

21 ENVIRONMENTAL INTERACTIONS & CUMULATIVE IMPACT

21.1 Introduction

This Chapter of the EIAR identifies the principle interactions between the potential impacts of the environmental factors identified in Chapter 5 to 19 inclusive.

The principal interactions are summarised below, under Table 21.1, and further discussed in Section 21.2 of this Chapter.

The predicted impacts identified in Chapters 5 – 19 have taken into account the principal interactions listed below and associated mitigation measures.

The cumulative impacts arising from the interaction of impacts identified below, is also outlined in this Chapter.

This Chapter of the EIAR has been prepared by the following staff at Stephen Little & Associates Chartered Town Planners & Development Consultants:-

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Where there is an interaction = ✓ No Interaction = x

	Population & Human Health	Biodiversity	Land, Soils & Geology	Water	Climate – Air Quality & Climate Change	Climate – Sunlight	Climate – Daylight	Air – Noise & Vibration	Landscape & Visual Impact	Material Assets – Transport	Material Assets – Waste	Material Assets – Utilities	Cultural Heritage (Archaeology)	Cultural Heritage (Architectural)
Population & Human Health		x	x	x	✓	x	x	✓	✓	✓	x	x	x	x
Biodiversity	x		✓	✓	✓	x	x	✓	✓	x	x	x	x	x
Land, Soils & Geology	x	✓		✓	x	x	x	x	x	x	x	✓	x	x
Water	x	✓	✓		x	x	x	x	x	x	✓	✓	x	x
Climate – Air Quality & Climate Change	✓	x	x	x		x	x	x	x	✓	x	x	x	x
Climate – Sunlight	x	x	x	x	x		x	x	x	x	x	x	x	x
Climate – Daylight		x	x	x	x	x		x	x	x	x	x	x	x
Air – Noise & Vibration	✓	x	x	x	x	x	x		x	✓	x	x	x	x
Landscape & Visual Impact	✓	✓	x	x	x	x	x	x		x	x	x	✓	✓
Material Assets – Transport	✓	x	x	x	x	x	x	✓	x		✓	x	x	x
Material Assets – Waste	x	x	x	✓	x	x	x	x	x	x		x	x	x
Material Assets – Utilities	x	x	x	x	x	x	x	x	x	x	x		x	x
Cultural Heritage (Archaeological)	x	x	x	x	x	x	x	x	x	x	x	x		x
Cultural Heritage (Architectural)	x	x	x	x	x	x	x	x	x	x	x	x	x	

Table 21.1: Matrix of Interactions between Environmental Factors (During Construction and Operational Phases)

21.2 Interactions

21.2.1 Population and Human Health (Chapter 5)

Climate (Air Quality and Climate Change)

- Increases in AQ emissions and dust can lead to an increase in the level of poor respiratory health in the area.
- Implementing the suggested mitigation measures will reduce the potential for such effects.

Air (Noise and Vibration)

- An increase in noise emissions can result in physical health effects relating to hearing loss and headaches and mental health effects such as stress and anxiety.
- Implementing the suggested mitigation measures will reduce the potential for such effects.

Landscape and Visual Impact Assessment

- The introduction of tall buildings on undeveloped land can cause visual disturbance for nearby residents leading to effects on mental health and wellbeing.
- As the tall buildings are in keeping with the existing surrounding developments and give increased access to open space and the links through the site, the effects should be limited.

Material Assets (Transport)

- An increase in the number of vehicle movements in the area has the potential to give rise to a risk of more traffic accidents and increased levels of poor air quality.

21.2.2 Biodiversity (Chapter 6)

Biodiversity receptors interact with other environmental items as outlined in Chapter 6 of this EIAR, these are summarised as follows: -

Land, Soil & Geology

- Interactions between land, soils and geology and habitats and fauna could potentially occur from surface water runoff and silt discharges to the River Skane during construction stage from periods of heavy rain. This interaction has the potential to affect water quality in the local environment, and negative effects on biodiversity as a result of the proposed development are predicted to be significant at a local geographic scale only. Following implementation of the mitigation measures outlined in Section 6.8.2 of Chapter 6, negative effects on biodiversity as a result of the proposed development are not predicted to be significant at any geographic scale.

Water

- Interactions between water and biodiversity including habitats, flora and fauna could potentially occur through impacts on water quality either arising from accidental pollution event during construction or during operation within the River Skane and surrounding local waterbodies. This interaction has the potential to results in significant effects on hydrologically connected habitats such as the River Boyne and Blackwater European Sites, and the sensitive fauna that rely on these habitats. Given the reasons discussed within section 6.7.2 and 6.7.3 of Chapter 6, negative effects on biodiversity as a result of the proposed development are predicted to be significant at a local geographic scale only. Following implementation of the mitigation measures outlined in Section 6.8.2 of Chapter 6, negative effects on biodiversity as a result of the proposed development are not predicted to be significant at any geographic scale.

Climate (Air Quality)

- Interactions between air quality and biodiversity could potentially occur from dust emissions during construction works which could affect vegetation in habitat areas within and adjacent to the proposed development boundary. Following implementation of the mitigation measures outlined in Section 6.8.2 of Chapter 6, negative effects on biodiversity as a result of the proposed development are not predicted to be significant at any geographic scale.

Air (Noise & Vibration)

- Interactions between noise and vibration and sensitive fauna could potentially occur from increased noise and vibration levels during construction works. This interaction has the potential to result in significant effects on sensitive fauna. Following the implementation of mitigation measures outlined in Section 6.8.2 of Chapter 6, effects on fauna arising from noise and vibration are not predicted to be significant at any geographic scale.

Landscape & Visual Impact Assessment

- Interactions between landscape and biodiversity could potentially occur as a result of vegetation removal within the proposed development site, landscaping along the River Skane watercourse,. This interaction has the potential to result in significant effects on biodiversity. However, the landscaping design will ensure the biodiversity value of habitats to be retained and created as part of the proposed development are maximised. Following implementation of the mitigation measure outlined in Section 6.8.2 of Chapter 6, negative effects on biodiversity as a result of the proposed development are not predicted to be significant at any geographic scale.

21.2.3 Land, Soils and Geology (Chapter 7)

Soils and geology interact with other environmental attributes as follows: -

Water

- Potential soil contamination could negatively impact surface water and groundwater quality. The impact on hydrology and hydrogeology is addressed in Chapter 8: Water. Mitigation measure outlined in Chapter 8: Water for the construction and operational phase of the proposed development are equally applicable to the protection of soils and bedrock.

Biodiversity

- Potential impacts on the underlying soils and geology could also impact on biodiversity conditions present. However, the mitigation measure described above and those relevant in Chapter 6: Biodiversity will ensure that this will not occur.

21.2.4 Water (Chapter 8)**Human Health**

- Potential surface water/groundwater contamination could negatively impact human health. There is a public groundwater source protection zone with exists within Dunshaughlin, and, within the vicinity of the subject site. The subject south site encroaches partially on the Outer Protection area with one small portion of reaching the Inner Protection area. However, due to the subject sites low permeability of subsoil and hence low vulnerability rating for both ground water protection zones, the potential human health risks associated with impacts to groundwater and/or surface water arising from the proposed development during both the construction and operational phases have been evaluated as low.

Taking account of the proposed mitigation measures, any human health risks will be imperceptible. Accordingly, no potential human health impacts associated with surface water/groundwater pathways will occur.

Land, Soils and Geology

- Potential surface water/groundwater contamination could negatively impact soils and bedrock. However, the mitigation measures described above and those relevant in Chapter 7: Lands, Soils and Geology will ensure that this will not occur.

Biodiversity

- Potential impacts on surface water and groundwater quality in the proposed development could also impact on the ecological conditions present. However, the mitigation measure described above and those relevant in Chapter 6: Biodiversity will ensure that this will not occur.

21.2.5 Climate (Air Quality and Climate Change) (Chapter 9)

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between population and human health and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits and therefore the predicted impact is long term and neutral with respect to human health.

Interactions between air quality and traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be imperceptible.

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils. No other significant interactions with air quality and climate have been identified.

21.2.6 Climate (Sunlight) (Chapter 10)

No potential impacts from other chapters of this EIAR were considered to have the potential to have associated sunlight impacts.

21.2.7 Climate (Daylight) (Chapter 11)

No potential impacts from other chapters of this EIAR were considered to have the potential to have associated daylight impacts.

21.2.8 Air, Noise and Vibration (Chapter 12)

Noise and Vibration does not have a significant number of interactions with other topics. In compiling this impact assessment, reference has been made to the project description provided by the project co-ordinators, project drawings provided by the project architects and traffic flow projections associated with the development provided by the traffic consultants.

In terms of the interactions between noise and vibration and traffic, these are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and noise and vibration are considered to be imperceptible.

Architectural drawings have informed the calculations to assess the inward noise impact. In this instance mitigation has been proposed to ensure that impacts remain neutral and not significant.

21.2.9 Landscape and Visual Impact (Chapter 13)

In this development project, the Landscape & Visual interacts primarily with the Biodiversity section of this EIAR.

The existing site vegetation of agricultural grassland surrounded by hedgerows with an existing attenuation area and a route for the River Skane all support a range of plant and animal species that will potentially be impacted by the development proposals. The arborist's survey, commissioned as part of the development work, describes the existing hedgerow species and the condition of the trees and understorey species contained in the hedgerows and includes a Tree Impacts Drawing shows the extent of hedgerow removal due to development works. The ecologist's baseline study of the ecological effects of the proposed development and the proposed mitigation measures inform the landscape design in terms of mitigation of negative ecological effects. Therefore, the proposed site layout includes interlinking green amenity spaces for active and passive recreation which also include biodiversity zones of existing linear hedgerows, riparian planting, wildflower meadows and compensatory native mixed woodland. Native plant material has been included within the scheme proposals in order to improve the overall ecological value and biodiversity of the site. In many instances, the new native planting will be located to merge with existing hedgerows scheduled for retention; and shall also be utilised as an 'in filler' within hedgerow structures to improve their overall longevity within the scheme. The inclusion of pollinator plants as part of the species mix has also been a focused element of the planting palette

21.2.10 Material Assets (Transport) (Chapter 14)

Transport items interact with other environmental items as outlined within Chapter 14 of this EIAR, these interactions can be summarised as follows: -

Air Quality and Climate

- Potential impacts on the receiving transportation network could potentially result in associated Air Quality and Climate impacts. However, due to the mitigation measures described in Chapter 14: Transport and Chapter 9: Climate (Aire Quality and Climate Change), these potential impacts will be suitably mitigated against.

Air, Noise and Vibration

- Potential impacts on the receiving transportation network could potentially result in associated Air, Noise and Vibration impacts. However, due to the mitigation measure described in Chapter 14: Transport and Chapter 12: Air, Noise and Vibration, these potential impacts will be suitably mitigated against.

21.2.11 Material Assets (Waste) (Chapter 15)

Adherence to the mitigation measures outlined in Section 15.6 will ensure that there are no significant impacts on resource or waste management from the proposed development. The management of waste during the construction phase in accordance with the C&D WMP and during the operational phase in accordance with the OWMP will meet the requirements of regional and national waste legislation and promote the management of waste in line with the priorities of the waste hierarchy.

Land and Soils

During the construction phase topsoil and subsoil will require excavation to facilitate site preparation, construction of the building foundations and access roads and the installation of underground services. The project engineers, (Waterman-Moylan) have estimated that 43,253m² of soil and stone will need to be excavated to facilitate the proposed development. It is envisaged that 24,807m² of soil and stone will be required to be moved off site, with the rest of the excavated material being reused on site.

Material moved offsite will be taken for offsite reuse, recovery and/or disposal. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers or the environment. Adherence to the mitigation measures in Chapter 15 and the requirements of the C&D WMP, will ensure the effect is long-term, imperceptible and neutral.

Material Assets Transport

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the development. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movement will be imperceptible in the context of the overall traffic and transportation increase and has been addressed in Chapter 14: Material Assets Transportation. Provided the mitigation measures detailed in Chapter 16 and the requirements of the OWMP (included as Appendix 15.2) are adhered to, the effects will be short to long-term, imperceptible and neutral.

21.2.12 Material Assets (Utilities) (Chapter 16)

Noise and Vibration does not have a significant number of interactions with other topics. In compiling this impact assessment, reference has been made to the project description provided by the project co-ordinators, project drawings provided by the project architects and traffic flow projections associated with the development provided by the traffic consultants.

In terms of the interactions between noise and vibration and traffic, these are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and noise and vibration are considered to be imperceptible.

Architectural drawings have informed the calculations to assess the inward noise impact. In this instance mitigation has been proposed to ensure that impacts remain neutral and not significant.

21.2.13 Cultural Heritage (Archaeology) (Chapter 17)

Land, Soil and Geology

- Without appropriate mitigation measures, the removal of topsoil, the digging of foundations and other earth-moving disturbances will have a profound, permanent negative effect on the known and potential archaeological features and or/deposits.

Water

- A change in the water table that may result from the Proposed Development could possibly have an adverse impact on potential subsurface archaeological features and/or deposits without the correct mitigation measures. Potential water-logged organic deposits may deteriorate and/or decompose if they are exposed to oxygen and allowed to dry out.
- Conversely, potential dry archaeological deposits can be negatively impacted by the introduction of potentially contaminated or nutrient-rich water.

Landscape and Visual Impact

- No interaction – there are no upstanding RMPs within visual distance of the Proposed Development. Therefore, no archaeological monuments will be visually impacted by the Proposed Development.

Material Assets (Transportation)

- The digging of foundations for roads and footpaths may profoundly and negatively impact upon potential archaeological features and/or deposits without the correct ameliorative measures.

Material Assets (Utilities)

- The digging of trenches for foundations may profoundly and negatively impact upon potential archaeological features and/or deposits without the correct ameliorative measures.

21.2.14 Cultural Heritage (Architectural) (Chapter 18)

There are no structures of architectural significance on the site, or within 0.5km of its boundaries. It is undeveloped and has historically been in agricultural use.

The predominant interaction relates to landscape.

The field boundaries to the south and east of the southern site follow the historic alignment, shown on the 1837 and 1907 Ordnance Survey mappings, and are of some historic significance. These field boundaries will be retained where possible and supplemented with additional planting. An existing stream is also to be retained and integrated into the public open space.

The retention of existing planting will result in a neutral or positive, long-term impact on the on the architectural character of the receiving environment, the significance of which will be imperceptible.

21.3 Cumulative Impacts

Where cumulative impacts were considered to arise, these have been outlined in the relevant Chapters of this EIAR. The below sections outline the cumulative impacts as raised in each relevant Chapter.

21.3.1 Population and Human Health (Chapter 5)

The cumulative effect of the proposed development alongside other development due to take place in the area will be long term, significant and positive.

21.3.2 Biodiversity (Chapter 6)

This section of the report presents the assessment carried out to examine whether any other proposed developments have the potential to act cumulatively with the proposed development to give rise to likely significant effects on biodiversity.

There are granted planning permissions for residential or other small-scale developments such as construction of housing developments, retail units, car parking spaces, etc. in the immediate vicinity of the proposed development site as well as larger scale developments in close proximity to the proposed development site, some of which may be in construction at the same time as the proposed development. A list of these projects considered in the cumulative impacts assessment has been included in Appendix V.

Potential cumulative impacts may arise during construction and operation, as a consequence of the proposed development acting in-combination with other plans and projects, on water quality in the downstream surface water environment, disturbance to birds, bats, small mammals and badger, as well as habitat loss to bats, birds, small mammals, otters and badger.

There is potential for cumulative impacts to arise with other local developments that would also result in increased noise, vibration, human presence and lighting. However, as any disturbance effects from other such local developments are likely to be of a minor nature, temporary, localised and over a short-duration, they are not likely to cumulatively affect the local badger, small mammal, breeding bird, otter or bat populations in conjunction with the proposed development.

The most likely cumulative effect of other future development with the proposed development on the receiving environment is the potential for other pollution sources within the River Boyne catchment, to cumulatively affect water quality in the receiving surface water, estuarine and marine environments. There will be no significant cumulative impacts on water quality in the downstream surface water environment in the River Boyne or the Boyne Estuary, as a consequence of the proposed development acting in-combination with other plans and projects, with the mitigation measures outlined in Section 6.8, which will be implemented in full, proposed measures will ensure that surface water and groundwater quality in the local groundwater body is protected during construction and operation of the proposed development.

However, any long-term effects on biodiversity are likely to be moderated by the environmental protective policies and objectives of the Meath County Development Plan 2013-2019, and the Dunshaughlin LAP 2013 - 2019.

There are general overarching policies in the Meath County Development Plan 2013-2019 to ensure that proposals for development integrate the protection and enhancement of biodiversity (Policy NH 1) and to identify and protect sites of local biodiversity importance (Policy NH 2). There are also specific objectives to protect European sites (Policy NH 5), prevent development that would adversely affect the integrity of any European site(s) or National site(s) (Policy NH 6), to ensure that development does not have significant impact on protected habitats and species (Policies NH 8, 9), to encourage the retention of hedgerows and prevent the loss and fragmentation (Policy NH 13), and to promote and encourage planting of native hedgerow species (Policy NH 14).

The Meath County Development Plan 2013-2019 also has specific policies and objectives relating to the protection of surface water and groundwater resources (e.g. WS Policy 2, WS 17, WS 18, WS 19, WS 20, WS 24).

The environmental protective policies and objectives set out in the Meath County Development Plan 2013-2019 are mirrored in the Dunshaughlin Local Area Plan 2013-2019 in terms of the protection of protection of hedgerows, planting of native hedgerows, and prevention of loss of fragmentation (Policy NH 3, 4, 5, 7). The LAP also has specific policies and objectives relating to the protection of surface water and groundwater resources (Objective WWT 1, and Objective SWM 1, 2).

Considering the predicted impacts associated with the proposed development, the mitigation measures proposed to protect the local biodiversity resource and the receiving environment, and the protective policies and objectives on the land-use plans that will direct future development locally, significant cumulative negative effects on biodiversity are not predicted.

21.3.3 Land, Soils and Geology (Chapter 7)

Construction Stage

Excavation activities will by their nature generate mud during wet periods and dust during dry periods. If construction works associated with other development in the area were to occur during the same time as the construction of the proposed development, there may be an increase in the amount of mud and dust on the roads providing access to the site. However, such impacts will be kept to a minimum with the use of road sweepers and wheel washing facilities. No cumulative effects on land, soils and geology are predicted to occur if any other development occurs concurrent to the construction of the proposed development. There are therefore no significant cumulative effects of Land, Soils and Geology associated with the proposed development.

Operational Stage

No cumulative effects are anticipated at the operational phase of the proposed development.

21.3.4 Water (Chapter 8)

Construction Stage

Foul Water Drainage

North & South Sites

Phase 1 foul water sewers will be constructed before construction begins for Phase 2 foul water sewer, the Neighbourhood Centre currently does not have a permission so as such, no cumulative construction effects are anticipated.

The phasing/commencement of any other permitted development within the Dunshaughlin LAP could potentially result in the scenario where a number of other developments are under construction at the same time as the proposed development.

The potential effect of the cumulative development during the construction phase is as per the proposed development.

Surface Water Drainage

North & South Sites

Phase 1 surface water drainage will be constructed before construction begins for Phase 2 stormwater drainage, the Neighbourhood Centre currently does not have a permission so as such, no cumulative construction effects are anticipated.

The potential effect of the cumulative development during the construction phase is as per the proposed development.

Water

North & South Sites

No other watermains will be under construction during the construction stage of the proposed Phase 2 development. There are therefore not anticipated to be any cumulative effects relating to water supply during the construction stage.

The potential effect of the cumulative development during the construction phase is the same as per the proposed development.

Operational Stage

Foul Water Drainage

North & South Sites

Given the capacity of the 525 dia trunk sewer running parallel to the River Skane, to which the site drains, is approximately 180 ℓ/s , there is adequate provision for anticipated 6.75 ℓ/s peak flows from the 415 no. residential units and crèche within the proposed Phase 2 development.

The cumulative development of the Phase 1 and proposed Phase 2 Dunshaughlin Lands will consist of approximately: -

Phase 1 Development

- 160no. housing units.
- 1no. childcare facility.

Phase 2 Development

- 415no. residential units.
- 1no. childcare facility.

An estimate of the quantity of wastewater that will be discharged from the cumulative Phase 1 and proposed Phase 2 developments is 30.75 ℓ/s .

The foul sewer system within the Dunshaughlin LAP Lands has been designed to accommodate the 30.75 ℓ/s peak flows.

The subject lands are within the catchment of the existing Dunshaughlin WwTW at Castletown, Tara, County Meath. The treatment works have been operational since November 2006. The WwTW has a design capacity of 12,000 PE, is licensed by the EPA to cater for a population equivalent up to 10,000 PE, and currently has an approximate 6,000 PE entering the plant

This treatment works has been designed to accommodate the Dunshaughlin Lands, including the Phase 1 development and proposed Phase 2 development.

Based on the above, there are not anticipated to be any cumulative effects.

The development of the proposed site along with other cumulative development will result in an expansion of the foul sewer network.

The potential effect of the cumulative development during the operational phase is as per the proposed development.

Surface Water

North & South Sites

There is adequate provision for anticipated cumulative 49.8 ℓ/s discharge rate from both the Phase 1 and proposed Phase 2 developments (14.9 ℓ/s + 34.9 ℓ/s).

The cumulative development of Phase 1 and proposed Phase 2 sites will consist of: -

Phase 1 Development

- 160no. housing units.
- 1no. childcare facility.

Phase 2 Development

- 415no. residential units.
- 1no. childcare facility.

The cumulative discharge from the Phase 1 and 2 within Dunshaughlin has been calculated at 49.8 ℓ/s.

With the balance of flows stored in the areas mentioned above that cater for up to the 100- year storm event and adequate provision for anticipated cumulative 49.8 ℓ /s discharge rate from both Phase 1 and the proposed Phase 2 development, there are therefore not anticipated to be any cumulative effects relating to surface water.

The potential effect of the cumulative development during the operational phase is as per the proposed development.

Water

The cumulative development of the lands within the Proposed Phase 2 Dunshaughlin site are the following: -

- **Phase 1**

The total water demand for Phase 1 was estimated at 1.06 ℓ/s, applying the same demand factors as above, the total peak demand for this development is 6.7 ℓ/s.

- **Phase 2**

The total peak water demand for the proposed development is estimated at 12.83 ℓ/s.

Total peak demands for the Phase 1 and proposed Phased 2 sites is estimated at 19.53 ℓ/s.

Irish Water have indicated with the Confirmation of Feasibility (COF) response that the existing water infrastructure can facilitate the proposed Phase 2 development. There are therefore not anticipated to be any cumulative effects relating to water supply during the operational phase.

During the operational phase of the cumulative development there will be a significant increase in the demand for water from the public water supply.

Do Nothing Impact

Foul Water Drainage

North & South Sites

The overall strategy for the Dunshaughlin area is the completion of development on the remaining vacant sites and their successful and sustainable integration into the urban fabric of both the immediate area and the wider town.

In terms of the “do nothing” scenario the existing lands would remain vacant and the overall strategy for the Dunshaguhlin area within the County Meath Development Plan will not be realized.

Surface Water Drainage

North & South Sites

The overall strategy for the Dunshaughlin LAP is the completion of development on the remaining vacant sites and their successful and sustainable integration into the urban fabric of both the immediate area and the wider city.

In terms of the “do nothing” scenario the existing lands would remain vacant and the overall strategy for the Dunshaguhlin area within the County Meath Development Plan will not be realized.

Water

North & South Sites

The overall strategy for the Dunshaughlin LAP is the completion of development on the remaining vacant sites and their successful and sustainable integration into the urban fabric of both the immediate area and the wider town.

In terms of the “do nothing” scenario the existing lands would remain vacant and the overall strategy for the Dunshaughlin LAP will not be realized.

21.3.5 Climate (Air Quality and Climate Change) (Chapter 9)

Construction Stage

According to the IAQM guidance (2014) should the construction phase of the proposed development coincide with the construction phase of any other developments within 350m then there is the potential for cumulative construction dust related impacts to nearby sensitive receptors. A review of recent planning permissions for the area was conducted and it was found that there were no developments within 350m of the proposed site that have the potential to cause cumulative construction dust impacts. Due to the short-term duration of the construction phase and the low potential for significant CO₂ and N₂O emissions cumulative impacts to climate are considered neutral.

There are no significant cumulative impacts to air quality or climate predicted for the construction phase.

Operational Stage

The traffic data used to assess the operational stage impacts to air quality and climate included the cumulative traffic associated with the Phase 1 development as well as other existing and permitted developments in the local area. Therefore, the cumulative impact is included within the operational stage impact for the proposed development. The impact is predicted to be long-term and imperceptible with regards to air quality and climate.

Do-Nothing Impact

The Do-Nothing impact detailed for the proposed development is the same as that for the cumulative development.

21.3.6 Climate – (Sunlight) (Chapter 10)

Phase 1 Dunshaughlin (currently under construction) is located directly north of the proposed development. The developments are located a distance apart such that there is anticipated to be no impacts on daylight access in the case of the subject application.

21.3.7 Climate – (Daylight) (Chapter 11)

Phase 1 Dunshaughlin (currently under construction) is located directly north of the proposed development. The developments are located a distance apart such that there is anticipated to be no impacts on daylight access in the case of the subject application.

21.3.8 Air, Noise and Vibration (Chapter 12)

The proposed development combined with other permitted developments in the area have the potential to result in cumulative noise or vibration impacts at surrounding noise sensitive locations during the construction and operational phases of the development.

The baseline scenario, as measured, takes into account existing road traffic and other noise sources in the area.

Construction Stage

The closest permitted development with the potential to contribute to a cumulative effect is the development Ref 190815 at Roestown, Cookstown and Readsland in Meath. Should the construction phase of this proposed development coincide with the construction of the permitted development, there is potential for cumulative construction noise levels at noise sensitive locations identified as R3, R4 and R6 (see Figure 12.2). The potential cumulative impacts are greatest at the noise sensitive location R6 which adjoins the proposed development site. In the event that construction works are occurring simultaneously at both sites the construction noise levels presented in Table 12.15 have the potential to increase by up to 3 dB. However, this would only be during the worst case and would be temporary in nature.

Operational Stage

Potential operational cumulative impacts relate to increased traffic flows resulting from other developments and any building services plant from other sources. Given the minor increase in noise levels for this development, and that a 100% increase in traffic flow is required for a minor impact to be indicated, it is not expected that any significant impacts will occur with additional operational traffic from surrounding developments. The noise impacts are determined to be long-term, imperceptible.

There are no expected cumulative noise impacts associated with building services plant from the proposed development and other development in the vicinity at external noise sensitive locations. The operation of any mechanical or electrical services associated with the proposed development will be designed to ensure the overall impact is deemed to be long-term and not significant.

Do-Nothing Impact

In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations and across the development site itself will remain largely unchanged. The noise and vibration levels measured/noted during the baseline studies are considered representative of the Do-Nothing scenario. The Do-Nothing scenario is therefore considered neutral impact.

21.3.9 Landscape and Visual Impact (Chapter 13)

Construction Stage

The construction proposals for this development comply with the Meath Co. Co. Development Plan 2013 -2019 and the Local Area Plan 2009 – 2015 with an A2 Zoning ‘to provide for new residential communities and community facilities’ and F1 for the provision of recreation. Given the lack of housing construction during the economic downturn and the amount of zoned land available for development around the town, residential development will be a notable feature of the town in the years to come. Dunshaughlin has already seen a number of residential developments on the main access roads commence construction in 2018. This SHD development, if granted, will increase the level of development close to the town. Therefore, there will be a visually perceived cumulative level of development associated with the town of Dunshaughlin. However, this majority of this SHD development will be connected to the existing development to the north and east of Dunshaughlin Town. The cumulative impact of the proposed development on the town and main arterial routes would therefore be locally moderate negative in the construction phase and imperceptible neutral in the operational phase.

Operational Stage

In the operational phase of the development will be on a phased basis as each section is completed and handed over. Therefore, there will be gradual transformation of the development site into a residential area. The landscape design will have been implemented and would be developing. The cumulative impact associated with other developments will be lessened as the development proceeds and as the landscape matures.

21.3.10 Material Assets (Transportation) (Chapter 14)

Construction Stage

During the construction stage of the development no cumulative impact on the traffic is envisaged as the number of trips generated by the construction stage is low in comparison to the operational stage and added to this, the trip generation occurs outside the AM and PM Peak Hours.

Operational Stage

Under-Construction Phase 1 development approved by Meath County Council in April 2013 under Reg. Ref. DA/120987, ABP Ref. PL17.241988

In order to provide a robust assessment of the transportation network in the local area, as per TII guidelines, the under-construction Phase 1 development approved by Meath County Council in April 2013 under Reg. Ref. DA/120987 was also analysed with regards to trip generation and distribution. The permission provided for the construction of 142 of the 160 No. residential units proposed, together with a Creche. As the remaining 18 No. residential units (on the southeast corner of Phase 1) are expected to be permitted in the future under a new planning application, for the purpose of this assessment, and in order to undertake a conservative assessment, the 160 No. residential units + creche have been assessed under Phase 1 development.

The AM and PM peak hour trip rates and the generated traffic from the under-construction Phase 1 development have been extracted from the Traffic Impact Assessment approved as part of the planning application for the site and are presented in Table 14.6 and Table 14.7, respectively.

Land Use	No. Units / Floor Area	AM Peak Hour (08h00 to 09h00)		PM Peak Hour (17h00 to 18h00)	
		Arr.	Dep.	Arr.	Dep.
Residential	Per Dwelling	0.20	0.41	0.42	0.26
Childcare Facility	Per 100 sq. m	5.163	3.890	1.287	2.907

Table 21.1: RICS Trip Rates – AM and PM Peak Hours – extracted from Approved Phase 1 TIA.

Land Use	No. Units / Floor Area	AM Peak Hour (08h00 to 09h00)		PM Peak Hour (17h00 to 18h00)	
		Arr.	Dep.	Arr.	Dep.
Residential (North)	78no. units	16	32	33	21
Residential (South)	82no. units	16	34	34	21
Creche (South)	c. 200 sq. m	10	8	3	6
Total	160 units c. 200 sq. m	42	74	70	48

Table 21.2: AM and PM Peak Hours – Car Trip Generation – Under-construction Phase 1.

As can be seen from the above, based on the approved TIA (Reg. Ref. DA/120987), the under-construction Phase 1 development (including both north and south sites) is estimated to generate a total of 116 vehicle movements in the AM peak hour (42 arrivals and 74 departures) and a total of 118 vehicle movements in the PM peak hour (70 arrivals and 48 departures).

Potential Neighbourhood Centre Reg. Ref. DA/803422

The AM and PM peak hour trip rates and trip generation estimated for the potential Neighbourhood Centre have also been extracted from the TIA prepared for Phase 1 and are presented in Table 14.8 and Table 14.9, respectively.

Land Use	Calculation Factor	AM Peak Hour (08h00 to 09h00)		PM Peak Hour (17h00 to 18h00)	
		Arr.	Dep.	Arr.	Dep.
Office	per 100 sq. m	3.042	0.430	0.225	2.378
Retail	per 100 sq. m	1.953	1.420	3.521	3.363
Cafe	per 100 sq. m	3.399	2.935	4.274	5.458
Medical Centre	per 100 sq. m	2.140	0.873	3.910	4.650
Leisure Facilities	per 100 sq. m	0.200	0.410	0.420	0.260

Table 21.3: TRICS Trip Rates – AM and PM Peak Hours – extracted from Approved Phase 1 TIA.

Land Use	Floor Area	AM Peak Hour (08h00 to 09h00)		PM Peak Hour (17h00 to 18h00)	
		Arr.	Dep.	Arr.	Dep.
Office	3,248	99	14	7	77
Retail	1,930	38	27	68	65
Cafe	250	8	7	11	14
Medical Centre	577	12	5	6	11
Leisure Facilities	1,773	9	8	30	23
Total	7,778	166	61	122	190

Table 21.4: AM and PM Peak Hours – Car Trip Generation – Potential Neighbourhood Centre.

As can be seen from the above, as per the trip rates and the floor areas assumed in the TIA prepared for Phase 1, the potential Neighbourhood Centre is estimated to generate a total of 227 vehicle movements in the AM peak hour (166 arrivals and 61 departures) and a total of 312 vehicle movements in the PM peak hour (122 arrivals and 190 departures).

Further to the information above, the peak hour modal splits for the electoral division of “Dunshaughlin” were extracted from Census 2016 data and can be seen in Table 14.10 below: -

Mode of Transport	Percentage Split
Private Car	68%
Cycle	1%
Train	3%
Pedestrian	18%
Bus	10%

Table 21.5: Model Split – Potential Neighbourhood Centre.

For the purpose of this Traffic and Transport Assessment, it is assumed that the potential Neighbourhood Centre will be fully developed and operational by 2029 if granted permission under the current development plan. Within the new proposed Development Plan for Dunshaughlin, the Neighbourhood Centre is proposed to be scaled back significantly. Therefore, the above projected figures are an absolute worst-case scenario in terms of project traffic movements.

21.3.11 Material Assets (Waste) (Chapter 15)

The implementation of the mitigation measures outlined in Section 15.6 will ensure that a high rate of reuse, recovery and recycling is achieved at the development during the demolition, excavation and construction phases as well as during the operational phase. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

Construction Stage

A carefully planned approach to waste management as set out in Section 15.6.1.1 and adherence to the C&D WMP during the construction phase will ensure that the effect on the environment will be short-term, imperceptible and neutral.

Operational Stage

During the operational phase, a structured approach to waste management as set out in Section 15.6.1.2 will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be long-term, imperceptible and neutral.

21.3.12 Material Assets (Utilities) (Chapter 16)

No significant cumulative impacts on the water environment are anticipated during the construction or operation phases.

There are no predicted cumulative impacts arising from the construction or operational phase related to the provision of power, gas and telecommunication services.

21.3.13 Cultural Heritage (Archaeology)

The Cumulative Development of Dún Ríoga was for the construction of 142no. residential units in two residential character areas with a creche and associated site works.

Construction Stage

The construction stage of the Cumulative Development involved the removal of topsoil throughout much of the site, exposing archaeological features, and significant subsurface works, necessitating the excavation of archaeological features.

The use of correct mitigation measures (geophysical survey and archaeological testing) prior to the construction stage of the Cumulative Development led to the identification of a significant ringfort and associated burial ground. This allowed for the profound, long-term positive effect of preservation in situ for the ringfort and burials.

During the construction phase, the archaeological excavation of other archaeological features external to the central enclosure had a permanent, very significant positive effect for our knowledge of metal-working and cereal-producing multi-phase sites associated with enclosures and burial grounds

Operational Stage

No further groundworks are associated with the operational stage of the Cumulative Development. Therefore, the operational stage of the Cumulative Development continues to have a long-term positive effect for the preservation in situ of the ringfort and associated burials.

Do-Nothing Impact

The Do-Nothing impact of the Cumulative Development would have been positive, profound and long-term for the preservation *in situ* of the archaeological ringfort, burials and associated features.

21.3.14 Cultural Heritage (Architectural)

In assessing the effects of the proposed development on the architectural heritage resource, the cumulative impact of the adjoining development in the applicant's ownership has been considered (MCC Reg. Ref. DA120987 and RA190815).

While the proposed development provides for the construction of a significant number of additional residential units, given the position of the proposed site, remote from any structures of architectural heritage significance, bounded by the M3 and link roads, and separated from the historic village centre by modern housing estates, the cumulative impact of the proposed development within the applicant's land holding will be indirect and imperceptible for the construction and operational stages.

The cumulative impact of a number of other developments in the vicinity of the proposed development have been considered including two strategic housing developments SHDs currently under review by An Bord Pleanála which propose the construction of a total of 1125 residential units (ABP Ref No. PL17.303433 and PL17.307244), and six planning decisions, granted by Meath County Council (MCC Reg. Ref. 19160, RA170866, 171239, 171416, 191066 and 200028).

Files for these proposals have been reviewed and it is considered that, as noted above, given the position of the proposed site, it is not anticipated that these developments will have a direct impact on the architectural heritage of the proposed site. With regard to these developments, the cumulative impact of the proposed on the built heritage of Dunshaughlin, will be indirect and imperceptible for the construction and operational stages.

21.3.15 Risk Management (Major Accidents and Disasters)

As outlined in sections 19.5.1.6 and 19.5.1.7 above, no likely risks of a major accident / disaster occurring are identified during construction stage. A medium risk of major accident / disaster in respect of the proposed development during the operational phase. No cumulative effects are identified.