Constraints Study 2 - Site Layout

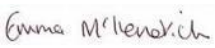
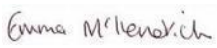
Proposed SHD at Glounthaune, Co. Cork

Bluescape Limited

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

Delivering a better world

Quality information

Prepared by	Checked by	Verified by	Approved by
			
Aileen Prendergast Principal Engineer	Laura Shaughnessy Principal Engineer	Emma McKendrick Regional Director	Emma McKendrick Regional Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	3rd December 2021	Issued for Planning	AP	Aileen Prendergast	Principal Engineer

Distribution List

# Hard Copies	PDF Required	Association / Company Name
10	Yes	Westhill/ HW Planning/ Deady Gahan Architects/ CSR Land Planning & Design/ Kelleher Ecology/ MHL

Prepared for:

Bluescape Limited

Prepared by:

Aileen Prendergast

AECOM Ireland Limited
1st floor, Montrose House
Carrigaline Road
Douglas, Cork T12 P088
Ireland

T: +353 21 436 5006
F: +353 21 436 5156
aecom.com

Table of Contents

Figures

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 form 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.

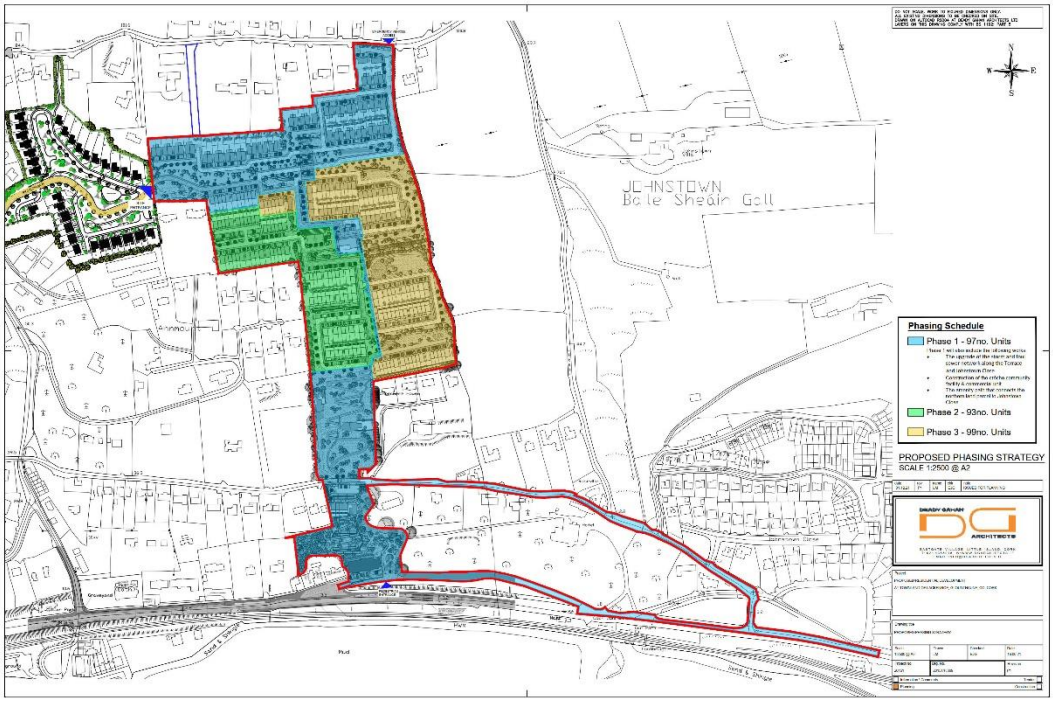


Figure 2 – Phasing Diagram

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.

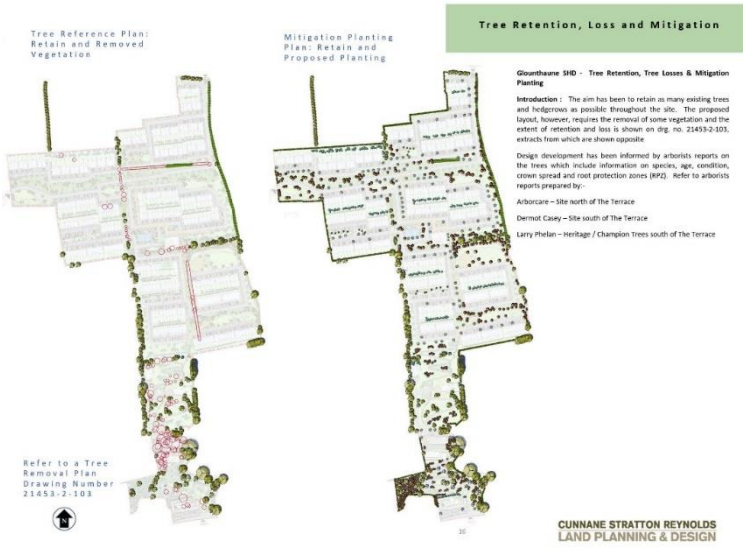


Figure 4 – Existing Hedgerows to be removed & retained (Extract from Landscape Design Rationale report)

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, permicrib 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

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.

Figure 8 – FFLs Units 23 to 27

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.

Figure 9 – FFLs Units 28 to 49

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.

To accommodate the difference in level of approximately 2.5 m between the rear gardens of Units 50-53 and Units 54-55, it is proposed to provide a gradient of 1 in 10 in conjunction with a retaining wall of approximately 0.6 m height at the boundary between the rear gardens.

Figure 10 – FFLs Units 50 to 55

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 exiting 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

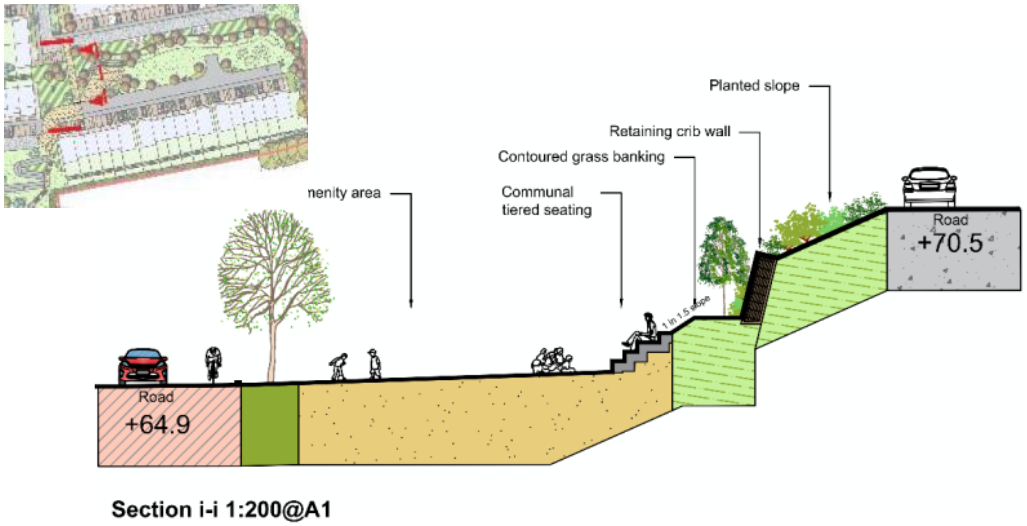


Figure 24 – Section through Character Area 3 Open Space – (Section i-i taken from Landscape Design Rationale Report)

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 flood 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.

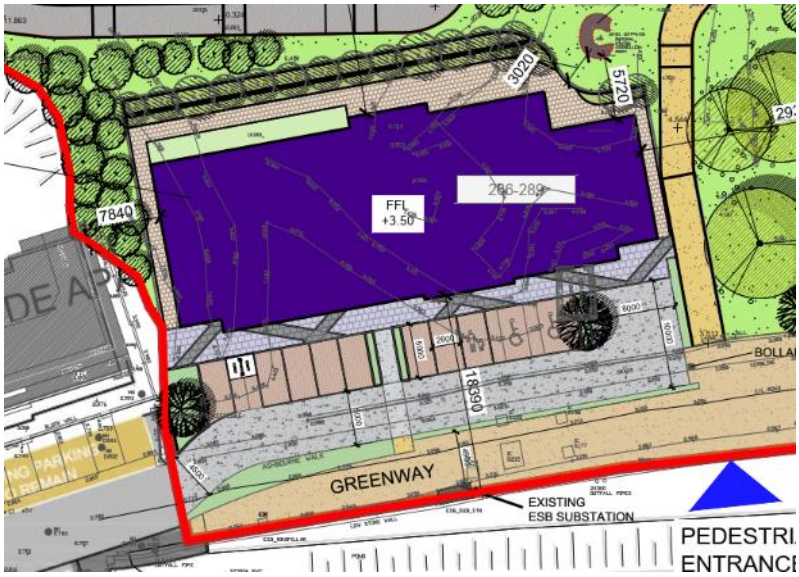


Figure 28 – FFLs Units 266 and 289

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.

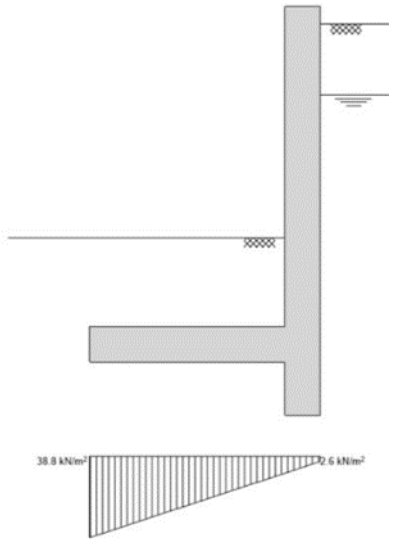


Figure 29 – Sample retaining wall

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.

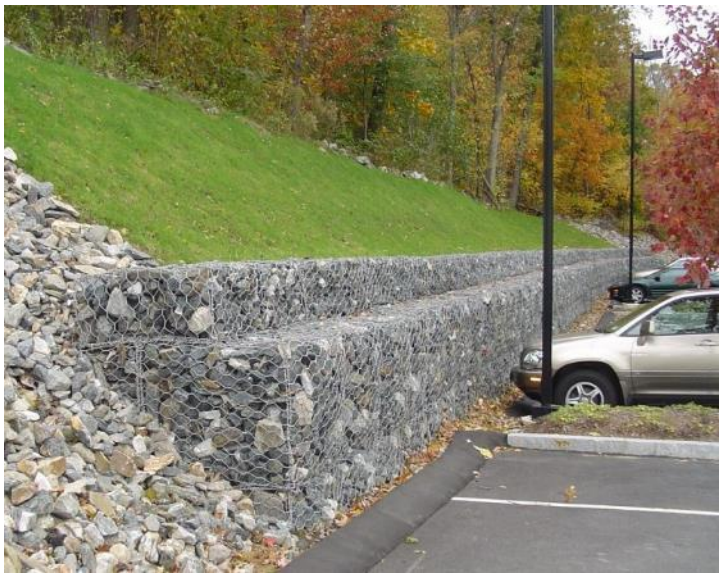


Figure 31 – Typical Gabion Wall

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.

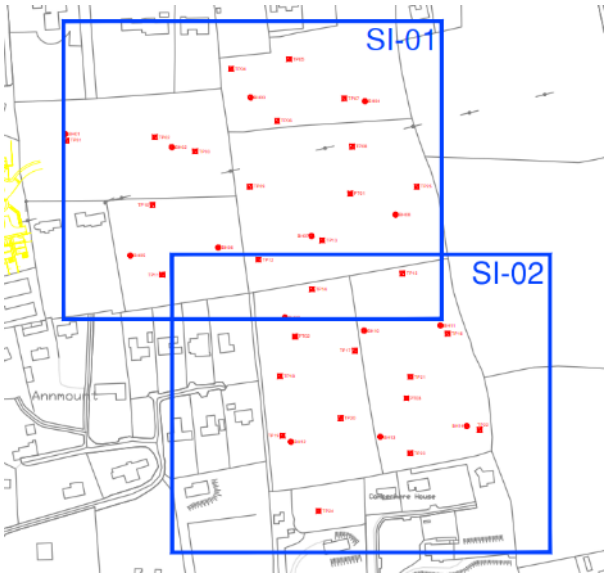


Figure 32 - Extent of Site Investigation

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.

aecom.com