# Nash's Boreen Housing Development, Fairhill, Cork City

## Proposed Residential Development


## Engineering Services Report

**September 2022**

**MHL & Associates Ltd.**
**Consulting Engineers**

**DOCUMENT CONTROL SHEET**

| | |
|---|---|
| **Client:** | Cork City Council |
| **Project Number:** | 21029HD |
| **Project Title:** | Proposed Residential Development, Nash's Boreen, Fairhill, Cork City |
| **Document Title:** | Engineering Services Report |
| **Document No.:** | NBHD-EDR-D01 |

| Revision | Status | Author | Reviewed by | Approved by | Date |
|---|---|---|---|---|---|
| 01 | Internal Draft | G. Whelton | K.Manley | K.Manley | 31/08/2022 |
| 02 | Client Issue | G. Whelton | K.Manley | K.Manley | 02/09/2022 |
| | | | | | |

***MHL & Associates Ltd***
Carraig Mór House,
10 High Street,
Douglas Road,
Cork.
*Tel 021-4840214*
*Email:* info@mhl.ie

## Contents

## Drawing Register

**PROJECT: PROPOSED RESIDENTIAL DEVELOPMENT AT Nash's Boreen, Fairhill, Cork City**

**CLIENT: Cork City Council**

**PROPOSED DEVELOPMENT: 34 residential units**

Report to be read in conjunction with the drawings in table 1.1 below.

| Drawing No. | Title | Scale |
|---|---|---|
| NBHD_PFS_P01 | Proposed Foul & Storm Network | 1:500 @ A3 |
| NBHD_FLS_P01 | Proposed Foul Long Sections | As Shown |
| NBHD_WM_P01 | Proposed Watermain Layout | 1:500 @A3 |
| NBHD_ER_P01 | Proposed Access Road | 1:500 @ A3 |
| NBHD_ERVA_P01 | Proposed Access Roads Long Sections | A Shown |
| NBHD_PRW_P01 | Proposed Public Realm Works | As shown @ A3 |
| NBHD_SFS_P01 | Proposed Storm Long Sections (1 of 2) | As Shown |
| NBHD_SFS_P02 | Proposed Storm Long Sections (2 of 2) | As Shown |
| NBHD_LD_P01 | Proposed Public Lighting | 1:500 @ A3 |
| NBHD_SCD_P01 | Manhole Detail as per STD-WW-10 | 1:25 @ A3 |
| NBHD_SCD_P02 | Manhole Detail as per STD-WW-11 | 1:25 @ A3 |
| NBHD_SCD_P03 | Manhole Detail as per STD-WW-12 | 1:25 @ A3 |
| NBHD_SCD_P04 | Trench Backfill Detail | 1:25 @ A3 |
| NBHD_SCD_P05 | Connection & Boundary Box as per STD-W-03 | 1:25 @ A3 |
| NBHD_SCD_P06 | General Pipe Connections - Watermain | 1:25 @ A3 |

**Table 1.1: Drawing Register**

# 1.0 PROPOSED SURFACE WATER DISCHARGE

## 1.1 Storm Water Discharge

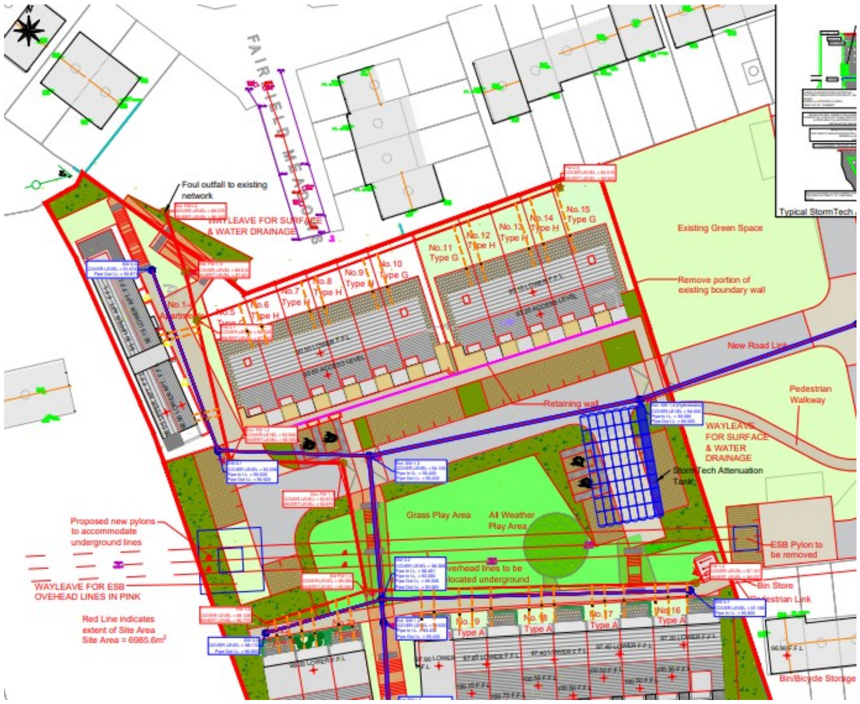



**Figure 1.1: Proposed storm water network (refer to drawings NBHD-FSL-P01 & NBHD-SLS-P01)**

There is currently an existing 450mm diameter storm sewer traversing the site. Starting on Nash's Boreen, it heads north into the site before turning east and connecting into Willow Bank View estate. It is proposed to connect a 225mm storm sewer into the existing network at different locations throughout the site.

It is a requirement to release storm water into this watercourse at a maximum rate of Q/Bar, equivalent to the existing greenfield runoff rate from the site. As there is an existing storm network traversing the site it has been recorded that an existing flow is present. A hydro-brake vortex will be installed in manhole SW 1.2 to control the proposed discharge rate from the site and connect into the existing network within manhole Ext. SW 1.4 – the rate of discharge will be of that equivalent to the existing greenfield runoff rate from the site plus the existing discharge rate from the existing network.

The proposed layout and topography of the development permits surface water runoff to be attenuated in one location, the proposed public green area in the centre of the development. To accommodate storm water runoff from the development it is proposed to install an offline attenuation tank, StormTech or similar style system, which will provide sufficient storage for excess storm water generated from these areas (Footpaths, roads and other hardstandings). Refer to drawing NBHD_FSL_P01 for attenuation tank details. The existing greenfield run-off rate currently being generated from the site is calculated as 3.9l/s. The overall discharge rate is yet to be determined as analysis of the existing sewer is to be carried out to determine the current flow.

## 1.2 Proposed Surface Water Drainage System Design

The proposed surface water drainage system is design in accordance with Sustainable Urban Drainage Systems (SUDS) principles and encompasses the entire development into one catchment which is primarily proposed for attenuation utilising Stormtech Underground Chamber systems. The attenuation system is designed with a controlled flow rate of equal to or less than the greenfield run-off rate for the catchment area. This results in an overall discharge from the site of 3.9 l/s. The attenuated systems will ultimately discharge into the existing public storm water network which runs through the site.

## 1.3 What are Sustainable Urban Drainage Systems (SUDS)?

SUDS mimic nature and typically manage rainfall close to where it falls. SUDS can be designed to transport (convey) surface water, slow runoff down (attenuate) before it enters watercourses, they provide areas to store water in natural contours and can be used to allow water to soak (infiltrate) into the ground or evaporated from surface water and lost or transpired from vegetation (known as evapotranspiration).

SUDS are drainage systems that are considered to be environmentally beneficial, causing minimal or no long-term detrimental damage. They are often regarded as a sequence of management practices, control structures and strategies designed to efficiently and sustainably drain surface water, while minimising pollution and managing the impact on water quality of local water bodies.

• Manage runoff volumes and flow rates from hard surfaces, reducing the impact of urbanisation on flooding
• Provide opportunities for using runoff where it falls
• Protect or enhance water quality (reducing pollution from runoff)
• Protect natural flow regimes in watercourses
• Are sympathetic to the environment and the needs of the local community
• Provide an attractive habitat for wildlife in urban watercourses
• Provide opportunities for evapotranspiration from vegetation and surface water
• Encourage natural groundwater/aquifer recharge (where appropriate)
• Create better places to live, work and play.

## 1.4 How will SUDS be implemented in the proposed development?

The proposed development has been designed using best practice in relation to flood risk and stormwater management including compliance with the following:

• Greater Dublin Regional Code of Practice for Drainage Works (GDRCoP).
• Greater Dublin Strategic Drainage Study (GDSDS).
• The SUDS Manual (CIRIA C753,2015).
• IS EN752, 'Drain and Sewer Systems Outside Buildings'.
• The incorporation of SUDS features to reduce run-off.

The design proposes to discharge at QBAR for all rainfall events up to and including the 1 in 100-year storm event plus 20% climate change as per the requirements of Cork City Council. This exceeds the climate change factor of 10% required as part of GDSDS. Furthermore, additional SUDS elements (permeable paving and partial infiltration solutions) are proposed in areas where the designed layout and topography allow, which have not been included when sizing of the attenuation tanks

The SUDS strategy for the site includes the following:
• Discharge Rate to be limited to QBAR for all rainfall events up to and including the 100-year storm event.
• Attenuation Storage to be provided up to the 100-year storm event allowing for 20% climate change.
• Hydrocarbon interceptor and silt chambers to be used upstream of each attenuation tank.
• Provision of infiltration soakpits for areas where the 'f' values are suitable. – Further site investigation is required to determine the level of infiltration feasible.
• Provision of permeable paving in public areas and to form 'home-zones'.
• Provision of tree-pits at suitable locations along roads and within the Park Area.

Various interception measures such as permeable paving, storm water storage butts for each unit, roof drainage to soakaways in rear gardens in parts of the development will ensure that the initial 5mm of rainfall is prevented from discharging from the site. This will ensure that the water quality of the receiving watercourse to the west is preserved.

As per section 16 of the GDRCoP and in particular the criteria as set out in section 16.3, compliance with all 4 Criteria is summarised as follows:

**Criterion 1 (River Water Quality Protection):**

Interception provided by way of:
• Permeable paving in public open spaces around the retail and creche area.
• Permeable paving provided to create 'home-zones' and traffic calming elements in parts of the development.

• Surface water runoff to 'Stormtech' attenuation chambers in parts of the development. These will be equipped with silt chambers and hydrocarbon interceptors.
• Water Butts and soakpits to rear gardens taken roof and patio drainage.

**Criterion 2 (River Regime Protection):**

Discharge rate restricted to QBAR for all storm events up to and including the 1 in 100-year storm event.

**Criterion 3 (Level of service (flooding) for the site):**

A review of the Office of Public Works (OPW) Flood Hazard Mapping website indicates that there are no records of flooding incidents at the site of the proposed development.
• No Site Flooding.
• No internal property flooding.
• All FFL's are a minimum of 500mm above adjacent on-site attenuation/infiltration tanks.
• Run-off from green areas during high intensity storm events can be catered for in on-site attenuation tanks.

**Criterion 4 (River Flood Protection):**

Maximum discharge rate of QBAR for all attenuated storage is proposed which is considerably less than the 30-year and 100-year greenfield run-off rates. As previously outlined no reduction in terms of run-off has been allowed for in the sizing of attenuation tanks as a result of proposed SUDS measures.

Measures to avoid significant environmental effects on the quality of the existing watercourse and groundwater will be implemented as part of the construction drainage management system. These will include:
• Silt fences
• Settlement ponds
• Silt bags
• Interceptor drains
• Hydrocarbon Interceptors (from compounds/soil improvement works)
• Construction management methods

## 1.5 Summary

The storm water management proposals for the site have been informed by the relevant standards and comply with best practice in terms of SUDS (Sustainable Urban Drainage Design). By providing the measures as outlined the impact of the proposed development on the Hydrological area has been minimised and results in a reduced risk of flooding downstream of the discharge points. Recharge of the underlying aquifer is accommodated through the SUDS measures proposed.

## 2.0 PROPOSED FOUL WATER DISCHARGE

### 2.1 Foul Design

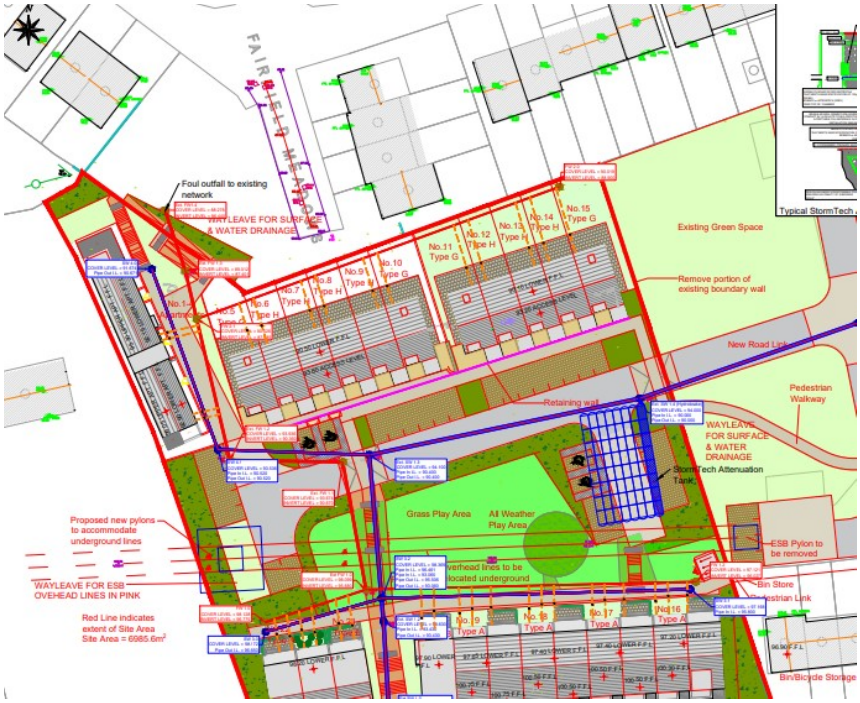



**Fig 2.1: Proposed Foul Sewer (refer to drawings NBHD-FSL-P01 and NBHD-FLS-P01)**

Each house is assumed to utilise 600 litres of water per day.

- 34 Unit Development - Normal Discharge = 600 l/house/day x 34 houses = 20,400 l/day
- Average flow (Dry Weather Flow (DWF)) = 23,400 /(24X60X60) = 0.236 l/s
- Design for 6 X DWF (Peak flow (6DWF)) = 0.236 l/s x 6 = 1.416 l/s (to account for surges in the consumption at peak times leading to surcharges in the pipe network).

For each pipe run the accumulative number of households contributing to that section of pipework is used to calculate the design flow.

There is an existing 300mm diameter foul sewer traversing the site. Starting towards the southern boundary the pipe runs north-west before connecting into the existing network within Fairfield Meadows Estate. Following site investigation, it appears that this existing section of foul sewer within the site curtilage is unutilised and in good condition. It is proposed to connect into the existing sewer in several locations.

A 150mm PVC-u pipes have adequate capacity for all the development and is proposed for all new pipe runs. After liaising with Irish Water engineers, it was agreed that foul sewer FW 2.0 – FW 2.1 is to be located within the private curtilage of the dwellings rather than the public road as outlined in Irish Water's guidelines. This is because the Units 05-15 are three storey town houses with living quarters located below the proposed road level. To avoid excessively deep manholes and inspection chambers it was agreed that the foul sewer and associated pipe work be constructed to the north of the dwellings at a significantly shallower depth. A wayleave will be provided over the length of this pipe run.

See drawing numbers NBHD-FSL-P01, NBHD-FLS-P01 and table 2.1 below for all foul details.

The construction of the foul sewer pipe network shall be in accordance with Irish Water publication "Code of Practice for Wastewater Infrastructure".

A Pre-Connection Enquiry Form was submitted to Irish Water to progress connection details. The response from Irish Water is attached in Appendix B of this report as well as correspondence with Irish Water's engineer.

| Existing Network denoted (EN) | Start Manhole ID | End Manhole ID | Length | Inlet invert elevation | Outlet invert elevation | Total drop | Slope | Pipe diameter |
|---|---|---|---|---|---|---|---|---|
| | | | (m) | (m) | (m) | (m) | (%) | (mm) |
| (EN) | Ext. FW 1.0 | Ext. FW 1.1 | 21.054 | 95.680 | 90.670 | 5.000 | 24.5 | 300.000 |
| (EN) | Ext. FW 1.1 | Ext. FW 1.2 | 17.811 | 90.670 | 90.360 | 0.310 | 1.74 | 300.000 |
| (EN) | Ext. FW 1.2 | FW 2.1 | 22.983 | 90.360 | 88.152 | 2.208 | 9.65 | 300.000 |
| (EN) | FW 2.1 | Ext. FW 1.3 | 7.838 | 87.885 | 87.401 | 0.484 | 6.21 | 300.000 |
| (EN) | Ext. FW 1.3 | Ext. FW 1.4 | 10.114 | 87.401 | 86.440 | 0.961 | 0.54 | 300.000 |
| - | FW 1.0 | Ext. FW 1.0 | 16.667 | 96.820 | 96.534 | 0.286 | 1.72 | 150.000 |
| - | FW 1.2 | Ext. FW 1.0 | 52.077 | 96.027 | 95.680 | 0.347 | 0.667 | 150.000 |
| - | FW 2.0 | FW 2.1 | 60.915 | 88.900 | 87.885 | 1.015 | 1.667 | 150.000 |

**Table 2.1: Foul design output**

## 3.0 WATER & FIRE FIGHTING SUPPLY

### 3.1 Water Supply

Design of watermain capacity:

- Per Dwelling = 150l/person x 2.7(P) x 1.25 (ADPW) = 506.25l/d
- Total daily demand = 34 x 506.25 = 17,212.5l/d
- Average flow =17,212.5/(24x60x60) = 0.199l/s
- Peak flow = 0.199 x 2.1 = 0.418l/s

### 3.2 Fire Fighting Supply

National Guidance Document on Provision of Water for Fire Fighting (Jan 2007, 3rd Edition) Section 5.2 – New Development Flow Rates Appendix 5 Housing developments of this type should have a water supply capable of delivering a minimum flow eight litres per second through any single hydrant.

A Pre-Connection Enquiry Form was submitted to Irish Water to progress connection details. The response from Irish Water is attached in Appendix B of this report.

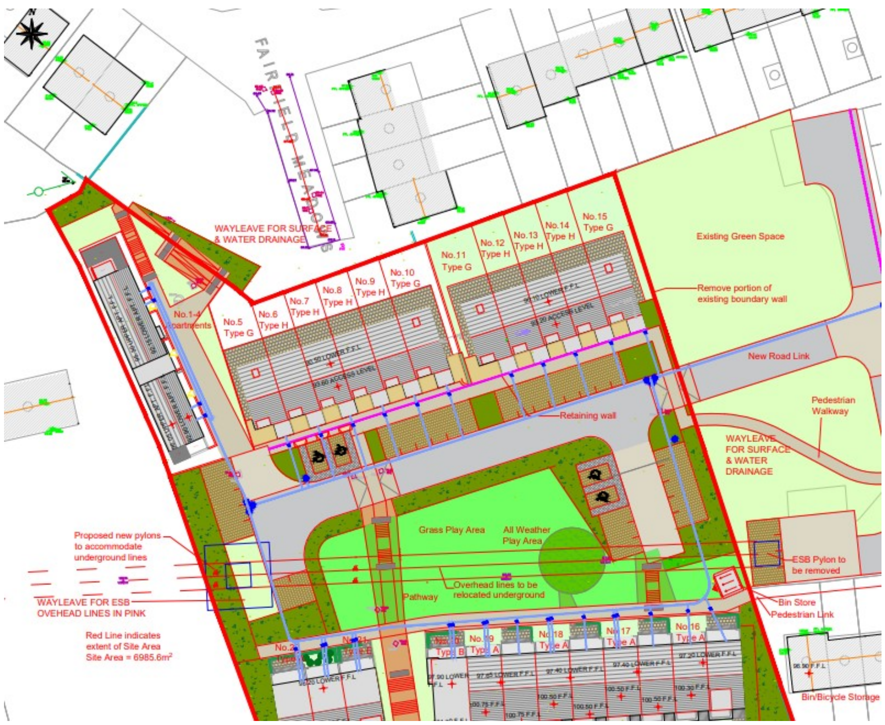


**Fig 3.1: Watermains detail (refer to drawing NBHD-WM-P01)**

## 4.0 PROPOSED SITE LAYOUT

### 4.1 Site Layout

The proposed site layout has been developed by Horgan Carroll Architects. MHL & Associates Ltd. Consulting Engineers provided engineering services for the proposed layout.

### 4.2 Roads - Internal road alignments

The internal roads have been designed for a design speed of 20km/h. Each road has a gradient of no more than 5% and cross fall of between 1-4%. Longitudinal gradients of equal to or less than 6.5% ensures compliance with Part M of the Building Regulations. In addition, cross falls of between 1-4% will ensure adequate surface water run-off. At the entrance junction, the vertical alignment of the approach road has been reduced to a max of 3% over a 10m distance.

The plan layout of the proposed estate roads is highlighted in drawing NBHD-ER-P01 and Figure 6.1 below.

**Figure 4.1: Proposed estate road (refer to drawing NBHD-ER-P01)**

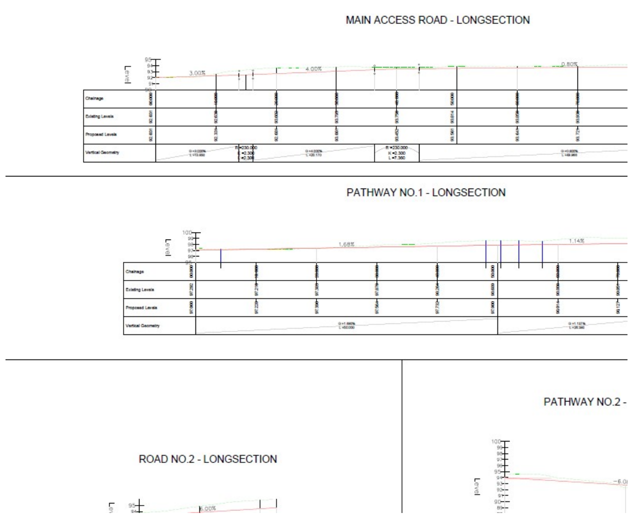



**Figure 4.2: Proposed estate road longsections (refer to drawing NBHD-ERVA-P01)**

## 4.3 Traffic and Pedestrian Management - Footways and Crossings

The proposed access road for the development will connect directly onto the existing Willow Bank View estate road network. Pedestrian connectivity will be provided from the existing estate to the proposed via a newly constructed section of footpath. This 1.8m wide path will be continued throughout the internal layout of the development with the construction of uncontrolled pedestrian crossings and raised crossings where applicable.

The proposed layout and gradients comply with Part M of the Building Regulations and the maximum gradients for both roads and footpaths are 6.5% with access to individual housing units no greater than 4%.

Several minor public realm improvement works are proposed for a portion of Nash's Boreen adjacent to the site, Willow Bank View and Willow Bank existing estate. The existing junction corner radii within the existing estate are large, splayed junctions which contradict good engineering practices as outlines in DMURS (Design Manual for Urban Roads and Streets. These large junctions promote an increase in vehicular speed and requires vulnerable road users to cross large sections of roadways. It is proposed to tighten the corner of radii of several highlighted junctions to reduce speed and improve pedestrian connectivity.

As part of the proposed development, parking is proposed for Units No.23-34 on Nash's Boreen. To account for this change in road landscape it is proposed to re-line to existing edge of carriageway lines adjacent to this section of the development. It is also proposed to repair any existing road damage outside the development which will improve the overall public realm environment. Refer to drawing NBHD_PRW_P01 for further details.

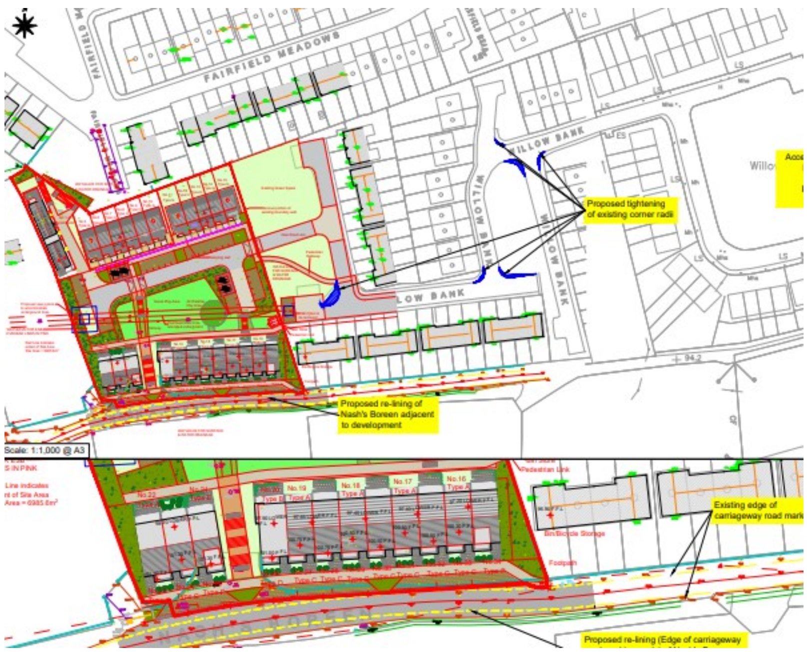



**Figure 4.3: Proposed public realm works (refer to drawing NBHD-PRW-P01)**

## 5.0 HISTORICAL AERIAL PHOTOGRAPHS OF THE SITE

The site's appearance has varied slightly in previous years. Having initially been a greenfield site, the site was partially developed in the interim before being demolished and returned to a brownfield site. In 2022, the site is fully cleared of all previous development construction.

### 5.1 Aerial Photograph - 2022


An aerial photograph of the site in 2022 – imagery sourced from Google Earth.

### 5.2 Aerial Photograph - 2018


An aerial photograph of the site in 2018 – imagery sourced from Google Earth.

## 5.3 Aerial Photograph - 2015


An aerial photograph of the site in 2015 – imagery sourced from Google Earth.

## 5.4 Aerial Photograph - 2013

An aerial photograph of the site in 2013 – imagery sourced from Google Earth.

## 5.5 Aerial Photograph - 2007


An aerial photograph of the site in 2007 – imagery sourced from Google Earth.

## 5.6 Aerial Photograph - 2006

An aerial photograph of the site in 2006 – imagery sourced from Google Earth.

## 5.7 Aerial Photograph – 2003 & previous years

An aerial photograph of the site in 2003 – imagery sourced from Google Earth.

# 6.0 PROPOSED DRAINAGE LAYOUT

## 6.1 Drainage Layout

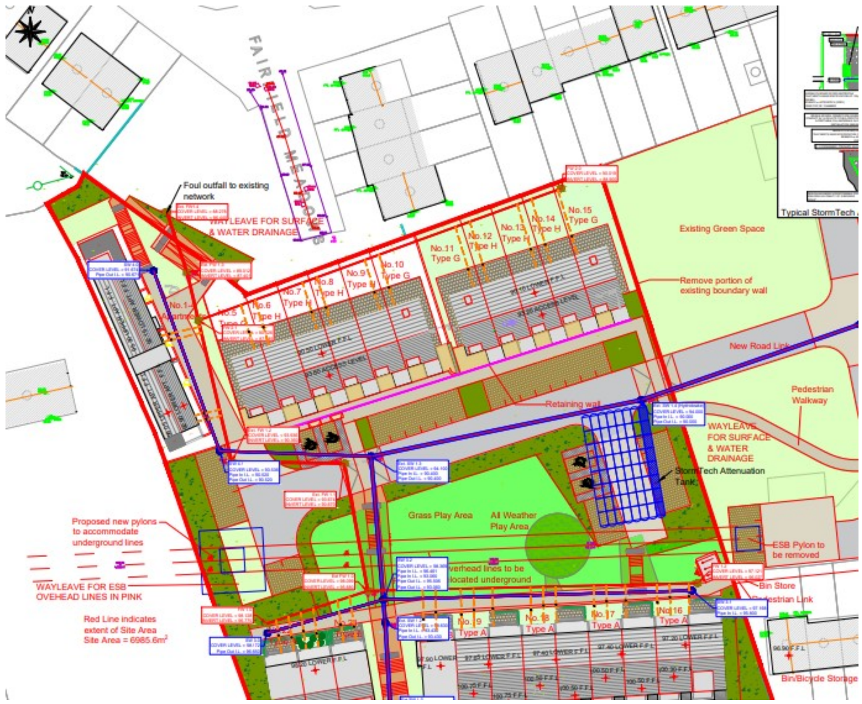



**Figure 6.1: Proposed storm water network (refer to drawings NBHD-FSL-P01 & NBHD-SLS-P01)**

There is currently an existing 450mm diameter storm sewer traversing the site. Starting on Nash's Boreen, it heads north into the site before turning east and connecting into Willow Bank View estate. It is proposed to connect a 225mm storm sewer into the existing network at different locations throughout the site. The proposed development requires four storm networks to adequately serve the site.

- The minimum gradient in the development storm sewer network is 1/200.
- The maximum gradient of a proposed pipe in the development storm sewer network is 1/20.

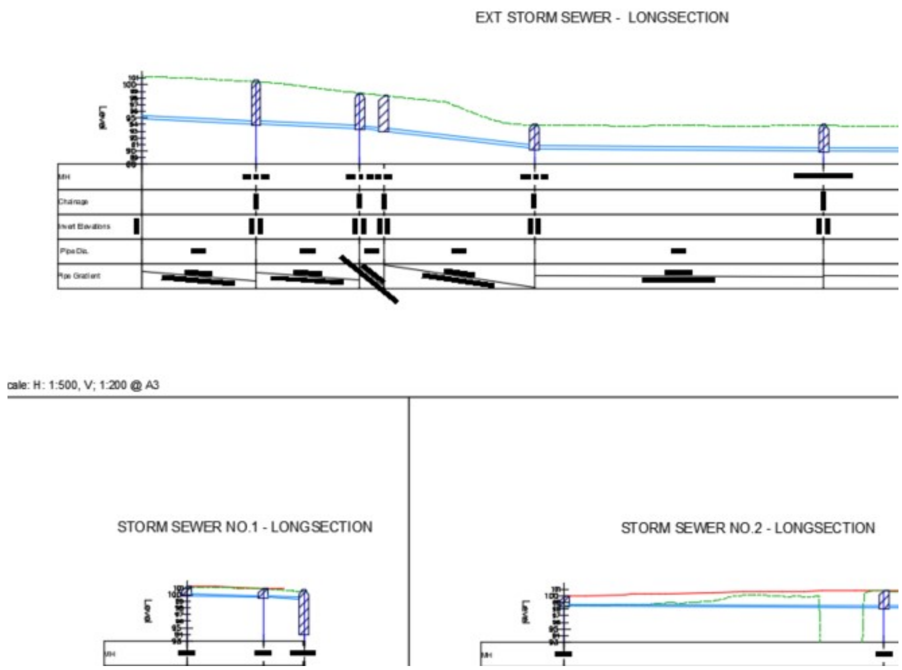



**Fig 6.2: Output profile plot of Ext. Storm Water Network, SW1.00 and SW2.00**

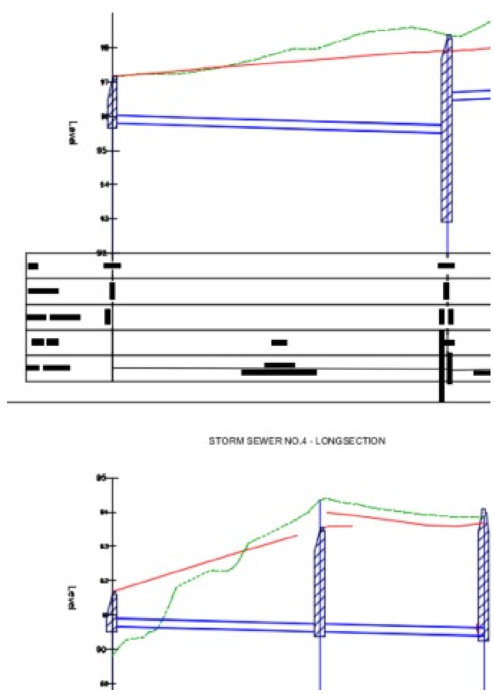



**Fig 6.2: Output profile plot of SW3.00 and SW4.00**

The construction of the storm sewer pipe network shall be in accordance with Section 3 of the Department of Environment and Local Government publication "Recommendations for Site Development Works for Housing Areas".

| Existing Network denoted (EN) | Start Manhole ID | End Manhole ID | Length | Inlet invert elevation | Outlet invert elevation | Total drop | Slope | Pipe diameter |
|---|---|---|---|---|---|---|---|---|
| | | | (m) | (m) | (m) | (m) | (%) | (mm) |
| (EN) | N/A | Ext. SW 1.0 | - | - | 94.050 | - | - | 450.000 |
| (EN) | Ext. SW 1.0 | Ext. SW 1.2 | 15.663 | 94.050 | 93.430 | 0.620 | 4.0 | 450.000 |
| (EN) | Ext. SW 1.2 | SW 3.2 | 3.634 | 93.430 | 93.060 | 0.370 | 10.2 | 450.000 |
| (EN) | SW 3.2 | Ext. SW 1.3 | 22.859 | 93.060 | 90.400 | 2.660 | 11.7 | 450.000 |
| (EN) | Ext. SW 1.3 | Ext. SW 1.4 | 43.567 | 90.400 | 90.000 | 0.400 | 0.92 | 450.000 |
| (EN) | Ext. SW 1.4 | Ext. SW 1.5 | 36.500 | 90.000 | 89.817 | 0.183 | 0.50 | 450.000 |
| - | SW 1.0 | SW 1.1 | 11.527 | 99.900 | 99.612 | 0.288 | 2.50 | 225.000 |
| - | SW 1.1 | Ext. SW 1.0 | 6.104 | 99.612 | 99.307 | 0.305 | 5.00 | 225.000 |
| - | SW 2.0 | SW 2.1 | 48.236 | 98.484 | 98.243 | 0.241 | 0.50 | 225.000 |
| - | SW 2.1 | Ext SW 1.0 | 7.385 | 98.243 | 98.206 | 0.037 | 0.50 | 225.000 |
| - | SW 3.0 | SW 3.2 | 19.033 | 96.650 | 96.461 | 0.189 | 0.99 | 225.000 |
| - | SW 3.1 | SW 3.2 | 48.761 | 95.800 | 95.506 | 0.294 | 0.60 | 225.000 |
| - | SW 4.0 | SW 4.1 | 30.288 | 90.671 | 90.520 | 0.151 | 0.50 | 225.000 |
| - | SW 4.1 | Ext SW 1.3 | 23.918 | 90.520 | 90.400 | 0.120 | 0.500 | 225.000 |

**Table 6.1: Storm design output**

## 7.0 PROPOSED WATERMAIN LAYOUT

### 7.1 Watermain Layout

A sluice valve T-junction will be fitted to the existing watermain, which is located within the existing Willow Bank View estate and will accommodate the proposed development as shown on drawing NBHD-WM-P01.

A 100mm diameter PE- 80 watermain is proposed to supply water to all the fire hydrants in the development. The proposed pipe network loops through the site. Domestic water will be taken off the 100mm mains for the development and supplied to each of the individual units.

The construction of the water supply pipe network shall be in accordance with Irish Water publication "Code of Practice for Water Infrastructure".

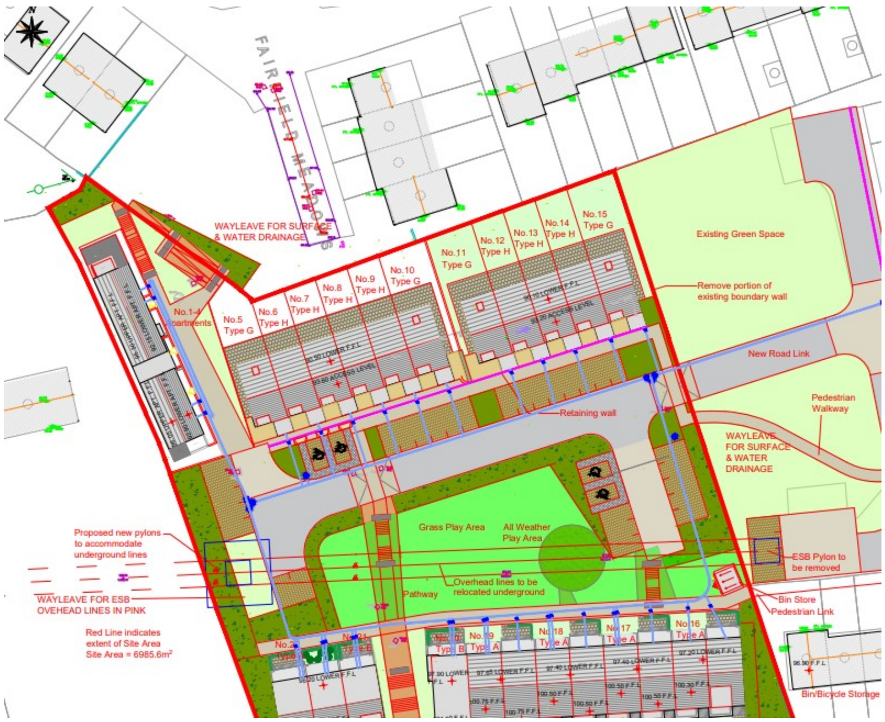



**Fig 7.1: Watermains detail (refer to drawing NBHD-WM-P01)**

# APPENDICES

## A1.1 Irish Water Correspondence

Please see attached.

[redacted]
Carraig Mor House
10 High Street
Douglas Road
Cork
T12KC66

**Uisce Éireann**
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

**Irish Water**
PO Box 448,
South City
Delivery Office,
Cork City.

**www.water.ie**

9 February 2022

**Re: CDS22000058 pre-connection enquiry - Subject to contract | Contract denied**

**Connection for Housing Development of 29 unit(s) at Nash's Boreen, Cork, Co. Cork**

Dear Sir/Madam,

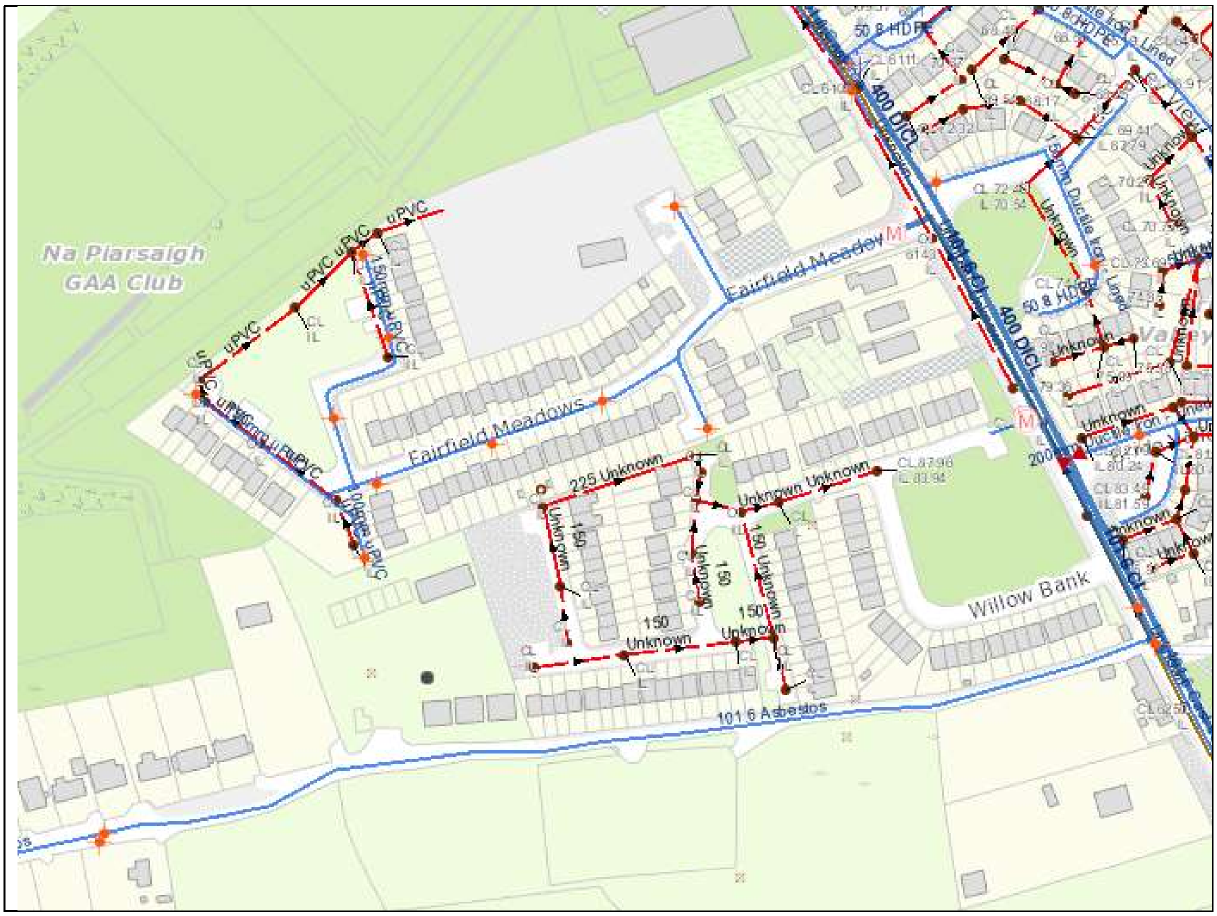
Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Nash's Boreen, Cork, Co. Cork (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

| **SERVICE** | **OUTCOME OF PRE-CONNECTION ENQUIRY**<br>**THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.** |
|---|---|
| Water Connection | Feasible without infrastructure upgrade by Irish Water |
| Wastewater Connection | Feasible without infrastructure upgrade by Irish Water |
| **SITE SPECIFIC COMMENTS** | |
| | |
| Water Connection and Wastewater Connection | Our records show a possible connection point to IW Network in the adjacent estate. The proposed water and wastewater connections for this development connect to the Irish Water network via infrastructure that has not been taken in charge by Irish Water (**Third Party Infrastructure**). Please be advised that at connection application stage and prior to the commencement of any Self-Lay Works, you have to:<br>• identify and procure transfer to Irish Water of the arterial water and wastewater Infrastructure within the Third Party Infrastructure<br>• demonstrate that the arterial infrastructure are in compliance with requirements of Irish Water Code of Practice and Standard Details and in |

| | |
|---|---|
| | adequate condition and capacity to cater for additional load from the Development. |

| |
|---|
| The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement. |

**The map included below outlines the current Irish Water infrastructure adjacent to your site:**






Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

**General Notes:**

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Brian Lavelle from the design team on  or email brian.lavelle@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,

Yvonne Harris

**Yvonne Harris**

**Head of Customer Operations**

Gmail [redacted]

## Foul Network Design query - Nash's Boreen

2 messages

[redacted] 27 January 2022 at 15:16
To: cdsdesignqa@water.ie
[redacted]

Good afternoon,

MHL & Consulting engineers have been engaged by [redacted] to provide engineering drawings to submit as part of a planning application for a housing development at Nash's Boreen, Cork City.

As the site in question is steeply sloped this results in duplexe Units and 'Upper level access' dwellings being proposed. Attached is a drawing showing 2no. proposals for a foul sewer which would serve two terraces of units - MHL require Irish Water's guidance on this matter.

Proposal 'A'
Install a foul sewer in the back gardens of the proposed dwellings. This would result in shallow sewers and connections making future access easily accessible. A Wayleave would also be provided along the length of the run.

Proposal 'B'
Install the sewer along the main access road (The main access road is +3.0m above the lower level of the Units. The main entrance level for the Units is at this level). This would result in deep manholes, sewers and connections (Up to 6.0m).

It would be appreciated if an Irish Water representative could advise us on the preferred proposal or outline alternative options. Feel free to give me a call on [redacted] if you wish to discuss further or have any queries.
Thanks.

--

Regards,

[redacted]

MHL & Associates Ltd.,
Consulting Engineers,

[redacted]

In light of the ongoing COVID-19 crisis, MHL & Associates Ltd. are taking precautionary measures in accordance with the Department of Health Guidelines. Our office will remain open and project work will continue, but until further notice we are unable to facilitate face to face meetings.

**Nash's Boreen - Irish Water query.pdf**
1503K

**CDS Design QA** <cdsdesignqa@water.ie> 1 February 2022 at 09:45
[redacted]

Hi [redacted]

As discussed yesterday, due to the nature of the site and upper level access to the duplex, standard practise as proposal ‘B’ would result in 3-4m deep inspection chambers which would not be practical to maintain & give rise to health risks for the occupants when maintain. Given this proposal ‘A’ in this circumstance looks like the best solution on this site and its constraints . Please note that back yard sewer should be avoided were possible.

Kind Regards,

**Kyle Jackson**
Southern Region – Connections and Developer Services – Design Engineer

**Uisce Éireann**
Teach na hAbhann Móire, Páirc Ghnó Mhala, Mala, Contae Chorcaí, Éire

**Irish Water**
Blackwater House, Mallow Business Park, Mallow, County Cork, Ireland

**T** + 01 22 54630

[redacted]

**www.water.ie**

Facebook | Twitter | LinkedIn

---

[redacted]>
**Sent:** Thursday 27 January 2022 15:16
**To:** CDS Design QA <cdsdesignqa@water.ie>
[redacted]
**Subject:** Foul Network Design query - Nash's Boreen

**CAUTION:** This email originated from outside of your organisation. Do not click links or open attachments unless you recognise the sender and are sure that the content is safe.

[Quoted text hidden]

## A2.1 Public Lighting Design

The Public Road Lighting has been designed to EN 13201 and British Standard BS 5489. The "Lighting Reality Pro" software package was used to choose an appropriate lantern type and to optimise the lighting design. An appropriate lantern in the Philips range of products was found to be the Luma Gen2 Micro BGP702 DRM1 5.40klm for Nash's Boreen (Local Road), Luma Gen2 Micro_BGP702_DX70_4.80klm for internal roadway and Luma Gen2 Nano BGP701 DN09 0.80klm for internal paths and playground. All are designed and manufactured to comply with EN 13201, and IP65 optic and gear housing 10 joules shock resistant.

A 6m wide distributor road with a 1.8m footpath will require 6m mounting height columns with post top fixings at 20m maximum centres when using as shown on drawing NBHD-LD-P01 and in the design report attached to this report.

Site specific public lighting design reports are included in Appendix A of this report.

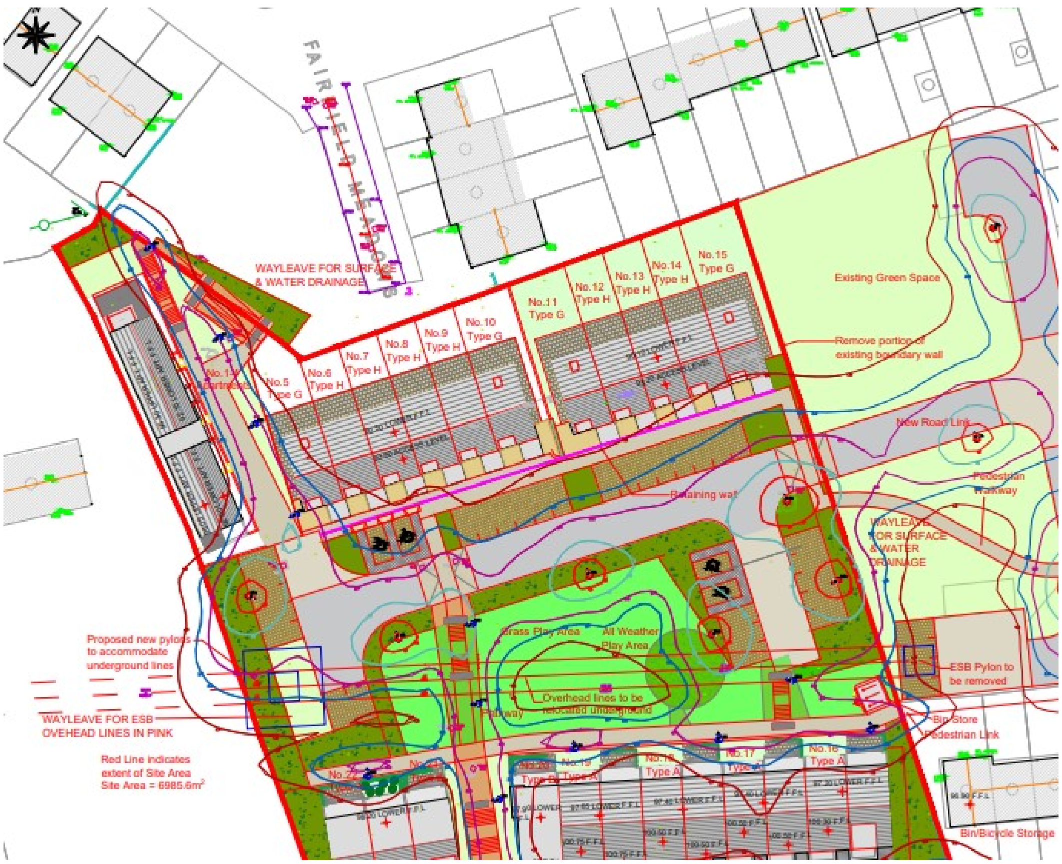



**Fig A1.1: Public lighting detail (refer to drawing NBHD-PL-P01)**

## A2.2 Public Lighting Report

<u>Please see attached report</u>

| | |
|---|---|
| **DATE:** | **7 February 2022** |
| **DESIGNER:** | **DM - MHL & Associates** |
| **PROJECT No:** | **21-029HD** |
| **PROJECT NAME:** | **Nashs Boreen** |

DEVELOPMENT

Lighting Classification

P2 Public Road
Eav = 10.00 to 15.00
Emin= 2.00

P4 Cul de Sac/ Internal Estate Road
Eav = 5.00 to 7.50
Emin= 1.00

P4 Isolated Footpaths/ Parks
Eav = 5.00 to 7.50
Emin= 1.00

# Outdoor Lighting Report

**PREPARED BY:**

Design Software from:
Lighting Reality Ltd
Park Business Centre
Wood Lane
Erdington
Birmingham
B24 9QR
United Kingdom
e-mail: sales@lightingreality.com
website: www.lightingreality.com

# Layout Report

## General Data

Dimensions in Metres Angles in Degrees

## Calculation Grids

| ID | Grid Name | X | Y | X' Length | Y' Length | X' Spacing | Y' Spacing |
|---|---|---|---|---|---|---|---|
| 1 | Local Road | 569540.40 | 575125.47 | 121.83 | 24.37 | 1.49 | 1.43 |
| 2 | Internal Paths/ Playground... | 569561.08 | 575111.18 | 95.00 | 128.01 | 1.48 | 1.49 |
| 3 | Internal Road | 569515.70 | 575151.11 | 160.47 | 125.69 | 1.50 | 1.50 |

## Luminaires

### Luminaire A Data

| | |
|---|---|
| Supplier | Philips |
| Type | BGP702 DX70 |
| Lamp(s) | LED-HB 5.2S 730 |
| Lamp Flux (klm) | 4.80 |
| File Name | Luma Gen2 Micro_BGP702_DX70_4800_20LED_5.2S_CLO_L90_730.ies |
| Maintenance Factor | 0.77 |
| Imax70,80,90(cd/klm) | 313.4, 303.5, 0.0 |
| No. in Project | 9 |

### Luminaire C Data

| | |
|---|---|
| Supplier | Philips |
| Type | BGP701 DN09 |
| Lamp(s) | LED-HB 5.2S 730 |
| Lamp Flux (klm) | 0.80 |
| File Name | Luma Gen2 Nano_BGP701_DN09_800_6LED_5.2S_CLO_L90_730.ies |
| Maintenance Factor | 0.77 |
| Imax70,80,90(cd/klm) | 1028.1, 130.5, 0.0 |
| No. in Project | 13 |

### Luminaire D Data

| | |
|---|---|
| Supplier | Philips |
| Type | BGP702 DRM1 |
| Lamp(s) | LED-HB 5.2S 730 |
| Lamp Flux (klm) | 5.40 |
| File Name | Luma Gen2 Micro_BGP702_DRM1_5400_20LED_5.2S_CLO_L90_730.ies |
| Maintenance Factor | 0.85 |
| Imax70,80,90(cd/klm) | 137.4, 10.1, 0.0 |
| No. in Project | 4 |

## Layout

| ID | Type | X | Y | Height | Angle | Tilt | Cant | Out-reach | Target X | Target Y | Target Z |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 569656.67 | 575186.77 | 6.00 | 0.00 | 0.00 | 0.00 | 0.40 | | | |
| 3 | A | 569647.22 | 575232.68 | 6.00 | 17.00 | 0.00 | 0.00 | 0.40 | | | |
| 4 | A | 569571.08 | 575180.08 | 6.00 | 109.86 | 0.00 | 0.00 | 0.40 | | | |
| 5 | A | 569595.57 | 575188.13 | 6.00 | 109.86 | 0.00 | 0.00 | 0.40 | | | |
| 6 | A | 569620.83 | 575197.63 | 6.00 | 109.86 | 0.00 | 0.00 | 0.40 | | | |
| 7 | A | 569645.18 | 575205.61 | 6.00 | 109.86 | 0.00 | 0.00 | 0.40 | | | |
| 8 | C | 569539.45 | 575230.30 | 6.00 | 208.40 | 0.00 | 0.00 | 0.30 | | | |
| 9 | C | 569548.16 | 575218.63 | 6.00 | 208.40 | 0.00 | 0.00 | 0.30 | | | |

8158203548

## Layout Continued

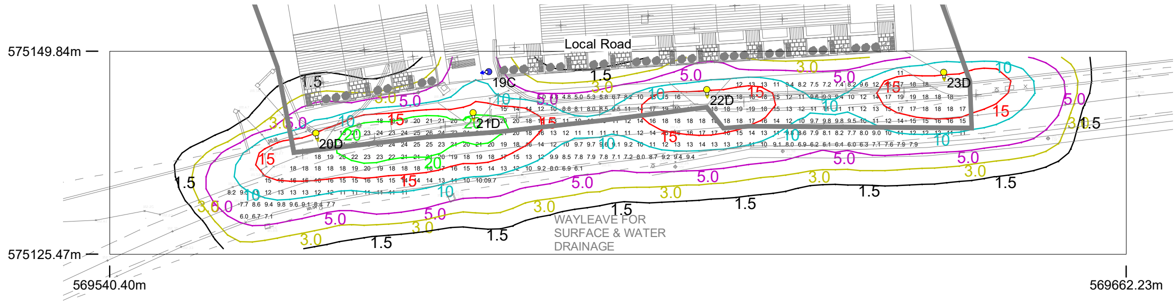
| ID | Type | X | Y | Height | Angle | Tilt | Cant | Out-reach | Target X | Target Y | Target Z |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | C | 569552.75 | 575207.59 | 6.00 | 208.40 | 0.00 | 0.00 | 0.30 | | | |
| 11 | C | 569557.97 | 575196.05 | 6.00 | 208.40 | 0.00 | 0.00 | 0.30 | | | |
| 12 | C | 569567.13 | 575162.54 | 6.00 | 95.68 | 0.00 | 0.00 | 0.30 | | | |
| 13 | C | 569593.58 | 575165.99 | 6.00 | 95.68 | 0.00 | 0.00 | 0.30 | | | |
| 14 | C | 569612.12 | 575167.14 | 6.00 | 95.68 | 0.00 | 0.00 | 0.30 | | | |
| 15 | C | 569631.55 | 575168.44 | 6.00 | 95.68 | 0.00 | 0.00 | 0.30 | | | |
| 16 | C | 569580.57 | 575182.03 | 6.00 | 192.00 | 0.00 | 0.00 | 0.30 | | | |
| 17 | C | 569581.33 | 575171.82 | 6.00 | 188.78 | 0.00 | 0.00 | 0.30 | | | |
| 18 | C | 569583.96 | 575159.54 | 6.00 | 188.78 | 0.00 | 0.00 | 0.30 | | | |
| 19 | C | 569585.83 | 575147.38 | 6.00 | 188.78 | 0.00 | 0.00 | 0.30 | | | |
| 20 | D | 569565.10 | 575140.04 | 8.00 | 284.90 | 0.00 | 0.00 | 0.50 | | | |
| 21 | D | 569583.93 | 575142.46 | 8.00 | 274.93 | 0.00 | 0.00 | 0.50 | | | |
| 22 | D | 569611.94 | 575145.25 | 8.00 | 274.93 | 0.00 | 0.00 | 0.50 | | | |
| 23 | D | 569640.33 | 575147.30 | 8.00 | 274.93 | 0.00 | 0.00 | 0.50 | | | |
| 23 | C | 569621.62 | 575174.80 | 6.00 | 172.00 | 0.00 | 0.00 | 0.40 | | | |
| 25 | A | 569627.42 | 575187.61 | 6.00 | 203.00 | 0.00 | 0.00 | 0.40 | | | |
| 26 | A | 569551.81 | 575185.52 | 6.00 | 343.00 | 0.00 | 0.00 | 0.40 | | | |
| 26 | A | 569611.19 | 575180.61 | 6.00 | 17.00 | 0.00 | 0.00 | 0.40 | | | |

**DATE: 7 February 2022** **DESIGNER:** **DM - MHL & Associates**

**PROJECT No: 21-029HD** **PROJECT NAME: Nashs Boreen**

# Horizontal Illuminance (lux)

Local Road




## Results

| | |
|---|---|
| Eav | 13.92 |
| Emin | 4.84 |
| Emax | 25.71 |
| Emin/Emax | 0.19 |
| Emin/Eav | 0.35 |
| | |

8158203548

# Horizontal Illuminance (lux)

Internal Paths/ Playground


## Results

| | |
|---|---|
| Eav | 6.18 |
| Emin | 1.20 |
| Emax | 18.12 |
| Emin/Emax | 0.07 |
| Emin/Eav | 0.19 |
| | |

8158203548

# Horizontal Illuminance (lux)

Internal Road


## Results

| | |
|---|---|
| Eav | 6.64 |
| Emin | 1.19 |
| Emax | 19.78 |
| Emin/Emax | 0.06 |
| Emin/Eav | 0.18 |
| | |

8158203548

## A3.1 Drawings