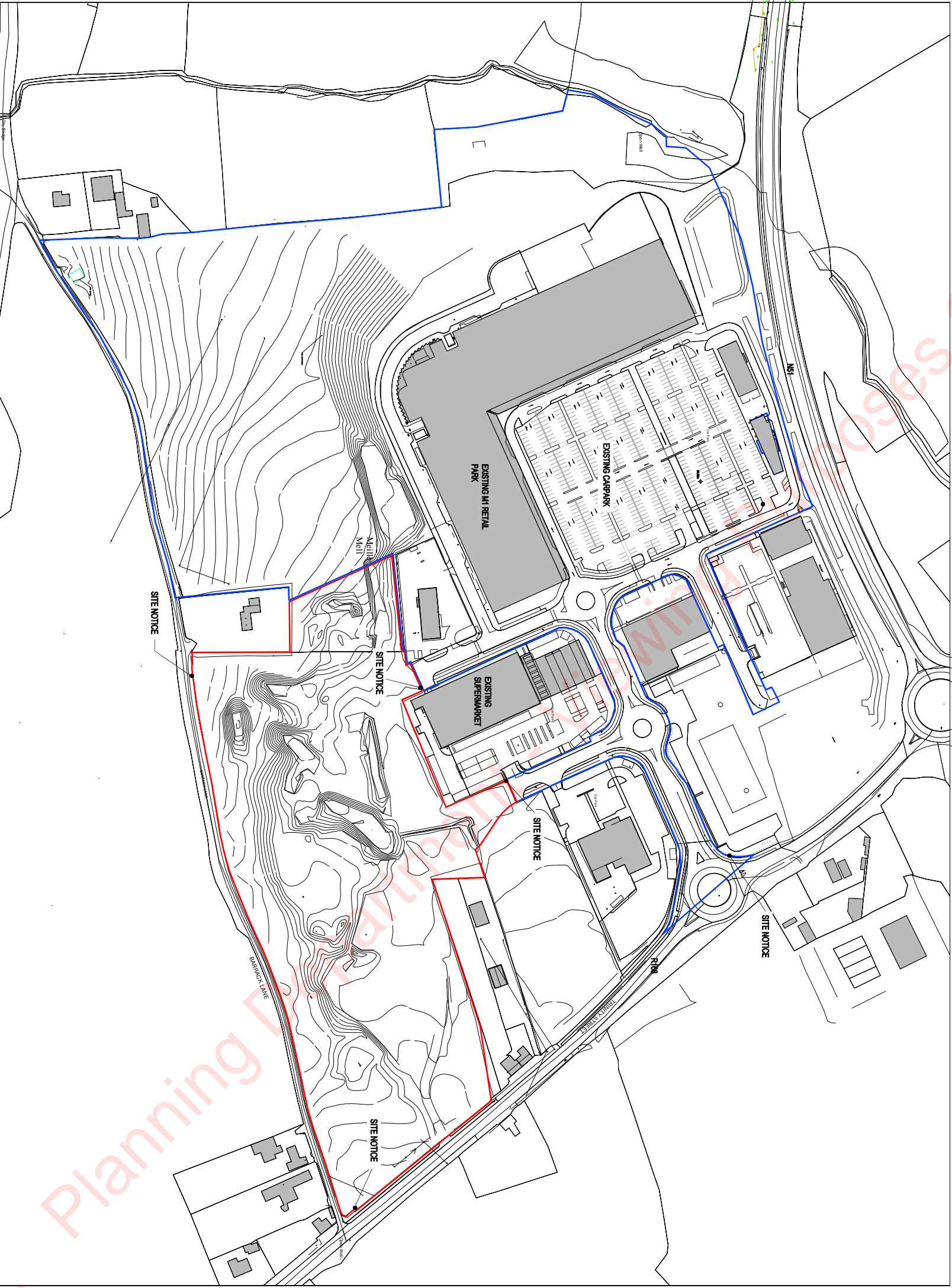


Appendix A

Louth CC, Planning Department - Viewing Purposes Only!



SITE LOCATION MAP

SITE AREA 4.82HA

Description:

Digital Orthographic Model (DOM)

Publisher / Source:

Ordnance Survey Ireland (OS)

Date Source / Reference:

PRIIME2

File Format:

Autodesk AutoCAD (DWG - R2013)

File Name:

v_5023911_1.dwg

Clip Extant / Area of Interest (AOI):

U LX LV = 709880.894, 776967.708

LRX LRV = 708619.894, 776967.708

ULX ULV = 709880.894, 776982.708

URL LRV = 708193.894, 776982.708

Projection / Spatial Reference:

Projection: RECHERTS_Irish_Transverse_Mercator

Centre Point Coordinates:

X/Y = 709404.894, 776375.208

Reference Index:

Map Series / Map Sheet:

12.200 | 23168

Date Extension Date:

Date: 26-Nov-2021

Source Data Release:

DOJMS Release V1, 146, 112

Product Version:

Version: 1.3

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Ireland, Phoenix Park, Dublin 8, Ireland.



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OS MAP
SCALE 1:1000 @ A1

SITE BOUNDARY OUTLINES IN RED

OVERLAPPING OUTLINES IN BLUE

WATERWAYS HIGH LIGHTED IN YELLOW

Date	Description	Drawn	Checked	By	Date	Version
	Planning	1	1	01/12/21		

Project:	IP14 (09) LIMITED	Scale:	1:1000 @ A1
Client:	Proposed Retail Development at Dublin 8, Phoenix Park, Dublin 8	Sheet:	201_49
Author:	PLANNING	Date:	11/2021
Checked:	FOR SUBMISSION	Scale:	1:1000
Project:	IP14 (09) LIMITED	Sheet:	201_49
Client:	Proposed Retail Development at Dublin 8, Phoenix Park, Dublin 8	Date:	11/2021
Author:	PLANNING	Scale:	1:1000
Checked:	FOR SUBMISSION	Date:	11/2021

Project:	IP14 (09) LIMITED	Scale:	1:1000 @ A1
Client:	Proposed Retail Development at Dublin 8, Phoenix Park, Dublin 8	Sheet:	201_49
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Project:	IP14 (09) LIMITED	Sheet:	201_49
Client:	Proposed Retail Development at Dublin 8, Phoenix Park, Dublin 8	Date:	11/2021
Author:	PLANNING	Scale:	1:1000
Checked:	FOR SUBMISSION	Date:	11/2021

Project:	IP14 (09) LIMITED	Scale:	1:1000 @ A1
Client:	Proposed Retail Development at Dublin 8, Phoenix Park, Dublin 8	Sheet:	201_49
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Project:	IP14 (09) LIMITED	Sheet:	201_49
Client:	Proposed Retail Development at Dublin 8, Phoenix Park, Dublin 8	Date:	11/2021
Author:	PLANNING	Scale:	1:1000
Checked:	FOR SUBMISSION	Date:	11/2021



SITE AREA 4.82Ha

Check all dimensions on site. Do not rely on scaled drawings. All dimensions must be read in conjunction with all relevant contract documents. This drawing is the property of MCA Architects. It is to be used only for the project and site shown. No other use or reproduction is permitted without the written consent of MCA Architects.

Rev	Date	Description	Drawn	Chkd	Rev	Date	Description
1	09.12.22	Planning Application	SF	PP			

MCA ARCHITECTS

Architecture • Interior Design • Landscape Architecture • Project Management

4th Floor, 100, Market Street, Dublin 2, Ireland. Tel: +353 1 6092918. www.mca.ie

Client: **BMA GPJ Limited**

Project: **Proposed Retail Development at lands south of existing Mt Retail Park, Mal, Drogheda, Co. Louth.**

Drawing: **SITE PLAN - (BLOCK PLAN)**

Stage: **PLANNING FOR SUBMISSION**

Sheet: **AT**

Scale: **1:500**

Sheet Code: **55**

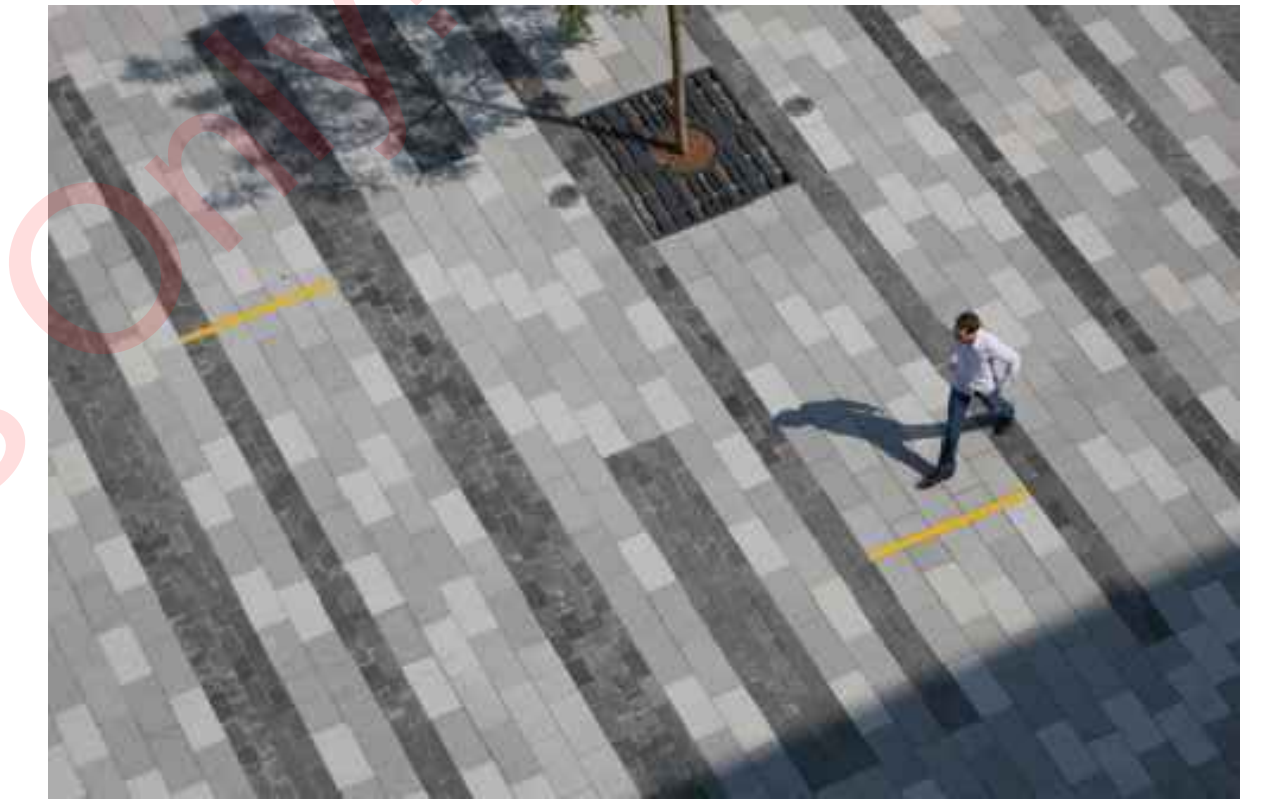
Job No.: **2021.49**

MM1 - MCA - 00 - 00 - DR - A - 2000

PRECEDENT IMAGES



Native Wildflower Meadow (4)



Modular Paving Light and Dark (6)



SOFT LANDSCAPE WORKS MAINTENANCE PROGRAMME

- Base root transplant, hedging and re-balled trees
- Containerised shrubs, perennials
- 12 months maintenance & defects liability period, to commence on practical completion of soft landscape works. Planted beds, trees, hedges and transplant planting 16 no. maintenance visits required per annum (April, October) started out on a fortnightly basis and 2 additional visits over winter period. 16 no. maintenance visits required per annum.
- 12 months maintenance & defects liability period to planted beds, trees, hedges and transplant planting to be carried out at the same time as grass cutting. 16 no. maintenance visits required.

Species	Height (cm)	Pot Size	Density	Container-grown (cg) / Bare Root (br)	Quality	Specification
Trees						
All trees to be provided with 1.5m ³ multi-purpose grade topsoil to BS3882 and planted as per planting details drawings, with root re-sterilisation membrane where appropriate to ensure adequate permeability and are not disturbed by root growth, and provided with irrigation where appropriate.						
<i>Pinus sylvestris</i> (Scots Pine)	20-35 cm clear stemmed to 2m height	planted to Planting Detail A				
<i>Quercus petraea</i> (Oak)	18-18 cm clear stemmed to 2m height	planted to Planting Detail A				
<i>Betula pubescens</i> (Downy Birch)	18-20 cm clear stemmed to 2m height	planted to Planting Detail A				
<i>Betula pubescens</i> (Downy Birch)	18-20 cm clear stemmed to 2m height	planted to Planting Detail A				
<i>Quercus robur</i> (Common Oak)	18-20 cm clear stemmed to 2m height	planted to Planting Detail A				
<i>Quercus robur</i> (Common Oak)	18-20 cm clear stemmed to 2m height	planted to Planting Detail A				
<i>Crataegus monogyna</i> (Common Hawthorn)	2.5 m high multi-stemmed min. no. 3 stems, form base 14-16cm	planted to Planting Detail A				
<i>Corylus avellana</i> (Hazel)	18-20 cm clear stemmed to 2m height	planted to Planting Detail A				
<i>Prunus padus</i> (Bird Cherry)	18-20 cm clear stemmed to 2m height	planted to Planting Detail A				
Shrubs & Perennials						
Excavate to 200mm depth and back fill with 300mm multi-purpose grade topsoil to BS3882, and top with non-woven 90gsm black geotextile landscape weed-guard type fabric and 75mm depth medium grade bark.						
Excavate to 200mm depth and back fill with 300mm multi-purpose grade topsoil to BS3882, and top with non-woven 90gsm black geotextile landscape weed-guard type fabric and 75mm depth medium grade bark.						
Species	Height (cm)	Pot Size	Density	Container-grown (cg) / Bare Root (br)	Quality	Specification
Flowering Bioretens Perennial Mix						
2 plants per m ²						
<i>Digitalis purpurea</i>	40-50cm	2l	cg			
<i>Digitalis grandiflora</i>	40-50cm	2l	cg			
Single Species						
Excavate to 200mm depth and back fill with 300mm multi-purpose grade topsoil to BS3882, and top with non-woven 90gsm black geotextile landscape weed-guard type fabric and 75mm depth medium grade bark.						
Excavate to 200mm depth and back fill with 300mm multi-purpose grade topsoil to BS3882, and top with non-woven 90gsm black geotextile landscape weed-guard type fabric and 75mm depth medium grade bark.						
Species	Height (cm)	Pot Size	Density	Container-grown (cg) / Bare Root (br)	Quality	Specification
Shrubs						
4 per m ²						
<i>Ilex Aquifolium</i> (Holly)	40-50cm	2l	cg			
<i>Cornus alba</i> (Dog Rose)	40-50cm	2l	cg			
<i>Sarcococca hookeriana</i> var. <i>digyna</i>	40-50cm	2l	cg			
<i>Equisetum arvense</i> (Horsetail)	40-50cm	2l	cg			
T1 Native woodland transplant mix in double staggered row						
2 plants per m ²						
<i>Pinus sylvestris</i> (Scots Pine)	40-50cm	Transplant 1+1	br			
<i>Quercus petraea</i> (Oak)	40-50cm	Transplant 1+1	br			
<i>Betula pubescens</i> (Downy Birch)	40-50cm	Transplant 1+1	br			
<i>Sorbus aucuparia</i> (Rowan)	40-50cm	Transplant 1+1	br			
<i>Ilex Aquifolium</i> (Holly)	40-50cm	Transplant 1+1	br			
<i>Corylus avellana</i> (Hazel)	40-50cm	Transplant 1+1	br			
<i>Crataegus monogyna</i> (Common Hawthorn)	40-50cm	Transplant 1+1	br			
<i>Prunus padus</i> (Bird Cherry)	40-50cm	Transplant 1+1	br			
T2 Native woodland transplant mix in double staggered row						
2 plants per m ²						
<i>Ilex Aquifolium</i> (Holly)	40-50cm	2l	cg			Bushy 5 trunks in Lower 1/3
<i>Cornus alba</i> (Dog Rose)	40-50cm	Transplant 1+1	br			
<i>Crataegus monogyna</i> (Common Hawthorn)	40-50cm	Transplant 1+1	br			
<i>Prunus spinosa</i> (Blackthorn)	40-50cm	Transplant 1+1	br			
<i>Viburnum tinus</i> (Laurustinus)	40-50cm	Transplant 1+1	br			
<i>Ligustrum vulgare</i> (Privet)	40-50cm	Transplant 1+1	br			

SPECIFICATION KEY

	BRUSHED CONCRETE TO FOOTPATH
	PERMEABLE MODULAR PAVING TO PEDESTRIAN AREAS
	RIGID BOUND IMPERMEABLE MODULAR PAVING TO SHARED SURFACE FOR TRAFFIC LOADINGS
	SEATING: • 550 2ms by OMOS • 4 leg seat for ground fixing or free standing in galvanised mild steel with polyester powder coating and treated hardwood laths • Dimensions: 1800mm (L) x 625mm (D) x 815mm (H)
	SHEFFIELD BICYCLE STANDS
	LOW GROWING LOW-MAINTENANCE Pollinator Friendly Ground Cover • Planting to BS3882 multi-purpose topsoil on free-draining sub-base, topped with 90gsm ² black landscape fabric and 50mm depth medium-grade pine bark mulch.
	TRANSPLANT PLANTING - WOODLAND (T1) • Excavate planter to 400mm depth and break up base of planted area to ensure free-drainage to subsoil. • Remove excavated material and any builder's rubble before back-filling with min. 300mm depth multi-purpose grade topsoil to BS-3882 (to be approved by LA). • Apply non-woven Weed-guard type filter geotextile membrane landscape fabric, black colour, 90gsm ² Weedguard by Terram or EQA. • 75mm depth medium grade bark mulch topping.

NUMERICAL KEY

	LOW GROWING LOW-MAINTENANCE NATIVE SCRUB (T2) • Planting to BS3882 multi-purpose topsoil on free-draining sub-base, topped with 90gsm ² black landscape fabric and 50mm depth medium-grade bark mulch. • Ornamental perennial planting to comprise ornamental grasses, flowering perennials and climbers to soften the visual impact of the development. • Apply non-woven Weed-guard type filter geotextile membrane landscape fabric, black colour, 90gsm ² Weedguard by Terram or EQA.
	WILDFLOWER MEADOW
	GRASS LAWN
	CLEAR-STEMMED TO 2M HEIGHT and MULTI-STEMMED SEMI-MATURE TREES • Semi-mature trees provided with 1200mm ³ multi-purpose grade topsoil to BS-3882, topped with black 90gsm ² landscape fabric secured with plastic pegs at 300mm c/c & 75mm depth medium-grade bark mulch. • Trees double-staked & supplied with planting accessories, and provided with root restrictors within 2m of paving, underground services and foundations. • Apply non-woven Weed-guard type filter geotextile membrane landscape fabric, black colour, 90gsm ² Weedguard by Terram or EQA.
	SEMI-MATURE NATIVE TREES • Semi-mature native species provided with 1200mm ³ multi-purpose grade topsoil to BS-3882, topped with black 90gsm ² landscape fabric secured with plastic pegs at 300mm c/c & 75mm depth medium-grade bark mulch. • Trees double-staked & supplied with planting accessories, and provided with root restrictors within 2m of paving, underground services and foundations. • Apply non-woven Weed-guard type filter geotextile membrane landscape fabric, black colour, 90gsm ² Weedguard by Terram or EQA.

- Native woodland as backdrop to development site. Woodland species to comprise oak, pine, birch, mountain ash, holly, hazel and hawthorn. (T1)
- Low growing low-maintenance native scrub to include holly, hazel, hawthorn, blackthorn, guelder rose and privet. (T2)
- Native wildflower meadow of species appropriate to the locality. One cut per annum. A higher number of cuts can be completed to approx. 2-3m width along access roads, footpaths and parking to present a maintained appearance.
- Shared surface modular paving to define pedestrian priority, slow vehicles and enhance safety.
- Modular paving to pedestrian areas.

- Tree Notes:**
- Psy *Pinus sylvestris*
 - Qp *Quercus petraea*
 - Qr *Quercus robur 'Fastigiata'*
 - Bp *Betula pubescens*
 - Cm *Crataegus monogyna*
 - Sa *Sorbus aucuparia*
 - Pp *Prunus padus*
- Level Notes:**
- EX+ Existing Level
 - TL+ Top of Landscape Finish
 - TP+ Top of Paving
 - TK+ Top of Kerb
 - TW+ Top of Walls
 - TE+ Top of Edging

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STEPHEN DIAMOND ASSOCIATES
CHARTERED LANDSCAPE ARCHITECTS

68 Pearse Street Dublin 2 tel: 01 6775670
email: mail@sdada.ie fax: 01 6775669

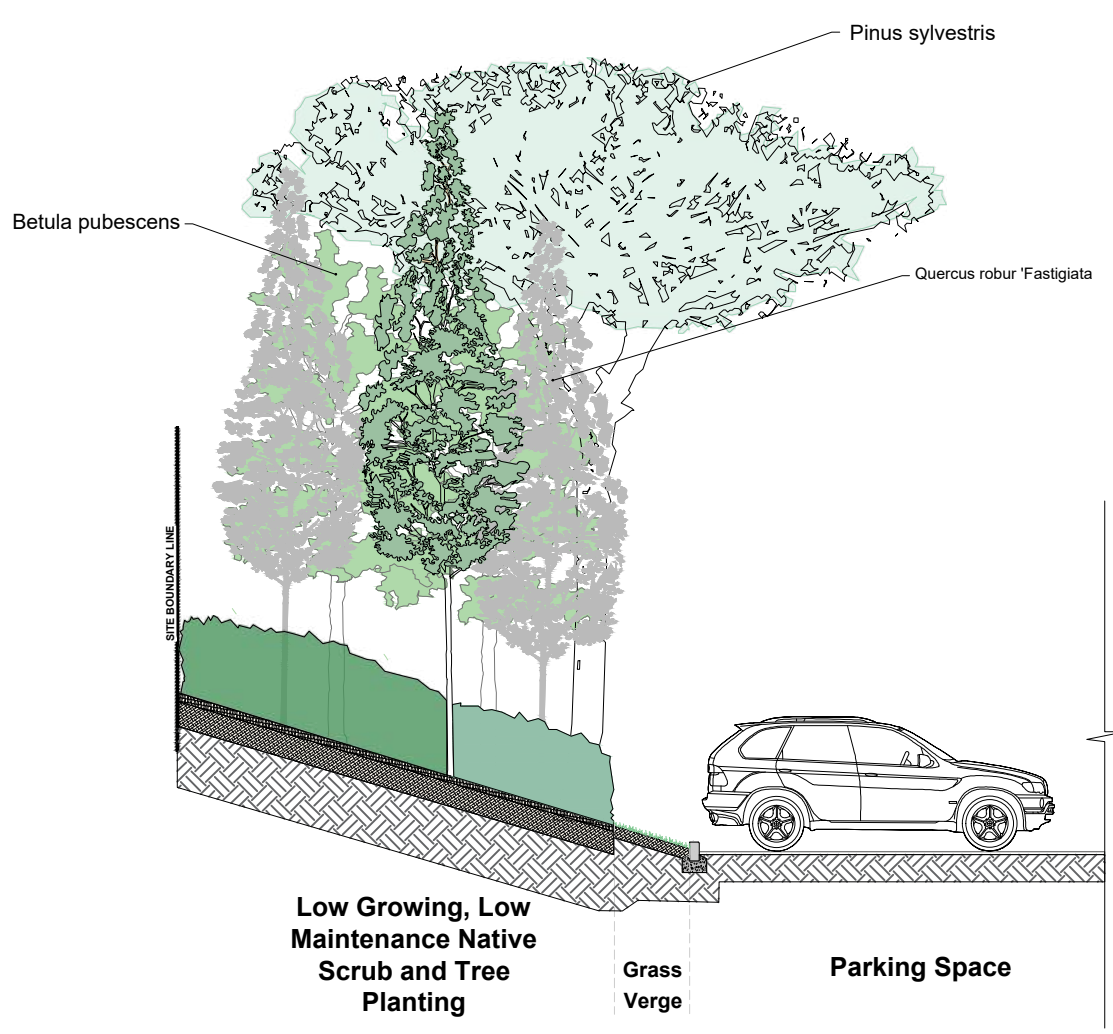
Client: **BPM GP3 Limited** Project No: **22-574**

Project: **M1 Retail** Scale: **1:500 @ A1**

Title: **Landscape Masterplan** Date Issued: **2022-12-06**

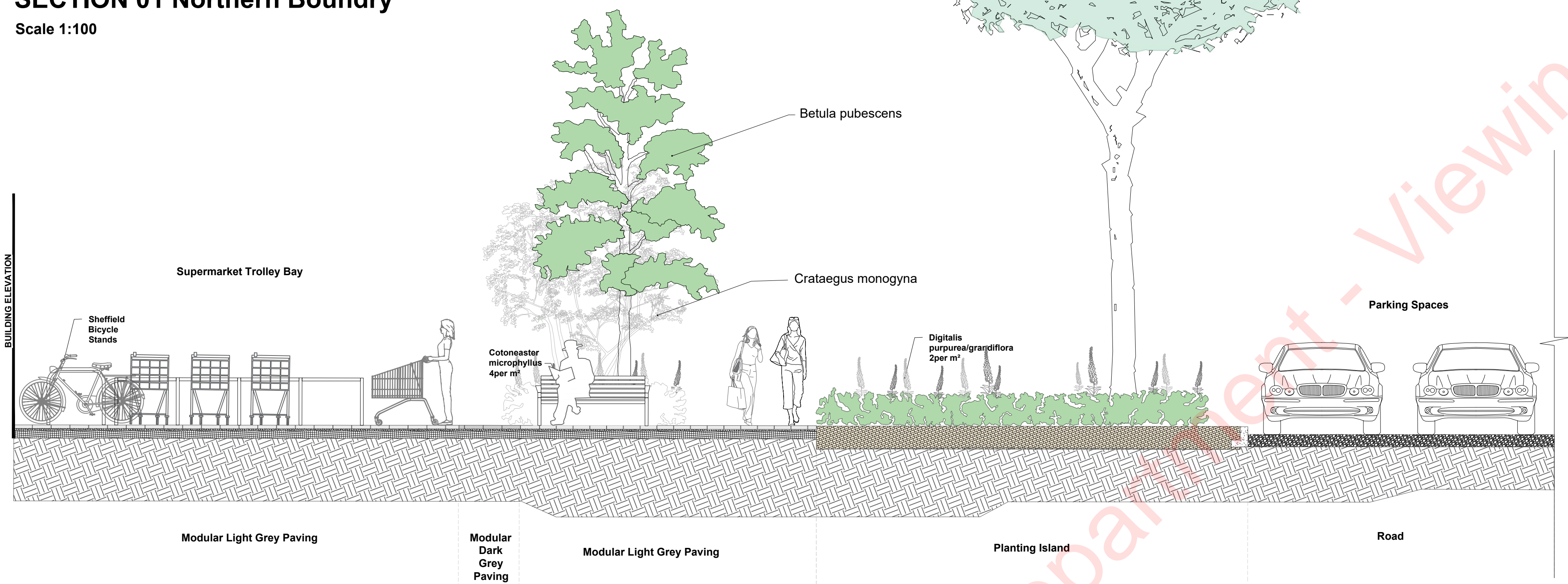
Dwg No: **22-574-SDA-PD-DR-GF-001**

Drawn: **BS** Purpose: **Planning** Checked: **SD**



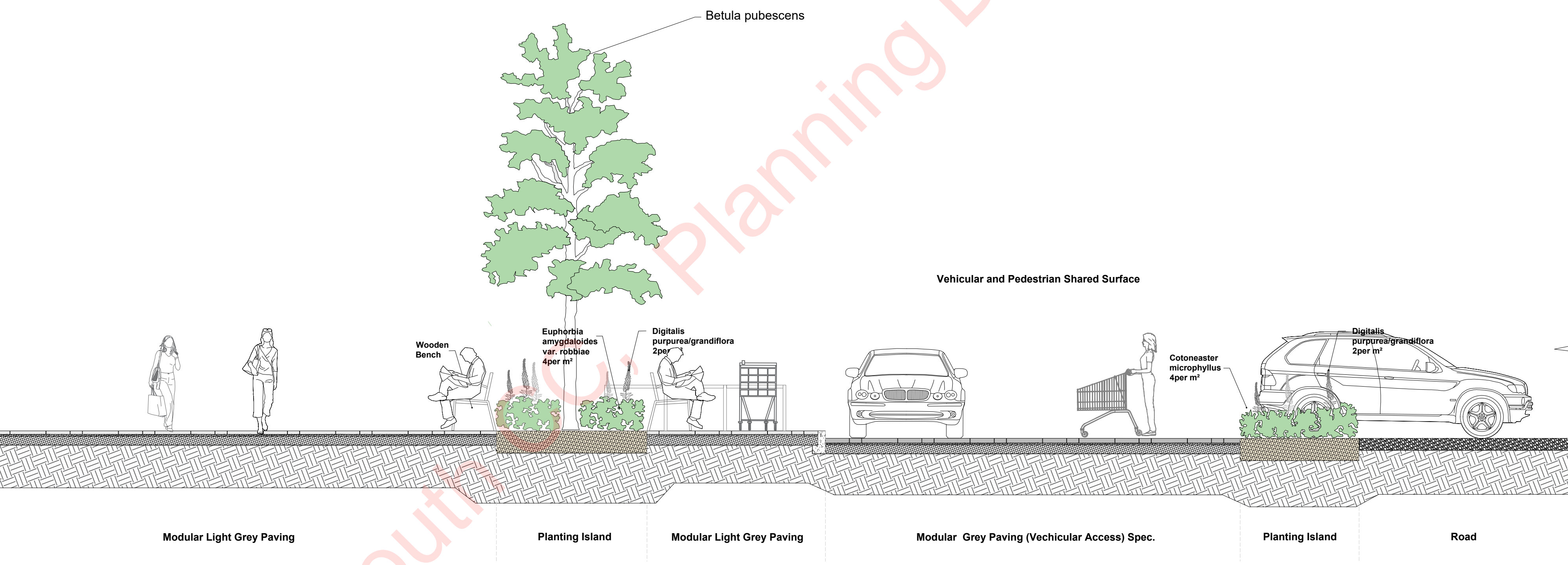
SECTION 01 Northern Boundary

Scale 1:100



SECTION 02 Central Square

Scale 1:50



SECTION 03 Small Square

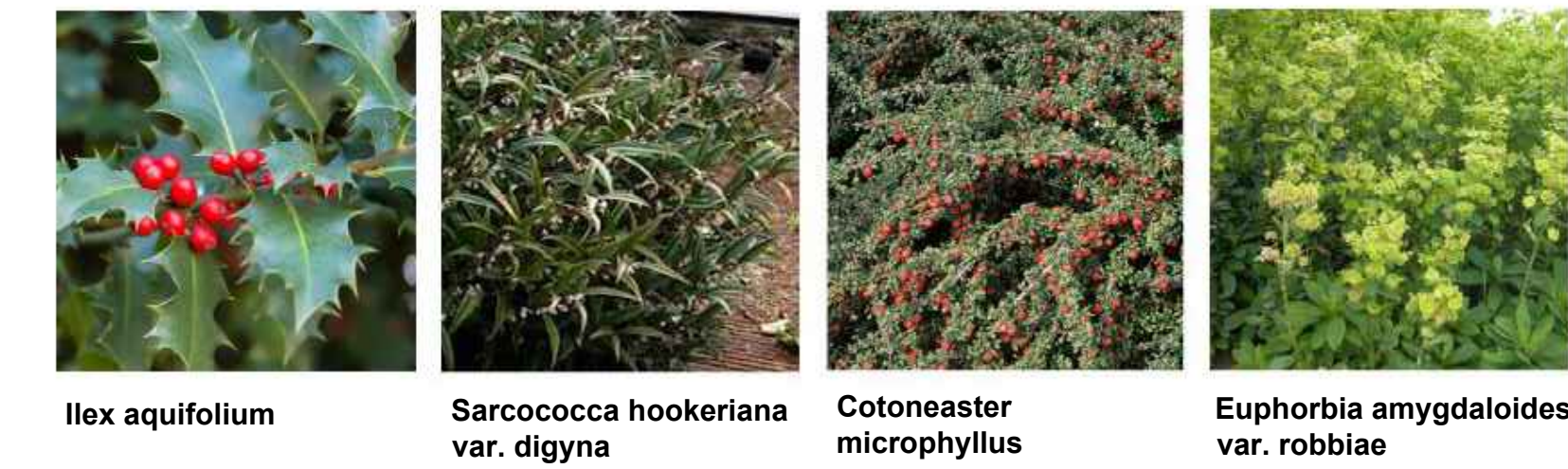
Scale 1:50



SECTION 04 Southern Boundary Buffer Backdrop Planting (Mature)

Scale 1:125

PLANTING ISLANDS VEGETATION



PARKLAND TREES



COLUMNAR TREES



SCREENING TREES



SMALL TREE



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STEPHEN DIAMOND ASSOCIATES
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Client: BPM GP3 Limited
Project: M1 Retail
Title: Sections
Date Issued: 2022-12-06
Dirg No: 22-574-SDA-PD-DR-GF-201
Drawn: BS
Purpose: Planning
Checked: SD

tel: 01 6775670
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Project No: 22-574
Scale: Varied @ A1

Appendix B

Louth CC, Planning Department - Viewing Purposes Only!

RETAIL IMPACT ASSESSMENT



RETAIL IMPACT ASSESSMENT

Retail/Commercial Development

Lands to the south of the existing M1, Retail Park,
Mell, Drogheda, Co. Louth

Louth County Council

December 2022

SUBMITTED ON BEHALF OF:
BPM GP3 Limited

HUGHES
PLANNING
& DEVELOPMENT CONSULTANTS

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CGI of the proposed scheme as prepared by Digital Dimensions

1.0 Introduction

This Retail Impact Assessment has been prepared by Hughes Planning and Development Consultants, 85 Merrion Square, Dublin 2, on behalf of our clients BPM GP3 Limited, in respect of a proposed retail development on greenfield lands, located to the immediate south of the existing M1 Retail Park, Mell, Drogheda, Co. Louth. For clarity, it is noted that the existing M1 Retail Park was initially approved by Louth County Council under **Reg. Ref. 03510292** in April 2004. This parent permission has been subject to a number of alterations applications since the original grant of permission.

A full description of the proposed development is set out in Section 4.0 of this report. The purpose of this report is to provide a rationale, in qualitative terms, for retail development on the subject lands. This assessment will have due regard to the vitality and viability of the catchment area in relation to a planning application for a retail development of a significant scale and involves a detailed analysis of the relevant planning policy context as well as a statistical analysis. The assessment has been prepared in conjunction with a comprehensive Sequential Test which will consider alternative sites and provide a justification for the final chosen location for the proposed development.

This assessment has regard to the Retail Planning Guidelines methodology and appropriately uses current, most up-to-date figures to provide a robust assessment. The Louth Retail Strategy 2021-2027, included as part of the Louth County Development Plan 2021-2027 was also consulted throughout the design evolution and during the preparation of this report. This Retail Impact Assessment provides an assessment of the likely impacts of additional retail comparison and warehouse/bulky goods floor space upon the vitality and viability of Drogheda Town Centre, allowing the Planning Authority to identify the effects (if any) or change in the economic or physical environment that may be resultant from any such addition.

As will be demonstrated as part of the accompanying Sequential Test, it is submitted that given the scale of development proposed, cannot be accommodated on an alternative site within the retail core area of Drogheda. Moreover, it is not considered that there is another more suitable location for the subject development, with the subject site neighbouring an existing, established and commercially strong Retail Park, The M1 Retail Park. Whilst the proposed development does not represent an extension to the existing M1 Retail Park, both the existing and proposed retail developments will be complimentary of one another, delivering significant improvements to the offering of Drogheda, and the operation of the existing M1 Retail Park, whilst also providing for an enhanced customer experience. By locating the proposed retail development adjacent lands will see a concentration of retail floor space in one accessible and established retail destination. Having regard to the ongoing commercial success of the existing M1 Retail Park, it is considered that the provision of a wider variety of shopping opportunities will significantly bolster its successful functioning.

In addition to the above, it is also noteworthy that the proposed retail comparison and retail warehouse floor space is seeking to counterbalance the leakage of comparison and bulky goods expenditure to other competing centres outside of the county by increasing the service offering to the residents of Louth. This Retail Impact Assessment will demonstrate that there is sufficient capacity within County Louth to accommodate the proposed retail development and that there will be no resultant adverse impacts on the vitality and viability of Drogheda Town Centre.

There are three key impacts that should be considered as part of any retail development application, particularly those which are of a significant scale. These include social, economic and environmental impacts as summarised below:

- **Social Impacts** – these relate to demographic and behavioural change, considering the social role of town centres and indicating if there would be any impact on shopper profiles as a result of new retail development;
- **Economic Impacts** – these relate to changes in retail turnover or trading patterns resultant from new retail developments. The creation of employment opportunities as well as growth in retail expenditure are particularly relevant.

- **Environmental Impacts** – these generally relate to traffic impacts and issues relating to the sustainability of new retail developments.

Taking the above into consideration, we note that restricting competition or preserving existing commercial interests is not within the remit of the planning system, rather the primary consideration should be the effect of any such retail proposal, if any, on the vitality and viability of a town centre. This is particularly pertinent given the direction of national, regional and local level planning policy which promotes the town centre approach in the first instance, and where appropriate.

We also note that the proposed retail/commercial development will also generate a significant economic spinoff, both in terms of construction stage, providing employment for construction workers and at operational stage, providing full and part-time employment positions for residents of Drogheda and the county more broadly.

In the context of the proposed development, it is contended that the growing population and expenditure capacity of the surrounding area of Drogheda will serve to support an increase in retail floorspace at this location.

2.0 Assessment of the Context

2.1 Site Location and Description

The proposed development site, of c. 4.82hectares, is situated to the immediate south of the existing M1 and approximately 554 metres west of the M1. The site comprises of greenfield lands and is bound to the east by Trinity Street (R168), to the north by the existing M1 Retail Park, to the south by Barrack Lane, and to the west by undeveloped greenfield lands, which are also within the ownership of the applicant. The site is accessible at Junction 9, off the M1, with access also easily available from the nearby Drogheda Town Centre which is approximately 2.5km southeast of the subject lands. The sites eastern boundary fronts the adjacent R168 Regional Road (Trinity Street) for approximately 130 metres, the N51 National Road is also located due north of the lands. The site is currently obsolete, with an entrance and access path running through the site from its eastern frontage to the north-western boundary.



Figure 1.0 Aerial image showing the wider locational context surrounding the subject site.

With respect to public transport, it is noted that there is a serviced bus stop located within the M1 retail park, which serves Bus Eireann routes 190 (Drogheda Bus Station – Trim Castle) and 173 (St. Peter's Church Drogheda – Marley's Lane Drogheda). At present, the M1 Retail Park comprises a number of national and international bulky comparison retailers including, Woodie's, Smyths Toys, Brand Max,

Hubert Tully, Choice Drogheda, Lidl, Equipet, Choice Drogheda and Power City to cite a few. The eastern portion of the subject site also comprises 2 no. car dealerships, Western Motors, and Malones Toyota, whilst Costa Coffee and Supermac's are located along the northern extremities of the park. A range of national and international bulky comparison retailers are located within the M1 Retail Park and Drogheda Retail Park.



Figure 2.0 Aerial image showing the immediate locational context surrounding the subject site.



Figure 3.0 Aerial image indicating the existing businesses located within the neighbouring M1 Retail Park.



Figure 4.0 Street view image showing the existing access gate and eastern site boundary.

As is indicated in the above street view image the eastern site boundary is bordered by a gate and is heavily vegetated and overgrown at present. It is also noted that there are some single and two-storey dwellings located adjacent to the northern, southern, and western site boundaries, with Barrack Lane flanking the site to the immediate south. Drogheda Recycling Centre is also located adjacent to the site, on the eastern side of Trinity Street.



Figure 5.0 Aerial image showing the subject site's abutments (subject site highlighted in red).



Figure 6.0 Aerial views of the subject site looking east (left) and looking south (right)



Figure 7.0 Street view image of the subject site looking west from Barrack Lane (left) and north along Trinity Street (right).

2.3 Profile of the Application Site

To demonstrate the necessity and appropriate scale of retail provision within the proposed scheme, this section provides an overview of the characteristics of the application site within the context of the surrounding area.

The application site constitutes an out-of-centre location situated on the periphery of Drogheda Town, immediately adjacent to the existing M1 Retail Park. Drogheda is an industrial and port town in County Louth in the east coast of Ireland, c. 56 kilometres north of Dublin. The town is located on the Dublin-Belfast corridor and is mostly situated within County Louth, with the south fringes of the town stretching to County Meath. Drogheda is designated at a Regional and Local level as a *Regional Growth Centre* and is noted as being the fastest growing town in the Country. *Regional Growth Centres* are defined within the Regional Spatial and Economic Strategy for the Eastern and Midland Region (RSES) as 'Large towns with a high level of self-sustaining employment and services that act a regional economic driver and play a significant role for a wide catchment area.' The role of these Regional Growth Centres as stated within the RSES is 'to serve as focal point to gain critical mass and to deliver positive impacts to their surrounding areas and enhance overall regional and national growth.' It is further stipulated that the growth strategy for the Eastern and Midland Region will, target the growth of the Regional Growth Centres, including Drogheda.

According to the 2016 census data, Drogheda has maintained its position as the largest town in Ireland with a population of **40,956 persons**. At the time of preparing this Retail Impact Assessment, the preliminary Census results for 2022 were available. These results indicate that the population of Drogheda increased exponentially to **46,280 persons**, up from just under 41,000 in 2016.

The subject site and the adjacent M1 Retail Park fall within the St. Peter's, Louth, Electoral division which has an estimated area of 38.7km. According to the 2016 Census summary, the total population of this Electoral Division in 2016 was **9,721 persons**. The preliminary Census 2022 results indicate that this figure rose to **10,858 persons** over the period from 2016-2022, representing a percentage change of **11.7%**. Given that the 2022 Census results are preliminary in nature at this stage, the assessment section of this report will utilise the published 2016 Census data its baseline.

3.0 Proposed Development

The proposed development seeks permission for the construction of a retail/commercial development comprising a total 10 no. retail/commercial units ranging in size from **c. 300sq.m to 4,085 sq.m gfa** to be constructed in **three phases**. In summary the overall development comprises 1 no. part-licenced anchor retail supermarket store (Unit 1) (4,085sq.m gfa), a DIY/Home store, including a garden centre (Unit 10)(2,350sq.m gfa), 8 no. smaller retail/commercial units, including a café and a pharmacy (Units 2-8)(ranging in size from 300sq.m – 760sq.m gfa) and 1 no. single storey Drive-Thru Restaurant/Café unit (375sq.m gfa). For clarity, the table below indicates the gross and net floor areas of each of the proposed units:

Proposed Retail/Commercial Development – Schedule of Areas				
Unit No.	Proposed Use		Gross Floor Area (GFA) (Sq.m)	Nett Floor Area (NFA) (Sq.m)
Phase 1				
1	Supermarket		4,085	2750
2	Coffee Shop / Tearoom		300	294
3	Shop		300	294
4	Shop		600	594
5	Shop		380	374
6	Shop		380	374
7	Pharmacy		760	754
	Total Phase 1		6,805	5,434
Phase 2				
8	Shop		460	454
9	Shop		700	694
10	Diy / Home / Leisure		2350	2344
	Total Phase 2		3,510	3,492
Phase 3				
	Drive Thru		375	375
	Total Phase 3		375	375
	TOTAL (Phase 1, Phase 2, Phase 3)		10,690	9,301

As is indicated in the Masterplan drawing below, prepared by MCA Architects, a deliveries area, service yard and plant compound will be provided to the side (south) and rear (west) of Retail Unit 1, a dedicated set down point is also proposed adjacent to the front entrance of Retail Unit 1. Deliveries for Units 2-10 will be accommodated to the rear (south) of the proposed units, with a HGV turning area provided to the rear of Unit 10.

A surface car park is proposed to serve the proposed development, with a total of 311 no. car parking spaces and 104 no. bicycle parking spaces proposed to serve Units 1-10 and the proposed Drive-Thru unit. Included in this calculation are 23 no. accessible parking spaces, 2 no. click and collect spaces and 17 no. parent and child spaces. A bus/coach parking area is also proposed within the eastern section of the site, adjacent to the sites Trinity Street frontage. The proposed Drive-Thru unit is served by 19 no. car parking spaces and 12 no. bicycle parking spaces.

Car Parking Schedule	
Phase 1 (Units 1-7)	188 no. spaces
Phase 2 (Units 8-10)	104 no. spaces
Phase 3 (Drive-Thru)	19 no. spaces
Total	311 no. spaces



Figure 8.0 Extract from the overall Masterplan drawing, as prepared by MCA Architects.

As demonstrated in the above drawing extract, access to the proposed development will be provided via the existing M1 Retail Park to the north, with 2 no. separate connection points proposed; one of which provide direct access to the western portion of the site and the second which will provide access to the central and eastern portion of the site. The proposed internal road network will seamlessly connect to the existing network within the main Retail Park.



Figure 9.0 Aerial view showing the proposed vehicular connection points (indicated with green stars).

The proposed layout also incorporates pedestrian walkways and pedestrian crossings, providing for a pedestrian friendly environment. The proposal also includes the provision of footpaths and hard and soft landscaping, creating a quality public realm which will aid in creating a people centred space for future customers.

As indicated above, a phasing plan has been developed for the construction of the proposed scheme, further details on each of the proposed phases of construction are outlined under the headings below. The proposed phasing is considered to represent a logical progression of development across the site,

ensuring that development can proceed in an orderly fashion on the lands, whilst providing for significant elements of planning gain.

Phase 1 – Units 1-7

Phase one will comprise the construction of 7 no. retail units (Units 1-7) including Unit 1 which is proposed to comprise a large anchor supermarket (4,085sq.m gfa) which will be located within the western portion of the subject lands, with the entrance facing east, and will include a loading and deliveries area to the rear. The 6-no. remaining retail units will range from 300sq.m to 760sq.m, including a coffee shop/tea room (300sq.m gfa) (Unit 2) and a Pharmacy (760sq.m gfa) (Unit 7).

A total of 188 no. parking spaces are proposed to be provided as part of Phase 1 of the overall development, together with the delivery of the 2 no. road connections to the adjacent M1 Retail Park to the north. Pedestrian footpaths, circulation spaces and pedestrian crossings, trolley bays and bicycle parking spaces will also be provided as part of Phase 1. Soft and hard landscaping will be provided along the site and road boundaries and between parking bays to enhance the visual aesthetic of the scheme as well as provide a degree of screening from adjoining roads and residential properties.



Figure 10.0 Extract from the Site Plan drawing as prepared by MCA Architects, indicating the extent of the proposed Phase 1 (Units 1-7).



Figure 11.0 Extract from the ground floor plan showing Units 1-6 (Phase 1).



Figure 12.0 Extract from the ground floor plan showing units 5-7 (Phase 1).



Figure 13.0 Architectural model demonstrating the proposed units featuring within Phase 1 (Units 1 -7).



Figure 14.0 Architectural model demonstrating the elevational treatment of the proposed units featuring within Phase 1 (Units 1-7).

Phase 2 (Units 8-10)

Phase 2 will be located within the eastern portion of the subject site and will comprise 3 no. retail/commercial units (Units 8-10) ranging in size from 460sq.m to 2,350sq.m (gfa), with the most eastern unit being a secondary anchor store (2,350sq.m gfa) comprising a DIY/Home store and an adjoining garden centre area. These units are orientated with north facing entrances and loading and deliveries area to the rear (south) of each unit.

104 no. car parking spaces are provided to serve retail Units 8-10, together with a bus/coach parking area to adjacent to the eastern site boundary. A large landscaped green space will feature along the eastern boundary, providing a degree of visual separation between the proposed scheme and the

adjoining Trinity Road. Pedestrian crossings, footpaths and a pedestrian circulation space is proposed to the front of the units, providing sufficient space for movement and public interaction.



Figure 15.0 Extract from the Site Plan drawing as prepared by MCA Architects, indicating the extent of the proposed Phase 2 (Units 8-10).

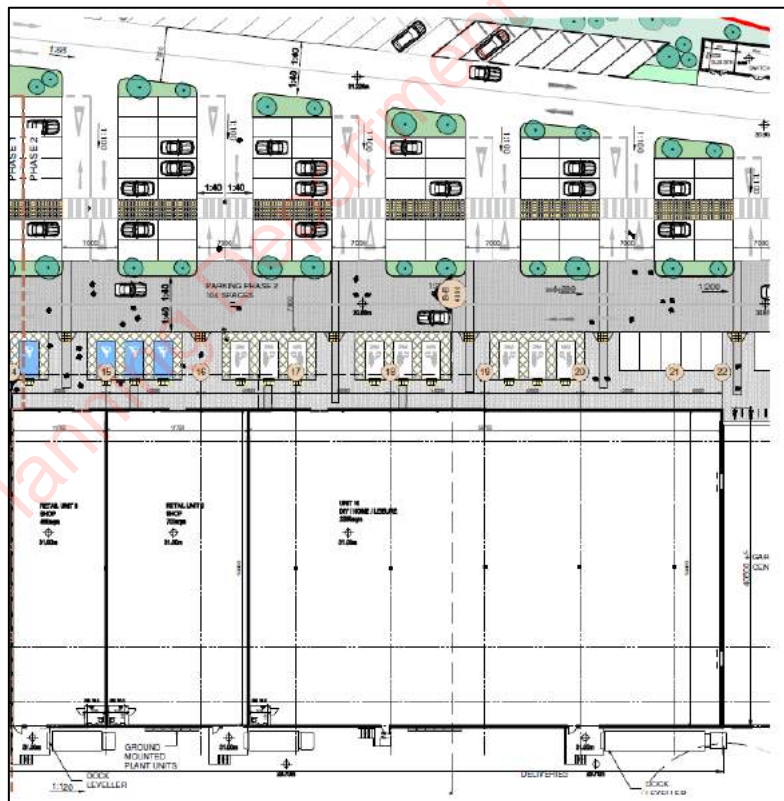


Figure 16.0 Extract from the ground floor plan showing units 8-10 (Phase 2).



Figure 17.0 Architectural model indicating the proposed units featuring within Phase 2 (8-10).

Phase 3 – Drive-Thru

Phase 3 of the overall development comprises the provision of a single-storey Drive-Thru Restaurant/Café unit (375 sq.m gfa) within the western most portion of the subject site, including an internal access road, a surrounding pedestrian circulation area and an external seating area. A total of 19 no. car parking spaces and 12 no. bicycle parking spaces are provided to serve this unit. The drive through is accessible via the proposed internal roundabout. 3 no. set-down spaces are also proposed to serve the drive thru unit.

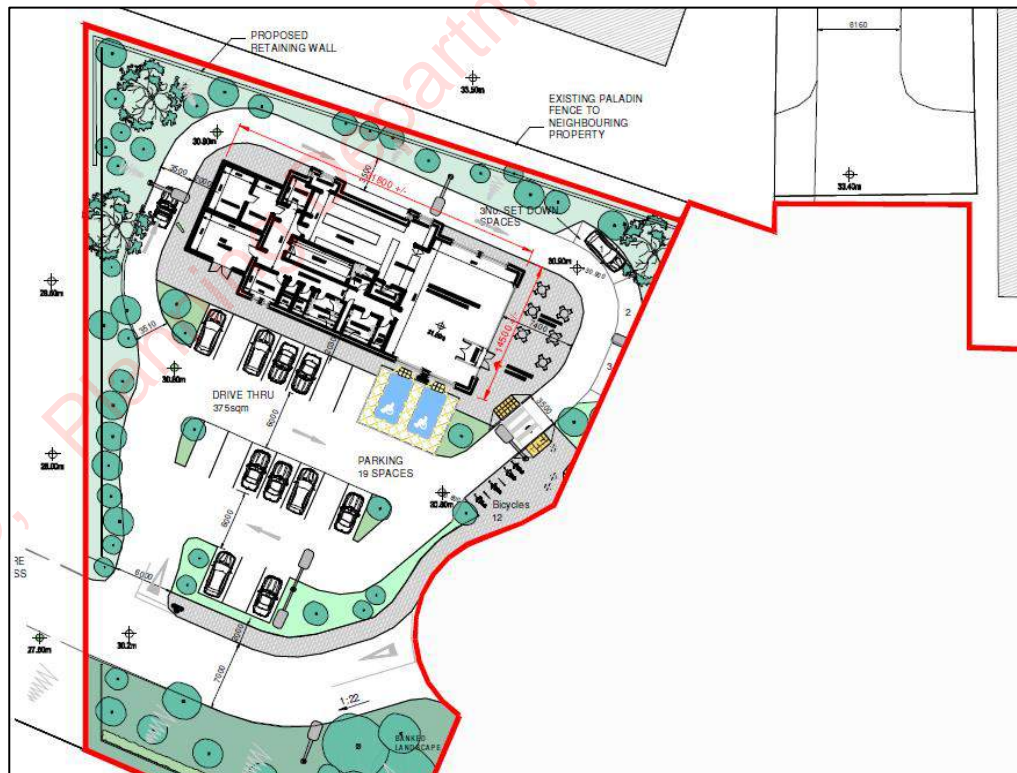


Figure 18.0 Extract from the Site Plan drawing as prepared by MCA Architects, indicating the extent of the proposed Phase 3 (Drive-Thru).

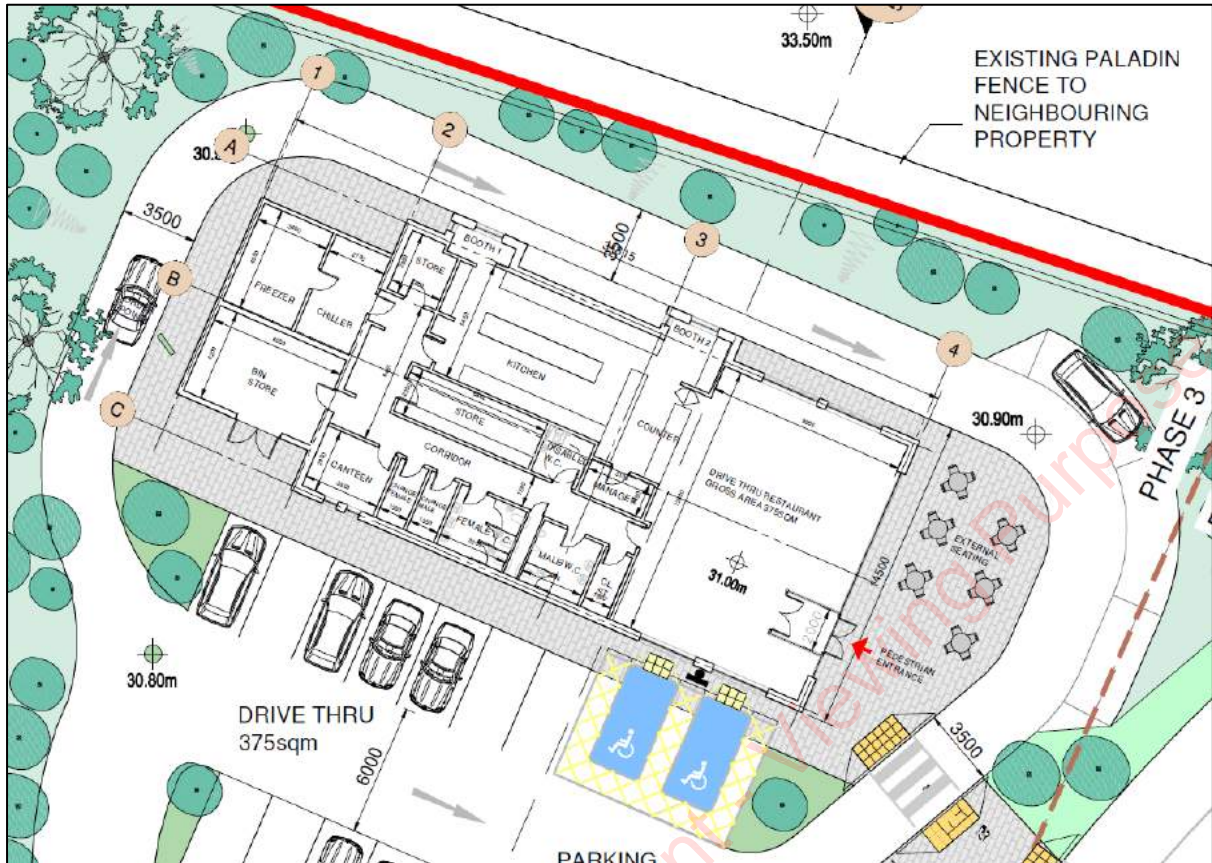


Figure 19.0 Extract from the ground floor plan showing the proposed Drive-Thru unit (Phase 3).

As indicated in the above drawing extracts, the proposed development will be of a high-quality design and of an appropriate scale, relative to the site's surrounding context. The development has also been designed by the project architects to ensure that ease of circulation for pedestrians and vehicles.

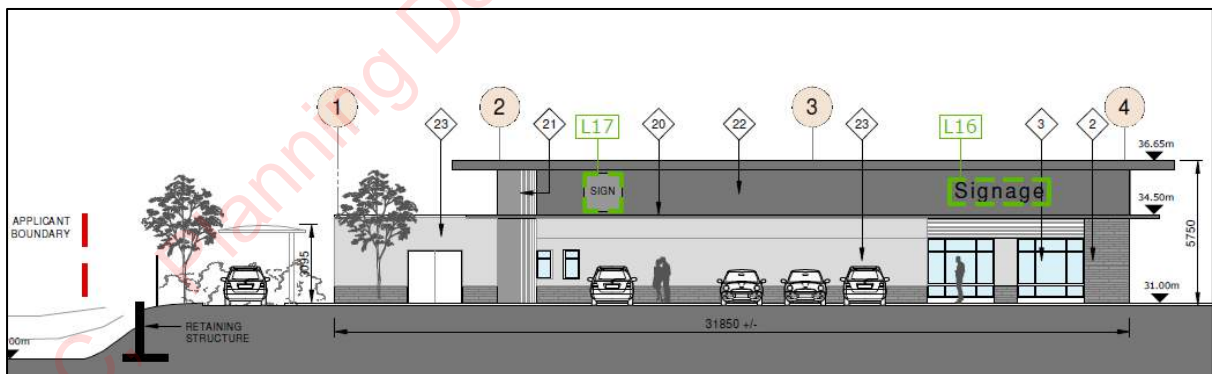


Figure 20.0 South elevation of the proposed Drive-Thru unit (Phase 3).

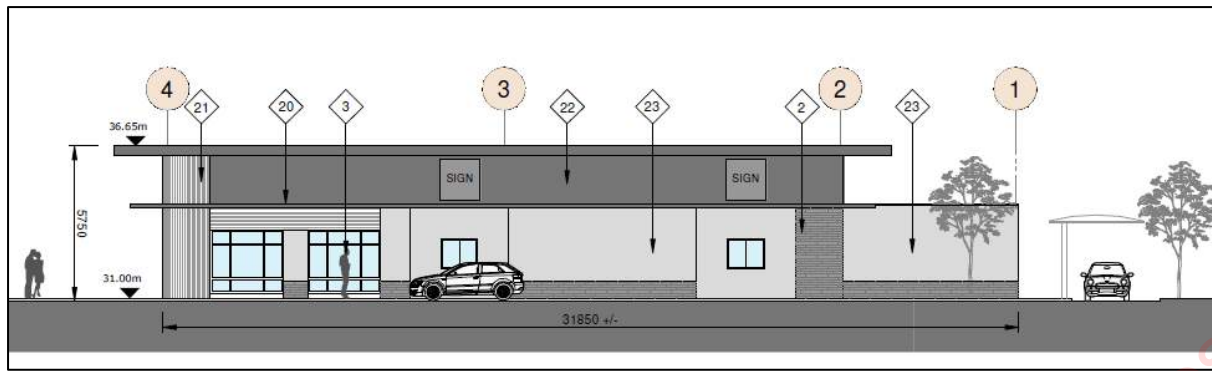


Figure 21.0 North elevation of the proposed Drive-Thru unit (Phase 3).

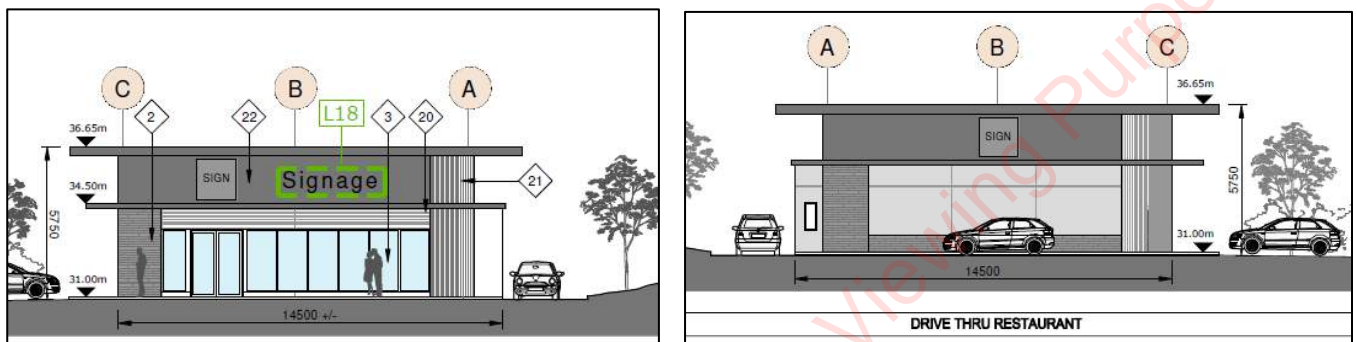


Figure 22.0 East (left) and west (right) elevations of the proposed Drive-Thru unit (Phase 3).

The overall intent of the proposed development is to enhance an existing prominent economic driver in the area and provide a destination that offers more than just shopping. The future development of the area, we believe, can deliver a long-term sustainable asset with seamless linkages between land uses, the public realm, and the community, generating employment and attracting people to come together, interact and creating an added sense of community.

The proposed development will attract new retailer representatives into the county and deliver an increased diversity of uses that will synergise with the retail offer and existing built environment. Supporting the proposed development means promoting enterprise, associated benefits in terms of new industries and services gravitating to the area and employment generation to support same. By attracting recognised drivers and achieving competitive advantages, the town and county can benefit from inward investment and overall economic regeneration.

Not only will the proposal effectively bring numerous jobs to the area and the city more broadly, but we believe it will also breathe new life into the site and area more broadly. It must be noted also that the site has been zoned for mixed-use type development for some time, and we are fully cognisant of the strategic qualities associated with same and aspire to create an imaginative, energetic, and vibrant area which provides new jobs and bolsters the economic profile of Drogheda.

Public Realm and Landscaping

A landscape strategy for the proposed scheme has been developed by Stephen Diamond and Associates as part of this application, an extract from which is included below. It is proposed to incorporate various types of hard and soft landscaping, with a mix of lawned areas, wildflower meadows and semi-mature tree planting proposed along the site boundaries, road edges and bookending the proposed parking bays. Brushed concrete footpaths will be provided along the proposed access points with modular paving proposed to the pedestrian and shared surface areas. External seating will be provided within the pedestrian circulation area and will be provided with natural tree cover.

A generously sized public plaza area with an overhanging canopy has been provided adjacent to the front entrance of Units 1-10 to facilitate ease of movement between units, whilst also creating a pedestrian friendly and people centred environment. We note that the movement of people from one area to another is central to public realm development, in this instance, the covered linkage between buildings is integral to creating a 'sense of place' on site. It also provides the opportunity for the proposed retail/commercial uses to provide break out spaces onto this public street, creating an attractive environment for residents, workers, and visitors of the scheme.



Figure 23.0 Extract from the proposed Landscape Strategy as prepared by Stephen Diamond and Associates.



Figure 24.0 Precedent images showing examples of the proposed wildflower meadow and modular paving.



Figure 25.0 CGI of the proposed scheme showing the proposed elevational and landscaping treatments (Units 1-3).



Figure 26.0 CGI of the proposed scheme showing the proposed elevational and landscaping treatments (Units 3-10).



Figure 27.0 CGI of the proposed scheme looking west from Unit 10, indicating the proposed elevational and landscaping treatments.

As indicated in the above drawing extracts, the proposed development will be of a high-quality design and of an appropriate scale, relative to the site's surrounding context. The development has also been designed by the project architects to ensure that ease of circulation for pedestrians and vehicles.

Overall, the proposed retail development is of a scale that assimilates with its location within the area. The proposed development has been designed having due consideration for the surrounding context of the site, with the proposed layout taking cognisance of the existing built form featuring within the immediate area surrounding the site. Planning permission is being sought for the development of a greenfield site which comprises of grossly underutilised lands which are obsolete at present. The proposed development will provide for the renewal of the subject site and will represent a strategic retail development which will enhance the retail offering at this location.

We also highlight that out-of-centre locations provide an opportunity for businesses to establish which require space that is not afforded in more central locations. Locating these businesses in these out-of-centre locations allows for town centres to facilitate businesses that do not require as much space to provide for more variety with regard to retail units. Urban areas typically have smaller plot sizes which aid in creating animated and active streets, promoting a sense of place and defining the character of an area.

4.0 Assessment Criteria

This Retail Impact Assessment has been prepared following pre-planning consultation discussions with Louth County Council on 19th May 2022 and is prepared in accordance with the Department of the Environment, Heritage and Local Government Retail Planning Guidelines 2012. The Retail Planning Guidelines require that a Retail Impact Assessment examines the potential retail impact and cumulative impact of new retail developments on the vitality and viability of existing centres to identify any adverse impacts.

In accordance with the above, this Retail Impact Assessment will consider the impact on the vitality and viability of the town centre of Drogheda or any other relevant centre. Specifically the assessment will:

- Demonstrate compliance with relevant strategic policy including the Retail Planning Guidelines for Planning Authorities (DoEHLG, 2012), which supersede the Retail Planning Guidelines for Planning Authorities (DoEHLG, 2005), the Regional Spatial and Economic Strategy for the Eastern and Midlands Region, Louth County Development Plan 2021-2027,

- Demonstrate that there will not be a material and unacceptable adverse impact on the vitality and viability of any existing centre and that the proposal has the potential to increase employment opportunities and will respond to consumer demand for its retail offering.

The Guidelines require that the following criteria are addressed in the assessment of retail impact, and it is demonstrated whether or not the proposal would:

- Support the long-term strategy for city/town centres as established in the retail strategy/development plan, and not materially diminish the prospect of attracting private sector investment into one or more such centres;
- Have the potential to increase employment opportunities and promote economic regeneration;
- Have the potential to increase competition within the area and thereby attract further consumers to the area;
- Respond to consumer demand for its retail offering and not diminish the range of activities and services that an urban centre can support;
- Cause an adverse impact on one or more city/town centres, either singly or cumulatively with recent developments or other outstanding planning permissions (which have a realistic prospect of implementation) sufficient to undermine the quality of the centre or its wider function in the promotion and encouragement of the arts, culture, leisure, public realm function of the town centre critical to the economic and social life of the community;
- Cause an increase in the number of vacant properties in the primary retail area that is likely to persist in the long term;
- Ensure a high standard of access both by public transport, foot and private car so that the proposal is easily accessible by all sections of society; and/or
- Link effectively with an existing city/town centre so that there is likely to be commercial synergy

The net retail floor area for the proposed development is 9,301 sq.m.

The RIA will demonstrate that the proposed development **will not have an adverse impact** on any other retailer and that the proposed development is justified and appropriate in this instance.

4.1 Proposed Occupation

It is anticipated that the proposed retail Unit No. 1, will comprise a large known brand supermarket which will provide primarily for the weekly convenience goods shopping of households in accordance with the definition comprised within the Retail Planning Guidelines. Referring to the 2012 Retail Planning Guidelines, it is noted that *'it may not be possible to bring forward suitable sites in or on the edge of a city or town because of the site requirements of large convenience goods stores, heritage constraints in historic towns, or because of the road network does not have the capacity to accommodate additional traffic and service vehicles.'*

It is envisaged that the proposed Retail Unit No. 2 will comprise a coffee shop/tearoom, which is a permitted in principle use and Unit 7 will comprise a Pharmacy unit. The remaining Units featuring within Phase 1 and Units 8 and 9 of Phase 2 of the proposed development will comprise a series of smaller shops, selling lower order goods, which again are permissible uses on B4 zoned lands.

Unit No. 10 will comprise a larger DIY/Home store which will generally specialise in the sale of bulky household goods and DIY items, catering mainly for car borne-customers.

4.2 Design Year

The design year for the proposed development is assumed to be 2025 as it is estimated to take approximately three years for the proposed development to establish a pattern of trading noting the amount of time required for completion of the planning process, construction and the establishment of a trade and market presence.

Stage	Description	Duration	Start-End Date
Stage 1	Planning Process (From Application Stage)	December 2021 (8-week timeframe for a decision) AI/Appeal (Approx 8-months August 2023)	October 2022 – August 2023
Stage 2	Site Enabling Works	3 months	August 2023 – November 2023
Stage 3	Construction Works	12 months	November 2023- November 2024
Stage 4	Establishment of Market Presence	12 months	November 2024 - November 2025
Stage 5	Fully Operational as of November 2025		

5.0 Strategic Policy Context

This Retail Impact Assessment has been prepared with full cognisance of the relevant policy context (national, regional and local), including the Retail Planning Guidelines 2012, the Retail Planning Guidelines for the Midland Region 2010-2022, and the Louth County Development Plan 2021-2027.

5.1 Retail Planning Guidelines for Planning Authorities (2000, Revised 2005 and 2012)

The Retail Planning Guidelines, which were first published in 2000 and subsequently revised in 2005 and 2012, provide the strategic policy framework for the spatial distribution of new retail development. In addition, these Guidelines provide a comprehensive framework to guide both local authorities in preparing development plans and assessing applications for planning permission, and retailers and developers in formulating development proposals. The guidelines specify that retailing should generally be directed into existing settlements, while having regard to the sequential approach in relation to the appropriate location for new retail development that is not capable of or suitable for town centre locations. It is noteworthy that the Guidelines also recognise the importance of the retail sector for employment, highlighting the fact that the sector accounted for 14.7% of all jobs in 2010.

The Guidelines indicate that the key challenge to be faced is how to accommodate the additional development that is projected to be required, in a way which is efficient, equitable and sustainable. It is important to establish the optimum location for new retail development which is accessible to all sections of society and is of a scale which allows for the continued prosperity of traditional town centres and existing retail centres and facilitates a competitive and health environment for the retail industry. This can only be achieved if strategic retail policies and proposals are incorporated into the development system. The guidelines also stipulate that retail development can thus be guided by development plans.

The 2012 guidelines outline five key policy objectives, of equal weight, which are as follows:

- *Ensuring that retail development is plan-led;*

This application site falls between two separate zoning objectives, with the majority of the site, located to the west of Trinity Street being zoned objective 'B4-District Centre', areas zoned as such have been planned specifically to maintain and enhance retail led mixed uses. As such the principle of the retail proposal should be considered plan-led and policy compliant in this regard.

- *Promoting city/town centre vitality through a sequential approach to development;*

The proposed development will not negatively impact on the vitality or viability of existing centres, this has been demonstrated through the sequential approach that was applied to the proposed development. The proposal will allow for the consolidation of retail/commercial units and retail warehousing units in an area which is readily accessible from the local, regional, and national road network and is already established as a retail destination. The proposal will not only reinvigorate and revitalise a long-standing retail destination but will further augment the range and choice of services available in this area of Drogheda, as well as facilitating increased footfall and the generation of additional revenue.

- *Securing competitiveness in the retail sector by actively enabling good quality development proposals to come forward in suitable locations;*

Section 2.5.3 of the Guidelines acknowledges that '*strong competition is essential to reduce retail costs and ensure that savings are passed on to retail customers through lower prices. Competition also promotes innovation and productivity. The planning system should not be used to inhibit competition, preserve existing commercial interests or prevent innovation.*'

The proposed retail/commercial units will provide new retail facilities as a suitably zoned site and will improve the retail offer for the resident and working community. This will introduce new competition in the retail sector and provide improved choice and the economy more generally.

- *Facilitating a shift towards increased access to retailing by public transport, cycling and walking in accordance with the Smarter Travel strategy; and*

This application is accompanied by a Traffic Assessment and detailed Mobility Management Plan, as prepared by Barrett Mahony Consulting Engineers. With regards to existing public transport, it is noted that the 173N route connects the north town centre of Drogheda town centre to the M1 Retail Park. This service runs every 60 minutes from Monday through to Saturday. This service also connects into the south town area via the 173S service which runs from the town centre to the south area.

This report also outlines the various planned bus routes for Louth put forward as part of the National Transport Authority's document 'Connecting Ireland – Rural Mobility Plan', published in November 2021. Moreover, as part of the proposed Cycle Scheme for Drogheda, in the area aligning the Collon Road Hill of Rath Roundabout, onto which the proposed development directly access via the R168, and Rosehall Roundabout directly east of the Hill of Rath Roundabout, 2.25km of footpaths and cycle lanes will be constructed. This will provide access to the proposed scheme and the adjoining M1 Retail Park. In addition a cycle lane and footpath will be installed on the North Road from Rosehall roundabout to Patrick Street. This will also serve commercial, retail and residential developments in the vicinity.

Given the significant public transport and cycling enhancements planned for the area, it is considered that there will be a great incentive, particularly for future workers of the scheme, to rely on sustainable forms of transport. Planned enhancements to bus and rail services will also increase the attractiveness of public transport. The significant cycle parking facilities proposed on site and the enhanced cycle land facilities planned for the surrounding road network will also enhance the attractiveness of this mode of travel to and from the scheme.

- *Delivering quality urban design outcomes.*

Detailed consideration has been given by the Design Team to the building placement, massing, finishes and the relationship between the built form and landscaping. The overall intent of the proposed development is to enhance an existing prominent economic driver in the area and provide a destination that offers more than just shopping. The future development of the area, we believe, can deliver a long-term sustainable asset with seamless linkages between land uses, the public realm, and the community, generating employment and attracting people to come together, interact and creating an added sense of community.

The Guidelines clearly acknowledge that it is imperative for the proper planning and sustainable development of an area that new retail development is located at the optimum location having regard to the type of retail offering and the context of the existing environs.

Comparison and large Convenience stores should be located in city or town or in district centres or on the edge of these centres and be of a size which accords with the general floorspace requirements set out in the Development Plan/Retail Strategy to support and add variety and vitality to existing shopping areas and also to facilitate access by public transport for shoppers. Thus, the Guidelines note that Retail Strategies and Development Plans are identified as a means of providing area specific location policies. In this regard, the Development Plan identifies the site as a 'Mixed-Use District Centre' which is suitable for the type of retail/commercial development proposed. In this context, the 2012 Guidelines stress that district centres should be supported in developing their retail offer to a scale which accords with the retail strategy.

The Sequential Test completed and submitted as part of this application, clearly demonstrates that the subject site, is the most appropriate available, compatible site within Drogheda to accommodate a new Retail Development of this scale.

Section 4.1 of the Guidelines state that retail proposals that comply with development plan policies, the objectives of the Retail Planning Guidelines and any retail strategy (if appropriate) and which promote a vital and viable retail sector '*will benefit the economy as a whole and also individual retailers and consumers*'. The Guidelines go on to conclude that '*the development management process should proactively support such applications.*'

5.2 Louth County Development Plan & Retail Strategy

The Louth County Development Plan 2021-2027 is the relevant statutory development plan for the proposed application site. Section 5.20 of the current county development plan has regard to Retail development and recognises that the retail sector has long been a key sector and major employer both nationally and locally and accounts for the largest proportion of the workforce in Ireland.

With respect to employment related land-uses, Section 13.13 '*Employment*' of the current plan requires that all employment related developments are development to a high standard to aid in creating an attractive environment for people to work and business to invest. Given the high-quality, contemporary design of the proposed scheme, including its associated public realm, it is strongly considered that this criteria has been successfully met as part of this proposal.

In terms of retailing, it is noted that Drogheda town is designated as a Level 2 Centre in the Louth County Council Retail Hierarchy, which accords with its designation as a *Regional Growth Centre* in the Regional Spatial and Economic Strategy, this places Drogheda on top of the county retail hierarchy. The key district centres of Drogheda are indicated as being at Level 3 of the county's retail hierarchy. It is further noted that the current plan confirms that the M1 retail park is noted as being one of the principal destinations for bulky goods shopping within Drogheda.

Retailing Level	Type of Centre	Centre
Level 2 * *Level 1 is Dublin City Centre	Major Town Centre / County Town	Drogheda Dundalk
Level 3	Town and/or District Centres and Sub County Town Centres	Ardee Drogheda District Centre: Matthews Lane Dundalk District Centres: Dublin Road & Ard Easmuinn
Level 4	Neighbourhood Centres, Local Centres, Small Towns And Villages	Dunleer, Annagassan, Bellurgan, Baltray, Castlebellingham/Kilsaran, Carlingford, Clogherhead, Collon, Dromiskin, Knockbridge, Louth Village, Omeath, Tallanstown, Termonfeckin, Tullyallen, Drogheda Neighbourhood Centres, Dundalk Neighbourhood Centres
Level 5	Small villages	Various

Figure 28.0 Table 5.3 'Louth County Hierarchy' of the Louth County Development Plan 2021 – 2027

As indicated in the current 2021 Development Plan, Louth County Council aims to ensure that all retail development permitted within the County's administrative boundary, is in accordance with the Retail Planning Guidelines for Planning Authorities, 2012, the Retail Design Manual – A Good Practice Guide, 2012 and the Louth Retail Strategy, which has been prepared as part of the current development plan. The proposed development has thus been prepared in line with the above documents.

It is also noted that the retail sector has been a long-established key sector and significant employer both nationally and locally, and accounts for the largest proportion of the workforce in the County, with approximately 298,000 employees working in the sector, according to 2019 Census data. More locally, the 2016 Census results demonstrate that at a local level, the retail and wholesale sector was the largest industrial sector in the County, employing 15.9% of the total working population, with the retail sector also supporting indirect employment within the County, in other sectors such as logistics and distribution.

In the context of the above, it is clear that the retail sector plays a pivotal role in providing sustainable employment and supporting a vibrant economy in County Louth, and as such the addition of additional retail space would serve to bolster this role.

The Louth Retail Strategy further sets out indicative potential for additional convenience comparison and bulky household goods floorspace in Louth, which are referenced overleaf. The additional floorspace requirement is estimated having regard to the changes in population, population forecasts, updated information on expenditure, trading retail floorspace and vacant retail floor space.

Table 5.4 Indicative Floorspace Requirements for County Louth

Year	Convenience (m ²)	Comparison (m ²)	Bulky Comparison (m ²)
2027	6,479	4,749	2,098
2030	8,039	11,242	5,849

Figure 29.0 Extract from Table 5.4 of the Louth County Development Plan 2021-2027, indicating the retail space requirements for County Louth to 2030

In accordance with the above, it is clear that there is a need for additional retail floorspace within the County to the year 2030. The proposed development will thus aid in meeting the above requirements and the needs growth population of both Louth and Drogheda.

The following policies as included within the Louth County Development Plan are also considered to be of relevance to the subject proposal.

Policy Objective EE 64 *To promote a healthy **competitive retail environment within County Louth** and to maintain the vitality and viability of the town and village centres and their role as primary retail core areas.*

Policy Objective EE 66 *To ensure that applications for retail development comply with the provisions of the Louth Retail Strategy*

Policy Objective EE 73 *To **support the development of Drogheda and Dundalk as Regional Growth Centres and principle locations for future retail development**, Ardee and Dunleer as Self Sustaining Growth Centres and the retail function of all other settlements, commensurate with locally generated needs.*

Having considered the afore referenced policy content, we would highlight that the subject development would enhance the overall retail environment within Drogheda and County Louth more broadly and would support the economic growth of Drogheda as a key Regional Growth Centre. In addition, it is highlighted that the proposed application site is located immediately adjacent to the existing M1 Retail Park and as such, the development of the subject lands for additional retail development will ensure a consolidation of such uses within this area of Drogheda, without negatively impacting upon vitality or impeding the growth of the retail offering located within the town centre. Moreover, the proposal will promote and attract further economic investment and employment generating development within Drogheda, which is a key objective of the current plan.

Section 5.25 of the current 2021 Plan also sets out the Louth County Council's guidance in respect of the assessment retail development proposals, and states that '*new retail developments of significant scale should be targeted primarily within the core retail areas of Level 2 and Level 3 centres, as identified within the Louth Retail Strategy.*' In this regard it is submitted that the subject site presents as an ideal location for the provision of additional out of centre retail development, given the established retail environment immediately adjacent to the site, its scale and proximity to public transport. It is considered that the proposed scheme would provide for a logical expansion existing retail and commercial uses at this location and will represent an efficient and sustainable use of available and serviceable zoned lands.

Land Use Zoning

As is indicated in the below extract from the Drogheda Zoning and Flood Zones Map included as part of the 2021 Development Plan, the subject site is split between two separate land use zones. The majority of the site, located to the west of Trinity Street is zoned objective '**B4 – District Centre**', with the western most portion of the lands being zoned objective '**C1 – Mixed Use**'.

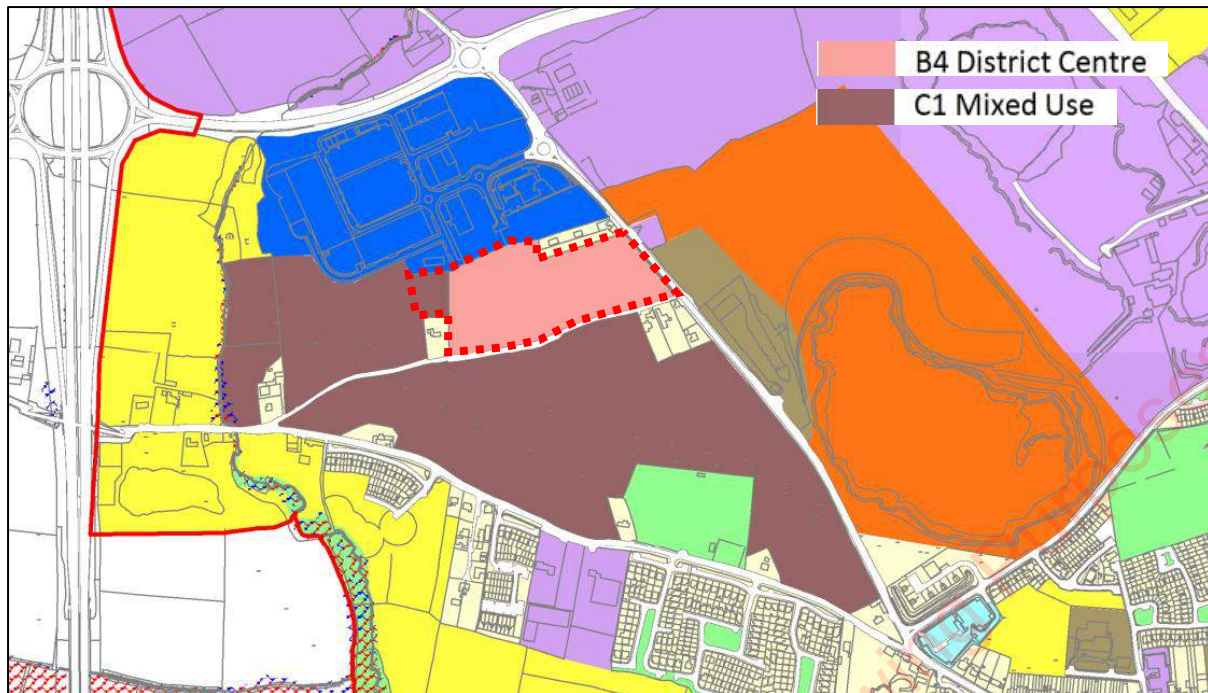


Figure 30.0 Extract from the Drogheda Zoning and Flood Map, showing the subject lands zoned B4-District Centre and C1-Mixed Use, in the Louth County Development Plan 2021-2027 (subject site outlined in red)

The stated objective for 'B4-District Centre' zoned lands is to 'maintain and enhance retail led mixed use district centres.' It is further stipulated within Section 13.21.11 of the 2021 Development Plan that District Centres provide a range of primary retail and non-retail functions and serve a wide catchment population. It is further noted that the range of services and functions available at District Centres is higher than a Neighbourhood Centre. This generally includes a **supermarket** and non-retail services such as banks, local offices, restaurants, and community facilities.

The use classes which are considered to be *Generally Permitted Uses* within B4 zoned lands are as follows:

Generally Permitted Use:

Car Park, Coffee Shop/Tea Room, Community facility, Restaurant, Service Station, Shop, Shop (Convenience) $\geq 1,500m^2$.

Land uses which are listed as being *Open for Consideration Uses* within B4 zoned lands, where the Planning Authority is satisfied that the proposed development would be compatible with the overall policy objectives for the zoning category, include the following:

Open for Consideration Use

Bank/Financial Institution, Betting Office, Bring Banks, Childcare Facility, Drive thru Restaurant, Garden Centre, Health Care Centre, Healthcare Practitioner, Nursing Home, Offices, Plant and Tool Hire, Public Services, Takeaway/Fast Food Outlet, Telecommunications Structures, Utilities.

In respect of the above it is noted that shop and shop (convenience $\geq 1,500m^2$) are listed as generally permitted uses within B4 zoned lands. Furthermore, the zoning objective for B4 zoned lands evidently sets out that uses, including supermarkets are suitable land-uses on District Centre zoned lands. On this basis it is considered that the proposed development fully accords with the overarching development plan guidance in respect of B4 zoned lands.

In respect of 'C1-Mixed Uses' zoned lands, the primary objective is 'to provide for commercial, business and supporting residential uses.' The guidance provided within **Section 13.21.13** of the Plan in respect of C1 zoned lands states that such lands shall provide for both commercial and business uses and the facilitation of residential uses as appropriate. Moreover, it is provided that mixed-use developments which generate daytime and evening activities will be encouraged and supported, however an over concentration of any one use will not normally be permitted. Maintaining the existing urban character, quality of design, integration, and links between uses and spaces are noted as being important considerations for any new developments within C1 zoned lands. In this regard, we note that the proposed retail development will connect with the existing retail park via the proposed road network within the scheme, providing for a cohesive and connected development which will serve to improve the retail offering within the area.

Land uses which are considered to be *Generally Permitted Uses* within C1 zoned lands are listed below for ease of reference:

Generally Permitted Use:

*Bank/Financial Institution, B&B/ Guest House, Bring Banks, Business Enterprise Centre, Coffee Shop/Tea Room, **Car Park**, Casual Trading, Childcare Facility, Cinema, Community Facility, Craft Centre/Shop, Cultural Facility, Digital Innovation Hub/Co-working Space, E-Charging Facility, Hotel/Hostel/Aparthotel, Offices, Park/Playgrounds, Place of Worship, Public House, Public Services, Nursing Home, Recreational/Amenity Open Space, Residential, Residential Institution, Retirement Village, Restaurant, Sheltered Accommodation, **Shop, Shop (Convenience) ≤1,500m²**, Telecommunications Structures, Third Level, Student Accommodation, Tourist Facility, Training Centre, Utilities.*

The use classes which are subsequently considered as being Open for Consideration within C1 zoned lands are as follows:

Open for Consideration Use

Advertisements and Advertising Structures, Amusement Arcade, Betting Office, Crematorium, Funeral Home/Mortuary, Garden Centre, Health Care Centre, Healthcare Practitioner, Nightclub, Recreational/Sports Facility, Recycling Facility (Civic & Amenity), Service Station, Taxi Office, Traveller Accommodation.

It is noted that the proposed Drive Thru unit will be located in the portion of the site which is zoned C1-Mixed Use. Whilst it is acknowledged that the zoning matrix for C1 zoned lands does not include Drive Thru facilities as a generally permitted use or an open for consideration use, we would note the provisions of Section 13.21.2.3 of the current plan which provides guidance in respect of uses not listed and states that whilst there is a comprehensive list of potential uses in 'Generally Permitted' and 'Open for Consideration' categories, it is recognised that there may be scenarios where there are proposals for uses not included on these lists.

Where such a situation arises, it is noted that proposals will be considered on their individual merits, taking into consideration the surrounding land uses, the compatibility of the use/development in the area in which it is proposed to locate any such development, as well as demonstrating compliance with the relevant policy objectives, standards and requirements as set out in the Louth County Development Plan 2021-2027.

On the basis of the foregoing, we submit that the proposed drive-thru facility is appropriately located on the subject site and will integrate well with the proposed retail development located further east within the site.

Louth Retail Strategy 2021-2027

Appendix 4 of the current 2021 Development Plan comprises the *Louth Retail Strategy*, the overarching aim of which is to ensure that future retail development in the County is accommodated in a manner that is efficient, equitable and sustainable. Section 1.4.1 of the Louth Retail Strategy

The Strategy outlines a number of key retail objectives which aim to protect and reinforce existing retail offering, some of which are listed below:

- To ensure that the **retail needs of the residents of County Louth are catered for** as much as possible within the area, to enable a reduction in the requirement to travel to meet these needs and accessibility to shopping and services across all sectors of the community.
- To ensure the orderly development of future retail developments within County Louth, to keep the Retail Strategy under review having regard to changes in the retail sector and have regard to any such review in determining applications for retail development;
- Maintain, and where possible, enhance the existing competitiveness of the County's main centres **by facilitating the development of additional retail floorspace** in keeping with the analysis within Section 1.5;
- To encourage and facilitate the re-use and regeneration of derelict land and vacant buildings for retail uses, with due cognisance to the Sequential Approach;
- Encourage infill retail developments and the redevelopment of derelict and obsolete sites in all existing Core Retail Areas;
- Encourage **a healthy diversity of retail types and scales**, as well as uses that are complementary to retail, in particular leisure uses, within all Core Retail Areas;

Having regard to the above objectives, we also note the following retail policies which have been developed to ensure that future retail developments are carried out in accordance with the requirements of the Retail Planning Guidelines 2012.

- To support applications for **retail development which are in line with the Retail Hierarchy** and accord with the scale and type of retailing identified for that location in accordance with Section 1.5 (Quantitative Analysis);
- **To recognise the growth centres of Drogheda and Dundalk as the principle locations for future retail development** particularly for middle to high order comparison goods;
- To adhere to the Sequential Approach principle in the consideration of retail applications located outside of core retail areas;
- To require a high quality of design and finish for new and replacement shopfronts, signage, and advertising;
- To ensure that a number of local centres be provided to meet the basic convenience and lower order comparison requirements of any expanding communities;
- To promote the Retail Design Manual 2012 and ensure that the identified Key Principles of Urban Design are an integral part of any application for retail development;
- To have regard to the policies and objectives of the Regional Spatial and Economic Strategy for the Eastern and Midland Regional Authority

In consideration of the above policies and objectives, it is considered that the proposed retail development will support the growth and evolution of the Drogheda retail base and will cater for the retail requirements of a growing population. The proposal provides for the sustainable and efficient use of zoned lands, which are within easy reach of the main town centre of Drogheda, and will act as a catalyst for increased economic growth.

In addition to the above, it is also acknowledged that it is the policy of the Council to require a Retail Impact Assessment to be undertaken for the following development proposals:

- Proposals **featuring greater than 1,000 sq.m** of net floorspace for both convenience and comparison type developments in **Level 1 towns**;

- Proposals featuring greater than 500 sq.m of net retail floorspace for both convenience and comparison type developments in all other settlements

The Strategy goes on to discuss population growth and expenditure potential in the County and allocation of projected retail floor space capacity. This is set out in tables 16.0 and 17.0 of the Strategy extracts from which are included below.

Table 16.0 Indicative Floorspace Potential by Settlement – 2027

2027	Convenience (m ²)	Comparison (m ²)	Bulky Comparison (m ²)
Drogheda	3,060	2,243	1,043
Dundalk	2,696	1,976	919
Ardee	399	292	136
Remainder of County	324	238	-

Table 17.0 Indicative Floorspace Potential by Settlement – 2030

2030	Convenience (m ²)	Comparison (m ²)	Bulky Comparison (m ²)
Drogheda	3,797	5,310	2,908
Dundalk	3,345	4,678	2,562
Ardee	495	692	379
Remainder of County	402	562	-

The following commentary is provided within the strategy in respect of these tables:

'Tables 16.0 and 17.0 above set out the indicative potential for additional convenience, comparison and bulky comparison floorspace in the towns of Drogheda, Dundalk and Ardee to 2027 and 2030. The potential floor space capacity for each town is in accordance with the settlement and Retail Hierarchy of the County and has been proportioned in accordance with the population target of the aforementioned settlements for 2027.'

In accordance with the Retail Planning Guidelines 2012, the indicative floorspace requirements set out in the tables above are only intended to provide broad guidance as to the additional quantum of floorspace provision.

The quantum of floorspace should not be considered as upper or lower limits, merely as indicative of the scale of new floor space required to meet the needs of existing and future population and expenditure within the County.

Any additional new floorspace proposed could replace some existing, outdated or poorly located retail floor space. In the event that a planning application is submitted for retail development which does not conform to the scale outlined in this retail strategy the onus is on the applicant to prove to the Planning Authority that the development will not detract from the vitality or viability of the town centre.'

6.0 Assessment of Retail Impact

The purpose of this Retail Impact Assessment is to establish the capacity for retail floorspace in Drogheda and is based on defining a catchment area, existing and projected population and available expenditure. The applicant has prepared a Retail Impact Assessment in line with pre-planning consultation discussions and in order to demonstrate the merits of the proposal. This Assessment will

adopt the six step methodological approach set out in the Retail Assessment Guidelines (2012), as follows:

1. Identification of catchment or study area;
2. Estimation of expenditure available within the defined catchment or study area;
3. Estimation of the turnover of existing centres within the catchment area which is likely to be affected by a new development.
4. Estimation for the turnover of the new development for which a planning application is being lodged.
5. Estimation of the quantum of consumer retail spending available in the catchment area which will be diverted from existing centres to the new retail development; this assessment normally highlights the diversion of expenditure by zone within the catchment area.
6. Aggregation of the zonal diversions from each centre to the new development to provide an estimate of trade diversion; trade is then expressed as a proportion of a centre's turnover at the target year to provide a measure of impact.

In assessing the retail impact based on the proposed development due regard has been had to the steps outlined in Annex 5 of the Retail Planning Guidelines for Planning Authorities, which are outlined in the table below:

Retail Impact Assessment Methodology
Identification of Catchment Area
Estimation of Expenditure Available Within Catchment Area
Estimation of Turnover Of Existing Centres Likely to Be Affected By The New Development Within The Catchment Area
Estimation of The Turnover of New Development
Estimation of the Quantum of Convenience and Comparison Expenditure Available Within Catchment Area
Estimation of the Retail Trade Share (i.e. Zonal Diversion) of Available Convenience and Comparison Goods Expenditure based on the Development of the Proposed Discount Foodstore Development

The retail catchment area for the proposed development has been determined by Hughes Planning and Development Consultants, based on experience and noting the patterns of travel in the surrounding area. Regard has also been had to the location of the subject lands within Drogheda, Co. Louth, the surrounding population, surrounding residential areas, nearby retail centres/areas and surrounding services.

The Retail Impact Assessment will demonstrate that the proposed development will not have a detrimental impact on the vitality and viability of the town centre.

The base and price year for the purposes of this assessment is 2016, which reflects the latest Census of Population data and the latest date for the Annual Services Inquiry. The design year is 2025 for the purposes of this study. This allows for a decision on the planning application (including potential appeals to An Bord Pleanála), the construction of the proposed retail development and a settling down of trading for approximately one year after the opening of the development.

6.1 Defining the Catchment Area

The definition of a catchment area is a matter of professional judgement based on experience and information available regarding travel patterns for retail in the surrounding area, and where available, information from research conducted by the Planning Authority. It is also informed by the nature and scale of the proposed development, the distribution of population in the area, the accessibility of the

site and the location of competing retail centres. In the context of the subject scheme, it is proposed to follow the general approach of the Louth Retail Strategy 2021 - 2027.

It is normal practice to define a catchment area having regard to the time it takes to drive to that centre from various locations, the retail offer of adjoining centres and the resulting shopping patterns in the area. This is done using drive time isochrones linking places of equal driving time from a particular location. The drive time isochrones are adjusted to account for likely shopping patterns in the area. Having regard to the 'out of town' location of this development combined with the nature of goods provided, which will be on the bulkier scale, it is considered more appropriate to assess the catchment area in terms of driving distance, rather than walking.

The catchment area or 'sphere of influence' for the purposes of this study extends to the north of the County outside of Termonfeckin, to the south between Duleek and Julianstown and to the west containing Drogheda and its environs. The catchment represents approximately 15 kilometres and includes the settlements of Bettystown, Donore and Tulleyallen. See the map of the catchment area provided in Figure 31.0 below.

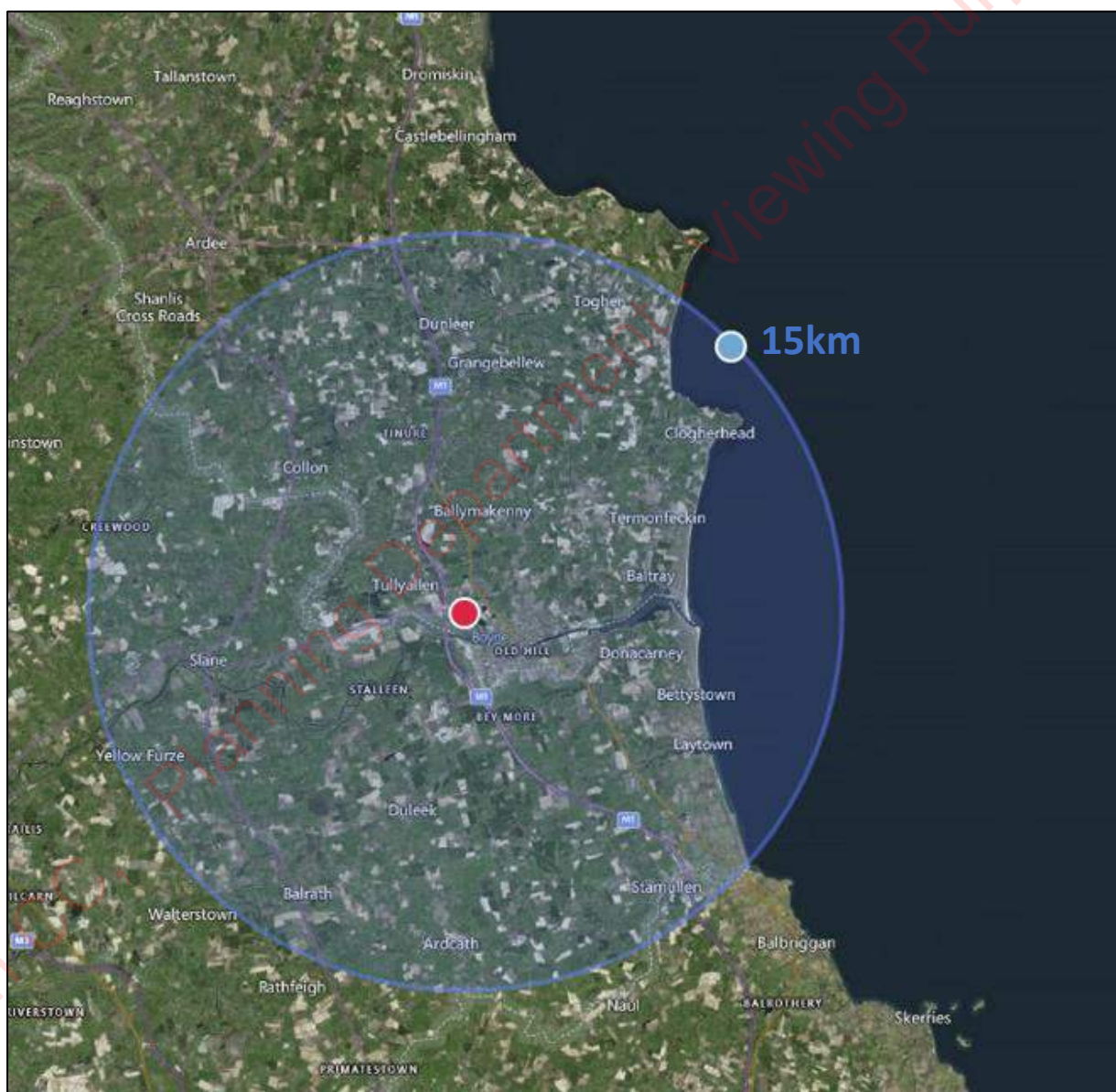


Figure 31.0 Aerial view of the subject 15km catchment area in relation to the subject site (red star)

that 34,199 of the total population live within the Louth County boundary, with the remaining 6,757 residents within County Meath. The total population of Drogheda grew by 2,378 (6.2%) between 2011 and 2016'.

The Catchment Area for this impact assessment has been informed by the study area set out within the County Retail Strategy 2021-2027. The study area is mentioned in section 1.4.1.1 of the Retail Strategy, specifically relating to the catchment area of Drogheda:

'Drogheda serves a wide catchment area stretching northwards towards Dunleer, west towards Slane and south towards the expanding populations of Laytown, Bettystown and Duleek'.

It is noted that the majority of towns listed in the catchment area from the Retail Strategy are included in the 15km radius adopted for the purposes of this report.

Electoral Division	Population 2016
Dysart	924
Dunleer	2,855
Dromin	626
Collon	1,881
Grangegeeth, Meath	659
Slane, Meath	1,853
Painestown, Meath	1,185
Mellifont, Meath	541
Duleek, Meath	5,565
Kentstown, Meath	2,152
Rathfeigh, Meath	988
Ardcath, Meath	1,949
Stamllin, Meath	5,009
Julianstown, Meath	10,176
Termonfeckin, Louth	3,545
Clogher, Louth	3,237
Mullary Louth	1,757
Monasterboice, Louth	1,373
St. Peters, Louth	9,721
St. Mary's, Meath	11,864
St. Mary's, Louth	6,859
West Gate, Louth	6,305
Fair Gate, Louth	10,424
St. Laurence Gate, Louth	4,068
Total	95,516

Table 1.0 Approximate population of the catchment area as per the 2016 census

In the wider context, the 2016 Census indicates a population of 95,516 for the entire 15-kilometre catchment area. Based on the results of the Census which found that there was an average annual rate of increase in the population of 1.6% nationally, it can be expected that by 2022 the population of the catchment area may be c.104,684. The table below assumes a conservative increase of 1.6%, with the existing and projected population of the catchment area provided for the subject site.

Catchment Area Population	
2016	95,516
2017	97,044
2018	98,597
2019	100,175
2020	101,778
2021	103,407
2022	105,062
2023	106,743

2024	108,451
2025	110,186

Table 2.0 2016 Census Assumption: Population growth rate of 1.6% per annum

Overall, it is predicted that the catchment area as a whole will experience a population increase of c. 13,752 to 2025. Further to this, recent trends and housing pressures sprawling outwards from Dublin since the last census suggest that a 1.6% per annum increase in population is an underestimation of actual increases, particularly with Drogheda's proximity and connections to Dublin. On the basis of this, the proposal which seeks to provide a sizeable retail/commercial development within a designated mixed-use district centre location is necessitated by this said increase.

6.3 Estimated Available Expenditure

In estimating available expenditure, Hughes Planning and Development Consultants have projected forward the per capita expenditure for comparison retailing for the Drogheda region based on the application of the Louth County Retail Strategy which assumes conservative annual growth rates for expenditure per capita, including 1% growth per annum for convenience expenditure and 2.5% per annum for comparison expenditure (from 2016-2030), in line with the recorded economic growth statistics and forecasted levels of growth.

Projected Per Capita Spend from 2016 – 2025				
<i>Year</i>	<i>Annual Growth Rate %</i>	<i>Per Capita Spend</i>	<i>Annual Growth Rate %</i>	<i>Per Capita Spend</i>
	<i>Convenience</i>	<i>Convenience</i>	<i>Comparison</i>	<i>Comparison</i>
2016	1	€3,769	2.5	€3,417
2017	1	€3,807	2.5	€3,502
2018	1	€3,845	2.5	€3,590
2019	1	€3,883	2.5	€3,680
2020	1	€3,922	2.5	€3,772
2021	1	€3,961	2.5	€3,866
2022	1	€4,001	2.5	€3,954
2023	1	€4,041	2.5	€4,042
2024	1	€4,081	2.5	€4,130
2025	1	€4,122	2.5	€4,218

Table 3.0 Projections of the available per capita comparison retail spend for County Louth

These figures indicate a modest gradual increase per annum in convenience and comparison per capita spends. Table 3.0 indicates our calculated convenience and comparison spend from 2016-2025.

The annual growth rate which is based on the Retail Strategy for Louth (Table 6.0) permits the convenience and comparison per capita spend to be calculated. These figures can then be used in conjunction with the existing and projected populations for the catchment area to determine an annual calculation of total convenience and comparison expenditure available within the proposed developments catchment area. It is important to consider the percentage of expenditure occurring through non-store sales and competing centres and these have been extrapolated from the County Retail Strategy and are included within the calculations set out within the tables below.

Quantum of Total Convenience Expenditure Available within Catchment Area			
<i>Year of Analysis</i>	<i>Per Capita Spend – Louth Region Convenience (based on Per Capita Spend Calculations)</i>	<i>Population of Catchment Area</i>	<i>Calculation of Total Convenience</i>
2016	€3,769	95,516	€359,999,904

2017	€3,807	97,044	€369,446,508
2018	€3,845	98,597	€379,105,465
2019	€3,883	100,175	€388,979,525
2020	€3,922	101,778	€399,173,316
2021	€3,961	103,407	€409,595,127
2022	€4,001	105,062	€420,353,062
2023	€4,041	106,743	€431,348,463
2024	€4,081	108,451	€442,588,531
2025	€4,122	110,186	€454,186,692

Table 4.0 Quantum of Convenience Expenditure Available within Catchment Area

Table 4.0 above indicates that the available convenience expenditure in the catchment area in 2022 is €420,353,062 with an estimated expenditure in 2025 (i.e., the expected first year of trading for the proposed development) at €454,186,692.

For the purpose of this Retail Impact Assessment, it is necessary to differentiate between comparison non-bulky goods and bulky household goods. In accordance with the Louth Retail Strategy 2021-2027, an 80:20 split has been applied to the total available comparison spend. This is broken down in the columns below.

Quantum of Total Comparison Expenditure Available Within Catchment Area					
Year	Per Capita Spend – Louth Region Convenience (based on Per Capita Spend Calculations)	Population of Catchment Area	Calculation of Total Comparison + Bulky Goods Expenditure Available	Calculation of Total Comparison Goods Expenditure Available (80%)	Calculation of Total Bulky Goods Expenditure (20%)
2016	€3,417	95,516	€326,378,172	€261,102,537.60	€65,275,634.40
2017	€3,502	97,044	€339,488,088	€271,590,470.40	€67,897,617.60
2018	€3,590	98,597	€353,963,230	€283,170,584.00	€70,792,646.00
2019	€3,680	100,175	€368,644,000	€294,915,200.00	€73,728,800.00
2020	€3,772	101,778	€383,906,616	€307,125,292.80	€76,781,323.20
2021	€3,866	103,407	€399,771,462	€319,817,169.60	€79,954,292.40
2022	€3,954	105,062	€415,415,148	€332,332,118.40	€83,083,029.60
2023	€4,042	106,743	€431,455,206	€345,164,164.80	€86,291,041.20
2024	€4,130	108,451	€447,902,630	€358,322,104.00	€89,580,526.00
2025	€4,218	110,186	€464,764,548	€371,811,638.40	€92,952,909.60

Table 5.0 Quantum of Comparison Expenditure Available within Catchment Area

Table 5.0 above demonstrates that the available comparison expenditure in the catchment area in 2022 is €415,415,148, with an estimated expenditure in 2025 (i.e., the expected first year of trading for the proposed development) at €464,764,548. Section 1.5.3 of the Louth Retail Strategy notes that it is estimated that 20% of comparison expenditure will be accounted for by bulky household goods. Therefore €83,083,029.60 of the available expenditure can be applied to bulky goods retail and €332,332,118.40 of available expenditure to comparison goods in 2022.

Adjustments to the available expenditure need to be made with regards to online shopping and shopping outside the catchment area. As part of this Retail Impact Assessment, it is necessary to estimate spending inflows and outflows from the catchment area. Having regard to the Louth Retail Strategy 2021-2027 it is outlined that the projected outflow rates by 2030 will be 3.3% for convenience spend, 9.8% for comparison (non-bulky) spend and 11.2% for bulky comparison spend. These figures which represent a worst case scenario basis have been used to form the basis of the below calculations. The increase in outflow rates is a direct result of the rise in popularity of online shopping.

As per Table 8.0 of the Retail Strategy inflow rates from the survey data from 2014 was relied upon to estimate spending inflows. This is consistent with the approach taken by the Planning Authority.

Total Available Expenditure adjusted to account for Inflows and Outflows						
Year		Convenience (€)		Comparison Goods		Comparison Bulky
2016						
Catchment Area Total Expenditure		€359,999,904		€261,102,537.60		€65,275,634.40
Less Outflows %	3.3%	€11,879,996.83	9.8%	€25,588,048.70	11.2%	€7,310,871.10
Total Expenditure		€348,119,907.17		€235,514,488.90		€57,964,763.30
Plus Inflows %	3.8%	€13,228,556.47	8.0%	€18,841,159.11	1.0%	€579,647.63
Total Spend Catchment Area		€361,408,463.64		€254,355,648.01		€58,544,410.93
2018						
Catchment Area Total Expenditure		€379,105,465		€283,170,584.00		€70,792,646.00
Less Outflows %	3.3%	€12,510,480.35	9.8%	€27,750,717.23	11.2%	€7,928,776.35
Total Expenditure		€366,594,984.65		€255,419,866.77		€62,863,869.65
Plus Inflows %	3.8%	€13,930,609.24	8.0%	€20,433,589.34	1.0%	€628,638.70
Total Spend Catchment Area		€380,525,593.90		€275,853,451.11		€63,492,508.40
2020						
Catchment Area Total Expenditure		€399,173,316		€307,125,292.80		€76,781,323.20
Less Outflows %	3.3%	€13,172,719.43	9.8%	€30,098,278.70	11.2%	€8,599,508.20
Total Expenditure		€386,000,596.58		€277,027,014.10		€68,181,815
Plus Inflows %	3.8%	€14,668,022.67	8%	€22,162,161.13	1%	€681,818.15
Total Spend Catchment Area		€400,668,619.25		€299,189,175.23		€68,863,63.15
2022						
Catchment Area Total Expenditure		€420,353,062		€332,332,118.40		€83,083,029.60
Less Outflows %	3.3%	€13,871,651.05	9.8%	€32,568,547.60	11.2%	€9,305,299.32
Total Expenditure		€406,481,410.95		€299,763,570.80		€73,777,730.28
Plus Inflows %	3.8%	€15,446,293.62	8%	€23,981,085.67	1%	€737,777.30
Total Spend Catchment Area		€421,927,704.57		€323,744,656.46		€74,515,507.30

2024						
Catchment Area Total Expenditure		€442,588,531		€358,322,104.00		€89,580,526.00
Less Outflows %	3.3%	€14,605,421.52	9.8%	€35,115,566.19	11.2%	€10,033,018.91
Total Expenditure		€427,983,109.48		€323,166,537.81		€79,547,507.09
Plus Inflows %	3.8%	€16,263,358.16	8%	€25,853,323.03	1%	€795,475.10
Total Spend Catchment Area		€444,246,467.64		€349,019,860.83		€80,342,982.16
2025 (Design Year)						
Total Expenditure		€454,186,692		€371,811,638.40		€92,952,909.60
Less Outflows %	3.3%	€14,988,160.84	9.8%	€36,437,540.56	11.2%	€10,410,725.88
Total Expenditure		€439,198,531.20		€335,374,097.84		€82,542,183.72
Plus Inflows %	3.8%	€16,689,544.10	8%	€26,829,97.83	1%	€825,421.84
Total Spend Catchment Area		€456,188,075.38		€362,204,025.67		€83,367,605.56

Table 6.0 Total Available Expenditure adjusted to account for Inflows and Outflows

6.4 Turnover Estimates

The average convenience and comparison retail floorspace turnover figures are contained within the Louth Retail Strategy 2021-2027. These indicative turnover figures are an estimate of the amount of expenditure that is currently being sustained by the amount of floor space in the County. Table 10.0 of the Strategy outlines that the indicative turnover per sq.m for **convenience is €11,531, €5,199 for comparison (non-bulky) and €2,101 for comparison (bulky)**. Applying the annual growth rate of 1% as depicted in Section 1.5.7 of the Louth Retail Strategy, these figures have been extrapolated for the current year (2022) and the anticipated first year of operation (2025) providing for the below ratios:

Estimated Turn Over Rates for 2022 and 2025 (Design Year)			
Year	Convenience – Indicative Turnover Per sq.m (€)	Comparison – Indicative Turnover Per sq.m (€)	Bulky Comparison – Indicative Turnover Per sq.m (€)
2022	€11,880.63	€5,356.03	€2,164.43
2025	€12,240.62	€5,518.34	€2,230.01

Table 7.0 Turn over estimates per sq.m for 2022 and 2025

The table below estimates the existing convenience and comparison floor space in Drogheda as per a survey undertaken by the Planning Authority in 2019 and 2020. The figures presented in the below table are nett figures.

Existing Retail Space in Drogheda				
Settlement	Convenience sq.m	Comparison (sq.m)	Bulky Comparison (sq.m)	Total
Drogheda	16,376	32,922	21,998	71,296

Table 8.0 Existing Retail floor space in Drogheda Louth

Catchment Existing Convenience Floorspace Turnover (2022)			
Area	Nett Floor Area	Turnover per sq.m	Turnover
Drogheda	16,376	€11,880.63	€194,557,197
Vacant Units	1,791	€11,880.63	€21,278,208.30
Total	18,167	€11,880.63	€215,835,405

Table 9.0 Catchment Existing Convenience Floor Space Turnover (2022)

Catchment Existing Comparison (non-bulky) Floorspace Turnover (2022)			
Area	Nett Floor Area	Turnover per sq.m	Turnover
Drogheda	32,922	€5,356.03	€ 176,331,219.66
Vacant Units	8,615	€5,356.03	€ 46,142,198.50
Total	41,537	€5,356.03	€ 222,473,418.11

Table 10.0 Catchment Existing Comparison (non-bulky) Floor Space Turnover (2022)

Catchment Existing Comparison (bulky) Floorspace Turnover (2022)			
Area	Nett Floor Area	Turnover per sq.m	Turnover
Drogheda	21,998	€2,164.43	€ 47,613,131.14
Vacant Units	463	€2,164.43	€ 1,002,131.09
Total	22,451	€2,164.43	€ 48,615,262.23

Table 11.0 Catchment Existing Comparison (bulky) Floor Space Turnover (2022)

The above analysis indicates, that in the current year 2022, there is an existing turnover in convenience retail floorspace within Drogheda of **€215,835,405** with the quantum of available expenditure within the catchment area (15km of the subject site) of **€421,927,704.57** in 2022. Therefore, the quantum of available expenditure within the catchment area for convenience goods is **€ 206,092,299.57**.

It is also demonstrated that there is an existing turnover in comparison (non-bulky) retail floorspace of **€222,473,418.11** (2022) within Drogheda, with the quantum of available expenditure available within the catchment area (15km of the subject site) of **€323,744,656.46**. Therefore, the quantum of available expenditure within the catchment area for comparison (non-bulky) is **€101,271,238.35**.

The final table above, depicts that there is an existing turnover in comparison (bulky) retail floorspace of **€48,615,262.23** (2022) within Drogheda, with the quantum of available expenditure within the catchment area (15km of subject site) of **€74,515,507.30**, equating to an available expenditure in the area of **€25,900,245.07**.

The above analysis demonstrates that there is an under provision if convenience and comparison, both non-bulky and bulky floor, retail floor space in the catchment area for the existing population.

The proposed development provides for a nett floor area of 2,750 sq.m (nett) convenience floor space which provides for an estimated turnover, based on the 2025 figures presented in table 7.0 above, of **€33,661,705**. The proposed development also provides for 3,382sq.m (nett) of comparison (non-bulky) retail floor space, which will provide for an estimated turnover of **€18,663,025.90**. The scheme will also provide for a total quantum of 2,344 sq.m (nett) bulky goods retail floor space, which will provide for an estimated turnover of **€5,227,143.44**. **Therefore, there is significant capacity within the catchment area to accommodate the additional convenience, comparison and bulky comparison floorspace proposed as part of this application.**

Table 5.4 of the Louth County Development Plan 2021-2027 provides for an indicative floorspace requirement for the County of 6,479sq.m for comparison, 4,749sq.m for comparison (non-bulky) and 2,098sq,m for comparison (bulky). The proposed scheme will aid in reaching these targets.

7.0 Conclusion

This Retail Impact Assessment has demonstrated that the proposed development is of an appropriate scale for the location and that it will adequately serve the growing demand for convenience, comparison and bulky goods providers in the area.

The subject site is currently vacant providing no practical use. The proposed retail scheme provides an opportunity to provide for the regeneration of the site and caters for their growing commercial customer base who buy in bulk. The quantitative assessment in this report has demonstrated that there is sufficient capacity to cater for the proposed bulky goods floorspace.

The proposed development is therefore consistent with the proper planning and sustainable development of the area and complies with the provisions of the Retail Planning Guidelines and the policies and objectives of the Meath Retail Strategy, and Louth Retail Strategy.

Appendix C

Louth CC, Planning Department - Viewing Purposes Only!



Civil Infrastructure Report

Project:
**Retail Development on
Lands to the South of the
M1 Retail Park, Mell,
Drogheda, Co. Louth**

Louth CC, Planning Department - View for Purposes Only

DOCUMENT CONTROL

Project: Retail Development on Lands to the South of the M1 Retail Park, Mell, Drogheda, Co. Louth

Project No: 21.344

Document Title: Civil Infrastructure Report

Document No: 21.344-IR-01

DOCUMENT STATUS

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1. INTRODUCTION

1.1 GENERAL DESCRIPTION

Barrett Mahony Consulting Engineers Ltd. have been commissioned by BPM GP3 Ltd to complete the Civil Infrastructure Report in respect of a proposed retail/commercial development on lands to the south of the existing M1 Retail Park, Mell, Drogheda, Co. Louth.

The development will consist of:

- (i) A retail/commercial development comprising: (i) provision of 10 no. single storey retail units including a part-licensed anchor retail supermarket store (Unit 1)(4,085sq.m gfa), a DIY/Home store, including a garden centre(Unit 10)(2,350sq.m gfa), 8 no. smaller retail/commercial units, including a café and pharmacy (Units 2-8) (ranging in size from 300sq.m – 760sq.m gfa) and 1 no. single storey Drive-Thru Restaurant/Café unit (375sq.m), including an external seating area. A deliveries area, service yard and ground mounted plant units will be provided to the side (south) and rear (west) of Retail Unit 1, a dedicated set down point is also proposed adjacent to the front entrance to Retail Unit 1. Deliveries will also be accommodated to the rear (south) of the proposed retail units (Units 2-10) with a truck turning area provided to the rear (south) of unit 10. Dock levellers will be provided to the rear of units 2-10 to facilitate loading and unloading of goods. A total of 311 no. car parking spaces are proposed to serve the proposed development, including 23 no. accessible parking spaces, 2 no. click and collect spaces and 17 no. parent and child spaces. A bus/coach parking area comprising 4 no. bus/coach parking spaces is also provided within the eastern portion of the site, adjacent to the Trinity Street Frontage. 104 no. bicycle parking spaces are proposed at surface level to serve the proposed retail/commercial units. A partially covered pedestrian circulation space will be provided to the front of each of the proposed retail units. The development also includes:
 - (ii) provision of 2 no. vehicular and pedestrian connection points to the existing M1 Retail Park to the north which will provide access to the proposed retail development;
 - (iii) internal roads, footpaths and pedestrian crossings;
 - (iv) trolley bays, signage, hard and soft landscaping, boundary treatments, Electric Vehicle Charging spaces, and lighting;
 - (v) associated site and infrastructural works are also proposed which include: foul and surface water drainage, plant areas; 3 no. ESB substations; and
 - (vi) all associated site development works necessary to facilitate the proposed development.

This application is accompanied by an Environmental Impact Assessment Report and a Natura Impact Statement.

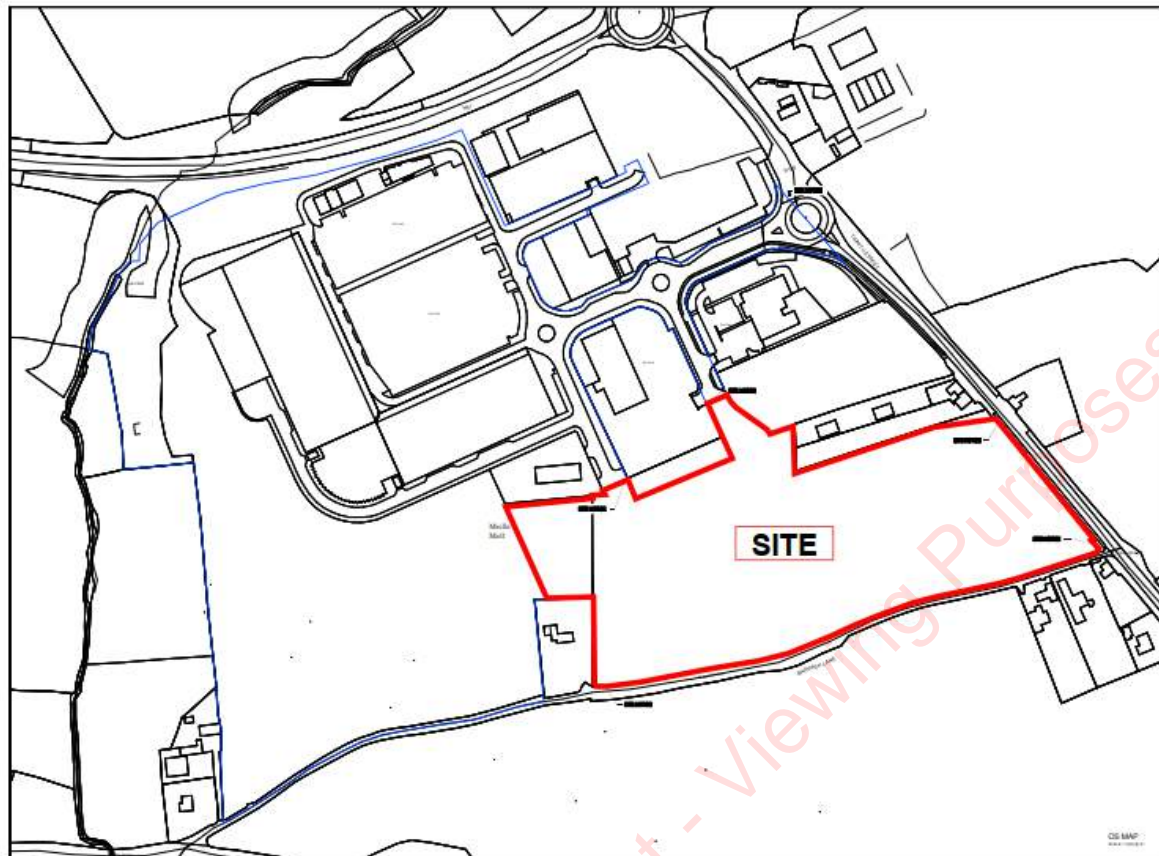


Figure 1 – Site Plan

1.2 SCOPE OF THIS REPORT

This report describes the proposed civil engineering infrastructure for the development and how it connects to the public infrastructure serving the area. In particular, foul and surface water drainage, and water supply aspects are considered. This report should be read in conjunction with the following drawings submitted with the Planning Application:

1.3 PRE-SUBMISSION DISCUSSIONS

1.3.1 Irish Water

A pre-connection enquiry was submitted to Irish Water New Connections and the Confirmation of Feasibility received. This can be found in Appendix 2.

Surface Water Drainage System

1.4 EXISTING SURFACE WATER INFRASTRUCTURE

Currently there is an existing 225mm uPVC sewer that Barrack Lane to the south of the site.

1.5 PROPOSED SURFACE WATER DRAINAGE SYSTEM

It is proposed to discharge the surface water runoff from the site to a tributary stream into the River Boyne. Surface water run-off from the roof will be collected in a gravity network and directed to an attenuation tank located under the car park before travelling to the stream via the Barrack Lane which has been confirmed to be taken in charge by the Louth County Council. The exact outfall point to the stream is to be agreed with County Council following a pre-construction ecology survey, should a Grant of Planning be forthcoming

Discharge from the site will be controlled via a flow control device set at 16.2l/s, located in a manhole adjacent the attenuation tank. The discharge will be pumped to a surface water manhole at ground level. The surface water discharge to the public sewer via a non-return manhole.

See Appendix 1 for calculations and refer to drawings 21.344-C-1000, C-1001, C-1005 and C-1200 issued with this report for layout and details.

1.6 COMPLIANCE WITH THE PRINCIPLES OF SUSTAINABLE URBAN DRAINAGE SYSTEMS

The proposed development has been designed in accordance with the principles of Sustainable Drainage Systems (SuDS) as embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GSDSDS). The GSDSDS addresses the issue of sustainability by requiring designs to comply with a set of drainage criteria which aim to minimize the impact of urbanization by replicating the run-off characteristics of the greenfield site:

- Criterion 1 – River Water Quality Protection
- Criterion 2 – River Regime Protection
- Criterion 3 – Flood Risk Assessment
- Criterion 4 – River Flood Protection

The requirements of SuDS are typically addressed by provision of the following:

- Interception storage
- Treatment storage (not required if interception storage is provided)
- Attenuation storage
- Long term storage (not required if growth factors are not applied to QBAR when designing attenuation storage)

1.6.1 Compliance with the principles of the CIRIA C753 SuDS Manual

The C753 SuDS Manual explains that the primary function of SuDS measures is to protect watercourses from any impact due to the new development. However, SuDS can also improve the quality of life in a new development and urban spaces by making them more vibrant, visually attractive, sustainable, and more resilient to change. This document explains the wider social context of SuDS and how SuDS can deliver high quality drainage while supporting urban areas to cope better with severe rainfall both now and in the future.

There are four main categories of benefits that can be achieved by SuDS:

1. Water Quantity (mitigate flood risk & protect natural water cycle)
2. Water Quality (manage the quality of the runoff to prevent pollution)
3. Amenity (create and sustain better places for people)
4. Biodiversity (create and sustain better places for nature)

1.6.2 SuDS Measure Selection

Below are the applicable SuDS measures which have been chosen for the site.

1.6.3 Permeable Paving

Permeable paving provides a surface suitable for pedestrian and/or vehicular traffic, while also allowing rainwater to infiltrate through the surface and into the underlying structural layers. The water is temporarily stored beneath the overlying surface before slowly infiltrating. Permeable paving systems are an effective way of managing surface water runoff close to its source.

The car parking spaces, throughout the site will be made up of permeable paving.

By providing a raised drainage outlet above the base of the coarse graded gravel bed it is possible to achieve interception storage. Raising the invert of the drainage pipe to 100mm above the gravel bed gives 30mm interception storage @ 30% voids in the gravel. Refer to detail below.

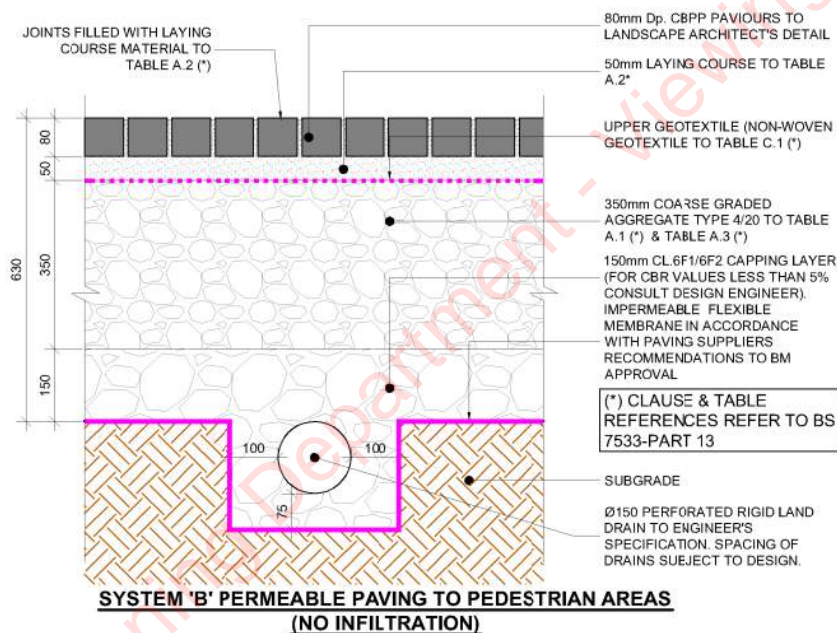


Figure 2 – Permeable Paving Detail

1.6.4 Attenuation Devices

Attenuation tanks are used to create below-ground void space for the temporary storage of surface water before infiltration, controlled release or use.

1.6.5 Bio-Retention and Tree Pits

Both catchments contain bio-retention areas and tree pits to treat and intercept runoff from neighbouring road surfaces and to take the rainwater from adjacent rainwater downpipes. These systems also allow some direct infiltration to the ground since they will be lined with permeable geotextile material. In each case there is a slotted drainage pipe above the base which collects and re-directs excess runoff to the stormwater network. For the location of these SuDS measures on BMCE drawing C1209

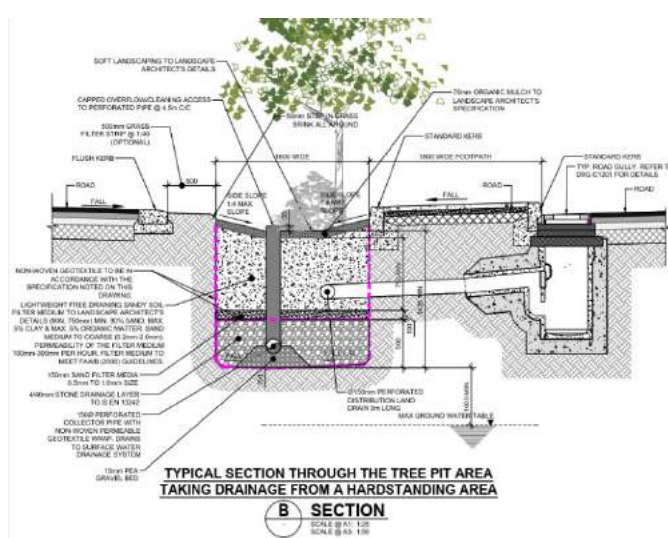


Figure 3 Tree Pit Detail

1.6.6 Filter Trenches

Filter Trenches systems are shallow landscaped depressions adjacent to the roadway. The trenches collect, intercepts and treat the road runoff. Filter trenches can reduce the runoff rates and volumes of surface water. They treat pollution using engineered soils and vegetation. They are very effective in delivering interception and treatment storage. By including filter strips within the depression, the effectiveness of the overall system in meeting the requirements of water quality, water quantity, amenity and biodiversity is significantly improved.

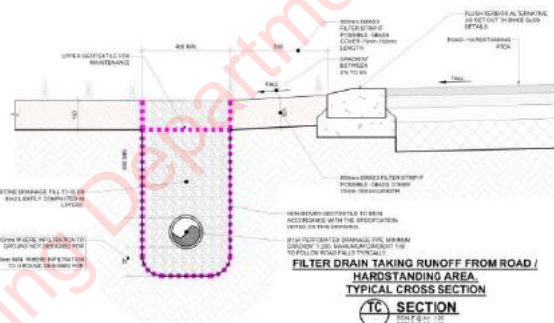


Figure 4 Filter Trench

1.6.7 Interception Storage

The GSDS requires that Interception storage, where provided, should ensure that at a minimum the first 5mm and preferably the first 10mm of rainfall is intercepted on site and does not directly pass to the receiving watercourse. Interception storage can be attained using SuDS features which allow the rainwater to infiltrate into the ground, evaporate into the atmosphere or transpire through vegetation.

The overall impermeable area of the site 3.24ha.

Providing the target of 10mm interception storage (in accordance with the requirements of the GSDS) equates to a volume of 324m³. Interception storage for the new development will be provided as outlined above. Respective areas of each type of interception are given below:

Interception storage will be provided using a combination of Filter Trenches, Tree Pits, Bio Retention & Permeable Paving.

The table 2.1 below outline how the interception storage will be achieved.

Interception Provided	Area (m ²)	Storage l/m ²	Capacity m ³
Filter Trench	1138	75	85.35
Tree Pit	1713	75	128.475
Permeable paving	5020	30	150.6
		TOTAL	364.425

The total interception storage provided (364m³) is greater than the required (324m³)

Refer to drawings issued with this report for proposed SUDS details.

1.6.8 Attenuation Storage

An attenuation tank will be located under the ground level on the southwestern corner of the development site.

In accordance with the IH124 method, the greenfield runoff for existing undeveloped sites measuring less than 50ha can be estimated using the following formula:

$$Q_{\text{barrural}} \text{ (in m}^3 \text{ /s)} = 0.00108 \times (0.01 \times \text{AREA})^{0.89} \times \text{SAAR}^{1.17} \times \text{SPR}^{2.17}$$

where:

- Q_{barrural} is the mean annual flood flow from a catchment.
- AREA is the area of the catchment in ha.
- SAAR is the standard average annual rainfall for the period 1981-2010 Annual Average Rainfall Grid produced by Met Éireann.
- SPR is Standard Percentage Runoff coefficient for the SOIL category – geotechnical report.

Rainfall data for the site was sourced from an Annual Average Rainfall (AAR) Grid (1981-2010) produced by Met Éireann (Available from: <http://www.met.ie/climate/products03.asp>). The rainfall data for the Irish Grid Coordinates closest to the site indicates a SAAR value of 807mm is appropriate.

Table 2.2: Met Éireann Annual Average Rainfall (AAR) Grid (1981-2010) Extract

easting	northing	Annual Average Rainfall (mm)
307000	274000	787
307000	275000	791
307000	276000	798
307000	277000	807
307000	278000	831
307000	279000	866
307000	280000	915

Soakaway testing to Building Research Establishment (BRE) 365 was carried out by Causeway Geotech in September 2020. Eleven trial pits were excavated (TP01-TP11), which indicated a combination of sandy silty gravelly clay. The infiltration rates were also found to be very low, and it is appropriate to use a SOIL Type 4 for the calculations.

Therefore, Qbar for a 50ha site has been calculated as follows:

$$\begin{aligned} \text{Qbar (for a 50ha site)} &= 0.00108 \times (0.01 \times 50)^{0.89} \times 807^{1.17} \times 0.37^{2.17} \\ \text{Qbar (for a 50ha site)} &= 0.16965 \text{ m}^3 / \text{s} \\ &= 169.647 \text{ l/s for a 50 ha site} \end{aligned}$$

Interpolating linearly, this corresponds with a Qbar figure for the drained area (4.82 ha) of 16.2 l/s.

The attenuation tank has been designed to attenuate a volume of 1500m³ with a flow control device limiting the discharge rate from the attenuation structure.

Appendix 1 contains Flow output for attenuation storage. Refer to drawings 21.344-C-1000 and C-1205 issued with this report.

1.7 SUMMARY

A two-stage treatment system is proposed for this site. Interception and Attenuation storage are provided, and 20% climate change has been applied to the design calculations in accordance with the GSDS guidelines.

2. FOUL DRAINAGE SYSTEM

2.1 EXISTING FOUL SEWER INFRASTRUCTURE

The Foul drainage system installed as part of the original retail park development outfalls to an existing pumping station constructed at the southwest corner of the site. A 225mm diameter gravity sewer collects the foul effluent from the retail park and runs south towards Barrack lane where it connects to another 225mm diameter gravity sewer that falls westwards along Barrack lane (inside the site boundary) from its junction with Trinity Street to the pumping station at the south west corner. From there the effluent is pumped back up through a 100mm diameter rising main that runs eastwards along Barrack lane (inside the site boundary) to a 225mm diameter sewer in Trinity Street. The Trinity Street sewer runs southwards where it connects into the town's main sewerage network.

Part of the original brief was to future proof, where cost effective, the Foul System and an additional 300mm rising main was laid parallel with the live 100mm main so that in the future, if the pumping station was upgraded for a bigger population, the larger rising main is already in place.

2.2 PROPOSED FOUL SEWER SYSTEM

The proposed foul drainage system can connect to the existing 225mm sewer pipe laid parallel to Barrack lane that outfalls to the pumping station. The pumping station will need to be upgraded to accommodate the increase in population but the rising main infrastructure is already in place as described.

Liaison with Irish water will be required to ensure there is adequate capacity in the town system (Drainage pipelines within the town and Foul Effluent Treatment Plant capacity) to cater for the increase in population.

2.3 FOUL DESIGN

With 10,690 m² of retail area proposed, the design foul flows from the retail units are calculated has been assessed using the Employment density guide and assuming a dry weather flow of 30 l/person/day

Daily flow

$$\begin{aligned}
 &= (\text{Number of Units}) \times (\text{Number of occupants}) \times (\text{Occupancy Rate}) + (\text{Retail area} \times 1\text{PE}/18\text{m}^2) \times (\text{Staff rate}) \\
 &= 10,690/18 \times 30 \\
 &= 17,817 \text{ l / day}
 \end{aligned}$$

Average Flow

$$\begin{aligned}
 &= \text{"Daily Flow"} / ((\text{"Flow Duration"})(3600)) \\
 &= 1.1 \times (17,817 \text{ l/day}) / (24)(3600) \\
 &= 0.23 \text{ l/s}
 \end{aligned}$$

Peak Flow

$$\begin{aligned}
 &= (\text{Average Flow}) \times (\text{"Peaking Factor"}) + 10\% \text{ infiltration} \\
 &= 0.23 \text{ l/s} \times 6 + 0.023 \\
 &= 1.39 \text{ l/s}
 \end{aligned}$$

The proposed pipe network has been designed in accordance with the relevant requirements of the Irish Water Code of Practice for Wastewater Infrastructure. The proposed foul outfall

pipe, 225mm diameter at a gradient of 1:150 has a capacity = 30.6 l/s which is sufficient for all foul pipework within the site. Refer to drawings 21.344-C-1000 and 21.344-C-1001 for foul network layout. Confirmation of Feasibility was received from Irish Water and can be found attached in Appendix 4.

3. WATER SUPPLY

3.1 EXISTING WATER SUPPLY INFRASTRUCTURE

The water supply system installed as part of the original Retail Park development included constructing a new 450mm diameter watermain out along Trinity Street to connect the town system to the new watermain that had been already laid in the link road from the motorway.

3.2 PROPOSED WATER SUPPLY SYSTEM

A new connection can be taken from the 450mm diameter watermain in Trinity Street to supply the proposed development in accordance with the Irish Water Confirmation of Feasibility. Refer to Appendix 2 of this report.

The water demand for the development has been assessed using the Employment density guide and assuming a dry weather flow of 30 l/person/day. The average day/peak week demand is taken as 1.25 times the average daily domestic demand. The peak demand factor is taken as 5 times the average day/peak week demand.

Retail

Daily Demand

$$\begin{aligned} &= (\text{Retail area} \times 1\text{PE}/18\text{m}^2) \times (\text{Staff rate}) \\ &= 10,690/18 \times 30 \\ &= 17,817 \text{ l / day} \end{aligned}$$

Average Demand

$$\begin{aligned} &= \text{"Daily Demand"} / (\text{"Demand Duration"}) \times 1.25 \\ &= (17,817 \text{ l / day}) / (24)(3600) \times 1.25 \\ &= 0.258 \text{ l/s} \end{aligned}$$

Peak Demand

$$\begin{aligned} &= (\text{Average Demand}) \times (\text{"Peaking demand Factor"}) \\ &= 0.258 \text{ l/s} \times 5 \\ &= 1.291 \text{ l/s} \end{aligned}$$



Appendix 1

Flow Calculations

Louth CC, Planning Department - Viewing Purposes Only

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	Scotland and Ireland	Connection Type	Level Soffits
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Depth (m)
Attenuation Tank	2.500	4.00	31.300	4.790

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	x
FSR Region	Scotland and Ireland	Drain Down Time (mins)	240
M5-60 (mm)	17.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.300	Check Discharge Rate(s)	x
Summer CV	1.000	Check Discharge Volume	✓
Analysis Speed	Detailed	100 year +20% 360 minute (m³)	

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	20	0	0
30	20	0	0
100	20	0	0

Pre-development Discharge Volume

Site Makeup	Brownfield	Return Period (years)	100
Brownfield Method	Greenfield	Climate Change (%)	20
Greenfield Method	FSR/FEH	Storm Duration (mins)	360
Positively Drained Area (ha)	750.000	Betterment (%)	0
Soil Index	5	PR	
SPR	0.53	Runoff Volume (m³)	
CWI			

Node Attenuation Tank Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	26.510	Product Number	CTL-SHE-0150-1620-3200-1620
Design Depth (m)	3.200	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	16.2	Min Node Diameter (mm)	1500

Hydrobrake set 16.2l/s

Node Attenuation Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr) 0.00000 | Safety Factor 1.0 | Invert Level (m) 26.510
Side Inf Coefficient (m/hr) 0.00000 | Porosity 1.00 | Time to half empty (mins)

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	467.0	0.0	3.200	467.0	0.0	3.201	0.0	0.0

Rainfall

Tank Size = 1500m3

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +20% CC 15 minute summer	112.579	31.856
1 year +20% CC 30 minute summer	76.307	21.592
1 year +20% CC 60 minute summer	53.572	14.158
1 year +20% CC 120 minute summer	34.505	9.119
1 year +20% CC 180 minute summer	27.280	7.020
1 year +20% CC 240 minute summer	22.045	5.826
1 year +20% CC 360 minute summer	17.384	4.474
1 year +20% CC 480 minute summer	14.013	3.703
1 year +20% CC 600 minute summer	11.693	3.198
1 year +20% CC 720 minute summer	10.588	2.838
1 year +20% CC 960 minute summer	8.970	2.362
1 year +20% CC 1440 minute summer	6.734	1.805
1 year +20% CC 2160 minute summer	4.987	1.378
1 year +20% CC 2880 minute summer	4.247	1.138
1 year +20% CC 4320 minute summer	3.328	0.870
1 year +20% CC 5760 minute summer	2.810	0.719
1 year +20% CC 7200 minute summer	2.427	0.619
1 year +20% CC 8640 minute summer	2.148	0.548
1 year +20% CC 10080 minute summer	1.937	0.494
30 year +20% CC 15 minute summer	250.319	70.832
30 year +20% CC 30 minute summer	169.534	47.972
30 year +20% CC 60 minute summer	116.572	30.807
30 year +20% CC 120 minute summer	73.169	19.337
30 year +20% CC 180 minute summer	56.807	14.618
30 year +20% CC 240 minute summer	45.293	11.970
30 year +20% CC 360 minute summer	35.007	9.008
30 year +20% CC 480 minute summer	27.832	7.355
30 year +20% CC 600 minute summer	22.966	6.282
30 year +20% CC 720 minute summer	20.599	5.521
30 year +20% CC 960 minute summer	17.095	4.502
30 year +20% CC 1440 minute summer	12.593	3.375
30 year +20% CC 2160 minute summer	9.154	2.530
30 year +20% CC 2880 minute summer	7.689	2.061
30 year +20% CC 4320 minute summer	5.898	1.542
30 year +20% CC 5760 minute summer	4.902	1.255
30 year +20% CC 7200 minute summer	4.191	1.069
30 year +20% CC 8640 minute summer	3.677	0.938
30 year +20% CC 10080 minute summer	3.291	0.840
100 year +20% CC 15 minute summer	325.091	91.990
100 year +20% CC 30 minute summer	221.434	62.658
100 year +20% CC 60 minute summer	151.342	39.995
100 year +20% CC 120 minute summer	94.238	24.904
100 year +20% CC 180 minute summer	72.733	18.717

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +20% CC 240 minute summer	57.752	15.262
100 year +20% CC 360 minute summer	44.349	11.412
100 year +20% CC 480 minute summer	35.092	9.274
100 year +20% CC 600 minute summer	28.847	7.890
100 year +20% CC 720 minute summer	25.793	6.913
100 year +20% CC 960 minute summer	21.298	5.608
100 year +20% CC 1440 minute summer	15.578	4.175
100 year +20% CC 2160 minute summer	11.244	3.107
100 year +20% CC 2880 minute summer	9.395	2.518
100 year +20% CC 4320 minute summer	7.151	1.870
100 year +20% CC 5760 minute summer	5.908	1.512
100 year +20% CC 7200 minute summer	5.028	1.283
100 year +20% CC 8640 minute summer	4.394	1.121
100 year +20% CC 10080 minute summer	3.920	1.000

Results for 1 year +20% CC Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
960 minute summer	Attenuation Tank	660	27.521	1.011	62.3	482.5212	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m ³)
960 minute summer	Attenuation Tank	Hydro-Brake®	13.6	757.3

Discharge rate

Results for 30 year +20% CC Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
960 minute summer	Attenuation Tank	780	28.944	2.434	118.7	1162.2920	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m ³)
960 minute summer	Attenuation Tank	Hydro-Brake®	14.2	850.2

Discharge rate

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
960 minute summer	Attenuation Tank	810	29.695	3.185	147.9	1520.7750	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m ³)
960 minute summer	Attenuation Tank	Hydro-Brake®	16.2	952.4

Discharge rate



Appendix 2

Irish Water Correspondence

Louth CC, Planning Department - Viewing Purposes Only!

Liam McCarthy
 Sandwith House
 52-54 Sandwith Street Lower
 Co. Dublin
 D02WR26

Uisce Éireann
 Bosca OP 448
 Oifig Sheachadta na
 Cathrach Theas
 Cathair Chorcaí

Irish Water
 PO Box 448,
 South City
 Delivery Office,
 Cork City.

www.water.ie

29 April 2022

Re: CDS22001877 pre-connection enquiry - Subject to contract | Contract denied

Connection for Business Connection of 6 unit(s) at Southern M1 Retail Park, Adjacent Barrack Lane, Louth

Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Southern M1 Retail Park, Adjacent Barrack Lane, Louth (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	OUTCOME OF PRE-CONNECTION ENQUIRY <u>THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.</u>
Water Connection	Feasible Subject to upgrades
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	In order to accommodate the proposed connection to Irish Water water network at the Premises, upgrade works are required to extend the length of the network by approximately 240m of new 100mm diameter main (See red dashed line in drawing below) to be laid to link up connection main and existing 150mmuPVC main. Should you wish to progress with the connection you will be required to fund this network extension.



The applicant shall note the water connection can not take place until the trunk main upgrade works are complete (Phase 1; 450mm dia. x 850m). Expected completion date is Q4 2022. Ref; SNDP Drogheda Project 2021. The Phase 1 upgrade has a limited capacity of 1200 units for new developments, and so once this limit has been reached developers will have to wait for phase 2 to be complete.

Wastewater Connection

N/A

The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.

The map included below outlines the current Irish Water infrastructure adjacent to your site:



Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

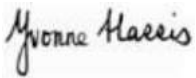
General Notes:

- 1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**

- 2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
- 3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
- 4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at <https://www.water.ie/connections/get-connected/>
- 5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
- 6) Irish Water Connection Policy/ Charges can be found at <https://www.water.ie/connections/information/connection-charges/>
- 7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
- 8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
- 9) To access Irish Water Maps email datarequests@water.ie
- 10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Dario Gozalo Alvarez from the design team on + 353 2254621 or email dalvarez@water.ie For further information, visit www.water.ie/connections.

Yours sincerely,



Yvonne Harris

Head of Customer Operations



Appendix 3

Confirmation Letter of Taken in Charge Roadways

Louth CC, Planning Department - Viewing Purposes Only!



Comhairle Contae Lú
Louth County Council

3rd October 2022

Marlet Property Group
O'Connell Bridge House
27/28 D'Olier Street
Dublin 2
D02 RR99

Roads: Barrack Lane & Slane Road, Drogheda, Co Louth
Your Ref: Karen Jankech

Dear Sirs,

I refer to your email dated 20th September 2022 in relation to the above.

I can confirm that the roads, marked in blue on the attached map, at Barrack Lane and Slane Road, Drogheda, Co. Louth are in the charge of the local authority.

Please contact Irish Water in relation to water supply and foul sewer queries at 1850 278278.

Yours faithfully,

Peadar Mackin
Assistant Staff Officer
Infrastructure Section
Phone 042 9392992
Email peadar.mackin@louthcoco.ie

Comhairle Contae Lú
Halla an Bhaile
Sráid Crowe
Dún Dealgan
Contae Lú
A91 W20C

Louth County Council
Town Hall
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Dundalk
County Louth
A91 W20C

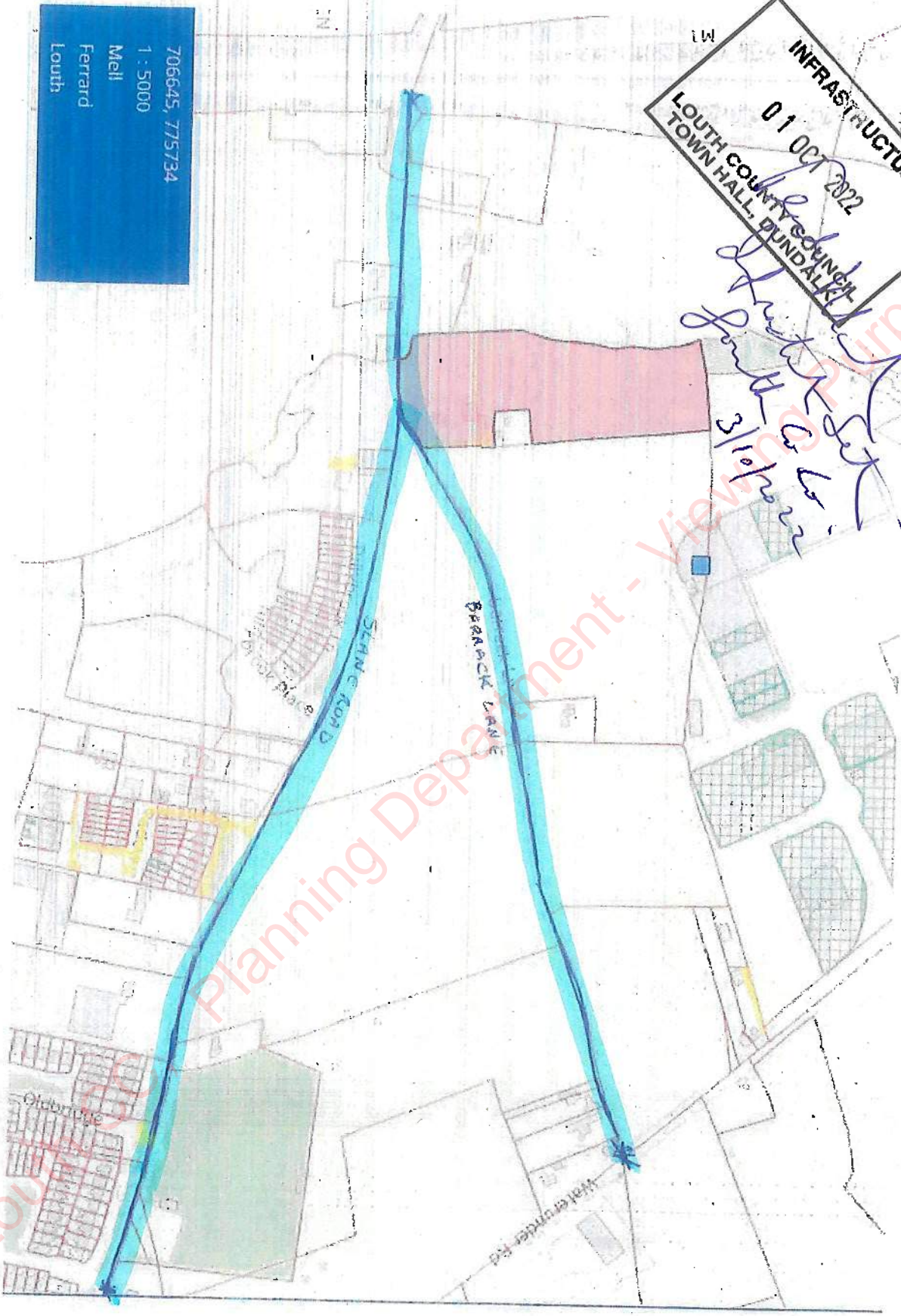
T + 353 42 9335457
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E info@louthcoco.ie
W www.louthcoco.ie

Cuirfear fáilte roimh chomhfhreagras Gaeilge - Correspondence in Irish is welcome
Féach foláirimh faoi Lú ón gComhairle ag www.mapalserter.ie/Louth
View Council alerts for Louth at www.mapalserter.ie/Louth

INFRASTRUCTURE
01 OCT 2022
LOUTH COUNTY COUNCIL
TOWN HALL, BUNDALK
Louth

Handwritten notes:
Louth
31/10/2022

706645, 775734
1 : 5000
Mell
Ferrard
Louth



107

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WWW.BMCE.IE

Louise O'Connell, Planning Department - Viewing Purposes Only

Appendix D

Louth CC, Planning Department - Viewing Purposes Only!

Planning Part L & NZEB Compliance Report
For a Proposed Retail/Commercial Development
on Lands To the South of the Existing M1 Retail Park,
Mell, Drogheda, Co. Louth.



Date:
05/12/22

Issue:
Rev_04



2020

CIBSE BUILDING
PERFORMANCE
CONSULTANCY



2020

EXCELLENCE IN
ENERGY AWARD



2019

ICE PROJECT OF
THE YEAR



2017

EUROPEAN
ENERGY AWARDS

LAWLER
SUSTAINABILITY

A Future Built on
Sustainable Design

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Document Issue Date	Revision	Notes
27/05/2022	Draft	-
23/06/2022	Rev_01	Mechanical, electrical and renewable energy strategy updated
02/09/2022	Rev_02	Proposed domestic hot water Strategy updated for premises with sale of food and drink for consumption.
12/10/2022	Rev_03	Minor descriptive revisions
21/11/2022	Rev_04	Minor descriptive revisions

Lawler Sustainability	
Name	Role
Shane Doyle	Sustainability Engineer
Brian O’Hanrahan	Associate Director

1. Executive Summary

Lawler Sustainability have been appointed to carry out a preliminary Building Energy Rating (BER) & Part L NZEB (Nearly Zero Energy Building) analysis for the Proposed retail/commercial development on lands to the immediate south of the existing M1 Retail Park, Mell, Drogheda, Co. Louth

This analysis is informed by the Architect's most current and up-to-date drawings, and the mechanical and electrical specifications from the mechanical engineer and the sustainability team.

The NZEB NEAP model has been completed using SBEMie v5.5.h.2 within the IES Virtual Environment 2021 VE Compliance software. This software has been validated and approved by the SEAI www.seai.ie/grants/supports-for-contractors/nea/sbemie-software/.

- The proposed Part L compliance strategy (see section 4) for each unit in the development is to achieve at least a 10% improvement in energy (EPC ≤ 0.9) and carbon performance (CPC ≤ 1.04) compared to the Part L minimum standards. This will be achieved by installing building fabric elements that meet the Part L U-value and air tightness requirements in adherence with the fabric first design approach, in addition to energy efficient HVAC, lighting and associated controls. Energy efficient split air conditioning heat pump units will be used to meet the renewable energy requirements for each unit. Heat pumps for the production of hot water are proposed where there is a large demand for hot water e.g. Restaurants, Snack Bars, Drive Thru Restaurant and Cafés. This is due to the increased hot water consumption associated with these establishments
- The buildings will be completed to a shell and core standard in compliance with Technical Guidance Document L 2021 of the building regulations. Section 5 of this report outlines the building fabric specifications required for Part L and NZEB compliance.
- Section 6 details the proposed mechanical and electrical strategy and NEAP specifications for the development. The purpose of this specification is to give future tenants a pathway to TGD Part L 2021 and NZEB compliance for their subsequent fitout. The tenant is at liberty if they so wish to implement an alternative strategy for their BCAR compliance and completion process, noting that it is the responsibility of the tenant to ensure that their fitout achieves compliance with TGD Part L 2021.
- Section 7 details the electric vehicle car parking strategy for the development

Based on the fabric, mechanical and electrical design parameters contained within this report the preliminary BER for each unit is an A2. Please see appendices of this report for the results of the Part L and BER calculations completed.

2. Introduction

This Part L NZEB energy statement report has been drafted by Lawler Sustainability for inclusion in the planning application for the proposed retail/commercial development on lands to the immediate south of the existing M1 Retail Park, Mell, Drogheda, Co. Louth. Lawler Sustainability have been appointed to investigate the architectural, mechanical and electrical requirements necessary to achieve the NZEB standard for the proposed development. The new structures will be designed to meet the building regulation standards in terms of the thermal performance. The proposed mechanical, electrical and renewable energy strategy outlined in the report details a pathway to Part L compliance for the development.

This analysis is informed by the Architect's most current and up-to-date plan drawings (31/05/2022), and the mechanical and electrical specifications from the mechanical engineer and the sustainability team.

The proposed development consists of 10 Retail Units and a Drive Thru unit as shown in Figure 1 below that will be completed to a shell and core standard.

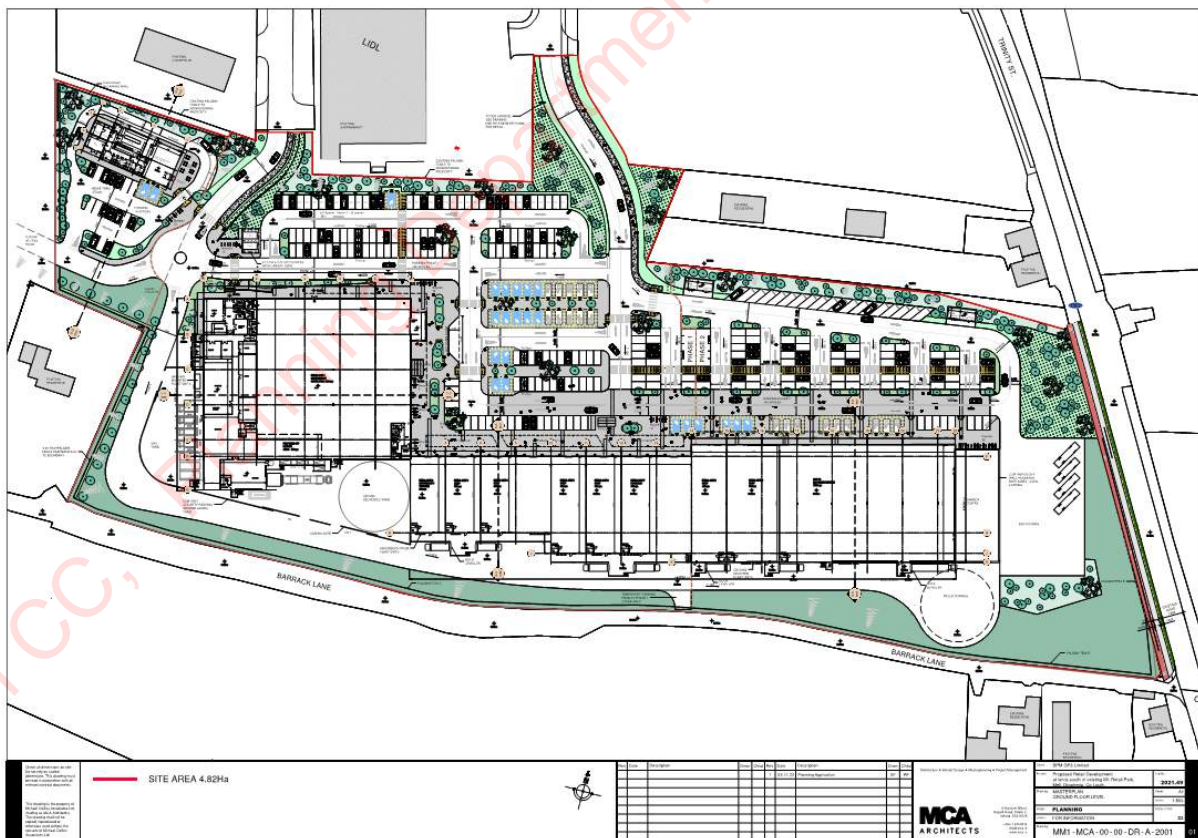


Figure 1: Site Plan

3. Part L 2021 Requirements

The requirements regarding conservation of fuel and energy are laid out in Part L of the Second Schedule to the Building Regulations 1997 (S.I. No. 497 of 1997) as amended and the European Union (Energy Performance of Buildings) Regulations 2021 (S.I. No. 393 of 2021).

For *new buildings other than dwellings*, compliance with Part L of the Second Schedule to the Building Regulations is achieved as follows:

- L1. A building shall be designed and constructed so as to ensure that the energy performance of the building is such as to limit the amount of energy required for the operation of the building and the amount of Carbon Dioxide (CO₂) emissions associated with this energy use insofar as is reasonably practicable.

- L5. For new buildings other than dwellings, the requirements of L1 shall be met by:
 - a. Providing that the energy performance of the building is such as to limit the calculated primary energy consumption and related CO₂ emissions to a Nearly Zero Energy Building level insofar as is reasonably practicable, when both energy consumption and CO₂ emissions are calculated using the Non-domestic Energy Assessment Procedure (NEAP) published by Sustainable Energy Authority of Ireland;
 - b. Providing that, the nearly zero or very low amount of energy required is covered to a very significant extent by energy from renewable sources produced on-site or nearby;
 - c. Limiting the heat loss and, where appropriate, availing of the heat gains through the fabric of the building;
 - d. Providing and commissioning energy efficient space heating and cooling systems, heating and cooling equipment, water heating systems, and ventilation systems, with effective controls;
 - e. Ensuring that the building is appropriately designed to limit need for cooling and, where air-conditioning or mechanical ventilation is installed, that installed systems are energy efficient, appropriately sized and adequately controlled;
 - f. Limiting the heat loss from pipes, ducts and vessels used for the transport or storage of heated water or air;
 - g. Limiting the heat gains by chilled water and refrigerant vessels, and by pipes and ducts that serve air-conditioning systems;
 - h. Providing energy efficient artificial lighting systems and adequate control of these systems; and
 - i. Providing to the building owner sufficient information about the building, the fixed building services, controls and their maintenance requirements so that the building can be operated in such a manner as to use no more fuel and energy than is reasonable.

The European Union (Energy Performance of Buildings) Regulations 2021 (S.I. No. 393 of 2021), insofar as it relates to works related to new buildings other than dwellings, provides as follows:

Regulation 5

- (a) A new building shall, where technically and economically feasible, be equipped with self-regulating devices for the separate regulation of the temperature in each room or, where justified, in a designated heated zone of the building unit.
- (e) A new building, which has more than 10 car parking spaces, shall have installed at least one recharging point and ducting infrastructure (consisting of conduits for electric cables) for at least one in every 5 car parking spaces to enable the subsequent installation of recharging points for electric vehicles.

Louth CC, Planning Department - Viewing Purposes Only

4. Part L (NZEB) Compliance and Renewable Energy Strategy

To meet the NZEB standard a building must comply with the following parameters that are calculated in accordance with the NEAP methodology:

- Maximum Permitted Energy Performance Coefficient (MPEPC) = 1.0.
- Maximum Permitted Carbon Performance Coefficient (MPCPC) = 1.15.
- Renewable Energy Ratio (RER) of at least 0.20 (20%) where a MPEPC of 1.0 and MPCPC of 1.15 is achieved.
- Renewable Energy Ratio (RER) of at least 0.10 (10%) where a MPEPC of 0.9 and MPCPC of 1.04 is achieved.

The proposed strategy for the development is to achieve at least a 10% improvement in energy (EPC ≤ 0.9) and carbon performance (CPC ≤ 1.04) compared to the Part L minimum standards. This will be achieved by installing building fabric elements that meet the Part L U-value and air tightness requirements in adherence with the fabric first design approach, in addition to energy efficient HVAC, lighting and associated controls. Energy efficient split air conditioning heat pump units will be used to meet the renewable energy requirements for the development. Heat pumps for the production of hot water are proposed where there is a large demand for hot water e.g. Restaurants, Snack Bars, Drive Thru Restaurant and Café's. This is due to the increased hot water consumption associated with these establishments.

Section 5 and 6 of this report outline the proposed NEAP specifications for the development. The purpose of this specification is to give future tenants a pathway to TGD Part L 2021 and NZEB compliance for their subsequent fitout. The tenant is at liberty if they so wish to implement an alternative strategy for their BCAR compliance and completion process, noting that it is the responsibility of the tenant to ensure that their fitout achieves compliance with TGD Part L 2021.

Based on the fabric, mechanical and electrical design parameters contained within this report the preliminary BER for each unit is an A2. Please see appendices of this report for the results of the Part L and BER calculations completed.

5. Building Fabric Performance

5.1.1. Opaque Elements

The following tables outlines the targeted building fabric thermal performance specifications required for Part L compliance.

Table 1: Opaque Elements U-values

Element	Target Value (U-value W/m ² K)
External Walls	≤ 0.21
Ground Floor	≤ 0.21
Vehicle Doors (or Similar Large Doors)	≤ 1.50
Personnel Doors	≤ 1.60
Roof	≤ 0.16

5.1.2. Glazed Elements

Table 2: Glazed Elements Details

Element	Target Value (U-value W/m ² K)	Required g-value (W/m ² K)	Target Visible Light Transmittance (VLT)	Notes
Glazing / Windows	≤ 1.6 (Frame + Glazing)	≤ 0.50	0.71	Required g-value to be confirmed at detailed design stage once the glazing ratios have been finalised.

Window and glazing U-value refers to the combined frame and glazing U-value calculation which is required for Part-L compliance.

5.1.3. Building Air Permeability

Table 3: Air Permeability Specification

Element	Target Value Air Permeability (m ³ /hr/m ² @ 50 Pa)	Notes
Air Permeability	≤ 5	Air Tightness Test Required at Project Completion

6. Mechanical and Electrical Performance Specification

6.1. Mechanical Plant Performance

6.1.1. Air Conditioning Units - Split Systems

Table 4. Split Systems

	Inputs	Notes
Heat source	Heat Pump	Certified heat pump in accordance with EN14825/EN14511 and Eurovent Certification Refrigerant based air conditioning system (i.e., heat pump (electric): air source (E.g., DX / Split / VRV / VRF / HVRV)
Fuel Type	Grid Electricity	
Target SCOP	≥ 4.0	
Target SEER	≥ 6.0	

6.1.2. Ventilation - Supply

Table 5. Heat Recovery Unit Supply Ventilation

	SFP	Heat Recovery	Notes
Heat Recovery Units	≤ 1.9 W/(l/s)	≥ 75 %	Heat Recovery Ventilation for the Retail Area. Back of House Areas e.g., Offices, Canteen, and Circulation Areas.

Table 6: Heat Recovery Unit Leakage Specification

System	Leakage Test / Standard CEN classification	Notes
AHU	Class L1	-

6.1.3. Ventilation - Extract

Table 7. Extract Fans

Fan Type	Required Specific Fan Power (SFP)	Notes
In-line extract fan remote from the zone	≤ 0.5 W(l/s)	Maximum Allowable Extract Fan SFP's for Toilets, Warehouse / Storage Areas.
Wall mounted Extract Fans	≤ 0.3 W(l/s)	
Kitchen Extract Fan with Grease Filter	≤ 1.0 W(l/s)	-

6.1.4. HVAC Controls

For compliance with Part L 2021 the following HVAC controls are controls are required for the proposed strategy.

Table 8. Minimum Controls for Heat Pumps

Heat Pump Type	Minimum Controls Package
All Types	<ul style="list-style-type: none"> On/off zone controls. If the unit serves a single zone, the minimum requirements is achieved by default. Time control.
(Air-to-air) Split Systems	<ul style="list-style-type: none"> Heat pump unit controls for <ul style="list-style-type: none"> Control of room air temperature Control of outdoor fan operation Defrost control of external airside heat exchanger Control for secondary heating (if fitted) External room thermostat (if not provided in the heat pump unit) to regulate the space temperature and interlocked with heat pump unit operation.

Table 9. Minimum Controls for Heat Recovery Units

System Type	Minimum Controls Package
Central mechanical ventilation with heating or heat recovery	<ul style="list-style-type: none"> • Heat exchanger defrosting control: Defrost control so that during cold periods ice does not form on the heat exchanger • Heat exchanger-overheating control: Overheating control so that when the system is cooling and heat recovery is undesirable, the heat exchanger is stopped modulated or bypassed • Supply temperature control: Demand control • Air flow control at room level: On/ off time control
Zonal	<ul style="list-style-type: none"> • Air flow control at room level: On / Off

6.1.5. Hot Water System

Table 10. Hot Water System - Retail Units (excluding units with sale of food and drink for consumption)

Hot Water System (HWS)	Inputs	Notes
HWS Generator Type	Standalone water heater	-
HWS Generator Seasonal Efficiency	100%	-
HWS Fuel Type	Grid supplied electricity	-
HWS Storage Volume	10 Litres	-
HWS Storage Losses	$\leq 0.071 \text{ kWh}/(\text{l} \cdot \text{day})$	-
Secondary Circulation Losses	None	-
Dead Legs per space	< 3m Required	-

Please note, a heat pump (as per the specifications in Table 11) for hot water generation will be required for Part L compliance if it is intended that the retail unit will be occupied by a premises with sale of food and drink for consumption, e.g. Restaurants, Snack Bars, Drive Thru Restaurant and Café's. This is due to the increased hot water consumption associated with these establishments.

Table 11. Hot Water System - Heat Pump (Units that include sale of food and drink for consumption)

Hot Water System (HWS)	Inputs	Notes
HWS Generator Type	Heat Pump	-
HWS Generator Seasonal Efficiency	Hot Water SCOP of ≥ 3.0	-
HWS Fuel Type	Grid supplied electricity	-
HWS Storage Volume	200 Litres	-
HWS Storage Losses	Factory Insulated	-
Secondary Circulation Losses	≤ 10 W/m	-
Circulation Loop Length	NEAP default	-
Time Switch	Circulation / Return Pump Time Switch Required	-
Circulation Pump Power	≤ 0.15 kW	-
Dead Legs per space	< 3m Required	-

6.2. Electrical Plant Performance

6.2.1. Lighting Efficacy

Table 12. Lighting Efficacy

	Type	Lighting Efficacy (lumens/Watt)	Notes
Required Lighting Efficacy for Interior Lighting and Display Lighting.	LED	≥ 110	Minimum Average Lighting Efficacy

6.2.2. Lighting Controls

Table 13. Lighting Controls

Lighting Controls	Inputs	Notes
Occupancy Controls	Auto-On / Auto-Off	Offices and Back of House Areas Only
PIR Lighting Control Parasitic Power	≤ 0.3 W/m ²	-

6.2.3. Electric Power Factor

Table 14. Electric Power Factor

Electric Power Factor	Inputs	Notes
Electric Power Factor	>0.95	Power Factor Correction Required

7. Electric Vehicle Charging Requirements

Under the new Part L 2021 the following Electric Vehicle Charging requirements apply to the project:

“A new building which has more than 10 car parking spaces shall have installed at least one recharging point and ducting infrastructure (consisting of conduits for electric cables) for at least one in every 5 car parking spaces to enable the subsequent installation of recharging points for electric vehicles.”

“at least 1 accessible recharging point; or 5% of the total recharging point provision, whichever is the greater, in accordance with similar provision for accessible car parking spaces as outlined in TGD M 2010 Sub-section 1.1.5. Where only 1 recharging point is provided this should be located so that it can be used either from a standard car parking bay or from an accessible car parking bay, and where this is not possible then 2 recharging points should be provided.”

The proposed EV charging space locations are indicated on the proposed site plan. It is proposed to provide 39 no. EV charging spaces

7.1.1. Electric Vehicle Recharging Points

Where electric vehicle recharging points are installed the guidance below should be followed in line with Section 1.4.7.3 of the TGD L 2021:

1. All recharging points should be installed in accordance with the general wiring rules and safety requirements as outlined in the National Rules for Electrical Installations I.S. 10101:2020, e.g., guidance for isolation, earthing, etc.
2. Where recharging points are installed, they should be commissioned by competent persons so that at completion, they are left in the intended working order.
3. Where recharging points are provided the associated parking bay should be clearly marked and consist of the words ‘Electric Vehicle Charging’ or ‘EV Charging’ written on the roadway in letters at least 350mm in height. Where this is an accessible parking bay the access symbol as outlined in Diagram 8 and Diagram 9 of TGD M 2010 (available at <https://www.gov.ie/en/publication/78e67-technical-guidance-document-m-access-and-use/>) should also be marked on the parking bay.
4. Where accessible recharging points are provided the guidance outlined in Section 1.1.5(k) of TGD M 2010 should be followed to allow similar space provisions for accessible recharging points.
5. Where accessible recharging parking bays are provided refer to the guidance for accessible on-site car parking as outlined in Paragraph 1.1.5 of TGD M 2010. The following additional space should be provided where electric vehicle recharging infrastructure is installed:
 - a. Provision of an additional 1200mm access zone to the front of the perpendicular parking bay illustrated in Diagram 8 of TGD M 2010
 - b. Provision of an additional 1200mm access zone to the kerbside of the parallel parking bay illustrated in Diagram 9 of TGD M 2010.
6. Consideration should be given to the location of recharging points and associated recharging cables, to be outside of access routes and the recharging point clear space, to avoid hazards associated with tripping and obstruction of these routes and spaces.

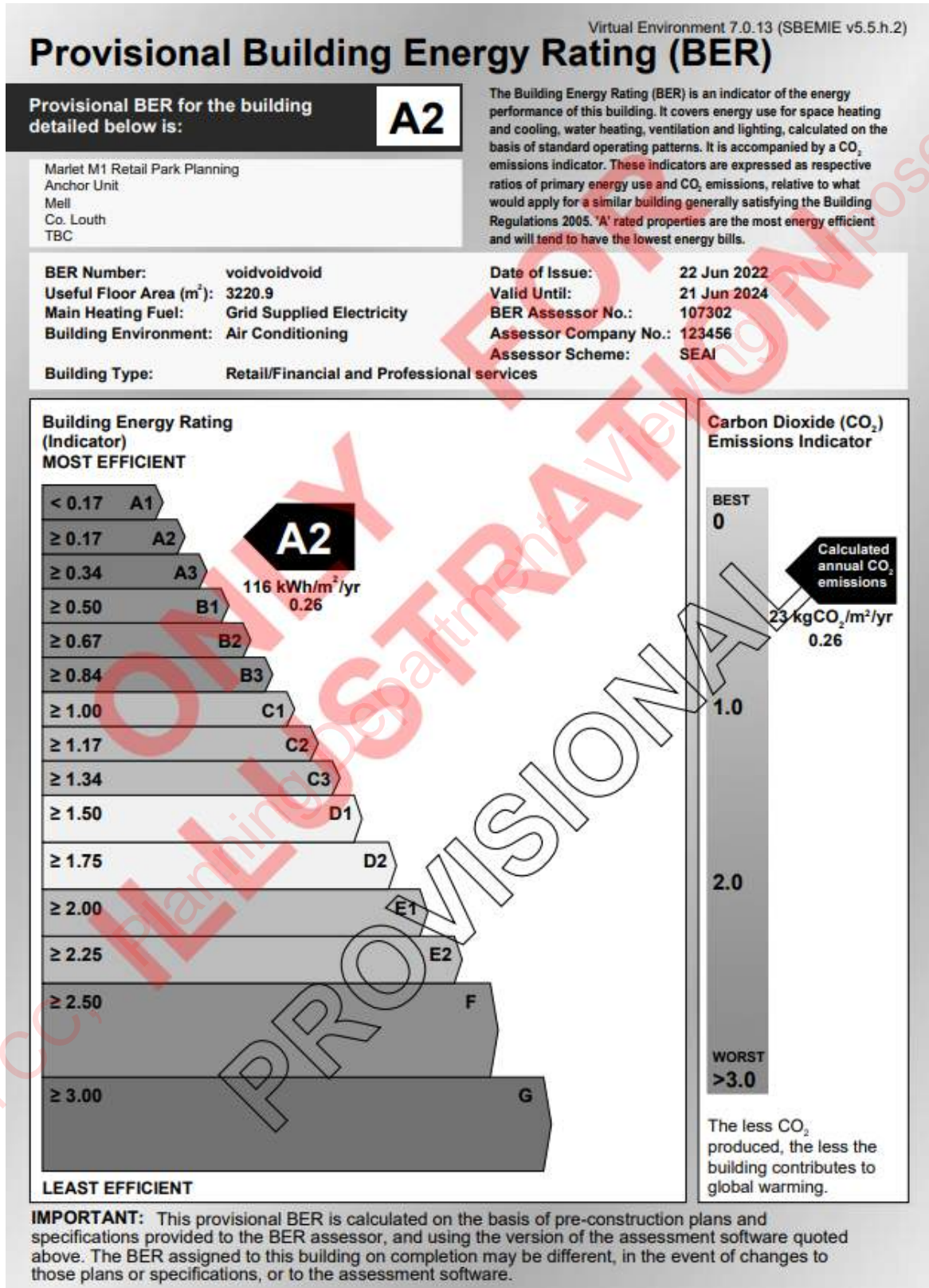
7. Where ducting infrastructure is provided for future installation of recharging points, consideration should be given to the accessible space requirements needed if recharging points were installed at these locations.

7.1.2. Electric Vehicle Ducting Infrastructure

Where ducting infrastructure is to be provided, the guidance below should be followed in line with Section 1.4.7.4 of the TGD L 2021:

1. Ducting infrastructure should be adequately designed to meet the full capacity of all recharging points when installed
2. Ducting infrastructure should be appropriately sized for electric vehicle recharging point capacity
3. Ducting infrastructure should be fit for purpose, capped as appropriate and clearly identified
4. Ducting infrastructure should be routed back to a suitable location with electrical supply access and adequate space provided to accommodate all recharging point ducting connections and electrical supply equipment.
5. Ducting infrastructure and associated electrical equipment, etc. should be adequately designed for maintenance access
6. Ducting infrastructure, including associated electrical equipment, etc. should be installed in accordance with the general wiring rules and safety requirements as outlined in the National Rules for Electrical Installations I.S. 10101:2020

Appendix A: Provisional BER - Anchor Unit



Appendix B: Part L Compliance Report - Anchor Unit

BRIRL Output Document

Compliance Assessment with the Building Regulations (Ireland) TGD-Part L 2017

This report demonstrates compliance with specific aspects of Part L of the Building Regulations. Compliance with all aspects of Part L is a legal requirement. Demonstration of how compliance with every aspect is achieved may be sought from the Building Control Authority.

Marlet M1 Retail Park Pla

Date: Wed Jun 22 22:02:40 2022

Administrative information

Building Details

Address: Marlet M1 Retail Park Planning, Anchor Unit, Mell, Empty, Co. Louth, TBC

NEAP

Calculation engine: SBEMIE
Calculation engine version: v5.5.h.2
Interface to calculation engine: Virtual Environment
Interface to calculation engine version: 7.0.13
BRIRL compliance check version: v5.5.h.2

Client Details

Name: Marlet M1 Retail Park
Telephone number: Phone
Address: Mell, Co. Louth, TBC

Energy Assessor Details

Name: Shane Doyle
Telephone number: 056 771115
Email: shanedoyle@lawlersustainability.com
Address: 7 Patrick Street, Co. Kilkenny, R95 HT9T

Primary Energy Consumption, CO2 Emissions, and Renewable Energy Ratio

The compliance criteria in the TGD-L have been met.

Calculated CO2 emission rate from Reference building	27.1 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	22.9 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.84
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	140.6 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	116.3 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.83
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.12
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.21	0.6	0.21	WR000000_W1
Floors (ground and exposed)	0.21	0.21	0.6	0.21	WR000000_F
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.16	0.3	0.16	WR000000_C
Windows, roof windows, and rooflights	1.6	1.6	3	1.6	0000000F_W0_O0
Personnel doors	1.6	-	3	-	"No ext. personnel doors"
Vehicle access & similar large doors	1.5	-	3	-	"No ext. vehicle access doors"
High usage entrance doors	3	-	3	-	"No ext. high usage entrance doors"
U _{a-Limit} = Limiting area-weighted average U-values [W/(m2K)]		U _{i-Limit} = Limiting individual element U-values [W/(m2K)]			
U _{a-Calc} = Calculated area-weighted average U-values [W/(m2K)]		U _{i-Calc} = Calculated individual element U-values [W/(m2K)]			
* There might be more than one surface with the maximum U-value. ** Automatic U-value check by the tool does not apply to curtain walls whose area-weighted average and individual limiting standards are 1.8 and 3 W/m2K, respectively.					

Air Permeability	Upper Limit	This Building's Value
m3/(h.m2) at 50 Pa	5	5

Building Services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Building Regulations documents for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	>0.95

1- Split System

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	6	-	-	-
Standard value	2.75	4.14**	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
** Standard shown is for split and multi-split air conditioners <6 kW. For systems 6-12 kW, limiting efficiency is 3.87.					

1- SYST0002-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	0
Standard value	1	N/A

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Building Regulations documents
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	ID of system type	SFP [W/(l/s)]									HR efficiency	
		A	B	C	D	E	F	G	H	I	Zone	Standard
	Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1		
Unit 1 Deliveries		0.3	-	-	-	-	-	-	-	-	-	N/A
00_Unit_1_Warehouse		0.3	-	-	-	-	-	-	-	-	-	N/A
00_Unit_1_Staff_Welfare_Corridor		-	-	-	1.9	-	-	-	-	-	0.75	N/A
00_Unit_1_Managers_Office		-	-	-	1.9	-	-	-	-	-	0.75	N/A
00_Unit_1_Meeting		-	-	-	1.9	-	-	-	-	-	0.75	N/A
00_Unit_1_Admin		-	-	-	1.9	-	-	-	-	-	0.75	N/A
00_Unit_1_Canteen		-	-	-	1.9	-	-	-	-	-	0.75	N/A
00_Unit_1_Toilet		-	-	0.5	-	-	-	-	-	-	-	N/A
00_Unit_1_Male_Changing		-	-	0.5	-	-	-	-	-	-	-	N/A
00_Unit_1_Female_Changing		-	-	0.5	-	-	-	-	-	-	-	N/A
00_Unit_1_Corridor		-	-	-	1.9	-	-	-	-	-	0.75	N/A
00_Unit_1_Female_WC		-	-	0.5	-	-	-	-	-	-	-	N/A
00_Unit_1_Male_WC		-	-	0.5	-	-	-	-	-	-	-	N/A
00_Unit_1_Retail		-	-	-	1.9	-	-	-	-	-	0.75	N/A

Zone name	SFP [W/(l/s)]									HR efficiency		
	ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
	Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1		
00_Unit_1_Customer_WC	-	-	0.5	-	-	-	-	-	-	-	-	N/A
00_Unit_1_Store	-	-	0.5	-	-	-	-	-	-	-	-	N/A
00_Unit_1_Disabled_WC	-	-	0.5	-	-	-	-	-	-	-	-	N/A

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
	Standard value	60	60	22
00_Unit_1_Entrance	-	110	-	78
Unit 1 Deliveries	110	-	-	639
00_Unit_1_Warehouse	110	-	-	1589
00_Unit_1_Staff_Welfare_Corridor	-	110	-	204
00_Unit_1_Managers_Office	110	-	-	197
00_Unit_1_Meeting	110	-	-	223
00_Unit_1_Admin	110	-	-	540
00_Unit_1_Canteen	-	110	110	165
00_Unit_1_Toilet	-	110	-	60
00_Unit_1_Male_Changing	110	-	-	135
00_Unit_1_Female_Changing	110	-	-	154
00_Unit_1_Corridor	-	110	-	57
00_Unit_1_Female_WC	-	110	-	141
00_Unit_1_Male_WC	-	110	-	131
00_Unit_1_Retail	-	110	110	19728
00_Unit_1_Customer_WC	-	110	-	85
00_Unit_1_Customer_Lobby	-	110	-	36
00_Unit_1_Store	110	-	-	17
00_Unit_1_Disabled_WC	-	110	-	37

Solar Gain in Summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
00_Unit_1_Entrance	N/A	N/A
Unit 1 Deliveries	N/A	N/A
00_Unit_1_Warehouse	N/A	N/A
00_Unit_1_Staff_Welfare_Corridor	N/A	N/A
00_Unit_1_Managers_Office	N/A	N/A
00_Unit_1_Meeting	N/A	N/A
00_Unit_1_Admin	N/A	N/A
00_Unit_1_Canteen	N/A	N/A
00_Unit_1_Toilet	N/A	N/A
00_Unit_1_Male_Changing	N/A	N/A
00_Unit_1_Female_Changing	N/A	N/A
00_Unit_1_Corridor	N/A	N/A
00_Unit_1_Female_WC	N/A	N/A
00_Unit_1_Male_WC	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
00_Unit_1_Retail	NO (-68.1%)	NO
00_Unit_1_Customer_WC	N/A	N/A
00_Unit_1_Customer_Lobby	N/A	N/A
00_Unit_1_Store	N/A	N/A
00_Unit_1_Disabled_WC	N/A	N/A

Overheating

Zone	Risk of overheating
00_Unit_1_Entrance	High risk
Unit 1 Deliveries	N/A
00_Unit_1_Warehouse	N/A
00_Unit_1_Staff_Welfare_Corridor	N/A
00_Unit_1_Managers_Office	N/A
00_Unit_1_Meeting	N/A
00_Unit_1_Admin	N/A
00_Unit_1_Canteen	N/A
00_Unit_1_Toilet	N/A
00_Unit_1_Male_Changing	N/A
00_Unit_1_Female_Changing	N/A
00_Unit_1_Corridor	N/A
00_Unit_1_Female_WC	N/A
00_Unit_1_Male_WC	N/A
00_Unit_1_Retail	N/A
00_Unit_1_Customer_WC	N/A
00_Unit_1_Customer_Lobby	N/A
00_Unit_1_Store	N/A
00_Unit_1_Disabled_WC	N/A

Primary Energy Contributions to RER

Technology	kWh/annum
Photovoltaic systems	0
Wind turbines	0
Solar thermal for water heating	0
Biomass for space and/or water heating	0
Biogas for space and/or water heating	0
Heat pumps for space and/or water heating	45414.3
CHP generators for space and/or water heating	0
District heating for space and/or water heating	0
Process energy	0
Total for renewables	45414.3
Total for renewables & non-renewables	379617.1

Technical Data Sheet (Actual vs. Reference Building)

Building Global Parameters

	Actual	Reference
Area (m2)	3221	3221
External area (m2)	8454	8454
Weather	DUB	DUB
Infiltration (m3/hm2 @ 50Pa)	5	3
Average conductance (W/K)	2086.41	2245.65
Average U-value (W/m2K)	0.25	0.27
Alpha value* (%)	14.71	25.3

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% area	Building Type
85	Retail/Financial and Professional services Restaurants and Cafes/Drinking Est./Takeaways Offices and Workshop businesses General Industrial and Special Industrial Groups
15	Storage or Distribution Hotels Residential Inst.: Hospitals and Care Homes Residential Inst.: Residential Primary schools Residential Inst.: Universities and colleges Secure Residential Inst. Residential spaces Non-residential Inst.: Community/Day Centre Non-residential Inst.: Libraries, Museums, and Galleries Non-residential Inst.: Primary Education Non-residential Inst.: Primary Health Care Building Non-residential Inst.: Law Courts General Assembly and Leisure, Night Clubs and Theatres Others: Passenger terminals Others: Emergency services Others: Miscellaneous 24hr activities Others: Car Parks 24 hrs Others - Stand alone utility block Non-residential Inst.: Post-primary Education Residential Inst.: Residential Post-primary schools

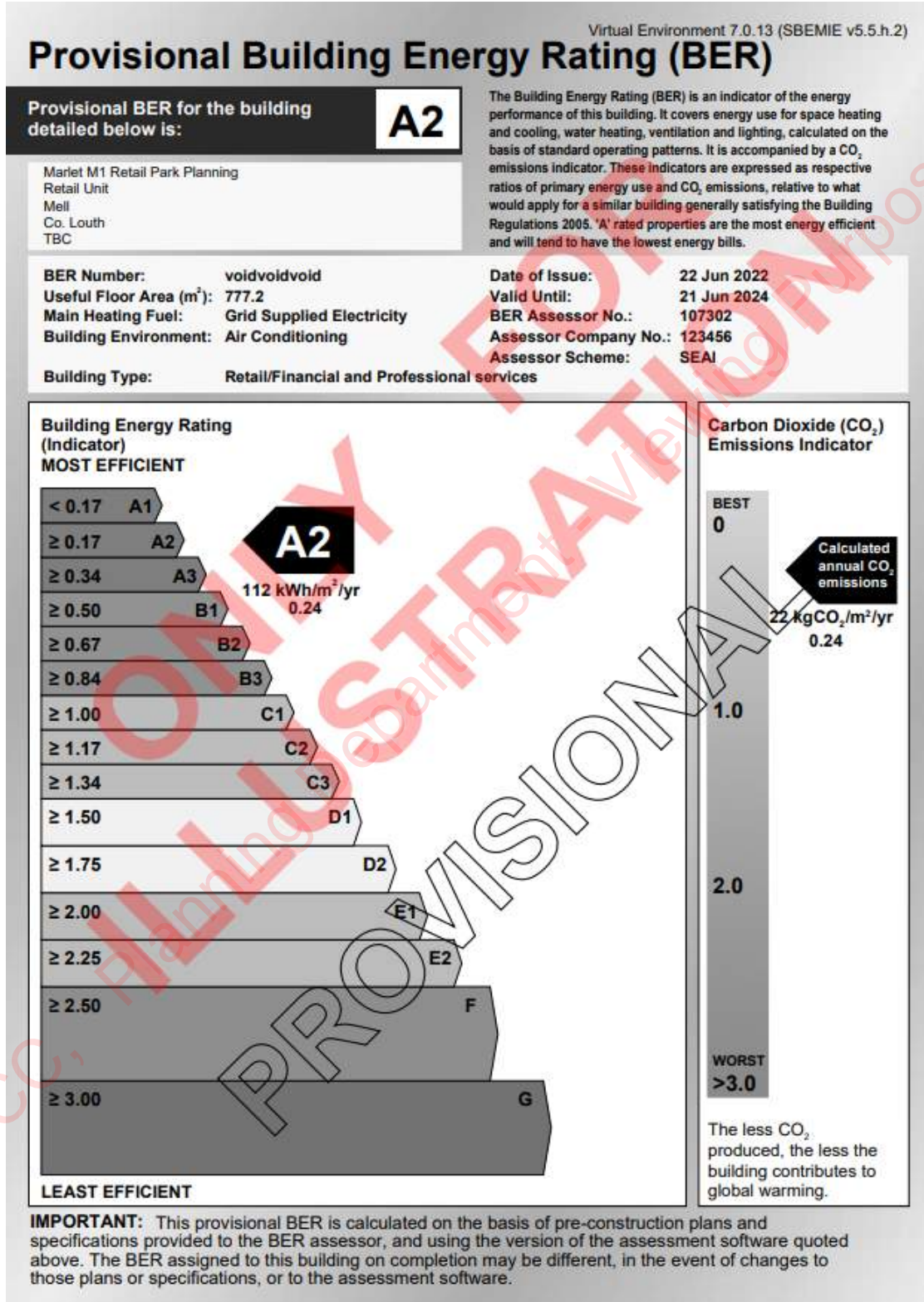
HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] No Heating or Cooling									
Actual	552.1	509.1	0	0	0	0	0	0	0
Reference	302.7	137.6	0	0	0	0	0	----	----
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	63.7	92.8	4.8	6.1	13	3.73	4.26	4	6
Reference	100.9	138.9	34.2	10.7	14.8	0.82	3.6	----	----

Key to terms

Alpha value (%)	percentage of the building's average heat transfer coefficient which is due to thermal bridging
Heat dem (MJ/m2)	Heating energy demand
Cool dem (MJ/m2)	Cooling energy demand
Heat con (kWh/m2)	Heating energy consumption
Cool con (kWh/m2)	Cooling energy consumption
Aux con (kWh/m2)	Auxiliary energy consumption
Heat SSEFF	Heating system seasonal efficiency
Cool SSEER	Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	Heating generator seasonal efficiency
Cool gen SSEER	Cooling generator seasonal energy efficiency ratio
ST	System type
HS	Heat source
HFT	Heating fuel type
CFT	Cooling fuel type

Appendix C: Provisional BER - Retail Unit



Appendix D: Part L Compliance Report - Retail Unit

BRIRL Output Document

Compliance Assessment with the Building Regulations (Ireland) TGD-Part L 2017

This report demonstrates compliance with specific aspects of Part L of the Building Regulations. Compliance with all aspects of Part L is a legal requirement. Demonstration of how compliance with every aspect is achieved may be sought from the Building Control Authority.

Marlet M1 Retail Park Pla

Date: Wed Jun 22 21:49:59 2022

Administrative information

Building Details

Address: Marlet M1 Retail Park Planning, Retail Unit, Mell, Empty, Co. Louth, TBC

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.5.h.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: 7.0.13

BRIRL compliance check version: v5.5.h.2

Client Details

Name: Marlet M1 Retail Park

Telephone number: Phone

Address: Mell, Co. Louth, TBC

Energy Assessor Details

Name: Shane Doyle

Telephone number: 056 771115

Email: shanedoyle@lawlersustainability.com

Address: 7 Patrick Street, Co. Kilkenny, R95 HT9T

Primary Energy Consumption, CO2 Emissions, and Renewable Energy Ratio

The compliance criteria in the TGD-L have been met.

Calculated CO2 emission rate from Reference building	26.6 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	22.1 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.83
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	137.7 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	112.2 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.82
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.12
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.21	0.6	0.21	NT000000_W1
Floors (ground and exposed)	0.21	0.21	0.6	0.21	NT000000_F
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.16	0.3	0.16	NT000000_C
Windows, roof windows, and rooflights	1.6	1.6	3	1.6	NT000000_W2_O0
Personnel doors	1.6	-	3	-	"No ext. personnel doors"
Vehicle access & similar large doors	1.5	-	3	-	"No ext. vehicle access doors"
High usage entrance doors	3	-	3	-	"No ext. high usage entrance doors"
U _{a-Limit} = Limiting area-weighted average U-values [W/(m2K)] U _{a-Calc} = Calculated area-weighted average U-values [W/(m2K)] U _{i-Limit} = Limiting individual element U-values [W/(m2K)] U _{i-Calc} = Calculated individual element U-values [W/(m2K)] * There might be more than one surface with the maximum U-value. ** Automatic U-value check by the tool does not apply to curtain walls whose area-weighted average and individual limiting standards are 1.8 and 3 W/m2K, respectively.					

Air Permeability	Upper Limit	This Building's Value
m3/(h.m2) at 50 Pa	5	5

Building Services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Building Regulations documents for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	>0.95

1- Split System

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	6	-	-	-
Standard value	2.75	4.14**	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
** Standard shown is for split and multi-split air conditioners <6 kW. For systems 6-12 kW, limiting efficiency is 3.87.					

1- SYST0002-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	0.003
Standard value	1	N/A

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Building Regulations documents
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	ID of system type	SFP [W/(l/s)]									HR efficiency	
		A	B	C	D	E	F	G	H	I	Zone	Standard
	Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1		
Retail Unit		-	-	-	1.9	-	-	-	-	-	0.75	N/A
Retail Unit Toilet		-	-	0.5	-	-	-	-	-	-	-	N/A

General lighting and display lighting

Zone name	Standard value	Luminous efficacy [lm/W]			General lighting [W]
		Luminaire	Lamp	Display lamp	
		60	60	22	
Retail Unit		-	110	110	6457
Retail Unit Toilet		-	110	-	67

Solar Gain in Summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Retail Unit	NO (-59.3%)	NO
Retail Unit Toilet	N/A	N/A

Overheating

No zones in project where overheating risk check is applicable.

Primary Energy Contributions to RER

Technology	kWh/annum
Photovoltaic systems	0
Wind turbines	0
Solar thermal for water heating	0
Biomass for space and/or water heating	0
Biogas for space and/or water heating	0
Heat pumps for space and/or water heating	10374.8
CHP generators for space and/or water heating	0
District heating for space and/or water heating	0
Process energy	0
Total for renewables	10374.8
Total for renewables & non-renewables	84269.2

Technical Data Sheet (Actual vs. Reference Building)

Building Global Parameters

	Actual	Reference
Area (m ²)	777	777
External area (m ²)	2010	2010
Weather	DUB	DUB
Infiltration (m ³ /hm ² @ 50Pa)	5	3
Average conductance (W/K)	531.87	539.79
Average U-value (W/m ² K)	0.26	0.27
Alpha value* (%)	9.55	26.47

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

HVAC Systems Performance

System Type	Heat dem MJ/m ²	Cool dem MJ/m ²	Heat con kWh/m ²	Cool con kWh/m ²	Aux con kWh/m ²	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	59.7	114.5	4.4	7.5	9.4	3.73	4.26	4	6
Reference	93.1	152.2	31.6	11.7	8	0.82	3.6	---	---

Key to terms

Alpha value (%)	= percentage of the building's average heat transfer coefficient which is due to thermal bridging
Heat dem (MJ/m ²)	= Heating energy demand
Cool dem (MJ/m ²)	= Cooling energy demand
Heat con (kWh/m ²)	= Heating energy consumption
Cool con (kWh/m ²)	= Cooling energy consumption
Aux con (kWh/m ²)	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Building Use

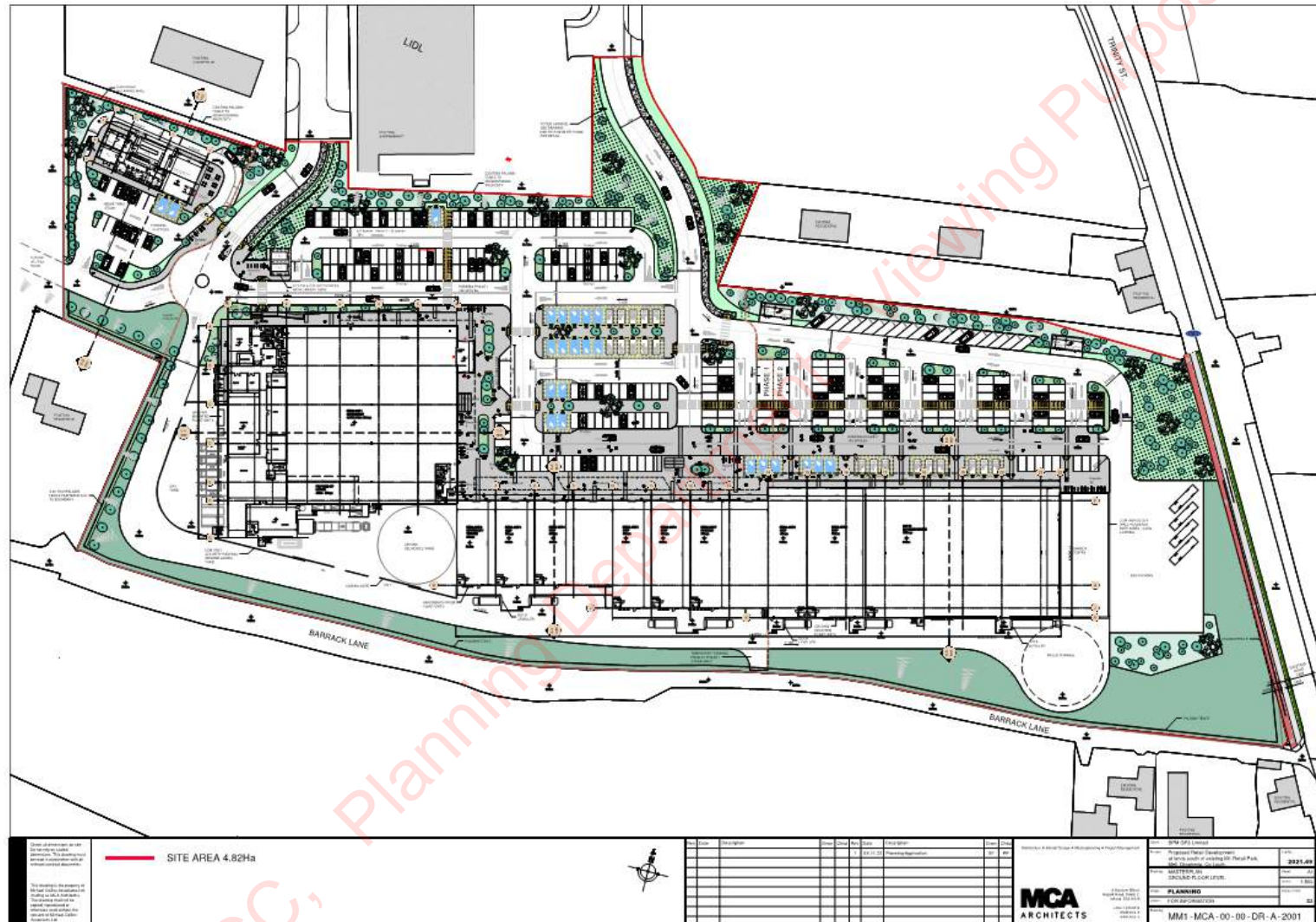
% area	Building Type
100	Retail/Financial and Professional services Restaurants and Cafes/Drinking Est./Takeaways Offices and Workshop businesses General Industrial and Special Industrial Groups Storage or Distribution Hotels Residential Inst.: Hospitals and Care Homes Residential Inst.: Residential Primary schools Residential Inst.: Universities and colleges Secure Residential Inst. Residential spaces Non-residential Inst.: Community/Day Centre Non-residential Inst.: Libraries, Museums, and Galleries Non-residential Inst.: Primary Education Non-residential Inst.: Primary Health Care Building Non-residential Inst.: Law Courts General Assembly and Leisure, Night Clubs and Theatres Others: Passenger terminals Others: Emergency services Others: Miscellaneous 24hr activities Others: Car Parks 24 hrs Others: Stand alone utility block Non-residential Inst.: Post-primary Education Residential Inst.: Residential Post-primary schools

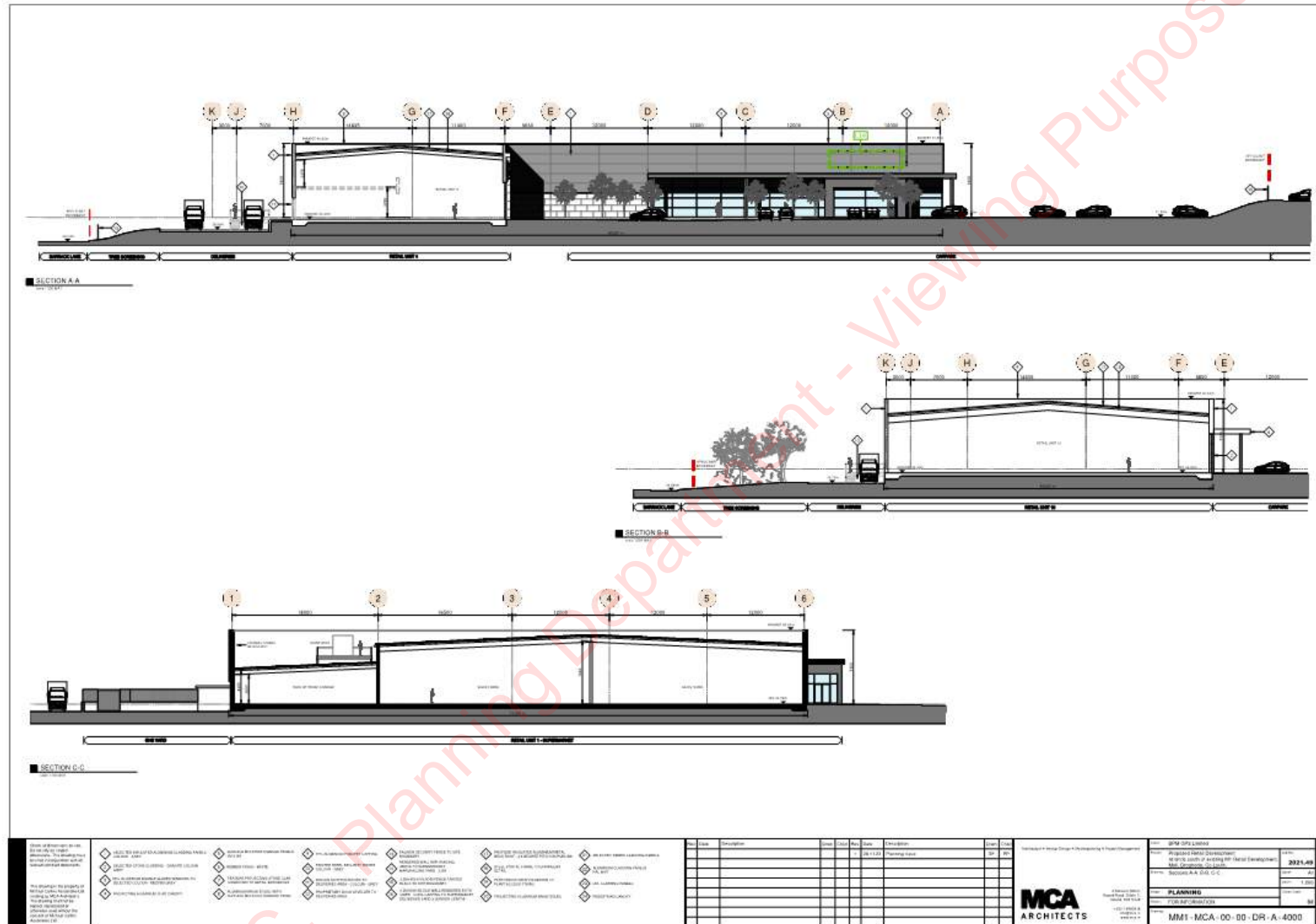
LAWLER

SUSTAINABILITY

Appendix E: Architectural Plans, Sections Drawings

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 w. www.LawlerConsulting.com





Abbreviations

AHU	Air Handling Unit
BER	Building Energy Rating
CIBSE	Chartered Institute of Building Services Engineers
CO₂	Carbon Dioxide
CPC	Carbon Performance Coefficient
DGP	Daylight Glare Probability
EPC	Energy Performance Coefficient
HRU	Heat Recovery Unit
HVAC	Heating, Ventilation, and Air Conditioning
HWS	Hot Water System
IES	Integrated Environmental Solutions
LED	Light Emitting Diode
M&E	Mechanical and Electrical systems
MPCPC	Maximum Permitted Carbon Performance Coefficient
MPEPC	Maximum Permitted Energy Performance Coefficient
NEAP	Non-domestic Energy Assessment Procedure
NZEB	Nearly Zero Energy Building
Part L	Part L 2021 Conservation of Fuel & Energy – Buildings Other than Dwellings
RER	Renewable Energy Ratio
SCOP	Seasonal Coefficient of Performance

Appendix E

Louth CC, Planning Department - Viewing Purposes Only!

Daylight and Sunlight Overshadowing Assessment
For a Proposed Retail/Commercial Development
on Lands To the South of the Existing M1 Retail Park,
Mell, Drogheda, Co. Louth.



Date:
05/12/22

Issue:
Rev_06



2020

CIBSE BUILDING
PERFORMANCE
CONSULTANCY



2020

EXCELLENCE IN
ENERGY AWARD



2019

ICE PROJECT OF
THE YEAR



2017

EUROPEAN
ENERGY AWARDS

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Louth CC, Planning Department - Viewing Purposes Only

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Current Revision			
Issue No.:	Rev_06	Issue Date:	05/12/22
	Originator:		Reason for Issue
	Shane Doyle		For Planning
Role:	Senior Sustainability Engineer		
Date:	05/12/2022		

Revisions			
Issue No.:	Date:	Originator	Comments
Rev_00	13/06/2022	Shane Doyle	-
Rev_01	23/06/2022	Shane Doyle	Report and results updated as per the latest site plan
Rev_02	02/09/2022	Shane Doyle	The report and results updated to reflect the latest site plan and building forms.
Rev_03	09/09/2022	Shane Doyle	The report and results updated to reflect the latest site plan
Rev_04	12/10/2022	Shane Doyle	The report and results updated to reflect the latest site plan
Rev_05	21/11/2022	Shane Doyle	The report and results updated to reflect the latest site plan
Rev_05	05/12/2022	Shane Doyle	The report and results updated to reflect the latest site plan

1. Executive Summary

Lawler Sustainability have been appointed to complete a daylight and sunlight overshadowing analysis for a proposed retail/commercial development on lands to the immediate south of the existing M1 Retail Park, Mell, Drogheda, Co. Louth

This report analyses the impact of the proposed development on the surrounding existing dwellings in terms of daylight and sunlight. It has been completed using the ModelIT, Radiance and Suncast applications within the IES Virtual Environment 2021 software.

The impact of the proposed development on 8 No. surrounding existing properties has been analysed in accordance with the guidelines described in BR209 (2022) Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice. The existing gardens and a total of 48 no. windows associated with the existing dwellings have been assessed. The results are within the BR209 guidelines, and the proposed development has a negligible adverse impact on the surrounding properties.

- Section 3 and 4 of this report list the standards and assessment criteria that this analysis adheres to.
- Detailed in section 5 of the report are the analysis inputs. The impact of the proposed development on 8 No. surrounding existing residential properties has been assessed. This analysis has been completed based on the latest drawings provided by MCA Architects and Marlet Property Group.
- Section 6 of this report details the following results in accordance with recommended metrics outlined in BR209:
 - Vertical Sky Component (VSC)
 - Annual Probable Sunlight Hours (APSH) for Neighbouring Property Windows
 - Sunlight to Neighbouring Back Gardens
 - Sunlight to Proposed Development Public Amenity Areas
- A discussion of the results has been completed in section 7 of this report. The results show that proposed development is within the guidelines laid out in BR 209 - Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice (3rd Edition).

2. Introduction

Lawler Sustainability have been appointed to complete a daylight and sunlight overshadowing analysis for a proposed retail/commercial development on lands to the immediate south of the existing M1 Retail Park, Mell, Drogheda, Co. Louth

The proposed development shown in Figure 1 below consists of 10 retail units and a drive thru unit to be completed to a shell and core standard. This analysis is based on the latest architectural drawings provided MCA Architects.

The impact of the proposed development on the surrounding properties is assessed in terms of daylight and sunlight. 8 no. of the surrounding properties have been assessed. The analysis inputs are detailed in section 5 of this report.

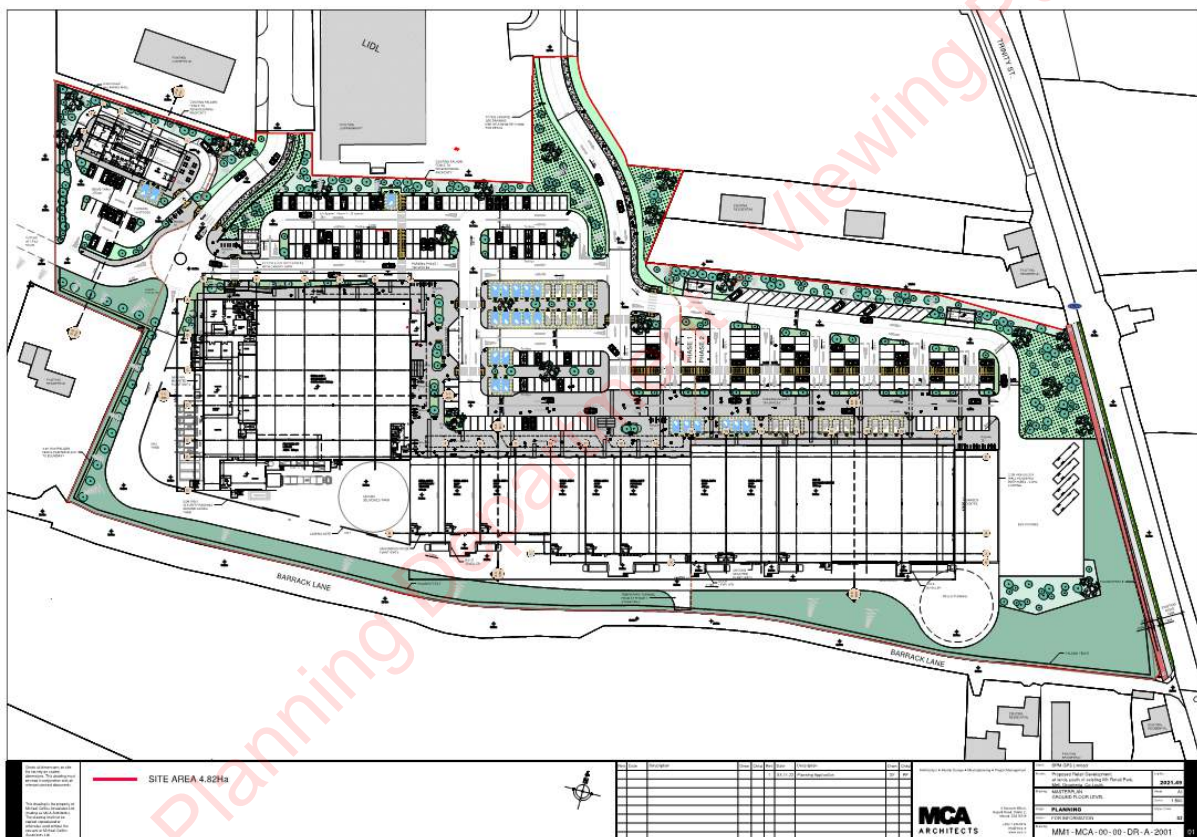


Figure 1: Proposed Development Site Plan

3. Guidance, Standards and National Policy

3.1.1. National Policy and Regulations

The Urban Development and Building Heights Guidelines 2018 states the following in relation to daylighting:

- The form, massing and height of proposed developments should be carefully modulated so as to maximise access to natural daylight, ventilation and views and minimise overshadowing and loss of light.
- Appropriate and reasonable regard should be taken of quantitative performance approaches to daylight provision outlined in guides like the Building Research Establishment's 'Site Layout Planning for Daylight and Sunlight' (2nd edition) or BS 8206-2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting'.
- Where a proposal may not be able to fully meet all the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, in respect of which the planning authority or An Bord Pleanála should apply their discretion, having regard to local factors including specific site constraints and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution.

Technical Guidance Document Part L 2021 for Dwellings states the following:

- The area of openings should not be reduced below that required for the provision of adequate daylight. BS 8206-2:2008 Code of Practice for daylighting and CIBSE Lighting Guide LG 10 gives advice on adequate daylight provision.

Technical Guidance Document Part L 2021 for Buildings other than Dwellings states the following:

- The area of openings provided should take account of the level of daylight provision appropriate to the building. BS8206-2:2008 and CIBSE Lighting Guide (LG10), give advice on adequate daylight provision. Natural daylight should be optimised where practical, taking into account the advice of LG10 and BS8206.

3.1.2. Key Guidance and Standards

- **BR 209 (2022)** - Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice (3rd Edition). The 2011 2nd edition has recently been superseded in June 2022 by the 3rd edition.
- **BS 8206-2:2008** - Lighting for Buildings, Part 2: Code of Practice for Daylighting.
- **BS EN 17037:2018** and **IS EN 17037:2018** – Daylight in Buildings. Note: EN 17037 does not offer any guidance on how new developments will impact on existing surrounding developments.

4. Assessment Criteria

The assessment of the impact of the proposed development on surrounding properties is completed in accordance with BS-8206-2:2008 and BRE 209 "Site Layout for Daylight and Sunlight Guide: A Guide to Good Practice". Table 1 below outlines the recommended metrics to assess impact on the surrounding properties.

Table 1: Assessment Criteria

Criteria No.	Criteria Name	Description	Criteria Pass / Fail Threshold
Existing / Neighbouring Properties			
1	Vertical Sky Component (VSC)	<p>VSC need not be analysed if the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window.</p> <p>or</p> <p>If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of <25° to the horizontal.</p> <p>VSC on windows of neighbouring properties:</p> <p>If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if the VSC measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value.</p>	<p>Pass = if VSC ≥ 27%</p> <p>Fail = If the VSC is < 27% and less than 0.8 times its former value</p>
2	Annual Probable Sunlight Hours (APSH)	<p>If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to horizontal measured from the centre of the window, then the sun lighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:</p> <ul style="list-style-type: none"> receives less than 25% of annual probable sunlight hours and less than 0.80 times its former annual value; or less than 5% of annual probable sunlight hours between 21 September and 21 March and less than 0.80 times its former value during that period; and also has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours. <p>Note: In this analysis it was not possible to determine the layout and location of the living rooms in each of the existing dwellings. Therefore, the VSC was calculated for all windows of neighbouring properties with a line of sight to the development as a worst case scenario.</p>	<p>Fail = if the APSH's for the year is <25% or if the APSH's is <5% between 21 September and 21 March.</p> <p>and</p> <p>received less than 0.8 times its former sunlight hours during either period.</p> <p>and</p> <p>if there is a reduction of APSH for the year of greater than 4%.</p>

3	Direct Sunlight - Garden and Amenity Spaces	<p>It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on the 21st of March. If as a result of a new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on the 21st of March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.</p>	<p>Fail = if less than 50% of the garden or amenity area receives at least 2 hours of sunlight on the 21st of March.</p> <p>and</p> <p>if the sunlight received is less than 0.8 times its former value.</p>
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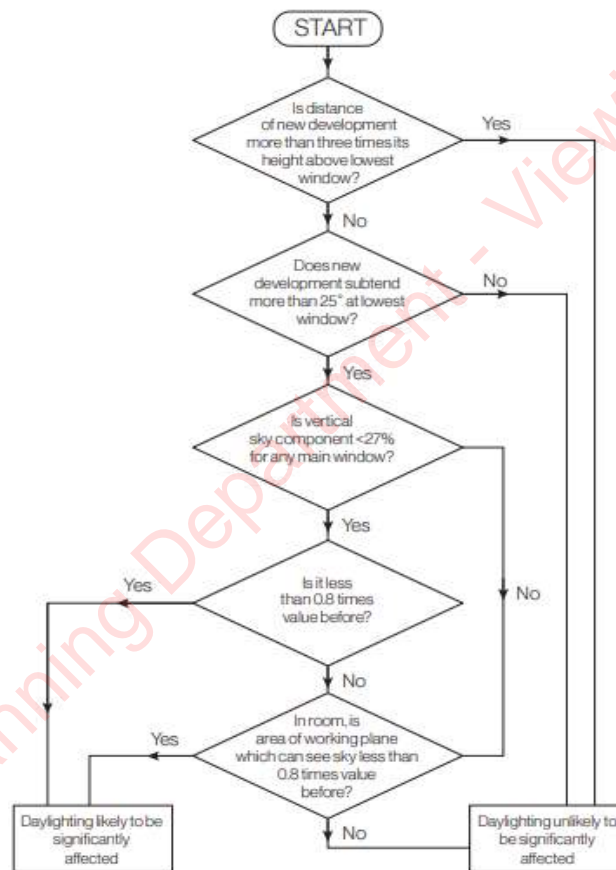


Figure 2: VSC Decision Chart (Source: BR 209)

5. Analysis Inputs

5.1. Properties Assessed Details

The proposed development building geometry has been built based on the latest architectural drawings provided by MCA Architect. Please see appendix A for the plan and section drawings which informed this analysis.

Figure 4 illustrates the 8 No. surrounding neighbouring residential properties that have been assessed.

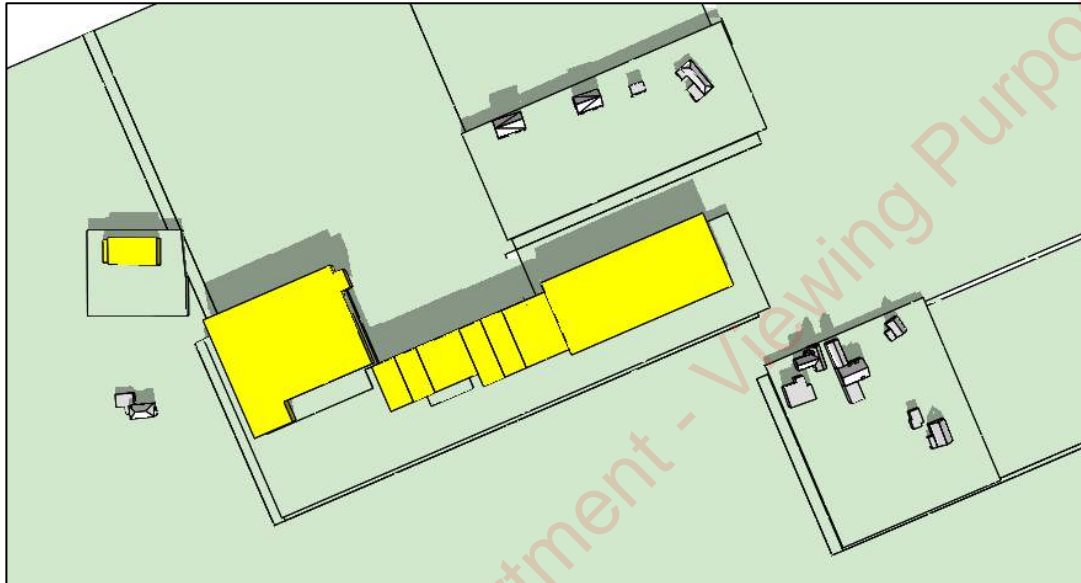


Figure 3. IES Model Birds-eye View - 21st of March @12:00

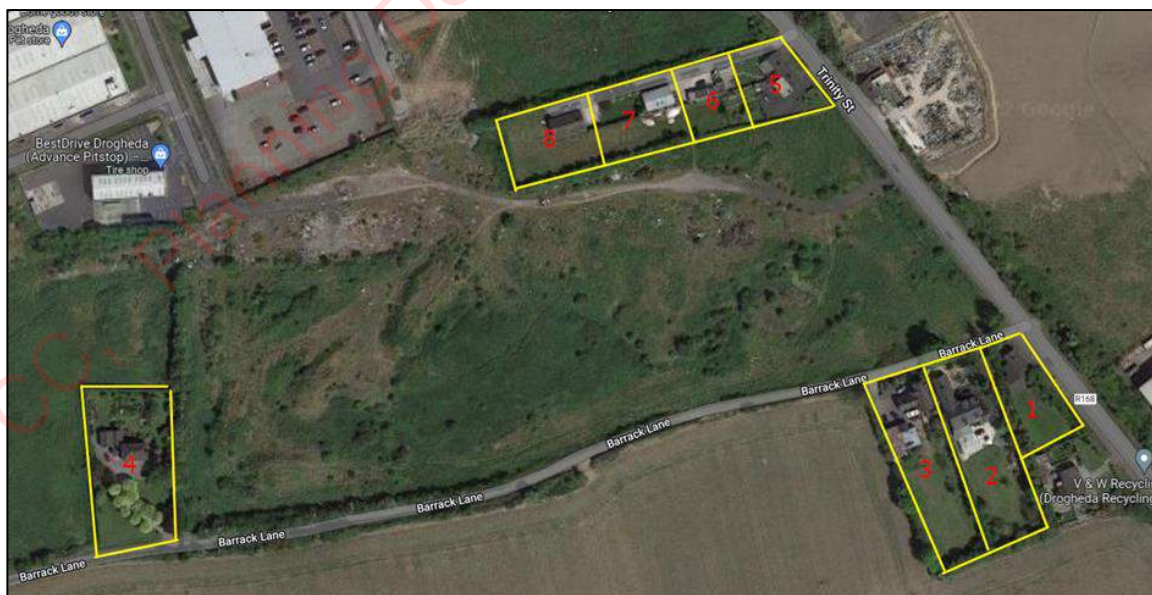


Figure 4: Site Location & Neighbouring Properties Assessed

5.2. Simulation Inputs

Table 2: Calculation Inputs

Input	Comment
Software	<p>IES Virtual Environment Version 2021.4.0.0</p> <p>Vertical Sky Component: Radiance Application</p> <p>Annual Sunlight Probable Hours: Suncast Application</p>
Building Layout, Plan, Elevation, and Section Drawings	<p>Drawings provided by MCA Architects on the 31/08/2022:</p> <ul style="list-style-type: none"> 'MM1 MCA 00 00 DR A 3000' - Site Plan <p>Drawings provided by MCA Architects on the 06/09/2022:</p> <ul style="list-style-type: none"> 'MM1 MCA 00 00 DR A 5000' - Elevations <p>Building heights included as per Elevation drawings provided by MCA on the 06/09/2022:</p>
Building Ground Levels	<p>Neighbouring property building ground floor levels were taken from the site survey drawing 'JEG2185_M1_RETAIL_FINAL' dated 19/01/2022 completed by Jones Engineering Group. See Table 3.</p> <p>The ground levels for the proposed development were taken from the latest site plan provided by MCA Architects on the 31/08/2022. Drive Thru finish floor level (31m) confirmed MCA Architects on the 14/06/2022.</p>
Weather Data File	DublinIWEC.fwt
Existing Neighbouring Dwellings - Building Geometry	<p>Site Plan MM1 MCA 00 00 DR A 3000.dwg (31/08/2022)</p> <p>Google Earth, Geohive, Louth County Council Website.</p> <p>Estimated Dwelling Floor to Ceiling Height: 3m</p> <p>Window sizes and locations estimated from Google Earth. Windows for all selected neighbouring property building facades facing (with a line of sight to the development) were included in the model.</p>
Landscape Features	The BRE Guidelines paragraph G1.2 states: 'Where the effect of a new building on existing buildings nearby is being analysed it is usual to ignore the effect of existing trees'.
Site Orientation	As Per Site Plan.

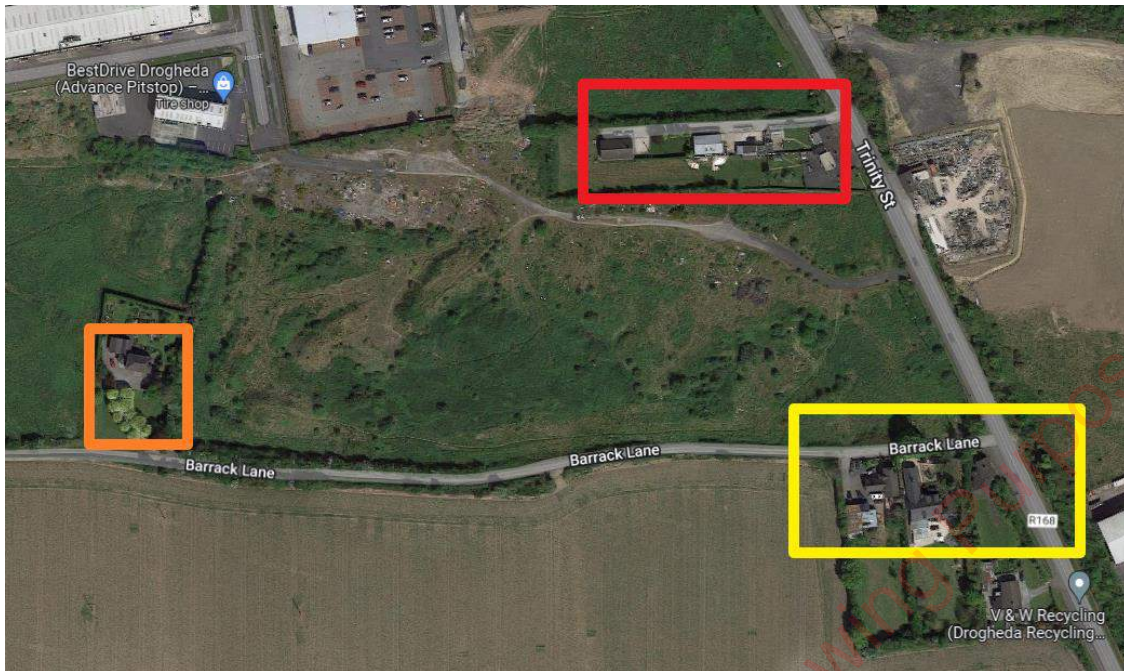





Figure 5: Neighbouring Property Site Levels Applied to the IESVE Model

Table 3: Neighbouring Property Site Levels Applied to the IESVE Model

Colour	Location	Floor Level starts from in the 3D model geometry
	Residential Properties located at the entrance of the Barrack Lane	29.5m
	Residential Properties located at the end of the Barrack Lane	26.0m
	Residential Properties located just off the Trinity Road	32.0m

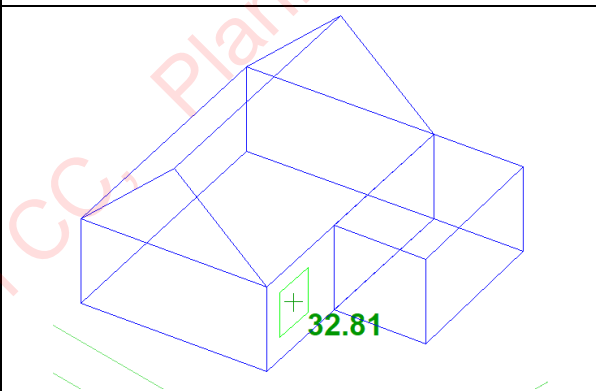
6. Results

6.1. Daylight - Vertical Sky Component

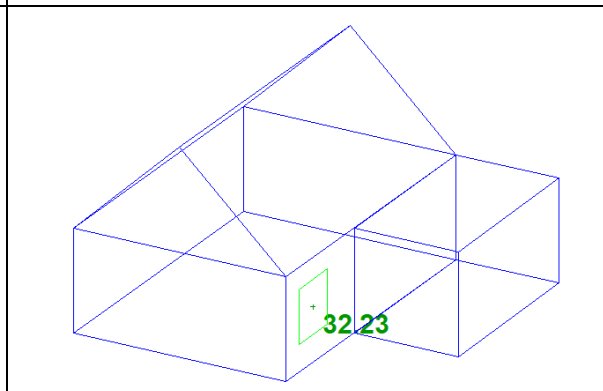
Barrack Lane – Existing Property 01



Existing Scenario



Proposed Scenario



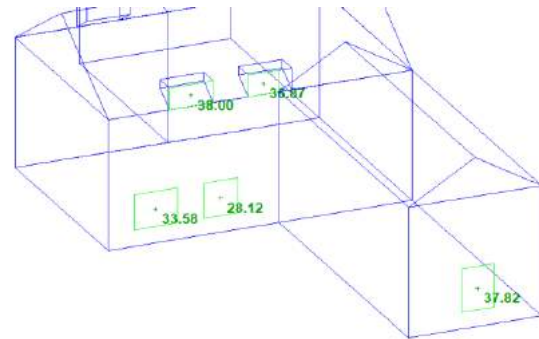
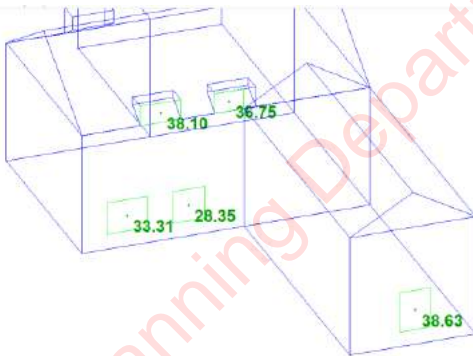
VSC Points:	Existing VSC	Proposed VSC	Proposed VSC% of Existing	Window orientation (in degrees from true North)
1	32.81	32.23	98%	233 (Southwest)

Barrack Lane – Existing Property 02



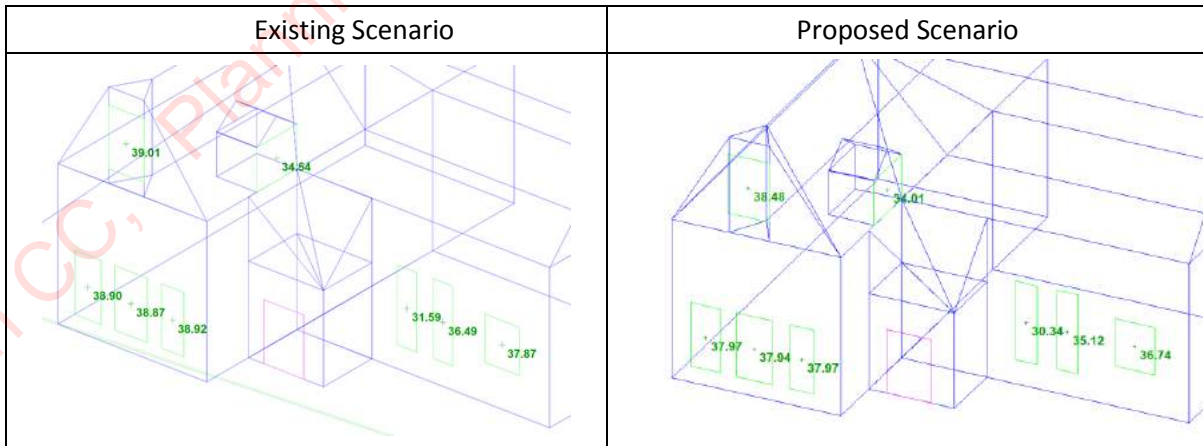
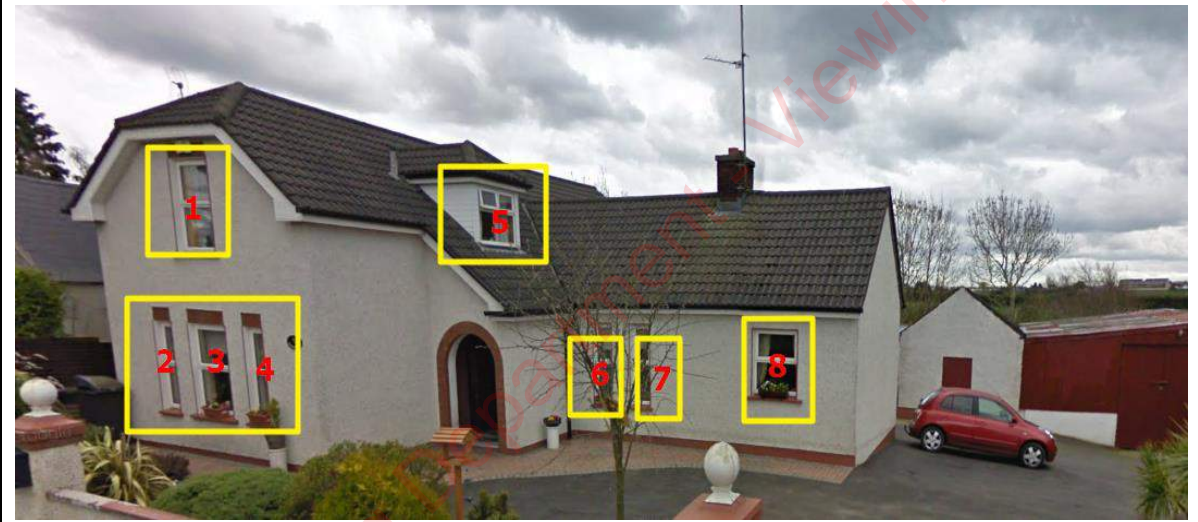
Existing Scenario

Proposed Scenario



VSC Points:	Existing VSC	Proposed VSC	Proposed VSC% of Existing	Window orientation (in degrees from true North)
1	38.1	38	100%	336- Northwest
2	36.75	36.87	100%	336- Northwest
3	33.31	33.58	100%	336- Northwest
4	28.35	28.12	99%	336- Northwest
5	38.63	37.82	98%	336- Northwest

Barrack Lane – Existing Property 03

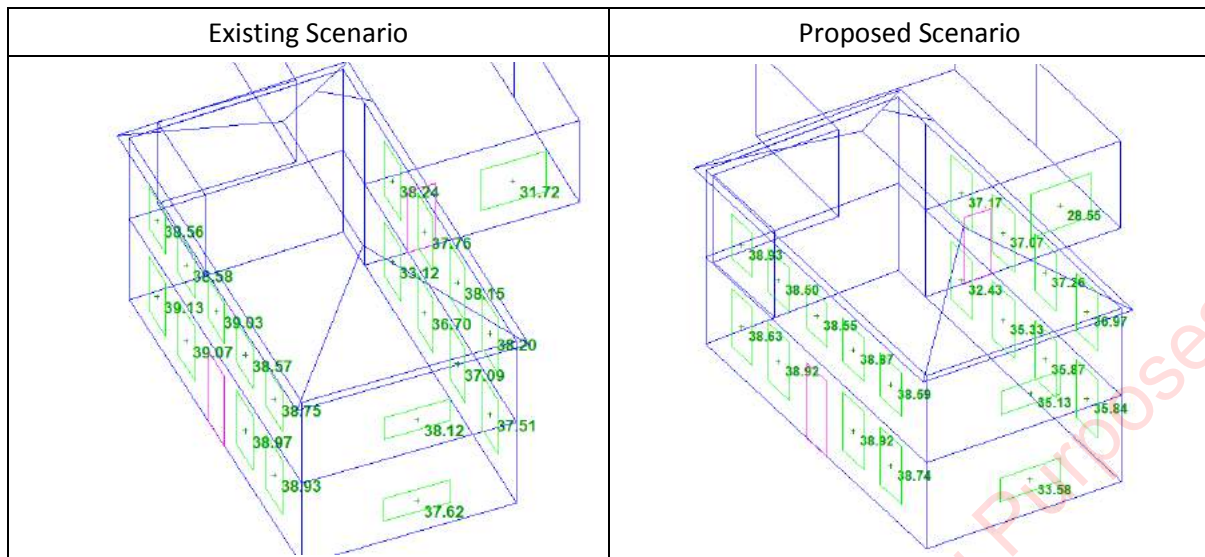


VSC Points:	Existing VSC	Proposed VSC	Proposed VSC% of Existing	Window orientation (in degrees from true North)
1	39.01	38.48	99%	340- Northwest
2	38.9	37.97	98%	340- Northwest
3	38.87	37.94	98%	340- Northwest
4	38.92	37.97	98%	340- Northwest
5	34.54	34.01	98%	250- Southwest
6	31.59	30.34	96%	340- Northwest
7	36.49	35.12	96%	340- Northwest
8	37.87	36.74	97%	340- Northwest

Barrack Lane – Existing Property 04



Note: The windows on the front of the building are visible, but the rear and side windows are not visible from google maps. The window openings below have been assumed on both the rear (north) and east facing facades.



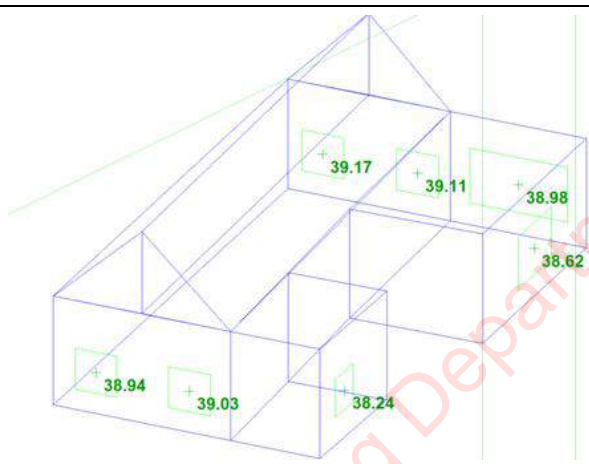
Note: Window positions are not visible from the rear of the building via google maps. Therefore, front facade windows are copied on to rear side of the building.

VSC Points:	Existing VSC	Proposed VSC	Proposed VSC% of Existing	Window orientation (in degrees from true North)
1	38.56	38.55	100%	173.42- South
2	38.58	38.94	100%	173.42- South
3	39.03	38.45	99%	173.42- South
4	38.57	38.57	100%	173.42- South
5	38.75	38.81	100%	173.42- South
6	39.13	39	100%	173.42- South
7	39.07	38.87	99%	173.42- South
8	38.97	38.81	100%	173.42- South
9	38.93	38.88	100%	173.42- South
10	38.12	35.27	93%	83.79 (East)
11	37.62	34.03	90%	83.79 (East)
12	38.2	37.03	97%	353.88 (North)
13	38.15	37.27	98%	353.88 (North)
14	37.76	37.68	100%	353.88 (North)
15	38.24	36.74	96%	353.88 (North)
16	37.51	36.31	97%	353.88 (North)
17	37.09	36.27	98%	353.88 (North)
18	36.7	35.35	96%	353.88 (North)
19	33.12	32.35	98%	353.88 (North)
20	31.72	28.69	90%	83.01 (East)

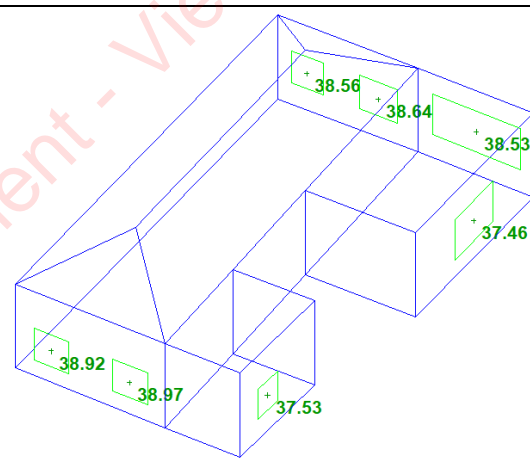
Trinity Street – Existing Property 05



Existing Scenario



Proposed Scenario



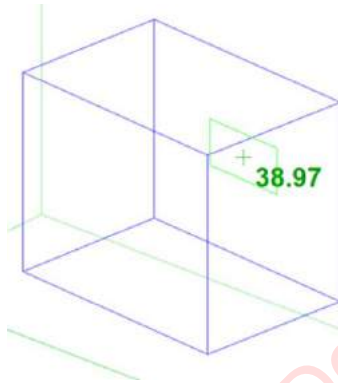
Note: Window positions are not available from google maps. Therefore, the window locations have been assumed for each façade facing the development.

VSC Points:	Existing VSC	Proposed VSC	Proposed VSC% of Existing	Window orientation (in degrees from true North)
1	38.94	38.92	100%	319.18 (NW)
2	39.03	38.97	100%	319.18 (NW)
3	38.24	37.53	98%	230.84 (SW)
4	38.62	37.46	97%	236.54 (SW)
5	38.98	38.53	99%	139.10 (SE)
6	39.11	38.64	99%	139.10 (SE)
7	39.17	38.56	98%	139.10 (SE)

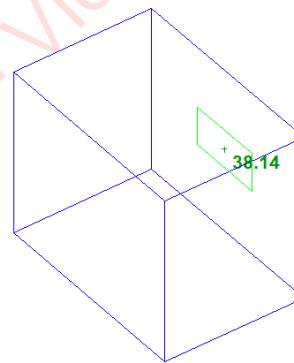
Trinity Street– Existing Property 06



Existing Scenario



Proposed Scenario



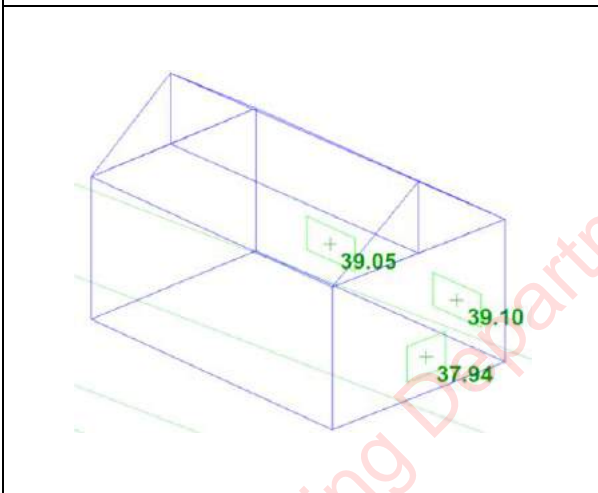
Note: Window positions are not available from google maps. Therefore, the window locations have been assumed for each façade facing the development.

VSC Points:	Existing VSC	Proposed VSC	Proposed VSC% of Existing	Window orientation (in degrees from true North)
1	38.97	38.14	98%	160.25 (South)

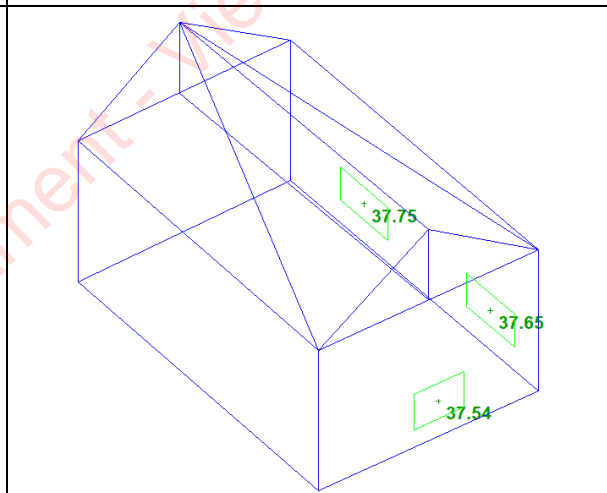
Trinity Street – Existing Property 07



Existing Scenario



Proposed Scenario



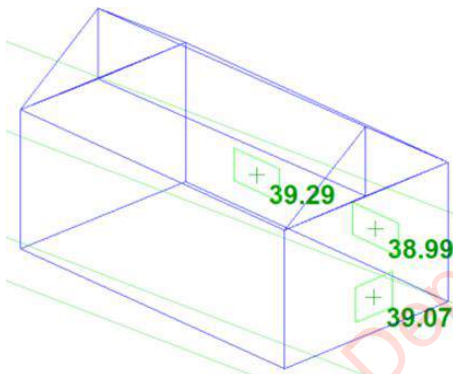
Note: Window positions are not available from google maps. Therefore, the window locations have been assumed for each façade facing the development.

VSC Points:	Existing VSC	Proposed VSC	Proposed VSC% of Existing	Window orientation (in degrees from true North)
1	37.94	37.54	99%	251.84 (W)
2	39.1	37.65	96%	160.25 (S)
3	39.05	37.75	97%	160.25 (S)

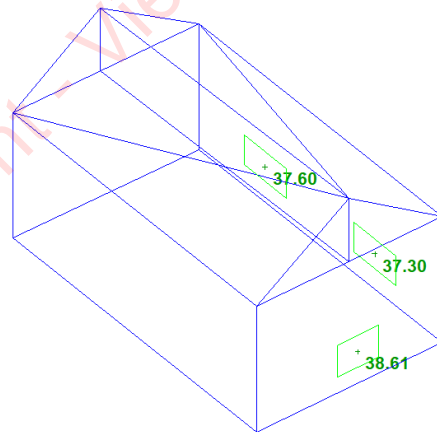
Trinity Street– Existing Property 08



Existing Scenario



Proposed Scenario



Note: Window positions are not available from google maps. Therefore, the window locations have been assumed for each façade facing the development.

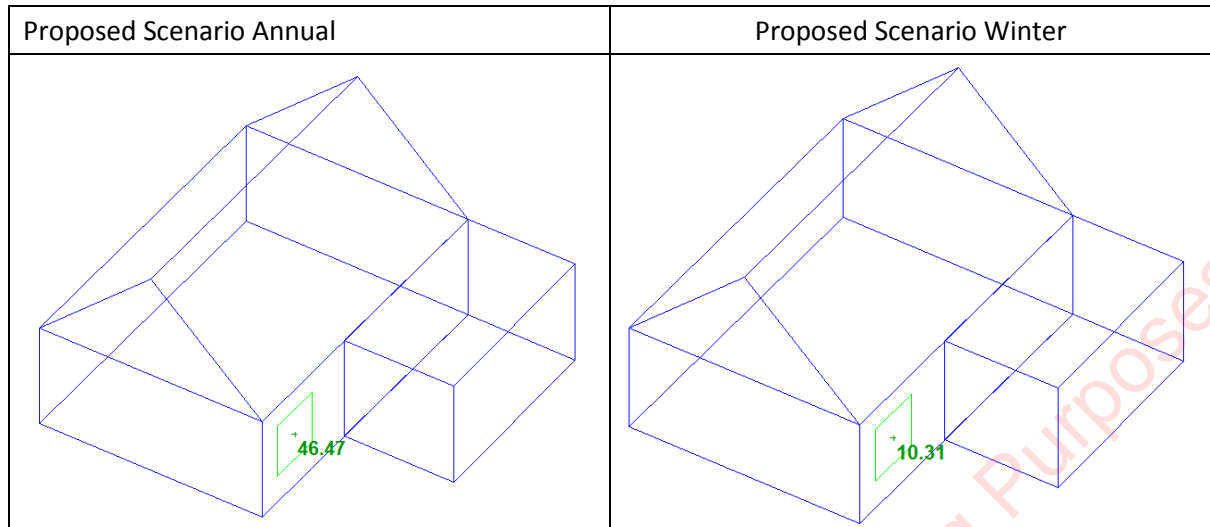
VSC Points:	Existing VSC	Proposed VSC	Proposed VSC% of Existing	Window orientation (in degrees from true North)
1	39.07	38.61	99%	250.54 (W)
2	38.99	37.3	96%	160.82 (S)
3	38.29	37.6	98%	160.82 (S)

6.2. Sunlight - Annual Probable Sunlight Hours: Windows

Barrack Lane – Existing Property 01



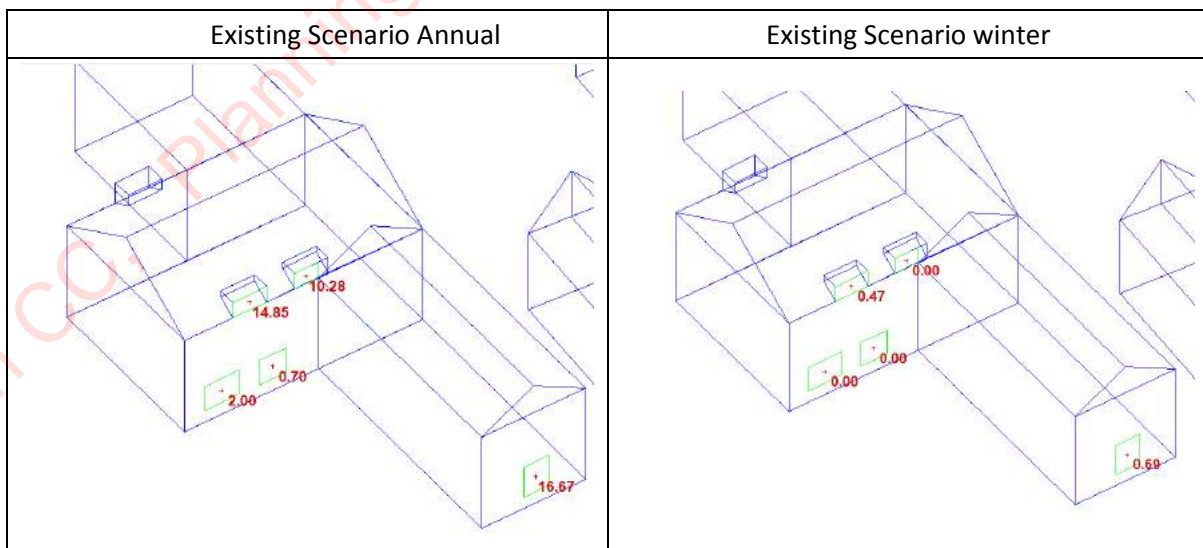
Existing Scenario Annual	Existing Scenario Winter
<p>48.44</p>	<p>11.33</p>

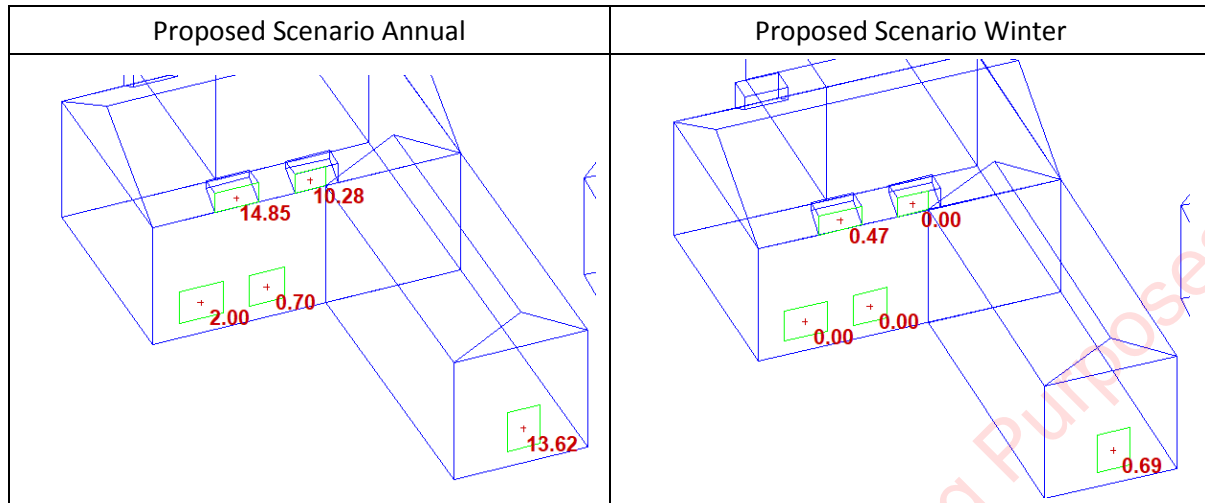


Ref:	Existing APSH (Annual)	Proposed APSH (Annual)	Proposed APSH % of Existing	% Reduction of APSH (Annual)	Existing APSH (Winter)	Proposed APSH (Winter)	Proposed APSH % of Existing	Window orientation (in degrees from true North)
W1	48.44	46.47	96%	4.52%	11.33	10.31	91%	233 SW

Result: **Pass**

Barrack Lane – Existing Property 02





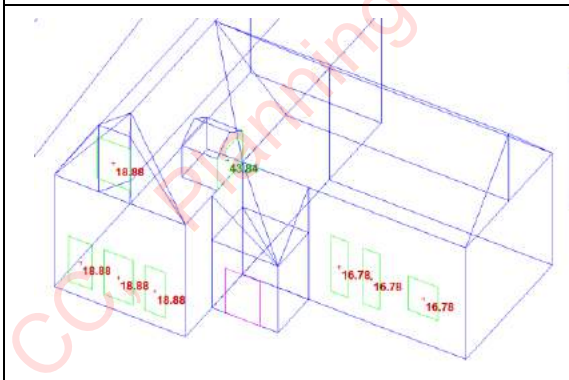
Ref:	Existing APSH (Annual)	Proposed APSH (Annual)	Proposed APSH % of Existing	% Reduction of APSH (Annual)	Existing APSH (Winter)	Proposed APSH (Winter)	Proposed APSH % of Existing	Window orientation (in degrees from true North)
W1	14.85	14.85	100%	0.00%	0.47	0.47	100%	336- NW
W2	10.28	10.28	100%	0.00%	0	0	0%	336- NW
W3	2	2	100%	0.00%	0	0	0%	336- NW
W4	0.7	0.7	100%	0.00%	0	0	0%	336- NW
W5	16.67	13.62	82%	18.30%	0.69	0.69	100%	336- NW

Result: **Pass**

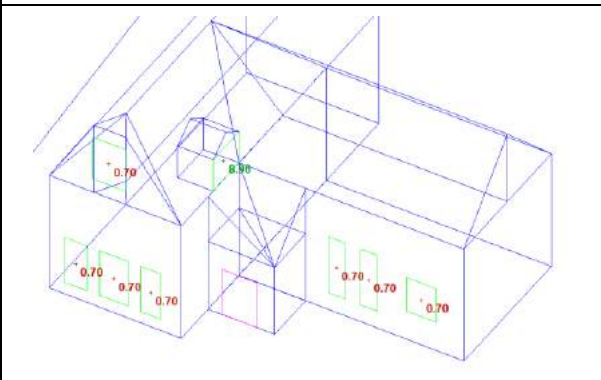
Barrack Lane – Existing Property 03

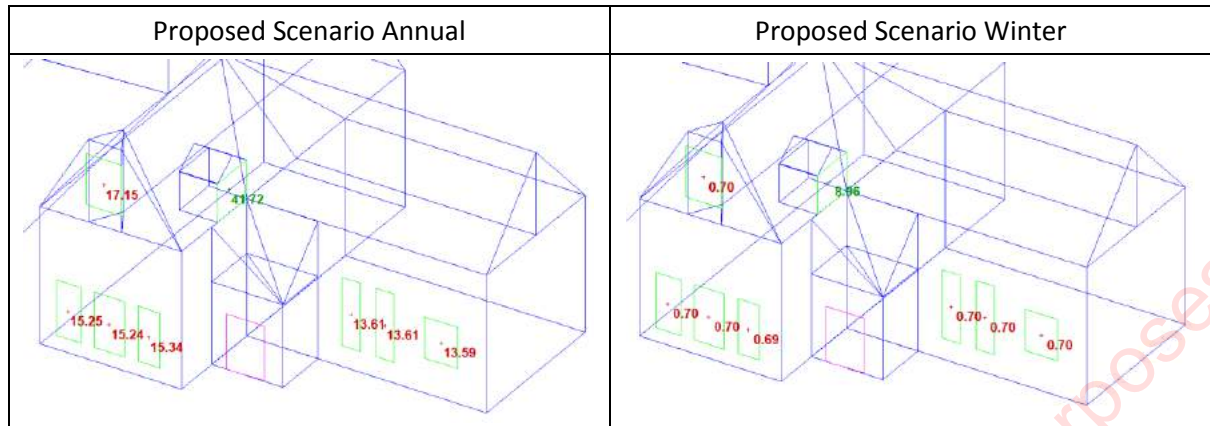


Existing Scenario Annual



Existing Scenario winter





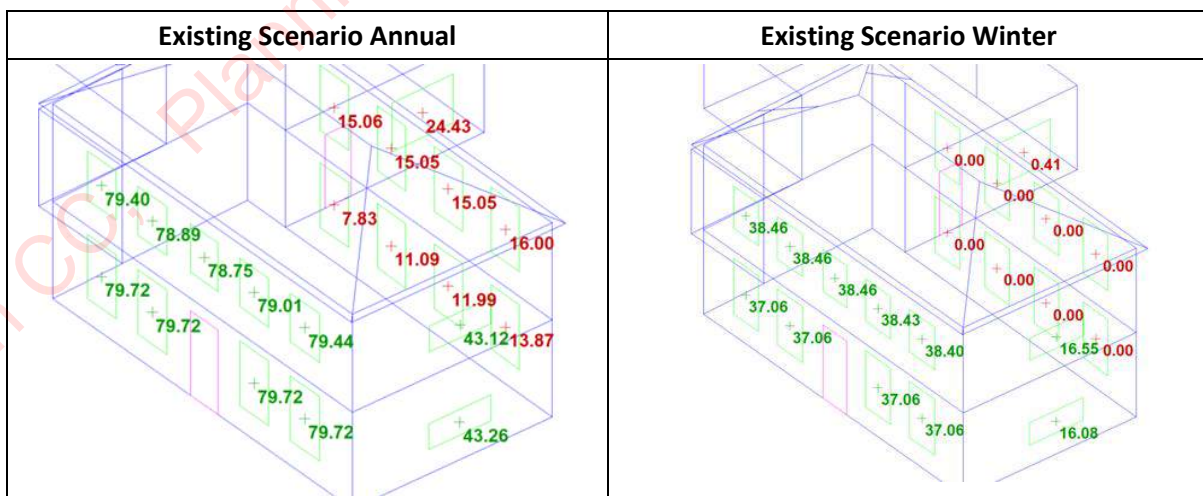
Ref:	Existing APSH (Annual)	Proposed APSH (Annual)	Proposed APSH % of Existing	% Reduction of APSH (Annual)	Existing APSH (Winter)	Proposed APSH (Winter)	Proposed APSH % of Existing	Window orientation (in degrees from true North)
W1	18.88	17.15	91%	9%	0.7	0.7	100%	340- NW
W2	18.88	15.25	81%	20%	0.7	0.7	100%	340- NW
W3	18.88	15.24	81%	20%	0.7	0.7	100%	340- NW
W4	18.88	15.34	81%	19%	0.7	0.7	100%	340- NW
W5	43.84	41.72	95%	6%	8.96	8.96	100%	250- SW
W6	16.78	13.61	81%	20%	0.7	0.7	100%	340- NW
W7	16.78	13.61	81%	20%	0.7	0.7	100%	340- NW
W8	16.78	13.59	81%	20%	0.7	0.7	100%	340- NW

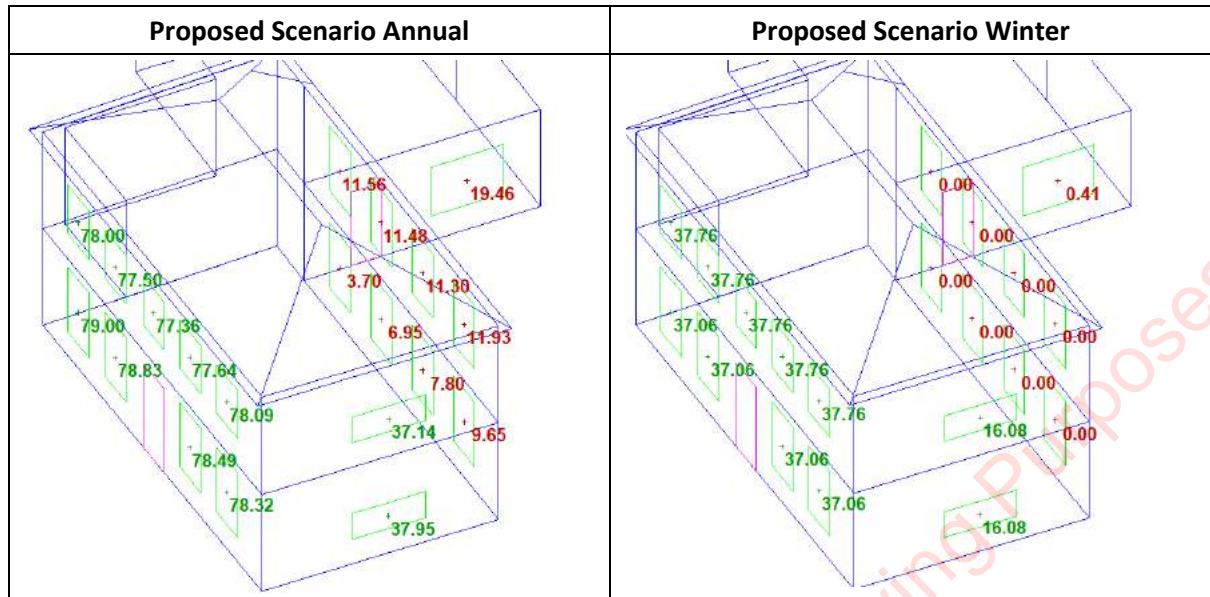
Result: **Pass**

Barrack Lane – Existing Property 04



Note: The windows on the front of the building are visible, but the rear and side windows are not visible from google maps. The window openings below have been assumed on both the rear (north) and east facing facades.





Ref:	Existing APSH (Annual)	Proposed APSH (Annual)	Proposed APSH % of Existing	% Reduction of APSH (Annual)	Existing APSH (Winter)	Proposed APSH (Winter)	Proposed APSH % of Existing	Window orientation (in degrees from true North)
W1	79.4	78	98%	2%	38.46	37.76	98%	173.42- South
W2	78.89	77.5	98%	2%	38.46	37.76	98%	173.42- South
W3	78.75	77.36	98%	2%	38.46	37.76	98%	173.42- South
W4	79.01	77.64	98%	2%	38.43	37.76	98%	173.42- South
W5	79.44	78.09	98%	2%	38.4	37.76	98%	173.42- South
W6	79.72	79	99%	1%	37.06	37.06	100%	173.42- South
W7	79.72	78.83	99%	1%	37.06	37.06	100%	173.42- South
W8	79.72	78.49	98%	2%	37.06	37.06	100%	173.42- South
W9	79.72	78.32	98%	2%	37.06	37.06	100%	173.42- South
W10	43.12	37.14	86%	14%	16.55	16.08	97%	83.79 (East)
W11	43.26	37.95	88%	12%	16.08	16.08	100%	83.79 (East)
W12	16	11.93	75%	25%	0	0	100%	353.88 (North)
W13	15.05	11.3	75%	25%	0	0	100%	353.88 (North)
W14	15.05	11.48	76%	24%	0	0	100%	353.88 (North)
W15	15.06	11.56	77%	23%	0	0	100%	353.88 (North)
W16	13.87	9.65	70%	30%	0	0	100%	353.88 (North)
W17	11.99	7.8	65%	35%	0	0	100%	353.88 (North)
W18	11.09	6.95	63%	37%	0	0	100%	353.88 (North)
W19	7.83	3.7	47%	53%	0	0	100%	353.88 (North)
W20	24.43	19.46	80%	20%	0.41	0.41	100%	83.01 (East)

Result: **Pass**

Trinity Street– Existing Property 05



Existing Scenario Annual	Existing Scenario Winter
Proposed Scenario Annual	Proposed Scenario Winter

Note: Window positions are not available from google maps. Therefore, the window locations have been assumed for each façade facing the development.

Ref:	Existing APSH (Annual)	Proposed APSH (Annual)	Proposed APSH % of Existing	% Reduction of APSH (Annual)	Existing APSH (Winter)	Proposed APSH (Winter)	Proposed APSH % of Existing	Window orientation (in degrees from true North)
W1	24.3	24.3	100%	0.00%	3.32	3.32	100%	319.18 (NW)
W2	24.01	24.01	100%	0.00%	3.03	2.86	94%	319.18 (NW)
W3	66.87	66.87	100%	0.00%	27.96	27.96	100%	230.84 (SW)
W4	66.96	66.96	100%	0.00%	29.37	29.23	100%	236.54 (SW)
W5	72.73	72.73	100%	0.00%	32.87	32.87	100%	139.10 (SE)
W6	72.73	72.03	99%	0.96%	32.87	32.87	100%	139.10 (SE)
W7	72.73	72.03	99%	0.96%	32.87	32.87	100%	139.10 (SE)

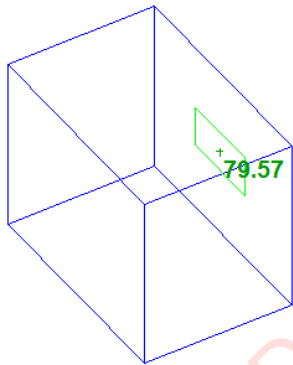
Result: **Pass**

Louth CC, Planning Department - Viewing Purposes Only

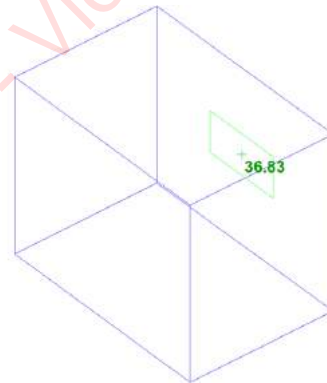
Trinity Street– Existing Property 06



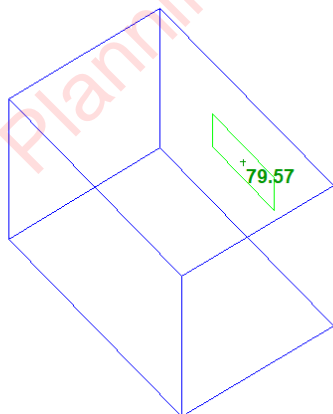
Existing Scenario Annual



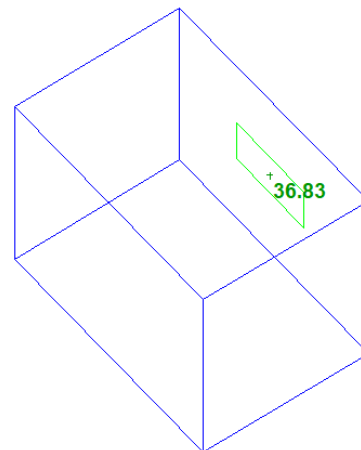
Existing Scenario Winter



Proposed Scenario Annual



Proposed Scenario Winter

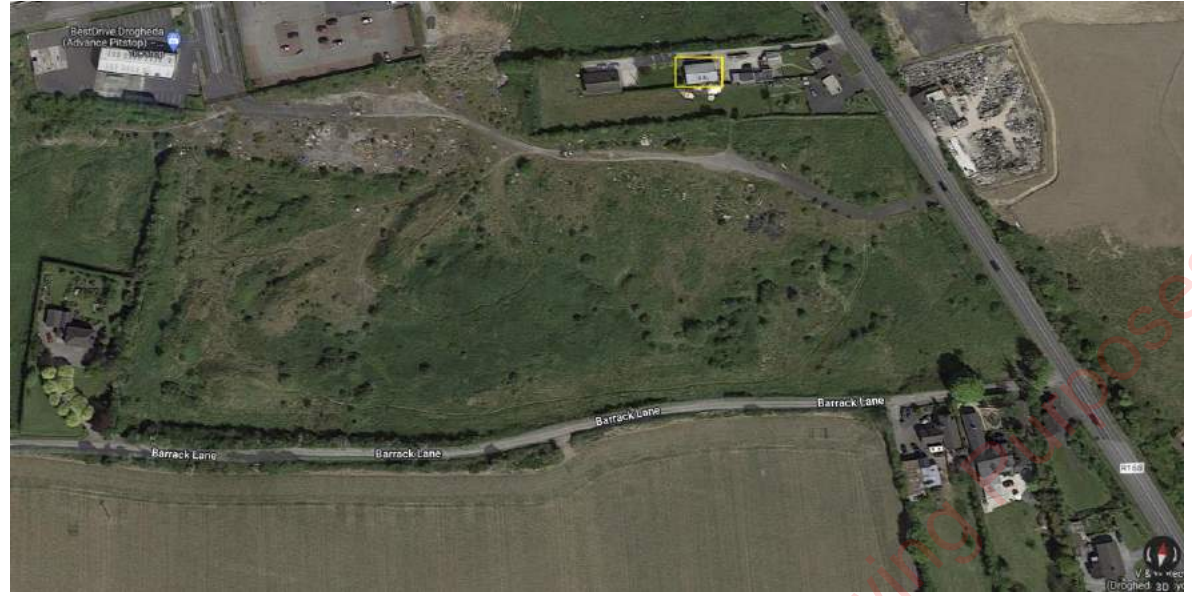


Ref:	Existing APSH (Annual)	Proposed APSH (Annual)	Proposed APSH % of Existing	% Reduction of APSH (Annual)	Existing APSH (Winter)	Proposed APSH (Winter)	Proposed APSH % of Existing	Window orientation (in degrees from true North)
W1	79.57	79.57	100%	0.00%	36.83	36.83	100%	160.25 (South)

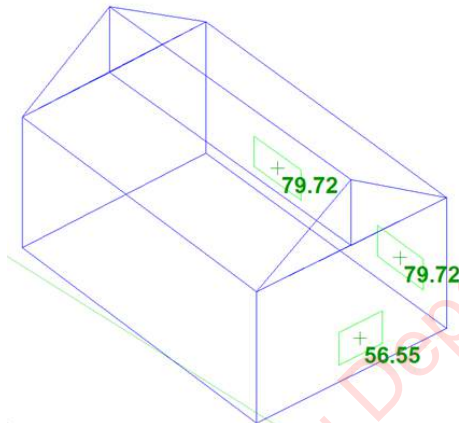
Result: **Pass**

Louth CC, Planning Department - Viewing Purposes Only

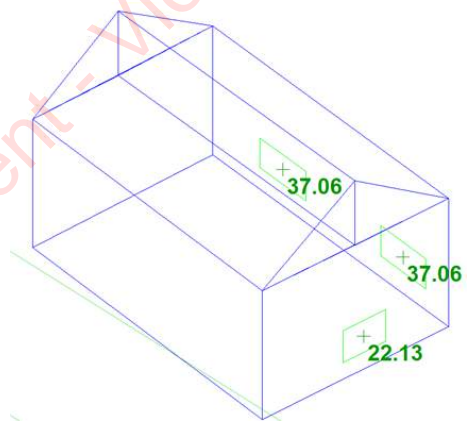
Off the Trinity Street– Existing Property 07



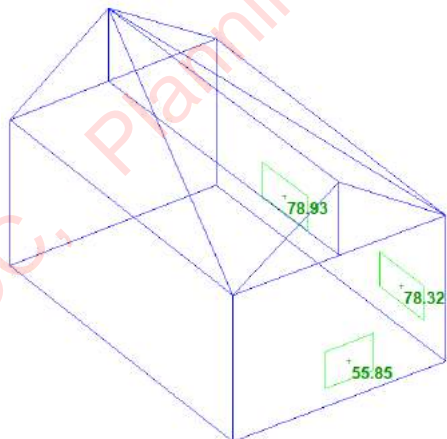
Existing Scenario Annual



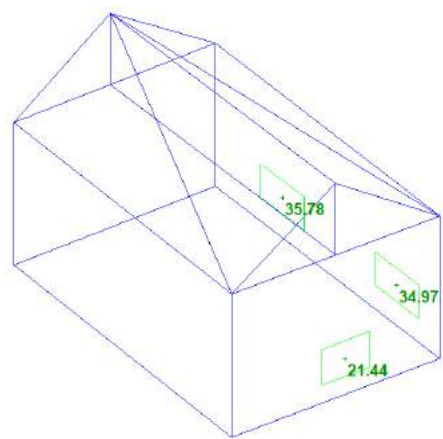
Existing Scenario Winter



Proposed Scenario Annual



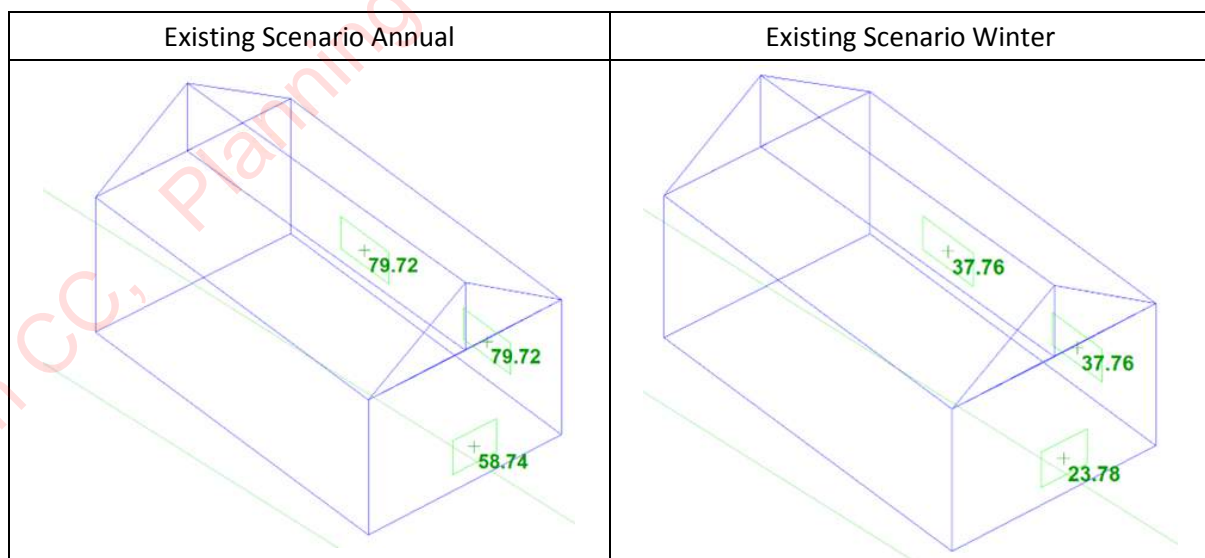
Proposed Scenario Winter

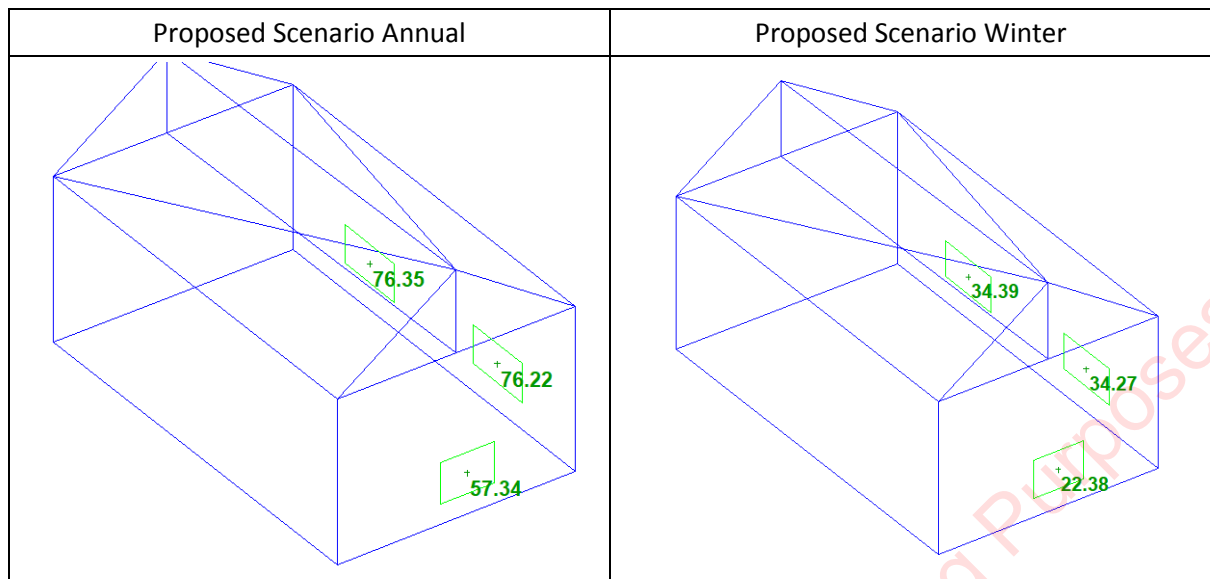


Ref:	Existing APSH (Annual)	Proposed APSH (Annual)	Proposed APSH % of Existing	% Reduction of APSH (Annual)	Existing APSH (Winter)	Proposed APSH (Winter)	Proposed APSH % of Existing	Window orientation (in degrees from true North)
W1	56.55	55.85	99%	1.24%	22.13	21.44	97%	251.84 (W)
W2	79.72	78.32	98%	1.76%	37.06	34.97	94%	160.25 (S)
W3	79.72	78.93	99%	0.99%	37.06	35.78	97%	160.25 (S)

Result: **Pass**

Trinity Street– Existing Property 08





Ref:	Existing APSH (Annual)	Proposed APSH (Annual)	Proposed APSH % of Existing	% Reduction of APSH (Annual)	Existing APSH (Winter)	Proposed APSH (Winter)	Proposed APSH % of Existing	Window orientation (in degrees from true North)
W1	58.74	57.34	98%	2.38%	23.78	22.38	94%	250.54 (W)
W2	79.72	76.22	96%	4.39%	37.76	34.27	91%	160.82 (S)
W3	79.72	76.35	96%	4.23%	37.76	34.39	91%	160.82 (S)

Result: **Pass**

6.3. Sunlight to Neighbouring Back Gardens

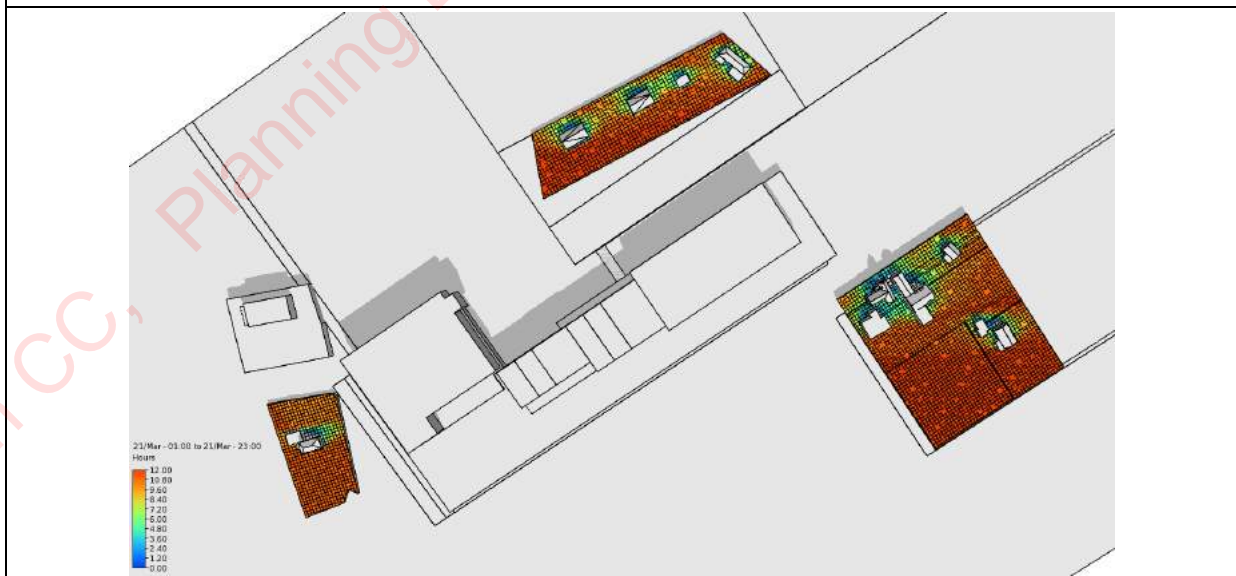
For a space to appear adequately sunlit throughout the year, at least half of the garden or amenity area should receive at least 2 hours of sunlight on the 21st of March.

The results below demonstrate that in excess of 50% of the existing neighbouring private garden areas will receive at least 2 hours of sunlight on the 21st of March when the proposed development is complete.



Figure 6: Site Plan - Private Garden Spaces Neighbouring Properties

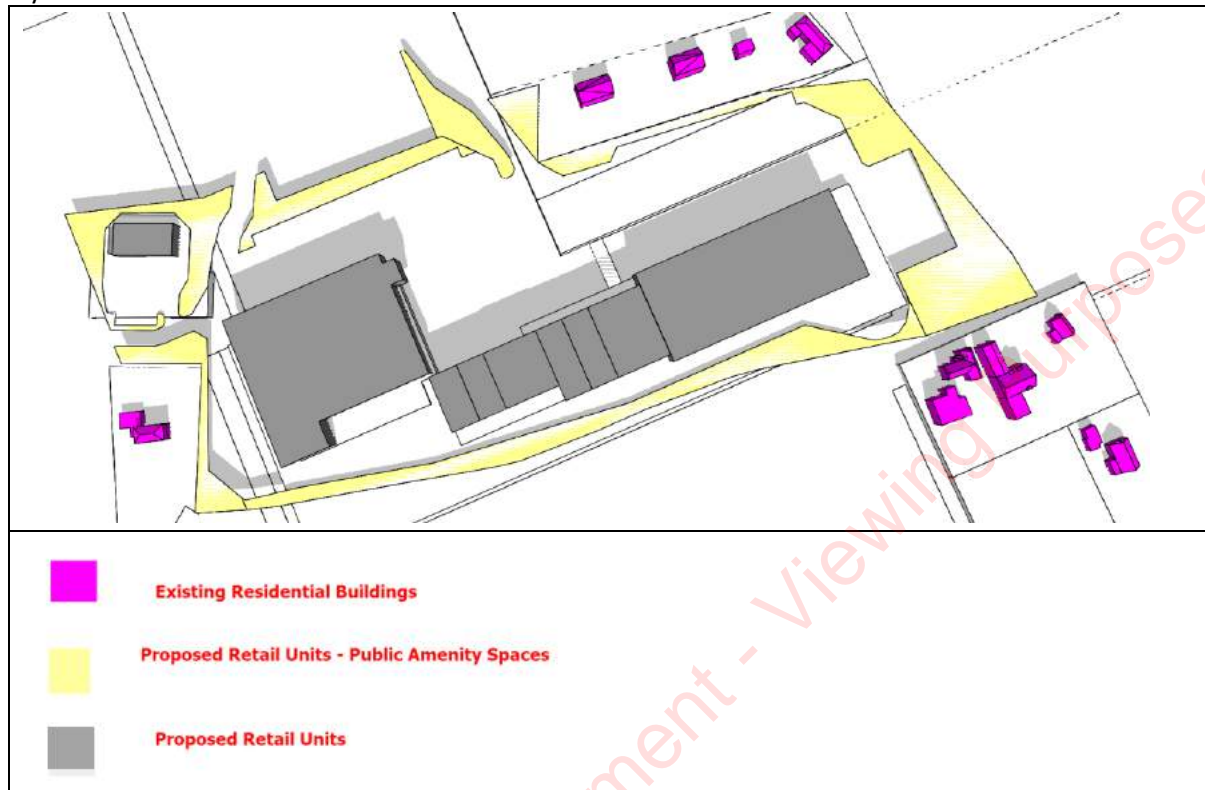
Annual Sunlight Probable Hours: The coloured areas receive > 2 hours of sunlight on the 21st of March



From the above results it is evident that well in excess of 50% of the area of each of the neighbouring private garden spaces will achieve a minimum of 2 hours of sun light on the 21st of March.

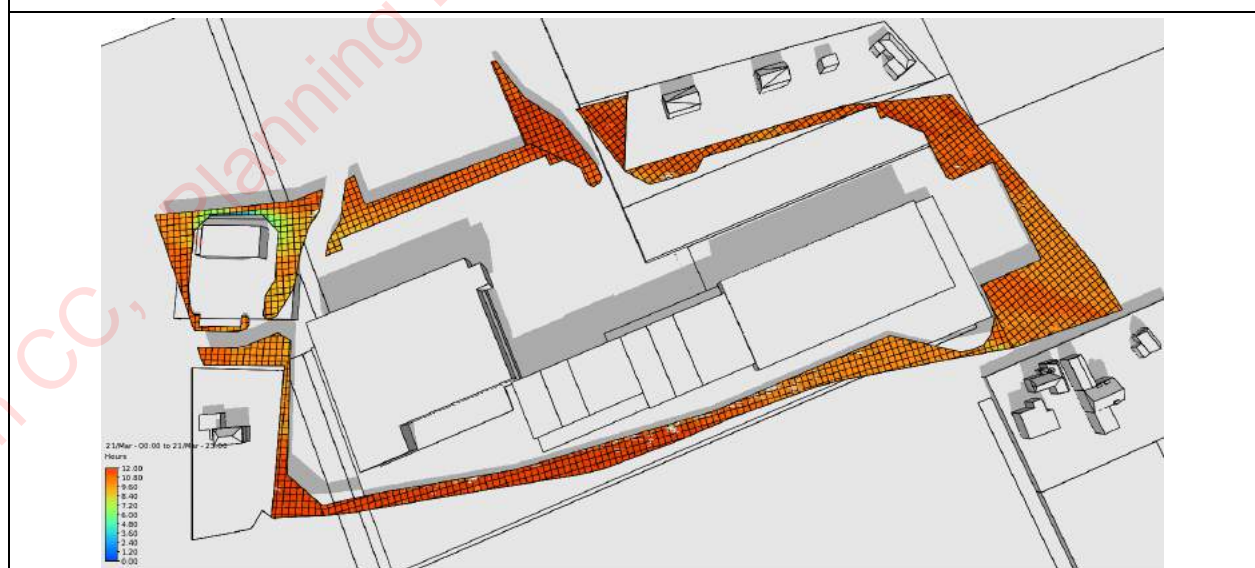
6.4. Sunlight to Proposed Development Public Amenity Areas

The image below illustrates the public amenity spaces identified from the proposed retail unit plan layouts.



The following images illustrate the annual sunlight probable hour simulation results for the proposed development amenity areas on the 21st of March.

Annual Sunlight Probable Hours: The coloured areas receive > 2 hours of sunlight on the 21st of March.



The results above illustrate that well in excess of 50% of the proposed development amenity space will achieve a minimum of 2 hours of direct sun light on the 21st of March.

7. Discussion of Results

Table 4 details the recommended nomenclature and definitions from the BR209 Environmental Impact Assessment Appendix H that are used to analyse skylight and sunlight results. The results are described in terms of negligible, minor and major adverse impacts.

Table 4: BR209 Environmental Impact Assessment Criteria

Impact	Description
Negligible Adverse Impact (Within the BR209 Guidelines)	Where the loss of light is well within the guidelines of BR209, OR only a small number of windows or limited area of open space lose light (within the guidelines), a classification of negligible impact is more appropriate.
Minor Adverse Impact (Within the BR209 Guidelines)	Where the loss of light is only just within the guidelines, and a larger number of windows or open space area are affected, a minor adverse impact would be more appropriate, especially if there is a particularly strong requirement for daylight and sunlight in the affected building or open space.
Minor Adverse Impact (Does not meet the guidelines of BR209)	Where the loss of skylight or sunlight does not meet the guidelines of BR209 and; <ul style="list-style-type: none"> only a small number of windows or limited area of open space are affected the loss of light is only marginally outside the guidelines an affected room has other sources of skylight or sunlight the affected building or open space only has a low level requirement for skylight or sunlight there are particular reasons why an alternative, less stringent, guideline should be applied, for example an overhang above the window or a window standing unusually close to the boundary.
Major Adverse Impact (Does not meet the guidelines of BR209)	Where the loss of skylight or sunlight does not meet the guidelines of BR209 and; <ul style="list-style-type: none"> a large number of windows or large area of open space are affected the loss of light is substantially outside the guidelines all the windows in a particular property are affected the affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight, e.g., a living room in a dwelling or a children's playground.

The impact of the proposed development in terms of daylight and sunlight on 8 No. surrounding existing properties has been analysed in accordance with the guidelines described in BR209 (2022) Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice. The existing gardens and a total of 48 no. windows associated with the existing dwellings have been assessed. The results are within the BR209 guidelines, and the proposed development has a negligible adverse impact on the surrounding properties.

7.1. Vertical Sky Component (VSC) Results

The vertical sky component results are detailed in section 6.1 of this report. The VSC results are >27% for all the windows tested both before and after the proposed development in place. Therefore, in terms of VSC the development has a negligible adverse impact and is within the BR209 guidelines.

7.2. APSH Neighbouring Properties Windows

The results of the APSH simulations in Section 6.2 show that the impact of the proposed development on the neighbouring properties are within the BR209 guidelines.

Table 5: APSH Neighbouring Properties Summary of Results

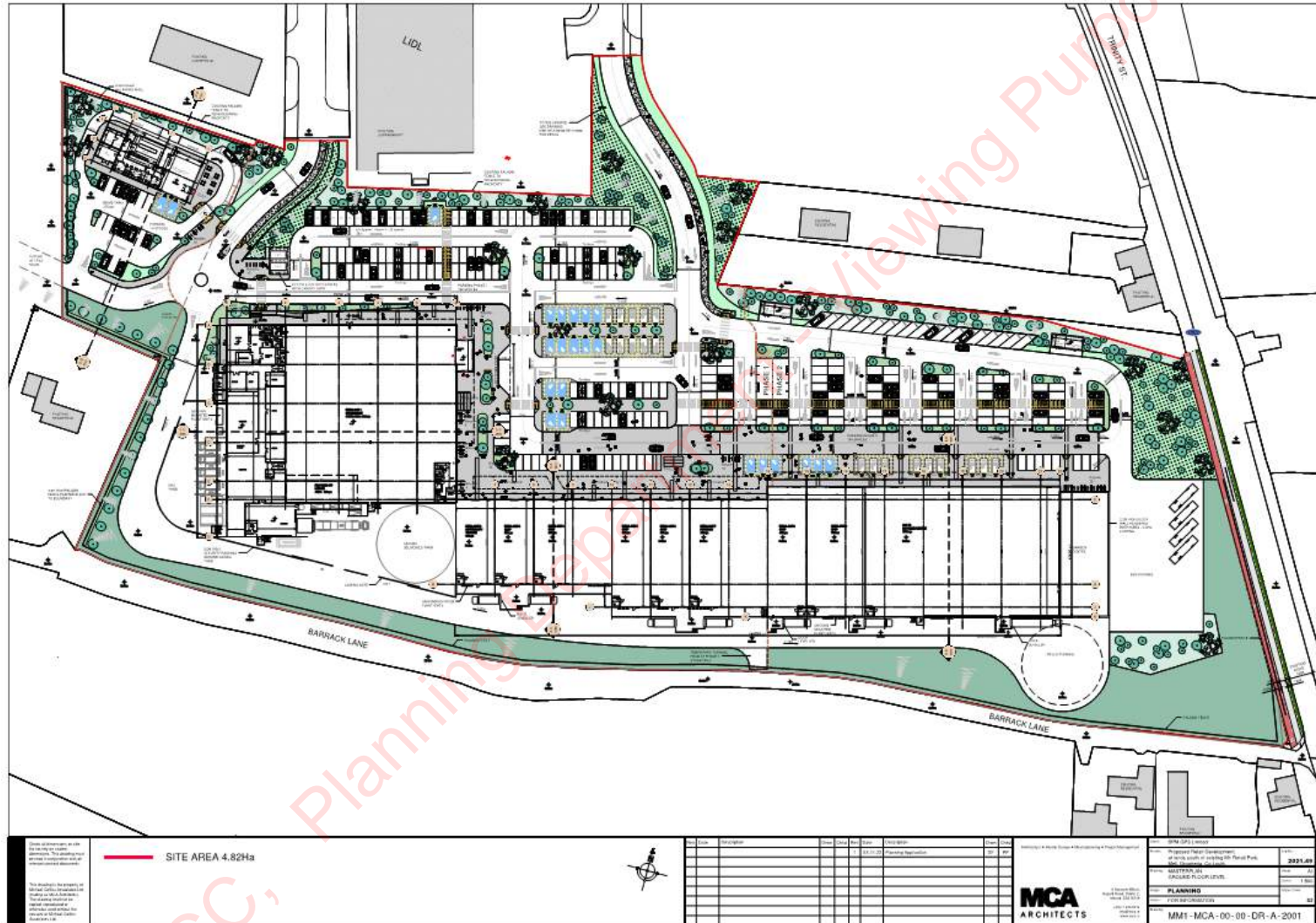
Neighbouring Property	Result
Existing Property No. 1 - Barrack Lane	Negligible Adverse Impact
Existing Property No. 2 - Barrack Lane	Negligible Adverse Impact: <ul style="list-style-type: none"> The windows facing the development are northwest facing and therefore not within 90° of due south
Existing Property No. 3 - Barrack Lane	Negligible Adverse Impact: <ul style="list-style-type: none"> The majority of windows facing the development are northwest facing and therefore not within 90° of due south 1 x southwest facing first floor window meets the sunlight requirements
Existing Property No. 4 - Barrack Lane	Negligible Adverse Impact: <ul style="list-style-type: none"> South facing windows comply. Windows on the rear of the building are north facing and not within 90° of due south. Assumed window locations on the east facing 2 storey wall comply. The ground floor east facing window will receive 20% of its former APSH's after the proposed development is built. The window does not face within 90° (83°) of due south nor does the development subtend at an angle of >25°.
Existing Property No. 5 - Trinity Street	Negligible Adverse Impact: <ul style="list-style-type: none"> W1 and W2 are not within 90° of due south. All windows within 90° of due south comply.
Existing Property No. 6 - Trinity Street	Negligible Adverse Impact
Existing Property No. 7 - Trinity Street	Negligible Adverse Impact
Existing Property No. 8 - Trinity Street	Negligible Adverse Impact

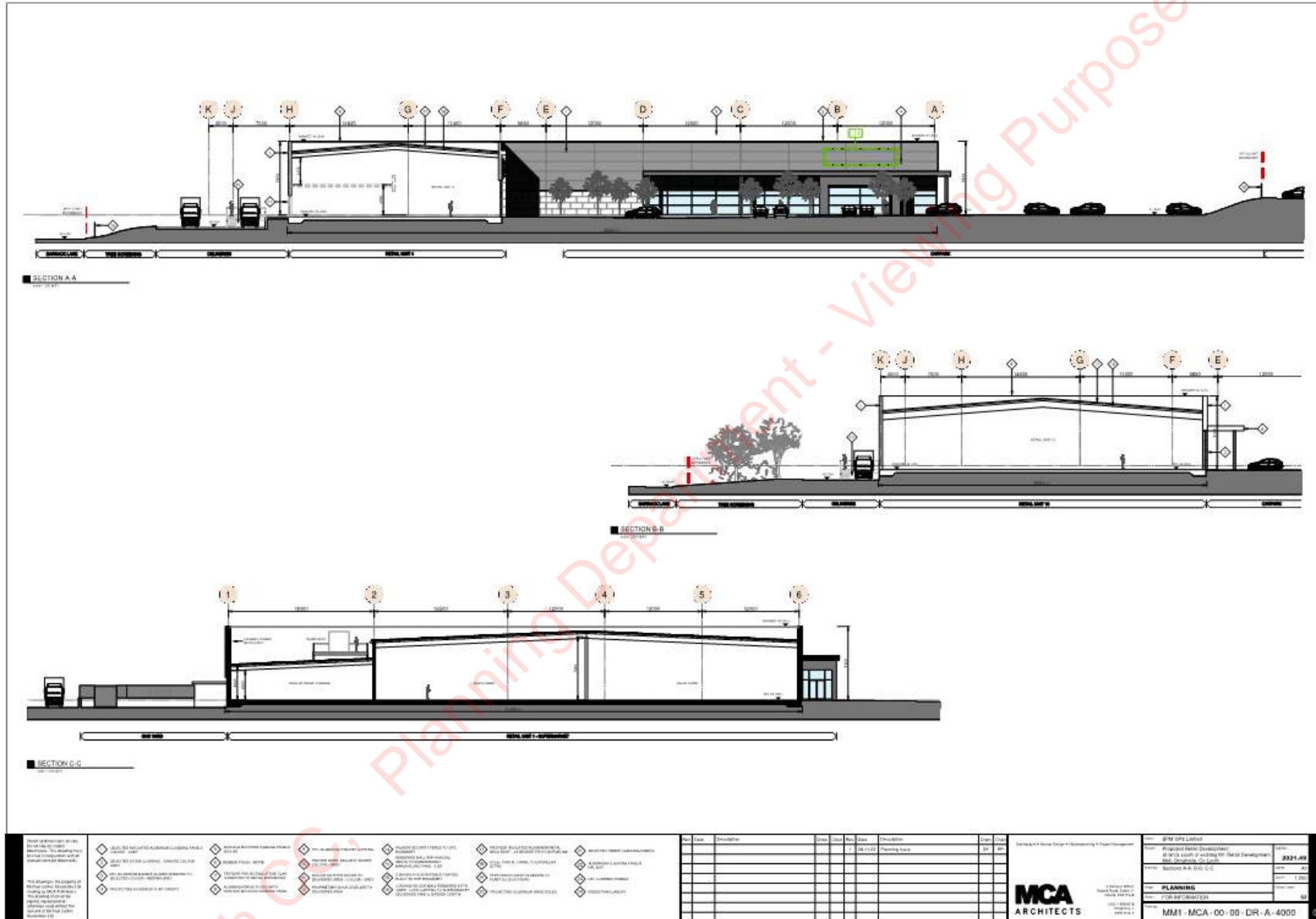
7.3. Sunlight to Proposed Development Public Amenity Areas

Section 6.3 and 6.4 of this report contains results of the APSH simulations for back gardens and amenity spaces. The results show that at least 50% of each of the neighbouring gardens and at least 50% of proposed development amenity space receives at least two hours of sunlight on the 21st of March. Therefore, the proposed development has a negligible adverse impact on the neighbouring garden APSH's.

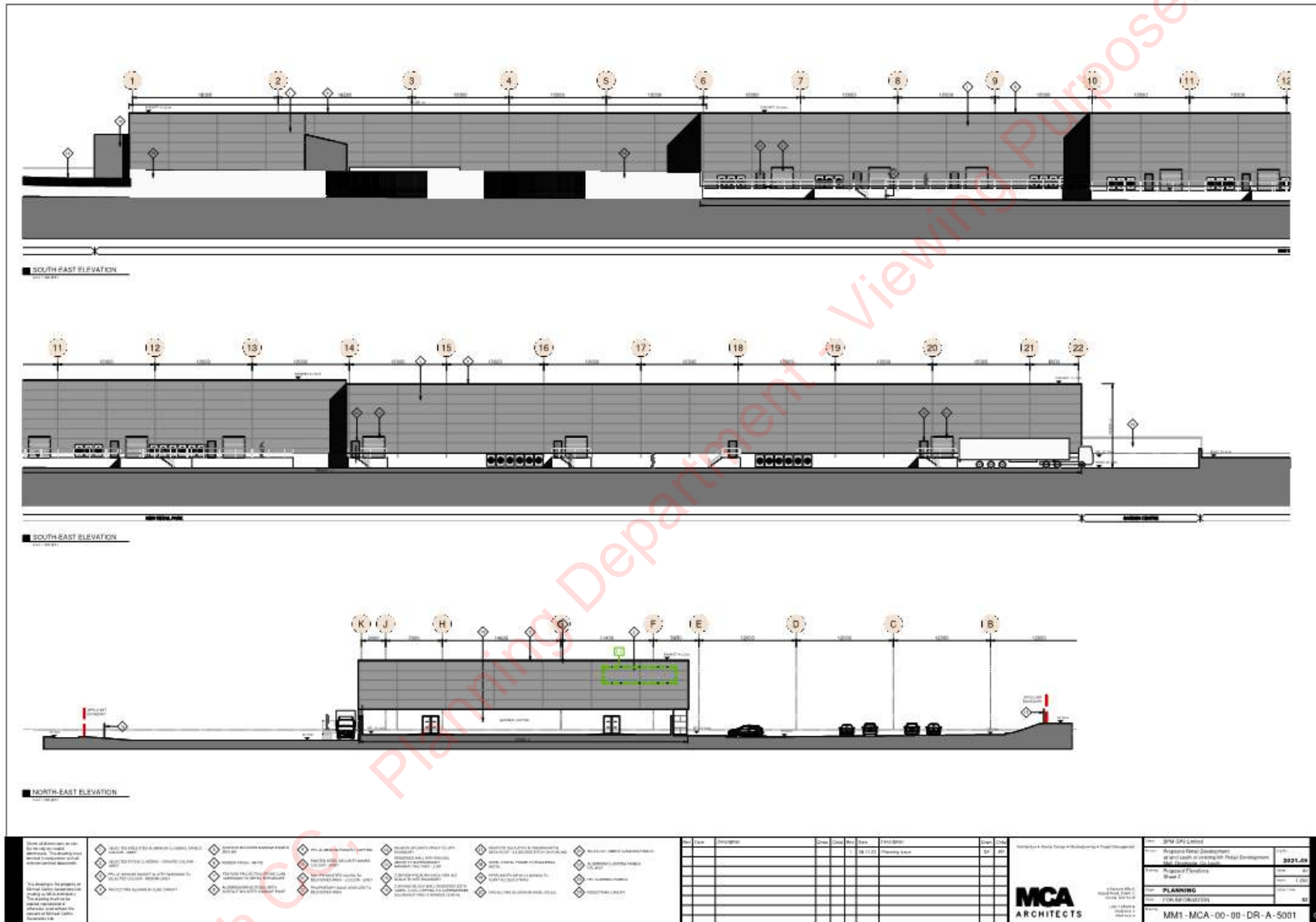
Louth CC, Planning Department - Viewing Purposes Only

Appendix A: Architectural Plan and Section Drawings



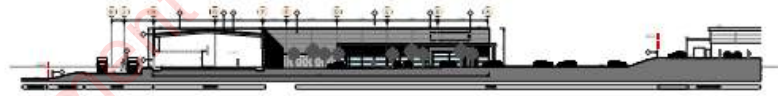








■ NORTH WEST ELEVATION - CONTIGUOUS



■ NORTH EAST ELEVATION - CONTIGUOUS



■ SOUTH - EAST ELEVATION - CONTIGUOUS

- ◆ ALL WORK SHALL BE IN ACCORDANCE WITH THE BUILDING REGULATIONS 2007 (AS AMENDED).
- ◆ ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE BUILDING REGULATIONS 2007 (AS AMENDED).
- ◆ ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE BUILDING REGULATIONS 2007 (AS AMENDED).
- ◆ ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE BUILDING REGULATIONS 2007 (AS AMENDED).
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- ◆ ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE BUILDING REGULATIONS 2007 (AS AMENDED).
- ◆ ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE BUILDING REGULATIONS 2007 (AS AMENDED).

Rev	Date	Description	Drawn	Checked	By	Date
1	2011-11-23	Planning Issue	SP	SP	SP	2011-11-23

MCA ARCHITECTS

100, 101 & 102, The Arcade, Kilkenny, Co. Wick.
 056 772 1115
 info@mca.ie

MCA 001 Layout	
Project Name	Proposed Future Development of an Area within the Rural Park, Co. Wick
Project No.	MM1-MCA-00-00-DR-A-5003
Client	MM1-MCA-00-00-DR-A-5003
Scale	1:500
Date	2011-11-23
Drawn	SP
Checked	SP
By	SP
Date	2011-11-23

Abbreviations

APSH	Annual Probable Sunlight Hours
BRE	Building Research Establishment
IES	Integrated Environmental Solutions
VSC	Vertical Sky Component

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Appendix F

Louth CC, Planning Department - Viewing Purposes Only!

Full bat survey metadata (Analysis carried out using Elekon BatExplorer 2.0 Software).

Recording	Timestamp	Species Text	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Latitude [WGS84]	Longitude [WGS84]	Longitude [WGS84]
2180125	20/07/2022 22:40	<i>Pipistrellus pygmaeus</i>	19	51.5	67.3	50.7	6	90	53.72555	-6.38538	-6.38538
2180127	20/07/2022 22:43	<i>Pipistrellus pygmaeus</i>	24	51.5	58	50.6	6	86	53.72557	-6.38539	-6.38539
2180134	20/07/2022 22:50	<i>Nyctalus leisleri</i>	6	23.6	24.9	22.4	12.9	474	53.72567	-6.38645	-6.38645
2180139	20/07/2022 22:53	<i>Pipistrellus pipistrellus</i>	25	49.7	57.8	48.8	7	90	53.7257	-6.38729	-6.38729
2180141	20/07/2022 22:58	<i>Pipistrellus pipistrellus</i>	78	46.8	63.3	45.5	4	50	53.7256	-6.38795	-6.38795
2180145	20/07/2022 23:03	<i>Pipistrellus pipistrellus</i>	13	45.6	62.2	44.8	5	180	53.72565	-6.38777	-6.38777
2180146	20/07/2022 23:04	<i>Pipistrellus pygmaeus</i>	33	54.3	81.3	53.5	5	86	53.72566	-6.38775	-6.38775
2180147	20/07/2022 23:04	<i>Pipistrellus pygmaeus</i>	57	54.7	78	53.9	5	80	53.72566	-6.38774	-6.38774
2180150	20/07/2022 23:06	<i>Pipistrellus pipistrellus</i>	27	45.5	62	44.2	4	94	53.72573	-6.38706	-6.38706
2180155	20/07/2022 23:09	<i>Nyctalus leisleri</i>	6	24.3	24.6	23.1	10.4	592	53.72585	-6.38524	-6.38524
2180156	20/07/2022 23:09	<i>Nyctalus leisleri</i>	6	23.6	24.5	22.8	6	260	53.72585	-6.38519	-6.38519
2180157	20/07/2022 23:09	<i>Nyctalus leisleri</i>	6	22.1	22.8	21.2	12	375	53.72585	-6.38519	-6.38519
02180158_1	20/07/2022 23:10	<i>Pipistrellus pipistrellus</i>	40	46.5	80.5	45.5	4	80	53.72584	-6.38518	-6.38518
2180159	20/07/2022 23:10	<i>Pipistrellus pipistrellus</i>	20	45.5	72.8	44.7	4	83	53.72583	-6.38519	-6.38519
2180166	20/07/2022 23:17	<i>Pipistrellus pipistrellus</i>	24	45.9	87.6	45	4	85	53.72594	-6.38397	-6.38397
2180167	20/07/2022 23:17	<i>Pipistrellus pipistrellus</i>	9	46.5	53.8	45.3	3	80	53.72594	-6.38399	-6.38399
2180168	20/07/2022 23:17	<i>Pipistrellus pipistrellus</i>	15	46.8	52.3	46	7	200	53.72593	-6.38403	-6.38403
2180173	20/07/2022 23:24	<i>Pipistrellus pipistrellus</i>	9	48	52.7	47.1	4	100	53.7259	-6.38562	-6.38562

Recording	Timestamp	Species Text	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Latitude [WGS84]	Longitude [WGS84]	Longitude [WGS84]
02180158_2	20/07/2022 23:10	<i>Nyctalus leisleri</i>	2	22.3	23.1	21.4	10.4	219	53.72584	-6.38518	-6.38518

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Appendix G

Louth CC, Planning Department - Viewing Purposes Only!

M1 Retail Park

Verified Photomontages & Computer-generated imagery (CGIs)



NOTES AND METHODOLOGY

PROJECT DETAILS

Title: M1 Retail Park
Development Description:
Design team: MCA

Prepared by Digital Dimensions

Issue Date	23/06/22	27/06/22	11/07/22	12/08/22	13/09/22	22/09/22
Revision	A	B	C	D	E	F
Status	FOR REVIEW					

PROFILE

Digital Dimensions are specialists in computer generated visualisations for all forms of planning applications. The company was established in 2000 by John Healy and Jim Manning in Dublin, Ireland. Digital Dimensions is one of Ireland's leading architectural visualisation companies with 20+ years of experience covering a wide range of solutions in the areas of architectural visualisation, environmental design and digital media.

Method Statement - Photo-montage production using guidance in The Landscape Institute TGN-06-19 Visual Representation of Development Proposals.

1. Photographs are taken from locations as advised by the planning consultant with a full frame SLR digital camera and prime lens. Photographs are taken using the most appropriate combination of lens focal lengths to ensure that the field of view covers the proposed scheme environment or landscape context. The photographs are taken horizontally with a survey level attached to the camera. The photographic positions are marked (for later surveying), the height of the camera and the focal length of the image recorded.
2. In each photograph, a minimum of 3no. visible fixed points are marked for surveying. These are control points for model alignment within the photograph. All surveying is carried out by a qualified topographical surveyor using Total Station / GPS devices.
3. The photographic positions and the control points are geographically surveyed and this survey is tied in to the site topographical survey supplied by the Architect / client.
4. The buildings are accurately modelled in 3D cad software from cad drawings or BIM model supplied by the Architect. Material finishes are applied to the 3D model and scene element are place like trees and planting to represent the proposed landscaping.
5. Virtual 3D cameras are positioned according to the survey co-ordinates and the focal length is set to match the photograph. Pitch and rotation are adjusted using the survey control points to align the virtual camera to the photograph. Lighting is set to match the time of day the photograph is taken.
6. The proposed development is output from the 3D software using this camera and the image is then blended with the original photograph to give an accurate image of what the proposed development will look like in its proposed setting.
7. In the event of the development not being visible, the roof line of the development will be outlined in red if re-quested.
8. The document contains:
 - a. Site location map with view locations plotted.
 - b. Photomontage sheet with existing or proposed conditions.
 - c. Reference information including field of view/focal length, range to site / development, date of photograph.
9. For the views, we provide four images:
 - a. The existing view (on 11 June 2022);
 - b. The proposed photomontage (or scheme outline as appropriate)



View Location Map

This map is for view location purposes only. Please refer to Architects drawings for site layout and redline boundary.



24mm - 73.74° fov | 208.3% of 50mm | 145.8% of 35mm

390mm wide

35mm - 54.43° fov. | 142.8% of 50mm

267.4mm wide

187.2mm wide

50mm - 39.59° fov | 70% of 35mm | 48% of 24mm

35mm - 54.43° fov. | 68.5% of 24mm

24mm - 73.74° fov

6000x4000px

< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
						Canon EOS 5DS



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View A Existing	Near junction of M1 & N51 looking East	11/06/22	73.7°	24mm	424.8m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View A Proposed	Near junction of M1 & N51 looking East	11/06/22	73.7°	24mm	424.8m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View B Existing	At roundabout junction of N51 & R168 looking South	11/06/22	73.7°	24mm	335m	Canon EOS 5DS



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View B Proposed	At roundabout junction of N51 & R168 looking South	11/06/22	73.7°	24mm	335m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View C Existing	At roundabout junction of M1 retail park entrance looking South	11/06/22	73.7°	24mm	172.6m	Canon EOS 5DS



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View C Proposed	At roundabout junction of M1 retail park entrance looking South	11/06/22	73.7°	24mm	172.6m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View D Existing	On Trinity Street (R168) looking South West	11/06/22	73.7°	24mm	83.5m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View D Proposed	On Trinity Street (R168) looking South West	11/06/22	73.7°	24mm	83.5m	Canon EOS 5DS



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View E Existing	Within M1 retail park adjacent to Lidl looking South	11/06/22	73.7°	24mm	35.8m	Canon EOS 5DS



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View E Proposed	Within M1 retail park adjacent to Lidl looking South	11/06/22	73.7°	24mm	35.8m	Canon EOS 5DS



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View F Existing	Within M1 retail park adjacent to rear of Lidl looking South	11/06/22	73.7°	24mm	35.8m	Canon EOS 5DS



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View F Proposed	Within M1 retail park adjacent to rear of Lidl looking South	11/06/22	73.7°	24mm	15.6m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View G Existing	On Trinity Street (R168) looking West	11/06/22	73.7°	24mm	24.5m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View G Proposed	On Trinity Street (R168) looking West	11/06/22	73.7°	24mm	24.5m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View H Existing	On Trinity Street (R168) at slip rd to V&W Recycling looking North West	11/06/22	73.7°	24mm	179.4m	Canon EOS 5DS



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< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
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< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View I Existing	On Trinity Street (R168) looking North West	11/06/22	73.7°	24mm	553m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View I Proposed	On Trinity Street (R168) looking North West	11/06/22	73.7°	24mm	553m	Canon EOS 5DS



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View J Existing	On Slane Road outside IPL Group premises looking North	11/06/22	73.7°	24mm	343m	Canon EOS 5DS



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
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< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View K Existing	On Slane Road near junction with Barrack looking North East	11/06/22	73.7°	24mm	279m	Canon EOS 5DS



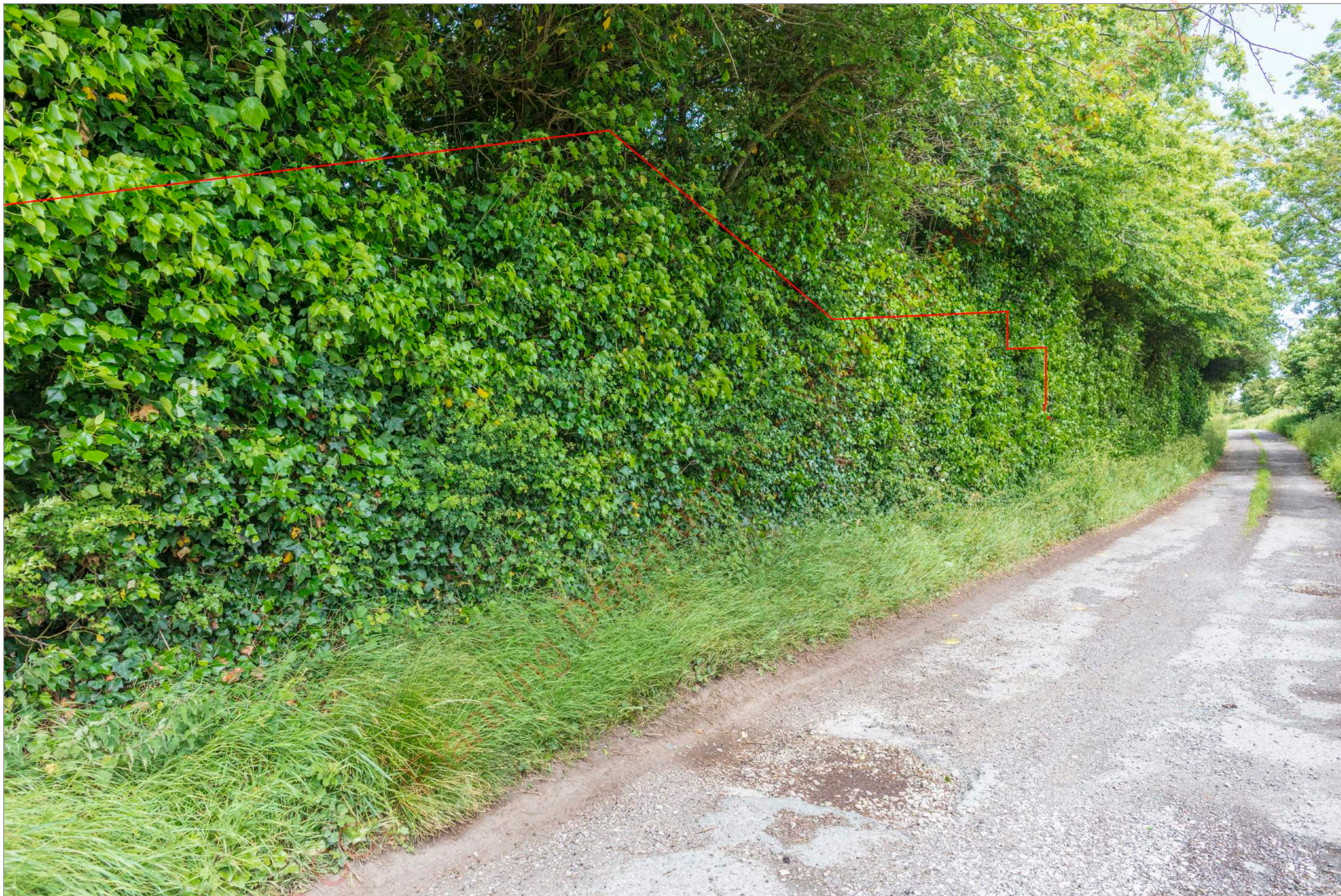
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< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View L Existing	On Barrack Lane looking East	11/06/22	73.7°	24mm	6.6m	Canon EOS 5DS



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View L Proposed	On Barrack Lane looking East	11/06/22	73.7°	24mm	6.6m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View M Existing		15/09/22	73.7°	24mm	33.4m	Canon EOS 5DS



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View M Proposed		15/09/22	73.7°	24mm	33.4m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View N Existing		15/09/22	73.7°	24mm	4,2m	Canon EOS 5DS



< 24mm / 73.7° < 35mm / 54.4° < 50mm / 39.6° Lens Information: Focal Length / Field of View 50mm / 39.6° > 35mm / 54.4° > 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model
View N Proposed		15/09/22	73.7°	24mm	4,2m	Canon EOS 5DS



CGI

Louth CC,



CG2

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CG3

Louth CC,
 planning

Appendix H

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**NORTHERN
TREE SERVICES**
Arboricultural Contractors & Consultants

Tree Survey Report

Site to the South of the M1 Retail Park, Mell, Drogheda
Co. Louth

December 2022



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Appendices

Appendix A - Tree Survey Schedule

Prepared by



Derek Gault
BSc Arboriculture & Amenity Forestry

Monday 20th June 2022

Instruction

To carry out a Tree Survey according to the standards as laid out in BS5837:2012 “ Trees in relation to design, demolition and construction – Recommendations.” on land proposed for development at the M1 Retail Park, Drogheda

Introduction

The lands south of the existing M1 Retail Park have been identified as having the potential for development of further retail commercial and a drive-thru unit. This survey has been commissioned to provide opinion upon the condition of existing trees around the site and to use this insight to inform the design of the new development, and to ensure measures are employed to protect those trees suitable for retention.

Limitations

- The survey was carried out from ground level and only those features significant at the time of survey are recorded
- No samples of wood, roots or soils were taken for analysis.
- There is no guarantee either expressed or implied of the internal condition of the wood or rooting system, or that problems or deficiencies may arise in the future.
- The survey is no guarantee that where trees have been identified as suitable for retention, the whole tree, or parts of it will not fail – trees are living organisms whose health and condition can change rapidly and are obviously affected hugely by unquantifiable high winds. Trees should be checked regularly and especially after storm events.

Methodology

- The significant trees inside the site (as illustrated in Photo 2) were assessed from ground level using Visual Tree Assessment techniques, and relevant observations and measurements taken in accordance with those specified in the industry standard document BS5837:2012 “Trees in relation to design, demolition and construction – Recommendations”
- Where trees are sufficiently homogenous, they have been assessed collectively and recorded as a group (prefix G- on the Schedule).
- An audible investigation of the tree using the Thor 710 nylon mallet is used when decay or cavities are suspected in the trees’ boles.
- Survey forms are contained electronically on Ipad Mini which is contained within an all-weather case.
- A Clinometer is used to measure tree heights.
- Where access to trees is restricted by undergrowth/ obstructions/ site boundaries etc estimations are made of required measurements for health and safety reasons.

Survey Key

Tree Numbers

Trees have been affixed with orange plastic tags and numbered, with the numbers pertaining to those in the Schedule. The numbers are also plotted on the plan drawing.

Age Class – recorded as;

JUV= Juvenile(in first 1/3 of life expectancy).

SM= semi-mature(in middle 1/3 of life expectancy).

M = Mature (in final 1/3 of life expectancy).

OM = Over Mature (becoming decrepit)

Dead

Dia-

Diameter in metres measured at 1.5 metres above ground level

RPA Radius –

Root Protection Area Radius is the minimum area around trees to be protected from disturbance during construction, calculated as an area equivalent to a circle with a radius 12 times the stem diameter.

Existing Height above Ground Level of (in metres)-

First significant branch, and, Canopy

Observations –

The results of the Visual Tree Assessment, combining experience and knowledge of tree biology and structure to draw conclusions about the tree’s condition. Only significant details are recorded on the schedule.

Preliminary Recommendations –

Proposed remedial tree works irrespective of site plans to ensure safety of users and neighbours

ERC – Estimated Remaining Contibution

– in years e.g <10, 10+,20+, 30+, 40+

Category

The tree retention category system according to BS5837:2012 which grades a tree's suitability for retention

U – Trees in such a condition that they cannot be realistically be retained in the context of the current land use for longer than 10 years

A - Trees of a high quality with an estimated remaining life expectancy of at least 40yrs

B – Trees of moderate quality with an estimated remaining life expectancy of at least 20 yrs

C - Trees of low quality with an estimated life expectancy of at least 10 yrs, or young trees with a stem diameter below 150mm

Subcategory –

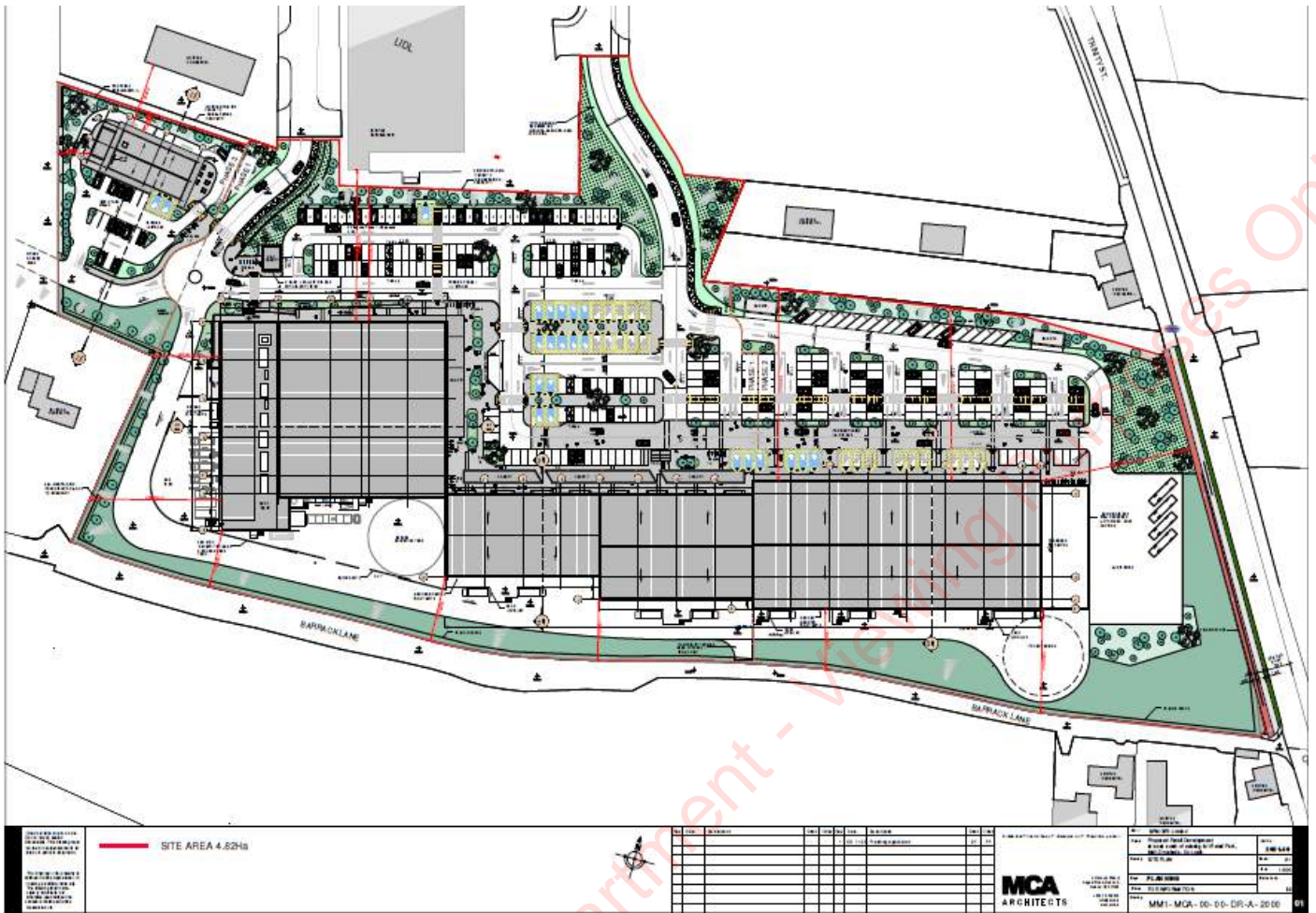
1. - Trees with mainly Arboricultural qualities. 2 – Trees with mainly Landscape qualities. 3. Trees with mainly cultural values , including conservation

Site Overview

The site occupies 4.82 Ha of land south of the existing M1 Retail Park off Junction 10 of the M1 Motorway at Drogheda.

Trinity Street runs to the East, Barrack Lane to the South with agricultural land to a portion of the western boundary. There are private dwelling houses at the North-Eastern & South-Western corners.

There is a disused black-top road running east-west through the site, with evidence of abandoned ground works throughout the northern half.



Plan 1 – Site boundary outlined in red

Tree Overview

The only significant trees are found at the South-eastern corner at the junction of Trinity Street and Barrack Lane. These are largely of average amenity, being festooned with ivy and growing too closely together to make good specimens.

The remaining vegetation found on site are mainly self-seeded Sally and Buddlea bushes that have pioneered the area after it was abandoned. It is estimated this vegetation is 15 years old.

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Photo 1 – View to the Northwest toward Lidl



Photo 2 – View Southeast to the corner of the site and trees 1-4. Note Tree 4 on the RHS is the very decrepit Ash tree



Photo 3 – View South to Tree 5 – a well-formed Sycamore

Survey Overview

A total of 5 no. individual trees were assessed as part of the Survey fieldwork.

Of these, 1 no. tree was classed as Category A (high value), 3 no. were classed as Category B (moderate value) and 1 no. was classed as Category U (unsuitable for retention).

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Conclusions

The trees found on site can be easily protected during the construction of the proposed development as there is more than enough room to accommodate their root protection zones between the closest part of the development (the lorry turning circle and the coach park) and their stems. In fact, there seems to have been some previous attempt at tree protection as a stretch of site fencing is already in place around trees 1-4.

Recommendations

Preliminary remedial recommendations for individual trees can be found in the Survey Schedule in the appendix.

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Arboricultural Method Statement

The Arboricultural Method Statement (AMS) lays down the methodology for any demolition and/or construction works that may have an effect upon trees on and adjacent to this site. It is essential within the scope of any contracts related to this development, that this AMS is observed and adhered to. It is recommended that this document forms part of the work schedule and that specifications are issued to the building contractor(s) and these must be used to form part of their contract.

SEQUENCE OF WORKS (AS PER RECOMMENDATIONS OF BS5837: 2012)

From commencement of the above development, the following methodology shall be implemented in the manner and sequence described:

1. Pre-contract site meeting
2. Arboricultural pruning and/or removal works: with written Council permission for protected trees
3. Erect *temporary* staked or (where there maybe a risk of root damage) stabilised Tree Protection Barriers (TPB) to establish a fenced-off Construction Exclusion Zone (CEZ): **before** any demolition and/or construction works begin on-site
4. Install *temporary* ground protection (TGP): **before** any demolition and/or construction works begin on-site
5. Route underground services: not within the RPAs of any retained trees
6. Demolition followed by main construction phase
7. Installation of Cellular Confinement Systems (if deemed necessary by the Arboriculturalist)
8. Remove TGP and TPBs
9. Landscape works.

1.0 PRE-CONTRACT SITE MEETING

To outline on-site working methods in relation to trees prior to any demolition/construction activity, a site meeting of the following shall take place:

- Client
- Architect/Planning Consultant/Structural Engineer
- Main Contractor and his site agent
- Arboriculturist

2.0 ARBORICULTURAL PRUNING AND/OR FELLING WORKS

1. Before the erection of the temporary protective barrier, all tree removal shall be implemented in accordance with the Tree Survey Schedules.
2. All possible efforts must be made to prevent damage to retained trees including potential root incursion or compaction caused by vehicle access. Temporary ground protection should be used to achieve the latter.
3. All arboricultural works should conform to the recommendations of BS 3998; 2010 '*Tree Work - Recommendations*'
4. All operatives shall be equipped with and use personal protective equipment (PPE) in accordance with Health & Safety Executive current directives and industry codes of practice.
5. Wound sealants shall not be used on any tree.
6. Performance of all arboricultural operations and use of equipment shall be in accordance with current Health & Safety Executive current directives and industry codes of practice.

3.0 ERECT TEMPORARY PROTECTIVE BARRIERS (TPB)

1. Following completion of the tree felling and prior to demolition and construction, the main contractor shall erect the temporary protective barriers as detailed in the 'Tree Protection Specification'.
2. Prior to commencement of any site demolition, construction, preparation, excavation or material deliveries, the Arboriculturist shall inspect the installation of the temporary barriers. Any damage occurring to protective barriers during the demolition or construction phase shall be made good by the main contractor.
3. Excavation shall not occur at a distance of less than 300mm from the temporary protective barriers.

4.0 INSTALL TEMPORARY (ANTI SOIL-COMPACTION) GROUND PROTECTION (TGP)

1. For wheeled or track construction traffic within retention tree Root Protection Areas (RPA's), ideally the TGP shall be specified by an engineer to accommodate the likely vehicular loading.
2. We recommend the use of Durabase (<http://terrafirma.gb.com/>), Ground Guards (www.greentek.org.uk) or Eve-Trackway (<http://www.evetrakway.co.uk/>) due to their recognised anti-soil compaction properties (i.e. to protect underlying tree roots). **NB.** It is vital that the TGP is in place before any demolition/construction works begin on site.
3. To prevent leakage into the soil area under the TGP, fuels, oils, chemicals and cement must be carried in a portable bunded bowser and petrol must be stored in a ventilated tool box. There must be no mixing/preparation of noxious substances (e.g. cement) on the ground protection surface.
4. The areas designated for ground protection shall be clearly marked on the Architects plan drawing and/or Tree Protection Plan (TPP).

5.0 DEMOLITION OF EXISTING STRUCTURES

1. Where trees stand adjacent to structures to be removed, the demolition should be undertaken inwards within the footprint of the existing building (often referred to as "top down, pull back"). Where there is a significant build-up of dust on the foliage, it might be necessary to hose down the tree(s).

6.0 MAIN CONSTRUCTION PHASE

1. There shall be no storage of construction material, site parking, site accommodation or equipment in any area designated as the Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) and enclosed by Temporary Protective Barrier.
2. No fires shall be lit within 15m of any tree.
3. The site agent shall supervise deliveries by self-loading crane, with vehicles positioned in such a manner that retained trees are not at risk of damage.

7.0 NO-DIG HARD SURFACING - THREE-DIMENSIONAL CELLULAR CONFINEMENT SYSTEMS (CCS)

1. Designed to be installed without the need for soil excavation, therefore eliminating the need for tree root severance and to sustain the vascular function of the woody roots that may extend outwards from beyond the CCS system.
2. Comprised of an expandable cellular mattress that is then in-filled with a clean stone sub-base above a geotextile membrane. The honeycomb-like structure is made of robust high density polythene that is stretched out and filled with clean angular material. The strength of the structure comes from the binding together of the infill, but with a CCS system this is achieved without compaction or a reduction in (rainwater and oxygen) permeability.
3. Perforated cell walls allow the infill to bind with the contents of adjacent cells, but with sufficient space for movement of water and air to nearby underlying tree roots. As the infill contains no fines and the geotextile layers prevent clogging from particles washing into the system, the structure remains permeable and protects tree roots.
4. The *required* permeable surface finish over the CCS ensures aqueous and gaseous exchanges can still occur in the underlying soil.
5. Edging options: Where edging is required for light structures (e.g. footpaths) above-ground pegs and treated timber edging may be acceptable. Where more substantial hard surface areas are required (e.g. access road and driveways) the use of pinned sleepers, gabions or non-invasive haunch kerbing can provide appropriate solutions.
6. Installing a CCS will assist in achieving part of SUDs (Sustainable Urban Drainage) solutions for on-site hard surfacing.
7. Resin Bonded Surface Care and Maintenance: In general, resin bonded surfaces should be regularly swept clean using a hard bristle yard brush, removing leaves and detritus material - this will prevent moss growth and help to maintain the surface's permeability. Periodic Cleaning General: Cleaning of the surface can be carried out by cold pressure washing up to a maximum 150 bar rating to remove dirt and grime. The water should be applied using a fan type lance which should be kept 200mm above the installed resin bonded surface. Care should be taken to prevent damage to the surface with excessive water pressure. Light coloured resin bonded surface blends may show tyre marks and removal by pressure washing as detailed above may be required.



Photo 11 -Resin Bonded Gravel used across a root-plate of the TROBI Champion Ginkgo at Kew Gardens (London)

8.0 REMOVAL OF TEMPORARY GROUND PROTECTION AND BARRIERS

Temporary ground protection and protective barriers shall be removed only upon completion of the no-dig hard surface installation works and following written approval of the Council.

9.0 LANDSCAPE WORKS

1. Landscaping works will be implemented in accordance with a scheme approved by the Council.
2. There shall be no rotovation of ground within any area designated as a Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) and enclosed by Temporary Protective Barrier unless agreed with the Council.
3. Sandy topsoil may be spread within the Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) to a depth of no more than 150mm to facilitate the establishment of new vegetation. No other addition of soil or other material shall be carried out within any area designated as a Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) without consultation with the Council.
4. No hard landscaping works or excavation for cables or any other service should be installed within the Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) without the written consent of the Council.

Glossary of Arboricultural terms

Abscission. The shedding of a leaf or other short-lived part of a woody plant, involving the formation of a corky layer across its base; in some tree species twigs can be shed in this way

Abiotic. Pertaining to non-living agents; e.g. environmental factors

Absorptive roots. Non-woody, short-lived roots, generally having a diameter of less than one millimetre, the primary function of which is uptake of water and nutrients

Adaptive growth. In tree biomechanics, the process whereby the rate of wood formation in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium. This helps to maintain a uniform distribution of mechanical stress

Adaptive roots. The adaptive growth of existing roots; or the production of new roots in response to damage, decay or altered mechanical loading

Adventitious shoots. Shoots that develop other than from apical, axillary or dormant buds; see also 'epicormic'

Aerial Inspection. A procedure for further inspection carried out by a climbing Arborist

Anchorage. The system whereby a tree is fixed within the soil, involving cohesion between roots and soil and the development of a branched system of roots which withstands wind and gravitational forces transmitted from the aerial parts of the tree

Architecture. In a tree, a term describing the pattern of branching of the crown or root system

Attenuated (slender). Low height/diameter ratio. Fracture-safety may be compromised

Axil. The place where a bud is borne between a leaf and its parent shoot

Bacteria. Microscopic single-celled organisms, many species of which break down dead organic matter, and some of which cause diseases in other organisms

Bark. A term usually applied to all the tissues of a woody plant lying outside the vascular cambium, thus including the phloem, cortex and periderm; occasionally applied only to the periderm or the phellem

Basidiomycotina (Basidiomycetes). One of the major taxonomic groups of fungi; their spores are borne on microscopic peg-like structures (basidia), which in many types are in turn borne on or within conspicuous fruit bodies, such as brackets or toadstools. Most of the principal decay fungi in standing trees are basidiomycetes

Bollig. A term sometimes used to describe pollard heads

Bottle-butt. A broadening of the stem base and buttresses of a tree, in excess of normal and sometimes denoting a growth response to weakening in that region, especially due to decay involving selective delignification

Bracing. The use of rods, cables or synthetic fibres to restrain the movement between parts of a tree

Branch:

- **Primary.** A first order branch arising from a stem
 - **Lateral.** A second order branch, subordinate to a primary branch or stem and bearing sub-lateral branches. Can be used to describe a suppressed branch growing from a stem
 - **Sub-lateral.** A third order branch, subordinate to a lateral branch, or stem and usually bearing only either small shoots or twigs
- Branch bark ridge.** The raised arc of bark tissues that forms within the acute angle between a branch and its parent stem
- Branch collar.** A visible swelling formed at the base of a branch whose diameter growth has been disproportionately slow compared to that of the parent stem; a term sometimes applied also to the pattern of growth of the cells of the parent stem around the branch base
- Brown-rot.** A type of wood decay in which cellulose is degraded, while lignin is only modified
- Buckling.** An irreversible deformation of a structure subjected to a bending load
- Buttress zone.** The region at the base of a tree where the major lateral roots join the stem, with buttress-like formations on the upper side of the junctions
- Cambium.** Layer of dividing cells producing xylem (woody) tissue internally and phloem (bark) tissue externally
- Canker.** A persistent lesion formed by the death of bark and cambium due to colonisation by fungi or bacteria
- Canopy species.** Tree species that mature to form a closed woodland canopy
- Cleaning out.** The removal of dead, crossing, weak, and damaged branches, where this will not damage or spoil the overall appearance of the tree
- Compartmentalisation.** The confinement of disease, decay or other dysfunction within an anatomically discrete region of plant tissue, due to passive and/or active defences operating at the boundaries of the affected region
- Compression strength.** The ability of a material or structure to resist failure when subjected to compressive loading; measurable in trees with special drilling devices
- Compressive loading.** Mechanical loading which exerts a positive pressure; the opposite to tensile loading
- Condition.** An indication of the physiological vitality of the tree. Where the term 'condition' is used in a report, it should not be taken as an indication of the stability of the tree

Crown/Canopy. The main foliage bearing section of the tree

Crown lifting. The removal of limbs and small branches to a specified height above ground level

Crown thinning. The removal of a proportion of secondary branch growth throughout the crown to produce an even density of foliage around a wellbalanced

branch structure

Crown reduction/shaping. A specified reduction in crown size whilst preserving, as far as possible, the natural tree shape

Crown reduction/thinning. Reduction of the canopy volume by thinning to remove dominant branches whilst preserving, as far as possible the natural tree shape

Deadwood. Dead branch wood

Decurrent In trees, a system of branching in which the crown is borne on a number of major widely-spreading and secondarily branched limbs (cf. excurrent). In fungi with toadstools as fruit bodies, the description of gills which run some distance down the stem, rather than terminating abruptly

Defect. In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment

Delamination. The separation of wood layers along their length, visible as longitudinal splitting

Dieback. The death of parts of a woody plant, starting at shoot-tips or root-tips

Disease. A malfunction in or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused by pathogenic microorganisms

Distal. In the direction away from the main body of a tree or other living organism (cf. proximal)

Dominance. In trees, the tendency for a leading shoot to grow faster or more vigorously than the lateral shoots; also the tendency of a tree to maintain a taller crown than its neighbours

Dormant bud. An axial bud which does not develop into a shoot until after the formation of two or more annual wood increments; many such buds persist through the life of a tree and develop only if stimulated to do so

Dysfunction. In woody tissues, the loss of physiological function, especially water conduction, in sapwood

DBH (Diameter at Breast Height). Stem diameter measured at a height of 1.5m or the nearest measurable point. Where measurement at a height of 1.5 metres is not possible, another height may be specified

Deadwood. Branch or stem wood bearing no live tissues. Retention of deadwood provides valuable habitat for a wide range of species and seldom represents a threat to the health of the tree. Removal of deadwood can result in the ingress of decay to otherwise sound tissues and climbing operations to access deadwood can cause significant damage to a tree. Removal of deadwood is generally recommended only where it represents an unacceptable level of hazard

Endophytes. Micro-organisms which live inside plant tissues without causing overt disease, but in some cases capable of causing disease if the tissues become physiologically stressed, for example by lack of moisture

Epicormic shoot. A shoot having developed from a dormant or adventitious bud and not having developed from a first year shoot

Excrescence. Any abnormal outgrowth on the surface of tree or other organism

Excurrent. In trees, a system of branching in which there is a well defined central main stem, bearing branches which are limited in their length, diameter and secondary branching (cf. Excurrent)

Flush-cut. A pruning cut which removes part of the branch bark ridge and/or branch-collar

Formative Prune. Removal of weak, crossing, rubbing, dead, diseased branches to create a structured framework for inhibited growth development

Girdling root. A root, which circles and constricts the stem or roots possibly causing death of phloem and/or cambial tissue

Guying a form of artificial support with cables for trees with a temporarily inadequate anchorage

Habit. The overall growth characteristics, shape of the tree and branch structure

Hazard beam. An upwardly curved part of a tree in which strong internal stresses may occur without being reduced by adaptive growth; prone to longitudinal splitting

Heartwood/false-heartwood/ripewood. Sapwood that has become dysfunctional as part of the natural aging processes

Heave. A term mainly applicable to a shrinkable clay soil which expands due to rewetting

after the felling of a tree which was previously extracting moisture from the deeper layers; also the lifting of pavements and other structures by root diameter expansion; also the lifting of one side of a wind-rocked root-plate

High canopy tree species. Tree species having potential to contribute to the closed canopy of a mature woodland or forest

Incipient failure. In wood tissues, a mechanical failure which results only in deformation or cracking and not in the fall or detachment of the affected part

Included bark (ingrown bark). Bark of adjacent parts of a tree (usually forks, acutely joined branches or basal flutes), which is in face-to-face contact

Increment borer. A hollow auger, which can be used for the extraction of wood cores for counting or measuring wood increments or for inspecting the condition of the wood

Infection. The establishment of a parasitic micro-organism in the tissues of a tree or other organism

Internode. The part of a stem between two nodes; not to be confused with a length of stem which bear nodes but no branches

Lever arm. A mechanical term denoting the length of the lever represented by a structure that is free to move at one end, such as a tree or an individual branch

Lignin. The hard, cement-like constituent of wood cells; deposition of lignin within the matrix of cellulose microfibrils in the cell wall is termed Lignification

Lions tailing. A term applied to a branch of a tree that has few if any side-branches except at its end, and is thus liable to snap due to end loading

Loading. A mechanical term describing the force acting on a structure from a particular source; e.g. the weight of the structure itself or wind pressure

Longitudinal. Along the length (of a stem, root or branch)

Lopping. A term often used to describe the removal of large branches from a tree, but also used to describe other forms of cutting

Major deadwood. Deadwood of a diameter likely to cause significant harm or damage upon impact with a target beneath the tree

Mature Heights (approximate):

- Low maturing - less than 8 metres high
- Moderately high maturing - 8 - 12 metres high
- High maturing - greater than 12 metres high

Mass Damping. The independent movements of leaves, branches and trunk which absorb and dissipate energy delivered in a strong gust of wind, greatly reducing stress on the overall tree canopy

Microdrill. An electronic rotating steel probe, which when inserted into woody tissue provides a measure of tissue density

Minor deadwood. Deadwood of a diameter less than 25mm and or unlikely to cause significant harm or damage upon impact with a target beneath the tree

Mulch. Material laid down over the rooting area of a tree or other plant to help conserve moisture; mulch may consist of organic matter or a sheet of plastic or other artificial material

Mycelium. The body of a fungus, consisting of branched filaments (hyphae)

Occluding tissues. A general term for the roll of wood, cambium and bark that forms around a wound on a woody plant (cf. woundwood)

Occlusion. The process whereby a wound is progressively closed by the formation of new wood and bark around it

Pathogen. A micro-organism, which causes disease in another organism

Photosynthesis. The process whereby plants use light energy to split hydrogen from water molecules, and combine it with carbon dioxide to form the molecular building blocks for synthesizing carbohydrates and other biochemical products.

Phytotoxic. Toxic to plants

Pollarding. The removal of the tree canopy, back to the stem or primary branches. Pollarding may involve the removal of the entire canopy in one operation, or may be phased over several years. The period of safe retention of trees having been pollarded varies with species and individuals. It is usually necessary to re-pollard on a regular basis, annually in the case of some species.

Primary branch. A major branch, generally having a basal diameter greater than 0.25 x stem diameter

Priority. Works may be prioritised, 1. = High, 5. = Low

Probability. A statistical measure of the likelihood that a particular event might occur

Proximal. In the direction towards from the main body of a tree or other living organism (cf. distal)

Pruning. The removal or cutting back of twigs or branches, sometimes applied to twigs or small branches only, but often used to describe most activities involving the cutting of trees or shrubs

Radial. In the plane or direction of the radius of a circular object such as a tree stem

Rams-horn. In connection with wounds on trees, a roll of occluding tissues which has a spiral structure as seen in cross-section

Rays. strips of radially elongated parenchyma cells within wood and bark. The functions of rays include food storage, radial translocation and contributing to the strength of wood

Red-rot. A form of decay in which reddish pigments are present but which is biochemically a white-rot; not to be confused with brown-rots which sometimes also have a reddish-brown colour

Reactive Growth/Reaction Wood. Production of woody tissue in response to altered mechanical loading; often in response to internal defect or decay and associated strength loss (cf. adaptive growth)

Removal of dead wood. Unless otherwise specified, this refers to the removal of all accessible dead, dying and diseased branch wood and broken snags

Removal of large diameter dead wood. The removal of dead, dying and diseased branch wood above a specified size

Root-collar. The transitional area between the stem/s and roots

Root-collar examination. Excavation of surfacing and soils around the root-collar to assess the structural integrity of roots and/or stem

Sapwood. Living xylem tissues

Secondary branch. A branch, generally having a basal diameter of less than 0.25 x stem diameter

Selective delignification. A kind of wood decay (white-rot) in which lignin is degraded faster than cellulose

Shedding. In woody plants, the normal abscission, rotting off or sloughing of leaves, floral parts, twigs, fine roots and bark scales

Silvicultural thinning. Removal of selected trees to favour the development of retained specimens to achieve a management objective

Simultaneous white-rot. A kind of wood decay in which lignin and cellulose are degraded at about the same rate

Snag. In woody plants, a portion of a cut or broken stem, branch or root which extends beyond any growing-point or dormant bud; a snag usually tends to die back to the nearest growing point

Soft-rot. A kind of wood decay in which a fungus degrades cellulose within the cell walls, without any general degradation of the wall as a whole

Spores. Propagules of fungi and many other life forms; most spores are **Shrub species.** Woody perennial species forming the lowest level of woody plants in a woodland and not normally considered to be trees

Sporophore. The spore bearing structure of fungi

Sprouts. Adventitious shoot growth erupting from beneath the bark

Stem. The main supporting structure, from ground level up to the first major division into branches. A stem can divide into two or more substantial elements that might be described as co-dominant stems

Stress. In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example due to lack of water, inadequate nutrition or extremes of temperature

Stress. In mechanics, the application of a force to an object

Stringy white-rot. The kind of wood decay produced by selective delignification

Storm. A layer of tissue, which supports the fruit bodies of some types of fungi, mainly ascomycetes

Structural roots. Roots, generally having a diameter greater than ten millimetres, and contributing significantly to the structural support and stability of the tree

Subsidence. In relation to soil or structures resting in or on soil, a sinking due to shrinkage when certain types of clay soil dry out, sometimes due to extraction of moisture by tree roots

Subsidence. In relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight

Taper. In stems and branches, the degree of change in girth along a given length

Target canker. A kind of perennial canker, containing concentric rings of dead occluding tissues

Targets. In tree risk assessment (with slight misuse of normal meaning) persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it

Topping. In arboriculture, the removal of the crown of a tree, or of a major proportion of it

Torsional stress. Mechanical stress applied by a twisting force

Translocation. In plant physiology, the movement of water and dissolved materials through the body of the plant

Transpiration. The evaporation of moisture from the surface of a plant, especially via the stomata of leaves; it exerts a suction which draws water up from the roots and through the intervening xylem cells

Understorey. A layer of vegetation beneath the main canopy of woodland or forest or plants forming this

Understorey tree species. Tree species not having potential to attain a size at which they can contribute to the closed high canopy of a woodland

Vascular wilt. A type of plant disease in which water-conducting cells become dysfunctional

Vessels. Water-conducting cells in plants, usually wide and long for hydraulic efficiency; generally not present in coniferous trees

Veteran tree. A loosely defined term for an old and interesting specimen, which has usually lived longer than the typical upper age range for the species concerned

Vigour. The expression of carbohydrate expenditure to growth (in trees)

Vitality. A measure of physiological condition expressed through the health and growth of foliage, shoots and adaptive woody tissues

White-rot. A range of kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded

Wind exposure. The degree to which a tree or other object is exposed to wind, both in terms of duration and velocity

Wind pressure. The force exerted by a wind on a particular object

Windthrow. The blowing over of a tree at its roots

Wound dressing. A general term for sealants and other materials used to cover wounds in the hope of protecting them against desiccation and infection; only of proven value against fresh wound parasites

Woundwood. Wood with atypical anatomical features, formed in the vicinity of a wound

Incorporating extracts from Lonsdale, D. 1999 'Principles of Tree Hazard Assessment and Management

Northern Tree Services

Horsepark House
Magheragall
Lisburn
BT28 2QU

Tel: 028 92621 217

northerntreeservices.co.uk

Appendix A



NORTHERN
TREE SERVICES

Tree Survey Schedule

Client	Marlet
Site	Site at M1 Retail Pk, Drogheda

Surveyor	D. Gault
Date	15/6/22

Tree no.	Species	Age Class	Ht. (m)	Dia. (cm)	RPA Radius (m)	Crown Spread (m)				Existing Ht Abv. G. Level		Observations	Preliminary Recommendations	ERC	Category
						N	E	S	W	1 st Sig.	Can				
1	Horse Chestnut	Mature	15	48	5.76	8	4	2	6	4	0	Leaning to North and highway	None	20+	B1
2	Acer	Mature	15	38	4.56	2	3	5	3	4	3	Suppressed. Ivy clad	None	30+	B1
3	Acer	Semi-mature	13	20	2.4	3	3	3	2	4	0	Multi stemmed from ground. Some dieback to N&W. Ivy clad	None	30+	B1
4	Ash	Over-mature	14	45	5.4	4	3	3	2	3	0	Multi stemmed from 1m, with stems to South decrepit. Advanced ADB. Massed ivy. Poor specimen	Remove	<10	U
5	Acer	Mature	15	45	5.4	5	5	3	6	4	2	Multi stemmed from ground. Healthy, well balanced crown. Ivy clad	None	40+	A1

Key to Survey

Tree No. - Reference number of tree surveyed - corresponds to number on tag and/or plan

Age Class - JUV= Juvenile (in first 1/3 of life expectancy). SM= semi-mature (in middle 1/3 of life expectancy). M = Mature (in final 1/3 of life expectancy). OM= Over Mature (becoming decrepit)

Dia- Diameter in cm measured at 1.5 meters above ground level

RPA Radius – Root Protection Area Radius is the minimum area around trees to be protected from disturbance during construction

Crown Spread – Taken as a minimum at the four cardinal points to derive an accurate representation of the crown

Existing Height above ground level (in meters)– of first significant branch and direction of growth. And **Can.** – of the canopy

ERC – **Estimated Remaining Contribution** – in years e.g., <10, 10+,20+, 30+, 40+

Category –

U – Trees in such a condition that they cannot realistically be retained in the context of the current land use for longer than 10 years

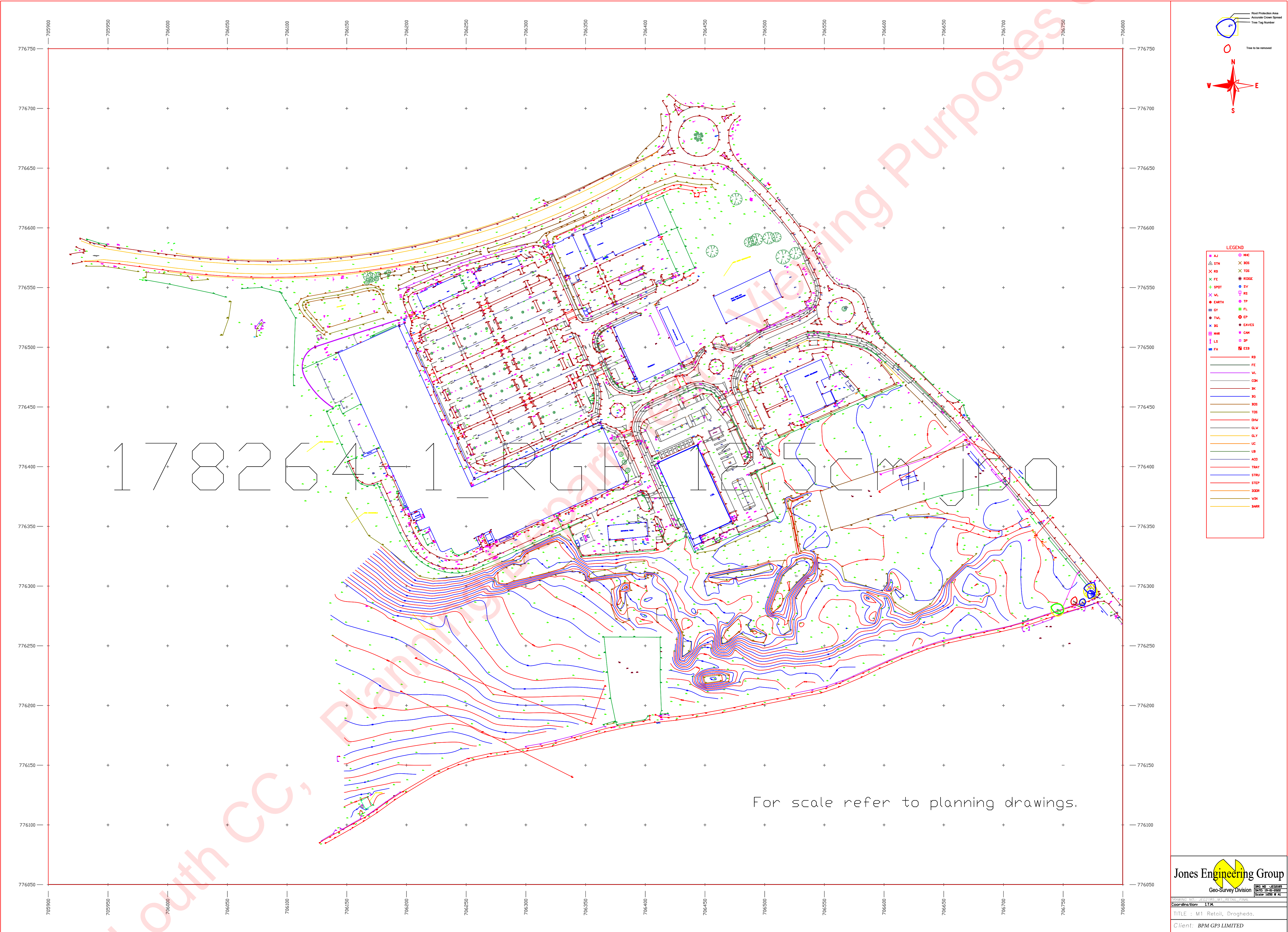
A - Trees of a high quality with an estimated remaining life expectancy of at least 40yrs

B – Trees of moderate quality with an estimated remaining life expectancy of at least 20 years

C - Trees of low quality with an estimated life expectancy of at least 10 years, or young trees with a stem diameter below 15cm

Subcategory – **1.** - Trees with mainly Arboricultural qualities. **2** – Trees with mainly Landscape qualities. **3.** Trees with mainly cultural values, including conservation

M1 Retail Park Drogheda Tree constraints Plan



Viewing Purposes Only!

178264-1 RGH 150010

For scale refer to planning drawings.

Appendix I

Louth CC, Planning Department - Viewing Purposes Only!

Appendix 9-A – Construction List

Construction Phase	Equipment	Duration of activity (hrs)	Duration of activity (%)
Site Setup	Digger	4	40
	Carpentry tools	2	20
	Skill saw	2	20
Earthworks	Excavators x2	2	20
	Articulated dump truck	2	20
	Lorry / truck	2	20
	Wheeled loader (loading lorry)	2	20
	Tracked excavator (loading dump truck)	2	20
	Lorry Idling	5	50
	Pavement Works Granular Fill	Lorry / truck	5
Tracked Excavator		5	50
Grader		2	20
Vibratory roller		4	40
Water bowsers (discharging)		2	20
Batching Plant	Diesel water pump	2	20
	Diesel generator	1	10
	Conveyor drive unit	5	50
	Wheeled loader (loading hopper)	5	50
	Feed hopper conveyor drive unit	5	50
	Large concrete mixer	4	40
	Wheeled loader	5	50
	Lorry / truck	5	50
Pavement Works - Laying Concrete Pavement	Concrete paver	5	50
	Lorry / truck	5	50
Pavement Works – Laying Bituminous Pavement	Lorry / truck	5	50
	Asphalt paver (+ tipper lorry)	3	30
	Vibratory roller	3	30
	Road roller	3	30
	Tack truck	3	30
	Road sweeper	3	30
Drainage Works	Diesel water pump (x4)	3	30
	Diesel generator	1	10
	Tracked excavator	5	50
	Lorry / truck	5	50
	Road sweeper	5	50
	Wheeled loader (loading lorry)	5	50
	Substructure	Excavators	2
Concrete breaker		2	20
Con saws		2	20
Rail saw		2	20
Drills		2	20
Tower Crane		6	60
Dumper 7t		6	60
Cement Mixer		1	10
Lorry Idling		5	50
Telescopic Handler		8	80
Tower Crane Generator		1	10

Construction Phase	Equipment	Duration of activity (hrs)	Duration of activity (%)	
	Concrete Pump	1	10	
Superstructure	Tower Crane	6	60	
	drills	2	20	
	Power tools	2	20	
	Impact steel	4	40	
	Hammer	2	20	
	Dumper 7t	6	60	
	Cement Mixer	1	10	
	Lorry Idling	5	50	
	Telescopic Handler	8	80	
	Tower Crane Generator	1	10	
	Concrete Pump	1	10	
	External finishes	Tools	5	50
		Con saw	2	20
Internal finishes	n/a	n/a	n/a	

Louth CC, Planning Department - Viewing Purposes Only

Appendix 9-B – Calibration Certificates

Louth CC, Planning Department - Viewing Purposes Only!

Calibration Reference

2101323

Test Date: 04-06-2021

Equipment

Sound Level Monitor:	EM2030	Serial Number:	01323
Microphone Assembly:	378802	Serial Number:	317961

Calibration Procedure

The sound level meter was calibrated by carrying out the verification tests detailed in IEC 61672-3 (2006), Periodic tests, specification of sound level meters. Tolerances for verification procedures are specified in IEC 61672-1 (2003).

Measurement Results

Test	Result
Self-generated noise	PASS
Frequency and Time Weightings	PASS
Frequency Weighting – A	PASS
Frequency Weighting – C	PASS
Level Linearity	PASS
Toneburst Response	PASS
Acoustical Tests of Frequency Weighting	PASS
Peak C Response	PASS
Overload Indication	PASS
Sensitivity Calibration	PASS

Signed on behalf of Sonitus Systems:



Equipment Description

Model:	EM2030	Microphone Model:	378B02
Serial Number:	01323	Microphone Serial Number:	317961
Microphone Type:	1/2" free field	Pre-amplifier Number:	062054
		Pre-amplifier Set:	143700

Ambient Conditions

Measurement conditions were within the tolerances defined in IEC 61672-1 and IEC 60942.

Barometric Pressure:	1020	hPa
Temperature:	22.2	°C
Relative Humidity:	38	%

Calibration Equipment

Description:	National Instruments PXI-4461	
Serial Number:	19C91D2	Certificate Number: 6284996-1
Calibrator:	CR511ES	
Serial Number:	60871	Calibrator Certificate: 16004

The standards used in this calibration are traceable to NIST and/or other National Measurement Institutes (NMI's) that are signatories of the International Committee of Weights and Measures (CIPM) mutual recognition agreement (MRA).

Results

Self-generated noise
 SLM Measuring mode: SPL

SLM Configuration	Freq. Weighting Network	SLM Reading
Microphone Installed	A	26.1
Microphone replaced by electrical signal device and fitted with short circuit	A	17.4
	C	17.1
	Z	

Test Result **PASS**

Frequency and Time Weightings at 1 kHz
 SLM Measuring Mode: SPL (dB)

Time Weighting	Freq. Weighting	Expected Level	Deviation	Tol +/-
Fast	A	94.0	ref	
	C	94.0	0.0	0.2
Slow	A	94.0	0.0	0.2
	LEQ	A	94.0	0.0

Test Result **PASS**

Electrical tests of frequency weighting (A-weighting)
 SLM Measuring Mode: SPL (dB)

Freq	Expected Level	SLM Reading	Deviation	Tol +	Tol -
63	75	75.0	0.0	1.5	-1.5
125	75	74.9	-0.1	1.5	-1.5
250	75	75.0	0.0	1.4	-1.4
500	75	75.0	0.0	1.4	-1.4
1000	75	75.0	0.0	1.1	-1.1
2000	75	75.0	0.0	1.6	-1.6
4000	75	75.0	0.0	1.6	-1.6
8000	75	74.9	-0.1	2.1	-3.1
16000	75	73.7	-1.3	3.5	-17.0

Test Result **PASS**

Electrical tests of frequency weighting (C-weighting)
 SLM Measuring Mode: SPL (dB)

Freq	Expected Level	SLM Reading	Deviation	Tol +	Tol -
63	75	74.9	-0.1	1.5	-1.5
125	75	75.0	0.0	1.5	-1.5
250	75	75.0	0.0	1.4	-1.4
500	75	75.1	0.1	1.4	-1.4
1000	75	75.0	0.0	1.1	-1.1
2000	75	75.1	0.1	1.6	-1.6
4000	75	75.0	0.0	1.6	-1.6
8000	75	74.9	-0.1	2.1	-3.1
16000	75	73.7	-1.3	3.5	-17.0

Test Result **PASS**

Linearity level on reference range

Input frequency: 8 kHz

SLM Measuring Mode: SPL (dB)

Range	Expected Level	SLM Reading	Deviation	Tol +/-
120 dB	94.0	94.0	0.0	1.1
	99.0	99.0	0.0	1.1
	104.0	104.0	0.0	1.1
	109.0	109.0	0.0	1.1
	114.0	114.0	0.0	1.1
	115.0	115.0	0.0	1.1
	116.0	116.0	0.0	1.1
	117.0	117.0	0.0	1.1
	118.0	118.0	0.0	1.1
	89.0	89.0	0.0	1.1
	84.0	84.0	0.0	1.1
	79.0	79.0	0.0	1.1
	74.0	74.0	0.0	1.1
	69.0	69.0	0.0	1.1
	64.0	64.0	0.0	1.1
	59.0	59.0	0.0	1.1
	54.0	54.0	0.0	1.1
	49.0	49.1	0.1	1.1
	44.0	44.1	0.1	1.1
	39.0	39.2	0.2	1.1
	34.0	34.4	0.4	1.1
	33.0	33.5	0.5	1.1
	32.0	32.5	0.5	1.1
	31.0	31.6	0.6	1.1
	30.0	30.7	0.7	1.1

Test Result **PASS**

Toneburst Response

Input frequency: 4 kHz

Burst Type	Response	Expected Level	SLM Reading	Deviation	Tol +	Tol -
200 ms	LAFMAX	91.0	90.9	-0.1	0.8	-0.8
2.0 ms	LAFMAX	100.0	100.0	0.0	1.3	-1.3
0.25 ms	LAFMAX	117.0	117.0	0.0	1.3	-3.3
200 ms	LASMAX	91.0	91.0	0.0	0.8	-0.8
2.0 ms	LASMAX	110.6	110.6	0.0	1.3	-3.3

Test Result **PASS**

Acoustical Tests of Frequency Weighting

Input Level	Freq	Expected Level	SLM Reading	Deviation	Tol +	Tol -
94	1 kHz	94.1	94.1	0.0	1.1	1.1
	125 Hz	93.9	93.9	0.0	1.5	1.5
	4 kHz	93.3	93.4	0.1	1.6	1.6

Test Result **PASS**

Peak C Sound Level

Pulse Type	Freq	Expected Level	SLM Reading	Deviation	Tol +/-
1 cycle	8 kHz	115.4	115.2	-0.2	2.4
Pos ½ cycle	500 Hz	117.4	117.1	-0.3	1.4
Neg ½ cycle	500 Hz	117.4	117.1	-0.3	1.4

Test Result **PASS**

Overload Indication

Test Description	Overload at	Meas. Diff. (Pos – Neg)	Tol +/-
Pos. ½ cycle at 4 kHz	122.7		
Neg. ½ cycle at 4 kHz	122.7		
Level difference		0.0	1.8

Test Result **PASS**

The microphone sensitivity was tested with a 1 kHz sine tone

SLM Serial No.	Microphone No.	Signal Level	Sensitivity (dB re 1V/Pa)
01323	317961	94 dB	-26.58

Frequency response of the microphone across the range 20Hz – 20kHz was within the tolerance limits specified by the manufacturer.

Calibration Notes

CALIBRATION CERTIFICATE

Date of issue: 18-05-2022

Certificate No: 1502560-1

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OBJECT OF CALIBRATION

Manufacturer: **SVANTEK**
Model: **SVAN 971**
Serial No.: 77789
Description: Sound Level Meter

SENSOR

Manufacturer: **ACO** **SVANTEK**
Model: **7052E** **SV 18**
Serial No.: 76513 72287
Description: Microphone Preamplifier

APPLICANT

Amplitude Acoustics
G2 The Steelworks, Foley Street, Dublin, Ireland D01 KP03

ENVIRONMENTAL CONDITIONS

Temperature: 21.0 – 21.4 °C
Humidity: 44 – 47 %
Pressure: 101.0 – 101.1 kPa

DATE OF CALIBRATION 18-05-2022

APPROVED BY B. Hunt

Date of issue: 18-05-2022

Certificate No: 1502560-1

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CALIBRATION METHOD Method described in instruction IN-02 "Calibration of the sound level meter", issue number 11 date 27.01.2016, written on the basis of international standard EN IEC 61672-3:2013 Electroacoustics. Part 3: Periodic tests.

CALIBRATION RESULTS **The sound level meter submitted for testing has successfully completed the Class 1 periodic tests of IEC 61672-3:2013 (BS EN 61672-3:2013), for the environmental conditions under which the tests were performed.**
The results are presented on pages 3 to 8 of this certificate (including measurement uncertainty).

CONFORMITY WITH REQUIREMENTS On the basis of the calibration results, it has been found that, the sound level meter meets metrological requirements specified in the standard IEC 61672-1:2013 Electroacoustics – Sound level meters. Part 1: Specifications, for class 1.

UNCERTAINTY OF MEASUREMENTS Uncertainty of measurement has been evaluated in compliance with EA-4/02:2013. The expanded uncertainty assigned corresponds to a coverage probability of 95 % and the coverage factor $k = 2$.

NOTES

1. The information appearing on this certificate has been compiled specifically for this instrument. This calibration certificate is produced with traceable and advanced equipment which permit comprehensive quality assurance verification of all data supplied herein.
2. The measurements in this document are traceable to GUM (Central Office of Measures), Poland
3. This calibration certificate shall not be reproduced except in full, without written permission from AcSoft Ltd.

REFERENCE EQUIPMENT

Description	Manufacturer	Model	Serial Number	Last Calibrated
Signal Generator	Svantek	SV401	124	27.08.2021
Sound & Vibration Analyser	Svantek	SV912AE	15909	22.09.2021
Thermo-Barometer	LAB-EL	LB-706B	912	27.08.2021
Acoustical Calibrator	Svantek	SV30A	83782	17.09.2021

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CALIBRATION RESULTS

Calibration results are as follows:

1. Indication at the calibration check frequency

The sound level meter was calibrated in compliance with the instruction manual. During this process, the indication of this SLM was adjusted to the sound pressure level of the sound level calibrator type SV 30A, No 83782, from SVANTEK. The sound pressure level was corrected by the free-field factor.

Deviation of the acoustic pressure measurement of the A-weighted sound level using the sound calibrator type SV 30A, No 83782, from SVANTEK, was made according to the standard reference conditions: for static pressure 1003 hPa, for temperature 24 °C and for relative humidity 60 %, results:

0.0 ± 0.2 dB

The deviation was determined as a difference between the measured sound level and the sound level corrected by the free-field factor appropriate to mentioned sound calibrator.

2. Self-generated noise with microphone installed

Frequency weighting	A
The highest level of self-generated noise stated in the instruction manual [dB]	15.0
Indication [dB]	8.4

3. Self-generated noise with microphone replaced by the electrical input signal device

Frequency weighting	A	C	Z
The highest expected level of self-generated noise stated in the instruction manual [dB]	12.0	12.0	17.0
Level of self-generated noise [dB]	4.8	4.3	9.0

4. Acoustical signal tests of a frequency weighting C

Frequency	Relative frequency-weighted free-field response	Design-goal frequency weighting	The deviation of frequency weighting	Expanded uncertainty	Acceptable limits
Hz	dB	dB	dB	dB	dB
125.0	-0.33	-0,2	-0.1	0.3	±1.5
1000.0	0.03	0,0	0.0	0.3	±1.1
4000.0	0.05	-0,8	0.8	0.4	±1.6
8000.0	-1.52	-3,0	1.5	0.4	-3.1; +2.5

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5. Electrical signal tests of frequency weightings

Frequency	Design-goal frequency weighting			The deviation of frequency weighting			Expanded uncertainty	Acceptable limits
	A	C	Z	A	C	Z		
Hz	dB	dB	dB	dB	dB	dB	dB	dB
63	-26,2	-0,8	0,0	0.1	0.0	0.1	0,3	±1,5
125	-16,1	-0,2	0,0	0.0	0.1	0.0	0,3	±1,5
250	-8,6	0,0	0,0	0.0	0.0	0.0	0,3	±1,4
500	-3,2	0,0	0,0	0.0	0.1	0.0	0,3	±1,4
1000	0,0	0,0	0,0	0.0	0.0	0.0	0,3	±1,1
2000	1,2	-0,2	0,0	0.1	0.1	0.0	0,3	±1,6
4000	1,0	-0,8	0,0	0.1	0.1	0.0	0,3	±1,6
8000	-1,1	-3,0	0,0	0.2	0.2	0.0	0,4	-3,1; +2,1
16000	-6,6	-8,5	0,0	-0.1	-0.2	0.1	0,6	-17,0; +3,5

6. Frequency and time weightings at 1 kHz

Frequency weighting	Sound level				Time-averaged sound level
	A	A	C	Z	A
Time weighting	Fast	Slow	Fast	Fast	-
Indication [dB]	94.0	94.0	94.0	94.0	94.0
The deviation of indication from the indication of A-weighted sound level with Fast time weighting [dB]		0.0	0.0	0.0	0.0
Expanded uncertainty [dB]		0.1			
Acceptable limits [dB]		±0.3	±0.4	±0.4	±0.3

7. Level linearity

Reference level range: 25

Expected sound level	Indication	Level linearity error	Expanded uncertainty	Acceptable limits
dB	dB	dB	dB	dB
122.0	122.0	0.0	0.2	±1.1
121.0	121.0	0.0		
120.0	120.0	0.0		
119.0	119.0	0.0		
118.0	118.0	0.0		
117.0	117.0	0.0		
116.0	116.0	0.0		
115.0	115.0	0.0		
114.0	114.0	0.0		
109.0	109.0	0.0		
104.0	104.0	0.0		
99.0	99.0	0.0		
94.0	94.0	0.0		
89.0	89.0	0.0		
84.0	84.0	0.0		
79.0	79.0	0.0		
74.0	74.0	0.0		
69.0	69.0	0.0		
64.0	63.9	-0.1		
59.0	59.0	0.0		
54.0	54.0	0.0		
49.0	49.0	0.0		
44.0	44.0	0.0		
39.0	39.0	0.0		
34.0	34.0	0.0		
33.0	32.9	-0.1		
32.0	31.9	-0.1		
31.0	31.0	0.0		
30.0	30.0	0.0		

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Level range: 27

Expected sound level	Indication	Level linearity error	Expanded uncertainty	Acceptable limits
dB	dB	dB	dB	dB
136.0	136.0	0.0	0.2	±1.1
135.0	135.0	0.0		
134.0	134.0	0.0		
133.0	133.0	0.0		
132.0	132.0	0.0		
131.0	131.0	0.0		
130.0	130.0	0.0		
129.0	129.0	0.0		
124.0	124.0	0.0		
119.0	119.0	0.0		
114.0	114.0	0.0		
109.0	109.0	0.0		
104.0	104.0	0.0		
99.0	99.0	0.0		
94.0	94.0	0.0		
89.0	89.0	0.0		
84.0	84.0	0.0		
79.0	79.0	0.0		
74.0	74.0	0.0		
69.0	69.0	0.0		
64.0	64.0	0.0		
59.0	59.0	0.0		
54.0	54.0	0.0		
49.0	49.0	0.0		
44.0	44.0	0.0		
39.0	39.0	0.0		
34.0	34.0	0.0		
33.0	33.0	0.0		
			0.3	

This calibration was performed by AcSoft Calibration.
AcSoft Calibration is a trading name of AcSoft Ltd, Bedford Technology Park, Thurleigh, Bedford, MK44 2YA.

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8. Level linearity including the level range control

Level range	25	27
Indication for the reference sound pressure level [dB]	94.0	93.9
The deviation of indication [dB]		-0.1
Anticipated level that is 5 dB less than the upper limit specified in the instruction manual for level range at 1 kHz [dB]	118.0	132.0
Indication [dB]	118.0	131.9
The deviation of indication [dB]	0.0	-0.1
Expanded uncertainty [dB]	0.2	
Acceptable limits[dB]	±1.1	

9. Toneburst response

Measurement quantity	Time weighting	Toneburst duration	The indications in response to toneburst relative to steady sound level	Reference toneburst response relative to steady sound level	Deviation of measured toneburst response from reference toneburst	Expanded uncertainty	Acceptable limits
Time-weighted sound level	Fast	200	-1.0	-1.0	0.0	0.2	±0.8
		2	-18.0	-18.0	0.0		-1.8; +1.3
		0.25	-27.1	-27.0	-0.1		-3.3; +1.3
Time-weighted sound level	Slow	200	-7.5	-7.4	-0.1		±0.8
		2	-27.1	-27.0	-0.1		-1.8; +1.3
		0.25	-36.1	-36.0	-0.1		-3.3; +1.3
Sound exposure level	-	200	-7.0	-7.0	0.0		±0.8
		2	-27.0	-27.0	0.0		-1.8; +1.3
		0.25	-36.1	-36.0	-0.1		-3.3; +1.3

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10. Peak C sound level

Numbers of cycles in test signal	Frequency of test signal	The deviation of indication	Expanded uncertainty	Acceptable limits
	Hz	dB	dB	dB
One	8000	-0.7	0.2	±2.4
Positive half-cycle	500	0.0		±1.4
Negative half-cycle	500	0.0		

11. Overload indication

Frequency weighting A

The difference between the levels of the positive and negative one-half-cycles input signals that first cause the displays of overload indication	Expanded uncertainty	Maximum value of the difference
dB	dB	dB
0.1	0.3	1.8



NSAI

National Metrology Laboratory

Certificate of Calibration

Issued to Amplitude Acoustics
G2 The Steelworks
Foley Street
Dublin 1

Attention of Donal O'Driscoll

Certificate Number 220822
Item Calibrated Larson Davis CAL200 Sound Level Calibrator
Serial Number 13592
ID Number None
Order Number P00016
Date Received 22 Feb 2022
NML Procedure Number AP-NM-13

Method The above calibrator was allowed to stabilize for a suitable period in laboratory conditions. It was then calibrated by measuring the sound pressure level generated in its measuring cavity (half-inch configuration). The calibrator's operating frequency was also measured.

Calibration Standards Norsonic 1504A Calibration System incorporating:
Agilent 34401A Digital Multimeter, File No. 0736 [Cal due: 10 Jun 2022]
B & K 4134 Measuring Microphone, File No. 0744 [Cal due: 03 Jun 2023]
B & K 4228 Pistonphone, File No. 0740 [Cal due: 04 Jun 2023]

Calibrated by

David Fleming

Approved by

Paul Hetherington

Date of Calibration

23 Feb 2022

Date of Issue

23 Feb 2022



This certificate is consistent with Calibration and Measurement Capabilities (CMC's) that are included in Appendix C of the Mutual Recognition Arrangement (MRA) drawn up by the International Committee for Weights and Measures. Under the MRA, all participating institutes recognize the validity of each other's calibration certificates and measurement reports for quantities, ranges and measurement uncertainties specified in Appendix C (for details see www.bipm.org)

Standard Terms & Conditions for Calibration, Testing and Consultancy Assignments

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Decision Rule and Compliance Statement

The rule that describes how measurement uncertainty is accounted for when stating conformity with a specified requirement is known as a decision rule. The rule used by NSAI NML follows the guidelines set out in the document ILAC-G8:09/2019 published by the International Laboratory Accreditation Co-operation. Further information on the decision rule is available on the NSAI website:

https://www.n sai.ie/images/uploads/metrology/Decision_Rule.pdf.

The symbols used to indicate the state of compliance of the instrument calibration and their meanings are given in the following table.

Statement of compliance and associated symbol	Description
PASS	The absence of a symbol indicates that the measurement result is inside the specification limit by a margin greater than its associated expanded uncertainty; the instrument meets its accuracy specification.
Conditional PASS Symbol: £	The measurement result is inside the specification limit by a margin less than or equal to its associated expanded measurement uncertainty; it is therefore not possible to state compliance. There is a risk that the instrument fails to meet its specification.
Conditional FAIL Symbol: &	The measurement result is on the specification limit or is outside the specification limit by a margin less than or equal to its associated expanded measurement uncertainty; it is therefore not possible to state non-compliance.
FAIL Symbol: \$	The measurement result is outside the specification limit by a margin greater than its associated measurement uncertainty; the instrument fails to meet its accuracy specification.
Unc. > Spec Symbol: #	The expanded measurement uncertainty is greater than the instrument's accuracy specification. It is not possible to determine compliance or otherwise with the specification. The user should expand the in-use accuracy specification to make allowance for the calibration uncertainty.
Outside CIPM MRA Symbol: ¢	Indicates that the calibration result is traceable to SI units but is not currently included in the table of NSAI NML's calibration and measurement capabilities approved under the CIPM MRA.

Where no specification exists, and none is prescribed by the client, the Decision Rule policy of the NSAI NML does not apply and results are provided without a statement of compliance.

Measuring Conditions:

Ambient Pressure: 100.8 kPa ± 0.5 kPa
 Ambient Temperature: 20.5 °C ± 1.0 °C
 Ambient Rel. Humidity: 34 %RH ± 5 %RH

Results:

The measured sound pressure levels reported below refer to the ambient laboratory conditions at the time of calibration. These environmental conditions were within the ranges specified in IEC60942:2003 (Section 5.2.2).

Calibrator Setting	Measured Parameter	Measured Value ^{(1), (2)}		Tol. ⁽³⁾ (±)	Meas. Uncertainty (±)
		Before Adj.	After Adj.		
94 dB	Sound Pressure Level	93.95 dB	*	0.40 dB	0.15 dB
	Frequency	1000.2 Hz	*	10 Hz	0.25 Hz
114 dB	Sound Pressure Level	113.95 dB	*	0.40 dB	0.15 dB
	Frequency	1000.2 Hz	*	10 Hz	0.25 Hz

Notes:

- (1) The measured levels refer to the reference conditions given above.
- (2) * indicates that no calibration adjustment was made.
- (3) Tolerances set out in IEC 60942 (2003), Sound Level Calibrators, Class 1

Comments:

Where used in the results table, further information on the meaning of symbols is given in the table on page 2 of this certificate.

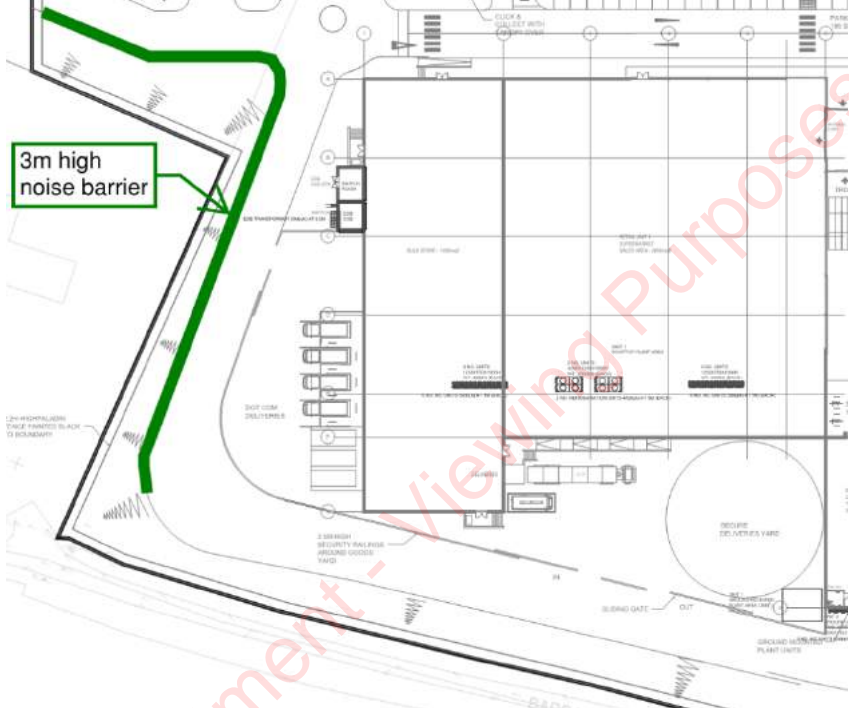
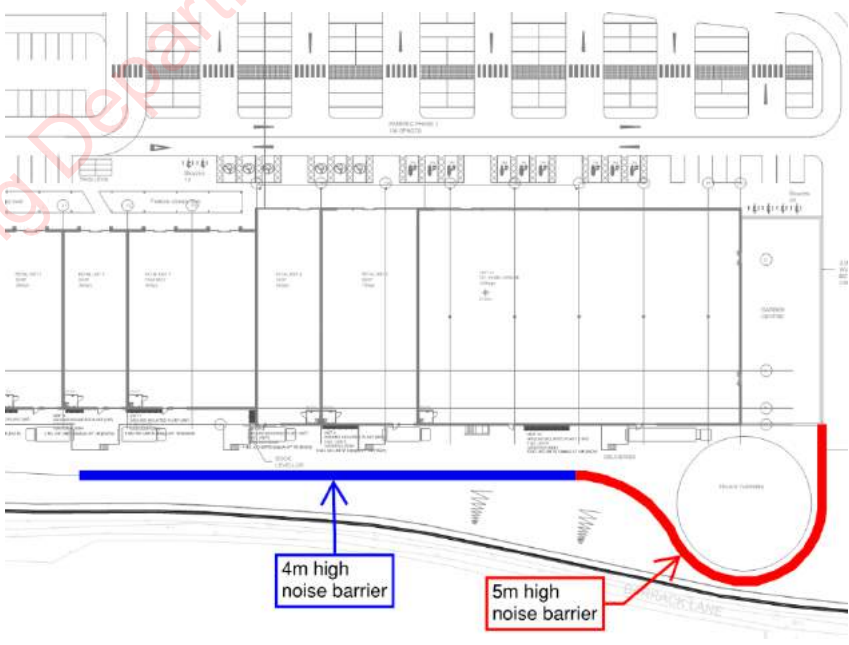
The instrument was found to comply with the requirements of IEC 60942 (2003), Class 1, for the sound pressure level and frequency outputs measured at the time of calibration.

When using the calibrator with a sound level meter any manufacturer's guidelines regarding free-field corrections should be observed.

The reported measurement results are traceable, via national standards maintained by NSAI National Metrology Laboratory (NML) or by other national metrology institutes, to internationally accepted realisations of the SI units.

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ which, for a normal probability distribution, corresponds to a coverage probability of approximately 95%. It has been determined in accordance with the "Guide to the Expression of Uncertainty in Measurement (GUM)". These uncertainties apply only to the measured values and do not carry any implication regarding the long-term stability of the instrument.

Appendix 9-C – Noise Wall Specifications

Treatment	Description	Location (Red and Green lines)
<p>Noise Wall</p>	<p>Material: Products listed in Table that follows</p> <p>Height: 3 m</p> <p>Proximity: As shown by Green Line</p>	
<p>Noise Wall</p>	<p>Material: Products listed in Table that follows</p> <p>Height: 4 m</p> <p>Proximity: As shown by Blue Line</p> <p>Height: 5 m</p> <p>Proximity: As shown by Red Line</p>	

Treatment	Details
Noise wall	<p>The noise wall should be constructed of a material with a surface density of typically 15kg/m², unless otherwise noted with acoustic absorption on the inner face. Examples of suitable materials to construct the noise wall include:</p> <ul style="list-style-type: none"> • Acoustically rated wooden noise barrier panels meeting the above specification • Acustimodul-80A with absorptive inner face • 100mm thick concrete block. • 100mm thick RC concrete. • Multivario Transparent Noise Barrier • Continuous precast concrete panel wall • Stratocell Whisper outdoor acoustic absorption (building wall cladding) <p>There should be no cracks or gaps between individual barrier elements, between the barrier or ground, or where the ends of the barrier join another structure.</p>

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