McGarrell Reilly Homes

Proposed development of lands in Newtownmoyaghy, Kilcock, Co. Meath.

VOLUME I
NON-TECHNICAL SUMMARY

DECEMBER 2019

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1 Introduction

This Non-technical Summary is for a proposed residential development located in Newtownmoyaghy, Kilcock, Co. Meath, approximately 1km east of the centre of Kilcock. **Figure 1** shows the site location.

Article 5(1)(e) of the EIA Directive requires the project proponent to include a Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) and it is transposed into Irish law under article 94(c) of the Planning and Development Regulations 2001, as amended. The term 'non-technical' indicates that this summary should not include technical terms, detailed data and scientific discussion, that detail is presented in Volume II, the EIAR.

This Non-Technical Summary provides a concise, but comprehensive description of the Project, its existing environment, the effects of the project on the environment, the proposed mitigation measures, and the proposed monitoring arrangements, where relevant. The NTS highlights any significant uncertainties about the project. It explains the development consent process for the Project and the role of the EIA in that process.

It is important to highlight that the assessments that form part of the EIAR were undertaken as an iterative process rather than a one-off, post-design environmental appraisal. Findings from the individual assessments have been fed into the design process, resulting in a project which achieves a 'best fit' within the environment.

FIGURE 1 - SITE LOCATION

1.1 Screening for Environmental Impact Assessment

Environmental Impact Assessment (EIA) requirements derive from EU Directives. Council Directive 2014/52/EU amended Directive 2011/92/EU and is transposed into Irish Law by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

Proposed development which falls within one of the categories of development specified in Schedule 5 of the Planning and Development Regulations 2001, as amended, which equals or exceeds, a limit, quantity or threshold prescribed for that class of development must be accompanied by an EIAR.

The subject development does not fall within development classes set out in Part 1 of Schedule 5.

It does however fall within development classes set out in Part 2 of Schedule 5 and the applicable categories are;

10b)

(i) Construction of more than 500 dwellings

The proposed development is for 575 dwellings.

(iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere. (In this paragraph, "business district" means a district within a city or town in which the predominant land use is retail or commercial use.)

The application site area is 24.24 hectares.

14) Works of Demolition carried out in order to facilitate a project listed in Part 1 or Part 2 of this Schedule where such works would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.

This application does not contain any demolition works.

1.2 Competency

It is a requirement that the EIAR must be prepared by competent experts. For the preparation of this EIAR, McGarrell Reilly Homes engaged McCutcheon Halley Chartered Planning Consultants to direct and coordinate the preparation of the EIAR and a team of qualified specialists were engaged to prepare individual chapters. The consultant firms and lead authors are listed in the **Table 1**. Details of competency, qualifications and experience of the lead author of each discipline is outlined in the individual chapters.

Chapter	Aspect	Consultant	Lead Consultant
1	Introduction	McCutcheon Halley Chartered Planning Consultants	Adrian Toolan
2	Project Description	McCutcheon Halley Chartered Planning Consultants	Adrian Toolan
3	Alternatives Considered	McCutcheon Halley Chartered Planning Consultants / Conroy Crowe Kelly Architects	Tom Hennessy, Paul McVeigh
4	Population and Human Health	McCutcheon Halley Chartered Planning Consultants	Adrian Toolan
5	Landscape & Visual	Murray & Associates	Mark Boyle
6	Material Assets: Traffic	DBFL Consulting Engineers	Brendan Manning
7	Material Assets: Built Services	DBFL Consulting Engineers	Brendan Manning
8	Land and Soils	DBFL Consulting Engineers	Brendan Manning
9	Water and Hydrology	DBFL Consulting Engineers	Brendan Manning
10	Biodiversity	Openfield Ecological Services / Wildlife Surverys Ireland	Padraic Fogarty, Brian Keeley
11	Noise and Vibration	AWN Consulting	Dermot Blunnie, Claire Flynn

Chapter	Aspect	Consultant	Lead Consultant
12	Air Quality	AWN Consulting	Dermot Blunnie, Claire Flynn
13	Cultural Heritage	Archer Heritage	Ciaran McGuinness
14	Interactions of the Foregoing	McCutcheon Halley Chartered Planning Consultants	Adrian Toolan
15	Summary of Mitigation Measures	McCutcheon Halley Chartered Planning Consultants	Adrian Toolan

TABLE 1 - EIAR CHAPTER LIST AND CONTRIBUTORS

1.3 Methodology

In preparing the EIAR the following regulations and guidelines were considered:

- The requirements of applicable EU Directives and implementing Irish Regulations regarding Environmental Impact Assessment;
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – DRAFT (Environmental Protection Agency, August 2017).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018).

In addition, specialist disciplines have had regard to other relevant guidelines, and where relevant these are noted in individual chapters of the EIAR, see Volume II.

Each chapter of this EIAR assesses the direct, indirect, cumulative and residual impact of the proposed development for both the construction and operational stage of the proposed development.

The identified quality, significance and duration of effects for each aspect is largely based on the terminology set out in the EPAs *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports* (2017) as summarised in **Table 2**.

Quality of Effect	
Positive	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Negative/Adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance)
Significance of Effect	

Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
Slight Effect	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effect	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effect	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant Effect	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound Effect	An effect which obliterates sensitive characteristics.
Duration of Effects	
Momentary	Seconds to minutes
Brief	Less than 1 day
Temporary	Less than 1 year
Short-term	1-7 years
Medium-term	7-15 years
Long-term	15-60 years
Permanent	Over 60 years
Extent & Context of Effects	
Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Probability of Effects	
Likely	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

Type of Effects	
Indirect	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
Cumulative	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
Do Nothing	The environment as it would be in the future should the subject project not be carried out.
Worst Case	The effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable	When the full consequences of a change in the environment cannot be described.
Irreversible	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
Synergistic	Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SOx and NOx to produce smog).

TABLE 2 - IMPACT RATING TERMINOLOGY

1.4 Consultation

A dedicated website for the proposed development is established and the EIAR is available at www.newtownmoyaghyshd.ie.

Additionally, prior to lodging this application, the required information has been issued for the Department of Housing, Planning and Local Government's EIA Portal. The purpose of this tool is to inform the public, in a timely manner, of applications that are accompanied by an EIAR. The portal provides a URL link

Extensive pre-planning consultation was held with Meath County Council and An Bord Pleanála (ABP) in advance of lodging this application. Guidance received is integrated into the design and in turn is assessed in this EIAR.

Where relevant specialists engaged with prescribed bodies and the details of advice received is provided in the individual chapters of this EIAR.

An Opinion was received from An Bord Pleanála following the pre-application consultation meeting and it contained details of the prescribed bodies to be notified of the making of this application. We can confirm that each body identified in the following list has received a copy of the application including the EIAR.

1. National Transport Authority
2. Irish Water
3. Transport Infrastructure Ireland
4. Minister for Culture, Heritage and the Gaeltacht
5. Heritage Council
6. An Taisce – the National trust for Ireland
7. Kildare County Childcare Committee

2 Project Description

The subject site area is approximately 24.24 hectares. The site layout is shown in **Figure 2**, as can be seen the residential layout is in two sections, one in the north and one in the south of the site. The northern residential footprint is approximately 8.38 hectares and the southern residential footprint is approximately 6.07 hectares. Two large areas of open space are provided to the south of both residential sections, comprising an area of approximately 9.79 hectares, both areas will be landscaped including footpaths for residential and public amenity.

FIGURE 2 - SITE LAYOUT

2.1 Proposed Development

The proposed development comprised of residential accommodation, and amenity space & open space. There will be other elements comprising of one creche facility (including outside play area) and one GAA changing rooms (including car parking facilities), both located in the southern section. A network of access roads will be constructed from the local road network and these will be planted with trees. Amenity open areas are located within the urban streetscape, with three in the northern section, two in the southern section, and other areas, in particular around apartment buildings, duplex buildings, and the creche.

The principle development statistics of the proposal are as shown below: **Table 3** shows the proposed residential unit mix. The development will also include the provision of a 623sq.m creche, 314 No. bicycle parking spaces, and a total of 1,019 No. car-parking spaces. New boundary walls and fences, open space amenity, internal site roads, pavements, public lighting, bin storage areas, and ancillary works.

Unit Type	Houses	Apartments	Duplexes	Total
1 Bed	0	20	44	64
2 Bed	43	46	63	152
3 Bed	270	0	14	284
4 Bed	75	0	0	75
Total	**388**	**66**	**121**	**575**

TABLE 3 - PROPOSED RESIDENTIAL UNIT MIX

The divide between the northern and southern sections is a drainage ditch / watercourse running and flowing east-to-west between the two sections and is part of the Office of Public Works (OPW) Arterial Drainage Scheme). The southern section is also bounded by the Rye Water River along its southern boundary. The lands along both these water courses in the vicinity of the site are partially within the extent of fluvial (river) flooding lands (see the Site Specific Flood Risk Assessment (SSFRA) within the application documentation) but it is noted that the layout design was completed in consideration of completed flood plain works and additional flood plain works within the proposed development, for further details see EIAR Chapter 9 and the SSFRA.

The lands near the drainage ditch and the Rye Water will be landscaped, including tree planting and pedestrian and cycle paths, providing residential and public amenity space. New Gaelic Athletic Association (GAA) changing room facilities and carpark will be provided adjacent to the consented (and under constructed) pitch located to the east of the proposed development and this sporting facility will use the access routes in the proposed development.

2.2 Site Access

There will be separate entrances to the northern and southern sections as shown in **Figure 2**. All entrances will be located off a new link road that will connect the R148 (which runs beside the Royal Canal to the south) and the R125 (which runs to the northwest). This road is consented and currently under construction and is due to be completed and operational by approximately Autumn 2020. There will be entrances to the northern section, the westerly most entrance in Figure 2.2 is dedicated for pedestrians and cyclists and while the two entrances immediately to the east and further east is for all traffic types. There will be three full span bridges constructed over the drainage ditch for these access routes into the northern section of the proposed development. The southern section will have two main vehicle entrances, for all traffic types, and other pedestrian and cyclist between building blocks. Furthermore, the permitted Distributor Road scheme will, once complete, provide dedicated segregated pedestrian / cycle facilities on both sides of the road. Internally, dedicated pedestrian footways will be provided on all streets which will connect with the existing / consented pedestrian facilities on the external network thereby facilitating excellent pedestrian connectivity.

The development includes a total of 1,019 No. car-parking and 314 No. bicycle parking spaces and will provide mobility impaired car parking spaces as required. The development includes a total of 40 no. car parking spaces located beside the GAA changing facilities and 14 no. neighbourhood focused creche car parking spaces.

2.3 Water Supply and Drainage

There is an existing surface watermain in the vicinity of the site. A Pre-Connection Feedback Letter has been received from Irish Water outlining that a water connection can be facilitated for the proposed development and is included with the application.

There is an existing surface foul water drainage network in the vicinity of the site which discharges to the existing Kilcock Foul Pump Station located immediately to the south of the subject lands. The foul drainage system will be completely separate from the surface water drainage system. A Pre-Connection Feedback Letter has been received from Irish Water outlining that a wastewater connection can be facilitated for the proposed development.

The proposed surface water drainage networks will collect surface water runoff from the site via a piped network. Attenuation of surface water will be provided in two separate attenuation facilities before discharging to the Upper Ditch and Rye Water River. A non-return valve will be provided at outlet locations to prevent flood waters from entering the surface water drainage network.

2.4 Energy and Telecommunications

The building services design strategy for the proposed development utilises as many sustainable design options and energy efficient systems that are technically, environmentally and economically viable for the project to achieve a low energy and environmentally friendly development.

There are no recorded distribution gas mains running through the site. However, medium pressure distribution pipes run through the existing residential development constructed to the west and south of the new link road. The proposed development site will be provided with connections from these existing networks.

There are a number of overhead power lines running through the site. These overhead lines will be relocated underground and will be located in green space areas and underneath footpaths within the proposed development. Two 38kV lattice mast structures will be erected in the south of the site to facilitate the transition from underground cable to overhead line infrastructure. Exact routing and location of sub-stations to be agreed with ESB. ESB will produce proposed layouts prior to construction. The proposed development site will be provided with connections from the existing network.

The existing Eir and Virgin Media telecommunications infrastructure are located the vicinity of the site. The proposed development includes for telecommunication network ducting that will be routed under or alongside the main access routes with network spurs to connect to individual houses, apartment buildings, duplex buildings, the creche, and the GAA changing facilities as required.

2.5 Construction Activities and Phasing

A construction compound will be provided for the construction phase and will be located within the subject site to the east of the new link road round-a-bout. The construction compound will include office space, welfare facilities (such as wash rooms, drying rooms, canteen, first aid, etc.), a small staff car parking, material storage containers, material laydown areas, recycling facilities. Construction access will use the site entrances detailed above in Section 2.2.

During the general excavation of the foundations there will be additional Heavy Goods Vehicle (HGV) movements from the site. All suitable material will be used for construction, landscaping, and fill activities where possible and appropriate. All spoil material will be removed to a registered landfill site which will be agreed in writing with the local authority prior to the commencement of works. A traffic management plan will be developed and implemented for the construction phase.

In addition to the traffic generated by the disposal of surplus subsoil from the site, there will be traffic generated from deliveries of construction materials and equipment. It should be pointed out that construction traffic generated during the development works tends to be outside of peak hours. Such trips would generally be spread out over the full working day and will not be higher than the peak hour predicted volumes for the operational stage. Construction waste will be minimised and all waste will be removal from site by an appropriate waste collection licence holder.

The southern development site is proposed to be constructed first with the initial 100 housing units within the southern site assumed to be built and occupied by the end of 2021. The remaining units of the southern site and the full northern development site is assumed to be complete and occupied by the 2026.

Construction Hours

The construction phase working hours will to be 07:00-18:00 Monday to Friday (excluding bank holidays) and 08:00 to 15:00 Saturdays, subject to the restrictions imposed by the local authority. No working will be allowed on Sundays and Public Holidays. Subject to the agreement of the local authority, out of hours working may be required for water main connections, foul drainage connections etc.

2.6 Mitigation and Monitoring

The appointed contractor will be required to prepare a Construction and Environmental Management Plan (CEMP) in advance of works commencing on site. This will incorporate all mitigation measures proposed within this EIAR for the protection of the environment and human health. The appointed contractor will update the CEMP accompanying this application to account for any planning conditions and/or changes in legislation or construction best practice.

Monitoring will be undertaken during the construction phase in line with the recommendations contained within Volume II of the EIAR.

Air Quality

Appropriate air quality and dust monitoring will be carried out and records will be kept of all such monitoring. Construction and demolition works will be carried out in such a way as to limit the emissions to air of pollutants (particularly dust and fine particles (PM10)), employing best practicable means.

Construction Noise and Vibration

Noise monitoring will be carried out in accordance in accordance with Safety, Health and Welfare at Work (Construction) Regulations 2006 – 2012 Safety, Health and Welfare at Work Act 2005, BS 6187:2011 - Code of Practice for Full & Partial Demolition, BS 5228:2009 Code of Practice for Noise & Vibration Control on Construction & Open Sites.

Vibration monitoring will be carried out in accordance with BS 5228-1, 2009, Code of Practice for Noise & Vibration Control on Construction & Open Sites.

3 Alternatives Considered

The Planning and Development Regulations, 2001, as amended, require;

*"A description of the **reasonable alternatives** studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment."* (emp. added).

Reasonable alternatives may include project design proposals, location, size and scale, which are relevant to the proposed development and its specific characteristics.

The Environmental Protection Agency (2017) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports - Draft* states;

"The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'.

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 is deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required."
As such, the consideration and presentation of the reasonable alternatives studied by the project design team is an important requirement of the EIA process.

3.1 Alternative Locations

The subject site is considered to represent a suitable location for the proposed development of residential dwellings, given its location within the Kilcock Development Area Boundary as identified in the Meath County Development Plan. The subject site is zoned for residential use (A2), albeit Residential Phase II (Post 2019) lands, and open space (F1) in the Meath County Development Plan 2013-2019. These plans were subject to formal public consultation process which included a Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) before being adopted.

3.2 Alternative Designs

In summary, the proposed layout is designed to function as a sustainable and successful residential neighbourhood and is considered to be a natural extension to the town of Kilcock. At the outset, the design team undertook a site appraisal to identify the key characteristics and constraints of the site. A strength, weakness, opportunity, and Threat (SWOT) analysis was completed on the site in consideration the existing and consented developments within the environs of the subject site and the relevant information from the Architectural Design Statement is shown in **Figure 3** and **Table 4** below.

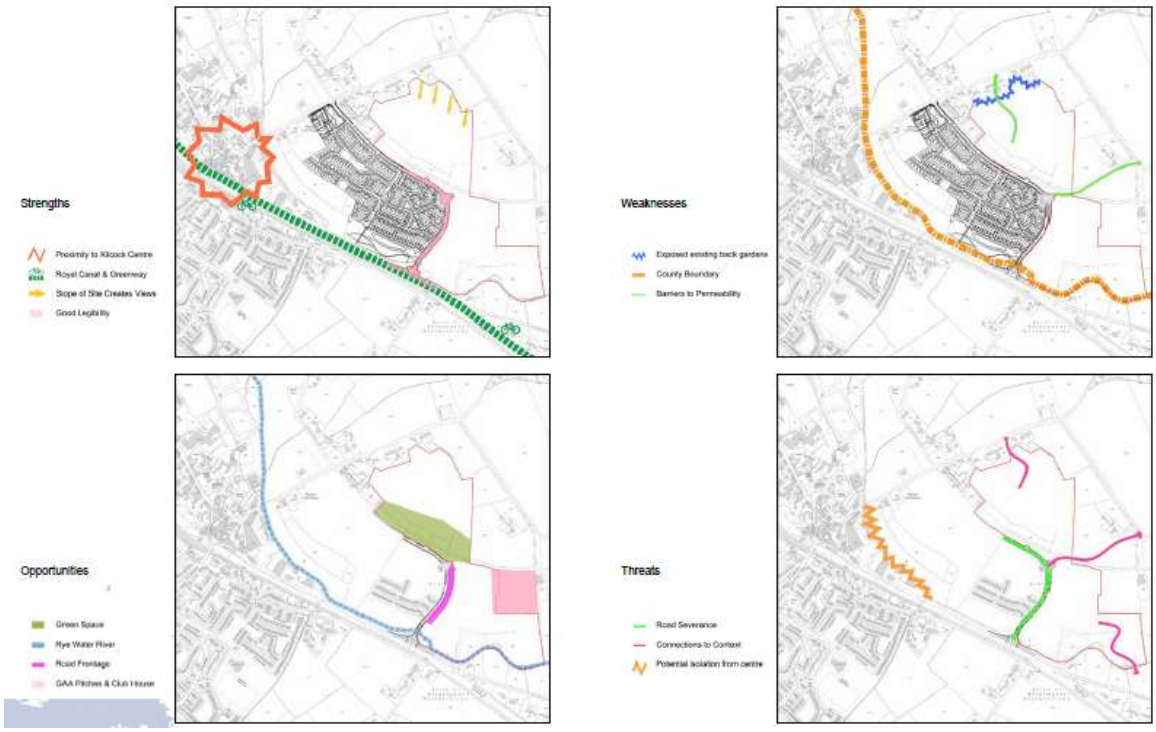

FIGURE 3 - SWOT ANALYSIS

Strengths	Weaknesses	Opportunities	Threats
Proximity to Kilcock centre	Exposing existing back gardens	Green space	Road severance
Royal Canal and Greenway	County boundary	Rye Water river	Connections to Context
Slope of site creates views	Barriers to permeability	Road Frontage	Potential isolation from centre

Good legibility		GAA pitches and club house	

TABLE 4 - SWOT ANALYSIS

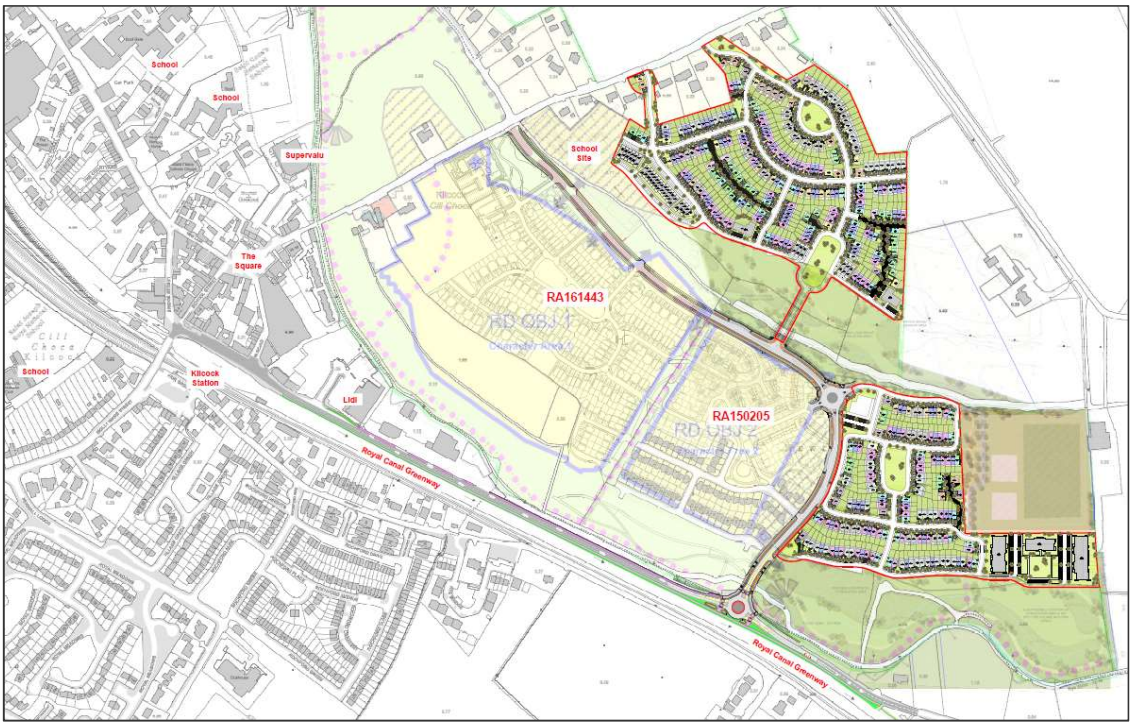

FIGURE 4 - INITIAL DESIGN PROPOSAL

The main design changes between the initial design proposal in **Figure 4** and the proposed development are the flowing:

- The removal of the two northern vehicular and pedestrian access points off the Moyglare Road (a local third class road). This was due to a lack of width along the existing road corridor.
- The provision of one additional vehicular and one additional pedestrian access points from the northern section to the new link road.
- The locating of dual aspect duplex and corner block apartments throughout the development to provide passive surveillance of both the large public open spaces and the development access roads.
- The changes in the street layouts so the majority of residential buildings are accessed by looped streets with a minority accessed by cul-de-sac streets.
- The existing dwellings to the northwest of the development are now backed only by houses and not by apartment type buildings.
- The provision of additional pocket parks and green space within both the northern and southern residential areas.
- The provision of additional public open space to the northwest of the development adjacent to the future location of a potential school site with sports pitches.
- The inclusion of greater landscaping to enhance the streetscapes, the public open space and the biodiversity of the proposed development.
- The inclusion of greater landscaping to reduce the landscape and visual impacts.

The final design (shown in **Figure 2**) also proposed the following design features:

- There are opportunities for houses to extend into the rear garden for both the narrow and wide fronted house types.
- In some house types space in the roof can be converted into living accommodation.
- For apartment buildings external secure bin and bicycle storage facilities will be provided.
- Housing and apartments will now be built to Nearly Zero Energy Buildings (NZEB) standards. The insulation of the building fabric, air tightness and renewable technologies employed in building services all combine to ensure an almost zero energy home.

The final layout for the proposed development was selected as a suitable proposal after the initial consultation with Meath County Council and the pre-planning application (PAC) consultation process with An Bord Pleanála (ABP).

3.3 Alternative Processes

The design team also recognizes the need for the development to be designed to maximize reliability and maintainability of the installations to efficiently operate the development in a sustainable manner. Lifecycle costs are also determined by the durability and maintenance requirements of materials. A high standard of finishes has been selected across the project. Low maintenance cladding materials such as brick and self-finished render are proposed to minimize the impact of façade maintenance. Balconies are designed to be capable of fabrication offsite, resulting in higher standard of finish, reducing damage during construction and improved durability.

4 Assessment of Environmental Impacts

The EIA process essentially identifies, describes and assesses in an appropriate manner, the direct and indirect significant effects of a project on a series of specified environmental factors;

- Biodiversity, with particular attention to protected species and habitats;
- Land, soil, water, air and climate;
- Material assets, cultural heritage and the landscape; and
- Interaction between the above factors.

4.1 Population and Human Heath

The assessment of Population & Human Health is contained within Chapter 4 of Volume II.

4.1.1 Existing Environment

The subject site lies within the Meath County Council administrative area, located close to the county border with Co. Kildare which is the Rye Water river along southern extent of the subject site. The National Planning Framework (NPF) identifies Meath as being located within the Eastern and Midland Region. The NPF notes that Co. Meath's location close to Dublin has led to significant population growth over recent times. The NPF outlines that future growth must be managed in a sustainable fashion with employment growth and infrastructure to be a priority.

The recently published Eastern and Midlands Regional and Spatial Economic Strategy (RSES) designates Co. Meath as one of four counties located in the Mid-east of the region.

The subject site lands are zoned 'A2 New Residential' in the Meath County Development Plan 2013-2019. The A2 zoning objective aims "to provide for new residential communities with ancillary community facilities, neighbourhood facilities and employment uses as considered appropriate for the status of the centre in the Settlement Hierarchy", shown by the yellow hatched area in **Figure 5**.

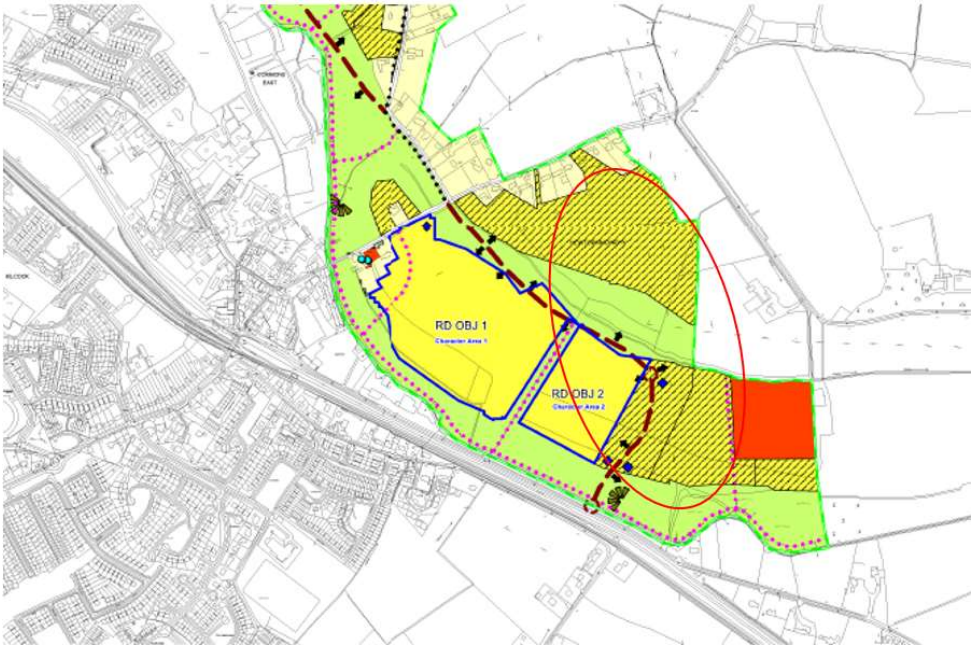

FIGURE 5 - LAND USE ZONING

There are a range of public transport options located in close proximity to the site which include. The M4 motorway, Kilcock train station, Bus Éireann provides services from Kilcock to Dublin City Centre and services to many other cities in Ireland. The Royal Canal provides a long-distance greenway walking and bicycling route between Maynooth to Mullingar.

The demographic profile in the 4 No. Electoral Divisions within approximately 2km of the site there are 12,571 (49%) males and 13,051 (51%) females within the study area. The largest cohort is within the 35-39 years category, 2,461 persons but with very similar numbers for the 20-24 years category, 2,454 persons and the 30-34 years category, 2,377 persons.

The employment profile in 4 No. Electoral Divisions, of a total 12,326 people are eligible for work, 11,308 (57.1%) of people were recorded as being within employment in Census 2016. 161 (0.8%) are listed as 'unemployed or given up a previous job'. 3,881 (19.6%) are listed as students (Maynooth is a university town). 1,267 (6.4%) are listed as 'looking after the home' while 1,849 (9.3%,) are retired.

Social infrastructure in the local Kilcock area includes a wide range of services and facilities including health, education, community, cultural, play, faith, recreation and sports facilities that contribute to the quality of life.

4.1.2 Impact Assessment

4.1.2.1 Do Nothing Scenario

If the proposed development is not realised, it is anticipated that the subject site would remain as agricultural lands in the short to medium term.

4.1.2.2 Construction Phase Impact

There will be positive, neutral and negative impacts on the following receptors from the construction phase. On land use the removal top soil and hedgerows, create hard and permeable surfaces, and residential infrastructure. On human health from constructions activities from construction traffic, noise, dust, and visual effects. On population and economic activity it is likely there will be a boost for local and regional construction services for the supply of materials and labour will likely occur. On local amenities there will likely be some disruption until the main access road to the GAA facility is completed.

The construction phase impact is likely and will have between a positive, short-term, not significant impact and a negative, brief and short-term, not significant impact.

4.1.2.3 Operational Phase Impact

There will be positive, neutral and negative impacts on the following receptors from the operational phase. On land use the change will create much needed residential housing close to Kilcock. On human health the residential development will incorporates the principles of universal design providing good access, pedestrian and cycle infrastructure as well as energy efficient measures to reduce dependence on fossil fuels and associated improved air quality. On population and economic activity potential employment opportunities will be limited except for the crèche facility. On local amenities excellent public amenity and recreational facilities, including open spaces and high-quality public realm.

The operational phase impact is likely and will have between a positive, permanent, moderate impact and a neutral, permanent, not significant impact.

4.1.2.4 Cumulative Impact

The proposed development will increase demand on local infrastructure and services. This will include increased demand on potable water supply, foul water treatment capacity, gas supply, electricity supply, and telecommunication (fibre / broadband) capacity. There will be an increased demand on creche, primary and secondary schools. The proposed development will create an increase local vehicular traffic and increase demand for public transportation. The proposed development will likely have a **positive**, **permanent**, **slight** cumulative impact.

4.1.3 Mitigation

There are no specific mitigation measures related to this section and a brief reference is made to the key mitigation measures within the other sections of the EIAR. A site Construction and Environmental Management Plan (CEMP) will be implemented by the selected contractor to mitigate potential construction phase impacts.

The proposed development has been designed to avoid and reduce negative impacts on population and human health through the following measures. Inclusion of a creche. Inclusion of leisure, amenity facilities and landscaping. Low energy consumption buildings using high quality finishes and materials. House designs that can by adapted and extended to allow for general changes in family circumstances.

4.1.4 Residual Impact Assessment

4.1.4.1 Construction Phase

Implementation of the mitigation measures given in this EIAR will ensure that the risks to population and human health in the construction phase will likely be a **negative**, **short-term**, **slight** impact.

4.1.4.2 Operational Phase

Implementation of the mitigation measures given in this EIAR will ensure that the risks to population and human health in the operational phase will likely be a **positive**, **permanent**, **slight** impact.

4.1.5 Monitoring

No specific monitoring is proposed in relation to this section.

4.2 Landscape and Visual

The assessment of Landscape & Visual Character is contained within Chapter 5 of Volume II. The landscape assessment of the proposed development is intended to analyse the effect the proposed housing and associated open spaces, streets, engineering, etc. would have on the existing landscape. This analysis includes both the components of the landscape itself (such as landform, character, trees and hedgerows, etc.) and views of and within the area.

4.2.1 Existing Environment

The proposed development site is located approximately 500m northeast and 800m to the east of Kilcock village in the townland of Newtownmoyaghy. The site is set in a predominantly rural agricultural context, with peri-urban built elements such as housing and commercial retail units along the roads to the west.

The landform of the site and environs is generally flat to undulating, falling locally towards water courses. Trees and hedgerows dominate the landscape due to this relatively flat character. Within the site, the field pattern is defined by hedgerows of Hawthorn, Ash, Blackthorn, Elder and scrub, with non-native trees and hedging on boundaries with adjacent houses. There are two water courses in the site, the Rye Water to the south, a substantial river which also forms the county boundary between Meath and Kildare, and the Upper ditch between the northern and southern sections of the site. The natural topography of the site falls gently towards the water courses. Man-made banks and bunds around the watercourses are also present on the site.

The site is zoned for residential development so long as the proposed housing growth protects and retains some of the natural elements and dynamics that the site contains. Within the site, the open space areas are identified of landscape and ecological value which need to be protected and retain its character during the development of the site.

Based on both Meath County Development Plan 2013 -2019 and Kilcock and Environs Local Area Plan 2009-2015, the existing site does not possess any significant features of note or trees that require protection. Protected views in the vicinity of the site, protected by Kildare County Council, are from the bridge in Kilcock and the bridge at Lock 15 of the Royal Canal. The Royal Canal Way follows the canal to the south of the site. There are no scenic routes or viewpoints within the site, neither are there any Tree Preservation Orders.

In visual terms, the wider landscape, viewed from ground level in and around the site is quite flat and horizons are defined by mature trees, particularly to the north, with some views of the eastern periphery of Kilcock and other housing to the west. The site is enclosed to a large extent by different hedgerows and trees along the north, east and west boundaries, so there are few external views into the site along Moyglare Road due to the existing vegetation. The dwellings and viewpoints likely to be affected are those houses closest to the site, off the Moyglare Road to the north, off the R148 to the south and along the R125 (north-west of the site). Viewpoints around the Royal Canal and Royal Canal Way were also considered, including the protected views from the bridge in Kilcock and Lock 15. Views from the existing Millerstown estate are not considered to be sensitive as much of this area is under construction.

4.2.2 Impact Assessment

4.2.2.1 Do Nothing Scenario

If the current agricultural landuse of the subject site continues no changes will occur to the landscape or views in the area. Should the site be left vacant, this could create negative impacts upon the landscape character and visual amenity of the area.

4.2.2.2 Construction Phase Impact

During the construction stage, building activities, vehicle movements, plant and machinery, site clearance works etc. will generate negative visual effects and will alter the topography, landscape character and result

in the removal of hedgerows. This will have a moderately negative effect on the existing landscape in overall terms.

The most substantive visual effects during construction will be experienced by the adjacent established residential properties closest to the proposed development and walkers along the Royal Canal. Very Significant negative short-term effects may occur for a dwelling off Moyglare Road (Viewpoint 07A), and a dwelling named 'Rosdara' along the R148 (Viewpoint 05A). Significant negative short-term effects may occur to dwellings adjacent to R125 (Viewpoints 01A/09), public realm along the R148 and Royal Canal (Viewpoints 10 and 05) and in Millerstown estate (Viewpoint 12). Direct views from the Royal Canal Way (viewpoint 11) will also have very significant negative short-term effects due to the high level of sensitivity of recreational walkers, etc.

For all other receptors, the construction phase visual impact will be a short-term, negative, moderate effect, due to the high level of change in the environment and the proximity between the works and the viewpoints, and the lack of mitigation measures to reduce impacts, as discussed in the following section 4.2.3.

4.2.2.3 Operational Phase Impact

In the operational phase the main potential landscape effects of the proposed development are due to the presence of the proposed development, primarily the buildings and two electricity lattice structures in the south of the site, which will affect the landscape character of the site. While the retention of boundary hedgerows will help maintain the integrity of the northern periphery of the site, the required removal of internal hedgerows will cause permanent moderate negative impact. This is reduced by the large areas of open space around the most sensitive landscapes of the site associated with the water courses.

The most substantive potential visual effects during the operational phase will be experienced by the adjacent established residential properties closest to the proposed development and walkers along the Royal Canal. Very Significant negative effects may occur for dwelling off Moyglare Road (Viewpoint 07A), and a dwelling named 'Rosdara' along the R148 (Viewpoint 05A). Significant negative short-term effects may occur to dwellings adjacent to R125 (Viewpoints 01A/09) and public realm along the R148 and Royal Canal (Viewpoints 05 and 10) and in Millerstown estate (Viewpoint 12). Direct views from the Royal Canal Way (viewpoint 11) will also have very significant negative short-term effects due to the high level of sensitivity of recreational walkers, etc.

For all other receptors, the operational phase potential visual impact will be a potentially permanent, negative, moderate or slight effect, due to the views of the proposed housing, which would be open, with no planting or screening to soften or hide the houses, i.e. mitigation measures, as discussed in the following section 4.2.3.

4.2.2.4 Cumulative Impact

Future development in accordance with permitted and proposed land uses for the area is likely to generate slight to moderate levels of impact for receptors along the western fringes of the proposed site but would be unlikely to result in any appreciable impacts for other receptors. The quality of impact would be considered positive for landscape and visual aspects as it would be completing a planned and approved land use pattern of the area and creating new open spaces, pedestrian, cyclist and vehicular connectivity with the urban centre of Kilcock.

4.2.3 Mitigation

Landscape mitigation measures are proposed to address the potential negative effects described in the preceding section.

4.2.3.1 Incorporated Mitigation

Some mitigation strategies which minimise visual impact or enhance the visual and aesthetic appearance of the proposed development were integrated into the design of the proposed development at an early stage, including the following measures integrated into the architectural proposals:

- Create a varied visual environment within the housing area by proposing variety in scale and massing of buildings and by creating high quality buildings.
- The roofscape is varied with pitched roofs and features to add interest to the skyline, particularly at important access road corners in the layout.
- Façade colours and materials also vary, resulting in a diverse and human-scale architectural environment.
- Incorporation of large open spaces (c.10 hectares) around the water courses.

The landscape proposals were prepared in parallel with the site planning, and are integral to the scheme, but for the purposes of this assessment, they are considered as mitigation strategies – see 4.2.3.3 below.

4.2.3.2 Construction Phase

During the construction phase, site hoarding will be erected to restrict views of the site during construction. Hours of construction activity will also be restricted in accordance with local authority guidance.

4.2.3.3 Operational Phase

As noted above, despite the fact that the landscape architectural design proposals are integral to the scheme, for the purposes of this assessment, they are considered as mitigation strategies. The primary proposed landscape measures for mitigation are as follows:

- Planting of trees and shrubs to the proposed streetscapes, open spaces and boundary areas will create an attractive immediate visual environment and aid in the screening of the development and integration into the existing context.
- Use of native trees, shrubs and wildflowers where possible, particularly in the boundary spaces will improve local biodiversity, in accordance with the All-Ireland Pollinator Plan and local county development plan policies. See Chapter 10 Biodiversity for further details.
- It is proposed to protect and retain (or replace, if necessary) the existing hedgerows to the north and west of the development.
- The proposed landscape spaces will respect and enhance the water courses on the site, adding to amenity and visual values and creating a sustainable landscape around the water elements.

4.2.4 Residual Impact Assessment

4.2.4.1 Construction Phase

Predicted landscape impacts at construction stage are assessed to be as per the potential impacts (see section 4.2.2.2).

With regard to visual effects, the proposed hoarding will slightly improve the negative effect on visual impact as much construction traffic and activity on site will be screened, particularly in views from local roads and pedestrian areas. However, as the proposed development terrain will be higher than the hoarding, the predicted visual impacts will otherwise be as given in the potential impacts (See section 4.2.2.2).

4.2.4.2 Operational Phase

The most important features of the site, the water courses, are protected and enhanced in the design of the proposed development. The landscape impacts due to the proposed development would overall be slight and positive. This is primarily due to the open spaces proposed to surround the water courses on the site, the quality of the buildings and public realm, the cohesive land use and pattern that would result and the new open

spaces, landscape features and distinctiveness introduced. The two proposed lattice masts in the south of the site adjacent to the Rye Water and open space will generate some localised negative impacts which are locally significant and impact on character. The proposed planting would substantially increase the amount of tree cover in the area, as well as introducing new landscape features and spaces resulting in an overall permanent, slight, positive residual effect.

The residual visual impacts are those that will persist following implementation and establishment of the proposed landscape measure. Despite the slight improvements to the landscape described above, the built elements in the views contrast with the existing rural landscape in the current views, resulting in generally negative visual impact, although this is ameliorated by the landscape proposals. The following table sets out the likely residual impacts.

The most significant residual visual impacts are likely to be from the existing dwellings which have direct views from their properties into the site and of the proposed lattice masts in the south of the site adjacent to the Rye Water. The proposed landscape and open spaces within and on the southern side of the proposed development will enhance the quality of many views into the site and reduce the level of negative visual effects, except where the views are shortened or where the proposed buildings form a substantial part of the view.

In overall terms, the operational phase visual impact will be a permanent, negative, moderate effect.

The following photomontages show the likely visual and landscape appearance of the proposed development following the establishment of the proposed tree planting.

FIGURE 6 - SELECTED VIEW 09 – NEAR

FIGURE 7 - SELECTED VIEW 11 – DISTANT

The proposed development has a design life probably exceeding 60 years and so its impact on views and visual amenity is likely to be long term to permanent.

The projected visual impact for each view is summarised below.

View No.	Residual Impact	Description
01	Slight Negative Long Term	Proposed development will be visible in the middle/background of the view and will create a new element on the horizon, but 2-storey housing proposed is relatively low and the existing hedgerow will be maintained which softens and screens much of the housing.
01A	Moderate Negative Long Term	Proposed development will be visible in the middle/background of the view and will create a new element on the horizon, but 2-storey housing proposed is relatively low and the existing hedgerows and garden vegetation will be maintained which softens and screens much of the housing. Removal of some overhead powerlines from this view is a slight positive effect, but overall effect is slight and negative.
02	Imperceptible Neutral	Proposed development is screened by the existing dwellings and vegetation, so there is no impact.
03	Imperceptible Neutral	Proposed development is screened by the existing town buildings and vegetation, so there is no impact.
04	Not Significant Negative Long Term	Proposed development will be visible in the middle/background of the view and will create a new element on the horizon but forms a relatively minor element of the view due to the mature hedgerows along the canal and existing shed in view which partially screen much of the proposed housing.
05	Significant Negative Long Term	Proposed development will be visible in the middle/background of the view and will create a new element on the horizon, and will form a

		substantial element of the view partially screened by the existing dwelling, hedgerows, outbuildings and garden vegetation which partially screen the proposed housing and the proposed planting in the open spaces to the north of the dwelling will create new features and tree cover in the views resulting in moderate effects due to the reduction in the depth of the existing view across the landscape. The two proposed lattice masts at 13m height will be visible in the views, contributing to the negative effects.
05A	Moderate Negative Long Term	Proposed development will be visible in the middle/background of the view across the Rye Water River and will form a substantial element in the view. It will be slightly screened by the existing garden vegetation and the proposed planting in the open spaces to the north of the dwelling will create new features and tree cover in the views resulting in moderate effects due to the reduction in the depth of the existing view across the landscape. The westernmost proposed lattice mast at 13m height will be visible from this viewpoint, contributing to the negative effects.
06	Imperceptible Neutral	Proposed development is screened by the dwelling and mature hedgerow vegetation along the Royal Canal, so there is no impact.
07	Not Significant Negative Long Term	Proposed development may be partially visible in glimpses through the existing mature vegetation along the Moyglare Road, but will generally be screened in almost all views.
07A	Significant Negative Long Term	Proposed development will be visible in the middle/background of the view and will create a substantial new element in views. The proposed 2-storey housing in this area will be visible due to the removal of existing hedgerows on this boundary. Garden boundary vegetation may soften or screen some of the housing in some views from the dwelling and the proposed fencing along the boundary of the proposed development with garden vegetation will soften and reduce the visual impact somewhat.
08	Imperceptible Neutral	The site is not visible at this distance and due to the existing buildings and vegetation in the intervening townscape/landscape, so there is no potential for impact.
09	Moderate Positive Long Term	Open views of the proposed development across the open space results in visibility of the proposed housing and significant potential impact but the proposed planting in the open spaces creates new features in the view from this public area.
10	Slight Negative Long Term	Proposed development will be visible in the middle/background of the view across the Rye Water River and in context with existing Millerstown estate. It will form a substantial element in the view, slightly screened by the existing housing and maturing planting in open space to south of Millerstown. The proposed open spaces and planting along the Rye Water will result in reducing the potential impact to slight and negative in oblique views. The proposed lattice masts at 13m height will be visible in the views from some viewpoints, contributing to the negative effects, but will not form a substantive element in most distant or oblique views from the Royal Canal Way.
11	Significant Negative Long Term	Proposed development will be visible in the middle/background of the view across the Rye Water River and in context with existing Millerstown Development. In direct views of the site, Millerstown estate is less dominant in the view so the proposed development will cause greater negative effects than oblique views such as View 10.

		The proposed open spaces and planting along the Rye Water will reduce the potential impact, but significant impact remains due to the change in the horizon. The westernmost proposed lattice mast at 13m height will be visible and distinct in the middleground from this viewpoint, contributing to the negative effects.
12	Slight Positive Long Term	Proposed development will be visible from the entrance to the existing Millerstown estate and from dwellings on the east of the development. The proposed development will be directly visible and will change the views considerably, although the landscape is currently undergoing change with adjacent construction of new housing which results in poor quality foreground in views. The existing residential zoning within which the Millerstown development is located is also relevant here in that people living in Millerstown will have been aware that this view was likely to change due to the zoning. The proposed open spaces and planting create new features in the views from Millerstown and also new landscape amenity space for residents. The westernmost proposed lattice mast at 13m height will be partially visible in the middle-/back-ground from this viewpoint, contributing to the negative effects.

TABLE 5 - RESIDUAL VISUAL IMPACT

In overall terms, the operational phase visual impact will be a permanent, negative, moderate effect.

4.2.5 Monitoring

Landscape maintenance will be of a very high standard, to the level currently visible in the earlier phases of development. This will consist of grass cutting, weed control, replacement planting, pruning, etc. All landscape works will be in an establishment phase for the initial three years from planting. The company responsible for site management of the scheme will be responsible for the ongoing maintenance of the site after this three-year period is complete. Part of these responsibilities will include monitoring to ensure that failed trees are replaces so the landscape proposals maintain the mitigation effects.

4.3 Material Assets: Traffic and Transport

The assessment of Traffic & Transport is contained within Chapter 6 of Volume II.

This chapter of the EIAR includes of an assessment of the likely impact on the existing transport environment as a result of the proposed 575 residential units comprising 388 no. houses and 187 no. apartments plus a 623m^2 neighbourhood focused crèche facility.

The proposed development site is located approximately 800m to the east of Kilcock Town Centre, north of the R148 Maynooth Road corridor. The subject scheme is proposed to be implemented on two individual plots (Northern and Southern sites) of land within the Meath County Local Area Plan Boundary as per the Kilcock LAP (2015-2021). The subject lands are zoned "*A2 – To provide for new residential communities with ancillary community facilities, neighbourhood facilities and employment uses as considered appropriate for the status of the centre in the Settlement Hierarchy" within the Meath County Development Plan 2013-2019*".

A number of road objectives are proposed within the Kilcock Local Area Plan (LAP) 2015-2021. In addition to the Distributor Road proposals through the subject masterplan lands, further road proposals within the LAP include the extension of the distributor road to the R148 / R158 roundabout thereby providing a complete route between the R148 Maynooth Road in the east and the M4 motorway in the west which avoids Kilcock Town Centre.

The development proposals include the provision of 1019 car parking spaces on-site comprising 561 no. within the Northern site and 458 no. within the Southern site (including 40 no. GAA changing room car parking spaces).

The proposals include the provision of a total 314 cycle parking spaces including 242 no. residential, 40 no. crèche and 32 no. GAA club cycle parking spaces on-site. The 242 no. residential cycle parking spaces comprise 163 long stay parking spaces and 97 short stay parking spaces. The provision of 242 no. residential cycle parking spaces is significantly higher than the development plan minimum requirement of 101 no. spaces and represents a good compromise between the development plan and generous DHPLG requirements (416). A total of 40 no. cycle parking spaces are proposed to be provided at the crèche facility comprising 18 no. long stay (1 per staff) and 22 no. short stay spaces (approximately 1 per 5 children). The proposed overall provision of 40 no. crèche cycle parking spaces is 26 no. spaces higher than the minimum development plan requirement.

4.3.1 Existing Environment

For the purposes of this assessment, it has been assumed that, in the 2021 Opening Year scenario, the section of Distributor Road between the existing R148 Maynooth Road roundabout and the future roundabout junction providing access to the subject southern site and the section between the committed "Character Area 1" development access and the R125 Dunboyne / Dunshaughlin Road signal controlled junction will be constructed. Accordingly, it has been assumed that there will be no through road in place resulting in no redistribution of base traffic in the 2021 Opening Year. By the adopted 2026 Future Design Year, the complete section of the permitted Distributor Road between the R148 Maynooth Road and the R125 Dunboyne / Dunshaughlin Road will be complete and operational. Accordingly, a proportion of the base (growthed) traffic flows as recorded in the 2019 traffic surveys will reassign onto this new piece of road infrastructure thereby reducing the potential future traffic flow through Kilcock Town Centre. By the 2036 Future Design Year, the full length of Distributor Road between the R148 Maynooth Road and the R158 roundabout is assumed to be complete and therefore an additional redistribution exercise has been undertaken to reflect the potential diverted traffic currently travelling between the R158 and Maynooth onto the future Distributor Road.

4.3.2 Impact Assessment

The analysis has demonstrated that whilst the proposals will generate a subthreshold impact upon the key off-site junctions 4 (Distributor Road / R125 / Moyglare Rd Junction), 5 (School Street / New Lane Junction) and 6 (New Lane / The Square Junction), a material impact (>10%) is noted at Junctions 1 (R148 Harbour St / R125 Bridge St Signal Controlled Junction), 2 (R148 Harbour St / New Lane Priority Controlled Junction) & 3 (R148 Maynooth Rd / Distributor Road Roundabout) in the 2036 Future Design Year. Based on the network impact categorisation, the following junctions were subject to detailed analysis. Whilst the impact level at Junction 4 is predicted to be less than 10%, this junction has also been subject to detailed analysis due to its close proximity to the subject development site;

- Junction 1: R148 Harbour St / R125 Bridge St Signal Controlled Junction
- Junction 2: R148 Harbour St / New Lane Priority Controlled Junction
- Junction 3: R148 Maynooth Rd / Distributor Road Roundabout
- Junction 4: Distributor Road / R125 / Moyglare Rd Junction

The detailed analysis of the aforementioned junctions reveals that the impact of the predicted development traffic is recorded as, at worst, slight at Junctions 1, 2 and 3 and imperceptible at Junction 4.

4.3.2.1 Do Nothing Scenario

If the proposed development is not consented or implemented all local junctions with the existing consented road network will likely continue to operate within reserve capacity.

4.3.2.2 Construction Phase Impact

The construction impact is likely and will have a negative effect in the short-term as construction will be between 1 - 7 years. This likely short term effect during the construction stage is predicted to be imperceptible as appropriate mitigation measures will be put in place to minimise the impact of construction vehicles on the surrounding road network.

4.3.2.3 Operational Phase Impact

The proposed development operational traffic (full development complete), will result in all local junctions operating well within reserve capacity. The probability of the predicted impacts occurring during this timeframe can be described as likely and the impacts are predicted to be negative, permanent and imperceptible.

4.3.3 Mitigation

A package of integrated mitigation measures has been identified to off-set the additional local demand that the proposed residential development on the subject zoned lands could potentially generate as a result of the forecast increase in vehicle movements by residents of the scheme. The strategy includes specific measures for both the construction and operational stages of the proposed development. The implementation of the mitigation measures outlined in Chapter 6 of the EIAR will ensure that the residual effect on the local receiving environment is both managed and minimised.

The analysis undertaken in the assessment represents a worst-case appraisal of a typical weekday as it is focused upon the two busiest periods of the day (i.e. AM and PM peak hours). During the remaining 22 hours of the day, traffic flows are predicted to be significantly lower resulting in the network operating with additional reserve capacity to that forecast for the peak hour periods. Similarly, over the weekend periods both the site generated traffic and the external road network traffic flows are generally lower compared to the weekday peak hour periods that have been assessed.

4.3.4 Construction Phase

In order to ensure satisfactory operation of the construction stage the following mitigation measures are proposed. Provision of sufficient on-site parking. The use of construction staff vans/minibuses to reduce traffic. Truck wheel washes will reduce the tracking of mud and dirt onto the local road network.

4.3.5 Operational Phase

To mitigating the potential impact of the proposed development the design sought to maximise the ability to provide attractive connections to the surrounding pedestrian / cycle network including the Maynooth Road corridor and the Royal Canal Greenway and Public Transport interchange locations (bus and train). Generous provision of cycle parking will help ensure cycling is a viable alternative mode of transport to private car travel thereby helping minimise private car trips generated by future residents.

4.3.6 Residual Impact

In conclusion, it is considered that the impact on the surrounding road network, as a result of the proposed development will be minimal. This is based on the anticipated levels of traffic generated by the proposed development, the existing and future road infrastructure and the information and analysis summarised in Chapter 6 of the EIAR.

4.3.7 Monitoring

During the construction stage, the following monitoring exercises are proposed. Compliance with construction vehicle routing practices. Compliance with construction vehicle parking practices. Internal and External road conditions. Timings of construction activities in terms of start / finish times.

During the operational stage occupancy surveys will be used to identify initiatives to maintain and further encourage sustainable travel characteristics.

4.4 Material Assets: Built Services

This chapter of the EIAR comprises of an assessment of the likely impact of the proposed development on existing utility services in the vicinity of the site as well as identifying proposed mitigation measures to minimise any impacts. The material assets considered in this chapter of the EIAR include Power, Gas and Telecommunications.

In summary, the proposed development ("the site") comprises of 575 No. residential dwellings (388 No. housing units in the form of detached, semi-detached and terraced houses, 121 No. duplex units and 66 No. 1 and 2-bedroom apartments) on a 24.24 Ha site.

4.4.1 Existing Environment

Assessment of the likely impact of the proposed development on existing utility services in the vicinity of the site included a desktop review of ESB's Networks Utility Plans, Gas Networks Ireland's Service Plans, Eir's E-Maps and Virgin Media's Service Plans.

There are records of medium and high voltage overhead power lines traversing through the site. These overhead lines will be relocated underground and will be located in green space areas and underneath footpaths within the proposed development. ESB will provide design for same at a later stage.

There are no recorded distribution gas mains running through the site. However, there is a medium pressure distribution pipe located on the R148 Maynooth Road to the south of the subject site. The existing Millerstown residential development adjacent to the subject site is also serviced by a medium pressure distribution pipe.

Telecommunications infrastructure is located along the R148 Maynooth Road to the south of the subject site.

The existing infrastructure noted above will provide electrical, gas and telecommunication connections for the proposed development.

4.4.2 Impact Assessment

There is potential interruption to ESB's network, Gas Networks Ireland's infrastructure and Eir's infrastructure while carrying out road works along the Link Street (e.g. during formation of site access junction) and while carrying out works to provide service connections to the proposed development.

Reinstatement of any excavations, trenches etc. relating to the provision of electrical, gas and telecommunications connections is to be carried out in accordance with the relevant utility provider's requirements.

4.4.2.1 Do Nothing Scenario

There are no predicted impacts should the proposed development not proceed.

4.4.2.2 Construction Phase Impacts

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, short-term, moderate impact.

4.4.2.3 Operational Phase Impacts

Without the consideration of mitigation measures the operational phase of the proposed development will likely have a neutral, permanent, slight impact.

4.4.2.4 Cumulative Impacts

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, short-term, slight cumulative impact.

Without the consideration of mitigation measures the operational phase of the proposed development will likely have a neutral, permanent, imperceptible cumulative impact.

4.4.3 Mitigation

Mitigation measures will include the following. A site specific Construction and Environmental Management Plan (CEMP) will be developed and implemented. Surface water runoff from excavations will be directed to on-site settlement ponds prior to discharge from the site. The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tinkered off site to a licensed facility until a connection to the public foul drainage network has been established. The construction compound's potable water supply shall be located where it is protected from contamination by any construction activities or materials.

All new foul drainage pipes will be pressure tested and will be subject to an internal CCTV survey in order to identify any possible defects prior to being made operational. Water conservation measures such as dual flush water cisterns and low flow taps will be included in the design.

4.4.4 Residual Impacts

4.4.4.1 Construction Phase

With the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, short-term, slight residual impact.

4.4.4.2 Operational Phase

With the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, permanent, imperceptible residual impact.

Implementation of mitigation measures outlined in Chapter 7 of this EIAR and the Construction and Environmental Management Plan will ensure that the potential impacts of the proposed development on site services do not occur during the construction phase.

4.4.5 Monitoring

No specific monitoring is proposed in relation to the remaining material assets infrastructure.

4.5 Land and Soils

This Chapter of the EIAR comprised of an assessment of the likely impact of the proposed development on the soils and the geological environment as well as identifying proposed mitigation measures to minimise any impacts.

In summary, the proposed development ("the site") comprises of 575 No. residential dwellings (388 No. housing units in the form of detached, semi-detached and terraced houses, 121 No. duplex units and 66 No. 1 and 2-bedroom apartments) on a 24.24 Ha site.

4.5.1 Existing Environment

An assessment of the likely impact of the proposed development on soils and the geological environment included a preliminary ground investigation study and review of information available on the Geological Survey of Ireland (IGSL) online mapping service.

A Preliminary Site investigation carried out by Ground Investigations Ireland indicate that the subsoil material generally comprises brown sandy gravely clay. This brown gravely clay generally overlies brown fine to coarse gravel and is interspersed elsewhere with upper layers of both soft and firm sandy brown clay.

Groundwater was encountered at SA01, TP03, SA03 and TP04.

Review of GSI's online mapping service ("Bedrock Geology") generally describes geology in the vicinity of the site as by "Calp" Limestone (dark grey to black limestone and shale). The term "Calp" is used to refer generally to the various units of basinal limestone and shale within the map area GSI have classified the site's groundwater vulnerability as "high" and have classified underlying aquifers as "Locally Important".

4.5.2 Impact Assessment

Site development works will include stripping of topsoil, excavation of subsoil layers (to allow road construction, foundation excavation, basement excavation for underground carpark, drainage and utility installation and provision of underground attenuation of surface water) and importation of fill (structural fill beneath houses, driveways and to roadways).

Potential impacts during the construction phase include exposure of the underlying subsoil layers to the effects of weather and construction traffic resulting in erosion and generation of sediment laden runoff. Accidental spills and leaks during construction activities may result in contamination of the soils underlying the site.

4.5.2.1 Do Nothing Scenario

There will be no impact on soils and the geological environment if the development does not proceed.

4.5.2.2 Construction Phase Impacts

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, short-term, moderate cumulative impact.

4.5.2.3 Operational Phase Impacts

During the operational phase there will be no further impact on soils and the geological environment.

4.5.2.4 Cumulative Impacts

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, permanent, not significant cumulative impact.

During the operational phase there will be no further impact on soils and the geological environment.

4.5.3 Mitigation

In order to mitigate impacts noted above stripping of topsoil will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development. Disturbed subsoil layers will be stabilised as soon as practicable (i.e. minimise the duration that subsoil layers are exposed to weather effects). Measures will also be implemented to capture and treat sediment laden surface water runoff (e.g. sediment retention ponds and surface water inlet protection).

Regarding construction traffic, earthworks plant and vehicles delivering construction materials to site will be confined to predetermined haul routes around the site.

Vehicle wheel wash facilities will be installed in the vicinity of any site entrances and road sweeping along the R148 Maynooth Road and dust suppression implemented as necessary.

In order to mitigate against spillages contaminating underlying soils, all oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area. Refuelling and servicing of construction machinery will take place in a designated hardstand area (when not possible to carry out such activities off site).

All temporary construction compounds are to be removed upon completion of the construction phase. Such areas are to be reinstated in accordance with the landscape architects plan and engineer's drawings.

All construction waste and / or scrapped building materials are to be removed from site on completion of the construction phase.

4.5.3.1 Construction Phase

With the consideration of mitigation measures the construction phase of the proposed development will likely have an overall neutral, short-term, imperceptible residual impact.

4.5.3.2 Operational Phase

For the operational phase no specific mitigation measures are proposed as there will be no further impact on soils and the geological environment.

4.5.3.3 Residual impacts

Implementation of the measures outlined in Chapter 8 of this EIAR and the Preliminary Construction Management Plan will ensure that the potential impacts of the proposed development on soils and the geological environment do not occur during the construction phase.

4.5.4 Monitoring

Proposed monitoring by the main contractor during the construction phase in relation to the soil and geological environment are as follows. Adherence to the CEMP. Construction monitoring of the works. Inspection of fuel / oil storage areas and having spill kits available to hand. Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities. Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill, protection of soils for removal from site from contamination). Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.). No ongoing monitoring is proposed on completion of the construction phase.

4.6 Water and Hydrology

This chapter of the EIAR comprises of an assessment of the likely impact of the proposed development on the surrounding surface water and hydrogeological environments (including flood risk, surface water drainage, foul drainage and water supply) as well as identifying proposed mitigation measures to minimise any impacts.

In summary, the proposed development ("the site") comprises of 575 No. residential dwellings (388 No. housing units in the form of detached, semi-detached and terraced houses, 121 No. duplex units and 66 No. 1 and 2-bedroom apartments) on a 24.24 Ha site.

4.6.1 Existing Environment

Assessment of the likely impact of the proposed development on the surrounding surface water and hydrogeological environments included site inspection / walkover, review of topographic survey information, review of Irish Water network plans, ground investigations, review of information available on the Environmental Protection Agency (EPA) online mapping service, review of information available on the Geological Survey of Ireland (GSI) online mapping service, review of OPW National Flood Hazard Mapping and CFRAM Studies, consultation with Meath County Council's Water Services Section and consultation with Irish Water

As part of assessing the likely impact of the proposed development, surface water runoff, foul drainage discharge and water usage calculations were carried out in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) and methods outlined in Irish Water's Pre-Connection Enquiry Application (water demand and foul drainage discharge).

An existing 300/375 diameter surface water drain runs in the existing link street, out-falling towards the south of the site in the Rye Water. It is proposed to outfall the surface water networks for the north and south sites to the 'Upper Ditch' and Rye Water respectively.

GSI's Groundwater Data Viewer classifies the bedrock aquifer underlying the site as "Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones". Low vulnerability is located in the majority of the subject site. There is a small portion of Moderate to High vulnerability in the southern section of the subject site.

A site specific flood risk assessment (SSFRA) has been undertaken by reviewing information from the Office of Public Works (OPW) National Flood Hazard Mapping (www.floods.ie), Kilcock Flood Risk Assessment and Management Study (FRAMS) and the Eastern CFRAM Study. Approved flood mitigation works have been completed to serve the proposed development site under ABP REF PL 17.246141 and have been confirmed as compliant by Meath County Council. This assessment has been carried out in accordance with the procedures for a "Flood Risk Assessment" as outlined in the OPW's Guidelines for Planning Authorities – The Planning System and Flood Management (November 2009).Following the SSFRA and approved flood mitigation works completed in 2018, it was determined that all dwellings in the subject site are located in Flood Zone C as defined by the Guidelines i.e. the proposed development is appropriate for the site's flood zone category.

An existing 375/450mm diameter trunk foul sewer line is located in the existing link street constructed as part of Phase 1 of Millerstown. This 375/450mm trunk sewer discharges to the 600mm Irish Water foul sewer to the south of the subject site adjacent to the Rye Water. This 600mm sewer outfalls to the Kilcock pump station just east of the site. A confirmation of Feasibility and Statement of Design Acceptance has been received from Irish Water which advises that new connections to the existing network are feasible without any upgrade works required and that the proposed foul sewer design is in compliance with Irish Water's Code of Practice and Standard Details. Irish Water's proposed 450mm diameter foul sewer will provide a suitable foul drainage outfall for the proposed development.

With regards to surface water discharge, the southern section is proposed to discharge to the Rye Water River to the south. It is proposed to discharge the northern section of the site to the 'Upper Ditch' which is a tributary of The Rye River. The Rye river ultimately discharges to the River Liffey. It is proposed to discharge attenuated flows from both the northern and southern sections to accommodate 100 year storm events with a 20% allowance for climate change. All surface water discharge is limited to mimic greenfield run-off via the use of flow control devices.

A strategic 280 / 315mm watermain is located in the link road which is located along the subject sites southern and western boundaries. It is proposed to service the subject site via this strategic watermain. A confirmation of Feasibility and Statement of Design Acceptance has been received from Irish Water which advises that new connections to the existing network are feasible without any upgrade works required and that the proposed watermain design is in compliance with Irish Water's Code of Practice and Standard Details.

4.6.2 Impact Assessment

Potential impacts that may arise during the construction phase include, surface water runoff becoming polluted by construction activities, accidental spills and leaks associated with storage of oils and fuels, leaks from construction machinery and spillage during refuelling and maintenance, concrete runoff (particularly discharge of wash water from concrete trucks), improper discharge of foul drainage from contractor's compound and cross contamination of potable water supply to construction compound.

4.6.2.1 Do Nothing Scenario

There are no predicted impacts should the proposed development not proceed.

4.6.2.2 Construction Phase

The potential operational phase impacts are likely and are expected to be a slight, short-term, neutral impact.

4.6.2.3 Operational Phase

The potential operational phase impacts are likely and are expected to be a slight, permanent and have a neutral effect on the environment.

4.6.3 Mitigation

In order to mitigate construction phase impacts a site-specific Construction and Environment Management Plan will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the Construction and Environment Management Plan.

Oil, fuel etc. storage areas are to be decommissioned on completion of the construction phase. Any remaining liquids are to be removed from site and disposed of at an appropriate licenced facility. Meath County Council's Environmental Control Section is to be notified of the proposed destination for disposal of any liquid fuels.

Potential operational phase impacts include increased impermeable surface area potentially increasing surface water runoff and accidental hydrocarbon leaks with subsequent discharge into piped surface water drainage network.

In order to mitigate operational phase impacts surface water runoff from the site will be attenuated to the greenfield runoff rate as outlined in the Greater Dublin Strategic Drainage Study (GDSDS). Methodologies such as permeable paving, green roofs and discharge of surface water via a fuel / oil separator are being implemented as part of a SuDS surface water treatment train approach.

Proposed mitigation measures to address residual flood risks include maintenance of the drainage system on a regular basis to reduce the risk of a blockage and in the event of storms exceeding the 1% AEP design capacity of the attenuation system, possible overland flow routing towards open space areas should not to be blocked.

4.6.3.1 Residual Impact Construction Phase

Implementation of mitigation measure outlined in Section 9.7 will ensure that the potential impacts of the proposed development on water and the hydrogeological environment do not occur during the construction phase and that any residual impacts will be slight, short-term and have a neutral impact on the environment.

4.6.3.2 Residual Impact Operational Phase

As the surface water drainage design has been carried out in accordance with the GDSDS, and SuDS methodologies will be implemented as part of a treatment train approach, the predicted residual impacts on the water and hydrogeological environment arising from the operational phase are expected to be slight, long term and have a neutral effect on the development.

4.6.3.3 Cumulative Impact

No potential cumulative impacts are anticipated in relation to foul drainage and water supply.

4.6.4 Monitoring

Proposed monitoring in relation to the water and hydrogeological environment are as follows. Inspection and maintenance of fuel / oil separators. Inspection and maintenance of the internal road network for wear and tear that could cause silt release. Inspection and maintenance of attenuation and hydrobrake infrastructure. During the operational phase an inspection and maintenance contract is to be implemented in relation to the proposed Class 1 fuel / oil separators, hydrobrakes and attenuation facilities.

4.7 Biodiversity

4.7.1 Existing Environment

A review of the biodiversity of the site was carried out by OPENFIELD Ecological Services and this included a study of existing information from the area and a site survey. Site surveys were carried out in March and June 2019. June is within the optimal season for general habitat survey and for surveying breeding birds while March is within the optimal period for large mammals (particularly Badgers). A separate, dedicated bat survey was carried out by Brian Keeley of Wildlife Surveys Ireland in July 2019, which is within the optimal flight period for bats.

It was found that the site is not within or adjacent to any area that is designated for nature conservation at a national or international level. There are no plants recorded from the site that are listed as rare or of conservation value. There are no habitats that are examples of those listed on Annex I of the Habitats Directive. There are no alien invasive plant species as listed on Schedule 3 of SI No. 477 of 2011. The site can be described as mostly disturbed ground with some areas of open agricultural grassland. Hedgerows along the northern boundary of high local value to biodiversity. Other hedgerows have poor structure and diversity and so are of low local value. The site is adjacent to the Rye Water which is a river of high fisheries value. The site was surveyed for bat activity and a number of species use the area for foraging and/or commuting. No bat roosts were recorded from the site. There was no evidence of Badgers setts on the land.

4.7.2 Impact Assessment

4.7.2.1 Do Nothing Scenario

Permitted development is already underway on much of these lands which will see new built development and infrastructure even in the absence of the proposed project. Lands to the north would remain in agricultural use in the absence of the scheme.

4.7.2.2 Construction Phase

Approximately 465m of high local value hedgerows and 575m of low local value hedgerows are to be removed. Approximately 60m of hedgerows are to be retained. The removal of vegetation could affect nesting birds and other fauna. Without mitigation, construction pollution could affect aquatic life in the Rye Water downstream. This includes the Rye Water/Carton Special Area of Conservation (SAC) located 5km to the east of the development site.

4.7.2.3 Operational Phase Impacts

The development projects will bring greater levels of human disturbance including noise and artificial light. Changes to surface water characteristics will not occur due to the attenuation measures included in the project design. There will be no impact arising from wastewater as treatment infrastructure will treat the additional loading to a high standard.

4.7.2.4 Residual Impact

With mitigation measures in place during the construction phase, residual impacts to biodiversity which will occur are neutral or negative, short-term, not significant. With mitigation measures in place during the operational phase, residual impacts to biodiversity which will occur are neutral or negative, short-term, not significant.

4.7.2.5 Cumulative Impact

Cumulative impacts from overlap of the construction phase of the adjacent consented residential development with proposed development is possible. The duration of the any construction overlap will likely be temporary. The Kilcock Environs Written Statement forms part of the Meath County Development Plan 2013-2019 includes an objective to provide for a primary school in a site of 1.6 hectares and consideration of pedestrian and cyclist

connectivity. The proposed school site is identified adjacent to the western most extent of the proposed development boundary and is shown in the Site Layout Plan (drawing no.1829-P-104) and is likely comprise of a school building with 24 class rooms, parking and sports facilities. The cumulative impacts are assessed to be not significant. Cumulative effects can also arise from additional loading to the municipal wastewater treatment plant as well as the characteristics of surface water arising from land use change. In both cases, significant effects to water quality will not arise as there is sufficient treatment capacity and sustaining drainage systems have been incorporated into the project design.

4.7.3 Mitigation

4.7.3.1 Construction Phase

Habitat loss will be compensated by extensive new planting in open spaces. Vegetation will not be removed between March and August in compliance with the Wildlife Act. Good site management practices will ensure that pollution to water courses does not occur during the construction phase.

4.7.3.2 Operational Phase

Lighting will be controlled to avoid light spill to areas of value to wildlife, e.g. along the corridor of the Rye Water and linear habitats of value to bats. Surface water will be attenuated using sustainable urban drainage systems (SUDS). Additional landscaping will compensate for the loss of habitat that will occur.

4.7.4 Monitoring

Monitoring will be required during the construction phase to ensure pollution of water courses does not occur. Inspections of silt-traps and barriers should be carried out at least daily. Monitoring will be required during the operational phase to ensure the oil separators are maintained and functioning to specification.

4.8 Noise and Vibration

4.8.1 Existing Environment

The baseline noise environment has been established through an environmental noise survey conducted at the site in order to quantify the existing noise environment. The survey was conducted in general accordance with ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*.

4.8.2 Impact Assessment

4.8.2.1 Do Nothing Scenario

In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations and within the development site will remain largely unchanged resulting in a neutral impact in the long-term.

4.8.2.2 Construction Phase Impact

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local Authorities typically control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

Reference has been made to BS 5228 2009+A1 2014 Code of practice for noise and vibration control on construction and open sites. Part 1 to set appropriate construction noise limits for the development site.

A detailed construction programme has not been established; therefore, it is difficult to calculate the actual magnitude of noise emissions to the local environment. However, it is possible to predict typical noise levels using guidance set out in BS 5228-1:2009+A1:2014.

Worst-case construction noise levels predicted at nearest sensitive properties at 25m from construction activity are predicted to be slightly above the threshold for significant impact during the general construction phase. The distance of 25m applies in the worst-case situation where works are being carried out close to the houses along the eastern edge of Millerstown estate. At distances greater than 50m from noise-generating construction activity the predicted levels are below the criterion for a significant noise impact.

The application of binding noise limits, hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact are minimised.

For any noise sensitive locations within 25m of the proposed development potential ***negative***, ***significant*** and ***temporary*** effects are likely.

At greater distances greater than 50m the effects are expected to be ***negative, moderate*** and ***short-term***.

4.8.2.3 Operational Phase Impact

The primary sources of outward noise in the operational context are long term and will comprise traffic movements to site using the existing road network and building services plant noise.

Additional Traffic on Public Roads

in order to increase traffic noise levels by 1dB, traffic volumes would need to increase by the order of 25% approximately. A review of the potential traffic level increases attributable to the proposed development indicates that the development will not give rise to increases of this magnitude on the surrounding road network.

The predicted increase in traffic flows associated with the development will result in an increase less than 1dB along all roads. The effect is therefore **neutral**, **imperceptible** and **permanent**.

Building Services Plant

It is expected that the principal items of building and mechanical services plant will be for heating and ventilation of the buildings. These items and their location will be selected at the detailed design stage to ensure that noise emissions to sensitive receivers both external and within the development itself will be within the relevant criteria set out in Chapter. The effects are considered **neutral**, **not significant** and **permanent**.

4.8.2.4 Residual Impact

During the construction phase of the project there is the potential for significant and moderate impacts on nearby noise sensitive properties due to noise emissions from site activities. The application of binding noise limits, hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact are minimised.

The predicted change noise levels associated with additional traffic is predicted to be of imperceptible impact along the existing road network. In the context of the existing noise environment, the overall impacts from noise contribution of increased traffic is imperceptible at the majority of locations and slight at near the newly-constructed roads.

Noise levels associated with operational plant are expected to be well within the adopted day and night-time noise limits at the nearest noise sensitive properties therefore the impacts are not significant.

4.8.2.5 Cumulative Impact

There are several proposed and permitted developments within the Hansfield development scheme. Considering the distances between the proposed and permitted developments, there is potential for cumulative construction impacts should the construction phases of the subject sites coincide with other developments. Mitigation measures have been outlined in order to minimise potential impacts.

The key potential noise source associated with the proposed development relates to additional traffic on the surrounding road network. The cumulative noise impacts associated with existing and development related traffic has been considered within this assessment and there are no perceptible impacts.

4.8.3 Mitigation

4.8.3.1 Construction Phase

Mitigation measures proposed during the construction phase are in line with the guidance contained within BS5228: 2009 + A1 *2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 1 Noise* for appropriate mitigation measures, which offers detailed guidance on the control of noise and vibration from construction activities. Various mitigation measures will be considered and applied during the construction of the proposed development to ensure noise and vibration limit values are complied with.

4.8.3.2 Operational Phase

During the operational phase of the development, noise mitigation measures with respect to the outward impact of traffic from the development are not deemed necessary.

4.8.4 Monitoring

During the construction phase, noise and vibration monitoring shall be carried out by the contractor to ensure that the recommended threshold levels set out in the EIAR Chapter or any conditioned noise and vibration limits are not exceeded.

4.9 Air Quality and Climate

4.9.1 Existing Environment

In terms of the existing air quality environment, data available from similar environments indicates that levels of nitrogen dioxide (NO_2), carbon monoxide (CO), particulate matter less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$) and benzene are generally well below the National and European Union (EU) ambient air quality limit values.

4.9.2 Impact Assessment

4.9.2.1 Construction Phase Impact

The greatest potential impact on air quality during the construction phase is from construction dust emissions, PM_{10} and $PM_{2.5}$ emissions. In order to minimise dust emissions during construction, a series of mitigation measures have been recommended. When the dust minimisation measures set out within this EIAR are implemented, the impact of fugitive emissions of dust from the site on nearby receptors will be short-term and not significant.

Due to the size and nature of the development, the impact of the proposed development on national greenhouse gas emissions is predicted to be insignificant in terms of Ireland's obligations under the EU 2020 target.

The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all ambient air quality legislative limit values and, therefore, the impact will be imperceptible with respect to human health.

4.9.2.2 Operational Phase Impact

The operational impact of the development was assessed based on emissions of the pollutants NO_2, CO, PM_{10}, $PM_{2.5}$ and benzene using the UK Design Manual for Roads and Bridges screening model which is a

recommended screening model for assessing the impact of traffic on air quality. The inputs to the air dispersion model consist of information on road layouts, receptor locations, annual average daily traffic movements, annual average traffic speeds and background concentrations. The climatic impact based on greenhouse gas (GHG) emissions of CO_2 was also assessed using the Design Manual for Roads and Bridges screening model.

Based on the modelling results, the impact of the proposed development on ambient air quality and climate is predicted to be long-term and imperceptible. The assessment demonstrates that the impact of the operational phase of the development complies with all ambient air quality legislative limit values which are based on the protection of human health and, therefore, the impact will be long-term and imperceptible with respect to human health.

4.9.2.3 Residual Impact

When the dust minimisation measures detailed in the EIAR are implemented, fugitive emissions of dust from the site will be short-term and not significant. Impacts to climate during the construction phase are considered imperceptible and therefore no residual impacts of significance are predicted.

The results of the air dispersion modelling study demonstrate that the impact of the proposed development on air quality and climate is predicted to be imperceptible with respect to the operational phase. Therefore, no residual impacts of significance for air quality and climate are predicted for the operational phase of the proposed development.

4.9.2.4 Cumulative Impact

The dust minimisation measures outlined for the proposed development should be implemented throughout the construction phase for all developments in the vicinity of the site to avoid any nuisance dust impacts occurring. Once these minimisation measures are in place, the cumulative impact to air quality is considered short-term and not significant. The cumulative impact to climate from construction is considered imperceptible based on the nature and scale of the proposed works and due to the low volumes of machinery and vehicles required for the construction of the proposed development as well as the construction phase of nearby committed developments.

The local air quality impact assessment, regional air quality impact assessment and climate impact assessment conducted using the DMRB model for the operational phase of the proposed development have all been based on cumulative traffic data incorporating projected traffic for permitted developments in the vicinity of the development as a worst-case. As the outcomes of the assessments concluded that impacts from the cumulative scenario will be long-term and imperceptible with respect to air quality and climate, no further cumulative impact assessment is required for the proposed development.

4.9.3 Mitigation

4.9.3.1 Construction Phase

A series of dust mitigation measures are proposed within the EIAR. These dust mitigation measures shall be implemented during construction of the proposed development to ensure the formation of fugitive dust is minimised.

4.9.3.2 Operational Phase

No additional mitigation measures are required during the operational phase of the proposed development as it is predicted to have an imperceptible impact on ambient air quality and climate.

4.9.4 Monitoring

Monitoring of construction dust deposition at the site boundary and / or at nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure the mitigation measures are

providing adequate dust minimisation. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119.

There is no monitoring recommended for the operational phase of the development as impacts to air quality and climate are predicted to be imperceptible.

4.10 Cultural Heritage

Archer Heritage Planning Ltd. has prepared this Cultural Heritage and Archaeology assessment undertaken at a greenfield site in Newtownmoyaghy townland, Co. Meath situated on the north-eastern outskirts of the town of Kilcock, Co. Kildare (ITM 689530, 739680). This assessment seeks to identify and record the location, nature and dimensions of any archaeological or cultural heritage features, fabric or artefacts that may be impacted by the proposed works.

4.10.1 Existing Environment

The name Kilcock is derived from the Irish 'Cill Coca' or the Church of Coca who was an early Christian missionary who founded the first Church in Kilcock circa 550 A.D. The Church was built on high ground on the southern bank of the Rye Water River. The area has been inhabited since early prehistory. The proposed development area is bordered to the south by the boundary with County Kildare. The county border also functioned as the border between the Kingdoms of Meath (Brega) and Leinster (Laigin).

The overall development site has been subjected to geophysical survey (Nichols 2010, Appendix 13.1) and archaeological testing (Bayley 2010) with only a portion of the southern block included in these assessments. No archaeological material was identified within the current site footprint during these works although two burnt spreads (probable fulachta fiadh) had been identified a short distance to the south-west. The testing indicated a low-moderate potential for the presence of sub-surface archaeology existing across the site, and it was noted that no testing was carried out in the central part of the development site. It was recommended that archaeological monitoring of all topsoil stripping and groundworks on the development site be carried out by a suitably qualified archaeologist.

There are two RMP sites within the subject site, Ring-ditches ME049-A003001 & ME049-A003002. Both were initially identified through aerial photography and neither has an above surface expression. These are relatively common archaeological site types; funerary or burial monuments; primarily of the Bronze Age period (c.2200-800BC); with 189 other examples of these sites in the county of Meath.

Analysis of historic mapping can show human impact on landscape over a prolonged period. No potential archaeological features were recorded within the subject site from cartographic sources. The closest Protected Structures are the Little Church of the Assumption (RPS no. ME049-103) and adjacent farmhouse (RPS no. ME049-102) which are located c. 350m to the south-west.

Several archaeological investigations have been undertaken within and nearby the proposed development producing evidence from the prehistoric to the medieval. One potential archaeological feature was observed during the topsoil strip monitoring comprising the remains of a disturbed Fulacht Fia on the edge of the Mill Race in Dolanstown.

Test trenching was completed under licence No. 19E0547 and the reader is also referred to the Detailed Archaeology Impact Assessment report submitted with the application documentation. Two areas of archaeological interest were identified during the test excavation. Both are ring-ditches and no evidence for internal features or potential cremation material was identified.

4.10.2 Impact Assessment

4.10.2.1 Do Nothing Scenario

If the proposed development were not undertaken, any sites/objects of archaeological or Cultural Heritage significance on the subject lands would be preserved in-situ beneath the existing ground surface.

4.10.2.2 Construction Phase Impact

The greatest threat to unrecorded, buried archaeological sites/ features occur during the construction stage and include all ground disturbance works undertaken at this stage (excavations and other groundworks including the provision of access roads and service trenches), movement of machines and storage of material. It is concluded that, in the absence of the mitigation measures described below, significant impacts on the archaeological remains at the site would be likely, negative, profound and permanent.

4.10.2.3 Operational Phase Impact

No potential impacts are identified during the operational phase as it is anticipated that issues of archaeological and cultural heritage interest will have been resolved prior to or during the construction phase. It is concluded that, in the absence of the mitigation measures described below, significant impacts on the archaeological remains at the site would be likely, negative, profound and permanent.

4.10.2.4 Cumulative Impact

No potential cumulative impacts are identified as it is anticipated that matters of archaeological and cultural heritage interest at the subject site will have been resolved prior to or during the construction phase of this proposal and there will be no anticipated impacts arising from interactions with neighbouring developments as these have been subject to previous mitigation measures.

4.10.3 Mitigation

Should this development proceed, the archaeological sites identified in this assessment will be subject to full archaeological excavation in advance of construction and carried out under licence to the Department of Culture, Heritage and the Gaeltacht (DCHG) in consultation with the National Museum of Ireland. **A licence to excavate the two areas of archaeology (Ring Ditches and Enclosure) identified in the test-excavation (Licence no. 19E0547) has been issued (Licence No. 19E0686, 17th October 2019) by the DCHG**.

4.10.3.1 Construction Phase

Following mitigation of any impacts to the identified archaeological features, all ground disturbance works across the remainder of the development site will be monitored by a suitably qualified archaeologist. Should any further archaeological features or material be identified then an appropriate area surrounding the archaeology will be cordoned off from construction activity and the Department of Culture, Heritage and the Gaeltacht will be notified and an appropriate mitigation strategy, i.e. preservation in situ or full archaeological excavation, will be agreed.

4.10.3.2 Operational Phase

Any archaeology uncovered will be resolved before the operational stage of the proposed redevelopment. There is no requirement for operational phase mitigation measures.

4.10.4 Monitoring

Archaeological excavation, as proposed in the mitigation measures (see 13.7.1 & 13.7.2), can only be undertaken upon receipt of a licence issued by the Department of Culture, Heritage and the Gaeltacht in consultation with the National Museum of Ireland. Conditions of awarding of an excavation licence include the production of a Preliminary Report within four weeks and a Final Report within twelve months of the completion of the excavation. The production of these reports ensures compliance with the proposed mitigation measures.

4.11 Description of Significant Interactions

The construction, operational and cumulative impacts of the proposed development have been assessed within each chapter of the EIAR. This section considers the significant interactions of impacts between each of the separate disciplines.

In practice many impacts have slight or subtle interactions with other disciplines. Table 8 highlights those interactions which are considered to potentially be of a significant nature. Discussions of the nature and effect of the impact is primarily undertaken within each of the relevant chapters, while this chapter identifies the most important potential interactions.

With mitigation measures in place, no significant residual negative impacts are predicted.

Interaction	Population & Human Health		Landscape		Material Assets- Traffic		Material Assets- Built Services		Land & Soils		Water		Biodiversity		Noise & Vibration		Air Quality & Climate		Cultural Heritage	
	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.
Population & Human Health			×	✓	✓	✓	✓	×	×	×	×	×	×	×	✓	×	✓	✓	×	×
Landscape and Visual					×	×	×	×	✓	×	×	×	×	✓	×	×	×	×	×	×
Material Assets- Traffic							×	×	×	×	×	×	×	×	✓	×	✓	✓	×	×
Material Assets- Built Services									✓	×	×	✓	×	×	×	×	×	✓	×	×
Land & Soils											✓	✓	✓	×	×	×	×	×	✓	×
Water													✓	×	×	×	×	×	×	×
Biodiversity															×	×	×	×	×	×
Noise & Vibration																	×	×	×	×
Air Quality & Climate																			×	×
Cultural Heritage																				

Con. - Construction Phase | Op. - Operational Phase | ✓ - Potential Significant Interaction | × - No Significant Interaction

FIGURE 8 - INTERACTIONS WITH POTENTIAL FOR SIGNIFICANT IMPACTS BEFORE THE IMPLEMENTATION OF MITIGATION MEASURE