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To: Traction Electricity Steering Group (TESG)

9 May 2014

Dear colleague,

Proposed Rules Change: Scotland electrification – changes to ESTA boundaries

1. Purpose

Prior to CP5, ESTA (electricity supply tariff area) descriptions were set out in Schedule 7 to the Track Access Agreements. Since the start of CP5, ESTA descriptions have been moved to the Traction Electricity Rules (TER)¹. The reason for this was to allow changes to be more easily made, as ESTA design changed over time, usually due to new electrification.

The purpose of this letter is to:

- (a) notify you of newly electrified lines from Springburn to Cumbernauld (March 2014) and from Rutherglen to Coatbridge (August 2014); and
- (b) to consult you on our proposal to reflect both of these newly electrified lines in changes to the descriptions of ESTA E and S in the TER.

The proposal we are consulting on is to amend the ESTA descriptions in Appendix 5 of the TER. The proposed change is to add “Barnhill” as an additional boundary point in the descriptions of both ESTA E and S.

This proposal is made in accordance with paragraph 11 of the TER to amend Appendix 5 (the Geographic Areas).

2. Structure

This letter is structured as follows:

- Scotland electrification;
- Proposed changes to Appendix 5 of the TER;
- Next steps;
- [Annex A](#) – ESTA diagrams; and

¹ Accessible here: [http://www.networkrail.co.uk/on-train-metering/traction-electricity-rules-\(from-1-April-2014\).pdf](http://www.networkrail.co.uk/on-train-metering/traction-electricity-rules-(from-1-April-2014).pdf)

- [Annex B](#) – Background information on ESTAs.

3. Scotland electrification

There is a rolling programme of new electrification in Scotland throughout CP5² and into CP6³. The new electrification schemes are short extensions of existing electrification. The proposed timescales for this electrification is set out below:

- 2014: Springburn to Cumbernauld and Rutherglen to Coatbridge;
- 2016: Glasgow to Edinburgh & Stirling via Falkirk and Glasgow to Edinburgh via Shotts;
- 2018: Stirling to Alloa; and
- CP6: East Kilbride line.

A diagram of the current ESTA configuration is illustrated in [Figure 1 in Annex A](#).

3.1 *Electrification in 2014*

- **Springburn to Cumbernauld:** In March 2014, a new neutral section was installed near Barnhill station, just south of Springburn. Since just one new neutral section was installed at the western end of the new section, it is not possible to separately switch the new section which means there is only one possible feeding arrangement. The section of line north of the neutral section is supplied from Parkhead GSP (grid supply point) in ESTA E and the much longer section to the east of the neutral section is supplied from Gowkthrapple GSP in ESTA S; and
- **Rutherglen to Coatbridge:** In August 2014, this line will be supplied from Eglinton Street and Gowkthrapple GSPs. Both of these GSPs are in ESTA S, therefore there is only one option for this section.

3.2 *Potential financial impact*

The distribution system loss factor (DSLFs)⁴ in ESTAs E and S are the same – both are set at 4.23%, therefore we consider the impact relating to transmission losses would be nil. Distribution and transmission charges will see minor changes as the expected additional consumption will be relatively small. With no additional GSPs, the fixed distribution costs will be shared over the higher consumption, therefore the existing consumption will likely to see marginally lower distribution costs.

4. Proposed changes to Appendix 5 of the TER

The proposed changes to Appendix 5 (the Geographic Areas) in the TER are set out in the extract of the appendix below - they are shown in **bold and underlined**:

² Control Period 5 - this is the period from 1 April 2014 to 31 March 2019.

³ Control Period 6 - we expect this to be the period from 1 April 2019 to 31 March 2024.

⁴ This is explained in more detail in Annex B.

ESTA	Traction electricity Geographic Area / Tariff zone	Description
S	Scotland Glasgow	Comprises the electrified routes in Scotland between the neutral sections at Barnhill , Coatbridge, Rutherglen, Bishopston, Lochwinnoch and Carstairs and Auchengray (between Edinburgh and Carstairs).
E	Scotland North & West	Comprises the electrified routes in Scotland on the North Clyde bounded by the neutral sections at Barnhill , Coatbridge, Rutherglen and Haymarket; the routes from Bishopston neutral section to Gourock and Wemyss Bay and the routes from Lochwinnoch neutral section to Ayr and Largs.

We consider this to be the only reasonable configuration, as no other feeding options are available.

We are proposing that these changes would take effect from the point at which services have/will start.

A diagram of the proposed ESTA configuration is illustrated in [Figure 2 in Annex A](#).

5. Next steps

We are inviting submission of written representations in respect of this proposal. **Please send your response, in electronic format, to Jashim Uddin at Jashim.Uddin@networkrail.co.uk by 5 June 2014.**

Subject to no material modification of this proposal, as soon as is reasonably practicable, we will submit the proposal to ORR for approval.

We note that this proposal relates to changes that have already happened, and therefore these ESTA changes have already been applied in Network Rail's billing system. We do not consider our proposal to be controversial, since we consider this to be the only viable option for ESTA configuration. However, if the outcome of this consultation resulted in a different ESTA configuration, then we would process an appropriate recharge.

If you would like to discuss any of the issues in this letter and/or its annex, please contact Alan Bullock (Alan.Bullock@networkrail.co.uk) or Jashim Uddin.

Yours sincerely,



Ekta Sareen

Senior Regulatory Economist, Network Rail

Annex A – ESTA diagrams

Figure 1: Current configuration of ESTAs in the Glasgow area



Figure 2: Proposed ESTA configuration in the Glasgow area from May 2014



Annex B – Background information on ESTAs

Background

ESTAs represent physically separate parts of our EC4T network. Reflecting this they are also used for billing purposes to charge train operators for Electric Current for Traction (EC4T). In particular, the year-end volume reconciliation and (for CP5) delivery costs for the year-end cost-reconciliation are calculated by ESTA; and the uplift on metered consumption to reflect transmission losses varies by ESTA.

ESTAs are primarily defined by the physical electrical boundaries, between GSPs.

On the AC overhead line system, GSPs are in insulated areas known as 'neutral sections'. It is possible, through switching, to extend feeding areas to cover maintenance and/or operational outages of adjacent GSPs. Most GSPs have two separate circuits which effectively back each other up. Where possible, ESTA boundaries are located between two double circuit GSPs. There are currently 16 AC only ESTAs.

The DC systems are continuous at the DC third rail, so it is not possible to specify boundaries by way of neutral sections. For this reason the DC systems are not split across GSP boundaries. There are currently two DC only ESTAs, one for south England (ESTA U) and one in Merseyside (ESTA M). There are also two ESTAs (R and T⁵) where both AC and DC power is provided and billed.

Transmission losses

Operators who are charged by way of metered data are charged an uplift on their metered consumption⁶, to recover the cost of transmission losses, this is known as the distribution system loss factor (DSLFF). Metered operators are charged a DSLF specific to each ESTA, which is fixed over CP5.⁷

Delivery charges

Delivery charges recover the costs incurred by Network Rail in respect of the delivery of traction electricity from the power station to Network Rail through transmission and distribution networks for each GSP. These charges are also differentiated by ESTA: this is because delivery charges vary by GSP. The charges relating to each GSP are grouped according to ESTAs, this gives a reasonable compromise between data processing and localised charging.

Physical ESTA changes

ESTA boundary changes are normally required if a new GSP is introduced in such a way as to change the location of the boundary neutral section. This would reflect a physical alteration to the EC4T network – most likely as a result of new electrification. These changes may be permanent or temporary. To ensure operators are correctly charged for their EC4T usage, any changes to the ESTA

⁵ There is also a very short stretch in ESTA P which uses both systems

⁶ For metered operators this is currently applied as an uplift on gross metered consumption only (i.e. it is not applied to energy regenerated through regenerative braking).

⁷ These are set out in Appendix 3 of the Traction Electricity Rules.

boundaries within the billing system should be synchronised with the physical changes, which could occur at any time during a control period.

ESTA descriptions

ESTA descriptions are currently set out in Appendix 5 of the TER. Any contractual changes to the descriptions of ESTAs may be formally amended through the change provisions for the TER, which are set out in paragraph 11 of the TER.