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**An Garrán, Tramore Housing**  
**3406.Rev D Issue date 030718**

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## **Design Overview.**

### **1 Introduction:**

The proposed development comprises 50 Units of housing with a mix of one, two and three bedroom accommodation and represents the second phase of development at An Garrán, Tramore Housing development.

#### **1.1 Design Brief:**

The design brief requested that the second phase tie into the first with common materials, architecture and landscape. Waterford County Council requested that the mix of units, one bedroom, two bedroom and three bedroom and to include terraced housing.

The ratios of internal storage, room widths and internal space allowances references Quality Housing for Sustainable Communities from The Department of Environment Heritage And Local Government.

#### **1.2 Design issues:**

Unique design challenges relating to the site is its steep incline, a site strategy is required to minimise movement of soil and use of retaining walls whilst achieving acceptable falls to roads and associated pavement levels for disabled access .The site rises to the South West from the existing road in Phase 1 by 8.87 meters.

### **2.0 Design Approach**

#### **2.1 Landscape:**

Phase 1 has a curved terrace wrapping around a central green space. The landscape proposal on Phase 2 extends the central green area. Additionally at Waterford County Councils request we have remodelled the access to the existing ESB station proposing grass permeable concrete formers to remove an area of unused space within Phase 1.The existing attenuation units are also included in the landscaped area.

This will give an uninterrupted vista across the centre of the site over a well observed central landscaped area tying together the two phases.



## 2.2

### House Types:

Solar orientation has been considered to enable as many amenity spaces to be south or west facing as possible. In certain circumstances where identical units are mirrored on the street, the internal layout has been reoriented to allow balconies with adjoining lounges to face the sun.



A theme throughout the development is the use of individual front doors to all apartments as well as houses. The first floor one bedroom flats have their own internal stairs.

### **2.3 Civil engineering/ site levels.**

The proposed strategy in relation to dealing with the substantial variations in level across the site is a response to the following constraints/objectives:

- To maintain the footpath gradients in public areas at a maximum of 1:20 so that the principle public areas of the development are accessible for the mobility impaired.
- To minimise the quantity of excavated material to be removed from site.
- To minimise the level differences between rear gardens in order to allow sufficient light while maintaining an appropriate level of privacy. The revised design reflects the clients request for a consistent retaining structure detail throughout the site by adopting reinforced concrete walls in place of gabions/reinforced earth. There are three principal wall sizes (shown on drawings 107-77-804-806. The strategy is to ensure that changes in level are distributed evenly across the site so that no local area requires an excessively imposing retaining structure. The maximum retained height is shown in section D-D directly adjacent to the racecourse boundary embankment. The heights of the retaining structures are mitigated by the provision of terracing in the rear gardens of the houses.
- To minimise the height of retaining walls for reasons of economy and safety.
- To maximise the useable area of the site in order to provide the maximum number of accommodation units within the constraints of all relevant design guidelines

The green area in the centre of the site is terraced more extensively and this acts to minimise excavation, minimise retaining structures at the boundary and act as a transition between the higher West end of the site and the lower East end of the site without any internal retaining elements.

Levels at the proposed housing at the east end of the site are closer to the existing topography. The site drainage follows the topography. The engineering design provisionally allows for an attenuation system to cater for the upper part of the site should additional capacity be required.

### **2.4 Materials and massing.**

Walls and roofs will match the existing scheme, concrete tile roofs, and brick and render walls. Windows are proposed to be aluminium clad units or similar appearance. Balconies will be galvanised steel. Phase 1 has corner feature units which have been copied and used as bookends through the site. Existing Phase 1 with existing end of row feature.



Phase 2 with proposed end of row feature.



## 2.5 Structure

The building(s) superstructure will generally comprise conventional masonry loadbearing walls concrete ground bearing ground floor slabs and timber first floors. The roof structures will comprise prefabricated trusses. Exceptions to this arrangement will be in the 1 bedroom units where a precast concrete first floor will be adopted. This will require some internal walls to increase to 215mm in width to provide adequate bearing for two precast units.

## 2.6 Substructure

A ground investigation has been carried out. In general the ground will be adequate to support the proposed structures on conventional reinforced concrete strip foundations. In addition we have allowed for lean concrete trench fill beneath the proposed footings to the eastern end of the site where a relatively soft stratum appears to coincide with the anticipated footing formation. In addition we have allowed for lean concrete trench fill to the rear of the houses along the north boundary where there is up to 1.5m depth of made ground (spoil from the development of the previous phase) and this will be required to reach original ground without requiring work in deep excavations. There is water in the ground at approximately 2.5m below existing ground level to the south boundary. Standpipes have been installed to allow this to be monitored through the winter months to assess whether this presents a significant risk.

## 2.7 Water Supply

The existing development is currently fed from the public 150mm uPVC water main in the existing development. It is proposed to provide a new main to the development as indicated on the proposed water main layout. A number of new hydrants will be provided at strategic locations to provide firefighting coverage in accordance with the requirements set out in TGD B of the Building Regulations (2013). In addition, sluice valves, air valves and a scour valve are also proposed to facilitate isolation of sections if required and cleaning.

## 2.8 Drainage

Separate foul and surface water drainage systems will be provided as per best practice for the new development. It is also noted that there are some issues in terms of collapse of the existing tank on

site to be examined. In terms of the foul drainage, a new system will be provided in the road with individual connections from each house to the public system.

## **2.9 Roads**

It is proposed that the road will rise at a maximum gradient of 8% as allowed under the Design Manual for Urban Roads for the first 80m (approximately) before flattening out to approximately 1:20 gradient where the houses are to be constructed. A run-off zone is also being provided a maximum gradient of 2% where the new proposed road meets the existing housing estate road. The 8% also allows the finished floor levels of the buildings to be set at practical levels in relation to each other and the existing ground levels. IT should be noted even with these gradients, there will be considerable earth removal in some areas of the site which is unavoidable due to the existing topography if the development is to remain compliant with the building regulations and in particular Part M.

## **2.11 Mechanical:**

The mechanical systems installed will be designed to meet the Building Regulations. Please see a summary below for each mechanical service.

### **Heating System – Air Source Heat Pump (Air to Water)**

The Air to Water Air Source Heat Pump will provide all of the space heating and hot water requirements for each Residential Unit. There is a domestic hot water priority control built into the controls of the heat pump to ensure that there is hot water available at all times, as required by the Building Regulations.

### **Heating Distribution**

The Heating Distribution system will consist of hot water radiators .Typically, each dwelling will have three heating zones. The three heating zones are Ground Floor, First Floor and the Hot Water Storage Cylinder. The heating system will modulate its output depending on the feedback from each zone. This allows the Heating System to operate efficiently, operating only when required.

Each dwelling will have a heating control panel allowing the occupants to set time schedules, turn on or off the heating system or to put the heating system into Automatic mode.

### **Water Services**

Mains water shall be supplied to each residential units kitchen sink. All other outlets shall be supplied from a cold water storage tank. The cold water storage tank in most cases shall be located within the attic space to provide a gravity fed system. Where we do not have the Attic space, then a boosted cold water supply shall be provided. All tanks will come with an overflow pipe and drip tray. Cold water storage tanks shall be sized based on a 24 hour demand.

The internal heat pump unit will accommodate the hot water storage tank to satisfy the hot water requirements for each unit. Hot water will be supplied to all outlets as required.

### **Ventilation**

All residential units will be predominately naturally ventilated with trickle vents and operable sectional windows throughout.

Additional mechanical ventilation will be provided in all moisture producing rooms (wet rooms), such as bathrooms and kitchens. Toilet extract fans are to be controlled by means of the light switch or PIR controller and would come equipped with a 15 minute run on timer. This is a Building Regulation requirement.

## **2.12 Electrical**

The electrical systems installed will be designed to meet the Building Regulations and the current edition of the Regulations for Electrical Installation, as issued by the Electrical Technical Council of Ireland, together with any amendments issued prior to the date of Tender.

Please see a summary below for each electrical service.

### **L.V. Distribution**

Electrical power supply and install will consist of new mains cable from the existing ESB supply to a new external ESB meter cabinet and an internal consumer unit of each dwelling. All housing shall be provided with infrastructure for Electrical Services and Telecom and TV services.

### **Lighting**

A complete lighting installation shall include switching to all rooms and hallways within the houses. Energy efficient IP65 Bulkheads shall be installed outside the front and back doors of all housing. Energy efficient Lighting Pendants to be installed over water tanks in attics. All bathrooms shall contain an IP44 ceiling fitting and a strip light complete with shaver point over sinks.

### **General Services**

General services to each premises shall consist of installation to all areas including, sub distribution boards c/w with isolators, RCDs, MCBs, bell transformers. The power to appliances will be by means of electrical sockets, spurs and cooker switches, Extract Isolators, Pull chord switches ( For future installation), Electric Showers , Double pole immersion switches, TV points, telephone points, door bell and sounder to all houses. The Electrical Contractor shall supply and install an infra-red lamp c/w frost stat over water tank in attic.

### **Fire Detection and Alarm System**

The Fire Detection and Alarm System will consist of mains powered smoke detectors complete with sounders and battery back up to be installed in the ground floor hallway, bedroom rooms, utility rooms and Living room. A mains powered heat detector complete with sounder and battery back up to be installed in all kitchens. CO2 sensors are required within bedrooms, kitchen/living rooms and utility rooms where required as set out in TGD J: 2014.

The Fire alarm shall be an LD1 Fire Detection and Alarm System in accordance with I.S. 3218.2013 to comply with Fire Certificate and TGD B 2017.

### **Mechanical Services**

An electrical supply shall be included to all electrical works associated with mechanical plant installation including all power and control wiring to temperature stats, humidity stats, actuators, timeclocks, boilers, pumps, VSD's, extract fans, ventilation, etc....

### **Containment**

Supply and installation of all tray, trunking and conduit required to carry out the electrical installation to meet all building regulations and electrical codes of practice shall be installed.

## **Phasing**

Entire Site Area (Phase 1 & 2): 34322.05m<sup>2</sup>

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## **Housing Matrix-Phase 2**

Total number of houses onsite: **50 units**

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- 1 Beds: achieved- 6 units
- 2 Beds: - achieved- 33 units
- 3 Beds: achieved- 11 units

## **House Type Areas**

- 1 Bed Unit House 2 Person- 45m<sup>2</sup> required- typical unit 51.4m<sup>2</sup>
- 2 Bed Unit House 4 Person- 80m<sup>2</sup> required- typical unit 49.7m<sup>2</sup>
- 2 Bed Apartment 4 Person- 73m<sup>2</sup> required- typical unit 80m<sup>2</sup>
- 3 Bed Unit House 5 Person- 92<sup>2</sup> required- typical unit : 98m<sup>2</sup>

## **Public Green Space**

- Public Green space in existing Phase 1= 3.23%
- Public Green space in Phase 2= 11.72%
- Public Green space in Phase 1 & Phase 2= 15%