Environmental Impact Assessment Report (EIAR)

Volume 1 Main Statement Addendum

Large Scale Residential Development at Ruanbeg, Kildare Town, Co. Kildare

September 2023

In association with

PUNCH Consulting Engineers
Panther Ecology Ltd.
Bluerock Environmental Limited
Traynor Environmental Ltd.
Cunnane Stratton Reynolds Land Planning and Design
John Purcell Archaeological Consultancy
MANDE Consulting Engineers Ltd
McCrossan O'Rourke Manning Architects

Prepared by

mcg
MCGILL PLANNING

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Executive Summary

Environmental Impact Assessment Report Addendum Volume 1 Main Statement

This addendum (Volume 1) has been prepared to be read in conjunction with the Environmental Impact Assessment Report for the Large Scale Residential development at Ruanbeg, Kildare Town, Co. Kildare.

The addendum includes any updates to the EIAR following completion of the additional assessment since completion of the EIAR.

Where additions/amendments are made, they are highlighted under each chapter reference. The amended text is highlighted in red.

Environmental Impact Assessment Report Addendum Volume 2 Appendices

The appendices addendum has been prepared to be read in conjunction with the Environmental Impact Assessment Report for the Large Scale Residential development at Ruanbeg, Kildare Town, Co. Kildare.

The appendices addendum (Volume 2) includes any updated reports prepared as part of the request for further information from Kildare County Council.

Where reports were previously submitted as part of the original Environmental Impact Assessment Report Volume 2 Appendices these are highlighted as 'slight change'. 'Slight change' refers to the report containing updated information to address/reflect items within the request for further information by Kildare County Council and are minor in nature relating to the development description or slight amendments to the figures as a result of the changes to the development.

Where new reports are provided these are highlighted as 'Additional information'.

Environmental Impact Assessment Report Addendum Volume 3 Non – Technical Summary (NTS)

The Non – Technical Summary (NTS) addendum (Volume 3) has been prepared to be read in conjunction with the original Environmental Impact Assessment Report Non – Technical Summary (NTS). The addendum includes any updates to the EIAR following the completion of the additional assessment since completion of the EIAR.

Where additions/amendments are made, they are highlighted under each chapter reference. The amended text is highlighted in red.

Conclusion

In conclusion, the Environmental Impact Assessment Report Addendum aims to address the following request for further information items listed below:

Further Information Item 2

(z) (ii) In a worst-case scenario situation, distance indicated on the maps within Chapter 11 of the EIAR should be via existing roads/footpath routes and not as the crow flies.

Further Information Item 3

a) Chapter 2 of the EIAR Alternative does not refer to the Draft Kildare Town Local Area Plan 2023-2029. Unlike the Kildare Town Local Area Plan 2012-2018 where the site is zoned New Residential Phase 1, the application site is zoned New Residential Phase 2 under the Draft Local Area Plan. In order to have a complete assessment of alternatives inclusive of worst-case scenario, the Applicants are requested to revise the EIAR to reflect the Draft Local Area Plan.

b) Chapter 3, Description of Development, the undulating nature of the site has not been described within the receiving environment section of this chapter, this is significant characteristic of the application site that has not been clearly outlined. In order for a comprehensive assessment of the receiving environment the levels on site need to be fully described. The level changes proposed during the construction phase within the site need to be described and outlined.

c) Chapter 4 Population and Human Health, it is noted there are two different figures given in this chapter and the previous chapter regarding the capacity of the créche. On page 58 of the EIAR is states the creche will accommodate 87 no. children on page 87 it states the créche will accommodate 78 no. children. Clarity in relation to same is required.

Additionally, the cumulative impact in relation to existing permitted developments under way such as Magee Barracks (375 no. residential units) and the impacts this will have on the capacity of existing and planned schools in the town needs to be explored.

d) Chapter 6, Lands, Soil & Geology, it is noted that additional material to be imported on site will be 64,030 cubic metres and will be used for raising ground levels locally, construction retention basins, road pavement foundations, buildings drainage etc. Clarity on where this imported material is to go and where the level changes will occur is required.

i. A site plan illustrating existing levels on site is needed and Site Layout Plan clearly illustrating where this imported material is to go and the proposed levels on site are required.
ii. Additional sections or a revised site layout plan with Finished Floor Levels (FFL) of the existing dwellings in Ruanbeg that will immediately adjoin the proposed Development and the proposed FFL of the proposed dwellings that will adjoin Ruanbeg.

e) Chapter 14 Archaeology, it stated the nearest SMR is c.500m KD022-052 Ringbarrow and states the KD022-118 Burial ground is c.1km from the site. However, the red line boundary of the application within this chapter of the EIAR does not appear to include the area along the road. The Planning Authority notes the nearest SMR from the application site is c.325m to the west of the site, KD022-118 Burial ground. The nearest one to the east of the site is c.400m and is KD022-052 Ringbarrow. Please revise the archaeological assessment accordingly.

Further Information Item 5

(g) A submission from a third party which owns the adjacent Tyre Centre has raised concerns regarding the potential for noise nuisance on intended occupants of the development from existing operation. It is noted, the age friendly units are proposed to be located near this site, it is also noted with the noise chapter of the EIAR part of this area of the site has been surveyed as a noisier location. In order to reduce the potential for future complaints the Applicants are requested to submit details which will aid in designing out potential noise impact such as triple glazing and appropriate location of vents/openings

1. Introduction and Methodology

1.1 Introduction

The proposed development will comprise the construction of 285 no. residential units along with a two storey creche facility measuring c.472.7sqm and a new multifunctional space. The residential units will include:

- **14 no. single storey, semi-detached/terraced houses (12 no. 1-beds and 2 no. 2-beds) provided as "age-friendly housing".**
- **231 no. two storey, semi-detached/terraced houses (20 no. 2 beds, 173 no. 3 beds, 38 no. 4 beds).**
- **40 no. three storey duplexes/apartments (20 no. 2 beds, 20 no. 3 beds) arranged within 3 no. blocks.**

All residential units will be provided with associated private gardens/balconies/ terraces facing to the north/ south/ east/ west.

New vehicular and pedestrian/cyclist accesses will be via Dublin Road (R445) and Ruanbeg Avenue and a pedestrian only access via Ruanbeg Park, with upgrade to existing public road as necessary.

All associated site development works, including 560 no. car parking spaces (including EV parking), 138 no. cycle parking spaces, public and communal open spaces, landscaping, SuDs features, boundary treatments, plant areas, waste management areas/bin stores, and services provision (including ESB substations, pumping station) are also proposed.

An Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement (NIS) have been prepared in respect of the proposed development.

A detailed description of the proposed development is provided in Chapter 3 of this EIAR.

1.2 Legislative Context

No change.

1.3 Legislative Definition of EIA

No change.

1.4 EIA Screening

The gross area of the application site is c. 10.3 gross (and 8.8 ha net), which is above the 10ha threshold for a built-up area.

The proposed development is for 285 no. residential units along with a creche, which is below the 500 no. unit threshold.

Based on the gross site area alone, an EIA is deemed automatically required in respect of the project.

1.5 EIA Scoping

No change.

1.6 EIAR Format & Content

No change.

1.7 Methodology

No change.

Methodology

No change.

1.8 Competency

No Change.

1.9 Difficulties in Compiling the Specified Information

No change.

1.10 Availability of the EIAR

No change.

2. Alternatives

2.1 Terms of Reference

No change.

2.2 Introduction

- No change.

2.3 Do-Nothing Alternative

The subject site has been zoned for development since the adoption of the Kildare Town Local Area Plan 2002. The zoning has remained the same since this LAP was adopted, with the main area of the site zoned as *'C: New Residential'* and the southwestern section of the site zoned as *'G1: Industry and Warehousing'*. The objective of zoning 'C: New Residential' within the Kildare Town LAP 2002 was *'to provide for new residential development'*. The objective of zoning 'G1: Industry and Warehousing' was *'to provide for new warehousing and industrial development'*. East of the site is green belt zoning J which aims *'to protect the Curragh and established agricultural uses, including the bloodstock industry'*.

Map 11.1 of the Draft Kildare Town Local Area Plan 2023-2029 indicates that the site zoning will remain as residential, however, the phasing of its delivery will change from Phase 1 to Phase 2. It is now zoned C: Phase 2 New Residential. In addition the land to the southwest corner of the site will be altered from: Industry and Warehousing to E: Community and Education.

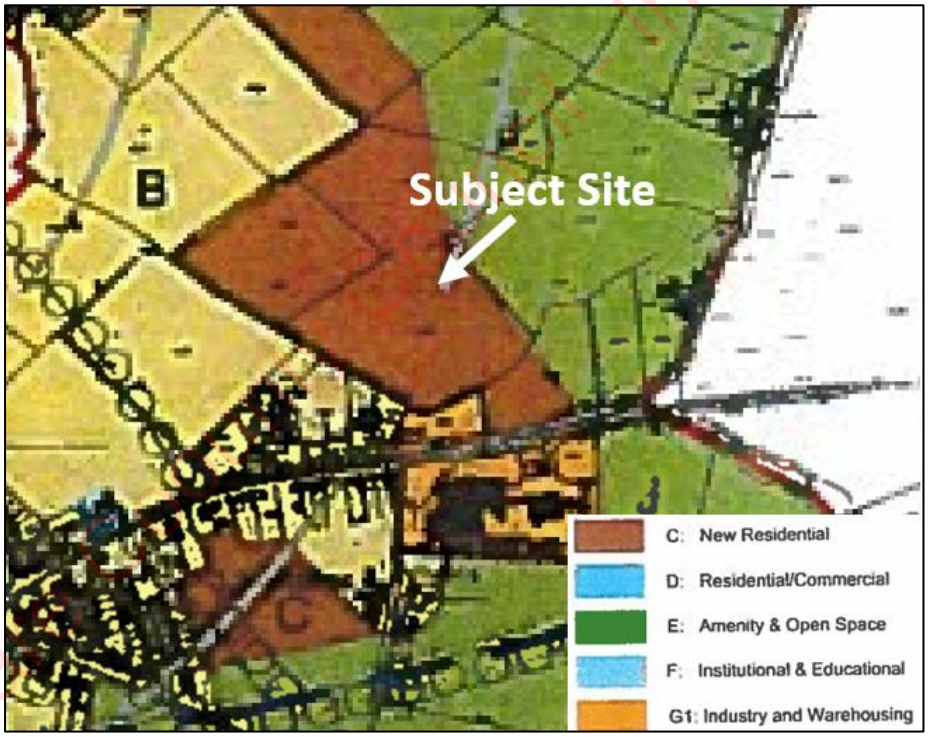
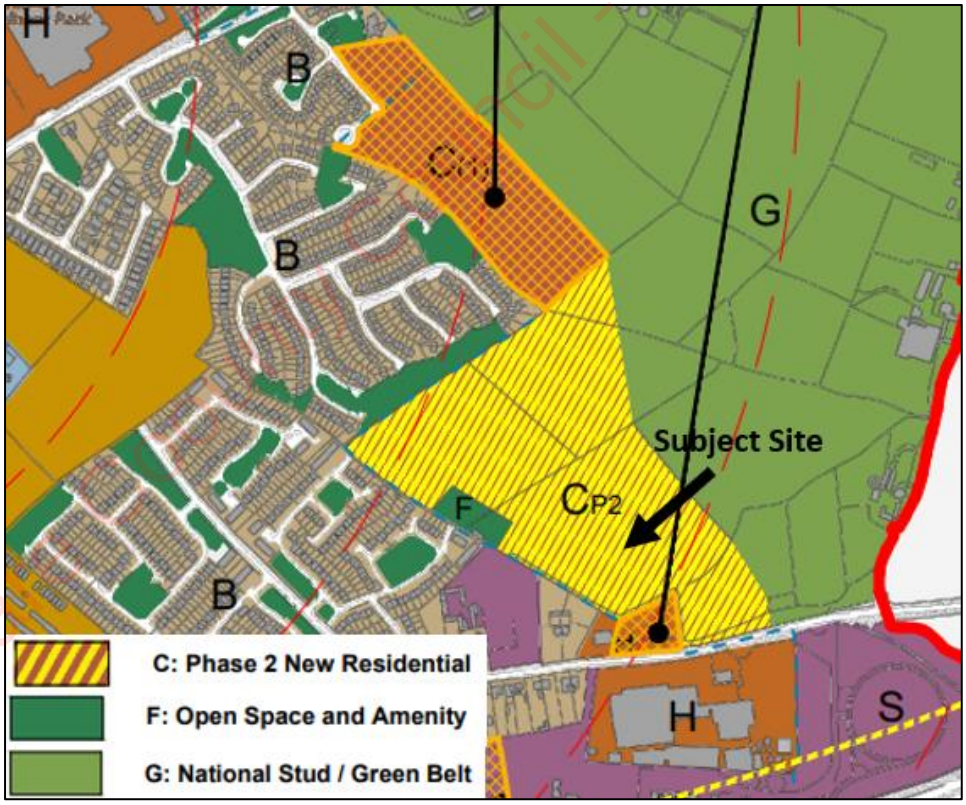


Figure 2.1: Land Use Zoning within the Kildare Town Local Area Plan 2002

Although zoning C permits several uses as listed in land use zoning matrix, no other proposals for the subject site have come forward in the time that the site has been zoned for development. The site has remained vacant and undeveloped for over 20 years.

Figure 2.2: Land Use Zoning within the Kildare Town Local Area Plan 2012-2018



Therefore, a 'do-nothing' alternative would likely result in the subject site remaining vacant and undeveloped. This would mean that these zoned lands would not be developed in accordance with the objectives of the current Local Area Plan in either the short or long-term.

This in turn would have the knock-on impact of the Local Area Plan/County Development Plan not being implemented as planned, potentially creating pressures to develop unzoned, unserviced or remote sites elsewhere, that would not promote sustainable development and compact urban growth.

This is not in line with National, Regional or Local Plan policies which require the efficient use of zoned land such as these. Furthermore, these lands are considered highly sustainable and suitable for development due to its proximity to a wide range of existing public transport facilities, services and community facilities within the area which are key considerations for the development of any zoned site.

2.4 Alternative Locations

The 2018 Guidelines note that some projects may be "site specific" so the consideration of alternative sites may not be relevant or warranted.

This point is also stated in the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022), which states that in some instances alternative locations may not be applicable or available for a specific project which is identified for a specific location. Regarding locations, the consideration of alternatives in many cases have been addressed and decided at strategic planning level during the adoption of the Kildare County Development Plan 2023-2029.

Furthermore, these plans, including the Development Plan and Local Area Plan, has been subject to Strategic Environmental Assessment takes into account the environmental considerations associated with, for example, the cumulative impact of an area zoned for industry on a sensitive landscape. The Guidelines also state that the statutory development plans can establish project-level objectives or other mitigation that a subsequent site project and its EIAR should be cognisant of.

In this regard, we note that the subject site is located within Kildare County Council administrative area and is primarily zoned *'C New Residential'*. The adopted Kildare County Development Plan 2023-2029 outlines that *"Individual Local Area Plans will be prepared for higher order settlements, where individual Infrastructural Assessments will be carried out to apply the tiered approach to the zoning provisions associated with their respective housing allocations."* Therefore, Kildare Town zoning is illustrated within the current adopted Kildare Town Local Area Plan 2012-2018.

The objective of zoning *'C New Residential'* is *'to provide and improve new residential areas and for associated local shopping and other services incidental to new residential development'*. In particular, the site currently is zoned C1 and therefore is designated to be included within the first phase of new residential development for Kildare Town.

A small proportion of the application site along the southern boundary is zoned *'H Industry and Warehousing'*, the objective of this zoning is *'to provide for and improve industrial and warehousing development.'*

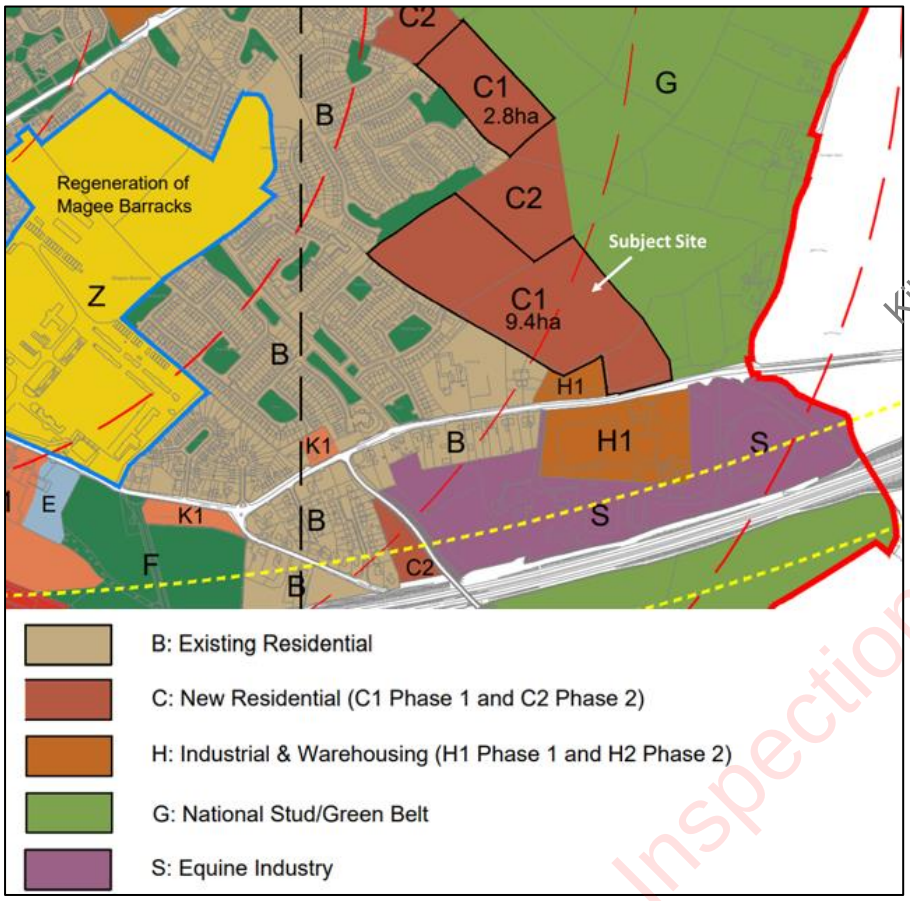


Figure 2.3: Kildare Town Local Area Plan 2012-2018 Zoning Map

As set out above, the Draft Kildare Town Local Area Plan 2023-2029 outlines zoning of the subject site as CP2 'Phase 2 New Residential'. The objective of this zoning is *"To protect future development lands from inappropriate forms of development which would impede the sequential expansion and consolidation of the town in terms of providing for new residential development for future plans."*

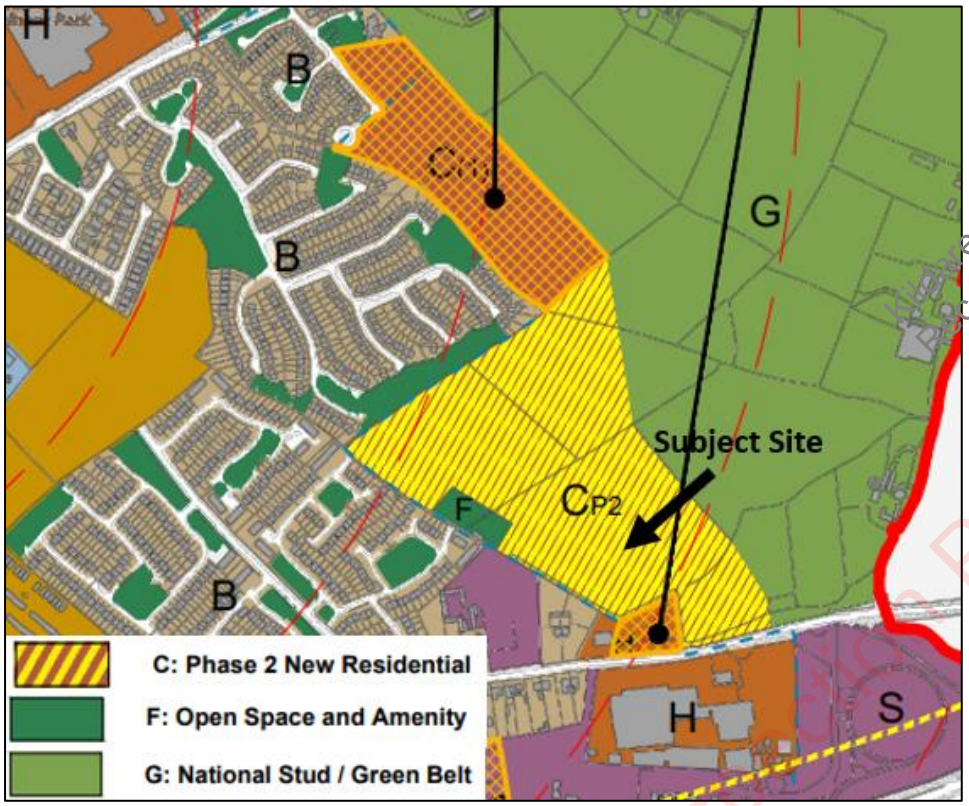


Figure 2.4: Land Use Zoning within Draft Kildare Town Local Area Plan 2023-2029

Considering its continued zoning as residential, whether it is phase 1 or phase 2 demonstrates that the use of this site for residential purposes is appropriate and acceptable in terms of best land use for Kildare Town.

2.5 Alternative Uses

The proposed development is predominantly zoned *'C1 – New Residential, Phase 1'* with the objective *'to provide and improve new residential areas and for associated local shopping and other services incidental to new residential development.'* Residential and childcare facilities are permissible uses on this land zoning.

Table 14 of the Kildare Town Local Area Plan 2012-2018 outlines the following for zoning *'C – New Residential'*:

Zoning	Zoning Objective
C – New Residential	This zoning provides for new residential development and associated local services ancillary to residential development. While housing is the primary use in this zone, recreation, neighbourhood services, education, crèche/playschool, clinic/surgery uses and sheltered housing are also envisaged, subject to the preservation of neighbouring residential amenity. Permission may also be granted for home based economic activity within this zone, subject to the preservation of residential amenity and traffic considerations. New residential areas should be developed in accordance with a comprehensive plan detailing the layout of services, roads, pedestrian and cycle routes and the landscaping of open space.

Table 2.1: Table 14 of Kildare Town LAP 2012-2018, Zoning Objectives

Section 8.1.3 of the LAP provides a detailed zoning mix illustration for each land use zoning. 'C – New Residential' permitted in principle and open for consideration uses are as follows:

Permitted in Principle	Childcare/Creche/Playschool, Dwelling unit, Park/Playground, Playing Fields, Residential Development
Open for Consideration	Community Hall, Cultural Uses/Library, Fire Station, Guest House/Hostel, Hotel, Halting Site, Health Centre/Clinic, Medical and related consultancy, Nursing Home, Place of Worship, Pub, Recreational Buildings, Restaurant, School, Shop (Convenience), Sport/Leisure Complex, Tourist camping/caravan park, Utility Structures

Table 2.2: Permitted and Open for Consideration Uses for zoning C - New Residential (Source: Kildare Town LAP 2012-2018)

There is an area south of the site which is zoned H – Industry and Warehousing. The objective of this zoning is *'to provide for and improve industrial and warehousing development.'*

Zoning	Zoning Objective
H – Industry and Warehousing	The purpose of this zoning is to provide for industrial and warehousing uses. Other uses, ancillary or similar to industry and warehousing will be considered on the merits of the proposed development and may be acceptable in this zone. Where employment is a high generator of traffic, the location of new employment facilities at an appropriate scale, density, type and location will be encouraged to reduce demand for travel. Residential or retail uses (including retail warehousing) or incinerators/thermal treatment plants will not be acceptable in this zone. Where any Industrial/ Warehousing land adjoins other land uses, particularly residential uses, a buffer zone (approximately 10–15 metres) shall be provided for and landscaped in accordance with Chapter 19 of the CDP.

Table 2.3: Zoning H - Industry and Warehousing Objective

Permitted in Principle	Car Parks, Fire Station, Heavy Commercial Vehicle Parks, Industry, Industry (Light), Repository/ Store/Depot, Utility Structures, Warehouse (Wholesale), Workshop
Open for Consideration	Childcare/ Crèche/ Playschool, Garages/ Car Repairs, Health Centre/Clinic, Medical and related consultancy, Motor Sales, Offices, Park/Playground, Petrol Station, Recreational Buildings, Restaurant, Shop (Convenience)

Table 2.4: Permitted and Open for Consideration Uses for zoning H – industry and Warehousing (Source: Kildare Town LAP 2012-2018)

The proposed development including the buffer zone on the industrial lands' accords with the zoning objectives for the area in the Development Plan.

The Draft LAP includes a Land Use Matrix for C: New Residential and E: Community and Educational. This provides for similar uses as set out above for New Residential Land. On the Community and Educational Land uses permitted in principle include Nursing Home; Park Playgrounds; Place of Worship; Playing fields; School; Cemetery; Community/ Recreational/ Sports Buildings; Creche; or Emergency Residential Accommodation.

The proposed development is in line with the objectives of "Housing for All", as it represents an increase in housing supply in the area including social housing and "age friendly housing" and also includes ancillary uses in the form of a new creche facility.

The lack of housing supply in Ireland is a well-documented and ongoing issue. The proposed development incorporates the construction of 285 no. units including houses, duplex apartments and age friendly single storey accommodation, all of which will service demand in the area. As such this is considered the most appropriate use of the land.

2.6 Alternative Designs

Alternative Designs for this development primarily relate to the design of the duplex units and houses, the design of the age friendly housing and the provision of appropriate SuDS measures within the development. These design layouts are following pre-application meetings with the Planning Authority prior to lodgement. This design has been subsequently revisited in response to the Further Information Request. An additional iteration is set out below. Numerous issues were highlighted and informed the design process in areas including but not limited to:

- Character of the site and the street scene
- SuDS measures
- Accessibility.

Design of duplex units and houses

Duplex

At the pre-application meeting and subsequent correspondence, it was suggested that the proposed development would benefit if the duplexes were altered to ensure internal stairs were provided.

Figure 2.4: Pre-application request duplex apartment design

Figure 2.5: Originally submitted proposed duplex apartment designs

As a result of these comments the external appearance has been altered to accommodate an internal stair. In addition to this the roof has been altered to accommodate SuDS measures in the form of a blue roof to enable further environmental gains within the development.

The design of the duplex units in blocks 1 to 3 have been further altered in response to Item 5(b)(ii) of the Further Information Request. Alterations to the design has been made to the side elevations fronting onto the Public Realm and Open spaces and the materiality of detailing of the rear elevations. The alterations include the provision of an extruded Bay window with metal detailing, additional windows and the use of stone and brick. These changes have elevated the design of the duplex apartment blocks, creating more visual interest and ensuring high levels of overlooking of all public open spaces. It also provides a more contemporary feel and a stronger street edge.

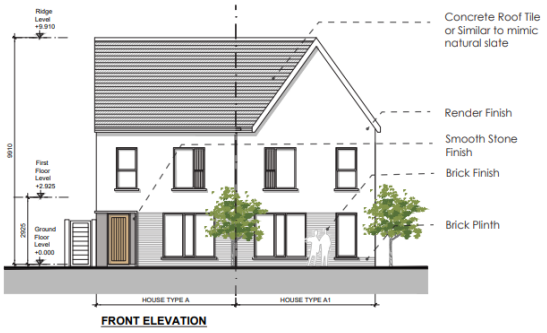
The duplex apartment blocks 4 to 6 have been replaced by two storey housing to the northeast corner of the site in response to the Further Information Request Item 5(a). The reduction in height and character of the units results in a better transition to the lands beyond to the east and northeast.

House

The pre-application consultation also asked for the design of the houses to be altered to provide a more unique character to the area, more in line with the character in the wider area. The design of the house types in Character Area A have been further altered in response to Item 5(b)(i) of the Further Information Request.

Figure 2.6: Pre-application house design

Figure 2.7: Original application proposal



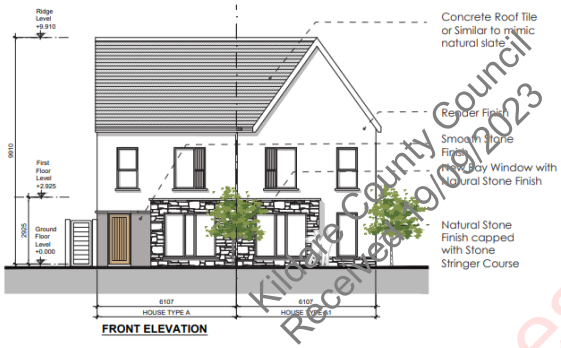


Figure 18 - Previously submitted A-A1 Type Elevations facing Streetscapes

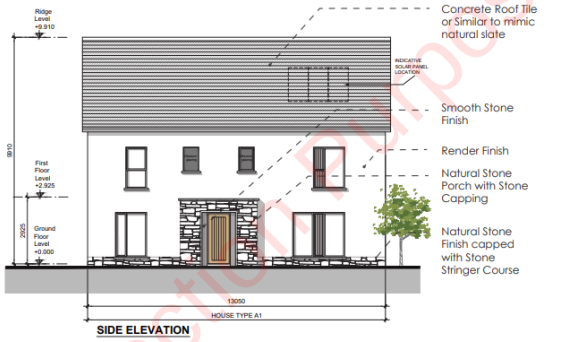


Figure 19 - Revised A-A1 Type Elevations facing Streetscapes

The change incorporate natural stone finish to the ground floor/ plinths capped with a stone string course. This alteration creates a more distinct architectural language reflecting the character of Kildare Town.

The front and rear gardens also benefit from the inclusion of bioretention areas and the inclusion of permeable paving to the front gardens. As well as being aesthetically pleasing it will also further support SuDS throughout the development.

Figure 2.8: Pre-application landscape extract of garden areas

Figure 2.9: Current proposed gardens showing bioretention areas

Another design change was to provide for better access to the creche and age friendly accommodation by moving it closer to the front of the site and providing an appropriate buffer within the H1 zoned land to facilitate this move. A multifunction unit has also been included within this block.

Figure 2.10: Pre-application area behind H1 Zoned land

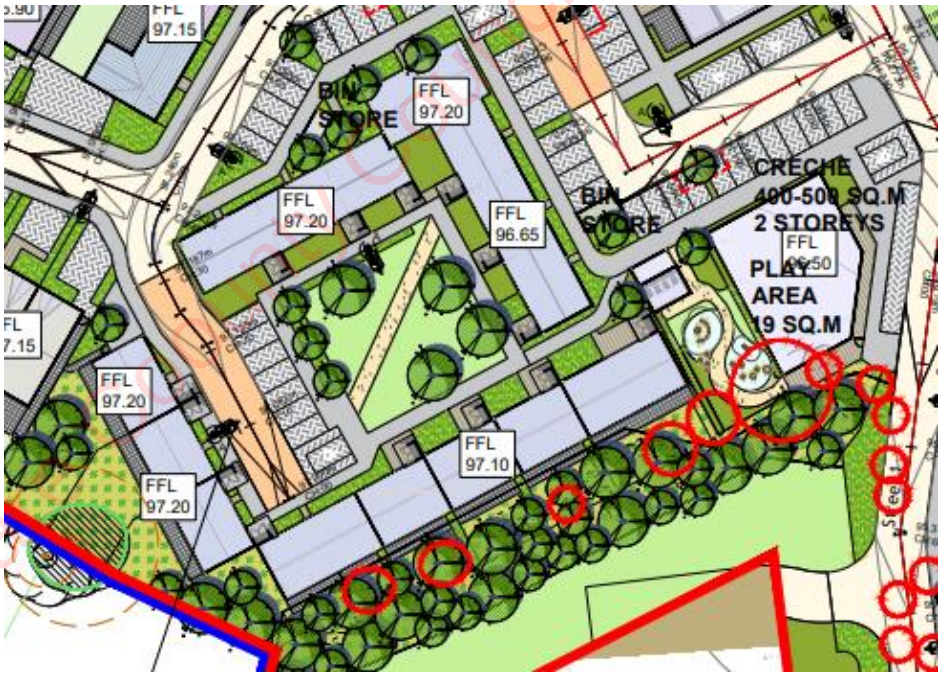


Figure 2.11: Current proposal of H1 zoned land and area behind

This alternative layout and siting of the unit provides the age friendly accommodation with the privacy required but also the proximity and ease of access to the Dublin Road and the bus routes along there if it is required. There is also the benefit of additional planting in the H1 zoned land providing an attractive transition and buffer area between the two uses.

2.7 Alternative Layouts

No change

Alternative Layout A

No change

Alternative Layout B

No change

Alternative C

No change

Alternative D

No change

Alternative E

No change

Alternative F –Original Planning Application layout

No change

Alternative G- Revised Proposal to Respond to the Further Information Request.

In response to the Further Information Request some minor adjustments have been made including alterations to the road widths, repositioning of the ponds within the public open spaces and the introduction of new pathways across the northern public open space.

The more substantial changes include

1. The replacement of the 3 storey duplex blocks 4, 5 and 6 (providing 34 no duplex apartments) with 25 no. two storey housing in the northeast corner of the site. The rear gardens step off the ownership boundary, protecting the existing hedgerow along the field boundary.
2. The introduction of a multifunction space in place of one of the age friendly units, reducing the number of age friendly units to 14 no.
3. The introduction of a signalised junction on the Dublin Road.
4. Revised boundary treatment along the Dublin Road through the introduction of a hedgerow and tree.

These changes have resulted in a reduction in the number of units to 285 no. residential units and a density of 32 units per hectare.

All other connections through to the existing neighbouring areas, nature-based management area, location of the age friendly accommodation, and creche have been retained as originally submitted.

Figure 2.12: Alternative G Site Layout Plan (Source: MCORM Architect's)

Environmental Impacts of Alternative Layout G

The alterations to the roads and civil engineering strategy, including SUDS are minor, and will enable better functioning of these services throughout the site.

The replacement of the 3 storey duplex apartment units in the northeast corner with 2 storey houses in this location. This will provide an improved transition to the existing fields to the east through the reduction in height.

The introduction of the multifunctional space in place of one of the age friendly units will provide a new community facility to the area which could be used a GP's office, or a space for community meetings, depending on the need arising in the area over time.

The provision of a signalised junction to the south of the site, on the Dublin Road, will provide improvements in terms of pedestrian and cyclist links and crossing points. It will also enable better control and flow of traffic onto the Dublin Road.

The provision of additional hedges and trees along the Dublin Road will soften the appearance of the development, while also providing for more locations for wildlife to live and forage within.

2.8 Alternative Processes

No Change

2.9 Summary Table of Alternative Designs and Environmental Impacts

A comparison of the environmental effects of each of these alternative layouts is shown in table 2.5 below. This table compares the operational effects of each alternative on a variety of environmental factors. Each option is compared to the others and are assessed as follows:

- ✓ Is for those that are considered to have a more positive impact than others
- = Where the impact is considered similar for all options
- X Where a particular option is considered to have a more negative impact on a particular aspect of the environment compared to the majority of the others.

It is considered that the chosen design as per this planning application and EIAR in general achieves a better result in terms of impact on the environment than the other design options previously considered.

	A	B	C	D	E	F	G
Population and Human Health	✓	✓	✓	=	=	=	✓
Biodiversity	✓	X	✓	=	✓	✓✓	=
Soils and Geology	✓	=	=	=	=	=	=
Hydrology	✓	X	✓	=	✓	✓✓	✓✓
Air and Climate	✓	=	=	=	=	=	=
Noise and Vibration	✓	=	=	=	=	=	=
Traffic and Transportation	X	X	X	✓	✓	✓	✓✓
Waste Management	✓	=	=	=	=	=	=
Material Assets	=	=	=	=	✓	✓	=

Table 2.5: Comparison of effects **Alternative G sees a reduced number of units to respond to the FI, thereby reducing the potential population of the development.*

The chosen layout provides an attractive development along the Dublin Road, with appropriate boundaries of hedgerows and trees, providing a transition from the more urban developments to the west on the Dublin Road moving east to more rural character. The new signalised junction provides appropriate crossing points for pedestrians and cyclists at this location improving safety and traffic flows.

The replacement of the duplex units with smaller two storey housing in the northeast corner also provides an appropriate transition from a housing estate to the open fields to the east and the Curragh beyond. It is worth noting that these lands to the east are also likely to change due to the zoning of the land in the current and draft LAP's.

The proposed development continues to provides additional linkages to the west and north. The site will enable the delivery of significant Irish Water infrastructure which will not only benefit the proposed development but also the existing developments in the surrounding areas.

The provision of a nature based management area for water to the western boundary will support not only the sustainable surface water strategy for this development but the future development of the wider area.

This chosen layout will create a strong sense of place, improve legibility and permeability, and create a new local attractive public open spaces for the existing community. While at a higher density than

the surrounding areas the proposed development is in accordance with current national and regional policies for compact urban growth.

In terms of population and human health, it is noted that the key benefits of this development, above the other similar schemes, is the increased provision of age friendly housing and creche space along with the multifunctional space which could be used for a GP's office or simply as a community room located close to the entrance of the development.

In terms of Biodiversity the retention and enhancement of the existing eastern boundary as well as the significant increase in planting of native species throughout the development, and the new hedgerow and tree planting to the Dublin Road, in conjunction with the ponds to support SuDS will result in a significant win in terms of environmental development.

3. Description of Development

3.1 Introduction

No change.

3.2 Receiving Environment

The subject site is greenfield and currently used for agricultural purposes. The southern, northern and eastern boundaries comprise mature vegetation, dense trees, and hedgerow of varying quality. The western boundary consists of a row of trees and a wall separating the site from the private gardens of the adjacent housing estate. Two hedgerows divide the site in an east/west direction.

The topography of the site varies, ranging between 92.00m AOD and 98.50m AOD, with a pronounced hillock located in the south centre of the site and lower levels within the area adjacent to the Dublin Road. Generally the site falls from the northeast corner, the highest point at c. 98.5 AOD to the southwest with a level of c. 92m AOD.

The site is c. 1km east of Kildare Town Centre, c. 8km west of Newbridge Town Centre, 19km west of Naas, and 19km east of Portarlington. It is bounded to the north by Coolaghknock housing estate and to the west by the Ruanbeg housing estate. Dublin Road R445, Heffernan Tyres Limited, and one detached house, bound the site to the south.

The site is not located within a Conservation Area or Architectural Conservation Area and there are no protected structures/monuments on site or within the vicinity of the site. There are no Tree Protection Orders on the site.

As set out in chapter 2, the site falls predominantly within land zoned C New Residential in both the current LAP 2012-2028 and the draft LAP 2023-2029. A small L – Shaped area of the site, falls within the H zoned lands to the south, which allows for Industry and Warehousing and requires a planted buffer to be provided to separate the two uses.

Figure 3.1 Site location and context

3.3 Characteristics of the Proposed Development

No change.

Residential

The proposed development is to build 285 no. residential units, of which 14 no. will be age friendly units. The breakdown of the mix of units will include:

	Age friendly units	Duplex apartments	Houses	Total	%
1 bed	12	0	0	**12**	4%
2 bed	2	20	20	**42**	15%
3 bed	0	20	173	**193**	68%
4 bed	0	0	38	**38**	13%
Total	**14**	**40**	**231**	**285**	**100%**

All the houses or duplex apartments provided are dual aspect and they all have private open space to the front or rear.

The age friendly units are provided in a roughly square shaped block around a centralised courtyard. There are 14 no. age friendly units in total.

The houses are two storey and are either semi-detached or terraced. There are 47 no. semi-detached houses, 87 no. mid terrace houses, 1 no. end of terrace houses and 96 no. semi-detached/ end of terrace houses.

There are 3 no. blocks of duplex apartments. These are 3 storeys in height and provide a mix of 2- and 3-bedroom units.

Additional Facilities

In addition to the residential units, the proposed development also provides a stand-alone creche measuring c.472.7sqm. This creche can accommodate 19 no. staff and 78 no. children. This also accommodates staff and pupils' car and cycle parking and an area of outdoor playspace for the children.

In addition to this a multifunctional centre is also included replacing one of the age friendly units to provide space for community uses of a GP. This measures c. 89.1sqm.

Communal Facilities

A communal open space is provided within the development located within the courtyard associated with age friendly accommodation and measures 403sqm.

Site Development Works

The proposal includes a range of associated site development works, drainage and infrastructural works, servicing (including substations, bin stores), landscaping, open spaces, and boundary treatment works.

The proposal includes for the delivery of a new pumping station in the northwest section of the proposed development. This has been sized in line with requirements from Kildare County Council and Irish Water so that it can not only accommodate the proposed residential units associated with this development but also the existing surrounding estates and any future developments that may need to connect with it.

New water services infrastructure works are also proposed as part of the development along the Dublin Road. These will upgrade the existing infrastructure and provide new pipework along the Dublin Road.

An area of the site has been set aside as a nature-based management area to accommodate the surface water pathways modelled in the draft local area plan.

The proposed development will include the removal of existing topsoil and subsoil, site grading, reprofiling and importing fill to build levels on site and excavation for installation of services, pavements and landscaping on existing and imported fill.

The proposal will also deliver a new vehicular access to the Dublin Road, R445 including a signalised junction, and connections into Ruanbeg Park, along with a new cycle track outside of the application site on the Dublin Road.

Layout and Design

Figure 3.2 Site Layout Plan

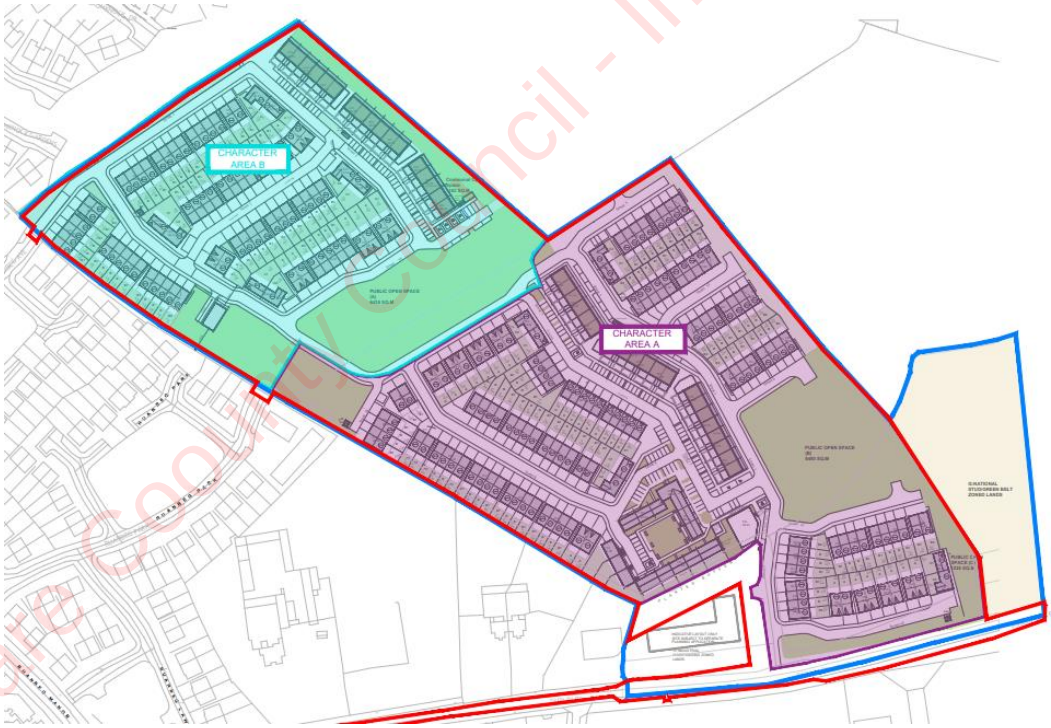


Figure 3.3 Character areas

The proposed development is set out two character areas, both of which have a mixture of house types. Character area A is to the south of the site fronting onto the Dublin Road. It is proposed to set the houses back from the Dublin Road to retain the openness of the road and also enable the provision

of cycle tracks. There is a large area of public open space in the centre of this area, as well as additional planting to the east along the Curragh Buffer Zone and to the south between the site and the commercially zoned lands. The materials and finishes of the proposed residential units will be designed to a high architectural standard. The materials and finishes have also been considered with regard to the surrounding existing pattern of development.

The creche, multifunctional space and age friendly accommodation are located within Character Area A, close to the Dublin Road but set back from it to ensure the safety of the children for drop off and pick up times and also the residential enjoyment of the occupants of the age friendly housing in a quieter location.

The northern end of the site, character area B, again has a mixture of house types, with the exception of age friendly housing. This area provides connections through to the existing estates to the west, while it brings the connections to the boundary of the site in order for connections to the north being delivered in the future subject to agreement with the landowner. This area also provides for a large area of public open space which is designed as a circus, reflecting its position adjacent to the Curragh race track.

The buildings have been located to sensitively reflect the existing neighbouring properties in terms of height and preventing any loss of amenity to the existing properties in terms of privacy or light. This is reinforced through the replacement of the duplex apartments with two storey houses in the north east corner of the site.

Access and Parking

The site is an accessible site close to Kildare Town Centre. The proposal is for the inclusion of 560 no. car parking spaces which equates to 2 no. car parking spaces per 3 and 4 bedroom unit, 1 no. Space for each two bed house, 1.5 spaces for each duplex unit, along with 1 spaces for each age friendly unit. In addition to these parking spaces visitor parking is provided throughout. The parking is provided either on curtilage for the houses or in parking courts to the front.

All of the houses can provide cycle parking within their curtilage. In addition, there are 138 no. cycle parking spaces throughout the development. This includes 12 no. spaces for the creche, 6 no. Spaces for the multifunctional space, 20 no. visitor spaces for the duplex units and then 100 no. spaces for residents of the duplex units which equates to 1 per bedspace.

The landscaping plan, along with various residential amenities and open spaces have been located to ensure ease of pedestrian movement through the site following desire lines and enabling clear legibility within the site.

3.4 Predicted Impacts and Mitigation Measures

Construction Phase

No change.

Hoarding, Site Set-up and Formation of Site Access/Egress

No change.

Site Clearance and preparation

The development will result in the removal of some of the existing vegetation and soil. Any of the high quality trees will be retained and root protection barriers will be put in place to ensure their safety. During site clearance works, excavation for the road, foundations, drainage, bioretention areas, and utilities, any excess material will be either stored for re-use in construction activities at the development or removed to a licensed waste facility. During excavation works, subsoil and topsoil would be temporarily stored for re-use in re-instatement where possible. The above ground ponds proposed will be constructed using suitable excavated material, with topsoil finish to form an above ground berm to shape the pond/basin for storage purposes.

The approximate volume of removed topsoil is 8,500 $m^{3.}$ This will need to be disposed off site.

The approximate volume of subsoil to be excavated is 20,092 $m^{3.}$

To address the varying levels, and undulating nature of the site, it is generally proposed to fill the site above existing levels and will require fill material to provide proposed levels. Imported fill will also be required for the raising of the site levels locally and constructing the retention basins to the south of the development site. Materials will be brought to site and placed in their final position in the shortest possible time.

The approximate volume of additional fill material to underside of pavement and building structural level is 43,850 m^3

The approximate volume of reused subsoil is 18,000 $m^{3.}$

A Construction and Environmental Management Plan has been prepared and submitted with this application and will guide the site clearance.

Construction Traffic and Site Access

No change.

Car Parking Arrangements

No change.

Working Hours & Staff

No change.

Lighting

No change.

Deliveries

No change.

Disposal of water, wastewater and sewage
No change.

Air Quality
No change.

Operational Phase
It is anticipated that the primary direct significant environmental effects will arise during the construction stage. Once the development is completed, and mitigation measures employed, it is expected to operate without creating any significant additional environmental impacts. The range of anticipated activities, materials/natural resources used, effects/emissions are not expected to result in a significant impact on the constituent environmental factors.

The primary likely and significant environmental impacts of the operation of the proposed development are fully addressed in the EIAR document; and relate to Population and Human Health, Landscape and Visual Impact and Noise and Air impacts associated with the traffic generated. There is also the potential for cumulative, secondary and indirect impacts (for instance traffic) but are unlikely to be significant and have been addressed in the EIAR.

The proposed development at operational stage will be predominantly a residential development with a creche and multifunctional centre. The expected use of energy and water would be in line with normal household uses. This is the same situation for the creche and multifunctional centre/ community room operation. There is no single use proposed that has an excessive or unusual demand in terms of energy and water as a result of this development. Once the development is completed and is operational there will be no additional uses of the material or natural resources such as land or soil. The biodiversity of the site will be improved due to the new landscaping proposed as part of the development.

3.5 Changes, Secondary Developments and Potential Cumulative Impacts
No change.

Committed Developments within the Wider Area
No change.

Future Development
No change.

3.6 'Do Nothing' Scenario

No change.

3.7 Worst Case Scenario

No change.

3.8 Monitoring & Reinstatement

No change.

3.9 Difficulties in Compiling Information

No change.

3.10 References

No change.

4. Population and Human Health

4.1 Introduction

No change

4.2 Methodology

Population

To establish the existing receiving environment/baseline for the subject site, the methodology included site visits to evaluate the location and likely significant potential impact upon the human population in the area.

Desk based study included an analysis of the Central Statistics Office Census (CSO) data, the ESRI Quarterly Economic Commentary, and national, regional and local planning policy, and school and creche enrolment figures.

Different local catchment areas were established for analysing population data, creche demand and capacity, and school demand and capacity. These areas were chosen to gather the most relevant data for each factor. A general local catchment area of 1km from the subject site forms the basis of most areas of analysis.

The following datasets were used during the survey:

- 2011 CSO Statistics
- 2016 CSO Statistics
- 2022 CSO Statistics
- 2023 Google Maps
- Kildare County Council website
- Department of Education
- HSE Facilities
- Pobal
- Information from schools in the area.
- Kildare Town Social Infrastructure Audit (January 2023)

Human Health

No change

4.3 Receiving Environment

Land Use and Settlement Pattern

No change

Population

For the purpose of this population analysis a local catchment area was selected to include the Electoral Divisions (EDs) within 1km of the subject site. This area is shown in Figure 4.2 and will be referred to as the Local Area. The EDs were chosen as a basis of analysis as, unlike the Small Area boundaries, the ED boundaries have remained unchanged and therefore can be used to compare population changes over time.

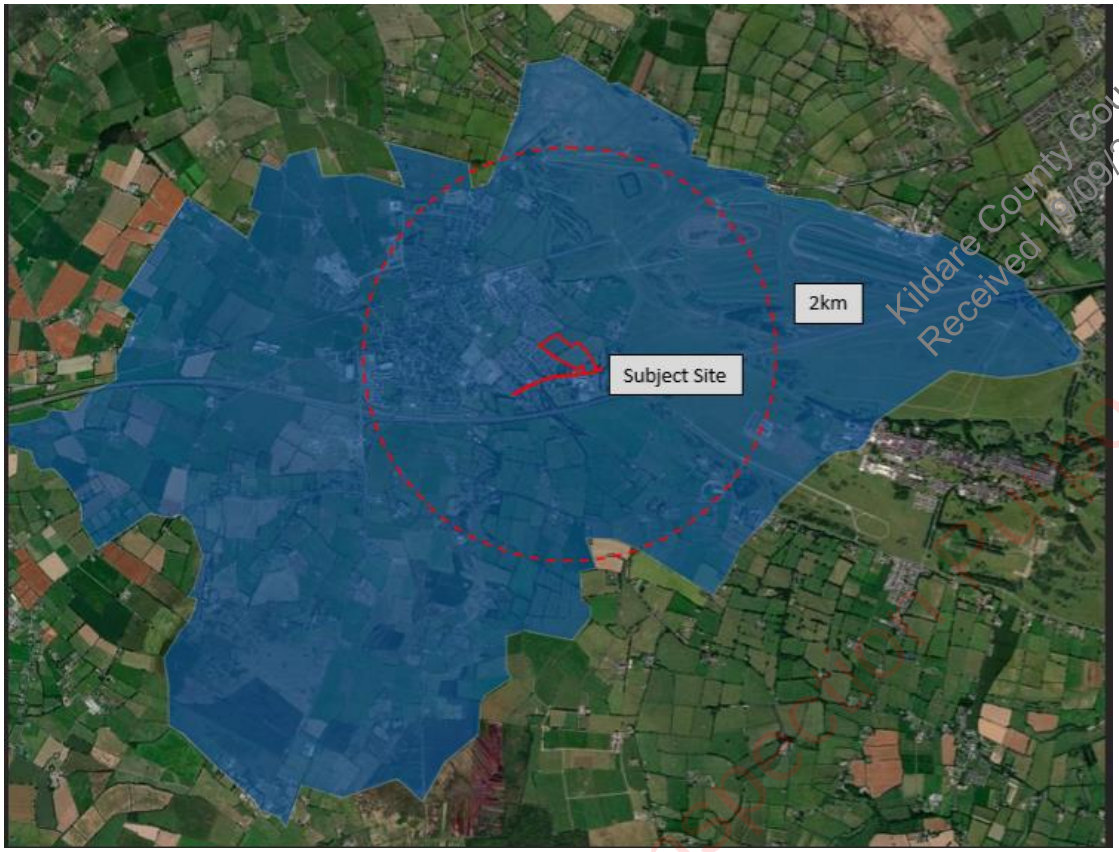


Figure 4.1: ED boundary

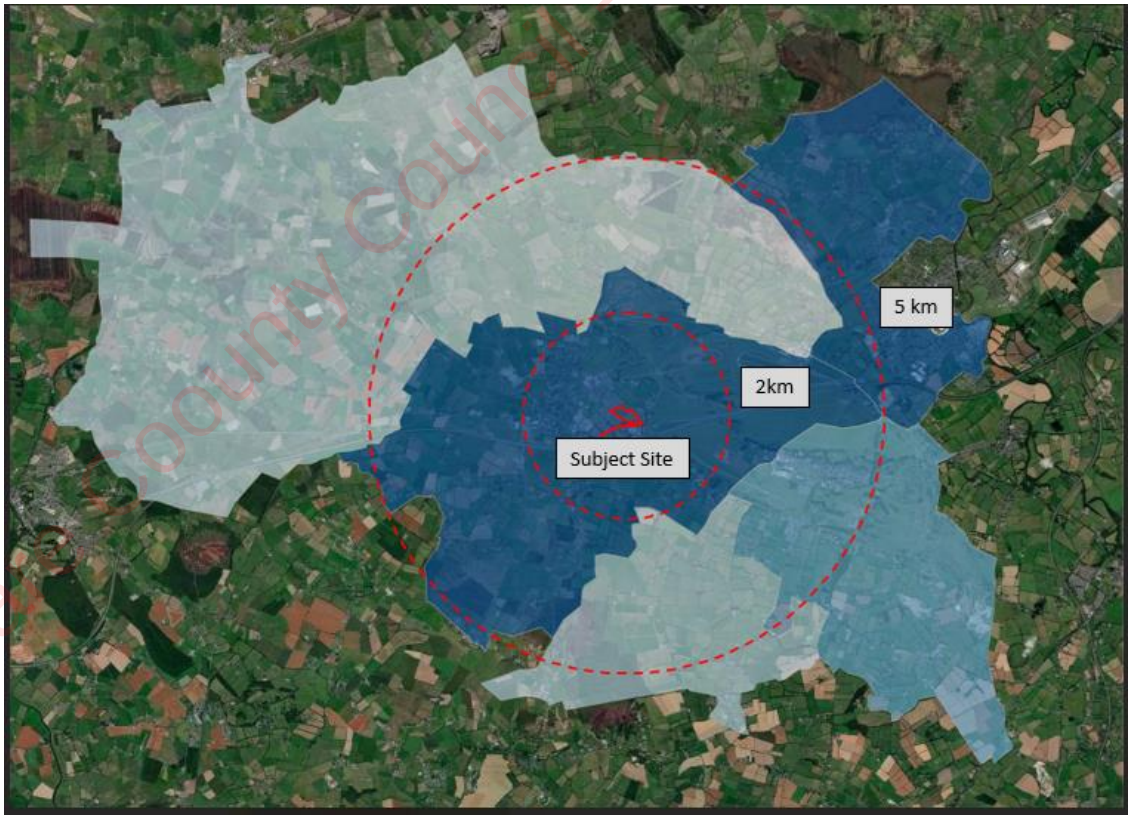


Figure 4.2: ED boundaries of the wider area

The Electoral Division detailed data has not been released at the time of writing this addendum for census 2022. Therefore, the Electoral Division data below is based on the 2016 census data and remains unchanged for the majority of this section aside where it has been possible to provide new data.

The subject site is located within the 'Kildare' electoral division, which had a population of approximately 9,874 people at the time of the 2016 census. The Draft Kildare LAP has an estimated population of 10,161 for 2022 and identifies that the County Development Plan future population estimate of 11,541 in 2029. However, the 2022 Census has identified that the current population for Kildare ED has already exceeded this 2029 figure and there are currently 11,587 people in Kildare ED. There was a c.5.89% increase in the population between the 2011 and 2016 Census, and an increase of 8.5% between 2016-2022 census.

Level	Name	2011	2016	% Change 2011-2016	2022	% Change 2016 - 2022
Electoral Division	Kildare	9,325	9,874	+5.89%	11,587	8.5%
County	Kildare	210,312	222,504	+5.8%	247,774	11.36%

Table 4.1: Electoral Division and County CSO population data

For the purpose of a demographic assessment, the local catchment area will consist of just the Kildare ED as the entire subject site and 1km buffer are within its boundary.

Age Profile

As set out above approximately 11,587 no. people were living within the Local Area at the time of the 2022 Census, an 8.5% increase on the 2016 population.

As set out in the 2016 Census, the local area has seen a decrease in the preschool age group (0-4) by -14.11% whereas both the primary (5-12) and post primary (13-18) age groups have increased since 2011. The primary school age group has increased significantly by 19.62% and post primary by 9.53%. Young adults (19-34) has also decreased by 12.17% which may indicate that young professionals are out-migrating for third level education or employment opportunities elsewhere. There is an increase in adults (35-64) age group of 13.28% and a 28.07% increase for 65+ adults.

2011 Population	2016 Population	Population Change 2011-2016	Percentage Change 2011-2016
9325	9874	549	5.89%
2016 Population	**2022 Population**	**Population change 2016 – 2022**	**Percentage Change 2016-2022**
9874	11587	1713	8.5%

Table 4.2: CSO ED Census data

Age	2011	2016	Change	Percentage Change
0-4 Pre-school	900	773	-127	-14.11%
5-12 Primary School	1157	1384	227	19.62%
13-18 Post Primary	766	839	73	9.53%
19-34 Adults	2350	2064	-286	-12.17%

35-64 Adults	3404	3856	452	13.28%
65+ Adults	748	958	210	28.07%

Table 4.3:2016 CSO Census Data - ED Age Groups

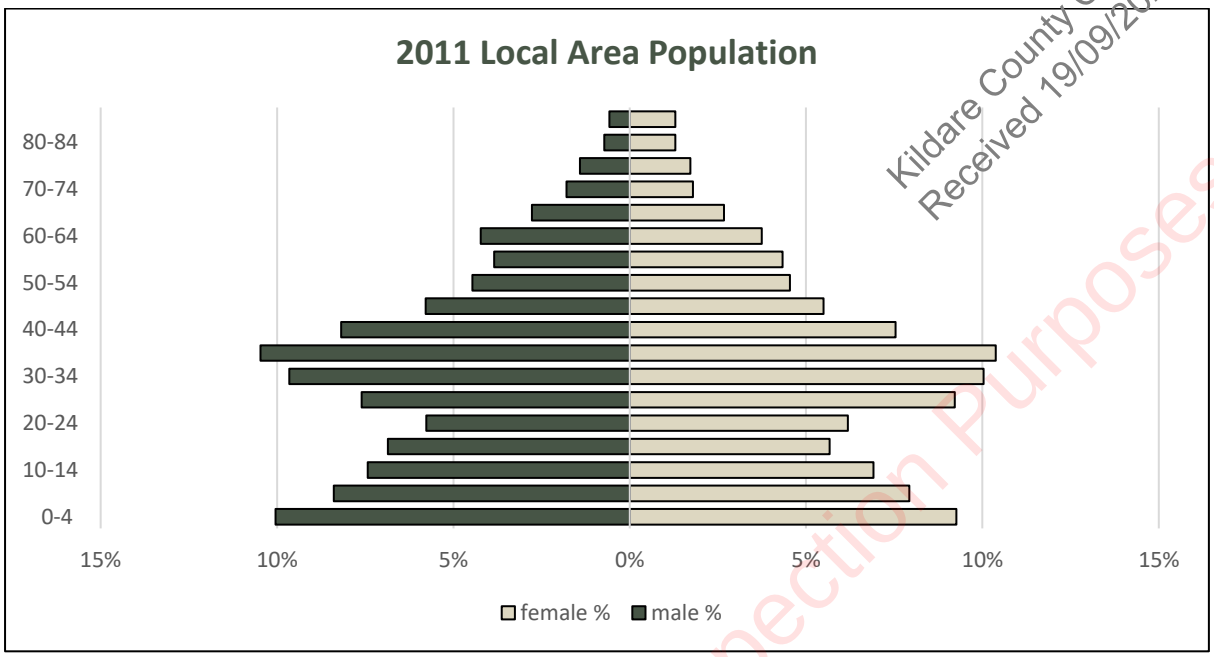


Figure 4.3: Population Pyramid for the 2011 Local Area Population

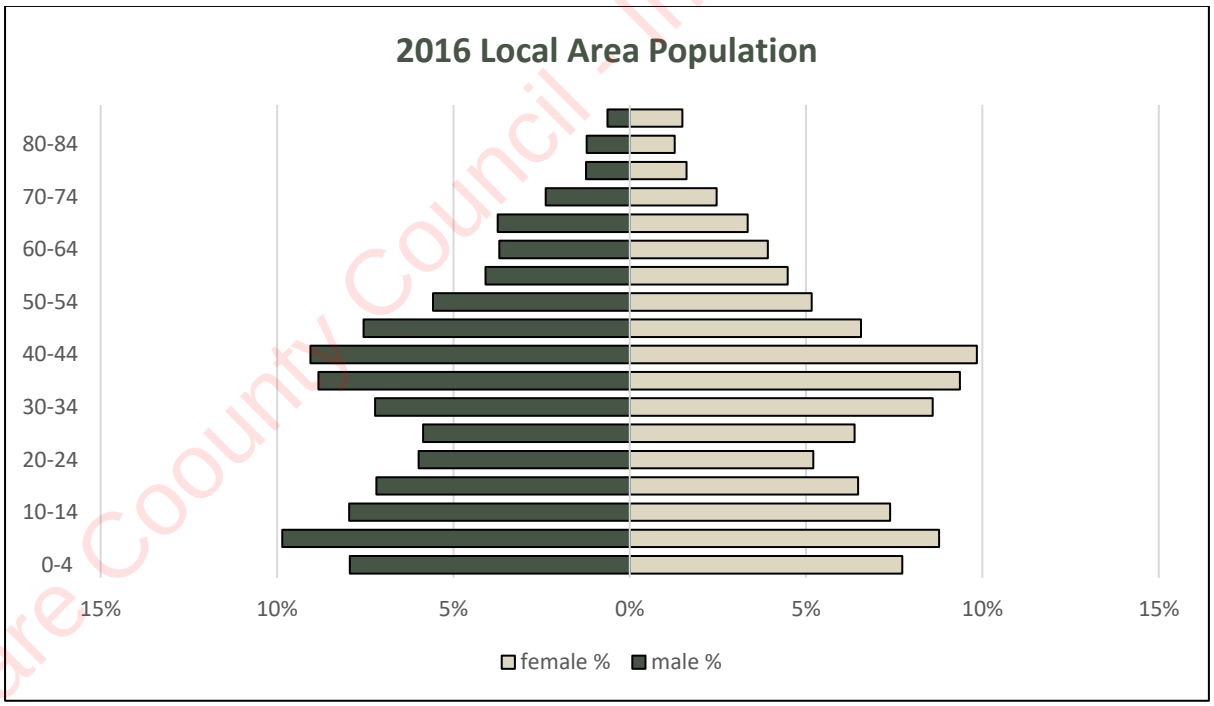


Figure 4.4: Population Pyramid for the 2016 Local Area Population

Employment

No change

Retail, Community & Cultural Facilities
No change

Leisure and Recreation
No change

Childcare and Healthcare Facilities
No change

Schools
No Change

Health
No Change

4.4 Characteristics of the Proposed Development
No Change

4.5 Potential Impacts
Impacts on Business and Residences

Construction Phase
No Change

Operational Phase
The proposed development will provide 285 no. of residential units and considering the national household size of 2.7 people this development will likely generate a population of c. 770 when fully occupied.

Considering the number of people in employment in the local area (54%), it can be expected that c.415 of the population generated will be working. The proposed creche will also bring employment to the area, it is estimated that c.19 people would be employed in the creche.

This increase in the local employment population will contribute positively to local businesses and amenities, while also improving the vibrancy and vitality of the area and the community. This will have a positive permanent effect on Business and Residences.

Impacts on Air Quality and Climate

Construction Phase
No Change

Operational Phase
No Change

Impacts on Retail and Community Services

Construction Phase

No Change.

Operational Phase

A new community centre is proposed as part of this FI response within the Age friendly accommodation. This could be used as a GP practice or a community room depending on identified need.

Impacts on Human Health

No Change

Construction Phase

No Change

Operational Phase

No Change

Impacts on Childcare

Construction Phase

No Change

Operational Phase

The proposed developments projected need for childcare spaces has been based on the local demographics, the quarterly national household survey, and national guidelines.

The Childcare Facilities Guidelines for Planning Authorities (2001) provides a standard of one childcare facility with a minimum 20 childcare places per approximately 75 dwellings. This would generate a demand for a childcare facility of c. 76 no. childcare spaces for the proposed development.

The 2022 Guidelines on Design Standards for New Apartments note that the threshold for the provision of childcare facilities *'should be established having regard to the scale and unit mix of the proposed development and the existing geographical distribution of childcare facilities and the emerging demographic profile of the area'. It also notes that 'one-bedroom or studio type units should not generally be considered to contribute to a requirement for any childcare provision and subject to location, this may also apply in part or whole, to units with two or more bedrooms'*

Based on the average household size of 2.7 persons, the estimated population of the proposed development when complete is c. 770 no. (285 no. units*2.7 household size). Based on the local

demographic analysis above, it is estimated that c. no.54 of this population will be aged 0-4 (7% of 770 people).

As noted above, not all children in the 0-4 age cohort require private childcare. The Quarterly National Household Survey (QNHS) indicated that in the Mid-East region only 14% of pre-school age children attend private childcare. Applying this percentage to the total estimate of children indicates that c. 8 no. childcare spaces are needed, assuming that each residential unit has children in the 0-4 age category.

The Apartment Guidelines recommend the exclusion of studio units and one bed units when calculating childcare demand. On this site it is reasonable to exclude the age friendly housing. When these units are excluded from the calculations, it is estimated that c. 51 no. children aged 0-4 would be in the development. When the QNHS proportion is included for the no. of children attending childcare would be estimated at 7 children. The above calculations are summarised in the table below. The table also includes a scenario in which 50% of the children would require private childcare, but this scenario is unlikely.

Pre-school children

Type of childcare	Border	Midland	West	Dublin	Mid-East	Mid-West	South-East	South-West	State
Parent / Partner	65	56	59	62	65	51	67	65	62
Unpaid relative or family friend	16	13	18	16	16	16	20	22	17
Paid relative or family friend	2	5	2	3	5	1	4	2	3
Childminder / Au Pair / Nanny	13	18	21	8	13	13	13	12	13
Creche / Montessori / Playgroup / After-school facility	15	14	15	25	14	28	17	16	19
Other	1	<1	<1	1	<1	1	1	1	1
Total pre-school children using non-parental childcare	45	47	49	46	45	53	45	45	46
Unweighted sample	*196*	*136*	*234*	*525*	*244*	*189*	*230*	*316*	*2,072*

Figure 4.5 Extract from Quarterly National Household Survey, 2016 Q4 Module on Childcare

The table below provides an overview of the expected childcare demand resulting from the 'Ruanbeg' development, as calculated in line with the above guidelines and local demographics.

	2001 Guidelines	**Revised assessment in line with the Apartment Guidelines advice**		
	All apartments	Without age friendly housing	Without Studios, 1 beds + 50% 2 beds	3 + beds only
Calculation based on 2001 Guidelines				
No. of units	285	271	253	231
2001 Guidelines (20 no. spaces/75 no. units)	76	72	68	62
Refined calculation based on population analysis as advised in the Apartment Guidelines				

Total Population generated (2.7 per household)	770	732	683	624
Population 0-4 (7% of Pop)	54	51	48	44
Quarterly National Household Survey 25% of all 0-4 year old				
Total Requiring Childcare (14%)	8	7	7	6
Worst case scenario total Requiring Childcare (50%)	27	26	24	22

Table 4.12 Estimated Childcare Demand from Proposed Development

Notwithstanding the above a creche is proposed as part of the development to provide for 78 childcare spaces, which will accommodate the full development, which creates a maximum demand of between 54 (Apartment Guidelines 2022) and 76 no. childcare spaces (2001 Childcare Guidelines) and will also provide capacity for the wider area. On this basis the sizing of the creche is considered appropriate for the development. This will have a positive effect on population and human health as the proposed creche will accommodate for the 78 no. childcare spaces which is more than the need generated by the development.

Impacts on Schools

Construction Phase

No Change

Operational Phase

The 2016 census indicates the share of population in the Primary School (4-11) and Post Primary School (12-19) years. This percentage share was used to estimate the number of primary and post-primary school children the proposed development would generate.

An analysis of the 2016 Census information shows that the total population for the local area was 9,874 people, of which 1,384 were of primary school age (5-12) and 839 were of post-primary school age (13-19). This equates to approximately 14% of the population as primary school age and 8.5% as post-primary school age.

Local Area Catchment	Number of People	% Total 2016 Population
Primary School Age (5-11)	1384	14%
Post Primary School Age (12-19)	839	8.5%
Total 2016 Population	9874	22.5%

Table 4.13 Breakdown of 2016 Local Population

The national household size, according to the 2016 (and 2022) census, is 2.7 people. The proposed residential development contains 285 no. units and will have an expected population of c. 770 when mature. Using the percentages explained above, the estimated maximum primary school going population that would be generated by the development is c. 108 and c. 66 students for post-primary.

Projected School Aged Population of Development	Projected Population when Mature
Total Population	770
Primary School Age (5-11)	108
Post Primary School Age (12-19)	66

Table 4.14 Projected School Aged Population of Development

It is also noted that 14 no. of these units proposed are age friendly housing and are unlikely to have any children/ teenagers living in these units. When this is taken into account the projected school population is set out in the table below.

Projected School Aged Population of Development	Projected Population when Mature
Total Population	732
Primary School Age (5-11)	103
Post Primary School Age (12-19)	62

Table 4.4: Projected School Aged Population of Development excluding age friendly housing units

Furthermore, if in line with the Apartment Guidelines 2022 only half of the 2 beds are considered the total population of school aged children is further reduced.

Projected School Aged Population of Development	Projected Population when Mature
Total Population	683
Primary School Age (5-11)	96
Post Primary School Age (12-19)	58

Table 4.5: Projected School Aged Population of Development when considering only half of the 2 beds as per the Apartment Guidelines 2022

While any of these forecasts are equally valid, assuming the highest figures based on all the units proposed included in the school population forecast there is sufficient spaces in the existing schools based on data provided by the schools themselves to accommodate the proposed development.

Based on the assessment of the school capacity in the area, it is noted that there are c. 132 no. spaces currently available at primary and c. 5 no. post-primary level currently. Regarding the post primary school figures, it is noted that Curragh Community College will be relocated and there will be spaces for 475 students by 2024/25. Furthermore, by the academic year 2028/2029 it is anticipated that there will be additional space for 1,000 no. students.

Therefore, it is considered that there will be sufficient capacity within the schools in the area to cater for the increased demand expected from the proposed development by the time of occupation.

We note that enrolment levels in schools change over time and national enrolment projections estimate decreasing enrolment numbers first at primary school and 5 years later at post primary school. These national projections are carried out by the Department of Education. This is likely to be reflected in the coming years in this ED area given the reduction in population of 0-4 years old in the 2016 by 14.11%.

The Department of Education published *Projections of Full-Time Enrolment Primary and Second Level 2020-2038* in November 2020 which outlined the results of 3 possible scenarios for the future

enrolment in schools. Enrolment projections show that primary school enrolment numbers reached their peak in 2018 and that a continuous decline in enrolment until 2036 is expected. The projected enrolment for post-primary schools is not expected to peak until 2024 or 2025, which is then expected to be followed by a continuous decline until 2039.

It is noted that these national projections may not be precisely applicable to each local area, although as a general guidance they are informative. Following these projections, it can be assumed that the increase in primary school aged children caused by the development will be lower than the c. 108 children as projected above, at any one time.

Figure 1 Actual and projected enrolments in primary schools, 1989-2051

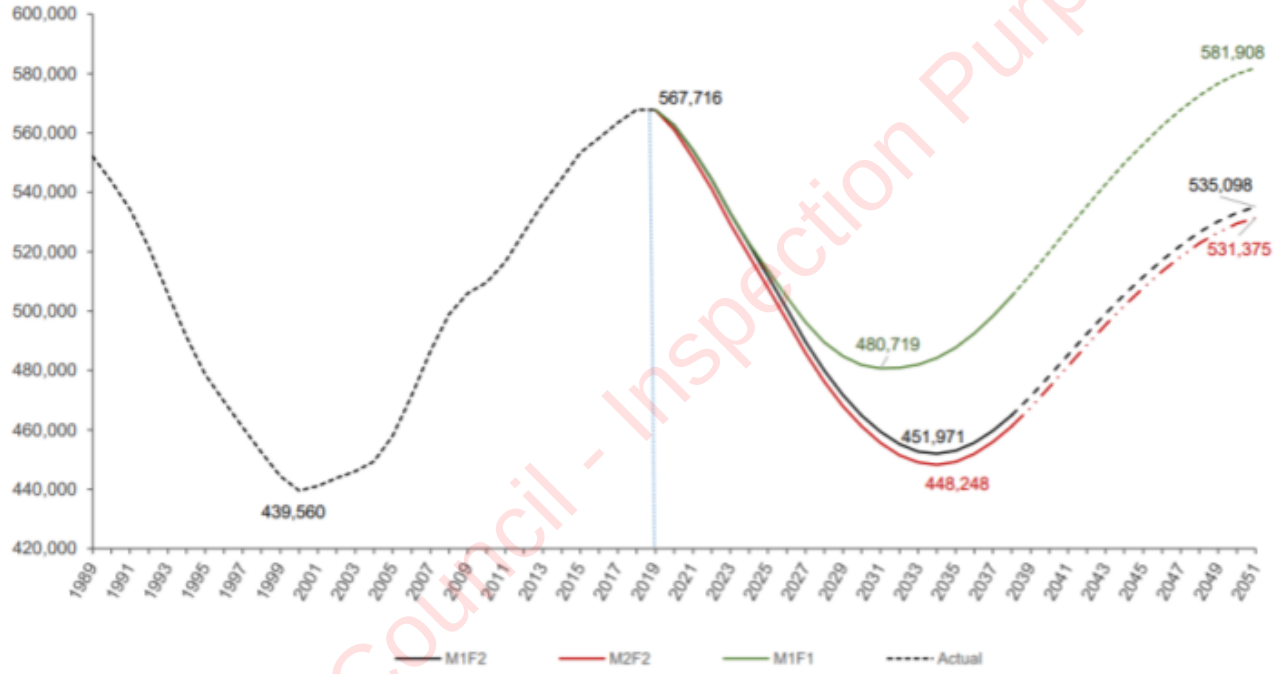


Figure 4.6 Projected Primary School Enrolment. Source: Dept. of Education

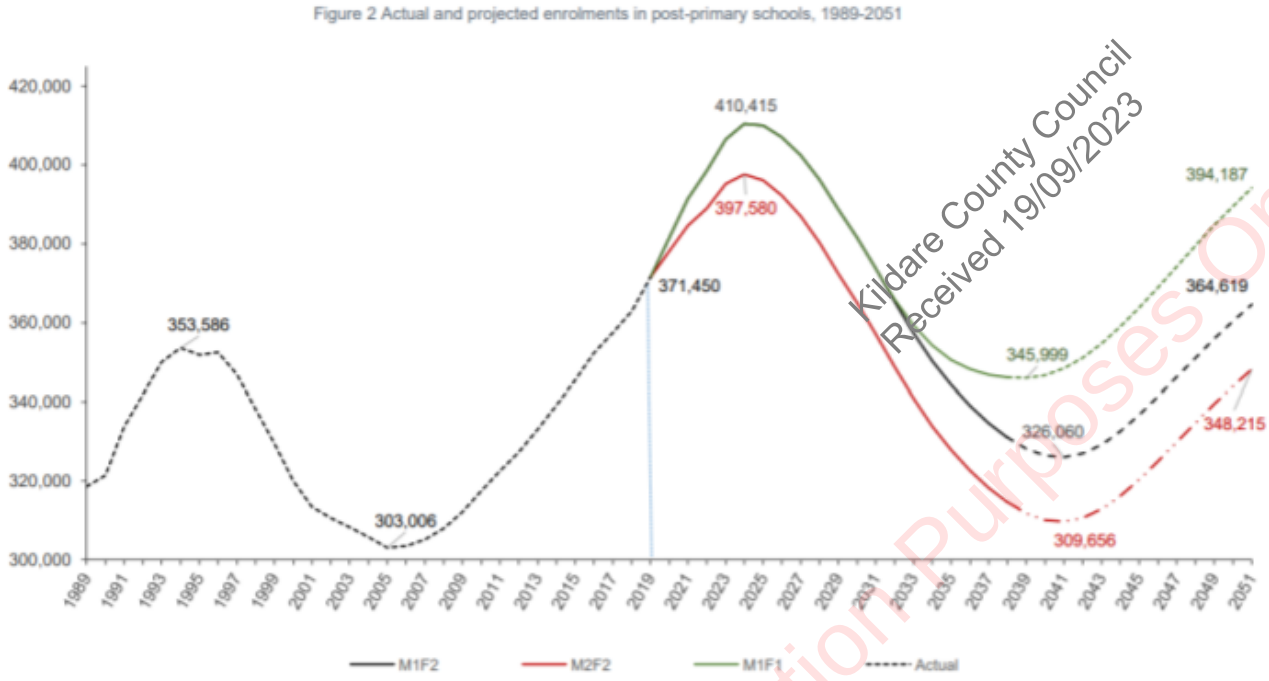


Figure 4.7 Projected Post-Primary Enrolment. Source: Dept. of Education

4.6 Potential Cumulative Impacts

Overall, the cumulative impacts of the proposed development in combination with other developments under way in the area on the population and human health are envisaged to be positive. The significant new population will contribute to the economic viability of the area, increasing in spending and a range of new services and facilities and new open spaces will add to the viability and vibrancy of the area. The existing services and facilities will tap into the expanding population and invest more. Schools, Buses, shops etc. will benefit from the increase in population.

There are several other developments under way within Kildare Town. These are set out in the table below. It also sets out the need generated in terms of creche, and school basis based on the figures above.

Address 1	Units Permitted	Res Units Commenced	Number of people	Creche places	Primary school places	Secondary school places
Former Magee Barracks ABP 305007	375	51	138	10*	19	12
Southgreen Road KCC181028	96	96	259	18	36	22
Greyabbey Nurney Road KCC 17523	207	100	270	19*	38	23

Southgreen Road KCC 181028	96	30	81	6*	11	7
Black Millers Hill Rathbride Road KCC 20159	74	74	200	14	28	17
Loughlion KCC 181033	63	11	30	2*	4	3
Coolaghknock Glebe. Melitta Road KCC 19539	7	7	19	1	3	2
Total	**921**	**373**	**997**	**70**	**139**	**86**

* Creche provided as part of the development

It is worth noting that The Former Magee Barracks EIAR chapter 3 states that in section 3.9 Predicted Impacts of the Proposed Development that:

> *Operational Phase*
>
> *The proposed development will cater for a portion of Kildare Town's planned population growth, enhance its urban structure and built fabric and provide new connections between existing residential areas to the north and east and the town centre, rail station and community facilities to the south and west. New residents are likely to benefit from the wide range of community facilities available within walking distance of the site, including public transport, and existing residents are likely to benefit from new community facilities to be delivered as part of the proposed development, including significant quantities of public open space. Further positive cumulative effects will result from the wider Magee Barracks regeneration proposals, which include a permitted supermarket, proposed cancer treatment clinic and completion of a road link between Hospital Street and Melitta Road, a specific local planning policy objective."*

Based on the assessment of the school capacity in the area, it is noted that three of the proposed development provide creches. These are sized to accommodate not only the development themselves but also to provide additional creche spaces for the wider community. Therefore, cumulatively between the sites there will be additional creche/ childcare spaces made available for the wider area.

It is noted in that the table above takes into account all units irrespective of whether they are one or two bedroom apartments, thereby providing the worst case scenario in terms of primary school and secondary school demand for developments that are commenced and currently underway. From this analysis the 7 developments above there will be a demand for c. 139 no. additional primary aged school children and c. 86 no secondary school children. When this is added to the proposed development, the subject of this EIAR, the resultant figure is c. 247 no. Primary school places, and c. 152 no. Secondary school places. Again this is taking the worst case scenario into account and includes all houses within the development, including sheltered accommodation, one beds and all two beds.

There are c. 132 no. spaces currently available at primary and c. 5 no. post-primary level currently. Regarding the post primary school figures, it is noted that Curragh Community College will be relocated and there will be spaces for 475 students by 2024/25. Furthermore, by the academic year 2028/2029 it is anticipated that there will be additional space for 1,000 no. students.

It is noted in the Draft LAP Social Infrastructure Audit that *"the primary school infrastructure can accommodate 1,741 children. There are 1,619 pupils enrolled in the three primary schools for the 2022/23 academic year."* Under section 3.2.4 the Draft LAP estimates that during the life of the Plan to 2029 there will be an additional 260 no. student spaces at primary level. *"These could be provided within the existing schools if there is capacity to expand or through the provision of a new school."* It is further noted that the Department of Education in their submission on the County Development Plan that additional primary level places in Kildare Town could be met by a minor expansion of existing facilities if required.

With regard to the primary school places, and as set out in the Department of Education graph at figure 4.12, 2019 was the peak population for primary schools with an actual and expected serious decline in the number of children going to primary schools between now and 2051, and it never reaching the same numbers as 2019. Therefore, by the time these units are completed and occupied, and the children begin attending school there will be a reduced number of students attending. Furthermore, given the differing start times and completion dates, each site will mature and produce children at a different rate. With this in mind, and the pipeline places for secondary schools and the existing primary school places, it is considered that there will be sufficient capacity within the schools in the area to cater for the increased demand expected from the proposed development by the time of occupation.

4.7 Mitigation Measures

Construction Phase

No Change

Operational Phase

No Change

4.8 Predicted Impacts

Construction Phase

No Change

Operational Phase

No Change

4.9 'Do Nothing' Scenario

No Change

4.10 Worst Case Scenario

No Change

4.11 Monitoring & Reinstatement

No Change

4.12 Difficulties in Compiling Information

As outlined above, the census data that informed this chapter's analysis dates from 2016, which could be considered out of date and updated in this addendum with the limited dataset released from 2022 census. This was a minor limitation in compiling the population data.

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5. Biodiversity

5.1 Introduction

No Change

5.2 Legislative Context

No Change

5.3 Methodology

No Change

Desktop Research

No Change

Field Survey

No Change

Study Area/Zone of Influence

No Change

Field Surveys Methodology

No Change

Badger and Other Fauna Survey

No Change

Bat Survey

No Change

Bird Surveys

No Change

5.4 Description of Existing Environment

The proposed development will consist of a Large-scale Residential Development of 285 no. units. The development will include one, two, three and four bed units in the form of two storey detached, semi-detached / terraced houses, along with 3 no. three storey duplexes/apartments and a single storey age friendly accommodation block. The development also includes a creche and multifunctional space along with associated car parking, bicycle parking, landscaping, and open spaces. Vehicular and pedestrian access will be provided from the Dublin Road (R445) and via Ruanbeg Avenue. Additional pedestrian access will be provided via Ruanbeg Park. All other site works including boundary treatments and site services to facilitate development.

The Curragh is designated as a proposed Natural Heritage Area (pNHA) (Site Code 000392) and is located approximately 130m east of the proposed site. See Section 5.8 for protected sites within 15km of the proposed development. The proposed development site has been in use as agricultural land for livestock grazing for over 10 years as shown imagery captured by Maxar Technologies © in 2009 and 2022, See *Figure 5.2* below. The proposed development will require the removal of approximately 306 linear metres of hedgerows. The proposed development will see the removal of 22 trees to facilitate the development and a further 3 due to poor health as per Arbor Care recommendations (See **Appendix 5.5** Arborist Report). Stormwater will ultimately discharge to ground via a drainage network

that includes attenuation tanks with ponds. No construction works will take place within or adjacent to a watercourse, riparian zone or wetland.

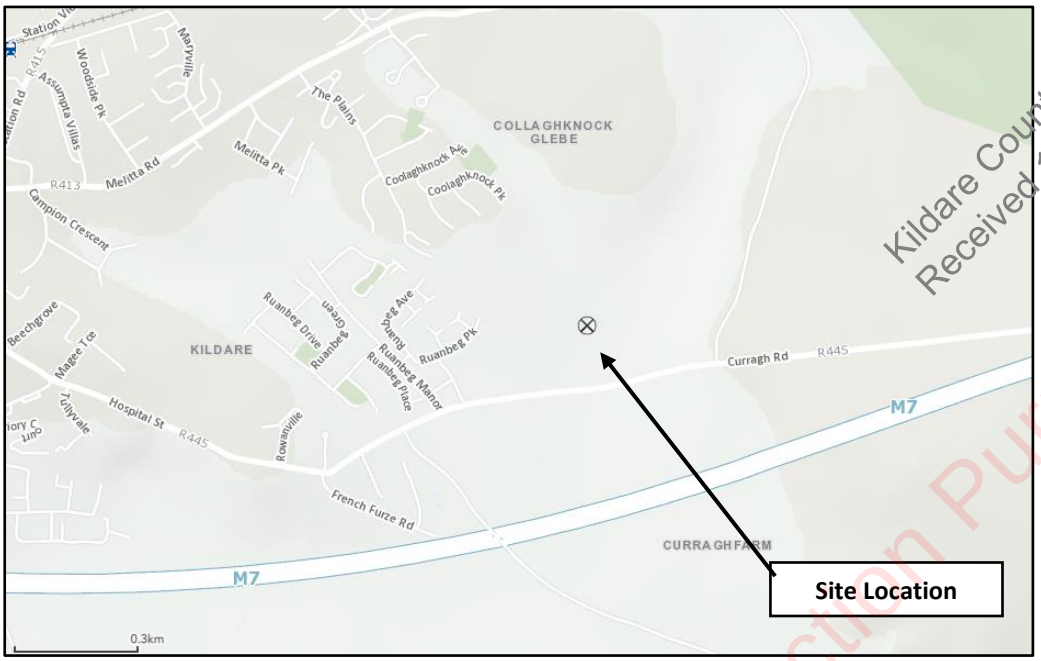


Figure 5.1: Location of Proposed Development at Ruanbeg, Kildare Town, co. Kildare

Figure 5.2: The Development Site (red line indicates habitat survey area) (i) 2022 and (ii) 2009 (Source Google Earth)

Existing Environment

No Change

5.5 Invasive Species

No Change

5.6 Protected Species Observed at Site

No Change

Birds

No Change

Badger and Other Fauna
No Change

Bats
No Change

Invertebrates Records
No Change

Amphibians and Reptiles
No Change

Other Species
No Change

5.7 National Parks and Wildlife Services Records
No Change

5.8 Protected Species
Natura 2000 Sites Within Zone of Influence
No Change

Natural Heritage Areas Within Potential Zone of Influence
No Change

5.9 Ecological Impact Assessment
No Change

5.10 Potential Impacts
Terrestrial Biodiversity Protection Protocol
No Change

Disturbance To Protected Habitats and Species
No Change

Badger
No Change

Bats
No Change

Birds And Other Fauna
No Change

Invasive Species
No Change

Aquatic Ecology
No Change

Ground Water
No Change

5.11 Mitigation/Monitoring Measures

Terrestrial Biodiversity Protection Protocol

As a matter of standard construction practice, the development would be constructed in accordance with the following methods and guidelines:

- All construction works would be confined as far as possible to the development footprint;
- Where possible, vegetation removal works would be scheduled outside of the 1st of March to the 31st of August period, so as not to disturb nesting bird species;
- If works should take place beside any trees that will remain as part of the landscape plan, then a root protection zone will be established to ensure no construction works will disturb the root zone (See **Appendix 5.5**);
- The Tree Protection Plan has been prepared with regard to the British standard BS 5837:2012 Trees in relation to design and construction recommendations this standard gives recommendations and guidance on the principles to be applied to achieve a satisfactory juxtaposition of trees, including shrubs, hedges and hedgerows, with structures;
- The construction works contractor will take cognisance of the NRA's document "*Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes*", 2006. In particular, the construction works contractor will take cognisance of the guidelines with regards soakaway, sewage system and drainage ponds area and the determination of the root protection area of the existing trees to be retained within the development site;
- A Landscape Plan has prepared as part of the development and has taken into consideration the urban setting and the use of native species where possible, with native tree species only used along the east and northeast boundary in proximity to the Curragh Buffer zone (See **Appendix 5.7**);
- The landscape plan includes areas of grasscrete, permeable parking bays, ornamental shrubs and bulbs. Also, meadows, wildflower meadows, wetland planting and bioretention areas, these areas are being planted with native flora that will increase biodiversity and pollinator activity within the proposed development;
- All planting of trees and hedges to be undertaken during bare root season November to April. The balance of tree & shrub planting and lawn & meadow seeding to be completed within 12 months of the completion of construction work of the development.

Badger

No Change

Bats

- No chemicals will be used within the development site and will not be used near treelines and hedgerows or any drainage system;
- The planting of landscape features integrated to the wider network of green corridors such as hedgerows, woodland and scrub, the landscape plan has maintained connectivity along the north east boundary of the site;
- Bat boxes can be installed to suitable mature trees along the site boundary;
- Bats rely on linear habitats such as hedges to fly through the landscape. The landscape plan includes the protection of the majority of hedgerows along the boundary with future replanting of mature trees in the south 15m industrial buffer zone.;
- Felling of moderate roost potential trees should be only undertaken in the period late August to late October/early November;
- Felled trees should be left for 48 hours, to allow for any potential bats to escape;

- See Bat Conservation Ireland Guidelines on hedgerow management for bats. https://www.batconservationireland.org/wp-content/uploads/2022/07/Managing-Hedgerows-for-Bats.pdf

Artificial Lighting during construction phase;

- Construction works in the hours of darkness, when bats are active (April – October), will be kept to a minimum;
- Lighting of hedgerows / treelines will be avoided where possible;
- Should lighting be required during construction works, it will be of a low height (without compromising safe working conditions) to ensure minimal light spill. Where possible and where practicable to do so, timers or motion sensors would be used;
- Directional lighting will be used where possible, by use of louvres or shields fitted to the lighting;

White light emitting diode (LED) will be used where possible, which is considered to be low impact in comparison to other lighting types. The Lighting Desing by MANDE Consulting has been redesigned to move columns away from areas where bats are likely to be active.

Artificial Lighting during operational phase;

Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).

The lighting design by MANDE Consulting Engineers Ltd. will include the following mitigation measures:

- Lighting will be directed to where it is required only, rear shields shall be used;
- Lighting of hedgerows / treelines will be avoided where possible. The PL shall be positioned to avoid unnecessary light over spill around the retained hedgerows;
- Using shielded, downward directed lighting by utilising specially designed lanterns with zero-light spill above the horizontal plane of the optic. This effectively illuminates any waste illumination above the horizontal plane of the lantern;
- Buildings, roads and site entrance lighting will be angled away from hedgerows and treelines;
- Using luminaire accessories to reduce the spill light. All lanterns will be fitted with front or back louvres to reduce the nuisance spill into dwellings. In addition the 4no. lanterns installed on the bridge will be equipped with back and front louvers to focus the illuminance on the bridge only;
- The PL shall be limited to roadways to retain darkness above;
- All lanterns calculated at 0° tilt
- Lighting will be 6m height as per KCC guidelines;
- Where possible and practicable to do so, timers or motion sensors will be used;
- White LED (temperature is 3000K) or amber coloured LED outdoor lighting would be used where possible, which is considered to be low impact in comparison to other lighting types;
- All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used;
- Light spill into the surrounding fields to the east and north is to be minimal, this would include the Curragh Buffer zone;
- Each light fitting shall be controlled via an individual Photoelectric Control Unit (PECU). The operation of the lighting shall be on a dusk-dawn profile, 35 lux on/18 lux off.

Birds And Other Fauna
No Change

Invasive Species
No Change

Aquatic Ecology
Stormwater from the proposed development would comprise of clean rainwater run-off from roof and paved areas and would be directed to the drainage network and attenuation system within the proposed development.

A nature-based solution has been designed to ensure the proposed development is more ecologically beneficial to the environment by including bioretention areas, swales, green roofs and attenuation tanks with ponds. The ponds will also act as a microcosm for biodiversity. The permanent waterbody will allow for aquatic invertebrates to establish which will in turn grow the potential for other fauna to establish here. The pond vegetation will also help prevent eutrophication of the water and remove excess nutrients from the drainage runoff.

Ground Water
No Change

5.12 Residual Impacts

Terrestrial Biodiversity Protection Protocol
Assuming all mitigation measures are put in place, there would be no significant residual impacts to the terrestrial ecology from the proposed development.

Badger
No Change

Bats
Three species of bat were detected within the site with bat activity concentrated along the mature treelines and hedgerows in particular Hedge 1. Bat activity was high along the R445 boundary. The light pollution was high here given the main and road and industrial development across the road. Insect activity is likely to be high in this area given the abattoir across the road. Removal of linear habitats and loss of foraging and commuting habitat will be a minor local impact as only boundary hedgerow and treelines along the R445 and southwest section (at proposed site entrance) will be removed. Other trees will be removed within the development but will not break linear lines. There will be small pedestrian openings in Hedge 1 (proposed future development) however this will not significantly impact on foraging bats along this hedgerow. Lighting at these locations will be designed with cognizance for wildlife. Additional landscaping along the boundary of the site will include mature trees and native species. As part of the drainage plans at the site, attenuation ponds will be incorporated into the design. These ponds are to enable the development to be compliant with SuDS but also enable the development to increase the ecological value of the site. A pond can significantly increase invertebrate activity at a site and in turn this will increase foraging areas for bats. The ponds are located in areas of open amenity greens however they are also in close proximity to the boundary hedgerows, or the treeline located within the middle of the development. The installation of sympathetic lighting in the vicinity of the proposed attenuation ponds and along the boundary hedgerows/treelines will enable these landscape features to become foraging areas for bats or

continue to be used by bats, post construction. In addition, bat boxes can be placed on mature trees along the site boundary.

Birds And Other Fauna
No Change

Invasive Species
No Change

Aquatic Ecology
No Change

Ground Water
No Change

IMPACT	DEVELOPMENT PHASE	SIGNIFICANCE	MITIGATION MEASURES	RESIDUAL SIGNIFICANCE	RESIDUAL IMPACT TYPE
Habitat Loss	Construction & Operational	Slight significance	• The inclusion of less intensively managed areas (meadows and wetlands) will allow for increased biodiversity within the proposed development; • The landscaping plan for the development take into consideration the outer urban setting and use of native species. • The hedgerow along the north east boundary will largely remain intact with significant planting of native trees and understory shrubs to screen the Curragh Buffer Zone;	Minor	Neutral
Introduction of Invasive Flora Species	Construction	Slight significance	• Construction plant would be inspected and washed prior to arriving onsite; • Regular site inspections for the presence of invasive species would be undertaken; • Should invasive species appear onsite, works would immediately cease until the plant was appropriately treated and disposed of; • Only qualified personnel to used herbicides on any invasive species; • Excavated soils would be segregated into subsoil and topsoil and reused in reinstatement and landscaping works. Where possible, seeding of stockpiled topsoil to ensure stability and limit the potential for invasive flora seeding; • If an Third Schedule invasive species is found within the site then an Invasive Species Management Plan will be in place by the Contractor;	Minor	Neutral
Fauna Disturbance	Construction	Moderate significance	• Where possible, no construction works would be conducted outside of normal working hours;	Moderate	Minor

IMPACT	DEVELOPMENT PHASE	SIGNIFICANCE	MITIGATION MEASURES	RESIDUAL SIGNIFICANCE	RESIDUAL IMPACT TYPE
			• All plant machinery and equipment would be maintained in good working order and regularly inspected • Where possible, vehicles would be equipped with mufflers to suppress noise • As a minimum, the construction work contractor would comply with all legislative provisions relating to hedgerow / tree removal • Should a protected fauna species be found during the construction phase, the NPWS would be notified prior to the resumption of construction works; • If a Badger Sett is found during construction then guidelines by NPWS and NRA must followed. • Fencing to limit access to the site.		
	Operational	Not significant	None required	Imperceptible	Neutral
Fauna Mortality	Construction	Moderate significance	• As a minimum, the construction work contractor would comply with all legislative provisions relating to hedgerow / tree removal • Where hedgerow / tree removal works are required during the bird nesting season (1st March to 31st August), the sections / trees for removal would be inspected by an ecologist for the presence of breeding birds. Where nests are present, a decision would be made as to whether a licence is required from the NPWS, or whether a suitable buffer zone could be established around the active nest with removal works rescheduled until chicks have fledged. • Before site clearance works a preconstruction badger survey must be carried out to ensure badgers are not active within the site.	Minor	Minor

IMPACT	DEVELOPMENT PHASE	SIGNIFICANCE	MITIGATION MEASURES	RESIDUAL SIGNIFICANCE	RESIDUAL IMPACT TYPE
Bats – Disturbance / Severance of Habitat	Construction	Moderate significance	• Landscape plan has taken into consideration the mature treelines and hedgerows and enhance this boundary with suitable additional planting; • Lighting measures have been implemented to reduce the potential for light pollution; • Construction works in the hours of darkness would be kept to a minimum; • Mature trees should be felled between late August to late October/early November; • Felled trees will be left for 48 hours, to allow for any potential bats to escape.	Minor	Neutral
	Operational	Moderate significance	• Lighting design measures to be implemented to reduce the potential for light pollution along hedgerows/treelines; • The inclusion of ponds will increase foraging habitats for bats.	Minor	Neutral
Groundwater Quality Deterioration	Construction	Moderate significance	• Standard construction control measures for the protection of groundwater would be implemented; • Concrete works would be supervised; • Appropriate storage and handling of fuels and oils; • Provision of spill kits	Minor	Neutral
	Operational	Not significant	• Ensure maintenance of drainage system	Minor	Neutral
Designated Sites	Construction	Moderate significance	• Standard construction control measures for the protection of groundwater would be implemented; • Concrete works would be supervised; • Appropriate storage and handling of fuels and oils; • Provision of spill kits	Minor	Neutral
	Operational	Not significant	None required	Imperceptible	Neutral

Table 5.1: Summary of Residual Impacts Post-Mitigation

5.13 Cumulative Impacts

The residual impact of this proposed development is anticipated to be slight negative local effect. Cumulative effects from a development in general can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM, 2018).

Considering the nature of the development and the adjacent urban town, the main potential cumulative impact upon biodiversity would be a deterioration in groundwater quality during the operational phase resulting in an impact upon the Curragh Aquifer and loss or fragmentation of natural habitat.

It is not anticipated that there would be any significant impact upon groundwater quality during the operational phase, given that stormwater from the site would be directed to the drainage network and attenuation system. All foul and domestic wastewater will connect with to Kildare Town Wastewater Treatment Plant (D0178-01). Irish Water have upgraded the sewerage network within Kildare Town which will serve and allow for the sustainable development of its residential and commercial sectors. The drainage system has been designed to ensure the infiltration to groundwater is controlled and will not contain hydrocarbons. As the development is residential there are no significant potential impacts from industrial pollutants.

Mature trees and hedgerows are to be maintained as part of this development that will enable the connectivity of the site to remain for ecological corridors. As noted in the Bat Survey the trees for removal do not contain bat roosts. The mature trees of note along the Curragh Buffer zone will not be removed and will this limit disturbance to this area. The proposed development has included a Landscape Plan and Arborist Report for the protection of trees. As part of the nature-based solutions for the proposed drainage system is the inclusion of attenuation ponds. A water feature such as a pond has the potential to significantly increase the ecological value of the proposed development. Aquatic habitats have the potential to increase amphibians and invertebrates within the site boundary. The site does not contain any aquatic habitats (including drainage ditches) therefore these ponds would be of benefit to the wider ecological environment. The ponds will create a new habitat within the site that will store stormwater. The aquatic and marginal vegetation will help remove excess nutrients (growth of plants) from any operational runoff within the development. The ponds are positioned within a large green space with an existing treeline and hedgerow to the northeast and southeast to remain largely intact. This will allow for bats to forage and commute within the proposed development and limit the impact to the local population.

In addition, green roofs will be added to the crèche and apartment buildings. Green roofs are beneficial to slow down the flow of stormwater within a development but also have the potential to increase biodiversity. These areas can be used by nesting birds given the remote location, increase invertebrate activity and provide ecological connectivity with the wider environment. The addition of bioretention areas and swales will allow the proposed development to conserve stormwater and slow the rate of flow and keep the soil infiltration capacity of the site. The drainage design has been independently reviewed and minor amendments will be implemented with no significant impact on biodiversity. The drainage design will reference and take note of Chapter 12 Biodiversity and Green Infrastructure of the Kildare Development Plan 2023- 2029.

With regards potential habitat loss or fragmentation of habitat, the proposed development is not anticipated to result in a significant impact upon habitat loss / fragmentation during either the construction or operational phases, given that the majority of the land take would comprise of

modified habitats of low ecological value, and given that the landscape plan for the development will take into consideration the setting and use of native species. The mature hedgerow along the north and northeast boundary will not be removed and consideration for the species found here have been included in the landscape plan. Therefore, there would be no cumulative habitat loss or fragmentation impacts which could pose a significant risk to biodiversity. Potential cumulative lighting impacts from external lighting for the development has been addressed in the mitigation measures proposed in Section 5.11 for this development therefore cumulative impacts as a result of external lighting should not arise.

5.14 "Do Nothing" Scenario

No Change

5.15 "Worst Case" Scenario

If the proposed development proceeded without the mitigation measures outlined in Section 5.11 there would be a potential low impact upon bat species due to the removal of commuting and foraging habitat, in addition to limited lighting impacts during the construction phase and potential for light spill into the Curragh Buffer Zone if lighting scheme if not implemented with the mitigation measures detailed in Section 5.10. There would also be a potential moderate impact upon fauna, should vegetation clearance be undertaken during the mammal and bird breeding season. However, this is unlikely to occur, given that there are legal restrictions under the Wildlife Act 1976 as amended, with regards the removal of vegetation.

During construction works, there would be potential to inadvertently introduce invasive species to the area. However, even in the absence of mitigation measures, this would be considered unlikely given that there would be no significant import of materials to the site and given that delivery of materials would be inspected prior to removal from the site of origin. It is likely that minimal topsoil will be required to be imported into the site given the large site area of existing agricultural grassland. In addition, the site is managed agricultural grassland that is controlled to prevent the spread of unwanted flora that would reduce the grazing rates of livestock.

The landscape plan has been reviewed for potential invasives species and the inclusion of the native species where practical in an urban design. If the root protection zones are not adhered to then there is the potential for mature trees and hedgerows to be impacted during construction works. The hedgerows are well established and managed (except for Hedge 1 that is not fully managed as per the Appendix 5.6 Tree Constraints Plan).

Any localised impact on the hedges would be minor as replanting with native species would restore the connectivity of the hedgerows. If substantial sections of the hedgerow are impacted, then this would be considered a moderate impact. Mature Ash trees that are not protected would likely die if the root zone is impacted. The presence of Ash Dieback in Ireland is currently being researched by Teagasc to determine if there is resistance in native Ash trees. Currently research has determined that young trees are impacted more, with Ash in wet sites also showing more severe symptoms.

5.16 Difficulties Encountered in Compiling

No Change

5.17 Conclusions

No Change

5.18 References

No Change

6. Land, Soil & Geology

6.1 Introduction

No Change

6.2 Methodology

No Change

6.3 Receiving Environment

No Change

Soils

No Change

Geology

No Change

6.4 Characteristics of the Proposed Development

The proposed development will consist of a Large-scale Residential Development of 285 no. units. The development will include one, two, three and four bed units in the form of two storey detached, semi-detached / terraced houses, along with three storey duplexes/apartments and a single storey age friendly accommodation block. The development also includes a creche and multifunctional space along with associated car parking, bicycle parking, landscaping, and open spaces. Vehicular and pedestrian access will be provided from the R445 and via Ruanbeg Avenue. Additional pedestrian access will be provided via Ruanbeg Park. All other site works including boundary treatments and site services to facilitate development.

The proposed development in relation to soils and geology will comprise:

- Removal of existing topsoil and subsoil
- Site grading
- Reprofiling and importing fill to build levels on site
- The construction of residential buildings, creche, and associated foundations
- Construction of vehicle access via connection to the existing Ruanbeg Park residential development to the northwest, and a main access point off the R445 located to the south of the site.
- Excavation for installation of services, pavements and landscaping on existing and imported fill.

6.5 Potential Impacts

Construction Phase

Removal of Topsoil and Subsoil

Removal of the existing topsoil layer will be required. Stripping of topsoil will result in exposure of the underlying subsoil layers to the effects of weather and construction traffic and may result in subsoil erosion and generation of sediment laden runoff.

Excavation of existing subsoil layers will be required in order to allow road and foundation construction, drainage and utility installation. In addition, the installation of the sustainable urban drainage systems will require a significant quantity of subsoil to be excavated to provide attenuation storage volumes for extreme weather events. The construction of bioretention areas would also require an excavation. The above ground ponds proposed will be constructed using suitable excavated material, with topsoil finish to form an above ground berm to shape the pond/basin for storage purposes.

The approximate volume of removed topsoil is 8,500 $m^{3.}$ This will need to be disposed off site.

The approximate volume of subsoil to be excavated is 20,092 $m^{3.}$

Volumes in addition to the excavated volumes nominated may be required to provide suitable formation for proposed works, to allow for unsuitable ground.

Imported Fill

The site is generally proposed to be filled above existing levels and will require fill material to provide proposed levels.

Materials imported to site will be natural stones sourced from locally available quarries, greenfield / inert soil imported as materials that have been determined as by-products in accordance with the EPA's criteria for determining a material is a by-product or not a waste, per the provisions of articles 27(1) or 28 of the European Communities (Waste Directive) Regulations, 2011-21, or under a Waste Permit issued by the local authority, where required.

Imported materials will be granular in nature and used in the construction of road pavement foundations, buildings, drainage and utility bedding and surrounds. Imported fill will also be required for the raising of the site levels locally and constructing the retention basins to the south of the development site. Materials will be brought to site and placed in their final position in the shortest possible time. Any imported material will be kept separate from the indigenous arisings from the site. All excavation to accommodate imported material will be precisely co-ordinated to ensure no surplus material is brought to site beyond the engineering requirement. Please note further site investigation will be conducted to confirm the suitability and quantity of material for reuse and imported fill.

It is assumed that most of the excavated soil can be removed and reused on site by lime – cement stabilisation or similar methods. An assumed 600mm difference in level from finished level to formation level is assumed for all areas. This difference in level will be developed as part of the detailed design.

The approximate volume of additional fill material to underside of pavement and building structural level is 43,850 m^3

The approximate volume of reused subsoil is 18,000 $m^{3.}$

Construction Traffic
No Change

Accidental Spills and Leaks
No change

Geological Environment
No change

Operational Phase
No change

6.6 Potential Cumulative Impacts
No change

6.7 Mitigation Measures
Construction Phase

Stripping Topsoil
No change

Excavation of Subsoil Layers
No change

Imported Fill
No change

Construction Traffic
No change

Accidental Spills and Leaks
No change

Geological Environment
No change

Operational Phase
No change

6.8 Predicted Impacts

Construction Phase
No change

Operational Phase
No change

6.9 'Do Nothing' Scenario

No change

6.10 Worst Case Scenario

No change

6.11 Monitoring & Reinstatement

No change

6.12 Difficulties in Compiling Information

No change

6.13 References

No change

7. Hydrology and Water Services

7.1 Introduction

This addendum has been prepared to be read in conjunction with the Environmental Impact Assessment Report for the Large Scale Residential development at Ruanbeg, Kildare Town, Co. Kildare. The addendum includes any updates to the EIAR following completion of the additional assessment since completion of the EIAR. Where additions/amendments are made, they are highlighted under each chapter reference. The amended text is highlighted in red.

It is noted that an updated Hydrogeological Assessment report was issued in August 2023 that takes account of additional site investigations and monitoring completed at the site. This updated Hydrogeological Assessment should be considered the most uptodate conceptual understanding of the hydrogeological conditions underlying the site, and its immediate environs, and supersedes all previous hydrogeological assessment reports/monitoring data.

7.2 Methodology

No change

7.3 Receiving Environment

Site Location and Context

No change

Topography
No change

Site Investigations Undertaken
Detailed site investigations were undertaken by Causeway Geotech across the site in September 2022 and January 2023 and subsequently by Ground Check Ltd in August 2023. Please see site investigation reports, appended to Chapter 6 as below:

- Appendix 6.1 – Causeway Geotech Ground Investigation Report No: 22-0819, October 2022; and,
- Appendix 6.2 – Causeway Geotech Ground Investigation: Report No: 22-1436, January 2023.
- Appendix 6.3 – Ground Check Ground Investigation Report No. 23-3281, August 2023.

The Causeway Geotech investigations included the following:

- Drilling of 7 no. light cable percussion boreholes;
- Drilling of 3 no. rotary boreholes;
- Monitoring well installations within each borehole i.e. 7 no. within the shallow subsoils and 3 no. within the deeper gravels;
- Excavation of 10 no. trial pits;

- Completion of 10 no. infiltration tests within trial pits;
- Completion of 10 no. variable head tests within all monitoring wells;
- Recording of groundwater levels within both shallow and deeper monitoring wells using automated dataloggers and manual dipping over a period of 7 months.
- Geotechnical testing.

The Ground Check investigation included the following:

- Drilling of 4 no. light cable percussion boreholes ;
- Monitoring well installations within each borehole i.e. 4 no. within the shallow subsoils;
- Excavation of 4 no. trial pits;
- Completion of 4 no. infiltration tests within trial pits;
- Completion of 4 no. variable head tests within all 4 monitoring wells;
- Recording of groundwater levels within both shallow and deeper monitoring wells using automated dataloggers and manual dipping between the 16th and 25th August 2023.

The locations of the Causeway Geotech investigation locations are presented in Figure 7.1 below and the Ground Check investigation locations in Figure 7-3.

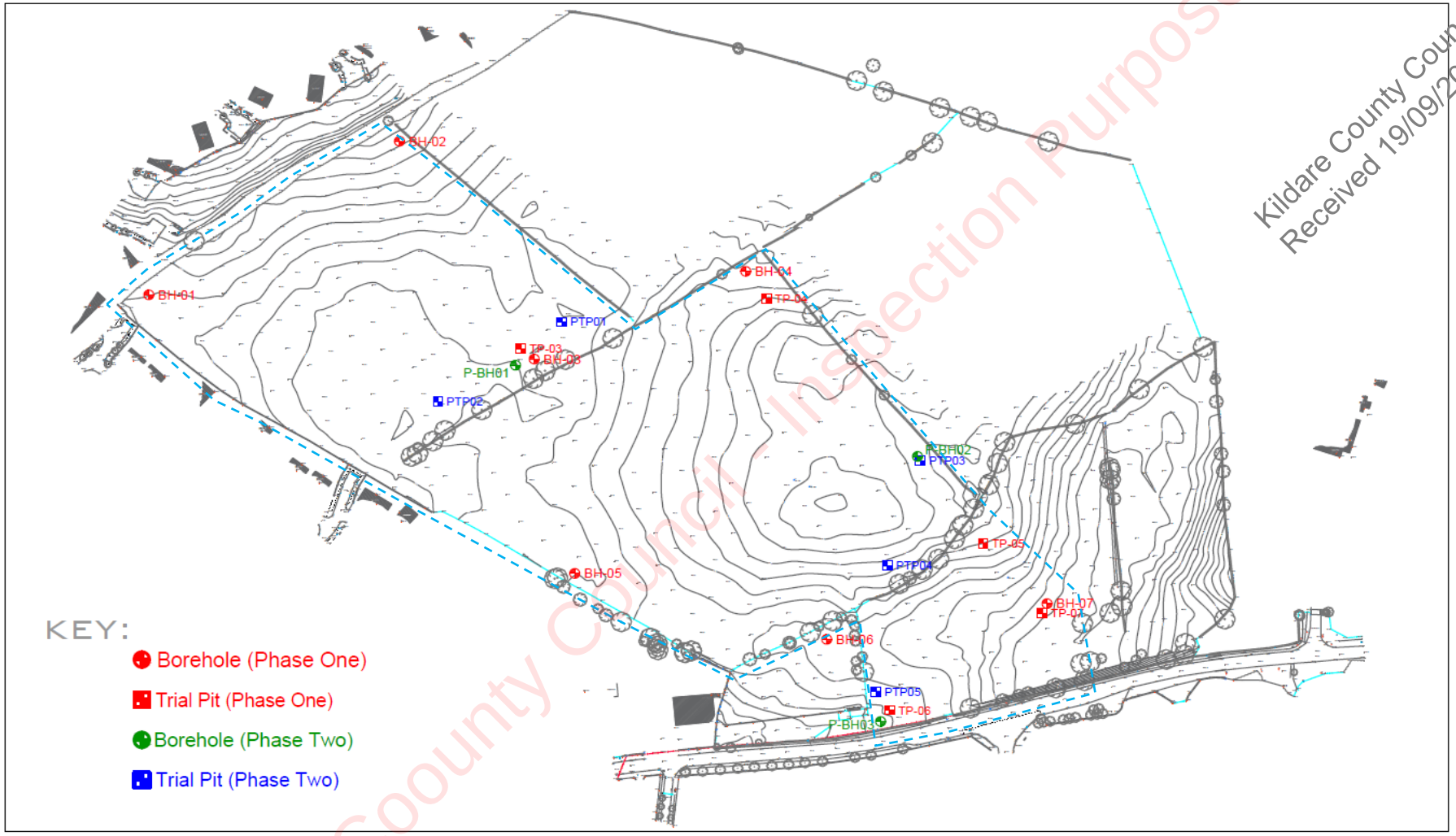


Figure 7.1 *Site Investigation Locations (Causeway Geotech)*

Figure 7.3 *Site Investigation Locations (Ground Check)*

Subsoils and Bedrock

The ground conditions recorded by Causeway Geotech and by Ground Check Ltd are summarised below based on up-to-date investigation data.

- Topsoil, approximately 200 – 300mm in thickness over a widespread deposit of typical boulder clay comprising gravelly clay with a sand and a silty sandy gravel component. This boulder clay was recorded at depths across the site ranging between 0.2 and 5.0 mbgl across the site. The thickness of this deposit generally ranges between 1 and 2 metres in the northwestern and northern regions of the site (i.e. boreholes BH01 and BH02) at thicknesses up to 4.5 metres.
- The boulder clays are underlain by fluvioglacial deposits of predominately medium dense silty sands and gravels with interlayered firm to stiff sandy gravelly clay/silt lenses. These deposits range between 5.4 and 7.9 metres in thickness, however the base horizon is considered gradational and is not sharply defined. The upper horizons of these fluvioglacial deposits are generally described as a sandy gravelly clay or clayey/silty sandy gravel. The lower horizon is characterised as a similar material with a notably reducing fines content with depth.
- Dense gravels are present at depths ranging between 10.7 and 11.5 mbgl in PBH01 and PBH02 respectively and encountered at much shallower depths within PBH03 between 2.3 and 13.1 mbgl. Generally the upper sections of the main dense gravel unit have an increased sand content with the material becoming dense clean gravels with depth.
- The thickness of the gravels is unknown from site investigations; however it is considered to be in the region of 30.0 - 40.0m. Depth of bedrock has not been confirmed to date at the site at depths up to 15 mbgl.

Bedrock

No change

Aquifer Classification

No change

Characteristics and Properties of Pollardstown Fen Aquifer

No change

Aquifer Vulnerability

No change

Water Framework Directive (WFD) Status – Groundwater

No change

Regional Groundwater Levels and Flow Direction

No change

Onsite Groundwater Level Monitoring

Groundwater levels monitoring was undertaken within all shallow and deeper groundwater monitoring wells across the site between the 19th September 2022 and the 4th April 2023 and again between the 16th August 2023 and 25th August 2023 representing a period of over 7 months.

Groundwater levels were monitoring using both automated groundwater level dataloggers and manual dipping.

The automated dataloggers were initially installed within BH01 – BH07 on the 16th September for a period of 4 months i.e. until the 9th January 2023. All wells, with the exception of BH07, were recorded as dry throughout this period. The dataloggers from selected consistently dry shallow wells were transferred to the deeper monitoring wells (PBH01, PBH02, PBH03 and BH07) for further on-going monitoring until the 4th April 2023. Weekly manual groundwater level monitoring was undertaken in wells BH01 to BH06 during this time to confirm dry conditions over time. In addition to the above, dataloggers were reinstalled within the wells between the 16th August 2023 and 25th August 2023.

The resulting water levels recorded in monitoring wells within groundwater present are summarised in Table 7-2 and outlined in Figure 7.2. A more detailed description is provided in the 2023 Updated Bluerock Environmental Hydrogeological Assessment Report for the site (see Appendix 7.1). A summary of the recorded groundwater levels is outlined below:

- All shallow groundwater monitoring wells were recorded as dry throughout the 4 months of data logger monitoring and subsequent 4 months of manual groundwater level monitoring with the exception of BH07 and BH102. Groundwater was recorded at levels ranging between 3.73 and 4.83 mbgl respectively (i.e. between 88.97 and 87.83 mOD) within these wells. Well BH07 is located in the lowest region of the site.
- Groundwater levels recorded within the deeper gravel monitoring wells were recorded at levels ranging between 5.18 and 8.95 mbgl (i.e. between 88.97 - 88.83mOD).
- The spike in water levels on BH07 in January 2023 is attributed to the effects of a falling head test and is not considered representative of equilibrium groundwater levels.

Monitoring Well ID	Max Water Level (mbgl)	Max Water Level (mOD)	Min Water Level (mbgl)	Min Water Level(mOD)
BH01	dry	dry	dry	dry
BH02	dry	dry	dry	dry
BH03	dry	dry	dry	dry
BH04	dry	dry	dry	dry
BH05	dry	dry	dry	dry
BH06	dry	dry	dry	dry
BH07	3.73	88.97	4.83	87.83
P-BH01	5.18	88.89	5.65	88.41
P-BH02	8.57	88.83	8.95	88.45
P-BH03	7.25	88.74	7.64	88.34

Table 7.2: Maximum and Minimum Groundwater Levels

Figure 7.2 represents the recorded groundwater levels from 4 no. monitoring wells within the site boundary (i.e. shallow well BH07 and deeper wells PBH01 to PBH03) throughout the monitoring period.

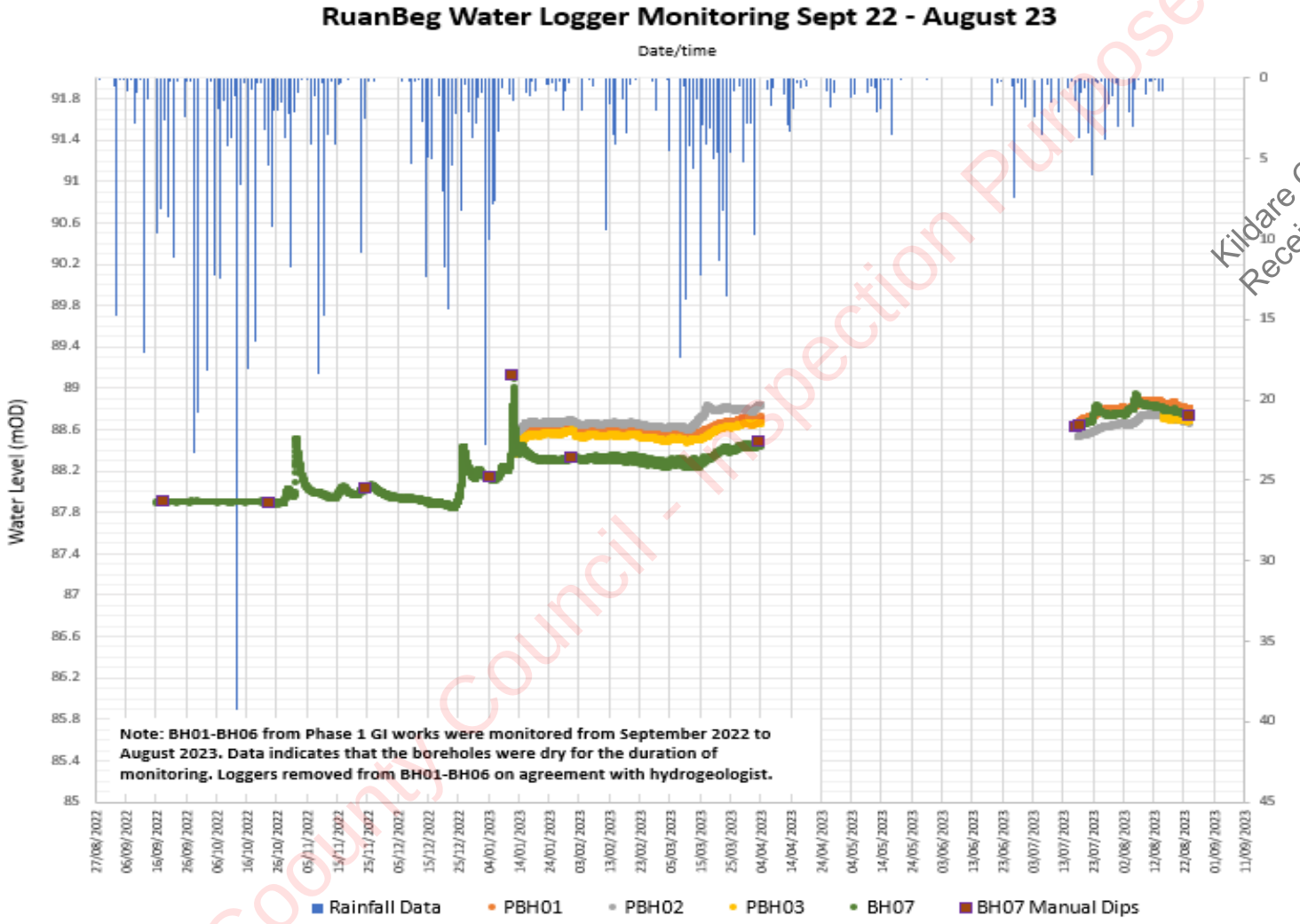


Figure 7.2 *Ground water Levels September 2022 – April 202*

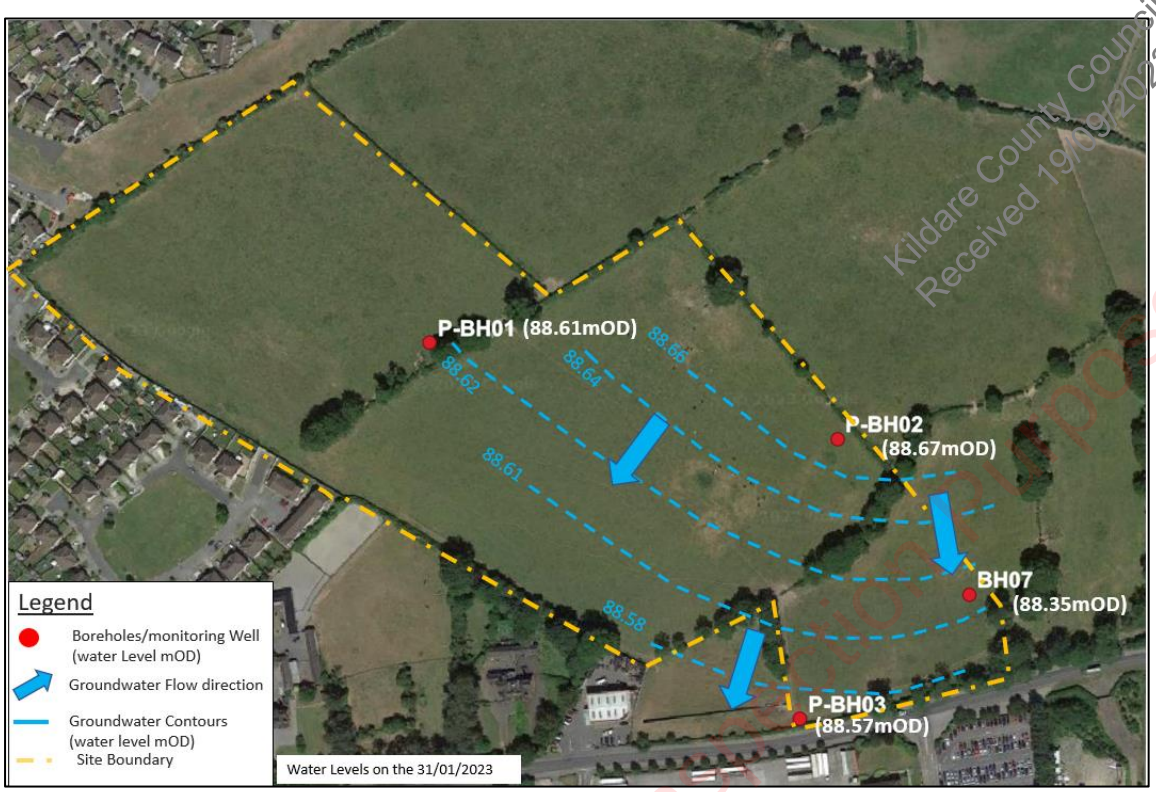


Figure 7.3 Ground water Flow Direction 31st January 2023

As detailed in the 2023 Updated Bluerock Environmental Ltd Hydrogeological Assessment report, groundwater flow within the deeper dense gravel body is interpreted to be consistently flowing in a south to southwesterly direction across the site i.e. in the opposite direction to Pollardstown Fen (Figure 7.3). The lowest groundwater levels were recorded in the southern region of the site. The interpreted flow direction is consistent with the regional groundwater flow pattern mapped by Trinity College and previous studies referenced in the 2023 Hydrogeological Assessment report.

Groundwater within shallow monitoring wells BH07 and BH102 are considered to be hydraulically connected with the deeper gavel aquifer with groundwater flowing as a single hydraulic unit across the site. No perched shallow groundwater body has been identified underlying the site. Groundwater is also interpreted to be flowing under unconfined conditions across the site.

Groundwater level differences across the site are not considered to be significant with relatively low gradients recorded between 0.001 and 0.005 between September 2023 and April 2023 with lower gradients recorded in July and August 2023.

The highest recorded groundwater level was recorded within well BH07 (i.e. 88.97 mOD) in the southeastern region of the site at a depth of 3.73 mbgl.

A cross section of ground conditions underlying the general area of proposed Attenuation tanks A and B are presented in Figure 7.4 and Figure 7-14.

Groundwater Recharge, Infiltration and Permeability

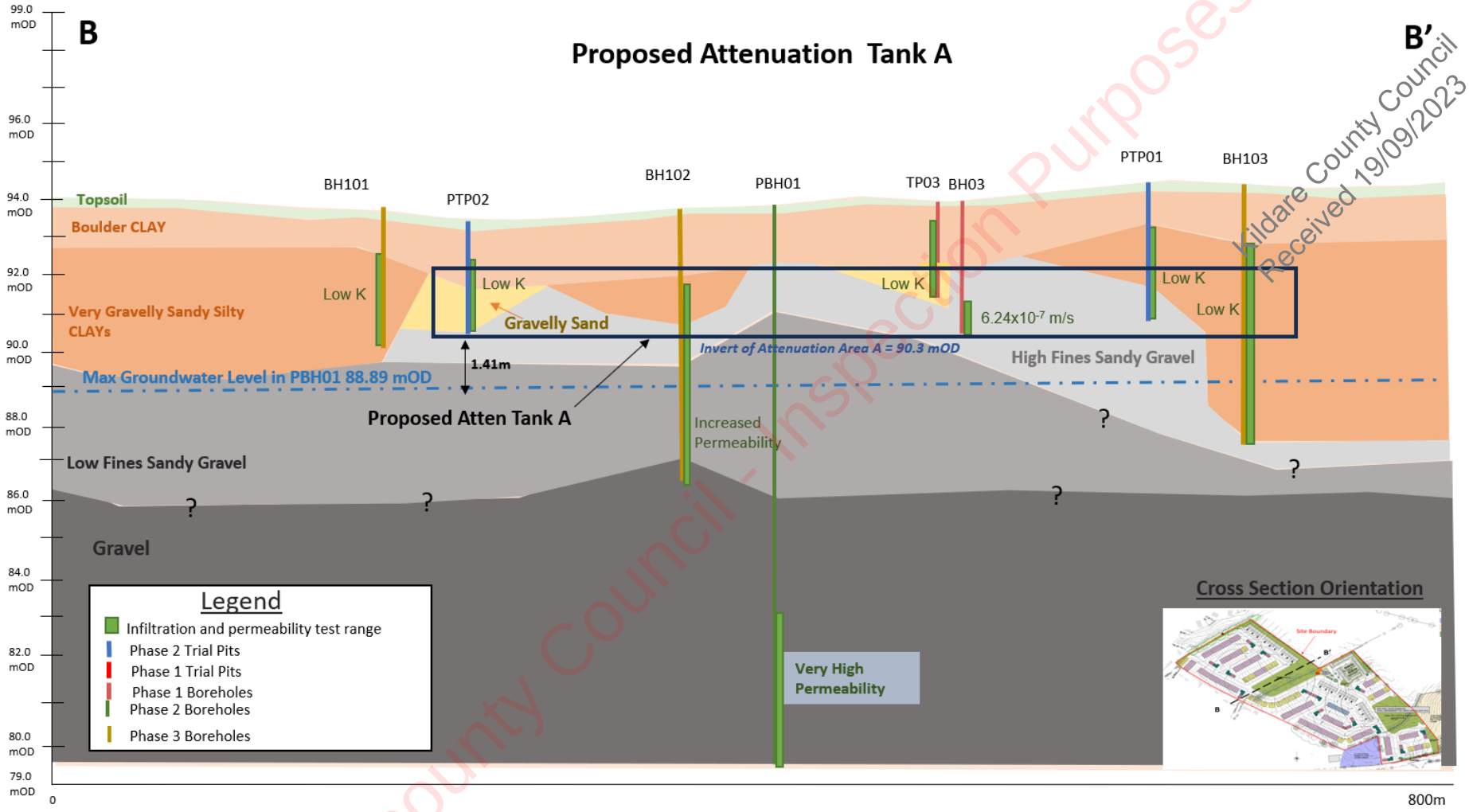
The GSI groundwater recharge map provides an estimate of the average amount of rainwater that percolates down through the subsoils to the water table over a year. The groundwater recharge map is derived from existing hydrogeological and meteorological spatial datasets. The main

hydrogeological controls on groundwater recharge include the permeability and thickness of superficial deposits, the presence of saturated soils, and the ability of the underlying aquifer to accept percolating waters. Combinations of these factors are assessed, and a 'recharge coefficient' established for different hydrogeological scenarios.

The GSI recharge map indicates the average recharge from the subject lands is 406 mm/year with a recharge coefficient of 85% (due to high permeability subsoil overlain by well-drained soil). The recharge will be diffuse in nature due to the permeability of the topsoil and subsoil.

Soil infiltration rates were calculated assessed as part of the site investigation activities in accordance with BRE Digest 365 and CIRIA SuDS Manual C753. In addition, a series of variable head permeability tests were conducted within all monitoring wells across the site to determine permeabilities within the overburden strata.

For all shallow subsoils, infiltration/permeability rates ranged widely across the site ranging between very low (i.e. 8.51 x 10^{-8} metres/second in TP103) to moderate/high permeability (i.e. 2.23 x 10-2 metres/second in TP104). Very high permeable conditions were recorded within the deeper gravels.



Note:Vertical Scale exagerated by 40:1 approx

Figure 7.4 *Cross section of Site at Attenuation Tank A.*

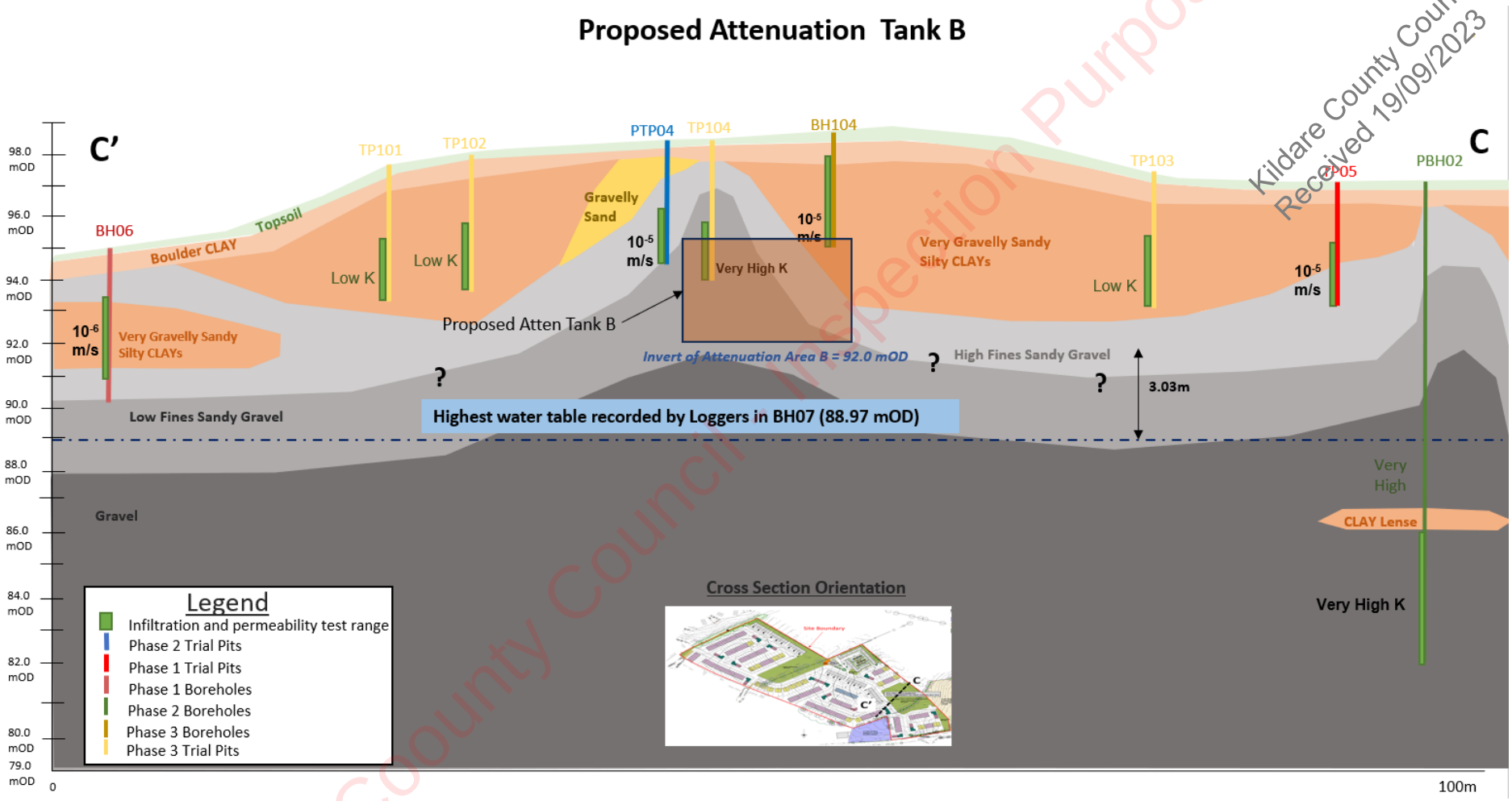


Figure 7.5 Cross section of Site at Attenuation Tank A.

GSI Well Database

No change

EPA/GSI Source Protection Zones

No change

Hydrology

No change.

Water Framework Directive (WFD) Status – Surface Water

No change

Site Drainage

No change

Designated Protected Areas

No change

Flood Risk

A site-specific flood risk assessment was completed for the site by Punch Consultant Engineers (Site Specific Flood Risk Assessment, Proposed Residential Development at Ruanbeg, Kildare Town, Co. Kildare, Ref: 222143-PUNCH-XX-XX-RP-C-0004, dated April 2023) and is appended to this EIAR (see Figure 7.2).

The Site-Specific Flood Risk Assessment was carried out in accordance with "The Planning System & Flood Risk Management Guidelines" published by the Department of the Environment, Heritage and Local Government in November 2009 and the Kildare County Council Local Area Plan.

A review of the flood risk in the area was carried out for the site. Flood Maps produced as part of the NIFMS were consulted to establish the Flood Zone. It was determined that the proposed development site is currently located in Flood Zone C for fluvial flooding (Figure 7.6). The GSI groundwater flood probability map indicates there is no risk to the subject lands from seasonal groundwater flooding.

A Proposed Material Amendment to the Draft Kildare LAP identified a pluvial flood risk to the site. However, this risk will be mitigated through the provision of a new surface water drainage system to be constructed as part of the development.

The proposed development was therefore deemed to be at low risk of flooding and is deemed appropriate for the site.

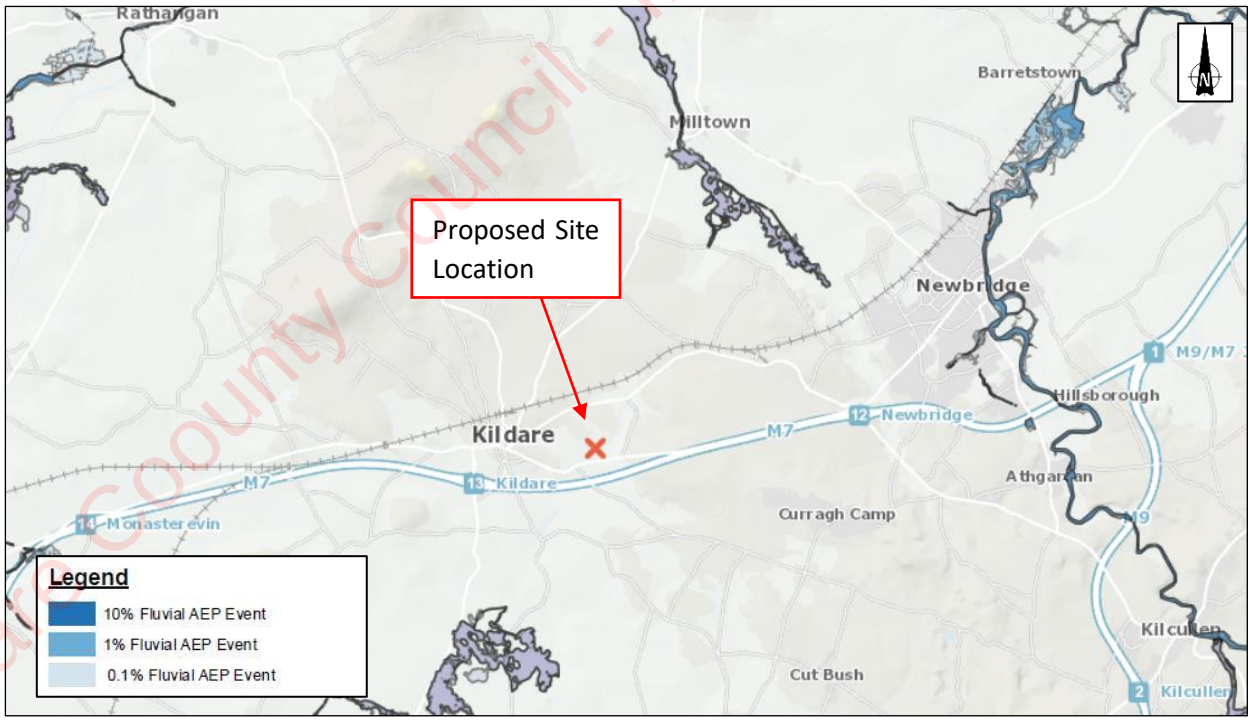


Figure 7.6: Extract from the National Indicative Fluvial Mapping (Low and Medium Probability)

Water Supply

No change

Foul Drainage

No Change

7.4 Characteristics of the Proposed Development

The proposed development will consist of a Large-scale Residential Development of 285 no. units. The development will include one, two, three and four bed units in the form of two storey detached, semi-detached / terraced houses, along with duplexes/apartments and a single storey age friendly accommodation block. The development also includes a creche and multifunctional space along with associated car parking, bicycle parking, landscaping, and open spaces. Vehicular and pedestrian access will be provided from the R445 and via Ruanbeg Avenue. Additional pedestrian access will be provided via Ruanbeg Park. All other site works including boundary treatments and site services to facilitate development.

Initial runoff from all areas is to be directed to dedicated SuDS measures such as:
a. Bioretention areas
b. Green Roofs
c. Permeable Pavements
d. Pond Areas

Overflows from these areas will be directed to overflow gullies within or adjacent to the treatment area,
draining below ground drainage and then to the infiltration attenuation tank. Refer to PUNCH Documentation.

The infiltration tanks are designed for 1 in 100-year storm (plus 30% climate change and 10% urban creep).
Please refer to Architectural Documents for full proposed site layout. Please refer to drainage design documentation for full design.

7.5 Description and Significance of Impacts

No change

7.6 Potential Impacts

Construction Phase
No change

Construction Works Potential Impacts (in the absence of mitigation)

No.	Construction Activity	Attribute	Character of Potential Impact	Importance of Attribute (see table 7.21)	Magnitude of Potential Impact (see table 7.22)	Significance of Potential Impact (see table 7.23)
1	Excavation Activities	Groundwater	It is anticipated that the development site works will involve some excavation of soils/subsoils for the various aspects of the development including foundations, underground services and site drainage. The site is mapped as a location of high groundwater vulnerability. The depth of excavation is anticipated to be limited and therefore the reduced thickness of overburden will not significantly effect the vulnerability of the underlying groundwater in the event of a pollution event such as a fuel spillage during the construction works.	High	Minor Adverse	Moderate/ Slight
		Surface Water	The removal of established vegetative cover and construction work activities (*e.g.* vehicle movements) could lead to the loss of large quantities of soil particles through uncontrolled sediment erosion and silty/hydrocarbon-laden runoff from vehicles, particularly during periods of high rainfall. However, given the distance to the closest surface water features, the potential impact is considered to be low.	High	Negligible	Imperceptible
2	Fuel storage/usage on site	Groundwater Surface Water	Accidental spillage of contaminants during construction works may cause short to long term, moderate to significant impacts to groundwater and surface water if not stored and used in an environmentally safe manner.	High	Major Adverse	Profound/ Significant
3	Waste Arisings	Groundwater Surface Water	Waste material generated from construction activities may require disposal off-site if not suitable for reuse on site. Temporary storage on site may be required and	High	Minor Adverse	Moderate /Slight

No.	Construction Activity	Attribute	Character of Potential Impact	Importance of Attribute (see table 7.21)	Magnitude of Potential Impact (see table 7.22)	Significance of Potential Impact (see table 7.23)
			impacts to groundwater and surface water from possible contaminated direct runoff during rainfall events could potentially occur.			
4	Contaminated land / buried waste	Groundwater Surface Water	No contaminated material or buried waste has been reported during the site investigation completed across the site. However, it is noted that no site investigation can be thorough enough to investigate every area of the site and therefore in the event of encountering unexpected ground contamination or buried waste material, it is anticipated to be very localised with an associated low level of risk posed to the environment	High	Minor Adverse	Moderate /Slight
5	Vandalism	Groundwater Surface Water	Pollution due to vandalism of stores or plant poses a risk to groundwater and to future site users.	High	Major Adverse	Profound/ Significant
6	Contaminated imported fill	Groundwater Surface Water	The importation of unsuitable or contaminated fill material for the purpose of reinstatement works or access roads may pose a risk to the groundwater aquifer and surface waters in proximity to the site.	High	Moderate Adverse	Significant/ Moderate
7	Construction Traffic	Groundwater Surface Water	There may be a risk of groundwater pollution from site traffic through the accidental release of oils, fuels and other contaminants from vehicles.	High	Minor Adverse	Moderate /Slight

No.	Construction Activity	Attribute	Character of Potential Impact	Importance of Attribute (see table 7.21)	Magnitude of Potential Impact (see table 7.22)	Significance of Potential Impact (see table 7.23)
8	Increased risk of flooding and soil erosion	Surface Water	The creation of hard standing areas and compaction of soil may increase levels of surface water run-off resulting in localised flooding and subsequent soil erosion.	High	Minor Adverse	Moderate /Slight

Table 7.7: Potential Impacts during construction Phase

7.7 Operational Phase

Potential Operational Impacts (in the absence of mitigation)

No change

7.8 Potential Cumulative Impacts

No change.

7.9 Mitigation Measures

Construction Phase

No change

Operational Phase

No.	Construction Activity	Attribute	Character of Impact	Mitigation	Post Mitigation Impact
1	Surface water runoff from footpaths, roads, walkways, carparks and general hardstanding	Groundwater Surface Water	Surface runoff being channelled to groundwater and surface water could result in contamination of the water bodies.	An appropriately designed drainage system has been designed for the subject site. The system was designed in accordance with the CIRIA SUDS Manual and Recommendations for Site Development Works for Housing Areas published by the Department of the Environment and Local Government. It is proposed to use a sustainable urban drainage systems (SuDS) approach to stormwater management throughout the site, the overall strategy aims to provide an effective system to mitigate the adverse effects of urban stormwater runoff on the environment by reducing runoff rates, volumes and frequency, reducing pollutant concentrations in stormwater, contributing to amenity, aesthetics and biodiversity enhancement and allow for the maximum collection of rainwater for re-use where possible. The lowest invert of the proposed attenuation tanks is 90.3 mOD at tank A. Based on the highest groundwater level recorded at this location of the site (i.e. 88.89 mOD within PBH02), this equates to an unsaturated zone of 1.41 metres between groundwater and the invert of the lowest proposed drainage tank. Given the reduced infiltration	Imperceptible

				characteristics of the subsoils recorded in the vicinity of, and underlying, tank A, access into the underlying, deeper more permeable horizons as part of the drainage system design in this area was incorporated to facilitate appropriate infiltration from tank A. The proposed design comprises the excavation of a small number of linear and localised pathway trenches infilled with natural permeable gravelly sands and sandy gravels. The objectives of the pathway trenches are to facilitate infiltration from the tank and provide additional filtration of stormwater before entering the groundwater body. The additional investigation and monitoring confirmed that subsoils present under the proposed Infiltration/Attenuation tank B and C are deemed suitably permeable to facilitate the infiltration of stormwater to the underlying groundwater while maintaining an appropriate unsaturated zone (i.e. 1 metre) between the invert of the proposed tanks and the highest recorded groundwater level in these areas. Permeabilities underlying Tanks B ranged between $2.23x10^{-2}$ m/s (TP104) and $5.19x10^{-5}$ m/s (PTP04) and underlying Tank C ranging between $1.16x10^{-5}$ m/s and $1.61x10^{-5}$ m/s.	

4	Contaminated imported material	Groundwater	The importation of unsuitable or contaminated fill material for the purpose of reinstatement works or access roads may pose a risk to the underlying aquifer.	All imported fill shall be confirmed as inert and suitable for reuse on site by an appropriately qualified engineer/consultant.	Imperceptible

Table 7.10: Predicted Operational Stage Mitigation Measures

7.10 Predicted Impacts

Construction Phase

No change

Operational Phase

No change

7.11 'Do Nothing' Scenario

No change

7.12 Worst Case Scenario

No change

7.13 Monitoring & Reinstatement

No change

7.14 Difficulties in Compiling Information

No significant difficulties were encountered while undertaking this assessment.

7.15 References

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Wright., G. (1988) 8th Annual Seminar, IAH (Irish) Group. Portlaoise, Ireland.

The following sources of information were used in the compilation of this assessment:

- Ordnance Survey of Ireland (OSI), Discovery Series, Sheet 55;
- Ordnance Survey of Ireland online historical maps and aerial photographs;
- Geology Kildare - Wicklow, Geological Survey of Ireland (GSI) (1:100,000), Sheet 16;
- GSI - On-line Geology Database. Aquifer Classification, Aquifer Vulnerability;
- GSI - GWDTE-Pollardstown Fen (SAC000396) and Curragh Gravels West (GWB);
- GSI - Groundwater Source Protection Zones - Rathangan PWS, MONASTEREVIN PWS and Curragh Camp PWS;
- Soil Map of Ireland (Second Edition, 1980), National Soil Survey of Ireland, An Foras Talúntais;
- National Parks and Wildlife Service (NPWS) on-line database (www.npws.ie);
- Environmental Protection Agency (EPA) online water quality mapping; (https://gis.epa.ie/EPAMaps/);
- Water Framework Directive (WFD) http://wfdireland.ie/maps.html;
- OPW hydro-data (http://www.opw.ie/hydro-data);

Flood Hazard Maps and flooding information for Ireland, www.floodmaps.ie - Office of Public Works (OPW);

The Planning System and Flood Risk Management – Guidelines for Planning Authorities - Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW);

Public Foul Drainage (Irish Water and KCC Records);

Public Water Main Networks (Irish Water and KCC Records);

Public Surface Water Drainage (Irish Water and KCC Records);

Office of Public Works flood mapping data (www.floodmaps.ie);

- Met Eireann monthly climatological data (https://www.met.ie/);
- Causeway Geotech – Ruanbeg, Kildare – Ground Investigation October 2022;
- Causeway Geotech – Ruanbeg, Kildare Phase 2 – Ground Investigation January 2023
- Ground Check Ground Investigation Report No. 23-3281, August 2023.
- Punch Consulting Engineers 222143 Ruanbeg, Kildare, Co. Kildare, Specification for Site investigation
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- Punch Consulting Engineers Site Specific Flood Risk Assessment 222143-PUNCH-XX-XX-RP-C-0004 September 2023
- Punch Consulting Engineers Sustainable Urban Drainage Strategy 222143-PUNCH-XX-XX-RP-C-0007 September 2023
- Punch Consulting Engineers Stormwater Drainage Maintenance Plan 222143-PUNCH-XX-XX-RP-C-0008 September 2023
- Bluerock Environmental Updated Hydrogeological Site Assessment, BRE22014Rp01A01, dated 3rd May 2023 (FINAL)

8. Noise and Vibration

8.1 Introduction

No Change

8.2 Methodology

No Change

8.3 Receiving Environment

Location and land use

The proposed development will consist of a Large-scale Residential Development of 285 no. units. The development will include one, two, three and four bed units in the form of two storey detached, semi-detached / terraced houses, along with 3 no. three storey duplexes/apartments and a single storey age friendly accommodation block. The development also includes a creche and multifunctional space along with associated car parking, bicycle parking, landscaping, and open spaces. Vehicular and pedestrian access will be provided from the Dublin Road (R445) and via Ruanbeg Avenue. Additional pedestrian access will be provided via Ruanbeg Park. All other site works including boundary treatments and site services to facilitate development.

The site is currently under a mixture of pasture and hedgerows. The area to the east is also under pasture. To the north and west, the landscape quickly becomes urban. A commercial unit lies to the south of the proposed site. Kildare Chilling also lies to the south of the proposed site , on the opposite side of the R445.

Noise Monitoring Equipment

No change

Receptors

No Change

Noise mapping

No Change

Noise Survey

No Change

Noise risk assessment

No Change

Future trends

No Change

8.4 Characteristics of the Proposed Development

The proposed development will consist of a Large-scale Residential Development of 285 no. units. The development will include one, two, three and four bed units in the form of two storey detached, semi-detached / terraced houses, along with 3 no. three storey duplexes/apartments and a single storey age friendly accommodation block. The development also includes a creche and multifunctional space along with associated car parking, bicycle parking, landscaping, and open spaces. Vehicular and pedestrian access will be provided from the Dublin Road (R445) and via Ruanbeg Avenue. Additional pedestrian access will be provided via Ruanbeg Park. All other site works including boundary treatments and site services to facilitate development. A full development description is provided in Chapter 3 of this EIAR.

When considering a development of this nature, the potential noise and vibration impact on the surroundings is considered for each of two distinct stages:

- Construction Phase.
- Operational Phase

The construction phase will involve excavation over the development site, landscaping, construction of internal roads, excavation of foundations, building and transport of materials to site using the local road network.

The primary sources of outward noise in the operational context are deemed to be long term in duration and will comprise traffic movements to site using the existing road network. (These issues are discussed in detail in the following sections).

8.5 Potential Impacts

No Change

8.6 Potential Cumulative Impacts

No Change

8.7 Mitigation Measures

Construction Phase-Noise

No Change

Selection of Quiet Plant

No Change

Noise Control at Source

No Change

Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Construction site hoarding will be constructed around the site boundaries as standard. The hoarding will be constructed use standard plywood material to provide adequate sound insulation.

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Construction site hoarding will be constructed around the site boundaries as standard. The hoarding will be constructed of a material to reduce noise by 20dB along the west, north boundaries and a percentage of the east boundary. Figure 8-16 shows locations of hoarding required. This will ensure guidance limit for construction noise at nearest noise sensitive location is followed and potential impacts relating to noise nuisance and disturbance and vibration impacts are effectively minimised and controlled.

In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.

Figure 8.1: shows locations and type of hoarding required

Liaison with the Public

No Change

Monitoring

No Change

Project Programme

No Change

Construction Phase - Vibration

No Change

Operational Phase

Additional Traffic on Adjacent Roads

No Change

Mechanical Services Plant

No Change

Inward impacts

Inward impacts relate to noise emissions received at a receptor due to emissions emitted by one or more sources. Emerging best practice provides for the design of new developments such that the occupants of residential elements are not subject to high internal noise due to existing (and potential future) external noise sources. Such sources usually consist of transport (road, rail, and aircraft), and industry. Internal and external criteria considered appropriate to new residential developments are identified below. Impacts at the proposed creche are also assessed.

At the Proposed Development site, inward noise will arise from the following sources:

- Onsite vehicle movements associated with residents at onsite and staff and creche. Noise emissions from these will be relatively low at onsite receptors due to low traffic speeds. Inward noise impacts are typically associated with rolling noise at higher speeds, and such emissions are unlikely to arise onsite.
- Noise from delivery vehicles across the site and from waste management vehicles will be similarly low due to low speed.
- The nearest road of significance is the R445 which runs along the southern side of the proposed development site. This road sees traffic throughout the day, evening, and night.
- Inward traffic noise also arises from distant roads, including the M7.
- Inward industrial noise also arises from Kildare Chilling.

All sources of inward noise are road traffic and industrial. Rail and aircraft noise is not audible at the site.

Noise levels measured at the site indicate that Lden levels close to the R445 rise to 60-61 dB, with Lnight levels reaching 46-47 dB. Levels falls with increasing distance from surrounding roads, with Lden and Lnight levels falling below 55 and 46 dB respectively in parts. Lden and Lnight levels across the site are currently lower than Noise Action Plan thresholds. The ProPG risk assessment concludes that the proposed development site is low risk across almost all areas, increasing to medium risk at positions immediately adjacent to the R445. It is also concluded that night-time L_{AFmax} levels require consideration at positions within approximately 100 m of public roads.

In order to quantify noise levels across the site, predictive modelling was undertaken using Sound plan software. The following input parameters were applied:

- Model algorithm: International Standard ISO 9613-2:1996 Acoustics: Attenuation Of Sound During Propagation Outdoors – Part 2 General Method Of Calculation (1996).
- Contours taken from mapping.
- Modelled heights: 2 m to allow comparison with measured values.

- Road traffic volumes taken from the traffic count data provided by the design team. The count measured daytime data only (0700-1900 h). Additional evening (1900-2300 h) and night-time (2300-0700 h) flows of 10 % each were assumed.
- Light vehicle and HGV noise emissions taken from CNOSSUS-EU database.
- Traffic speeds 50 km/h,
- Industrial Noise.

The model output is shown in Figures 8-19 and 8-20. Table 8-18 presents a comparison between modelled and measured Lden and Lnight levels. Modelled levels at three measurement positions are within 3 dB of measured levels. The model is considered reasonably valid for the purposes of this assessment.

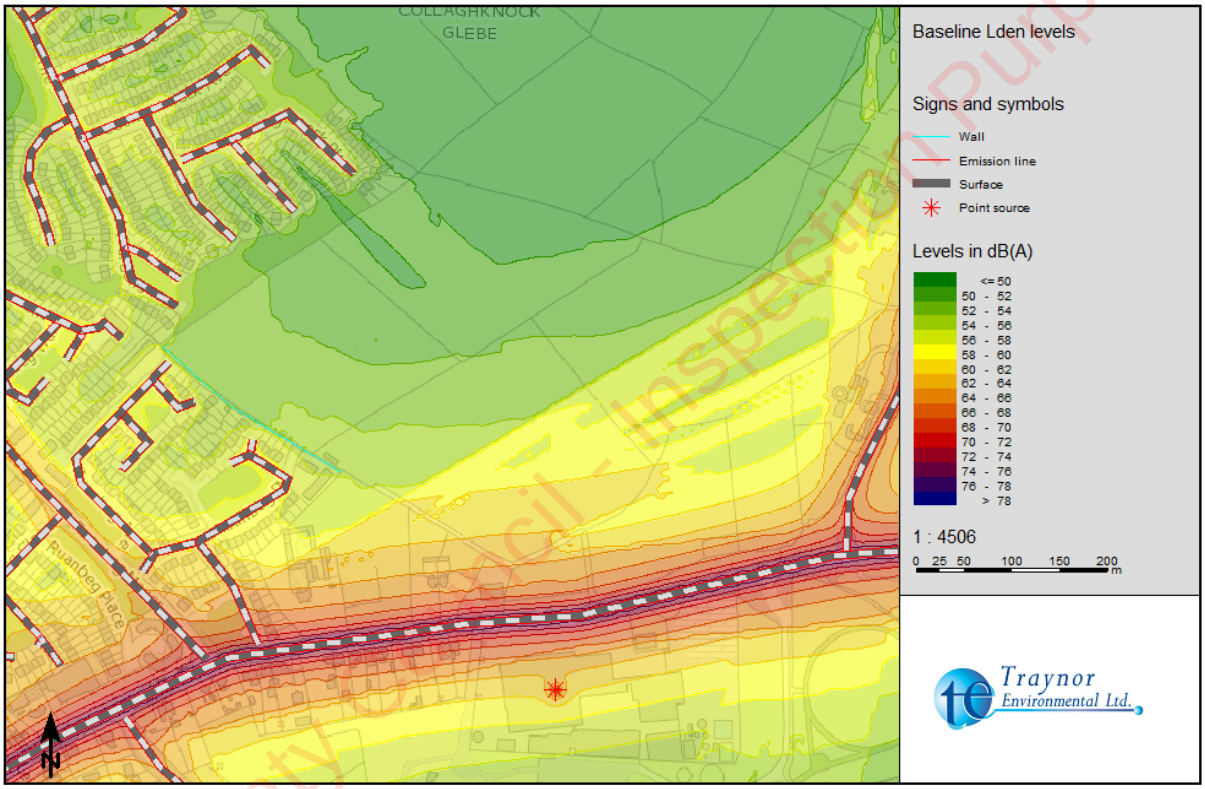

Figure 8.2: Baseline Lden levels

Figure 8.3: Baseline Lnight levels

Parameter		A	B	C
Lden	Measured	60	59	55
	Modelled	62	59	54
Lnight	Measured	51	52	46
	Modelled	53	50	46

Table 8.1: Modelled and measured baseline Lden and Lnight levels

In order to provide for future increases in noise levels, the model was modified to include future traffic volumes (overall road traffic across the local area) predicted by the project traffic team with respect to the design year 2041. Proposed buildings at the site were added to the model, as well as traffic on the proposed site roads. The model was run at a height of 4 m, to provide an indication of future traffic noise levels at upper floors of the proposed buildings. The model output is shown in Figures 8-15 to 8-18. Parameters modelled are Lnight, Lden, LAeq 16 h and night-time LAeq 1 h, as these relate to identified criteria.

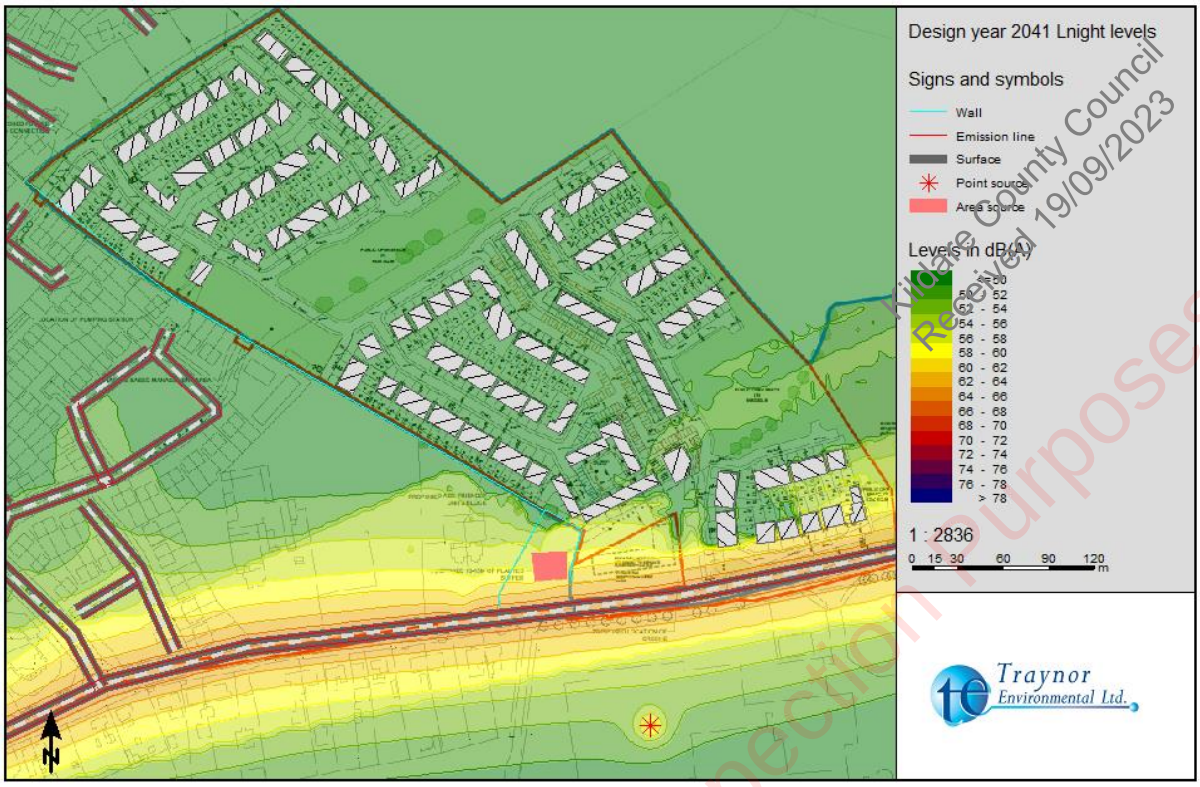

Figure 8.4: Design year 2041 Lnight levels (indicative site boundary)

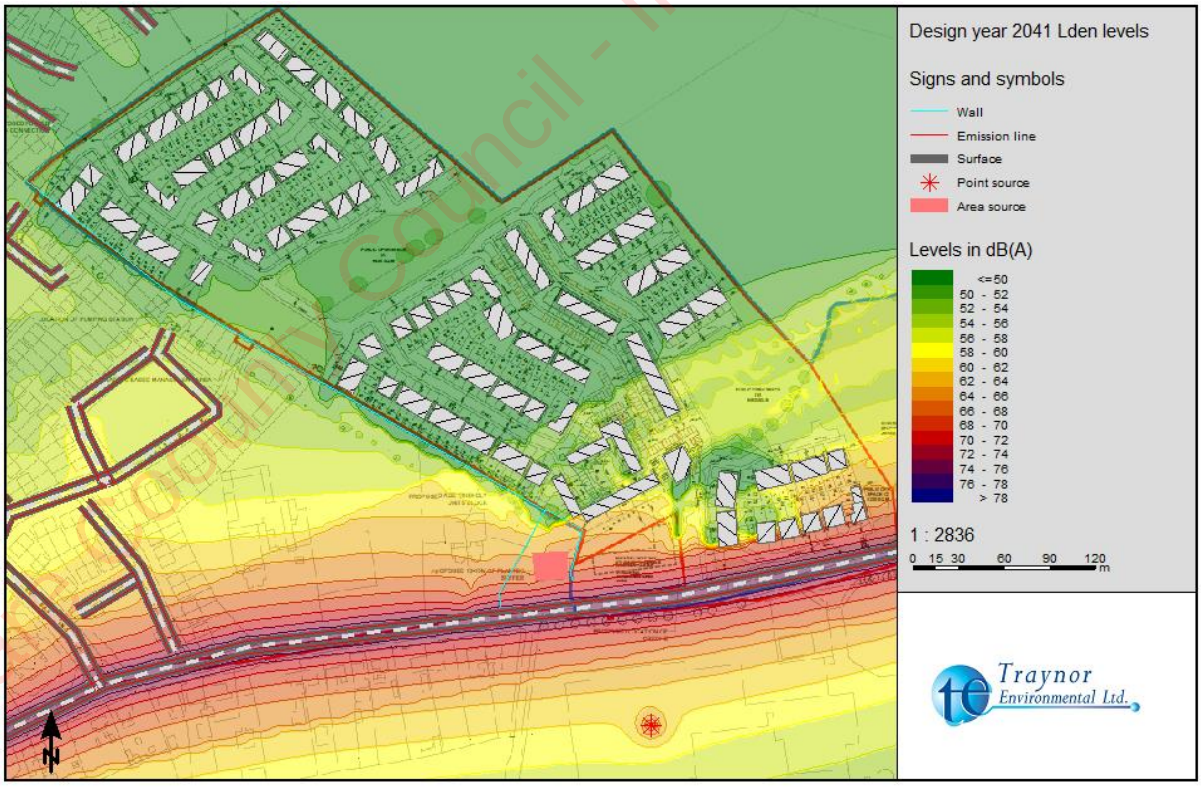

Figure 8.5: Design year 2041 Lden levels (indicative site boundary)

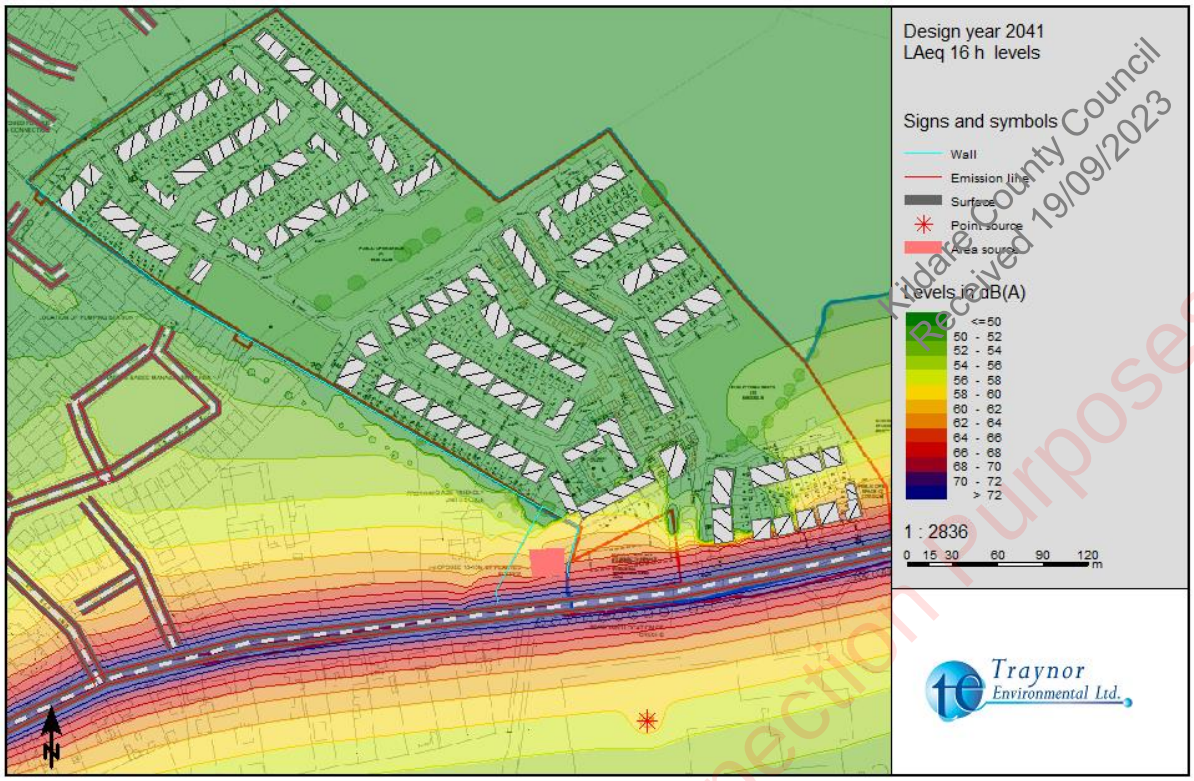

Figure 8.6: Design year 2041 LAeq 16 h levels (indicative site boundary)

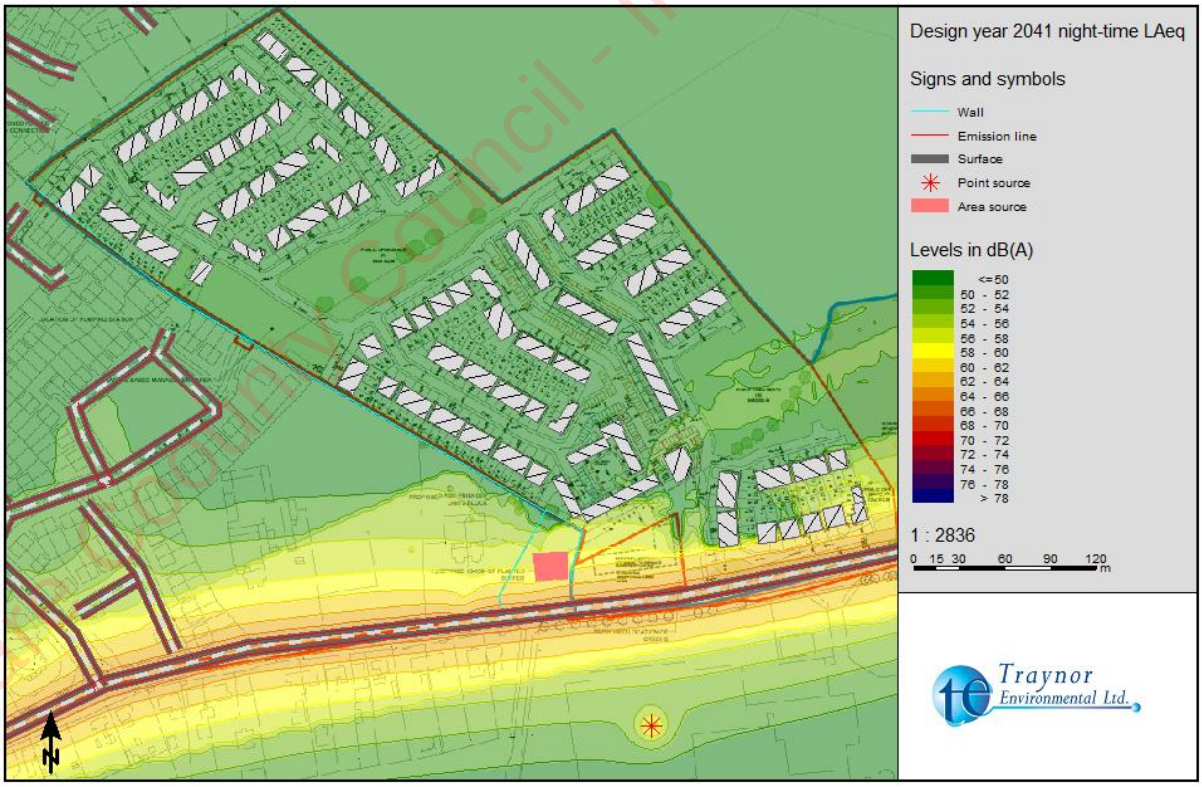

Figure 8.7: Design year 2041 night-time LAeq 1 h levels (indicative site boundary)

Pro-PG Stage 1: Risk assessment

No Change

Pro-PG Stage 2 element 1: Good acoustic design process

No Change

Pro-PG Stage 2 element 2: Internal noise level guidelines

Internal noise criteria are discussed above. Assuming a 15 dB reduction through an open window (the conventionally accepted value, identified in NANR116: Open/Closed Window Research – Sound Insulation Through Ventilated Domestic Windows (prepared by the Napier University Building Performance Centre for DEFRA, 2007)), the following conclusions are drawn:

- Recommended internal daytime LAeq 16 h criteria are 35-40 dB. These criteria will be met with open windows where incident levels do not exceed 50-55 dB. The criteria will be met across most of the residential area with windows open.
- At dwellings fronting the R445, RW value of 33 glazing is likely to allow compliance with criteria with windows closed in living rooms ,dining rooms and bedrooms.
- The recommended L_{night} criterion in bedroom is 30 dB. As before, this criterion will be met across most of the residential area with windows open. Installation of RW value of 33 glazing identified in the previous paragraph will allow internal night-time criteria to be achieved at bedrooms facing the R445.
- Facades within 100 m of the R448 will be exposed to more than 10 L_{AFmax} events at night which exceed 60 dB. The World Health Organisation (1999) recommends that LAFmax levels in bedrooms should not exceed 45 dB to prevent sleep disturbance. Where the number of events exceeds 10 per night, the objective is thus to ensure than internal LAFmax levels with windows closed remain below 45 dB. Standard thermal glazing will reduce internal LAFmax levels below 45 dB at almost all bedrooms across the site, including most units within the 100 m corridor along the R445. At units directly fronting the R445, external LAFmax levels may reach 80 dB, and standard thermal glazing will be insufficient. The RW 33 dB recommendation above will also be insufficient, and it will be necessary to further increase RW values here. A conservative RW value of 38 dB is recommended at bedrooms within 20 m of the R445. Standard thermal glazing will be sufficient at other facades.

The operational phase mitigation required onsite relates solely to inward impacts associated with R445 traffic and industrial noise. Internal LAeq T criteria will be met at most residential units using standard thermal glazing. However, certain facades will require enhanced glazing to meet ProPG and BS 8233:2014 criteria. The facades in question are shown in Figure 8-19. At these façades, it is proposed to install glazing with a minimum RW value of 33 dB in living rooms and dining rooms, and 38 dB on bedrooms. Standard glazing will suffice in kitchens, bathrooms, hallways, and stairwells. Table 8-13 shows recommended glazing specifications, along with ventilation requirements.

Table 8-13 specifications are readily achievable, and a number of suppliers offer suitable products. It is necessary that the glazing RW value is guaranteed by the window supplier rather than by the individual glazing and frame manufacturers. Potential suppliers should be advised that levels in each octave band should be achieved as a minimum. Compliance with the overall RW value should only be assessed by reference to the RW+Ctr value, typically 4-5 dB higher than the RW value alone.

Band	63 Hz (dB)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Total

		(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
Dining & living glazing	15	17	21	30	38	36	35	35	33 dB Rw
Dining & living trickle vent	36	36	34	31	34	38	38	38	35 dB Dn,e
Bedroom glazing	25	28	28	34	40	41	43	45	38 dB
Bedroom trickle vent	35	40	38	32	47	53	53	53	38 dB Dn,e

Table 8.2: Site glazing and ventilation requirements at facades shown in Figure 8-19

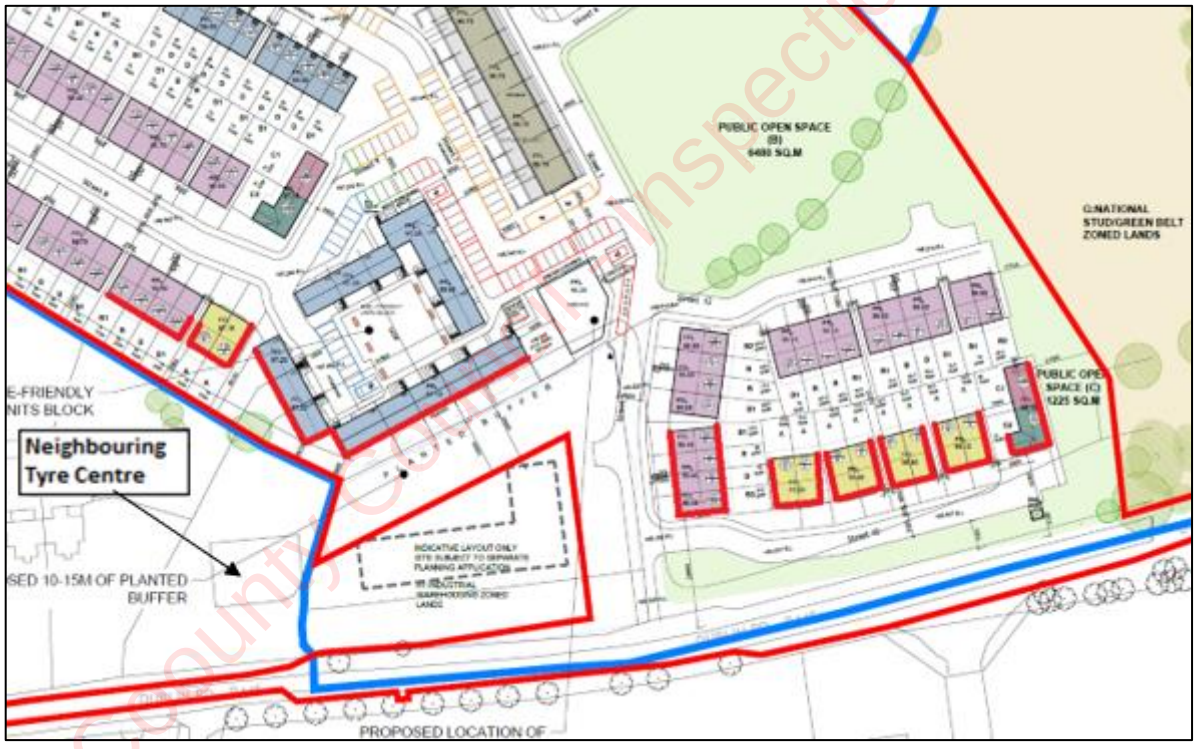

Figure 8.8: facades requiring enhanced glazing (shown red) (indicative site boundary)

It is proposed to install the glazing recommended in Table 8.13 and shown in Figure 8.19 to the proposed facades located to the north of the adjacent Tyre Centre and along the R445. This will reduce the potential for future complaints from the existing residents adjacent to the Tyre Centre and the R445.

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The results of the modelling show that the proposed age friendly housing units close to the tyre centre and houses located close to the R445 will be protected from potential noise impact by the installation

of triple glazing windows (min 38dB reduction) and façade acoustic ventilation which will also have a minimum Reduction of 38dB.

External amenity areas will be satisfactory in the context of WHO and ProPG criteria. At the proposed creche, received LAeq 16 h levels will be satisfactory in the context of Technical Guidance Document TGD-021-5, and specific mitigation measures are not required. Standard thermal glazing is expected to be sufficient to meet an internal ambient LAeq 30 min criterion of 35 dB.

Pro-PG Stage 2 element 3: External amenity area noise assessment

BS 8233:2014 recommends that LAeq 16 h levels should ideally not exceed 50-55 dB in external amenity areas. This criterion will be met in rear gardens of all housing units.

Where LAeq 16 h levels in amenity areas exceed 50-55 dB, BS 8233:2014 states that:

'These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces but should not be prohibited.'

In this regard, ProPG adds:

'Where, despite following a good acoustic design process, significant adverse noise impacts remain on any private external amenity space (e.g. garden or balcony) then that impact may be partially off-set if the residents are provided, through the design of the development or the planning process, with access to…a relatively quiet, protected, publicly accessible, external amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance).'

The residential area will incorporate a number of onsite open green spaces, all within several minutes' walk. Residents of all units will therefore benefit from provision of an extensive open, accessible, and quiet onsite realm. On this basis, noise levels in amenity areas will be satisfactory.

Pro-PG Stage 2 element 4: Assessment of other relevant issues

Other issues assessed, as recommended by ProPG, include the following:

- Compliance with relevant national and local policy: The most relevant policies are those set out in the County Kildare Third Noise Action Plan 2019-2023. The plan proposes that mitigation will be applied where Lden levels exceed 70 dB, and Lnight levels exceed 57 dB. Onsite Lden noise levels do not exceed the 70 dB criteria and are not expected to exceed them in the future.
- Magnitude and extend of compliance with ProPG: LAeq 16 h and Lnight levels in almost all proposed units will meet identified criteria without specific acoustic mitigation measures. Measures required relate solely to units fronting the R448 and are discussed below.
- Likely occupants of the development: The proposed development is expected to be occupied by a typical sample of the population and is unlikely to see a predominance of one particularly sensitive group.
- Acoustic design versus unintended adverse consequences: No adverse consequences have been identified.
- Acoustic design versus wider planning objectives: No issues have been identified.

At the proposed creche, incident LAeq 16 h levels will be considerably lower than the 51-55 dB range suggested by Technical Guidance Document TGD-021-5.

8.8 Predicted Impacts

Construction Phase

No Change

Operational Phase

Additional Vehicular Traffic

No Change

Mechanical Plant & Creche

No Change

Population & Human Health

No Change

Overall Residual Impacts

Following completion, noise emissions arising within the completed development will be identical in character to emissions arising across the nearby fringes of Kildare. Emissions will be urban residential in character and will not give rise to offsite impacts.

Noise impacts at offsite receptors attributable to vehicle movements on roadways within the completed site will be imperceptible. While increases in traffic on the surrounding road network will arise as a result of the development, much of the increase will be attributable to traffic using the R448 which will benefit the wider town. Increases associated with onsite traffic directly will be less than 2 dB, resulting in noise impacts at nearby receptors which are imperceptible.

At the completed development, inward noise emissions will arise from the surrounding road network. The future noise risk is low across most of the site when assessed using ProPG guidance, increasing to medium at units directly fronting the R448. These properties will benefit from moderately enhanced glazing on units facing these roads.

Noise levels in amenity areas and at the proposed creche will be lower than relevant criteria. Residents will benefit from onsite green spaces.

EPA document Guidelines On The Information To Be Contained In Environmental Impact Assessment Reports (2022) sets out a scheme by which environmental noise impacts may be assessed. Operational phase environmental impacts are assessed in this regard in Table 8.21. This assessment scheme is not applicable to inward noise impacts, which are assessed separately through the ProPG procedure set out above.

Criterion	Impact at offsite receptors
Quality of effects	Activities within the development: Neutral effects
	Onsite traffic: Imperceptible effects
Significance of effects	Activities within the development: Imperceptible effects
	Onsite traffic: Imperceptible effects

Extent & context of effects	Activities within the development: Minimal extent, as almost all onsite sources will be inaudible offsite. Effects will conform with baseline environment which is urban-fringe in character.
	Onsite traffic: Extent extends throughout surrounding area. Effects will conform with baseline soundscape which is dominated by road traffic.
Probability of effects	Activities within the development: Effects likely to occur
	Onsite traffic: Effects likely to occur
Duration & frequency of effects	Activities within the development: Permanent, irreversible, daily
	Onsite traffic: Permanent, irreversible, daily
Types of effects	Indirect effects: None identified at offsite receptors
	Cumulative effects: Discussed below
	Do-nothing effects: None identified at offsite receptors
	Worst case effects: None identified at offsite receptors
	Indeterminable effects: None identified at offsite receptors
	Irreversible effects: Effects will be irreversible
	Residual effects: None identified at offsite receptors
	Synergistic effects: None identified at offsite receptors

Table 8.3: Assessment of offsite noise impacts from completed development.

Adjacent Tyre Centre

Noise levels associated with the operation of the adjacent Tyre Centre are mitigated against with triple glazing windows (min 38dB reduction) and façade acoustic ventilation. The noise impact from this source will be of neutral, Imperceptible, long-term impact.

8.9 'Do Nothing' Scenario

No Change

8.10 Worst Case Scenario

No Change

8.11 Monitoring & Reinstatement

No Change

8.12 Difficulties in Compiling Information

No Change

8.13 References

No Charge

8.14 Glossary

No Charge

9. Climate & Air Quality

9.1 Introduction

No Change

9.2 Methodology

No change

9.3 Receiving Environment

No change

9.4 Characteristics of The Proposed Development

"Slight amendment"

The proposed development will consist of a Large-scale Residential Development of 285 no. units. The development will include one, two, three and four bed units in the form of two storey detached, semi-detached / terraced houses, along with 3 no. three storey duplexes/apartments and a single storey age friendly accommodation block. The development also includes a creche and multifunctional space along with associated car parking, bicycle parking, landscaping, and open spaces. Vehicular and pedestrian access will be provided from the Dublin Road (R445) and via Ruanbeg Avenue. Additional pedestrian access will be provided via Ruanbeg Park. All other site works including boundary treatments and site services to facilitate development.

When considering a development of this nature, the potential air quality and climate impact on the surroundings must be considered for each of two distinct stages:

A. - Construction phase.

B. - Operational phase.

During the construction stage the main source of air quality impacts will be as a result of fugitive dust emissions from site activities. Emissions from construction vehicles and machinery have the potential to impact climate. The primary sources of air and climatic emissions in the operational context are deemed long term and will involve the change in traffic flows or congestion in the local areas which are associated with the development.

The following describes the primary sources of potential air quality and climate impacts which have been assessed as part of this EIAR.

Do-Nothing Scenario

The Do-Nothing scenario includes retention of the current site without the proposed residential development in place. In this scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc).

9.5 Potential Impacts

No change

9.6 Mitigation Measures

No change

9.7 Residual impacts

No change

9.8 'Do Nothing' Scenario

No change

9.9 Worst Case Scenario

No change

9.10 Monitoring & Reinstatement

No change

9.11 Difficulties in Compiling Information

no change

9.12 References

No change

10. Landscape and Visual

10.1 Introduction

No change.

10.2 Methodology

No change.

10.3 Receiving Environment

No Change.

10.4 Characteristics of the Proposed Development

No Change.

10.5 Potential Impacts

No change.

10.6 Potential Cumulative Impacts

No change.

10.7 Mitigation Measures

No change.

Construction Phase

No change.

Operational Phase

The retained landscape features will be incorporated into the overall landscape proposals which will bolster the existing green infrastructure of the existing Proposed Development site and immediate surroundings.

Existing lines of mature trees within the Proposed Development site will be incorporated as a key feature within the areas of public open spaces. These spaces will also include valuable functioning SUDS features including a bioretention pond on the western boundary.

Planting across the Proposed Development will include trees, hedges, shrubs, perennials, wildflower meadow, wetland planting, amenity/private grassland. The planting will consist of a range of suitable native and non-native non-invasive species which across the various open spaces and gardens will help to soften the appearance of the buildings and act as a visual barrier to reduce potential visual

impacts. The amended landscape masterplan provides additional mitigation measures in the form of new hedgerow and tree planting along the Proposed Development's southern roadside boundary specifically to act as a visual barrier between the Proposed Development and road users travelling along the adjoining R445 scenic route in order to reduce any potential visual impacts.

10.8 Predicted Impacts

Predicted Landscape Impact

No change to the Predicted Landscape Impact Section, as the principles of the proposed development remains the same and the site layout revisions occurs within the same site boundary limits and require no further loss of any existing retained vegetation.

The potential localised impacts and effects are primarily visual and are described below in the Visual Impact Assessment below.

Landscape Sensitivity Assessments

No change

Predicted Landscape Impacts and Effects

Construction Phase

No change

Predicted Visual Impact

The original LVIA submitted considered a total of twelve viewpoints to be assessed which took into consideration the views/setting of the Proposed Development within the local context. These twelve existing views and proposed photomontages were provided as a set by Urban 3D and accompanied the original LVIA.

All twelve viewpoints were initially reviewed against the remodelled site layout to help determine any potential visual changes to the original modelled views as a result of the proposed RFI site layout changes. Only three of the twelve viewpoints (nos. 1, 6 and 7) were considered likely to experience any perceptible changes to their previous modelled views due to the proposed development's revised design. There would also likely to be a slight alternation to the red outline, indicating the proposed development's limited visibility, from four viewpoints nos. 9, 10, 11, and 12. The seven views were remodelled by Urban 3D and a set of new photomontages were produced for the affected viewpoints.

The set of RFI photomontage visuals were subsequently reassessed to determine if the revised RFI site layout would have any notable changes to the previously predicted visual effects for the same viewpoints as the original LVIA. The seven reassessed views are listed below and locations indicated on Figure 10.20 and 10.21, with the set of revised photomontages provided as an appendix to this report.

The revised photomontages pack can be viewed alongside the previously submitted photomontages pack to allow for comparison between the verified views from the same seven selected viewpoints which reflect the resulting visual changes due to the proposed development's RFI revised site layout.

Zone of Visual Influence and Potential Visual Receptors

Figures updated with circling of the viewpoints to be reassessed in this assessment.

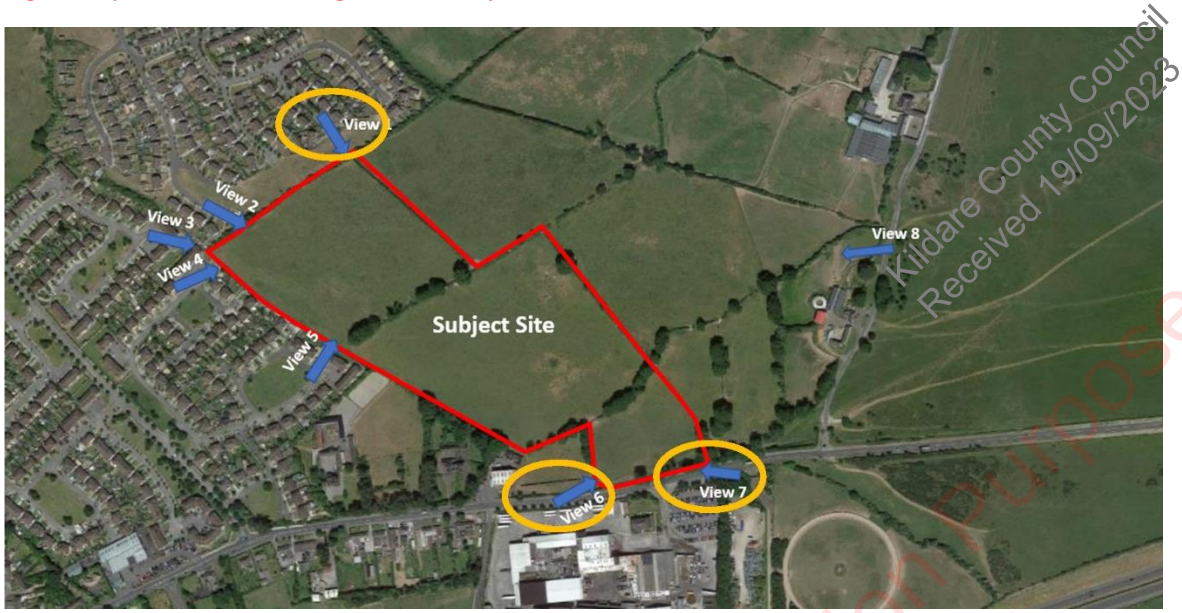

Figure 10.1: Viewpoint Locations Map – short and medium distance (Indicative red line boundary, refer to Ch.3 for accurate site boundary)

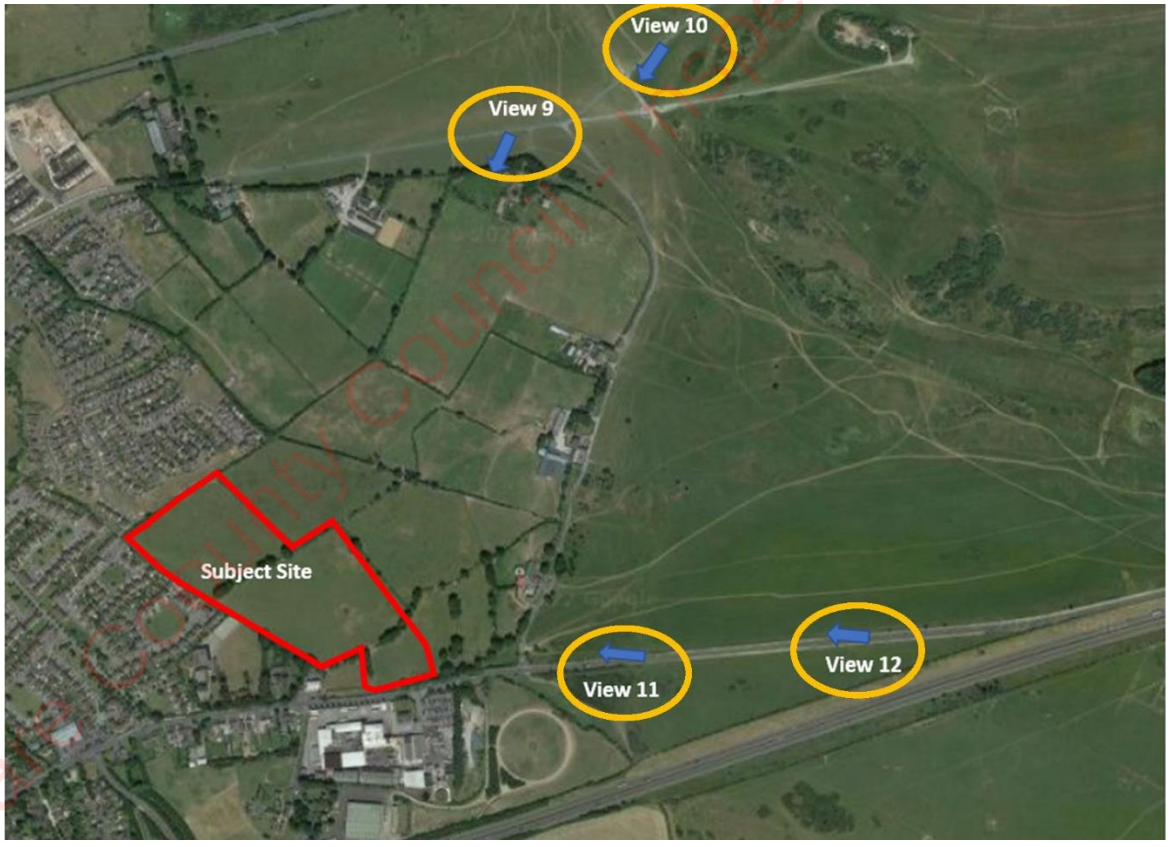

Figure 10.2: Viewpoint Locations Map - Long-distance views (Indicative red line boundary, refer to Ch.3 for accurate site boundary)

VP	Location / Description	Rationale for Selection	Expected Visibility	Sensitivity Rating

01	Coolaghknock Close	Representing residential receptors and road users	Visible	High
06	Dublin Road (R445)	• Representing road users • Representative of views from Scenic Route 3	Partially	High
07	Dublin Road (R445)	• Representing road users • Representative of views from Scenic Route 3	Partially	High
09	Melitta Road (R413)	• Representing road users • Representative of views from Scenic Route 4	Limited / No visibility	High
10	Melitta Road (R413)	• Representing road users • Representative of views from Scenic Route 4	No visibility	High
11	Dublin Road (R445)	• Representing road users • Representative of views from Scenic Route 3	No visibility	High
12	Dublin Road (R445)	• Representing road users • Representative of views from Scenic Route 3	No visibility	High

Table 10.1: Viewpoint Locations

Table 10.6 updated listing only the seven viewpoints to be considered for review below.

Viewpoint Descriptions

The following provides the original LVIA assessment text in black for the seven reviewed viewpoints, for ease of reference. Any amendments to this text and commentary on any perceived changes to each proposed view as a result of the revised site layout changes are in red.

Viewpoints Assessment

Viewpoint 1 - Coolaghknock Close

Existing View

The view is looking south from Coolaghknock Close. This is a close distance view of the site from a local road in a residential neighbourhood by the edge of open space. The views would be representative of views enjoyed by residential receptors, road users and pedestrians. The subject site is visible from this location, through gaps in the hedgerow which runs along the edge of the open space and site's northern boundary. During winter months there are partial views of the Kildare Chilling Company factory buildings and some houses in the existing Ruanbeg estate to the west of the Site.

The viewpoint sensitivity is High - v*iewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features)*

Visual Impacts and Effects

Construction Phase

Views of the construction phase will be greatest along the Site's northernmost field. The present of the hedgerows, trees and site hoarding help to partially restrict views of the ground level activity while

upper-level activity will be visible. These views will be slightly increased views in winter when the hedgerow and trees are lacking vegetation coverage.

The magnitude of change would be Low, the significance of effect would be Moderate-Slight Adverse Temporary.

Operational Phase

The proposed development is partially screened by the existing hedgerow and the full extent of the development is hidden from this location. The view will contain the rear view of a groups of two storey houses and their rear enclosed gardens located along the site's eastern edge and some roofs of other houses near the northern end of the site, with views greatest in the winter months.

Views will be greatest around the open spaces, while views from most residences are facing out onto Coolaghknock Close away from the proposed development some may experience partial views from windows located in upper storeys and frontages of residential dwellings located at higher elevations. It is expected that the proposed development would be a minor intrusion and would not be uncharacteristic in the context.

The Magnitude of change would be Low- *Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity*

The significance of effect would be Moderate-Slight the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Change to the proposed view:

The revised site layout will result in the removal of the duplex blocks from the northeast end of the site and their replacement with groups of houses within the proposed view. There will be a reduction in the overall building height and changes to the façade, where the previous brick faced, and flat roofed duplex profile is replaced by the lower slate roofs and a mix of brick to the gable ends and white plastered walls to the rear of the houses. The change will help provide greater continuity with the other housing proposed along the site's northern boundary and within the existing housing in the adjoining Coolaghknock Close estate.

The revised RFI landscape layout visible within this view will result in replacing the previously proposed communal open space landscaping of shrubs, trees and grasses around the duplexes with private grassed garden spaces to the rear of the groups of new houses each enclosed by concrete post and timber panel fencing.

Overall, these proposed changes seeks to provide a type of housing that allows greater visual transition between existing and new housing estate, due to the similarities in their built forms. On balance the predicted visual effects remain the same as per the original assessment.

Viewpoint 2 - Coolaghknock Gardens

No change.

Viewpoint 3 - Ruanbeg Cresent

No change.

Viewpoint 4 - Ruanbeg Avenue

No change.

Viewpoint 5 - Ruanbeg Park

No change.

Viewpoint 6 - Dublin Road (R445) / Scenic Route 3

Existing View

The view is looking north-east from Dublin Road (R445), also designated Scenic Route 3 in the development plan. The view is representative of viewers travelling along the R445 and the scenic route. The existing hedgerow and vegetation along the northern section of the R445 fully screens the views enjoyed from the route. The proposed site is partially visible from gaps in the vegetation.

The viewpoint sensitivity is High - *Viewers at viewpoints that are recognised in policy or otherwise designated as being of value. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes.*

Visual Impacts and Effects

Construction Phase

There will be a notable change to this view with the result of the hedgerow and tree removal along the site's roadside southern boundary edge to accommodate the works. Hoarding will run the length of this boundary which will help contain most views of the site's ground level activity while views of the upper level activity above the hoarding will be possible. There will also be views of construction site traffic coming onto/off the main road from the new site entrance.

The magnitude of change would be Medium, the significance of effect would be **Significant Adverse Temporary.**

Operational Phase

The proposed development includes removal of the existing site boundary hedgerow and 8 no. trees along the northern section of the road. These elements will be replaced by the new landscaping along the boundary edges of the proposed development. The revised planting will include reinstatement of the site's roadside boundary with a new native hedgerow and 8 standard to semi-mature size trees to help contain inward views of the new housing from the KCC scenic route. Such views will reduce overtime as the new boundary vegetation thickens out.

The proposed development would introduce new housing and activity around the new entrance and a shared public footpath/cycle path (on both side of the road). The architectural treatment of the house's facades have been revised, as shown on the photomontage, so to improve the visual characteristics of the nearest set of houses where viewed by those receptors travelling the section of

KCC scenic route adjacent to the site boundary. These alternations from rural lands to new housing estate would initially represent change to the view and character of the existing road. Over time as the proposed landscaping and new boundary treatment establish this change would reduce.

The magnitude of change would be Medium – *introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity*

The significance of the effect is Significant and would remain so in the Short Term.

Qualitatively the impact would initially be to **Adverse in the short term**: *Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.*

Before reducing to **Neutral in the Medium and Long Term**.

Change to the proposed view:

The visual changes within this proposed view as a result of the revised site layout include changes to the landscape boundary treatment along the roadside, some changes to the ground floor facades of the nearest houses, amended road layout and street elements.

The revised landscape treatment is intended to provide greater enclosure of the Proposed Development when viewed from this point along the scenic route than that of the original landscape masterplan. This can be seen when comparing this viewpoint's photomontages figures of the original EIA and those included in this RFI appednum. Where a new hedgerow provides a stronger visual barrier between the new housing estate and the upgraded public road which along with new trees help to partially screen some of the built elements. The new native hedgerow and trees will also help reinstate the length of existing hedgerow and trees being removed to accommodate the works and maintain a continuous roadside hedgerow boundary in keeping with other nearby fields located along the periphery of Kildare towns' urban-rural edges and the Curragh Plains. The architectural changes to the new houses facade include subtle textural material changes which will help to improve their built character and further integrate the new housing into its surroundings.

Overall, these proposed changes seek to provide an improved boundary edges and greater integration of the proposed schemed when viewed by passing route users along this sensitive scenic route.

On balance the predicted visual effects remain the same as per the original assessment, where the impacts will be initially greatest in the short term prior to the landscaping become fully established in the medium to long term and helping to reduce the initial impact.

Viewpoint 7 - Dublin Road (R445) / Scenic Route 3

Existing View

The view is looking north-west from Dublin Road (R445), also designated Scenic Route 3 in the development plan. The view is representative of viewers travelling along the R445 and the scenic route. The existing hedgerow and vegetation along the northern section of the R445 fully screens the views enjoyed from the route. The proposed site is partially visible from gaps in the vegetation.

The viewpoint sensitivity is High - *Viewers at viewpoints that are recognised in policy or otherwise designated as being of value. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes.*

Visual Impacts and Effects

Construction Phase

The changes to this view are very similar to viewpoint above, as a result of the removal of the site's roadside boundary trees and hedgerows.

The magnitude of change would be Medium, the significance of effect would be **Significant Adverse Temporary.**

Operational Phase

The proposed development includes removal of the existing site boundary hedgerow and 8 no. trees along the northern section of the road. The proposed changes to the existing views will be similar to viewpoint 6, but viewed in the opposite direction of travel. Here the boundary vegetation is replaced by the new landscaping, new footpaths/cycleways and new housing located along the southernmost end of the proposed development. As outlined in viewpoint 6 above the revised landscape boundary treatment includes a new native hedge and 8 trees to help further reduce inward views from this point along the scenic route. Similarly, the view contains the same set of roadside houses as viewpoint 6 and the revised architectural changes to their facades to help improve their appearance when viewed looking westwards from this point in the scenic route.

These alternations would initially represent change to the view and character of the road. Over time as the proposed landscaping and new boundary treatment establish this change would reduce.

The magnitude of change would be Medium – *introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity*

The significance of the effect is Significant and would remain so in the Short, Medium and Long Term.

Qualitatively the impact would initially be to **Adverse in the short term**:- *Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.*

Before reducing to **Neutral in the Medium and Long Term**.

Change to the proposed view:

Here the proposed visual changes are very similar to those outlined above for viewpoint 6 as a result of the same material changes to the site's boundary landscape treatment and front facades of the new houses.

On balance the predicted visual effects remain the same as per the original assessment, where the impacts will be initially greatest in the short term prior to the landscaping become fully established in the medium to long term and helping to reduce the initial impact.

Viewpoint 8 – Local Road L7022 / Curragh View / Curragh Plains

No change

Viewpoint 9 - Melitta Road (R413)

Existing View

The view is looking south-west from Melitta Road (R413), also designated Scenic Route 4 in the development plan. The viewpoint is located about 750m north from the site boundary. The view is representative of viewers travelling along the R413 and the scenic route.

The Scenic Route offers splendid views of the Curragh Plains. There is thick woodland running parallel along the south of the scenic route stretching from local road L7022 towards the edge of the town. The woodland area effectively screens any long distance views oriented towards south and south-west, that is towards Kildare Town and the site respectively, from the scenic route. The site is not visible from this viewpoint.

The viewpoint sensitivity is High - *Viewers at viewpoints that are recognised in policy or otherwise designated as being of value. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes.*

Visual Impacts and Effects

Construction Phase

The site works will be barely visible through minor gaps in the intervening hedgerows, trees and fenceline during winter months.

The magnitude of change would be Negligible, the significance of effect would be **Not Significant** Neutral Temporary.

Operational Phase

The proposed development is not clearly visible from this location due to being heavily screened by the intervening trees and hedgerows. Here any potential views are very limited to the uppermost roofline of a small portion of houses on the eastern end through minor gaps within the intervening field boundaries and only appearing as a very minor intrusion in the winter months and not necessarily uncharacteristic in the view.

The magnitude of change would be Negligible – *Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity*.

The significance of effect would be Slight-Not Significant in the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Change to the proposed view:

The change to this view is as a result of the revised site layout with the replacement of the three-storey duplex with the two storey groups of houses on the site's eastern boundary. The change in building types and slight decrease in visibility of built structures within this view, being greatest in winter, will slightly reduce the original LVIA assessment's significance of effects from Slight-Not Significant to Not Significant.

Viewpoint 10 - Melitta Road (R413)

Existing View

The view is looking south-west from Melitta Road (R413), also designated Scenic Route 4 in the development plan. The viewpoint is located about 1.2km north from the site boundary. The view is representative of viewers travelling along the R413 and the scenic route.

The Scenic Route offers splendid views of the Curragh Plains. There is thick woodland vegetation running parallel along the south of the scenic route stretching from local road L7022 towards the edge of the town. The woodland area effectively screens any long distance views oriented towards south and south-west, that is towards Kildare Town and the site respectively, from the scenic route. The site is not visible from this viewpoint.

The viewpoint sensitivity is High - *Viewers at viewpoints that are recognised in policy or otherwise designated as being of value. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes.*

Visual Impacts and Effects

Construction Phase

Views toward the proposed development will be restricted by the intervening field boundary hedgerow vegetation.

The magnitude of change would be None, the **significance of effect would be None.**

Operational Phase

There will be no impacts or effects on this view as the proposed development will be screened by the intervening field boundary vegetation in the summer months. Some very minor views of the uppermost portions of housing nearest the site entrance maybe visible above the intervening and backdropped by the factory buildings.

The magnitude of change would be None to Negligible – *Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity*.

The significance of effect would be Slight-Not Significant in the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Change to the proposed view:

Very slight change to the red outline on the rightside of the revised visual figure (northern end of site) as a result of the replacement of the duplex with houses on the site's eastern boundary. However, it doesn't affect the original assessment as this part of the proposed site is already heavily screened by the intervening trees.

Viewpoint 11 - Dublin Road (R445) / Scenic Route 3

Existing View

The view is looking west from Dublin Road (R445), also designated Scenic Route 3 in the development plan. The viewpoint is located 300m east from site boundary. The view is representative of viewers travelling along the R445 and the scenic route.

The Scenic Route offers splendid views of the Curragh Plains, viewing north from the route. The topography of the landscape is slightly undulating at this location. The existing hedgerows and trees in between the site and the viewpoint effectively screens views towards the town and the site from this location. Where there are gaps in the vegetation the ridges of the residences in the Coolaghknock neighbourhood (north of the site) is clearly visible.

The viewpoint sensitivity is High - *Viewers at viewpoints that are recognised in policy or otherwise designated as being of value. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes.*

Visual Impacts and Effects

Construction Phase

Views toward the proposed development will be restricted by the intervening field boundary hedgerow vegetation, with some potential limited views during the winter months but being barely perceptible.

The magnitude of change would be None to Negligible, the **significance of effect would be None to Slight-Not Significant.**

Operational Phase

Any potential views are limited to the winter months, as views are heavily screened by the intervening mature field boundary hedgerows and trees.

During the winter months there will be some limited heavily filtered views of the buildings on the eastern end of the proposed development through minor gaps in the intervening mature field boundaries. Some views will be further reduced as the proposed boundary treatment matures overtime. The buildings are set lower down and do not affect views of the Kildare skyline from this point. Where visible, it is expected that the proposed development would be a minor intrusion and would not be uncharacteristic in the context. The existing more elevated residential development of Coolaghlnock remaining more prominent within this view.

The magnitude of change would be None to Negligible – *Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity*.

The significance of effect would be Slight-Not Significant in the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Change to the proposed view:

Very slight change to the red outline on the rightside of the revised visual figure (northern end of site) as a result of the replacement of the duplex with houses on the site's eastern boundary. This material change wouldn't affect the overall assessment, remaining the same as the original LVIA.

Viewpoint 12 - Dublin Road (R445) / Scenic Route 3

Existing View

The view is looking west from Dublin Road (R445), also designated Scenic Route 3 in the development plan. The viewpoint is located 800m east from site boundary. The view is representative of viewers travelling along the R445 and the scenic route.

The Scenic Route offers splendid views of the Curragh Plains, viewing north from the route. The topography of the landscape is mostly flat at this location.

The existing hedgerows and trees in between the site and the viewpoint effectively screens views towards the site and the town.

In the middle of the background, the town's 'Landmarks'; Round Tower, spire of St. Brigid's Cathedral, spire of White Abbey Church and spire of St. Brigid's RC Church are visible towering over the landscape. Where there are gaps in the vegetation the ridges of the residences in the Coolaghknock neighbourhood (north of the site), Curragh Plains neighbourhood and other residential areas of the town are partially visible.

The viewpoint sensitivity is High - *Viewers at viewpoints that are recognised in policy or otherwise designated as being of value. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes.*

Visual Impacts and Effects

Construction Phase

Views toward the proposed development will be restricted by the intervening field boundary hedgerow vegetation.

The magnitude of change would be None, the significance of effect would be None.

Operational Phase

As with previous viewpoint no. 11 the proposed development will be fully screened by the intervening field boundary vegetation during the summer months. Similarly, potential views of the proposed development will be very limited during the winter months, with some very minor views of buildings along the eastern end of the proposed development possible but heavily filtered through the various intervening mature field boundaries hedgerows and trees. Where visible, it is expected that the proposed development would be only a minor intrusion and would not be uncharacteristic in the context. The lower setting ensures any limited views do not affect the views from this point towards the historic buildings set against the town's skyline.

The magnitude of change would be None to Negligible – *Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity*.

The significance of effect would be Slight-Not Significant in the Short, Medium and Long Term.

Qualitatively the impact would be Neutral i.e. *Scheme complements the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality;*

Change to the proposed view:

As with previous viewpoints there is a very slight alternation to the red outline on the revised visual, by its far right (northern end of site), as a result of the change from duplexes to houses on the eastern boundary. Although there will be a material change to the housing type along the site's eastern end, with limited visibility in the winter months, overall the assessment from the original LVIA above remains the same.

Viewpoint Assessment Summary

The following tables have been adopted from the original LVIA summary of visual effects tables for both construction and operational phase showing only the selected seven viewpoints to be reviewed. The RFI Significance and Quality of the effects is stated directly beneath that of the original LVIA for each viewpoint, with 'same' stated wherever there is no variation between the values of the two assessments.

VP No.	Location	Sensitivity	Degree of Change	Significance and Quality
				Short
VP01	Coolaghknock Close	High	Low	LVIA- Moderate-Slight Adverse RFI-same
VP06	Dublin Road (R445)	High	Medium	LVIA - Significant Adverse RFI- same
VP07	Dublin Road (R445)	High	Medium	LVIA- Significant Adverse RFI -same
VP08	Curragh View / Curragh Plains	High	Negligible	LVIA - Not Significant Adverse RFI -same
VP09	Melitta Road (R413)	High	Negligible	LVIA - Not Significant Adverse RFI- same
VP10	Melitta Road (R413)	High	None	LVIA – None RFI- same
VP11	Dublin Road (R445)	High	None to Negligible	LVIA - None to Not Significant Adverse RFI-same
VP12	Dublin Road (R445)	High	None	LVIA – None RFI - same

Table 10.2: Summary of Visual Effects - Construction Phase

VP No.	Location	Sensitivity	Degree of Change	Significance and Quality		
				Short	Medium	Long
VP01	Coolaghknock Close	High	Low	LVIA - Moderate-Slight and Neutral RFI - same		

VP06	Dublin Road (R445)	High	Medium	LVIA - Significant and Adverse	LVIA - Moderate and Neutral
				RFI -same	RFI -same
VP07	Dublin Road (R445)	High	Medium	LVIA Significant and Adverse	LVIA - Moderate and Neutral
				RFI -same	RFI - same
VP08	Curragh View / Curragh Plains	High	Negligible	LVIA - Slight-Not Significant and Neutral RFI -same	
VP09	Melitta Road (R413)	High	None to Negligible	LVIA - Slight-Not Significant and Neutral RFI- -Not Significant and Neutral	
VP10	Melitta Road (R413)	High	None to Negligible	LVIA - Slight-Not Significant and Neutral RFI -same	
VP11	Dublin Road (R445)	High	None to Negligible	LVIA - Slight-Not Significant and Neutral RFI -same	
VP12	Dublin Road (R445)	High	None to Negligible	LVIA - Slight-Not Significant and Neutral RFI -same	

Table 10.3: Summary of Visual Effects - Operation Phase

The proposed development is expected to have a temporary adverse effect on the visual resource during construction. Upon operation and into the future, the development is expected to have a neutral long term / permanent effect on the visual resource.

Cumulative
No change.

10.9 'Do Nothing' Scenario
No Change.

10.10 Worst Case Scenario
No Change.

10.11 Monitoring & Reinstatement
No Change.

10.12 Difficulties in Compiling Information

No change.

10.13 Conclusion

The conclusion has been updated to reflect the proposed changes of the RFI proposed layout.

Landscape Effects

The proposed development's RFI site layout will not have any notable change to the previous assessed landscape effects of the proposed layout.in the original LVIA. As although there is a slight change to housing types and landscape proposals, overall, these changes are like what is originally proposed within the same site area and with no further loss of the site's retained hedgerows or trees.

Visual Effects

Visually, the greatest visual changes will result from the proposed development's revised variations in housing types from duplexes to houses on the northeastern boundary as viewed from around viewpoint 3. Here, the revised building type is more suited to the interface with the existing housing estate by providing better visual continuity and less structural prominence than the duplexes.

Viewpoint 6 and 7 will also experience notable changes to the proposed views along this section of the R445 road's KCC scenic route as a result of the proposed changes. These include changes to the material finishes of the front facades of the nearest houses to improve their appearance and greater enclosure of the roadside boundary with additional hedgerow and trees. Which help to better integrate the proposed development into the sensitive visual receptor along the urban-rural fringe of Kildare town.

Lesser barely perceptible changes will be experienced from the more distant viewpoints of 9-12, where the duplexes are replaced by the housing on the site's northeastern corner resulting in the reduction of the roofline at this end which is barely visible in winter months from some points.

Cumulative Effects

No Change

<u>Summary</u>

The key proposed changes to the site layout are attended to help reduce the prevalent of the new housing from the nearby existing housing estate to the northeast and improve it's architectural characteristics around its entrance when viewed travelling along the KCC scenic route to the south.

On review the proposed changes will have some localised positive visual changes over the previous proposed building layout. Overall, these changes on balance, do not alternate from the original findings of the LVIA which concluded:

The development is regarded as a complementary and neutral change to the landscape amenity of the area and in keeping with change proposed in local policy.

Visually, the change is regarded as qualitatively 'neutral' as it represents change that is in character with other elements in the landscape or, if initially adverse, will be mitigated in the Medium and Long Term by planting and screening.

10.14 References

No Change.

11. Traffic and Transportation

11.1 Introduction

No change

11.2 Methodology

No change

11.3 Receiving Environment

Site Location

No change

Land Use

No change

Existing Road Network, Pedestrian and Cyclist Facilities

The site location in relation to the wider road network is detailed in Figure 11-4 below.

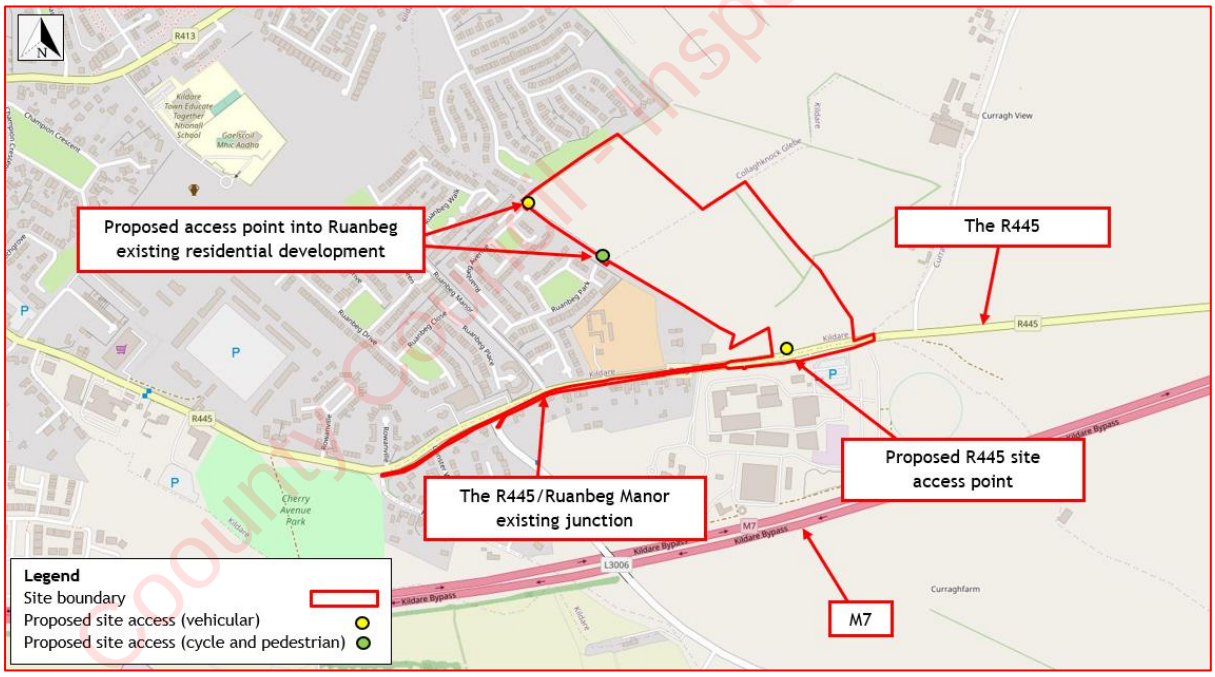

Figure 11.4: Site Location and Surrounding Road Network (Ref: www.openstreetmap.org)

A brief description of the local road network and the major road junctions is provided below:

R445

The R445 is the link between Kildare Town to the west and the M7 motorway (Junction 12) and the Curragh Racecourse located to the east. The R445 is a single lane two-way carriageway with footpaths on both sides of the carriageway and no existing designated cycle lanes. Refer to Figure 11-5.

Note: The R445 is named 'Dublin Road' on Google Maps and/or 'N7' in other instances, however The Curragh Road is used on Ordinance Survey Maps. The R445 naming convention is carried throughout this chapter.

Figure 11.5: R445 (Looking East) © Google Maps

Ruanbeg Manor

Ruanbeg Manor is the access road to the Ruanbeg existing residential housing development. It is the link with the R445 and the Ruanbeg existing residential housing development (namely Ruanbeg Park, Ruanbeg Avenue, and Ruanbeg Lawns). Ruanbeg Manor is a single lane two-way carriageway with wide footpaths and grassed verges on both sides of the carriageway and no existing designated cycle lanes. Refer to Figure 11-6.

Figure 11.6: Ruanbeg Manor (Looking South) © Google Maps

Ruanbeg Avenue

Ruanbeg Avenue is the access road to the Ruanbeg residential housing development which incorporates Ruanbeg Park, Ruanbeg Avenue and Ruanbeg Lawns. It is the link with the R445 and the existing residential housing in Ruanbeg. Ruanbeg Avenue is a single lane two-way carriageway with a

wide footpath and grassed verge on both sides of the carriageway and no existing designated cycle lanes. Refer to Figure 11-7.

Figure 11.7: Ruanbeg Avenue (Looking North) © Google Maps

Existing Public Transport Services - Bus

The following routes serve bus stops close to the proposed development site. See Figure 11-8 for an extract of Kildare's public transport network.

Go-Ahead Commuter (TFI)

French Furze Road (L3006) Stop no. 104031

- Route 126: Rathangan – Mayor Street Lower
- Route 126E: Kildare – Merrion Square West
- Route 126U: Kildare – UCD

Curragh Road (R445) Stop no. 104021

- Route 126: Rathangan – Mayor Street Lower

Kildare Town (R445) Stop no. 104001

- Route 126: Rathangan – Mayor Street Lower
- Route 126A: Kildare – Connolly Station
- Route 126B: Kildare – Mayor Street Lower
- Route 126E: Kildare – Merrion Square West
- Route 126D: Kildare – Connolly Station

- Route 126U: Kildare – UCD
- Route 726: Laois Shopping Centre – Dublin Airport
- Route 883: Athy – Dunnes Stores Newbridge
- Route UM14: Laoise Shopping Centre – Maynooth University Campus
- Route IW02: Carlow IT - Curragh

Kildare Town (R445) Stop no. 155261

- Route IW02: Curragh – Carlow IT
- Route 726: Dublin Airport – Laois Shopping Centre
- Route 126: Mayor Street Lower - Rathangan

St Brigid's Church (Bride Street) Bus Stop

- Route 883: Dunnes Stores Newbridge - Athy

Bus routes are daily. Timetables are available online.

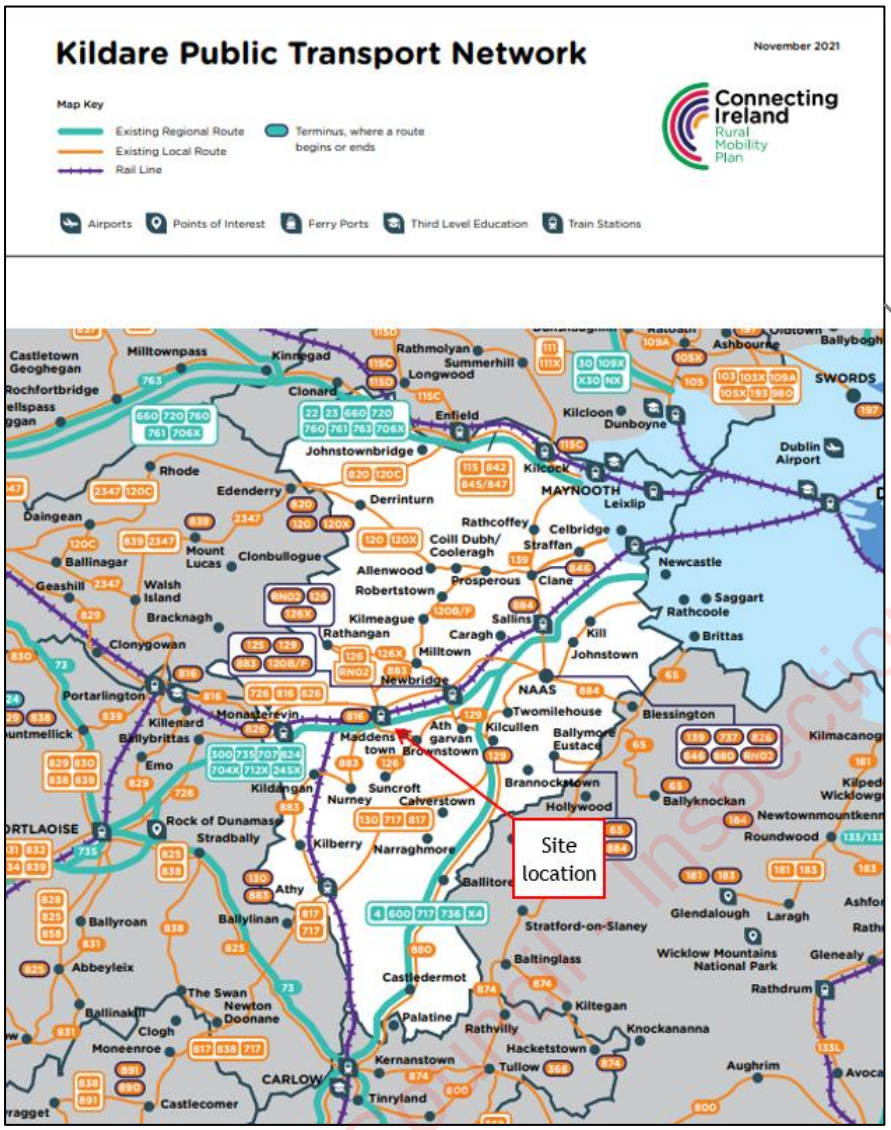

Figure 11.8: Kildare Public Transport Network (Ref: https://www.nationaltransport.ie)

The development is served by TFI Local Link bus services as shown below in Figure 11-8(a).

Local Link

Stop no. 136421

- Route 883: Athy to Newbridge

Bus routes are daily. Timetables are available online.

Figure 11.8(a): Local Link Transport Network (Ref: https://www.transportforireland.ie)

Existing Public Transport Services - Rail

No change

Table 11.1: Approximate Transport Times from the Proposed Development Site (© Google Maps)

Description	Distance*	Time Taken (minutes)*				
	(km)	Car	Train	Bus	Cycle	Walking
French Furze Road, Stop 104031	0.6	1	-	-	3	8
Curragh Road, Stop 104021	1.2	2	-	-	4	15
Kildare, Stop 104001	1.7	3	-	-	6	22
Kildare, Stop 155261	1.7	3	-	-	6	22
St Brigid's Church Bus Stop	1.8	3	-	-	6	23
Kildare Train Station	2.4	6	-	26	9	30
M7 Motorway (Jct 13)	3.0	6	-	-	-	-

**Note: Distances/times are taken from the proposed development entrance on the R445*

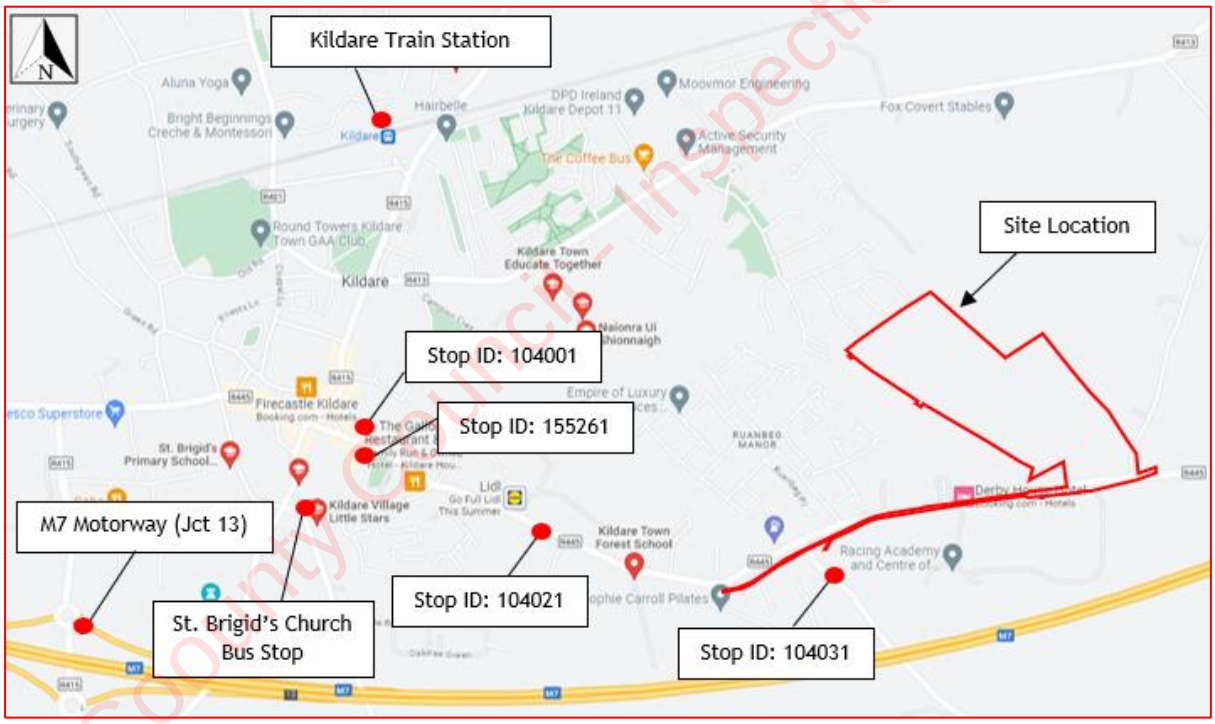

Figure 11.12: Significant existing Transport Features

Road Network Proposals

The Kildare County Council Development Plan 2023-2029 identifies a number of roads proposals and improvements to be carried out across the county in the short, medium and long term. It is noted that progress on The Kildare Town Local Area Plan (LAP) 2012-2018 (Current) plan does not identify any new road proposals in the vicinity of the site. See an extract of map 8.6 taken from the LAP in Figure 11-13**Error! Reference source not found.** below.

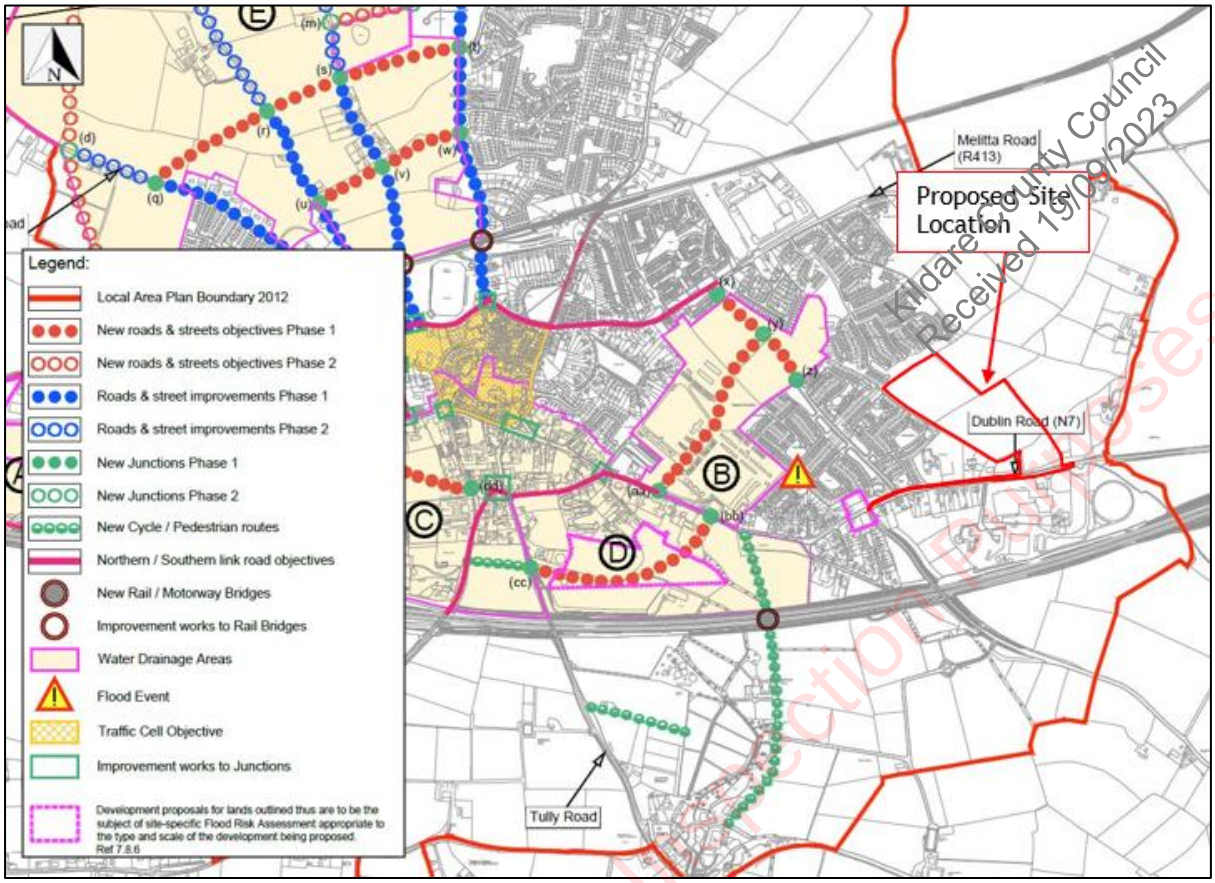

Figure 11.13: Kildare Town LAP – Excerpt from Map 8.6 (Ref: KCC LAP 2012-2018)

The Kildare Town LAP 2023-2029 (draft) outlines a variety of improvements to road, cycle and walking routes proposed west of the site. These are highlighted in Maps 7.1 and 7.2. Refer to Figure 11-14 and Figure 11-15 below.

General proposals and objectives as noted in the Development Plan are to reduce car dependency and increase the use of sustainable means of transport such as walking, cycling and the use of public transport.

The Kildare Town LAP 2023-2029 (draft) outlines a variety of road upgrades in Kildare Town as highlighted in Map 7.1, of which details are included in Figure 11-14. Road upgrades in the vicinity of the site include Former Magee Barracks Phase 1 & 2, located north-west of the site.

Further improvements to road, cycle and walking routes proposed west of the site are highlighted in Maps 7.2 and 7.3. These include public transport measures PT3 and PT4, as listed in Table 7.3 of the Kildare Town LAP 2023-2029. Refer to Figure 11-14 and Figure 11-15.

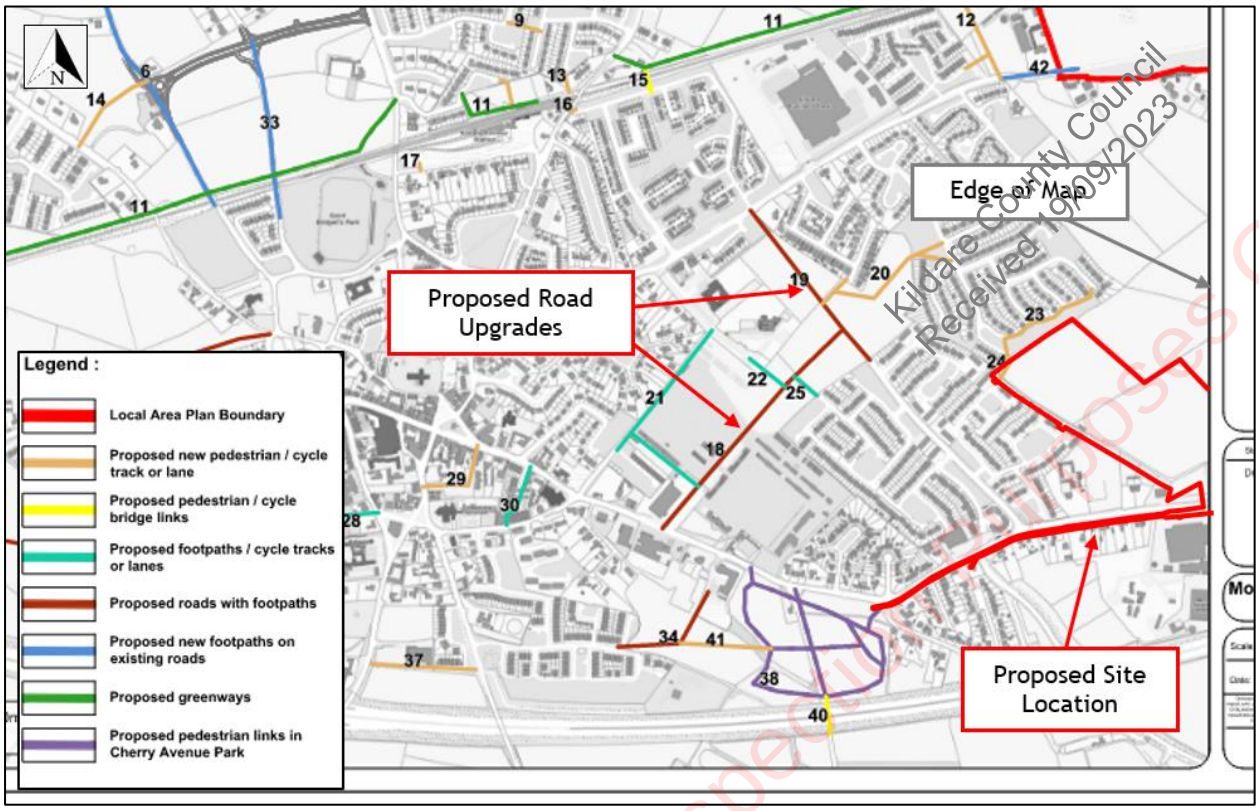

Figure 11.14: Kildare LAP 'Movement and Transportation: Permeability Measures' – Map 7.1

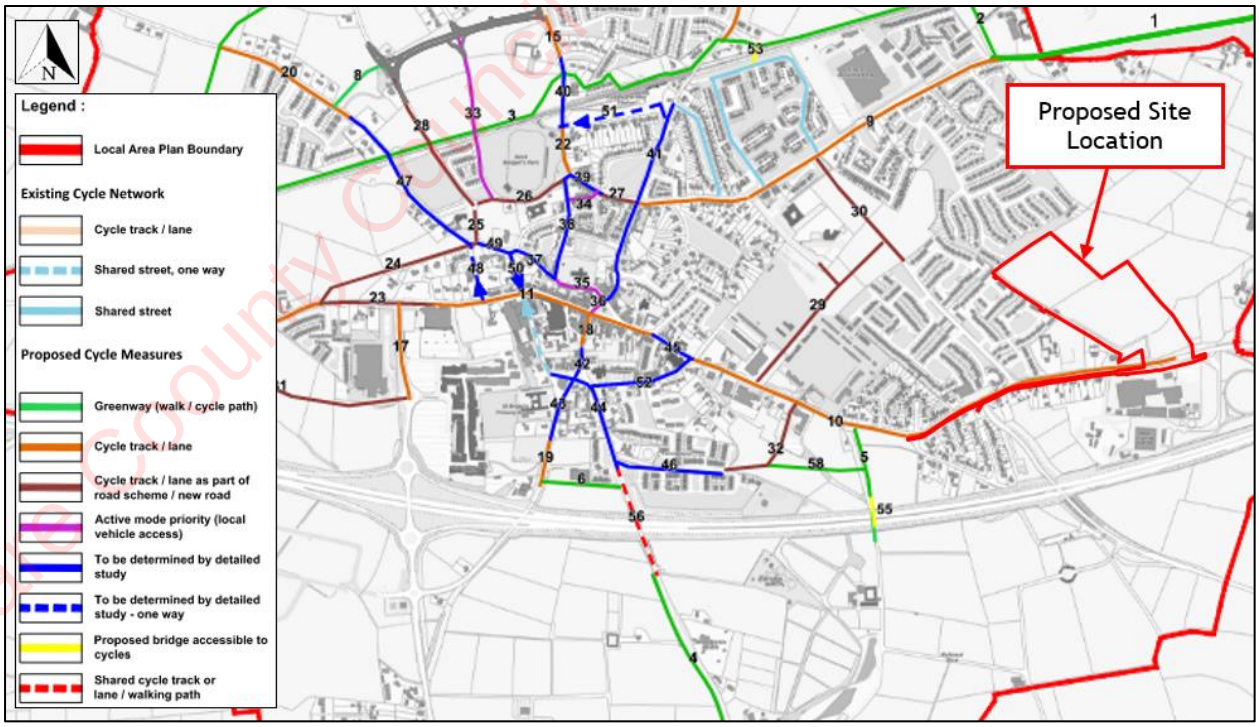

Figure 11.15: Kildare LAP 'Movement and Transportation: Cycling Measures' – Map 7.2

The removal of the pedestrian/cyclist connection to Coolaghknock is noted in the 'Proposed Material Alterations (PMAs)' of the Draft Kildare Town Local Area Plan 2023 – 2029 as shown on *Map 7.1 Permeability Measures PMAs* of the Draft LAP (refer to PMA no.s 23, 24). An extract from Map 7.1 is shown in Figure 11-15(a) below. Refer to the KCC website for further information (correct at September 2023):

https://consult.kildarecoco.ie/en/consultation/proposed-material-alterations-draft-kildare-town-local-area-plan-2023-2029

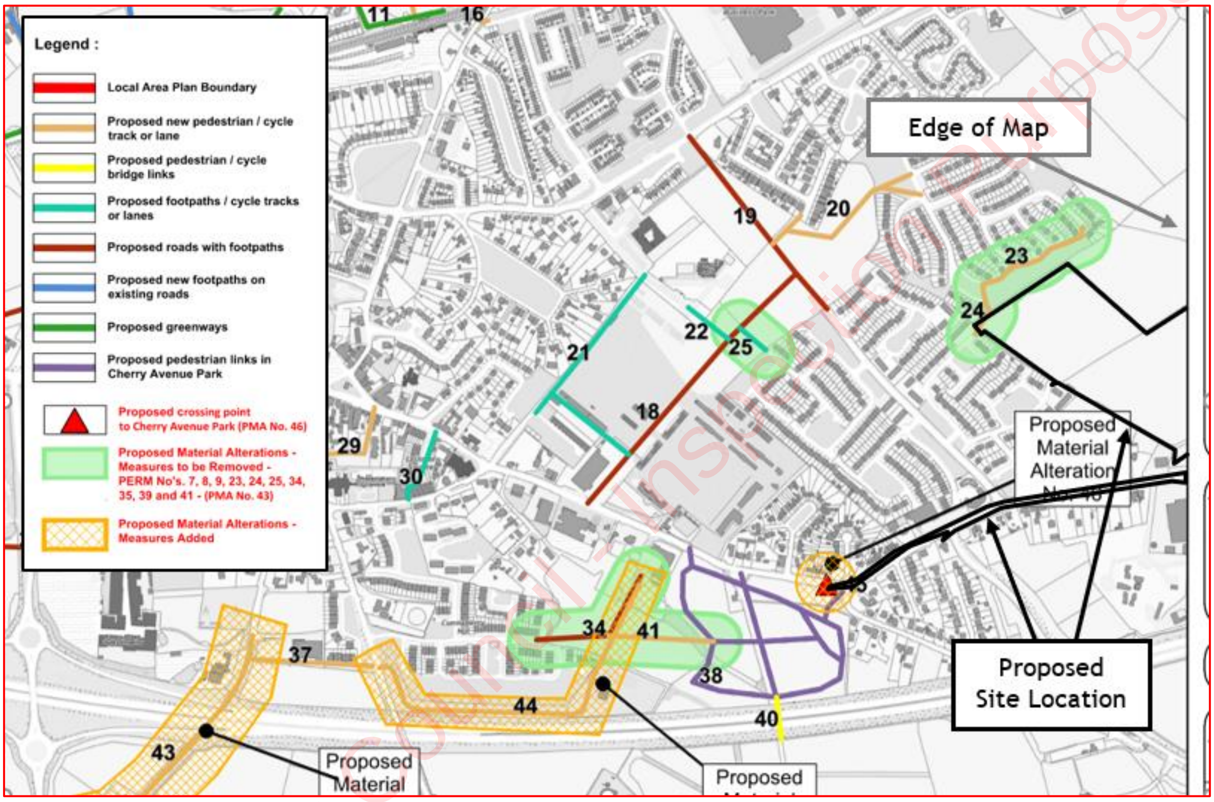

Figure 11.15(a): Proposed Material Alterations to Draft Kildare Town LAP 2023 – 2029 'Movement and Transportation: Permeability Measures' - Map 7.1

Proposed Pedestrian Facilities

The proposed development is to be provided with a footpath network within the development, as well as a new footpath along the frontage of the development.

The pedestrian footpath network provides routes to/from surrounding public transport network, including nearby bus stops located along the R445.

As part of the proposed development works, the access point on R445 will be upgraded. The works will include the upgrading of a section of the R445 along the southern border of the site to include a designated cycleway/footpath on either side of the road. A pedestrian crossing is also included as part of the upgrade.

It is proposed that vehicular traffic will access the proposed development at 2 no. locations: a primary signalised entrance on the R445 located to the south of the site, and a secondary entrance via Ruanbeg existing residential development to the northwest of the site which is accessed from Ruanbeg Manor via the R445 also. Pedestrian and cycle access will also use these access locations. There will be a further access point from the Ruanbeg existing residential development for cycle and pedestrian access only. Refer to the architects site plan for further information.

The proposed development is to be provided with a footpath network within the development, as well as a new footpath along the frontage of the development. A signalised Toucan crossing is proposed to the east of the vehicular entrance (towards the Kildare town side) on the R445. Refer to the Traffic and Transport Assessment report which accompanies this submission for further information.

Pedestrian connectivity to Coolaghknock Gardens and Coolaghknock Drive is provided as part of the architectural site plan. Refer to architectural and landscape architect's drawings for details of the proposed connections, as well as PUNCH Road Marking drawings accompanying this submission.

The development is located approximately 0.6km (8-minute walk) from a bus stop on the L3006 with key bus routes serving the stop: 126, 126E, and 126U. The site is located approximately 1.2-1.7km (15-22-minutes' walk) from bus stops along the R445 with key bus routes serving the stops such as the 126 (A-U), the 726, the 883, the UM14 and the IW02. It is also located approximately 1.8km (23-minute walk) from another bus stop on Bride Street with a key bus route serving the stop: 883. Please refer to Table 11-1 and Figure 11-12 for further information on these transport features.

Figure 11-15(b) below relates to permeability routes to adjoining estates, of which there are two main routes: (i) Via the pedestrian/cyclist connection point to the west through Ruanbeg Manor, and; (ii) Via the pedestrian/cyclist connection point to the north through Coolaghknock.

The removal is noted of the pedestrian/cyclist connection to Coolaghknock in the 'Proposed Material Alterations (PMAs)' as mentioned in the section 'Road Network Proposals' above and shown in Figure 11-15(a). It is understood that the removal of the proposed connection points to Coolaghknock may be required through the means of a planning condition. Note: The routes through Coolaghknock and Magee Barracks are to be implemented by others.

The site is in close proximity to multiple schools at various education levels. Naionra Ui Shionnaigh, Gaelscoil Mhic Aodha and Kildare Town Educate Together are in very close proximity to the site, located just northwest of the northern site boundary. Currently, there is no access point via Ruanbeg Manor to these schools, however a pedestrian access walkway from Ruanbeg Drive through Magee Barracks and into the schools' campus is proposed as part of the Magee Barracks approved planning application (planning reference: ABP-305007-19). Pedestrian access through adjacent sites will significantly reduce travel times for students travelling from the Ruanbeg proposed development and these schools will be within walking distances for parents and their children. Other schools are located near the proposed site, please see Figure 11-16 for the locations of local educational facilities and Table 11-1(a) for the various distances taken from the three site entrances shown in Figure 11-16(b).

The development is also located in the vicinity of employment areas. The site is opposite from Kildare Chilling Company, 1.2km from the HSE Kildare Primary Care Centre, 2.4km from Tesco Superstore, and 2.7km from DPD Ireland Kildare Depot by car. Refer to Figure 11-17 for locations of key employment areas.

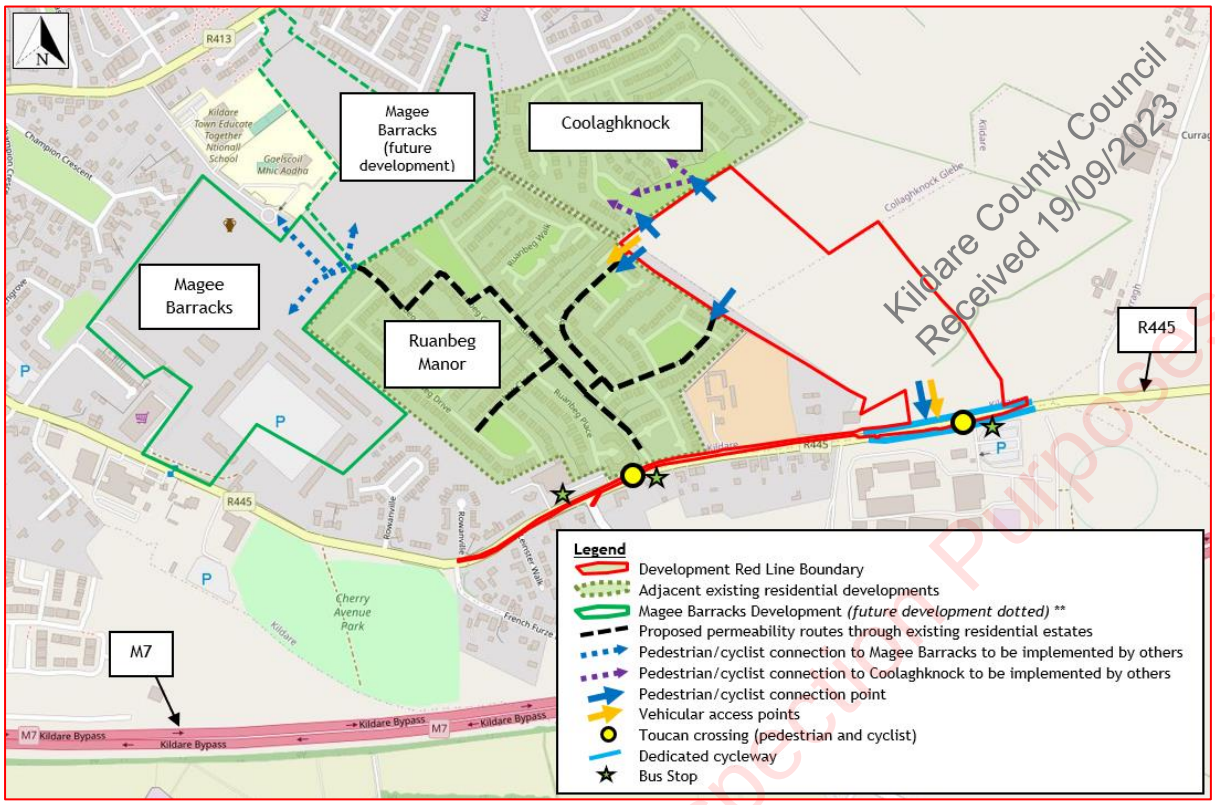

Figure 11.15(b): Site Location in relation to Adjoining Estates

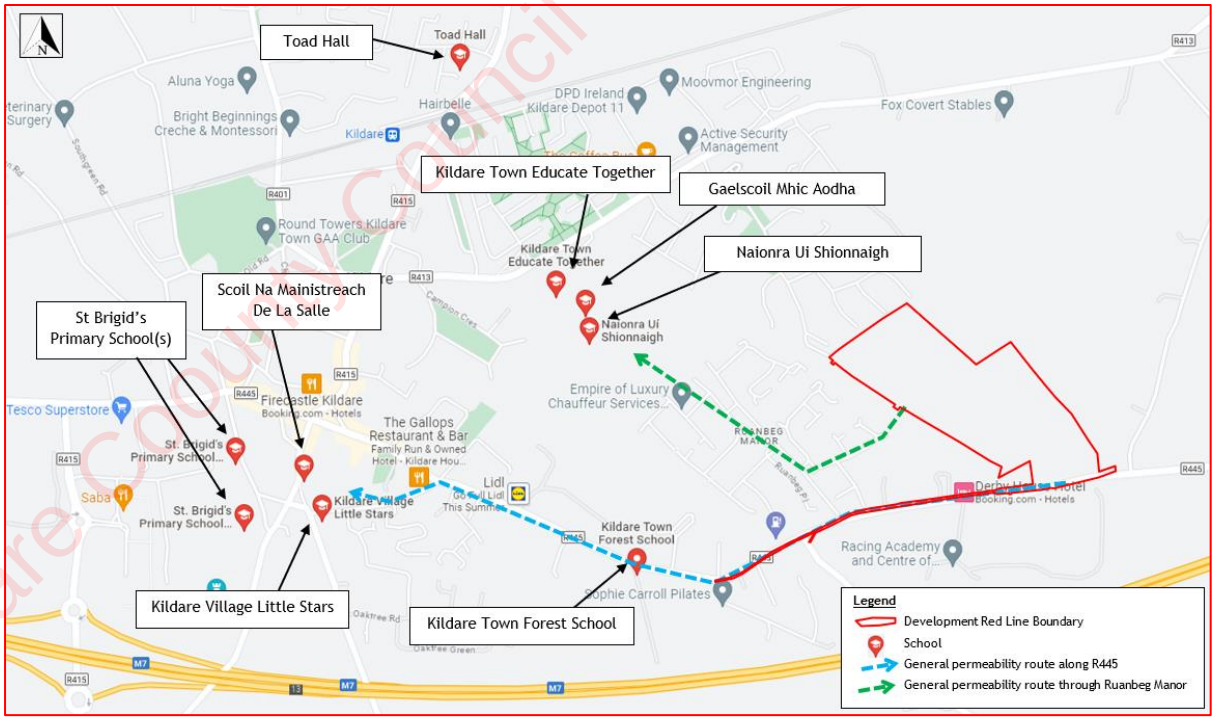

Figure 11.16: Site location in relation to Local Schools

Table 11.1(a): Distances to Local Schools from the Proposed Development Access Points

	Distance (km) from Development Entrance:		
School	**A**	**B**	**C**
Naionra Ui Shionnaigh	1.25	0.90	0.90
Gaelscoil Mhic Aodha	1.35	1.00	1.00
Kildare Town Educate Together	1.45	1.10	1.10
Kildare Town Forest School	1.00	0.95	1.00
Kildare Village Little Stars	1.80	1.70	1.80
Toad Hall	2.90	2.80	2.90
Scoil Na Mainistreach De La Salle	1.90	1.80	1.90
St Brigid's Primary School(s)	2.00	1.90	2.00

Note: Figures in Table 11-1(a) above have taken the new Magee Barracks walkway into account

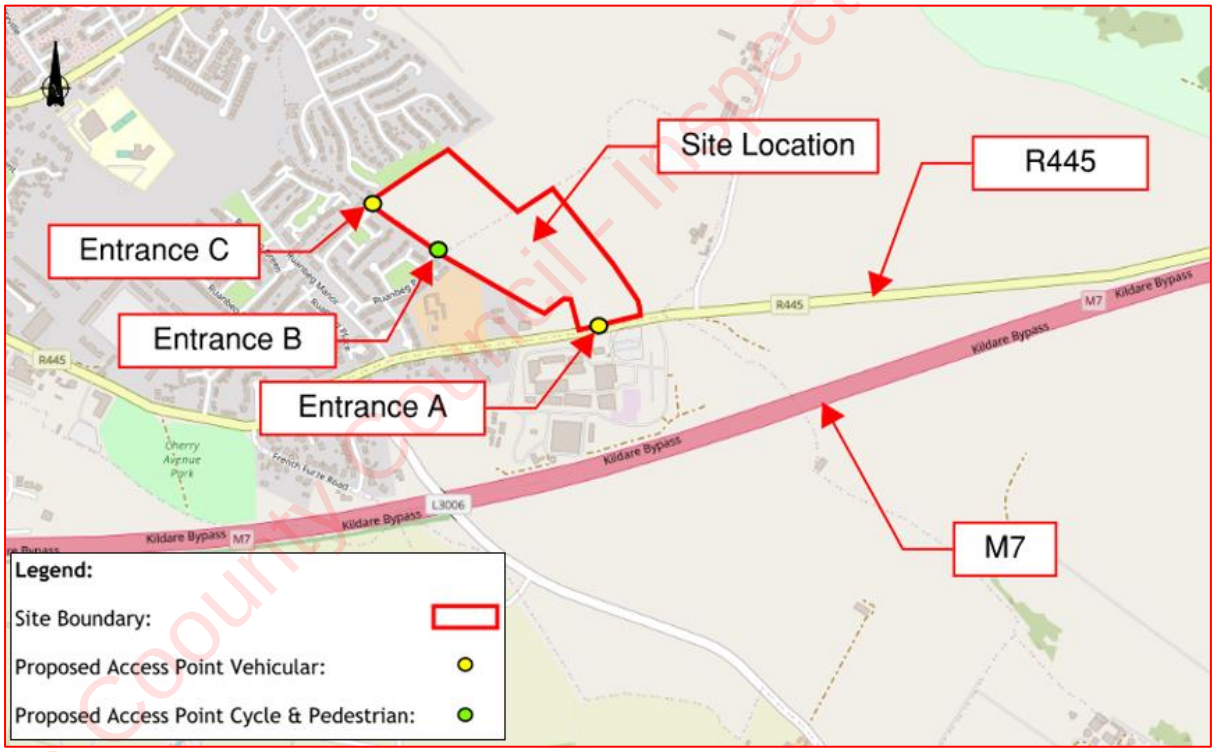

Figure 11.16(b): Locations of Proposed Access Points

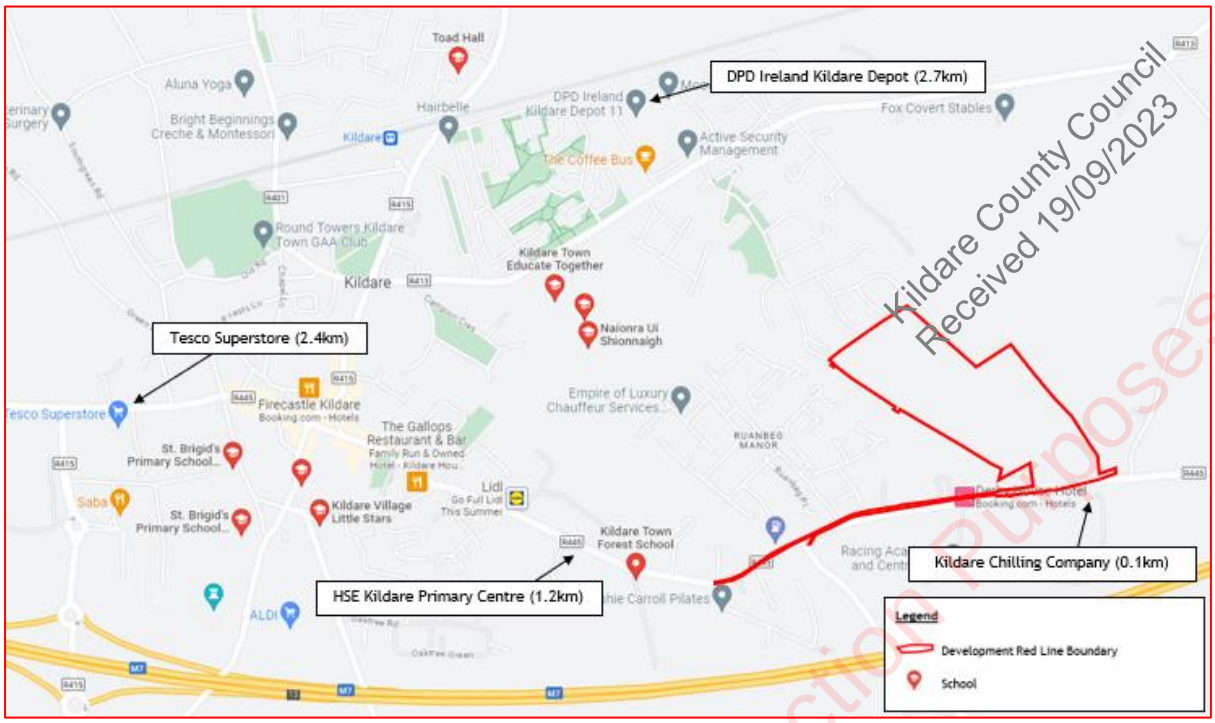

Figure 11.17: Site location in relation to key employment areas (with approximate distances)

Proposed Cycle Infrastructure

While there are no existing cycle lanes on the R445 or on Ruanbeg Park, there are proposals from the National Transport Authority (NTA) for a cycle network linking Newbridge to Kildare. An extract from the proposed network is shown in Figure 11-18.

As can be seen there are no proposed cycle routes directly passing the site. However designated cycleways are proposed in the near vicinity, both to the north and south of the site as shown in Figure 11-18, which will provide additional cyclist connectivity for the proposed development.

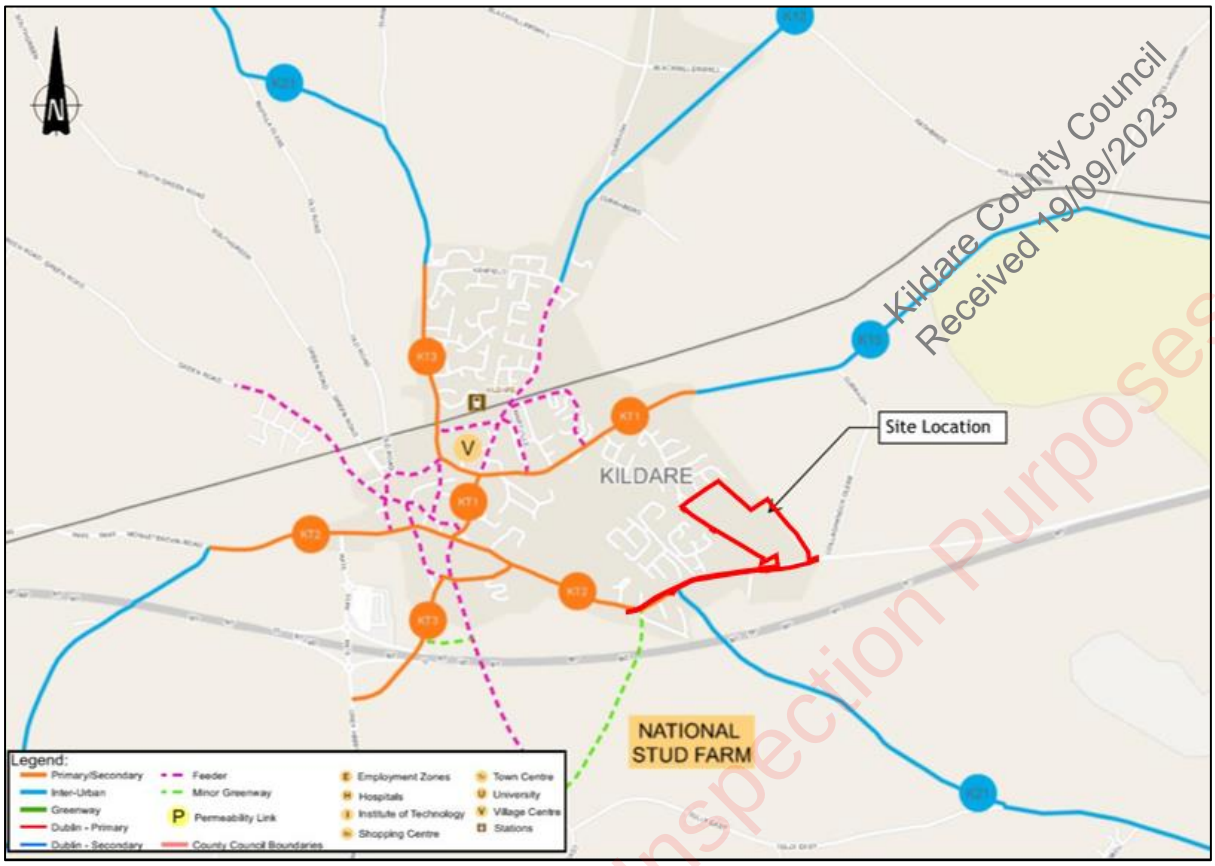

Figure 11.18: Proposed cycle routes as part of the Greater Dublin Area Cycle Network Plan (Ref: https://www.nationaltransport.ie)

The Kildare Town Local Area Plan (LAP) 2023-2029 (Draft) outlines a variety of improvements to road, cycle and walking routes proposed west of the site. These are highlighted in Maps 7.1 and 7.2. Refer to Figure 11-19 and Figure 11-20 below.

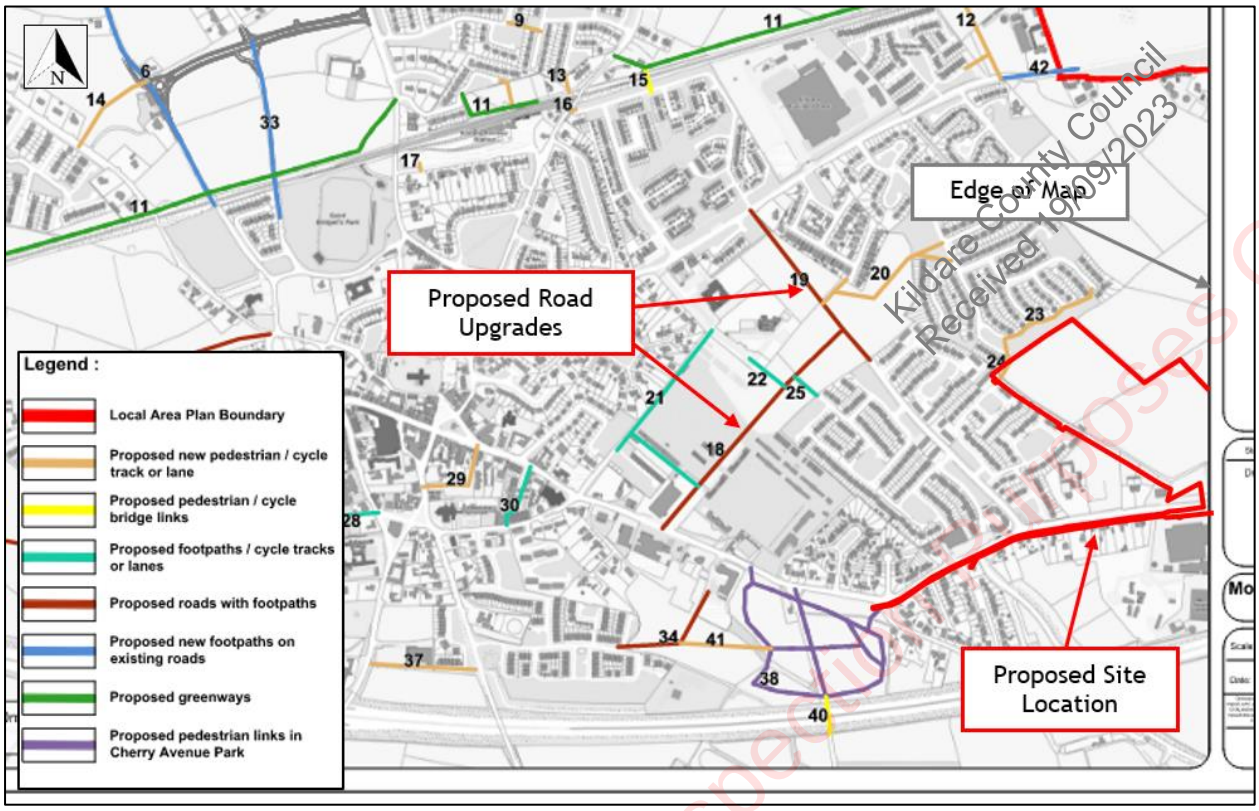

Figure 11.19: Kildare LAP 'Movement and Transportation: Permeability Measures' – Map 7.1

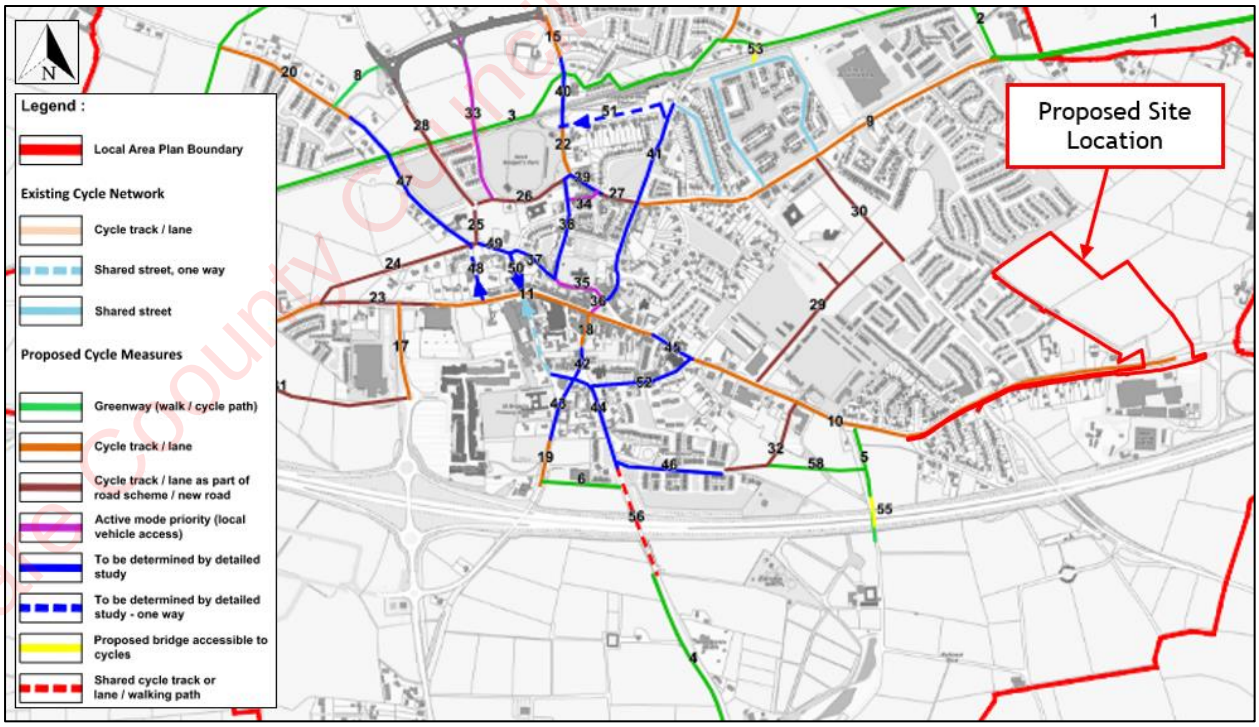

Figure 11.20: Kildare LAP 'Movement and Transportation: Cycling Measures' – Map 7.2

Cycle parking serving the proposed Ruanbeg development is provided in accordance the Kildare Development Plan 2023-2029 'Table 15.4'.

The removal is noted of the pedestrian/cyclist connection to Coolaghknock in the 'Proposed Material Alterations (PMAs)' as mentioned in the section 'Road Network Proposals' above and shown in Figure 11-15(a). It is understood that the removal of the proposed connection points to Coolaghknock may be required through the means of a planning condition. Note: The routes through Coolaghknock and Magee Barracks are to be implemented by others.

11.4 Characteristics of the Proposed Development

Development schedule

The proposed development will consist of a Large-scale Residential Development of 285 no. units. The development will include one, two, three and four bed units in the form of two storey detached, semi-detached / terraced houses, along with three storey duplexes/apartments and a single storey age friendly accommodation block. The development also includes a creche and multifunctional space along with associated car parking, bicycle parking, landscaping, and open spaces. Vehicular and pedestrian access will be provided from the R445 and via Ruanbeg Avenue. Additional pedestrian access will be provided via Ruanbeg Park. All other site works including boundary treatments and site services to facilitate development.

Site Access Arrangements

It is proposed that vehicular traffic will access the proposed development at 2 no. locations: a primary entrance on R445 located to the south of the site, and a secondary entrance via Ruanbeg existing residential development to the east of the site which is accessed from Ruanbeg Manor via R445 also. Additional pedestrian access will be provided via Ruanbeg Park. The proposed primary junction is a signalised junction and includes a westbound right turning lane, cycle lanes and pedestrian footpaths on both sides of the carriageway. A signalised Toucan crossing is proposed at the vehicular entrance on the R445.

Refer to the architects site plan for further information, and to Figure 11-21 below.

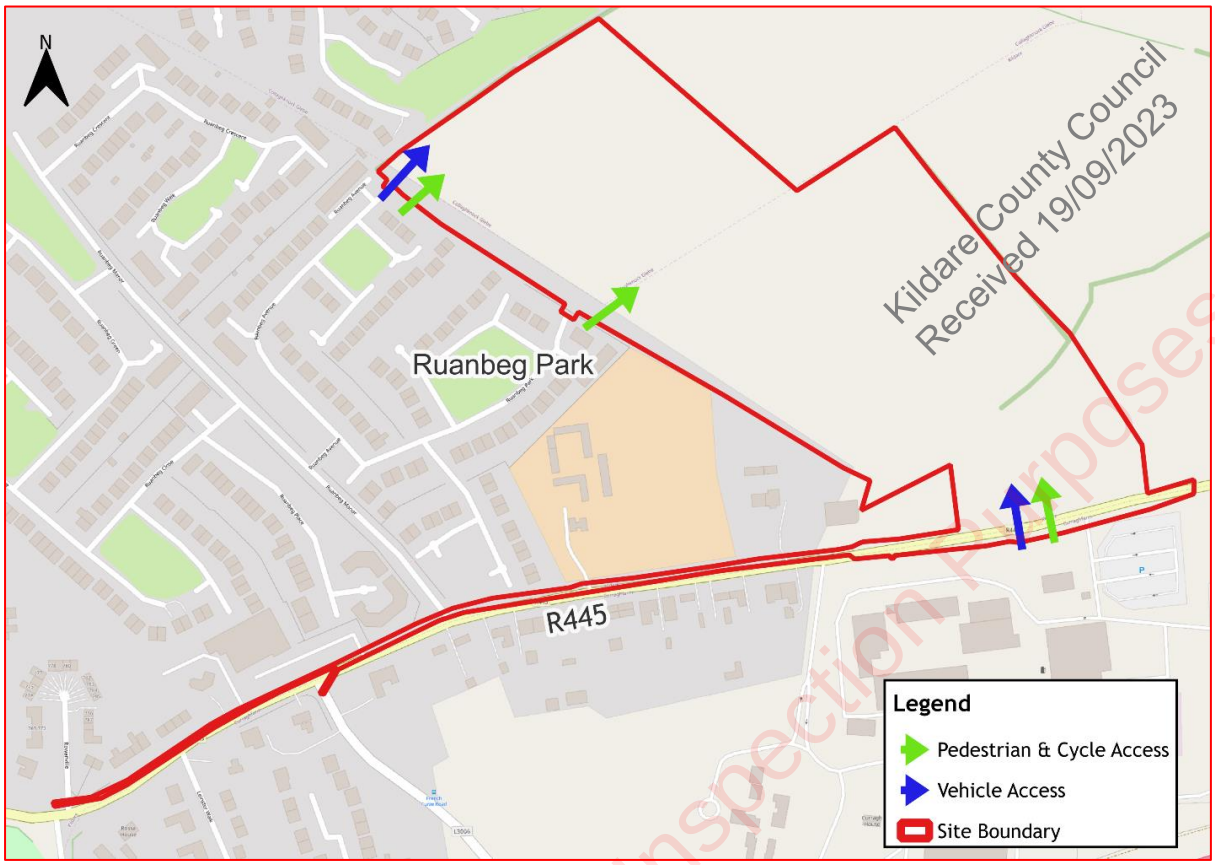

Figure 11.21: Proposed Site Access Locations

Proposed Internal Pedestrian and Cycle Network

The roads layout together with pedestrian and cycle facilities for the site have been developed considering the design principles set out in the Design Manual for Roads and Streets (2019). The hierarchy of the streets on the site are all local in nature which reflects the end destination typology of the site. The design speed for the site is 30 kph, and appropriate speed restriction signs and traffic calming will be set out through the site, and including:

- On site kerb radii at proposed junctions and bends reduced.
- Vertical and horizontal deflections e.g. raised tables and chicanes.
- Roads narrowed – 5.5m wide on minor roads and 6m on main spine road through development.
- 30 km/hr signage will be provided
- Informal pedestrian crossings will be provided at junctions to improve access for pedestrians
- Minor streets have been designated as 'Home zones' to provide a shared surface for vehicles and pedestrians
- Road gradients are to be kept shallow to facilitate ease of pedestrian access through the site.
- Road marking and signage will be provided in accordance with the current version of the Traffic Signs Manual.

Public Transport Proposals

No change

Car Parking

Car parking serving the subject development is provided at designated areas at ground level and is distributed throughout the development.

The proposed development encourages a positive modal shift at the development towards alternative sustainable modes of transport. It is an objective of this plan to limit the level of parking available on site wherever possible in order to minimise and discourage dependency on private car travel. This will also continue to take into consideration the necessary demand to prevent overspill parking issues in nearby locations. The provision of cycle parking and the availability of public transportation will serve to mitigate the requirements for residential parking. However, it is also necessary to acknowledge the location of the site and the current availability of public transport in the vicinity of the development.

As seen in Table 11-1 many locations in Kildare Town are within short cycling distances but may not be within comfortable walking distances for all. Furthermore, public transport is limited within Kildare Town and thus to allow residents commute easily within the town there is a need for the use of a private cars. Thus, it is seen as necessary to consider car usage for this development.

Car parking serving the development are provided in accordance with the Kildare County Council Development Plan 2023-2029 'Table 15.8'. The applicable car parking standards are noted in Table 11-2:

Table 11.2: Car Parking Requirements

Development type	Requirement
Houses	1 space each for units up to and including 3 bed units and 1 space + 0.5 visitor spaces for units of 4 units or greater
Apartments	1.5 spaces per unit + 1 visitor space per 4 apartments
Creche	0.5 per staff member plus 1 per 4 children

The parking requirements set out in the Kildare County Development Plan 2023-2029, section 15.7.8 are 'maximum' standards.

Refer to Table 11-3 which indicates the parking provisions for the proposed development site.

Disabled parking will be provided in accordance with Building Regulations and the Kildare County Development Plan.

The Kildare County Development Plan has no requirement for designated motorcycle user parking spaces.

Electric Vehicle Charging Points (EVCP) facilities are to be provided accordance with the Kildare County Development Plan.

The 'standard' parking spaces will be demarcated with white lines. All car parking spaces will be 2.5m by 5.0m.

Table 11.3: Development parking provision.

Development type	Quantity	Parking spaces provided	Comment	Reference
Houses	231 dwellings	442	2 parking spaces provided for 3-4 bedroom houses 1 parking space provided for 2 bedroom houses	A
Age Friendly Units	14 dwellings	14	1 parking space per unit	B
Duplex Blocks	40 dwellings	70	1.5 parking space per unit plus 1 parking space per 5 units	C
Creche	78 children and 19 staff members	29	1 parking space per 4 children and 0.5 parking space per staff member	D
Multifunctional Space	-	5	-	E
EV Parking Spaces	-	57	10% of total quantity provided	F
Accessible Parking	-	6	5% of total quantity provided	G
Total		**560**	Total of A + B + C + D + E. EV parking and accessible parking included within total	

Creche and Age Friendly accommodation parking

No change

Increased Parking for Houses

No change

Cycle Parking

Cycling is to be significantly encouraged as part of the development. Cycle parking is provided in accordance with the Kildare Development Plan 2023-2029 'Table 15.4'. The applicable cycle parking standards are noted in Table 11-4 below:

Table 11.4: Cycle parking space requirements

Development Type	Requirement
Houses	No Requirement
Apartment	1 space per bedroom + 1 visitor space per 2 apartments
Creche	1 space per 5 staff + 1 space per 10 children

Cycle parking for the proposed development is to be provided as summarised below:

- Residential cycle parking for houses is to be provided in private rear gardens
- Residential (resident and visitor) cycle parking for duplexes is to be provided in secure cycle storage areas
- The creche has shower facilities and lockers for staff to promote use of cycle travel to and from the site to reduce reliance on the car.
- Secure cycle storage is provided including both covered and Sheffield stands throughout the development including adjacent to the creche.

- Visitor cycle parking for creche to be provided in open areas maximised for convenience near the entrance of the proposed building clearly visible from the building entrance. This is done to enable drop offs to the creche.
- Both creche and age friendly accommodation is provided with Cycle spaces in close proximity.
- Sheltered/ secure storage parking area for day-time storage of children's bicycles/ scooters.
- Storage area for pushchairs to enable onward journey by foot.

The parking requirements set out in the Kildare County Development Plan 2023-2029, section 15.7.2 are 'minimum' standards.

Refer to Table 11-5 for the proposed cycle parking provision.

Table 11.5: Development cycle parking provision.

Development type	Bicycle Parking Provision	Parking spaces provided
Duplex Blocks	1 per bedroom	100
Creche	1 per 5 staff 1 per 10 children	12
Multifunctional Space	1 per 2 units	6
Duplex Blocks (Visitors)	1 per 2 units	20
Total		138

11.5 Potential Impacts

Construction Phase

No change

Operational Phase

Traffic Assessment

With the objective of quantifying the existing traffic characteristics along the surrounding road network, classified turning count traffic surveys of the existing 1) R445/Kildare Chilling Company Junction (east of the new Proposed Development junction), and 2) R445 and Ruanbeg Manor Junction, were completed by IDASO Ltd on the following dates:

- Junction 1 – R445/Kildare Chilling Company Junction: Thursday 9th June 2022
- Junction 2 – R445/Ruanbeg Manor Junction: Thursday 30th June 2022

The locations of the surveyed Junctions and the Proposed Development Junction are shown in Figure 11-22 below.

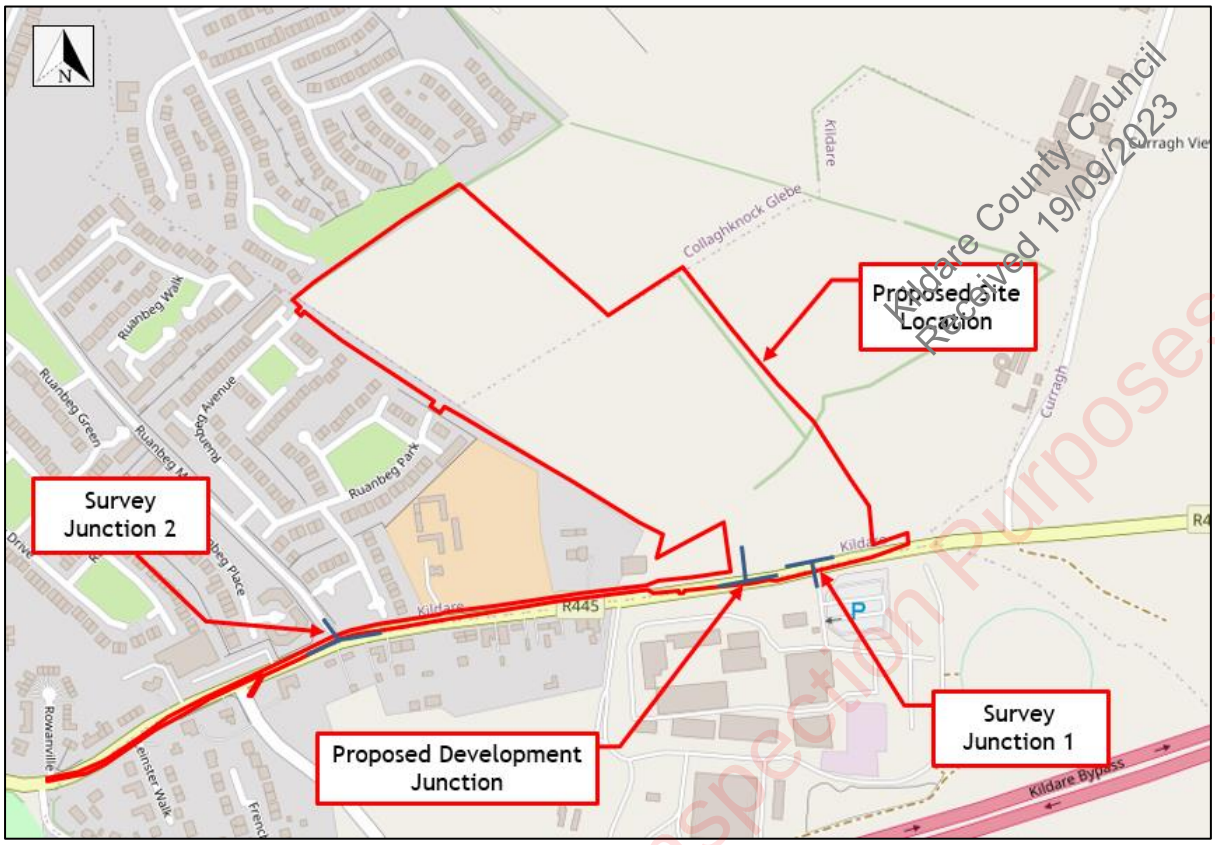

Figure 11.22: Location of Surveyed Junction and Proposed Development Junction.

Factoring of the Turning Counts Traffic Surveys

It is noted in the Traffic and Transport Assessment (TTA) that the surveys for junction 1 were carried out when primary schools were still in term. Secondary and third level would have been on the summer break. Third level establishments are remote and would have negligible impact on any survey results.

The surveys for junction 2 were carried out when primary, secondary and third level would have been on the summer break.

To account for the different dates when traffic counts were taken a factor was used.

- Junction 2 AM traffic counts (undertaken when all schools were out of term) were factored up by 30% to bring them in line with Junction 1 counts (undertaken when primary, but not secondary, schools were in term).
- An additional factor of 8% was applied to all counts. This 8% is based on the traffic counts available from TTI from the M7. This would account for additional trips on the road network to allow for secondary and third level schools, thereby providing a robust assessment.
- This would bring the total increase to the original counts.

Proposed Development Trip Generation

The purpose of this section is to determine the overall number of trips that will be generated by the proposed development. The proposed development consists of 285 no. residential units (231 no. houses, 40 no. duplex units, 14 no. age-friendly units), and a creche (GFA 472.7 m^2).

A number of rates were assessed, and the most onerous value taken. These include trip rates from TRICS (Trip Rate Information Computer System) as well as those based on actual traffic flows at the nearby existing residential development.

Trip Rates based on TRICS

In order to estimate the likely volumes of traffic that will be generated by the proposed development, trip rates recommended by TRICS were extracted from the database and applied pro-rata to the number of relevant residential units and creche within the development. In addition to the TRICS predicted trip rates, residential trip rates were also calculated using the existing Ruanbeg Manor Junction traffic flow survey, as described in the TTA. Trip rate generations based on adjacent developments are likely to be a more realistic reflection of local trip generation.

The trip rates shown in Table 11-7 are the most site specific and appropriate for the location and they also result in the highest predicted trip generation for the proposed development. In order to adopt a conservative approach these rates were used in the junction analysis.

Note: Trip Rates for the creche were based off the adjacent Magee Barracks Development TRICS rates as described in the TTA.

Table 11.7 *Proposed Development Predicted Peak Hour Trip Generation - Trip Rates Based off Ruanbeg Manor Junction Traffic Survey*

Land Use	Calculation Factor		Trip rate				Additional Number of Trips			
			08:00-09:00		17:00-18:00		08:00-09:00		17:00-18:00	
	GFA (m^2/100)	No. Units	AM Arrive	AM Depart	PM Arrive	PM Depart	AM Arrive	AM Depart	PM Arrive	PM Depart
Creche*	4.727		6.629	5.181	5.211	5.861	31	24	25	28
Residential		285	0.216	0.440	0.538	0.306	62	125	153	87
Total							**93**	**150**	**178**	**115**

**Note Creche Trip Rates above based of Magee Barracks Development TRICS rates*

Traffic Growth

No change

Assessment Scenarios

Capacity analysis was carried out for the junctions listed below:

1. Proposed Development Junction on the R445 (signalised junction).
2. Existing Ruanbeg Manor on R445 (priority junction).

The following development scenarios were analysed with and without development for all junctions:

1. Survey year: 2022
2. Opening year: 2026
3. Design year: opening year + 5 years: 2031
4. Design year: opening year + 15 years: 2041

The traffic modelling in all scenarios takes account of predicted traffic from the granted projects described previously. Additionally, the junctions have been analysed with consideration given to the proposed future development to the north of the site. It is noted that this is separate from the proposal in question and has not been granted planning permission at the time of writing.

Network Impact

Junctions 9 software was used for priority junction analysis. LinSig software was used for the analysis of the signalised junction.

Junctions 9 Analysis Note: The ratio of flow to capacity (RFC) is an indicator of the likely performance of a junction under design year loading. Due to site to site variation, there may be a standard error of prediction of the entry capacity by the formulae of + or - 15% for any site. Thus, queuing should not occur in the various turning movements in the chosen design year peak hour in 5 out of 6 peak hour periods or sites if a maximum RFC of about 85% is used. Once the RFC is at 1.0 the Junctions 9 modelling software produces results regarding queues and delays that is unrepresentative of the actual or likely effects.

LinSig Analysis Note: The degree of saturation (DOS) is defined as the ratio of demand flow to the maximum flow which can be passed through the junction from a particular approach. If an approach is found to have a DOS greater than 100%, then it is "over saturated" and long ques will result. The practical capacity is the level of capacity above which the junction is assumed to work inefficiently (usually taken to be 90%).

Analysis Summary

The analysis predicts that by the Design Year 2041 the Proposed Development Junction would be operating well within the design threshold with the full development in operation during both the AM and PM peak hours.

The analysis predicts that by the Design Year 2041 the Existing Ruanbeg Manor on the R445 Priority Junction would be operating within the design threshold in the PM Peak Hours and above the threshold by a margin of 4% for the AM Peak Hours with the full development in operation. However as noted in the TTA, 50% of the development traffic has been added to this junction. It is highly unlikely that half of the development traffic would use this junction and thus it would be considered that this junction would operate within the thresholds in normal circumstances.

The worst-case scenario is presented in the results above by adding the development traffic to the existing peak hour traffic selected from the traffic count survey.

Table 11.8: Summary Results of Junction Analysis

Junction	2041 Without Development RFC	2041 With Development RFC	2041 With Future Development RFC
Proposed Development Signalised Junction (With 100% Development Traffic) *Max. DOS (%)*	n/a	64.1	65.3
Existing Ruanbeg Manor/R445 Priority Junction (With 50% Development Traffic) *Max. RFC*	0.62	0.89	0.84

From the above modelling results in Table 11-8, it is concluded that the surrounding road network and adjacent existing junctions/roundabouts will have little comparable impact on the current operational capacity of the surrounding network of roads and junctions.

11.6 Potential Cumulative Impacts

No change

Committed Developments Trip Generation

Adjacent planning consents/applications granted/submitted in the area have been reviewed. In assessing the traffic impacts of the subject development, the developments shown in Table 11-9 below were considered based on the current data available.

Table 11.9: Other Projects in the Area (Ref: KCC Online Planning Enquiry System)

Planning Reference	Status	Description
ABP-305007-19	Granted Permission	Proposed development at the Former Magee Barracks, Hospital Street, Kildare, Co. Kildare which will consist of the demolition of 17 no. existing buildings (with a GFA of 16,320sqm), and the construction of a development comprising of 375 no. residential units, a neighbourhood centre comprising of 3 no. single-storey retail units, a cafe, a two-storey childcare facility, and associated play area, all internal roads, car parking, pedestrian and cycle paths, public open space, and all associated site and infrastructural works on an application site of c.11.35ha.
18273	Granted Permission	Demolition of existing structures including the gatehouse and an ancillary building. The construction of a single storey, licensed, discount foodstore with a gross internal area of 2,192sqm incorporating an off-licence area, including car parking and cycle parking.
18149	Granted Permission	The demolition of 6 No. existing buildings (with a GFA of c. 2,180sqm) and the removal of hard surfacing on the subject site, and the construction of a part 1, part 2 and part 3 No. storey Health Care Facility for a Cancer Treatment Clinic (Proton Therapy) with a GFA of c. 3,555sqm, including a terrace and plant areas at roof level, on a site area of approximately 2.5 hectares. The associated site and infrastructural works, 80 no. surface car parking spaces, and cycle parking.

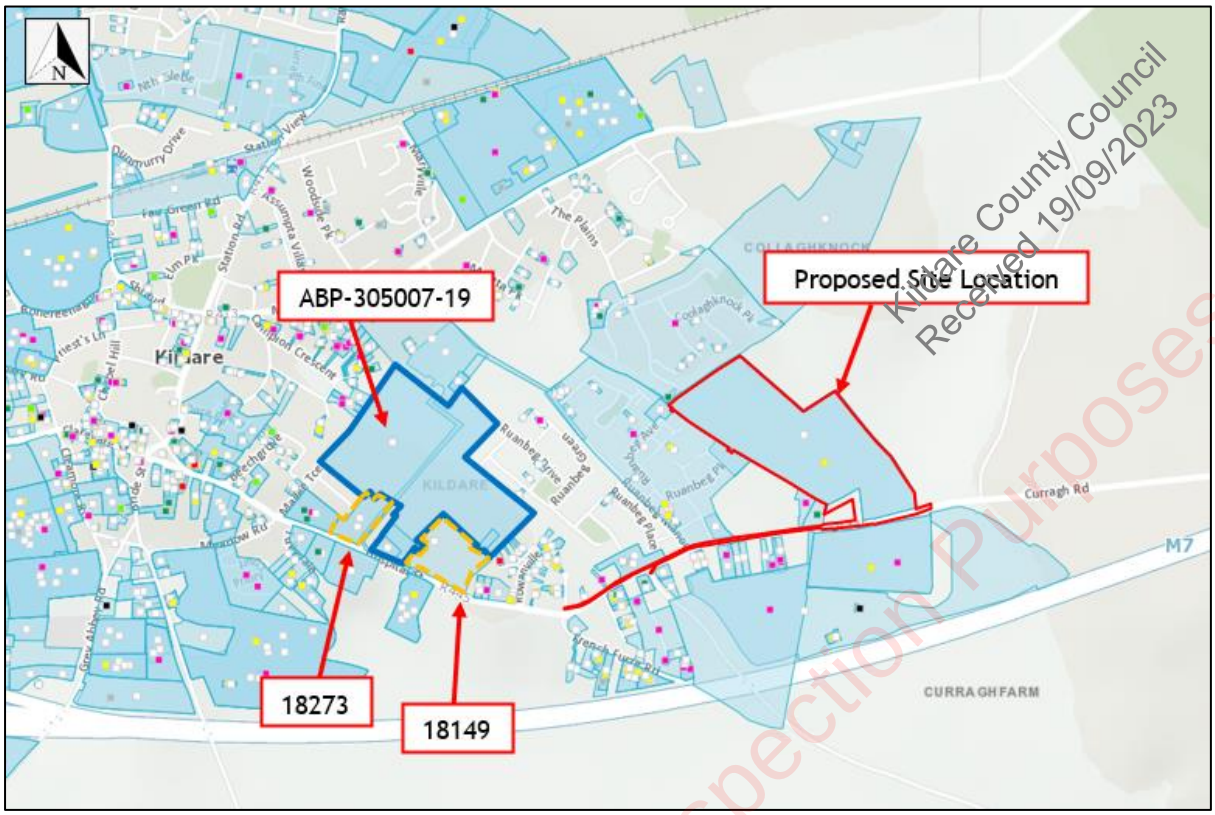

Figure 11.23: Planning Grants reviewed adjacent to the site (Ref: KCC Planning Enquiry Online Map)

The largest development application in the vicinity of the site is the SHD (Planning ref: ABP-305007-19). A Traffic Impact Assessment undertaken by Roadplan Consulting (July 2019) was reviewed as part of this report.

It is noted that as part of their assessment Roadplan included predicted peak hour flows from adjacent proposed developments described above (Planning references 18273 and 18149) in their trip generation.

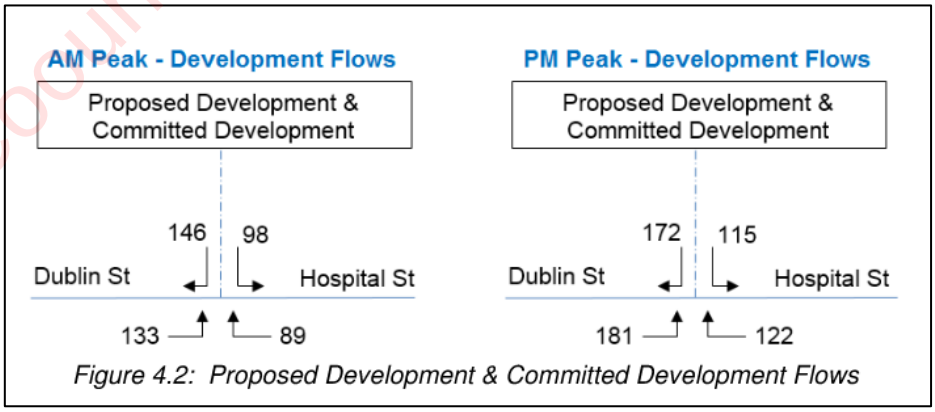

Figure 11.24: Roadplan Predicted Peak Hour Flows From Adjacent Granted Projects Described Above.
(Ref: Roadplan: Proposed Mixed Development At Magee Barracks Traffic Impact Assessment (2019), Figure 4.2)

The above predicted AM & PM peak flows arriving from and departing to Hospital St (west of R445) have been included in the junction analysis undertaken as part of the TTA.

Future Residential Development on Adjoining Lands

Access to adjacent land to the north east of this development is to be provided through the proposed development. Predicted traffic flows from this development have been allowed for as part of the junction analysis, on the basis of the below information supplied by the developer.

- Site area: 2.52 Ha
- Units per hectare: 35
- Estimated no. dwelling units: 88

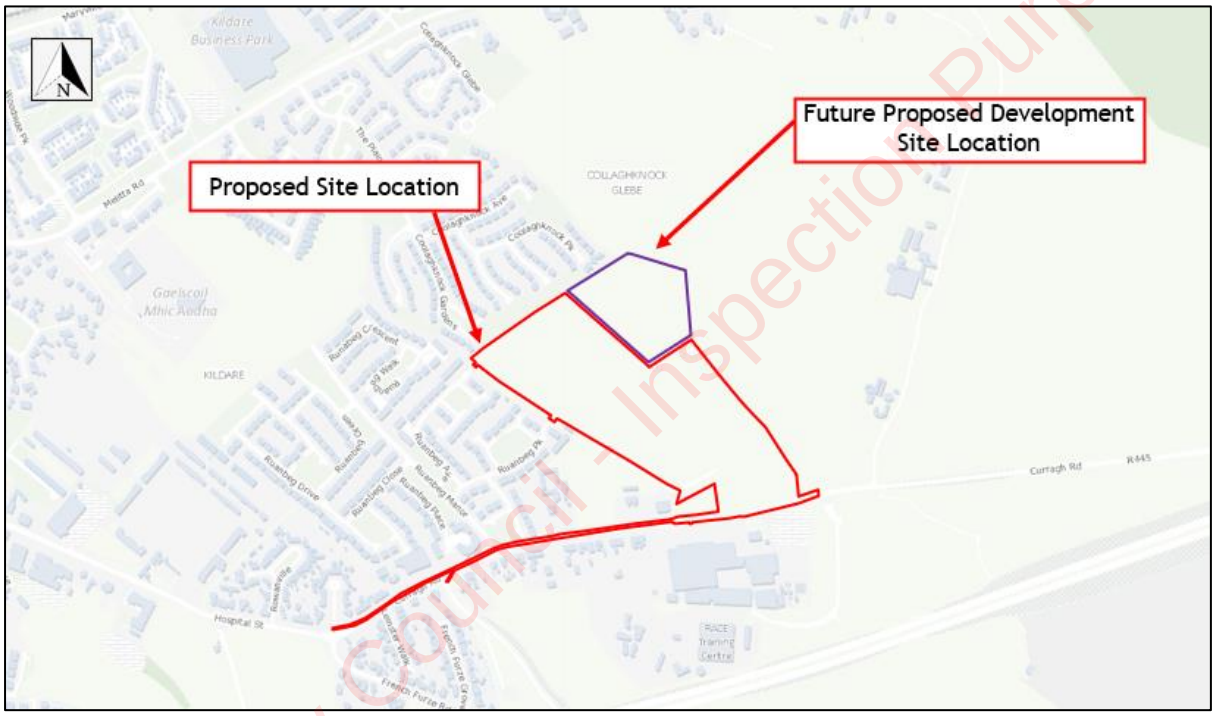

Figure 11.25: Location of Lands for Further Development Adjacent Proposed Site.

In order to estimate the likely volumes of traffic that would be generated by the further future development (separate to this application) on the adjoining lands north of the proposed development site the trip rates in Table 11-11 were also applied.

Table 11.11: Potential Future Development on Adjoining Lands Predicted Peak Hour Trip Generation

Land Use	Calculation Factor		Trip rate				Additional Number of Trips			
			08:00-09:00		17:00-18:00		08:00-09:00		17:00-18:00	
	GFA (m^2/100)	No. Units	AM Arrive	AM Depart	PM Arrive	PM Depart	AM Arrive	AM Depart	PM Arrive	PM Depart
Residential		88	0.216	0.440	0.538	0.306	19	39	47	27
Total							**19**	**39**	**47**	**27**

11.7 Mitigation Measures

Construction Phase

No change

Operational Phase

No change

11.8 Predicted Impacts

Construction Phase

No change

Operational Phase

The traffic associated with the Operational Phase of the proposed development is described in Table 11-12 below.

Table 11.12: Operational Phase: Description of Impacts / Effects

Junction	Location	Environment Character	Quality / Scale of Impact	Impact Significance	Duration
1	Proposed Development Junction on the R445	The proposed primary access point to the site is located on R445. R445 is the link between Kildare Town to the west and the M7 motorway and the Curragh Racecourse located to the east. R445 is a single lane two-way carriageway with footpaths on both sides of the carriageway and no existing designated cycle lanes. The proposed primary junction is a signalised junction and includes a westbound right turning lane, cycle lanes and pedestrian footpaths on both sides of the carriageway. A signalised Toucan crossing is proposed at the vehicular entrance on the R445.	From the modelling results of the Traffic & Transport Assessment the surrounding road network and adjacent existing junctions will have **neutral effects** on the current operational capacity of the surrounding network of roads and junctions.	The proposed changes to the site include a signalised junction and includes a westbound right turning lane, cycle lanes and pedestrian footpaths on both sides of the carriageway. A signalised Toucan crossing is proposed at the vehicular entrance on the R445. The effect will cause noticeable changes in the character of the environment. However due to the neutral quality of impact it is expected that the significance of impact will be **not significant.**	The junction has been designed and modelled for a Design Year of 2041. However, it could be assumed that the junction will remain in use beyond that year. Thus, duration of effects is **long term.**
2	Existing Ruanbeg Manor/ R445	The proposed secondary point is located further west on the R445 at Ruanbeg Manor. It is the link with the R445 and the Ruanbeg existing residential housing development. Ruanbeg Manor is a single lane two-way carriageway with wide footpaths and grassed verges on both sides of the carriageway and no existing designated cycle lanes. Alterations to this junction are not included as part of the scope of this submission.	From the modelling results of the Traffic & Transport Assessment the surrounding road network and adjacent existing junctions will have **neutral impact** on the current operational capacity of the surrounding network of roads and junctions.	There are no proposed changes to the junction. Junction modelling shows that the junction has capacity for increased traffic up to the design year. Thus, significance of impact will be **imperceptible.**	The junction has been designed and modelled for a Design Year of 2041. However, it could be assumed that the junction will remain in use beyond that year. Thus, duration of effects is **long term.**

11.9 'Do Nothing' Scenario

No change

11.10 Worst Case Scenario

No change

11.11 Monitoring & Reinstatement

Construction Phase

No change

Operational Phase

No change

Reinstatement

No change

11.12 Difficulties in Compiling Information

No change

11.13 References

No change

12. Material Assets

12.1 Introduction

No change.

12.2 Methodology

No change.

12.3 Receiving Environment

No change.

12.4 Characteristics of the Proposed Development

Slight change please see section below.

The proposed development is described in Chapter 3. A full description of the proposed development is also stated in the statutory notices. The following elements are relevant to the assessment of effects in this Chapter.

The proposed development will involve the construction of the following service networks. Note that Transport Infrastructure is discussed in Chapter 11:

- Access
- Transport Infrastructure
- Waste Management
- Foul Water Disposal
- Surface Water Disposal
- Potable Water Supply
- Natural Gas Supply
- Electrical Supply
- Telecommunications

Foul Drainage – Proposed Works

Wastewater gravity drainage is proposed through the development to services all dwellings and the proposed creche. In general, wastewater drainage is proposed in the roadway.

It is proposed to drain the northern portion of the site by gravity to a proposed wastewater pumping station. A foul sewer rising main then connects into the foul drainage network serving the southern portion of the site and then drains fully by gravity to a discharge point on the R445.

The proposed pumping station is to be designed to accommodate future connections from Coolaghknock Glebe Wastewater Pump Station and Coolaghknock Gardens Wastewater Pump Station.

Additional wastewater flows are to be allowed for from a proposed future development to the north, for 88 dwellings. Please refer to **Error! Reference source not found.**.

- Site area: 2.52 Ha
- Units per hectare: 35
- Estimated no. dwelling units: 88

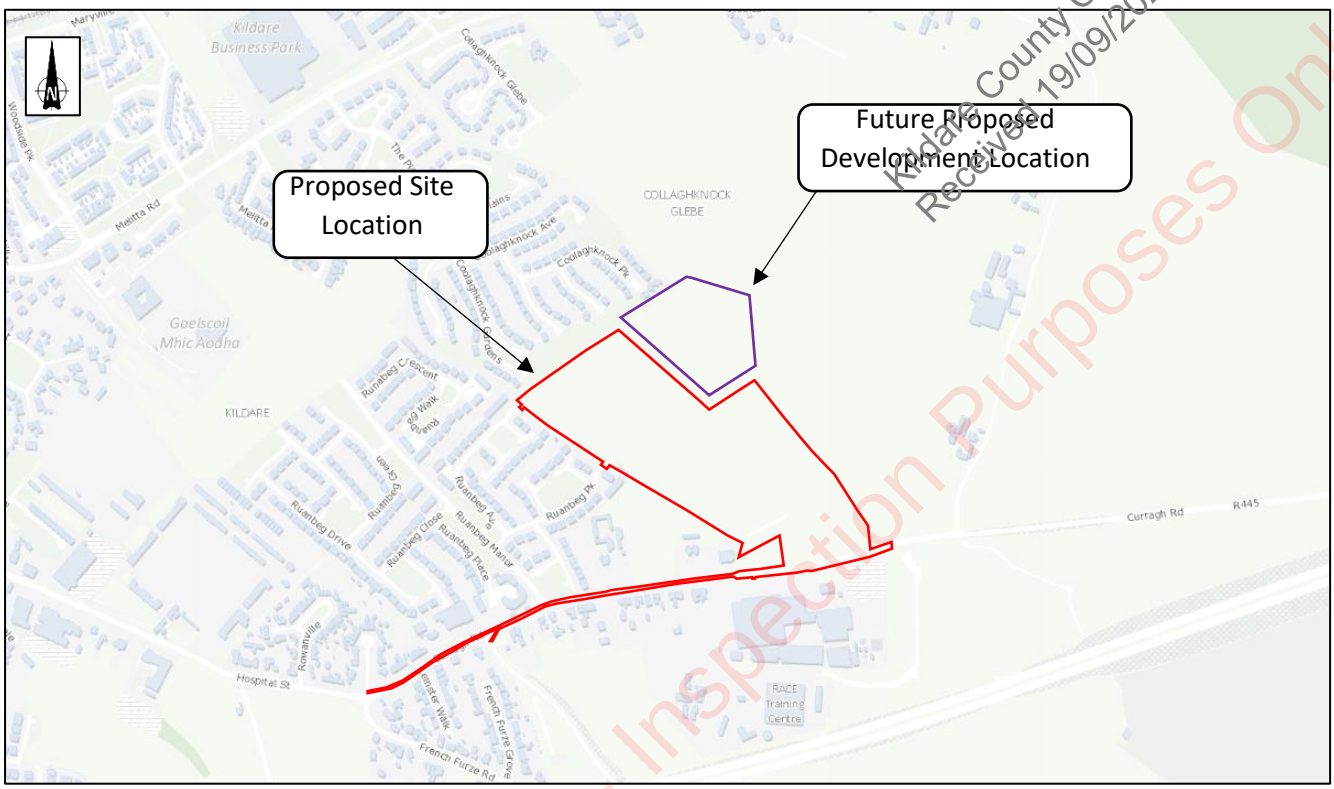

Figure 12.8: Location of Lands for Further Development Adjacent Proposed Site.

It is expected that the off-site foul sewer works will be undertaken by Irish water to facilitate the development and will follow a formal Irish water Connection Application. The sewer upgrade works will have a significant benefit to Irish water since they will assist in servicing wastewater for the surrounding area.

Error! Reference source not found. describes the foul water drainage design parameters used. Outputs are provided for dry weather flow, 4.5 times dry weather flow and 6 times the dry weather flow.

Table 12.1: Foul Water Drainage Design Parameters.

Description	Value
Residential Flow Rate	150 l/person/day
Creche Flow Rate	50 l/person/day
Persons per Dwelling	2.7
Infiltration (additional flow)	10%
Peaking Factor	4.5 DWF where over 750 persons 6 DWF where under 750 persons
Minimum Self Cleansing Velocity	0.75m/s
Minimum Pipe Diameter	150mm

Table 12.2 below summarises the wastewater flows for the development in addition to the additional flows to be allowed for from the neighbour to the north. Different peak flows are applied to the different drainage elements, and the total peak is based on the total flow. The total number of persons is split between residential and commercial since these will each have different drainage parameters associated with them.

Table 12.2: Foul Water Flows.

Category	Quantity	Flow Rate	Daily Flow (l/day)	DWF (l/s)	Design Peak Flow (l/s)
Residential Development	285 units =>769.5 persons	150 l/per/day	115,425	1.47	6.61 (4.5 DWF)
Creche	19 staff 78 children => 97 persons	50 l/per/day	5,335	0.06	0.30 (4.5 DWF)
Additional Development to north	88 units =>237.6 persons	150 l/per/day	35,640	0.45	2.72 (6 DWF)
Total	**1007 persons in residential 97 persons at Creche**	**-**	**156,400**	**1.98**	**9.18**

Surface Water Disposal – Proposed Works

Piped surface water drainage is proposed throughout the development to service the entire development. Given the presence of gravel geology at the site, it is currently proposed to discharge surface water to groundwater by infiltration.

3 no. below ground geocellular infiltration tanks are proposed that will allow infiltration. The northern portion of the site discharges to Soakaway Attenuation Tank A within a landscape area. Soakaway infiltration tank A is provided in an area with limited groundwater infiltration. A deep gravel infiltration zone comprising of natural gravels is proposed to extend to the level of the existing gravel layer below tank A to provide a drainage pathway from the infiltration tank to the ground.

The southern portion of the site has 2 no. discharge locations, Soakaway Attenuation Tank B & C both of which are located in landscape areas. Sections of the site discharges directly into the soakaways. Where site levels allow pipe runs discharge into proposed wetlands with overflows which then discharge into the soakaway structures.

Please refer to EIAR Chapter 7 for Water chapter.

Potable Water Supply – Proposed Works

Watermains are proposed throughout the development to service the proposed dwellings and creche.

It is proposed to construct a 225mm diameter watermain connecting to an existing watermain located on the R445. It is intended to extend the watermain network to serve the proposed development based on the calculated demand.

It is noted that the red line boundary extends along the R445 towards a junction with French Furze Road. This is due to the anticipated upgrades of the existing 150mm Irish Watermains along the R445 to a 225mm watermain, in order to accommodate the proposed development flows.

It is expected that the off-site water supply works will be undertaken by Irish water to facilitate the development and will follow a formal Irish water Connection Application. The watermain supply works will have a significant benefit to Irish water since they will assist in providing water supply for the surrounding area.

The watermain layout has been designed in accordance with "Irish Water Code of Practice for Water Infrastructure". All watermains are to be constructed in accordance with Irish Water Code of Practice and the Local Authority's requirements. Fire coverage is to be reviewed and certified by the fire consultant.

This feed will provide potable and firefighting water to the proposed development. A bulk water meter shall be provided at the site boundary at the location of the proposed connection to the existing watermain.

Design loading for foul drainage is used to evaluate the water demand on the site. With reference to Irish Water's Code of Practice for Water Infrastructure, the average daily flow is calculated as the number of persons multiplied by the flow rate per person. The average day peak week flow is taken to be 1.25 x the average flow, and the peak demand is taken to be the average day peak week flow multiplied by a peaking factor of 5.

Additional water flows are to be allowed for from the development to the north, for 88 dwellings as discusses in Section on "Foul Drainage – Proposed Works" and **Error! Reference source not found.**.

Table 12.3 describes the watermain design parameters used.

Table 12.3: Watermain Design Parameters.

Description	Value
Residential Flow Rate	150 l/per/day
Creche Flow Rate	50 l/per/day
Persons per Dwelling	2.7
Average Demand	1.25 DWF
Peak Demand	5 DWF

Table 12.4 below summarises the water supply flows for the development in addition to the additional flows to be allowed for from the neighbour to the north.

Table 12.4: Water Supply Flows.

Category	Quantity	Flow Rate	Daily Flow (l/day)	DWF (l/s)	Average Demand (1.25DWF) (l/s)	Peak Demand (5DWF) (l/s)
Residential Development	285 units =>796.5 persons	150 l/per/day	115,425	1.33	1.67	8.35

Creche	19 staff 78 children => 97 persons	50 l/per/day	5,335	0.06	0.07	0.35
Additional Development to north	88 units =>237.6 persons	150 l/per/day	35,640	0.41	0.52	2.58
Total	**1007 persons in residential 97 persons at Creche**		**156,400**	**1.80**	**2.26**	**11.28**

Natural Gas Supply (GNI) – Proposed Works
No Change

Electrical (ESB) Supply – Proposed Works
No Change

Telecommunications

Virgin Media (VM) Supply – Proposed Works
No Change

EIR Supply – Proposed Works
No Change

SIRO Supply – Proposed Works
No Change

12.5 Potential Impacts
No change.

12.6 Potential Cumulative Impacts
No change.

12.7 Mitigation Measures
No change.

12.8 Predicted Impacts
No change.

12.9 'Do Nothing' Scenario
No change.

12.10 Worst Case Scenario

No change.

12.11 Monitoring & Reinstatement

No change.

12.12 Difficulties in Compiling Information

No change.

12.13 References

- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018
- Guidelines on the information to be contained in environmental impact assessment reports, EPA, 2022
- Advice notes on current practice in the preparation of Environmental Impact Statements, EPA 2003.
- Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG, 200)
- Development Management Guidelines (DoEHLG, 2007)
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DoECLG, March 2013).
- DRAFT Kildare Town Local Area Plan 2023-2029

13. Waste Management

13.1 Introduction

No change

Proposed Development Site Location and Brief Description

The proposed development will consist of a Large-scale Residential Development of 285 no. units. The development will include one, two, three and four bed units in the form of two storey detached, semi-detached / terraced houses, along with 3 no. three storey duplexes/apartments and a single storey age friendly accommodation block. The development also includes a creche and multifunctional space along with associated car parking, bicycle parking, landscaping, and open spaces. Vehicular and pedestrian access will be provided from the Dublin Road (R445) and via Ruanbeg Avenue. Additional pedestrian access will be provided via Ruanbeg Park. All other site works including boundary treatments and site services to facilitate development.

Statement of Competence

In accordance with Article 5(3)(a) of the EU Directive, by appointing Traynor Environmental, the applicant has ensured that this chapter has been prepared by "Competent experts".

Figure 13.1: Site Layout

13.2 Methodology

No change.

13.3 Receiving Environment

No change

13.4 Characteristics of the Proposed Development

The proposed development will consist of a Large-scale Residential Development of 285 no. units. The development will include one, two, three and four bed units in the form of two storey detached, semi-detached / terraced houses, along with 3 no. three storey duplexes/apartments and a single storey age friendly accommodation block. The development also includes a creche and multifunctional space along with associated car parking, bicycle parking, landscaping, and open spaces. Vehicular and pedestrian access will be provided from the Dublin Road (R445) and via Ruanbeg Avenue. Additional pedestrian access will be provided via Ruanbeg Park. All other site works including boundary treatments and site services to facilitate development.

Additional pedestrian access is provided via Ruanbeg Park. All other site works including boundary treatments and site services to facilitate development. A full development description is provided in Chapter 3 of this EIAR.

The project will involve the development of the proposed Ruanbeg site over a construction period 3-5 years. When considering a development of this nature, the potential waste management impact on the surroundings must be considered for each of two distinct stages:

- Construction Phase.
- Operational Phase.

As stated, the construction phase will involve extensive excavation over the development site and the erection of a new development and associated communal facilities over a phased construction period. These issues are discussed in detail in the following sections. Waste activities relating to the construction, and operation of the development in terms of waste management are discussed.

Demolition Phase

No change

Construction Phase

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The construction contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

In addition, there will be excavations associated with foundations and roads. The project engineers, Punch Consulting have estimated that the approximate volume of removed topsoil is 8,500 $m^{3.}$ This will need to be disposed off site. The approximate volume of subsoil to be excavated is 20,092 $m^{3.}$

In order to establish the appropriate reuse, recovery and/or disposal route for the material to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous*. Environmental soil analysis will be carried out prior to construction on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste including potential pollutant concentrations and leachability.

In the unlikely event that surplus soils/stones are generated it may be suitable for acceptance at either inert or non-hazardous soil recovery facilities/landfills in Ireland, In the event of hazardous material being encountered, it will be transported for treatment/recovery or exported abroad for disposal in suitable facilities.

Waste will be generated from construction workers e.g., organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins, and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP. Table 13.1 shows the breakdown of C&D waste

types produced on a typical site based on data from the EPA National Waste Reports, the GMIT and other research reports.

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	**100**

Table 13.1: Waste materials generated on a typical Irish construction site.

Table 13.2 shows the predicted construction waste generation for the proposed development based on the information available to date along with the targets for management of the waste streams. The predicted waste amounts are based on an average largescale development waste generation rate per m^2, using the waste breakdown rates shown in Table 13.1 and the schedule of areas supplied by the project architects.

Waste Types	Tonnes	Reuse		Recycle/Recover		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	304.22	10	30.42	80	243.37	10	30.42
Timber	250.43	40	100.17	55	137.73	5	12.52
Plasterboard	60.34	30	18.1	60	30.17	10	6.34
Metals	85.87	5	4.29	90	77.28	5	4.29
Concrete	64.4	30	19.32	65	41.86	5	3.22
Other	114.01	20	22.80	60	68.4	20	22.80
Total	**879.27**		**195.11**		**598.83**		**79.60**

Table 13.2: Estimated on and off-site reuse, recycle and disposal rates for construction waste.

Operational Phase

An Operational Waste & Recycling Management Plan (OWRMP) (Appendix 13.2) has been prepared for the development. The plan will seek to ensure the development contributes to the targets outlined in the Eastern Midlands Regional (EMR) Waste Management Plan 2015 – 2021. Mitigation measures proposed to manage impacts arising from wastes generated during the operation of the proposed development are summarised below.

All waste materials will be segregated into appropriate categories and will be stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site in accordance with the *Kildare County Development Plan 2023 – 2029.*

Waste type	Age-friendly Units	Duplexes	Houses	Totals (L)
Organic Waste	70	200	1,145	1415
Mixed Dry Recyclables	770	4,100	28,040	32910
Glass	70	200	1,145	1415
Mixed Municipal Waste	770	4,100	28,040	32910
Total	**1680**	**8600**	**58,370**	**68,650**

Table 13.3: Residential Waste Prediction (m3/per week)

Non-Residential Floor Areas	Area (Sq.m)	DMR (Recycling)	Food Waste	MNR (Residual)	Glass	Total (L)
Crèche	472.7	1219.90	30	1219.90	10	**2479.8**
Multifunctional Centre	89.1	217.34	20	217.34	20	**474.68**

*Table 13.4: **Multifunctional Centre**/ **Crèche** Waste Predictions (L/per week)*

All waste leaving the site will be recycled or recovered, with the exception of those waste streams where appropriate recycling/recovery facilities are currently not available. All waste leaving the site will be transported by suitable permitted contractors and taken to suitably permitted or licenced facilities. All waste leaving the site will be recorded and copies of relevant documentation maintained.

Hazardous Waste

Hazardous waste may be generated from WEEE, batteries, fluorescent tubes, and cleaning products. Any waste classed as hazardous will be required to be taken to a specialise waste company e.g., Rilta.

13.5 Potential Impacts

no change

13.6 Potential Cumulative Impacts

no change

13.7 Mitigation Measures

no change

13.8 Predicted Impacts

no change

13.9 'Do Nothing' Scenario

no change

13.10 Worst Case Scenario

no change

13.11 Monitoring & Reinstatement

no change

13.12 Difficulties in Compiling Information

no change

13.13 References

no change

14. Cultural Heritage

14.1 Introduction

No Change

14.2 Methodology

No change

14.3 Receiving Environment

No change.

14.4 Characteristics of the Proposed Development

The proposed development will consist of a Large-scale Residential Development of 285 no. units. The development will include one, two, three and four bed units in the form of two storey detached, semi-detached / terraced houses, along with 3 no. three storey duplexes/apartments and a single storey sheltered housing block. The development also includes a creche and multifunctional space along with associated car parking, bicycle parking, landscaping, and open spaces. Vehicular and pedestrian access will be provided from the Dublin Road (R445) and via Ruanbeg Avenue. Additional pedestrian access will be provided via Ruanbeg Park. All other site works including boundary treatments and site services to facilitate development.

14.5 Brief Archaeological and Historical Background

Archaeological Background

Mesolithic to Bronze Age

No change.

Iron Age to Early Medieval Period

No change.

Historic Period

No change.

Post Medieval Ireland

No change.

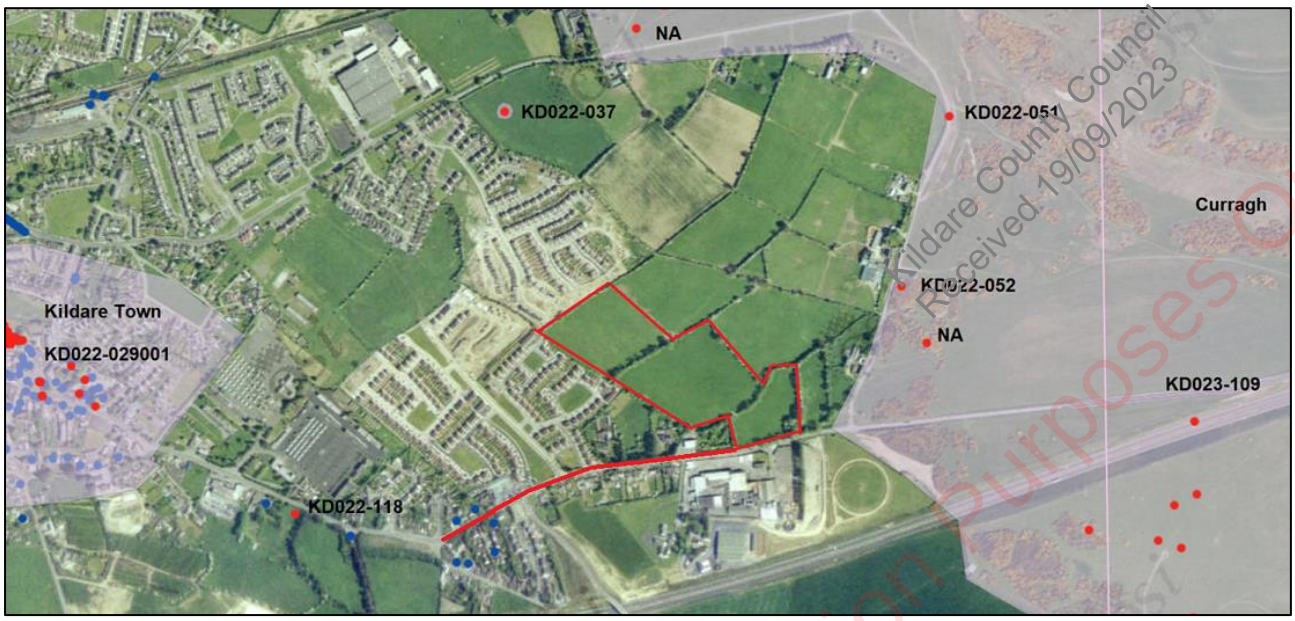

Figure 14.1: Extract from the RMP for the development with the site marked

Archaeological Monuments

The proposed development does not include any registered monuments, however there are a number in the wider vicinity. These are listed below:

KD022-052----

No change

KD022-037----

No change

KD022-051----

No change

KD022-049----

No change

KD022-118----

No change

KD022-029001-

No change

RMP	Type	Townland	Proximity (m)
KD022-052	Ring barrow	Curragh	400m
KD022-037	Burial	Collaghknock Glebe	550m
KD022-051	Linear Earthwork	Linear	750m
KD022-049	Ring barrow	Curragh	900m
KD022-029001	Historic Town	Greyabbey	650M
KD022-118	Burial Ground	Kildare	325m

Table 14.1: Recorded monuments

Architectural Heritage
No Change.

Previous archaeological Excavations
No Change.

Cartographic Evidence
No change.

Site Survey and Geophysical Survey
No change.

14.6 Potential Impacts
No Change.

14.7 Potential Cumulative Impacts

No Change.

14.8 Mitigation Measures

No Change.

14.9 Predicted Impacts

No Change.

14.10 'Do Nothing' Scenario

No Change.

14.11 Worst Case Scenario

No Change.

14.12 Difficulties in Compiling Information

No Change.

14.13 References

No Change.

15. Interactions

15.1 Introduction

No change.

15.2 Assessment

No change.

1. Population & Human Health / Soils

No change.

2. Population & Human Health / Hydrology

Failure or mismanagement of the potable water supply could lead to its contamination during the construction phase. A range of mitigation measures, as outlined in Chapter 7 addendum, will be put in place during the construction phase of the development to ensure this does not occur. The correct implementation of these mitigation measures will ensure that the potential impacts on hydrology and water services during the construction phase will be imperceptible and short term.

3. Population & Human Health / Noise

No change.

4. Population & Human Health / Air

No change.

5. Population & Human Health / Landscape

No change.

6. Population & Human Health / Traffic

Chapter 11 addendum notes that, provided the mitigation measures and management procedures outlined in the Construction Environmental Management Plan are incorporated during the Construction Phase, the residual impact upon the local receiving environment is predicted to be temporary in the nature and slight in terms of effect.

Once complete, and as set out in the addendum, the proposed development will operate well within capacity during the AM and PM peak hours in the 2026 + Proposed Development (Opening Year) scenario and would continue to do so for the future assessments.

7. Population & Human Health / Waste
No change.

8. Population & Human Health / Cultural Heritage
As set out in Chapter 14 addendum, there are no protected structures on site or any areas of architectural conservation in the area which will be impacted. Prior to commencement it is recommended that an archaeological assessment is carried out in line with the recommendations in Chapter 14. With the implementation of the mitigation measures in Chapter 14 the impact of the proposed development on cultural heritage will be minimal, if any.

9. Population & Human Health / Materials Assets
No change.

10. Biodiversity / Soils
No change.

11. Biodiversity / Hydrology
No change.

12. Biodiversity / Noise
No change.

13. Biodiversity / Air
No change.

14. Biodiversity / Landscape
No change.

15. Biodiversity / Material Assets
No change.

16. Soils / Hydrology
No change.

17. Soils / Air

No change.

18. Soils/Landscape

No change.

16. Schedule of Mitigation Measures

16.1 Introduction

Given the complexity of the proposed development and this EIAR, this chapter seeks to provide a complete summary of mitigation measures proposed in Chapters 4 to 16. The appointed contractor will be required to adhere to the mitigation contained in the EIAR. Monitoring of the effectiveness of mitigation measures put forward in the EIAR document by the competent authorities is also integral to the process.

16.2 Construction Phase

Population and Human Health	No change
Biodiversity	**Terrestrial Biodiversity Protection Protocol** As a matter of standard construction practice, the development would be constructed in accordance with the following methods and guidelines: • All construction works would be confined as far as possible to the development footprint; • Where possible, vegetation removal works would be scheduled outside of the 1st of March to the 31st of August period, so as not to disturb nesting bird species; • If works should take place beside any trees that will remain as part of the landscape plan, then a root protection zone will be established to ensure no construction works will disturb the root zone (See **Appendix 5.5**); • The Tree Protection Plan has been prepared with regard to the British standard BS 5837:2012 Trees in relation to design and construction recommendations this standard gives recommendations and guidance on the principles to be applied to achieve a satisfactory juxtaposition of trees, including shrubs, hedges and hedgerows, with structures; • The construction works contractor will take cognisance of the NRA's document "*Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes*", 2006. In particular, the construction works contractor will take cognisance of the guidelines with regards soakaway, sewage system and drainage ponds area and the determination of the root protection area of the existing trees to be retained within the development site; • A Landscape Plan has prepared as part of the development and has taken into consideration the urban setting and the use of native species where possible, with native tree species only used along the east and northeast boundary in proximity to the Curragh Buffer zone (See **Appendix 5.7**); • The landscape plan includes areas of grasscrete, permeable parking bays, ornamental shrubs and bulbs. Also, meadows, wildflower meadows, wetland planting and bioretention areas, these areas are being planted with native flora that will increase biodiversity and pollinator activity within the proposed development;

- All planting of trees and hedges to be undertaken during bare root season November to April. The balance of tree & shrub planting and lawn & meadow seeding to be completed within 12 months of the completion of construction work of the development.

Badger

No Change

Bats

- No chemicals will be used within the development site and will not be used near treelines and hedgerows or any drainage system;
- The planting of landscape features integrated to the wider network of green corridors such as hedgerows, woodland and scrub, the landscape plan has maintained connectivity along the north east boundary of the site;
- Bat boxes can be installed to suitable mature trees along the site boundary;
- Bats rely on linear habitats such as hedges to fly through the landscape. The landscape plan includes the protection of the majority of hedgerows along the boundary with future replanting of mature trees in the south 15m industrial buffer zone.;
- Felling of moderate roost potential trees should be only undertaken in the period late August to late October/early November;
- Felled trees should be left for 48 hours, to allow for any potential bats to escape;
- See Bat Conservation Ireland Guidelines on hedgerow management for bats. https://www.batconservationireland.org/wp-content/uploads/2022/07/Managing-Hedgerows-for-Bats.pdf

Artificial Lighting during construction phase;

- Construction works in the hours of darkness, when bats are active (April – October), will be kept to a minimum;
- Lighting of hedgerows / treelines will be avoided where possible;
- Should lighting be required during construction works, it will be of a low height (without compromising safe working conditions) to ensure minimal light spill. Where possible and where practicable to do so, timers or motion sensors would be used;
- Directional lighting will be used where possible, by use of louvres or shields fitted to the lighting;

White light emitting diode (LED) will be used where possible, which is considered to be low impact in comparison to other lighting types. The Lighting Desing by MANDE Consulting has been redesigned to move columns away from areas where bats are likely to be active.

Birds And Other Fauna

No Change

Invasive Species

No Change

Aquatic Ecology

	Stormwater from the proposed development would comprise of clean rainwater run-off from roof and paved areas and would be directed to the drainage network and attenuation system within the proposed development. A nature-based solution has been designed to ensure the proposed development is more ecologically beneficial to the environment by including bioretention areas, swales, green roofs and attenuation tanks with ponds. The ponds will also act as a microcosm for biodiversity. The permanent waterbody will allow for aquatic invertebrates to establish which will in turn grow the potential for other fauna to establish here. The pond vegetation will also help prevent eutrophication of the water and remove excess nutrients from the drainage runoff. **Ground Water** No Change
Land, Soil and Geology	No change.
Hydrology and Water Services	No change.
Noise and Vibration	**Construction Phase-Noise** No Change **Selection of Quiet Plant** No Change **Noise Control at Source** No Change **Screening** Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Construction site hoarding will be constructed around the site boundaries as standard. The hoarding will be constructed use standard plywood material to provide adequate sound insulation. Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Construction site hoarding will be constructed around the site boundaries as standard. The hoarding will be constructed of a material to reduce noise by 20dB along the west, north boundaries and a percentage of the east boundary. Figure 8-16 shows locations of hoarding required. This will ensure guidance limit for construction noise at nearest noise sensitive location is followed and potential impacts relating to noise nuisance and disturbance and vibration impacts are effectively minimised and controlled. In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.

	 *Figure 16.1: shows locations and type of hoarding required* **Liaison with the Public** No Change **Monitoring** No Change **Project Programme** No Change **Construction Phase - Vibration** No Change
Air and Climate	No change.
Landscape and Visual Impact	No change.
Traffic and Transportation	No change.
Material Assets	No change.
Waste	No change.
Cultural Heritage	No change.

16.3 Operational Phase

Population and Human Health	No change.
Biodiversity	Artificial Lighting during operational phase; Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012). The lighting design by MANDE Consulting Engineers Ltd. will include the following mitigation measures: • Lighting will be directed to where it is required only, rear shields shall be used; • Lighting of hedgerows / treelines will be avoided where possible. The PL shall be positioned to avoid unnecessary light over spill around the retained hedgerows; • Using shielded, downward directed lighting by utilising specially designed lanterns with zero-light spill above the horizontal plane of the optic. This effectively illuminates any waste illumination above the horizontal plane of the lantern; • Buildings, roads and site entrance lighting will be angled away from hedgerows and treelines; • Using luminaire accessories to reduce the spill light. All lanterns will be fitted with front or back louvres to reduce the nuisance spill into dwellings. In addition the 4no. lanterns installed on the bridge will be equipped with back and front louvers to focus the illuminance on the bridge only; • The PL shall be limited to roadways to retain darkness above; • All lanterns calculated at 0° tilt • Lighting will be 6m height as per KCC guidelines; • Where possible and practicable to do so, timers or motion sensors will be used; • White LED (temperature is 3000K) or amber coloured LED outdoor lighting would be used where possible, which is considered to be low impact in comparison to other lighting types; • All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used; • Light spill into the surrounding fields to the east and north is to be minimal, this would include the Curragh Buffer zone; • Each light fitting shall be controlled via an individual Photoelectric Control Unit (PECU). The operation of the lighting shall be on a dusk-dawn profile, 35 lux on/18 lux off.
Land, Soil and Geology	No change.
Hydrology and Water Services	**Surface water runoff from footpaths, roads, walkways, carparks and general hardstanding** An appropriately designed drainage system has been designed for the subject site. The system was designed in accordance with the CIRIA SUDS Manual and Recommendations for Site Development Works for Housing Areas published by the Department of the Environment and Local Government.

	It is proposed to use a sustainable urban drainage systems (SuDS) approach to stormwater management throughout the site, the overall strategy aims to provide an effective system to mitigate the adverse effects of urban stormwater runoff on the environment by reducing runoff rates, volumes and frequency, reducing pollutant concentrations in stormwater, contributing to amenity, aesthetics and biodiversity enhancement and allow for the maximum collection of rainwater for re-use where possible. The lowest invert of the proposed attenuation tanks is 90.3 mOD at tank A. Based on the highest groundwater level recorded at this location of the site (i.e. 88.89 mOD within PBH02), this equates to an unsaturated zone of 1.41 metres between groundwater and the invert of the lowest proposed drainage tank. Given the reduced infiltration characteristics of the subsoils recorded in the vicinity of, and underlying, tank A, access into the underlying, deeper more permeable horizons as part of the drainage system design in this area was incorporated to facilitate appropriate infiltration from tank A. The proposed design comprises the excavation of a small number of linear and localised pathway trenches infilled with natural permeable gravelly sands and sandy gravels. The objectives of the pathway trenches are to facilitate infiltration from the tank and provide additional filtration of stormwater before entering the groundwater body. The additional investigation and monitoring confirmed that subsoils present under the proposed Infiltration/Attenuation tank B and C are deemed suitably permeable to facilitate the infiltration of stormwater to the underlying groundwater while maintaining an appropriate unsaturated zone (i.e. 1 metre) between the invert of the proposed tanks and the highest recorded groundwater level in these areas. Permeabilities underlying Tanks B ranged between $2.23x10^{-2}$ m/s (TP104) and $5.19x10^{-5}$ m/s (PTP04) and underlying Tank C ranging between $1.16x10^{-5}$ m/s and $1.61x10^{-5}$ m/s. **Contaminated imported material** All imported fill shall be confirmed as inert and suitable for reuse on site by an appropriately qualified engineer/consultant.
Noise and Vibration	**Operational Phase** **Additional Traffic on Adjacent Roads** No Change **Mechanical Services Plant** No Change **Inward impacts** Inward impacts relate to noise emissions received at a receptor due to emissions emitted by one or more sources. Emerging best practice provides for the design of new developments such that the occupants of residential elements are not subject to high internal noise due to existing (and potential future) external noise sources. Such sources usually consist of transport (road, rail, and aircraft), and industry. Internal and external criteria considered appropriate to new residential developments are identified below. Impacts at the proposed creche are also assessed.

At the Proposed Development site, inward noise will arise from the following sources:

- Onsite vehicle movements associated with residents at onsite and staff and creche. Noise emissions from these will be relatively low at onsite receptors due to low traffic speeds. Inward noise impacts are typically associated with rolling noise at higher speeds, and such emissions are unlikely to arise onsite.
- Noise from delivery vehicles across the site and from waste management vehicles will be similarly low due to low speed.
- The nearest road of significance is the R445 which runs along the southern side of the proposed development site. This road sees traffic throughout the day, evening, and night.
- Inward traffic noise also arises from distant roads, including the M7.
- Inward industrial noise also arises from Kildare Chilling.

All sources of inward noise are road traffic and industrial. Rail and aircraft noise is not audible at the site.

Noise levels measured at the site indicate that Lden levels close to the R445 rise to 60-61 dB, with Lnight levels reaching 46-47 dB. Levels falls with increasing distance from surrounding roads, with Lden and Lnight levels falling below 55 and 46 dB respectively in parts. Lden and Lnight levels across the site are currently lower than Noise Action Plan thresholds. The ProPG risk assessment concludes that the proposed development site is low risk across almost all areas, increasing to medium risk at positions immediately adjacent to the R445. It is also concluded that night-time L_{AFmax} levels require consideration at positions within approximately 100 m of public roads.

In order to quantify noise levels across the site, predictive modelling was undertaken using Sound plan software. The following input parameters were applied:

- Model algorithm: International Standard ISO 9613-2:1996 Acoustics: Attenuation Of Sound During Propagation Outdoors – Part 2 General Method Of Calculation (1996).
- Contours taken from mapping.
- Modelled heights: 2 m to allow comparison with measured values.
- Road traffic volumes taken from the traffic count data provided by the design team. The count measured daytime data only (0700-1900 h). Additional evening (1900-2300 h) and night-time (2300-0700 h) flows of 10 % each were assumed.
- Light vehicle and HGV noise emissions taken from CNOSSUS-EU database.
- Traffic speeds 50 km/h,
- Industrial Noise.

The model output is shown in Figures 8-19 and 8-20. Table 8-18 presents a comparison between modelled and measured Lden and Lnight levels. Modelled levels at three measurement positions are within 3 dB of measured levels. The model is considered reasonably valid for the purposes of this assessment.

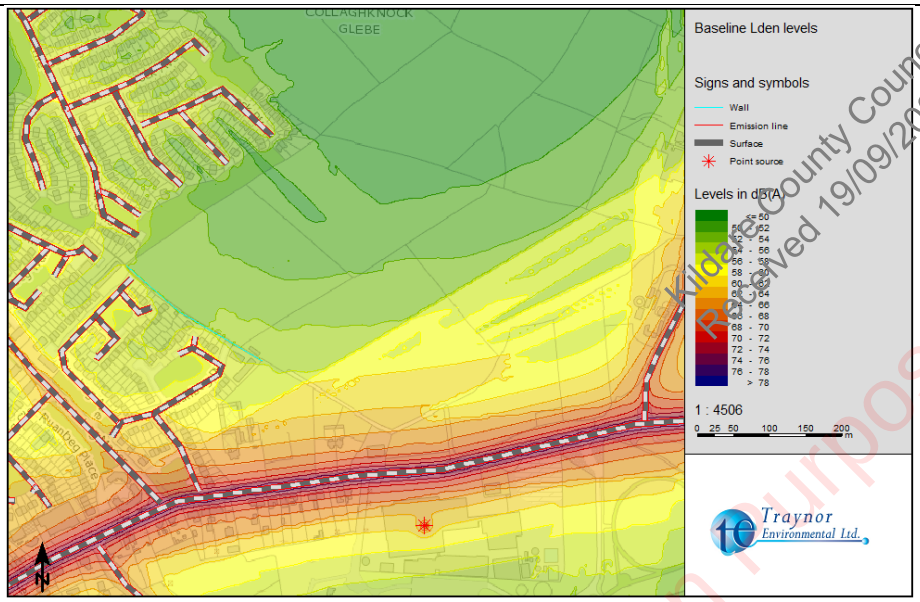

Figure 16.2: Baseline Lden levels

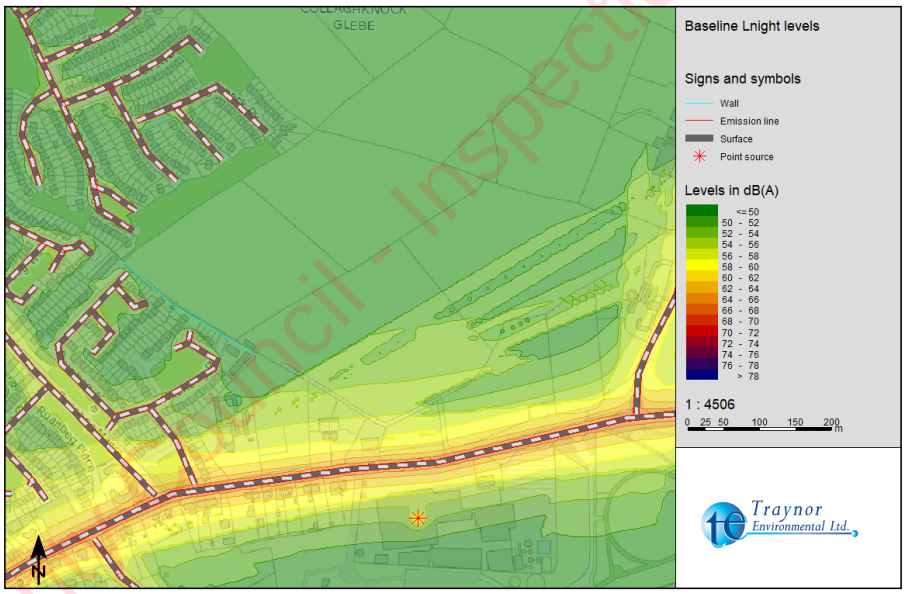

Figure 16.3: Baseline Lnight levels

Parameter		A	B	C
Lden	Measured	60	59	55
	Modelled	62	59	54
Lnight	Measured	51	52	46
	Modelled	53	50	46

Table 16.1: Modelled and measured baseline Lden and Lnight levels

In order to provide for future increases in noise levels, the model was modified to include future traffic volumes (overall road traffic across the local area) predicted by the project traffic team with respect to the design year 2041. Proposed buildings at the site were added to the model, as well as traffic on the proposed

site roads. The model was run at a height of 4 m, to provide an indication of future traffic noise levels at upper floors of the proposed buildings. The model output is shown in Figures 8-15 to 8-18. Parameters modelled are Lnight, Lden, LAeq 16 h and night-time LAeq 1 h, as these relate to identified criteria.

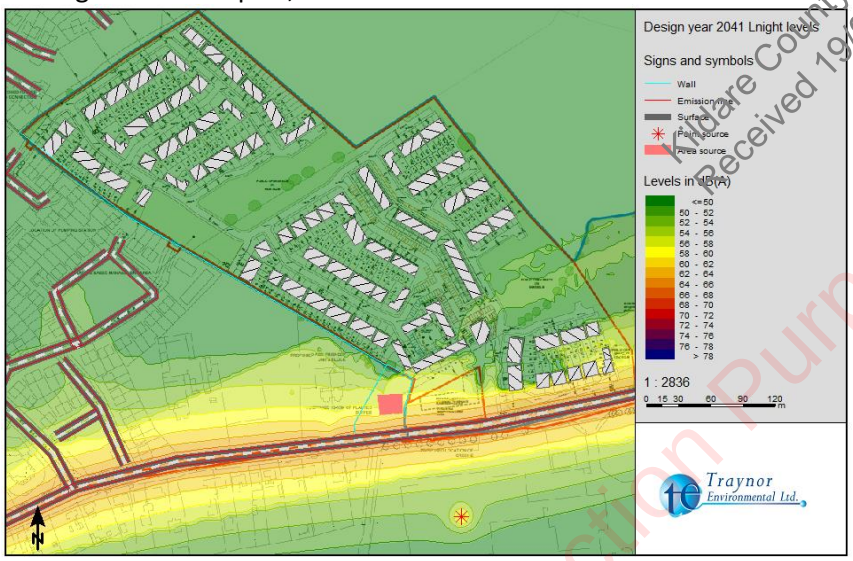

Figure 16.4: Design year 2041 Lnight levels (indicative site boundary)

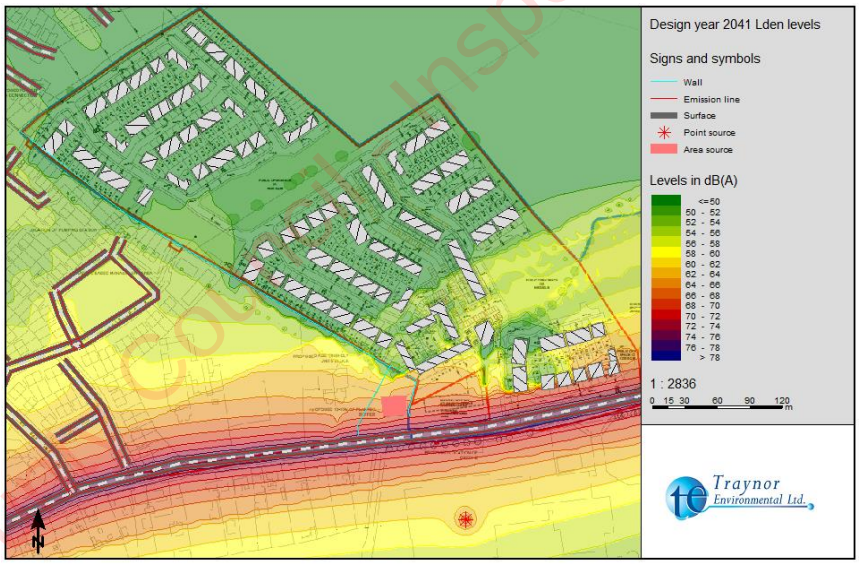

Figure 16.5: Design year 2041 Lden levels (indicative site boundary)

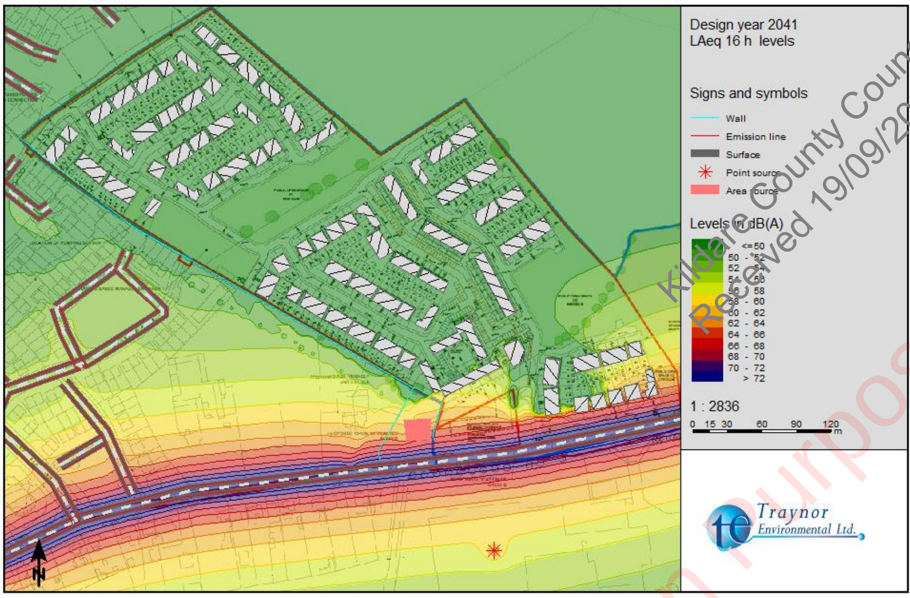

Figure 16.6: Design year 2041 LAeq 16 h levels (indicative site boundary)

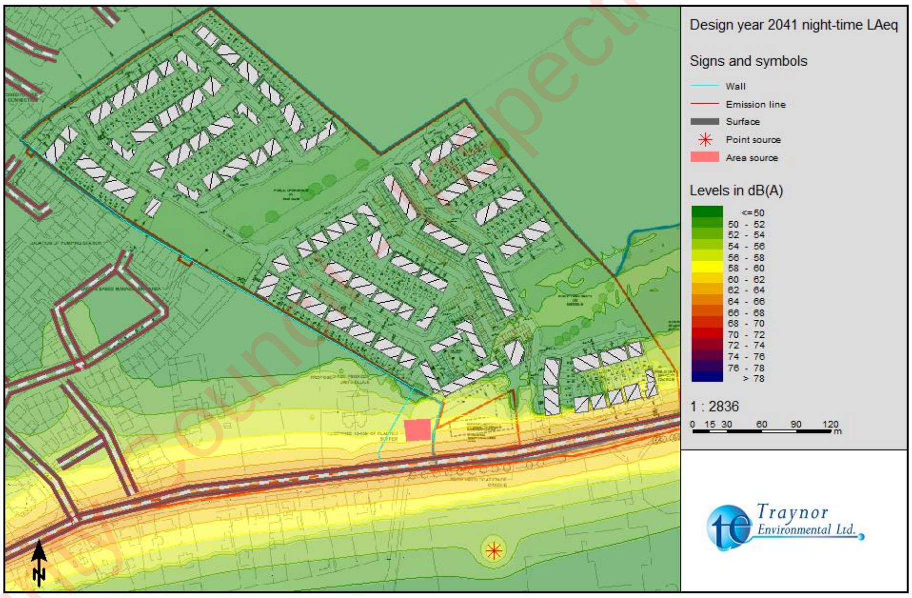

Figure 16.7: Design year 2041 night-time LAeq 1 h levels (indicative site boundary)

Pro-PG Stage 1: Risk assessment

No Change

Pro-PG Stage 2 element 1: Good acoustic design process

No Change

Pro-PG Stage 2 element 2: Internal noise level guidelines

Internal noise criteria are discussed above. Assuming a 15 dB reduction through an open window (the conventionally accepted value, identified in NANR116: Open/Closed Window Research – Sound Insulation Through Ventilated Domestic Windows (prepared by the Napier University Building Performance Centre for DEFRA, 2007)), the following conclusions are drawn:

- Recommended internal daytime LAeq 16 h criteria are 35-40 dB. These criteria will be met with open windows where incident levels do not

exceed 50-55 dB. The criteria will be met across most of the residential area with windows open.

- At dwellings fronting the R445, RW value of 33 glazing is likely to allow compliance with criteria with windows closed in living rooms, dining rooms and bedrooms.
- The recommended L_{night} criterion in bedroom is 30 dB. As before, this criterion will be met across most of the residential area with windows open. Installation of RW value of 33 glazing identified in the previous paragraph will allow internal night-time criteria to be achieved at bedrooms facing the R445.
- Facades within 100 m of the R448 will be exposed to more than 10 L_{AFmax} events at night which exceed 60 dB. The World Health Organisation (1999) recommends that LAFmax levels in bedrooms should not exceed 45 dB to prevent sleep disturbance. Where the number of events exceeds 10 per night, the objective is thus to ensure than internal LAFmax levels with windows closed remain below 45 dB. Standard thermal glazing will reduce internal LAFmax levels below 45 dB at almost all bedrooms across the site, including most units within the 100 m corridor along the R445. At units directly fronting the R445, external LAFmax levels may reach 80 dB, and standard thermal glazing will be insufficient. The RW 33 dB recommendation above will also be insufficient, and it will be necessary to further increase RW values here. A conservative RW value of 38 dB is recommended at bedrooms within 20 m of the R445. Standard thermal glazing will be sufficient at other facades.

The operational phase mitigation required onsite relates solely to inward impacts associated with R445 traffic and industrial noise. Internal LAeq T criteria will be met at most residential units using standard thermal glazing. However, certain facades will require enhanced glazing to meet ProPG and BS 8233:2014 criteria. The facades in question are shown in Figure 8-19. At these façades, it is proposed to install glazing with a minimum RW value of 33 dB in living rooms and dining rooms, and 38 dB on bedrooms. Standard glazing will suffice in kitchens, bathrooms, hallways, and stairwells. Table 8-13 shows recommended glazing specifications, along with ventilation requirements.

Table 8-13 specifications are readily achievable, and a number of suppliers offer suitable products. It is necessary that the glazing RW value is guaranteed by the window supplier rather than by the individual glazing and frame manufacturers. Potential suppliers should be advised that levels in each octave band should be achieved as a minimum. Compliance with the overall RW value should only be assessed by reference to the RW+Ctr value, typically 4-5 dB higher than the RW value alone.

Band	63 Hz (dB)	125 Hz (dB)	250 Hz (dB)	500 Hz (dB)	1000 Hz (dB)	2000 Hz (dB)	4000 Hz (dB)	8000 Hz (dB)	Total

Dining & living glazing	15	17	21	30	38	36	35	35	33 dB Rw
Dining & living trickle vent	36	36	34	31	34	38	38	38	35 dB Dn,e
Bedroom glazing	25	28	28	34	40	41	43	45	38 dB
Bedroom trickle vent	35	40	38	32	47	53	53	53	38 dB Dn,e

Table 16.2: Site glazing and ventilation requirements at facades shown in Figure 8-19

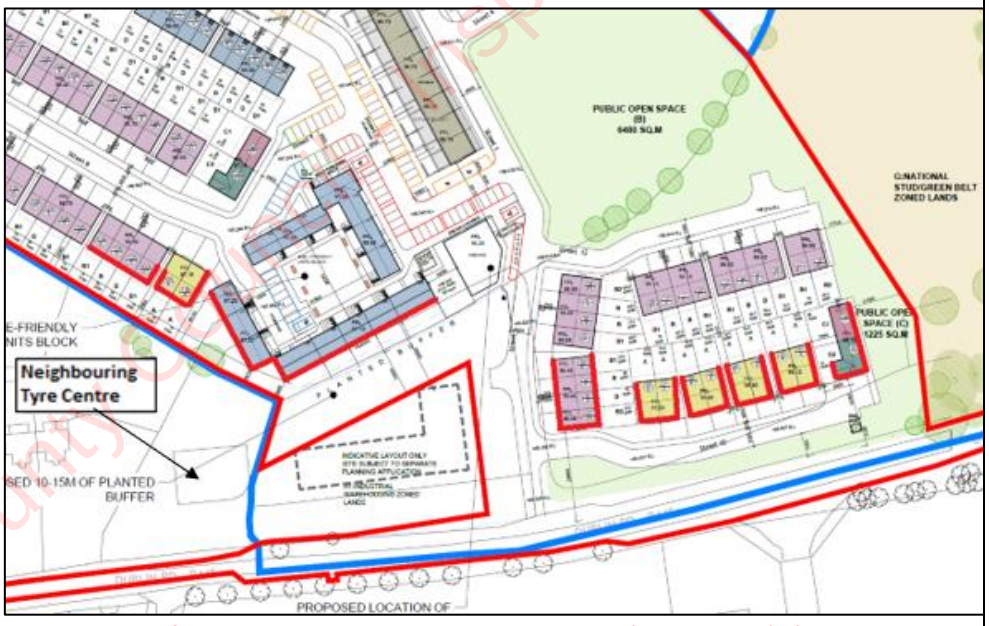

Figure 16.8: facades requiring enhanced glazing (shown red) (indicative site boundary)

It is proposed to install the glazing recommended in Table 8.13 and shown in Figure 8.19 to the proposed facades located to the north of the adjacent Tyre Centre and along the R445. This will reduce the potential for future complaints from the existing residents adjacent to the Tyre Centre and the R445.

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The results of the modelling show that the proposed age friendly housing units close to the tyre centre and houses located close to the R445 will be protected from potential noise impact by the installation of triple glazing windows (min 38dB

reduction) and façade acoustic ventilation which will also have a minimum Reduction of 38dB.

External amenity areas will be satisfactory in the context of WHO and ProPG criteria. At the proposed creche, received LAeq 16 h levels will be satisfactory in the context of Technical Guidance Document TGD-021-5, and specific mitigation measures are not required. Standard thermal glazing is expected to be sufficient to meet an internal ambient LAeq 30 min criterion of 35 dB.

Pro-PG Stage 2 element 3: External amenity area noise assessment

BS 8233:2014 recommends that LAeq 16 h levels should ideally not exceed 50-55 dB in external amenity areas. This criterion will be met in rear gardens of all housing units.

Where LAeq 16 h levels in amenity areas exceed 50-55 dB, BS 8233:2014 states that:

'These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces but should not be prohibited.'

In this regard, ProPG adds:

'Where, despite following a good acoustic design process, significant adverse noise impacts remain on any private external amenity space (e.g. garden or balcony) then that impact may be partially off-set if the residents are provided, through the design of the development or the planning process, with access to…a relatively quiet, protected, publicly accessible, external amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance).'

The residential area will incorporate a number of onsite open green spaces, all within several minutes' walk. Residents of all units will therefore benefit from provision of an extensive open, accessible, and quiet onsite realm. On this basis, noise levels in amenity areas will be satisfactory.

Pro-PG Stage 2 element 4: Assessment of other relevant issues

Other issues assessed, as recommended by ProPG, include the following:

- Compliance with relevant national and local policy: The most relevant policies are those set out in the County Kildare Third Noise Action Plan 2019-2023. The plan proposes that mitigation will be applied where Lden levels exceed 70 dB, and Lnight levels exceed 57 dB. Onsite Lden noise levels do not exceed the 70 dB criteria and are not expected to exceed them in the future.
- Magnitude and extend of compliance with ProPG: LAeq 16 h and Lnight levels in almost all proposed units will meet identified criteria without specific acoustic mitigation measures. Measures required relate solely to units fronting the R448 and are discussed below.
- Likely occupants of the development: The proposed development is expected to be occupied by a typical sample of the population and is unlikely to see a predominance of one particularly sensitive group.
- Acoustic design versus unintended adverse consequences: No adverse consequences have been identified.

	• Acoustic design versus wider planning objectives: No issues have been identified. At the proposed creche, incident LAeq 16 h levels will be considerably lower than the 51-55 dB range suggested by Technical Guidance Document TGD-021-5.
Air and Climate	No change.
Landscape and Visual Impact	The retained landscape features will be incorporated into the overall landscape proposals which will bolster the existing green infrastructure of the existing Proposed Development site and immediate surroundings. Existing lines of mature trees within the Proposed Development site will be incorporated as a key feature within the areas of public open spaces. These spaces will also include valuable functioning SUDS features including a bioretention pond on the western boundary. Planting across the Proposed Development will include trees, hedges, shrubs, perennials, wildflower meadow, wetland planting, amenity/private grassland. The planting will consist of a range of suitable native and non-native non-invasive species which across the various open spaces and gardens will help to soften the appearance of the buildings and act as a visual barrier to reduce potential visual impacts. The amended landscape masterplan provides additional mitigation measures in the form of new hedgerow and tree planting along the Proposed Development's southern roadside boundary specifically to act as a visual barrier between the Proposed Development and road users travelling along the adjoining R445 scenic route in order to reduce any potential visual impacts.
Traffic and Transportation	No change.
Material Assets	No change.
Waste	No change.
Cultural Heritage	No change.