

Scottish Building Regulations – Proposed Changes to Energy Standards and associated topics

(Note – only questions relating to Part 7 –Electric Vehicle Charging Infrastructure were responded to ie Questions 51-56)

Question 51

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?

As an organisation we are committed to an ambition of net zero emissions by 2040 and the adoption of zero emission vehicles is a commitment we have made within our route map.

We would note the following Scottish Water activity in working towards our transition to electric vehicles:

- All our pool cars are electric
- All new employee lease cars must be electric
- We have a commitment to replace light commercial vehicles with electric where financially and operationally practical
- We are rolling out charging infrastructure strategically across our estate, with charging facilities currently at 19 sites
- We are currently finalising a home charger installation programme to ensure charging facilities at home for our electric fleet drivers, where feasible.
- We have a dedicated EV Transition Team in place to lead our switch to electric vehicles

Scottish Water welcomes the policy goal to enable the installation of EV charge points within new residential parking spaces, a move with clear societal benefits and with opportunities for new housing developers to recoup such costs from the end user.

For non-residential buildings, we recognise the benefit of policies that lead to an expansion in charging infrastructure and the need to future-proof such investment decisions, however we consider that the proposals are in need of refinement. The extent of ducting and charging points required would lead to many under-utilised charge points (and enabling infrastructure) across Scotland, and at a significant financial and environmental cost. We ask that the regulations allow organisations to base the scale of their investment on their future charging demand forecasts.

We would be keen to ensure the following factors are considered within the regulations for non-residential buildings:

- The policy requirements are proportionate and do not place an excessive cost burden on organisations.
- Charge points and ducting infrastructure are installed to meet forecasted demand rather than fixed regulatory thresholds, in order to avoid redundant infrastructure and the associated environmental consequences (e.g. from the materials use, emissions and waste) of installing ducting on a large scale.
- The anticipated expansion of charging infrastructure, including large-scale charging hubs over the next 5-10 years and £1 billion of UK government investment in rapid charging facilities should be factored into forecasts of demand at workplaces. We note the recent Scotland Futures Trust report, with the clear focus on encouraging new private partners

- There is clear justification for placing this new capital cost burden on organisations. Employers had not previously been responsible for the vehicle refuelling needs of employees and visitors and we would query why workplaces should now have this responsibility (and cost burden).
- Consideration given to sectors-specific regulations (e.g. the use cases within retail parks differ greatly from those of workplaces).

Scottish Water is undertaking a roll-out of EV charging infrastructure across our estate, which is based on the evidenced needs of the commercial fleet. Whilst significant investment has been approved for this programme, the proposals in this consultation would require an additional high level of investment for active/passive EV provision, that we forecast would not be fully utilised now or in the future.

We have provided examples within Question 6 to demonstrate the potential impact of the current proposals.

Question 52

What are your views on the following preferred options?

Building Type	Scottish Government preferred options
New residential buildings	<p>All dwellings with a parking space to have at least one EV charge point socket with minimum 7kW output power rating.</p> <p>Exemption to requirement to install EV charge point if additional cost of electricity grid connection exceeds £2,000.</p> <p>If exemption applies, ducting infrastructure to be installed in each car parking space.</p>
Residential buildings undergoing major renovation	<p>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.</p> <p>EV charge point 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.</p> <p>Exemption applies if the cost of installing recharging and ducting infrastructure exceeds 7% of total major renovation cost.</p>
New non-residential buildings	<p>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.</p>
Non-residential buildings undergoing major renovation	<p>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</p>

Building Type	Scottish Government preferred options
	<p>7kW output power rating.</p> <p>Exemption applies if the cost of installing recharging and ducting infrastructure exceeds 7% of total major renovation cost.</p>
Existing non-residential buildings	<p>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 spaces to provide an EV charge point socket with minimum 7kW output power rating.</p>

Residential properties

Whilst as an organisation we are not materially affected by the proposals around residential properties, we would support the proposal to require the installation of a charge point socket for all new residential dwellings with parking spaces. The ability for employees with off-street parking to leave for their duties with a fully charged vehicle is crucial for our operations and we would see a clear societal benefit within these proposals. We would see a requirement for “smart” residential charge points as being essential, to allow scheduling which benefits the grid and to also allow integration with fleet management software and other platforms which allow features such as expenses reimbursement.

Non-residential buildings - Overview

Our comments on non-residential buildings relate to workplaces/depots, as they are within our primary consideration.

From a Scottish Water perspective, the proposals would be estimated to cost over £1m across our 10 largest sites, with further expenditure required across many others.

We are committed to both net zero ambitions and a transition to electric vehicles across Scotland, based on our own forecasts of charging behaviour at our workplaces. However, we consider that the proposed ducting for 1 in 2 bays and charging points for 1 in 10 bays proposals will be costly, would lead to many under-utilised charge points across Scotland and redundant enabling infrastructure.

We would like to understand the assumptions that underpin the required number of charge points and ducting under the proposed regulations. Estate-wide staff charging requirements (including ducting) should be sized based on predicted future usage, taking into account the function of the premises, in order to avoid the installation of redundant infrastructure. Also, utilisation of EV infrastructure varies according to the type of use and location of the non-residential building e.g. if it is a workplace or accessible to the public.

By 2025, new EVs would be expected to require fewer charging sessions per week than current EVs and “topping up” is expected to be more common charging behaviour than charging from near empty to full. In the case of workplaces, it would be logistically unreasonable to expect staff to move their vehicles from a charge point in under 4 hrs of use (4 hours of use on a 7kW charge point is likely to provide around a week of an average driver’s charging needs).

We have provided an example of the proposals applied to one of our sites in our response to Question 6

We agree with the 7kw minimum output power rating but we recommend that across a multi-charge point system, load balancing should be permitted (i.e. less than 7kW may be outputted dependant on the volume of charge points in use). Without this caveat there is a clear risk of large electrical

infrastructure upgrade costs. This scenario would only be advised for non-public units (e.g. workplaces with potentially longer dwell times and where user expectation can be well managed).

New non-residential buildings

For new workplace car parks, we would consider that 1 in every 10 parking spaces providing an EV charge point is reasonable. In the situation where a full car park is being constructed, future-proofing with a level of additional ducting is sensible and cost-effective, though the proposed 1 in 2 bay requirement appears excessive.

Non-residential buildings undergoing major renovation

We would request further definition of “major renovation.” If the renovations don’t include the car parking area, then the proposals should be the same as those for existing non-residential building as there will be no notable savings from carrying out EV parking bay provision at the same time as the renovation.

Existing non-residential buildings

We propose that the regulations permit a reduced number of charge points where a site installs 25kW+ DC charging provision. As an example, a 50kW rapid charger can facilitate a far greater number of charging sessions in comparison to a 7kW unit. We would propose equating 1 x 25kW DC unit to 4 x 7kW AC sockets and 1 x 50kW DC unit to 7 x 7kW sockets.

Question 53

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

Exemption	Scottish Government preferred options
Buildings owned and occupied by SMEs.	No intention to apply.
Building permit applications or equivalent applications have been submitted by 10 March 2021.	Not applicable as date of exemption has passed.
If ducting infrastructure required would rely on micro-isolated systems and if this would lead to substantial problems for local energy system operation and endangering grid stability.	No intention to apply.
Cost of recharging and ducting infrastructure exceeds 7% of total major renovation cost.	Apply to both residential and non-residential buildings undergoing major renovations.
A public building is already covered by comparable requirements according to transposition 2014/94/EU.	No intention to apply.

We would suggest that a reduced infrastructure requirement should be permitted where a clear case can be evidenced:

- A site that is in close proximity of large-scale EV charging provision
- Where value for money cannot be demonstrated, should excessive works for enabling duct provision be required?
- Where a new DNO supply is required to meet either current active or future passive bay activation requirements – we would suggest a maximum DNO cost (including civils) that could act as a threshold. Without this, there will be many situations where a high level of ducting is being installed that will be unlikely to lead to activated EV bays due to cost/grid constraints. Where large potential DNO costs arise, we would suggest consideration of:
 - Whether central funding could be accessed for assistance
 - Whether lesser infrastructure provision (not requiring DNO upgrades) would be acceptable
 - Closer analysis of forecasted demand

Question 54

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?

With the high levels of proposed active and passive EV bay provision (and the cost implications), there could be an incentive for abuse of the regulations. Monitoring and enforcement of ducting provision will be challenging and there could be situations where ducting is placed in areas where there are no intentions of converting to active EV bays but where those ducting locations are lower cost to implement. We would not be able to propose a monitoring or enforcement system that would be effective, though as an organisation we would commit to robust and transparent (and evidenced) self-reporting of adhering to policy.

Question 55

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?

We note that there has been a widespread lack of coverage of accessible EV parking bays across Scotland and are encouraged that this is being considered through policy. We have seen best practice throughout the public charging infrastructure deployed by East Lothian, South and East Ayrshire Councils and would agree with the proposed provision within this consultation.

Question 56

Do you have any other views that you wish to provide on EV section of the consultation (e.g. the minimum standard of EV charge point or safety within the built environment).

- Within the proposals there is no definition for the ducting, in particular whether it would be required to connect back to a power source. Without this clarification there is a risk of ducting being installed without being fit for purpose for easy EV bay activation.
- The proposals place a new requirement on organisations to provide refuelling facilities for our staff, which is an area we would query in terms of the fair expenditure of customer charges for Scottish Water. The consultation does not set out a framework for organisations to recover this cost over time from those that use it however Scottish Water would need to set a fair price in comparison

with other publicly available chargers. Due to our forecast utilisation levels we think it unlikely that we could recover the capital cost involved in adhering to these proposals.

We have provided detail on one of our largest sites below to illustrate the implications of the proposals. With hundreds of relevant sites across Scotland, the potential cost implications of the current proposals are significant to our organisation.

Example – The Bridge, Buchanan Gate Business Park. Cumbernauld Road. Stepps. G33 6FB.

- 456 parking bays
- Currently 10 bays of charging infrastructure
- Please see below car park layout (all bays within yellow boundary under Scottish Water ownership)
- No reports of any car parking pressures (i.e. always available bays)



Whilst we don't have precise data on this topic, it would be reasonable for us to assume:

- Based on the consultation's statistics for North Lanarkshire and assuming full occupancy of the 456-bay car park, around 192 vehicles might belong to individuals who do not have a dedicated parking space at home. If an employee has a charge point at home, it would be reasonable to assume that they would opt for that lower cost charging option, rather than workplace charging.
- Of those 192 vehicles it would be reasonable to assume that they may need a full day charging session, between once a week and once a fortnight (based on average daily mileages in Scotland and on the assumption that a full day charging session provides a full recharge)
- Working on a conservative once-a-week basis, then at any one time 38 vehicles may be required to charge simultaneously (192 vehicles divided by 5 working days)
- The above does not consider the motorway network around Stepps and the likelihood of forthcoming public rapid charging provision (which may negate some of the requirement for workplace units).
- The above assumes high levels of office occupancy and does not take into account new hybrid working patterns which means it is unlikely that all 456 parking bays will be in use at any one time. Whilst difficult to quantify at this stage, we expect the car park to be no more than half full (228 bays) at any one time in the future. Working pro-rata from the above assumptions, this would lead to a possible maximum requirement at any one time for 19 bays of charge points (i.e. 1 in 24 bays)
- Under the current 1 in 2 ducting requirements, we would strongly note the following implications:
 - The lowest cost route would be for us to install ducting at the areas highlighted in red below (c. 400m of ducting)



- Using typical trenching costs, we would estimate this to cost in the region of £30,000. In addition, internal works (e.g. routes to proposed electrical supplies) in excess of £15,000 may be required.
- The 1 in 10 bay proposal for active charge points, would lead to an estimated additional cost for Scottish Water at this site of £140,000 as well as an on-going maintenance burden.
- Due to extremely long potential future cable runs back to the power supply, oversized cabling would be required to prevent voltage drop (or a series of feeder pillars be required across the site) which would bring a large additional future cost
- The current proposals would require for us to provide ducting to 228 bays. Should these all be activated with 7kW charge points this would add an additional 1,596 kVa load to the site and requiring a new substation at an estimated minimum cost of £40,000.
- Even on a load managed system across 228 bays (each would have to be set with a 10a/2kW minimum to meet vehicle charging specifications) this would require a 456 kVa additional capacity. We would stress that our current agreed capacity on site is 350kVa, so if all ducted bays were activated at some stage in the future (even on a load managed system), then we would have to more than double the electrical capacity on site.
- There is a clear environmental impact to trenching and using tarmac across a significant volume of bays, some of which we can state with confidence will never all be activated.