

5 Infrastructure

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This Infrastructure Section of the Master Plan addresses the following matters:

- *Identification of local infrastructure required to service the Northern Environs;*
- *Identification of the necessary upgrades to existing infrastructure to allow development;*
- *Consideration of the wider area when recommending future infrastructure;*
- *Establishment of design standards for roads;*
- *Establishment of design standards for foul and surface water drainage;*
- *Establishment of design standards for watermains; and*
- *Promotion of sustainable development*

5.1.1 Philosophy

Infrastructure Objective: INF 1

The objective of Louth County Council is to obtain a high quality urban environment and infrastructure design for the three neighbourhoods and the Master Plan overall.

The natural development of the Port Access Northern Cross Route (PANCR) is from west to east while the Foul Sewerage System will need to develop in an east to west direction. Allied to this are the considerable constraints of Stormwater Management and Water Supply, the solution to which will require an innovative and holistic approach

Core objectives for the design and construction of the major infrastructure elements include:

- *Sustainability;*
- *Best Practice;*
- *Quality Construction*

5.1.2 Sustainability

All development should balance environmental, economic and social objectives and to this end it is imperative that all infrastructure is designed and constructed with regard to environmental and ecological issues. In particular, the potential ecological implications of interference with stream channels will require detailed assessment before engineering solutions are applied.

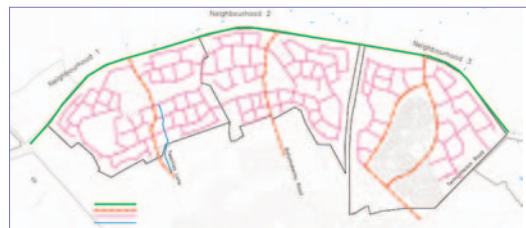
5.1.3 Best Practice

Employing best practice techniques from conception to handover will help to deliver the necessary infrastructure in a sustainable manner. Such techniques should address the design, construction, testing and commissioning and/or handover stages. The main relevant standards are to be found within the following documents

- Recommendations for Site Development Works for Housing Areas", DOELG
- Sustainable Urban Drainage Systems", CIRIA
- Drainage of Development Sites - A Guide", CIRIA & Wallingford
- Traffic Management Guidelines", NDP, DOELG, DTO & DOT
- NRA Series of Road Design and Construction Manuals

5.1.4 Quality Construction

In order to achieve a high quality of construction it will be necessary to use the highest quality of design and materials, and employ an experienced workforce.



▲ Refer to Appendices for Proposed Road Network

Infrastructure Objective: INF 2

One of the main urban design objectives for the Plan lands is to create a vibrant, integrated, safe and secure environment for the population. It is an objective, therefore, to facilitate and strongly prioritise safety and the ease of movement for pedestrians, cyclists and public transport. Movement by private car is accommodated, but does not receive a priority level above more sustainable transport modes. The Plan facilitates safe but not necessarily direct or fast movement by private car through the Plan lands.

Infrastructure Objective: INF 3

To seek to achieve a balance between the use of private transport with the need to promote alternative modes of transport such as public transport, cycling and walking.

GENERAL STANDARDS	
CLASSIFICATION	
<i>Cycle Path Width</i>	
<i>Absolute minimum</i>	1.50m
<i>Preferred minimum</i>	1.75m
<i>Foot Path Width</i>	
<i>Minimum</i>	1.80m
<i>Favourable maximum</i>	2.50m
<i>Super elevation</i>	
<i>Desirable maximum</i>	5.0 %
<i>Absolute maximum</i>	7.0 %

Roads and Transportation

It is the intention of Louth County Council to ensure that all roads are designed as "people friendly" with regard to pedestrian and cycling facilities. To this end, the Council will promote the use of innovative design; this may take the form of soft engineering such as horizontal alignment of roads and/or use of green verges to roadsides to segregate pedestrians and cyclists and to promote traffic calming. Hard engineering solutions such as speed ramps and speed tables will be discouraged. Road speeds will be discouraged through narrowing of the Ballymakenny Road and Twenties lane at appropriate locations to ensure a safe residential development.

Assessment of carriageway width is not based solely on peak hour travel demand but also considers the environmental impact on the area.

5.2.1 Traffic Generation

It is anticipated that a Population Equivalent of 20,000 within the North Drogheda Environs could generate approximately 12,000 trips (6,000 trips out and 6,000 trips in) per day. Design and construction of all roads shall consider best practice at all times and shall be in accordance with the National Roads Authority Publications, "Road Geometry Handbook", "Design Manual for Roads & Bridges" & "Manual of Contract Documents for Road Works" and the "Traffic Management Guidelines" published jointly by the Department of Environment and Local Government, the Department of Transport and the Dublin Transportation Office.

5.2.2 Existing Motorway Junction

It will be necessary to conduct a traffic impact study at an early stage of Plan implementation in order to assess the impact of the additional traffic generated by the development on the existing M1 Motorway Junction with the N51.

5.2.3 Proposed New Roads

Louth County Council has, in recent times, developed from concept stage and designed to near completion the preferred route, the horizontal and the vertical alignment for the Proposed Port Access Northern Cross Route (PANCR). Modification of this design will only be considered in the context of detailed design requirements and environmental considerations. The boundary of the Northern Environs, Plan lands, shall not otherwise be changed.

5.2.4 Primary Distributor Roads

The primary distributor road, the Proposed PANCR, is to provide for long distance travel. It will be a requirement that pedestrians and cyclists are segregated from traffic. A key consideration will be safe movement in a north-south direction to facilitate pedestrian and cycle traffic to the proposed regional sports centre and wider land area north of the Plan lands. To this end, a minimum of 3 crossover points will be required on the PANCR, which may take the form of under-passes or overhead crossings. These crossovers may be located at or provide access to the following, subject to detailed design considerations:

- The zoned area to the North of Neighbourhood 1
- The Sports Facility to the north of Neighbourhood 3
- At the railway crossing

The detailed design of the PANCR shall consider the potential future requirements for additional crossings, particularly to the North of Neighbourhood 2.

5.2.5 Local Collector Roads

Local Collector Roads are to provide for local journeys and provide links to major routes. Residential and commercial access and/or frontage will be permitted to these roads. These roads are to be designed to provide safe movement of pedestrians and cyclists. It is a requirement that a number of roads be upgraded to the standard of Local Collector Road.

The upgraded Ballymakenny Road and Twenties Lane shall provide segregated cycle paths. Both these roads are to be designed as UAP3 (Urban All Purpose) Classification under the Design Manual for Roads and Bridges and be a minimum 7.3m in width, subject to a detailed traffic study. This Road Classification allows for carrying mixed traffic with full frontage access, side roads, bus stops and at-grade pedestrian crossings.

The preferred route for the realignment of the Twenties Lane is as shown on the "Proposed Fixed Roads" map on page 98 of the Master Plan. Part of the preferred route is located on a proposed playing field attached to the Drogheda Institute of Further Education, which is in the ownership of County Louth VEC. The VEC has previously intimated that it would be prepared to facilitate the re-routing of the Twenties Lane on its property, provided that additional land in lieu is made available in order that the playing field can be retained. If this matter can not be resolved to the satisfaction of Louth County Council, a modification to the preferred route and limited alterations to the overall urban design framework may be permitted provided that the character of the existing Twenties Lane extending from the proposed linear park to the VEC site remains substantially intact. Any proposed changes to the route will be subject to full public consultation under part 8 planning procedures.

Parallel parking bays and bus lay-bys will be encouraged to assist with traffic flow through both these routes. Traffic lights will be appropriate at the civic / commercial centres to ensure safety, promote a more urban condition and identify the change in environment. Improvements are also required to the Termonfeckin Road, subject to assessment and availability of land e.g. roundabouts on the PANCR, lighting, carriageway definition, surfacing as well as accommodation of cyclists and pedestrians.

Geometric Design Characteristics for Roads Network*

5.2.6 Access Roads

The design speed for the access roads is to be a maximum of 30 kph. Vehicle access to properties and access for delivery of goods and services is to be provided. Segregated cycle tracks are not a requirement on access roads, however, pedestrians are to have freedom to cross the access roads.

5.2.7 Visibility Splays

Clear visibility splays shall be provided at all junctions within the development and at junctions with existing and proposed roads as per the Geometric Design Table or as otherwise agreed with the Council. All property boundaries and parking bays shall be clear of the visibility splays.

Infrastructure Objective: INF 4

While the Council recognises certain minimum roads engineering standards are necessary, all applications will be assessed against priority treatment for cyclists and pedestrians.

5.2.8 Traffic Calming

Traffic calming measures are to be introduced in accordance with the "Traffic Management Guidelines" and shall be designed as an integral part of any element of development to provide a sustainable development philosophy and a safer place for people to live. The horizontal alignment of roads will be the preferred method to limit the speed of vehicles, however, where this is not possible alternatives will be considered such as:

- Carriageway Narrowing & Chicanes
- Gateways & Entry Treatments
- Speed Control Islands
- Change of Priority at Junction

5.2.9 Parking

Car parking spaces shall be provided as per the Louth County Development Plan. Parking spaces must be considered in the geometric design of the roads. On-street parking can also contribute to traffic calming.

Infrastructure Objective: INF 5

Car parking shall be an integral part of the design elements for the urban frameworks. Large expanses of surface car parking will be discouraged, particularly in the civic/commercial centres. Where surface parking is acceptable at the civic/commercial centres it shall be located behind the building line. Alternatively, to avoid creation of large expanses of car parking, underground parking or multi-storey parking facilities should be used, depending on urban design impacts. In residential areas grouped parking will be encouraged, again behind building lines.

5.2.10 Public Transport

Louth County Council recognises the need for a modern integrated public transport system. To this end the Council require designated bus routes through the three neighbourhoods. Bus stop lay-bys are to be provided along the PANCR and encouraged along the Local Collector Roads, where this is not possible, kerbside bus stops will be permitted.

5.2.11 Rail Station

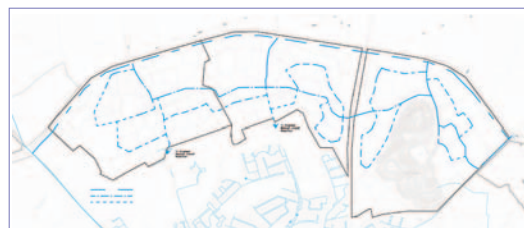
It is an objective of Louth County Council to seek permission for provision of a new railway station north of the River Boyne. A general location for this station has been identified towards the northern part of the Plan lands. The exact location is to be determined following detailed design and assessment and a mobility study. The area around the proposed location is designated as reserved land for high-density residential development. The relocating of the rail stop does not result in any other changes to land use designations.

At the same time it is recognised that delivery of the new rail stop can only be considered in the context of regional rail solutions on the Dublin - Belfast Rail, between, Drogheda / Dundalk and Dublin City Centre rail stations.

Louth County Council shall review potential location of Rail Station at the Local Area Plan review stage of 6 years. The location of the rail station and the phasing of development may allow an opportunity to incorporate additional higher density residential and civic and commercial development. In the interim the area around the public transport interchange may be used for park and ride facilities.

CHARACTERISTICS FOR ROADS NETWORK					
CLASSIFICATION	Port Access Northern Cross Route	New Twenties Lane	Ballymakenny Road	Local Collector Road	Minor Access Road
Design Speed (kph)	80	50	50	50	30
<i>Geometric Characteristics</i>					
Standard Carriageway Width (m)	7.3	7.3	7.3	6.1	5.0
<i>Standard Radius at Bends</i>					
Preferred (m)	255	180	180	40	20
Minimum (m)	127	90	90	--	--
<i>Min. Length of Curve per 1% Change in Gradient (m)</i>					
Sag	13	13	13	9	6.5
Crest	17	17	17	10	6.5
<i>Visibility Splays</i>					
X (m)	4.5	4.5	4.5	3.0	3.0
Y (m)	120	90	90	70	50

*information based on National Roads Authority Design Manuals



▲ Refer to Appendices for Watermain Layout

Infrastructure Objective: INF 6

To protect and develop existing groundwater sources and aquifers in the county and to restrict and control development in a manner consistent with the proper management of these resources

Water Supply

5.3.1 Existing Water Supply

The water supply for Drogheda is abstracted from the River Boyne and the River Mattock and distributed from two sources as follows:

- Staleen Water Treatment Works, currently supplying approximately 31,500m³ per day. At present a total of 15,200m³/d is supplied to Drogheda Town, with the remainder of 16,300m³/d supplied to Meath
- Rosehall Reservoir, potential to supply approximately 3,636m³/day. This source is currently unavailable during summer months or prolonged periods of dry weather.

The water supply meets the current water demand for Drogheda and Environs but the potential for expansion is limited and it is estimated that the spare capacity is in the region of less than 5%, which is reserved for emergency supply and infill development.

5.3.2 Existing Watermain Network and Water Conservation Issues

A substantial proportion of the existing watermain network in Drogheda is in excess of 50 years old. Over the years, this has been extended and augmented by the laying of new mains. There is significant leakage from the network and thus considerable Unaccounted For Water (UFW), estimated at approximately 48%. A substantial reduction in the volume of UFW would greatly help to reduce pressure on the water supply.

For this reason, Louth County Council are currently undertaking the "Louth Local Authorities Water Conservation and Network Management Project".

The project includes a number of elements that will benefit the North Drogheda area, including proposals to reduce UFW and hydraulic modeling, to indicate where reconfiguration can be undertaken to improve the operation of the network.

These measures may allow some new development to proceed in the North Drogheda area in advance of the proposed new mains.

Future developments must have regard to the need to conserve water and, as a means of addressing this issue, may include the following measures:

- Grey water recycling
- Pressure & flow regulators on fittings
- Prohibition on direct feeds to heating and appliances
- Low flush toilets
- Use of rainwater for toilet flushing
- Apartments to include end use recycling

5.3.3 Future Water Supply

The Preliminary Report on the East Meath, South Louth and Drogheda Water Supply Scheme includes proposals on the development of water sources to cater for the needs of the supply area to the year 2023. Currently, work is underway to determine the potential of the Regionally Important Aquifer located south of Drogheda to supply water to the area. The Report includes proposals to supply water to the North Drogheda and South Louth Area and the following proposals are of particular relevance:

- A new 600mm diameter trunk main is proposed from Staleen WTW to North Drogheda
- A new 7,100m³ service reservoir is proposed for North Drogheda, to be located at Killineer
- A 600mm diameter trunk main is proposed from Killineer Reservoir to Mell
- Two new 450mm diameter distribution mains are proposed from the roundabout at Mell.

- One main will serve areas east of Mell, while a second main will serve areas west of Mell, including much of north Drogheda. The second distribution main will run west from Mell, crossing the railway line and the Termonfeekin Road and will continue southwards across the River Boyne, linking in to the existing network close to Kiltrough

5.3.4 Temporary Watermain Supply

Provision of adequate water supply is a prerequisite for any development being permitted in the area.

The use of temporary wells for the provision of water will be accepted subject to demonstrating that an adequate, sustainable supply can be provided and the provision and implementation of a satisfactory Groundwater / Source Protection Plan. It is envisaged that such supplies may be required to be in place until 2012 and the level of development permitted will reflect the proven sustainable supplies available from these sources.

Temporary supply will be distributed via a suitable new watermain network, which should include a substantial element of the proposed long-term trunk, secondary and feeder network. The wells and interim distribution network shall be managed as an integrated system by a competent contractor appointed and paid for by the developers group and approved by Louth County Council. This is required in order to ensure the quality of water meets relevant standards and that failure of a well or wells will not lead to a specific development losing its water supply.

5.3.5 Future Watermain Network

Proposals for the watermain network will be required to demonstrate best practice with regard to design, construction, environmental, ecological, economical and technical areas. In particular, new watermains in the North Drogheda Area will be required to be:

Constructed to appropriate standards so as to minimise potential leakage from new mains.

Configured and metered such that District Meter Areas can be established.

It is envisaged that the watermain network will comprise of the following elements:

Trunk Main: A trunk main is to be constructed along the route of the proposed PANCR. This main is to be designed to cater for the entire catchment as well as providing a strategic circumferential main for the overall Drogheda Network. Direct connection from the trunk main will be kept to a maximum of 3 or 4 connections.

Secondary Main: It is proposed that a secondary main will be provided with connection off the Trunk Main at the Twenties Lane, Ballymakenny Road, the access road into Neighbourhood 1 and the Termonfeckin Road. This main will effectively provide loops within each neighbourhood. They may be used as the primary distribution mains for the temporary water supply arrangements until such time as the Trunk Main is delivered in conjunction with the Port Access Northern Cross Route. These mains are to be located within the footpath of the distributor roads and along the route of the linear park. These mains will also be required to provide interconnectivity with the existing Drogheda Borough Council network.

Feeder Lines: A number of feeder lines off the Secondary Main will provide access point for the proposed sub-catchments. These lines may also connect into adjacent developments within the Drogheda Borough Council area.

Individual Development Mains: Watermains to serve individual housing developments will be required to be designed as looped networks. The mains are to be located in open space or, where this is not possible, along the footpath.

Watermain Design Considerations: It will be necessary to demonstrate best practice with regard to all design. The following design guidelines shall set the minimum standards which will be required:

Watermain Pressure: Watermain pipes shall have a minimum nominal pressure classification of 9 bar and be Class C pipes.

Pipe Materials: Unplasticized polyvinylchloride (uPVC) pipes, ductile iron pipes & fittings to IS EN 545 and Polyethylene Pipes to IS EN 512 will be permitted.

Pipe Sizes: The Trunk Main has been designed to serve the entire catchment area, including lands outside the Environs Plan. The Secondary Mains shall be sized to adequately cater for all water requirements within the sub-catchments and to provide adequate linkage to the Drogheda Borough trunk mains network.

Watermain Layout: All pipelines are to be located primarily in open space or, where this is not possible, along public footways. The layout shall incorporate a series of integrated loop systems. Service pipelines shall not cross roads.

Anchorage & Thrust Blocks: Concrete anchor blocks are to be located at all tees, bends and curvatures greater than 220. Pipes shall be encased to a minimum of 150mm and shall be a minimum 750mm in length.

Flow Measurement: Flow measurement devices will be required at strategic points. This will include district metering at connections from the Trunk Main and bulk metering to all developments.

Cover to Pipelines: All watermain pipes shall have a minimum cover of 900mm. Service pipeline shall have a minimum cover of 600mm.

Accessibility: Pipelines shall be accessible for maintenance and repair purposes.

Hydrants: Hydrants shall be provided such that no house is more than 46m from a hydrant. The depth of the outlet below ground level shall not exceed 200mm.

Sluice Valves: Sluice valves shall be provided such that houses can be isolated in groups of maximum 40 units.

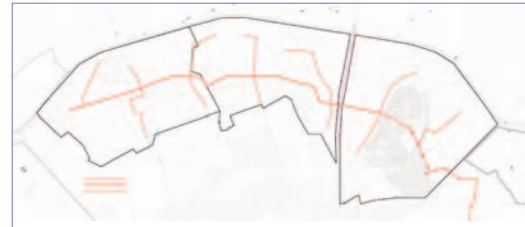
Air Valves: Air valves shall be provided and located at the summit of watermains.

Boundary Boxes: Approved Boundary Boxes shall be provided for each house, located in the footpath immediately outside the house. In the case of apartments or sub-divided premises, approved manifold systems may be used.

Testing of Pipelines: All watermains shall be hydraulically tested in accordance with the manufacturers instructions. Pipelines shall be tested to 1.5 times the working pressure. House connections will not be permitted to the watermain until the main has been successfully tested.

Sterilisation of Pipelines: On completion of the final test the system shall be sterilised in sections. The system is to be flushed out and water containing 10 parts per million residual chlorine shall be allowed to stand in the mains and service pipes for 2 hours. Following sterilisation, the system is to be flushed out again.

Takeover of Pipelines: The County Council will, at their sole discretion and subject to satisfactory construction and completion, take in charge watermains with the right to grant further connections to same.



▲ Refer to Appendices for Foul Drainage Layout

Infrastructure Objective: INF 7

The proposed extension to the trunk main shall be designed and constructed in accordance with best practice from a technical and environmental perspective. It shall incorporate flow measurement facilities and shall be constructed as a single entity in its entirety.

Infrastructure Objective: INF 8

The Local Authority will require compliance with IO 1 (Section 6) to the effect that 'non-providers' will be permitted to connect to infrastructure subject to reasonable apportionment of provision costs. The Council shall determine reasonable apportionment in the absence of agreement between parties.

Foul Water Drainage

5.4.1 Existing Foul Sewers

All foul sewage generated North of the River Boyne is collected via a network of gravity pipelines to a Siphon Chamber located on Doners Green where it crosses the River via a 500mm and 1200mm pipe. The sewage is delivered to a Pumping Station at Newtown, where it is pumped to the Waste Water Treatment Plant.

A 750 mm diameter pipeline with a minimum gradient of 1:330 has been constructed from the Siphon Chamber to the Eastern Boundary of Neighbourhood 3. The capacity of this pipeline is approximately 600 l/s.

5.4.2 Projected Effluent Generation

The target population for the North Drogheda Environs is 20,000. In addition to this, provision has to be made for associated commercial, institutional, industrial usage. Capacity has also to be provided for zoned lands to the west and north east of the study area and other zoned lands within the Borough Boundary, which drain naturally to the proposed trunk Sewer.

North Drogheda Environs:

Residential	Non-Residential
2.8 Persons/dwelling	205,200 l/day
200 l/hd/day	9.5 l/s at 4DWF
4 DWF	65,710 gm BOD/day
190.5 l/s at 4 DWF	
60Gms BOD/hd/day	

Total Flow: 200 l/s

Lands within Drogheda Borough Council

8500 PE
4 DWF
79 l/s at 4 DWF

Industrial Lands to West and North East of Environs

91 Hectares
56,000 l/Ha/day
5,096,000 l/day
59 l/s

It is not envisaged that major 'wet industries' would be located within the area.

5.4.3 Wastewater Treatment Plant

The existing Wastewater Treatment Plant, located on Marsh Road, has a treatment capacity of 67,600PE, which is currently being increased to 101,000PE. Further expansion of the wastewater treatment capacity will be addressed as the need arises.

5.4.4 Reduction in Loading

Louth County Council will look favourably on measures taken to reduce the Hydraulic and Pollution Load forwarded to Treatment. This may take the form of, but will not be confined to, the following mechanisms:

- Utilisation of fittings that promote conservation of water
- Management of water pressure to reduce wastage
- Grey water re-use
- Prohibition on use of sink macerators

5.4.5 Extension of Existing Trunk Sewer

It is envisaged that the foul drainage network will comprise of:

Trunk Sewer: To serve the entire catchment and additional aforementioned-zoned sub-catchments outside the Area Plan Boundary as per Section 5.4.2. The trunk sewer is to be routed through open spaces, where possible, with a minimum wayleave of 10m on completion of construction unless agreed otherwise at planning application stage. Where reduced width wayleaves are considered, specific construction measures may be required by the Council to ensure accessing the sewer at a future date will not prejudice the safety of adjacent structures. Design and construction will be carried out by developers to specifications and construction standards to be agreed in writing with the Council. In addition, an extension to the trunk sewer to allow for the connection of a rising main from the area west of the R132 shall be provided, which shall be constructed in conjunction with the trunk sewer.

Collector Sewer: To serve sub-catchments of the development area and lands within Drogheda Borough Council, which drain naturally towards the drainage network. The collector sewers are to be constructed in open spaces, where possible. Connections from the Collector Sewer to Trunk Sewer are to be kept to a minimum; therefore medium sized sub-catchments are to be catered for by collector sewers.

5.4.6 Individual Development Drainage:

Within individual developments, collector sewers will not be permitted in individual gardens or private areas. Each house will, insofar as possible, have an individual connection to a manhole or approved saddle connection to the collector sewer.

5.4.7 Guidance Documents

The Council consider the "Drainage of Development Sites - A Guide" published by CRIA & HR Wallingford, 2004 provides guidance in respect of a drainage philosophy and standards that would be acceptable.

5.4.8 Foul Drainage Design Considerations

An integrated design will be required with regard to the Trunk and Collector Sewers.

The following design guidelines, in conjunction with recommended guidance documents, set the minimum standards that will be required. The Local Authority may specify further requirements with regards to design and construction to cater for site-specific requirements.

Pipe Materials: uPVC pipes and fittings shall be permitted up to 300mm diameter, in accordance with IS 424. Pipelines in excess of this diameter shall be Concrete spigot and socket pipes in accordance with IS 6. Under certain circumstances, glass reinforced plastic (GRP) and Glass Composite Concrete (GCC) may be considered.

Pipe Sizes: Trunk pipelines shall be designed to cater for a 4 times Dry Weather Flow (4 DWF). Collector pipelines shall cater for 6DWF.

Gradients & Velocities: Pipelines shall be laid to a gradient that will produce velocities in the range 0.75m/sec to 3.0m/sec. Self-cleansing velocities shall be obtained and demonstrated in all pipelines and under all flow conditions.

Flow Measurement: Flow measurement devices will be required at strategic points in order to allow early detection of ingress of stormwater to the system. A minimum of two units will be required in the trunk sewer.

Manholes: All manholes will be required to be constructed in accordance with the "Recommendations for Site Development Works for Housing Areas published by the Department of the Environment". In particular, all manholes shall be resistant to water penetration, resistant to leakage, be durable and be designed and constructed so as to minimise the risk of blockage. In areas susceptible to flooding, manhole covers shall incorporate an impermeable seal.

Cover to Pipelines: Minimum cover to all pipelines shall be as follows

Roads & Driveways:	1.2m
Open Spaces:	0.9m
Gardens:	0.6m

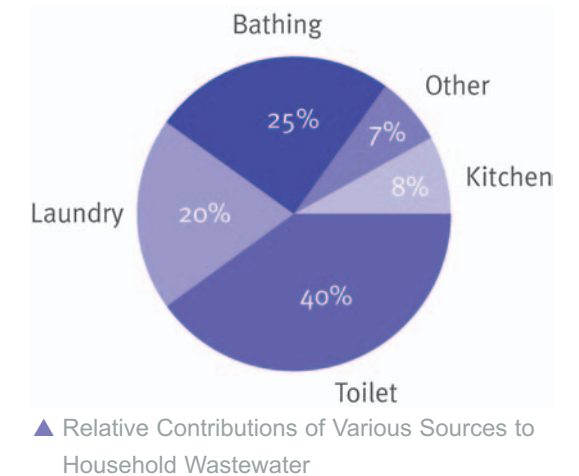
If it proves impossible to achieve the above minimum cover and subject to written agreement with the Council, additional measures may be taken to adequately protect the pipelines

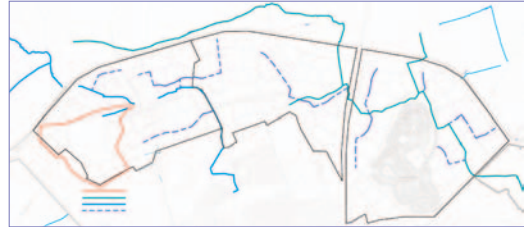
Accessibility: All sewers shall be accessible for maintenance and repair purposes. As such, all units shall be connected directly to the mains system. Access shall also be accommodated at maximum intervals of 90m, at all changes in direction & gradient, at all changes in pipe diameter & sewer junctions and at the head of all sewers.

Pumping Stations: The Council do not favour the use of pumping stations where a gravity option exists, however the Council will accept proposals in respect of the use of pump stations if a substantial catchment is to be served by the proposed pump station. In such circumstances a computed sum will be required from the developers in respect of the on-going operation and maintenance of the pump station based on a 20-year operation period. Louth County Council will determine acceptable design standards in respect of adoptable pump stations in consultation with its Operate & Maintenance Contractor.

Installation: Installation of all pipelines shall be strictly in accordance with the manufacturers instructions. On-line connections shall be via proprietary saddle pieces, connected as per manufacturers instructions.

Testing of Sewers: All sewers shall be subject to either an air test or a water test in accordance with "Recommendations for Site Development Works for Housing Areas published by the Department of the Environment", prior to coming into service. All manholes shall be subject to an approved infiltration test, following backfilling and when the groundwater adjacent to the manhole is at its highest level.





▲ Refer to Appendices for Stormwater Drainage

Infrastructure Objective: INF 9

Where it is necessary to re-profile, widen or deepen existing streams to facilitate drainage or for any other reason, the edge condition shall be re-instated under the supervision of a properly qualified ecologist. Streams shall not be culverted except in the three neighbourhood centres. All proposed works shall be subject to detailed environmental assessment which shall include appropriate mitigating measures to protect and re-instate habitat.

Surface Water Drainage

5.5.1 Existing Surface Water Regime

An overriding consideration in the preparation of the surface water regime for the plan lands is the protection of the ecological value of streams and wetlands. All proposals involving alterations to channels will be subject to detailed landscape and ecological assessment. Surface proposals for the Plan lands are therefore subject to this over-riding consideration.

There are two main streams draining the North Drogheda Environs, namely the Ushers Stream and the Beaulieu Stream, which predominately provide drainage for surface water run-off from green field lands, as detailed on the Surface Water Drawing.

The Ushers Stream drains through the urban area of North Drogheda in open and closed conduits and serves as an outfall for rainfall generated runoff from various developments in the urban area. The Ushers Stream Catchment contains a naturally low-lying area which functions as a flood attenuation area / flood plain to the west of Twenties Lane and is a key element in preventing flooding downstream in the urban area of North Drogheda.

The Beaulieu Stream flows through the grounds of Newtown House and the ponds at Beaulieu House. There are a number of weirs and a piped section on the stream in the Newtown House area, which limit the flow that can drain through this wooded area without causing a flooding problem. In addition, there is a history of flooding at Beaulieu Cross and Newtownstalaban arising from overland flow from the Beaulieu Stream to the adjacent Baltray Stream Catchment.

Previous studies indicate that the Ushers Stream and Beaulieu Stream do not have sufficient capacity to cater for substantial development and therefore channel improvements, flow diversion and stormwater attenuation are required. In the Ushers Stream flood risk occurs at the commencement of the urban piped section of the stream but is alleviated provided flood flows can drain effectively to the natural flood plain. In the Beaulieu Stream there is a risk of flooding from the Termonfeckin Road, through the grounds of Newtown House, to the sea outlet as well as in the Baltray Stream Catchment.

5.5.2 Upgrading of Existing Surface Water System

In summary, the recommendations of Studies on the streams in North Drogheda include the following:

Ushers Stream: The flood attenuation area / flood plain, as set out in TOBIN Consulting Engineers Reports on Drainage Infrastructure Proposals for North Drogheda - Assessment of Ushers and Beaulieu Streams and mapping deposited with the Council is to be preserved free of development.

The Council may consider a reduction in the extent of the flood attenuation area / flood plain basin at a future date, subject to a comprehensive hydrological study being undertaken based on catchment specific data collected over an appropriate time period indicating that such a reduction does not pose significant flood risk to either existing or proposed developments.

All new developments within the stream catchment are to provide attenuation to limit the outflow to that which naturally occurs prior to development.

Improvement works are to be carried out on the stream, including localised regrading of the streambed, improvement of cross-sections and replacement of culverts to provide capacity for at least a 50-year Return Period.

Impact assessment of 100-year flows will also be required. Improvement works shall be carried out in an environmentally sensitive manner taking cognisance of the recommendations in Section 3.7.2.

The Stream is to be properly 'Banked' where required and sides reinforced to prevent soil erosion. Initial clearance and on-going management of flood retention basin is to be carried out by developers.

Beaulieu Stream: It will be a requirement to construct a Diversion Pipeline from the Termonfeckin Road to the Boyne River when the section of the Port Road from Termonfeckin Road to the Port is being constructed.

Improvement works are to be carried out on the stream, including localised regrading of the streambed, improvement of cross-sections and replacement of culverts to provide capacity for at least a 50-year Return Period. Impact assessment of 100-year flows will also be required. Improvement works shall be carried out in an environmentally sensitive manner taking cognisance of the recommendations in Section 3.7.2.

The Stream is to be properly 'Banked' where required and sides reinforced to prevent soil erosion.

All new developments within the stream catchment are to provide attenuation to limit the outflow to that which naturally occurs prior to development.

Infrastructure Objective: INF 10

A stormwater management plan will be required for the entire area based on the CIRIA publication "Sustainable Urban Drainage Systems". Attenuation Tanks will not normally be permitted within each individual development but shall be provided on a regional basis. Control of stormwater at source will be encouraged.

5.5.3 Proposed Surface Water Management

A Surface Water Management Plan will be required in respect of the overall development area, which shall be based on the SUDS Design Philosophy. This will incorporate an integrated approach to the management of runoff from each individual unit, development, designated neighbourhood and the North Drogheda Environs as a whole, so that a universal and consistent approach to provision of an overall functional solution to surface water management is adopted. The plan shall be submitted to Louth County Council for approval and modified as required prior to commencement of development works. All developments shall be required to submit individual drainage proposals consistent with the overall plan.

Cognisance shall be taken of objectives and constraints as set out in Section 3 - Landscape and Open Space in the preparation of the plan and in particular the design options shall recognise the importance of minimising the impact of attenuation features on the utilisation of open space for recreational purposes. All proposals relating to the alterations of streams and flood plains shall be subject to detailed landscape and ecological assessment.

The following issues shall be specifically addressed in the plan:

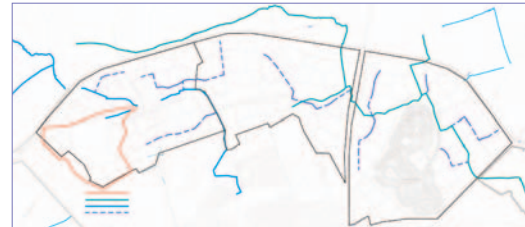
- Protection of water quality in receiving watercourses and groundwater
- Stream Regime Protection - minimisation of ecological and physical impacts on receiving streams
- Level of Service Protection - protection of site from flooding of drainage system
- Stream Flood Protection - minimisation of risk of downstream flooding
- Site Flood Protection - control of flooding of site during extreme events

Maximum acceptable surface water runoff levels and indicative storage requirements are provided in "Report on Drainage Infrastructure Proposals for North Drogheda - Assessment of Ushers Stream and Beaulieu Stream", prepared by TOBIN Consulting Engineers for Louth County Council.

Stormwater attenuation methods may include but will not be limited to the following:

1. Filter Strips & Swales
2. Filter Drains & Permeable Surfaces
3. Infiltration Trench
4. Flood Plains
5. Detention Basins
6. Retention Pond
7. Balancing Ponds
8. Flood Storage Ponds

Subject to detailed studies (including flow studies) of the existing flow regime, alternative arrangements may be considered. Developers will be required to submit a Management and Operation Plan for construction and post construction phases of all elements of the integrated surface water drainage system, which will adequately address the on-going operation and maintenance of all elements of the system including ongoing maintenance of the stream channel, attenuation facilities, pipelines and the flood plain.



▲ Refer to Page 61 or the Appendices for Stormwater Drainage

Infrastructure Objective: INF 11

Subject to detailed studies (including flow studies) of the existing flow regime, alternative arrangements may be considered. Developers will be required to submit a Management and Operation Plan for design, construction and post construction, which will incorporate proposals for the prevention of flooding and include detailed ecological assessments, and mitigating measures.

Surface Water Drainage

5.5.4 Guidance Documents

Guidance in respect of SUDS philosophy is provided in the following CIRIA Publications:

- Sustainable Urban Drainage Systems – Design Manual for Scotland and Northern Ireland
- Sustainable Urban Drainage Systems – Best Practice Manual
- Sustainable Urban Drainage Systems – Best Practice Manual and Drainage of Development Sites – A Guide, published by CIRIA / HR Wallingford

5.5.5 Design Considerations

It will be necessary to demonstrate the use of best practice with regard to all design works. The following design guidelines shall set the minimum standards that will be required. All designs submitted in respect of individual developments shall be consistent with the Surface Water Management Plan. The Local Authority may place further restrictions to the general design or to cater for localised considerations:

Pipe Materials: uPVC pipes and fitting shall be permitted up to 300mm diameter, in accordance with IS 424. Pipelines in excess of this diameter shall be concrete spigot and socket pipes in accordance with IS6 or rebated concrete pipes to BS 5911.

Pipe Sizes: Surface run-off shall be calculated using the Modified Rational Method.

Gradients & Velocities: Pipelines shall be laid to a gradient that will produce velocities in the range 0.80m/sec to 3.0m/sec when flowing half full.

Installation: Installation of all pipelines shall be strictly in accordance with the manufacturers instructions. On-line connections shall be via proprietary saddle pieces, connected as per manufacturers instructions.

Cover to Pipelines: Minimum cover to all pipelines shall be as follows:

Roads & Driveways:	1.2m
Open Spaces:	0.9m
Gardens:	0.6m

If it proves impossible to achieve the above minimum cover and subject to approval, additional measures may be taken to adequately protect the pipelines.

Manholes: All manholes will be required to be constructed in accordance with the "Recommendations for Site Development Works for Housing Areas published by the Department of the Environment". In particular, all manholes shall be resistant to water penetration, resistant to leakage, be durable and be designed and constructed so as to minimise the risk of blockage.

Accessibility: All pipelines, manholes, attenuation structures and ancillary elements shall be accessible for maintenance and repair purposes. Access shall also be accommodated at maximum intervals of 75m, at all changes in direction & gradient, at all changes in pipe diameter & sewer junctions and at the head of all sewers.

Testing of Sewers: All sewers shall be subject to either an air test or a water test in accordance with "Recommendations for Site Development Works for Housing Areas published by the Department of the Environment", prior to coming into service.

All manholes shall be subject to an approved infiltration test, following backfilling and when the groundwater adjacent to the manhole is at its highest level.

5.5.6 Upgrading of Streams

The design capacity for the upgraded streams shall be for a 50-year flood. Due cognisance shall be taken of more severe storms in design of open spaces and developments with flood risk analysis for 100-year storm to be undertaken to identify areas that may be inundated should the stream overtop its banks.

The design capacity should also make allowances for projected impacts of Global Warming and resultant increased rainfalls.

The number of outfalls shall be kept to a minimum and shall be designed such that scouring and bank damage is prevented through means of effective energy dissipation and environmentally sensitive bank and bed reinforcement.

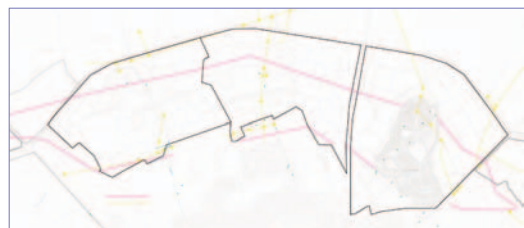
Works on streams, culverts and bridges shall incorporate recommendations from both Eastern Fisheries Board and the Office of Public Works who shall be consulted at an early stage in the design process.

Attenuation Storage Facilities: The use of underground tank storage systems with flow control devices at individual small scale developments will, in general, not be permitted due to limited effectiveness of flow control devices at low flows.

Existing and Proposed Stormwater Drainage Layout



▲ Existing and Proposed Stormwater Drainage Layout



▲ Refer to Appendices for ESB Network

Infrastructure Objective: INF 12

While recognising that certain utilities have a monopoly position in respect of the supply of ducted services, the County Council will encourage an open access protocol in respect of the provision of ducting for utilities.

Infrastructure Objective: INF 13

It is an objective that existing overhead lines and all new lines be placed underground throughout the Plan lands. In particular overhead cables will not be permitted within the linear park or pocket parks. Sub-stations and other facilities including gas and telcom facilities shall be placed at the least obtrusive locations.

Waste Disposal & Recycling Objective: INF 14

The Council will require recycling 'bring' facilities to be located strategically around the Plan lands so that every household has convenient access to them. Facilities for the recycling of glass, paper, clothes and beverage cans must be provided within the Plan lands. Additional facilities may also be required. They should be located so as to minimise negative impacts on residential amenity and be easily accessible to collection vehicles.

Utilities

Adequate ducting is to be provided to cater for the current and anticipated future utility provision. A written agreement will be required with the duct providers and the Council to ensure that service providers will be leased ducting, subject to maintaining the ducting in good condition and agreeing to share duct space with competitors where this is technically feasible.

5.6.1 Existing Electricity Supply

2 No. existing overhead 38kV lines cross the North Drogheda Environs. The southern line has been placed underground in a number of locations and one part of the northern line has been undergrounded.

The area has a restricted distribution network of 10kV lines. These are a mixture of overhead and underground cables, with sub-stations located at various points on the network as shown on the drawing, refer to the Infrastructure Drawings under the Appendices.

5.6.2 Future Electricity Network

The overhead 38kV lines will be required to be routed underground where the route crosses the North Drogheda Environs. The new route should be located along an accessible route. The northern line is to be rerouted along the linear park while the southern line will be rerouted locally along access routes to avoid development areas. Way-leave access over the cables will be required by the ESB. There will also be restrictions on the proximity of development to the underground cables.

The development area will have a primary feed from the ESB network with 2No. 38kV/10kV sub-stations being placed in suitable locations. These will each require a space of 2000m² (50m x 40m approx) with vehicular access thereto.

Secondary distribution at 10kV will be by means of cables installed along public routes to localised 10kV/400V sub-stations. These sub-stations shall provide power to all low voltage customers and larger single users (at 10kV).

Residential and commercial schemes are to have sub-stations provided. Public and amenity lighting schemes are to have mini-pillars/distribution pillars/sectional pillars provided.

All sub-stations are to be located as determined by the developers and local authority in conjunction with ESB Networks.

Sub-station buildings and/or compounds are to be constructed in accordance with ESB Networks specifications. Connection from the network to the premises/development will comply with the National Code of Practice for Customer Interface as issued by ESB Networks.

All sub-station locations and cable routes are to be agreed with ESB Networks. Cables shall be installed in pipe ducts underground. Arrangement of pipe ducts, specification of pipe duct material and segregation from other services shall be as directed by ESB Networks. Generally pipe ducts shall be installed 900mm (min) below finished ground level and 500mm radially away from other services.

Compliance with standards, specifications and codes of practices shall be the edition current at time of construction.

5.6.3 Energy Efficiency and Renewable Energy

The Planning Authority will

- Promote and encourage the development of sustainable energy resources within the plan area;
- Encourage the design of buildings that promote energy conservation;
- Co-operate with Sustainable Energy Ireland in promoting greater energy efficiency and conservation; and
- Ensure applications for energy generating structures or other alternative energy facilities are assessed on their merits, having regard to considerations of visual and residential amenity.

Energy Objective: INF 15

For all developments, including residential developments comprising 10 or more units, and non-residential development exceeding 1000m² gross floorspace, the Council will require at least 10% of predicted energy requirements to be provided, on site, from renewable energy sources.

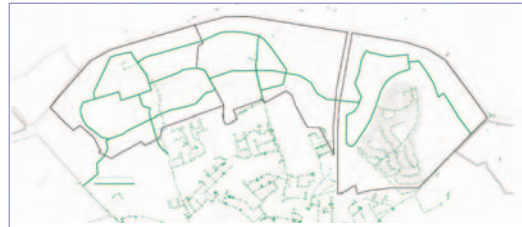
The heating energy performance of new buildings shall not exceed 50kwh/m² of useful floor area.

5.6.4 Gas Supply

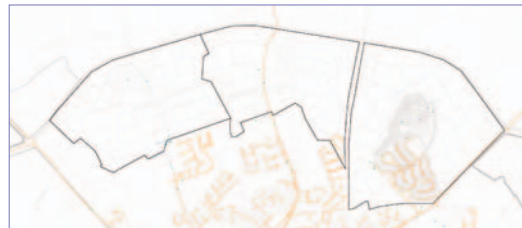
All residential and commercial development in the North Drogheda Environs will be connected to the national gas network.

5.6.5 Existing Gas Supply

The existing gas supply network in the area is illustrated on the accompanying drawing. This includes a 180mm PE 4 Bar line on the Termonfeckin Road, a 125mm PE 4 Bar line on the Ballymakenny Road, a 90mm PE 4 Bar line on Twenties Lane and a 125mm PE 4 Bar line on R132.



▲ Refer to Appendices for Gas Network



▲ Refer to Appendices for Telecom Networks

5.6.6 Proposed Gas Network

It will be a requirement to upgrade and enhance the network as necessary in consultation with Bord Gais, including the installation of necessary above ground installations (AGI's). Bord Gais will require way-leave access over the pipework. There will also be restrictions on the proximity of development to the underground pipes. Connections to the existing network shall be provided where appropriate by Bord Gais or a Bord Gais appointed contractor. All gas mains pipework and gas services shall also be provided by Bord Gais or a Bord Gais appointed contractor. All trenches constructed for accommodating gas mains shall be provided by the appropriate developer and are to be constructed in accordance with the requirements as set out in the Bord Gais Guidelines and Irish Standards Publications.

General details of developers, total numbers of business and residential units requiring meters shall be required for Bord Gais Network design. Detailed Site layout drawings with proposed meter positions, a project programme as well as a site location map shall also be required by Bord Gais. All information required is obtainable from Bord Gais at plans@bge.ie.

All Gas trenches are to be placed in accordance with the requirements as set out in the Bord Gais Guideline Publications.

5.6.7 Telecom Supply

Louth County Council support the development of an open access ducting network to support telecommunications. This shall consist of a pair of 100mm ducts with 25mm branch connections from access chambers or swept tees to each house/unit. Such a network shall remain in the ownership of the developer until taken in charge by the Council and shall be made available to all service providers on a non-exclusive lease basis at minimal cost. The network shall support the provision of universal access to competitive telecommunications services, broadband and digital television to further enhance the attractiveness of Drogheda for inward investment and as a place to live.

5.6.8 Existing Telecommunication Infrastructure

The existing Eircom Networks are detailed on the Infrastructure Drawings under the Appendices. Eircom have, at present, no plans to supplement the existing infrastructure in the region. However, this will be reviewed on an on-going basis, possibly subject to granting of substantial planning. Eircom have indicated that additional exchanges are likely to be required in order to adequately service the area.

Ducting and site infrastructure will be placed in accordance with the requirements of the service provider. Arrangement of exchange buildings, comms towers containing antenna, microwave dishes etc. shall be agreed in advance such that their location, design and access thereto are compatible with the design strategy for the area including the Urban Design Framework of this document. Ducting shall be installed underground to provide a comprehensive network which minimises overhead cables. Final connections to premises shall be via underground ducts.

Successful delivery of services will depend on early consultation between developers, Louth County Council and the Telecoms Service Providers. The consultation process shall include input from Telecoms Service Providers currently active in the region. An opportunity should also be offered to other Service Providers, registered with the Department of Communications, Marine and Natural Resources, who may wish to become active/operational in the region. Requirements of the Service Providers shall be considered and networks developed to provided a coordinated infrastructure which facilitates delivery of service to consumers without the need for excessive underground ducting, manholes, exchanges, antenna etc

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