

# Strategic Housing Development, Blackrock, Dundalk, Co. Louth

Environmental Impact Assessment Report  
Volume 1 - Non-Technical Summary

Kingsbridge Consultancy Ltd.

21st June 2019

# Notice

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## Client signoff

|                         |  |
|-------------------------|--|
| Client                  | Kingsbridge Consultancy Ltd.                                 |
| Project                 | Strategic Housing Development, Blackrock, Dundalk, Co. Louth |
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# 1. Introduction & Methodology

Kingsbridge Consultancy Ltd. is seeking permission for the development of 483no. residential units, an access road, creche, 824no. car parking spaces (including 2no. undercroft parking facilities with a combined total of 96no. spaces), 512no. cycle parking spaces, open space / landscaped areas, and all associated ancillary works in a new community on a 17.9ha parcel of lands c. 1.3km north of Blackrock Village Centre and c. 3km south of the central core of Dundalk. The development site location, and red-line boundary are presented in Figure 1 and Figure 2 respectively.

This non-technical summary presents a general overview of the proposed residential development and an assessment of all associated potential environmental impacts. Refer also to the 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;
- **Volume 3** - EIAR Appendix A to Appendix J.

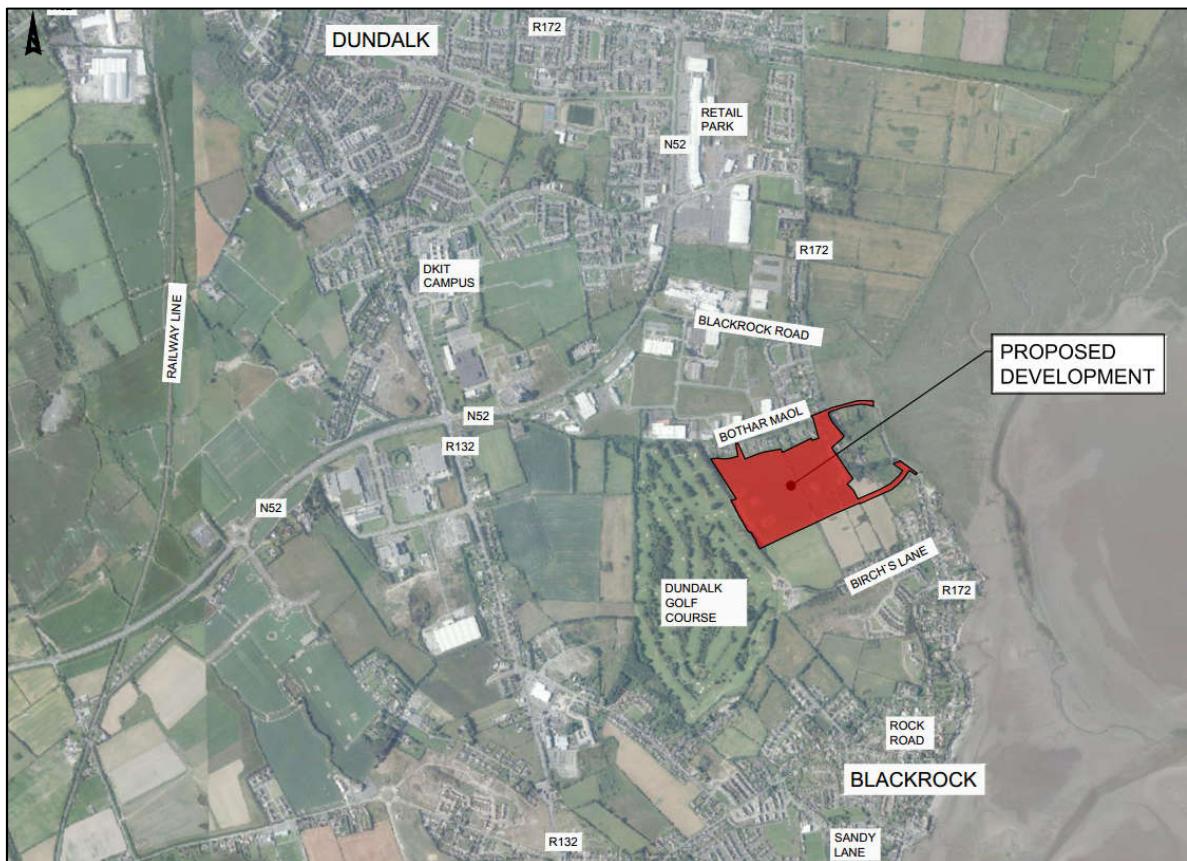
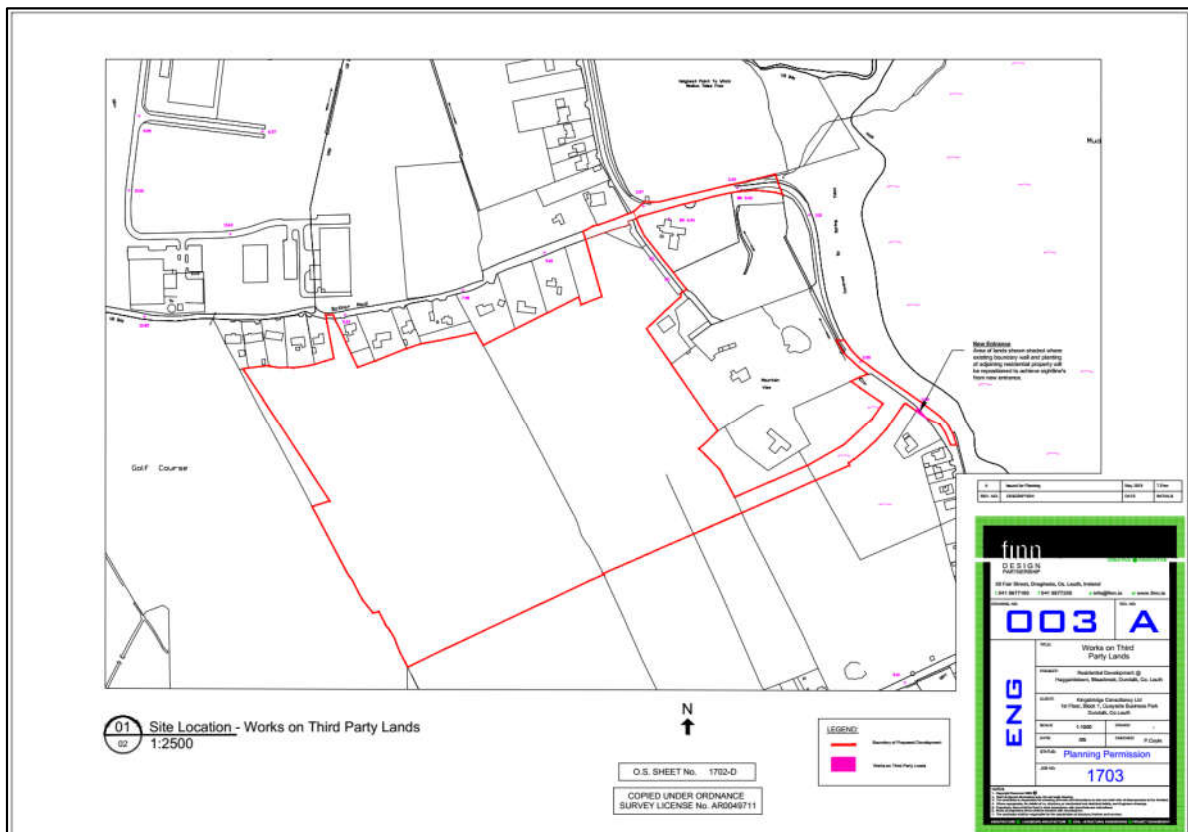


Figure 1 - Site Location



**Figure 1 - Proposed Development Site (including red-line boundary)**

The Planning and Development (Strategic Housing Development) Regulations (S.I. No. 271/2017) came into effect in July 2017. These regulations form part of the Planning and Development Regulations 2001 to 2018, 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).

This development is the subject of an SHD planning application to An Bord Pleanála, under Planning and Development (Strategic Housing Development) Regulations S.I. No. 271/2017.

The need for the preparation of an EIAR has been considered with due regard to EIA Directive 85/337/EEC and Directive 2014/52/EU as amended. The project 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 2001-2018. The project does not exceed the relevant thresholds and so a mandatory EIAR is not required. However, the proposed development is located within close proximity to Dundalk Bay, which is a designated Natura 2000 Site (Special Area of Conservation Site Code 000455 / Special Protection Area Site Code 004026). Therefore given the sensitive location of the project, the potential for this project to have a significant impact on the receiving environment must be considered further. An EIAR has therefore been prepared for the proposed development.

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 on radiation. Therefore, this topic was not considered further within this EIAR. The following environmental topics have been fully assessed within the EIAR document;

- Population and Human Health;
- Biodiversity;
- Landscape & Visual;
- Air Quality & Climate;
- Noise & Vibration
- Traffic;
- Land, Soils & Geology;
- Water;
- Cultural Heritage; and,
- 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 13, 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 14, Volume 2 – EIAR).

# 2. Project Description

## Details of Proposed Development

The purpose of this application is to seek permission for an SHD outside the gateway town of Dundalk. The proposal is for the sustainable development of 483no. residential units, an access road, creche, 824no. car parking spaces (including 2no. undercroft parking facilities with a combined total of 96no. spaces), 512no. cycle parking spaces, open space / landscaped areas, and all associated ancillary works in a new community on a 17.9ha parcel of lands c. 1.3km north of Blackrock Village Centre and c.3km south of the central core of Dundalk. 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 13.8ha results from the deduction of the 3.7ha zoned open space from the gross Site area; and, sustainable residential densities of 35 dwellings per hectare are achieved through the use of a variety of housing typologies including apartments, duplex, terraced, semi-detached and detached dwellings as shown below in Figure 3. A full set of all planning and engineering drawings are presented in Appendix A, Volume 3 of the EIAR.

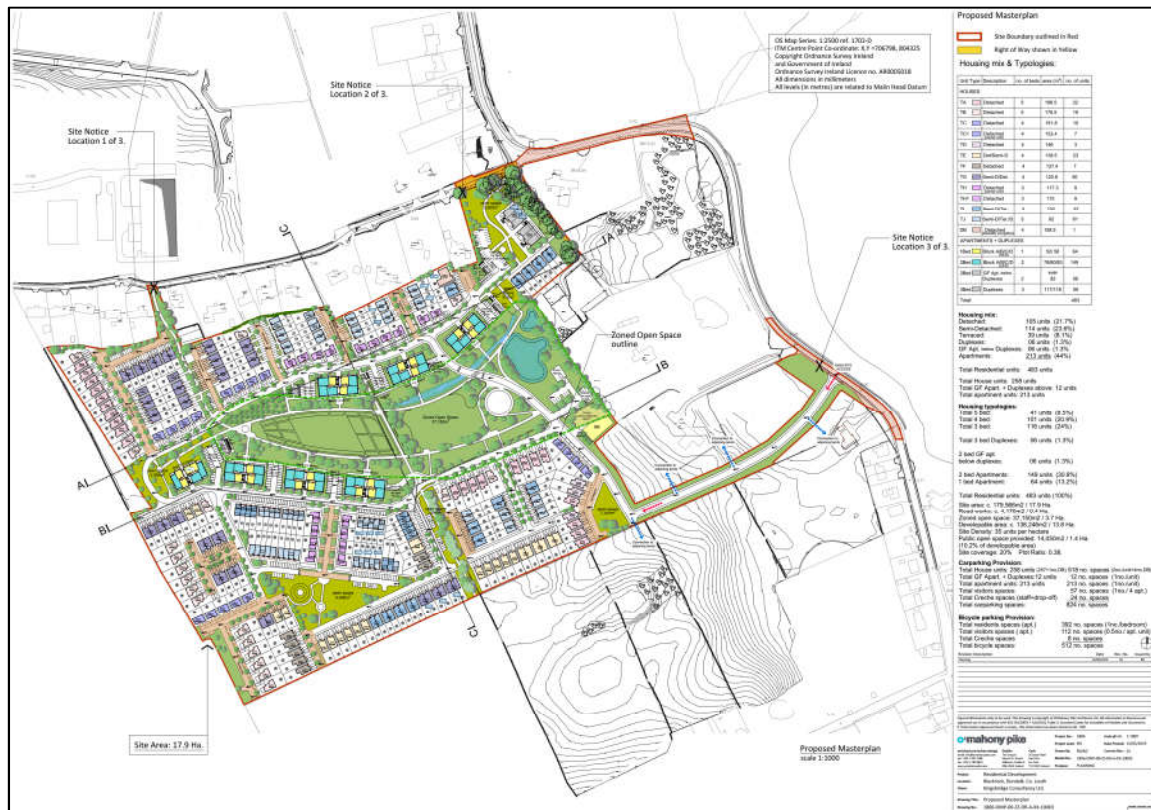


Figure 3 – Proposed Site Layout

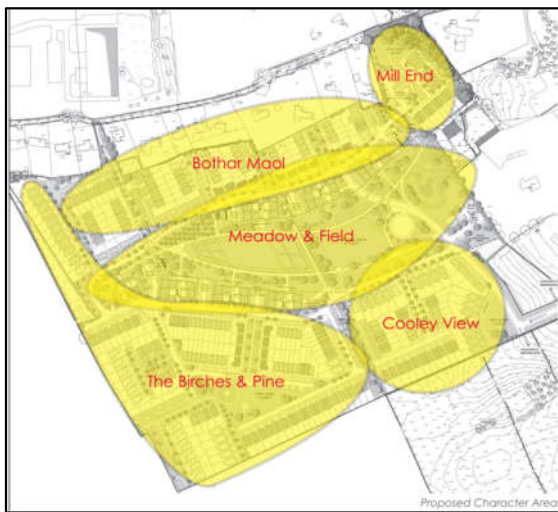
The layout proposes five landscape character areas, each responding to specific landscape, topographical and boundary considerations, as summarised below and presented in Figure 4.

- Cooley View - A forecourt open space providing a sense of place and an entrance to the new community. The siting of dwellings along the southern edge sets up a back-to-back condition with any future residential development. Landscape is envisaged as having a wetland character.
- Meadow & Field - The most extensive character area within the development, occupying the core central space from which the other character areas integrate. It is formed by the zoned open space compartmentalised by the pedestrian and cycle movement network and by hedges, trees and fences into a series of smaller enclosures, with amenity/play interventions throughout the space. The edges of this character area are defined by apartment buildings, offering supervision

of the open space through higher densities, open up views to the estuary to the east from higher levels, and framing the public realm when viewed from the east.

- The Birches & Pine - As the land rises subtly in the direction of the Golf Course, the site character will also change. This area will respond to the existing conifer planting associated with the Golf Course and slightly higher and drier land. The golf course edge is occupied by detached dwellings taking advantage of excellent views, vistas to the west. A triangular shaped public open space is located at the heart of the south portion of this character area. This pocket park is defined by the building form of mixed house typologies to provide more local and intimate space which aid placemaking in this character area.
- Bothar Maol - Acting as a landscape extension to Bóthar Maol, the built form provides a series of gabled relationships to existing dwellings to the north. Small streets, homezones, each street is different in size and shape, which will add to its individuality and sense of place.
- Mill End - Intimately scaled enclave responding to existing mature landscape character.

In addition to the zoned open space; 10% of the developable area (1.38ha) will be delivered as a series of public open spaces.



**Figure 4 – Proposed Character Areas**

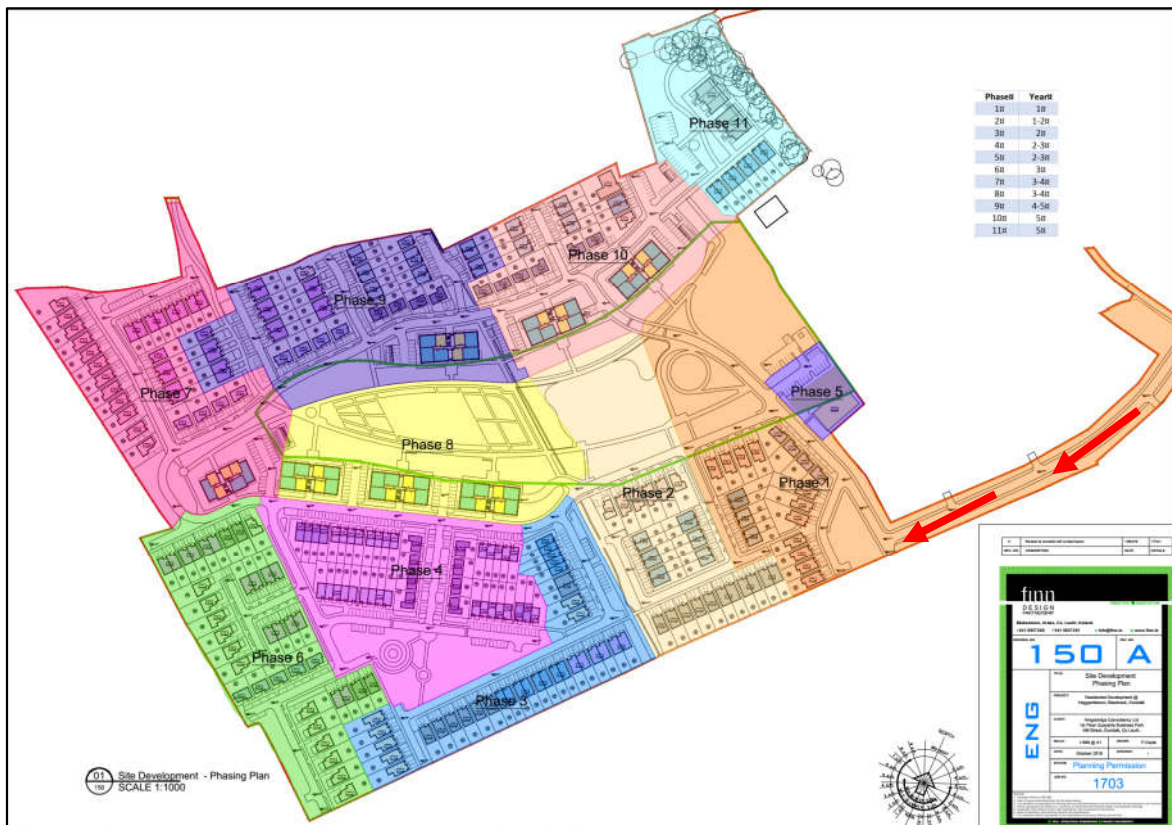


**Figure 5 – Open Space within the development**

A notable connection is made to the historic Bothar Maol lane connection via a pedestrian / cyclist path. The landscape design responds to the presence on Site of many existing hedgerows, which form the boundaries between fields. The layout recognises hedgerows as the primary land form on the Site and uses them to order the development where possible. A diverse range of planting will be provided to compensate for any hedgerow removal required to maintain linkages between public open spaces. Refer to Figure 5. The landscape and engineering design of this development incorporates sustainable drainage systems (SuDS) measures including swales, bio-retention areas, wetlands, and permeable paving.

A number of 'homezone' areas are proposed as part of the layout design. Within each 'homezone' a shared surface is proposed for the carriageway and the pedestrian areas, with priority given to pedestrians and cyclists. Trees and other planting have been incorporated within the design so as to create an attractive streetscape.





**Figure 6 – Proposed Preliminary Phasing Plan**

It is proposed that the construction of the residential development will be delivered in 11no. Phases (Year 1 to Year 5). Refer to Figure 6. The first phase of the project will be developed in the south east corner of the Site and will be accessed through the proposed entrance off the R172 during the construction phase. 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 remaining phases (Phase 2 – Phase 11).

2no. pedestrian / cyclist access points are proposed for the north west and north east of the Site, off Bothar Maol and will become operational once the construction of Phase 7 and Phase 11 are complete. The proposed construction period will last a maximum of 5 years.

The proposed surface water drainage system will collect storm water run-off from the roofs, pavements and other impermeable areas of the proposed development using underground pipework and manholes primarily laid along the access roads throughout the development. The SuDS philosophy has been incorporated into the design to reduce run-off volumes and improve run-off water quality. The surface water drainage system has been designed with 4no. separate catchment areas. The runoff flows from the two large catchment areas will be attenuated in an onsite infiltration basin before the allowable greenfield runoff will discharge to an open channel within the estuary of Dundalk Bay. The detention basin/pond will be located within the public open space and will be incorporated into the landscape plan with gently sloping side slopes. Water quality in receiving waters, namely Dundalk Bay, shall be protected through the provision of interception storage and treatment of runoff within the SuDS features, via. permeable paving, swales, filter drains, silt traps and oil separators (proprietary oil/water separators which prevent hazardous chemical and petroleum products from entering watercourses and public sewers are proposed at the end of the each of the 4no. surface water drainage networks) and onsite attenuation storage and infiltration basin. Flows will be attenuated through a flow control device fitted on the discharge pipe from the attenuation basin/pond. An emergency shut-off valve will also be fitted to prevent storm water discharge to Dundalk Bay in the highly unlikely event of failure of the treatment system or an onsite contamination event during the operational phase of the development.

A new foul drainage network will be constructed throughout the development which will include 150 mm and 225 mm diameter gravity pipelines with manholes. The proposed design includes an onsite pumping station with an adjoining emergency storage tank capable of 12 hours of dry weather flow.

Wastewater from the new pumping station will be pumped to the public mains located at the junction of the N52 and the entrance to the Crowne Plaza Hotel and Dundalk IT. The design includes the laying of a new 150 mm diameter mains from the pumping station to a stand-off manhole to be constructed prior to the connection to the existing gravity mains. The new rising main will extend through the site and extend along Bothar Maol in a north-westerly direction prior to connecting to the mains. A full set of all planning and engineering drawings are presented in Appendix A of Volume 3 of the EIAR.

## Description of the Baseline Scenario



**Plate 1 - Aerial Photo Showing Baseline Site Conditions**

The subject site is currently good quality arable land, generally square in plan and subdivided into a small number of relatively large field enclosures, as presented in Plate 1. The northern boundary is defined by a variety of private residential properties which front Bothar Maol (a historic route) which will only be publicly accessible from the site via a proposed pedestrian / cyclist path in the north west portion. The western and part of the southern boundary of the site adjoins Dundalk Golf Course and practice range. The majority of this boundary is currently fenced and planted with non-native conifer trees. The remainder of the southern boundary joins with lands which are currently in agricultural use, but also zoned for residential use. Along much of the eastern boundary (particularly to the north east) are mature hedgerows and trees which separate the subject lands from two large sites which are privately owned residential properties.

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.

### *Alternative Considered 01 - Revised Entrance Organisation*

The first alternative considered related to the following revised entrance organisation:

- Relocation of proposed access road north of final alignment to improve the sense of entry to the development and to provide views from the entrance to western extremities of subject lands to aid legibility and sense of place.
- Rejected due to lack of client control of this alternative.
- No significant environmental issues were identified associated with this alternative.

### *Alternative Considered 02 - Western Apartment Location*

The second alternative considered related to the location of the proposed Apartment Block in the Western portion of the Site:

- Developed with an alternative access location as a consideration; this option resulted in an additional secondary open space south of the zoned open space along the entrance route, and clustered taller apartment forms to the north and south of the western extremity of the zoned

open space (to close the vista from the east and reduce the golf course view aperture to the west).

- This was rejected in tandem with the rejection of an alternative road alignment.

#### *Alternative Considered 03 - Gabled Arrangement to Golf Course*

Another alternative considered related to a gabled arrangement to the existing golf course:

- Initial design development had significant differences from the final proposal in terms of mix and orientation of units; however, the most notable difference is the character of the residential edge formed to the golf course.
- This was rejected, and the revised orientation of the edge (as reflected in the final proposal) adopted due to the final orientation better exploiting views west over the golf course and east to the estuary.
- No significant environmental issues were identified associated with this alternative.

#### *Alternative Considered 04 - Intensification of Use in South-West*

A fourth alternative considered related to intensification of use in the South-west:

- Design development to reduce the number of apartment blocks to the perimeter of the park through intensification of housing typologies in the south-west quadrant.
- This was rejected due to the lack of visual interest created along the southern boundary and the over scaling of the new open space in the south west quadrant that resulted from housing efficiencies.
- No significant environmental issues were identified associated with this alternative.

#### *Alternative Considered 05 – Alternative Parking Arrangement to Zoned Open Space*

The final design alternative considered related to an alternative parking arrangement to lands zoned for use as open space:

- Surface car-parking provided north of apartment blocks A, B, & C between building edge and Class 2 Zoned Open Space.
- The final design eliminates parking in these locations for reasons to do with the negative impact of such parking; firstly in relation to the quality of the open space when edged with parking bay; secondly due to the visual impact of parking in this location on the setting of the residential apartment blocks themselves. This could be considered either from the point of view of an external observer where the built form is edged by hard-surfaced parking rather than sitting in a landscape setting, or from the point of view of the occupant where views to open space are interrupted by the lower visual quality of parking.
- No significant environmental issues were identified associated with this alternative.

Therefore two undercroft car parking facilities were incorporated into the final design, described previously.

#### *Alternative Considered 06 – SHD Planning Application: Duration of Planning Permission Sought*

Initially it was proposed that a ten year planning permission would be sought for the proposed development. However, taking account of the need for the residential project in the context of current and future population and employment growth within the Dundalk region, and following pre-application consultation with ABP, a five year planning permission is considered to be more appropriate for the subject Site. Therefore a five year planning permission is being sought for the proposed SHD.

## **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 but are not yet built or operational, 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 3 to Chapter 12 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 area have been designed to take account of potential changes in rainfall run-off rates associated with climate change (i.e. additional 10% increase in rainfall over the design life of the development (100 years)). Finish floor levels of all proposed dwellings along with the vast majority of Site infrastructure will be well above the maximum predicted flood level. All habitable dwellings together with the proposed crèche will be protected from tidal flood risk in both the current climate and future climate scenarios. Therefore, the potential impact of climate change, and associated rising sea levels in the vicinity, on the proposed development with regards to drainage design is imperceptible.

The traffic air dispersion modelling study indicates that the residual impacts of the proposed development on air quality and climate are predicted to be negligible, with respect to the operational phase local air quality assessment for the long and short term.

### 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 / industrial activities in the vicinity of the development, specifically along Bothar Maol and Finnabair Industrial Park 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 Dundalk Golf Club or to Dundalk Institute of Technology (DKIT) will not be impacted.

A Stage 1 Human Health screening assessment has been undertaken. The proposed residential development will not have an adverse impact on mental health and wellbeing, or 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 residents including crèche users, and offsite residents) through inhalation of dust emissions during the construction phase.
- 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) during the construction phase. Given the current and historic land use and based on Site-specific soils chemical data, the potential risk of exposure via. ingestion or volatilisation associated with baseline soil quality is negligible.
- Potential risk to receptors (i.e. maintenance workers) through direct contact with attenuated storm water which may potentially contain low level hydrocarbon concentrations from Site activities (potential minor fuel leaks) during the operational phase.
- Potential risk to (i.e. construction workers, onsite residents including crèche users, and offsite residents) through noise emissions, during the construction phase.

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 slight positive 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

Ecological Impact Assessment (EclA) was undertaken (CIEEM EclA Guidelines) to understand and assess the likely impact of site development on existing ecological resources (flora, habitats, fauna, designated sites etc.) within, adjacent and connected to the site. A detailed assessment of potential effects on Dundalk Bay Special Protected Area for birds (SPA) and Special Area of Conservation (SAC) was undertaken. A Natura Impact Statement (NIS) has also been submitted as part of this planning application.

### Ecological Baseline

This is a large greenfield site which presents as rural and is currently used for agricultural purposes; however, the wider setting is within a predominantly developed area. The site is dominated by arable fields, with marginal and peripheral areas of rough, semi-improved grassland including isolated, rocky areas which remain uncultivated, with rough grassland and loose scrub cover. External site boundaries range from managed thorn hedges, non-native garden hedgerows and lines of mature trees or screen planting, to short sections of defunct and patchy hedgerows remaining within the site, marking former internal field divisions. The route for the site access runs over an area of wet and rough marshy grassland and scrub to join with the R172 Blackrock Road. The site contains no built structures and, away from the site boundaries, no mature trees.

The site is on the western shore of Dundalk Bay, which is designated under international statute/convention as SAC, SPA and Ramsar, and under national legislation as a proposed Natural Heritage Area (pNHA). Functional ecological connectivity at a terrestrial landscape scale is very limited.

### Ecological Impacts & Mitigation

#### Sites Designated for Nature Conservation

The main areas of concern are pollution of Dundalk Bay SAC or Dundalk Bay SPA, degradation of SAC/SPA habitats and *ex-situ* impacts on SPA feature and assemblage species. Objective, scientific and precautionary assessment has demonstrated that the required measures to avoid, mitigate and otherwise reduce the significance of adverse effects are technically feasible and attach a high level of confidence in both implementation and success.

#### Habitats & Flora

Development is restricted to the open, central areas of the site, leaving hedgerows and scrub on the site boundaries and the small area of mixed woodland in the north-eastern corner of the site largely intact. Remaining sections of internal hedgerows are to be retained and incorporated into internal planting and an extensive central open landscaped area. Additional boundary and internal landscape planting are proposed which will offset minor losses and enhance retained vegetation.

The small section of marshy/swampy grassland and scrub to the east of the site is of some biodiversity and habitat interest and is the only area of notable semi-natural habitat within the site which will be lost to development. The loss of this small area of wetland habitat to the construction of the main site access will be compensated by new internal and boundary landscape planting and the creation of new pond/wetland areas in the north-eastern section of the site.

#### Bats

Bat activity was largely restricted to the site boundaries, with commuting and foraging individuals of four species observed and recorded. Local roosting was indicated from site surveys within structures just outside the site boundaries and possibly also within mature trees. The strong linear habitat features on the site boundaries used by bats will persist post-development. It is unlikely that site development in itself will adversely impact local populations as no actual or potential roost sites and no useful commuting or foraging habitat will be degraded or lost. Site development will strengthen boundary vegetation and create new wetland areas which may enhance the overall habitat utility of the site for bats.

However, increased artificial illumination, which will be introduced by the construction and occupation of the new housing development, can degrade the utility of natural and semi-natural habitats for commuting, foraging and roosting bats. This may compromise patterns of movement and foraging;

the degree of impact varies according to species, but all bats respond negatively to illumination of roost exits. At present, most of the site retains high levels of nocturnal darkness, with just sporadic illumination around the boundaries from dwellings on adjoining lands. It will be necessary to design site lighting which ensures minimal spillage from public amenity lighting onto the site boundaries.

### Badgers

A local social group of badgers is active in the area and seems to make limited use of the site for commuting and foraging, and more so in the winter. There are no setts within the site or adjoining lands. As no setts will be destroyed and as the site does not represent a major foraging area, it is unlikely that the development of the site will have any significant adverse impacts on the local population. Construction works present some risk of injury and disruption/disturbance; however standard measures for the protection of wildlife during the construction phase will be implemented during the construction phase.

### Hedgehogs

A resident population of hedgehogs has been confirmed at the site, associated with the scrub and hedgerows along the site boundaries, particularly to the east (rather than the open central areas). Standard measures for the protection of wildlife, as set out within the Outline Construction Environmental Management Plan (CEMP) submitted as part of this planning application, and which will be further detailed within the project specific CEMP prepared by the Contractor, will be required to prevent harm and minimise disturbance during the construction phase. The provision of new boundary and internal landscape planting will ensure continuity of habitat for cover, concealment, foraging and refuge.

### Herpetofauna

Marginal opportunities for frogs and possibly newts provided by the marshy grassland and scrub to the east of the site will be lost to development. The establishment of new pond/wetland areas in the north-eastern section of the site, which are likely to be suitable for amphibians, will compensate for these minor losses.

### Breeding/Nesting Birds

The open, central areas of the site are to be developed, with mature trees, hedgerows and scrub on the boundaries largely retained and enhanced with additional boundary and internal landscape planting. Some remaining sections of internal hedgerow are to be retained and incorporated into internal landscape planting. New planting will compensate for minor losses. Overall, the site development proposals respect, incorporate and protect many peripheral areas of habitat which provide nesting opportunities. As such, it will be possible to develop the site without causing any significant adverse impacts on the breeding assemblage, providing any incidental vegetation clearance that may be necessary should take place outside the bird breeding season to ensure that no active nests are damaged or destroyed.

### Wintering Birds

Construction operations within the site are unlikely to result in increased anthropogenic disturbance to SPA feature species within or outside the SPA, although discrete elements of site construction close to the shore may require specific mitigation to prevent disturbances to coastal and estuarine birds if carried out during the winter. Otherwise, habitat loss to the wintering assemblage as a result of site development is unlikely to be a significant issue.

## Cumulative Impacts

The preparation of a comprehensive EclA has demonstrated that the ecological impacts of the proposed development are, in the context of iterative project design and mitigation, expected to be insignificant and localised to the site and immediate environs. Local populations of bats, badgers, hedgehogs and birds may suffer some disruption and habitat loss in the short term; however, as the greater part of the site comprises ecologically sterile habitat, losses to development are not significant.

The potential for significant cumulative ecological impacts is limited to effects on the marine and coastal habitats of Dundalk Bay resulting from the management and disposal of surface / storm water from the site, during the operational phase of development. With environmental management and design mitigation measures the impacts of site development are expected to result in insignificant ecological and hydrological effects on Dundalk Bay.

In the context of the scale of existing development in the peri-urban landscape, the development proposals do not contribute significantly to any pathway of additive, cumulative or in-combination effect which can be considered to increase the magnitude of residual impact predicted on habitats or species associated with other ecologically/hydrologically connected areas beyond the immediate confines of the site, particularly Dundalk Bay.

### Residual Ecological Impacts

The overall (residual) ecological impacts of site redevelopment, where adverse impacts are indicated, are expected to be insignificant, in the context of appropriate mitigation, and localised to the site and immediate vicinity. The proposed development will not interfere with the integrity of identified Natura 2000 sites or any associated/underlying designations.



## 5. Landscape and Visual

The Landscape and Visual Impact Assessment (LVIA) was prepared by Mullin Design Associates, Chartered Landscape Architects.

### Baseline Conditions

The site is located within a Landscape Character Area categorised by Louth County Council (LCC, 2002) as 'Dundalk Bay Coast' with key characteristics summarised as follow:

- Land is relatively flat and generally not higher than 20mOD;
- Seashore is mainly of marsh at the Northern end, which gives way to sand beaches in the south. Coastal erosion is evident;
- Well defined hedgerows with larger fields. Some examples of old county house estates with broadleaf planting;
- Main settlements are Blackrock, Drumiskin, Castlebellingham/Kilsaran, and Annagassan;
- Motorway to the west has reduced the traffic on the old N1;
- The area is rich in archaeological features;
- Dundalk Bay is a designated SAC and SPA; and,
- Isolated housing is very evident.

The Zone of Theoretical Influence guides the focus for the visual impact assessment. In this case the majority of receptors are theoretically located in close proximity to the north or east and across Dundalk Bay to the Cooley Peninsula. The selected viewpoints are considered representative of a range of views and viewer types, including residential, transport routes, recreational routes, designated landscapes, and main visitor locations at a variety of distances, aspects, elevations, extents, and sequential routes.

### Potential and Predicted Environmental Impacts / Effects

Landscape and Visual Assessments attempt to measure the sensitivity of specific landscape resources and describe the significance of changes to that landscape occurring as a result of a proposed development. Landscape and Visual impacts are intrinsically linked; therefore measures to reduce landscape impacts will generally assist with reduction of visual impacts and vice versa.

Detailed predefined criteria are supplied within the main LVIA, determining sensitivity and magnitude of change ratings. These are then considered through a combination of professional judgment (with reference to an assessment matrix) to establish predicted impacts / effects.

Aspects of the development which may potentially impact the landscape character or visual resource within the study area are considered. A full project description of the Development and the iterative design process is provided in Chapter 2 – Project Description. In summary the existing rolling agricultural site will be progressively developed in 11no. phases with significant areas of open space and landscape features included.

### Mitigation of Impacts

A number of measures have been proposed to mitigate against adverse landscape and visual effects being generated by the proposed development.

These include:

- Retention and protection of existing hedgerow through the centre of the site;
- Retention and protection of existing woodland block to the north east corner;
- Retention and protection of all existing boundary planting;
- Advanced landscape planting where possible to reinforce and strengthen existing planting;
- All soil stripping or earthworks and visible disturbed lands where construction has been fully complete would be temporarily grass seeded;

- Lighting to meet with guidance to avoid sky glow and disruptive directional lighting; and,
- Planting to respond to proposed character areas, considered appropriate to respect and integrate with the surrounding landscape.

## Potential Residual Impacts

Landscape sensitivity associated with this site is considered Medium-Low. In terms of magnitude of change over the entire life of the proposals (post construction), this has been considered to generate a Medium change to the landscape character area. This combined with the sensitivity outlined above would result in Moderate landscape impact post construction.

Selected visual receptors are considered representative of typical to worst case scenario views of the proposal with receptor visual sensitivity ranging from Medium-Low to High-Medium. Visual effects are set out in Chapter 5, Volume 2 - EIAR. The effects range from Negligible to Moderate. However as viewers move away from these key receptors visual sensitivity and magnitude of change generally diminishes, resulting in visual impacts over the majority of the Zone of Theoretical Visual Influence (ZTVI) being in the Minor to Negligible range.

## Summary & Conclusions

The following conclusions have been made based on the above assessment:

- The site is not located within any designated landscape. The Cooley Peninsula Area of High Scenic Quality is located c. 4km to the north; the Cooley Peninsula Area of Outstanding Natural Beauty (AONB) is located c. 6.5km from the site. The nearest designated Scenic route is located 6km from the site and nearest designated 'View & Prospect' area is located 8km from the site.
- Nine Landscape Character Areas (LCAs) within the county of Louth have been identified and categorised by Louth County Council (LCC) in their 'Landscape Character Assessment' published in 2002. The site is located within the 'Dundalk Bay Coast' LCA.
- The overall application area occupies c.17.9 ha.
- The site is currently arable agricultural land.
- The majority of key receptors with potential open views to the proposals are to the northeast, east and northwest.
- The development would be implemented in a phased approach. The development would be phased with preliminary phasing suggesting 11no. phases.
- Landscape sensitivity is considered Medium-Low.
- During the construction phase the Magnitude of Change to the site would be greatest however this is somewhat offset by phasing the development and utilising the opportunity to establish advance planting, particularly around boundaries.
- Post construction with establishment and maturing of landscape proposals, the Magnitude of Change would diminish to Medium.
- Overall post construction with establishment and maturing of landscape proposals the potential landscape impact/effect would diminish to Moderate.
- Visual sensitivity and effects obviously varies with location. The majority of those selected were considered High / Medium to Medium sensitivity. Refer to views from identified key visual receptors in Chapter 5, Volume 2 - EIAR.
- The Magnitude of Change from these viewpoints is considered to range from Very Low to High.
- Overall during the post construction stage, with establishment and maturing of landscape proposals, the potential visual impacts/ effects diminish, and range from Negligible to Moderate, with none of the selected visual receptors being considered in the significant range.

## 6. Air Quality and Climate

AWN Consulting Limited were commissioned to conduct an assessment into the likely air quality and climate impacts associated with the proposed residential development of 17.9ha of lands c.1.3km north of Blackrock Village Centre and c. 3km south of the central core of Dundalk.

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

The operational impact of the developments was assessed for the pollutants nitrogen dioxide, particulate matter less than 10 microns, particulate matter less than 2.5 microns, carbon monoxide and benzene using the UK Design Manual for Roads and Bridges screening model which is a recommended screening model for assessing the impact of traffic on air quality. The inputs to the air dispersion model consisted of information on road layouts, receptor locations, annual average daily traffic movement's, annual average traffic speeds and background concentrations.

Modelling a "Do Nothing" scenario where the development does not occur for both the opening and design years indicates that concentrations are within the EU ambient air quality standards under all scenarios and all five pollutants assessed. In addition, the impact of the traffic from the proposed development compared to the respective EU limit values for the pollutants was assessed. Based on the UK Design Manual for Roads and Bridges modelling results, the impact of the development in terms of ambient levels of particulate matter less than 10 microns, particulate matter less than 2.5 microns, carbon monoxide and benzene is considered imperceptible. In 2020 and 2025 some small increases in nitrogen dioxide concentrations are predicted. However, the traffic air dispersion modelling study indicates that the residual impacts of the proposed development on air quality and climate are predicted to be negligible, with respect to the operational phase local air quality assessment for the long and short term. Mitigation measures in relation to traffic-derived pollutants have focused on improvements in both engine technology and fuel quality with vehicles over recent years significantly cleaner than those prior to this period.

The greatest potential impact on air quality during the construction phase is from construction dust emissions, particulate matter less than 10 microns emissions, particulate matter less than 2.5 microns emissions and the potential for nuisance dust. In order to minimise dust emissions during construction, a series of mitigation measures have been prepared in the form of a Dust Minimisation Plan (refer to Chapter 6, Volume 2 - EIAR). When the dust minimisation measures set out in the Plan are implemented, fugitive emissions of dust from the site will be insignificant and pose no nuisance to nearby receptors.

## 7. Noise & Vibration

AWN Consulting Limited has been commissioned to conduct an assessment into the likely noise and vibration impact of the proposed residential development at a 17.9ha greenfield Site located in Blackrock, Dundalk, Co. Louth. The existing noise climate has been surveyed at locations representative of both the proposed dwellings and the nearest noise sensitive properties. Prevailing noise levels are primarily due to distant road traffic noise and can be considered relatively low. When considering a development of this nature, the potential noise & vibration effects on the surroundings must be considered for each of two distinct stages: the short-term construction phase and the longer-term operational phase.

During the construction phase it is anticipated that a potentially significant effect may occur at nearby dwellings during worst case periods where construction activities take place within the immediate vicinity of dwellings along the northern boundary of the proposed site. For the majority of the construction phase, activities will take place at distances further from the dwellings and impacts will therefore be reduced. A range of construction phase noise mitigation measures are proposed in order to minimise potential impacts to nearby dwellings.

During the operational phase of the development the outward noise emissions will be as a result of increased traffic on local roads. The predictions indicate that increases in traffic noise will be barely perceptible and not significant. An inward noise impact assessment has been undertaken to account for potential noise impacts during the operational phase on the proposed dwellings themselves. It can be concluded that standard construction materials will be sufficient for provision of attenuation to the external noise levels.

Whilst construction noise and vibration impacts are expected to be within the relevant criteria for the majority of the time, the contractor will ensure that all best practice noise and vibration control methods will be used, as necessary in order to ensure impacts to nearby residential noise sensitive locations are not significant. In this regard, various mitigation measures can be considered and applied during the construction of the proposed development (refer to Chapter 7, Volume 2 – EIAR). No significant vibration effects are expected as a result of the proposed development.

## 8. Traffic

### Receiving Environment

The proposed development is advantageously located in terms of access to local services, amenities and employment opportunities; many of which are located within a 2km walking distance of the site. There are many significant land uses such as Finnabair Industrial Park, Dundalk Retail Park and Blackrock Village which are within walking distance from the proposed site. In terms of cycling, there is an extensive area within a cycling distance of 4.8km. As such all of Blackrock and a significant portion of Dundalk, including the Town Centre, Dundalk IT and local employment opportunities to the south and east of the town, are within these cycling distances from the site. The access junction of the proposed development will operate under priority control. The junction design has been used to model the junction capacity as reported in Chapter 8, Volume 2 - EIA.

### Construction Traffic Impacts

The likely impact of construction works associated with the proposed development will be short-term in nature. The number of staff on site will fluctuate over the construction phase. Based on experience of similar developments, it would be envisaged that at any one time approximately 40 to 50 staff could be on site. Consequently, it is expected that two-way vehicle traffic generation during the construction phase would be of a low level during the peak AM and PM periods over the construction period of the works. It should also be noted that construction workers will typically make use of shared transport thereby further reducing traffic generation. In terms of arrivals and departure times, on-site employees will typically arrive before 08:00 and will generally depart before 17:00. These arrival and departure times are outside the general commuter AM and PM peak periods; thereby further reducing the impact of the construction phase.

In terms of deliveries to the site, these would likely be expected to arrive at a steady rate during the course of the day over the entire duration of the construction phase. The majority of deliveries would be expected to be rigid HGV's with inert material. The main haul routes for deliveries will generally arrive from the direction of the strategic motorway network via the N52 / M1 interchange. This interchange will allow access to the N52 national road from which access to the R172 can be gained via the Finnabair Crescent, a wide single carriageway distributor road serving the adjacent industrial estates with minimal frontage and access points connecting the N52 to the R172. Once on the R172, deliveries will proceed south until they reach the proposed access junction off the R172. The potential traffic impact during the construction phase is considered to be low. The active management of traffic generated by construction workers and deliveries will help to reduce the potential impacts.

### Operational Traffic Impacts

Once in operation the proposed development is predicted to establish permanent travel patterns onto the surrounding local road network by virtue of its predicted traffic generation. These travel patterns would be considered to be reflective of the existing traffic characteristics of the local road network in Blackrock and Dundalk. The impact at key junction locations are predicted to have a slight to moderate effect but would remain consistent with baseline trends.

The main junction impacted upon by the proposed development is Junction 3 (Hoey's Lane / N52 Roundabout Junction). The model results indicate that this junction is operating slightly over capacity during the 2035 assessment year with the development in place. However, when compared to the scenario without the development in the same assessment year it can be seen that the impact due to the proposed development is negligible, and the main impact on this junction is due to growth in background traffic. Notwithstanding this, consideration of all the modelled data indicates that the associated queuing and delay is low and therefore the junction is operating within acceptable limits.

### Conclusion

It is therefore concluded, in the context of the receiving traffic environment, that the impacts of the proposed development (during the construction and operational phases) on the adjacent local road network constitutes both an appropriate and sustainable form of development.

## 9. Land, Soils & Geology

### Receiving Environment

This chapter addresses the receiving land, soils and geology environment within and in the vicinity of the site at Blackrock Dundalk, Co. Louth, and potential associated impacts arising from the proposed development. Historic land-use at the site was greenfield, based on a review of available historic mapping and aerial photography. The site continues to be used as arable agricultural land. The subject lands are generally undulating and fall from the south west (23 mOD) to the north east (6 mOD).

The site is generally underlain by glacial till with bedrock close to surface at various locations across the site. Bedrock generally comprises greywacke of the Clontail 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. Rock may be encountered in localised areas. The majority of the excavated material will be reused onsite with any surplus material moved offsite in accordance with all relevant waste legislation. 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. There could be an impact on land soils and geology from potential fuel leaks during refuelling or maintenance of vehicles however, any maintenance works which may be required will be undertaken in accordance with industry Safety and Health best practice standards for such work and thus, minimise any potential risk.

### Operational Land, Soils & Geology Impacts

There are no operational impacts on Land, Soils and Geology anticipated.

### Conclusion

The proposed development will not have a significant residual impact on land, soils and geology given the mitigation measures proposed during the construction phase of the development. There are no predicted significant impacts to soils or to the receiving geological environment arising from the operational 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.

In terms of hydrology there are no reported surface water features within the proposed development, and none were identified during the site walkover survey, carried out by a Senior Atkins Hydrogeologist. Currently rainfall runoff across the site appears to drain directly to ground and likely flows in discrete permeable zones beneath the subsurface, prior to discharge to Dundalk Bay SAC and pNHA (Site Code: 000455), and SPA (Site Code: 004026).

The Haggardstown River, the Marshes Upper River and an unnamed drainage ditch are the only watercourses identified within c. 2km of the proposed development (EPA, 2019); however none of these surface water courses appear to be hydraulically connected to the proposed development site. There is no available data regarding surface water quality in the vicinity of the site (due to the lack of any pertinent surface water features). The Inner Dundalk Bay (transitional waterbody) is reported to have '*Moderate Status*' for the monitoring period 2010 to 2015 (EPA, 2019). The overall objective of the WFD is therefore to '*Restore*' the good ecological status for the Inner Dundalk Bay by 2021.

Groundwater vulnerability beneath the general vicinity of the proposed development, is classified as '*Extreme*', with localised portions of '*rock at or near surface*' indicating that bedrock is expected to be extremely shallow in the vicinity (within approximately 3m), and vulnerable to potential contamination. Groundwater flow is expected to follow topography in a general easterly / north easterly direction towards Dundalk Bay. Regional baseline groundwater quality within the general vicinity of the existing site, is of '*Good Status*' for the 2010 to 2015 period. The overall objective of the Water Framework Directive for the Louth groundwater body is to '*Protect*' the current good status.

There is no evidence of an existing direct hydrological link between the proposed development and Dundalk Bay SAC and SPA. However, an indirect link is likely via. shallow groundwater flow and subsequent discharge (via. groundwater and / or surface water) to Dundalk Bay.

There are 14no. registered wells within 2km of the proposed development. There is one onsite disused well, located in a secure pumphouse. Two of the registered wells are Group Water Schemes, used for domestic purposes. The closest groundwater supply well to the site is located c. 0.5km west (Ballinfoyle Group Water Scheme). Given the nature and location of the proposed development, there will be no impact on regional or local groundwater resources. The focus of this assessment is therefore on potential groundwater, surface water and transitional 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 transitional water quality resulting from potential pollution caused by construction activities including cement handling. This 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 transitional waters (Dundalk Bay) 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); SuDS failure; equipment failure; or routine site maintenance; and subsequent storm water discharge. However, the following design measures will be implemented as part of the proposed development specifically in order to address this potential risk;

- The surface water drainage system for the new infrastructure has been designed to convey and attenuate design flows from the infrastructure works and to accommodate the attenuated design flows from the development;
- The provision of a silt trap and an oil separator on each of the four storm water networks will remove suspended solids and hydrocarbon pollutants prior to discharge. All units have been sized to accommodate expected flows from each network. If any unit becomes overloaded as a result of unexpected significant contaminant loading, the fitted alarm will immediately activate, and maintenance will be immediately carried out.

- Discharge will be attenuated to greenfield run-off rates with flow restricted through the use of a flow control device;
- Runoff flows from two large catchment areas will be attenuated in an infiltration basin located on site before the allowable greenfield runoff will discharge to an open channel within the estuary of Dundalk Bay SAC and SPA;
- The surface water drainage system has been designed to accommodate flows up to and including 1-in-100 year rainfall events;
- An emergency shut-off valve has been designed into the system to ensure that in the highly unlikely event of an onsite spill or contamination event, contaminated storm water will be either retained onsite or diverted to the waste water pumping station; therefore safeguarding Dundalk SAC and SPA.

Nonetheless 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.

As a precautionary measure, quarterly monitoring and annual surface water sampling is recommended. Routine inspections of all silt traps and Class 1 petrol/oil separators should be carried out on a quarterly basis. During each inspection, equipment should be checked, and a visual inspection of water quality in the final chamber should be carried out. Surface water sampling should be carried out at three key locations, on an annual basis (and in the event of a major onsite fuel / oil spill or fire). Samples should be analysed for hydrocarbon parameters, and the results evaluated to confirm that the onsite storm water treatment system is fully effective.

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;

*'It is the overall conclusion of this assessment that the proposed development does not represent an unacceptable flooding risk nor shall it exacerbate flooding in the immediate vicinity or wider area. The proposed development is therefore deemed to be in compliance with both The Planning System and Flood Risk Management Guidelines for Planning Authorities Dundalk Development Plan and Louth County Development Plan with respect to flood risk.'*

In summary, there are no anticipated significant residual adverse effects to groundwater, surface water or transitional waters (Dundalk Bay SAC and SPA) provided mitigation and monitoring measures proposed during the construction and operational phases are implemented. No residual flood risk has been identified.



# 11. Cultural Heritage

A desk-based study, field survey and intrusive excavation works were carried out on lands in Blackrock, Dundalk, Co. Louth. Geophysical survey of the site under license number 18R0036 and subsequent test trenching of possible anomalies under license number 18E00417 were carried out on the site during 2018 and did not reveal any archaeological finds or features. The Archaeological Impact Assessment sought to identify and describe known and potential archaeological or cultural heritage constraints within and/or immediately adjacent to the site. The following factors were identified in the course of this assessment:

- There are no recorded archaeological sites within the proposed site. The closest listed site is a possible early medieval souterrain (LH012-013) located c. 400m east of the subject site;
- Bothar Maol, the laneway located at the north of the site is the reputed location of an ancient roadway mentioned in the *Táin Bo Cuailgne*;
- No stray finds recorded in the topographical files of the National Museum of Ireland can be directly associated with the subject site;
- No previously unrecorded archaeological or cultural heritage features were recorded in historic maps;
- No new features of archaeological or cultural heritage interest were identified in aerial photographs;
- No previous excavations have been undertaken within the subject site;
- There are no protected structures located within the subject site;
- Geophysical survey undertaken across the site displayed no clear evidence of archaeological activity;
- The test excavation works verified that no archaeological features were present at the locations where anomalies were recorded during the geophysical survey. Hence these anomalies were confirmed to be associated with naturally occurring variations in ground conditions / shallow bedrock. Shallow bedrock has been proven to be present beneath the site as discussed in detail in Chapter 9, Volume 2 - EIAR; and,
- Test trenching was therefore not undertaken in order to establish the archaeological potential of the remainder of the site.

The scale of the site and its proximity to recorded archaeological monuments indicates that there is moderate potential for the survival of buried archaeological remains at this site. Buried archaeological deposits may exist at locations which were not subject to test trench assessment in the course of this study.

It is therefore recommended that any future development works carried out at the subject site be monitored by a suitably qualified archaeologist under licence to the Department of Culture, Heritage and the Gaeltacht in consultation with the National Museum of Ireland. Particular attention will be paid to those areas adjacent to and covering the laneway to the north of the site which may potentially be the location of an ancient roadway.

## 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 proposed development is currently a greenfield Site. However, residential properties are located along the northern Site boundary, further north and south-east of the Site. Finnabair Industrial Park is also located further north. The western and part of the southern boundary of the Site adjoins Dundalk Golf Course and practice range. 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 currently no public storm water drainage networks beneath or immediately adjacent to the Site.
- There is currently no public foul water drainage network beneath the Site; however existing foul drainage networks are located along Blackrock Road and Bothar Maol.
- The Site is currently not serviced by public water supply. Within the immediate vicinity of the Site public water mains are located along Blackrock Road, along the R132, Loakers housing estate, Finnabair Industrial Park, and within the Birch's Lane area. All water supply requirements for the proposed development will be provided by public water supply.
- There are no existing underground ESB services beneath the Site. Low to medium voltage underground cables are located north and south-east of the Site. Medium voltage overhead lines currently run across the Site.
- There are no existing gas utilities beneath the Site.

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

Based on the proposed engineering design, which has been developed in consultation with the engineering and water services section of Louth 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

Historic and current land-use at the Site is greenfield. 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 wastes generated during the construction of the proposed development will be in accordance with the Outline C&D WMP 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 a project specific Outline C&D WMP. 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 (LCC, 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 duplex and apartment units. The following primary waste streams will be generated during the operational phase: dry mixed recyclables, mixed general waste / non-recyclables, glass, and organic waste. In addition the following waste streams will occasionally be generated by the residents of the proposed development: green waste, WEEE, batteries, textiles and bulky waste. 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: 120L waste and 75L recycling per week. 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. 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.

**Table 13.1 - Matrix Showing Interactions Between Environmental Attributes Considered in this EIAR**

| Interactions                          | 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 |                                       |     | x                        | x   | x                                | x   | ✓                                 | ✓   | ✓                             | ✓   | x                   | x   | ✓                                 | ✓   | ✓                  | ✓   | x                              | x   | x                            | x   |
| Chapter 4 - Biodiversity              |                                       |     |                          |     | ✓                                | ✓   | ✓                                 | ✓   | ✓                             | ✓   | x                   | x   | x                                 | x   | ✓                  | ✓   | x                              | x   | x                            | x   |
| Chapter 5 - Landscape and Visual      |                                       |     |                          |     |                                  |     | ✓                                 | ✓   | ✓                             | ✓   | x                   | x   | x                                 | x   | x                  | x   | ✓                              | ✓   | x                            | x   |
| Chapter 6 - Air Quality & Climate     |                                       |     |                          |     |                                  |     |                                   |     | ✓                             | ✓   | ✓                   | ✓   | ✓                                 | ✓   | ✓                  | ✓   | x                              | x   | x                            | x   |
| Chapter 7 - Noise & Vibration         |                                       |     |                          |     |                                  |     |                                   |     |                               |     | ✓                   | ✓   | x                                 | x   | x                  | x   | x                              | x   | x                            | x   |
| Chapter 8 - Traffic                   |                                       |     |                          |     |                                  |     |                                   |     |                               |     |                     |     | x                                 | x   | x                  | x   | x                              | x   | ✓                            | ✓   |
| Chapter 9 - Land, Soils & Geology     |                                       |     |                          |     |                                  |     |                                   |     |                               |     |                     |     |                                   |     | ✓                  | ✓   | x                              | x   | ✓                            | x   |
| Chapter 10 - Water                    |                                       |     |                          |     |                                  |     |                                   |     |                               |     |                     |     |                                   |     |                    |     | x                              | x   | x                            | x   |
| Chapter 11 - Cultural Heritage        |                                       |     |                          |     |                                  |     |                                   |     |                               |     |                     |     |                                   |     |                    |     |                                |     | x                            | x   |
| Chapter 12 - Material Assets          |                                       |     |                          |     |                                  |     |                                   |     |                               |     |                     |     |                                   |     |                    |     |                                |     |                              |     |

✓ Interaction      **Con.:** Construction Phase  
x No Interaction      **Op.:** Operational Phase

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 13, Volume 2 – EIAR.

## 14. 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 EIA.

All mitigation and monitoring commitments detailed within the EIA have been included in a separate compendium and are presented in Chapter 14, Volume 2 - EIA.

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