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Scottish Building Regulations: Proposed Changes to Energy Standards Including Ventilation, Overheating and Electric Vehicle Charging Provision (July 2021)

Transport Scotland Response

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Introduction

The First Minister declared a Global Climate Emergency in April 2019 and, following advice contained in a Committee on Climate Change report, announced that Scotland will be carbon neutral by 2040 and will emit net zero emissions by 2045. [The Scottish Government's Climate Change Plan update \(CCPu\)](#), published in December 2020, set out the pathway to meet Scotland's statutory greenhouse gas emission reduction targets by 2032.

With the transport sector being the largest emitter of greenhouse gases in Scotland, accounting for 29% of all emissions in 2019, and road transport making up the majority of those emissions at 66% ([Scottish Greenhouse Gas Statistics](#)), we have committed to decarbonising transport in Scotland. [The National Transport Strategy 2](#) sets out the strategic vision for Scotland's transport system and the Mission Zero for transport commitment – to reduce our emissions by 75% by 2030 and to net-zero by 2045 - underlines our ambition to deliver a healthier, cleaner and greener Scotland for current and future generations.

As part of this, we are fully committed to phasing out the need for petrol and diesel cars and vans by 2030. The transition to Electric Vehicles (EV) will contribute significantly to these goals and, with demand growing rapidly, we want people to have access to convenient and reliable EV charging infrastructure at home, at work and when out and about.

Therefore, on 26 July 2021, the Scottish Government launched a consultation: [Building regulations - energy standards and associated topics - proposed changes](#). Section 7 of the consultation sought views on the requirements we proposed to set out in legislation for the installation of EV charge points and enabling infrastructure in a number of different building types with parking spaces (**Table 1**). The consultation closed on 28 November and [analysis](#) of those responses was undertaken by Harlow Consulting.

In addition, Transport Scotland hosted four Q&A webinars in August and September 2021 on the policy proposals for EV charge points. A number of stakeholders participated, including representatives from the public sector, building developers and the transport sector. These webinars were open to all and advertised on the consultation website.

This publication will briefly summarise the key responses that were received regarding those policy proposals, and set out the Scottish Government's next steps.

Policy Proposals

New Residential Buildings	<ul style="list-style-type: none"> All dwellings with a parking space to have at least one EV charge point socket with minimum 7kW output power rating. Exemption to requirement to install EV charge point if additional cost of electricity grid connection exceeds <u>£2,000</u>. If exemption applies ducting infrastructure to be installed in each car parking space.
Residential Buildings undergoing major renovation	<ul style="list-style-type: none"> For buildings with more than 10 car parking spaces, ducting to be installed in each residential car parking space to support the future installation of an EV charge point (unless the cost of recharging and ducting infrastructure exceeds 7% of total major renovation cost). EV charge points sockets to be installed, with minimum 7kW output power rating, in as many residential car parking spaces as the electrical capacity of building post-renovation allows.
New Non-residential Buildings	<ul style="list-style-type: none"> For buildings with more than 10 non-residential car parking spaces, 1 in every 2 non-residential parking spaces to have ducting installed and 1 in every 10 non-residential parking spaces to provide an EV charge point socket with minimum 7kW output power rating.
Non-residential Buildings undergoing major renovation	<ul style="list-style-type: none"> For buildings with more than 10 non-residential car parking spaces, 1 in every 2 non-residential parking spaces to have ducting installed and 1 in every 10 non-residential parking spaces to provide an EV charge point socket with minimum 7kW output power rating (unless the cost of recharging and ducting infrastructure exceeds 7% of total major renovation cost).
Existing Non-residential Buildings	<ul style="list-style-type: none"> For buildings with more than 20 non-residential car parking spaces, by 1 January 2025, 1 in every 2 non-residential parking space to have ducting installed and 1 in every 10 non-residential parking space to provide an EV charge point socket with minimum 7kW output power rating.

Table 1: Policy Proposals

Consultation Questions

1: What are your views on our policy goal to enable the installation of electric vehicle (EV) charge points and ducting infrastructure (to facilitate the future installation of EV charge points) for parking spaces in new residential and non-residential buildings parking?

There were 102 responses to this question.

2: What are your views on the following preferred options?

There were 91 responses to this question.

3: Do you agree with the Scottish Government's preferred options for the exemptions as set out below?

There were 81 responses to this question.

If no, please explain why you disagree?

There were 50 responses to this question.

4: What are your views on how our preferred option relating to existing non-residential buildings with car parks with more than 20 spaces could be properly monitored and enforced, given that the Building (Scotland) Regulations will not apply?

There were 65 responses to this question.

5: What are your views on the proposed provision for charge points for accessible parking spaces? Do you have examples of current best practice for the provision of charge points for accessible parking spaces?

There were 73 responses to this question.

6: We welcome any other comments you may wish to make on EV charging provision (e.g. the minimum standard of EV charge point or safety within the built environment).

There were 84 responses to this question.

Summary of Responses

You can read [detailed analysis of the responses](#) received on the Scottish Government Website.

Overall, the majority of the consultation responses were broadly supportive of our policy proposals and the proposed exemptions. There were varying degrees of support for the minimum requirements we set out for EV charge points, with some advocating for a higher minimum standard, but there were also three cross-cutting themes raised by respondents.

Cost

The main concern raised was around the cost implications of the installation of charge points, including upfront costs and ongoing maintenance costs, and the cost of retrofitting existing non-residential buildings. Respondents also highlighted differences in the cost dependent on location, local labour requirements and local infrastructure costs and other additional pressures.

Additional points were made around the cost associated with publicly accessible chargers and the requirements not being fair to existing non-residential building owners, in particular the potential disproportionate cost of retrofitting existing car parks.

Response

The Scottish Government is committed to decarbonising transport and part of this requires increasing the network of reliable EV charging infrastructure, whether that be in public or at home. As demonstrated in the new residential and non-residential case studies (*Hypothetical Case Studies 1,3, and 6*) in Appendix A, and as we highlighted in the consultation document, it is cheaper to install charge points, and the associated infrastructure, at the point of construction versus the cost of retrofitting.

That being said, we acknowledge that there will be a small number of residential developments where the cost of installation will be higher than in the vast majority of developments. That is why, for new residential buildings with a parking space, we believe that our cost exemption for grid connection, of over £2000 per dwelling, provides a reasonable threshold for costs but, at the same time, does not stop residential developments proceeding. However, if the cost exemption is met, then there is still a requirement to ensure that the ducting infrastructure is in place, future-proofing the building and allowing future homeowners a cheaper installation than would be the case if fully retrofitted at a later date.

Grid Capacity and Infrastructure

Concerns around the capacity of the electrical grid, and associated infrastructure, was another common theme. Respondents highlighted the increasing requirements of a number of net zero technologies in residential homes on top of EV charge points, like electric heating, increasing the pressure on local grid networks.

Additional points were made around the cost of grid reinforcement and the investment needed to meet these additional capacity needs.

Response

We acknowledge that there will be unique grid capacity challenges in some rural and urban residential developments; that is why we are proposing the £2000 grid connection cost exemption for new residential buildings and the 7% cost exemption for buildings undergoing renovation. However, the additional power requirements of 7kW EV charge points themselves, particularly with the advent, and increased usage, of smart meters, is unlikely to put undue pressure on the power supply for the majority of new developments.

However, for existing non-residential buildings, we agree that grid capacity concerns and the potentially substantial grid reinforcement costs are a barrier for many of those building owners, as demonstrated in the existing non-residential case study (*Hypothetical Case Study 5*) in Appendix A.

We will continue to engage with the Distribution Network Operators (DNO) and energy providers as we take this work forward, particularly through the engagement we are undertaking for the technical guidance that will accompany the legislation later in 2022.

Transport Hierarchy

Respondents also felt that the policy proposals were at odds with broader aspirations to reduce car usage by locking in the demand for and continued growth of private car ownership, which is the lowest priority in sustainable transport hierarchies. Some respondents also called for the Scottish Government to take local transport strategies and plans into account, particularly where those plans were focussed on reducing private car usage.

Response

There is a requirement to achieve a balance between public transport and active travel, and the use of electric vehicles. The Scottish Government is confident that our proposals will not hinder local planners from enacting transport strategies where active travel and public transport are the prime objective. The requirements we propose will only come into force if local planners decide to have residential and non-residential developments with parking spaces; in these circumstances, these requirements will ensure that the majority of those spaces are at least EV friendly and therefore encourage the use of zero emission vehicles.

The plans are aligned to our overall approach to enabling a more sustainable travel and transport system but we must also acknowledge that car usage will continue, particularly in the short to medium term. Therefore, if we want to decarbonise transport, then only by supporting the expansion of the EV charging network, publicly and privately, can we encourage car users to make their next car electric.

Policy Decisions

New Residential Buildings

- All dwellings with a parking space to have at least one EV charge point socket with minimum 7kW output power rating.
- Exemption to requirement to install EV charge point if additional cost of electricity grid connection exceeds £2,000.
- If exemption applies ducting infrastructure to be installed in each car parking space.

This requirement will be taken forward.

Draft legislation will be laid in the Scottish Parliament later in 2022 to enact this.

This requirement will mean that new dwellings (a house, flat etc.) with a parking space, whether that be a private driveway within the boundary of the property or an designated or undesignated parking space for a flatted development, will have one 7kW (minimum output) EV charge point socket provided for that space.

The only exemption will be if the additional cost of an electricity grid connection for that charge point socket exceeds £2000. In that case, the ducting infrastructure must be installed for every parking space where the cost exemption has been exceeded.

Residential Buildings (undergoing major renovation)

- For buildings with more than 10 car parking spaces, ducting to be installed in each residential car parking space to support the future installation of an EV charge point (unless the cost of recharging and ducting infrastructure exceeds 7% of total major renovation cost).
- EV charge points sockets to be installed, with minimum 7kW output power rating, in as many residential car parking spaces as the electrical capacity of building post-renovation allows.

This requirement will be taken forward.

Draft legislation will be laid in the Scottish Parliament later in 2022 to enact this.

This requirement will mean that any residential buildings undergoing major renovation (a house, flatted developments etc.) with 11 parking spaces or more, will require ducting infrastructure to be installed in each parking space and for as many 7kW (minimum output) EV charge point sockets to be installed as the electrical capacity of the renovated building can support.

The only exemption will be if the cost of this work exceeds 7% of the total renovation cost. In that case, as much ducting infrastructure as possible must be installed within that 7% cost envelope.

New Non-residential Buildings

- For buildings with more than 10 non-residential car parking spaces, 1 in every 2 non-residential parking spaces to have ducting installed and 1 in every 10 non-residential parking spaces to provide an EV charge point socket with minimum 7kW output power rating.

This requirement will be taken forward.

Draft legislation will be laid in the Scottish Parliament later in 2022 to enact this.

This requirement will mean that any new non-residential buildings (a retail park, school, sports complex etc.) with 11 parking spaces or more, will require ducting infrastructure to be installed for 1 in every 2 parking spaces and 1 in every 10 parking spaces to have access to a 7kW (minimum output) EV charge point socket.

Non-residential Buildings (undergoing major renovation)

- For buildings with more than 10 non-residential car parking spaces, 1 in every 2 non-residential parking spaces to have ducting installed and 1 in every 10 non-residential parking spaces to provide an EV charge point socket with minimum 7kW output power rating (unless the cost of recharging and ducting infrastructure exceeds 7% of total major renovation cost).

This requirement will be taken forward.

Draft legislation will be laid in the Scottish Parliament later in 2022 to enact this.

This requirement will mean that any non-residential buildings (retail development, offices etc.) with 11 parking spaces or more, will require ducting infrastructure to be installed for 1 in every 2 parking spaces and 1 in every 10 parking spaces to have access to a 7kW (minimum output) EV charge point socket.

The only exemption will be if the cost of this work exceeds 7% of the total renovation cost. In that case, as much ducting infrastructure as possible must be installed within that 7% cost envelope.

A draft outline of technical guidance will be shared with stakeholders over the course of the summer ahead of the legislation being laid later in 2022. This will provide more detail on how we envisage these requirements working in practice.

Existing Non-residential Buildings

- For buildings with more than 20 non-residential car parking spaces, by 1 January 2025, 1 in every 2 non-residential parking space to have ducting installed and 1 in every 10 non-residential parking space to provide an EV charge point socket with minimum 7kW output power rating.

This requirement will be not be taken forward at this time.

There were a number of factors that have influenced our decision to not proceed with this requirement at this time.

Firstly, this proposal, unlike the other proposals, could encourage car use into areas that could be served by more sustainable travel options and, importantly, would not give the flexibility to local planners or those delivering local transport needs to make decisions that would be appropriate for those areas.

We are also currently seeing an increase in private sector investment into publicly available charging, whether that be retailers and local authorities entering into partnerships with the industry to provide publicly available charge points, or energy and EV charging companies embarking on ambitious plans to install on-street charging. It is clear that, at the moment, the private sector is beginning to step up to the challenge of increasing the availability of public charging.

Therefore, given the above reasons, the Scottish Government is not proceeding with this requirement at this time. However, Scottish Ministers will continue to monitor the growth of publicly available EV charging carefully over the next few years and may introduce legislation at a later date if the availability of public charging is not progressing as expected.

Given that we are not proceeding with this option there is now no requirement to designate a public body to enforce this requirement or to determine appropriate incentives or penalties within legislation.

Accessibility

- At least 1 accessible parking space should have access to an EV charge point socket for every 4 accessible parking spaces. This requirement would be over and above the requirements set out in our policy proposals to ensure that adequate provision is provided for those that use these spaces.

We intend to proceed with the proposed requirements for accessible parking spaces.

A number of concerns were raised by respondents about the wider concerns they had on the accessibility of charge points themselves and related concerns for those people that use these spaces. This proposal was solely looking at the provision of a minimum number of EV charge point sockets for accessible spaces rather than the standards of the charge points or the parking spaces themselves.

However, our recently published draft vision for public EV charging, [A Network Fit For The Future: Draft Vision for Scotland's Public Electric Vehicle Charging Network](#), outlines our core principles for the EV public charging network and how we want to ensure people have access to an inclusively designed and comprehensive public network of charge points that works for everyone regardless of age, health, income or other needs. We would expect building owners to follow those principles.

Safety within the Built Environment

The Scottish Government will not be requiring new buildings with enclosed car parks to meet these EV charge point requirements at this time, although we may do so at a future date.

Whilst some concerns were raised around the general safety of EV charge points and the associated infrastructure, there is nothing to suggest that they are an increased safety risk that cannot be dealt with through current legislation. However, the characteristics of an EV fire are different from a diesel/petrol vehicle fire and, whilst there is no evidence to suggest that current fire safety building regulations are not sufficient enough to mitigate the risk of an EV fire in enclosed car parks, we believe undertaking further work to understand how enclosed car parks are able to withstand an EV fire before proposing any new legislation is a sensible precaution.

Next Steps

Over the course of the summer, the Scottish Government will engage with stakeholders on the proposals we have outlined in this publication and our plans for laying the legislation and associated guidance later in 2022.

This will also allow those stakeholders, particularly those who will have a need to understand in detail what their legal requirements will be once this legislation is enacted, to engage on the technical guidance and help us ensure that the requirements and exemptions we set out are clear and appropriate for local planners and developers.

Appendix A: Case Studies

These case studies have been published in ClimateXChange's research paper, [Electric vehicle enabled buildings: evidence review of installation costs](#).

Hypothetical Case Study 1: New Residential Building

Real World Planned Development: Water Row, Govan, Glasgow



Development Details

Glasgow City Council have received a planning application for the erection of a mixed residential and commercial development (Class 1, 2, 3, 4, 7, 8, 10 and 11) with associated access, parking, open space, and public realm works.

If EV infrastructure was considered as part of the site a number of 7kw totem chargers would be installed.

No of dwellings	92	No of Car parking spaces	25	Development Cost	£26.5m*	Status	At Planning Stage
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* The overall plan, approved in January 2019 was for £57m which includes 200 homes and 3500sqm of commercial space. For the purpose of this case study the Govan development is assumed to comprise half of the total development cost.

Where possible, we have spoken to the local authority regarding this case study, though these are purely hypothetical and should not be used as actual proposed plans.

Scottish Government preferred options

All dwellings with a parking space to have at least one EV charge point socket with minimum 7kW output power rating.

Exemption to requirement to install EV charge point if additional cost of electricity grid connection exceeds £2000.

If exemption applies ducting infrastructure to be installed in each car parking space.

Estimated EV Infrastructure Installation Costs

By Charger installed (7kw totem)

Category	Average Cost
Materials	£1,330
Installation	£275
DNO	£0
Total	£1,605

By Development (13-chargers)*

Category	Estimated Cost
Materials	£17,290
Installation	£3,575
DNO	£0
Total	£20,865

By Development – Ducting only

Category	Estimated Cost
Materials	£6,500
Installation	£19,500
DNO	£0
Total	£26,000

*This is to install the chargers in situ only and does not include ducting.

All Figures above are estimates based on the example development and are potential costs derived from the bottom-up approach of market analysis. We assume 13x 7kw totem chargers with 2 sockets each (at least 1 per parking space). Figures exclude planning, traffic management and maintenance of infrastructure. DNO costs are excluded as we assume there would be network capacity as part of the new development. Average ducting costs have been estimated but may vary based on the development size. It is assumed that all parking is residential. The total cost of the development where 13 chargers are installed would be a combination of 'By Development (13 chargers)' and 'By Development – Ducting Only'.

Would Exemption Apply: No, as there are no expected additional DNO costs to connect to the grid.

Regional Variations based on Geography if this development was built in different locations

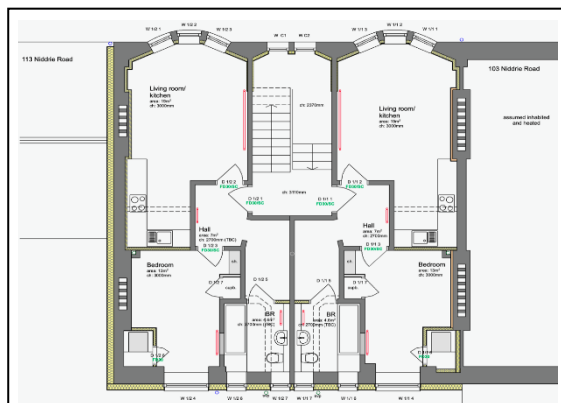
Note that this development would be classed as an urban development.

Geography	Urban	Rural	Remote Island
Total Installation Costs by charger	£579 - £1,035	£570 - £1,030	£777 - £1,307
Total Installation Costs by development (13-chargers)	£7,527 - £13,455	£7,420 - £13,390	£10,101 - £16,991
Exemption?	No - no expected additional DNO costs to connect to the grid.	No - no expected additional DNO costs to connect to the grid.	No - no expected additional DNO costs to connect to the grid.

The regional variation figures above are derived from a top-down approach of data processing provided by the Energy Savings Trust (EST). Although the EST data was available for existing residential buildings, for comparison purpose, it was caveated to use for new residential buildings. EST data does not include 'Ducting only' as an option. EST data ranges are different from the data used in the 'bottom-up' approach and as such the estimated cost will not always fall within the EST data range.

Hypothetical Case Study 2: Residential Buildings Undergoing Major Renovation

Real World Planned Development: 107 Niddrie Road, Glasgow



Development Details

The Niddrie Road project received funding from the Scottish Government as part of its Climate Emergency Collaboration Challenge to renovate a tenement building. The four storey 8 flat building, owned by Southside Housing Association, was empty and in a poor state of repair. A 'hypothetical car park' with 4 parking spaces is assumed to be included within the development as part of the refurbishment.

No of dwellings	8	No of Car parking spaces	4	Development Cost	£704k	Status	Completed
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Where possible, we have spoken to the local authority regarding this case study, though these are purely hypothetical and should not be used as actual proposed plans.

Scottish Government preferred options

For buildings with more than 10 car parking spaces, ducting to be installed in each residential car parking space to support the future installation of an EV charge point.

EV charge points sockets to be installed, with minimum 7kW output power rating, in as many residential car parking spaces as the electrical capacity of the building post-renovation allows. Exemption applies if the cost of installing recharging and ducting infrastructure exceed 7% of total major renovation cost.

Estimated EV Infrastructure Installation Costs

By Charger (7kw totem charger)

Category	Average Cost
Materials	£2,888
Installation	£750
DNO	£2,500
Total	£6,138

By Development – 2 Chargers*

Category	Estimated Cost
Materials	£5,776
Installation	£1,500
DNO	£5,000
Total	£12,276

By Development – Ducting only

Category	Estimated Cost
Materials	£1,000
Installation	£3,000
DNO	£1,650
Total	£5,650

*This is to install the chargers in situ only and does not include ducting.

All Figures above are estimates based on the example development and are potential costs derived from the bottom-up approach of market analysis. We assume 2 7kw on-street chargers (total of 4 sockets) are required based on 1 socket per parking space. Figures exclude planning, traffic management and maintenance of infrastructure. DNO costs are based on interviews with charging infrastructure companies and available public information. The figure above is the average figure and quotes from the DNO will differ to this. For ducting only a hypothetical DNO cost has been included to cover negotiations relating to where to connect the ducting to. The total cost of the development where 2 chargers are installed would be a combination of 'By Development (2 chargers)' and 'By Development – Ducting Only'.

Would Exemption Apply: No, as the cost to install recharging and ducting would not exceed 7% of the development cost

Regional Variations based on Geography if this development was built in different locations

Note that this development would be classed as an urban development.

Geography	Urban	Rural	Remote Island
Total Installation Costs by charger	£579 - £1,035	£570 - £1,030	£777 - £1,307
Total Installation Costs by development (2 chargers)	£1,158 - £2,070	£1,140 - £2,060	£1,554 - £2,614
Exemption?	No, as the cost to install recharging and ducting would not exceed 7% of the development cost		

The regional variation figures above are derived from a top-down approach of data processing provided by the Energy Savings Trust (EST). EST data does not include 'Ducting only' as an option.

Hypothetical Case Study 3: New Non-Residential Buildings

Real World Planned Development: Plot 3 and 4, Lammermoor Avenue, Abbotsford Business Park, Falkirk



Development Details

The proposed development is for the creation of 16 commercial units on plot 3 and 4 of the Abbotsford Business Park in Falkirk. The planned development already includes provision for 4 7kw charging totems, each with 2 sockets, cabling ducts and connections to the DNO. For the purpose of this case study, it was assumed that no EV chargers are available at the moment.

No of commercial units	16	No of Car parking spaces	63	Development Cost	£5.2m*	Status	At Planning Stage
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* Based on development figures for the original business park, built in 2016 which was for 4 units (£1.3m. £325k per unit). This base figure has been adapted based on the number of planned units.

Where possible, we have spoken to the local authority regarding this case study, though these are purely hypothetical and should not be used as actual proposed plans.

Scottish Government preferred options

For buildings with more than 10 non-residential car parking spaces, 1 in every 2 non-residential parking spaces to have ducting installed and 1 in every 10 non-residential parking spaces to provide an EV charge point socket with minimum 7kW output power rating.

Estimated EV Infrastructure Installation Costs

By Charger installed

Category	Average Cost
Materials	£2,888
Installation	£750
DNO	£0
Total	£3,638

By Development - 4 chargers*

Category	Estimated Cost
Materials	£11,552
Installation	£3,000
DNO	£0
Total	£14,552

By Development – Ducting only

Category	Estimated Cost
Materials	£2,000
Installation	£6,000
DNO	£0
Total	£8,000

*This is to install the chargers in situ only and does not include ducting.

All Figures above are estimates based on the example development and are potential costs derived from the bottom-up approach of market analysis. Based on the Scottish Government's preferred option we assume 4 7kw charging totems, each with two sockets. The planned development already meets this requirement though additional ducting would be required based on the site diagrams to align with the preferred option. A combination of 'By development – 4 chargers' and 'By Development – Ducting only' would be required to ascertain the full cost. Figures exclude planning, traffic management and maintenance of infrastructure. DNO costs are excluded as we assume there would be network capacity as part of the new development. Average ducting costs have been estimated but may vary based on the development size. The total cost of the development where 4 chargers are installed would be a combination of 'By Development (4 chargers)' and 'By Development – Ducting Only'.

Would Exemption Apply: No, there is no criteria relating to exemption

Regional Variations based on Geography if this development was built in different locations

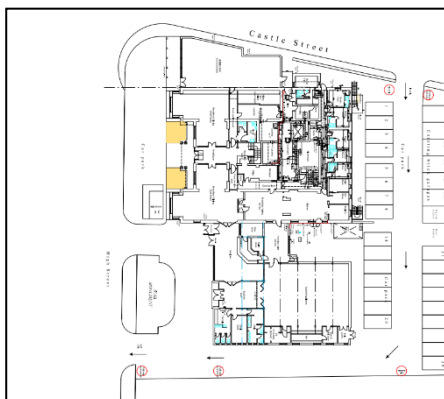
Note that this development would be classed as an urban development.

Geography	Urban	Rural	Remote Island
Total Installation Costs by charger	£2,044 - £11,569	£1,273 - £7,255	£1,653 - £26,584
Total Installation Costs by development (4 chargers)	£8,176 - £46,276	£5,092 - £29,020	£6,612 - £106,336
Exemption?	No, there is no criteria relating to exemption		

The regional variation figures above are derived from a top-down approach of data processing provided by the Energy Savings Trust (EST). Although the EST data was available for existing non-residential buildings, for comparison purpose, it has been adapted to use for new non-residential buildings. EST data does not include 'Ducting only' as an option.

Hypothetical Case Study 4: Non-Residential Buildings Undergoing Major Renovation

Real World Development: Residential Care Home, Dingwall



Development Details

Change of use from Hotel to Residential Institution (Residential Care) with some internal renovations including the installation of a lift

No of commercial units	1	No of Car parking spaces	45*	Development Cost	£400k**	Status	Complete
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* Estimated based on available information

** Based on a high-level estimation of the development

Where possible, we have spoken to the local authority regarding this case study, though these are purely hypothetical and should not be used as actual proposed plans.

Scottish Government preferred options

For buildings with more than 10 non-residential car parking spaces, 1 in every 2 non-residential parking spaces to have ducting installed and 1 in every 10 non-residential parking spaces to provide an EV charge point socket with minimum 7kW output power rating.

Exemption applies if the cost of installing recharging and ducting infrastructure exceeds 7% of total major renovation cost.

Estimated EV Infrastructure Installation Costs

By Charger installed (7kw totem)

Category	Average Cost
Materials	£2,888
Installation	£750
DNO	£2,500
Total	£6,138

By Development - 5 Chargers*

Category	Estimated Cost
Materials	£14,440
Installation	£3,750
DNO	£12,500
Total	£30,690

By Development – Ducting Only

Category	Estimated Cost
Materials	£2,500
Installation	£7,500
DNO	£1,650
Total	£11,650

* This is to install the chargers in situ only and does not include ducting.

All Figures above are estimates based on the example development and are derived from the bottom-up approach of market analysis. Based on the Scottish Government's preferred option we assume 5 7kw charging totems, each with two sockets. Figures exclude planning, traffic management and maintenance of infrastructure. Average ducting costs have been estimated but may vary based on the development size. DNO costs are based on interviews with charging infrastructure companies and available public information. The figure above is the average figure and quotes from the DNO will differ to this. For ducting only, a hypothetical DNO cost has been included to cover negotiations relating to where to connect the ducting to. The total cost of the development where 5 chargers are installed would be a combination of 'By Development (5 chargers)' and 'By Development – Ducting Only'.

To align with the Scottish Government's preferred options, it is likely that the total cost would be a blend of 'By Development – 5 Chargers' and 'By Development – Ducting Only'

Would Exemption Apply: No, as the cost of installing recharging and ducting infrastructure does not exceed 7% of the budget.

Regional Variations based on Geography if this development was built in different locations

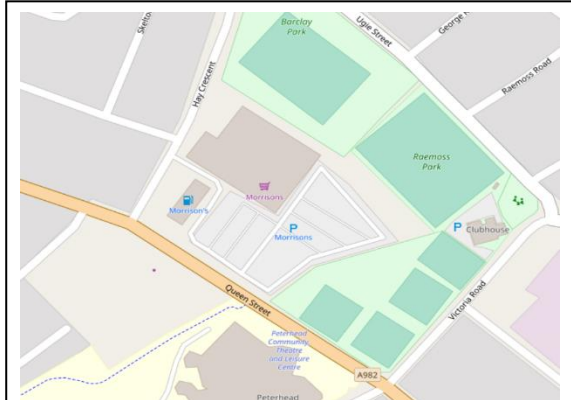
Note that this development would be classed as a urban development.

Geography	Urban	Rural	Remote Island
Total Installation Costs by charger	£2,044 - £11,569	£1,273 - £7,255	£1,653 - £26,584
Total Installation Costs by development (5 chargers)	£10,220 - £57,845	£6,365 - £36,275	£8,265 - £132,920
Exemption?	No, as the cost of installing recharging and ducting infrastructure does not exceed 7% of the budget		

The regional variation figures above are derived from a top-down approach of data processing provided by the Energy Savings Trust (EST). EST data does not include 'Ducting only' as an option.

Hypothetical Case Study 5: Existing Non-Residential Buildings

Real World Development: Morrisons, Peterhead



Development Details

Supermarket site with no current EV charging infrastructure.

No of commercial units	1	No of Car parking spaces	380	Development Cost	N/A	Status	Active site
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Where possible, we have spoken to the local authority regarding this case study, though these are purely hypothetical and should not be used as actual proposed plans.

Scottish Government preferred options

By 1 January 2025, for buildings with more than 20 non-residential car parking spaces, 1 in every 2 non-residential parking space to have ducting installed and 1 in every 10 non-residential parking space to provide an EV charge point socket with minimum 7kW output power rating.

Estimated EV Infrastructure Installation Costs

By Charger installed

Category	Average Cost
Materials	£2,888
Installation	£750
DNO	£2,500
Total	£6,138

By Development - 38 Chargers*

Category	Estimated Cost
Materials	£109,744
Installation	£28,500
DNO	£95,000
Total	£233,244

By Development – Ducting Only

Category	Estimated Cost
Materials	£19,000
Installation	£57,000
DNO	£1,650
Total	£77,650

* This is to install the chargers in situ only and does not include ducting.

All Figures above are estimates and are potential costs derived from the bottom-up approach of market analysis. Based on the Scottish Government's preferred option we assume 38 7kw charging totems, each with one socket. Figures exclude planning, traffic management and maintenance of infrastructure. DNO costs by development are based on guidance from SP Energy Networks. Developments with connections greater than 1 MVA can cost over £100k but we have simplified the cost based on a per charger cost. This development would require a maximum power capacity of 2.66 MVA so it is likely the quoted DNO cost will be higher. DNO costs are based on interviews with charging infrastructure companies and available public information, DNO costs for this stay the same as this is to cover determining where the ducting connects to. To align with the Scottish Government's preferred options it is likely that the total cost would be a combination of 'By Development – 38 Chargers' and 'By Development – Ducting Only'.

Would Exemption Apply: No, as no exemptions have been stated for this building type.

Regional Variations based on Geography if this development was built in different locations

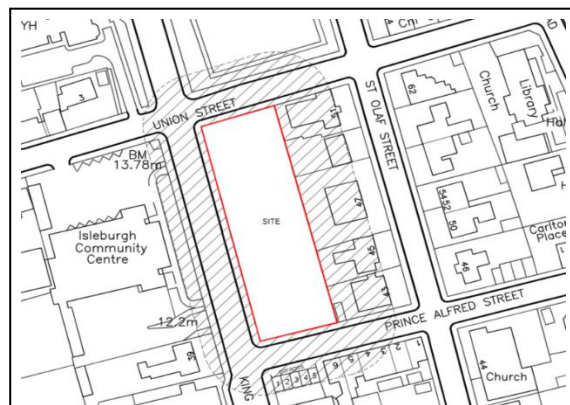
Note that this development would be classed as an urban development.

Geography	Urban	Rural	Remote Island
Total Installation Costs by charger	£2,044 - £11,569	£1,273 - £7,255	£1,653 - £26,584
Total Installation Costs by development (38 chargers)	£77,672 - £439,622	£48,374 - £275,690	£62,814 - £1,010,192
Exemption?	NO, as no exemptions have been stated for this building type.		

The regional variation figures above are derived from a top-down approach of data processing provided by the Energy Savings Trust (EST).

Hypothetical Case Study 6: New Residential Building

Real World Development: King Harald Street, Lerwick



Development Details

Existing buildings demolished and replaced with three new two-three storey buildings containing in 27 one-bedroom flats. Note that the original plans did not include car parking so this hypothetical case study assumes each flat would have an associated car park and that this would be included in the development cost below.

No of dwellings	27	No of Car parking spaces	27	Development Cost	£5.6m*	Status	Completed site
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According to Hjatland Housing Association the total investment for this development and another development of 24 dwellings in Tingwall was £10.4million. An average per dwelling cost was developed across both developments and then multiplied by the number of dwellings at this site (£204k x 27).

Where possible, we have spoken to the local authority regarding this case study, though these are purely hypothetical and should not be used as actual proposed plans.

Scottish Government preferred options

All dwellings with a parking space to have at least one EV charge point socket with minimum 7kW output power rating.

Exemption to requirement to install EV charge point if additional cost of electricity grid connection exceeds £2000.

If exemption applies ducting infrastructure to be installed in each car parking space.

Estimated EV Infrastructure Installation Costs

By Charger installed (7kw totem)

Category	Average Cost
Materials	£1,330
Installation	£275
DNO	£0
Total	£1,605

By Development (14 chargers)

Category	Estimated Cost
Materials	£18,620
Installation	£3,850
DNO	£0
Total	£22,470

By Development – Ducting only

Category	Estimated Cost
Materials	£7,000
Installation	£21,000
DNO	N/A
Total	£28,000

* This is to install the chargers in situ only and does not include ducting.

All Figures above are estimates based on the example development and are potential costs derived from the bottom-up approach of market analysis. We assume 14x 7kw totem chargers with 2 sockets each (at least 1 per parking space). Figures exclude planning, traffic management and maintenance of infrastructure. DNO costs are excluded as we assume there would be network capacity as part of the new development. Average ducting costs have been estimated but may vary based on the development size. Ducting only costs can be higher than installing the charge points if the location of the charge points is unknown and it is necessary to future proof the site. The actual cost will be a blend of 'by development (14 chargers)' and 'by development – ducting only'.

Would Exemption Apply: No. While there might be a £2,000 cost exemption, it is not triggered in this case.

Regional Variations based on Geography if this development was built in different locations

Note that this development would be classed as a remote island development.

Geography	Urban	Rural	Remote Island
Total Installation Costs by charger	£579 - £1,035	£570 - £1,030	£777 - £1,307
Total Installation Costs by development (14 - chargers)	£8,106 – £14,490	£7,980 - £14,420	£10,878 - £18,298
Exemption?	No - no expected additional DNO costs to connect to the grid.	No - no expected additional DNO costs to connect to the grid.	No - no expected additional DNO costs to connect to the grid.

The regional variation figures above are derived from a top-down approach of data processing provided by the Energy Savings Trust (EST). Although the EST data was available for existing residential buildings, for comparison purpose, it was caveated to use for new residential buildings. EST data does not include 'Ducting only' as an option. EST data ranges are different from the data used in the 'bottom-up' approach and as such the estimated cost will not always fall within the EST data range.



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