

22 SUMMARY OF RESIDUAL IMPACTS

22.1 Introduction

This Chapter of the EIAR collates the predicted residual impacts on the environment as identified in Chapters 5 to 19, arising from the Proposed Development, during Construction and Operational Phases.

Residual Impacts, according to the Draft EPA Guidelines (2017, p.3) are: -

“The final or intended effects which occur after the proposed mitigation measures have been implemented.”

A summary of the Proposed Mitigation Measures are outlined under Chapter 19: Summary of Mitigation Measures.

22.1.1 Population and Human Health (Chapter 5)

Construction Stage

Effects on population and health during the construction phase are expected under different environmental topics and will be mitigated as described in the other relevant chapters throughout this EIAR. Once mitigation measures have been implemented the residual effects are expected to be limited to minor or insignificant levels as described in other associated residual impacts sections relating to the construction phase.

Operational Stage

The effects for an increase in population as a result of the operational phase are expected to be positive, long term and significant. No mitigation measures are expected during operation of the proposed development that would alter the anticipated impacts therefore they remain as described.

As above, potential effects to human health are considered elsewhere in this EIAR and the discussion will not be repeated in this Chapter. Following the implementation of the mitigation measures described in the respective Chapters, the operational effects on human health are not expected to be significant.

Worst Case Impact

The precautionary principle has been applied throughout this assessment and as such the worst-case scenario has been accounted for.

22.1.2 Biodiversity (Chapter 5)

Designated Sites

European sites

The assessment presented in the Appropriate Assessment Screening Report concluded that there was no risk of the proposed development resulting in a likely significant effect on any European site, either alone or in combination with other plans or projects. Therefore, the proposed development is not likely to have significant residual effects on any European sites.

Nationally Designated Sites

There is no risk of the proposed development to affect the integrity of any nationally designated site, either alone or in combination with other plans or projects. Therefore, the proposed development is not likely to have significant residual effects on any nationally designated sites.

Habitats

Residual effects on habitats and flora will be reduced to non-significant levels following the implementation of the measures outlined in Section 6.6.2.

Bats

Significant effects in the absence of mitigation have been identified in relation to loss of potential roosting and foraging habitats for bats, and disturbance and/or mortality of bats during construction. Measures to avoid, reduce and mitigate effects on bats have been provided in Section 6.6.3.2 of this Chapter. Following the implementation of these measures, residual effects on bats arising from the proposed development will be reduced to levels not considered to be significant.

Mammals

The effects of the proposed development on mammals have been considered within Section 6.5.3 of this Chapter. Measures to avoid, reduce and mitigate effects on mammals have been provided in Section 6.6.3 of this Chapter. Following the implementation of these measures, residual effects on breeding birds arising from the proposed development will be reduced to levels not considered to be significant.

Breeding Birds

The effects of the proposed development on breeding birds have been considered within Section 6.5.12 of this Chapter. Measures to avoid, reduce and mitigate effects on breeding birds have been provided in Section 6.6.4 of this Chapter. Following the implementation of these measures, residual effects on breeding birds arising from the proposed development will be reduced to levels not considered to be significant.

Amphibians

The effects of the proposed development on amphibians have been considered within Section 6.5.6 of this report. Measures to avoid, reduce and mitigate effects on amphibians have been provided in Section 6.6.5 of this Chapter. Following the implementation of these measures, residual effects on amphibians arising from the proposed development will be reduced to levels not considered to be significant.

Fish

The effects of the proposed development on fish have been considered within Section 6.5.7 of this Chapter. Measures to avoid, reduce and mitigate effects on fish have been provided in Section 6.6.6 of this Chapter. Following the implementation of these measures, residual effects on fish arising from the proposed development will be reduced to levels not considered to be significant.

22.1.3 Land, Soils and Geology (Chapter 7)

Construction Stage

If the recommended remedial or reductive measures are implemented, the proposed development will not give rise to any significant residual adverse impact. Negative impacts during the construction phase will be temporary only.

Operational Stage

It is predicted that there will be no residual impacts on land, soil or geology, resulting from the proposed development in the operational phase.

22.1.4 Water (Chapter 8)

Foul Drainage

Construction Stage

North & South Sites

The construction phase of the project has the potential to give rise to some short-term negative impacts as identified above. However, provided that the proposed remediation or reductive measures are implemented, the impact of the proposed development during the construction stage of the foul drainage network will be minimised and no significant effects will result from the construction works.

Operational Stage

North & South Sites

The proposed development will result in a permanent increase in foul water flows in the existing drainage system. These increased flows will result in an additional peak flow of 6.75l/s discharging to the Castletown -Tara WwTW. Both the Foul Drainage Network and the pumping station have been designed to cater for the increased flow.

Worst Case Impact

North & South Sites

The "worse case" scenario for the site is that foul effluent from the site or sewer discharges into the ground and/or River Skane, contaminating the soil and water. The possibility of this scenario occurring is very low as all pipelines will be tested prior to connection to the main sewer and any work in the vicinity of the main sewer will be monitored for breakages in the pipeline.

Surface Water Drainage

Construction Stage

North & South Sites

The construction phase of the project has the potential to give rise to some short-term negative impacts as identified above. However, provided that the proposed remediation or reductive measures are implemented, the impact of the proposed development during the construction stage of the stormwater network will be minimised and no significant effect is likely to result from the construction works.

Operational Stage

North & South Sites

With the implementation of the SuDS treatment train and attenuation tank outlined in section 8.10.1.2, the surface water quality and quantity discharging to the River Skane will be pre-treated and attenuated to the greenfield runoff rate, in accordance with the requirements set out in the GSDS, and no significant adverse effect are envisaged.

Worst Case Impact

North & South Sites

A worst-case scenario is that for a very intense storm, minimal flooding of landscape areas and roads may occur within the site.

Water Supply

Construction Stage

North & South Sites

Due to the proposed remedial measures outlined above no negative impacts are expected to arise during the construction phase of the proposed development on the water supply network.

Operational Stage

The proposed development will result in a permanent increase in water demand from the water supply network. There will be a water demand for the proposed development of approximately 1,108.50m³ per day. The water supply network of the LAP Lands has been designed and constructed to cater for this increase in water demand. Furthermore, the Irish Water has issued a Confirmation of Feasibility for this development.

Worst Case Impact

North & South Sites

The “worst-case” scenario for the site is that the watermain along Dumree Road, serving the development is damaged or severed, stopping the water supply to the north site of the proposed Phase 2 development.

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

Construction Stage

Once the dust minimisation measures outlined in Section 9.6 and Appendix 9.3 are implemented, the impact of the proposed development in terms of dust soiling will be short-term and not significant at nearby receptors.

Operational Stage

The impact of the proposed development on air quality is considered long-term, negative and imperceptible. The impact to climate is considered long-term, neutral and imperceptible.

Worst Case Impact

As part of the air dispersion modelling, worst-case traffic data was used in the assessment. In addition, conservative background concentrations were used in order to ensure a robust assessment. Thus, the predicted results of the operational stage assessment are worst-case and will not cause a significant impact on either air quality or climate.

Cumulative Development

The residual impact of the cumulative development is the same as that detailed above in Section 9.7.1 for the proposed development for both the construction and operational stages.

22.1.6 Climate (Sunlight) (Chapter 10)**Construction Stage**

As no ameliorative, remedial, or reductive development is proposed, the residual impact of the proposed development on sunlight access is predicted to be as described under Section 10.5.1.1 above.

Operational Stage

As no ameliorative, remedial, or reductive development is proposed, the residual impact of the proposed development on sunlight access is predicted to be as described under Section 10.5.1.2 above.

Worst Case Impact

As no ameliorative, remedial, or reductive development is proposed, the residual impact of the proposed development on sunlight access is predicted to be as described under Section 10.5.1.3 above.

22.1.7 Climate (Daylight) (Chapter 11)**Construction Stage**

As no ameliorative, remedial, or reductive development is proposed, the residual impact of the proposed development on sunlight access is predicted to be as described under Section 11.5.1.1 above.

Operational Stage

As no ameliorative, remedial, or reductive development is proposed, the residual impact of the proposed development on sunlight access is predicted to be as described under Section 11.5.1.2 above.

Worst Case Impact

As no ameliorative, remedial, or reductive development is proposed, the residual impact of the proposed development on sunlight access is predicted to be as described under Section 11.5.1.3 above.

22.1.8 Air, Noise and Vibration (Chapter 12)**Construction Stage**

At location R6 the construction noise impact can be assessed as below: -

<i>Quality</i>	<i>Significance</i>	<i>Duration</i>
Negative	Significant	Short-term

For all other receptors the impact can be described as:

<i>Quality</i>	<i>Significance</i>	<i>Duration</i>
Negative	Significant	Short-term

Operational Stage

Outward Noise Impact – Mechanical Plant

In terms of outward noise impact a set of criteria has been established using relevant guidance. Plant items will be selected at a later stage and will be designed and located so that the criteria is met, and that there is no negative impact on sensitive receivers within the development itself or on nearby sensitive receptors. With measures in place to ensure that noise emissions meet the above thresholds it is expected that any impacts will be:-

<i>Quality</i>	<i>Significance</i>	<i>Duration</i>
Neutral	Not Significant	Permanent

Outward Noise Impact – Additional Traffic on Public Roads

In terms of outward noise impact from additional traffic on public roads the impact can be described as: -

<i>Quality</i>	<i>Significance</i>	<i>Duration</i>
Neutral	Imperceptible	Permanent

Residential Inward Noise Impact

This assessment identifies facades where mitigation in the form of enhanced glazing and ventilation will be required. The specification of this enhanced façade is discussed in Section **Error! Reference source not found.** Following the provision of these measures the impacts will be considered to be:

<i>Quality</i>	<i>Significance</i>	<i>Duration</i>
Neutral	Not Significant	Permanent

Worst Case Impact

Cumulative Development

Construction Stage

Construction noise impacts have the potential to increase by up to 3 dB if all surrounding developments progress through each phase simultaneously. However, this would only be during the worst case and would be temporary in nature.

Operational Stage

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's not expected that any significant impacts will occur with additional operational traffic from surrounding developments. Other outward noise impacts will be controlled through mitigation so that no additional impact will occur.

22.1.9 Landscape and Visual Impact (Chapter 13)

The residual impacts of the proposed development would comprise of the change from agricultural lands to medium density residential development. However, as the lands are zoned for development and adjoin a town that has an increasing population there is a certain inevitability in this transformation. The proposed landscape design with significant open space areas, pedestrian and cycle links and the emphasis on native species planting and biodiversity will all integrate the built environment into the adjoining landscape. The inclusion of photomontages describing the existing and proposed representative views in the area impacted by the development show the residual impacts of the proposed development.

Visual Impact: Photomontage

Thirteen photomontages (Refer to Modelworks submission Appendix 13.1) have been prepared to illustrate the physical and visual character of this residential development and its effects on its surrounds. In each instance the existing publicly accessible view is illustrated together with the proposed development as seen from the same viewpoint. A description of each viewpoint is illustrated in Table 13.2 below.

View	Description	Location in Relation to Site
View 01	View west towards site from College Grove	East
View 02	View west towards site from Manor Court	East
View 03	View north east from R125 roundabout	South West
View 04	View north east from R125 / M3 overbridge	South West
View 05	View east from R125 into site	West
View 06	View southwest from Dún Ríoga	North east (Contd.)
View 07	View south east from R125	North west
View 08	View north east from L2208 Drumree Rd. overbridge	South west
View 09	View north from L2208 Drumree Road	South
View 10	View south west from R125	North East
View 11	View north west from R125/ L2208 roundabout	South East
View 12	View south west from Dunshaughlin Community College	North east
View 13	View west from Dún Ríoga Estate	East

Table 22.1: Visual Impact: Photomontage Locations.

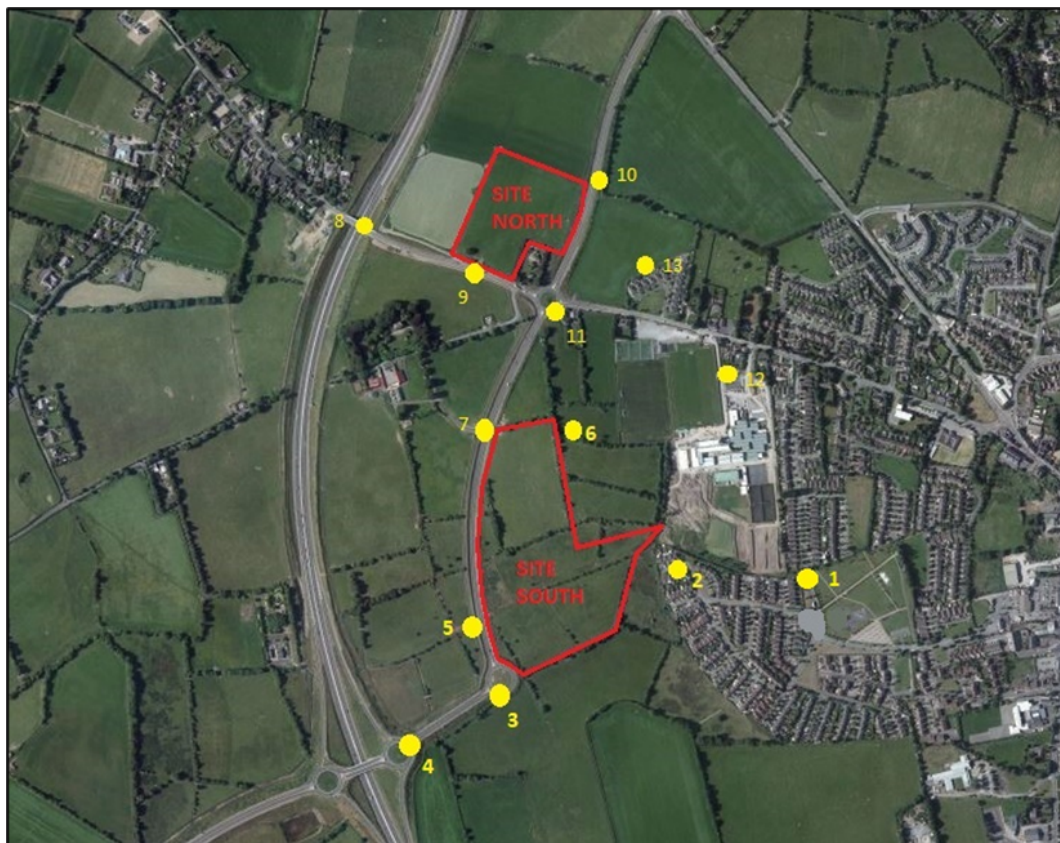


Figure 22.1: Dunshaughlin SHD -Location of 13 No. Views.

Photomontage View 01	View west towards site from College Grove
Existing View	This view to the north of the College Estate and the Community College is where the proposed pedestrian / Cycleway from the site approx. 350M to the west would connect with the existing residential development at College grove.
Proposed View	The proposed development is not visible from this viewpoint due to intervening buildings and vegetation
Impact (Construction Stage)	<i>Imperceptible neutral short-term visual impact</i>
Impact (Operation Stage)	<i>Imperceptible neutral long-term visual impact</i>

Photomontage View 02	View west towards site from Manor Court
Existing View	The site lands are approx. 50M to the west of this viewpoint. The view from the cul-de-sac is screened by existing vegetation but the site trees are visible in the distance.
Proposed View	The view contains a section of a 4-storey apartment block and section of roofs from the 2-storey housing. The view is partially screened by existing boundary walls and vegetation. The intervening hedgerow is to be retained and additional tree planting is to be carried out
Impact (Construction Stage)	<i>Slight negative visual impact short term</i>
Impact (Operation Stage)	<i>Slight and neutral to imperceptible long term</i>

Photomontage View 03	View north east from R125 roundabout
Existing View	This view across the R125 roundabout shows the existing roadside screening a section of which will be removed to create access into the site.
Proposed View	The proposed south west section development will be visible from this viewpoint as the existing roadside vegetation will be removed to facilitate construction of the buildings and access roadway. Significant native hedgerow and woodland planting will be carried out between the buildings and roadway to replace removed hedgerows.
Impact (Construction Stage)	<i>Moderately visually negative visual impact short-term</i>
Impact (Operation Stage)	<i>Slight negative to imperceptible visual impact in the short to medium term</i>

Photomontage View 04	View north east from R125 / M3 overbridge
Existing View	This view from the locally elevated section of the R125 provides views over the local countryside and the residential development to the west of Dunshaughlin. Roadside screen planting partially screens views into the site.
Proposed View	The elevated viewpoint gives wide views eastwards and the proposed development is partially screened by developing roadside vegetation.
Impact (Construction Stage)	<i>Moderately visually negative visual impact short-term</i>
Impact (Operation Stage)	<i>Slight to imperceptible neutral visual impact in the short to medium term</i>

Photomontage View 05	View east from R125 into site
Existing View	There is little existing roadside vegetation along this section of the subject lands and the view into the site shows the attenuation on the left and roof and gable of the existing residential development in the distance.
Proposed View	The proposed view shows duplex units to the right of the image and significant native species hedgerow and woodland planting along the boundary of the development. This will develop over time into a strong visual barrier between the roadway and the development.
Impact (Construction Stage)	<i>Moderately visually negative short-term</i>
Impact (Operation Stage)	<i>Moderate & positive visual impact for the medium to long-term</i>

Photomontage View 06	View southwest from Dún Ríoga
Existing View	The view from the recently completed Dún Ríoga Estate shows the palisade site security fence with soil heaps to the rear and the completed section of the Dún Ríoga development on the right.
Proposed View	The development proposals show 2-storey housing on the left and a 5-storey apartment building in the background. A brick plinth wall and railing and semi mature tree planting form the boundary of this section of the development.
Impact (Construction Stage)	<i>Moderately visually negative impact short term</i>
Impact (Operation Stage)	<i>Moderate and neutral visual impact in the short to medium-term</i>

Photomontage View 07	View south east from R125
Existing View	This view from the R125 south east into the site shows a glimpse view through the roadside hedgerow with mature hedgerows in the background.
Proposed View	The development proposals for this area include the provision of a roundabout and a 5-storey apartment building with creche provides a visually strong element at the edge of the roundabout. Proposed native species hedgerow planting bounds the R125 along the western edge of the development.
Impact (Construction Stage)	<i>Moderately visually negative impact short term</i>
Impact (Operation Stage)	<i>Slightly negative to imperceptible visual impact in the short to medium term</i>

Photomontage View 08	View north east from L2208 Drumree Rd. overbridge
Existing View	This section of L2208 over bridge roadway is elevated over the M3 and there are views over the surrounding countryside. The Dunshaughlin water supply tower is on the left and there is a line of developing roadside trees bounding the lands adjoining the site.
Proposed View	The development proposals show the western edge of the development backing onto agricultural lands. A proposed native species hedgerow bounds the edge of the gardens with the farmland.
Impact (Construction Stage)	<i>Moderately negative visual impact short-term</i>
Impact (Operation Stage)	<i>Moderate and neutral visual impact in the short to medium term</i>

Photomontage View 09	View north from L2208 Drumree Road
Existing View	This view into the entrance area of the northern section B shows an open pasture field with a mature hedgerow bounding the R125 in the background.
Proposed View	The proposed houses are set to the rear of a boundary brick plinth wall and railing with semi mature tree planting with ornamental bulb planting to the roadside.
Impact (Construction Stage)	<i>Moderately negative visual impact short-term</i>
Impact (Operation Stage)	<i>Slight and negative visual impact in the short-term, turning to slight and neutral visual impact in the medium to long-term</i>

Photomontage View 10	View south west from R125
Existing View	This section of roadway is in a slight cutting below the level of the lands of Section B. The developing roadside planting provides screening into the site.
Proposed View	Sections of the proposed apartment block are visible above the existing dense developing roadside planting. Additional tree planting will be carried out beside the apartment building which will strengthen the existing roadside planting.
Impact (Construction Stage)	<i>Slight to Imperceptible negative visual impact short-term</i>
Impact (Operation Stage)	<i>Slight and negative visual impact in the short-term; turning to slight and neutral visual impact in the medium to long-term.</i>

Photomontage View 11	View north west from R125 / L2208 roundabout
Existing View	The view towards the site shows the boundary planting of the house which adjoins the site and the R125 road in cutting with developing screen planting on the embankment.
Proposed View	The proposed view shows a section of the proposed apartment block above the existing roadside hedgerow. Additional tree planting in the subject lands will strengthen the roadside hedgerow over time adding screening to the visible sections of the development.
Impact (Construction Stage)	<i>Slight negative to Imperceptible visual impact short-term</i>
Impact (Operation Stage)	<i>Slight and neutral impact in the short term; turning to imperceptible and neutral impact in the long-term</i>

Photomontage View 12	View south west from Dunshaughlin Community College
Existing View	This view across Dunshaughlin GAA grounds shows the existing site vegetation in the centre of the image with the Dún Ríoga residential development on the right.
Proposed View	The view across the GAA pitches shows the taller apartment building above the recently completed Dún Ríoga development.
Impact (Construction Stage)	<i>Slight to Imperceptible short-term visual impact</i>
Impact (Operation Stage)	<i>Imperceptible neutral long-term visual impact</i>

Photomontage View 13	View west from Dún Ríoga Estate
Existing View	The view is across the open space in the Dún Ríoga Estate which also contains an archaeological feature. Some of the boundary vegetation of the R125 is visible to the rear of the houses.
Proposed View	The proposed apartment building and houses are partially visible above the roofs of the Phase 2 Dún Ríoga development. The roadside hedge is also visible in front of the proposed development.
Impact (Construction Stage)	<i>Imperceptible and negative visual impact short-term</i>
Impact (Operation Stage)	<i>Imperceptible and neutral visual impact in the long-term</i>

22.1.10 Material Assets (Transportation) (Chapter 14)

Construction Stage

If the recommended remedial or reductive measures are implemented, the proposed development will not give rise to any significant residual adverse impact. Negative impacts during the construction phase will be temporary only.

Operational Stage

Provided that the mitigation measures proposed are implemented and the infrastructure upgrades proposed for Dunshaughlin are implemented when required by traffic demand, the impact of the increased traffic volumes that will be generated in the area following the construction of the development is not expected to lead to significant congestion.

22.1.11 Material Assets (Waste) (Chapter 15)

The implementation of the mitigation measures outlined in Section 15.6. will ensure that the 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. and adherence to the C&DMP during the construction and demolition phase will ensure that the effect on the environment will be **short-term, imperceptible** and **neutral** within the Eastern and Midlands Waste Region.

Operational Stage

During the operational phase, a structured approach to waste management as set out in Section 16.6 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**.

Worst Case Impact

In a worst-case scenario, if no mitigation measures found in section 15.6 are followed, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution.

Cumulative Development

Construction

During both the C&D phase and operational phase, waste management will be carefully managed as set out in Section 15.6. Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative effect relating to waste management will be **long-term, imperceptible** and **neutral**.

Operational Stage

During both the C&D phase and operational phase, waste management will be carefully managed as set out in Section 15.6. Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative effect relating to waste management will be **long-term, imperceptible** and **neutral**.

Worst Case Impact

In a worst-case scenario, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution.

22.1.12 Material Assets (Utilities) (Chapter 16)

Construction Phase

Implementation of the measures outlined in Section 16.6 will ensure that the potential impacts of the proposed development on the site's material assets do not occur during the construction phase and that any residual impacts will be short term.

Operational Phase

The demand on power supply, gas supply and telecommunications supply will all increase due to the development of the lands. The development of the lands will be constructed in phases, with the final phase being completed c. 2024.

Residual impacts will be permanent and imperceptible.

22.1.13 Cultural Heritage (Archaeology) (Chapter 17)

Construction Stage

If the appropriate reductive measures of archaeological testing (Appendix 17.1) and potential monitoring and excavation are followed, then the Residual Impact of the Proposed Development on the potential archaeological features and/or deposits will be zero.

Should any archaeological features and/or deposits be preserved *in situ* within green areas of the Proposed Development, then the Residual Impact on those features will be long-term, imperceptible and permanent.

Operational Stage

Likewise, the Residual Impact of the Proposed Development on the potential archaeological features and/or deposits during the Operation Stage of the residential development will be zero in the case of archaeology that has been excavated and long-term imperceptible positive for any archaeology that is preserved *in situ*.

Worst Case Impact

The worst case impact of the proposed development on the archaeological resource would be for the construction and operational stages to go ahead without the correct mitigation measures; i.e. the removal of archaeological features and/or deposits without preservation *in situ* and/or preservation by record.

Cumulative Development

Construction Stage

Following the preservation *in situ* of the central, large enclosure and the inner burial enclosure and the excavation of all other archaeological features external to these, the residual effect of the Construction Stage of the Cumulative Development was long-term, imperceptible and positive.

The effect of the Construction Stage of the Cumulative Development on the known and unknown archaeological resource in the wider Dunshaughlin area was zero.

Operational Stage

The effect of the Operational Stage of the Cumulative Development on the known and unknown archaeological resource in the wider Dunshaughlin area is zero.

Worst Case Impact

The worst case impact of the Cumulative Development on the archaeological resource would have been for the construction phase to commence without the correct mitigation measures, i.e. geophysical survey, archaeological testing and archaeological excavation. This would have led to the removal of archaeological features and/or deposits without preservation *in situ* and/or preservation by record.

22.1.14 Cultural Heritage (Architectural Heritage) (Chapter 18)

The residual impacts of the proposed development on the local architectural resource are anticipated to be imperceptible.

22.1.15 Risk Management (Major Accidents & Disasters) (Chapter 19)

The risk of a major accident and / or disaster during the construction phase of the proposed development is considered low.

The risk of a major accident and /or disaster during the operational phase of the proposed development is considered medium.