Comhairle Cathrach Bhaile Átha Cliath
Dublin City Council

Report to the Chair and Members of the
Climate Action, Environment & Energy
Strategic Policy Committee

The Potential for Residential On-Street EV Charging in the Dublin City Council Area

24 June 2022

1. Introduction

The issue of facilitating charging of electric vehicles in residential areas by motorists, who do not have access to off-street EV charging facilities, is increasingly being raised. The '***Electric Vehicle Charging Infrastructure Strategy 2022-2025***' consultation paper, published by the Department of Transport in May 2022, emphasised the role of residential on-street charging when it stated as follows:

> *'For those who cannot charge at home, provision of residential charging solutions that give the same benefits and mirror the home charging option should be the first objective. Residential charge points should replicate the home charging pattern of charging vehicles at night, during off peak periods, and at low cost. There is an onus on national and local government to facilitate the provision of these charging solutions for citizens who do not have access to a home charge point.'* **EVCIS 2022 – 2025, p20**

The consultation paper reviewed different on-street residential charging technologies (i.e. lamppost, lamppost with satellite bollard, bollard, slim bollard, pop-up) and electric vehicle charging channels. It presented the following summary in respect of lamppost charge points:

Summary of On-street Charging Technologies - Lampposts

Charging Speed	Electricity Supply	Ground Works	Kerb side Street Furniture	Electrical Box Above Ground
Up to 5.8KW	Connected to lamppost supply	No groundworks required	No additional street furniture	No electrical box

The paper referred to examples from the UK, which suggest that the costs etc. associated with PL EVCPs are low:

> *'For example, in the case of lamppost charge points, such as those installed in the London boroughs of Hackney and Westminster, they allow all charging hardware to be installed within*

the lamppost column without any extra groundworks, such as ducting or cabling, depending on the ducting being of sufficient quality. This means that rather than having to install an extra piece of street furniture on already crowded urban streets, charge points can be inserted into existing features that are already present in large numbers and connected to the electricity distribution network.' **EVCIS 2022 -2025, p31/32**

In light of the consultation paper this note considers the potential use of public lighting (PL) infrastructure to support the deployment of EVCPs within the administrative area of Dublin City Council. It also considers the City Council's approach to charging EVs using cables, which extend over the public footpath.

2. Use of PL Infrastructure to Provide EVCPS

While it may initially appear that there are potential opportunities to leverage the City Council's PL assets to facilitate the roll out of EVCPs, there are a range of considerations that need to be taken into account to get a full understanding of the potential of PL infrastructure to support EVCPs and the significant costs involved. These considerations are outlined below under the headings of Regulatory Issues, Technical Constraints, Cost and Parking Demand Issues.

(i) Regulatory Issues

Mini Pillars and Metering

EVCPs consume significant amounts of energy and this energy consumption profile fluctuates, hence it cannot be considered 'fixed' in nature. For this reason unmetered electrical connections are not permitted by ESB Networks (ESNB) and the Commission on Utilities Regulation (CRU) and there is a requirement for electricity meters to be installed at each source of ESBN power injection. The current requirements for meter connections stipulates that a two compartment mini pillar must be provided. These units are significant in size and will restrict available footpath space.

The cost of a two compartment mini pillar is in the region of €2,700 (€700 for the mini pillar and €2,000 for related civil construction works). Furthermore, the cost for the mini pillar required for a High Capacity Power Connection (discussed below) is in the region of €6,000 (€3,200 for the mini pillar and €2,800 for related civil construction works). The cost of the DSO/ESBN electrical connection ranges between €360 and €2,500 depending on capacity.

A policy change by ESBN and CRU will be required to allow for the ESBN meter to be incorporated into the EVCP unit, which would greatly reduce street cluster. Based on these costs it is clear that significant price reductions will also be required to make EVCPs financially feasible.

High Capacity Power Connections

It would be prudent for the City Council to safeguard its capital investment in EVCPs by ensuring any solution installed is future proofed to cater for advances in EVCP technology. In the context of EVCPs, future proofing often equates to ensuring spare electrical capacity is provided for in the original design solution. With regards to electrical connections sought from ESBN, there is a threshold of 50KW. Any applications in excess of this energy consumption rating requires what is known as CT Metering. There is a significantly higher requirement with regards the on-street infrastructure and on-going charges associated with connections that

require power of this order. If a local authority does not future proof its EVCP installations, it may be faced with the prospect of not moving to faster charging technology as it emerges, or it may have to dig up the original electrical infrastructure to allow for a larger electrical connection at a later stage.

Sharing of Electricity with Third Parties
Traditionally, as part of the formal connection agreement, local authorities (and other ESBN customers) have been contractually bound not to pass on or sell on electricity to third parties. In this regard, there has been some policy shift within the energy sector to explore mechanisms whereby primary energy customers may facilitate third party vendors accessing their infrastructure, including power provision. Before the City Council could embark on a strategy of rolling out EVCP's, operated by third parties, on its PL assets it would need to have a very clear understanding regarding the regulatory position in this regard.

There is clearly a need for action on the part of ESBN and the CRU to address the issues outlined above if EVCPs, operating off existing PL infrastructure, are to be rolled out in any numbers.

(ii) ***Technical Constraints***

Cable Type and Mini Pillars:
There are broadly 5 types of cable supplying the PL network in the City Council area. These are listed below and illustrated in Appendix 1. The potential of each cable type to support the roll out of EVCPs is as follows:

- DCC PL Underground Network Cables These cables, (shown in Green in Appendix 1), are City Council owned underground cables. They are compliant with current regulations, but, in the main, do not have sufficient electrical capacity to support EVCPs. The exception here is at the point were the first column (in the row of columns) is connected to a mini pillar. At this point the ESBN injection cable is located (in the mini pillar), and there is sufficient power capacity to explore the installation of an EVCP.

- DCC PL Overhead Networks Cables These cable types, (shown in Orange in Appendix 1), are City Council owned overhead cables. They are non-compliant with current regulations, but even when they are upgraded they will not have sufficient electrical capacity to support EVCPs.

- ESBN Overhead Network Cables These cable types, (shown in Red in Appendix 1) and the associated infrastructure, belong to ESBN. The City Council only has permission to install their lanterns on these ESBN assets, hence there are no opportunities for City Council EVCPs at these locations. There is an abundance of power available at these locations. The roll out of EVPCs at these locations will be a matter for ESBN.

- ESBN Underground Network Cables. These cable types (shown in Blue in Appendix 1 and Appendix 2) offer the best possibility for supporting the deployment of EVCPs. The physical cable is the property of ESBN and the cable enters each PL column (which is the property of the local authority) from a connection directly from the ESBN grid. While these installations are typically older in nature, they are probably the only cable type associated with all of the City Council's PL assets that have the electrical capacity to support EVCPs. Interaction with ESBN will be required before any scoping out of this

option can take place. There may be some modernisation of the PL assets required to bring installations up to current standards.

- Unsuitable Cable Type These cables types, (shown in Grey in Appendix 1), are a combination of old legacy cables that are not suitable for EVCP adaptation.

Given the age of the City Council's PL Assets, there are likely to be significant upgrading works required at most locations to facilitate the deployment of EVCPs, in order to comply with current standards.

Appendix 3 illustrates the locations of DCC PL mini pillars, shown in Green. At these locations there is the potential to explore EVCP provision.

The PL infrastructure cable type situation and potential for EVPCs is summarised in the Table below:

Potential for EVPCs in DCC Area Using PL Infrastructure

Colour	Description	No of Luminaries	% of Luminaries	EVCP Potential
Green	DCC Underground Network	15,561	34.1%	Limited
Orange	DCC Overhead	9,996	22.0%	Very Limited
Red	ESBN Overhead	9,223	20.2%	Good*
Blue	ESBN Underground	8,333	18.3%	Good**
Grey	Not Suitable	2,473	5.4%	None
		45,586	**100%**	

**** Matter for ESBN***
***** Co-operation of ESBN required***

(iii) Costs

It is clear from the analysis presented above that there are significant costs likely to be associated with the roll out of EVCPs in residential areas using the PL network, where the network will support the provision of EVCPs.

A number of neighbouring Dublin local authorities have utilised their PL assets to trial EVCP installations. It should be noted that all of the above ground and below ground infrastructure was replaced in these trials, including the installation of an ESBN meter and associated mini pillar/ducting. From discussions with these authorities, we understand the average cost per Charging Unit installed was circa €10,000.

The Department of Transport's consultation paper envisages PL EVCPs being predominately used at night during low cost off-peak periods. They will support 'slow' charging with limited utilisation potential. It is considered most unlikely that the capital cost of circa €10,000 per charging unit could ever be recouped or recouped to any significant extent from user charges.

(iv) On –Street Parking Demand

The areas of the City Council where there is likely to be the highest demand for residential on-street charging are areas where all or the majority of houses do not have driveways and home EV charging is not an option. These areas are characterised by very high demand for the available and usually limited on-street parking. On-street parking in these areas is generally subject to paid parking controls and resident permit schemes.

Attempts to allocate a space or spaces for EV charging in these areas is likely to be strongly resisted, especially if the availability of EVCP is considered likely to attract vehicles from outside the areas, thereby exacerbating the excess demand for on-street parking.

3. Use of EV Charging Cables Connected to Off-Street EVCPs

The City Council has received a number of requests from EV owners, without access to off street charging, requesting permission to be allowed charge their vehicles using a cable from a home EV charging point. The difficulty with this option is that the EV charging cable must run across the pavement. The option of allowing householders to run cables across the pavement, even if they are placed under an appropriate cable 'protector', has also been raised as well as the possibility of householders indemnifying the local authority against claims.

IPB, the City Council's insurers, have advised strongly against endorsing the use of EV charging cables with or without cable 'protectors' on the grounds that trailing cables and 'protectors' constitute trip hazards and in the event of a trip, if their use had been endorsed in any way by the City Council, could give rise to a potential liability in the event of a successful claim where the relevant homeowner does not have the financial resources or an adequate insurance policy to meet the cost of any judgements against him/her. In the absence of appropriate insurance cover IPB believe there is a serious risk that Courts will look for an avenue to apportion an element of negligence to the City Council in the knowledge that an injured party should be fairly compensated. In these circumstances the full award will fall to be paid by the Council.

The strong advice of IPB is that the City Council should avoid giving any opinion/guidance/agreement/support on the use of cables over footpaths as a method of EV charging.

IPB have pointed out that coverage under motor insurance policies is related to the **'use'** of the vehicle, which is defined by the Road Traffic Act (RTA) and not by insurers. There would appear to be a case to amend the RTA to extend the definition of 'use' to include the charging of an EV.

In addition to genuine liability concerns at present only entities governed by a statutory regulator (such as CRU) are permitted to install electrical services, above or below ground, in the public domain. It is also essential that all electrical connections in the public domain can be safely isolated at the point where the services reside. In the case of private households providing electrical connections in the public domain, this requirement cannot be achieved. Nor can electrical certification from a private dwelling be relied upon for electrical installation in the public domain.

The City Council will not be supporting the use of EV charging cables connected to off-street EVCPs.

4. Conclusions

The City Council's submission to the Charging Strategy consultation paper noted as follows:

'The Department of Transport's Electric Vehicle Charging Infrastructure Strategy 2022-2025 considers neighbourhood EVCPs to be the main solution for those without access to private home charging. Due to the nature of the Dublin region (considerable space constraint in places) and Dublin's aim to encourage a shift away from private car use in the city centre, the Dublin LA strategy considers a different priority, namely rapid hub charging will be prioritised over slow-fast neighbourhood chargers.'

On-street EVCPs in residential areas are not a panacea for those who cannot charge their EVs at home. There are very significant, regulatory, technical, cost and parking management challenges that may well rule out the widespread roll out of on-street EVCPs in the City Council area. In addition, the City Council cannot support the charging of EVs using a cable from a home EV charging point and trailing the cable across the pavement with or without a cable protector.

Martin Maycock
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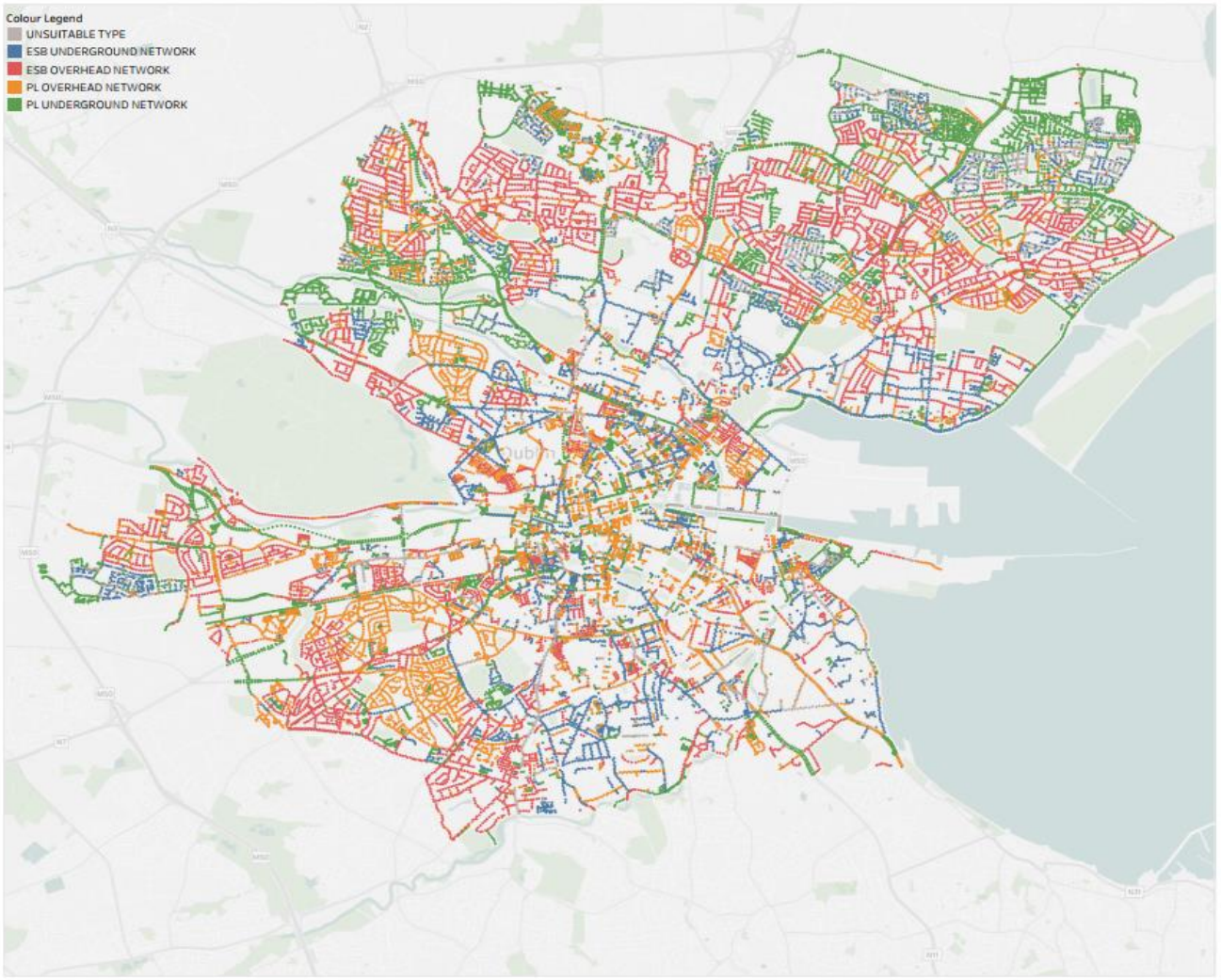
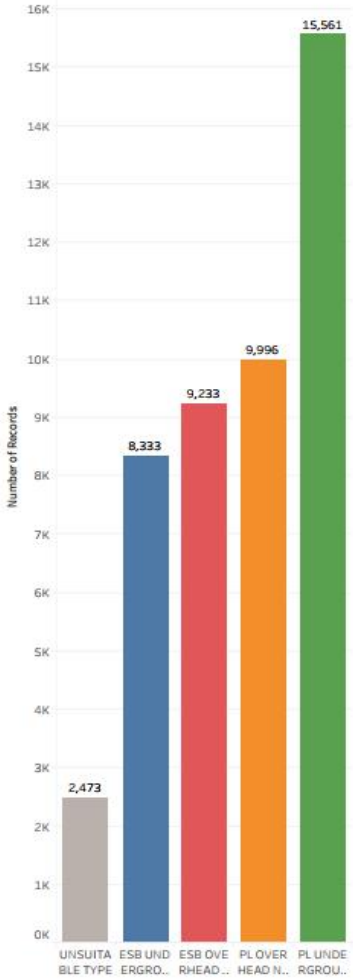
Appendix 1

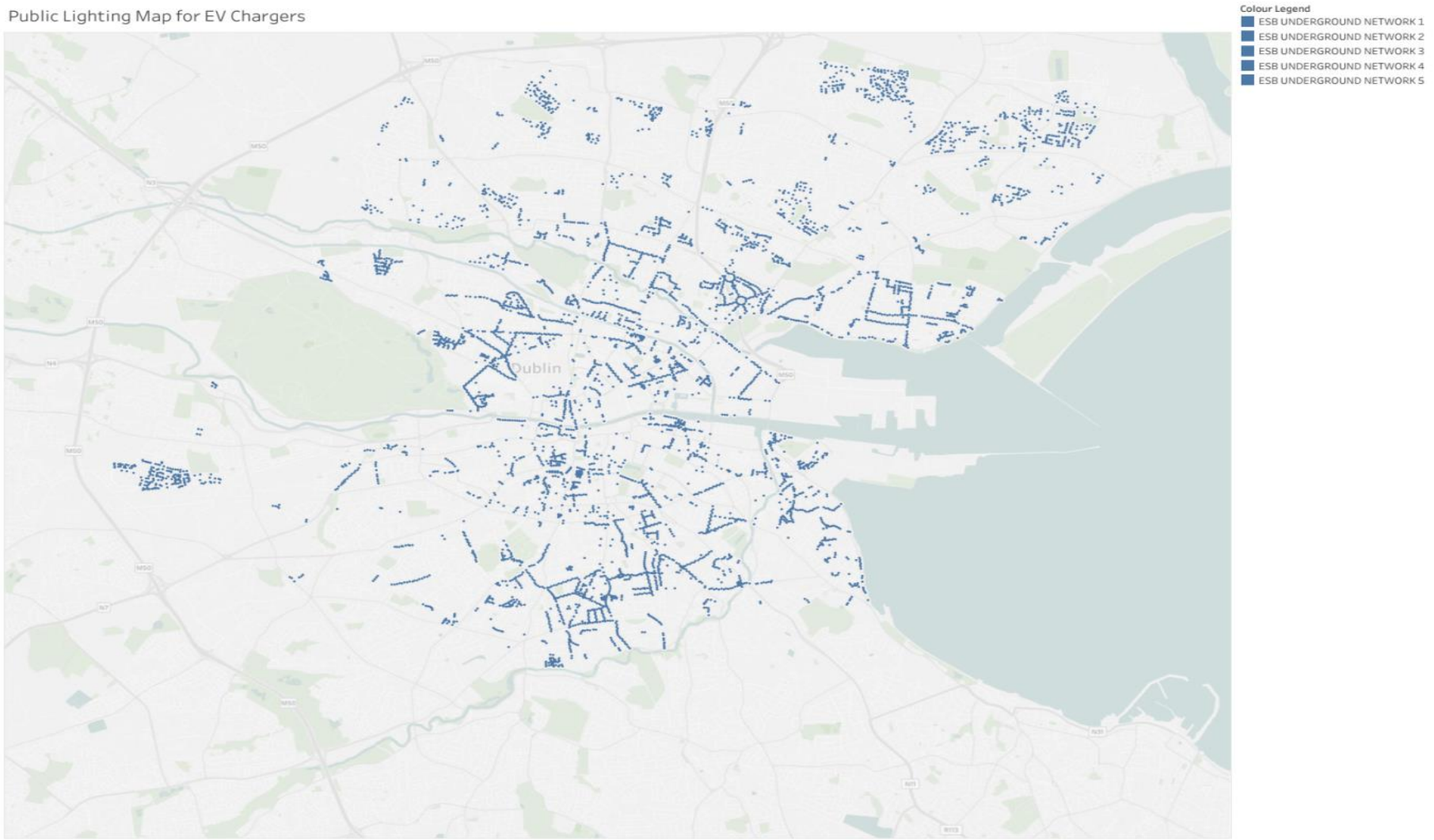
Public Lighting Map for EV Chargers



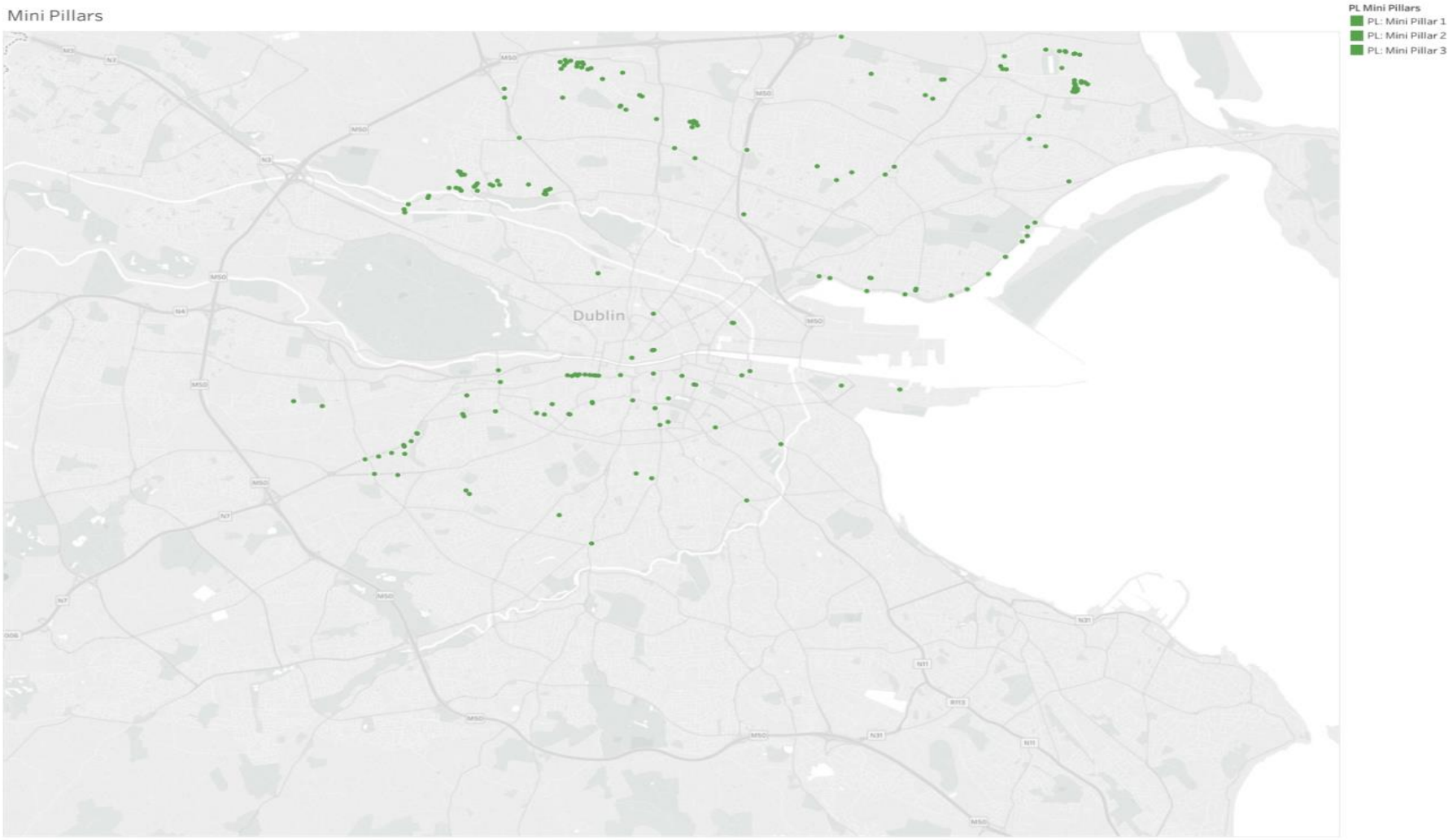
Number of Lights Serviced by Different Cable Types



Appendix 2


Public Lighting Map for EV Chargers
Colour Legend
ESB UNDERGROUND NETWORK 1
ESB UNDERGROUND NETWORK 2
ESB UNDERGROUND NETWORK 3
ESB UNDERGROUND NETWORK 4
ESB UNDERGROUND NETWORK 5
Dublin

Appendix 3


Mini Pillars
PL Mini Pillars
PL: Mini Pillar 1
PL: Mini Pillar 2
PL: Mini Pillar 3
Dublin