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# W1952 Abbeylands Public Lighting Planning Report



**Comhairle Contae  
an Chabháin**  
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County Council

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W1952  
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# W1952 Abbeylands Public Lighting – Planning Report

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## 1 INTRODUCTION:

Douglas Carroll have been appointed by Cavan County Council via dhb/Cooney Architects. Douglas Carroll will act as Mechanical & Electrical Engineers on this project. The Report will provide an overview on the selection of the various lighting classes for the different lighting scenarios identified during this Design Process. This report will be submitted to Cavan County Council Public Lighting for approval prior to the detailed design.

The lighting scenarios as defined by EN IS 13201-2:2015 are ME, CE and P series of lighting classification. Additional Lighting classification M, C and S series have been defined in CIE 115: 2010 [N1]. The lighting scenarios covered are Lighting for traffic routes, lighting for conflict zones, subsidiary roads including pedestrian areas and lighting within city and town centres.

The purpose of correct selection of lighting classification is to ensure that an area is neither over illuminated or under illuminated. The selection of the lighting classification is as per agreements with Cavan County Council.

The overall lighting classification for the scheme will be selected based on the following steps:

1. Select light classification based on carriageway type, occupancy, and speeds.
2. Results of Risk Assessment
3. Where necessary, adjust the lighting classification by a maximum of 1No. class based on assessed risks
4. Adjust the lighting level classification level according to the S/P ration of the light source.
5. Assess the lighting requirements and determine whether different classifications are required during various times of the night, due to changes in Traffic flow or other parameters. (Parameters will be clearly noted)

Lighting Classification based on Carriageway Types, occupancy, and travel speeds to define Lux Levels from Relevant Table of BS 5489 - 1:2020

- Table A.2: Very high-speed traffic route ( $V \geq 100$  Kmhr), motorized users only.
- Table A.2: High speed traffic route ( $60$  Kmhr  $< V$   $100$  Kmhr) with mixed users.
- Table A3.: Moderate speed traffic route ( $50$  kmhr  $> V$   $60$  Kmhr) with mixed users.
- Table A.4: Conflict Areas.
- Table A5: Subsidiary roads, low speeds ( $V \leq$  Kmhr)

- Table A6: Subsidiary roads, very low speeds (Walking pace), pedestrians and cyclists.
- Table A.8: City and Town Centre lux levels.

## 2 EXISTING INSTALLATION:

### 2.1 EXISTING PUBLIC LIGHTING INFRASTRUCTURE – ABBEY STREET:



**Figure 1 Existing Decorative Public Lighting Luminaire on Farnham Street**



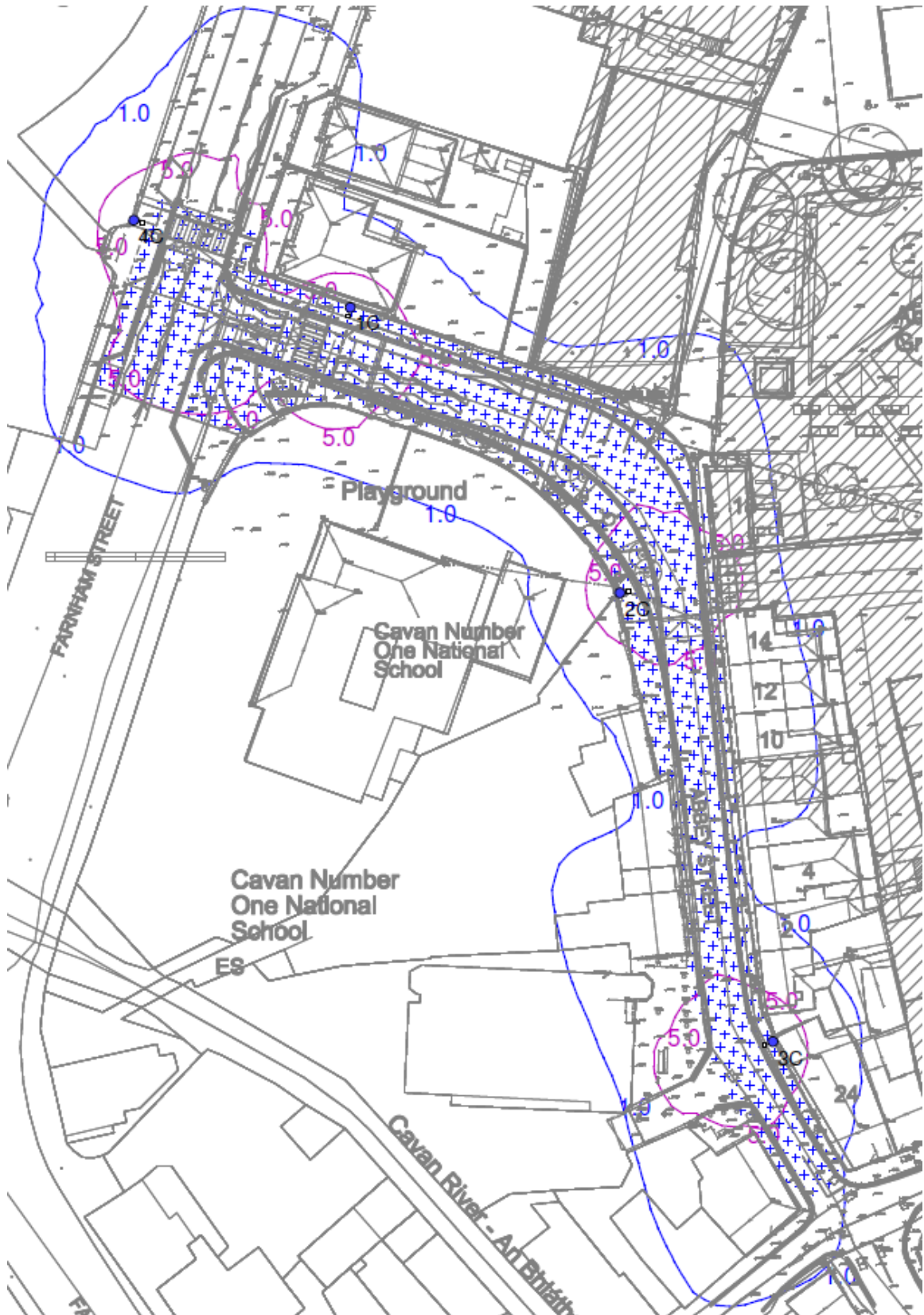
**Figure 2 Existing Public Lighting Luminaire on Abbey Street**

The existing public lighting luminaires are a mix of lantern style fitting with a SON bulb (see figure 1) and an older fluorescent style fitting (see figure 2). These existing columns are 8 meters in height, excluding the route of the columns installed below finished ground level. The existing columns have been installed along both sides of Abbey Street.

The older fluorescent style fitting (2no.) will be replaced with the lantern style fitting for continuity. This is abbreviated on the W1952-MES1001 drawing as Type EX4.

It is proposed to re-use the existing lighting columns as per figure 1 under the conditions of the existing granted part 8. Should the strategy of the granted Part 8 be considered, the lighting scheme will not be in compliance with EN I.S. 13201 1-5 and the Cavan County Council Public Lighting Specification.

**2.1.1 LIGHTING REALITY – SIMULATION MODEL:  
Existing Public Lighting Scheme – Abbey Street:**



**Figure 2 Lighting Reality Model**

The following conditions have been included and achieved in the model:

- Mounting Height of Luminaires – 8 Meters,
- No. of Luminaires within section – 4No.
- Luminaire Type – Urbis Albany 4000K Neutral White
- Design Classification – Class P4 – 5 Lux average, 1 Lux minimum

Design Classification Table:

**Table 3 — P classes**

Class	Horizontal Illuminance (lux)			
	Horizontal Illuminance		Additional requirement if facial recognition is necessary	
	$\bar{E}$	$E_{min}$ lux	$E_{v,min}$ lux	$E_{sc,min}$ lux
P1	15.0	3.00	5.0	5.0
P2	10.0	2.00	3.0	2.0
P3	7.50	1.5	2.5	1.5
P4	5.00	1.00	1.5	1.0
P5	3.00	0.60	1.0	0.6
P6	2.00	0.40	0.6	0.2
P7	Not Determined			

To provide for uniformity, the actual value of the maintained average illuminance shall not exceed 1.5 times the minimum  $\bar{E}$  value indicated for the class.

Results Table:

## Results

Eav	5.39
Emin	1.02
E <sub>max</sub>	12.73
E <sub>min</sub> /E <sub>max</sub>	0.08
E <sub>min</sub> /E <sub>av</sub>	0.19

### 3 NEW INSTALLATION:

#### 3.1 NEW PUBLIC REALM LIGHTING:

As discussed, and agreed with the council, a new Public Lighting Scheme will be installed for the Public Realm Space inclusive of walkways through from adjacent street areas.

A Lighting Design Class of P5 or lower was agreed for the Burial Ground Area. This is made up of a mixture of 5- and 6-meter-high lighting poles installed around the perimeter as shown on W1952-MES1002 drawing. This is so as to avoid the requirement for excavation for new services with the Burial Ground Area.

It is also proposed to include a mixture of LED Strip Lighting and infrastructure for Projector Style Lighting to illuminate the existing Tower with the Burial Ground Area. This design will be determined at Design Stage pending Environmentalist approval.

#### Proposed Public Lighting Scheme – Public Realm:

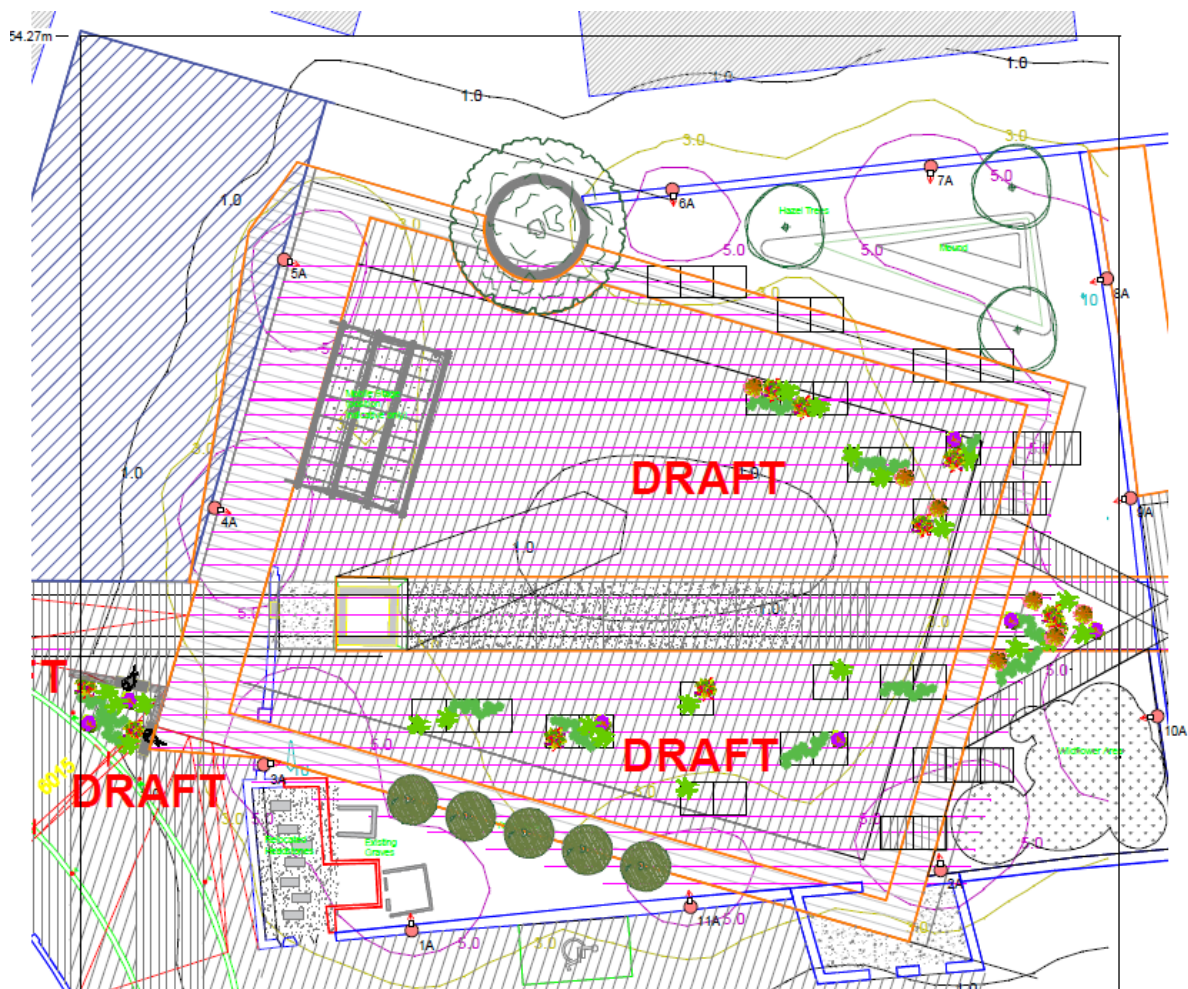


Figure 4 Lighting Reality Model



The following conditions have been included and achieved in the model:

- Mounting Height of Luminaires – 5/6 Meters (refer to MES1000 series drawings for details)
- No. of Luminaires within section – 11No.
- Luminaire Type – Thorn Isaro Pro 2200K (for Bat Sensitivity)
- Design Classification – Class P6 – 2 Lux average, 0.40 Lux minimum

Design Classification Table:

**Table 3 — P classes**

Class	Horizontal Illuminance (lux)			
	Horizontal Illuminance		Additional requirement if facial recognition is necessary	
	$\bar{E}$	$E_{min}$ lux	$E_{v,min}$ lux	$E_{sc,min}$ lux
P1	15.0	3.00	5.0	5.0
P2	10.0	2.00	3.0	2.0
P3	7.50	1.5	2.5	1.5
P4	5.00	1.00	1.5	1.0
P5	3.00	0.60	1.0	0.6
P6	2.00	0.40	0.6	0.2
P7	Not Determined			
To provide for uniformity, the actual value of the maintained average illuminance shall not exceed 1.5 times the minimum $\bar{E}$ value indicated for the class.				

Results Table:

## Results

Eav	2.90
Emin	0.54
E <sub>max</sub>	10.05
E <sub>min</sub> /E <sub>max</sub>	0.05
E <sub>min</sub> /E <sub>av</sub>	0.19

A Lighting Design Class of P4 was agreed for the Walkway Areas through from Main Street and Bridge Street and around the new Donohues Building. This is made up of 6-meter-high light fittings installed on poles or surface mounted where applicable as shown on W1952-MES1002 drawing.

### Proposed Public Lighting Scheme – Laneways/Walkways:



Figure 5 Lighting Reality Model

The following conditions have been included and achieved in the model:

- Mounting Height of Luminaires – 6 Meters (refer to MES1000 series drawings for details)
- No. of Luminaires within section – 8No.
- Luminaire Type – Thorn Isaro Pro 3000K
- Design Classification – Class P4 – 5 Lux average, 1 Lux minimum

Design Classification Table:

**Table 3 — P classes**

Class	Horizontal Illuminance (lux)			
	Horizontal Illuminance		Additional requirement if facial recognition is necessary	
	$\bar{E}$	$E_{\min}$ lux	$E_{v,\min}$ lux	$E_{sc,\min}$ lux
P1	15.0	3.00	5.0	5.0
P2	10.0	2.00	3.0	2.0
P3	7.50	1.5	2.5	1.5
P4	5.00	1.00	1.5	1.0
P5	3.00	0.60	1.0	0.6
P6	2.00	0.40	0.6	0.2
P7	Not Determined			
<p>To provide for uniformity, the actual value of the maintained average illuminance shall not exceed 1.5 times the minimum <math>\bar{E}</math> value indicated for the class.</p>				

Results Table:

## Results

Eav	5.87
Emin	1.02
E <sub>max</sub>	13.35
E <sub>min</sub> /E <sub>max</sub>	0.08
E <sub>min</sub> /E <sub>av</sub>	0.17

## 4 CONCLUSION:

The Lighting Reality Calculation was broken down into 3 sections inclusive of;

- Abbey Street
- Existing Burial Ground Area
- Walkways and Laneways

The Cavan County Council Public Lighting Specification requirements was adhered to as part of this design with Design Classification requirements agreed as listed below;

- Abbey Street – Class P4
- Existing Burial Ground Area – Class P5 or P6
- Walkways and Laneways – Class P4

From results shown in Section 3 above, the design classification requirements agreed between the council and the design team have been met.

Refer to Douglas Carroll W1952 MES1001 & MES1002 Drawings provided separately to this report for further details.

## **APPENDIX NO. 1**

See attached Public Lighting Drawings W1952 MES1001 & W1952 MES1002

## **APPENDIX NO. 2**

See attached Luminaire Data Sheets