



CLOGHROE SHD

VOLUME I | EIAR

Non Technical Summary



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DEVELOPMENT LTD

ATKINS
Member of the SNC-Lavalin Group

 **awnconsulting**

 **DGD**
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 **Forestbird Design**
landscape architecture | landscape planning | environmental design

 **HWPP**
hw planning

Irish Hydrodata Limited



JOHN CRONIN & ASSOCIATES
ARCHAEOLOGY | CONSERVATION | HERITAGE | PLANNING

 **MHL**

CHAPTER 1 | INTRODUCTION

1.1 BACKGROUND

This Environmental Impact Assessment Report (EIAR) has been prepared on behalf of Cloghroe Development Limited to assess the likely significant environmental effects of a proposed strategic housing development [SHD] at Coolflugh, Cloghroe, Tower, Co. Cork.

The EIAR has been completed in accordance with Directive 2011/92/EU (as amended by 2014/52/EU) and relevant Irish legislation as well as in conformity with guidance in the European Commission’s ‘Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report’ (2017) and EPA’s Draft Guidelines On The Information To Be Contained In Environmental Impact Assessment Reports’ (2017).

The proposed development consists of the construction of 198 no. residential units, two storey creche, two storey café building, ESB substations, and single storey retail food store. The proposed development will be constructed on lands of circa 7.5 hectares in area to the west of the R617 Cloghroe-Blarney Road. A full description of the proposed development is provided in Chapter 2 of this EIAR.

The sites location within the wider settlement of Tower is illustrated in Figure 1.1 as shown.

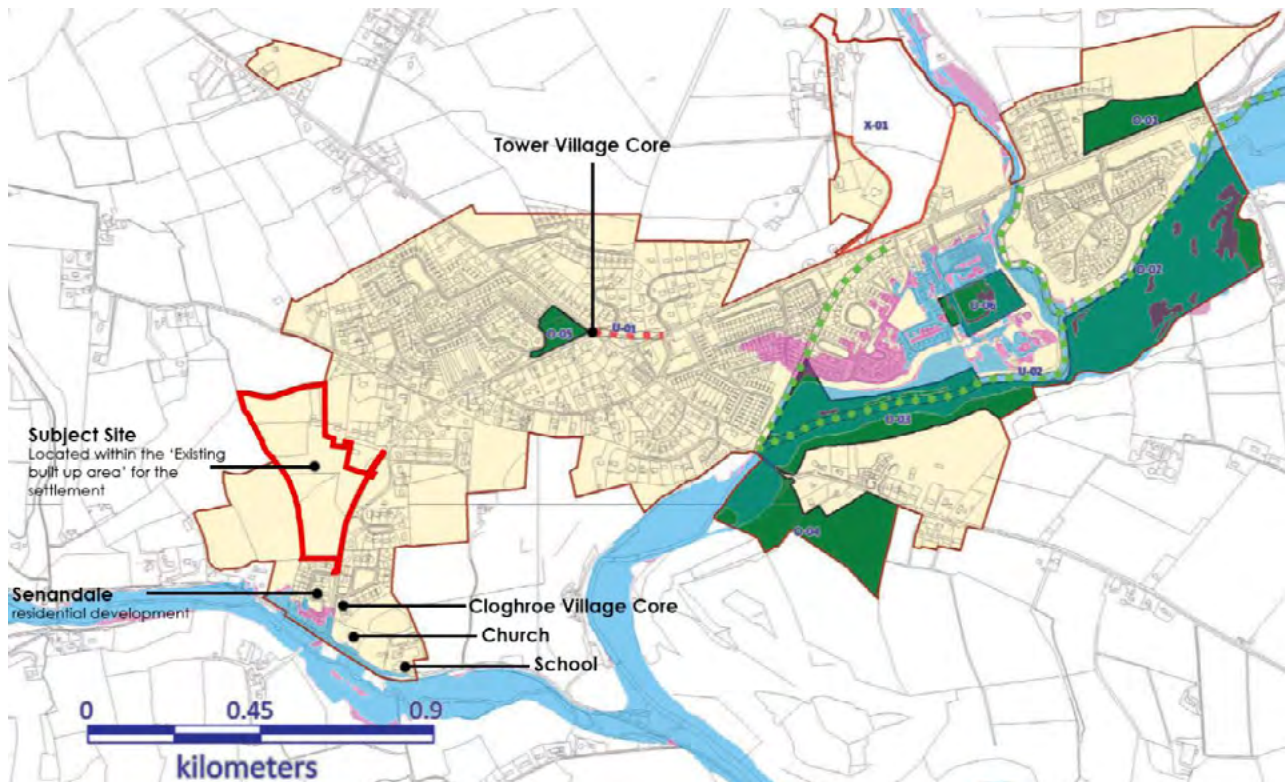


Figure 1.1 Site Location in wider settlement of Tower

1.2 PURPOSE OF EIA

EIA requirements are now governed by Directive 2014/52/EU, which amends Directive 2011/92/EU (“the EIA Directive”). The primary function of the EIA Directive is to ensure that projects that are likely to have significant effects on the environment are subjected to an assessment of their likely impacts.

Ireland’s obligations under the EIA Directive have been transposed into Irish law and, in particular, the planning consent process through the provisions of Part X of the Planning and Development Act 2000, as amended, and the Planning and Development Regulations, 2001, as amended.

This EIAR has been prepared in accordance with the relevant provisions of the EIA Directive, the Planning and Development Acts and Planning and Development Regulations. In addition, the EIAR conforms to the guidance contained in the relevant EU and Irish guidance in respect of the preparation of an EIAR.

The objective of the EIA Directive is to ensure a high level of protection of the environment and human health, through the establishment of minimum requirements for EIA, prior to development consent being given, of developments that are likely to have significant effects on the environment.

1.3 EIA METHODOLOGY

As per Article 5(1) of the 2014 Directive, an EIAR should provide the following information:

- Description of Project;
 - Description of Baseline Scenario;
 - Description of Likely Significant Effects;
 - Description of Avoidance / Mitigation Measures;
 - Description of Reasonable Alternatives (and rationale for chosen option); and
 - A Non-Technical Summary.
- Annex IV of the Directive sets out a more detailed outline of the information required in an EIAR. The subject EIAR has been prepared in full accordance with these stated requirements of Annex IV.

1.4 EIA SCREENING & SCOPING

Screening is the term used to describe the process for determining whether a proposed development requires an EIA by reference to mandatory legislative threshold requirements or by reference to the type and scale of the proposed development and the significance or the environmental sensitivity of the receiving baseline environment.

Article 93 of, and Schedule 5 to, the Planning and Development Regulations 2001 set out the classes of development for which a planning application must be accompanied by an EIAR.

Part 1 and Part 2 Schedule 5 of the Planning and Development Regulations, 2001 prescribes the categories of, and thresholds for, prescribed development requiring EIA.

The subject proposal does not come under any of the prescribed development contained in Part 1 of Schedule 5.

By way of example, paragraph 10(b) of Part 2 of Schedule 5, which refers to Infrastructure Projects includes, includes:

- (i) Construction of more than 500 dwellings
- (ii) Construction of a car-park providing more than 400 spaces, other than a car-park provided as part of, and incidental to the primary purpose of, a development.
- (iii) Construction of a shopping centre with a gross floor space exceeding 10,000 square metres.
- (iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.
(In this paragraph, “business district” means a district within a city or town in which the predominant land use is retail or commercial use.)”

However, the proposed development consists of a residential development of 198 no. residential units, retail food store of 1,895 square metres and surface car park of 101 no. spaces to serve the retail development on a site of 7.5 hectares in area. Accordingly, the proposed development is “sub-threshold” development.

However, section 172 of the 2000 Act also sets out the basis on which an EIA will be required for such a “sub-threshold” development. An EIA is required where a sub-threshold development is likely to have significant effects on the environment and therefore should be subject to EIA. Whether or not a proposed development will have a ‘significant effect’ is not determined by reference to relevant quantity, area or other limit thresholds but involves a consideration of factors such as the nature and location of a project. On this basis, the developer decided to prepare an EIAR in respect of the proposed strategic housing development, so as to enable the Competent Authority to carry out an Environmental Impact Assessment in respect of the proposed development.

EIA Scoping is the process of determining the content and extent of the matters which should be considered in the environmental information contained in an EIAR.

In determining the extent and content of this EIAR, the authors have carefully considered the applicable EU and Irish legislative requirements, relevant EU and Irish guidance and pre-planning consultation meetings held with Cork City Council in accordance with Section 247 of the Planning and Development Act 2000 in November 2020. In addition, the following prescribed bodies were notified of the extent of the proposed development and of the fact that an EIAR was being prepared:

1. Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media
2. The Heritage Council
3. An Taisce
4. Irish Water
5. Inland Fisheries Ireland (Southwest Region)
6. Transport Infrastructure Ireland
7. The National Transport Authority
8. Department of Local Government, Housing and Heritage
9. Department of Education and Skills
10. Cork County & Cork City Childcare Committees
11. National Parks & Wildlife Service
12. Office of Public Works

The particulars sent to the above bodies are contained in Appendix 1-1 with any responses received contained in Appendix 1-2 of this EIAR (Volume III).

1.5 PURPOSE & STRUCTURE OF THE EIAR

The primary purpose of this EIAR is to inform the EIA process, by identifying likely significant environmental impacts resulting from the proposed development, to describe the means and extent by which they can be reduced or mitigated, to interpret and communicate information about the likely impacts and provide an input into the decision-making planning process.

The fundamental principles to be followed when preparing an EIAR are:

- Anticipating, avoiding and reducing significant effects
- Assessing and mitigating effects
- Maintaining objectivity
- Ensuring clarity and quality
- Providing relevant information to decision makers
- Facilitating better consultation.

The EIAR is divided into 3 volumes:

- the non-technical summary comprising a concise, but comprehensive description of the project, its environment, the effects of the project on the environment, the proposed mitigation measures, and the proposed monitoring arrangements;
- The main report consisting of 15 chapters as outlined in the table of contents;
- The Appendices numbered in accordance with the chapter they relate.

1.6 EIAR TEAM & QUALIFICATIONS

HW Planning have coordinated the subject EIAR. Environmental specialist consultants were also commissioned for the various technical chapters of the EIAR document which are mandatorily required as per the EIA Directive and Planning and Development Regulations 2018. Each environmental specialist was required to characterise the receiving baseline environment; evaluate its significance and sensitivity; predict how the receiving environment will interact with the proposed development and to work with the EIA project design team to devise measures to mitigate any adverse environmental impacts identified.

A full list of all consultants and the corresponding chapters that have been prepared is detailed below.

Planning Consultants: HW Planning

Address: 5 Joyce House, Barrack Square, Ballincollig, Co. Cork

Chapters Prepared: Chapter 1 – Introduction, Chapter 2 - Project Description, Chapter 3 - Alternatives Considered, Chapter 13 - Population & Human Beings, Chapter 14 - Interaction of Impacts and Chapter 15 - Summary of Mitigation Measures

Personnel: Harry Walsh - BA HONS, Master of Regional and Urban Planning, MIPI.

Landscape Architects: Forestbird Design

Address: Alting Cottage, Ballybranagh, Cloyne, County Cork

Chapters Prepared: Chapter 4 – Landscape & Visual

Personnel: Mike Waldvogel - Principal of Forestbird Design,

Project Engineers/Traffic Consultants: MHL & Associates Consulting Engineers

Address: Carrig Mor House, 10 High Street, Douglas Road, Cork.

Chapters Prepared: Chapter 5 - Material Assets – Traffic & Transportation Chapter 6 - Material Assets – Services, Infrastructure & Utilities,

Personnel: Ken Manley - BE CEng MIEI HDip Env Eng FConsEI

Project Geologist: Atkins Ireland

Address: Unit 2B, 2200 Cork Airport Business Park, Cork, T12 R279

Chapters Prepared: Chapter 7 – Land, Soils & Geology

Personnel: Kieran Lynch - BSc. MSc. LLB.

Project Hydrologist: Irish Hydrodata

Address: Ballygarvan, Co. Cork. T12 HD5Y

Chapters Prepared: Chapter 8 – Water (Hydrology & Hydrogeology)

Personnel: Jim Walshe - BE, MEngSc MIEI C.Eng

Project Ecologist: Atkins Ireland /Greenleaf Ecology

Address: Unit 2B, 2200 Cork Airport Business Park, Cork, T12 R279 /Lissacreasig, Macroom, Co. Cork

Chapters Prepared: Chapter 9 - Biodiversity

Personnel: Paul O'Donoghue - BSc (Zoology), MSc (Behavioural Ecology) and a PhD in avian ecology and genetics.

Emma Nickelsen - BSc (Hons) in Environmental Biology and an MSc in Marine Biology.

John Deasy - BSc in Environmental and Earth Systems; an MSc in Marine Science and an MSc in Ecological Assessment.

Karen Banks - Greenleaf Ecology is an established ecological consultancy with over 12 years' experience in ecological survey and assessment.

Environmental Consultant: AWN Consulting

Address: The Tecpro Building, Clonshaugh Business & Technology Park, Dublin 17

Chapters Prepared: Chapter 10 - Noise & Vibration, Chapter 12 – Air Quality & Climate

Personnel: Alex Ryan - BA, BAI and MAI in Mechanical and Manufacturing Engineering from Trinity College Dublin. At master's level, he specialised in aircraft noise reduction using aeroacoustic simulations. He is an associate member of the Institute of Acoustics.

Ciara Nolan - MSc. (First Class) in Environmental Science from University College Dublin and has also completed a BSc. in Energy Systems Engineering. She is an Associate Member of both the Institute of Air Quality Management (AMIAQM) and the Institution of Environmental Science (AMIEEnvSc).

Built Heritage/Archaeology: John Cronin & Associates

Address: Unit 3a Westpoint Trade Centre, Ballincollig, Co. Cork.

Chapters Prepared: Chapter 11 - Cultural Heritage

Personnel: John Cronin - (B.A., University College Cork (UCC), 1991), regional and urban planning (MRUP (University College Dublin (UCD) 1993) and post-graduate qualifications in urban and building conservation (MUBC (UCD), 1999).

Project Architects: Deady Gahan Architects.

Address: Eastgate Village, Little Island, Co. Cork

Chapters Prepared: N/A

Personnel: Eamonn Gahan, Director -Architects Registration No. 04148

1.7 CUMULATIVE IMPACTS

Each of the projects listed in table 1.1 have been assessed for potential cumulative impacts. These projects were identified by using Cork City and Cork County Councils Planning Enquiry Systems and An Bord Pleanála's website.

Application Reference	Applicant(s)	Description	Outcome/Current Status
Cork City Council Ref: 21/40620	Kevin McDonnell and Paul Coburn	The construction of 73 no. residential units, flood mitigation works which include works to the R579, culverting of existing streams, foul and storm drainage, public lighting, landscaping, amenity areas and all associated site works.	Application currently being assessed by Cork City Council
Cork City Council Ref: 20/39202	Tower Residential Developments Limited	Construction of 37 no. dwelling houses	Final permission granted on 19th May 2021.
Cork City Council Ref: 19/39001	Gleann Fia Homes Ltd.	Construction of 40 no. dwelling houses	Final permission granted on 06/01/2021. Construction has commenced on site.
Cork County Council Ref: 19/4718	Whitebon Developments Ltd	Construction of 12 no. dwelling houses	Final permission granted by Cork County Council on 08/08/2019. Construction has commenced on site
Cork County Council Ref: 18/7111	Hydro Estates Ltd	Construction of nursing home & 21 no. dwelling houses.	Conditional permission granted by Cork County Council on 13/08/2019. Decision upheld by An Bord Pleanála submission of third-party appeals (Ref: ABP-305373-19).
Cork County Reference 18/6802	The Board of Management of Cloghroe National School	The construction of a new car park with 67 no. general parking spaces, 53 no. staff parking spaces, new entrance and all associated ancillary site works at a green-field site opposite Cloghroe National School.	Final Permission granted on 4th December 2019
Cork County Council Ref: 18/5562	Gleann Fia Homes Ltd	Construction of 54 no. dwelling houses.	Permission granted by Cork County Council for on 27/11/ 2018. Construction has commenced on site with some units completed and occupied.

Table 1.1 Cumulative Impacts – Projects Considered

The potential impact on the environment of the 2014 Cork County Development Plan and 2017 Blarney Macroom Municipal District Local Area Plan have also been assessed for cumulative impacts and were considered in the preparation of this EIAR.

1.8 AVAILABILITY OF EIAR DOCUMENTATION

This EIAR will be available in printed form at the offices of Cork City Council (City Hall, Anglesea Street, Cork, T12 T997) and An Bord Pleanála (64 Marlborough St, Rotunda, Dublin 1, D01 V902).

The EIAR will also be available to view electronically at the following website. **www.CloghroeSHD.ie**

1.9 TYPOGRAPHICAL ERRORS

Every effort has been made to ensure that the content and findings of this EIAR is consistent and error free. However, it is acknowledged that some minor grammatical/spelling and typographical errors may occur. These typographical minor inconsistencies are unlikely to result in any material impacts on the overall findings and conclusions of the EIAR.

CHAPTER 2 | PROJECT DESCRIPTION

2.1 INTRODUCTION

The EIA Directive requires that an EIAR should provide an overview of:

- the location, site, design, size, etc.;
- the physical characteristics of Project (including any demolition or land-use requirements);
- the characteristics of the operational phase of the Project;
- any residues, emissions, or waste expected during either the construction or the operational phase.

2.2 DESCRIPTION OF THE PROJECT

The proposed development consists of the construction of a mixed-use residential and retail development and all ancillary site development works, including the demolition of 2 no. existing agricultural structures at Coolflugh, Cloghroe, Tower, Cork. The proposed residential development comprises the construction of 198 no. residential units, two storey creche, two storey café building, ESB substations, and single storey retail food store. The proposed development provides for 117 no. dwelling houses consisting of 5 no. 4 bedroom detached houses, 44 no. 4 bedroom semi-detached houses, 8 no. 4 bedroom townhouses, 14 no. 3 bedroom semi-detached houses, 24 no. 3 bedroom townhouses and 22 no. 2 bedroom townhouses. The proposed development includes 81 no. apartment/duplex units consisting of 2 no. 3 bedroom, 35 no. 2 bedroom and 44 no. 1 bedroom units. 79 no. of the proposed apartment/duplex units will be provided in 6 no. 3 storey apartment buildings with ancillary communal areas and bicycle parking facilities. 2 no. apartment units will be provided at first floor level of a proposed café building to the south of the site.

The proposed retail development consists of a single storey retail food store with a net sales area of 1,315 m² which includes the sale of alcohol for consumption off premises, totem sign and ancillary building signage, servicing areas, surface car park and bicycle parking facilities. The proposed development includes a proposed two storey café building with café on ground floor and 2 no. apartments at first floor level.

Access to the proposed development will be via 2 no. entrances from the R617, one which will serve the proposed residential development and one to serve the proposed retail development. A separate pedestrian entrance is to be provided from the existing cul-de-sac to the northeast of the site. The proposed development makes provision for the upgrade of the R617, including the installation of footpath/cycle infrastructure, signalised pedestrian crossing and the relocation of the existing public bus stop to the west of the R617. Ancillary site development works include flood defence works, public realm upgrades, amenity walks, public open spaces, an urban plaza to the east of the proposed retail unit and the undergrounding of existing overhead lines.

The subject lands are situated within the development boundary and 'existing built-up area' of Tower in the current Blarney Macroom Municipal District Local Area Plan 2017 confirming their suitability for mixed-use development.

2.3 DESCRIPTION OF CONSTRUCTION PHASE

2.3.1 CONSTRUCTION PROGRAMME AND PHASING

Construction access to the site will be provided from the R617 via the proposed access serving the residential development. The proposed development will be constructed in three distinct phases comprising,

- Phase 1 – (Expected duration of approximately 6 months). Bulk excavation across the entire site extents and public realm upgrades to the R617 including installation of signalised pedestrian crossing, relocation of bus stop and delivery of footpath/cycle infrastructure on the R617. Demolition of the existing agricultural structures to the north of the site will also be undertaken in Phase 1.
- Phase 2 - (Expected duration of approximately 18 months). Development in the southern areas of the site comprising 82 no. residential units, creche, retail food store/café and central amenity parkland.
- Phase 3 - (Expected duration of approximately 24 months). 109 no. residential units in the northern area of the site.

A temporary construction compound will be located to the east of the site which will contain:

- Site offices, canteen and toilet / changing facilities c/w temporary water supplies and wastewater treatment unit.
- Secure compound and containers for storage of materials and plant.
- Temporary vehicle parking areas.
- Contained area for machinery refuelling and construction chemical storage.
- Contained area for washing out of concrete and mortar trucks.

2.3.2 WORKING HOURS

Construction works will occur within the hours outlined below.

- 07.00am – 07.00pm* (Monday – Friday inclusive)
- 07.00am – 4.00pm* (Saturday)

There will be no work on Sunday and Bank Holidays.

** The working day may extend at times when critical elements of work need to be advanced. Longer working days can occur when there is a planned concrete pour. If extended working hours are required, these will be agreed in advance with the planning authority. Accordingly, traffic generated by core construction personnel will be mainly during the off-peaks and will not have a significant adverse impact on the road network*

Deliveries will be co-ordinated to prevent queuing of vehicles which could adversely affect traffic flow and to minimise disruption to local traffic. Deliveries will be timed and coordinated to avoid conflict with collection of waste, other deliveries.

Special consideration will be given to the busy drop off and collection times at St. Senan's Cloghroe National School. The school day begins at 8:50am, ending at 1:30pm for Junior/Senior infants and 2:30pm for classes I to VI.

2.3.3 CONSTRUCTION TRAFFIC MANAGEMENT PLAN

Based on the calculated quantities of cut and the fill requirements, approximately 30,000 cubic metres of suitable structural fill material will be required at construction stage. This equates to approximately 1,500 HGV movements to the site during this construction phase of the works. Other construction stage deliveries include concrete, concrete blocks, timber, structural steel, reinforcing steel, road construction materials, finishing materials, subsurface drainage works (including attenuation and storage systems), public lighting columns, windows and doors which will be delivered to site at different phases of the scheme.

A Construction Traffic Management Plan (CTMP) has been prepared by MHL & Associates and is included as Appendix 2-3 of this EIAR.

2.4 DESCRIPTION OF OPERATIONAL PHASE

2.4.1 RESIDENTIAL DEVELOPMENT

An overview of the key statistics of the proposed residential development is provided in Table 2.1.

Key Figures of Proposed SHD Development	
No. of units	198 (117 houses and 81 apartment/duplex units)
Site Area	7.5 ha
Residential Developable Site Area	5.6 ha
Density (Residential Developable site area only)	Within the proposed residential developable area 196 no. residential units are proposed reflecting a residential density of 35 units per hectare.*
Plot Ratio	0.352 (Net Developable Residential Area)
Open Space provision	16% of residential developable site area - (14% is useable public open space)
Creche Details	A two storey 404.9 sqm 42 no. child capacity creche
Total Residential Car Parking spaces	287
Total Residential Bicycle spaces (including creche)	126 no. serving apartment units
Total Creche Car Parking Spaces.	9
Access	Provided via a new access from the R617 Cloghroe – Blarney Road

Table 2.1 – Key Statistics of Proposed Residential Development

* 2 no. additional apartment units are proposed are first floor level of the proposed café building within the defined 'commercial developable area' of the proposed development. For the purposes of calculating the residential density of the proposed development these 2 no. units have not been factored into density calculations.



Figure 2.1 Proposed Residential Development

2.4.2 RETAIL DEVELOPMENT

The proposed retail development involves the southern areas of the site most proximate to the existing Cloghroe Neighbourhood Centre. The retail development includes a surface car park, café building with 2 no apartments at upper floors and urban plaza fronting onto the R617. An overview of the key statistics of the proposed residential development is provided in Table 2.2.

Table 2.2 – Key Statistics of Proposed Retail Development

Key Figures of Proposed Retail Development	
Commercial/Retail developable site area	0.81 ha
Retail foodstore floor area	1,895 sqm (gross) - 1,315 sqm (net)
Café floor area	186.3 sqm (gross) – 155.5 sqm (net)
No. of car parking spaces	101
No. of bicycle parking spaces.	26 no. spaces serving retail foodstore/café building.
Access	Access provided via an upgraded existing agricultural entrance from the R617 Cloghroe – Blarney Road. This represents a separate access point from the residential development to the north.

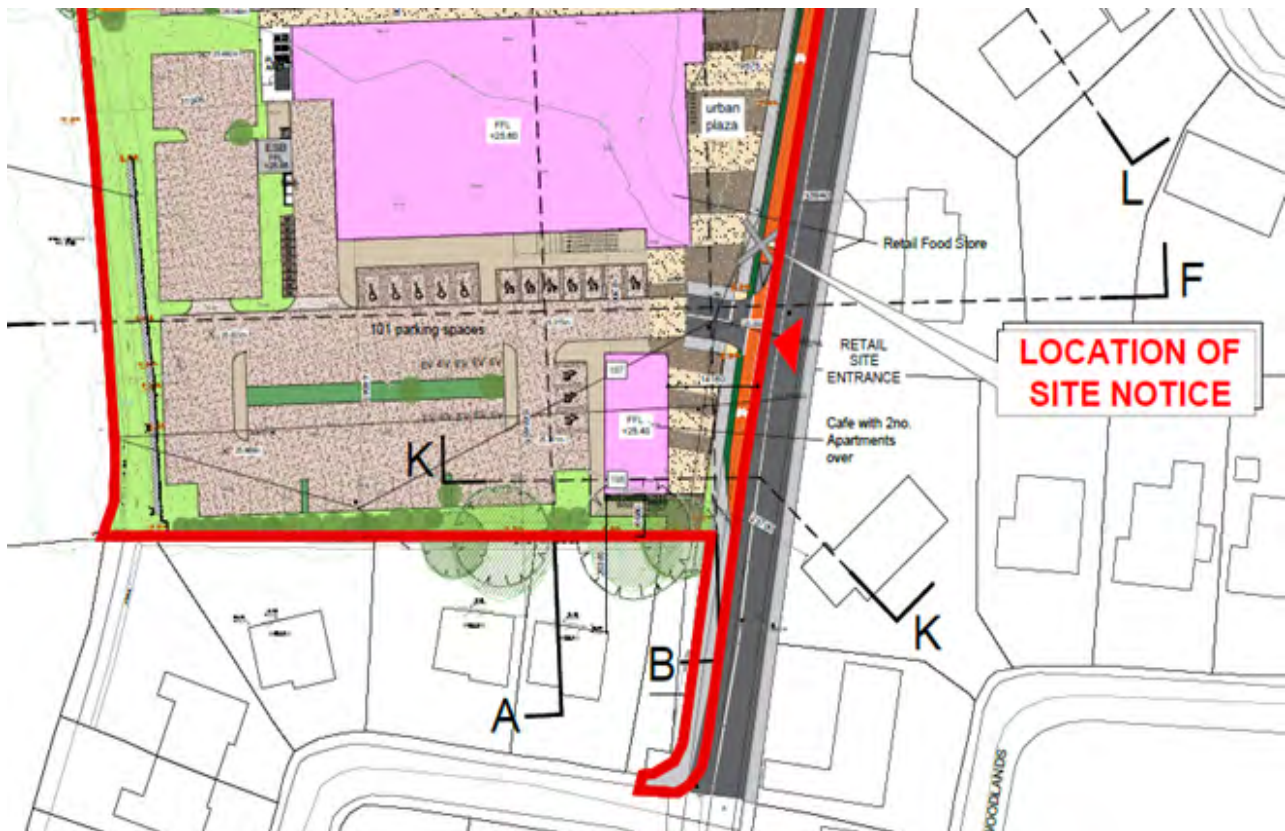


Figure 2.2 Proposed Retail Development

2.4.3 PROPOSED CONNECTIVITY/ROAD WORKS

- traffic calming measures including the provision of a signalised toucan crossing to improve connectivity with Tower to the north;
- relocation of existing bus stop and provision of bus shelter;
- provision of 2 metre footpath, 1 metre verge and 2 metre cycle lane in accordance with the guidance provided in the National Cycle Manual;
- future provision for 3.25m bus lane to form part of BusConnects network. In the interim this will form part of the hard and soft landscaping proposal to the R617.

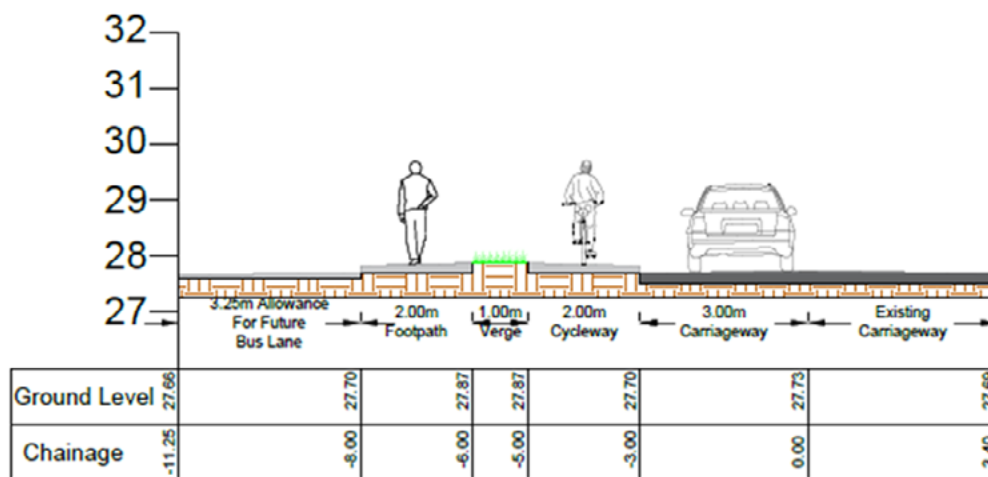


Figure 2.3 Proposed Cross Section of R617

Figure 2.4 Proposed Upgraded Bus Stop with Shelter on the R617



2.4.4 PROPOSED LAYOUT & LANDSCAPE STRATEGY

The design rationale for the proposed development has been influenced by an analysis of the sites natural constraints, setting in the wider settlement of Cloghroe/Tower and its location adjacent to a suburban bus route and short distance from a variety of recreational, employment, retail and service outlets in the settlement. The design rationale for the proposed development has been 'landscape led' with the site topography and setting in its local and wider contexts forming a critical component of the development strategy of the lands. The proposed landscape, recreation and amenity strategies of the development are based upon a number of key features and landscape proposals in the site including.

- The creation of an appropriate streetscape (approximately 700 metres) on the R617, reflective of the sites existing context and which positively contributes to the character and amenities of the settlement. The proposed is divided into distinctive 'urban' and 'green' streetscapes, reflective of the existing site context and defining the traditionally separate villages of Tower and Cloghroe.
- The provision of a 420-metre streamside amenity path along the sites western boundary, a 1700 m². central amenity/parkland access and biodiversity corridor, and 1200 metres in amenity walks throughout the site through 4 different habitats.
- A willow wetland walk with nature play amenity, 500 m² of formal children's play areas with full equipment, 4 no. adult exercise equipment units, 3 acres of wildflower meadow and quadrangle with public orchard.
- The proposed layout, pedestrian links, amenity areas/walks and landscaping treatments will result that the proposed development will not only provide for the amenities of future residents of the scheme, but also serve as a local 'destination' in its own right benefiting the existing residents of the settlement.

2.4.5 SITE SERVICES & INFRASTRUCTURE

The Engineering Design Report prepared by MHL & Associates details the proposed engineering and servicing details relating to the proposed development. An overview of the main servicing proposals relating to the proposed development is as follows.

- The internal estate roads have been designed in accordance with the Design Manual for Urban Roads and Streets (DMURS). The public realm upgrades will improve pedestrian, cyclist and motorist safety in the area. The proposed layout and public realm upgrades satisfy the recommendations of a prepared Road Safety Audit, prepared by MHL & Associates, attached as Appendix 2-4 of this EIAR.
- The proposed surface water drainage system is in accordance with Sustainable Urban Drainage Systems (SUDS) principles and divides the site into six (6) drainage catchments: all of which are proposed for attenuation utilising Stormtech Underground Chamber systems. Each attenuation system is designed with a controlled flow rate of less than the greenfield run-off rate for the catchment area. This results in an overall discharge from the site of 20.8 l/s which is less than the greenfield run-off of 25.29 l/s. The attenuated systems will ultimately discharge into the Owennagearagh River downstream of the Currabeha bridge, via the public storm sewer present on the R617.
- Wastewater will discharge to the Cloghroe Wastewater Pumping Station. In order to accommodate the proposed connection, upgrade works to the existing pumps are required at the Cloghroe Wastewater Pumping Station to the south of Cloghroe Church. Irish Water has confirmed that following the upgrade, the pumping station will have sufficient capacity to adequately process the additional input from the operational demand of the proposed development. A Confirmation of Design Acceptance from Irish Water accompanies the Engineering Design Report.
- A 150mm diameter HDPE watermain is proposed to supply potable water to all units and fire hydrants within the development. The proposed pipe network has no dead ends with loops serving a minimum of 4 units in accordance with Irish Water Code of Practice for Water Infrastructure Doc IW-CDS-5020-03. The 150mm mains will be connected to the existing mainline present on R617.

- A flood storage network with a volume of 1200 m³ is proposed near the southwest corner of the site to compensate for the loss of floodable area following construction. This system will take the form of a “Stormtech subsurface unit” that will allow the stream to flood as required (Refer to figure 2.21). The ‘Stormtech subsurface unit’ will be located beneath the car park area of the proposed retail unit. In addition to the compensatory flood storage, a headwall with non-return valve is proposed at the outfall of the existing land drain running along the southern boundary of the site. This land drain falls in a westerly direction towards the western boundary stream and is located along the boundary between the proposed retail car park and the Senandale residential development. This non-return valve will remove the risk of any flood waters from the western stream entering the land drain and thereafter flooding into Senandale.
- The proposed flood storage system is designed to manage the overflow from the western boundary stream during times of flooding and will provide protection to both the proposed development and adjoining properties in the Senandale residential development.

2.5 IMPACT ASSESSMENT

2.5.1 DO-NOTHING SCENARIO

A ‘do nothing scenario’ will result in no predicted impacts at the subject lands, and the site would remain in its existing undeveloped, agricultural and woodland use. The existing agricultural structures to the north of the site would remain in-situ and the proposed public realm upgrades including the proposed pedestrian crossing, footpaths, cycles lanes and relocated bus stop would not occur. The proposed surface water and flood defence measures would also not take place.

Over time, in the ‘do nothing scenario’ the subject lands would remain undeveloped and in agricultural use. It is considered likely that the zoned lands to the west, (currently subject to application reference 21/40620) will be developed for residential development, resulting in an increasingly urban setting in the area. The ‘do-nothing scenario’ over time will also result in the subject lands being still liable to increased flood risk, as well as a continuing leakage of potential retail and economic growth from the settlement.

2.5.2 OPERATIONAL PHASE

Once constructed, the proposed development will be permanent in nature. The proposed development will result in the construction of an additional 198 no. residential units, retail food store, café and creche.

The 2016 Census confirms that the average household size of Tower is just over 3.0 no. persons per household which translates that the proposed development may provide for an uplift in population of approximately 600 no. persons consistent with adopted planning policy objectives of concentrating population growth around high frequency public transport links in existing settlements.

The proposed residential development will result in several positive effects in the local area by providing a broad range of housing units which will serve all aspects of the current housing market and address the current housing shortage in the Metropolitan Cork Area. The development will support the continued operations of local public transport routes and justify future improvements

As demonstrated in the accompanying Retail Impact Assessment (RIA) prepared by HW Planning (Appendix 13-1 of this EIAR), there is currently a deficit in convenience retail provision in Tower for its inhabitants and those in its rural hinterland. This has resulted in a leakage of potential retail and economic activity from the settlement to other areas such as Ballincollig and Blackpool. The proposed retail unit and café will result in significant long-term positive impacts to the local economy by addressing the current retail shortage in the wider area.

As detailed in Chapter 8 of this EIAR (Water- Hydrology & Hydrogeology) once implemented, the proposed surface water and flood defence strategy will remove the risk of flooding during extreme events in the Senandale housing estate and on the R617, arising from extreme high flows in the western boundary stream. It is anticipated that any long-term impacts relating to flood risk arising from the development will be moderate and positive.

CHAPTER 3 | ALTERNATIVES CONSIDERED

3.1 INTRODUCTION

The purpose of this Chapter is to assess the project alternatives throughout the design and consultation phases of the project, taking into account and comparing environmental effects and illustrating how the final proposed layout has been arrived at.

Regarding 'Reasonable Alternatives', the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment' (2018) states that:

"The Directive requires that information provided by the developer in an EIAR shall include a description of the reasonable alternatives studied by the developer. These are reasonable alternatives which are relevant to the project and its specific characteristics. The developer must also indicate the main reasons for the option chosen taking into account the effects of the project on the environment.

Reasonable alternatives may relate to matters such as project design, technology, location, size and scale. The type of alternatives will depend on the nature of the project proposed and the characteristics of the receiving environment. For example, some projects may be site specific so the consideration of alternative sites may not be relevant. It is generally sufficient for the developer to provide a broad description of each main alternative studied and the key environmental issues associated with each. A 'mini- EIA' is not required for each alternative studied.'

This chapter provides an outline of the main alternatives examined throughout the design and consultation process to indicate the primary reasons for choosing the proposed development, considering and providing a comparison of the environmental effects.

3.2 ALTERNATIVE LOCATIONS

The subject lands are situated within the 'Settlement Boundary' of Tower as defined in the Blarney Macroom Municipal District Local Area Plan 2017 and are the only lands within the settlement in the ownership of Cloghroe Development Limited.

3.3 DO-NOTHING ALTERNATIVE

The consideration of alternative sites in Tower for a mixed-use residential/retail development would result in the 'do-nothing' scenario. This would reflect that serviced and zoned greenfield lands within the defined settlement of boundary of Tower, would remain undeveloped and in agricultural use. The 'do nothing' scenario would also result that the proposed public realm upgrades to the R617 would not take place and the proposed pedestrian crossing, footpath, cycle lanes and flood defence measures would not occur.

Over time, in the 'do nothing scenario', the subject lands would remain undeveloped and in agricultural use. It is considered likely that the zoned lands to the west, (currently subject to application reference 21/40620) will be developed for residential development, resulting in an increasingly urban setting in the area. The 'do-nothing scenario' over time will also result in the subject lands being still liable to increased flood risk from the western boundary stream, as well as a continuing leakage of potential retail and economic growth from the settlement.

A “do-nothing” scenario was considered to represent an inappropriate unsustainable and inefficient use of these serviced residential zoned lands within the defined settlement boundary of Tower.

3.4 ALTERNATIVE USES

The subject lands are identified specifically as being within the ‘Existing Built-up area’ zoning objective of Tower in the LAP. Regarding these areas, Objective ZU 3-1, of the Cork County Development Plan 2014 aims to;

‘Normally encourage through the Local Area Plan’s development that supports in general the primary land use of the surrounding existing built up area. Development that does not support, or threatens the vitality or integrity of, the primary use of these existing built-up areas will be resisted.’

The subject lands are bound to the south by the Senandale residential development, to the north by a mix of open agricultural lands and one-off dwelling houses with the Cloghroe Neighbourhood Centre to the southeast and adjacent to an existing bus stop serving as the terminus of the No. 215 Cloghroe – Mahon Point bus route providing a half hourly service to urban centres including Blarney, Blackpool, the City Centre and Mahon.

The proposed mixed use residential and retail development with central amenity parkland is consistent with the existing character and land uses in the sites immediate vicinity and the provisions outlined in Objective ZU 3-1. It is not considered appropriate to provide land-uses such as high-intensive employment or industrial development would be appropriate in the sites immediate context. It is also considered that an alternative consisting of only open space, recreation, community or education uses would reflect the most efficient use of the lands, due to the presence of an existing bus stop to the east of the site providing half hourly services to other urban centres including Cork City. In this context, the proposed mix use development which contributes to Towers future retail and residential needs comprises the most appropriate land-use alternative of the lands and is in accordance with the proper planning and sustainable development of the area.

3.5 ALTERNATIVE LAYOUTS

Throughout the duration of the project, the applicant and the design team considered several different layouts and options regarding the proposed development. Each stage of the project required a reassessment of the design strategy of the scheme and an evaluation of how each proposed layout responded to the sites local and wider contexts.

3.5.1 ALTERNATIVE A - NOVEMBER 2020

Alternative A comprised of a development comprising the following.

Key Figures of Alternative A Layout	
Total Site Area	7.5 hectares
Residential Developable Area	6.0 hectares
No. of residential units	181 no. units
Residential Density	30.1 no. residential units per hectare (residential developable area)
Housing Mix	63 no. 4 bedroom detached, semi-detached & detached HSE units - (34.8%). 46 no. 3 bedroom semi-detached townhouse units - (25.4%) 44 no. 2 bedroom townhouse, apartment, duplex and step-down bungalow units - (24.3%) 28 no. 1 bedroom apartment units - (15.5%).
Public Open Space (Residential Area)	19% of total residential developable area – 12% of useable developable area
Car Parking (Residential)	293 car spaces. This equates to approx. 2 spaces for each of the detached and semi-detached units and 1.25 spaces per townhouse and apartments. This does not include the parking requirement for proposed creche.
Creche	A 42-no. child capacity creche is to be provided.
Access to Residential Development	Access provided via a new entrance from the R617. Separate access to 2 no. detached units will be provided via an existing cul-de-sac to the north.
Commercial/Retail developable site area	0.81 ha
Retail foodstore floor area	1,895 sqm (gross) - 1,315 sqm (net)
Café floor area	186.3 sqm (gross) - 155.5 sqm (net)
No. of car parking spaces	101
No. of bicycle parking spaces	26 no. spaces serving retail foodstore/café building.
Access	Access provided via an upgraded existing agricultural entrance from the R617 Cloghroe – Blarney Road. This represents a separate access point from the residential development to the north.

Table 3.1 - Alternative A – November 2020 – Key Statistics



Figure 3.1 Alternative A – November 2020

3.5.2 ALTERNATIVE B – MARCH 2021

The design rationale for the proposed development was revisited following Cork City Councils recommendations during the Section 247 meeting, including.

1. The provision of three storey apartment/duplex/townhouse units within the central area to form a strong built edge and streetscape fronting onto the public road and to create a more urban character.
2. Relocation of the proposed step-down apartment building to a more central prominent location where it forms part of the central urban fabric of the site.
3. Re-design of the central parkland establishing hedgerows/planting/and watercourses as key features and enhancing the biodiversity strategy for the site. Proposed units to the north and south have been clustered around this space which will form a valuable amenity for the residents.
4. Pedestrian link proposed to the northeastern corner of the site, providing pedestrian connectivity and a ‘desire line’ to Tower village centre to the northeast. Reorientation and redesign of units to the north of the woodland.
5. Revised details relating to the sites frontage with the R617 road, including reserving a route for a potential future bus lane, footpath, cycle path and relocation southwards of the existing bus stop.

Alternative B comprised of a development comprising the following.

Key Figures of Alternative B Layout – Residential	
No. of units	189 (124 houses & 65 apartment/duplex units)
Site Area	7.5 ha
Developable Site Area	5.86 ha
Density (Residential Developable site area only)	Within the proposed residential developable area 187 no. residential units are proposed reflecting a residential density of 31.9 units per hectare.*
Plot Ratio	0.327 (per developable residential site area)
Open Space provision	20% - (14% useable open space)
Creche Details	A two storey 404.9 sqm 42 no. child capacity creche
Total Residential Car Parking spaces	296
Total Residential Bicycle spaces	54 no. serving apartment units
Access	Provided via a new access from the R617 Cloghroe – Blarney Road
Retail foodstore floor area	1,895 sqm (gross) - 1,315 sqm (net)
Café floor area	186.3 sqm (gross) – 155.5 sqm (net)
No. of car parking spaces	101
No. of bicycle parking spaces	26 no. spaces serving retail foodstore/café building.
Access	Access provided via an upgraded existing agricultural entrance from the R617 Cloghroe – Blarney Road. This represents a separate access point from the residential development to the north.

Table 3.2 - Alternative B – March 2021 Key Statistics (Residential)

* 2 no. additional apartment units are proposed are first floor level of the proposed café building within the defined ‘commercial developable area’ of the proposed development. For the purposes of calculating the residential density of the proposed development these 2 no. units have not been factored into density calculations.

Key Figures of Alternative B Layout – Retail	
Commercial/Retail developable site area	0.81 ha
Retail foodstore floor area	1,895 gross floor area (1,315 sqm net retail area)
Café floor area	186.3
No. of car parking spaces	101
No. of bicycle parking spaces.	26 no. spaces serving retail foodstore/café building.
Access	Access provided via an upgraded existing agricultural entrance from the R617 Cloghroe – Blarney Road. This represents a separate access point from the residential development to the north.

Table 3.3 - Alternative B – March 2021 Key Statistics (Retail)



Figure 3.2 Alternative B Layout – March 2021

Following the receipt of the ABP opinion (ABP-308980-20) in March 2021, further amendments to the layout were investigated to address the matters raised which included residential density and interaction of the site with the R617 and pedestrian/connectivity proposals. It was considered that Alternative B should be amended having regard to the Boards Opinion including.

1. It was considered appropriate to increase the density of residential development in the area to the south of the Central Parkland to ensure a strong urban edge/backdrop is formed in this area. 2 no. two storey units previously proposed would be replaced by a three-storey duplex block containing 4 no. residential units.
2. It was also considered appropriate to increase the quantum of residential development in the area to the east of the site to the north of the existing woodland area. 5 no. detached/semi-detached dwellings would be replaced by a three storey duplex apartment building providing 12 no. residential units.
3. In order to improve connectivity and pedestrian safety to the R617, Alternative B would be amended to reflect the following.
 - traffic calming measures including the provision of a signalised toucan crossing to improve connectivity with Tower to the north.
 - relocation of existing bus stop and provision of bus shelter.
 - provision of 2 metre footpath, 1 metre verge and 2 metre cycle lane in accordance with the guidance provided in the National Cycle Manual.
 - future provision for 3.25m bus lane to form part of BusConnects network. In the interim this will form part of the hard and soft landscaping proposal to the R617.

3.5.3 ALTERNATIVE C – PROPOSED DEVELOPMENT

The end result of the various alterations and layout revisions is the proposed development subject to this SHD/EIAR. The proposed density of the scheme has been increased and the proposed 198 no. residential units on developable site area 5.6 hectares reflects a residential scheme of 35 units per hectare. This represents an increase from that presented at pre-consultation stage where a development of 31.9 units per hectare was proposed. An overview of the key statistics of the proposed residential development is provided in table 3.4 as shown.

Key Figures of Proposed SHD Development	
No. of units	198 (117 houses and 81 apartment/duplex units)
Site Area	7.5 ha
Residential Developable Site Area	5.6 ha
Density (Residential Developable site area only)	Within the proposed residential developable area 196 no. residential units are proposed reflecting a residential density of 35 units per hectare.*
Plot Ratio	0.352 (Net Developable Residential Area)
Open Space provision	16% of residential developable site area – (14% is useable public open space)
Creche Details	A two storey 404.9 sqm 42 no. child capacity creche
Total Residential Car Parking spaces	287
Total Residential Bicycle spaces (including creche)	126 no. serving apartment units
Total Creche Car Parking Spaces.	9
Access	Provided via a new access from the R617 Cloghroe – Blarney Road

Table 3.4 – Key Statistics of Proposed Residential Development



Figure 3.3 Proposed Residential Development

The layout of the proposed retail development has not deviated significantly from originally proposed.

Key Figures of Proposed Retail Development	
Commercial/Retail developable site area	0.81 ha
Retail foodstore floor area	1,895 sqm (gross) – 1,315 sqm (net)
Café floor area	186.3 sqm (gross) – 155.5 sqm (net)
No. of car parking spaces	101
No. of bicycle parking spaces.	26 no. spaces serving retail foodstore/café building.
Access	Access provided via an upgraded existing agricultural entrance from the R617 Cloghroe – Blarney Road. This represents a separate access point from the residential development to the north.

Table 3.5 – Key Statistics of Proposed Retail Development

* 2 no. additional apartment units are proposed are first floor level of the proposed café building within the defined ‘commercial developable area’ of the proposed development. For the purposes of calculating the residential density of the proposed development these 2 no. units have not been factored into density calculations.

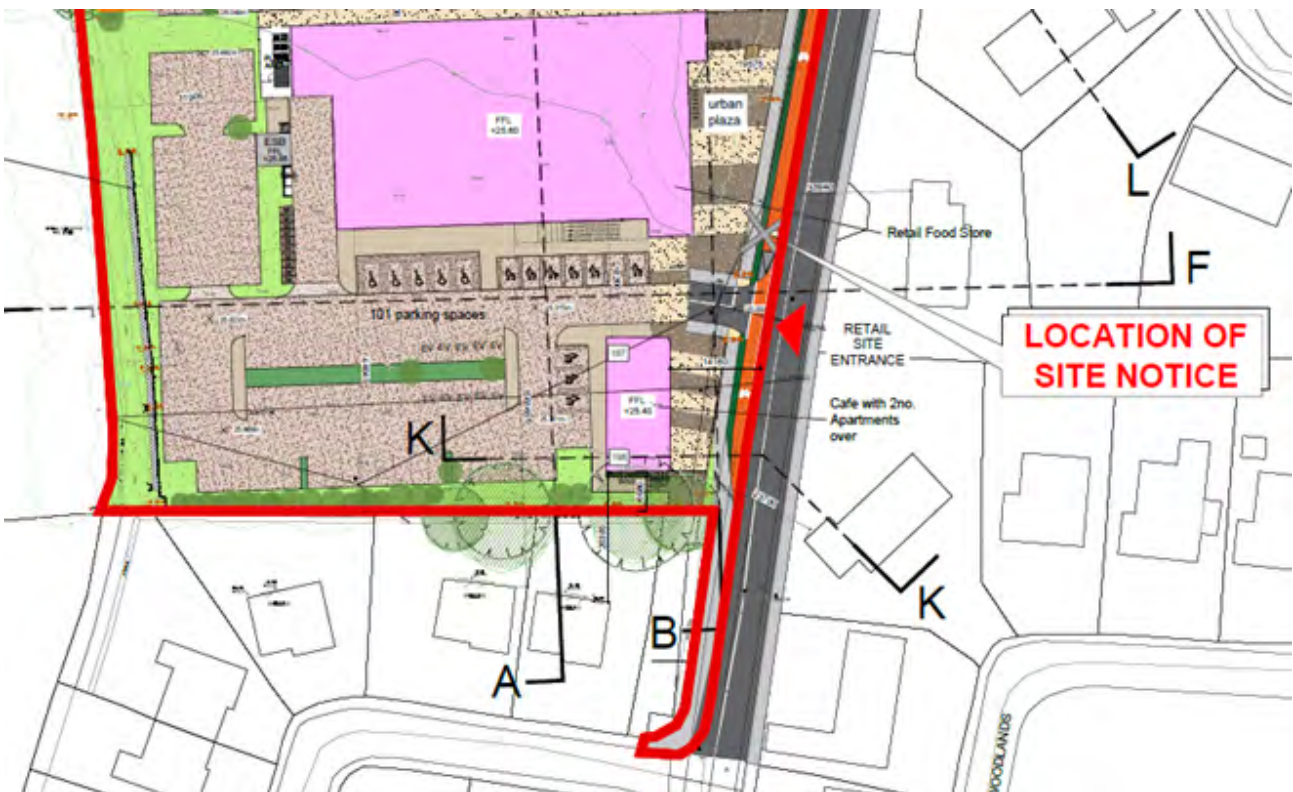


Figure 3.4 Proposed Retail Development

3.6 COMPARISON OF ENVIRONMENTAL IMPACTS

This section provides a summary of the comparison of environmental impacts during the operational phase between the various alternatives outlined above. Tables 3.6 and 3.7 as shown provide an objective comparison analysis of the evolution of the proposed development in context of the categories outlines above.

Criteria	Alternative A	Alternative B	Alternative C
Landscape & Visual	=	=	=
Traffic & Transportation	=	X	=
Services, Infrastructure & Utilities	=	=	=
Land, Soils & Geology	=	=	=
Water & Hydrology	=	=	=
Biodiversity	=	=	=
Noise & Vibration	=	X	X
Cultural Heritage	=	=	=
Air Quality & Climate	=	X	X
Population & Human Beings	=	X	X

Table 3.6 – Comparison of Impacts - Construction Phase

- ✓ Where it has been considered that there has been an improvement from the previous alternative
- = Where the impact is considered similar for all options
- X Where a particular option is considered to have a more negative impact on a particular aspect of the environment than other alternatives.

Criteria	Alternative A	Alternative B	Alternative C
Landscape & Visual	X	✓	✓
Traffic & Transportation	X	✓	=
Services, Infrastructure & Utilities	X	✓	=
Land, Soils & Geology	=	=	=
Water & Hydrology	X	✓	=
Biodiversity	X	✓	=
Noise & Vibration	=	=	=
Cultural Heritage	=	=	=
Air Quality & Climate	=	=	=
Population & Human Beings	X	✓	✓

Table 3.7 – Comparison of Impacts - Operational Phase

- ✓ Where it has been considered that there has been an improvement from the previous alternative
- = Where the impact is considered similar for all options
- X Where a particular option is considered to have a more negative impact on a particular aspect of the environment than other alternatives.

CHAPTER 4 | LANDSCAPE AND VISUAL ASSESSMENT

Background

A landscape and visual assessment (LVA) was carried to ascertain the impact of the development on external public views and resultant impact on landscape character. The assessment of Visual Impact is based on what is visible to the standard human eye. The result is *visibility* and it is influenced by terrain, vegetation and physical structures. The assessment of Landscape Character involves the attempt to measure community perceptions of the site and its environs using impartial data. It assesses any change in the landscape that might be *perceived* by the community and the consequential effect of such change.

Receiving Environment

The site is located on lower elevations (25-50m) in a greater landscape of undulating hills that reach 90-120m elevation. Half of the site is level, while the other half has a natural slope of 1:12. It is currently under pasture. The site is bounded on the west by a local stream, to which is associated a contiguous line of mature trees. Quality hedgerows bound the northern end and bisect the site where the level and sloping areas meet. Broadleaf woodlands have arisen at the eastern edge of the site in the latter part of the 20th century. The presence of Rushes at the southern end indicates a degree of regularly saturated ground. The site does not have a distinct local character, but does serve as a green buffer between the villages of Cloghroe and Tower.

The lands are zoned residential in the Cork County development plan, but do not have a specific landscape objective. The site is not located within the *High Value Landscape* and is not visible to any designated Scenic Routes or *Protected Structures*. A *Fulacht fía* and *Togher* road archaeological features are a good distance from the site and have minor, filtered views of the upper lands. Culturally, the Cloghroe shops, St. Senan's church and the R617 regional road have a visual and proximity link to the site.

Characteristics of the Proposal

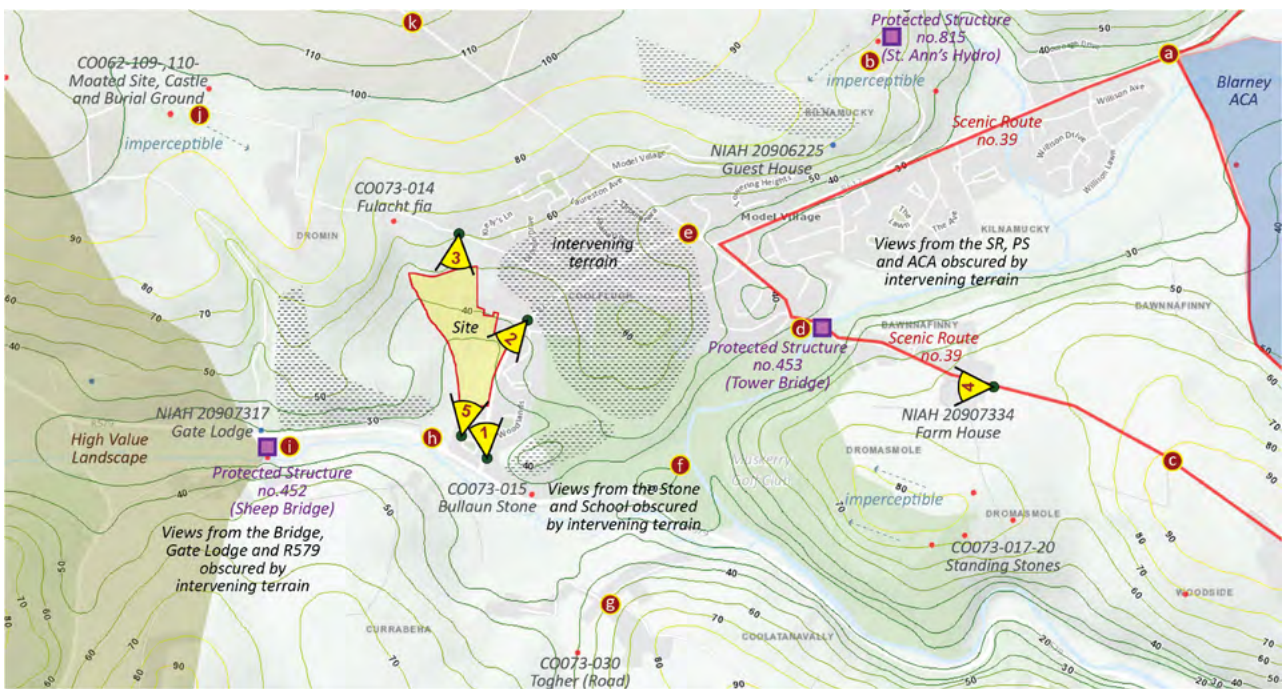
The proposed development provides a commercial component, mixed with apartments and individual houses. The structures are set within a high quality landscape that has a strong emphasis on biodiversity links. A summary of the pertinent landscape elements:

- Modifications to the R617 road frontage to include climbing cycle lane, a broad pedestrian path and plaza, an upgraded bus stop and avenue tree planting.
- Four primary biodiversity zones with contiguous tree planting and habitat corridors, linking back to the stream along the western boundary.
- Internally there are 2 no. playgrounds and large active grass amenity areas. Overall, open space amenity constitutes 15% of the site area, which is considered above-average.
- 800 lin.m. of designated amenity paths, in addition to standard footpaths.
- Semi-mature tree planting with more than 330 no. trees, plus 625 no. transplants for native woodland enhancement.

Predicted Impacts

The site has a general positive landscape character in that it is vegetated and serves as green relief between suburbs. The lack of statutory designation or association with other landscape amenity, reduces the landscape sensitivity of the site. It thus has the ability to absorb a certain degree of change, which is derived from the sensitivity of the view receptor (viewpoint).

More than 20 no. potential view receptors were visited, resulting 5 no. selected viewpoints illustrated on the map below. The surrounding rising terrain, intervening vegetation and low laying nature of the site obscure views where one would anticipate potential visibility. Given the size of the site, the number of public view receptors is limited. The table following the map outlines the visual impact from the 5 no. view receptors.



SUMMARY OF KEY VISUAL RECEPTORS

Receptor No.	Title of Receptor	Distance from Site	Receptor Sensitivity	Degree of Visible Change	Predicted Impact and Duration construction	Predicted Impact and Duration		Key Factors Contributing to Predicted Impact
						short	medium long permanent	
1	R617 at St. Senan's Church	160m	Medium	Low	Neutral	Moderate, Positive		Improved road frontage and village character, roadside parking removed, variation in roadside tree planting
2	R617 Approaching from Tower	80m	Medium	Low	Neutral	Moderate, Positive		Improved road frontage, retention of tall trees, presentation of creche
3	Kiely's Lane North of Site	110m	Low	Medium	Negative	Moderate, Neutral		Change from greenfield to suburban development, Extent of visibility with minimal impact, retention of trees
4	Scenic Route no. 39 at Bawnafinny	2000m	High	None	None	Imperceptible		Distance and intervening terrain, low elevation of site
5	Senandale Estate	52m	Medium	Low	Negative	Slight, Neutral		Development offset to boundary, existing buffer supplemented by extra trees and screen fencing

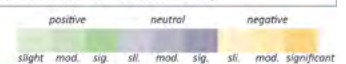


Table: Visual Impact Summary Table

The greatest impact arises in views from the R617. These views will undergo a degree of change that impact both local residents and commuters. This impact is substantially positive. The provision of urban areas and green buffers is visible in the photomontages. The proposals are imperceptible from high-sensitivity statutory receptors. There is an unavoidable degree of impact to residents bounding the site. However, this is minimised by large offsets to structures and provision of additional planting layers. There is some removal of lower quality roadside vegetation, but the vast majority of existing mature trees are retained with comfortable offsets to development.

Proposed Mitigation Measures

To minimise any adverse impacts on views from the visual receptors and impact on greater landscape character, a series of mitigation measures should be incorporated into the construction process. These are as follows:

- Retain or construct a woodland at the northern part of the R617 to ensure a green transition between Cloghroe and Tower.
- Fence off and protect the trees to be retained during construction.
- Retain all trees within 5m of the stream and new planting within 10m of the stream should consist solely of native species.
- Implement a topsoil salvaging regime and retain all of it on site.
- Phase tree felling to minimise visual and habitat impact.
- Install and plant the central attenuation basin minimum 6 months prior to use.
- The urban frontage to the R617 should include large canopy tree planting as visual filters with landscape furniture and paving to reflect town centre materials.
- Roofing material to any structures should be non-reflective with a dark colour tone

Conclusion

The site has a low degree of visibility and is imperceptible from the most sensitive statutory designations. To perceive impact, one must typically be within 200m of the site. Even then, there is no single viewpoint where the entire development is visible at once. When the site is visible, impact is typically *slight*, with an increase to *moderate* as viewers approach the site boundary.

The proposals will have a measurable impact on the character and perception of Cloghroe; one that in all likelihood underscores its status as a suburban village. The development should improve pedestrian and cycling footfall in the village, with increased population and a retail destination to improve existing local residents interaction with the village. The impact on the R617 will likely be moderating, with an improved sense of space. New amenity will be available to local residents, including play areas, nature walks and the experience of the stream. Biodiversity will be enhanced and a plan for long-term tree planting implemented. The scheme is quite heavy on *positive* landscape and visual impacts.

The change in land use will inevitably result in a *perceived adverse* impact, particularly for the small number of neighbours. However, this impact has been designed out by means of large building offsets, protection of mature trees and the addition of green buffers, which in turn mitigate the impact to a *neutral* level.

Adherence to the landscape mitigation measures is critical to enable success of the development while having minimal impact. When complete, the overall Visual and Landscape Character impact will be Moderate, Positive. With the retention and protection of mature trees, habitat enhancement and a new urban realm for the village, there will be no moderate, significant or profound adverse impacts.

CHAPTER 5 | MATERIAL ASSETS – TRAFFIC & TRANSPORT

This chapter assesses the characteristics of the application site and surrounding area, examines the likely transport implications, ensures sustainable accessibility is maximised and that appropriate infrastructure is provided to accommodate the proposed development.

The key junctions in the area surrounding the proposed development are as follows:

- Junction 1: The junction of the R617/R579.
- Junction 2: Proposed Residential Development access
- Junction 3: Proposed Retail Development Access

The traffic assessment has demonstrated the following:

- The proposed Cloghroe SHD is in accordance with the traffic and transportation policies and objectives of the Local Area Plan and forms an important continuation in the delivery of planned growth in the area.
- A review of the existing roads network and collision data in the vicinity of the site indicates that there are no significant impacts on road safety.
- Junction 1: R617/R579 is shown to currently operate within capacity during morning & evening peaks with some delay occurring. The modelling results for future years show the junction reaching capacity in the design year 2024 and degrading, both with and without development traffic, up to design year 2039. There are a number of remedial measures that can be implemented such as the addition of right turn lanes on the various approaches and ultimately the signalisation of the junction. An assessment of the signalisation of this junction shows that it can operate within capacity up to and including the design year 2039.
- The findings of the traffic modelling were discussed with Cork City Council Traffic & Transportation Department, and it was agreed that the operation of the junction in future years will be monitored to determine if and when remedial works become necessary. Future upgrade works to be delivered as part of Bus Connects may positively impact on this junction's capacity.
- Junction 2: Retail Access onto the R617 will operate within capacity up to and including the design year 2039.
- Junction 3: Residential Access onto the R617 will operate within capacity up to and including the design year 2039
- The proposed site layout is permeable to the roads network and is well connected to existing pedestrian linkages, to public transport offerings, schools, retail, and amenity destinations.
- The proposed new access arrangements are safe and suitable and are in accordance with the Design Manual for Roads & Bridges (DMRB) and the Design Manual for Urban Roads & Streets (DMURS).
- The site benefits from being in close proximity to regular transport provision, within walking distance of the site, which enables journeys throughout Cork City. Car parking provision within the site is at the lower end of the scale in order to encourage the use of sustainable transport modes.

A modal shift of 20% (implying an anticipated increase in public transport usage or active travel in the immediate area of 15%) for future year models is deemed to be reasonable. This modal shift increase, of 15% has been applied to proposed development traffic from the opening year (when the development is fully completed) 2024, up to the design year 2039. This same modal shift increase, of 15% has not been applied to the background traffic of the modelled junctions, ensuring that a conservative (worst-case) analysis has been carried out.

As part of the development of the scheme the R617 will be upgraded to include a 2.0m cycle track, a 1.0m planted verge, a 2.0m pedestrian footpath and a reservation of 3.25m for a future Bus Lane as part of Bus Connects. In the interim the bus reservation area will be grassed as an inner verge.

In line with the proposed upgrade works on the R671, the existing 215 Bus Stop is to be upgraded with the provision of a Bus Shelter and a colour contrasted paved stop area. The developed scheme will provide universal footpath access to the bus stop as well as more direct stepped access. The provision of the controlled pedestrian crossing to the north of the bus stop will facilitate safe and controlled access for existing residents in the area.

CHAPTER 6 | MATERIAL ASSETS – SERVICES, INFRASTRUCTURE & UTILITIES

This chapter assesses the material assets that could potentially be impacted by the proposed development including services, utilities, and infrastructure, within and around the site during the construction and operational phases. Impacts can be both positive and negative in nature. The material assets considered include Storm Water Drainage, Foul Water Network, Water Supply, Telecommunications, and Waste Management.

The proposed development site at present is predominantly a greenfield site of approximately 7.6 ha and containing two agricultural structures to the north of the site (382 m²). The site is bounded to the east by the R617 and to the south by the residential estate of Senandale. The development works also include upgrades to the public realm along the R617 to the east of the development. Proposed upgrades include new footpaths, controlled signalised pedestrian crossing, cycle facilities, and new bus stop facilities.

Existing Infrastructure Summary

Due to the greenfield nature of the site, any existing utilities and services are limited to the existing roads and residential estates in the area.

There is an existing storm water sewer running north to south along the R617 which ultimately discharges into the Owennagearagh River to the east of the Currabeha Bridge. The development lands contain an existing land drain running from east to west through the centre of the site before merging with an existing stream running along the western boundary of the development. This existing stream runs north to south along the full length of the proposed developments western boundary. There is another land drain present at the southern boundary of the development lands which also outfalls into the western boundary stream.

Referring to the separate Flood Risk Assessment undertaken and accompanying this planning application, it is evident that the low-lying southern part of the site is subject to flooding during heavy rainfall. This flooding is primarily caused by the western boundary stream over topping its banks and entering the development lands.

There is an existing Irish Water foul sewer running north to south along the R617 to the east of the development. In order to accommodate the proposed connection, upgrade works are required at the Cloghroe Waste Water Pumping Station. There is an existing Irish Water watermain is present on the R617 to the east of the development. It is proposed that the potable water serving the proposed development will be provided from this network.

There are a number of overhead ESB lines currently traversing the development lands.

The R617 is currently served by public lighting with the columns positioned generally on the western side of the road.

The development lands are partially served by commercial providers. EIR Fibre Broadband is live in the area and being availed of by the adjacent Senandale residential estate.

With regards to waste management, kerbside collection remains the most efficient and popular method of recycling and waste disposal in the region. There are many private waste contractors operating in the Cork City area who are permitted to collect waste.

Proposed Infrastructure Summary

The proposed surface water drainage system divides the site into six (6) drainage catchments. Each catchment area will be attenuated with a controlled flow rate of less than greenfield runoff. Surface water discharge from the development will ultimately discharge into the Owennagearagh River downstream of the Currabeha bridge via the public storm sewer present on the R617. There will be one outfall from the development to the existing public storm sewer.

The existing land drain running from east to west through the centre of the site is to be expanded upon with the creation of two basins/wetland meadows prior to merging with the western boundary stream. In addition to slowing the velocity of surface water entering the western boundary stream, the basins provide for a good source of groundwater recharge.

A flood storage system is proposed as part of the development at the southwest corner of the site to compensate for the loss of floodable area following construction. This system, to be located beneath the car park area of the proposed retail unit, will take the form of a subsurface unit that will allow the stream to continue flooding as at present. The construction of a headwall with non-return valve is proposed south of the flood storage system at the outfall from the southern boundary land drain. This non-return valve will remove the risk of any flood waters from the western stream entering the land drain and thereafter flooding into Senandale.

The development will be served by a new gravity fed piped foul water network. Irish Water has confirmed that the Cloghroe Waste Water Pumping Station will have sufficient capacity for the additional input following appropriate upgrades.

A 150mm diameter HDPE watermain is proposed to supply potable water to all units and fire hydrants within the development. The proposed watermain will be connected to the existing mainline present on the R617.

The proposed development is to be served by the ESB via a new network connection to be agreed upon with the ESB prior to construction. An underground LV network will be provided for by the developer along with the supply of mini pillars are required to serve all units within the development. It is proposed that the existing overhead lines within the proposed development boundary will be undergrounded in accordance with ESB Networks design standards.

The development will be served by a new public lighting network as agreed with the Cork City Council lighting department. To meet with ecology requirements, in particular regarding potential bat activity, all installed lighting in the development will be Warm White (<3000K) and minor estate roads will receive a step down in lighting classification. Additionally, the installed lighting columns will be 6m high instead of 8m (or 10m) on the public roads. The proposed public realm improvements along the R617 will also include a new public lighting scheme along the extent of the works.

The proposed development will be served by a new telecommunications network with access provided for all new buildings. The design of the proposed telecommunications network will be agreed upon with providers prior to construction.

Regarding waste management, the development will be served by private waste contractors of which there are many covering the Cork City region. The layout of the internal estate roads has been designed to allow for the safe manoeuvring of waste collection vehicles around the proposed development.

Taking other permitted and planned developments in the surrounding area into account, the cumulative operational impact of the proposed development is considered to be slight.

In terms of mitigation measures, control measures will be put in place during construction to protect surface water contamination and control surface water runoff from the site. The construction compound will be adequately served regarding foul drainage and water supply for construction staff. Regular site audits will be conducted to ensure compliance with the Construction Environmental Management Plan (CEMP) developed for the works. Any construction waste generated during the construction phase shall be managed in line with the CEMP.

In circumstances where the proposed suite of mitigation measures referenced in the CEMP are effectively implemented, the proposed development will result in a slight impact on the existing utility services in the vicinity of the development .

CHAPTER 7 | LAND, SOILS & GEOLOGY

Receiving Environment

This chapter addresses the receiving land, soils and geology environment within and in the vicinity of the Site in Tower, Cloghroe County Cork and potential associated impacts arising from the proposed development. Historic land-use at the site was greenfield agricultural land with a number of farm buildings located in the northern portion of the site. The Site is mainly grassed, as a result of its former use as agricultural lands. The topography of the Site generally falls from north to south. The ground level in the north of the site is ca. 45m AOD falling to ca. 28m AOD at the location of a stone ditch in the centre of the site and further to ca. 25m AOD in the south of the site.

The site is generally underlain by topsoil, glacial till, and clay/ silt/ sand/ gravel, with localised areas underlain by made ground. Bedrock was not encountered onsite during the site investigation. Therefore, bedrock is anticipated to be >10m bgl and is unlikely to be encountered during the construction of the development.

The GSI bedrock geology 100k map identifies the underlying bedrock of the site as the Gyleen formation comprising sandstone with mudstone and siltstone in the northern section of the site and the Cuskinny Member formation comprising sandstone and siltstone towards the south of the site.

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. It is anticipated that all materials excavated onsite will be suitable for reuse onsite. Any unsuitable material will be moved offsite in accordance with all relevant waste legislation. There could be an impact on land, soils and geology from potential fuel leaks during refuelling or maintenance of vehicles.

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

Operational Land, Soils & Geology Impacts

Oil interceptors will be incorporated into the site drainage design and parking areas will be paved so impacts on soil and geology during the operation of the site are unlikely.

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.

CHAPTER 8 | WATER (HYDROLOGY & HYDROGEOLOGY)

Chapter 8 of the EIAR provides an assessment of the likely impact on local water and hydrological regimes associated with the proposed development. The potential impacts are considered under three main headings:

Hydrological regime: How relevant aspects have the potential to change the physical characteristics of the site area and thus the drainage and flood characteristics of the study area.

Water quality: How the proposed works may impact on surface watercourse and groundwater quality during construction and operation.

Flood risk: How the development interacts and mitigates the existing flood risk in the area.

The assessments involved examination of various sources of information such as:

- Engineering Design Report prepared by MHL Consulting Engineers;
- Site Specific Flood Risk Assessment Report prepared by Irish Hydrodata Ltd;
- Geotechnical Site Investigations Report prepared by OCB Geotechnical Ltd;
- Topographic Survey drawings by Precise Control Ltd;
- OPW Lee CFRAM study reports and mapping;
- OPW Indicative Flood Maps (www.floodinfo.ie);
- Geological Survey of Ireland online data (www.gsi.ie);
- EPA online mapping (www.epa.ie);
- History of flooding in the vicinity (www.floodinfo.ie/map/floodmaps/);
- Cork County Blarney Macroom Municipal District Plan.

8.1 RECEIVING ENVIRONMENT

The proposed development occupies a site of 7.5 Ha within the townland of Coolflugh, Blarney, Co. Cork. It is currently used for agricultural purposes. It is bounded on the west by a small stream (western stream), to the east by the Blarney road (R617) and the Senandale housing estate to the south.

The site itself is not situated within any environmentally designated areas; however, surface water running off the site reach the Owennagearagh river which drains into the Shournagh Valley proposed Natural Heritage Area (pNHA), and the Lee Valley pNHA. The closest Special Protection Area, Cork Harbour SPA, is approximately 10km to the east-southeast of the site.

The stream on the western boundary of the site rises to the north and drains a rural catchment of about 0.9km². It enters a culvert system close to the south western corner of the site. This culvert system runs along the rear of Senandale housing estate properties No. 5 to No. 12 and discharges through two pipe culverts under the regional road, R579. A shallow, open drain is located on the southern boundary of the site adjacent to the Senandale housing estate. This conveys local land runoff including some from the R617. There are two other significant stream/drainage channels located within the centre of the site. These drains collect surface runoff and are also likely to receive inflow from groundwater.

The geotechnical site investigation report indicated topsoil over shallow sediments containing clay. The presence of the clay layer suggests that overall surface water infiltration to the ground is likely to be limited and that a high proportion of rainfall will run off directly to surface waters.

A site-specific flood risk assessment has been completed as part of this application. The 1:100year peak flow for the Owennagearagh river was calculated to be 36.7m³/s while that for the western stream was 1.4m³/s. Hydraulic modelling has shown that there is a local flood risk associated with high flows in the western stream. The areas likely to be impacted are the southern part of the site, a number of dwellings in the Senandale housing estate and parts of the R617 extending down to the junction with the R579. There is no risk of flooding on the site associated with high flows in the Owennagearagh river.

8.2 THE PROPOSED DEVELOPMENT

The proposed development is for 198 residential units, a crèche, a cafe and associated site works. It includes a number of open spaces and play areas and a commercial retail food store.

Runoff from the built-up areas and roads will be collected by the surface water drainage network and discharged into the existing storm sewer on the R617.

The foul drainage network will flow to the south eastern corner of the site from where it will connect to the existing Irish Water foul sewer on the R617. Water supply will be provided by the Irish Water main on the R617. Confirmation of design acceptance has been received from Irish Water.

Existing drainage channels within the site area will be maintained. Flood alleviation works are proposed to remove the flood risk associated with high flows in the western stream.

8.3 MITIGATION MEASURES

The layout of the proposed development has been designed to minimise the potential impact on the local hydrological environment. Proposals include storm water attenuation, hydrocarbon interception and flood water management including surface drainage basins and underground storage.

Impacts may still arise during construction and operation of the development. Further mitigation measures will be adopted to ensure any additional impacts are minimised.

A project-specific Construction and Environmental Management Plan has been prepared by MHL Consulting Engineers and will be implemented by the appointed contractor. The plan covers all potentially polluting activities and includes an emergency response procedure. It is tailored to address the hydrological regime, water quality and flood risk. The fundamental approach is to ensure that any potential contamination issues that may impact on the overall surface water or groundwater quality are prevented.

Services will be installed to the latest standards and fully tested. Once the development is complete the foul drainage system and potable water system will be vested to Irish Water and the surface water drainage system will be taken in charge by Cork City Council.

Inlet and outlet structures associated with the flood water storage will be designed and constructed to ensure that blockages do not occur and that waters can free flow at all times. The flood water storage and management system will be the responsibility of the developer through a management company. No additional mitigation measures are considered necessary for the operational phase.

8.4 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

The development has the potential to impact the local surface hydrology, groundwater and water quality during the construction and operation phases.

Construction of the proposed development will require the removal of the topsoil and the softer underlying layers. The reshaping of the terrain may thus temporarily alter the hydrological regime. An increased runoff rate may be experienced once the underlying clay layers are exposed and the beneficial effects of the existing marshy surface layer are removed. Proposed excavations are not extensive and are unlikely to alter the site or local area groundwater regime.

Surface water runoff from the construction phase may contain increased silt levels or pollution from the construction processes. The discharges of these contaminants, such as concrete and cement, have the potential to cause pollution. The development proposes various flood relief works including the provision of surface and underground storage and local raising of the terrain. Until such time all items are in place, a flood risk will be present for the southern part of the site, for some dwellings in the Senandale housing estate and for parts of the R617.

Due to the temporary and shallow nature of the works and if appropriate site management processes are implemented, no significant construction impacts are anticipated.

Once the development is completed the operational impacts on the water and hydrology aspects of the site will be minimal. Surface water drainage will collect runoff and route it through attenuation and hydrocarbon interceptors. This will result in a slight reduction in peak flows reaching the Owennagearagh and the potential for accidental discharge of oils/fuels to the watercourses and groundwater will also be minimised. Water quality will thus be maintained.

The development will remove the risk of flooding associated with high flows in the western stream and have a beneficial impact on parts of the Senandale housing estate and on the R617.

CHAPTER 9 | BIODIVERSITY

Background

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.

Receiving Environment

A desk study was carried out to collate the available existing ecological information on the development site and surrounding areas. Field surveys included consideration of semi-natural habitats, terrestrial mammals, birds and bats.

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 is dominated by improved (GA1) and wet grassland (WS4) and includes an area of Built land (BL3). The site is bordered by treelines (WL2) and hedgerows (WL2) and includes examples of mature oak trees on the western side of the site. Other semi-natural habitats recorded include mixed broadleaved woodland (WD1); wet willow woodland (WN6) and scrub (WS1). An area of grassy verges (GS2) is present along the R617 verge adjoining, but outside the site. Apart from a central drain (FW4), there are no watercourses within the development site. The Dromin stream (FW1) runs along the western boundary of the site. No rare or protected plant species were recorded on site. No invasive plant listed on the 3rd Schedule of the Natural Habitats Regulations (S.I. 477 of 2011) were recorded on site.

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. While a number of potential bat roosts (trees) were identified, none of these will be removed nor, in the main will treelines and hedges framing the site be impacted. No badger setts were recorded on site. No signs of otter were recorded on the Dromin Stream; movement along the stream corridor is negatively affected by culverting of the river downstream of the site. Common frog was encountered in the wet grassland at the southern end of the site. A bird community typical of the habitats on site and of local importance (higher value) was noted.

Predicted Impacts

Potential impacts on the ecological receptors within the zone of influence of the proposed development during the construction and operation phases have been assessed. 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 semi-natural habitats ranging in value from negligible ecological value (e.g. improved grassland) to local importance (higher value) (e.g. portion of mixed (broadleaved) woodland and wet willow woodland and a hedgerow along the R617). Semi natural habitat of similar ecological value will, however, be replaced as part of the landscape strategy and thus the habitat loss impact will be temporary. Mature oak trees on the western boundary will not be impacted.

The alteration and removal of woodland, wet grassland and hedge would have a significant adverse impact to bat species (at a local geographic scale). However, this impact is mitigated by the proposed landscaping design and the abundance of similar habitat beyond the proposed site; therefore, this project will have a slight temporary adverse impact to local bat species on site.

Indirect habitat loss/damage via e.g. proximity of construction works to habitats to be retained will be mitigated to an imperceptible level by measures as set out in the Biodiversity chapter and the accompanying Environmental Management Plan. 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 detailed SuDS measures to manage surface water run-off within site as well as the design of landscaping measures, which include proposals for biodiversity gain are outlined. Key elements include the creation of a central wetland zone along the existing drain as well as woodland planting and enhancement. Appropriate lighting will be used within the proposed development and adjacent areas with sensitive lighting regimes deployed in wildlife sensitive areas.

Conclusion

The proposed development will result in the loss of grassland, woodland and hedgerow. Overall, the impacts of the proposed development in the absence of mitigation would be assessed as significant at the site level. Mitigation by avoidance is proposed for breeding birds, bats, trees, hedgerows; while strict adherence to on-site biosecurity measures would be implemented to prevent the spread of invasive species onto the site. A number of potential bat roosts in trees on site are also to be retained. Detailed measures to protect vegetation to be retained are set out in Section 9.5.13. Measures to reduce the effects of loss of habitats are also proposed in the form of detailed landscaping proposals. Details of trees to be planted are presented in Section 9.5.2.3. The protection of a wetland corridor along the central large drain will serve to retain and enhance the biodiversity value of this feature. Details are set out in Landscape Drawing L100 – Central Amenity. Planting of native woody species and wildflower meadows in public spaces is also proposed as mitigation in the Landscape Masterplan.

Enhancement proposals incorporated into the site landscape masterplan will improve the site potential for foraging bats and birds and will increase the potential for nesting and roosting opportunities for both. The value of the site for bats is to be retained through the careful design of lighting to account for bats foraging on site; protection of trees / hedges on the site boundary; planting of further trees throughout the site and in particular by protecting and enhancing the wetland corridor through the site, which links to the Dromin Stream to the west. Furthermore, bat boxes are to be provided on site in order to enhance bat roosting opportunities locally. With the effective implementation of the mitigation measures outlined in Section 6, such as landscaping and the minimisation of artificial light spill on to valuable habitats, no significant negative residual impacts on the conservation status of bat species will occur.

When considered in the context to the type and ecological value of semi-natural habitats to be lost on site, these measures will also benefit other groups using the site, such as birds, amphibians and invertebrates, and enhance the overall value of the site at a local level.

Overall, the residual impacts of the proposed development on ecology are likely to be slight negative impact at a site level and of short-term duration (i.e. Effects lasting one to seven years). In the short to medium term (i.e. seven to fifteen years) as vegetation on site mature the residual impact would increase to slight positive impact at a local level.

CHAPTER 10 | NOISE & VIBRATION

The existing noise climate has been surveyed during both daytime and night-time periods. It has been found that prevailing noise levels are primarily due to road traffic on N25 and the local road network.

The potential noise and vibration impact on the nearest noise-sensitive locations was assessed for the short-term construction phase and the long-term operational phase.

Provided that the mitigation measures detailed in the chapter, as well as good working practices, are employed during the construction phase and that the limits proposed within the EIS are not exceeded, it is anticipated that the noise impact during the construction phase will be short-term, negative and moderate. The vibration impact is considered to be short-term, negative and imperceptible.

During the operational phase, the key potential noise sources, including increased road traffic and mechanical plant noise emissions, have been assessed and commented upon. The assessment has indicated that, subject to the implementation of the mitigation measures proposed within the EIS, the operational phase impact will be long-term, negative and imperceptible.

In line with current best practice, a detailed inward noise impact assessment on exposed residential units within the proposed development which were not identified as having negligible risk has also been completed. Based on the recommended guidance, i.e. Professional Guidance on Planning & Noise (ProPG), the assessment outlines measures that will be incorporated into the design, including glazing sound insulation requirements that assist in the provision of an appropriate level of amenity in terms of noise.

CHAPTER 11 | CULTURAL HERITAGE

11.1 INTRODUCTION

The Cultural Heritage chapter assesses the impact of the proposed development on the known and potential cultural heritage resource. The term 'Cultural Heritage' encompasses heritage assets relevant to both the tangible resource (archaeology and architecture heritage); and non-tangible resources (history, folklore, tradition, language, placenames etc.). The recorded and potential cultural heritage resource within a study area that encompasses the internal lands within the proposed development site and an area extending for 1km in all directions from its boundary, was assessed in order to compile a comprehensive cultural heritage baseline and context to inform the assessment.

11.2 METHODOLOGY

Guiding principles in relation to the assessment of impacts of Cultural Heritage, including current legislation, and EPA Guidelines were adhered to as part of the methodological approach, with a view to identifying likely and significant impacts on the resource.

Documentary research on the recorded and potential cultural heritage resource within the study area was carried out in order to identify any recorded archaeological, architectural and other cultural heritage sites and features. This information provided an insight into the development of the study area over time and also assisted in an evaluation of the potential presence of unrecorded cultural heritage sites or features within the proposed development site.

The principal sources reviewed for the assessment of the recorded archaeological resource were the Sites and Monuments Record (SMR) and the Record of Monuments and Places (RMP) maintained by the Department of Housing, Local Government and Heritage (DHLGH). The relevant Record of Protected Structures (RPS) and the National Inventory of Architectural Heritage (NIAH) were consulted to assess the designated architectural heritage resource. Summaries of the legal and planning frameworks designed to protect these elements of the cultural heritage resource are also provided within the chapter. Various relevant literary sources, datasets and cartographic sources were also reviewed as part of the assessment and a summary of relevant information is presented within the chapter, including extracts from cartographic images and inventory descriptions.

The proposed development site and its environs were inspected on a number of occasions during 2021. The lands were assessed in terms of modern land use, remnants of historic landscape features, vegetation cover and the potential for the presence of previously unrecorded archaeological and architectural heritage sites/features. The survey results are described within the chapter and extracts from the photographic record compiled during the field survey are presented in Appendix 11.1.

11.3 DESCRIPTION OF EXISTING ENVIRONMENT

The proposed development site is located within the townland of Coolflugh which is located on the western outskirts of Tower village and is c.3.5km to the west-south-west of the town of Blarney, County Cork. In general, the lands within the boundary of the proposed development site comprise an area of poorly-drained, sloping farmland bounded by modern suburbs to the east and farmland to the west.

There are no recorded archaeological sites located within the proposed development site. The Archaeological Survey of Ireland lists seven recorded archaeological sites within 1km of its boundary and the nearest example is a fulacht fiadh (CO073-014---) which is located within a greenfield area located 180m outside the northern boundary. None of the recorded sites within the study area are designated as National Monuments in State Care. A review of the results of a number of archaeological investigations carried out within the surrounding 1km study area and lands in its environs revealed that none revealed the presence of any unrecorded archaeological sites or features. In addition, the Topographical Files of the National Museum of Ireland contain no records of the discovery of archaeological objects within the townlands within the study area. No surface traces of potential unrecorded archaeological sites or structures of architectural heritage were identified within the boundary of the proposed development site during the desktop study and field surveys undertaken as part of the assessment. The potential does exist for the presence of unrecorded, sub-surface archaeological sites, features and artefacts within the green field areas within the proposed development site.

There are no Protected Structures or NIAH-listed buildings located within the boundary of the proposed development site or its close environs. The surrounding 1km study area contains one Protected Structure (RPS 00452) which comprises a late 18th century road bridge, known locally as the Sheep Bridge, over the Owennagearagh River that is also listed in the RMP (CO073-013---) and NIAH (20907318). A 19th century building currently in use as a private residence located to the north of the bridge is also listed in the NIAH (20907317). This was originally a gate lodge associated with Cloghroe House, the site of which is located outside the west end of the 1km study area. The road bridge and former gate lodge are both located over 600m from the proposed development site.

While no undesignated cultural heritage features were identified within the interior of the proposed development site during the assessment, the townland boundary between Coolflugh and Dromin is formed by a small stream that extends along its western boundary.

The information gathered during the desktop study revealed no evidence for the presence of past settlement activity within the proposed development site, which is depicted as vacant farmland on all reviewed historical cartographic sources.

11.4 IMPACT ASSESSMENT

Archaeology

There are no recorded archaeological sites within the proposed development site or within 180m of its boundary, and the proposed development will, therefore, have no predicted impact on the known archaeological resource during the construction and operational phases.

While no evidence for unrecorded archaeological sites or features was identified during the assessment the potential exists for the presence of unrecorded, sub-surface archaeological features in undisturbed green field areas. As the existence, nature and extent of any unrecorded archaeological features within the study area are unknown; the level of potential impacts is indeterminable. However, ground works required for housing construction will have the likely potential to result in negative, direct, permanent, irreversible impacts of unknown significance on any sub-surface archaeological sites or features which may exist within the boundary of the proposed development.

Architectural Heritage

There are no designated architectural heritage sites located within the study area or within 600m of its boundary and the surrounding built environment is modern in character. The proposed development will, therefore, have an imperceptible impact on the architectural heritage resource during the construction and operational phases.

Undesignated Cultural Heritage Assests

There is one feature of local cultural heritage significance located within the environs of the proposed development site and this comprises a stream extending along the western boundary which forms the townland boundary between Coolflugh and Dromin. The proposed development will not result in any predicted impacts on this historic boundary feature.

11.5 MITIGATION

Archaeology

Given the scale and extent of the proposed development works within an undeveloped greenfield area, a programme of archaeological investigations will be carried out prior to the commencement of the construction phase. The presence of vegetation overgrowth and areas of waterlogging within the proposed development site will act as a constraint on geophysical surveying but will not hinder the excavation of archaeological test trenching within any of the fields. A thorough advance programme of archaeological test trenching within the proposed development site will, therefore, be carried out by a suitably qualified archaeologist under a licence issued by the National Monuments Service. In the event that any sub-surface archaeological deposits, features or artefacts are identified during the test trenching investigations then their surfaces will be manually cleaned, recorded and left to remain in situ while the Planning Authority and the National Monuments Service are consulted to determine further appropriate mitigation measures, which may involve preservation in situ (avoidance) or preservation by record (archaeological excavation).

Architectural Heritage

There are no Protected Structures, NIAH listed structures or undesignated buildings of architectural heritage significance located within the proposed development site. There are also no designated architectural heritage structures located within lands extending for 600m from its boundary and the surrounding built environment is modern in date. It is, therefore, concluded that no mitigation measure for the architectural heritage resource are required.

Undesignated Cultural Heritage

No undesignated features of cultural heritage were identified within the interior of the proposed development site during the assessment. The proposed development will not result in any predicated impacts on the townland boundary between Coolflugh and Dromin which extends along the western boundary of the proposed development site and no mitigation measures for this undesignated cultural heritage feature are, therefore, required. .

11.6 MONITORING OF MITIGATION MEASURES

There are a number of obligatory processes to be undertaken as part of archaeological licence applications and these will allow for monitoring of the successful implementation of the archaeological mitigation measures outlined in **Section 11.5**. Method statements detailing the proposed strategy for all pre-construction site investigations will be submitted for approval to the National Monuments Service as part of the licence applications. These will clearly outline the proposed extent of works and outline the consultation process to be enacted in the event that any unrecorded archaeological sites or features are identified. A report will be compiled on all site investigations which will clearly present the results in written, drawn and photographic formats. Copies of these reports will be submitted to the National Monuments Service, Cork City Council and the National Museum of Ireland. In the event that any sub-surface archaeological deposits, features or artefacts are identified during site investigations then they will be

cleaned, recorded and left to remain in situ while the Planning Authority and the National Monuments Service are consulted to determine further appropriate mitigation measures.

11.7 RESIDUAL IMPACTS

All potential impacts on any potential unrecorded archaeological features that may exist within the proposed development site will be addressed by mitigation during the pre-construction phase of the proposed development which will provide for the recording and/or avoidance of any potential sub-surface archaeological features that may exist within the site. There are no designated structures of architectural heritage significance located within the proposed development site or its close environs. The townland boundary between Coolflugh and Dromin which extends along the western boundary of the proposed development site will be retained as part of the proposed development. As a result, no residual impacts on the cultural heritage resource are predicted.

CHAPTER 12 | AIR QUALITY & CLIMATE

Non Technical Summary

AWN Consulting Limited has been commissioned to conduct an assessment of the likely impact on air quality and climate associated with the proposed residential development at Cloghroe, Tower, Co. Cork.

In terms of the existing air quality environment, baseline data available from similar environments indicates that levels of nitrogen dioxide, particulate matter less than 10 microns and less than 2.5 microns are generally well below 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 Effort Sharing Decision "EU 2020 Strategy" (Decision 406/2009/EC). The EPA state that Ireland had total GHG emissions of 57.7 Mt CO₂eq in 2020. This 6.73 Mt CO₂eq higher than Ireland's annual target for emissions in 2020. The EPA indicate that Ireland can meet its non-ETS EU targets over the period 2021 – 2030 assuming full implementation of the 2019 Climate Action Plan and the use of the flexibilities available.

The greatest impact to air quality during the construction phase of the proposed development is from dust emissions. There are a number of sensitive receptors in close proximity to the site, to the direct south and east of the site boundary. Provided the dust mitigation measures outlined in Appendix 12.3 of Chapter 12 are implemented, dust emissions are predicted to be short-term, 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 is likely to be short-term, 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 increased traffic 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 increased traffic volumes during the operational phase of the proposed development is localised, negative, imperceptible and long-term. In addition, the proposed development has been designed to reduce the impact to climate where possible.

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, 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.

CHAPTER 13 | POPULATION AND HUMAN BEINGS

13.1 CHAPTER CONTEXT

The European Commission’s ‘Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report’ 2017 specifies the following in relation to the assessment of population and human health.

“Human health a very broad factor that would be highly project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population.”

This chapter of the EIAR document has been prepared with reference to the Draft Guidelines on the information to be contained in environmental impact assessment reports, published by the EPA in August 2017, as well as European Commission’s ‘Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report’ 2017. A desktop study of the following published policy documents and data was undertaken to appraise the location and likely and significant potential impact upon population and human health receptors and to assess population trends in the subject site and in the wider hinterland:

- Central Statistics Office (CSO) Census 2011 & 2016 data.
- Cork County Development Plan 2014.
- Draft Cork City Development Plan 2021.

This assessment is a study of the potential indirect and direct socio-economic impacts of the construction phase and the operational phases of the development. Effects on receptors were assessed in terms of magnitude, quality, significance and duration.

13.2 DESCRIPTION OF EXISTING BASELINE ENVIRONMENT

In assessing the demographic trends in the vicinity of the subject site, a focused analysis of the site-specific Electoral Division has been conducted. Located immediately to the west of the CSO census settlement of Tower, the subject site is located in the CSO small area reference 047250010, within the larger Matehy Electoral Division (Ref 47250). The site was formerly located within the administrative area of Cork County Council, however, since the Cork City Boundary Extension in May 2019, the lands are now situated within the functional area of Cork City Council. A number of nested geographics have been selected as the study area for this demographic analysis, with the detailed CSO small area statistics being juxtaposed with the settlement statistics for adjoining village of Tower and the wider statistics for the Matehy Electoral Division (ED), Cork City and Cork County overall. While the subject site is now within the amended Cork City Boundary the statistics outlined in this chapter relate to the previous city boundary as the boundary change occurred subsequent to the Census in 2016 and the statistics relate to the previous boundary. The boundaries of these areas are illustrated in Figure 13.1 as shown.

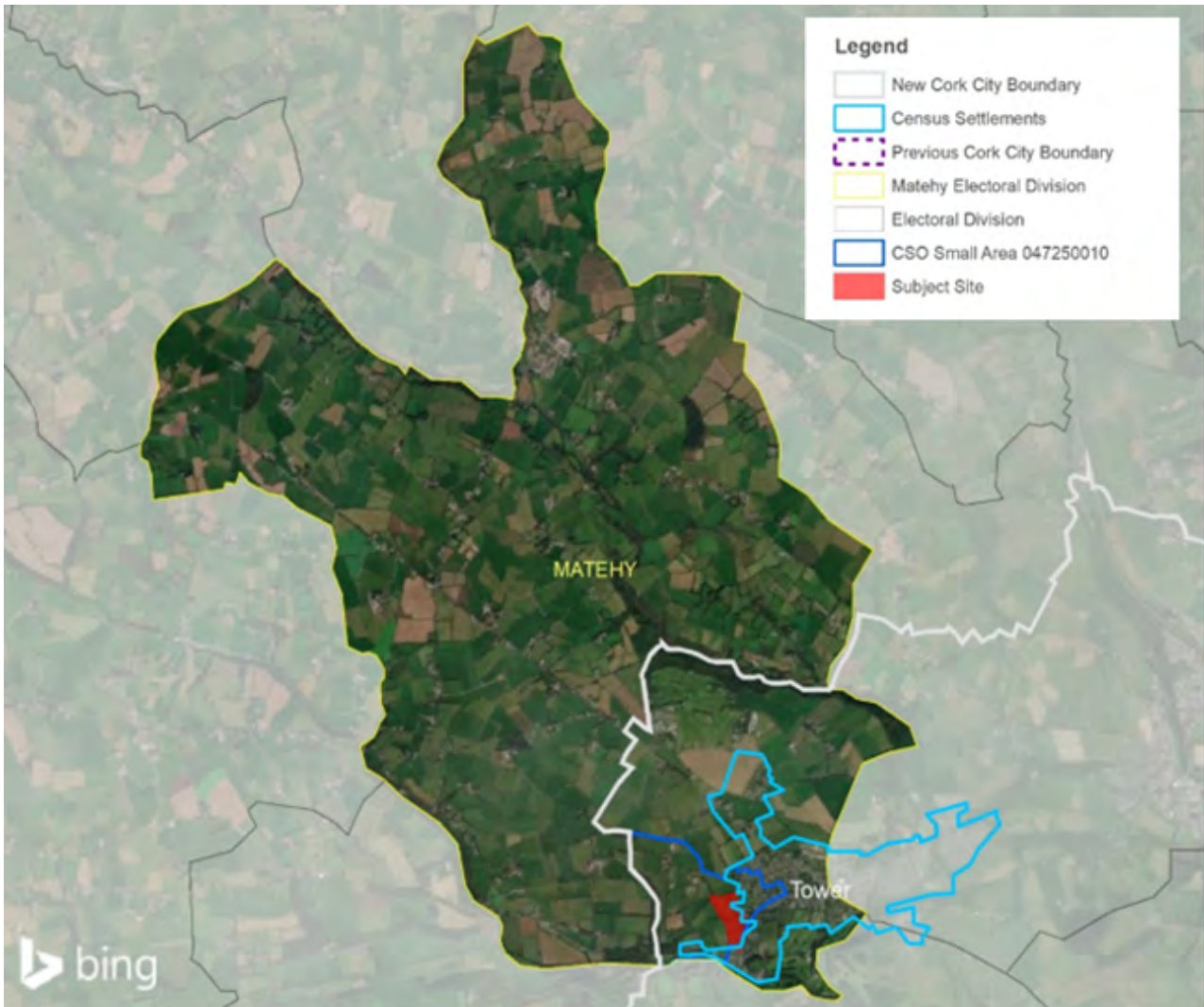


Figure 13.1 Immediate Study Area

13.3 COMMUNITY AND SOCIAL INFRASTRUCTURE

The existing community and social infrastructure assets in the local area has been identified in accordance with the categories outlined in the table 13.1 below.

Table 13.1 Community and Social Infrastructure Categories

Category	Description
Amenity, Open Space and Sports	Parks, Playgrounds, Amenity Walks/Greenways, Pitches, Green Areas, Golf Courses, Sports Pitches, Sports Centres, Swimming Pools, Gyms
Childcare and Education	Childcare, Primary Schools, Post Primary Schools, Special Schools, Third Level Universities, Other Educational Institutions
Community facilities	Community Centres, Religious Facilities, Post Offices, Libraries.
Retail services	Supermarkets, Convenient Shops, Specialty Services, Restaurants/Take-aways, ATM, Petrol Station
Health	Hospitals, Health Centres, Clinics, Pharmacies, Addiction Services, GPs, Mental Health Services
Emergency	Fire Station, Garda Station
Public Transport	Bus and Train Routes

For the purposes of assessing the community and social infrastructure serving the settlement of Tower, it has been concluded to provide for a 5km radius of the settlement, including the nearby settlements of Blarney and Ballincollig. Tower is closely linked to both settlements geographically and in the provision of services.

13.4 RETAIL

A Retail Impact Assessment (RIA) prepared by HW Planning accompanies this SHD application and is attached in Appendix 13-1 of this EIAR.

The retail catchment defined in the RIA, does not include Blarney or Ballincollig. As detailed in the RIA, the retail catchment of was established by a desktop approach, using Census 2016 small area data and based on existing and expected consumer behaviour. The catchment was validated by site visits and visual inspections. The starting point for catchment definition was a 5 minute drivetime of the proposed development site, this area was then modified to exclude areas within 5 minutes drivetime of Blarney, with the exception of those areas within Tower, which are more likely to be served by the settlement itself. The catchment was also reduced to the south in areas which would naturally be served by Ballincollig. Conversely, the catchment was expanded to the west and north to a 15 minute drivetime, to reflect the absence of other convenience retail stores in these areas. It is considered that Tower serves as the most convenient location for household retail shopping for the rural areas such as Matehy, Inniscarra, Donoughmore, Berrings, Dripsey, Firmount, Kerry Pike, New Tipperary, Stuake and Courtbrack.

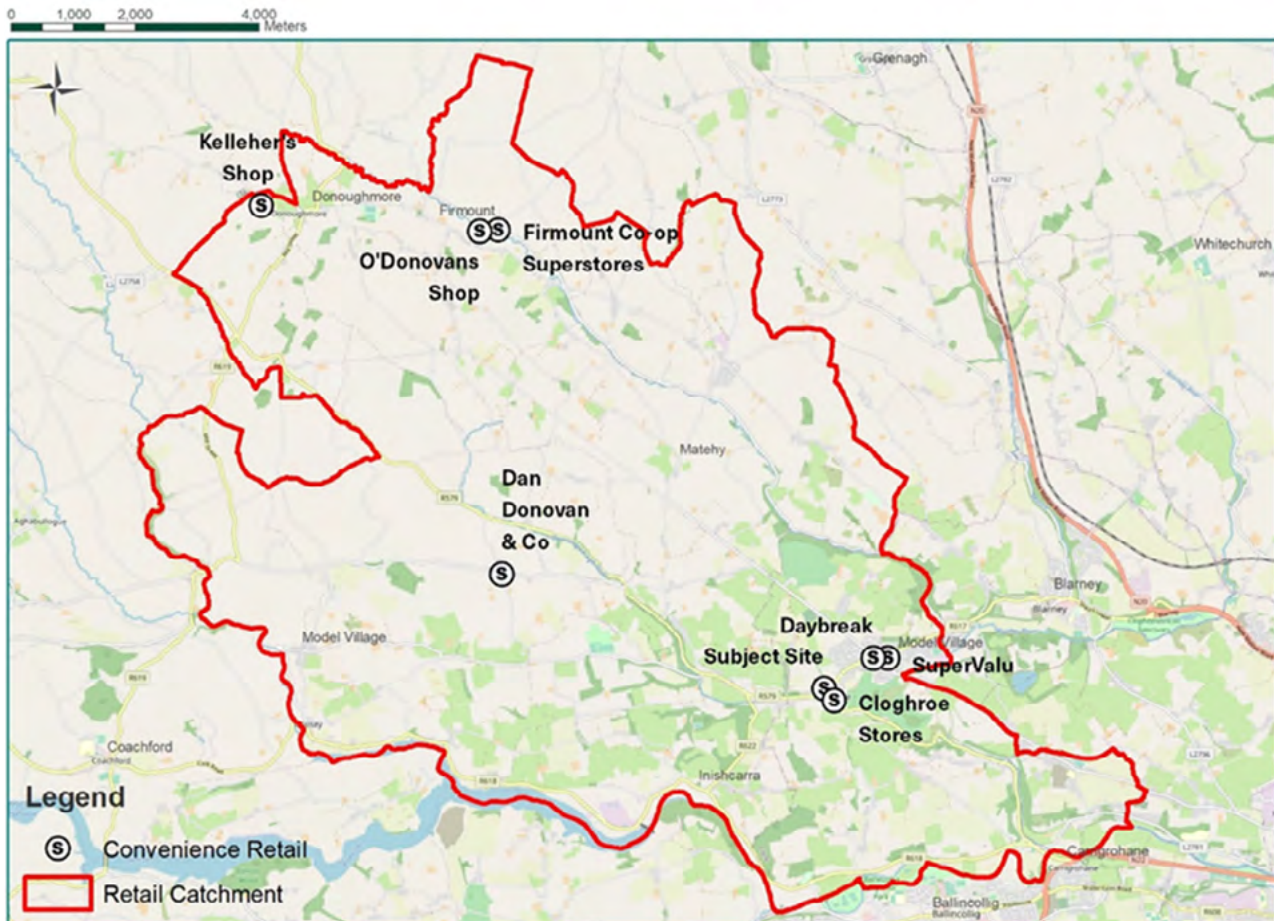


Figure 13.2 Retail Catchment as defined in Retail Impact Assessment

At present there are two local neighbourhood centres in the settlement of Tower/Cloghroe. An existing Super Valu supermarket is situated in Tower, with florist, physiotherapists, beauty salon pharmacy also provided. A Daybreak/ Circle K service station is located near the junction of the R617 and L-2752 roads. There is a separate neighbourhood centre in Cloghroe to the south of the settlement. Within this neighbourhood centre a local convenience shop (Cloghroe Stores), post office, pharmacy, fitness studio and hairdressers are located immediately adjacent to Cloghroe Church and Cloghroe National School.

An analysis of the defined retail catchment identifies 11 no. other smaller settlements within Towers wider retail catchment. Field visits at these locations were carried out on 05/12/2020 /during the late morning to early afternoon to establish the existing quantum of convenience retail in the area.

13.5 IMPACT ASSESSMENT

13.5.1 DO-NOTHING SCENARIO

In the 'do nothing' scenario, the subject lands will remain undeveloped would remain in its existing undeveloped, agricultural and woodland use and inaccessible to the public. The proposed upgrades to the R617 would not take place, resulting in the existing situation remaining, whereby the existing bus stop is difficult to access and there is

substandard pedestrian crossing points across the R617. The R617 would continue to represent a barrier to efficient pedestrian and cycle connectivity in the settlement in the 'do nothing' scenario, discouraging an uptake of walking, cycling and public transport as viable modes of transport.

The 'do nothing' scenario would also result that the existing flood risk will continue in the absence of appropriate drainage/flood defence works.

The 'do nothing' scenario, would also result in a continuing leakage of economic and retail activity from the settlement, reflective of current trends in the settlement. This trend is likely to increase further into the future given the strong recent performance in terms of population and housing growth, evidenced from the number of dwellings which have received permission and have been constructed in the settlement, since the adoption of the 2017 Local Area Plan.

Over time it is considered the do-nothing scenario will result in an inefficient use of serviced lands, which will have convenient access to public transport opportunities and local amenities and will negatively impact many aspects relating to population and human health.

13.5.2 IMPACTS ON EXISTING POPULATION AND HUMAN HEALTH

13.5.2.1 CONSTRUCTION PHASE

Construction works are likely to take place over a c. 48 no. month period (c. 4 no. years). The construction methods employed, and the hours of construction proposed will be designed to minimise potential impacts to nearby residents. Construction of the proposed development will be implemented in accordance with the CEMP and CTMP prepared by MHL & Associates which are included in Appendices 2-2 and 2-3 of this EIAR. These documents describe a suite of mitigation measures to be strictly implemented and monitored during the construction phase of the development.

13.5.2.2 OPERATIONAL PHASE

Once constructed, the proposed development will be permanent and non-reversible. The proposed development will result in several significant long-term positive impacts for the local population including.

- The proposed development will result in providing a diverse range of housing and apartments which will serve all aspects of the current housing and rental markets and address the current accommodation shortage in the Metropolitan Cork Area.
- The proposed compensatory flood storage, headwall with non-return valve at southern boundary land drain, and attenuated surface water drainage system will remove the risk of flooding occurring within the site. The proposed flood defence system will also represent an improvement from the do-nothing' scenario, by protecting properties within the Senandale residential development to the south, from future flood events generated from the existing western boundary stream.
- The proposed development will result in the consolidation of the Cloghroe Neighbourhood Centre as an important local service centre. The proposed retail unit and café unit will represent an expansion of the existing neighbourhood centre which contains a local newsagent, post office, pharmacy, beauticians, fitness studio, church and school and create additional employment and economic opportunities for local residents.
- The relocation of the bus stop and proposed public realm works, including the introduction of bicycle lanes/footpaths will all positively contribute to sustainable mobility and traffic safety in the settlement. Cloghroe/Tower by its nature is a relatively compact settlement, with Tower village centre to the northeast a confluence point of the R617, L-2752 (referred to locally as the 'Kerry Road') and the Kerry Pike Road. The improvement of pedestrian/cyclist infrastructure, in tandem with potential future public transport links identified in CMATS/BusConnects will enhance opportunities for pedestrian and cyclist connectivity in the area, with most of the settlement within a 5-15 minute walking distance of the site.

The proposed development will result in the evolution and urbanisation of the streetscape along the R617 Cloghroe-Blarney Road. The Landscape & Visual Impact Assessment prepared by Forestbird Design, concludes that the proposed development will positively contribute to the landscape character of the area and will complement the existing built form of the settlement.

13.5.3 IMPACTS ON LOCAL ECONOMY AND RETAIL

13.5.3.1 CONSTRUCTION PHASE

The duration of the construction phase is likely to result in moderate short term positive impacts to the local economy. Construction workers will avail of local retail outlets and food establishments for refreshments in mornings and lunchtimes in particular. Supplies and materials for proposed construction works may also be supplied locally further resulting in positive impacts on the local economy. The construction phase will also provide for both direct and indirect construction related employment opportunities.

13.5.3.2 OPERATIONAL PHASE

The proposed development will result in significant permanent positive impacts on the local economy. The 2016 Census confirms that the average household size of Tower is just over 3 no. persons per household. The proposed development of 198 no. dwellings translates to an approximate uplift of approximately 600 no. persons. The projected increase in population of Tower will create additional demand for local retail and service provision, providing increased local employment opportunities. The proposed development will result in providing a diverse range of housing and apartments which will serve all aspects of the current housing market and address the current housing shortage in the Metropolitan Cork Area.

The location of the proposed retail component to the south of the site will result in the expansion of Cloghroe Neighbourhood Centre, catering for the needs of the towns growing population and sizeable local catchment. The proposed development provides for a 'one project approach' resulting in new residential development and the expansion of the towns retail offering being delivered in tandem.

Once operational, the proposed development will provide for a retail food store of 1,315 m² (net floor area) and café of 155.5 m². The findings of the RIA predict that, based on a modest population growth scenario of 1% by 2022, there will be spare capacity within the retail catchment to support additional convenience floorspace of 1,990 m². Given the population underestimate inherent in these calculations as referred in the RIA, a growth figure of 1% is considered to be conservative. If a 2% population growth scenario is realised the spare capacity within the retail catchment to support additional convenience floorspace rises to 2,416m². By the year 2031 it is envisaged that the 1% growth scenario will support 2,724m² of additional convenience floorspace and the 2% growth scenario would support 4,196 m². In this context there is adequate capacity within the catchment to support the proposed retail food store which would result in an increase of 1,315 m² to the existing net sales area.

Based on the findings and desk and field research conducted in the RIA, it is considered that the proposed development will result in significant long-term positive impacts to the local economy and retail provision for the settlement and its large rural catchment. The proposed retail development and population growth generated from the proposed residential development will stimulate competitiveness and variety in the local retail market.

13.6 RESIDUAL IMPACTS

Residual impacts refer to those impacts that remain following the implementation of mitigation measures. It is considered that subject to the mitigation measures outlined in the CEMP and EIAR being implemented the proposed development will result in many positive and permanent residual impacts including.

- The creation of a new community in Cloghroe/Tower, orientated around public transport opportunities which can promote sustainable commuting patterns to nearby urban and employment centres.
- The delivery of a new retail outlet, café, and creche will all assist in consolidating the Cloghroe Neighbourhood Centre as an important local centre. As demonstrated in this EIAR and supporting documentation, there is a need for these uses in the settlement to support the existing and future population of the settlement with the development positively contributing to Cloghroe's retail, childcare and economic outlets.
- The relocation of the existing bus stop/delivery of the bus shelter and public realm upgrades will ensure that the existing bus stop at Cloghroe will be more accessible and useable than the existing scenario.
- The proposed compensatory flood storage, headwall with non-return valve at southern boundary land drain, and attenuated surface water drainage system will remove the risk of flooding occurring within the site. The proposed flood defence system will also represent an improvement from the do-nothing scenario by protecting the properties within the Senandale residential development to the south from future flood events generated from the existing western boundary stream.
- The proposed central parkland, amenity walk areas and urban plaza to the front of the café unit will provide high quality public amenity and communal spaces promoting human interactions. The proposed layout provides for high quality public open spaces promoting outdoor activities and exercise which will benefit existing and future residents of the settlement.

13.7 CUMULATIVE IMPACTS

13.7.1 CONSTRUCTION PHASE

Assessing the cumulative impacts of the construction phase of the development is contingent on the construction schedules of the permitted developments in the area identified in Chapter 1. For the purposes of this assessment of impacts a 'worst case' scenario has been assessed based on the projects stated in Chapter 1.

The subject site is not situated immediately adjacent to any of the other permitted developments referenced in Chapter 1. The most proximate site is the development permitted by Cork County Council reference 18/6802 for the construction of a new surface car park to the south of Cloghroe National School (approximately 300 metres southeast of the site). An application for the construction of 73 no. dwellings, flood mitigation works, landscaping, amenity areas and all associated site works is currently being assessed by Cork City Council. Cork City Council Planning Application reference 21/40620 refers.

As referenced in the CEMP, the construction phase of the proposed development will be subject to strict mitigation and monitoring procedures. It is predicted that subject to the implementation of mitigation measures proposed, that the proposed development will result in no significant impacts relating to air quality, noise, vibration or traffic. Any negative impacts or nuisances experienced from construction activities which affect human health will be temporary/short term in nature.

13.7.2 OPERATIONAL PHASE

Once constructed, the proposed development will be permanent and non-reversible. It is considered that cumulative impacts relating to human health factors including traffic, road safety, air quality, landscape and visual, water quality, noise and vibration will be not significant.

In the context of profound benefits in terms of the delivery of a new retail development, café, creche, public realm upgrades and flood defence works that the development will result in profound benefits in terms of wider human health considerations.

CHAPTER 14 | INTERACTION OF IMPACTS

Article 3(1) of the EIA Directive states.

The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

- (a) population and human health;*
- (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
- (c) land, soil, water, air and climate;*
- (d) material assets, cultural heritage and the landscape;*
- (e) the interaction between the factors referred to in points (a) to (d)."*

Annex IV of the amended Directive states that a description of impacts should include:

"...the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the project"

Table 14.1 as shown summarises the relevant interactions and interdependencies between specific environmental aspects.

Interaction	Landscape & Visual	Material Assets – Traffic & Transport	Material Assets – Services, Infrastructure & Utilities	Land, Soils & Geology	Water (Hydrology & Hydrogeology)	Biodiversity	Noise & -Vibration	Cultural Heritage	Air Quality & Climate	Population & Human Beings
Landscape & Visual	Op	Op	Con & Op	Con & Op	Op	Con	-	Con	-	Con & Op
Material Assets – Traffic & Transport	Op	Op	Con	Con	-	Con	Con & Op	-	Con & Op	Con & Op
Material Assets – Services, Infrastructure & Utilities	Con & Op	Con	Con	Con	Con & Op	Con & Op	Con	-	Op	Con & Op
Land, Soils & Geology	Con & Op	Con	Con	Con	Con & Op	Con	-	Con	Con	Con
Water (Hydrology & Hydrogeology)	Con & Op	Con & Op	Con & Op	Con	Con & Op	Con & Op	-	-	-	Con & Op
Biodiversity	Con & Op	Con	Con & Op	Con	Con & Op	Con	Con & Op	-	Con	-
Noise & Vibration	-	Con & Op	Con & Op	-	-	Con	Con	-	Con	Con & Op
Cultural Heritage	-	-	-	Con	-	-	-	-	-	-
Air Quality and Climate	-	Con & Op	Con	-	Op	Con	Con	-	-	Con & Op
Population and Human Beings	Con & Op	Con & Op	Con & Op	Con & Op	Con & Op	-	Con & Op	-	Con & Op	Con & Op

Table 14.1: Potential Interaction of Effects Matrix (Con = Construction, Op= Operational. If there is considered to be no potential for an effect, the box is left blank.)

CHAPTER 15 | SUMMARY OF MITIGATION MEASURES

The 2017 Draft EPA Guidelines regarding information to be contained in EIAR's identifies the following strategies for the mitigation of effects.

Mitigation by Avoidance: Avoidance usually refers to strategic issues, such as site selection, site configuration or selection of process technology. This may be the fastest, cheapest and most effective form of effect mitigation. In some cases mitigation by avoidance may also be considered as part of the "consideration of alternatives".

Mitigation by Prevention: This usually refers to technical measures. Where a potential exists for unacceptable significant effects to occur (such as noise or emissions) then measures are put in place to limit the source of effects to a permissible and acceptable level.

Mitigation by Reduction: This is a very common strategy for dealing with effects which cannot be avoided. It tends to concentrate on the emissions and effects and seeks to limit the exposure of the receptor. This is regarded as a less sustainable, though still effective, approach, implemented through reducing the effect and/or reducing exposure to the effects.

Mitigation by Remedy/Offsetting: This is a strategy used for dealing with adverse effects which cannot be prevented or reduced. Remedy is compensating for or counteracting adverse effects. Examples include increased planting of specific trees/shrubs to replace unavoidable loss of vegetation, or provision of a new amenity area to compensate for the unavoidable loss of access to the grounds of an old house. Examples of Offsetting include reinstating buildings, walls or features, or the introduction of tunnels to enable wildlife to access other comparable habitats.

For a comprehensive list of all proposed mitigation measures, refer to the individual chapters and corresponding appendices of this EIAR (Volumes II and III).

The accompanying Construction & Environmental Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) prepared by MHL & Associates (Appendices 2-2 and 2-3 of this EIAR), also provide details of all construction related mitigation and monitoring measures to be adopted during the construction phase of the project.

