

Project

**Proposed Residential Development
Lissywollen, Athlone, Co. Westmeath**

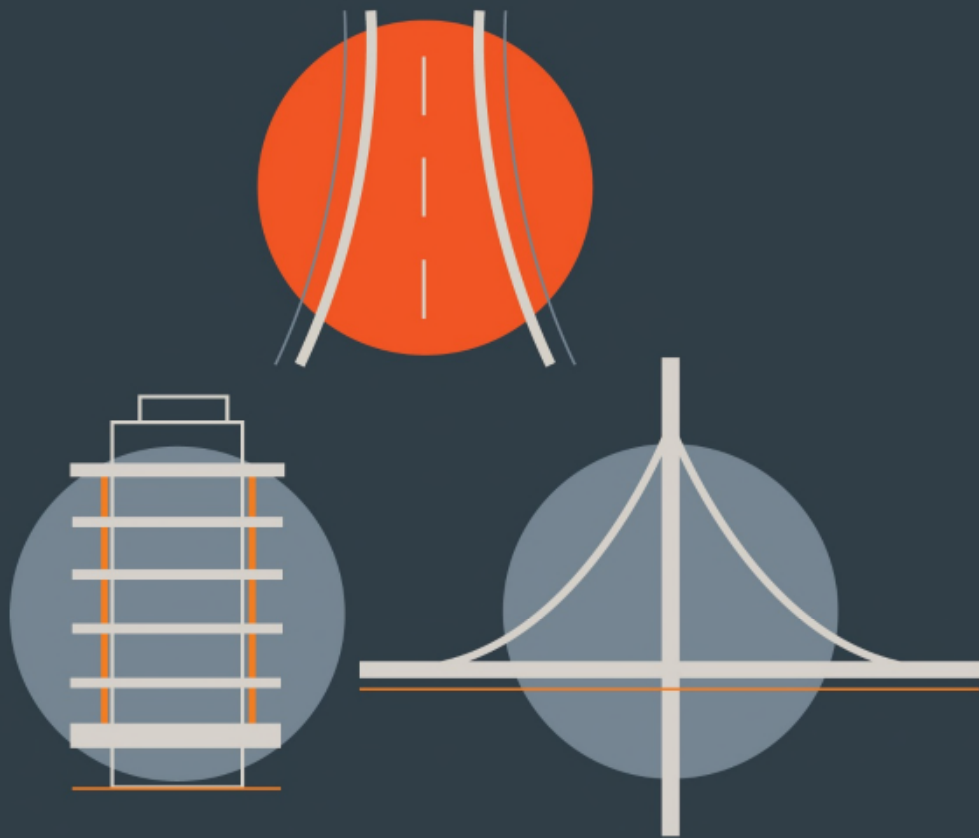
Report Title

DMURS Compliance Statement

Client

Alanna Roadbridge Developments Ltd.

TRANSPORTATION



DBFL CONSULTING ENGINEERS

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1.0 INTRODUCTION

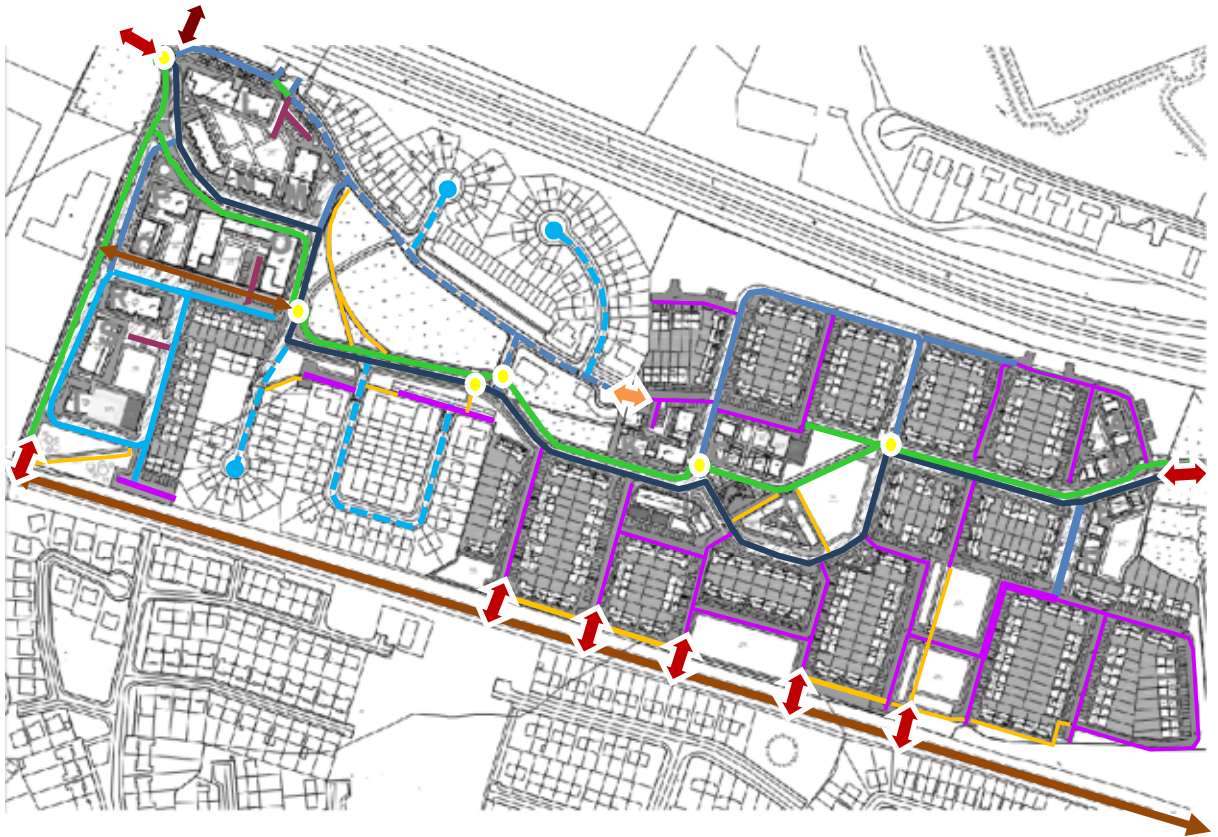
1.1 OVERVIEW

- 1.1.1 DBFL Consulting Engineers (DBFL) have been commissioned by the Alanna Roadbridge Developments Ltd. to form part of a multidisciplinary design team who together have been appointed to investigate, analyse, and prepare the preliminary design (and associated SHD planning documentation) for a proposed residential development on a greenfield site located at Lissywollen, Athlone.
- 1.1.2 The principal members of the design team include;
- **Delphi Design Architects & Planning Consultants** (Architects & Planning Consultant).
 - **Ronan MacDiarmada & Associates** (Landscape Architects).
 - **DBFL Consulting Engineers** (Consulting Civil, Structural and Transportation Engineers).
- 1.1.3 The scheme proposals now being presented to An Bord Pleanála are the outcome of an integrated design approach that seeks to deliver a sustainable residential community connected by well-designed streets with assimilated open spaces which together deliver safe, secure, convenient, and attractive networks in addition to promoting a real and viable alternative to car-based journeys.
- 1.1.4 In response to the Lissywollen sites characteristics and associated accessibility characteristics it is the design teams view that the design presented for the proposed Strategic Housing Development has maximised every opportunity to ensure consistency with both the principles and design guidance outlined within the Design Manual for Urban Roads and Streets (DMURS) (Version 1.1, 2019).
- 1.1.5 This DMURS Compliance Report seeks to outline the specific design features that have been incorporated within the proposed residential scheme with the objective of delivering an integrated design that complies with the guidance outlined within DMURS.
- 1.1.6 This DMURS compliance report should be reviewed in conjunction with the architectural, landscape and engineering site layout drawings in addition to the following key planning documents all of which form part of the submitted planning application documentation;
- Delphi Design Architects *Design Statement*
 - Delphi Design *'Planning Report'*
 - DBFL Consulting Engineers *'Traffic and Transport Assessment'* Report
 - Ronan MacDiarmada & Associates *'Landscape Design Rationale'*

1.2 PROPOSED DEVELOPMENT

- 1.2.1 The subject development land is bisected by the existing Brawny residential estate and is generally bounded to the north by the N6, Athlone Relief Road, to the south by the Old Rail Trail Greenway, to the west by Scoil na gCeithre Máistrí and to the east by undeveloped lands, further east of which are the ESB Regional Headquarters. The subject site is located within the lands designated for the Lissywollen South Framework Plan 2018-2024.
- 1.2.2 This DMURS Compliance Statement has been compiled in support of the planning application for the development at Lissywollen, Athlone. The proposals incorporating a mixture of private and public housing comprises a total of 576 no. residential units including:
- 246 no. Apartments,
 - 45 no. Duplex Units, and
 - 285 no. Houses
- 1.2.3 Access to the subject site will be from Ballymahon roundabout (on the R915) to the west via Brawny Road and Garrycastle roundabout (on the R916) to the east. The development proposal includes for road development works and the construction of an east-west link route through the subject site from Ballymahon roundabout (on the R915) to the west to Garrycastle roundabout (on the R916) to the east. The development proposal provides for pedestrian and cyclist connectivity to Old Rail Trail Greenway to the south. Further details of this link road and the mitigation roads undertaken along the link road on the approaches to Ballymahon roundabout and Garrycastle roundabout are detailed in section 4.2 of the Traffic and Transport Assessment report.
- 1.2.4 The development proposes 5 no. new formal cycle / pedestrian access points between the subject site and the Old Rail Trail Greenway to the south of the development site subsequently ensuring excellent cycle / pedestrian accessibility.
- 1.2.5 The subject site will be highly accessible to pedestrians and cyclists. Pedestrians and cyclists will be given priority within the internal site layout to ensure travel desire lines within the site are accommodated providing a good level of service and ensures the risk of vehicle/pedestrian conflict is minimised.
- 1.2.6 Dedicated pedestrian / cycle paths are proposed throughout the site layout providing a traffic free route between the different sections of the development site. Furthermore, pedestrian facilities are proposed on two sides and two-way cycle facilities on one side of the extended Brawny Road corridor.

1.2.7 A total of six controlled crossing facilities (Zebra) are proposed along the new east-west 'Avenue' street each located on key pedestrian / cycle travel desire routes. These formal facilities, supplemented by courtesy crossings, will provide a high degree of permeability with safe crossing points integrating the residential areas located to the north and south of the new 'Avenue' street.



- Linkage Type 1** : Brawny Road - Footpaths along both sides of the street
- Linkage Type 2** : Primary LOCAL Street – Footpaths on one or both sides of the street
- Linkage Type 3** : Secondary LOCAL Street – Footpaths on one or both sides of the street
- Linkage Type 4** : 'Homezone' – Pedestrians share the carriageway with other road users
- Linkage Type 5** : Courtyard - Pedestrians share the carriageway with other road users ...
- Linkage Type 6** : Greenway with segregated pedestrian and cycle facilities
- Linkage Type 7** : Greenway with shared pedestrian and cycle facilities
- Linkage Type 8** : Pedestrian Footpath through open space (Existing & Proposed)
- Controlled Pedestrian / Cycle Crossing Facility (Zebra Crossing)
- Pedestrian / Cycle Access to/from Development Masterplan Lands

Figure 1.1: Site Layout and Pedestrian/Cycle Accessibility

1.2.8 The masterplan also facilitates the potential future delivery (by others) of a new pedestrian / cycle overbridge across the N6 corridor which will link the subject

Lissywollen South masterplan lands to the zoned lands to the north as per the Curragh-Lissywollen LAP objections.

- 1.2.9 The planning application also includes for the provision of new bicycle infrastructure along Brawny Road (to the west) and Blackberry Lane (to the east) corridors subsequently linking the subject masterplan lands with the existing bicycle infrastructure to the R915 and R916 respectively. This new bicycle infrastructure will benefit new residents of the proposed development to access work, leisure and education facilities to the northwest and northeast in addition to providing new sustainable routing opportunities for both existing residents of the area and visitors / patrons of the leisure facilities currently located along Brawny Road.

1.3 STRUCTURE OF REPORT

- 1.3.1 The key design principles and overriding objectives of DMURS are introduced in **Chapter 2**. A summary of DMURS principal design features and how they have shaped the design of the proposed development are presented in **Chapter 3** subsequently demonstrating the level of compliance between the scheme proposals and DMURS guidance.

2.0 DMURS OBJECTIVES

2.1 OVERVIEW

2.1.1 DMURS seeks to balance the needs of all users, creating well-designed streets at the heart of sustainable communities. It states that:

"Well designed streets can create connected physical, social and transport networks that promote real alternatives to car journeys, namely walking, cycling or public transport"

2.1.2 DMURS also seeks to create streets which are attractive places and encourage designs appropriate to context, character and location that can be used safely and enjoyably by the public. The recommended approach includes the adoption of a more integrated model of street design, where barriers (physical and perceived) are removed to promote more equitable interaction between users in a safe and traffic calmed urban environment

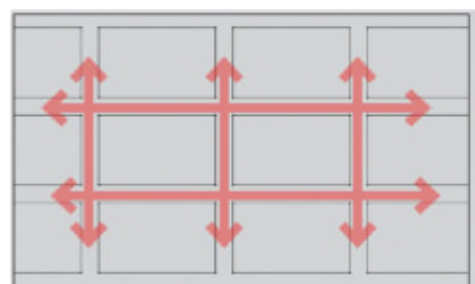
2.1.3 This integrated approach incorporates elements of urban design and landscaping that contribute to positively influence behaviour thereby reducing the necessity for conventional measures (e.g. physical barriers and road geometry) along to manage travel behaviour. The recommended approach creates environments where:

- Street Networks are similar in structure (more eligible) with higher levels of connectivity (more permeability) thus reducing travel distances.
- Higher quality street environments attract pedestrians and cyclists, promoting the use of sustainable modes of transport.
- Self-regulating streets proactively manage vehicle driver behaviour and calm traffic, promoting safer streets.
- Street and junctions are more compact, providing better value for money.

2.2 PLACEMAKING

2.2.1 DMURS recommends that whilst the movement of traffic is still a key issue, there are several others, including the 'sense of place', which are of core significance to the creation of safe and more integrated street designs. DMURS reveals that place can be difficult to define but can be measured and relate to;

CONNECTIVITY : *The creation of a vibrant and active places requires pedestrian activity. This in turn requires walkable street networks that can be easily navigated and are well connected.*



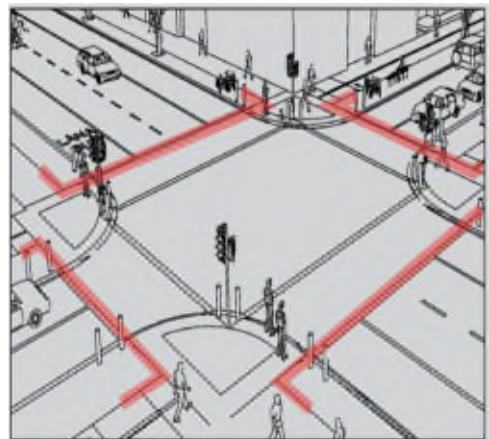
ENCLOSURE : A sense of enclosure spatially defines streets and creates a more intimate and supervised environment. A sense of enclosure is achieved by orientating buildings toward the street and placing them along its edge. The use of street trees can also enhance the feeling of enclosure.



ACTIVE EDGE : An active frontage enlivens the edge of the street creating a more interesting and engaging environment. An active frontage is achieved with frequent entrances and openings that ensure the street is overlooked and generate pedestrian activity as people come and go from buildings.

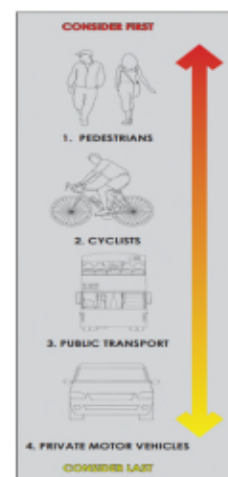


PEDESTRAIN ACTIVITY / FACILITIES: The sense of intimacy, interest and overlooking that is created by a street that is enclosed and lined with active frontages enhances a pedestrian's feeling of security and well-being. Good pedestrian facilities (such as wide footpaths and well designed crossings) also make walking a more convenient and pleasurable experience that will further encourage pedestrian activity.



2.3 THE DMURS USER HIERARCHY

2.3.1 DMURS set out a clear user hierarchy for scheme designers which prioritises sustainable forms of transport. Walking is the most sustainable form of transport with all journeys beginning / ending on foot. By prioritising design for pedestrians, the number of short journeys taken by car can be reduced, public transport made more accessible and the delivery of walkable communities addresses issues of social equity. DMURS reveals that cyclists must be afforded a high priority as trips by bicycle have the potential to replace motor vehicles as an alternative means of transport for short to medium range trips.



- 2.3.2 The movement of buses should be prioritised over other motorised vehicles according to DMURS whilst the placement of private motor vehicles at the bottom of the user hierarchy is not anti-car but acknowledges that a balanced solution is required with the needs of the car no longer taking priority over (i) the needs of other users or (ii) the value of place within the proposed residential development and across the local receiving environment.
- 2.3.3 As outlined in Chapter 3 the design team have adhered closely to this hierarchy, by assigning higher priority to the movement of pedestrians and cyclists within the development and implementing self-regulating streets which actively manage vehicle movements within a low speed, high-quality residential environment.

2.4 DMURS DESIGN PRINCIPLES

- 2.4.1 At the heart of DMURS is a place-based, integrated approach to road and street design with the following four overarching design principals to be applied to the design of all urban roads and streets.
- **Design Principle 1:** To support the creation of integrated street networks which promote higher levels of permeability and legibility for all users, and in particular more sustainable forms of transport
 - **Design Principle 2:** The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating environment
 - **Design Principle 3:** The quality of the street is measured by the quality of the pedestrian environment
 - **Design Principle 4:** Greater communication and co-operation between design professionals through the promotion of a plan-led, multidisciplinary approach to design
- 2.4.2 Compliance of the proposed development with the design principles of DMURS is described in the following chapter, with details of how these will be implemented through adherence to recommendations in relation to individual design elements.

2.5 BEST PRACTICE

- 2.5.1 The design approach adopted for the Lissywollen masterplan has sought to respect best practice examples presented in DMURS (pages 47 and 128) as exemplified by the Newcastle Local Area Plan (LAP) which in turn has influenced the design of the third party SHD scheme ABP-305343-19 as permitted by An Bord Pleanála (ABP). As per the Newcastle LAP example highlighted in **Figure 2.1** below the design of the masterplans

street network including the main east-west 'Avenue' LINK street has sought to ensure that there is choice of alternative movement corridors for local trips and dissipate vehicular traffic throughout the plan.

2.5.2 In addition to respecting the concerns of existing local residents (as expressed during local consultation exercises) the design has sought to prevent the overuse of some corridors in parallel with discouraging the potential for non-local rat-running traffic east-west through the site. Slower vehicle speeds are encouraged in the interest of pedestrian and cyclist safety. Movement through the masterplan lands is structured by connecting major focal points in a similar manner to DMURS Newcastle example with proposed focal points also used to slow / discourage through traffic, deliver a legible network to assist wayfinding and draw people towards key destinations and the masterplans focal points / open spaces and key public realm areas.

2.5.3 As detailed further in Chapter 3 the following DMURS initiatives have been adopted throughout the masterplan with the objective of delivering a legible network with street networks structured to draw people towards focal points, which are also used to achieve a low speed environment, discourage through traffic and offer self-regulating street environments that successfully balance the functional needs of different users, enhance the sense of place and manage speed in a manner that does not rely on extensive regulatory controls and physically intrusive measures for enforcement.

- The promotion of low-speed environments and avoidance of long continuous streets;
- The location of buildings close to street edges;
- Continuity of built frontages;
- Active ground floor uses;
- Encouragement and facilitation of high levels of pedestrian and cyclist activity;
- The provision of frequent pedestrian and cyclist crossing points;
- Horizontal and vertical deflections along carriageways to include raised traffic tables;
- Narrow carriageways;
- On-street parking of appropriate design / layout as per DMURS guidance;
- Tighter corner radii;

- Shared surfaces for vehicles, pedestrians and cyclists in appropriate lightly trafficked environments, and
- Frequent tree planting along streets to provide a sense of enclosure.

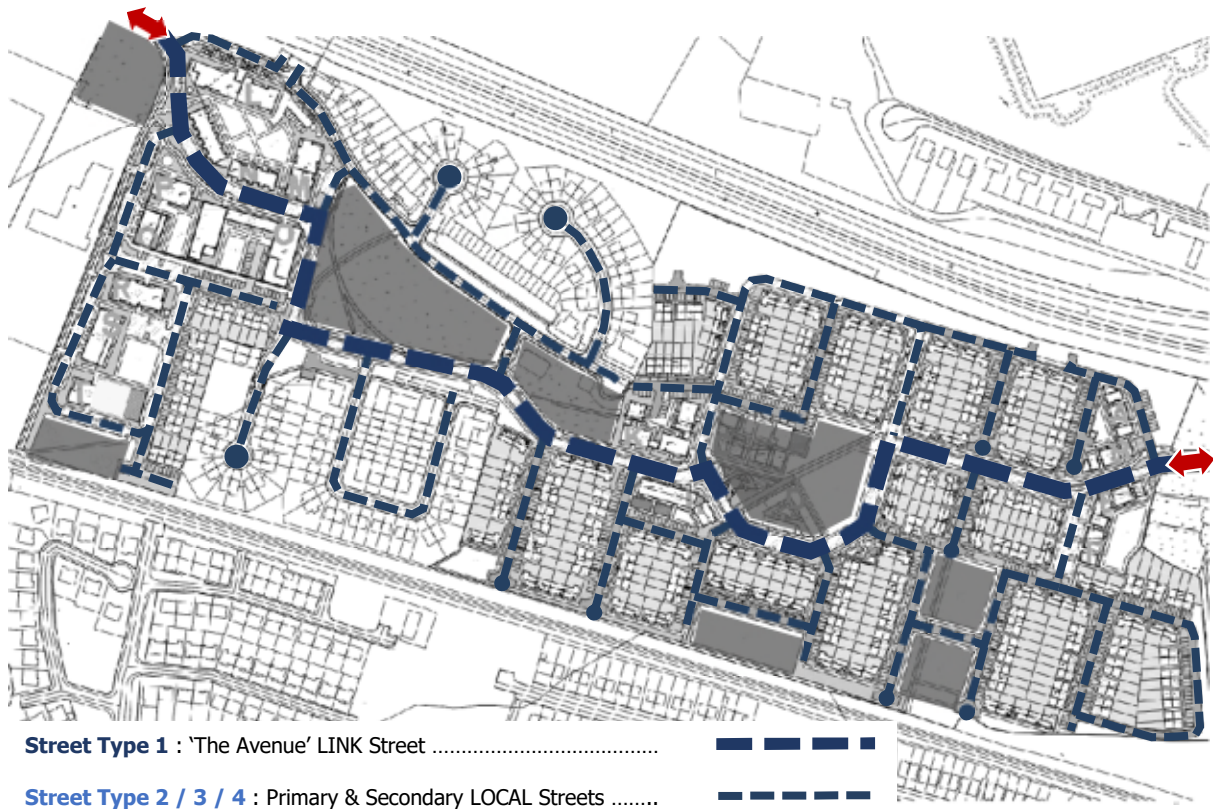


Figure 2.1: Comparison of Lissywollen (Top) and DMURS Newcastle LAP (Bottom) Masterplans Design approach to Connecting Focal Points and Spaces and how these same Focal Points can be structured to slow and discourage through traffic

3.0 DMURS DESIGN ATTRIBUTES

Design Element	DMURS Guidance	Proposed Development Adopted Design Approach
<p>Movement Function</p>	<p>DMURS encourages designers to consider the movement function of a street / street network and develop a street hierarchy reflective of the levels of connectivity required and volumes of traffic</p>	<p>The proposed development’s street hierarchy is illustrated in Appendix A. With the Brawny Road corridor exhibiting LINK street functions, the proposed internal network incorporates a structured hierarchy of integrated residential streets responding to their context and function attributes;</p> <ul style="list-style-type: none"> • Type 1 : The Avenue LINK Street – 30kph design speed • Type 2 : Primary LOCAL Street – 20kph design speed • Type 3 : Secondary LOCAL Street – 20kph design speed • Type 4 : Shared surface ‘Homezone’ – 20kph design speed • Type 5 : Private Parking Courtyard – 10-15kph design speed • Type 6 : Greenway (Segregated pedestrian / cycle facilities) • Type 7 : Greenway (Shared pedestrian / cycle facilities) • Type 8 : Pedestrian footpath (leisure route / connection) <p>Meandering east-west through the subject site, ‘The Avenue’ LINK Street (Brawny Rd extension) connects to the east with R916 (Wash House Road) and to the west with R915 Ballymahon Road. This 6m wide LINK street has been purposively designed (30kph design speed) through the masterplan development lands to actively manage vehicle speeds and discourage through traffic. Segregated cycle tracks and footways are proposed to the north and / or south of this LINK street.</p> <p>The narrower 5.5m wide Primary and Secondary LOCAL streets (20kph) branching off the aforementioned LINK street have been designed to have relatively short lengths of straight sections with tight corner and junction geometry further contributing to managing vehicle speeds. The main function of these LOCAL streets are to provide access within/across the immediate development quarter. The ‘Homezone’ (20kph) will be enclosed lightly trafficked squares with onwads permeability provided for only pedestrians and cyclists. Within the courtyards higher quality material specifications will be applied to influence its place function.</p>
<p>Place Function</p>	<p>The ‘Place Function’ essentially distinguishes a street from a road, achieved largely by creating a relationship between the street and the buildings and spaces that frame it, ultimately resulting in a richer and more fulfilling environment</p>	<p>The adopted design philosophy has sought to achieve a quality ‘sense of place’ by incorporating several green open space areas to encourage social activity. Furthermore, the type of surface materials, landscaping and street furniture have been chosen with consideration of both their aesthetic qualities and context of the existing surrounding environment. The design has also sought to minimise the impact of highway features by avoiding excessive signing, road markings and street furniture. Significant levels of enclosure along each street type as achieved by the building orientation and tree planting contribute to providing a more intimate and supervised street environment.</p>

Design Element	DMURS Guidance	Proposed Development Adopted Design Approach
Street Layout	DMURS looks to encourage street layouts where <i>“all streets lead to other streets, limiting the number of cul-de-sacs that provide no through access”</i> and maximise the number of walkable / cyclable routes between destinations	The street layout has been influenced by several factors including the Athlone Town Development Plan 2014-2020, boundary conditions, future and existing development, watercourses, hedgerows and consultations with local residents. The resulting street pattern is largely a grid pattern with some minor curvilinear sections, creating attractive legible streetscapes. The street layout was derived from several factors which include, the distinct shape of the site, boundary conditions and travel desire lines. This has led to the creation of a street network that comprises elements of an orthogonal and organic layout in specific areas but with through access maintained for walking and cycling throughout, thereby maximising connections within the site and complying with DMURS principles.
Block Sizes	DMURS states that block dimensions of 60-80m are optimal for pedestrian movement in Centres, whilst block dimensions of up to 100m enable reasonable levels of pedestrian permeability in Neighbourhoods / Suburbs. Block dimensions should not exceed 120m	The blocks sizes within the proposed development (varying from 65m up to 120m maximum) are optimised in line with density and comply with the requirements of DMURS
Wayfinding	DMURS states that in general <i>“the more the orthogonal street layout the more legible it will be (as well as being the most connected)”</i>	The grid and curvilinear street pattern adopted for the proposed development is recognised by DMURS as being generally legible in terms of wayfinding.
Permeability	Permeability can be categorised into four types: <ul style="list-style-type: none"> • Dendritic Networks • Open Networks • 3 Way Off-Set Networks • Filtered Permeability 	The development strategy adopts an open network model with elements of a filtered permeability network, maximising connectivity between key local destinations through the provision of a high degree of permeability and legibility for sustainable forms of travel.
Approach to Speed (Geometry)	DMURS states that designers should balance speed management, the values of place and reasonable expectations of appropriate speed according to Context and Function. Where vehicle movement priorities are low, such as on Local Streets, lower speeds limits should be applied.	The proposed development has adopted the following approach to vehicle speed, with streets designed to ensure they are self-regulating through a combination of ‘soft’ (landscaping and active edges) and ‘hard’ measures (street geometry, raised tables and build outs). <ul style="list-style-type: none"> • The Avenue – LINK Street (30kph) • Primary LOCAL Street – 20kph design speed • Secondary LOCAL Street – 20kph design speed • ‘Homezone’ – 20kph design speed • Private Parking Courtyard – 10-15 kph design speed

Design Element	DMURS Guidance	Proposed Development Adopted Design Approach
<p>Approach to Legibility and Self Regulating Streets</p>	<p>Legibility can be achieved with street networks that are structured to draw people towards focal points such as Landmarks, Gateways and other civic buildings and spaces.</p> <p>Self-regulating environments can successfully balance the functional needs of different users, enhance the sense of place and manage speed in a manner that does not rely on extensive regulatory controls and physically intrusive measures for enforcement.</p>	<p>The design approach has sought to respect best practice examples as exemplified by the Newcastle Local Area Plan (LAP) presented in pages 47 and 128 of DMURS. This same approach influenced the design of the third party SHD scheme ABP-305343-19 as previously permitted by An Bord Pleanála (ABP).</p> <p>As per the Newcastle LAP example the design of the Lissywollen street network has sought to ensure that there is choice of alternative movement corridors for local trips and dissipate vehicular traffic throughout the plan.</p> <p>In addition to addressing existing residents concerns (as expressed during local consultation exercises) the design has sought to prevent the overuse of some corridors in parallel with discouraging the potential for non-local rat-running traffic east-west through the site. Slower vehicle speeds are encouraged in the interest of pedestrian and cyclist safety.</p> <p>Movement through the masterplan lands is structured by connecting major focal points in a similar manner to DMURS Newcastle example with proposed focal points also used to slow / discourage through traffic, deliver a legible network to assist wayfinding and draw people towards key destinations and the masterplans focal points / open spaces and key public realm areas.</p>
<p>Street Trees, Planting & Street Furniture</p>	<p>DMURS primarily considers street trees in terms of enclosure and suggests that for ratios of building height and street width within this development that supplementary street trees are desirable</p>	<p>A comprehensive landscape masterplan for the proposed development has been prepared by Ronan MacDiarmada & Associates Landscape Architects. The masterplan reinforces a sense of street enclosure through the addition of street trees with appropriate canopy spreads best suited to Local Streets for optimal compliance with DMURS.</p>
<p>Active Street Edges</p>	<p>Designers should aim for active street edges which provide passive surveillance and promote pedestrian activity</p>	<p>On-street activity is promoted within the internal layout of all internal Local Streets and Pedestrian / Cycle Only Urban Streets through the adoption of 'own-door' dwellings and corner plots have been designed with dual aspect units.</p>
<p>Signage & Line Marking</p>	<p>DMURS notes that designers should use discretion with regard to the self-regulating characteristics of streets and the impact of signs / line marking on the value of place</p>	<p>In recognition of the low speed nature and higher place function of Local Streets, the proposed design has sought to specify minimal signage and line markings along the internal local streets with such treatments used sensitively throughout.</p>

Design Element	DMURS Guidance	Proposed Development Adopted Design Approach
Materials & Finishes	DMURS states that designers should use <i>'contrasting materials and textures to inform pedestrians of changes to the function of space (i.e. to demarcate verges, footway, strips, cycle paths and driveways) and in particular to guide the visually impaired'</i>	The range of proposed materials is in line with the requirements of DMURS with Local Streets (e.g. leading to/from the site access nodes with the Link Street) will be formed using standard macadam / asphalt finishes. At each of the at-grade flat top pedestrian crossing / traffic calming table treatments, different surface material treatments are proposed to alert and subsequently influence driver behaviour and vehicle speeds. Courtyard areas will be distinguished through the application of high-quality material specification in addition to different coloured surfacing materials.
Footways	DMURS notes that well designed footpaths are free of obstacles and wide enough to allow pedestrians to pass each other in comfort.	Clear, unobstructed footpaths of no less than 2.0m wide are provided throughout the scheme, with connections and tie-ins to existing external pedestrian networks thereby complying with DMURS requirements. Greenways (shared ped / cycle connections) have been designed to incorporate 3.0m wide facilities as per the guidance outlined in the National Cycle Manual which accompany DMURS
Pedestrian Crossings	DMURS considers crossings to be <i>"one of the most important aspects of street design as it is at this location that most interactions between pedestrians, cyclists and motor vehicles occur"</i> .	Well-designed pedestrian crossing facilities are provided at frequent intervals along key travel desire lines throughout the scheme in addition to those located at street nodes. All courtesy crossings are provided with either dropped kerbs or a raised flat top treatment thereby allowing pedestrians to informally assert a degree of priority. All informal pedestrian crossing facilities are at least 2.0m wide, whilst all controlled pedestrian crossings are at least 2.4m wide and all toucan crossings are 4.0m wide or more.
Corner Radii	Reducing corner radii improves pedestrian and cyclist safety at junctions by lowering vehicle speeds and increasing inter-visibility between users	With the objective of encouraging low vehicle speeds and maximising pedestrian safety and convenience, corner radii have been provided as per DMURS guidance, at: <ul style="list-style-type: none"> • Link / Local nodes has been specified as 5.0m - 6.0m where required as informed by swept path analysis, and • Local / Local nodes has been specified as 3.0m
Pedestrian & Shared Surfaces	In the context of the proposed development, DMURS recognises the use of shared surfaces as being highly desirable where <i>"movement priorities are low and there is a high place value in promoting more liveable streets (i.e. homezones) such as on local streets within neighbourhood"</i>	A small number of Courtyards are proposed within the development and have been designed to incorporate features that ensure drivers recognise that they must proceed with caution within a low speed environment and that they are likely to be sharing the space with non motorised users. This has been achieved by applying differing materials and finishes within the design philosophy of residential Homezones.

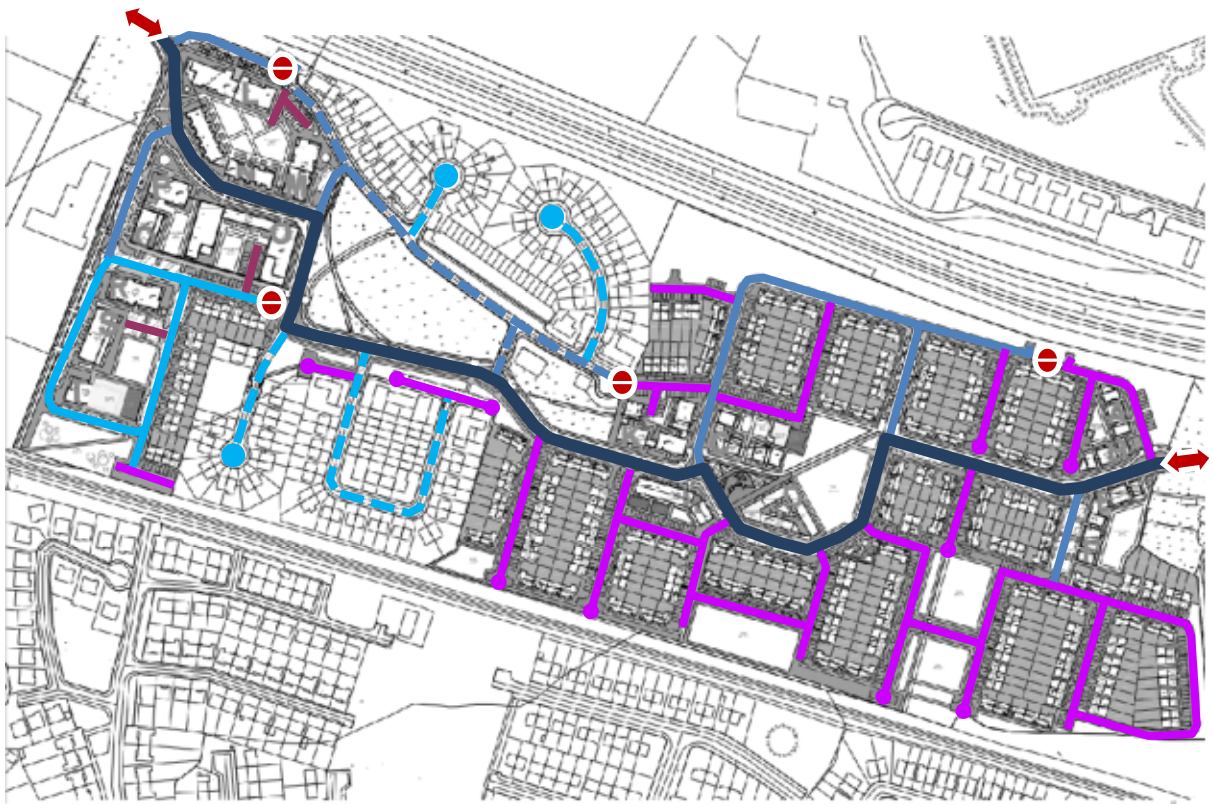
Design Element	DMURS Guidance	Proposed Development Adopted Design Approach
Cycling Facilities	DMURS references the National Cycle Manual (NCM) in terms of the provision of appropriate cycling facilities.	Segregated two-way cycle track facilities are provided along the entire length of the LINK Street (the proposed east-west avenue). The design of this high quality segregated bicycle track ensure that a 2.5m wide dedicated track is delivered in accordance with the guidance outlined within the NCM.
Carriageway Width	DMURS states that LINK Streets should lie in the range of 5.5m to 7m, while on Local Streets carriageway widths should be between 5.0m-5.5m and on local streets where a shared surface is provided should not exceed 4.8m	<p>The proposed residential developments internal street network are considered to be compliant with DMURS, incorporating the following carriageway width characteristics:</p> <ul style="list-style-type: none"> • Carriageway Type 1 : The Avenue LINK Street – A width of 6.0m has been provided which is noted as being slightly wider to the DMURS requirement of 5.5m. Segregated cycle tracks and footways are proposed to the north and/or south of this LINK street. • Carriageway Type 2 Primary LOCAL Street – Typically 5.5m wide carriageway with the exception of (i) the sections accommodating the local bus route, and (ii) the route to/from the existing school along which coach access is required; over which the road carriageway is 6.0m wide to accommodate sweet paths requirements for these larger • Carriageway Type 3 : Secondary LOCAL Street – Typically 5.5m wide carriageway • Carriageway Type 4 : Shared surface 'Homezone' – Typically 5.5m wide carriageway • Carriageway Type 5 : Private Parking Courtyard - Typically 5.5m wide carriageway
Carriageway Surfaces	Where low design speeds are desirable (i.e. 30km/h) DMURS states that changes in colour and/or texture of the carriageway should be used periodically such as at crossings or where shared carriageways are proposed (i.e. 10-20km/h) applied to the full length of the street	Raised traffic calming features (e.g. flat top junction treatments), pedestrian crossings and shared surfaces such as Homezone area will be differentiated through the application of differing coloured surfacing on the carriageways.
Junction Design	Junction design has traditionally being determined by traffic volumes however DMURS recommends that designers should now take a more balanced approach to junction design catering for all road users specific requirements	All junctions within the proposed development will be priority controlled which is consistent with the proposed traffic flows and complies with the requirement of DMURS for junctions between Local Streets and between Local / Link Streets.
Forward Visibility & Visibility Splays	DMURS provides SSD Standards in relation to forward visibility requirements at junctions to ensure drivers have sufficient reaction time	Appropriate clear unobstructed visibility splays on both the horizontal and vertical planes, as per DMURS requirements; are provided / safeguarded at all internal nodes and at the site access junctions to the external road network in response to the adopted design speeds.

Design Element	DMURS Guidance	Proposed Development Adopted Design Approach
Horizontal & Vertical Deflections	DMURS highlights that traffic calming features should be provided on longer straights where there is more than 70m between junctions	Vertical deflections in the form of raised tables have been strategically placed across the internal Local Street network to promote lower design speeds and enable pedestrians to cross the street at-grade. Raised tables / platforms have been located at Local / Link nodes, including raised zebra crossings on all arms of the proposed roundabout. The maximum height of these raised flat top treatments is designed to be 75mm with a minimum flat top width of 2.0m. Junction layout designs (e.g. change of priority), kerb buildouts and speed reduction bends have also been incorporated into the Local Streets as traffic calming features making the local streets self-regulating.
Kerbs	DMURS provides indicative kerbs heights of 125mm on Link Streets for clear segregation, while lower kerb heights of 60mm are appropriate pedestrian activity is higher & design speeds lower i.e. Local Streets and no kerb should be provided for shared surface	Internally within the development carriageway kerb heights will comply with DMURS requirements having been specified as follows: <ul style="list-style-type: none"> • Link Street: 125mm, • Primary / Secondary Local Streets: 60mm
On-Street Parking	Well designed on-street parking can help calm traffic, although a balance needs to be struck as an over provision will conflict with sustainability objectives and be visually dominant.	In accordance with DMURs, parking is to be provided through a mix of <ul style="list-style-type: none"> • On-street : in-curtilage and kerbside perpendicular spaces (5m x 2.5m), • On-street : kerbside parallel spaces (6m x 2.2m), and • Off-street : private car parking courtyards. The provision of on-street car parking includes both parallel and perpendicular parking bays along either one or both sides of the internal local streets. It is noted that in response to preplanning observations only parallel car parking bays are provided for along the main east-west 'Avenue' LINK street. The use of perpendicular parking bays is restricted to the lower category LOCAL streets and parking courtyards. The potential dominance of both on and off street car park areas are minimised through the provision of landscaped buffers and street trees. Furthermore the number of continuous on-street parking bays is restricted to 3 parallel bays and 6 perpendicular bays as per DMURS recommendations
Multi-disciplinary Design Team	DMURS advocates multi-disciplinary input into the development of a scheme to ensure a holistic design approach is implemented	In accordance with design philosophy of DMURS, the proposed development has been prepared by a multi-disciplinary design team including Delphi Design Architects & Planning Consultants (architects), DBFL Consulting Engineers (civil engineers & transport planning), Ronan MacDiarmada & Associates (landscape architects) and Redmond Analytical Management Services (Street Lighting).

Design Element	DMURS Guidance	Proposed Development Adopted Design Approach
Road Safety Audit (RSA)	RSAs are required to identify potential hazards and how they could affect road users. They should be undertaken in full cognisance of the principles, approaches and standards contained within DMURS	RSAs will be considered for all stages of the development to ensure adequate and appropriate measures are included guaranteeing satisfactory standards of personal and traffic safety

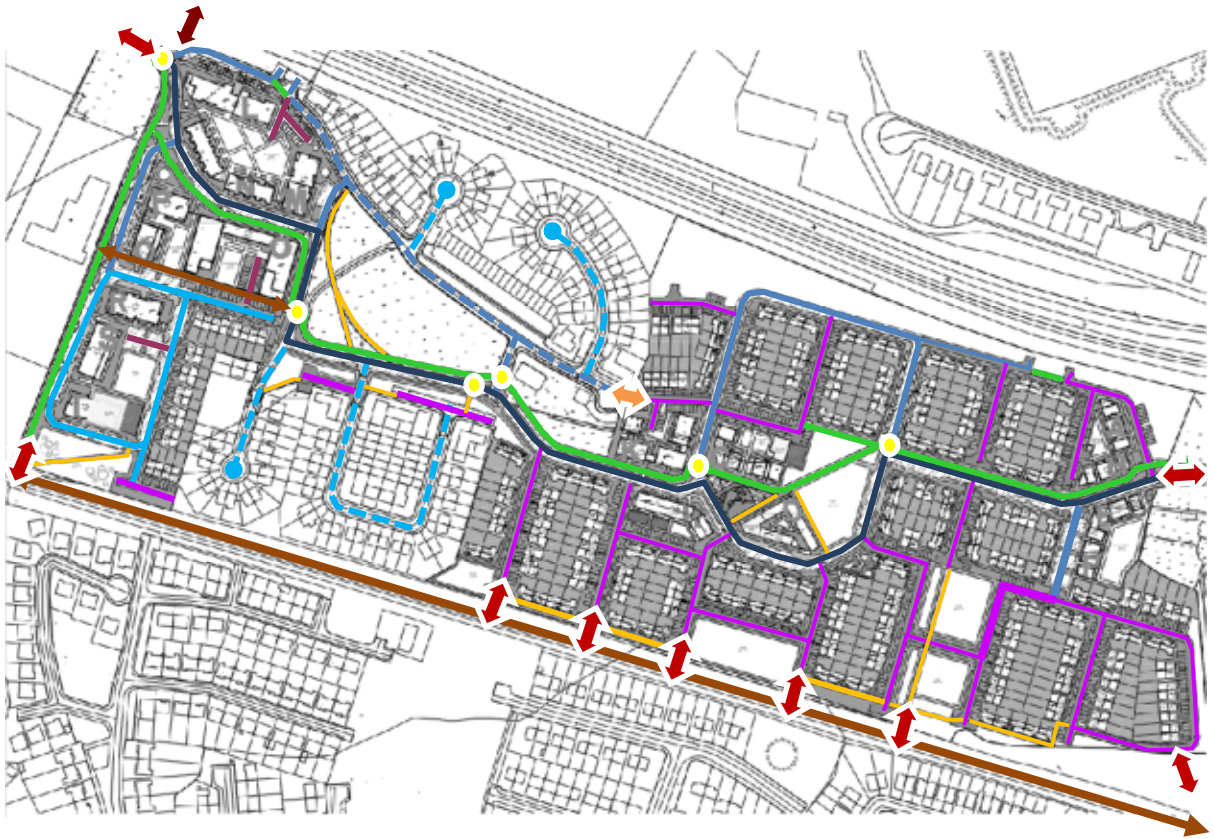
APPENDIX A

Proposed Street / Linkages Hierarchy



- Street Type 1** : 'The Avenue' (LINK Street) – 30kph Design Speed ...
- Street Type 2** : Primary LOCAL Street – 20kph Design Speed
- Street Type 3** : Secondary LOCAL Street – 20kph Design Speed
- Street Type 4** : Shared Surface 'Homezone' – 20 kph Design Speed
- Street Type 5** : Private Parking Courtyard – 10-15 kph Design Speed
- Existing Street within the area-wide street hierarchy
- Vehicle Access to Development Masterplan Lands

Figure A1 : Proposed Developments Street Hierarchy



- Linkage Type 1** : Brawny Road - Footpaths along both sides of the street
- Linkage Type 2** : Primary LOCAL Street – Footpaths on one or both sides of the street
- Linkage Type 3** : Secondary LOCAL Street – Footpaths on one or both sides of the street
- Linkage Type 4** : 'Homezone' – Pedestrians share the carriageway with other road users
- Linkage Type 5** : Courtyard - Pedestrians share the carriageway with other road users ...
- Linkage Type 6** : Greenway with segregated pedestrian and cycle facilities
- Linkage Type 7** : Greenway with shared pedestrian and cycle facilities
- Linkage Type 8** : Pedestrian Footpath through open space (Existing & Proposed)
- Controlled Pedestrian / Cycle Crossing Facility (Zebra Crossing)
- Pedestrian / Cycle Access to/from Development Masterplan Lands
- Future Pedestrian / Cycle N6 Overbridge (By Others) to / from Curragh-Lissywollen LAP Lands
- Pedestrian / Cycle Only Connection between neighbouring streets

Figure A2 : Pedestrian And Cyclists Linkages