

3. CONSIDERATION OF REASONABLE ALTERNATIVES

3.1 Introduction

Article 5(1)(d) of Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (codification) as amended by Directive 2014/52/EU (the EIA Directive) requires that the Environmental Impact Assessment Report (EIAR) prepared by the developer contains “a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.”

Article 5(1)(f) of the EIA Directive requires that the EIAR contains “any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.”

Annex IV of the EIA Directive states that the information provided in an EIAR should include a “description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.”

This section of the EIAR contains a description of the site selection criteria and the reasonable alternatives that were considered for the Proposed Development, in terms of site layout and transport route options to the site. This section also outlines the design considerations in relation to the Proposed Development and indicates the main reasons for selecting the chosen option with regards to its environmental impacts.

The consideration of alternatives is an effective means of avoiding environmental impacts. As set out in the ‘Guidelines on The Information to be Contained in Environmental Impact Assessment Reports’ (Environmental Protection Agency, 2022), the presentation and consideration of reasonable alternatives investigated is an important part of the overall EIA process.

It is important to acknowledge that although the consideration of alternatives is an effective means of avoiding environmental impacts, there are difficulties and limitations when considering alternatives. Indeed, as is clear from the provisions of the EIA Directive itself, the requirement is to consider “reasonable alternatives” which are relevant to the project and its characteristics. In general terms, issues such as hierarchy, non-environmental factors and certain site-specific issues may also be relevant to the consideration of reasonable alternatives by the developer.

Hierarchy

EIA is concerned with projects. The Environmental Protection Agency’s guidelines (EPA, 2022) state that in some instances neither the applicant nor the competent authority can be realistically expected to examine options that have already been previously determined by a higher authority, such as a national plan or regional programme for infrastructure.

Non-environmental Factors

EIA is confined to the potential significant environmental effects that influence consideration of alternatives. However, other non-environmental factors may have equal or overriding importance to the

developer of a project, for example project economics, land availability, engineering feasibility or planning considerations.

Site-specific Issues

The EPA guidelines state that the consideration of alternatives also needs to be set within the parameters of the availability of the land, i.e., the site may be the only suitable land available to the developer, or the need for the project to accommodate demands or opportunities that are site-specific. Such considerations should be on the basis of alternatives within a site, for example design and layout.

3.2

Determination of Proposed Development

A comprehensive proposed masterplan for the entire site has been developed, setting out proposals for buildings, spaces and a movement and land-use strategy. The **'Proposed Moygaddy Masterplan'** comprises four main parcels of land, currently intended to be developed as follows:

- **Site A: Strategic Employment Zone**, as per Meath County Development Plan (CDP, 2021-2027) and Maynooth Environs Local Area Plan (LAP, see Section 3 of Scoping Document for further details). Proposed to be developed as a Biotechnology & Life Sciences Campus. The initial planning application in this area will be for 3 No. standalone office buildings, to be submitted to Meath County Council.
- **Site B: Community Infrastructure Use**, as per Meath CDP (2021-2027) and Maynooth Environs LAP. It is envisaged that the initial planning application within this area will comprise a Nursing Home and Primary Care Centre, to be submitted to Meath County Council. A separate, future planning application is also envisaged for a new public hospital on an adjoining site in collaboration with the HSE / Sláintecare.
- **Site C: Residential Use**, as per Meath CDP (2021-2027) and Maynooth Environs LAP. It is intended that a Strategic Housing Development planning application will be submitted to An Bord Pleanála for the first phase of residential development within this area. A creche/childcare facility and public park will also be included as part of the SHD application.
- **Site D: Tourism / Community / Amenity Use**, as per as per Meath CDP (2021-2027) and Maynooth Environs LAP. It is intended that a hotel, sport and leisure facilities, local retail and a cultural heritage centre will be delivered on this site, to be submitted to Meath County Council as part of a separate, future planning application.

Sky Castle Ltd. intends to submit to a total of six planning applications as part of the Moygaddy Mixed Use Development (henceforth referred to as the Proposed Development). A total of three planning applications will be submitted to Meath County Council as the competent authority. The First planning application seeks to provide a Strategic Employment Zone, the second planning application for Healthcare Facilities which includes a Nursing Home and Primary Care Centre, and the third planning application for the delivery of the proposed Maynooth Outer Orbital Road (MOOR).

A planning application for a Strategic Housing Development (SHD) will be submitted to An Bord Pleanála under the Strategic Housing Provisions of the Planning and Development (Housing) and Residential Tenancies Act, 2016.

There will also be two separate planning applications submitted to Kildare County Council for shared infrastructure and proposed road services and utilities connection to Maynooth town in County Kildare. One planning application to Kildare includes a proposed pedestrian / cycle bridge adjacent to the existing Kildare Bridge, as well as a proposed wastewater connection to the Maynooth Municipal Wastewater Pumping Station to the southeast of the Proposed Development. The other planning application to be submitted to Kildare County Council is located to the southwest of the Proposed Development for the provision of an integral single span bridge over the River Rye Water with

associated flood plain works and embankments, as well as services and utilities connections in county Kildare.

MKO have also prepared an Appropriate Assessment Screening Report and a Natura Impact Statement (NIS) for the Proposed Development.

The current statutory planning policy document for the subject lands is the Maynooth Environs Local Area Plan 2013-2019 (MLAP), which is incorporated into the Meath County Development Plan 2021-2027. The plan sets out the zoning and other specific objectives for all lands within the Maynooth Environs area of Co. Meath. The land use zonings for the MLAP are also reflected in the Kildare County Development Plan. The subject lands have a mix of land use zonings as Figure 3-1 indicates below.

The Proposed Development lands are located within the MLAP lands which are zoned for Strategic Employment, Community Infrastructure, Tourism, New Residential and High Amenity. The current land zoning and Proposed Distributor Road under the MLAP have been key facilitators in the design process for the Proposed Development at Moygaddy.

The route alignment of the proposed MOOR has been heavily informed by the Part 8 Planning Application that was advanced previously by Meath County Council for the Maynooth Outer Orbital Route (P8/16003). Meath County Council decided to proceed with the proposed road scheme in 2016. However, the Part 8 scheme was subsequently withdrawn by Meath County Council.

The proposed mixed-use development at Moygaddy has been designed in compliance with the policies and objectives of the Meath County Development Plan. The Maynooth Environs Local Area Plan, which is set out in the Meath County Development Plan 2021-2027, includes the following policy objectives relevant to the Proposed Development at Moygaddy;

Table 3-1 Meath County Development Plan 2021-2027 Relevant Policies and Objectives

Policy Objective	Guidance/Policy Requirement
MAY POL 1	To prepare in conjunction with Kildare County Council a joint Local Area Plan for Maynooth, over the period of the Plan.
MAY POL 2	To ensure that the development of the Maynooth Environs is accommodated in an environmentally sensitive manner that will: <ol style="list-style-type: none"> 1. Create a centre of excellence for innovation and employment; 2. Protect the existing natural environment and built heritage and utilise it to frame new development, and; 3. Build a distinctive and attractive mixed-use place to work and live.
MAY POL 3	To provide for high technology / biotechnology industries/medical uses inclusive of associated advanced manufacturing, office, research and development uses in a high-quality campus style environment on the strategic employment lands.
MAY OBJ 1 (Master Plan 1):	It is an objective of the Planning Authority to require the submission with any application for development of lands at Moygaddy for a Master Plan for the prior written agreement of the Executive of the Planning Authority which shall address the following:

Policy Objective	Guidance/Policy Requirement
	<ol style="list-style-type: none"> 1) A Design Statement outlining the evolution of the design process for the proposed development. An emphasis on exemplar sustainable design and aesthetic quality shall be required 2) Proposals for the accessing of lands which shall adhere to the permitted Part VIII realignment of the junction of the R157 Regional Road and Moygaddy Road. 3) Proposals providing for the delivery of the Maynooth Outer Relief Road which shall be developer driven in tandem with the overall development; 4) Proposals for piped water services to be agreed with Irish Water compliant with any existing consents in place; 5) Mobility Management Plan for the development. This Plan shall be to the fore in establishing the agreed quantum of employees which can be accommodated within individual locations predicated on maximising public transport opportunities and the use of innovation in reducing associated carbon footprint. 6) Urban design and landscape design statement. <p>Any development within the subject lands shall be subject to compliance with the requirements of the Habitats Directive and shall be phased with the delivery of the MOOR in Phase 1 of the development.</p>
MAY OBJ 4	To support and facilitate in conjunction with Kildare County Council and private developers and landowners, the construction of the Maynooth Outer Orbital Route.
MAY OBJ 5	To require that the Maynooth Outer Orbital Route connects with the MOOR being delivered in the administrative area of Kildare County Council. Said route shall incorporate the construction of a sewer and ring main linking the sewer and trunk main in the Dublin Road to the residential development in the Mariavilla area.
MAY OBJ 6	To ensure the provision of improved cycle and walking connections to Maynooth Town Centre.
MAY OBJ 7	To upgrade the R157 between Kildare Bridge and Offaly Bridge.
MAY OBJ 8	To require the implementation of cycle lanes and associated cycle infrastructure upgrades as identified within the Greater Dublin Area Cycle Network Plan, in the area in partnership with the National Transport Authority and other relevant stakeholders.
MAY OBJ 10	To require that any development in the Maynooth Environs respects the built and natural heritage of the area, its landscape quality, protected structures, historic demesne, archaeological heritage, natural heritage and general landscape character.
MAY OBJ 11	To ensure all development in the area has no negative impact on the Rye Water Valley/Carton SAC site or on the environmental characteristics of the area including woodland, rivers and tributaries.
MAY OBJ 13	To facilitate the provision of community facilities including a hospital and/or associated educational/research and residential facilities.
MAY OBJ 14	To promote a high standard of architectural design, and quality of materials utilised throughout the Development Framework area, that is appropriate in scale, and form to its location.

The Proposed Development has been designed in consideration of the Maynooth Environs Local Area Plan and Meath and Kildare County Development Plan policies and objectives, including zoned lands for Moygaddy as indicated in Figure 3-1 below. The site boundaries for the 6 no. planning applications included as part of the Proposed Development are shown in Figure 3-2 below.

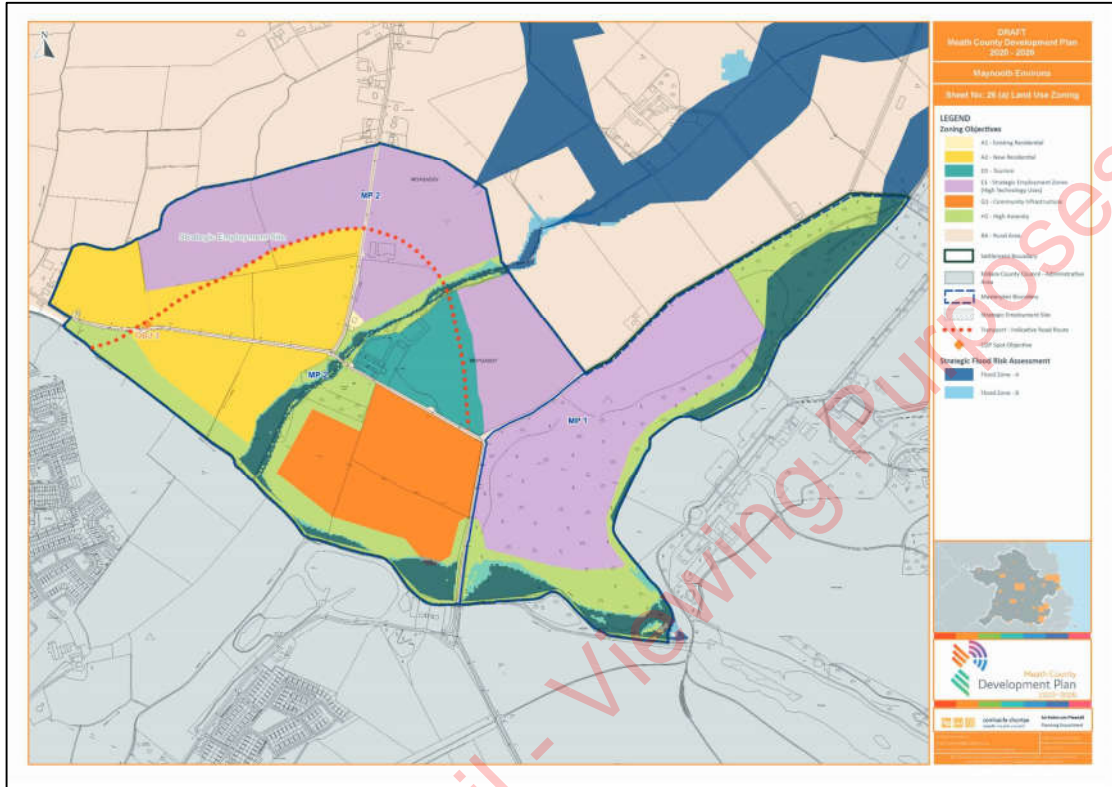


Figure 3-1 Land Use Zoning Map for Maynooth Environs (Meath County Development Plan 2021-2027)

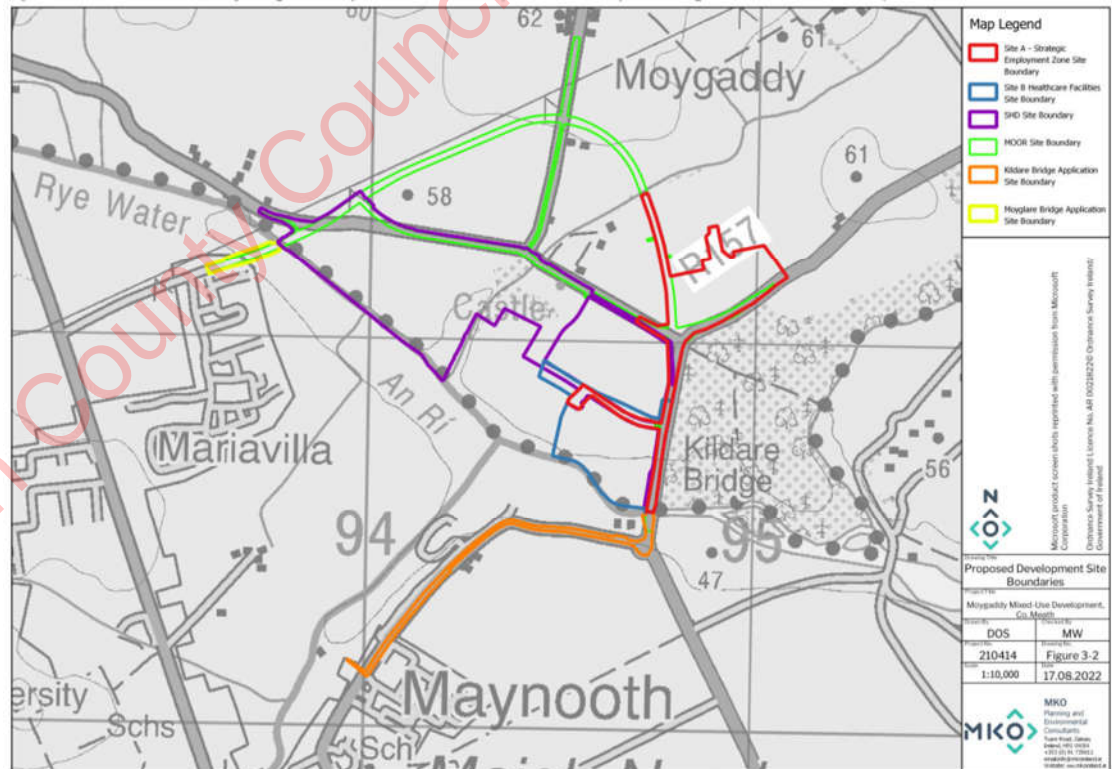


Figure 3-2 Proposed Development Site Boundaries

The site selection and design for the Proposed Development was an iterative process which took account of all site constraints and the distances to be maintained between infrastructure from ecological constraints, houses, roads, watercourses, etc. As information regarding the site of the Proposed Development was compiled and assessed, the proposed layout has been revised and amended to take account of the physical constraints of the site and the requirement for buffer zones and other areas in which infrastructure could not be located. The final site selection provides the optimum location for site infrastructure, with ecological and environmental constraints at the forefront in the selection process.

3.3 Consideration of Alternatives

3.3.1 Methodology

The EU Guidance Document (EU, 2017) on the preparation of EIAR outlines the requirements of the EIA Directive and states that, in order to address the assessment of reasonable alternatives, the Developer needs to provide the following:

- A description of the reasonable alternatives studied; and
- An indication of the main reasons for selecting the chosen option with regards to their environmental impacts.

There is limited European and National guidance on what constitutes a 'reasonable alternative' however the EU Guidance Document (EU, 2017) states that reasonable alternatives “*must be relevant to the proposed project and its specific characteristics, and resources should only be spent assessing these alternatives*”.

The guidance also acknowledges that “*the selection of alternatives is limited in terms of feasibility. On the one hand, an alternative should not be ruled out simply because it would cause inconvenience or cost to the Developer. At the same time, if an alternative is very expensive or technically or legally difficult, it would be unreasonable to consider it to be a feasible alternative*”.

The current EPA Guidelines (EPA, 2022) state that “*It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required.*”

Consequently, taking consideration of the legislative and guidance requirements into account, this chapter addresses alternatives under the following headings:

- 'Do Nothing' Alternative;
- Alternative Locations;
- Alternative Layouts;
- Alternative Designs; and
- Alternative Mitigation Measures.

Each of these is addressed in the following sections.

In considering a mixed-use development on already zoned lands, given the intrinsic link between layout and design, the two will be considered together in this chapter.

3.3.2 'Do-Nothing' Option

If the Proposed Development were not to proceed, no changes would be made to the current land-use practice. The site would continue to be managed under the existing farming and agricultural practices and the environmental impact of this is considered negative in the context of the EIAR. The potential

for additional investment in infrastructure, housing and employment in the area in relation to the construction and operation of the Proposed Development would be lost. It is considered that the ‘Do-Nothing’ impact would be permanent, negative and slight as the Proposed Development lands are already zoned for Strategic Employment, Community Infrastructure, Tourism, New Residential and High Amenity.

3.3.3 Alternative Sites/Strategic Site Selection

It is critical that the most suitable layout for the Proposed Development was chosen. Sites selected for development must be suitable for consideration under a number of criteria, such as:

- Planning Policy Context;
- Low population density preferred;
- Potential for impact on Designated sites;

Planning policy, population density, designated sites and ecological and environmental constraints were all crucial considerations as part of the selection of optimum site. If the developer was unable to utilise the lands at Moygaddy, they would envisage the need to develop another (potentially greenfield and unzoned lands) site for the Proposed Development. The Proposed Development has been designed in consideration with local planning policy objectives and the low population density of Moygaddy, proximity to Maynooth town and delivery of the Maynooth Orbital Outer Relief (MOOR) Road and construction of zoned lands as key facilitators. Alternative sites or locations on unzoned lands were not considered as a result.

The below sections have assessed all alternatives considered in respect to the Proposed Development.

3.3.4 Alternative Infrastructure Layout and Design

The design of the Proposed Development has been an informed and collaborative process from the outset, involving the designers, developers, engineers, landowners, environmental, hydrological and geotechnical, archaeological specialists and traffic consultants. The aim being to reduce potential for environmental effects while designing a project capable of being constructed and viable.

Throughout the preparation of the EIAR, the layout of the Proposed Development has been revised and refined to take account of the findings of all site investigations, which have brought the design from its first initial layout to the current proposed layout. The design process has also taken account of the recommendations and comments of the relevant statutory and non-statutory organisations, the local community and local authorities as detailed in Section 2.9 of Chapter 2 in this EIAR.

3.3.4.1 Constraints Mapping

The constraints mapping process involves the placing of buffers around different types of constraints so as to identify clearly the areas within which no development works will take place. The size of the buffer zone for each constraint has been selected on a highly precautionary and conservative basis and incorporated into the design. As outlined above, the recommendations and comments of the relevant statutory and non-statutory organisations, the local community and local authorities as detailed in Section 2.9 of Chapter 2 in this EIAR, have been considered in selecting the constraints buffer to be applied. Specifically Inland Fisheries Ireland recommended a 10m buffer between the Proposed Development and adjacent watercourses.

The constraints map for the site, as shown in Figure 3-3, was produced following a desk study of all site constraints.

- Residential dwellings plus 30-metre buffer achieved from infrastructure;
- Natura 2000 sites plus 200-metre buffer;

- > Natural Heritage Areas (NHAs);
- > Watercourses plus 25-metre buffer from infrastructure (excluding, watercourse crossings, road upgrades and drainage infrastructure);
- > Archaeological Sites or Monuments (RMP and/or NIAH) plus 20-metre buffer.

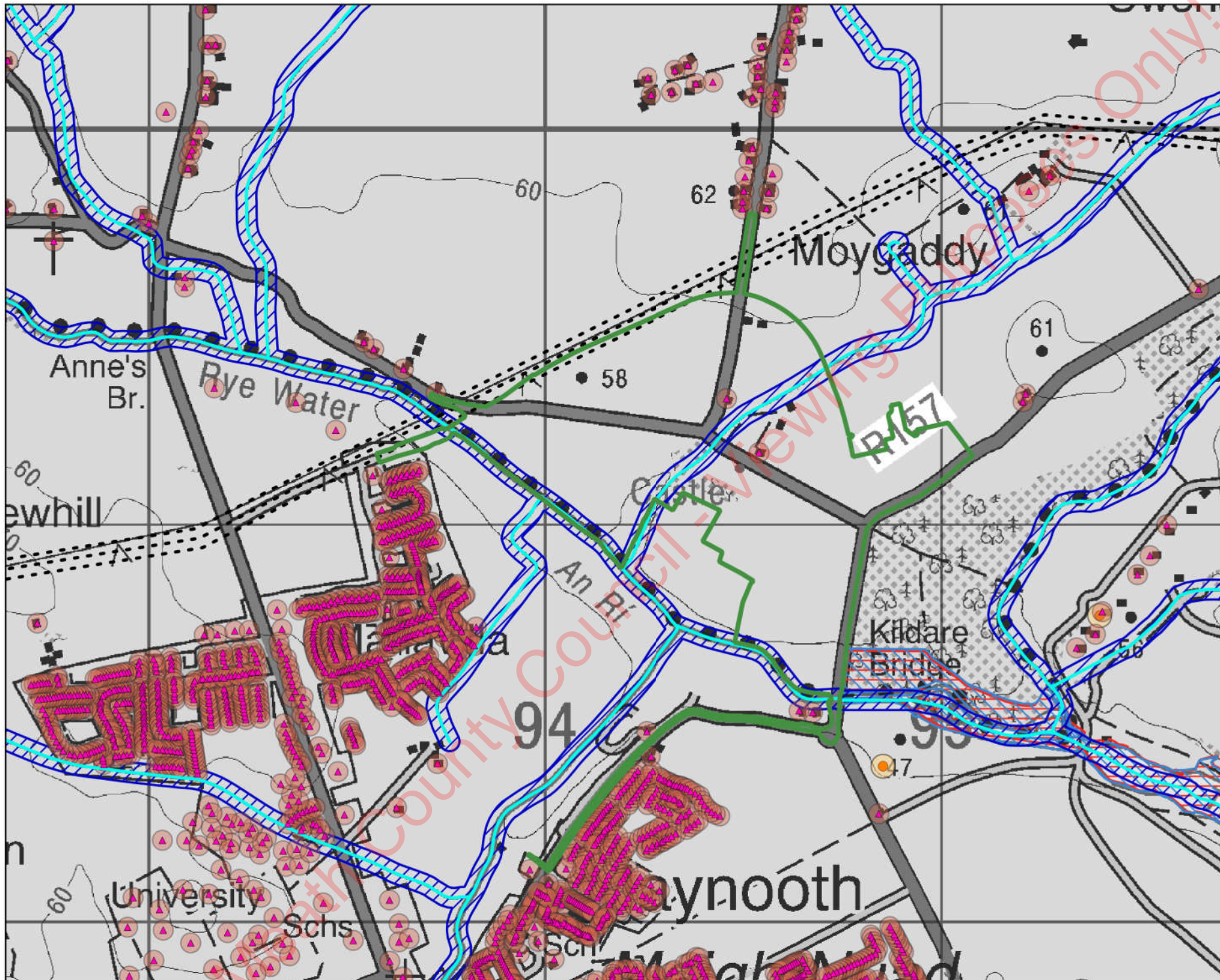
Facilitators at the site build on the existing advantages and include the following:

- > Available lands for development;
- > Separation distance from third-party dwellings;
- > Local Planning Policy;
- > Existing access points and onsite road infrastructure;
- > Limited extent of constraints as detailed above.

The inclusion of the constraints on a map of the study area allows for identification of suitable areas for the Proposed Development. An initial layout is then developed to take account of all the constraints mentioned above and their associated buffers.

Following the mapping of all known constraints, detailed site investigations were carried out by the project team. The ecological assessment of the site encompassed habitat identification and mapping and surveying of the site for flora and fauna, as described in Chapter 6 of this EIAR.

The hydrological and geotechnical investigations of the site examined the proposed locations for excavation works, road upgrades and other components of the Proposed Development. A walkover of the Proposed Development infrastructure was also undertaken by a project archaeologist to identify any additional constraints from the desk study. Where specific areas were deemed as being unsuitable for the siting of the Proposed Development infrastructure, alternative locations were proposed and assessed, taking into account the areas that were already ruled out of consideration.



Map Legend

- EIA Site Boundary
- Dwelling
- 30m Dwelling Buffer
- Powerlines (25m Buffer)
- Watercourses
- Watercourses 25m Buffer

Protection Areas

- pNHA
- SAC
- National Monument
- 30m National Monument

Drawing Title

Constraints Map

Project Title

Moygaddy Mixed Development

Drawn By	Checked By
DOS	MW
Project No.	Figure 3-3
Scale	Date
1:12,500	01.09.2022

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3.3.4.2 Proposed Development Iterations

The final Proposed Development layout takes account of all site constraints and the distances to be maintained between infrastructure and houses, roads, watercourses etc. The layout is based on the results of all site investigations that have been carried out during the EIAR process. As information regarding the site of the Proposed Development was compiled and assessed, the proposed layout has been revised and amended to take account of the physical constraints of the site and the requirement for buffer zones and other areas in which infrastructure could not be located. The EIAR and project design was an iterative process, where findings at each stage of the assessment were used to further refine the design, always with the intention of minimising the potential for environmental impacts.

The development of the final layout of the Proposed Development has resulted following feedback from the various studies and assessments carried out.

3.3.4.2.1 Proposed Moygaddy Masterplan Area and Land Use Zoning

As outlined in Section 3.2 above, the lands at the Proposed Development are incorporated into the proposed Moygaddy Masterplan area which reflects the existing land use zoning set out in the Maynooth Environs Local Area Plan 2013-2019 (MLAP), which is incorporated into the Meath County Development Plan 2021-2027. The initial proposed Moygaddy Masterplan area was envisaged by the applicant as shown in Figure 3-4 below and considered the previous Part 8 proposal on the MOOR as those designs have informed the current design of the MOOR. The proposed non-statutory Moygaddy Masterplan was developed prior to finalising the Proposed Development but is a continuously evolving plan for the Moygaddy lands.

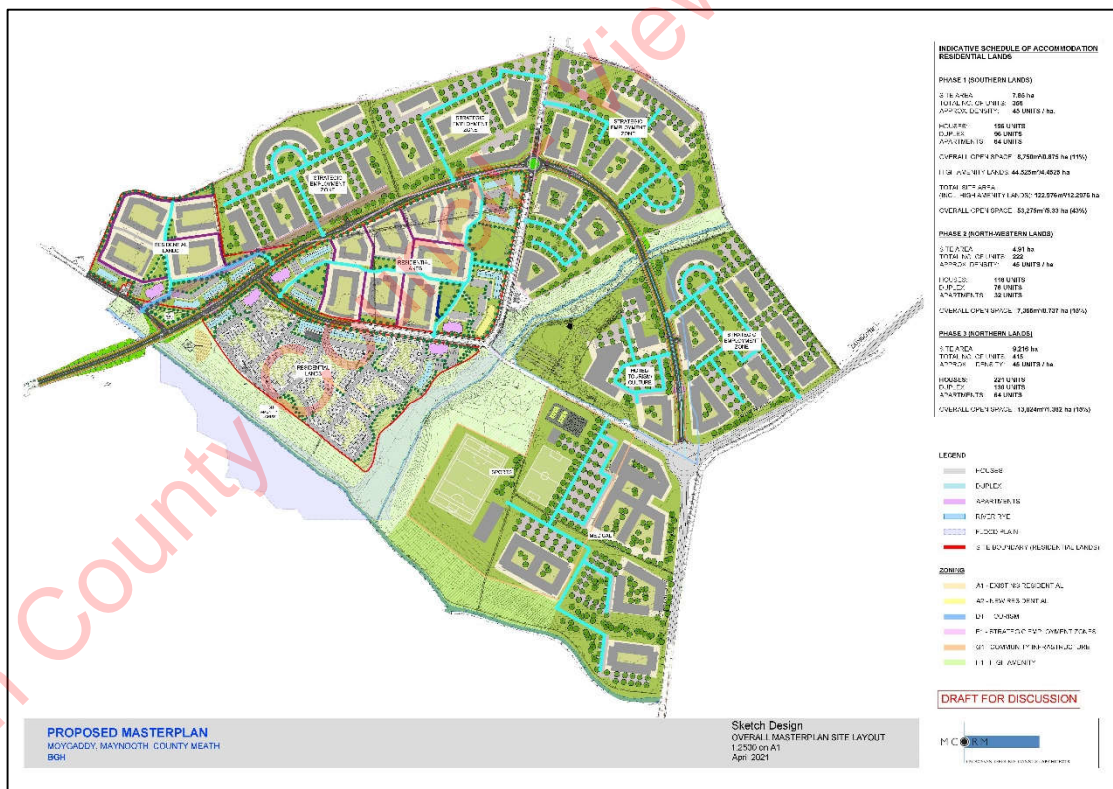


Figure 3-4 Initial proposed Moygaddy Masterplan

3.3.4.2.2 Initial Site Layouts

Site A

During the optimisation of the site layout, there were a number of iterations and reviews to the Site A study area. The proposed Site A study area, originally included for a much larger area, which initially followed the existing field boundary. The initial layout for Site A included for 11 no. office building blocks, internal access roads and car parking areas, see Figure 3-5 below.

As previously discussed, iterations to the proposed section of MOOR and road upgrades works for the existing R157 regional road and L2214-3 local road were also considered and progressed throughout the design process for Site A. As can be seen in Figure 3-5 below the original road design included for a new roundabout at the existing junction between the R157 and L2214-3, which was subsequently replaced by a proposed crossroad junction as a safer more viable alternative.



Figure 3-5 Initial Site A Layout

Site B

The proposed Site B study area initially followed the existing field boundary. The initial layout for Site B included the proposed nursing home and primary care centre buildings, as well as access roads and car parking areas, but did not include the proposed onsite pumping station, see Figure 3-6 below.



Figure 3-6 Initial Site B Layout

Site C

During the optimisation of the site layout, there were a number of iterations and reviews to the Site C study area. The proposed Site C study area originally occupied a similar area, with the exception being the location of the proposed creche and childcare facilities which were originally located to the north of the L22143 Local Road, directly adjacent to and northeast of Moygaddy House. The initial layout for Site C included for 381 no. residential units, a creche, public park, internal access roads and car parking areas, see Figure 3-7 below.

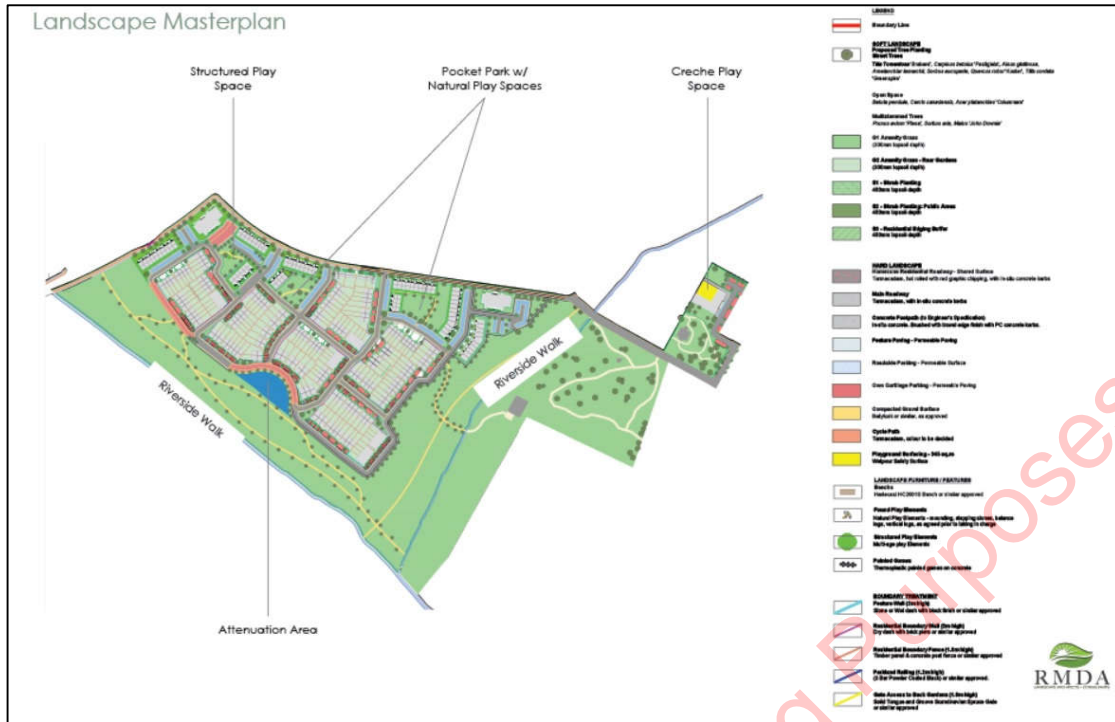


Figure 3-7 Initial Site C Layout

MOOR

During the optimisation of the MOOR site layout, there were a number of iterations and reviews to the MOOR study area. The design of the proposed MOOR has been heavily informed by the Part 8 Planning Application by Meath County Council for the Maynooth Outer Orbital Route (P8/16003). The proposed MOOR study area originally occupied a similar area, with the exception being the upgrade works north of the Kildare Bridge along the R157 Regional Road and the upgrade of the L22143 Local Road, directly adjacent to the Moygaddy House. The original road design included for a new roundabout at the existing junction between the R157 and L2214-3, which was subsequently replaced by a proposed crossroad junction as a safer more viable alternative. See Figure 3-8 below.

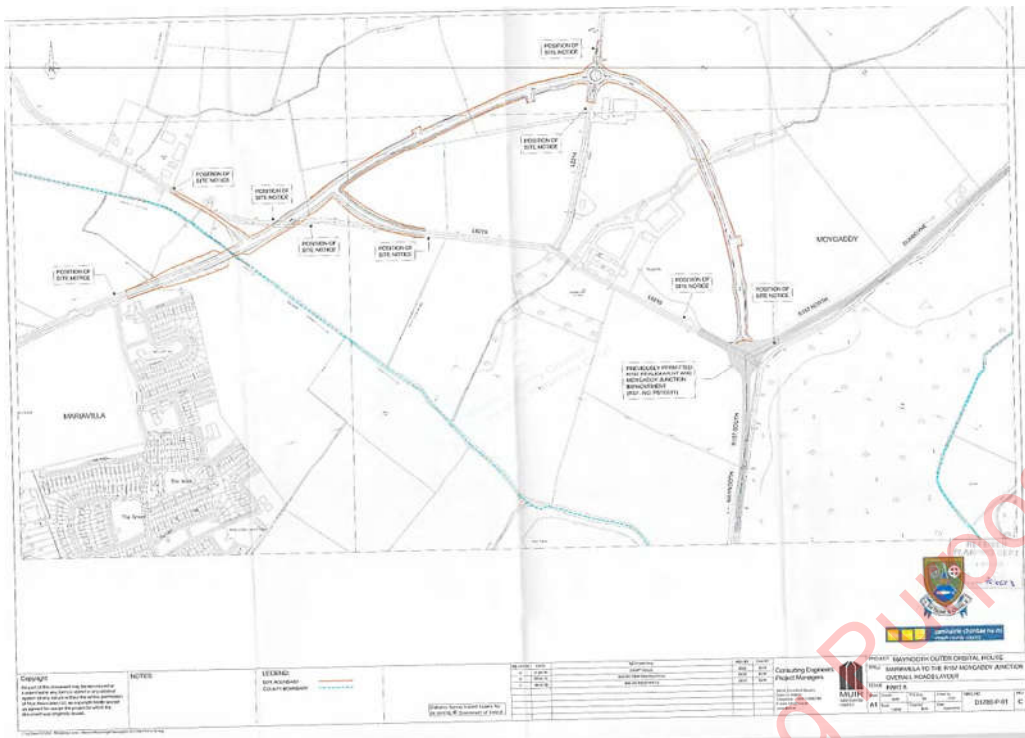


Figure 3-8 Initial MOOR Layout

Kildare Bridge Planning Application

During the optimisation of the Kildare Bridge site layout the part 8 Maynooth Outer Orbital Road proposal was considered and impacted the final Kildare Bridge design. As the Kildare Bridge application includes a section of the MOOR and any changes to the design of the MOOR were transferred across to the Kildare Bridge application.

Moyglare Bridge Planning Application

During the optimisation of the Moyglare Bridge site layout the part 8 Maynooth Outer Orbital Road proposal was considered and impacted the final Moyglare Bridge design. As the Moyglare Bridge application includes a section of the MOOR and any changes to the design of the MOOR were transferred across to the Moyglare Bridge application.

3.3.4.3 Progression of Site Layout Design

In the course of the progression of the site layout design, consideration was given to a number of factors, which all fed into various iterations of the design process. Consideration was given primarily to the creation of a ‘live, work, play’ area which set the tone for the wider proposed Masterplan. Emphasis was placed on selecting appropriate locations for the creche, so that it could serve both the new Residential community, and also the new strategic employment zone, and the healthcare facilities zone. Similar to this, emphasis was placed on selecting the appropriate location in which to place the Leisure and Cultural Tourism development, which forms part of the proposed Masterplan.

Consideration also was given to how best to accommodate Irish Water’s strategic infrastructure investment into the new High Pressure sewer line upgrade from Maynooth to Leixlip.

Integration of all of the High Amenity areas into the Residential, Employment and Medical uses envisaged by the proposed Masterplan so that a fully integrated networks of blueways and greenways

could be created throughout the site. Similarly, consideration was given to the enhancement of pedestrian and cycle connectivity throughout the wider proposed Masterplan site to assist with permeability and to promote a modal shift away from vehicular transport. Riparian zones and high amenity areas throughout the site were also used to create an attractive network of interconnected walkways that traverse the proposed masterplan site.

3.3.4.3.1 **Site A – Strategic Employment Zone**

Once the initial proposed Masterplan area and Proposed Development design was confirmed, site investigations and surveys were undertaken by the project team to finalise the layout. This involved environmental, ecological, geological, hydrological and archaeological surveys. Assisted noise monitoring was also undertaken as well as traffic counts and future modelling.

- Ecological Constraints (Badger Setts and Otter Holts) plus 30-metre buffer;
- Hydrological Constraints (Watercourses) plus 25-metre buffer;
- Existing Infrastructure (Powerlines) plus 25-metre buffer;
- National Monuments plus 30-metre buffer
- Existing Dwellings plus 25-metre buffer
- Proposed Irish Water High Pressure Sewer Line

Taking into account constraints in the area and based on feedback from the design team, it was determined that the proposed final site layout would be the most suitable layout when constraints and facilitating factors were considered.

3.3.4.3.2 **Site B – Healthcare Facilities**

Once the initial proposed Masterplan area and Proposed Development design was confirmed, site investigations and surveys were undertaken by the project team to finalise the layout. This involved environmental, ecological, geological, hydrological and archaeological surveys. Assisted noise monitoring was also undertaken as well as traffic counts and future modelling.

- Ecological Constraints (Badger Setts and Otter Holts) plus 30-metre buffer;
- Proposed Irish Water High Pressure Sewer Line
- Hydrological Constraints (Watercourses) plus 25-metre buffer;
- Historic Flood Zone mapping – development excluded from Flood Zone A & B
- Hedgerow protection

Taking into account constraints in the area and based on feedback from the design team, it was determined that the proposed final site layout would be the most suitable when constraints and facilitating factors were considered.

3.3.4.3.3 **Site C – Strategic Housing Development**

Once the initial proposed Masterplan area and Proposed Development design was confirmed, site investigations and surveys were undertaken by the project team to finalise the layout. This involved environmental, ecological, geological, hydrological and archaeological surveys. Assisted noise monitoring was also undertaken as well as traffic counts and future modelling.

- Ecological Constraints (Badger Setts and Otter Holts) plus 30-metre buffer;
- Hydrological Constraints (Watercourses) plus 25-metre buffer;
- National Monuments plus 30-metre buffer
- Proposed Irish Water High Pressure Sewer Line
- Historic Flood Zone Mapping – development excluded from Flood Zone A & B

Taking into account constraints in the area and based on feedback from the design team, it was determined that the proposed final site layout would be the most suitable when constraints and facilitating factors were considered.

3.3.4.3.4 **MOOR – Maynooth Outer Orbital Road**

Once the initial proposed Masterplan area and Proposed Development design was confirmed, site investigations and surveys were undertaken by the project team to finalise the layout. This involved environmental, ecological, geological, hydrological and archaeological surveys. Assisted noise monitoring was also undertaken as well as traffic counts and future modelling.

- Ecological Constraints (Badger Setts and Otter Holts) plus 30-metre buffer;
- Hydrological Constraints (Watercourses) plus 25-metre buffer;
- Existing Infrastructure (Powerlines) plus 25-metre buffer;
- National Monuments plus 30-metre buffer
- Existing Dwellings plus 25-metre buffer
- Proposed Irish Water High Pressure Sewer Line

Taking into account the constraints in the area and based on the previous part 8 MOOR application, the most suitable route for the MOOR was considered. The preferred option contains 2 no. road bridges crossing the Rye Water River and the Blackhall Little Stream.

3.3.4.3.5 **Kildare Bridge Application**

Once the initial proposed Masterplan area and Proposed Development design was confirmed, site investigations and surveys were undertaken by the project team to finalise the layout. This involved environmental, ecological, geological, hydrological and archaeological surveys. Assisted noise monitoring was also undertaken as well as traffic counts and future modelling.

- Ecological Constraints (Badger Setts and Otter Holts) plus 30-metre buffer;
- Hydrological Constraints (Watercourses) plus 25 metre buffer
- Existing Infrastructure (Powerlines) plus 25-metre buffer;
- National Monuments plus 30-metre buffer
- Existing dwellings plus 25 metre buffer
- Proposed Irish Water High Pressure Sewer Line

Taking into account constraints in the area and based on feedback from the design team, it was determined that the proposed final site layout would be the most suitable when constraints and facilitating factors were considered.

The Rye Water River located at the bridge is categorized as Eroding upland River. The design of the development was realigned to facilitate this. Appropriate mitigation has been detailed in Chapter 6 of this EIAR.

3.3.4.3.6 **Moyglare Bridge Application**

Once the initial proposed Masterplan area and Proposed Development design was confirmed, site investigations and surveys were undertaken by the project team to finalise the layout. This involved environmental, ecological, geological, hydrological and archaeological surveys. Assisted noise monitoring was also undertaken as well as traffic counts and future modelling.

- Ecological Constraints (Badger Setts and Otter Holts) plus 30-metre buffer;
- Hydrological constraints (Watercourses) plus 25m buffer
- Existing Infrastructure (Powerlines) plus 25-metre buffer;
- National Monuments plus 30-metre buffer
- Existing dwellings plus 25 metre buffer

➤ Proposed Irish Water High Pressure Sewer Line

Taking into account constraints in the area and based on feedback from the design team, it was determined that the proposed final site layout would be the most suitable when constraints and facilitating factors were considered.

The Rye Water River located at the bridge is categorized as Eroding upland River. The design of the development was realigned to facilitate this. Appropriate mitigation has been detailed in Chapter 6 of this EIAR.

3.3.4.3.7 **Final Proposed Development Layout**

The proposed development layout builds on Alternative Layouts and seeks to address issues in relation to a more appropriate spread of density throughout the development. In this layout the overall number of residential homes is 360 dwellings within Site C. Site A provides for 3 no office building while Site B includes a Primary Care Centre and Nursing Home. The MOOR is designed to facilitate the proposed Moygaddy Masterplan lands and provide connectivity to Maynooth town. The 2 no. Kildare applications facilitate the proposed development.

The proposed development layout is the culmination of an extensive design process. Overall, the proposed development as a whole is a better design from an environmental perspective than the alternatives previously considered. The proposed development provides for an appropriate number of residential units at a density that is consistent with the provisions of the *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009)*. The standards provided within the Meath County Development Plan 2021 – 2027 have been adhered to across Sites A, B & C.

A network of footpaths and pedestrian/cycle bridges throughout the proposed development will provide a high rate of accessibility to the landscaped amenity areas including parks, playgrounds and open play areas. The inclusion of these attractive, well-designed routes will encourage pedestrians to access the local facilities on foot as opposed to taking their personal vehicles.

The use of permeable paving, natural infiltration, landscape collection features and carefully designed landscaping including native and adapted plants and trees throughout the proposed development are a key design focus in the final proposed development.

Connectivity to Maynooth has been improved through the provision of a footpath along the R157, L22143 and L2214 roads which will benefit not only the proposed development but also the existing residents of the area. For these main reasons, the proposed development is considered the most appropriate alternative from an environmental impact assessment perspective.

3.3.5 **Alternative Processes**

The management of processes that affect the volumes and characteristics of emissions, residues, traffic and the use of natural resources has formed part of the consideration of reasonable alternatives through the project's development.

The construction works on the site will require the use of raw materials in the form of energy to supply plant and machinery, standard building materials including stone, metals, pipework, concrete, electrical, plumbing etc and raw materials are consumed to manufacture building materials. The use of these resources will be controlled by the employment of best practice construction techniques including waste management practices.

The processes to be employed during the construction of the Proposed Development, and described in Chapter 4 of this EIAR, are standard best practice for the construction industry in Ireland. There will be no novel processes or methods employed. Since the proposed processes represent industry standard

best practice, alternative processes were not considered to be reasonable and were therefore not considered further in the EIAR.

3.3.6 Alternative Mitigation Measures

Mitigation by avoidance has been a key aspect of the Proposed Development's evolution through the selection and design process. Avoidance of the most ecological, archaeological and hydrogeological sensitive areas of the site, limits the potential for environmental effects. As noted above, the site layout aims to make use of existing infrastructure which assists in avoiding any environmentally sensitive areas. The alternative to this approach is to encroach on the environmentally sensitive areas of the site and accept the potential environmental effects and risk associated with this.

The best practice design and mitigation measures set out in this EIAR will contribute to reducing any risks and have been designed to avoid any potential impacts on identified environmental receptors. The alternative is to either not propose these measures or propose measures which are not best practice and effective, neither of which are sustainable option.

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