

FASSAROE PHASE 1 SHD DEVELOPMENT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Volume 1 - Non-Technical Summary

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1 INTRODUCTION

Cosgrave Property Group is proposing a Strategic Housing Development at Fassaroe, Bray, Co. Wicklow which comprises a residential mix of houses and apartments as well as supporting services and amenities including neighbourhood centre uses, a district park, a creche, roads infrastructure, a pedestrian / cycle bridge over the N11 to Dargle Road and associated services and infrastructural works. The application also seeks planning permission for the remediation of 5 no. historic landfill sites within the application site previously operated by Wicklow County Council and for which the EPA has already issued consent by way of Certificates of Authorisation.

Given the nature and scale of development proposed an EIAR is a mandatory requirement for this application with reference to the Planning and Development Act 2000 as amended and the Regulations made thereunder.

The environmental assessments presented in this EIAR have been undertaken by a variety of specialists with considerable experience of EIA for various project types.

Prior to preparing the EIAR an EIA Scoping exercise was undertaken in which an EIA Scoping report was prepared and issued to various prescribed bodies. Limited responses were received.

2 DESCRIPTION OF DEVELOPMENT

The subject lands on which the development is proposed currently comprise of agricultural lands to the west of the N11 at Bray. The overall site extends to 80.16 ha. The lands are zoned for development under the Bray Municipal District Local Area Plan 2018.

The proposed development referred to as 'Fassaroe Phase 1', will be the first phase of development within these lands and will comprise:

- Road link (2.4km) connecting N11 to Ballyman Road (with westerly connection to Ballyman Road already in place)
- Pedestrian / cycle route including bridge across the N11 to Dargle Road Upper
- 15.3ha of District Park / Active Open Space
- 650 no. residential units comprising 241 no. houses and 409 no. apartments
- 3 No. pocket park areas comprising a total of 0.43ha.
- 733sq.m approx. crèche with capacity for approx. 138 no. childcare spaces
- Retail unit / kiosk (108sq.m.) in district park
- Neighbourhood Centre Phase 1 comprising:
 - 1,035sq.m. retail
 - 360sq.m. café,
 - 480sq.m community concierge (serving entire Fassaroe community)
 - 414sq.m. residential ancillary uses for residents of the neighbourhood centre apartments (residents lounge 256sq.m., residents gym 90sq.m., and residents concierge 68sq.m.)
- Demolition of an existing dwelling at Berryfield Lane
- Rerouting and undergrounding of overhead ESB lines (110kV and 38kV lines) across site and into existing ESB Substation
- Site development / ground works on future development areas to ensure sustainable cut and fill balances across the lands
- Water supply, foul and surface water drainage proposals
- Provisions for public bus services in line with demand towards Bray (DART and Bray bus interchange) and towards the Luas at Cherrywood / Brides Glen
- Remediation of 5 no. historic landfill sites in line with Certificates of Authorisation issued to Wicklow County Council by the EPA in 2019

3 PLANNING AND POLICY CONTEXT

The rationale for this development is grounded in National, Regional and Local planning policy provision.

National policy supports increased housing delivery in accordance with Housing for All – A New Housing Plan for Ireland, and the National Planning Framework which has a population growth target between 490,000 – 540,000 additional people up to 2040.

Bray is identified in the Eastern and Midland’s Regional Spatial and Economic Strategy (RSES) as one of three ‘Metropolitan Key Towns’. The RSES identifies that Bray is the largest town in County Wicklow, with a population of 32,600 in 2016, and strategically located at the eastern gateway to the County, with access to the N/M11 corridor (including M50), DART/rail line and quality bus service.

With reference to residential development specifically the RSES sets out that population growth in Bray has been modest compared to other settlements as expansion of the town is constrained by the coast to the east, Bray Head/Sugarloaf mountains to the south and the N/M11 to the east. The RSES states that in order for Bray to fulfil its growth potential, the lands at Fassaroe to the west of the N/ M11 are targeted for new housing, employment and major community and sports facilities, along with development of lands at Old Connaught (Conna)-Fassaroe, which are within Dún Laoghaire-Rathdown.

RPOs 4.37 and 4.40 of the RSES have specific regard to the development of Bray and note the importance of the westward extension of the town into Fassaroe.

The predicted population growth set out in the Wicklow County Development Plan 2010 – 2016 was for a population of 45,000 in 2022 from its measured population of 28,814 in 2006. The Plan notes that in order for Bray to fulfil its growth potential, lands at Fassaroe to the west of the N/M11 are targeted for new housing and other facilities. Under the Draft Wicklow County Development Plan 2021 – 2027 the population of Bray is targeted to increase from 29,646 in 2016 to 40,425 in 2031.

The Bray Municipal District Local Area Plan 2018 (Bray MD LAP) identifies Fassaroe as a major new centre targeted to be developed as a mixed residential, open space, community and employment area, with the potential to meet up to 60% of the new housing need of Bray.

The Draft Transport Strategy for the Greater Dublin Area 2022 – 2042 includes a number of proposals for the Bray area:

- BusConnects Core Bus Corridor from Bray to Dublin City Centre
- Extension of the Luas Greenline southwards to serve Bray and Environs
- DART+ Coastal South
- Park and Ride Facilities at Fassaroe

The Bray and Environs Transport Study (BETS) is a joint undertaking between the National Transport Authority (NTA), Transport Infrastructure Ireland (TII), Wicklow County Council (WCC) and Dún Laoghaire-Rathdown County Council. A primary purpose of this study was to seek to facilitate the land use objectives of Wicklow County Council and Dún Laoghaire-Rathdown County Council as provided in statutory plans and policy documents.

The Study identifies a first phase of development in Fassaroe as comprising circa 650 no. residential units and appropriate residential support facilities. It sets out several provisions for transportation infrastructure / services that are required in order to sustainably develop this first phase of development. These identified requirements will be provided either as part of the current application or by other providers as appropriate including Wicklow County Council and the National Transport Authority.

The Bray MD LAP identifies Fassaroe as an Action Area and sets out a concept plan and a number of objectives for development at Fassaroe. The proposed development has been drawn up with reference to these provisions. This application comprises a first phase of development. As the first phase of development this application contains a significant amount of infrastructural works which will facilitate further phases of development also.

4 POPULATION AND HUMAN HEALTH

The Fassaroe area is largely agricultural in nature with existing closest residents located at Berryfield Lane, Thornhill Road, Kilbride Road and Ballyman Road. The lands are part of the expansion area of Bray metropolitan town which contains a wide variety of services and amenities for the residents of Bray and which will serve the future residents of Fassaroe. In addition, the Bray Municipal District Local Area Plan identifies a mix of uses at Fassaroe which will also serve the needs of the future new Fassaroe Community over time. As part of the first phase of development a first phase of the Neighbourhood Centre is being provided along with a creche and large scale public open space provisions. The subject lands will be served by a public bus service which will provide easy and fast sustainable travel to existing retail, education and other community and amenity services in Bray. A pedestrian and cycle route, including bridge over the M11, will also provide safe and direct access to Bray and onwards to the town centre.

During construction there will be potential for construction activities and construction traffic to give rise to temporary adverse impacts such as traffic delays on the immediate local road network, noise and dust. However, given the site context and the scale of the site much of the construction activity will be sufficiently distant from residents so that only short term slight impacts arise.

The construction phase will generate significant levels of onsite employment as well as supporting further employment in supporting construction supply industries. A modest level of employment will also be provided in the Neighbourhood Centre and Creche proposed as part of this application.

The proposed District Park will be a significant positive addition to the wider Bray / Enniskerry area and will serve this wider population area in addition to the future residents of Fassaroe itself.

In developing these lands the existing agricultural uses will cease, in order to accommodate the development. This is in accordance with the zoning objectives for the site however, so the effects are not considered to be adverse. Rather the construction activity will facilitate the planned future land uses for the site which is a positive impact.

Given the presence of historic landfill sites at the application site and the proposals for remediation of these sites there is potential for impact on human health for the construction workers. A range of construction mitigation measures are set out to ensure all workers are aware of the dangers and that they are appropriately protected when working in these areas.

The EPA has already issued consent under the Certificate of Authorisation procedures for the remediation of these sites. The current application provides for these remediation measures which include a landfill cap and gas management measures (passive measures along with a collection and flare system) for the landfill. In addition, this current application proposes further building protection measures to be incorporated into the construction detail of building foundations. These measures will ensure no residual risk to human health or odour from the remediated landfills.

5 BIODIVERSITY

An appraisal of the likely significant effects on biodiversity (flora and fauna) arising out of the proposed Fassaroe Phase 1 Strategic Housing Development, Bray, Co. Wicklow was undertaken. Measures to mitigate the potential effects on defined ecological features are proposed. The assessment involved a desk study and field surveys by suitably qualified ecologists. The methodologies used to determine the value of ecological features, to characterise the potential effects of the proposed development and to assess the significance of effects and any residual effects are in accordance with the NRA (now TII) (2009) *Guidelines for Assessment of Ecological Impacts of National Road Schemes* and the CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Coastal, Freshwater and Marine*. Ecological features are valued as being of Local Importance (Higher Value) as per the criteria set out in the NRA (2009) guidelines.

A Natura Impact Statement has been prepared and is included as a standalone report with the application. The NIS concluded that, with the implementation of best practice and the recommended mitigation measures, there will be no potential for direct, indirect or cumulative impacts arising from the proposed strategic housing development, either alone or in combination with any other plans or projects. No reasonable scientific doubt remains as to the absence of such adverse effects.

The proposed site predominantly comprises arable fields and agriculturally improved grassland. Five historical landfill areas within the site support pockets of relatively species poor unimproved grassland; and one field of neutral grassland is present at the east of the site. The agricultural grassland and arable land is of low ecological value and the unimproved grassland is of Local Importance (Higher Value).

Many of the fields at the site are bound by hedgerows and treelines and immature woodland is present at the periphery of the road network at the east of the site. Woodland habitats present within Ballyman Glen SAC adjoining the northern boundary of the site include scrub, Oak-ash-hazel and mixed broadleaved woodland. These habitats are of Local Importance (Higher Value). Wet woodland is also present in waterlogged areas within Ballyman Glen SAC, this habitat is of County Importance.

There are no watercourses or waterbodies within the site. County Brook (Fassaroe Stream), Cookstown River and the Dargle River are located to the north, southeast and northeast (respectively) of the site boundary; these rivers are of National Importance. The Dargle River is an important salmonid system holding significant populations of Atlantic salmon, Sea trout, Brown trout, Lamprey and Crayfish.

No bat roosts were recorded within the site, however it is likely that Leisler's bat roost in the vicinity of the site. Six species of bat commute to the site to forage, predominantly along hedgerows and sheltered areas in farmyards, around houses and along Berryfield lane. Bird species recorded at the site were typical of the agricultural habitats present at the site and are common and widespread in the Irish countryside. A badger sett is present in the wider environs of the site and this species forages and commutes across the site. The site does not provide a significant supporting role for other protected species of mammal, however suitable habitat for otter, red squirrel, pine marten and deer is present within Ballyman Glen SAC.

The proposed development will involve construction on a site predominantly comprising agricultural land of low conservation value. No potential significant adverse effects on grassland habitats are identified. The loss of hedgerows/treelines and small areas of woodland habitat during the construction phase would result in a significant adverse effect at the local geographic scale. There is potential for indirect effects on the County Brook (Fassaroe Stream), River Dargle and the Cookstown River as a result of degradation of water quality during both the construction and operation phases.

There is potential for a loss of hedgerow/ treeline and woodland habitat to reduce available foraging and commuting habitat for bats. There is also potential for an increase in lighting during the construction and operational phase to cause disturbance to foraging and commuting bats. There will be no loss of badger setts as a result of the proposed development, however, there is potential for fragmentation and reduction of the social groups territorial area and an increase in road kill rates during both the construction and operational phases. In the absence of mitigation, the proposed development would potentially result in a significant adverse effect on bats and badgers at the local geographic level. Potential effects on otter utilising County Brook, to the north of the site, are limited to indirect effects as a result of a reduction of water quality during the construction phase. No impacts are expected to occur to other species of fauna.

All construction works will proceed in line with current best practice guidelines and the requirements of the Construction and Environmental Management Plan prepared for the strategic housing development. A Japanese Knotweed Management Plan has been prepared for the proposed development.

In order to avoid disturbance effects on bats during the operational phase, the lighting scheme has been designed in accordance with best practice lighting guidelines. While no bat roosts were recorded within the proposed site, as a precautionary measure, the trees scheduled for felling and the building scheduled for demolition will be subject to further examination prior to commencement of development to determine the presence/ absence of bats. Badger will be protected from an increased road kill rate by the installation of badger proof fencing and an underpass at the western end of the distributor road.

The landscaping plans include substantial native tree planting; large areas of open space will be maintained on the site, along with areas of wildflower meadow. The planting schemes shall ensure connectivity to linear/ woodland habitats in the wider landscape. Hedgerows and wooded areas within and immediately adjacent to the site will be retained, these habitats will be protected from any accidental damage during construction through the use of measures such as fencing.

With the successful implementation of the landscaping plan, no significant residual adverse effects on habitats will occur.

The proposed site forms part of the territory of the local badger population. The construction of the proposed development will result in a reduction in badger territory size in the long-term. However, the level of badger activity evidence recorded across the site was low, therefore it is expected that there will be a minor, but not significant residual effect on the local badger population in the long-term.

There will be a reduction in the dark areas of Fassaroe as a result of the development, this will reduce the feeding potential for species such as whiskered bat and brown long-eared bat. With the effective implementation of the landscaping plan and mitigation provided in the Biodiversity Chapter, it is expected that there will be a minor, but not significant residual effect on local bat populations in the long-term. Overall, no significant residual effects on biodiversity are expected as a result of the proposed development.

6 SOILS, GEOLOGY AND HYDROGEOLOGY

This chapter addresses the receiving, soils, geology and hydrogeology environment within and in the vicinity of the Site at Fassaroe Bray, Co. Wicklow, and potential associated impacts arising from the proposed development. Historic land-use at the site was predominantly greenfield agricultural land (this is based on a review of available historic mapping and aerial photography). There are a number of historic landfills within the boundaries of the development which will be subject to remediation as part of the development. The Site is mainly in arable agricultural use. The subject lands generally fall from the west ca. 100 meters above ordnance datum (mOD)) to the east (ca. 30 mOD).

The site is generally underlain by topsoil, glacial till, and gravels. Bedrock is present at depths ranging from ca 6m bgl towards the east of the site to < 25m bgl to the west of the site. Bedrock generally comprises shale. 5no historic landfills were recorded on site with waste encountered to a maximum depth of ca. 16m bgl.

The major aquifers underlying The Site are part of the broader Enniskerry Gravels Aquifer and Wicklow Bedrock Aquifer and these have been generally classified by the GSI as a Locally Important (LI) Aquifers.

The major bedrock aquifer surrounding The Site has been classified by the GSI as a Locally Important (LI) Aquifer which is moderately productive in local zones only. The south-eastern corner of The Site is slightly underlain by a different classified aquifer body – Poor Aquifer (PI) which is described as bedrock which is generally unproductive expect for local zones.

Reference to the GSI Vulnerability data indicates that The Site is classified as having a ‘High’ aquifer vulnerability which indicates that the soil cover is >3.0m of high to medium permeability soil at the site, given by the cohesive and granular deposits (Gravels subsoil) which overlay the bedrock aquifer. Comparison with the site investigation results and GSI Well Card Data confirms that the surrounding area can be classified as ‘Moderate’ to ‘High’.

The County Brook waterbody valley which is known as Ballyman Glen is designated an SAC (Site Code: 000713) selected for the following habitats and/or species listed on Annex I/II of the E.U. Habitats Directive; petrifying springs with tufa formation and alkaline fens.

Emerging groundwater spring flows feed the tufa deposits and alkaline fen and they are therefore considered to be Groundwater Dependant Terrestrial Ecosystems (GWDTE).

Potential Construction Impacts

Soils & Geology

Stripping of topsoil and subsoil during the construction phase will be carried out in a controlled manner and stockpiles of materials will be protected to minimise the impact on land, soils and geology. Based on the development proposed under this current Phase 1 application alone it has been calculated that there will be a deficit of fill material of the order of 129,747m³ required within the Phase 1 development areas. Any unsuitable material will be moved offsite in accordance with all relevant waste legislation. It is unlikely that bedrock will be encountered during the development works. There could be an impact on land, soils and geology from potential fuel leaks during refuelling or maintenance of vehicles. Temporary onsite groundwater and gas monitoring wells could provide a conduit for potential contamination of soils and bedrock.

There could be an impact from the landfill remediation works in respect of soil contamination, landfill gas, slope stability, settlement, asbestos dust and odours. The likely impacts on human health from possible soil contamination, landfill gas, asbestos, dust and odours is considered in Chapter 4 – Population and Human Health. The effects of historic landfill slope stabilisation works will have a significant positive impact on the stability of site slopes. The employment of good construction management practices, and mitigation and monitoring measures (as set out in Chapter 6 of this EIAR) will serve to minimise any risk of pollution to geology and soils from construction activities.

Hydrogeology

The proposed landfill capping measures comprise mitigation and management proposals to eliminate any potential adverse impacts of the landfills on the development proposed, and in particular any potential to impact on human health or the uses proposed which include residential and amenity uses. These measures are discussed in detail in Chapter 2 as well as the management of run-off. There are no major dewatering plans required as part of the planned development. However, minor and localised dewatering will be required

during the excavations of the proposed development. The potential impact is the localised lowering of groundwater levels during dewatering which may impact on the nearby Ballyman Glen SAC/ GWDTE. Dewatering will be temporary to short term which will have imperceptible impact on the nearby SAC.

The employment of good construction management practices, and mitigation and monitoring measures (as set out in Chapter 6 of this EIAR) will serve to minimise any risk of pollution to the hydrogeological environment from construction activities.

Operational Impacts

Soils & Geology

There may be an impact on soils and geology during the operational phase from fuel leaks from the parking of cars and trucks within the development. Any leak is likely to be small in scale. The presence of interceptors within the surface drainage system will mitigate any impacts on soils and geology.

Slope stabilisation works and settlement mitigation works have been incorporated into the design of the remediation works to mitigate any risks associated with the historic landfill sites during the operational phase.

The Environmental Risk Assessment prepared by RPS (2018) indicates that following the remediation works to the 5 no. landfills which are detailed in the Remediation Strategy Report (RPS 2020) there will be no risk to future site users from waste or dust. Further the Environmental Risk Assessment concludes as follows

Furthermore the construction of such cap ...would allow greater control of risks associated with landfill gases generated on the landfill sites.

Hydrogeology

There is no requirement for bulk diesel or chemical storage on site during the operation phase of the development. Any accidental emissions during the operational phase from vehicles which could cause localised contamination if the emissions enter the soil and groundwater environment without adequate mitigation. However, it is noted that any accidental discharge will more likely impact stormwater drainage due to the hardstanding and drainage infrastructure proposed. This surface water will be discharged through a network of oil-water separators to the proposed series of attenuation systems. The attenuation system will remove all the silt from the water and will contain an oil-water separators.

Incorporation of hard standing area and levelling/ compaction of ground level and the use of limited (due to underlying landfill conditions) SUDs techniques will have a minor effect on local recharge to ground; however, the impact on the overall groundwater regime will be insignificant.

The reduced recharge rate in the aquifer could lead to a comparable reduction in the seepage face elevation. Therefore, potentially there may be a drop of 0.3m from the top of the seepage face and the reduction in flow at the springs could reduce by 7%. A predicted reduction of 0.3m is a small change when compared to the total saturated thickness of the gravel. The tufa springs are mapped lower down in the river valley, rather than at the top of the seepage face and therefore it is unlikely that this minor amount of drawdown would lead to a significant loss of any of the petrifying springs. The reduced recharge rate (by 7% in comparison to pre-development conditions) could lead to a comparable reduction in flow from the springs (7%), however it is expected the springs would continue to flow and the tufa would continue to be deposited.

The springs and seepages which feed the tufa deposits emanate at the seepage face where groundwater emerges from the river valley. The extent of the seepage face above the river elevation is related to the groundwater elevation in the gravels, which in turn is related to the recharge.

Conclusion

The proposed development will not have a significant residual adverse impact on land, soils and geology (and associated human health) given the mitigation measures proposed during the detailed design and construction phase of the development.

The proposed development will not have a significant residual adverse impact on the hydrogeological environment given the mitigation measures proposed during the detailed design and construction phase of the development.

7 WATER SERVICES, HYDROLOGY AND FLOOD RISK

This chapter describes the type of hydrological environment likely to be encountered and in the general area of the proposed development. It also addresses the potential impact of the proposed development on the hydrological environment together with the mitigation measures that will be employed to eliminate or reduce any potential impacts. This chapter also considers the implications of and impacts of the proposed water services.

The site is currently used for agricultural purposes with residential housing located in the surrounding areas. This proposed development comprises the construction of 650 no. housing units on a ca. 80.16 ha Site at Fassaroe, Bray, Co. Wicklow. There are a number of historic landfills within the boundaries of the development which will be subject to remediation as part of the development. The Site is mainly in arable agricultural use. The subject lands generally fall from the west ca. 100 meters above ordnance datum (mOD)) to the east (ca. 30 mOD).

According to the EPA maps, The Site lies within the Ovoca-Vartry Catchment (Hydrometric Area 10) and the Dargle River sub-catchment (sub catchment: 10_5). This sub-catchment is managed by Wicklow County Council (WCC) – the local authority. The current EPA watercourse mapping does not include any existing streams within the proposed application site boundaries. In addition, a review of the historical mapping records provided within the GeoHive website do not indicate any watercourses within The Site.

There are three (3) no. watercourses within the vicinity of The Site:

- Country Brook waterbody (IE_EA_10D010250) located along the northern boundary.
- Glencullen waterbody (IE_EA_10G020500) located approx. 0.61 km to the south of The Site.
- Dargle waterbody (IE_EA_10D010250) located approx. 0.23 km to the east of The Site.

A Stage 1 Flood Risk Assessment was carried out as part of planning. The Stage 1 flood risk assessment was completed in accordance with The Guidelines and the following conclusions can be drawn;

- There is no historic risk of flooding within the development site.
- The OPW CFRAM flood extent maps studies have not been carried out in the area of the site and therefore do not show any flood risk at the site. On the basis of the maps and the topography the site could be considered to be located within Zone C, low probability of flooding.
- Given that the proposed development site is located in Zone C, low probability of flooding, is thus appropriate from a flood risk perspective subject to the completion of this FRA which considers other sources of flood hazard than river flooding and subject to it meeting the normal range of proper planning and sustainable development requirements.
- Given that the proposed development is located in Zone C and is appropriate development, consideration of the Justification Test is not required.
- The proposed development is not at risk of flooding from the 1% AEP event.

The County Brook waterbody valley which is known as Ballyman Glen is designated a SAC (Site Code: 000713) selected for the following habitats and/or species listed on Annex I/II of the E.U. Habitats Directive; petrifying springs with tufa formation and alkaline fens.

Emerging groundwater spring flows feed the tufa deposits and alkaline fen and they are therefore considered to be Groundwater Dependant Terrestrial Ecosystems (GWDTE).

According to the NPWS (2021) on-line database and available data, the Ballyman Glen Special Area of Conservation (SAC) and proposed National Heritage Area (pNHA) (Site code: 00713), is located along the northern boundary of The Site.

Construction Impacts

Surface water runoff during the construction phase may contain increased silt levels or become polluted from construction activities. Runoff containing large amounts of silt can cause damage to surface water systems and receiving watercourses. Silt water can arise from dewatering excavations, exposed ground, stockpiles and access roads. During the construction phase at this site there is potential for an increase in run-off due to the compaction of soils. This will reduce the infiltration capacity and increase the rate and volume of direct surface run-off. The potential impact of this is a possible increase in surface water run-off and sediment

loading which could potentially impact local drainage on the County Brook Stream and the downgradient Dargle.

Any surface water run-off collecting in excavations will likely contain a high sediment load. This will be diverted to settlement ponds and will not be allowed to directly discharge directly to existing field drains or open water courses.

Machinery activities on site during the construction phase may result in contamination of runoff/surface water. Potential impacts could arise from accidental spillage of fuels, oils, paints etc. which could impact surface water if allowed to discharge and runoff to surface water systems and/or receiving watercourses such as existing drainage ditches and the nearby County Brook Stream. However, implementation of the mitigation measures detailed below will ensure that this does not occur.

Welfare facilities will be provided for the contractors on site during the construction works. These facilities are portable sanitary facilities will be provided with waste collected and disposed of appropriately.

The employment of good construction management practices, and mitigation and monitoring measures (as set out in Chapter 7 Volume 2 – EIAR) will serve to minimise any risk of pollution to geology and soils from construction activities.

Operational Impacts

The development does not include the storage of bulk storage tanks for fuel oil distribution pumps. However, it is noted that any accidental discharge of hydrocarbons (from operational vehicles) to stormwater drainage may arise from areas of hardstand and drainage infrastructure proposed. This discharge will have the potential to impact on the water quality of the nearby watercourses. Drainage from the hardstanding areas will discharge through a petrol interceptor. There will be an increase of hardstanding areas (3.59 ha) due to the proposed development.

Storm water runoff from the site will be treated through the use of a Bypass Interceptor prior to discharge to the receiving watercourse and existing storm drainage networks.

The storm water management design for the proposed housing and road development routes the storm water to soakaways to promote percolation back to ground. The soakaways are designed to accommodate the 1 in 5-year storm events. Runoff in excess of the 1 in 5-year event will overflow from the soakaway storage to attenuation ponds which discharge to surface water. The storm water management system for the housing and road development (other than the landfill capping measures discussed below) will therefore have a negligible impact on groundwater recharge rates and may even promote additional recharge due to the additional storage provided in the soakaway tanks.

Conclusion

The proposed development will not have a significant residual impact on the hydrological environment given the mitigation measures proposed during the detailed design and construction phase of the development.

8 AIR QUALITY

This chapter identifies, describes and assesses the impact of the development on the subject site and surrounding area in terms of air quality during the construction and operational phases of the development. In addition, this chapter identifies, describes and assesses the impact of the proposed development in terms of greenhouse gas emissions during the construction and operational phases.

An assessment of baseline air quality has been undertaken using the Environmental Protection Agency air quality data in order to identify the existing pollutant trends in the area and to establish spatial information to determine compliance with relevant ambient air legislation. Future air quality trends for the key traffic-derived pollutants with and without the proposed scheme in place were then predicted using the screening air quality assessment from the Design Manual for Roads and Bridges.

A desktop climate assessment for the area was undertaken using climate data from the Met Eireann 30-year averages. Existing trends in residential and transport related greenhouse gas emissions are considered with reference to the targets outlined in Ireland's National Policy Position on climate action and low carbon development.

Construction activities are likely to generate some dust emissions. The potential quantity of dust emissions will depend on the type of construction activity being carried out such as excavations, mixing concrete, sawing wood and construction traffic travelling across exposed ground. There are several residential/commercial properties located within 100 metres of the proposed works site, in particular along Berryfield Lane and Thornhill Road. These properties are likely to experience a 'temporary slight adverse' dust impact during construction. All other properties are located outside of the 100 metres threshold and hence, these properties will experience no adverse dust impact from the proposed construction phase.

The disturbance of the areas within and around the historic landfills may generate lateral or vertical pathways for the escape of landfill gas. The fugitive release of this landfill gas has the potential for the generation of odour nuisance through the release of trace gases within the landfill gas. There are a number of existing residential properties located to the south of the Landfill Site 2 where the proposed road alignment is planned. Similarly, the Enniskerry Football Club grounds are located adjacent to the area where the proposed road cuts through Landfill Site 3B. These properties are predicted to experience a 'temporary slight adverse' impact from landfill odours in the event that any landfill gas is released during the works. Other receptors in the area will likely experience negligible impacts.

The construction phase of the potential development has the potential to generate a number of greenhouse gas emissions in the short term. Emissions from construction activities will arise from embodied carbon in site materials as well as vehicles delivering this material to the construction site. The construction of the proposed development is considered to pose a 'permanent adverse' impact for climate.

There is the potential for a number of emissions to the atmosphere during the operational phase of the proposed development. In particular, the traffic-related air emissions may generate quantities of air pollutants such as nitrogen dioxide and particulate matter. The site is accessed via Junction 6 off the N11 road then via the R918 or internal roads (Berryfield Lane, Thornhill Road). The changes presented for the development coupled with the proposed changes in traffic will result in local human and ecological receptors experiencing a 'negligible' air quality impact from road traffic associated with the development.

The presence of the historic landfills on site acts as a potential source of odour as a result of trace gases to properties on the site and in the area. A Gas Management Strategy for managing this risk has been approved by Wicklow County Council and the EPA. This strategy includes for engineered barriers and vents to ensure the safe collection and venting of any gases. With these standard landfill design measures in place, the potential for fugitive losses of odour is significantly reduced. Any potential losses will be short term and temporary and will readily dilute and disperse with no significant impact for air quality for the area.

During the operational phase a scheme of this nature has the potential to generate greenhouse gases through increased vehicular traffic in the area as well as from the external lighting, space heating and energy use within the buildings. It is proposed that buildings constructed as part of the proposed development will integrate sustainable energy efficient design principles in order to reduce their potential climate impact. All of the units will be subject to the Nearly Zero Energy Building requirements of the updated Part L of the Irish Building Regulations. In terms of energy ratings all of the units on site will have a Building Energy Rating of A2 / A3. Energy efficiency will be achieved through building fabric and window elements as well as use of renewable energy solutions which development will incorporate photovoltaic (PV) solar panels, combined heat and power and heat pumps. These design measures are aligned with the Built Environment actions in

the Climate Action Plan 2021. In this regard, the built environment elements of the proposed development are fully aligned with climate policy.

In terms of climate adaption, the main potential risk to and from the development relates to fluvial flood risk from the rivers in the area. A flood risk assessment for the proposed development forms part of the planning application.

9 NOISE AND VIBRATION

This chapter of the Environmental Impact Assessment Report (EIAR) identifies, describes and presents an assessment of the likely significant noise and vibration effects of the proposed Fassaroe Phase 1 strategic housing development. This involves the outward assessment of noise and vibration impacts on nearby noise sensitive locations during construction and operational phase of the proposed development. The inward impact on the proposed development was also considered.

The Noise and Vibration Study Area encompasses the site of the proposed development and the surrounding area within an approximate 500 m radius to include residential properties and commercial/industrial premises.

A noise survey at 4 no. of locations was undertaken establish the existing noise levels in the area of the proposed development, derive appropriate construction noise limits and determine average daytime and night-time noise levels for assessment against operational noise criteria.

Construction noise predictions have been undertaken for the proposed construction activities at all noise sensitive receptors in the noise and vibration study Area using a three-dimensional model. Construction plant is assumed to be operational at closest point to receptors and predictions are based on the construction plant operating simultaneously. Pre-mitigation, the predicted construction noise impacts are anticipated to result in effects ranging from not significant to significant at some noise sensitive receptors. With mitigation the significance rating will reduce to moderate, and this is expected to result in brief effects.

Construction traffic noise impacts were also assessed. Potential impacts arising from increases in construction traffic noise are predicted to be not significance during the construction phase.

The main construction activity that has potential to result in vibration impacts is piling for the road embankment which traverses the southern point of landfill site 2. Potential impacts arising from increases in vibration are predicted to be not significant at the nearest receptor.

The proposed development scheme spans an area of 78.5 ha with 650 residential units in 5 no. of character areas across the development site. Given the extent of the development, some residential units are in proximity to N11 national road, Fassaroe 110 kV substation and EPA licensed facilities Roadstone Quarry and Starrus Eco Waste Transfer Facility and a gas flare as part of the gas management system for remediation of the historic landfills within the wider site boundary.

Where noise sources were existing (e.g. Fassaroe substation, Roadstone Quarry...), assessment of the baseline noise levels against the noise criteria was used to assess potential impacts. Where the proposed development introduces a new source (e.g. gas management system for remediation of the historic landfills) a combination of noise predictions and baseline noise levels were assessed against the noise criteria. With mitigation measures, no significant residual effects are predicted for existing residents and residents as part of the proposed development.

Mitigation measures are proposed during the construction phase including completing works during 'normal hours' except for a number of concrete pours which for technical reasons require significantly longer working days. It is proposed that the developer however will provide notification to the Planning Authority a week in advance of these occurrences. Other mitigation measures include the implementation of construction good practice measures (e.g. switching off plant when not in use), open communications with potentially affected residents on the programme of works or works outside normal hours and programming of works to avoid simultaneous noisy activities where possible. It is proposed that a 3.6m high double skinned solid site hoarding is located along the site boundary adjacent to two receptors. It is also proposed that existing walls will be retained along the Berryfield Lane and raised to a height of 3.6 metres using double skinned solid plywood site hoarding. Where no walls are present a 3.6 m high double skinned solid plywood barrier will be erected adjacent to receptors on Berryfield Lane in proximity to construction works.

To mitigate the operational noise impact for receptors facing the Starrus Eco Waste Transfer Facility (WTF), it is recommended that a noise barrier is installed along the boundary with the WTF. The barrier can be blended into the surrounding with the planting of mature trees. With this mitigation the amenity noise levels will be reduced. It is also recommended that dwellings nearest the WTF be acoustically treated with enhanced glazing, acoustic vents and enhanced roof insulation. The exact details and dwelling numbers will be determined at detailed design stage.

Fassaroe 110 kV substation is located off the Berryfield Lane. It is recommended that a noise barrier adjoining the substation boundary is installed. The noise barrier should block direct line of sight with the nearest dwellings. To further mitigate the noise, it is recommended that a 2m stone wall be installed along the boundary of nearest dwellings in character area 5. The façade of the dwellings above will act as a barrier for other dwellings in character area 5. It is also recommended that dwellings nearest the substation will be acoustically treated with enhanced glazing, acoustic vents and enhanced roof insulation. The exact details will be determined at detailed design stage. With the mitigation measures in place the noise impact will not be significant in EIA terms.

Following the implementation of the above mitigation measures, noise sources arising from the proposed development and existing noise sources in proximity to the proposed development will not result in any significant effects on noise and vibration sensitive receptors.

10 LANDSCAPE AND VISUAL IMPACT

The Landscape and Visual Impact Assessment chapter was prepared by Richard Butler (B LArch , MSc Sp Planning, MILI, MIPI) of Model Works Ltd. Richard has degrees in landscape architecture and planning and is a member of the Irish Landscape Institute and the Irish Planning Institute. He has over 20 years' experience in development and environmental planning, specialising in Landscape/Townscape and Visual Impact Assessment (LVIA). The chapter was prepared with reference to the Landscape Institute's *Guidelines for Landscape and Visual Impact Assessment*, 2013 (GLVIA) and Technical Information Note *Townscape Character Assessment*, and the EPA draft *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*, 2017.

The Fassaroe lands are located to the west of Bray and the N11. The area is mostly greenfield but the landscape can be described as peri-urban in character, in that the farmland is interspersed with a mix of urban-generated development typical of areas surrounding an urban centre (e.g. the houses on Berryfield Lane, the quarry, waste processing plant, soccer club and substation).

The Fassaroe lands have been identified for the expansion of the Bray urban area since the 1990s. Bray is identified as a Metropolitan Consolidation Town in the Regional Planning Guidelines for the Greater Dublin Area (2010-2022), with Fassaroe specifically mentioned (p.73): "*Fassaroe is considered a suitable location to facilitate long term and large scale economic growth and should be developed in tandem with consolidation of Bray town...*".

Accordingly, the lands are zoned for urban development in the Bray Municipal District Local Area Plan 2018-2024 (the 'Bray MD LAP 2018'). Fassaroe is identified as Action Area Plan 1 (AAP1). The LAP states (p.58): "*Fassaroe is identified as the location of major development in Bray; the growth of the settlement in accordance with regional plan targets is contingent on the delivery of the major residential and community services development at this location, there being no other suitable lands in the environs of Bray for such large scale development*". (emphasis added)

The area has thus long been designated for transformation from peri-urban to urban in character. This landscape change has been deemed acceptable in principle through the process of Strategic Environmental Assessment (SEA). The SEA Environmental Report for the Bray LAP 2018 states: "*The potential impacts on landscape and visual amenity are predominantly neutral with some positive impacts likely to occur. Development would generally be consolidated within Bray town centre, undertaken on appropriately zoned lands in Fassaroe and generally avoid impacts on landscape and visual amenity.*"

Potential Impacts - Landscape

Landscape Character and Sensitivity to Change

The *Guidelines for Landscape and Visual Impact Assessment* notes that landscape sensitivity should be classified with consideration of 'the particular project or development that is being proposed and the location in question'. Sensitivity of the landscape is determined by two factors:

- (1) **Susceptibility to change:** "*This means the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular landscape type or area, or an individual element and/or feature...) to accommodate the proposed development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape policies or strategies*".
- (2) **Value of the landscape/townscape receptor:** This can be indicated by designations or, where there are no designations, by judgments based on criteria that can be used to establish landscape value.

Overall, the sensitivity of the receiving environment to landscape change of the type proposed can be classified 'medium' (definition: *Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The landscape character is such that there is some capacity for change. These areas may be recognised in landscape policy at local or county level and the principle management objective may be to consolidate landscape character or facilitate appropriate, necessary change*).

This sensitivity classification is based on the following factors:

- The Fassaroe lands have been zoned for urban development since the 1990s when the area was identified as the only option for the necessary large scale expansion of the Bray urban area. The lands are zoned for urban development in both the Wicklow CDP and the Bray MD LAP. Both plans were subject to Strategic Environmental Assessment and the SEA report for the LAP states: *“The potential impacts on landscape and visual amenity are predominantly neutral with some positive impacts likely to occur. Development would generally be consolidated within Bray town centre, undertaken on appropriately zoned lands in Fassaroe and generally avoid impacts on landscape and visual amenity.”*
- The Fassaroe lands are already classified as ‘urban’ in the Landscape Assessment contained in the Wicklow CDP. The Landscape Assessment states: *“In terms of landscape classification, these [areas] have already been deemed suitable for development (of the type allowed by the settlement strategy and the development standards of this plan) and the impacts on the wider landscape of such development has already been deemed acceptable”.*
- There are relatively few cultural heritage sensitivities in and around the Fassaroe area, and no protected views identified in the area in the Bray MD LAP or the Wicklow CDP. The ‘preserve views’ objective of the DLR CDP from Ballyman Road to the north can be assumed to allow for the planned urban development of Fassaroe.
- Due to its intensive agricultural use there is relatively little vegetation of ‘landscape value’ in the Fassaroe area. The exceptions to this include (a) a shelter belt of trees around Berryfield House, (b) a belt of screening vegetation on the embankments surrounding the waste facility, (c) belts of screening vegetation on the embankments either side of the Fassaroe access road, and (d) the woodland in the river valleys.
- The main areas of landscape sensitivity in the Fassaroe area are:
 - The Cookstown River valley to the south and Ballyman Glen to the north – due to their valley topography, woodland/trees and other habitats, and a relative absence of built elements. Ballyman Glen is particularly sensitive due to its SAC and pNHA designations. These add a layer of value to the valley as an element of the landscape
 - The pockets of residential use in the area including (1) the row of houses and farms along Berryfield Lane, (2) the houses along Thornhill Road to the north east, (3) the houses along Kilbride Lane to the south east, and (4) the houses and farms along the eastern stretch of Ballyman Road to the north.

Magnitude of Landscape Change

Taking account of the scale (80.16 ha) and the nature of the proposed development, **the magnitude of landscape change which would result from the development would be ‘high’** (definition: *Change that is moderate to large in extent, resulting in major alteration to key elements, features or characteristics of the landscape, and/or introduction of large elements considered uncharacteristic in the context. Such development results in change to the character of the landscape*).

Significance of Landscape Effects

Measuring the magnitude of change against the sensitivity of the receiving environment, **the operational phase effects on the landscape would be ‘significant’**. The development would initiate and realise a substantial part of the planned urban expansion of Bray into the Fassaroe area, delivering several key elements including (a) the east-west road link between the N11 and Ballyman Road, (b) the neighbourhood centre, (c) the district park and active open space and (d) extensive residential neighbourhoods of diverse typology/density and character. The overall effect, i.e. the shift in the landscape character of Fassaroe from peri-urban towards a contemporary urban condition, would be permanent.

In order to determine whether the landscape effects can be classified positive, neutral or negative, the proposal was appraised against the relevant ‘Key Principles of Good Design’ as stated in the Development and Design Standards of the Wicklow CDP. (These principles are derived from the ‘Urban Design Criteria and Indicators’ provided in the *Urban Design Manual - A Best Practice Guide* (2009) published by the Department of Housing, Local Government and Heritage.)

The appraisal (see Table 10.7 in Chapter 10) found that the proposal is in accordance with all the relevant ‘principles of good urban design’ and therefore the landscape effects, while significant, can be considered positive.

Potential Impacts – Visual Amenity

To assess the proposal’s visual effects 22 no. representative viewpoints in the receiving environment were selected for detailed assessment informed by verified photomontages. The viewpoints were selected to address the key elements, areas and sensitivities in the receiving environment, as well as to provide photomontages from a range of angles, distances and elevations. The findings of the assessment are summarised in the table below.

Viewpoints	Viewpoint Sensitivity	Magnitude of Change	Significance & Quality of Visual Effects		
			Construction (Temporary)	Operation (Permanent)	Residual (Permanent)
01 – Fassaroe access road (R918) from the east	Low-Medium	High	Moderate negative	Moderate positive	Moderate positive
02 – Thornhill Rd approaching the Fassaroe roundabout	Low-Medium	High	Moderate negative	Moderate positive	Moderate positive
03 –Approaching the Fassaroe roundabout from the SW	Low-Medium	High	Moderate negative	Moderate positive	Moderate positive
04 – Berryfield Lane existing houses – View east	Medium	Medium	Moderate negative	Moderate positive	Moderate positive
05 – View west from houses on Berryfield Lane	Medium	Medium	Moderate negative	Moderate positive	Moderate positive
06a – View north from Berryfield Lane	Medium	Medium-High	Moderate negative	Moderate positive	Moderate positive
06b – View north from houses on Berryfield Lane	Medium	Medium	Moderate negative	Moderate positive	Moderate positive
07 - View west along Berryfield Lane	Medium	Medium	Moderate negative	Moderate positive	Moderate positive
08 – View east along Berryfield Lane	Medium	High	Moderate negative	Moderate positive	Moderate positive
09 – Farm house to west of Fassaroe lands	Medium	Negligible	Imperceptible neutral	Imperceptible neutral	Imperceptible neutral
10 – Ballyman Road NW of main development area	Medium-High	None	No effect	No effect	No effect
11 – Ballyman Road north of the site	Medium-High	Low	Slight negative	Slight positive	Slight positive
12a, 12b, 13 – Ballyman Road north of the site	Medium-High	Medium	Moderate negative	Moderate positive	Moderate positive
14 - Dun Laoghaire Golf Course	Medium	Low-Medium	Slight-Moderate negative	Slight-Moderate neutral	Slight-Moderate neutral
15 - Killegar Road north west of Fassaroe	Medium	Low	Slight negative	Slight neutral	Slight neutral

Viewpoints	Viewpoint Sensitivity	Magnitude of Change	Significance & Quality of Visual Effects		
			Construction (Temporary)	Operation (Permanent)	Residual (Permanent)
16 - Parknasilloge Court west of Enniskerry	Medium	Negligible	Not Significant negative	Not Significant neutral	Not significant neutral
17 - Rocky Valley Drive	Medium	Low-Medium	Slight-Moderate negative	Slight-Moderate neutral	Slight-Moderate neutral
18 - Trail on northern slope of Great Sugarloaf	Medium-High	Negligible-Low	Not Significant negative	Not Significant neutral	Not significant neutral
19 - Trail near summit of Little Sugarloaf	Medium-High	Low-Medium	Slight-Moderate negative	Slight-Moderate positive	Slight-Moderate positive
20 – Bray Head	Medium-High	Low-Medium	Slight-Moderate negative	Slight-Moderate positive	Slight-Moderate positive
21 - Ardmore Wood estate	Medium	Medium-High	Moderate negative	Moderate positive	Moderate positive
22 - M11 road corridor	Low	Low	Not Significant neutral	Not Significant neutral	Not significant neutral

The key findings can be summarised as follows:

- Views from the Fassaroe access roads and Bray to the east of the site. The access road and roundabout to the east of the site form the main gateway to Fassaroe from the N11/M11 and Bray. The landscape in view from the roads (Viewpoints 1, 2, 3) was constructed specifically to facilitate the urban development of Fassaroe. Therefore the sensitivity can be considered low-medium despite there being limited development visible from the road currently. In views from the road the apartment buildings of Character Area 1 would be a prominent addition. Being of contemporary urban typology, scale and architecture, the building would announce the road's arrival in the new urban quarter. Design measures such as the vertical division of the facade into volumes of different materials, and its articulation by recessed balconies and large windows, are successful in reducing the perceptions of scale. Importantly, the scale of the building is commensurate with the width of the road corridor and the height of the enclosing embankments; the development can be comfortably accommodated in this landscape. The magnitude of change in these views would be high (the development being the first step in the area's urbanisation following the construction of the road itself). The significance of the visual effects would be moderate and positive.
- Views from Berryfield Lane. Berryfield Lane passes through the centre of the Fassaroe lands. The road users and the linear cluster of houses and business premises on the road are unavoidably exposed to the area's future development/urbanisation. Taking account of their position at the centre of the planned new urban quarter, the sensitivity of these viewpoints (nos. 4-8) can be considered medium. The viewers would experience change ranging from medium to high magnitude, with various elements of the development visible, including the apartments in Character Area 1 down the hill, the neighbourhood centre, the different lower density residential neighbourhoods (including houses fronting Berryfield Lane itself) and the District Park and Active Recreation Space. Berryfield Lane would effectively become incorporated in the new urban area. Two noteworthy aspects of the proposed views are the following: (1) the extent to which the proposal visibly responds to the topography of the area (in terms of building height and urban grain/layout), and (2) the diversity of character within the new urban quarter,

generating local identity and legibility. The significance of the visual effects would be moderate and positive.

- Views from Ballyman Road. Ballyman Road passes along the hillside north of Ballyman Glen to the north of Fassaroe. The western stretch of the road, closer to Enniskerry, would experience no change (due to the topography and vegetation along the road). The eastern stretch of the road, closer to Bray, is more exposed. The DLR CDP has an objective to 'preserve views' from the road. Viewpoints 11, 12a and b and 13 assess the effects on views from the road. Much of the proposed development would be visible, including the apartment buildings in Character Area 1, the neighbourhood centre, the lower density residential estates and the District Park which wraps around the northern edge of the development to form a green buffer to Ballyman Glen. The Fassaroe lands would thus be transformed from agricultural to urban, with the new urban area characterised by diversity of built form, a high proportion of green space and pronounced topography. The most valued elements in the existing views from Ballyman Road, i.e. the foreground fields, Ballyman Glen and the distant mountains, would be unaffected. The resulting composition would thus deliver the land use objectives for Fassaroe and also preserve the visual amenity experienced along Ballyman Road. The significance of the visual effects would be moderate and positive.
- Views from the uplands south and east of Fassaroe including the Sugarloaf, Little Sugarloaf and Bray Head. The hills/mountains to the south and east of Fassaroe are an important outdoor recreation amenity, affording views of high amenity value. Due to the elevation of the trails in these uplands the proposed development would be exposed to view – although it would be seen from some distance (several kilometres) and as part of a vast and diverse panorama. In these views (as in the views from Ballyman Road) the responsiveness of the development to the landscape context would be evident, as well as the new urban area's diversity. Also of note is the extent to which (a) the texture and colours of the buildings and (b) the extent of the open space and vegetation, would contribute to the development's integration into the wider landscape. The visual effects would range from not significant to slight-moderate, and would be neutral or positive.

In conclusion, none of the 22 no. viewpoints is predicted to experience a negative visual impact. The proposed development would achieve the land use zoning objective for the site, initiating the planned expansion of Bray into the Fassaroe area, and the proposal can be considered an exemplar of best practice in urban design.

Cumulative Impacts

There are no permitted developments in the vicinity of the site with which the proposed development would interact to cause landscape or visual impacts more significant (or otherwise different) to the effects identified above.

The proposed development would interact with future phases of development of the Fassaroe lands to cause more significant landscape and visual effects (due to the greater extent and diversity of the new urban area). This is intended (and prescribed in planning policy). It can be assumed that to successfully obtain planning permission the future phases will be of similar design and material quality to the proposed development, and therefore that the in-combination effects will also be generally positive or neutral.

11 ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE

The Cultural Heritage of the area of the proposed project was examined through an Archaeological, Architectural, and Historical study. The Archaeological and Architectural studies involved a documentary/cartographic search and focussed field inspection of the area, while the Historical study involved a documentary search.

The subject development is largely located within the townland of Fassaroe and civil parish of Kilmacanoge, with a small section within the townland of Monastery and civil parish of Powerscourt, all in the barony of Rathdown (half-barony of Rathdown, Co. Wicklow). The name Fassaroe may derive from the Irish *An Fásach Rua* – the ‘red wilderness’ or ‘red wasteland’, although the Irish form has not yet been validated by the Placenames Commission (www.logainm.ie), while the Irish form of the name ‘Monastery’ has yet to be verified. There are no significant historical events associated with the proposed development lands which have the ability to be impacted upon by the proposed development.

There are twelve previously recorded monuments, identified on the basis of the Paper Survey, located within the defined Cultural Heritage Study area of the application site and 300m surrounding. One of these, ecclesiastical remains, is located within the extent of the subject development lands and is a National Monument. This is located adjacent to the eastern distributor road (Fassaroe Avenue) to the subject development lands. It is positioned adjacent to an area where an existing section of the distributor road from the east has already been constructed. The lands immediately east, and adjacent to the monument, were previously subjected to a programme of archaeological testing and no subsurface features were encountered. Furthermore, archaeological monitoring of topsoil stripping within the field to the immediate east of the monument, undertaken in 2005, did not reveal any subsurface features of archaeological interest or potential. The only extant remains is a granite cross known as St. Vallery’s Cross.

The existing roundabout at the junction of Berryfield Lane and the existing constructed section of Fassaroe Avenue will be removed. This is located adjacent to the National Monument. However, given the nature of the works, as proposed, it is not considered likely that any direct impacts to the monument will occur.

None other of the monuments are within the site area. One set of ecclesiastical remains are positioned almost immediately outside the westernmost extent of the development lands, adjacent to the link road element already built connecting to Ballyman Road. A geophysical survey undertaken in the field containing the monument uncovered a probable monastic enclosure surrounding the partially extant/ruined remains of a later church. A subsequent programme of intrusive archaeological testing determined that this enclosure was formed by a ditch and no subsurface features of interest were uncovered outside the extent of the enclosure feature. The closest element of the proposed development (distributor road to Ballyman Road) to the outermost extent of the probable monastic enclosure is 70m; consequently, it is not considered likely that any direct impact on the monument will occur with respect to the present proposals.

In general, ground reductions associated with a development of this kind, in areas of previously generally undisturbed ground, have the ability to uncover and disturb hitherto unrecorded subsurface features, deposits, structures and finds of archaeological interest and potential. Without the adoption and implementation of a suitable mitigation strategy, any unknown subsurface archaeological features or artefacts that might be located within the site during the construction phase of the development might not be identified and recorded.

The following mitigation measures are suggested:

- Prior to the commencement of development, a suitably qualified and licence-eligible archaeologist should be appointed.
- A temporary safety barrier shall be erected, under supervision of the appointed archaeologist, around the National Monument on site in order to ensure that no accidental damage is caused to the monument during the works associated with the realignment of the adjacent road.
- A 10m wide buffer area should be established around the perimeter of the detected outer edge of the monastic enclosure adjacent to the western extent of the site.
- Prior to the commencement of development/site preparation works, the extent of the subject development should be subjected to archaeological investigations. Where considered feasible, an archaeological geophysical survey should be undertaken, followed by a programme of intrusive testing.

A report detailing the results of such investigations should be prepared for submission to the Local Authority and National Monuments Service, Department of Housing, Local Government and Heritage.

Given the distance between the proposed development and the other identified monuments in the vicinity, it is not considered likely that any visual impacts will occur to the settings of such following the construction of the subject development.

There are no protected structures, within the meaning of the Planning and Development Act, 2000, or NIAH-listed structures, situated within the boundaries of the proposed development lands.

There are three Protected Structures and three NIAH-listed structures located outside the subject proposed boundaries but within the defined study area.

Given the locations of these structures and the extents of their attendant grounds (curtilages), it is not considered likely that any direct impacts will occur during the construction phase of the development with respect to these structures of architectural heritage interest.

It is not considered that the cumulative effect of the proposed development will cause any increased impacts to identified sites of Cultural Heritage interest. This is due to the locations of such sites with respect to the subject development lands and the existing nature of such sites.

12 TRAFFIC AND TRANSPORTATION ASSESSMENT

This chapter details the Traffic and Transportation Assessment associated with the proposed Phase 1 mixed-use development at Fassaroe. The proposed mixed use development includes residential (650 No. Units), commercial, community and recreational uses. The zoned lands are located to the west of the N11/M11 and Bray. The lands will be developed in accordance with Bray & Environs Transport Strategy (BETS) (2019) to ensure that the phased delivery of the development will go hand in hand with the provision of transport infrastructure and public transport services that will be delivered by Wicklow County Council (WCC), the national Transport Authority (NTA) and the Applicant.

The transport planning aspects of the proposed site have been developed in close consultation between the Applicant, the Design Team and stakeholders including WCC, NTA, TII and ABP.

The development presents as a sustainable development from a transport perspective. The scheme is fully integrated in to the existing and planned walking, cycling, public transport, and road network in the surrounding area.

The existing and future environment is described in detail in the report. A significant number of transport infrastructure and transport services are planned in the area that will greatly enhance the sustainable travel characteristics of the site and when combined with the proposed measures that will be delivered by the applicant will mean that future residents will be able to avail of a wider range of sustainable travel options for work, education and leisure travel within, to and from the site. The development is therefore being appropriately planned in a coordinated manner between the NTA, TII, WCC and the Applicant as the sustainable expansion of Bray to the west.

Construction Impacts

The traffic that would be generated during construction of the development is predicted on the basis of an outline construction programme and activity schedule for the proposed development. There is anticipated to be two peak periods associated with construction traffic movements associated with the remediation of the park and the concrete pours for the Neighbourhood Centre and Apartment blocks. Given the location of the site to the N11/M11 it is anticipated that all construction traffic will approach and leave the site from the N11/M11 only. Therefore, the assessment of impact focuses on the Junction 6 Fassaroe interchange and the N11 corridor in the vicinity of Fassaroe.

It is demonstrated that the increase in traffic volumes is below 5% during the AM peak hour and PM peak hours of the adjacent strategic and local road network. Therefore, in accordance with TII guidance regarding thresholds it is considered that the construction impact will therefore be negligible and temporary in nature. Nevertheless, a range of mitigation measures are proposed as part of a Construction Traffic Management Plan which will be the responsibility of the Contractor to finalise and agree with the Planning Authority prior to commencing the works.

Operational Impacts

The operational impacts of the development were assessed for active travel, public transport and general traffic. The proposed development will bring about changes to the transport network for all modes. The development will result in improvements to the pedestrian and cyclist network both within the development and via external connections via a new pedestrian and cycle bridge over the N11 to La Vallee that will connect up with existing and planned scheme to provide onward connections to and from Bray. The development will therefore deliver significant permanent benefits impacts for active travel. The development will provide regular high capacity bus services that will provide connections to and from the development to a wide range of catchments within the Bray and Greater Dublin areas. Travelling to and from the site by means of public transport will therefore be a realistic option for all future users. These regular bus services will serve future residents and benefit other users along the proposed bus routes and will therefore have a positive permanent and beneficial impact on public transport bus services.

The traffic impact from the development on both the N11 mainline, Junction 6 Fassaroe and local road network at Ballyman Road was assessed. The Impacts are:

N11 Impacts – the analysis shows the impact of a Phase 1 development at Fassaroe of 650 units result in only marginal increases in average journey times on the N11/M11 mainline in the AM peak (northbound) and PM peak (southbound) versus the Do Minimum scenarios. In the +9 scenario the average journey times on the network only increase marginally in both the Phase 1 development of 650 units and future phases of development of up to 1,200 units versus the Do Minimum scenario. The analysis indicates that the impact is therefore considered to be negligible.

Junction 6 Impacts – the analysis shows that the retention of the current arrangement's at junction6 Fassaroe, priority roundabout, is the most appropriate arrangements for both the accommodation of the development and for minimising impacts on the N11. The Traffic Management measures Framework agreed with TII, NTA and WCC sets out a range of measures to ensure that the impact on Junction 6 and N11 mainline are negated.

Impact on Local Road Network - It is demonstrated that the increase in traffic volumes is below 5% during the AM peak hour and PM peak hours on the local road network. Therefore, in accordance with TII guidance regarding thresholds it is considered to be imperceptible / not significant on the local road network to the west.

Conclusion

In overall terms, Fassaroe Phase 1 development will be developed in the context of a holistic plan through an integrated land use and transport strategy based on delivering the regional and county spatial and land-use planning objectives in conjunction with a detailed transport strategy that is coordinated between the relevant agencies and authorities including the NTA, TII, WCC and Dun Laoghaire-Rathdown County Council (DLRCC). The development proposes to provide the necessary Phase1 transport infrastructure outlined in BETS that will ensure that sustainable transport infrastructure is in place to ensure sustainable travel patterns to and from the development. The analysis shows that the construction and operational impact of the development on the transport network will be modest and well within carrying capacity of existing and future infrastructure.

13 INTERACTIONS

An impact and mitigation measure from one environmental topic may indirectly cause a secondary impact on another topic. These indirect impacts and impact interactions are identified within individual chapter but the table below highlights the main areas of interrelated impacts.

	Population and Human Health	Traffic & Transportation (Material Assets)	Noise and Vibration	Air Quality and Climate	Soils, Geology and Hydrogeology	Water Services, Hydrology, and Flood Risk	Biodiversity	Landscape and Visual Impact	Cultural Heritage
Population and Human Health		X	X	X	X			X	
Traffic & Transportation (Material Assets)			X	X					
Noise and Vibration									
Air Quality and Climate									
Soils, Geology and Hydrogeology						X	X		
Water Services, Hydrology, and Flood Risk							X		
Biodiversity									
Landscape and Visual Impact									
Cultural Heritage									