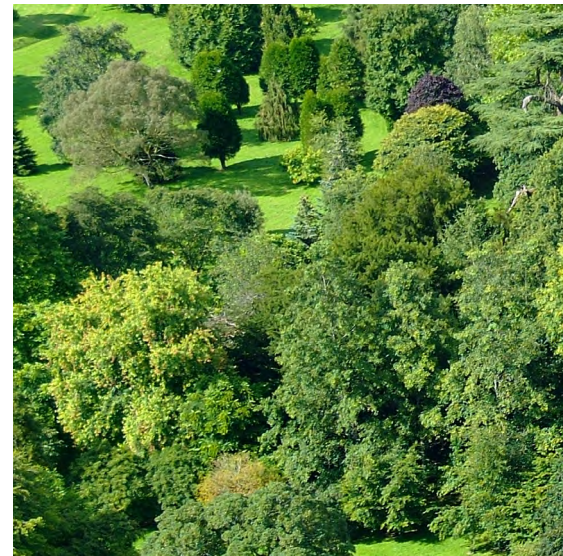
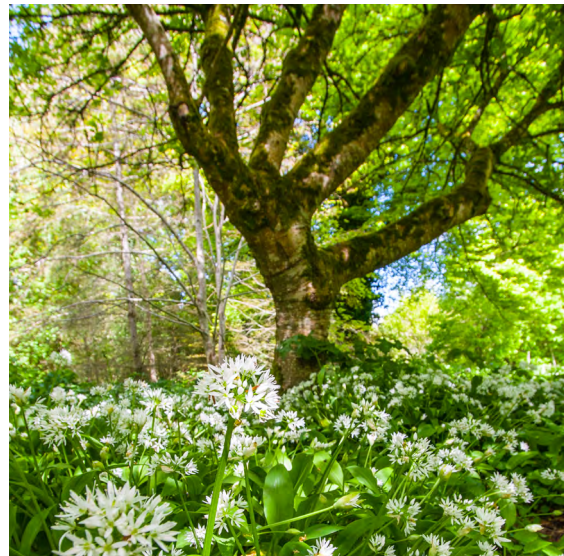




LACKENROE SHD

# APPENDIX 3

Alternatives Considered



**VOLUME III** | Appendices

LACKENROE SHD

# APPENDIX 3-1

Minutes of Section 247 Discussions

**VOLUME III** | Appendices

### Bluescape Ltd – Section 247 Meeting - Glounthaune

**Date:** 20/9/2018      **Time:** 11.00am      **Venue:** Cork County Hall

List of Attendees:	Organisation/Department	Abbreviation
Noel Sheridan	CCC Planning Department	NS
Enda Quinn	CCC Planning Department	EQ
Louise Ahern	CCC Planning Department	LA
Seán O’ Brien	CCC Planning Department	SO’B
Micheál Mulconry	CCC Traffic and Transport	MM
Giulia Vallone	CCC Architect	GV
Gerard O’Hora	CCC Roads & Engineering	GO’H
Harry Walsh	HW Planning	HW
John O’Brien	HW Planning	JO’B
Ken Manley	MHL & Associates Consulting Engineers	KM
Eamonn Gahan	Deady Gahan Architects	EG
Paul McCarthy	Bluescape Ltd.	PM

**Apologies:**  
Jim Kelly                      Cunnane Stratton Reynolds                      JK

Item	Minute
1.	HW thanks CCC for accommodating meeting and gives an overview of the proposed development in the context of its location proximate to existing train station. Also highlights the grant of permission of another SHD development at Glounthaune (174 units) and the grant of 40 no. units in the first phase of the overall masterplan in the immediate lands to the west.
2.	NS – References local planning policy of the Council. Provisions in the Local Area Plan identify that Glounthaune is identified as a ‘Key Village’ and should expand by approx. 400 units over a period of 10 years with a general recommendation that no development exceed 40 units. In the past year over 200 units have been granted in the settlement with another current application running from Ruden Homes for a further 80 units near the primary

	school. Should Bluescape development be granted it would take permitted dwelling in Glounthaune to well in excess of 500 units in just over a year.  NS mentions that pre-application discussions have occurred regarding other sites in the settlement.
3.	HW responds; <ul style="list-style-type: none"> <li>- Glounthaune is on a rail line and development should be concentrated around public and sustainable transport.</li> <li>- Policy conflict between local documents and national policy which seeks to consolidate growth on public transport corridors. Glounthaune modest population targets do not reflect national guidance.</li> </ul>
4.	NS accepts that Council did not envisage such demand for residential development so quickly in Glounthaune when adopting LAP’s in 2017. Planning Policy Unit of the Council is aware of this and is currently reassessing its own population and housing targets relating t Glounthaune.
5.	NS expresses concerns over density of the proposed development in excess of 30 units per hectare. NS points out that the first phase of development of 40 units was granted by An Bord Pleanala (ABP) despite having a density of circa. 12 units per hectare.
6.	EG responds that proposed density of 30.2 units per ha is calculated from developable site area (7.75 ha) and that if entire area is calculated the density is circa 20.3 units per ha. Given the sites closer location to the station it is more appropriate to have higher density in this area of the site.
7.	MM references special development contribution of €80,000 which was levied on the first phase of development for improvement of roadworks/junction on road to the west. Uncertainty over what will be delivered on foot of this and queried whether road upgrade proposals and upgrades will be included within application red line.
8.	HW confirms that red line would extend to account for upgrade proposals/provision of footpaths along road to south of the site to provide certainty over what will be delivered.
9.	KM provides an overview of road upgrades to be implemented as part of the proposed development and wider connectivity considerations; <ul style="list-style-type: none"> <li>- Vehicular access to the site will be provided via signalised junction as permitted by first phase.</li> <li>- Pedestrian route will run south from the site to the local road.</li> <li>- Existing road to south is too narrow at present (approx. 6m) to provide a continuous footpath from the site access to connect to existing footpath network which will provide access to train station.</li> <li>- Train station is approx. 10-minute walk from southern site access point.</li> </ul>



	- Potential upgrades to road include shared surface treatment designed to slow traffic and be pedestrian priority.
10.	MM has serious concerns about road to the south and how residents will be able to access train station without a continuous footpath. Queries how someone pushing a buggy could safely access train station from the site.
11.	KM stresses that road width cannot be helped due to levels and third party ownership and that where road widens sufficiently to the east a footpath can be provided.
12.	MM responds that pedestrian environment to south is not satisfactory and that deliverable proposals will need to be provided by the applicant.
13.	HW points out that Council has zoned the land for several years and that Council should cooperate and account for these lands being developed.
14.	Discussion between KM and MM about alternative methods which could be investigated on this stretch of road including; <ul style="list-style-type: none"> <li>- Providing a one way system where appropriate. MM points out that there would be significant local resistance to this proposal.</li> <li>- Chicaning/Shuttle the relevant stretch of road where appropriate. KM states that there is good visibility on this stretch of road and that this could be considered.</li> </ul>
15.	MM recommends that the scope of any Traffic Impact Assessment or Road Safety Audit be agreed with the Council prior to lodgment of the application. KM agrees.
16.	KM points out that a Traffic & Transport Assessment which was submitted as part of application for first phase accounted for the development of the entire lands of over 200 units and was acceptable to the Council and ABP.
17.	NS queries planning history on the site and a previous application that was previously refused on the site which could only have provided access to northern country road.
18.	KM responds that road to north is not conducive with increased traffic and is sub-standard and takes residents away from village centre and train station to the south.
22.	GO'H requests that details relating to traffic calming measures within the estate be presented when available as he does not have enough information at present to comment.
23.	EG provides an overview of the design rationale of the proposed layout and highlights the challenges of the site including topography and access. Layout has 3 different character zones with the northern most portion of the site being least dense area and area to south having apartments and denser concentration of dwellings to reflect its location closer to the train station. EG explains that the design has sought to retain as many original hedgerows as possible with play areas and public spaces deliberately located to maximise their potential.

	Due to levels on the lands a linear settlement approach has been adopted in parts to minimise as much cut and fill and slit levels as possible.
24.	GV provides the following comments; <ul style="list-style-type: none"> <li>- Proposal is for 235 houses which will result in circa 500 cars and 700 residents.</li> <li>- Wants a special focus on neighbourhood and community and how layout responds to interaction between residents.</li> <li>- Development should discourage use of car and provide useable and accessible walking routes and desire lines.</li> <li>- From an urban design perspective, a one way road to the south conducive with safe pedestrian/cycle environment would be encouraged.</li> <li>- Requests a walking and cycling strategy within the site and in its wider context.</li> <li>- Steps within the development would be welcomed and can be incorporated into public spaces. Provision of stepped terraces etc. would assist in addressing topography issues on the site.</li> <li>- Site should be more legible and desire lines for walking and cycling should be more clearly defined.</li> <li>- Residents at north of the site should have a clear and easy walking route to southern most area of the site.</li> <li>- Investigate possibility of courtyard development with communal spaces. Proposed layout of predominantly bac to back gardens does not always promote socialising and interaction between residents in the development.</li> <li>- Better connections internally in the site.</li> <li>- Consider cyclists within the development despite the sites topography. E-bikes will become more mainstream in the coming years.</li> <li>- Current location/orientation of apartments should be looked at as they may affect pedestrian desire line due to its central location.</li> <li>- Investigate possibility of providing apartment units close to proposed creche.</li> <li>- Overall goal of proposed development should be sustainable and to avail of its location close to the rail line which is currently underused.</li> <li>- Current road network does not sufficiently address road hierarchy and desire lines for pedestrian should form one of the key aspects for the layout.</li> </ul>
25.	HW and EG acknowledge points made re. layout and that many of the points will be considered. However, they also stress that compliance with technical regulations makes a lot of these proposals difficult.
26.	EG also notes that the current location of the creche to the north of the site is in his view the most appropriate as it is easily accessible by car via the junction to the west and that locating apartments at furthest point from the pedestrian entrance to the site would not be most sustainable location for them.
27.	NS and GV query layout to north of the site and that 2 internal roads in close proximity provide obstacles to pedestrian movement.

28.	GV queries public lighting and advises that measures relating to tree planting are still achievable while still providing adequate lighting. EG requests that she share details with this
29.	NS provides general comment on layout that internal roads should run right up to eastern most boundary of the site as these lands are also zoned.
30.	EG notes and agrees.
31.	NS notes that when calculating density that area to the south of the site can be omitted from the developable area due to its topography and also the presence of a broadleaf woodland. NS also recommends that no building occur in this area.
32.	NS requests to investigate whether a tree survey will be necessary
33.	NS advises that County Archaeologist has advised that there is a possibility of archaeological features in the site particularly to the south. A geophysical survey has been requested to establish the extent of any archaeological remains.
34.	NS also requests that applicants note the Protected Structure to the east be accounted for and mitigation measures be adopted as necessary.
35.	NS notes that after the application will be lodged with ABP that the Council will discuss with Council members who have a big onus on community facilities. There are concerns that the recent residential developments will result in a stretch on local outlets. PM queries what type of facilities are of interest. NS provides example of community hall or space.
36.	SO'B forwards comments via email to HW from CCC Heritage Officer who would not support the development of the Southernmost portion of the site which appears to comprise broadleaved woodland
37.	SO'B forwards comments via email to HW from CCC Ecologist stating; <ul style="list-style-type: none"> <li>- Encourage retention of field boundaries where possible and to incorporate native species into landscaping design.</li> <li>- All boundaries should be fully surveyed (by an ecologist) and described and mitigation measures put forward, where their removal cannot be avoided, which should be fully incorporated into a detailed landscape plan.</li> <li>- Appropriate Assessment - applicants should address possible implications of the proposed development for the Cork Harbour SPA and the Great Island Channel SAC – their assessment should be prepared by a qualified and experienced ecologist. Attention should be paid to management of surface and waste water in that assessment.</li> </ul>
38.	Meeting concludes.

**Proposed Development at Lackenroe – Glounthaune: Council reference SHD 20**

**Minutes of Section 247 Pre-Planning Consultation held on 20<sup>th</sup> May 2021  
Meeting held on Microsoft Teams**

In attendance:

Name	Representing
Niall O’ Donnabháin	Cork County Council
Kevin O’ Regan	Cork County Council
Noel Sheridan	Cork County Council
Sharon O Connell	Cork County Council
Harry Walsh	HW Planning
John O Brien	HW Planning
Ken Manley	MHL & Associates
Prendergast, Aileen	AECOM
Dr Katherine Kelleher	Kelleher Ecological Services
Eamonn Gahan	DG Architects
McKendrick, Emma	AECOM
Jim Kelly	CSR Land Planning & Design
Liam Murphy	DG Architects
Paul McCarthy	Bluescape Ltd

Following introductions H Walsh outlined the background noting the previous application to ABP. He advised that the issues raised following that process had been examined and various options considered. The inclusion of the land to the south in this application provides a direct access that can service this proposed development and other lands to the North.

Liam Murphy expanded on the connectivity that this land provides for. He noted the desire line connectivity N/S and W to the school. The proposal includes N/S central walkway linking various elements of the proposal and that there would be an urban edge to the walkway. The proposal incorporates smaller units, including apartments, duplex etc as one moves south with edges to urban squares. Universal access (Part M compliance) through the site is catered for.

They advised that there was a lot of scrub land in the southern element, that mature trees have been tagged and the proposed alignment is designed to minimise impact on these. The trees that will need to be removed to provide the footpath have been identified and there is ample opportunity for mitigation measures to be incorporated.

It was also noted that 2 No retail units are proposed for the apartments.

Niall noted that this is a difficult site and that these particular lands are not identified for development in the draft CDP review. The core issues as identified by ABP need to be addressed in any new proposal. In relation to accessibility he noted the improvement outlined in the new proposal. As with any proposal issues relation to deliverability, how the proposal can function at a practical level, overlooking, identification of areas proposed to be taken in charge, management of apartments, passive surveillance, ecology will all need to be taken into consideration.

In response it was noted that public lighting that meets ecological standards, is proposed to assist in passive surveillance and working through the cut & fill requirements are being considered carefully in this regard. The proposed path is designed to work, as much as it can, with the topography and to ensure compliance with accessibility. It was noted that there may be opportunities to increase the level of interactivity surveillance and this would be examined.

Niall noted that certainty will be required by the Council’s Estates Engineers in relation to what is proposed and that a series of cross sections would be required to provide the detail to allow for proper assessment.

Niall noted that further discussion with the Traffic & Transport Section would be required in relation to E/W proposals and the need to discourage excessive traffic to the old road from the southern section.

Proposal for bollards and to cater for modest parking for the retail units but overall minimising parking are proposed.

Niall noted that there could be potential for an improved relationship for the proposed parking and more detail in would be beneficial. Ho also commented that the proposed 306unit development had a very dense feel and the road hierarchy was unclear. Clarity on the amount of open space that is useable, bearing in mind the topography, is also essential. The area to the south, for example, would appear to be suitable for walking only as opposed to active open space.

In response it was noted that a street hierarchy would be produced with sections to demonstrate what is proposed. This would include the home zones, shared surfaces etc. Additional detail in relation to wayfinding through the site, for example the pedestrian route to the train station, are to be provided. Maximising the potential of the open space is difficult and requires careful consideration.

Sharon O’ Connell noted that the community facility in the original proposal was removed from the current proposal. Following a discussion, it was agreed to consider the potential for one of the proposed retail units in the southern part of the site could be designated for this purpose. The proposed relocation of the creche to an area nearer the MUGA was noted. It was noted that clear identification of what is being ‘offered back’ to the community would be beneficial. It was also noted that issues such as car-charging points within the overall car parking would be beneficial.

Noel Sheridan noted that the challenging topography would require considerable section detail to show how working with it and to demonstrate the relationship between housing units, open space etc.

It was noted that detailed proposed TIC drawings will need to be produced to encompass all the various items for consideration.

In relation to a query on traffic and junction capacity it was stated that new traffic counts show capacity. There is an aim, that with the <10-minute walk to the train station to promote sustainable transport as opposed to vehicular. Further discussion will be undertaken with Traffic & Transport in relation to carparking requirements etc.

It was also clarified that the proposed N/E access would only be opened in case of some incident/emergency that affected the N/W access.

A general discussion on the options in relation to progression of the proposed development followed. Niall advised that the Council would be available for discussion once items identified have been worked through. It was noted that the issue of the incorporation of the southern lands and any environmental implications will need to be carefully addressed. It is proposed that an EIAR and NIS will accompany the application.

## Proposed Development at Lackenroe – Glounthaune: Council reference SHD 20

### Minutes of Section 247 Pre-Planning Consultation held on 29<sup>th</sup> July 2021 Meeting held on Microsoft Teams

In attendance:

Name	Representing
Niall O' Donnabháin	Cork County Council
Kevin O' Regan	Cork County Council
Joy Barry	Cork County Council
Micheal Mulconry	Cork County Council
Gerard O' Hora	Cork County Council
Anthony Callery	Cork County Council
Harry Walsh	HW Planning
John O Brien	HW Planning
Eamonn Gahan	DG Architects
McKendrick, Emma	AECOM
Jim Kelly	CSR Land Planning & Design
Liam Murphy	DG Architects
Paul McCarthy	Bluescape Ltd

It was noted that with annual leave not all staff that would normally attend were available. Niall would bring up points noted to him as meeting progressed.

Harry Walsh noted main issues address were dealing with the access to the South, dealing with passive overlooking of pathway, engineering challenges presented by topography etc. He indicated that an EIS will be prepared for the proposed project.

Liam Murphy noted the amendments made including the increased overlooking of the walkway. He noted that it is now proposed to replace the derelict buildings on site with 2 no of new properties. There is a proposal for community use in the property at the southern end of the site as it faces the new greenway. A creche is provided in the Northern element as well as a MUGA.

Jim Kelly provided an update in relation to the proposed pedestrian route through the site to enhance connectivity and permeability. The direct route would be stepped with no more than a 1 in 12 gradient on the indirect route. A series of stop/break/rest points and signage would be provided. 126 trees have been identified as requiring removal to facilitate the walkways. The amount of removal has been minimised as much as possible. Significant replacement planting is proposed in the masterplan with a concentration of same proposed for the south west corner.

Emma advised that the amount of retaining structures have been minimised. Each bend on the route will have a level platform and handrail edge protection is also provided for. Overall, there is a 60 meter differential from the top to the bottom of the site.

Harry Walsh noted that a letter of consent would be required from the Council in relation to proposed works affecting public roads and noted that a pedestrian crossing is provided for in their proposal.

Joy Barry noted that the preparation of EIAR including EclA and NIS is welcomed. The main concern in relation to the proposal is the significant loss of trees and woodland habitat associated with the development which is not supported by the Ecology Office. Consideration should be given to the retention of woodland areas and existing treelines on site. A strong rationale for such tree loss will be required along with a supporting Ecological Impact Assessment and Tree Survey Report. It is recommended that woodland habitat and trees and any habitat of high natural value is retained and integrated into the layout for the scheme.

The applicant will also need to consider potential for landscape and heritage related impacts associated with loss of trees associated with Ashbourne House and Gardens located to the east of the site. Any Tree Survey for the site should be prepared with input from a Historic Garden / Landscape specialist and qualified ecologist. Consideration should also be given to the use of natural drainage solutions, biodiversity enhancement and preparation of a Construction, Environmental Management Plan to prevent localised impacts associated with the construction stage of development.

Niall noted that issues that arose in the Ashbourne House application, which is now on Further Information, may be of relevance and worth examining to ascertain if they might arise on this SHD site.

Micheal Mulconry noted that cycling did not appear to be facilitated. He noted that this would be challenging as would trying to ensure that walkways were suitable for all age use. He noted a potential conflict in relation to the proposed parking at the apartments due to the interaction with Council greenway proposals for the area and believed this matter should be revisited.

Harry Walsh noted that the developers were constrained with what could be incorporated due to the topography and the need to strike a balance on the impact on the landscape. A wider facility would have greater impact. It was clarified that the potential conflict related to possible reversing and that this would probably be identified in the Road Safety Audit.

Anthony Callery and Gerard O' Hora referenced the need for clarity on what will be requested to be taken in charge etc. It was noted that the previous issue relating to sightlines in the initial application were resolved. The maintenance of the footpath, given the terrain was noted.

Harry Walsh advised that TIC drawings are being prepared and that the team would re-examine the potential for the provision of a cycle path but noting that it does have the potential to have significant impact.

It was noted that Part V discussions have been entered into with Housing.

It was noted that the site does present significant challenges, that the developer is trying to address, due to the terrain. The proposed density of circa 35/Ha is considered appropriate based on An Bord Pleanála's opinion. Localised and long view montages will be prepared. A brief discussion followed on car parking and the variety of parking proposed throughout the development.

Following a discussion on maximisation of the useable open space it was agreed to re-examine the central area in the northern part of the site adjoining the proposed creche. It was noted that the removal or adjustment of the number of units in this area may require the provision of additional units or varied typologies in other areas of the site to maintain the density expectations set by ABP.

In conclusion it was noted that the developer is making genuine efforts to improve the overall development prior to the application being made to ABP but the site remains challenging due to its topography, elevation and accessibility which are not easily resolved. It was noted that the proposed timeline for lodging an application is early September 2021.



LACKENROE SHD

## APPENDIX 3-2

Site Constraints Reports - AECOM

**VOLUME III** | Appendices

Quality information

Prepared by	Checked by	Verified by	Approved by
			
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Revision History

Revision	Revision date	Details	Authorized	Name	Position
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Distribution List

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10	1	Westhill/ HW Planning / Deady Gahan Architects / CSR Land Planning & Design/ Kelleher Ecology/ MHL

# Constraints Study 1 - Site Permeability

Proposed SHD at Glounthaune, Co. Cork

Bluescape Limited

Project number: 60592432  
60592432-ACM-00-XX-RP-CE-00-0005

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## 1. Introduction

### 1.1 Background

AECOM were appointed by Bluescape Limited to prepare Constraints Studies in support of a Strategic Housing Development (SHD) planning application to An Bord Pleanála for a proposed residential development at Glounthaune, Co. Cork.

This report has been prepared to accompany the planning application for the proposed development. The proposed layout of the development is detailed in the planning drawings prepared by Deady Gahan Architects. This report relates specifically to pedestrian permeability constraints and how they were overcome. Constraints relating to the proposed residential layout are included in a separate report (Constraints Study 2).

### 1.2 Site Location

The current site comprises of a greenfield site. The site measures approximately 13.87 ha in total. The majority of the site is located to the north of The Terrace Road (L-2970-38 - known locally as 'the Terrace') with a small part of the site located to the south of 'the Terrace'. The northern part of the site is bounded by existing residential developments to the north, west and south. Agricultural land bounds the site to the east.

The public road network surrounding the site is defined by Killahora Road (L-2969) to the north, Knockraha Road (L-2968) to the west, and 'the Terrace'/ Johnstown Close to the south.

The southern part of the site is bounded by 'the Terrace' to the north, existing dwellings to the east and west and Johnstown Close to the south.

The majority of the site is located to the north of 'the Terrace' with a small part of the site located to the south of 'the Terrace'. There is a considerable variation in ground levels across the site which has been considered in developing the proposed layout. The site slopes from north to south from approximate +110 m OD Malin to +34.5 m OD Malin on 'the Terrace' to approximately +3.30 m OD Malin.

### 1.3 Proposed Development

The proposed development consists of the construction of a mixed-use residential development of 289 no. residential units consisting of 201 no. dwelling houses and 88 no. apartment/duplex units, a two storey creche, 4 no. ESB substations and all ancillary site development works at Lackenroe and Johnstown (townlands), Glounthaune, Co. Cork. The proposed development will be constructed on lands to the north and south of the public road, L-2970, known locally as 'the Terrace'. A portion of the site to the south of 'the Terrace' was formerly within Ashbourne Garden and is considered to be within the curtilage and attendant grounds of Ashbourne House, which is a Protected Structure (Ref 00498).

The proposed development to the north of 'the Terrace' provides for 260 no. residential units comprising of 196 no. dwelling houses, 64 no. apartment/duplex units and a two storey creche. The 196 no. dwelling houses includes 5 no. 4 bedroom detached dwellings, 44 no. 4 bedroom semi-detached dwellings, 12 no. 4 bedroom townhouses, 2 no. 3 bedroom detached dwellings, 22 no. 3 bedroom semi-detached dwellings, 47 no. 3 bedroom townhouses and 64 no. 2 bedroom townhouses. The 64 no. apartment/duplex units contains 5 no. 3 bedroom units, 32 no. 2 bedroom units and 27 no. 1 bedroom units contained in 6 no. three storey apartment buildings, with ancillary bicycle parking and bins stores.

The proposed development to the south of 'the Terrace' provides for 29 no. residential units comprising of 5 no. dwelling houses and 24 no. apartments. The 5 no. dwellings include 1 no. 3 bedroom detached dwelling, 2 no. 3 bedroom townhouses and 2 no. 2 bedroom townhouses. The proposed apartments are provided in a four-storey mixed-use building containing a ground floor community unit and a commercial unit with apartments at ground and upper floor levels comprising 3 no. 3 bedroom units, 7 no. 2 bedroom units and 14 no. 1 bedroom units with ancillary rooftop terrace, car parking, bicycle parking and bin stores.

Vehicular access to 2 no. dwellings in the lands to the north of 'the Terrace' will be provided via an upgraded entrance from 'the Terrace' with vehicular access to the remainder of dwellings in the lands to the north of 'the Terrace' via the signalised junction from the L-2968 and internal road network permitted by Cork County Council reference 17/5699 and An Bord Pleanála reference 300128-17. A separate secondary emergency access is also proposed from the L-2969 to the north.

Vehicular access to the 5 no. dwellings to the south of the 'the Terrace' will be via a new entrance from 'the Terrace' and the proposed apartment building will be accessed from Johnstown Close. The proposed development also makes provision for a pedestrian link from the proposed development north of 'the Terrace' to Johnstown Close via 'the Terrace' which will include a signalised pedestrian crossing and associated traffic calming measures on 'the Terrace'.

Ancillary site works include the demolition of 1 no. existing derelict dwelling house and associated outbuildings, landscaping and servicing proposals including the realignment of the existing pedestrian/cycle route on Johnstown Close, the undergrounding of existing overhead lines, upgrade of the storm and foul sewer network to the south and east of the subject lands along 'the Terrace' and Johnstown Close (L-3004).

Pedestrian footpaths provide connectivity between all parts of the development ensuring full pedestrian permeability. Figure 1 illustrates the extent and layout of the proposed development.



Figure 1 – Site Location and Layout

### 1.4 Engineering Challenges

The site presents a number of engineering challenges. These include topography, geology, physical form, and lack of pedestrian connectivity between the upper and lower lands. The site layout has been developed by the design team to work with the natural form, geology, and constraints of the site while at the same time complying with technical design standards:

- The natural topography of the site was considered. Vehicular access to the lands to the north of 'the Terrace' will be via the signalised junction from the L-2968 and internal road network permitted by Cork County Council reference 17/5699 and An Bord Pleanála reference 300128-17. The new road is an extension of the road serving Phase 1 of the wider development. The road traverses west to east across with internal roads serving the development.
- A separate secondary emergency access is proposed to the L-2969 to the north.



- A 3m wide shared pedestrian / cycle path has been incorporated to provide access from Johnstown Close to 'the Terrace' and also from 'the Terrace' to the dwellings to the north, connecting at access Road 11, between Units 187-196 and Unit 241. Given the topography of the site the minimum gradient achievable is 1 in 12. The maximum length between landings is 10m and a continuous handrail is proposed on down slope of the path. This ensures an accessible, integrated, and permeable design.
- Given the topography of the site, the proposed path takes a meandering route through the proposed development. The bends incorporated within the proposed path will encourage slow cyclists to travel at low speed when using the path. Staggered railings will be included on straighter sections of the path to deter cyclists travelling at higher speeds.
- To shorten the distance between the points of pedestrian connectivity between Johnstown Close and 'the Terrace' for non-disabled persons, 2m wide concrete steps have been incorporated into the slope. A more direct route from 'the Terrace' to the dwellings to the north, connecting at access Road 11 within the development for use by non-disabled persons is also provided. Signage will be provided at both ends of the path and where it intersects with the accessible path warning the route incorporates stairs. A cycle ramp is proposed on the stairs to allow cyclists to push their bicycle up/down the stairs.

## 2. Phasing Strategy

As per the Phasing strategy included in Figure 2 it is proposed to construct the 97 Units including the crèche, community facility and commercial unit as part of Phase 1. This phase also includes the construction of the development access road through the site along with the pedestrian paths which traverse the site from north to south. Developing the paths are part of Phase 1 ensures pedestrian connectivity and accessibility from the outset.

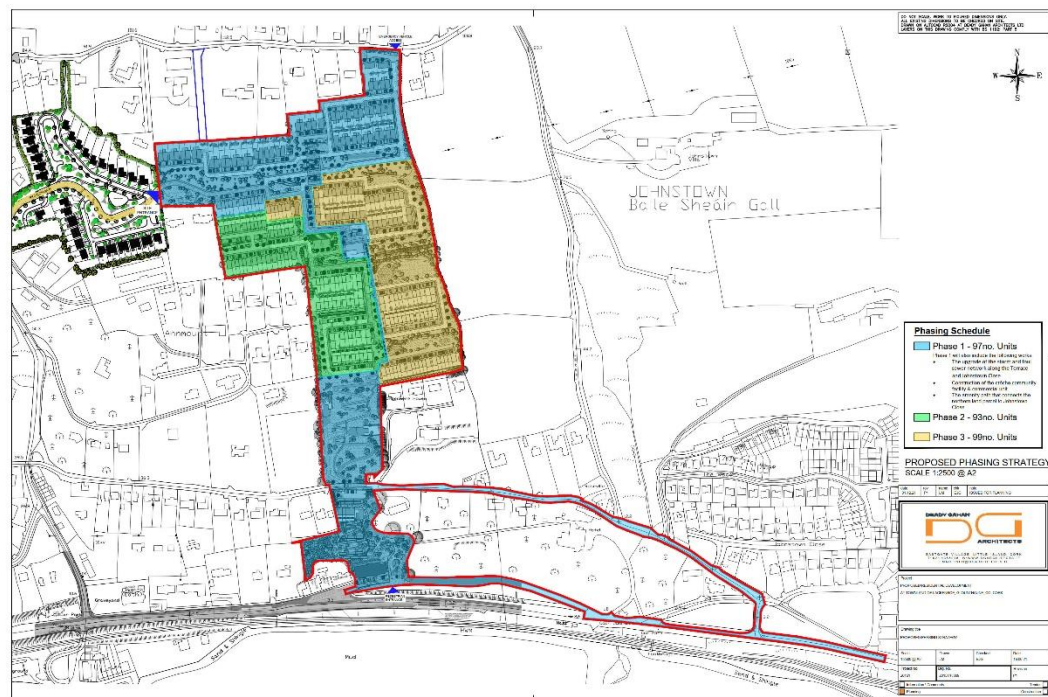


Figure 2 – Phasing Diagram

## 3. Topography

### 3.1 Site Access and Internal Road Layout

Vehicular access to the lands to the north of 'the Terrace' will be via the signalised junction from the L-2968 and internal road network. The new is road is an extension of the road serving Phase 1 of the wider development. A separate secondary emergency access is proposed to the L-2969 to the north. The maximum longitudinal road gradient provided is 1 in 12 and all roads incorporate facilities for pedestrians. Refer to Constraints Study 2 for more information on the interaction between the roads and the proposed dwellings.

### 3.2 Pedestrian Paths

#### 3.2.1 Pedestrian / Cycle Path from 'the Terrace' to Unit 241

It is proposed to provide a 3m width pedestrian / cycle path to link the northern part of the proposed development to 'the Terrace' and on to Johnstown Close to the south. Drawing 60592432-ACM-00-00-DR-CE-10-0650 illustrates the route of the proposed path between Unit 241 and 'the Terrace'. There is a rise of approximately 30.27m in elevation over a distance of just over 460m. The level at 'the Terrace' is 34.680m and the level at the connection to internal access road adjacent to Unit 241 is 64.950 m OD Malin. Cross sections through the proposed path are included on the following drawings:

- 60592432-ACM-00-00-DR-CE-10-0651,
- 60592432-ACM-00-00-DR-CE-10-0652,
- 60592432-ACM-00-00-DR-CE-10-0653,
- 60592432-ACM-00-00-DR-CE-10-0654,
- 60592432-ACM-00-00-DR-CE-10-0655.

As illustrated in the sections, the level of the path typically results in cut and fill not exceeding 1.5m, the exception being the path between chainages 180m and 290m where the overall depth of excavation is 2.3m and at chainage 410m to 470m where approximately 2.0m of fill material is required to tie in with the road level of 64.950 m OD Malin.

Side slopes at a gradient no steeper than 1 in 2 are proposed. Generally, the distance required to tie back into the natural ground level is circa 2m, with one exception occurring at chainage 200m where the distance is circa 7.5m.

Short lengths of retaining walls will be required, particularly where the path turns back on itself as it meanders up the slope. It is proposed that these retaining structures be generally formed with timber pericrib gravity retaining wall system with small sections formed with Gabion baskets filled with rock excavated and crushed on site. The retained height throughout is typically 2m.

The 3m wide footpath will have 1m wide verges with pedestrian guard rail protection at embankment edges. The guardrail protection will also prevent people taking shortcuts between the meandering path.

A typical section is shown in Figure 3 below.



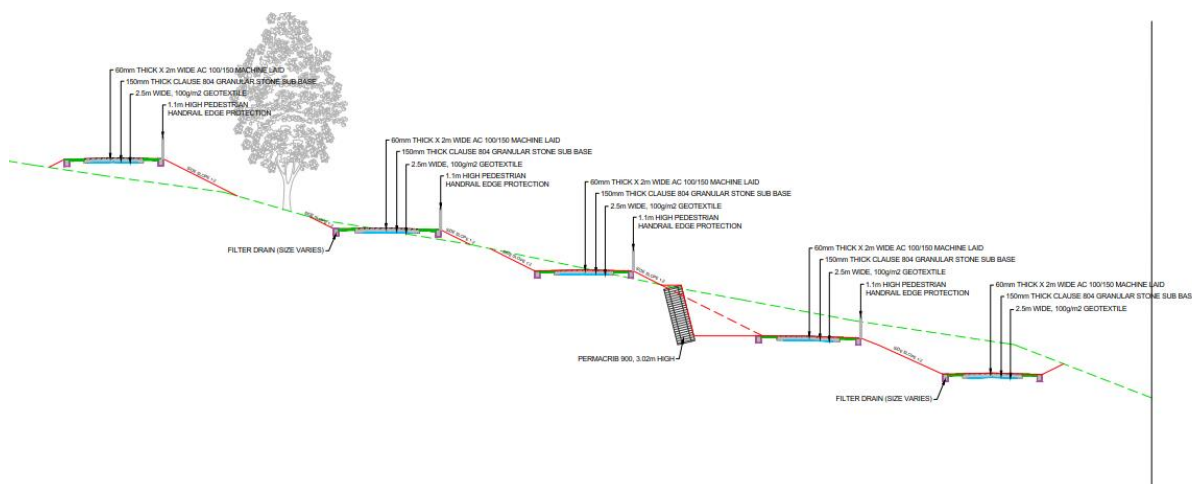


Figure 3 – Typical Section Through Northern Path

The choice of introducing embankments or retaining structures was also influenced by minimising excavation of rock and also to retain existing trees, where possible.

**3.2.2 Footpath for Non-Disabled Linking ‘the Terrace’ to Unit 241**

To shorten the distance between the points of pedestrian connectivity between Johnstown Close and ‘the Terrace’ for non-disabled persons, a more direct route from ‘the Terrace’ to the dwellings to the north, connecting at access Road 11 has been provided. This route is shown on 60592432-ACM-00-00-DR-CE-10-0650.

Signage will be provided at both ends of the path and also where it intersects with the accessible path along the length of path warning the route is only suitable for non-disabled users. The Way Finding Plan prepared by CSR Land Planning & Design illustrates the type of signage to be provided.

The footpath rises some 30.27m in elevation over a distance of circa 205m. The level at ‘the Terrace’ Road is 34.600m and the level at the connection to internal access Road 11 is 64.950 m OD Malin.

This 2m wide footpath will have 1m wide verges with pedestrian guard rail protection at embankment edges and incorporates flights of concrete steps to follow the natural topography.

**3.2.3 Accessible Pedestrian / Cycle Path Johnstown Close to ‘the Terrace’**

It is proposed to provide a 3m width pedestrian / cycle path to link ‘the Terrace’ with Johnstown Close to the south. Drawing 60592432-ACM-00-00-DR-CE-10-0650 illustrates the route of the proposed path between ‘the Terrace’ and Johnstown Close.

There is a rise of approximately 31.04m in elevation over a distance of just over 463m. The level at on Johnstown Close is 3.75m OD Malin and the level at ‘the Terrace’ is 34.71m OD Malin. Cross sections through the proposed path are included on the following drawings:

- 60592432-ACM-00-00-DR-CE-10-0656,
- 60592432-ACM-00-00-DR-CE-10-0657,
- 60592432-ACM-00-00-DR-CE-10-0658,
- 60592432-ACM-00-00-DR-CE-10-0659,
- 60592432-ACM-00-00-DR-CE-10-0660.

As illustrated in the sections, the level of the path typically results in cut not exceeding 3.0 m. The extent of this 3m excavation is limited to chainage 390m. The level of the path typically results in fill not exceeding fill 3.5 m. The extent of this fill is limited to the area around chainage 250 m.

Short lengths of retaining walls will be required, particularly where the path turns back on itself as it meanders up the slope. It is proposed that these retaining structures be generally formed with timber permicrib gravity retaining wall system with small sections formed with Gabion baskets filled with rock excavated and crushed on site. The retained height throughout is typically 2m.

The 3m wide footpath will have 1m wide verges with pedestrian guard rail protection at embankment edges. The guardrail protection will also prevent people taking shortcuts between the meandering path.

The layout of the proposed path has been developed with the aim of retaining as many existing trees as possible. The design development of the proposed path has been informed by arborists reports on the existing trees. The Landscaping Design Rationale includes further information on tree retention, loss, and mitigation. A particular constraint associated with this part of the site is the presence of existing 23 No. Heritage Trees, 3No. of which are classified as Champion Trees. The proposed path between approximately Chainage 350 and 380 has been positioned to avoid the Root Protection Zones (RPZ) associated with Tree TR311 and Tree TR310 (both classified as Champion Trees). The layout of the proposed path/ steps has been developed to avoid impacting these in so far as possible.

A typical section is shown in Figure 4 below.

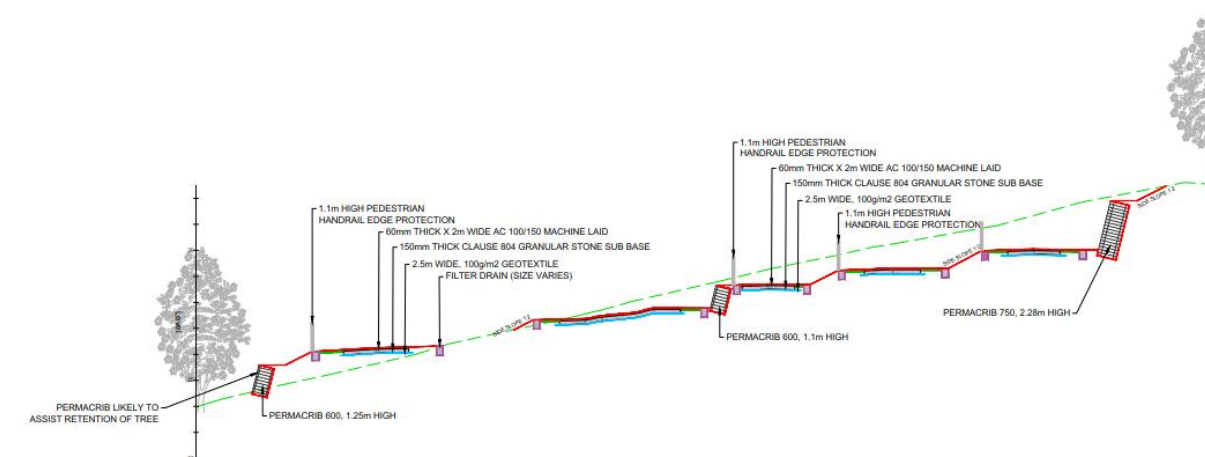


Figure 4 – Typical Section Through Southern Path

The choice of introducing embankments or retaining structures was also influenced by minimising excavation of rock and also to retain existing trees, where possible.

**3.2.4 Stairs Incorporated into Footpath for Non-Disabled Johnstown Close to Terrace Road**

To shorten the distance between the points of pedestrian connectivity between Johnstown Close and Terrace Road for non-disabled persons, 2m wide concrete steps have been incorporated into the proposals. The steps start at chainage 90m and re-join the path at chainage 240m. This route is shown on 60592432-ACM-00-00-DR-CE-10-0650. Steps are also provided to serve people accessing units 261 to 265 from the path at Chainage 480 m and level access from the path is provided to these units between Chainage 380 and 405 m.

It is proposed to provide a bicycle ramp at the edge of the steps to enable cyclists to wheel their bicycle up/ down the steps.

**3.3 Retaining Structures**

The proposed site levels will necessitate retaining walls in a number of locations to support the paths.

The layout of the paths has been optimised to minimise the height of retaining structures whilst balancing the extent of cut / fill.

It is generally proposed to use a Permicrib Retaining Wall which is a gravity retaining wall system, that uses timber header and stretcher components to form a cage which is then filled with stone. Stability is achieved through interaction of the crib components and the infill.

All Permicrib components have a Desired Service Life of 60 years.

The standard lean back for a Permicrib timber crib wall is 1H:4V (76 Degrees) as illustrated in Figure 5 below.



Figure 5 – Typical Permicrib Wall under construction

### 3.4 Surface Water Drainage

French drains discharging to ground are proposed to collect run-off from embankments / cuttings / retaining walls.

## 4. Geology

The site has been subject to a detailed ground investigation. The exploratory hole locations are shown on Figure 6. A total of 14 cable percussion boreholes were bored to depths between 1.2m and 4m below ground level (bgl) and 25 trial pits were dug to depths of between 1m and 2.6m below ground level (bgl).

No groundwater was encountered during the period of works.

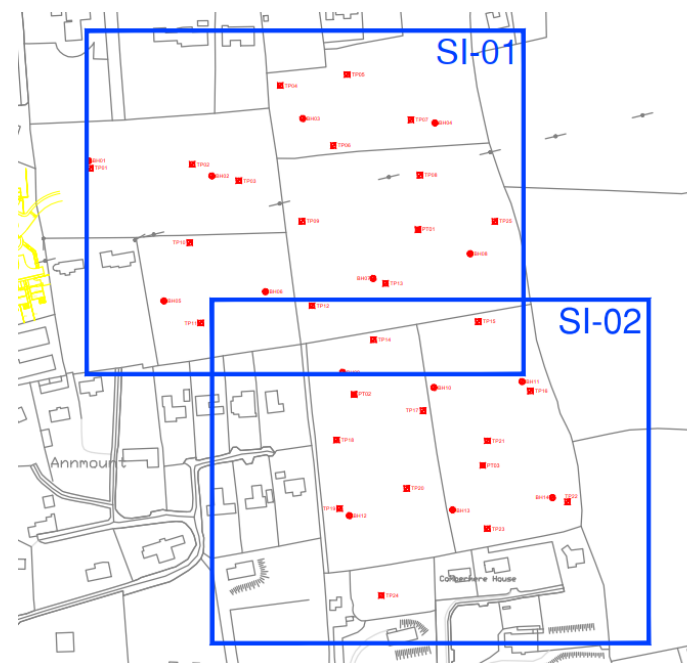


Figure 6 - Extent of Site Investigation

Topsoil encountered was 300mm to 400mm thick. Superficial glacial deposits were described as firm to stiff, slightly sandy (slightly) gravelly CLAY/ SILT with varying Cobble content 0.7m to 2.1m thick and granular deposits of (very) silty (very) sandy GRAVEL and (very) sandy (very) clayey GRAVEL with varying cobble content 0.3m to 3.0m thick persisted to depths 1.0m bgl to 4.0m bgl. Typically, the CLAY / SILT deposit transitioned to the GRAVEL overlying the bedrock. The weathered rock mass was 1.0m to 4.0m below existing ground level (bgl).

The scope of the investigation did not allow for a detailed characterisation of the bedrock, however based on GSI the bedrock is assumed SITLSTONE.

### 4.1 Stability of Excavations

The stability of all 24 trial pits dug was described as good and no groundwater was encountered.

### 4.2 Strength of Rock

A JCB backhoe excavator excavated within the upper 200mm to 500mm of the rock mass.

Consideration could also be given to using blasting or to using Dexpan or CARDOX (or similar) which is a vibration free method of 'blasting' that uses expanding gas to help remove the rock.

## 5. Conclusion

The proposed new development promotes the design of a sustainable new community. Through a more efficient use of land, availing of both local amenities and transportation links, the development encourages a more efficient and sustainable quality of life for its residents. Even though the topography of the site is challenging, the proposed dwellings are laid out to maximize the orientation and amenity of their setting. The landscape is designed to create a sense of community with outdoor facilities for all age groups to enjoy. The proposed scheme is compatible with its neighbouring residential uses and activities. Refer to Constraints Study 2 for more information on how constraints were overcome in the design of the residential development.

Combined, the pedestrian/ cycle paths provide connectivity between all parts of the development. Accessible footpaths link from Killahora Road to Johnstown Close and also to Knockraha Road ensuring full pedestrian permeability. Given the topography of the site, the minimum gradient achievable is 1 in 12. The maximum length between landings is 10m and a continuous handrail is proposed on down slope of the path. Non-disabled routes are also provided.

The paths typically result in cut and fill not exceeding 1.5m, the exception being the northern path between chainages 180m and 290m and the southern path between chainages 320m to 360m and chainages 240m to 310m.

Side slopes at a gradient no steeper than 1 in 2 are proposed. Generally, the distance required to tie back into the natural ground level is circa 2m, with one exception occurring at chainage 130m on the northern path where the distance is circa 7.5m.

Short lengths of retaining walls will be required, particularly where the path turns back on itself as it meanders up the slope. It is proposed that these retaining structures be generally formed with timber perimetric gravity retaining wall system with small sections formed with Gabion baskets filled with rock excavated and crushed on site. The retained height throughout is typically 2m.



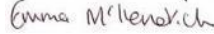
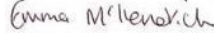
The 2m wide footpath will have 1m wide verges with pedestrian guard rail protection at embankment edges. The guardrail protection will also prevent people taking shortcuts between the meandering path.

The choice of introducing embankments or retaining structures was influenced by minimising excavation of rock and also to retain existing trees, where possible.

The development as proposed has been designed to work with the natural constraints of the site and successfully overcome them to achieve an accessible, integrated, permeable site layout and design.

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Quality information

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# Constraints Study 2 - Site Layout

Proposed SHD at Glounthaune, Co. Cork

Bluescape Limited

Project number: 60592432  
60592432-ACM-00-XX-RP-CE-0006



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## 1. Introduction

### 1.1 Background

AECOM were appointed by Bluescape Limited to prepare Constraints Studies in support of a Strategic Housing Development (SHD) planning application to An Bord Pleanála for a proposed residential development at Glounthaune, Co. Cork.

This report has been prepared to accompany the planning application for the proposed development. The proposed layout of the development is detailed in the planning drawings prepared by Deady Gahan Architects.

This report relates to constraints associated with the proposed layout of the residential units and internal road layout and how these constraints were overcome. Constraints relating to pedestrian permeability are included in a separate report (Constraints Study Part 1).

### 1.2 Site Location

The current site comprises of a greenfield site. The site measures approximately 13.87 ha in total. The majority of the site is located to the north of The Terrace Road (L-2970-38 – known locally as ‘the Terrace’) with a small part of the site located to the south of ‘the Terrace’. The northern part of the site is bounded by existing residential developments to the north, west and south. Agricultural land bounds the site to the east.

The public road network surrounding the site is defined by Killahora Road (L-2969) to the north, Knockraha Road (L-2968) to the west, and ‘the Terrace’ / Johnstown Close to the south.

The southern part of the site is bounded by ‘the Terrace’ to the north, existing dwellings to the east and west and Johnstown Close to the south.

The majority of the site is located to the north of ‘the Terrace’ with a small part of the site located to the south of ‘the Terrace’. There is a considerable variation in ground levels across the site which has been considered in developing the proposed layout. The site slopes from north to south from approximate +110 m OD Malin to +34.5 m OD Malin on ‘the Terrace’ to approximately +3.30 m OD Malin.

### 1.3 Proposed Development

The proposed development consists of the construction of a mixed-use residential development of 289 no. residential units consisting of 201 no. dwelling houses and 88 no. apartment/duplex units, a two storey creche, 4 no. ESB substations and all ancillary site development works at Lackenroe and Johnstown (townlands), Glounthaune, Co. Cork. The proposed development will be constructed on lands to the north and south of the public road, L-2970, known locally as ‘the Terrace’. A portion of the site to the south of ‘the Terrace’ was formerly within Ashbourne Garden and is considered to be within the curtilage and attendant grounds of Ashbourne House, which is a Protected Structure (Ref 00498).

The proposed development to the north of ‘the Terrace’ provides for 260 no. residential units comprising of 196 no. dwelling houses, 64 no. apartment/duplex units and a two storey creche. The 196 no. dwelling houses includes 5 no. 4 bedroom detached dwellings, 44 no. 4 bedroom semi-detached dwellings, 12 no. 4 bedroom townhouses, 2 no. 3 bedroom detached dwellings, 22 no. 3 bedroom semi-detached dwellings, 47 no. 3 bedroom townhouses and 64 no. 2 bedroom townhouses. The 64 no. apartment/duplex units contains 5 no. 3 bedroom units, 32 no. 2 bedroom units and 27 no. 1 bedroom units contained in 6 no. three storey apartment buildings, with ancillary bicycle parking and bins stores.

The proposed development to the south of ‘the Terrace’ provides for 29 no. residential units comprising of 5 no. dwelling houses and 24 no. apartments. The 5 no. dwellings include 1 no. 3 bedroom detached dwelling, 2 no. 3 bedroom townhouses and 2 no. 2 bedroom townhouses. The proposed apartments are provided in a four-storey mixed-use building containing a ground floor community unit and a commercial unit with apartments at ground and upper floor levels comprising 3 no. 3 bedroom units, 7 no. 2 bedroom units and 14 no. 1 bedroom units with ancillary rooftop terrace, car parking, bicycle parking and bin stores.

Vehicular access to 2 no. dwellings in the lands to the north of 'the Terrace' will be provided via an upgraded entrance from 'the Terrace' with vehicular access to the remainder of dwellings in the lands to the north of 'the Terrace' via the signalised junction from the L-2968 and internal road network permitted by Cork County Council reference 17/5699 and An Bord Pleanála reference 300128-17. A separate secondary emergency access is also proposed from the L-2969 to the north.

Vehicular access to the 5 no. dwellings to the south of the 'the Terrace' will be via a new entrance from 'the Terrace' and the proposed apartment building will be accessed from Johnstown Close. The proposed development also makes provision for a pedestrian link from the proposed development north of 'the Terrace' to Johnstown Close via 'the Terrace' which will include a signalised pedestrian crossing and associated traffic calming measures on 'the Terrace'.

Ancillary site works include the demolition of 1 no. existing derelict dwelling house and associated outbuildings, landscaping and servicing proposals including the realignment of the existing pedestrian/cycle route on Johnstown Close, the undergrounding of existing overhead lines, upgrade of the storm and foul sewer network to the south and east of the subject lands along 'the Terrace' and Johnstown Close (L-3004).

Pedestrian footpaths provide connectivity between all parts of the development ensuring full pedestrian permeability.

Figure 1 illustrates the extent and layout of the proposed development and the four-character areas.



Figure 1 – Proposed Site Layout

### 1.4 Engineering Challenges

The site presents a number of engineering challenges. These include topography, geology, physical form, and lack of pedestrian connectivity between the upper and lower lands.

The site layout has been developed by the design team to work with the natural form, geology, and constraints of the site while at the same time complying with technical design standards:

- The natural topography of the site was considered. Vehicular access to the lands to the north of 'the Terrace' will be via the signalised junction from the L-2968 and internal road network permitted by Cork County Council reference 17/5699 and An Bord Pleanála reference 300128-17. The new is road is an extension of the road serving Phase 1 of the wider development. The road traverses west to east across with internal roads serving the development.

- A separate secondary emergency access is proposed to the L-2969 to the north.
- A 3m wide pedestrian/ cycle path has been incorporated to provide access from Johnstown Close to 'the Terrace' and also from 'the Terrace' to the dwellings to the north, connecting to the internal access road at between Units 241 and 187-196. Given the topography of the site, the minimum gradient achievable is 1 in 12. The maximum length between landings is 10m and a continuous handrail is proposed on down slope of the path. This ensures an accessible, integrated, and permeable design.
- To shorten the distance between the points of pedestrian connectivity between Johnstown Close and 'the Terrace' for non-disabled persons, 2m wide concrete steps have been incorporated into the slope. A more direct route for use by non-disabled persons is also provided from 'the Terrace' to the dwellings to the north, connecting to the internal access road at between Units 241 and 187-196. Signage will be provided at both ends of the path and where it intersects with the accessible path warning the route incorporates stairs. A cycle ramp is proposed on the stairs to allow cyclists to push their bicycle up/down the stairs.



## 2. Phasing Strategy

As per the Phasing strategy included in Figure 2, during Phase 1 it is proposed to construct 97 Units, including the creche, community facility & commercial unit (shown in blue). This phase includes the units proposed as part of Character Area 1 and Character Area 4 and also includes the construction of the development access road through the site along with the pedestrian paths traversing from north to south through the site.

As part of Phase 2 it is proposed to construct 93 Units along the western boundary of the site (shown in green in Figure 2). This phase includes units proposed as part of both Character Areas 2 and 3. As part of Phase 3 it is proposed to construct 99 Units along the eastern boundary (shown in yellow in Figure 2). This phase includes units proposed as part of both Character Areas 2 and 3.

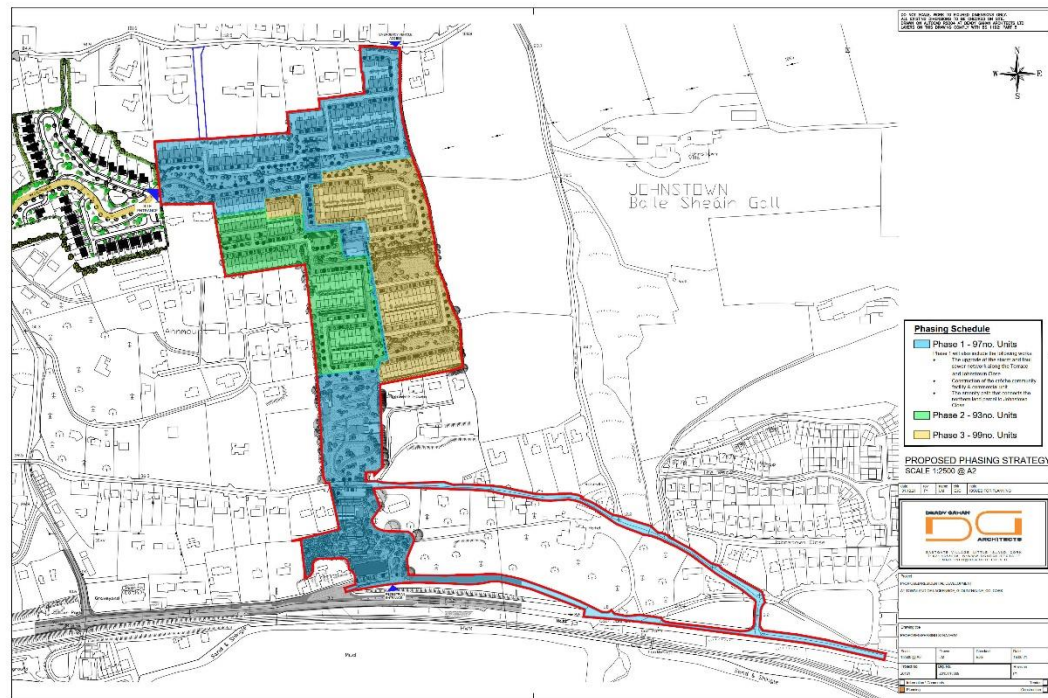


Figure 2 – Phasing Diagram

## 3. Site Topography

### 3.1 Existing Site Topography

There is a considerable variation in ground levels across the site which has been considered in developing the proposed layout. The site primarily slopes from north to south from approximately 110 m OD Malin to 34.5 m OD Malin on 'the Terrace' to approximately 3.30 m OD Malin on Johnstown Close. Figure 3 illustrates the contours within the subject site. Where the existing contours are close together, this indicates a steep gradient. Where there is more space between contour lines, the gradient is gentler.



Figure 3 – Existing Site Topography

### 3.2 Existing Hedgerows/ Trees

The proposed development layout has been developed to minimise the impact on existing hedgerows both around and within the site. Throughout design development, the aim has been to retain as many existing trees and hedgerows as possible. The extent of retention and loss of existing trees and hedgerows is illustrated on Figure 4, which is taken from the Landscape Design Rationale report prepared by Cunnane Stratton Reynolds (CSR) Land Planning and Design.



Figure 4 – Existing Hedgerows to be removed & retained (Extract from Landscape Design Rationale report)



## 4. Development of Proposed Site Layout

Based on the challenges described in Section 1.4 and the constraints listed above, the proposed development layout has developed through a number of iterations. These layouts are included in Chapter 3 of the EIAR (Alternatives Considered). The proposed internal road levels and layout have been developed based on the existing road tie in levels, existing rock profile and technical road design constraints. The internal road layout was developed based on a tie in level at the access from Phase 1 of the wider development. The layout of the proposed development has been developed based on the Engineering Challenges described in Section 1.4 and to deliver the following:

- Provide universal access to ground floor units,
- Minimise the requirement for retaining structures,
- Minimise the height of retaining structure where they are required,
- Maximise the provision of flexible use open spaces,
- Landscape that creates a sense of community with outdoor facilities for all age groups to enjoy,
- Vehicular, cycle and pedestrian connectivity throughout the development and with the wider community,
- Minimise the level difference at the boundary between the subject site and adjoining lands/developments,
- Minimise the level difference between back-to-back gardens (e.g., Units 56-66 and 73-83),
- Ensure roads do not require retaining structures,
- Minimise cut in existing rock within the site.

Based on these constraints, the proposed roads within the development have a maximum longitudinal road gradient of 1 in 12 and all roads incorporate facilities for pedestrians. Refer to Constraints Study 1 for more information on the interaction between the proposed paths and the proposed layout.

A combination of embankments, retaining walls, permeable structures, gabions and terraced gardens have been incorporated in the proposed development to accommodate level changes within the development and level changes between the development and surrounding lands. These proposals are described by Character Area within the proposed development. The site plan (Drawing No. 20151/ SK/ 003) prepared by Deady Gahan Architects illustrates the extent of each of the Character Areas.

### 4.1 Character Area 1

Character Area 1 comprises the northern part of the proposed development, 55 No. Units within the 97 No. Units proposed as part of Phase 1 (Units 01 to 55). The existing levels within Character Area 1 range from 94.5 m OD Malin to 110.5 m OD Malin at the boundary with the Killahora Road. The units shown in blue on Figure 5 are within Character Area 1.



Figure 5 – Character Area 1 Extent

#### 4.1.1 Units 01 – 08

These units are located at the north western end of the proposed development and interfaces with third party lands to the west of Unit 01 and at the rear of Units 01 to 08. The existing ground levels to the west of Unit 01 are between 95.5 m OD Malin and 99.5 m OD Malin. The existing ground levels to along the boundary to the north are between 99.5 m OD Malin and 103.5 m OD Malin. The proposed Finished Floor levels of these units is illustrated on Figure 6. A retaining wall will be provided at the western boundary of Unit 01 to accommodate the level difference on each side of the boundary. The rear gardens will incorporate a gradient of 1 in 10 rising toward the rear boundary. A retaining wall will be provided at the rear boundary of these properties to accommodate the remaining level difference of between 2.0 m and 3.0 m.



Figure 6 – FFLs Units 01 to 08

#### 4.1.2 Units 09 – 22

These units are located at the northern end of the proposed development and interfaces with third party lands to the northern end of the rear gardens of these units. The existing ground levels to the north of Units 09 to 22 are between 104.00 m OD Malin and 106.5 m OD Malin. The proposed Finished Floor levels of these units are illustrated on Figure 7. The rear gardens will incorporate a gradient of 1 in 10 rising toward the rear boundary.

An embankment will be provided within a portion of the rear gardens of Units 09 to 22. It is proposed to provide an embankment at a gradient of 1 in 2 to tie in with existing levels along the northern boundary.





Figure 7 – FFLs Units 09 to 22

Figure 9 – FFLs Units 28 to 49

4.1.3 Units 23 – 27

These units are located at the northern end of the proposed development and interfaces with third party lands to the northern end of the rear gardens of these units. The existing ground levels to the north of Units 23 to 27 are between 108.5 m OD Malin and 109.5 m OD Malin. The proposed Finished Floor levels of these units are illustrated on Figure 8. The rear gardens will incorporate a gradient of 1 in 10 rising toward the rear boundary. It is proposed to provide an embankment at a gradient of 1 in 2 to tie in with existing levels along the northern boundary.

4.1.5 Units 50 – 55

These units are located at the north eastern end of the proposed development, as shown on Figure 10. The existing ground levels to the west of Units 50 and 55 are between 108 m OD Malin and 110.5 m OD Malin. The existing ground levels to the east of Units 53 and 54 are between 105.5 m OD Malin and 107.5m OD Malin. The proposed Finished Floor Levels of these units are illustrated Figure 10. The proposed finished road levels in this area are similar to existing levels along the eastern boundary, therefore no embankment or retaining wall will be required. A secondary emergency access has been incorporated in the proposed layout to the north east of Unit 54. The road level will tie in with the existing road level on the public road to the north. The proposed levels within Units 50 and 55 are similar to the existing levels along the western boundary therefore no retaining wall will be required. The green space to the north west of Unit 55 will incorporate an embankment with a gradient of 1 in 2 to tie in to the existing levels at the north western boundary.

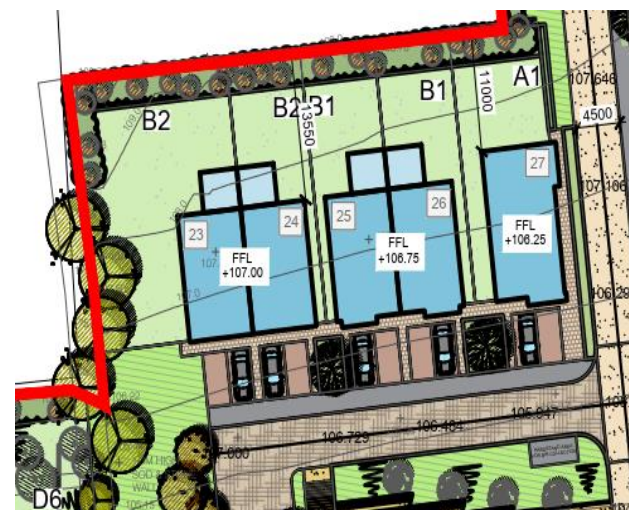


Figure 8 – FFLs Units 23 to 27

Figure 10 – FFLs Units 50 to 55

4.1.4 Units 28 – 49

These units are located at the northern end of the proposed development. It is proposed to provide a loop road around these units as shown in Figure 9. This loop road interfaces with third party lands at two locations; to the north of Units 43 to 49 and to the east of Units 38 and 39. The existing ground levels to the north of Units 43 to 49 are between 107.5 m OD Malin and 109.5 m OD Malin. It is proposed to provide an embankment at a gradient of 1 in 4 along the interface with the northern boundary to tie in with the existing levels at the boundary. The existing ground levels to the east of Units 38 and 39 are between 102 m OD Malin and 106 m OD Malin. The proposed Finished Floor Levels and road levels in this area are similar to existing levels therefore no embankment or retaining wall will be required.

To accommodate the difference in level of approximately 3.5 m between the rear gardens of Units 39-49 and Units 28-38, it is proposed to provide a gradient of 1 in 10 within the rear gardens in conjunction with a split-level rear garden within Units 28-38. A 1 in 2 embankment will be provided within the rear gardens of these units to provide the split-level garden. The remaining level difference of approximately 1.0m will be accommodated by providing a retaining wall at the rear boundary.



### 4.1.6 Open Space

The main access road to the proposed development provided from Phase 1 of the wider development (permitted by Cork County Council reference 17/5699 and An Bord Pleanála reference 300128-17, and amendments made under planning references 18/6312 and 20/5864). An area of open space is provided to the south of Units 01-22/ 28-38. In order to accommodate the difference in levels between the road serving Character Area 1 the main access road to the development it is proposed to provide an embankment with a gradient of 1 in 2 in conjunction with a crib wall.



Figure 11 – Open Space within Character Area 1

## 4.2 Character Area 2

Character Area 2 comprises the area to the south of the main access road and includes 89 No. Units. Units 56 to 72 will be provided as part of Phase 1; Units 73 to 105 will be delivered as part of Phase 2 and Units 106 to 144 will be delivered as part of Phase 3. The existing levels within Character Area 2 range from 78.5 m OD Malin at the southern western corner of Unit 90 to 97.0 m OD Malin at the north eastern corner of Unit 126. Figure 12 illustrates the extent of Character Area 2.



Figure 12 – Character Area 2

### 4.2.1 Units 56-72 and Units 73-89

Units 56-72 are located to the south of the main access route to the proposed development and interface with third party lands to the west of Units 56 and 73. The existing ground levels to the West of Units 56 and 73 are between 82.5 m OD Malin and 88.3 m OD Malin. The proposed Finished Floor Levels of these units are illustrated on Figure 13. The FFL of the units adjacent to this boundary are similar to the existing ground levels therefore no embankments or retaining walls are required at this boundary.

There is approximately 5.3 m of a difference in level between the back-to-back units (e.g., Units 56 to 60 and 73 to 77). In order to resolve the level difference at each side of the rear boundary between the units gradient of 1 in 10 within the rear gardens in conjunction with a split-level rear garden within Units 73-89. A 1 in 2 embankment will be provided within the rear gardens of these units to provide the split-level garden. The remaining level difference of approximately 1.8m will be accommodated by providing a retaining wall at the boundary.



Figure 13 – FFLs Units 56 to 89

### 4.2.2 Units 90-105

Units 90 to 105 interface with third party lands along the southern boundary of the units (rear gardens) and along the western boundary of Unit 90. The existing ground levels to the west of Unit 90 are between 78.5 m OD Malin and 80.0 m OD Malin. The proposed Finished Floor Levels of these units are illustrated on Figure 14. The proposed FFL of Unit 90 is 79.70 m OD Malin which is similar to the existing level in this area therefore no embankments or retaining walls are required along the western boundary of Unit 90.

The existing levels along the southern boundary of Units 90 to 105 are between 78.5 m OD Malin and 105 m OD Malin. The FFLs of these units have been set close to existing levels in this area in order to avoid the requirement to provide a retaining structure along this boundary. The difference in level between the FFLs and the existing levels along the boundary are approximately 1.5 m and 2.0 m. A proposed gradient of 1 in 10 within the rear gardens of Units 90 to 95 (sloping to the southern boundary) will allow the proposed gardens to tie in with the existing levels at the southern boundary.

It is also proposed to provide a gradient of 1 in 10 within the rear gardens of Units 96 to 105 (sloping to the southern boundary) with a short section of embankment with a gradient of 1 in 2 to accommodate a level difference of 0.5 m at the southern boundary.



Figure 14 – FFLs Units 90 to 105



### 4.2.3 Units 106-144

Units 106 to 144 are located to the north of the proposed Central Parkland and interface with third party lands to the east of Units 126-128. The existing levels along the boundary to the east of Units 126-128 are between 85.0 m OD Malin and 97 m OD Malin. The proposed Finished Floor Levels of these units are illustrated on Figure 15. There is between 3 and 4m of a difference between the FFL of Unit 126 and the existing level at the eastern boundary. The space provided between the boundary and the proposed loop road serving these units has been maximised to provide sufficient space to incorporate an embankment along this boundary, avoiding the requirement for a retaining wall. Similarly, at Unit 128, the space provided between the proposed road and the eastern boundary is based on that required to provide an embankment to resolve the level differences.

There is approximately 5 m of a difference in level between the back-to-back units (e.g., Units 119 to 126 and 129 to 135). In order to accommodate the difference in level between the gardens, it is proposed to provide a gradient of 1 in 10 within the rear gardens in conjunction with a split-level rear garden within Units 129-144. A 1 in 2 embankment will be provided within the rear gardens of these units to provide the split-level garden. The remaining level difference of approximately 2.2m will be accommodated by providing a retaining wall at the rear boundary.



Figure 15 – FFLs Units 50 to 55

### 4.2.4 Central Parkland

It is proposed to provide a Central Parkland in the centre of the proposed development as an amenity area/ public open space. This will incorporate the existing hedgerow/ trees as shown in Figure 16. It is proposed to maintain the existing ground levels around the existing hedgerow running in an east-west direction and lower the levels in the area to the south. Figure 17 shows a section (Section G-G) through the proposed Central Parkland (Section G-G is taken from the Landscape Design Rationale report prepared by Cunnane Stratton Reynolds).



Figure 16 – Central Parkland

It is proposed to incorporate a crib wall to the south of the existing hedgerow to provide a lower level within the central parkland area. The central parkland will fall from north to south at a gradient of 1 in 33 (3%), tying in with the road to the south.



Figure 17 – Section through Central Parkland (Section G-G taken from Landscape Design Rationale)

### 4.3 Character Area 3

Character Area 3 comprises the southern part of the lands to the north of 'the Terrace', i.e., to the south of the Central Parkland and includes 114 No. Units. Units 145 to 204 will be delivered as part of Phase 2 and Units 205 to 258 will be delivered as part of Phase 3. The existing levels within Character Area 3 range from 60.0 m OD Malin at the southern western corner of Unit 241 to 80.0 m OD Malin at the north of units 145-154. Figure 18 illustrates the extent of Character Area 3.





Figure 18 – Character Area 3 Extent

4.3.1 Units 145 to 177

Units 145 to 178 are located to the south west of the Central Parkland and interface with third party property to the west of Units 145 and 177. The existing levels along the western boundary are between 74.0 m OD Malin and approximately 79.0 m OD Malin. The proposed Finished Floor Levels of these units are illustrated on Figure 19. The proposed FFL of Unit 145 is 79.75 m OD Malin which is similar to the existing level in this area therefore no embankments or retaining walls are required along the western boundary of Unit 145. However, in order to avoid removal of the existing trees along the western boundary, it is proposed to provide a split-level garden in the rear of Unit 145. This will be achieved through the provision of a garden area at a similar level to the FFL of 79.75 m OD Malin, with steps down to a lower garden area. The difference in level between the two garden areas within Unit 145 will be accommodated through a retaining wall.

To accommodate the difference in level of approximately 4.3 m between the rear gardens of Units 145 to 153 and Units 156-177, it is proposed to provide a gradient of 1 in 10 within the rear gardens in conjunction with a split-level rear garden within Units 156-177. A 1 in 2 embankment will be provided within the rear gardens of these units to provide the split-level garden. The remaining level difference of approximately 0.8m will be accommodated by providing a retaining wall at the rear boundary of units 145-148 and 166-177.



Figure 19 – FFLs Units 50 to 55

4.3.2 Units 178 to 204

Units 178 to 204 are located at the southern end of Character Area 3 and interface with third party lands to the west of Units 178, 179 and 204. The existing ground levels to the west of Units 178, 179 and 204 are between 61.0 m OD Malin and 71.0 m OD Malin. The proposed Finished Floor Levels of these units are illustrated on Figure 20. The FFL of Units 178 and 179 are 68.50 m OD Malin and 67.60 m OD Malin, respectively, which is similar to the existing level in this area. The space provided between the boundary and the proposed loop road serving these units has been maximised to provide sufficient space to incorporate an embankment along this boundary, avoiding the requirement for a retaining wall adjacent to the proposed road.

There is approximately 4.5 m of a difference in level between the back-to-back units (e.g., Units 180 to 184 and 187-196/ 197 and 204). To accommodate this difference in level, it is proposed to provide a gradient of 1 in 10 within the rear gardens in conjunction with a split-level rear garden within Units 187-204. A 1 in 2 embankment will be provided within the rear gardens of these units to provide the split-level garden. The remaining level difference of approximately 1.5m will be accommodated by providing a retaining wall at the rear boundary between Units 180 to 184 and 187-204.



Figure 20 – FFLs Units 178 to 204



**4.3.3 Units 205 to 240**

Units 205 to 240 are located to the south of the Central Parkland and interface with third party property to the east of Units 215, 216 and 217. The existing levels along the western boundary are between 71.0 m OD Malin and approximately 77.5 m OD Malin. The proposed Finished Floor Levels of these units are illustrated on Figure 21. The proposed FFL of Unit 90 is 76.50 m OD Malin which is similar to the existing level in this area therefore no embankments/ retaining is required along the eastern boundary at Unit 215.

The space provided between the boundary and the proposed loop road serving these units has been maximised to provide sufficient space to incorporate an embankment along this boundary, avoiding the requirement for a retaining wall.

There is approximately 3.65 m of a difference in level between the back-to-back units (e.g., Units 207 to 214 and 217 to 240). To accommodate this difference in level, it is proposed to provide a gradient of 1 in 10 within the rear gardens in conjunction with a split-level rear garden within Units 217-240. A 1 in 2 embankment will be provided within the rear gardens of these units to provide the split-level garden. The remaining level difference of approximately 1.2m will be accommodated by providing a retaining wall at the rear boundary between Units 207 to 214 and 217 to 240.



**Figure 21 – FFLs Units 205 to 240**

**4.3.4 Units 241 to 258**

Units 241 to 258 are located at the southern eastern end of Character Area 3 and interface with third party property to the south of Units 241 to 258 and to the east of Unit 258. The existing levels along the southern boundary are between 60.0 m OD Malin and approximately 64.0 m OD Malin. The existing levels along the eastern boundary of Unit 258 are between 64 m OD Malin and 66.5 m OD Malin. The proposed Finished Floor Levels of these units are illustrated on Figure 22.

The FFLs of these units have been set close to existing levels in this area in order to avoid the requirement to provide a retaining structure along this boundary. The difference in level between the FFLs and the existing levels along the boundary are approximately 1.5 m and 2.0 m. It is proposed to provide a gradient of 1 in 10 within the rear gardens of these units 90 to 95 (sloping to the southern boundary) and an embankment with a gradient of 1 in 2 to tie in with the existing levels at the southern boundary.



**Figure 22 – FFLs Units 241 to 258**

**4.3.5 Open Space**

It is proposed to provide an open space area to the north of Units 241 and 258. Figure 23 illustrates the extent of this open space. There is a significant level difference between the road level in front of Unit 217-240 and the access road to the south of the open space. Figure 24 shows a section (Section i-i) through the proposed open space (Section i-i is taken from the Landscape Design Rationale report prepared by Cunnane Stratton Reynolds).



**Figure 23 – Character Area 3 Open Space**



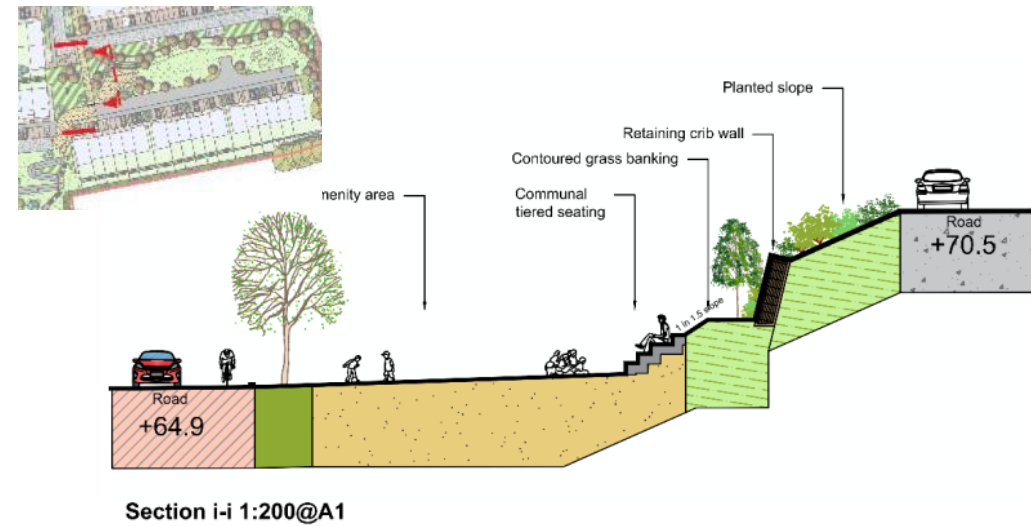


Figure 24 – Section through Character Area 3 Open Space – (Section i-i taken from Landscape Design Rationale Report)

#### 4.4 Character Area 4

Character Area 4 comprises the area surrounding the existing derelict dwelling immediately to the north of 'the Terrace' and the portion of the site to the south of 'the Terrace' (Units 259 to 289) and will be delivered as part of Phase 1. The existing levels within Character Area 4 range from 3.5 m OD Malin at the southern end of the site (proposed apartment block) to 51.0 m OD Malin at the Unit 259. Figure 25 illustrates the extent of Character Area 4.



Figure 25 – Character Area 4 Extent

#### 4.4.1 Units 259 and 260

The proposed Units 259 and 260 are located to the north of 'the Terrace'. There is an existing derelict dwelling house at Unit 259. It is proposed to demolish the existing dwelling and provide a new detached dwelling in its position. The proposed Finished Floor Level of Unit 259 is 59.00 m OD Malin which is similar to that of the existing dwelling.

The footprint of Unit 260 is currently hardstanding as a former dwelling house was demolished in late 2020/ early 2021. The proposed Finished Floor Level of Unit 260 is 45.30 which is also similar to the existing levels in this area.

These two units have been incorporated in the proposed layout following discussions with Cork County Council regarding overlooking of the proposed path through the site. It is proposed to reuse the existing vehicular entrance and access road from 'the Terrace' to provide access to Units 259 and 260. Figure 26 illustrates the location of proposed Units 259 and 260 relative to the proposed path.



Figure 26 – FFLs Units 259 and 260

#### 4.4.2 Units 261 to 289

Units 261 to 289 are located at the southern end of the site, to the south of 'the Terrace'. 5 No. dwelling (One detached house and 4 townhouses) houses are proposed to the south of 'the Terrace' and 24 No. apartments are proposed on Johnstown Close. The proposed layout in this part of the site (south of 'the Terrace') has been developed based on the constraints associated with providing the path from Johnstown Close to 'the Terrace', i.e., path gradients, existing tree locations and tie in levels. The constraints associated with the proposed path are described in Constraints Report 1.

Figure 27 illustrates the proposed Finished Floor Levels of Units 261 to 265. The proposed path will provide access to these units and a stairs has also been provided. The levels associated with Units 261 to 265 will require fill and a retaining wall at the rear of the gardens. In order to reduce the level of fill and retained height, it is proposed to provide a split-level garden in the rear of Units 261 to 264. These gardens will also incorporate a gradient of 1 in 10 sloping to the south.

Unit 265 has a lower ground floor level of 25.40 m OD Malin, which is similar to the proposed path level at the south eastern corner. The upper floor level of this unit is 28.15 m OD Malin which will tie in with the proposed path on the northern side of the unit.





Figure 27 – FFLs Units 261 and 265

24 No. apartments are proposed on Johnstown Close, as shown on Figure 28. The ground floor level of the apartment block is 3.5 m OD Malin, similar to existing levels on Johnstown Close. As the existing levels in the area to the north of the apartment block are higher, it is proposed to provide a retaining wall around the rear courtyard area. It is proposed to provide a split wall along the rear boundary in order to allow for plant screening to be incorporated.



Figure 28 – FFLs Units 266 and 289

## 5. Retaining Structures & Embankments

The following sections provide additional information to describe each of the types of retaining structures identified in the previous sections.

### 5.1.1 Concrete Retaining Walls

A retaining wall is a vertical or near-vertical structure that holds back material and prevents it from sliding or eroding away. It is designed so that to resist the material pressure of the material that it is holding back. Figure 29 illustrates a retaining wall detail which includes a shear key to provide additional resistance.

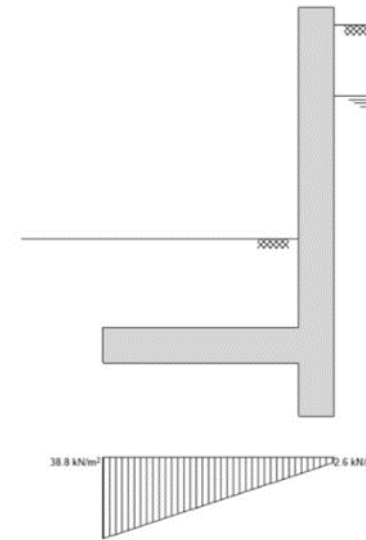


Figure 29 – Sample retaining wall

### 5.1.2 Permicrib Walls

Where a retaining structure is required within public areas, it is generally proposed to use a Permicrib Retaining Wall. This is a gravity retaining wall system which uses timber header and stretcher components to form a cage which is then filled with stone. Stability is achieved through interaction of the crib components and the infill. All permicrib components have a Desired Service Life of 60 years. The standard lean back for a permicrib timber crib wall is 1H:4V (76 Degrees) as illustrated in Figure 30.



Figure 30 – Typical Permicrib Wall under construction

### 5.1.3 Gabions

Gabions are rectangular baskets fabricated from a hexagonal mesh of galvanized steel wire. The baskets are filled with rock and stacked atop one another to form a gravity-type wall. Gabions depend mainly on the interlocking of the individual stones and rocks within the wire mesh for internal stability, and their mass or weight to resist hydraulic and earth forces. Gabions are a porous type of structure that can be vegetated. It is proposed to incorporate gabions within the open space areas to provide stepped seating. A typical use of a gabion is illustrated in Figure 31.

Some advantages of gabion walls include:

- Ease of handling and transportation,
- Flexibility (Gabions tolerate movement),
- Permeability to water (Good drainage),
- Gabions offer an easy-to-use method for decreasing water velocity and protecting slopes from erosion.

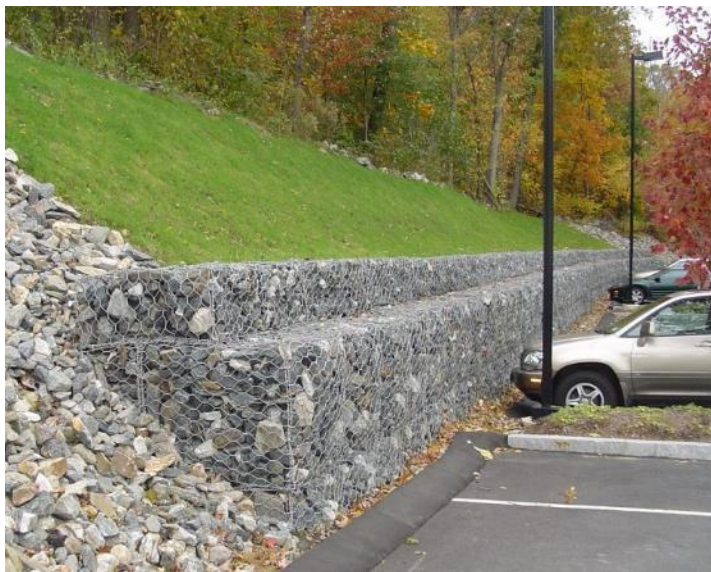


Figure 31 – Typical Gabion Wall

### 5.1.4 Embankments

There are a number of different embankments proposed within the proposed development. The gradients of the proposed embankments vary from 1:1.5 to 1:3.

## 6. Geology

The site has been subject to a detailed ground investigation. The exploratory hole locations are shown on Figure 32. A total of 14 cable percussion boreholes were bored to depths between 1.2m and 4m below ground level (bgl) and 25 trial pits were dug to depths of between 1m and 2.6m below ground level (bgl).

No groundwater was encountered during the period of works.

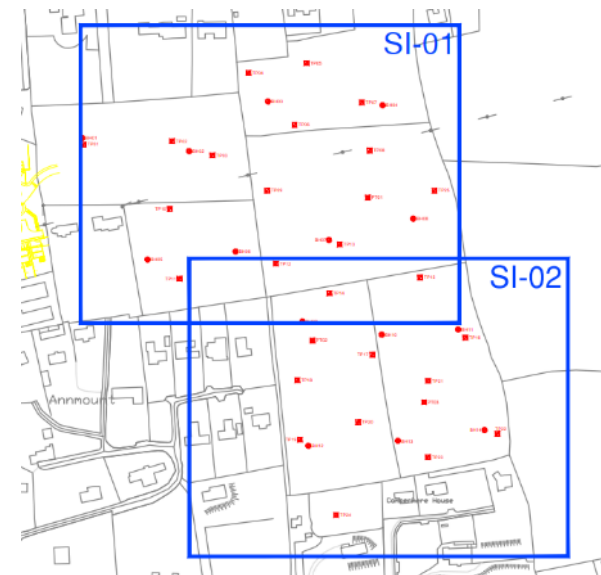


Figure 32 - Extent of Site Investigation

Topsoil encountered was 300mm to 400mm thick. Superficial glacial deposits were described as firm to stiff, slightly sandy (slightly) gravelly CLAY/ SILT with varying Cobble content 0.7m to 2.1m thick and granular deposits of (very) silty (very) sandy GRAVEL and (very) sandy (very) clayey GRAVEL with varying cobble content 0.3m to 3.0m thick persisted to depths 1.0m bgl to 4.0m bgl. Typically, the CLAY / SILT deposit transitioned to the GRAVEL overlying the bedrock. The weathered rock mass was 1.0m to 4.0m below existing ground level (bgl).

The scope of the investigation did not allow for a detailed characterisation of the bedrock, however based on GSI the bedrock is assumed SITLSTONE.

### 6.1 Stability of Excavations

The stability of all 24 trial pits dug was described as good and no groundwater was encountered.

### 6.2 Strength of Rock

A JCB backhoe excavator excavated within the upper 200mm to 500mm of the rock mass. Consideration could also be given to using blasting or to using Dexpan or CARDOX (or similar) which is a vibration free method of 'blasting' that uses expanding gas to help remove the rock.

### 6.3 Building Foundations

Foundations are to be within the 'firm to stiff' glacial deposits below a depth of 1.0 m below existing ground level. It is proposed to provide shallow strip and pad foundations. Capping will be between 200 mm and 600 mm thick with a sub-base of 150 mm for proposed road construction in accordance with Tii guidance for road design.



## 7. Conclusion

The proposed new development promotes the design of a sustainable new community. Through a more efficient use of land, availing of both local amenities and transportation links, the development encourages a more efficient and sustainable quality of life for its residents. Even though the topography of the site is challenging, the proposed dwellings are laid out to maximize the orientation and amenity of their setting. The landscape is designed to create a sense of community with outdoor facilities for all age groups to enjoy. The proposed scheme is compatible with its neighbouring residential uses and activities.

The proposed development layout has been developed through a number of iterations. The proposed internal road levels and layout have been developed based on the existing road tie in levels, existing rock profile and technical road design constraints. The internal road layout was developed based on a tie in level at the access from Phase 1 of the wider development. The layout of the proposed development has been developed based on the Engineering Challenges and to deliver the following:

- Provide universal access to ground floor units,
- Minimise the requirement for retaining structures,
- Minimise the height of retaining structure where they are required,
- Maximise the provision of flexible use open spaces,
- Landscape that creates a sense of community with outdoor facilities for all age groups to enjoy,
- Vehicular, cycle and pedestrian connectivity throughout the development and with the wider community,
- Minimise the level difference at the boundary between the subject site and adjoining lands/developments,
- Minimise the level difference between back-to-back gardens (e.g., Units 56-66 and 73-83),
- Ensure public roads do not require retaining structures,
- Minimise cut in existing rock within the site.
- Based on these constraints, the proposed roads within the development have a maximum longitudinal road gradient of 1 in 12 and all roads incorporate facilities for pedestrians.

Constraints Study 1 provides more information on how constraints were overcome in the design of the pedestrian permeability through the proposed development.

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