

Coastal Quarter SHD 2

Environmental Impact Assessment Report -
Volume 1 Non-Technical Summary

Shankill Property Investments Limited

Sept. 22



Notice

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Client signoff

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1. Introduction & Methodology

Shankill Property Investments Limited are applying to An Bord Pleanála (ABP) for permission for a Strategic Housing Development consisting of 586 no. residential units in a mix of apartments, duplexes and houses on a ca. 8.81 hectare (ha) site. In addition, a childcare facility, café, retail unit and 1 no. mixed use commercial unit (incorporating a gym and a juice bar) are proposed along with all associated and ancillary development and infrastructural works, hard and soft landscaping, open spaces, boundary treatment works, ancillary car and bicycle parking spaces at surface, undercroft and basement levels. The proposed houses and duplexes range in height from 2 – 3 storeys with the proposed 4 no. apartment blocks ranging in height from 3 – 12 storeys. Block A will accommodate 162 no. Build-to-Rent (BTR) units. It is proposed that 274 no. units will be located within the administrative area of Dún Laoghaire-Rathdown County Council and 312 no. units will be located within the administrative area of Wicklow County Council. The childcare facility, retail, café and commercial unit will all be located in the administrative area of Wicklow County Council.

Planning permission was granted on part of the subject site for 234 no. residential units, a childcare facility, café and retail unit subject to compliance with the terms of conditions attached to reference ABP-311181-21. The proposed Coastal Quarter development SHD 2 includes development as permitted under ABP-311181-21 together with minor revisions chiefly addressing conditions and new proposals for Blocks A and B which were previously refused. An EIAR was prepared by Atkins (2021) as part of the previous planning application (ABP-311181-21).

The Harbour Point Masterplan sets the context for the proposed SHD. The subject lands (outlined in red on Dwg. BRA-GHA-SW-XX-DR-A-05001) are part of a larger landholding (outlined in blue) in ownership of the applicant. The overall Harbour Point development site of ca. 19 hectares comprises the former Bray Golf Club lands. Given the size and strategic location of the site, the applicant appointed Glenn Howell Architects (GHA) to prepare a masterplan to guide the development of the entire land holding. The Harbour Point Masterplan is grounded in national, regional and local planning policy and guidelines as well as best practice in urban design. It provides the overarching development framework for the lands and sets out the design principles that will govern this planning application and all future applications on the overall landholding. The masterplan is included as part of this application.

The proposed Coastal Quarter lands are the subject of this Strategic Housing Development (SHD 2) application to ABP and are hereafter also referred to as ‘the Site’, or the ‘proposed development’.

The Site location, and proposed layout plan are presented in Figure 1 and Figure 2 respectively. A copy of all planning and engineering drawings submitted in support of this planning application is presented in Appendix 1.1 of Volume 3.

This non-technical summary presents a general overview of the proposed residential SHD 2 development and an assessment of all associated potential environmental impacts. Refer also to the main Environmental Impact Assessment Report (EIAR) submitted as part of this planning application. The EIAR is presented in three volumes as follows;

Volume 1 - Non-Technical Summary;

Volume 2 - EIAR; and

Volume 3 - EIAR Appendix 1 to Appendix 14.

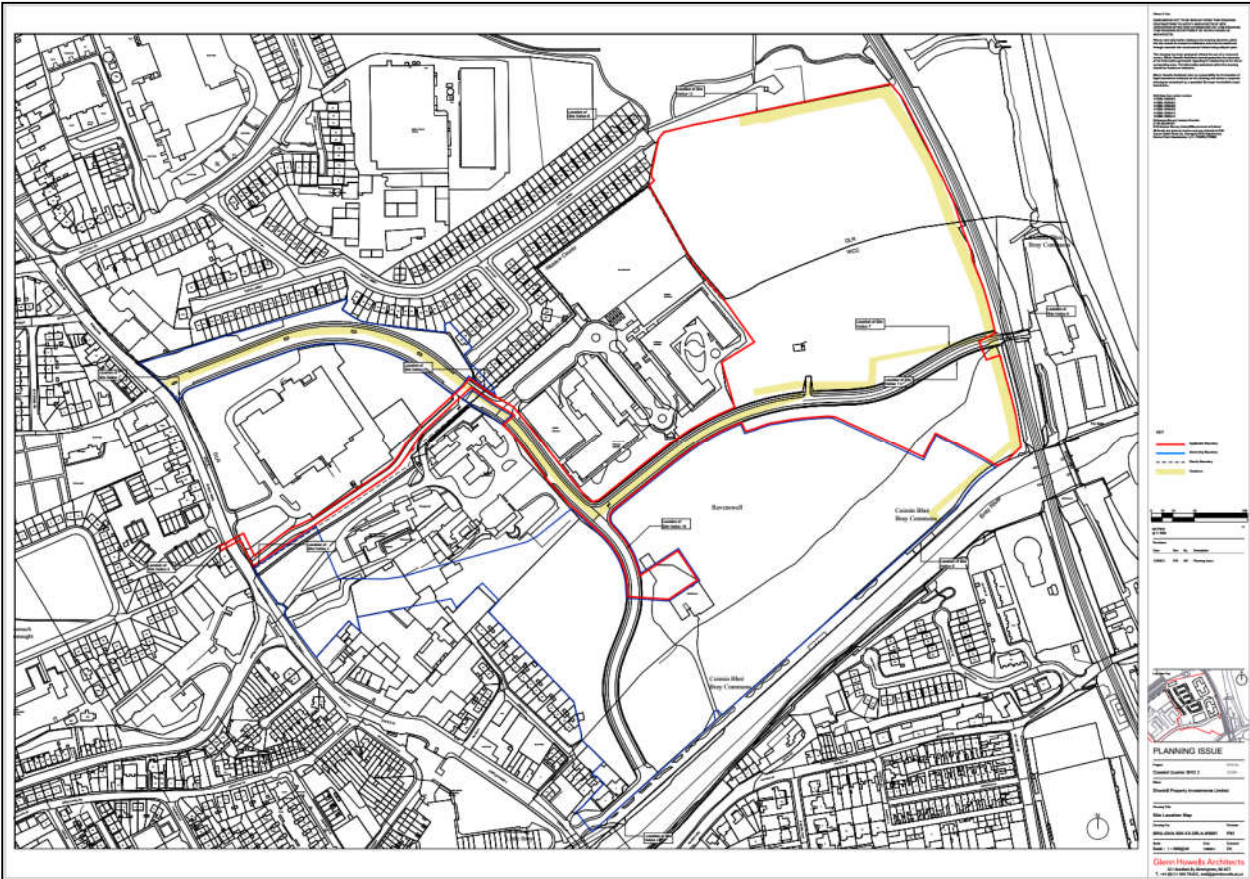


Figure 1 - Site Location



Figure 2 - Site Layout Plan

The Planning and Development (Strategic Housing Development) Regulations (S.I. No. 271/2017) came into effect in July 2017 pursuant to sections 4,5,7,8,9 and 12 of the Planning and Development (Housing and Residential Tenancies) Act 2016 (No. 17 of 2016). These regulations form part of the Planning and Development Regulations 2001 to 2022, as amended. A Strategic Housing Development (SHD) is defined under Section 3 of the Planning and Development (Housing and Residential Tenancies Act 2016 as follows;

- a. the development of 100 or more houses on land zoned for residential use or for a mixture of residential and other uses;
- b. the development of student accommodation units which, when combined, contain 200 or more bed spaces, on land the zoning of which facilitates the provision of student accommodation or a mixture of student accommodation and other uses thereon;
- c. development that includes developments of the type referred to in paragraph (a) and of the type referred to in paragraph (b), or containing a mix of houses and student accommodation; or,
- d. the alteration of an existing planning permission granted under section 34 (other than under subsection (3A)) where the proposed alteration relates to development specified in paragraph (a), (b), or (c).

Each of which may include other uses on the land, the zoning of which facilitates such use, but only if—

(i) the cumulative gross floor area of the houses or student accommodation units, or both, as the case may be, comprises not less than 85 per cent, or such other percentage as may be prescribed, of the gross floor space of the proposed development or the number of houses or proposed bed spaces within student accommodation to which the proposed alteration of a planning permission so granted relates, and

(ii) the other uses cumulatively do not exceed—15 square metres gross floor space for each house or 7.5 square metres gross floor space for each bed space in student accommodation, or both, as the case may be, in the proposed development or to which the proposed alteration of a planning permission so granted relates, subject to a maximum of 4,500 square metres gross floor space for such other uses in any development’.

Accordingly, this development is the subject of an SHD planning application to ABP, under Planning and Development (Strategic Housing Development) Regulations S.I. No. 271/2017.

The proposed development has been screened against the types of development, various processes and activities listed in Schedule 5 Part 2 of the Planning and Development Regulations as amended 2001-2022, including S.I. No. 296 of 2018 – European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 which came into operation on 1st September 2018.

In accordance with Section 10(b) an Environmental Impact Assessment Report (EIAR) would be required if the proposed infrastructure consists of the development of more than 500 dwelling units or has an area of more than 20 hectares. The proposed development comprises 586no. residential units, hence exceeds this relevant threshold and thus a mandatory EIAR is required.

This EIAR has been prepared in accordance with Planning and Development Regulations as amended 2001-2022, and with due regard to the following EIAR guidance;

‘Guidelines on the information to be contained in Environmental Impact Assessment Reports’ published in 2022 (EPA, 2022);

Environmental Impact Assessment of Projects Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU); and,

Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU), published by the European Commission.’

Cognisance has also been taken of the ‘*Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*’ published by the Department of Housing, Planning and Local Government (DoHPLG) in August 2018.

Additionally, discipline specific best practice guidance has been consulted by each specialist for each of the relevant topics (Population & Human Health; Biodiversity; Landscape and Visual; Air Quality & Climate; Noise & Vibration; Traffic; Land, Soils & Geology; Water; Cultural Heritage; and, Material Assets) during the preparation of the EIAR.

For the purposes of this EIAR (Atkins, 2022), the proposed development includes development as permitted under ABP-311181-21 together with minor revisions chiefly addressing conditions and new proposals for Blocks A and B which were previously refused. Supplementary surveys have been carried out by relevant subject matter experts as required.

As part of the EIAR process, an environmental scoping exercise was carried out. The purpose of the exercise was to define the exact scope of the EIAR. It was concluded that the proposed residential development is not expected to result in significant impacts in terms of radiation. Therefore, this topic was not considered further within this EIAR. The following environmental topics have been fully assessed within the EIAR document;

- Chapter 3 Population and Human Health;
- Chapter 4 Biodiversity;
- Chapter 5 Landscape & Visual;
- Chapter 6 Air Quality & Climate;
- Chapter 7 Noise & Vibration
- Chapter 8 Traffic;
- Chapter 9 Land, Soils & Geology;
- Chapter 10 Water;
- Chapter 11 Cultural Heritage; and,
- Chapter 12 Material Assets

The EIAR has been prepared by competent experts. Consultation was undertaken with statutory organisations at various stages of the pre-planning process and subsequently informed the preparation of this EIAR document. All comments and feedback received from the environmental consultees are addressed in full within the EIAR.

Interactions between impacts on various environmental factors have also been addressed within the EIAR (refer to Chapter 14, Volume 2 – EIAR). All mitigation and monitoring commitments detailed within the EIAR have been included in a separate compendium ‘a schedule of environmental commitments’ presented within the EIAR (refer to Chapter 15, Volume 2 – EIAR).

2. Project Description

Details of Proposed Development

The purpose of this application is to seek permission for a SHD in the Town of Bray. The proposed Coastal Quarter SHD 2 development comprises 586no. residential units in a mix of apartments, duplexes and houses on an 8.812ha parcel of land within the former Golf Course lands to the north of Bray Town Centre. In addition, a childcare facility, café, retail unit and 1no. mixed use commercial unit (incorporating a gym and a juice bar) are proposed along with all associated and ancillary development and infrastructural works, hard and soft landscaping, open spaces, boundary treatment works, ancillary car and bicycle parking spaces at surface and undercroft levels and all associated ancillary works. The proposed maximum height of the apartment blocks will be ca. 12no. floors. The Site of the proposed development is presented in Figure 1.

The proposed residential units are arranged in a series of character areas that respond to the zoned open space and the existing landscape character of the lands. Views within and from the development are framed by legible links that supervise the space and connect to the existing landscape structure. A developable area of 7.28ha results from the deduction of the ca. 0.56ha zoned open space from the gross site area; and residential densities of 80 units per hectare are achieved through the use of a variety of housing typologies including apartments, duplex, terraced, semi-detached and detached dwellings, as shown in Figure 3. A full set of all planning and engineering drawings are presented in Appendix 1.1, Volume 3 of the EIAR.



Figure 3 - Proposed Site Layout (also showing housing mix and typologies)

The layout proposes 9no. character areas, each responding to specific landscape, topographical and boundary considerations, as summarised below and presented in Figure 4.

2. **Underpass Entrance Node** - The Entrance Node marks an important arrival point in to the development for non-car users and provides an opportunity to develop a key piece of well used public realm that ties together the Market Square, the Coastal Gardens and pedestrian/cycle routes to Bray town centre.
3. **Market Square** - The Market Square defines another key entrance and gateway to the development. The design of the area has developed as a mix of hard and soft landscape treatments to create a series of useable spaces.

4. **Nuns Walk** - The 'Nun's Walk' will be defined by engraved paving slabs laid through the public open space area located between apartment blocks A and B to echo the alignment of this linear earthwork along with the alignment of the boundary between Dublin and Wicklow. This feature will run through the paved area that also provides drop off access to the entrance of Block A.
5. **Coastal Gardens** - The Coastal Gardens will create a meandering footpath/cycle link along the eastern boundary that also enables emergency vehicle access to the eastern elevations of Blocks A and B. This pathway has been increased to 3m overall width as required by condition 4F of the current planning approval.
6. **The Orchard** - The Orchard has been developed as the scheme's 'Mobility Hub' and marks a key entrance to the development, designed to bring an aesthetic and usable space to what is currently a below ground waste water pumping station. This significant piece of infrastructure cannot be relocated and therefore the design intent of the scheme is to create a strong frontage on the approach to the development which helps screen the infrastructure and creates a secure location for a mobility hub containing a range of transport options to reduce reliance on private car use.
7. **Green Spine** - The Green Spine provides pedestrian connections through the heart of the scheme to link with Corke Abbey Valley Park and The Nun's Walk. The Spine will benefit from quality paving finishes and extensive SuDs areas to assist attenuation while providing biodiversity interest.
8. **Woodland Settings** - The Woodland Setting area extends across the northern boundary of the site and will help to integrate Block D in to the landscape and with the adjacent existing residential development. This character area will act as a transition from the proposed development to the surrounding existing residential development and will benefit from access routes to the adjacent Corke Abbey Valley Park.
9. **Home Zones** - Home Zones are an urban design led concept for residential developments, where streets are intended for a range of activities and are primarily places for people, not places for vehicles. The aim is to improve the quality of life for residents, and this takes priority over ease of traffic movement. Streets in Home Zones will include seating, shared surfaces, parking spaces and areas of planting as well as indirect traffic routes.
10. **Communal Gardens** - Apartment Blocks A, B and C will avail of central courtyard communal open space areas at podium level above the under-croft car parks. These podium gardens will provide amenity space for residents and will include seating and play/exercise features to facilitate active and passive recreation and comply with the relevant requirements of the apartment design guidelines.

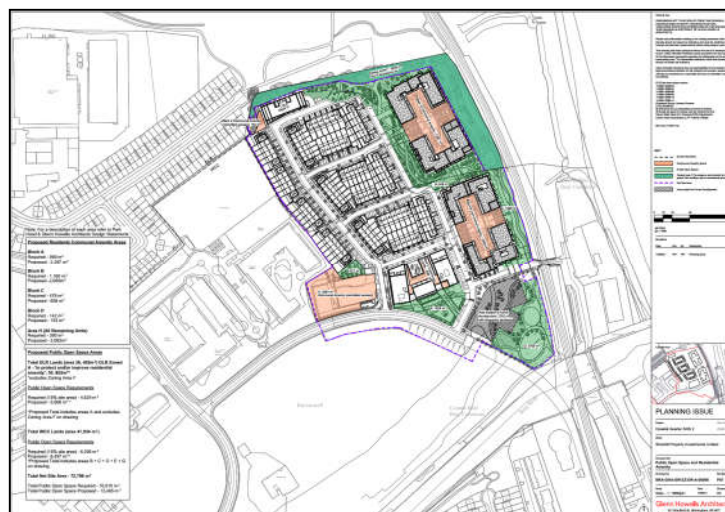


Figure 4 - Proposed Character Areas

Figure 5 – Zoned Open Space

The landscape design responds to the presence of the existing coastal gardens linear park located between the Site and the railway line to the east and the Corke Abbey Valley Park to the north of the Site. The layout recognises these areas as the primary cyclist and pedestrian connections to the development Site. In addition to these existing areas, the design provides for the Coastal Gardens, a Green Spine and the Orchard area, with semi-private communal gardens in the podium gardens for apartment blocks, along with a small communal roof terrace on Block C. Further details are provided in Chapter 5 – Landscape and Visual.

The landscape and engineering design of this development incorporates SuDS measures including modular permeable paving, swales, tree pits and underground storage capacity. Trees and other planting have been incorporated within the design so as to create an attractive streetscape.

It is proposed that the construction of the residential development will be delivered in 3no. Phases (48 months) as illustrated in Figure 6. It must be noted however that this phasing plan is preliminary and may be subject to revision at a later stage of the development.

Construction is scheduled to commence during Q4 '22, under planning permission which was granted on part of the subject site for 234 no. residential units, a childcare facility, café and retail unit (subject to compliance with the terms of conditions attached to reference ABP-311181-21). The first development phase, which is expected to be constructed between Q4 '22 and Q3 '24, will be developed in the south western corner of the Site and will be accessed through the existing access road to the school development.

Following the construction of Phase 1, this access route will become operational for the residents of the units developed during this phase and will also be used by construction traffic for the construction of Phase 2 which is located in the north western corner of the Site and is expected to be constructed between Q4 '23 and Q1 '26. Phase 3 will be developed in the eastern portion of the Site and will be accessed from the existing access route. It is anticipated that this phase will be constructed between Q3 '23 and Q4 '26.

3no. pedestrian / cyclist access points are proposed during the construction phase, as presented in Figure 6 below; 2no. points in the south (1no. in south west and 1no. in south east) and 1no. in the north. The proposed construction period will last 48 months.

Access from the north (Corke Abbey Valley Park) to the underpass and Ravenswell Schools complex, and from the underpass to the Ravenswell schools complex will be maintained at all times throughout the construction process. Details are set out in the Construction Management Plan.

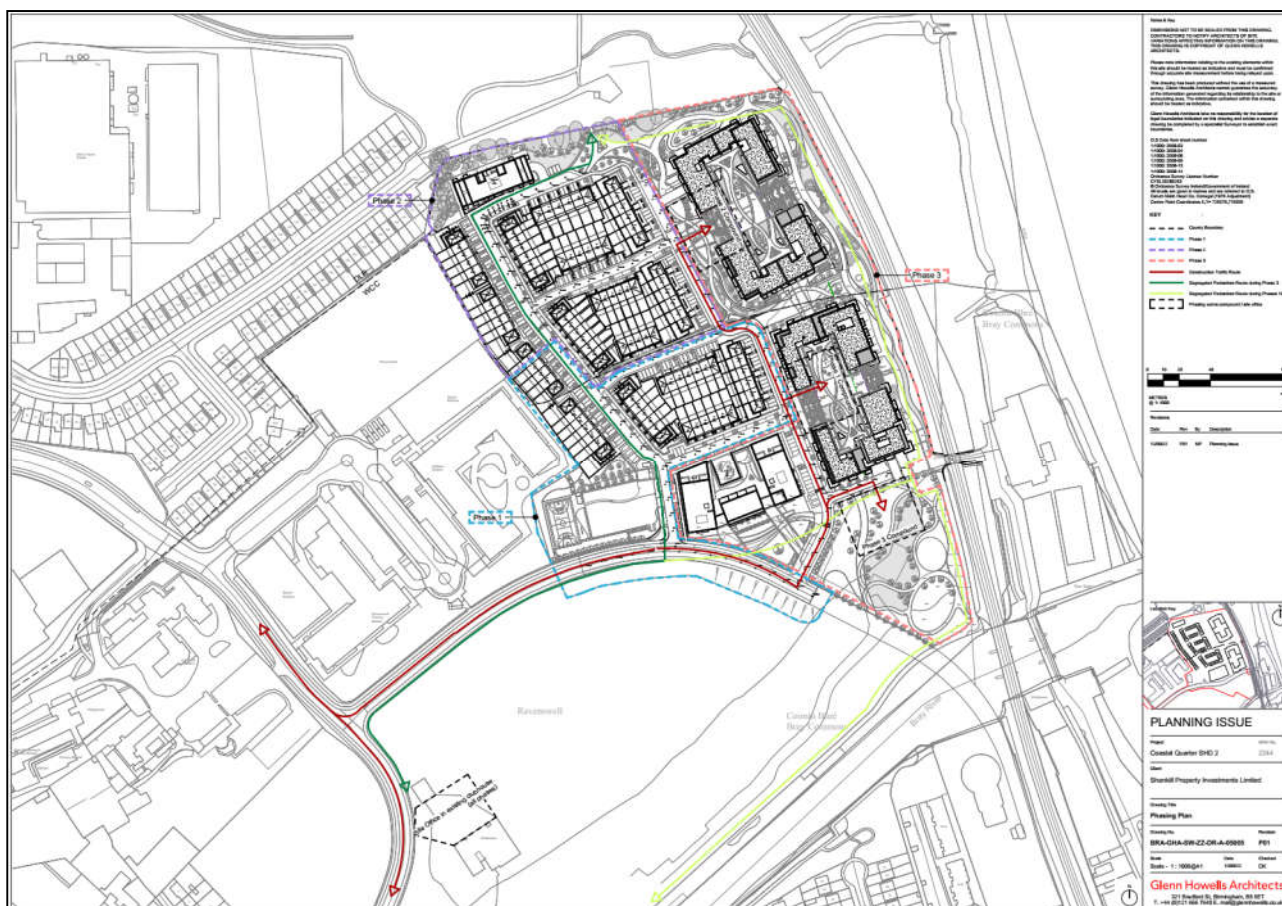


Figure 6 - Preliminary Phasing of the development

Stormwater run-off will be collected from the roofs, pavements and other impermeable surfaces i.e. open space via a standard manhole and underground pipework system which will be primarily laid along the internal road network. SuDS have been incorporated into the drainage design to reduce run-off rates and to improve run-off quality. The SuDS design will include for permeable paving, swales, filter drains, green roofs and tree pits as well as 2no. onsite attenuation systems (tanks). The rate of flow will be controlled by the installation of a flow control device fitted to the discharge pipe from the attenuation systems. A Stormtech attenuation system

will be located within the park/open space area within the centre of the site and a sealed underground concrete tank located in the landscaped area within the south eastern corner of the site.

Proposed foul drainage services (maximum 225mm diameter pipeline) will be provided; all wastewater will discharge via gravity to the proposed Ravenswell section of the Irish Water Local Network Reinforcement Project. Irish water has confirmed that the existing foul network has sufficient capacity to meet the combined wastewater discharge volumes of ca. 264,470 l/d from the proposed development, once operational. A full set of all proposed drainage design drawings are presented in Appendix 12.2 of this EIAR. Refer also to the Engineering Planning Report prepared by Atkins (2022) submitted as part of this planning application. All foul drainage related works will be carried out in consultation with Irish Water and in accordance with all relevant Irish Water guidelines and any site-specific additional requirements. A full set of all planning and engineering drawings are presented in Appendix 1.1 of Volume 3 of the EIAR.

Description of the Baseline Scenario

The Site is located immediately North of Bray Town Centre, approximately five minutes walk from the train station. Road access to the nearby M11 is via Dublin Road at the Bray North Motorway exit. The lands have previously been isolated from the harbour area and the Dart Station. A route through the town centre was the only link until the development of the Ravenswell schools campus opened up the area and facilitated access to the road underpass. The Dart station is only a few minutes walk from the site and bus routes to Dublin are available on the adjoining Dublin Road. The proposal has been developed to facilitate a future Luas / Public Transport corridor through the Site.

The Site is located behind the seafront and harbour adjacent the southern edge of the Woodbrook Golf Club. The variety of views in and around the lands emphasise the unique quality of the site and its setting. Regionally the town of Bray is almost surrounded by hills and mountains that are in the middle distance to the south and stretch into the horizon to the west. The topography on the site combined with the views and vistas of the surrounding landscape, the sea and Bray Town will provide a rich variety of visual experience at ground level as well as the residents in apartments at higher levels.

The need for the project is discussed in detail within the accompanying Planning Report.

Consideration of Reasonable Alternatives

Potential alternatives to the proposed development have been considered at length within this submission and are summarised below.

Option 1 (2021)

- Early options placed a series of apartment mansion blocks along the coast in order to establish acceptable levels of density for a site on the edge of Bray town centre.
- These apartment buildings are distanced from the eastern boundary to account for the various services along this boundary.
- A larger apartment building lined the southern boundary of the Coastal Quarter, its alignment guided by existing services at that location.
- A series of houses were set out across the remainder of the site with their orientation guided by the county boundary line that runs west to east across the Quarter.
- The apartment buildings to the eastern boundary of the site provide shelter to the housing at this exposed coastal location.

Option 2 (2021)

- The apartment buildings to the east are now grouped together and defining the eastern ends of blocks.
- In order to accommodate parking the communal spaces for apartments were raised up onto podiums with parking below.
- A clear vista out to sea along the County Boundary Line is provided between the apartment buildings facing east.
- In earlier options roads were long and straight and not DMURS compliant.
- An exclusion zone around the Irish Water Tank and the associated odour control unit was introduced.

- The services along the southern boundary of the site were diverted to allow for the change in shape of Block C and the creation of a public space close to the existing underpass under the railway line.
- A series of apartment buildings were placed along the northern boundary to overlook the existing park at that location.

Option 3 (2021)

- Block D was consolidated to make it more efficient and to avoid infringing the complex geometry of the zoning line at the northern end of the quarter.
- The apartment buildings to the south east of the site are pulled further away from the site boundary to facilitate a route for the fire brigade along building elevations. The creation of public open space along the eastern boundary of Block B also contributed to the Wicklow County Council requirement for a two hectare quantum of open space for all parts of the overall Harbour Point Masterplan lands within Wicklow.
- Two community streets (home zones) were introduced into the scheme.
- In order to minimise traffic through the proposed Market Square the principle route into the Coastal Quarter became the road between Block C & the Irish Water Tank, as this was the first road that would be encountered by traffic approaching the scheme the design emphasised this as the principal entry point.
- A large quantum of public open space was also required in DLRCC lands within the quarter, this open space could not use the Zone F lands. A large green space was introduced between block A and the adjacent housing.
- Block A and B became rectangular blocks with apartments on three sides and triplex apartments on their western elevation. Large podiums allowed for significant quantum of car parking to be located off the streets.

Current (2022) Planning Application

Finger Block Option

- This option consisted of four narrow finger blocks, perpendicular to the coastline. Parking and service areas were contained within two blocks at ground level with podium above. The finger blocks were raised above podium level and equally spaced from North to South along the Eastern boundary of the site.
- This approach resulted in a more open grain in this part of the site, providing better visual connections across the site from West to East and vice versa.
- The openness of the blocks also allowed the landscaping to connect across the podium from the coastal gardens to the green spine to the West.
- The finger blocks were very efficient in layout, as well as providing a good number of dual aspect apartments, which maximised sea views.
- Each of the finger blocks had a number of set back levels as the buildings increased in height. They were taller to the East, as they faced the sea, reducing in height to the West, in order to have a better relationship to the smaller houses and duplex units.
- The buildings also increased in height from ground + eight storeys at the northern end of the site, to a ground + 16 storey tower at the southern end, which formed a focal point for the site.

Zig-Zag Option

- This consisted of two blocks (A and B) in a zig-zag arrangement.
- While this option maximised views of the sea from the apartments, it had the effect of severing the permitted elements of the scheme from the sea by effectively creating a wall between these elements and the sea.
- The 'zig-zag' pattern was also difficult to reconcile with the orthogonal layout in the consented elements of the Coastal Quarter scheme and with the general established urban form of Bray analysed in the Masterplan.

Current Proposal - Two Block option

- It was felt that there was merit in lower courtyard buildings that offered an edge to the coastal gardens and some enclosure to the green spine to the west. This option sought to directly address the issues with the previous application.

- In this option the buildings have been expressed as 4 distinct blocks, paired to share a ground floor and podium level.
- Like in the finger blocks, the landscaping is continued across the podium level, to link the coastal gardens on the east with the green spine to the west, creating a better sense of openness and connectivity.
- The buildings are not linked above ground floor level, which improves the visual connections across the site.
- The distance between each of the buildings and also across the public space at the county boundary, has been increased and each of these openings aligns with the home zone streets to the West, which helps to create a better sense of connectivity and integrates the proposal within the overall masterplan.
- The two Southern most buildings have been set back a further distance from the train line and under pass, to provide a more generous dimension to the coastal gardens in this location and a better sense of place to the public space at the underpass, which is an important point of connection between the development and the continuing link to the seafront further South.
- The buildings have a number of set back levels on the upper floors, that moderate the blocks and relate them to the heights of neighbouring buildings. To the North of the site the buildings step down to three storeys above ground floor, to address the height of the three story duplex buildings opposite. The buildings step in height from West to East, where they are taller on the side facing the coastal gardens and the sea.
- The stepped roofline is also continued from North to South, where set backs and changes in levels are used to create a variation in the roofline which is visible in the more historic buildings and streetscapes along the seafront in Bray.
- In order to avoid monotony or a sense of monolithic form, the four buildings are given distinct architectural character. Different in their form and massing, each building is also distinct in terms of colour, fenestration and detail, with high quality balconies proposed throughout.
- The buildings are to be constructed in brick, with details such as cills and copings designed to be robust, taking care over how these more exposed sea facing buildings, will weather and stand the test of time.

Consideration of Cumulative Effects with other Projects

Consideration of cumulative effects with other projects was undertaken. All relevant developments in the immediate environs of the proposed residential development, which have been approved (or are pending a decision) but are not yet built or operational, along with any relevant schemes/ plans, have been reviewed in terms of potential cumulative environmental impacts that may arise with the proposed residential development.

Cumulative impacts were identified by each specialist within individual impact assessment chapters (refer to Chapter 13 of Volume 2 - EIAR) and considered further as part of the EIAR. No significant cumulative impacts arising from the proposed development are anticipated.

Risk of Major Accidents and/or Disasters

The potential risk posed by a major accident and/or disaster has been considered. Based on the low vulnerability of the proposal to such risk, and the unlikely potential occurrence of such an incident, the overall risk is considered to be low.

Climate Change

Drainage infrastructure beneath the proposed development and associated attenuation areas have been designed to take account of potential changes in rainfall run-off rates associated with climate change (i.e. 1 in 100-year 6-hour storm event including 20% for climate change and 10% for urban creep).

The Finished Floor Levels (FFL) of the proposed units within the Coastal Quarter development have been set at a minimum level of 6.10mOD. A freeboard of 2.131m above the peak 0.1% AEP flood level has been provided which is significantly higher than the minimum freeboard requirement of 500mm. The level of flood protection also provided by the recently constructed River Dargle Flood Defence Scheme mitigates the level of flood risk to people, property and the urban environment (Atkins, 2022). Therefore all habitable dwellings together with the proposed crèche will be protected from flood risk in both the current climate and future climate scenarios. Accordingly, the potential impact of climate change on the proposed development with regards to drainage design is imperceptible.

Traffic related air emissions have the potential to impact air quality. However, based on the scale and short-term nature of the construction works and the intermittent use of equipment, the potential impact on climate change and transboundary pollution from the proposed development is considered direct, negative, long-term and imperceptible in relation to Ireland's obligations under the EU 2030 target.

3. Population and Human Health

The impact of the proposed residential development on the broader human environment has been assessed for both the construction and operational phases. The proposed development will not have a significant adverse effect on any of the adjoining land uses or properties. Commercial / retail activities in the vicinity of the development, specifically the town of Bray will not be impacted by traffic associated with the proposed development. The development will not impact adversely on existing recreational and educational activities in the immediate vicinity of the existing site; access to Ravenswell Primary School and Coláiste Ráithín will not be impacted by the proposed development.

A Stage 1 Human Health screening assessment has been undertaken, in accordance with relevant UK guidance (UK DH, 2010) based on five key screening criteria. The construction and operation of the proposed residential development will not negatively impact on mental health and wellbeing, will not negatively impact on social, economic and environmental living conditions that would indirectly affect health, will not affect an individual's ability to improve their own health and wellbeing, will not result in a change in demand for or access to health and social care services, and will not have an impact on global health.

Potential direct impacts on human health have also been considered with the following plausible impacts to human health identified;

- Potential risk to receptors (i.e. construction workers, onsite and offsite residents, and existing school users) through inhalation of dust emissions;
- Potential risk to receptors (i.e. construction workers) through direct contact, ingestion or inhalation with any soils which may potentially contain low level hydrocarbon concentrations from Site activities (potential minor leaks and spills of fuels, oils and paint);
- Potential risk to i.e. construction workers, onsite and offsite residents, and existing school users) through noise emissions; and,
- Potential risk to receptors (i.e. new residents) through ingestion of naturally occurring barium in soils in two localised hotspots in the vicinity of the proposed housing / duplex units.

However a range of mitigation measures will be implemented during the construction and operational phases of the proposed development (refer to Chapter 3 of Volume 2 – EIAR); therefore no residual human health impacts are likely to occur.

The overall impact on population and human health will be positive (ranging from slight to moderate) and permanent, as the proposed development will provide employment and will also benefit the local economy through spin-off activities and will provide high-quality housing at a sustainable level to the local community. The provision of onsite facilities, including pedestrian and cyclist facilities, high-quality amenity open space and child care facilities via a crèche, will also result in a positive contribution to the mental health and wellbeing of the residents and local amenity users.

In relation to Population and Human Health, the proposed residential development will not result in any direct or indirect significant adverse impacts, during the construction or operational phases.

4. Biodiversity

Introduction

This biodiversity chapter identifies, quantifies and evaluates potential effects of the proposed residential development project on protected sites, habitats, species and ecosystems. It considers impacts to ecological receptors and proposes mitigation and enhancement measures to offset or reduce the identified impacts. A Natura Impact Statement has also been prepared for the proposed project and accompanies this application.

Methodology

A desk study was carried out to collate the available existing ecological information on the development site. Field surveys included consideration of semi-natural habitats, terrestrial mammals, birds and bats. Lands located within the proposed site boundary and immediately adjacent to the proposed site were surveyed.

Survey Results

There are no habitats within the development site of greater than local value. No ecological features of regional, national or European importance will be impacted by the proposed development. This site comprises semi-natural habitats including; Mixed broadleaved and conifer woodland (WD2); Scattered Trees and Parkland (WD5); Treelines (WL2), Hedgerows (WL2), Recolonising Bare Ground (ED3) and predominantly Amenity Grassland (GA2). There are no watercourses or surface water features within the development site, however, the site borders the River Dargle in one (small) area at the southern extents of the development site. Part of the development site has been previously cleared of vegetation during works associated with construction of the River Dargle flood defences. Bat activity was high-medium, and activity was mainly concentrated along boundary treelines. Overall, the proposed development site is considered to be of high suitability for foraging and commuting bats due to the presence of connectivity to other suitable habitats in the wider landscape. However, the proposed site is considered to be of low-medium suitability for roosting bats due to the low number of suitable roosting features in trees. The development site is utilised by foraging badgers and foxes. Whilst no badger setts were found within the development site, there is a known breeding badger sett located in lands to the north (outside) of the development site. The site is within the territorial range of the sett and evidence of badger activity was found within the development site extents. No invasive plant species were recorded within the site extents.

Potential impacts

Potential impacts on the ecological receptors within the zone of influence of the proposed 'Coastal Quarter' development during the construction and operation phases have been assessed. Potential impact through the construction and operation of the development include; Physical Damage / Habitat Loss; Disturbance to fauna and Changes in Water Quality.

Due to the location, nature, extent and duration of the proposed works at the development site and with the inclusion of mitigation measures, the project will not have an impact on any European site / Natura 2000 site. Similarly, the proposed project will not have an affect any nationally designated conservation areas such as National Heritage Areas / proposed National Heritage Areas. The development will result in a permanent loss in habitats ranging in value from negligible ecological value (e.g. amenity grassland) to local importance (higher value) (e.g. Woodland (WD2)). There are no habitats on site of greater than local value. No ecological features of regional, national or European importance will be directly impacted by the proposed development. Semi natural habitat of similar ecological value will be replaced as part of the landscape strategy and thus the habitat loss impact will be temporary.

Indirect habitat loss/damage via. proximity of construction works will be mitigated to an imperceptible level. Habitat/species loss/damage via spread of invasive species can be avoided with the inclusion of biosecurity measures and the impact of invasive species of local biodiversity will be imperceptible.

Loss of trees and grassland during construction will impact on commuting and foraging bats and may reduce the available insect prey species and also reduce the feeding area available for bats in some locations. In the absence of mitigation, it is considered that the removal of foraging and commuting habitat would be a long-term significant adverse impact at the local geographic scale. Temporary lighting required during the construction phase may cause disturbance to bats commuting through or feeding at the proposed site. In the absence of mitigation, disturbance of bats due to construction phase lighting would have short-term significant adverse impact at the local geographic scale.

During the construction phase there will be a loss of grassland and woodland areas which will lead to a reduction in foraging habitat for larger mammals. The construction phase may also temporarily disrupt foraging

habits and commuting routes. In the absence of mitigation, it is considered that the removal of foraging and commuting habitat would be a long-term significant adverse impact on badgers at the local geographic scale. No significant impacts on foxes, otters or any other large mammals are expected as a result of the proposed development.

There will be a net loss of semi-natural habitats within the proposed development area (grassland, trees, woodlands) and the loss of woodland in particular will have a localised effect on nesting and feeding resources for local passerine species. Waterbirds were not recorded within the Site during 2020 surveys. There is no evidence of the project site being used by field feeding waterbird species. The site is prone to high levels of disturbance from walkers and dogs and given the current high public usage of the development site, it is considered not to be of prime value as a roosting or feeding area for waterbirds associated with the neighbouring coastal waters and no adverse impacts to waterbirds or wildfowl are anticipated. In the absence of mitigation, the loss of habitat for breeding birds within the development site is considered a permanent slight negative effect on bird species at a local geographic scale.

As part of this assessment the potential pollution pathways were identified for the development including; surface-water run-off during construction; via groundwater during construction (hydrogeological pathway); environment via surface-water run-off (operational phase) and via discharge of treated foul effluent (operational phase). The proposed project has the potential to impact on a local surface waterbody; River Dargle through the release sediment and contaminants from the construction and operational phases. Given the lack of waterbodies onsite and provision of Sustainable Drainage Systems as well as measures incorporated into the projects Construction Environmental Management Plan and design elements (operational foul to be treated appropriately) the River Dargle will not experience a reduction in water quality as a result of proposed development.

Mitigation and enhancement measures

The incorporation of an ecological buffer zone along the northern and eastern boundaries of the development site, including additional hedgerow planting, woodland planting and wildflower planting is a significant part of the design which has been developed in order to minimise disturbance and loss of foraging and commuting habitat for local bat, badger and bird species. The incorporation of sensitive lighting into the lighting plan will reduce the impacts to commuting and foraging bats once the development is operational. The inclusion into the design of wildflower areas, numerous bat roosting boxes, bird nesting boxes and insect boxes aims to enhance the development site in terms of wildlife habitat and refuge.

Removal of vegetation such as grassland and parkland trees will be carried out outside the breeding bird season from 1st March to 31st August inclusive. Biosecurity measures will be in place to reduce the likelihood of introduction of invasive plant species.

The inclusion of SuDS measures will reduce surface water run-off to greenfield rates. Although the risk of any significant impact on water quality of the River Dargle is considered to be extremely low given the lack of running water features on the site, best practice will be implemented at all times in relation to all construction activities to avoid any accidental pollution events occurring on site or polluting the groundwater table.

Residual impacts

This assessment has demonstrated that through iterative project design and assessment, and the identification of appropriate ecological mitigation measures, the residual ecological impacts of the development proposals are not expected to be significant, and are expected to be localised to the Site and immediate environs.

Local populations of bats, badgers and birds may suffer some disruption and habitat loss in the short term but, as the greater part of the Site is of low ecological value, habitat losses to development are not significant. Some minor beneficial effects are expected and some opportunities for enhancement measures are presented.

5. Landscape and Visual

This report assesses the impacts of the proposed development on the existing landscape character and visual amenity of the subject site and its surroundings. Planning permission was granted on part of the subject site, for 234 no residential units, a childcare facility, café and retail unit, subject to compliance with the terms of conditions attached to reference ABP ABP-311181-21. The proposed SHD 2 development includes development as permitted under ABP-311181-21 together with minor revisions chiefly addressing conditions, along with revised proposals for Blocks A and B which were previously refused.

The Site is located on the northern outskirts of Bray town centre on Bray Golf Club lands, a former golf course with no formal function. It comprises approximately 8.81 hectares of scattered trees and parkland with large areas of amenity grassland and the remnants of the golf course including bunkers around greens. To the west, adjacent to the Site are primary and post primary schools. The former Industrial Yarns premises, now the Industrial Yarns Complex, lies to the north west and comprises supermarkets and other commercial premises. The R761, Dublin Road, is approximately 5km to the west. The eastern boundary lies adjacent to the railway line, with Bray Daly railway station lying approximately 800m south. To the north west is St. Philomena's Primary School and Corke Abbey residential estate. To the north is Corke Abbey Valley Park, an area of public open space/woodland with residential development located further north.

Access to the proposed development will run from Dublin Road, circumventing the primary and post primary school complex adjacent to the Site. In addition, a network of pedestrian and cycle connections will be provided to residential developments via Corke Abbey Valley Park, the adjacent Ravenswell Primary School, the River Dargle walkway and Bray Harbour, Promenade and town centre.

The Site is roughly rectangular in shape and falls from north to south with the northern portion located at an elevated position. The land slopes gently from west to east, down to the railway line and coastline at Bray Beach.

The Site traverses the administrative boundaries of Dún Laoghaire-Rathdown County Council (DLRCC) and Bray Municipal District of Wicklow County Council.

The Site does not have any value in terms of comparative rarity, distinctiveness or amenity value and is typical of a former golf course with grassland, bunkers and scattered trees. The site is influenced by the presence of existing development. Whilst it is in a prominent position adjacent to Bray Beach and the Dargle River, it is not in a prime position from which to view the beach or river, as there are industrial/commercial buildings around the harbour and along Harbour Road. Whilst it may be appreciated by local walkers it has no wider recognition and the assessment of the value of this landscape is Low.

In terms of the susceptibility of the landscape resource to accommodate change of the type proposed, it is considered that the presence of the adjacent existing development to the west, proximity of housing to the north and south and the railway to the east reduces the susceptibility of the Site to change resulting from residential development. The susceptibility is considered Low and sensitivity is assessed as Low, which accords with the Wicklow County Development Plan (WCDP) Appendix 5, Landscape Assessment 2016-2022 published assessment.

Potential Landscape and Visual Impacts

Building Heights

The maximum height of Block A within DLR is 7 storeys. The supporting Architect's and Landscape Architects design drawings, statements and LVIA satisfy the performance-based criteria in Section 5 of the DLR County Development Plan 2022-2028 for buildings that may be defined as taller than the prevailing building heights in the surrounding urban areas, although there are not comparable buildings within close proximity. Planning Reference ABP30584419 in the Townland of Corke Little, Woodbrook is 700m from the proposed development and received planning approval from DLRCC in February 2020. Buildings in this development in DLRCC range from 2 to 8 storeys. Both this location and the location of the proposed development have similar benefits both locally, at county level and national level as noted below.

Section 1.5.2.5 in the DLR County Development Plan 2022-2028 notes that the Dublin Metropolitan Area Strategic Plan (MASP) sets out a vision for the future growth of the Dublin Metropolitan area, identifying strategic corridors based on their capacity to achieve compact sustainable and sequential growth along key public transport corridors along with large scale strategic residential, employment and regeneration development. The Metropolitan Key Town of Bray is recognised as having significant growth potential and the RSES makes an allowance for up to 20% of the targeted growth in Dublin City and Suburbs area to be

transferred to other settlements in the MASP, which includes Bray. In addition, Bray is within the strategic North-South corridor (DART).

For the above reasons, this report considers that Block A between 4 and 7 storeys and Block B between 4 and 12 storeys is acceptable in the current context. In addition, the ABP Inspector's Report of December 2021 relating to ABP311181-21, approved most of this development, with conditions, but refused Blocks A and B (heights ranging from 4 to 8 storeys) on the basis of *"poor design in terms of façade treatment and architectural expression, in combination with their disposition on the site,"* rather than height issues.

Predicted impacts on landscape during construction

Landscape and visual impacts will be most pronounced during the construction stage when the initial unfamiliarity, disturbance and visual intrusion associated with general construction activity and development of new structures will be aspects of particular attention.

General construction operations are likely to include the following:

- Site establishment, including access roads, hoardings, security and safety lighting and provision of compounds;
- Earthworks, stripping of soils and alteration of levels;
- Fixed construction plant, including cranes, scaffolding and gantries;
- Mobile construction plant, such as excavators and lorries;
- Progressive construction of new buildings and infrastructure including 4 blocks of apartments the maximum of which is 12 storeys high and residential units, along with childcare facilities, retail outlets, café, car parking and associated landscaping including communal gardens, play provision, open space zones and boundary planting. (Full details are given in Chapter 2 of Volume 2);
- The proposed houses and duplexes range in height from 2-3 storeys. Block A and Block B of apartments range in height from 3-12 storeys. The maximum height of Block A is 7 storeys. The maximum height of Block B is 12 storeys. Block C has a maximum of 6 storeys, and Block D has a maximum of 4 storeys; and,
- Finishing, including new boundaries, roads, landscape works, footpaths, cycleways, play areas, planting.

Increased construction traffic and changes to the road infrastructure will cause short-term, temporary delays and diversions along Dublin Road and the roads giving access to the Site.

The site is annotated as part of an "Urban Area" in terms of landscape classification and category throughout the WCDP 2016-2022 and draft WCDP 2022-2028 and the landscape to the north and west is influenced by urban residential, commercial and small industrial development. In the local area the magnitude of the landscape effects and significance during construction are assessed as **moderate adverse** due to the fact that the effects are local, temporary and short term.

Predicted impacts on visual amenity during construction

This landscape and visual assessment is accompanied by a range of Photomontages (i.e. Accurate Visual Representations), which have been prepared in order to represent the physical and visual nature of the Proposed Development and to assist in describing the likely visual impact during construction and on completion.

The greatest effects of the construction activities will be on the residents at the north eastern end of Corke Abbey (Viewpoint 10) adjacent and in close proximity to the site, those road users bordering the school development along with the staff and pupils of the schools (Viewpoint 1). Receptors will experience short-term effects **moderate/major adverse** significance.

Predicted impacts on landscape during operational phase

The former golf course lands do not currently exploit the ecological potential of the area. It is a heavily maintained manmade landscape. The proposed development will represent a significant change to the site character as the landscape of a golf course with its scattered trees and manicured grassland, is changed to accommodate a mixed residential development with associated outlets and facilities. This is a change of context and sense of place. However, whereas the whole site was formerly used for recreation the proposed development will provide mixed residential in addition to leisure and recreation facilities including pedestrian and cycle links through the proposed development to existing surrounding residential developments, the River Dargle walkway, Bray Harbour, Promenade and town centre.

A comprehensive landscaping design has been developed for the Site which will include additional boundary planting and the creation of an ecological buffer zone along the northern and eastern boundaries of the Site. See Landscape Design Strategy Report and drawing 6948-L-2000 Landscape Masterplan.

Planting schedules have been developed with reference to the National Biodiversity Action Plan 2017-2021, Dún Laoghaire-Rathdown Biodiversity Plan 2009-2013, County Wicklow Biodiversity Action Plan 2010-2015 and the All Ireland Pollinator Plan 2021-2025 in order to create areas of ecological enhancement and a biodiversity net gain.

The proposed development extends the settlement area, 'infilling' an open area of land, however, the character assessment has identified the Site as influenced by the existing surrounding development, thus reducing its susceptibility to change. It is acknowledged that there would initially be a high degree of change, with new built elements making a substantial alteration to the existing open landscape setting but it is considered the proposals would not introduce elements significantly at odds with the local prevailing character. Over a period of time, as the planting matures the residential housing will be set within a high quality semi-natural environment incorporating new native tree and hedgerow planting, wildflower meadow and shrub blocks which would assist with increasing the biodiversity within the Site.

Predicted impacts on visual amenity during operational phase

The impacts and significance for the operation of the proposed development are similar to those for the construction operations.

The greatest impacts will be on those road users and staff and pupils bordering the Ravenswell School Development (Viewpoint 1), residents at the north eastern end of Corke Abbey (Viewpoint 10), and pedestrians on the Harbour Wall as they look back towards Bray.

Residents at the north eastern end of Corke Abbey particularly in no 112 Corke Abbey Road (Viewpoint 10) and neighbouring properties, are adjacent to the site and while visibility is oblique the magnitude of impact and significance will be **moderate/minor adverse**. From Viewpoint 6 on the Harbour Wall the proposed development is a significant addition, however, this is considered to contribute (**moderate neutral**) to the townscape, giving Bray seafront a sense of place and introducing visual interest to the current low lying, linear nature of the seafront.

Cumulative Impacts

In terms of intra-project cumulative impacts, occupants of residential properties and the school development in close proximity to the site will experience combined adverse nuisance effects arising from demolition and construction activities. Whilst there is the potential for these adverse combined effects to occur throughout the demolition and construction phase, these effects would generally be restricted to short periods of time due to the transient nature of the works and the magnitude of the effects will vary depending on the stage of works.

Once operational there is the positive cumulative impact of the proposed pedestrian/cycle paths that integrate with existing and planned green routes that will provide a coherent and comprehensive network of east-west and north-south linkages providing permeability within Harbour Point and connecting with external destinations including Bray town centre and Bray Daly railway station.

The Bray MD LAP 2018-2024 outlines its plan to focus new residential development into the existing built envelope and is adopting a mixed strategy on the densification of development. The Proposed Development is classed as Mixed Use, consequently community infrastructure including a café, crèche, public play areas and gardens are provided to match the need of new residents and the built environment along with proposed developments may have less of a cumulative impact.

Whilst the proposed development along with other proposals increase the residential provision within 200m of the Site, these developments accord with the zoning strategy of the Bray Municipal District LAP. The proposed development is sufficiently disconnected from other proposals to avoid continuous built form, minimal direct visual connection and cumulative impact and sequential cumulative impacts.

Mitigation Measures

Construction Stage:

Construction methods and procedures will accord with agreed standard statements and plans with phasing to assimilate changes into the landscape.

Design Considerations:

Circulation both internal and external to the site will be constructed to mitigate against traffic congestion and improve permeability and connectivity between the Proposed Site and neighbouring areas.

The design and finishes of buildings will draw reference and inspiration from the existing traditional town centre and incorporate appropriate and robust materials. An interpretative feature is proposed within the hard landscape paving to demarcate the County Boundary, with potential for public artwork.

New public open spaces provide an element of social, community and residential services and cohesion. In addition, there are also semi-private communal amenity areas and private space for residents.

Residential housing will incorporate car parking spaces, and car parking for the apartment blocks will be enclosed by facilities and services at ground floor level.

Biodiversity and wildlife habitats will be increased and enhanced with green roofs, bird, insect and bat boxes. Sustainable drainage is a key focus for the landscape treatment, which will also contribute to ecological biodiversity.

Landscape Design

The landscape planting design provides for a net gain in number of trees, with ca. 380no standard sized trees, in addition to native whip planting, mixed screen planting, amenity grass, meadow grass and shrub and herbaceous planting resulting in moderate beneficial ecological effects. Root protection will be applied to the existing trees to be retained.

The Proposed Development will retain existing trees where possible and maintain and enhance strong native boundary planting to ensure existing wildlife corridors are retained. Along the northern boundary it is proposed to create and enhance the existing planting with further woodland. Gardens will border the eastern boundary combining footpath, cycleway, play provision and planting to create a green corridor that will soften the views of the buildings from the Harbour Wall and coastal path and create a link to Bray town centre.

A Green Spine will run through the centre of the northern half of the Proposed Development and will incorporate footpaths, pocket parks, green spaces.

Residual Impacts

Trees removed from the northern boundary and centre of the site will be compensated for by planting 379 new standard trees and ca. 4,500m² of native whips. In addition, the landscape proposals include green roofs to apartment blocks, mixed screen planting (4,718m²), shrub and herbaceous planting (2480m²), amenity grass (14,430m²) and meadow grass (3930m²).

Viewpoints 2, 3, 4, 5, 7, 8, 9, 11-35 are considered to result in negligible or slight impacts. The view from the harbour wall is considered to overall improve the existing seafront of Bray, giving it a sense of place and visual interest.

Residents on Corke Abbey that either directly face the rear gardens of the Proposed Development or lie at an oblique angle to the rear gardens may experience more activity, but will not experience any additional overshadowing and will result in minor impacts. The residence closest to the proposed development, no. 112 will experience **moderate/minor adverse** impacts, but with the retention and strengthening of the boundary in the north west corner of the Site, this will be reduced.

Moderate and minor socio-economic beneficial effects are predicted including increased employment necessary for the site e.g. maintenance operatives, effects on property values, greater wellbeing and sociability fostered through the provision of public open spaces, play provision and gardens, improved accessibility to attractive parts of Bray including the beach, promenade and Dargle River.

Interaction with other Environmental Attributes

The nearest European site is Bray Head SAC, which is approximately 1.7km south along the coastline. There is no direct connectivity from the project site to Bray Head SAC or any other European site via hedgerows or treelines. The landscape design measures have been developed in conjunction with ecological and archaeological specialists.

The County Boundary between Dublin and Wicklow runs through the site along with a historic linear earth feature known locally as the 'Nun's Walk'. These elements will be recognised through feature paving within an area of public open space to acknowledge and preserve their importance within the proposed development. This will also create an interactive landscape feature within the public realm for use by residents and visitors.

6. Air Quality and Climate

AWN Consulting Ltd has assessed the likely air quality and climate impacts associated with the construction and operational phases of the proposed residential development Bray, Co. Wicklow.

In terms of the existing air quality environment, data available from similar environments indicates that levels of nitrogen dioxide (NO₂), particulate matter less than 10 microns and particulate matter less than 2.5 microns (PM₁₀/PM_{2.5}) are, generally, well within the National and European Union (EU) ambient air quality standards.

The existing climate baseline can be determined by reference to data from the EPA on Ireland's total greenhouse gas (GHG) emissions and compliance with European Union's Regulation 2018/842. The EPA state that Ireland had total ESR GHG emissions of 43.48 Mt CO₂eq in 2021. This is 2.71 Mt CO₂eq higher than Ireland's annual target for emissions in 2021. The EPA predict that Ireland can comply with the GHG targets for 2021 – 2030 provided full implementation of the measures outlined within the Climate Action Plan and the use of the flexibilities available.

Impacts to air quality and climate can occur during both the construction and operational phases of the proposed development. With regard to the construction stage the greatest potential for air quality impacts is from fugitive dust emissions impacting nearby sensitive receptors. Impacts to climate can occur as a result of vehicle and machinery emissions. In terms of the operational stage air quality and climate impacts will predominantly occur as a result of the change in traffic flows in the local areas associated with the proposed development.

There are a number of sensitive receptors in close proximity to the site at which dust impacts may occur. Provided the dust mitigation measures outlined in Appendix 6.3 of Chapter 6 are implemented, dust emissions are predicted to be short-term, direct, negative and imperceptible and will not cause a nuisance at nearby sensitive receptors.

The best practice dust mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development will be short-term, direct, localised, negative and imperceptible with respect to human health.

Potential impacts to air quality and climate during the operational phase of the proposed development are as a result of a change in traffic flows and volumes on the local road network. The changes in traffic flows were assessed against the UK Design Manual for Roads and Bridges (DMRB) screening criteria for an air quality and climate assessment. The operational phase air quality and climate modelling assessments determined that there is no potential for significant impacts as a result of traffic related to the proposed development. It can therefore be determined that the impact to air quality and climate as a result of altered traffic volumes during the operational phase of the proposed Project is negative, direct, imperceptible and long-term. In addition, the proposed development has been designed to minimise the impact to climate where possible during operation.

As the National and EU standards for air quality are based on the protection of human health, and concentrations of pollutants in the operational stage of the proposed development are predicted to be significantly below these standards, the impact to human health is predicted to be imperceptible, direct, negative and long term.

No significant impacts to either air quality or climate are predicted during the construction or operational phases of the proposed development.

7. Noise & Vibration

AWN Consulting Ltd has assessed the noise and vibration impacts associated with the construction and operational phases of the proposed residential development Bray, Co. Wicklow.

When considering the potential impacts, the key sources will relate to the short-term construction phase and the long-term impacts associated with the development as a whole once operational.

The existing noise climate in the vicinity of the proposed development has been surveyed. Prevailing noise levels are typically dominated by train movements. Distant road traffic was also audible.

The construction phase will involve site preparation, foundation construction, general construction works and landscaping, the assessment has determined that there is the potential for some temporary, potentially significant noise impacts when works are undertaken within 35m of the receptor locations. However, these occurrences will only be temporary, and the vast majority of the construction works will take place at distances of greater than 35m from the receptors where no significant impacts are predicted and the construction criterion will be complied with.

Vibration impacts during the construction phase will be not significant and well controlled through the adherence to strict limit values.

During the operational phase, the predicted change in noise levels associated with additional traffic in the surrounding area required to facilitate the development is predicted to be of imperceptible impact along the existing road network. In the context of the existing noise environment, the overall contribution of induced traffic is considered to be of neutral, imperceptible and permanent impact to nearby residential locations.

The operational noise from the development will be designed to ensure the prevailing background noise environment is not increased by a significant level such that potential adverse noise impacts are avoided. Once noise emissions from operational plant and activities are designed in accordance with BS 4142 Methods for Rating and Assessing Industrial and Commercial Sound, resultant residual noise impact from this source will be of negative, not significant, permanent impact.

The potential for inward noise effect on the proposed development has been assessed. The assessment was carried out with reference to the guidance contained in Professional Practice Guidance on Planning & Noise (ProPG), BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings (BSI); and the local and national Noise Action Plans relevant to the area. The assessment has identified facades where upgraded acoustic glazing and ventilation will be required. With the implementation of these measures it is expected that the impact will be neutral, not significant and permanent. In terms of inward vibration, the assessment indicates that impacts will be not significant and permanent.

8. Traffic

Receiving Environment

The proposed development embraces the 15 Minute City concept, minimising the need for private transport. While the development proposal includes a childcare facility, café, convenience store, commercial, retail and recreational facilities within the scheme in addition to houses and apartments, all other essential services are within a 15-minute walk (1.5km) of the subject site.

The site is exceptionally well served by existing public transport with Bray DART station 700m to the south and Bray-Dublin Bus routes (bus stops 4131 and 106331) 600m to the west of the subject lands.

Whilst not a requirement for the subject application, connectivity will be further enhanced in the coming years through the realisation of the following projects;

- Bus Connects: Bray to UCD and onwards to Dublin City Centre Due for completion between 2022 – 2027;
- Wicklow County Council (WCC) is undertaking Part 8 approval procedures to carry out the design and construction of the Bray Sustainable Transport Bridge (Ref. PRR 21/869). The project has not yet been confirmed by the Planning Authority;
- Luas extension to Bray: post 2035; and
- National Cycle Network Route 5 (Dundalk to Wexford): this route will pass immediately to the east of the site and link the site to the north to Shankill and beyond to Dublin.

Construction Traffic Impact

The overall traffic generation for the construction phase of the proposed development has been devised with the anticipated volumes of excavation of the site.

It is demonstrated that the increase in traffic volumes on the R761 is below 5% during the AM peak hour and PM peak hours of the adjacent road network. It is therefore considered that the level of traffic impact during the construction stage is of an acceptable level in the short term.

The reported impacts represent a short term slight negative impact due to construction traffic.

A range of mitigation measures are proposed as part of an Outline 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 Traffic Impact

Given that the growth in background traffic has been estimated to be a ‘no growth’ scenario, the base year traffic was also used for all future scenarios which considered the “without development” scenario. Similarly, since the background traffic is not expected to grow – only the Opening Year + 5 assessment was required to be assessed (based on development completion in 2029).

The assessment has been subject to sensitivity testing. The sensitivity testing scenarios were as follows:

- The existing Southern Access junction onto Castle Street was assumed to be closed to vehicular traffic; and
- To assess the traffic impact if the working from home mode share was adjusted from the estimated 20% to a lower value of 10%.

TII’s Traffic and Transport Assessment Guidelines (May 2014) were used to determine thresholds for junction assessment based on the traffic data collected. It was found that 4 no. of the total 8 no. junctions required assessment. The junctions which required assessment were as follows:

- Junction 2: R761 Dublin Road, Old Connaught Avenue & Corke Abbey Avenue;
- Junction 3: R761 Dublin Road & Northern Development Access Road;
- Junction 4: R761 Castle Street & Upper Dargle Road; and
- Junction 5: R761 Castle Street, Lower Dargle Road & Ravenswell Road.

The junctions 3, 4 & 5 are expected to perform well within capacity for all future scenarios/sensitivity analyses while junction 2 is expected to operate over capacity during both peak hours. It was found that the AM peak hour is the more critical of the two peak periods.

Although junction 2 is expected to operate over capacity, the Opening Year + 5 “Do Something” scenario indicates that the maximum degree of saturation increases on the arms is only 5% above that of the existing

traffic scenario. Given the urban nature of this junction, it is not unexpected that this junction is at or slightly over capacity. The increase in degree of saturation is therefore represents a marginal impact on the junction due to the proposed development.

The above reported impact represents a long term slight negative effect.

Cumulative Traffic Impact

In order to appropriately assess the traffic impact of the full Harbour Point development, the required modelling scenarios to be tested are similar to the Coastal Quarter and based in the first instance on the assumption of growth in background traffic and in the second instance on the assumed period for the full build out of the full development.

This assessment has been carried out with development and existing traffic utilising both the Northern Development Road Assess Junction (Northern Access Junction) onto the R761 Dublin Road and the upgraded Upper Dargle Road Signalised Junction (Central Access Junction) onto the Dublin Road. The Ravenswell Road Access Junction onto the R761 Castle Street (Southern Access Junction) is assumed to be closed to through traffic and will cater to only a minor volume of development traffic

All junctions operate well within capacity with the exception of Junction 2. In the worst case scenario, where mode share for working remotely is reduced to 10%, all arms of the junction operate within capacity except for the Cork Abbey and Dublin Road South approaches in the morning peak hour. Within urban locations it is acceptable that junctions operate over capacity during some periods of the day. In reality further transfers to public transport coupled with increased opportunities for workers to travel off peak and indeed work from home will result in this scenario not being realised.

The above reported impact represents a long term slight negative effect.

Conclusion

The site is exceptionally well served by existing public transport with Bray DART station 700m to the south and Bray-Dublin Bus routes (bus stops 4131 and 106331) 600m to the west of the subject lands. Whilst not a requirement for the subject application, connectivity will be further enhanced in the coming years through the realisation of the following projects;

- Bus Connects: Bray to UCD and onwards to Dublin City Centre Due for completion between 2022 – 2027;
- Wicklow County Council (WCC) is undertaking Part 8 approval procedures to carry out the design and construction of the Bray Sustainable Transport Bridge (Ref. PRR 21/869). The project has not yet been confirmed by the Planning Authority;
- Luas extension to Bray: post 2035
- National Cycle Network Route 5 (Dundalk to Wexford): this route will pass immediately to the east of the site and link the site to the north to Shankill and beyond to Dublin.

Thus, it is expected that car ownership will be well below traditional suburban residential development rates. In anticipation of this, it is proposed to provide parking spaces to serve the housing units at an overall rate of 0.82/unit (not including commercial or visitor parking), significantly below traditional development plan standards. A car club parking spaces is also provided so as to further reduce the need for car ownership.

In contrast to car parking provision, bicycle parking is proposed at a rate of 2 spaces per house and 1 space per apartment bedroom, in line with the National Cycle Manual Standards and that of the Design Standards for New Apartments. All bike parking is secure and easily accessible.

In January 2021, the National Remote Work Strategy was published by the Department of Enterprise Trade and Employment which lays out the long-term strategy to promote home and remote working for public sector and private sector employees. The strategy mandates that 20% of the public sector workforce move to home and remote working in 2021. Furthermore, the strategy notes that more than 25% of the private sector workers in Ireland are capable of working remotely.

Therefore, in addition to the significant opportunities to travel to work by active travel and public transport modes, residents of the Harbour Point development may avail of the home and remote working opportunities, including flexible working opportunities, as promoted by the National Remote Work Strategy. This change in work practice will reduce overall work trips and optimise flexible working opportunities that will enable residents to avoid travel to work and to also facilitate residents to commute to their place of employment outside of the peak traffic and travel periods.

In overall terms, the Coastal Quarter development will be fully consistent with the National Planning Framework objective of compact growth in a location that will optimise the residents opportunities to travel by active travel

and public transport modes, fully consistent with the overall objectives of the NTA Greater Dublin Area Transport Strategy.

The development therefore presents as an exemplar of integrated land use and transportation planning that is fully consistent with the 'Avoid - Shift -Improve Model' as set out in the Draft Dun Laoghaire Rathdown Development Plan. This approach, which is based on avoiding or reducing the need to travel, shifting to more environmentally friendly modes and improving the efficiency of motorised transport modes, is echoed in the transport objectives of the current and draft Wicklow County Development Plan, the Bray Municipal District Local Area Plan and the Bray and Environs Transport Study.

In this context, and in the more general context of rapidly changing lifestyles and work patterns it is anticipated that the impact of the proposed development on the existing road network will be modest and well within the carrying capacity of existing infrastructure, inclusive of public transport.

9. Land, Soils & Geology

Receiving Environment

This chapter addresses the receiving land, soils and geology environment within and in the vicinity of the Site in Bray, Co. Wicklow, and potential associated impacts arising from the proposed development. Historic land-use at the site was greenfield before being developed as the former Bray Golf Club (based on a review of available historic mapping and aerial photography). The Site is mainly grassed, as a result of its former use as a golf course and is a popular spot for local dog walkers and members of the local community. The subject lands generally fall from the north-west (ca. 12 meters above ordnance datum (mOD)) to the south-east (ca. 2 mOD).

The site is generally underlain by topsoil, glacial till, and clay/ silt/ sand/ gravel, with localised areas underlain by made ground. Bedrock is present at depths ranging from ca. 21 to ca. 26 meters below ground level (mbgl) at various locations across the site. Bedrock generally comprises mudstone / siltstone bedrock of the Maulin Formation.

Construction Land, Soils & Geology Impacts

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. Approximately 20% of the excavated material will be reused onsite with surplus material moved offsite in accordance with all relevant waste legislation. Bedrock will not likely be encountered during the construction 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.

However, the employment of good construction management practices, and mitigation and monitoring measures (as set out in Chapter 9, Volume 2 – EIA) will serve to minimise any risk of pollution to geology and soils from construction activities.

Operational Land, Soils & Geology Impacts

Elevated levels of barium have been detected within native soil at two localised hotspots within the proposed footprint of the housing and duplex units. Barium is a naturally occurring element in soils; however due to the concentrations detected, native soil is unsuitable for re-use in gardens in these localised areas (due to a potential human health risk via. ingestion).

Soils beneath apartment blocks 1B and 1C (in the southern and western portions of the Site) could pose a potential ground gas issue due to elevated levels of carbon dioxide within localised pockets of made ground (reused soil) in this area.

However, the employment of mitigation measures (as set out in Chapter 9, Volume 2 – EIA) will ensure that potential impacts on human health and infrastructure do not occur during the operational phase.

Conclusion

The proposed development will not have a significant residual 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.

10. Water

This section addresses hydrology (i.e. surface water) and hydrogeology (i.e. groundwater) in the vicinity of the proposed residential development, the potential impacts of the proposed development (including potential flood risk) and mitigation where required.

The Site is mainly grassed, as a result of its former use as a golf course. The southern section of the Site is a former hardstanding / gravel surfaced area which has become overgrown. Topographic levels fall from the north west to the south east of the Site (as previously outlined in Chapter 9 – Land, Soils and Geology).

In terms of hydrology there are no reported surface water features within the proposed development.

There are two rivers located in the general vicinity of the proposed development. The Rathmichael Stream is located immediately north of the proposed development and flows in an easterly direction prior to discharge to the Irish Sea. The River Dargle is located immediately south of the proposed development, and also flows in an easterly direction prior to discharge to the Irish Sea. Bray harbour is located ca. 0.5km south east of the Site and is an important amenity for the local population. The proposed development is located ca. 90m from the Irish Sea. Killiney Bay geological heritage area is located ca. 30m east of the Site. The nearest European site is Bray Head Special Area of Conservation (SAC) which is located along the coastline ca. 1.7km south of the project site. However as presented in Chapter 4 – Biodiversity there is no viable connectivity between the proposed development and any European site.

Regional surface water quality for the Rathmichael Stream and River Dargle is reported by the EPA (2022) to have ‘Good’ water quality status for the 2013-2018 monitoring period. Regional coastal water quality for the Irish Sea east of the Site is reported by the EPA (2022) to have ‘High’ water quality status for the same period. Regionally the water quality status of Bray South Promenade during the 2021 summer bathing water season was reported to be ‘Good’¹ (EPA, 2022). Surface water sampling was carried out along the River Dargle as part of this assessment, and the analytical results confirm that baseline surface water quality in the River Dargle, upstream and downstream of the proposed development is generally good. The Site is hydraulically connected to the River Dargle and the Irish Sea.

Groundwater vulnerability beneath the general vicinity of the proposed development is predominantly ‘Moderate’ (M) in the northern and central portions of the Site, and ‘Low’ (L) in the southern portion of the Site. Measured groundwater levels during 6no. monitoring events (carried out between October to December 2020) ranged from 4.49 to 4.98 mbgl in the north western portion of the Site (ROH01), to 0.2 to 0.87 mbgl immediately south of the Site, adjacent to the River Dargle (ROH04) (IGSL, 2021). Groundwater flow is expected to follow topography in general easterly, southerly, and south easterly directions, towards the River Dargle (in the south) and the Irish Sea (in the east / south east). Continuous groundwater level monitoring was carried out at selected monitoring locations between 6th October and 12th December 2020 and confirmed a maximum tidal range in groundwater levels of ca. 0.6m in the vicinity of the southern portion of the Site (ROH04) (IGSL, 2021). Shallow perched water is present within made ground in a localised area in the south western portion of the Site.

It is likely that effective rainfall percolates vertically and flows within the saturated estuarine silts, sands and gravels beneath the general vicinity of the Site. Shallow groundwater flowing beneath the proposed development discharges to the River Dargle in the south, and to the Irish Sea, in the east / south east.

Regional baseline groundwater quality within the general vicinity of the Site, is of ‘Good’ status for the 2013 to 2018 period (EPA, 2022). Groundwater sampling was carried out at 3no. groundwater monitoring locations and 1no. perched water monitoring location. No contaminants of potential concern with regards to environmental risk have been identified within the perched water or groundwater beneath the Site.

There are 6no. registered wells and springs within the general vicinity of the Site. However no groundwater abstraction wells or springs are known to be present within the Site boundary, and there are no group water scheme or public water supply abstraction points, or designated group water scheme or public water supply Source Protection Areas within the vicinity of the Site (GSI, 2022).

Given the nature and location of the proposed development, there will be no impact on regional or local groundwater resources or on surface water flows in the River Dargle. The focus of this assessment is therefore on potential groundwater, surface water and coastal water quality impacts that may be associated with the proposed development.

During the construction phase there is potential for degradation in groundwater, surface water and coastal water quality resulting from potential pollution caused by construction activities including cement handling. This

¹ <https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/Bathing-water-quality-in-Ireland-in-2021.pdf>

is likely to result in temporary, moderate and slight adverse effects to groundwater, surface water and transitional water quality.

During the operational phase groundwater, surface water and coastal waters (Irish Sea) may be at risk of becoming impacted through occasional fuel / oil leaks; unplanned events (traffic collision, emergency onsite fuel / oil spill, fire water arising from a property fire); or routine site maintenance; and subsequent storm water discharge. This is likely to result in temporary slight adverse effects to groundwater and surface water quality.

Mitigation measures will be implemented during both the construction phase and operational phase to avoid these potential effects. Site specific mitigation measures are detailed within Chapter 10, Volume 2 - EIAR. A maintenance programme for the proposed surface water drainage system will be implemented.

Taking account of proposed mitigation measures, no significant adverse impacts are anticipated to the receiving water environment arising from the proposed development during the construction or operational phases. No human health risks as a result of groundwater or surface water impacts are likely to occur.

A standalone Flood Risk Assessment (FRA) has been prepared and submitted with this planning application. The overall finding from the FRA, which includes detailed hydraulic modelling, is that identified potential flood risks are sufficiently addressed, and states the following;

- *A detailed hydrological analysis was undertaken of the River Dargle in order to identify the predicted 1 in 100 year (1% AEP) and 1 in 1000 year (0.1% AEP) flood events in the vicinity of the proposed development site. In addition, the predicted 1 in 200 year (0.5% AEP) and 1 in 1000 year (0.1% AEP) tidal flood levels have been analysed in the vicinity of the site.....Due to the location of the proposed development adjacent to and partially within a flood zone a Justification Test was carried out in line with the criteria outlined by the Dept. of the Environments guidelines for planning authorities 'The Planning System and Flood Risk Management'. This Justification Test satisfied the required criteria and therefore determined that there is no residual risk of flooding to the proposed Coastal Quarter Development except for that which is planned (during the fluvial 1 in 100 year and 1 in 1000 year event along with the tidal 1 in 200 year and 1 in 1000 year flood events) within the south of the subject site in the open space area.In addition, the proposed development does not pose an increased flood risk to people or the surrounding property outside of the applicant's landholding.*
- *In summary, the development as proposed shall not result in an adverse impact to the existing hydrological regime of the area nor increase flood risk to areas outside of the landowners' holdings, nor create unacceptable levels of flood risk within the proposed development and is therefore considered to be appropriate from a flood risk perspective.*

In summary, there are no anticipated significant residual adverse effects to groundwater, surface water or coastal waters provided mitigation measures proposed during the construction and operational phases are implemented. No residual flood risk has been identified.

11. Cultural Heritage

Introduction

This chapter assesses the impacts of the proposed development on the known and potential cultural heritage resource which includes archaeological sites and architectural heritage structures. The assessment was based on a programme of desktop research combined with fieldwalking, geophysical survey and archaeological test trenching. A study area encompassing the proposed development site and surrounding lands was reviewed in order to compile a comprehensive cultural heritage context for the proposed development and its environs.

Methodology

This section commences with an outline of the criteria used to assess the nature of impacts on the known and potential elements of the cultural heritage resource within the study area. It then describes how the baseline information on this resource was established which, in summary, was by a combination of desktop research, site inspections, a geophysical survey and a programme of archaeological test trenching which were undertaken to establish a cultural heritage context for the study area and to identify both known and potential features of cultural heritage significance likely to be affected by the proposed development.

The guidelines relevant to the assessment included *Architectural Heritage Protection: Guidelines for Planning Authorities* (Department of Arts, Heritage and Gaeltacht 2011) and the *Framework and Principles for the Protection of Archaeological Heritage* (Department of Arts, Heritage, Gaeltacht and the Islands 1999). The assessment was also informed by the International Council on Monuments and Sites (ICOMOS) *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (2011).

A process of consultation with the NMS was undertaken by the authors during the compilation of this assessment in order to scope the nature and extent of geophysical surveys and test trenching site investigations required to determine the archaeological context of the proposed development site and potential impacts on known and previously unrecorded elements of this resource.

Receiving Environment

Desktop Study

The SMR/RMP for Counties Dublin and Wicklow list a total of nine recorded archaeological sites within the study area and one of these, Linear Earthwork (DU026-124----/ WI004-005----), extends into the proposed development site. This section of the chapter presents brief summary details of the main periods within the Irish archaeological record with references to the recorded archaeological sites within the study area.

There are no recorded prehistoric monuments within the study area although examples have been recorded within the wider region, including the location of a number of Romano-British burials (WI004-004----) close to the shoreline in Bray town to the south demonstrates that contacts with Britain existed in the area during the 2nd century AD. While there are no extant early medieval archaeological sites located within the study area it does contain the former locations of three recorded examples associated with ecclesiastical activity that may conceivably have had its origin during this period. This includes the recorded site of a church and graveyard (DU026-068001-/02-), which are now occupied by a modern housing estate, located at a distance of c.250m to the northwest of the proposed development site. The former site of a holy well (DU026-069----) is recorded within a developed area c.60m to the south of the church and c.250m to the west of the proposed development site. A cross inscribed slab (WI004-001001-) was discovered at a location on the east side of Castle Road, at a distance of c.455m to the west of the proposed development site, in the 1960s and was relocated to the National Museum of Ireland.

Following the arrival of the Anglo-Normans the manor of Bre was granted to Walter de Ridlesford in 1173 and the grant of a market to the settlement in 1213 indicates that it had achieved borough status by this time. The proposed development site is located c.300m outside the north end of the Zone of Notification around the historic town of Bray (WI004-001----). The study area contains the recorded site of a levelled tower-house (WI004-001006-) which formerly stood c.400m to the west of the proposed development site and the National Museum of Ireland Topographical Files also record the discovery of one sherd of medieval pottery (NMI ref. IA/27/2005) within lands outside the southeast corner of the proposed development site.

In 1660 a stone bridge was built over the river at a distance of 450m to the southwest of the proposed development while the existing bridge at that location was constructed in the mid-19th century and is listed in the NIAH (ref. 1301267). The study area surrounding the proposed development site contains two recorded Martello towers (DU026-070---- & WI004-002----). The former example was removed by coastal erosion while the latter remains extant within an urban area located 260m to the southeast of the proposed development

site. A number of 18th century maps show the Bray settlement clustered to the south of the river while the area to the north, including the proposed development site, is shown outside the urban area. By the middle of the 18th century the settlement comprised a small market town and it began to develop as a seafront resort during the 19th century. The development the resort was facilitated by the extension of the Dublin-Kingstown railway line to the town in 1854. The original line flanked the coastline although the section adjoining the east end of the proposed development site was moved to its current location in 1907 due to coast erosion.

The lands which contain the proposed development site remained outside the urban area until the early modern period and details on the layout of the site during the 19th century are presented in the review of cartographic sources within the chapter. The northern section of the proposed development site formed part of Co. Dublin until it was transferred to Co. Wicklow under the Local Government (Ireland) Act of 1898. The development of the existing golf course within the proposed development site commenced 1897 and it remained in operation until 2003.

The proposed development site contains a linear earthwork (DU026-124---- / WI004-005----) and, while the Archaeological Survey of Ireland description of this feature includes a postulation that it possibly formed part of the medieval Pale ditch, the results of a number of archaeological investigations of the feature indicates that it is a landscaped feature dating to recent centuries. The construction of a school development adjacent to the east end of the proposed development site has impinged on the western end of the earthwork. A pre-development programme of archaeological test trenching in advance of the school development concluded that the feature is of 19th century date and subsequent monitoring of the construction of the school buildings, under licence by the NMS, on its footprint revealed nothing of archaeological significance.

There are no Protected Structures or buildings listed in the National Inventory of Architectural Heritage (NIAH) located within the proposed development site and it is not within or adjacent to an Architectural Conservation Area (ACA). In addition, there are no extant structures of any date located within the proposed development boundary and it is not within the curtilage of a Protected Structure. The built environment within its surrounds is modern in date and includes the school development to the west and a housing estate to the north. The southern end of the study area extends into streets within the north end of the town centre which contain various protected structures and other structures listed in the NIAH for Co. Wicklow and none of these are located within 200m of the proposed development.

The translations of the townland names within the study area record topographical features and associations with past landowners and none indicate the presence of unrecorded archaeological sites.

Site Inspection

The proposed development site contains greenfield and brownfield areas within the former golf course. The application boundary also encompasses the site access along sections of the public roadways to the west and a construction compound within an existing golf club car park. The proposed development site is occupied by landscaped areas consisting of green areas delimited by tree belts, earthworks and sand bunker with modern hard-standing surfaces in the southern and western areas. The southern end of the proposed development site has been subject to ground disturbance during the recent construction of an access road which extends east to west across this portion of the site. The section of the linear earthwork (DU026-124---- / WI004-005----) within the site is currently visible as a low (0.8m high) section of bank (150m long) which extends on an NNE-WSW axis. It contains a splayed, flat-topped bank (1.60m wide at top; 10m wide at base) with some mature deciduous tree growth along its margins and no discernible surface traces of a flanking ditch were observable on either side. The west end of the feature within the development boundary has been removed by ground works which appear to be associated with the recent construction of the adjacent school. The long-term use of the lands within the proposed development boundary as a golf course appears to have involved significant disturbance of ground levels during landscaping and regrading works undertaken during its operational years and other than the low surviving remains of the linear earthwork, no surface traces of any features of potential cultural heritage significance were noted.

Geophysical Survey

The greenfield areas within the proposed development site were subject to a geophysical survey undertaken by JM Leigh Surveys in October 2020 (NMS Licence 20R02014). The linear earthwork appeared as a curvilinear band of increased magnetic and ferrous response in the geophysical data. In addition, a number of features of low archaeological potential were identified within the site. There were no definitive patterns of an archaeological character evident within the survey results and numerous small-scale ferrous responses were evident throughout the survey area.

Archaeological Test Trenching

The programme of archaeological test trenching (NMS Licence 20E0482) was carried out in November 2020 following consultation with the NMS. Ten test trenches (650m linear metres in combined length) targeted the

locations of the anomalies identified during geophysical survey and these included two manually excavated trenches across the linear earthwork (WI004-005----/DU026-124---).

The topsoil within site consisted of a mid-brown sandy clay containing modern inclusions and drainage pipes present to its base. The underlying natural subsoil was highly disturbed in places, presumably due to landscaping works associated with the former golf club. The testing programme revealed that the isolated features identified in the geophysical survey were related to modern activity.

Two manually excavated trenches were excavated across the linear earthwork. The stratigraphy encountered in both sections suggests that the feature was formed by the demolition of the upper courses of a random rubble wall which may have formed part of a lane shown on the historic OS maps. The rubble was primarily heaped on the northern side of the remnant basal course of the wall where the terrain slightly dips and was subsequently overlain with soil to create the slightly elevated flat-topped earthwork. A sub-surface ditch cut measuring 1.5m wide by 0.3m deep was uncovered under the north side of the embankment material and its basal fill contained late 19th /early 20th inclusions such as glass and ceramic sherds. In summation, the results of the archaeological test trenching, in conjunction with the cartographic evidence and previous archaeological investigations of the feature, indicates that the existing linear earthwork within the proposed development site is a landscaped feature of late 19th or early 20th century date and is not archaeological in origin.

Potential Construction Phase Impacts

The SMR/RMP lists one recorded archaeological site located within the proposed development site and this comprises a linear earthwork (DU026-124--/WI004-005-) which will be removed during the construction phase. A number of archaeological investigations of this feature, including manual test trenching undertaken as part of the current assessment, have concluded that it is of 19th /20th century date and is not archaeological in origin. It is noted that archaeological monitoring, licensed by the NMS, of the recent construction of the adjoining school development on the direct footprint of the section of this earthwork in the adjoining property to the west uncovered nothing of archaeological significance.

No potential unrecorded archaeological features were identified within the proposed development boundary during the desktop study and site investigations undertaken as part of this assessment or during previous archaeological investigations also carried out within the site boundary and its environs. The proposed development will, therefore, have no predicted direct impacts on any previously unrecorded archaeological features during the construction phase. The known archaeological resource within the surrounding study area includes the recorded locations of a number of sites that are now occupied by modern developments and no potential indirect impacts on any extant sites were identified.

There are no designated or previously unrecorded architectural heritage features located within the proposed development site or its close environs and it is not located within an Architectural Conservation Area. The construction phase of the proposed development will, therefore, have no predicted impact on the architectural heritage resource.

Potential Operational Phase Impacts

There are no Protected Structures located within the proposed development site or its close environs, which are occupied by a number of modern developments, and the proposed development will not result in any predicted impacts on the architectural heritage resource during the operational phase. Following the successful implementation of the mitigation measures presented in Section 11.7, the proposed development will also have no predicted impacts on the archaeological resource during the operational phase.

Cumulative Impacts

While the proposed development will act in combination with the recent construction of the adjacent school buildings to result in the removal of the linear earthwork (DU026-124---- / WI004-005----), three separate archaeological investigations undertaken on this feature, including the site investigations carried out as part of the current assessment, have concluded that it dates to recent centuries and is not archaeological in origin. In addition, archaeological monitoring, licensed by the NMS, of the construction of the school buildings on its western extent did not reveal anything of archaeological significance. Given the absence of any identified archaeological features within the proposed development site during the geophysical survey and test trenching investigations carried out as part of this assessment in combination with a review of other developments in the area it is concluded that the proposed development will not result in any significant cumulative impacts on the cultural heritage resource.

Mitigation Measures

A programme of archaeological monitoring of ground excavation works during the construction phase will be carried out by a suitably qualified archaeologist licensed by the NMS. In the event that any archaeological remains are identified during monitoring they will be recorded and left to remain securely in situ while the NMS are consulted to determine further appropriate mitigation measures, which may entail preservation in situ by avoidance or preservation in record by archaeological excavation. Whilst the linear earthwork feature is of no great antiquity or cultural heritage significance (as evidenced by a series of archaeological investigations of the feature), the positioning of the houses and blocks within the proposed development has been arrayed so that they will form a spatial marker (or morphological memory) of its former location and alignment. Following the implementation of the construction phase mitigation measures, no predicted mitigation measures will be required for the cultural heritage resource during the operational phase.

Monitoring Requirements

There are a number of obligatory processes required as part of archaeological licence applications to the NMS, including the submission of method statements and reports, and these will allow for monitoring of the successful implementation of the archaeological mitigation measures.

Interaction with other Environmental Attributes

The authors of the Cultural Heritage chapter compiled preliminary constraint reports on known cultural heritage assets within the study area at the outset of the project to inform the design team of their location, extent and designations in order to assist in considerations of potential interactions with other environmental attributes. The authors also liaised with the design team in relation to incorporating the alignment of the 18th/19th century linear earthwork into the as a spatial attribute within the layout of the proposed development. In addition, the Landscape and Visual chapter of the EIAR was reviewed by the authors as part of the assessment process to ascertain if any interactions with the cultural heritage resource will arise. It is noted that the landscape and visual specialists conclude that the proposed development is not predicted to result in any significant visual impacts on any cultural heritage receptors within the surrounding townscape.

12. Material Assets

This assessment examines material assets serving the proposed development, in relation to existing and proposed built services (i.e. foul sewerage, surface water drainage, water supply, gas, electricity, and telecommunications utilities), and waste management.

Built Services

The Site of the proposed development is a former Golf Course. Residential properties including Corke Abbey are located to the west of the Site and further north, with School Developments bordering the western Site boundary. Retail units are located further west of the proposed development Site with the railway line bordering the eastern Site boundary. Consultation with relevant bodies has been undertaken to determine existing utilities present in the vicinity of the Site. The current status of utilities serving the Site is summarised as follows;

- There is existing storm water drainage infrastructure along the access path to the school development and therefore the proposed access road for the proposed development. This roadway will separate the southern portion of the Site from the northern portion of the Site and therefore this storm water infrastructure is aligned in an east-west direction through the Site.
- There is an existing major foul water network with associated Irish Water services along the northern, eastern and southern boundary of the proposed Site as well as through the Site to the north of the access path to the school development in an east-west direction with a foul drainage network located to the north and south of the Site (outside the Site boundary).
- The Site is currently not serviced by a public water supply.
- There are existing underground ESB services along the northern, eastern and southern Site boundaries as well as through the Site within vicinity of the access path to the school development / proposed access route to the proposed development. An ESB pole is also located in the north eastern corner of the Site. There are overhead ESB services further east of the Site, on the opposite side of the railway track with none identified within the immediate vicinity of the Site.
- There are existing gas utilities within the south eastern section of the site.
- Existing air ducting is located along the southern and eastern boundaries of the site
- There is existing street lighting along the access path to the school development with street light also leading to the underpass.

A complete set of all utility / service plans received is presented in Appendix 12.1, Volume 3 - EIAR.

A Telecommunications Impact Assessment report has been prepared by BBSC (2022), as presented within the MEP Engineering Report & Energy Statement in Appendix 12.3, Volume 3 - EIAR. Recommendations include the completion of onsite surveys and network load analysis which can only be carried out once the development has been constructed.

Based on the proposed engineering design, which has been developed in consultation with the engineering and water services section of Dún Laoghaire-Rathdown County Council, Wicklow County Council and other key stakeholders including Irish Water and National Parks and Wildlife Services, given the phased nature of the proposed development, along with proposed mitigation measures (set out in Chapter 12, Volume 2 - EIAR) no residual significant impacts are anticipated with regards to existing or proposed utilities associated with the proposed development.

Waste

The Site is a former golf course in nature. Based on all available evidence, including findings from the geotechnical investigation undertaken across the Site, soils beneath the Site are not considered to pose an unacceptable risk to human health, building and services, environmental receptors or third-party Sites.

The proposed residential development will be designed, planned, constructed and operated to minimise waste generation at every stage.

The management of waste generated during the construction of the proposed development will be in accordance with the Construction RWMP submitted as part of this planning application. The following waste streams will be generated during the construction phase: native non-contaminated soils, mixed C&D waste, wood / timber, metal, paper, plastics and packaging, canteen / office waste, and other waste (comprising soiled paper, cardboard, plastics, cloth, insulation and plasterboard). However all waste streams will be managed in accordance with statutory waste management and environmental requirements, regional waste related policy, best practice waste management guidance, and the Construction RWMP. As with any construction project,

there is potential for nuisance issues to arise during the construction phase, associated with mud or waste materials impacting roads and footpaths adjacent to the proposed development. Mitigation measures will be implemented to manage these potential impacts.

The Contractor will be responsible for monitoring waste documentation for the full duration of the construction phase. The Contractor will track and monitor all waste volumes to be transported offsite. All waste records will be maintained onsite throughout the project, and will be made available for viewing by the Client, Employer's Representative and statutory consultees (DLRCC, WCC, EPA) as required.

During the operational phase, the proposed residential development has been designed to provide adequate domestic refuse storage areas for individual dwellings, within a paved collection area at the entrance to each home zone, and within communal waste collection areas for the commercial and apartment units. The following primary waste streams will be generated during the operational phase: residual waste, dry recyclables and organic waste. In addition, the following waste streams will occasionally be generated by the residents of the proposed development: WEEE, batteries, fluorescent tubes, furniture, chemicals and textiles.

However, communal waste collection areas will be clearly identified, secure, have adequate lighting and drainage, and will be easily accessible for bin collection crews. Each communal waste collection area will provide the following capacity for family households: 1100L residual waste, 1100L recyclable waste and 240L organic waste. During the operational phase waste shall be collected on a fortnightly basis (for all houses and duplex units) and a weekly basis (for all apartment blocks and commercial units). Therefore, all waste generated during the operational phase will be managed in accordance with statutory waste management and environmental requirements, regional waste related policy, and best practice waste management guidance. As with all residential developments, there will be potential for litter pollution within the proposed housing estate and surrounding areas. Mitigation measures will be implemented to manage these potential impacts.

Given the nature and location of the proposed development, along with proposed mitigation and monitoring measures (set out in Chapter 12, Volume 2 - EIAR) no residual significant impacts are anticipated with regards to waste management associated with the proposed development.

13. Cumulative Impacts

This Chapter assesses the potential for the proposed development to act in combination with committed developments in the vicinity to result in cumulative impacts on the environment. A list of all relevant committed / proposed developments; including the Harbour Point Masterplan Development, has been assessed during the EIA process. The potential for cumulative impacts from the proposed development on each of the environmental topics discussed below and in detail Chapter 13, Volume 2 - EIAR. In summary, there are no significant cumulative environmental impacts anticipated as a result of the proposed development; in-fact, there are positive cumulative impacts anticipated on population and human health.

13.1. Human Health and Population

The development will influence demographic change, population growth, and the intensity of commercial use in this area, cumulatively contributing to increasing population and employment growth in the wider area which represents a positive cumulative impact which accords with the planning policy context for the area. The planning policy context, including the Wicklow and Dún Laoghaire – Rathdown County Development Plans and the Bray District LAP 2018 - 2024 provide for the necessary and appropriate range of facilities and services in the area which will deliver further improvements in service provision in line with the planned population growth.

The existing high capacity public transport services and the planned improvements, including Bus Connects and Luas extension shall provide for this population growth.

The cumulative impact of the proposed development, along with other permitted and existing developments in the vicinity, will be a further increase in the population of the wider area. This will have a moderate impact on the population (human beings) in the area. This impact is likely to be long term and is considered to be positive, having regard to the zoning objective for the subject lands, and their strategic location in close proximity to public transport, and the high level of demand for new housing in the area.

The overall cumulative impact of the proposed development will therefore be long term and positive with regard to population and human health, as residents will benefit from a high quality, visually attractive living environment, with ample opportunity for active and passive recreation and strong links and pedestrian permeability.

13.2. Biodiversity

Cumulative Impacts to Designated Sites

Aeval Ltd, SHD Planning, Townland of Cork Little, Woodbrook, Shankill, Co. Dublin (Planning Ref: ABP30584419 – Granted February 2020); Permission for a Strategic Housing Development consisting of a residential-led development comprising 685no. residential units and 1no. childcare facility in buildings ranging from 2 to 8-storeys. This development is located ca. 750m north of the project. An Environmental Impact Assessment and Appropriate Assessment Screening Report were submitted as part of the planning application for this project which determined that significant environmental / ecological impacts are not anticipated.

Silverbow Ltd. St. Anthony's Dwyer Park and No. 22 Dwyer Park, Bray (ABP ref; 313442). – (Decision due 17/08/2022). Demolition of existing buildings, construction of 139no. apartments, creche and associated site works. This development has been subject to the Appropriate Assessment process which concluded; *'on the basis of the best scientific knowledge available, that the possibility of any significant effects on any European Sites, whether arising from the project itself or in combination with other plans and projects, can be excluded.'*

In regard to the development of Phase 2 River Quarter and Phase 1B, due to the location, scale and nature of the Phase 1A, Phase 1B and Phase 2 developments and lack of viable pathways from any of the proposed development sites to any European site it is considered that the construction and/or operation of either phase of the SHD, either alone or in combination, will not give rise to impacts on any European sites.

Given the elements of the different plans and projects described above, these plans and projects are not anticipated to act in-combination with the proposed development to affect any designated site.

Cumulative Impacts to Habitats

The proposed works will result mostly in the loss of habitat of negligible ecological importance (amenity grassland) and some small areas/habitats of local importance (woodlands/scattered trees). On assessment of the proposed landscape plan and enhancements included in this development (such as native tree planting, pollinator species planting, bird nesting boxes, bat roosting boxes and roof gardens) it is considered there will

be a net gain and moderate positive impact for local biodiversity in the long term. Given that no significant adverse impacts are anticipated on habitats of high ecological value as a result of the proposed project, it is considered that the proposed project will not act in combination with other plans and projects to give rise to significant effects on habitats of high ecological value.

Cumulative Impacts to Species

The proposed development will result in slight temporary negative impacts to local bat and bird species and moderate impacts to local mammal species in the form of foraging badger.

The granted Aeval Ltd. SHD in Woodbrook is considered to be the only project within the vicinity which has the potential to act in combination with the proposed project to potentially affect protected species. This granted development in Woodbrook may have a temporary impact on local badgers given the proximity of a badger sett and the detailed badger mitigation measures required to be undertaken for the Woodbrook development project.

The proposed landscape plan and enhancements ensures connectivity of habitats and foraging routes enabling local badgers to continue to have a territorial range over and foraging areas within Rathmichael woodlands and stream, the railway corridor and the large area of undeveloped lands on the east side of the railway line.

Cumulative impacts to local bats and bird species are considered to be imperceptible in the long term. Cumulative impacts of the proposed development with the granted Aeval Ltd. SHD in Woodbrook will lead to an overall reduction in badger foraging area, however the 2no. projects do allow for badger mitigation in the form of habitat creation, habitat connectivity and the creation of wildlife corridors. As such it is considered cumulative impacts of the 2no. projects will have a long term moderate negative impact of badgers at a local geographical level.

Cumulative Impacts to Aquatic Ecology

Impacts on surface water features and aquatic ecology are not anticipated from the proposed development as only small-scale works (i.e. 1no. pipe outfall) are necessitated on the artificial banks of the River Dargle. The next phases of the proposed Harbour Point Masterplan development will be designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers (GDSDS). Cumulative impacts on the local surface water features are not anticipated.

13.3. Landscape and Visual

Construction

- In terms of intra-project cumulative impacts (or “interactions”), occupants of residential properties and the school development in close proximity to the site will experience combined adverse nuisance effects arising from visual intrusion as a result of the enabling demolition and construction activities. Whilst there is the potential for these adverse combined effects to occur throughout the demolition and construction phase, these effects would generally be restricted to short periods of time due to the transient nature of the works and the magnitude of the effects will vary depending on the stage of works. Mitigation measures will be set out in the Construction Environmental Management Plan, but it is recognised that even with the implementation of the mitigation measures the combined effect on the nearby residential and community occupants during demolition and construction is likely to remain moderate adverse.
- During the peak period of construction traffic, which will be for a limited time within the overall construction programme, the proposed construction activities will result in a temporary (medium term) minor adverse effect in terms of the increase in Heavy Good Vehicles (HGVs) on the surrounding highway network. This effect would be limited to agreed construction working hours with deliveries to be limited to outside of the peak hours.

Operation

There is the cumulative impact of the proposed pedestrian/cycle paths that integrate with existing and planned green routes that will provide a coherent and comprehensive network of east-west and north-south linkages providing permeability within Harbour Point and connecting with external destinations including Bray town centre and Bray Daly railway station.

The majority of the proposed and granted developments are small scale, such as single residential properties, extension works and retention projects, which it was assessed would not result in any cumulative impact. The schemes outlined in Table 5-32 of Volume 2 - EIAR have been selected because of their proximity and size and potential for cumulative impacts.

13.4. Air Quality and Climate

Due to the short-term duration of the construction phase and the low potential for significant CO₂ and N₂O emissions, cumulative impacts to climate are considered direct and imperceptible.

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

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

13.5. Noise and Vibration

The traffic data used to assess the operational stage impacts from noise and vibration included the cumulative traffic associated with the proposed development as well as other existing and permitted developments in the local area where such information was available. Therefore, the cumulative impact is included within the operational stage impact for the proposed development.

In terms of construction noise, it is noted that construction works for other phases of the overall masterplan may be ongoing at an adjacent site simultaneous to this project. In this scenario elevated construction noise emissions due to cumulative noise are likely to occur at receptor locations equidistant to both sites, for instance the school situated at the west of the site. Cumulative impacts will need to be considered and managed during the construction phase. It is recommended that liaison between the proposed development construction site and any adjacent construction sites arising from subsequent phased development of the Harbour Point Masterplan is on-going throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors.

In addition, the construction of the proposed Bray sustainable transport bridge has some potential to cause cumulative impacts. However, given the location of the proposed bridge and the location of the Harbour Point development it is expected that the Harbour Point construction phase would be dominant in terms of construction noise impacting on the identified receptors due to its closer proximity. Hence, the sustainable transport bridge is unlikely to have any additional significant impact on the receptors. Nevertheless, it is recommended that liaison between both construction sites is on-going throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors.

All other known proposed or permitted developments are further than 300m from this proposed development and as a result will not cause a cumulative noise or vibration impact.

13.6. Traffic

Following an assessment of junctions in the local area, following from an increase in traffic as a result of the proposed development in combination with other local developments, it is found that all junctions are expected to continue to operate within capacity on all arms in the Opening Year + 15 scenario. As such, the reported impact represents a long term slight negative effect.

13.7. Land, Soils and Geology

The relevant local committed developments were subject to cumulative impact assessment and found to have no cumulative impacts on land, soils and geology. The remainder of committed developments in the vicinity generally comprise the redevelopment or extension of existing properties or small-scale property construction projects. Therefore, in summary, no cumulative impacts associated with the proposed development with respect to land, soils or geology are anticipated during the Construction or Operational Phases.

13.8. Water

All relevant local committed developments were subject to cumulative impact assessment and found to have no cumulative impacts on hydrogeology and hydrology. In addition, available information at this preliminary juncture for the Harbour Point Masterplan has been considered with regard to cumulative hydrogeology / hydrology / flood risk impacts. Taking account of the design of the proposed development, in the context of the receiving water environment, no significant cumulative hydrogeological or hydrological impacts are likely to occur. Regarding potential cumulative flood risk impacts, based on a technical review undertaken by IE

Consulting Ltd. (2021) (presented in Appendix 10.4 of Volume 3), the following conclusions have been made (IE Consulting Ltd., 2021):

- *'A Stage 3 Flood Risk Assessment has been carried out for the subject site and the proposed layout ensures that none of the 'highly vulnerable' elements of the Development are located within Flood Zone 'A' or Flood Zone 'B'. The proposed development will not increase the flood risk from the River Dargle to surrounding people or any property outside of the applicant's landholding.*
- *While the Masterplan concept design for the Lands outside of the subject site has considered the relevant information, any future application and development of these Masterplan Lands will be subject to a stand-alone Stage 3 Flood Risk Assessment including a Justification Test in consultation with Wicklow County Council.*
- *The remaining portion of the Masterplan lands will be progressed in tandem with the stand alone Stage 3 FRA noted above to ensure that there will be no increased risk of flooding to the Coastal Quarter Development. The design will also ensure that there will be no increased flood risk to any other existing adjacent developments or properties. The building positions and their levels above ground will be such that they will facilitate an overland flow route, and will not impact on the function of the emergency storm outlets on the northern flood defence wall.'*

Therefore, in summary, no cumulative impacts associated with the proposed development with respect to water (i.e. hydrology, hydrogeology and flood risk) are anticipated during the Construction or Operational Phases.

13.9. Cultural Heritage

A review of the masterplan for adjacent lands as well as other committed developments in the area, which have been permitted but not yet built, did not reveal any likely impacts on known elements of the cultural heritage resource.

Given the absence of any identified archaeological remains within the proposed development during the geophysical survey and test trenching investigations carried out as part of this assessment in combination with the above summary of other developments in the area it is, therefore, concluded that the proposed development will not result in any significant cumulative impacts on the known archaeological resource.

13.10. Material Assets

With regard to proposed waste management strategies, no potential cumulative impacts are anticipated during the construction and operational phases of the proposed development.

No cumulative impacts are anticipated during the construction or operational phases of the proposed development associated with built services.

14. Interactions

This section describes interactions between impacts on various environmental factors. A summary matrix showing interdependencies between these environmental attributes is presented below for the proposed development.

	Chapter 3 - Population & Human Health		Chapter 4 - Biodiversity		Chapter 5 - Landscape and Visual		Chapter 6 - Air Quality & Climate		Chapter 7 - Noise & Vibration		Chapter 8 - Traffic		Chapter 9 - Land, Soils & Geology		Chapter 10 - Water		Chapter 11 - Cultural Heritage		Chapter 12 - Material Assets	
	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.
Chapter 3 - Population & Human Health			*	*	*	*	✓	✓	✓	✓	*	*	✓	✓	*	*	*	*	*	*
Chapter 4 - Biodiversity					✓	✓	✓	✓	✓	✓	*	*	*	*	✓	✓	*	*	*	*
Chapter 5 - Landscape & Visual	*	*	✓	✓			*	*	*	*	*	*	*	*	*	*	✓	✓	*	*
Chapter 6 - Air Quality & Climate	✓	✓	*	*	*	*			*	*	✓	✓	✓	✓	*	*	*	*	*	*
Chapter 7 - Noise & Vibration	✓	✓	*	*	*	*	*	*			✓	✓	*	*	*	*	*	*	*	*
Chapter 8 - Traffic	*	*	*	*	*	*	✓	✓	✓	✓			*	*	*	*	*	*	*	*
Chapter 9 - Land, Soils & Geology	✓	✓	*	*	*	*	✓	✓	*	*	*	*			✓	✓	*	*	*	*
Chapter 10 - Water	✓	✓	✓	✓	*	*	✓	✓	*	*	*	*	✓	✓			*	*	*	*
Chapter 11 - Cultural Heritage	*	*	*	*	✓	✓	*	*	*	*	*	*	*	*	*	*			*	*
Chapter 12 - Material Assets	*	*	*	*	*	*	*	*	*	*	✓	✓	✓	✓	*	*	*	*		

All potential interactions have been addressed as required throughout the EIAR. During each stage of the assessment contributors have liaised with each other (where relevant) to ensure that all such potential interactions have been addressed.

The various interactions between environmental topics considered within the EIAR are further discussed in Chapter 14, Volume 2 – EIAR.

15. Schedule of Environmental Commitments

A schedule of environmental commitments has been prepared, for ease of reference and clarity, and to facilitate enforcement of all environmental mitigation and monitoring measures specified within Chapters 3 to 12 of the EIAR.

All mitigation and monitoring commitments detailed within the EIAR have been included in a separate compendium and are presented in Chapter 15, Volume 2 - EIAR.

These commitments have been incorporated into the Construction Environmental Management Plan (CEMP) submitted as part of this planning application. The CEMP is a live document which will be added to by the Contractor, and will include any future additional mitigation measures as may be required.

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