



To distributors, customer groups
and other interested parties

*Promoting choice and
value for all customers*

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Dear colleague,

Open Letter Consultation on Electricity Distribution Network Planning – Engineering Recommendation P2/6

On 1 August 2007, we published an open letter consultation on distribution network planning and in particular, Engineering Recommendation P2/6 (ER P2/6)¹. We also published a report commissioned by us and produced by KEMA and Imperial College (KEMA/IC) which provided a preliminary review of ER P2/6².

On 14 September, we held an open workshop to discuss the issues raised by the open letter. There were 27 attendees. The workshop presentations and summary notes have been published on our website together with the written responses to this consultation.

This letter brings together the views that have been expressed by stakeholders and recommends the actions that we believe now need to be taken. A summary of the comments we have received is set out in Attachment 2 of this letter.

Introduction

ER P2/6 is the current distribution network planning standard. It comes under the governance of the Distribution Code Review Panel (DCRP)³. The Distribution Network Operators (DNOs) have a licence obligation⁴ to plan and develop their systems in accordance with ER P2/6. The standard is also referenced in the Distribution Code⁵. The standard and its predecessor, ER P2/5, have helped to deliver secure distribution networks for the last 30 years, resulting in quality of supply indices that compare favourably with other European countries.

The open letter raised a number of questions relating to ER P2/6 and explained our objectives in initiating this consultation. In summary this is to ensure that ER P2/6 remains fit for purpose and that the obligations on DNOs relating to ER P2/6 are clear.

¹ http://www.ofgem.gov.uk/Networks/Techn/TechStandds/Documents1/P2_6%20review%20open%20letter%20-%201%20August.pdf

² http://www.ofgem.gov.uk/Networks/Techn/TechStandds/Documents1/KEMA_Imperial_D_Planning_Review_Final.pdf

³ ER P2/6 is noted in Annex 1 of the Distribution Code. The Distribution Code's governance of electrical standards procedures apply to all standards listed within Annex 1.

⁴ Standard Licence Condition 5 of the Electricity Distribution Licence

⁵ <http://www.dcode.org.uk/>

Ofgem's Views

Here we set out our views on the issues raised by the consultation and the conclusions we have drawn. It is structured in the same way as the 1 August open letter.

Is there adequate clarity in the licence drafting?

The open letter explained our concerns about the clarity and consistency of Standard Licence Condition 5 (SLC5) and ER P2/6. It also set out a number of possible options to address this. These were:

- i. Do nothing.
- ii. Delete the SLC5 (1) reference to ER P2/6 and rely on quality of supply output incentives to drive network design.
- iii. Retain the SLC5 (1) reference to ER P2/6 but encourage changes to the wording of P2/6 to remove the present ambiguity about enforceability.
- iv. Change SLC5 (1) to refer to more specific obligations rather than to ER P2/6 in general.

The difference of views expressed by respondents on this key issue confirms our original concern and leads us to conclude that improvements should be made to ER P2/6 and/or the distribution licence.

Of those respondents that selected one of the options above, four selected option (iii) and no respondent selected (i), (ii) or (iv). We will pursue this issue further as part of the current distribution licence review and consider how to redraft the licence condition to provide clarity on the obligation. We consider that changes to the drafting of ER P2/6 could also be helpful and therefore request the distribution licensees to consider whether changes would be beneficial to improve the clarity of the obligations on licensees taking account of any changes made to SLC5. A report to the Authority should be made by 30 June 2008.

Issues raised by KEMA/IC to be addressed in the short term

As stated in the open letter, KEMA/IC's report has helped to highlight the following issues that could be addressed in the short term:

Clarity of definitions of Group Demand and Transfer Capacity

The open letter asked whether Group Demand and Transfer Capacity could be more clearly defined.

One respondent considered the definitions of Group Demand and Transfer Capacity adequate, one saw little deficiency but recognised some interpretational ambiguities and seven saw a need to improve the clarity of one or both definitions. Various views were expressed as to the ambiguities of these definitions and of redundancy required after first and second circuit outages and how this relates to transfers. In light of the responses it would appear that these definitions and the drafting of ER P2/6 with respect to first and second circuit outages could be improved to aid clarity. We therefore request the distribution licensees to consider whether changes would be beneficial in relation to the concerns raised by this consultation with respect to Transfer Capacity and Group Demand. A report to the Authority should be made by 30 June 2008.

Loading conditions against which network capacity assessments are made

In light of increasing summer loads being reported, the open letter consulted on the need for the planning standard to refer explicitly to the consideration of critical network loading conditions when planning the system.

All respondents that expressed a view recognised the importance of designing to critical loading conditions (irrespective of the season in which these might occur). We therefore request the distribution licensees to consider whether changes would be beneficial in relation to the concerns raised by this consultation with respect to critical network loading conditions. A report to the Authority should be made by 30 June 2008.

Co-ordination of substation design at Grid Supply Points

The open letter asked whether substation design at Grid Supply Points (GSP) could be better co-ordinated between DNOs and National Grid Electricity Transmission (NGET). We acknowledged that a Grid Code Review Panel Working Group has recently reviewed the data flows between DNOs and NGET relating to ER P2/6 compliance at Grid Supply Points. This Working Group published its report earlier this year⁶. Following a consultation process NGET has now submitted its report⁷ to us proposing changes to the Grid Code.

The key issue raised in NGET's consultation was the need for separate compliance assessments to be made for each side of the ownership boundary at GSPs. Respondents also noted that duplication of this work introduces a risk of inconsistent analyses given the differences between the GB Security and Quality of Supply Standard (GB SQSS) and P2/6 requirements.

This concern was also raised by respondents to the open letter. There were further concerns over changes in the design of GSPs and the resulting impact on reliability to customers and the operational management of transfer capacity. We recommend that all issues relating to the planning of GSPs are considered together so that a coherent way forward is identified. We are currently considering our response to NGET's report to the Authority in relation to Grid Code change proposal B/07. We will provide further guidance on this issue in our decision on B/07.

Early experience of ER P2/6 on the treatment of distributed generation

In the open letter we asked for views on the changes introduced by ER P2/6 in relation to distributed generation and early experience of their application in assessing the contribution of distributed generation to the capacity of a network to meet group demand.

Those respondents that addressed this issue agreed that there was currently insufficient experience to form a view as to the effectiveness of the changes introduced by ER P2/6. One respondent did comment that the contribution of all distributed generation should be considered even if it was below the de-minimis value specified in ETR-130, both for deferring reinforcement and in charging methodologies (so as to incentivise the connection of distributed generation).

We agree that the level of penetration of distributed generation since the implementation of ER P2/6 has been too low to judge whether changes introduced in ER P2/6 allow appropriate consideration of the contribution of distributed generation to the capacity of a network to meet group demand. We therefore do not see a case for a review of these aspects of ER P2/6 at present. However, we will ensure that the current and future price control incentives for distributed generation, the further development of the DNOs' charging methodologies and the development of Engineering Recommendations G75 and G59⁸ all support the growth of distributed generation.

⁶ <http://www.nationalgrid.com/uk/Electricity/Codes/gridcode/workinggroups/p25wg/>

⁷ <http://www.nationalgrid.com/NR/rdonlyres/0EB8B905-6FDD-412A-96DD-F4225D41BA6B/20296/B07ReporttotheAuthorityIssued.pdf>

⁸ The Engineering Recommendations relating to the connection of distributed generation as referenced in Annex 1 of the Distribution Code.

Issues to consider for longer term

In the open letter we also invited views on the following issues to be considered in the longer term:

How might the standard be updated to accommodate developments such as active networks, demand side management and virtual power plants (VPP)?

Respondents that considered this question all expressed the view that further development of active network scenarios is required to inform discussion before attempting to change design standards. The ongoing work of the Electricity Network Strategy Group's (ENSG) Distribution Working Group (DWG) and Ofgem's Long Term Electricity Networks Scenarios (LENS) project are likely to be helpful in developing thinking on these matters.

Would there be significant value in re-examining the reliability calculations which underpin ER P2/6?

Two respondents believe that there would be value in re-examining the reliability calculations which underpin ER P2/6, whilst two see little value in this. While we understand the reasoning behind this view we are not persuaded at present that the benefits of such an exercise would justify the time and resources required to carry out this work. This position should be reviewed if a case can be made for a more fundamental review.

Should the standard be updated to take account of longer construction outages as well as maintenance outages, and the additional risk to consumers that these outages may present?

There was a consensus amongst the respondents that addressed this question that construction outages are presenting increasing operational challenges to the DNOs. We acknowledge that the extended outages necessary for some construction projects, combined with higher off-peak demands, increase the risk of customer interruption. However, this risk remains at very low levels in most situations and customers are protected by the financial incentives from the Interruptions Incentive Scheme (IIS) and Guaranteed Standards of Performance (GSoP). The question is whether this issue should be addressed as a network planning issue or an operational one?

Our view is that this issue should be considered as an operational one initially. We also see some linkages to the discussion of High Impact Low Probability (HILP) events which is currently in train. We welcome the work of the ENA's Urban Reliability (HILP) Working Group on this issue. We consider that, as proposed by a number of respondents, there may be scope for the development of an industry code of practice for the operational management of all planned outages but particularly those that pose significant risk to customers. Guidance could extend to the cost-benefit analysis of building off-line or installing temporary mitigation measures. We would encourage the DNOs to consider the development of such guidance or alternative ways to better assess and manage the risk to customers.

We would not rule out a future change to ER P2/6 to address this issue but there would have to be a substantial case for this if its effect was to increase redundancy and/or transfer capacity in networks and therefore increase costs to customers.

Is there scope to remove the requirement of the design standard for smaller sizes of group demand (e.g. demand groups up to 60MW) and rely purely on output incentives (IIS) as the network design driver for these demand groups?

Respondents to the open letter generally agree that quality of supply performance incentives are the overriding driver of network design up to 60MW Group Demand. However, on balance most respondents took the view that ER P2/6 should continue to

apply to all demand classes to provide a minimum design threshold. We support this view but will consider the issue again when we carry out the two year review of the simplified regulation arrangements that were implemented on 6 March this year. Any further development of the quality of supply incentives will also be taken into account.

How should environmental and sustainability issues be considered in the design standard?

Several respondents consider that the use of full-lifecycle costs (including taking account of losses, cost of carbon and environmental/societal impacts) in network design should be encouraged or required. Whilst we recognise the importance of producing economically efficient design solutions over the full life of installed assets we believe that this is outside the scope of ER P2/6 which purely deals with levels of system security. Carrying out full-lifecycle cost benefit analysis should be part of network design in order to comply with the general duties of licence holders to develop and maintain an efficient, co-ordinated and economical system of electricity supply as laid down in the Electricity Act 1989, Section 9(1). ER P2/6 defines minimum security criteria but these do not dilute the obligations on distribution licensees under the Act or under the licence.

How should the standard be updated to take account of climate change, in particular higher summer loadings and reduced ratings of plant due to higher ambient temperatures?

Respondents generally see the effects of climate change on network design to be manifest in changing seasonal demands (reduced variation between summer and winter loadings, reducing opportunities for maintenance outages) and critical network loading (impacted by the effect of higher ambient temperatures on plant ratings). This would not appear to require changes to ER P2/6 itself but it will impact on the issue of critical network loadings which is dealt with above.

Additional Points

In addition to the above points, the open letter also invited comments on the recommendations and analysis in KEMA/IC's report. The open letter responses together with our views and recommendations are addressed in Attachment 1. Where these are not addressed above they are briefly summarised here.

Connection of Generation – the issues of connection standards and energy transfer across DNO networks were raised. We remain of the view that generation connections should be agreed bilaterally between the generator and the DNO. We also welcome the review of ER G75 and ER G59 and would encourage generator involvement in this process. We agree that the issue of bulk energy transfer across a DNO network, particularly in relation to the connection of offshore wind generation, is a new development. This is likely to affect only a limited number of networks and so would best be dealt with through bilateral agreement between a DNO and NGET. We would encourage parties to advise us of any material issues which arise with this approach.

Operational Co-ordination between DNOs and the TSO – we see this issue as outside the scope of ER P2/6 and we propose that the GCRP and DCRP develop a proposed way forward to meet the concerns of all stakeholders.

Frequency of Supply Interruptions to customers - we consider that this issue is best dealt with by the multiple interruptions Guaranteed Standard (GSoP), ensuring that this is well meshed with IIS. This is being reviewed as part of Distribution Price Control Review 5 (DPCR5).

Summary of Decisions

In summary, the Authority has decided to:

- Address the clarity of the SLC5 obligation as part of the licence review project.
- Request, in accordance with SLC9(2), the distribution licensees to consider whether changes to ER P2/6 would be beneficial to improve the clarity of the obligations on licensees taking account of any changes made to SLC5. A report to the Authority should be made by 30 June 2008.
- Request, in accordance with SLC9(2), the distribution licensees to consider whether changes to ER P2/6 would be beneficial in relation to the concerns raised by this consultation with respect to Transfer Capacity, Group Demand and critical network loading conditions. A report to the Authority should be made by 30 June 2008.
- Recommend that the distribution licensees consider the need to address the issue of construction outages and develop good practice guidance to better assess and manage the risk to customers.
- Recommend that the distribution licensees continue to engage actively in the issues relating to the co-ordination of planning of GSPs.

The Authority does not consider that the issues of supply interruption frequency, construction outages or generation connections are best addressed through ER P2/6 at this stage.

If you have any queries in relation to the issues raised in this letter please do not hesitate to contact Gareth Evans on 020 7901 7347.

Yours faithfully,



Martin Crouch
Director – Electricity Distribution

Signed on behalf of the Authority and authorised for that purpose by the Authority

KEMA/IC Report – Additional Points

In addition to the points raised by us in the open letter we also invited comments on the recommendations and analysis in KEMA/IC's report. Some of these points are addressed in the main letter. The remainder are addressed here.

"Energy exports and transfers across distribution networks: *In future, it may be important to quantify distribution network security required to transport the output from offshore generation connected via distribution networks. A possible development path to accommodate such a scenario would be to ensure that the industry codes and governance procedures for both transmission (on and offshore) and distribution are developed on a consistent basis."*

Three respondents considered that the security requirements of DG connections (in particular offshore wind farms) need to be considered and standards laid down either within ER P2/6 or separately. We recognise this as being a significant new issue for particular DNO networks. However, this is likely to affect only a limited number of networks and so would best be dealt with through bilateral agreement between a DNO and NGET. We would encourage parties to advise us of any material flaws in this approach.

"Distributed Generation Connection Criteria: *It is recommended that connection requirements continue to be agreed on a bilateral basis between generators and DNOs. It is not essential for the distribution planning standard to contain prescriptive guidance with respect to generator connection criteria."*

One respondent gives a counter viewpoint, saying that there should be a recognised baseline level of security in a standard connection arrangement. We consider that the design of distributed generation connections should be based on commercial as well as technical criteria and agreed on a bilateral basis between the generator and the DNO.

It is worth noting that technical aspects of connection are largely standardised through compliance with ER G59 and ER G75, which are currently being reviewed by DCRP. We would encourage greater generator involvement in this process.

"Operational co-ordination between DNOs and the TSO: *It is recommended that requirements for DNOs to provide transfer capacity to the TSO are clarified in order that the risks apparent to the respective network operators (and the corresponding customer groups) are clearly understood and that co-ordinated approaches to risk mitigation can be adopted."*

One respondent considers the potential for tension between the DNOs and NGET where DNO transfer capacity is required to resolve a security non-compliance at a GSP, possibly placing its customers at single circuit risk. Whilst Ofgem encourages operational co-ordination between DNOs and the TSO in order to reduce risk and improve efficiencies we recognise that ER P2/6 is currently purely a design standard, not an operational standard, and see this being developed outside of ER P2/6. We propose that GCRP and DCRP develop a proposed way forward to meet the concerns of all stakeholders.

We also note that this issue was raised as part of the GCRP Working Group who agreed that GB SQSS requires the transmission system to be secured pre-fault. Therefore NGET seeks demand transfers as a precautionary measure. Grid Code change proposal B/07 includes proposals to enhance information exchange about demand transfer options that the DNO wishes to declare as available for use in compliance assessments. We are currently considering our response to NGET's report to the Authority in relation to Grid Code change proposal B/07.

"Frequency of Supply Interruptions to customers: *It is recommended that the distribution planning framework (planning standard, Guaranteed Standards or incentive arrangements) be developed to specify maximum expected interruption frequencies for individual customers. The determination of appropriate provisions will require further modelling and analysis."*

Two respondents bring this out as an issue, with one suggesting an incentive aimed towards discrete groups of customers (rather than individual customers). Another considers that whilst there is a Guaranteed Standard addressing this, it may be geared too low to drive investment. Ofgem recognises that a minimum frequency of supply interruption would benefit certain customers (since CIs deal with system wide averages rather than performance seen by individual customers or groups of customers). We also recognise that ER P2/6 as it stands purely deals with system security (in terms of levels of redundancy) rather than with performance of the network and its individual components (in terms of reliability/mean time between failures). We consider that this issue is best dealt with by the multiple interruptions GSoP, ensuring that this is well meshed with IIS. We consider that this should be reviewed as part of DPCR5.

"Lifecycle costing: *In order to ensure network performance and costs are optimised in the long-run, it is recommended that DNOs increasingly adopt lifecycle costing practices when reinforcing and extending their networks."*

Whilst not explicitly covered by the open letter this was covered by many respondents in their responses to the sustainability issue which we have addressed in the decision letter.

"Common Mode Failures: *It is recommended that the risks associated with common mode failures be investigated further. Should these risks be confirmed to be material, it is recommended that ER P2/6 be amended to include guidance regarding the minimisation of Common Mode Failure risks."*

Whilst not explicitly brought out by the open letter this features in several responses, often in HILP event discussions. Respondents generally see a need to consider common mode failures in more detail, and to discuss how best to improve network resilience by economically designing out common mode failures. Ofgem believe that general guidance on reducing common mode failure risks through network design could be beneficial. Consideration of common mode failures would also be beneficial in HILP discussions. Ofgem would welcome the further development of these issues by licensees.

**Open Letter Consultation on Electricity Distribution Network Planning –
Engineering Recommendation P2/6
Summary of Consultation Responses**

Introduction

In total, 11 responses were received one of which requested confidentiality. A list of the 10 remaining respondents is shown in the table below.

Respondent	Company
1	United Utilities
2	Renewable Energy Association
3	CE Electric UK (CE)
4	EDF Energy Networks (EDF)
5	Scottish Power T&D (SP)
6	energywatch (ew)
7	Scottish & Southern Energy
8	Electricity Networks Association
9	Western Power Distribution
10	Central Networks

Summary of Responses

Comments – Short Term

The comments below have been extracted from the responses and presented in the format of the consultation open letter.

Is there adequate clarity in the licence drafting?

Several respondents expressed the view that the current licence drafting made it an absolute requirement to design their systems based on the levels of redundancy required for compliance with ER P2/6. Others thought that the clarity of the drafting could be improved and that this would be helpful.

Of the respondents that expressed views most considered that no changes were necessary to SLC5 (1), but one considered the possibility of minor changes to aid clarity. Six respondents supported option iii from the open letter.

One respondent suggested an alternative option to address areas of ER P2/6 where they see a need for additional security of supply requirements (such as CBDs), and to reflect that ER P2/6 is a guidance document allowing departure from Table 1 requirements when cost benefit analysis supports.

Can Group Demand & Transfer Capacity be better defined?

Of the respondents that expressed views one thought that the terms were adequately defined, one saw little deficiency but recognised some interpretational ambiguities and seven saw a need to improve the clarity of one or both definitions.

Particular issues that were brought out were:

- How to deal with the demand associated with single large customers who have non firm connections?

- What demand is supported under second circuit outage in class E (is this two thirds of Group Demand or the maximum demand in a season other than the season of peak demand)?
- Ambiguities regarding first and second circuit outages.

ACS or Critical Loading Conditions

Of the respondents that expressed a view all recognised the importance of critical loading conditions irrespective of season. Two respondents considered the use of weather correction for other seasons (as well as winter) and one respondent considered the detrimental impact of summer loading on plant maintenance.

GSP Design Co-ordination

Two respondents expressed concerns over replacement of SGTs with fewer larger capacity units.

Two respondents cited conflicts between ER P2/6 and GB SQSS in terms of data required for compliance tests, with another considering that greater clarity is required with respect to responsibility for compliance at the interface. Repetition of assessing GSPs against two slightly different standards was raised as a concern.

One respondent raised the issue of potential increased risk to customers when transfer capacity is provided by the DNOs to the TO.

DG & ER P2/6

Of the respondents that consider DG, none has enough experience of it contributing to security to form a view on the changes made to ER P2/5. One respondent considered that contribution of DG should be considered even if below the de-minimis value specified in ETR-130, both for deferring reinforcement and in charging methodologies based on ER P2/6 (so as to incentivise connection of DG).

Comments – Longer Term

Is there a case for fundamental change now?

There is general consensus among all respondents that there is not a case for fundamental change.

Review for active networks, DSM & VPP (Virtual Power Plant)?

One respondent considered ER P2/6 should continue to provide the network security framework with DSM and VPPs deferring reinforcement costs. Another thought that constraining of generation and its market impact should be considered.

Two respondents highlighted the need to further develop future scenarios to inform discussion.

Re-examine the reliability calculations that support ER P2/6?

Two of the respondents consider that there is a case for re-examining the reliability calculations behind ER P2/6. One of these believes that VoLL may now be different to that originally used. Another believes that reassessment of assumptions regarding switching time, repair time and financial valuation of the cost of outages is required.

One respondent thinks that re-examining the calculations would have little material impact while another thinks that there are insufficient drivers to warrant a re-examination.

Long term construction outages?

There was a general consensus that the issue of construction outages warrants further thought and discussion.

One respondent recommended an industry agreed methodology for assessing acceptability of risks during construction outages and raised the possibility of increased construction costs as a result of mitigating risks. They put forward the suggestion of including busbar faults in SCOs to encourage greater interconnection and transfer capacity.

Another respondent also raised the possibility of requiring risk assessments for construction outages, but added that this assessment framework should be directly associated with IIS and GOS liability and exclusion arrangements to ensure economic development of networks.

A third respondent highlighted that construction outages and associated longer restoration periods would mean thinner firm capacity margins.

Do we need a design standard up to 60MW?

Most respondents that expressed a view considered that a design standard should be in place for all Group Demands up to 60MW.

One respondent believes the standard to be important for networks that are automatic firm (where a single fault or planned outage has no direct customer effect), with IIS now being a stronger driver of operation and design for radial networks.

Another respondent believes that ER P2/6 drives investment for class A, may drive investment for class B, but doesn't tend to drive investment for class C (which is driven by IIS considerations). They also think that ER P2/6 should remain as a backstop where a DNO supplies an IDNO.

A third respondent considers that the design standard should be kept for supply classes A to C since these can still constitute large numbers of customers and a standard supports longer term network development (whereas IIS tends to focus on short term supply restoration).

Factor in environmental/sustainability issues?

Three respondents highlight the need to consider full lifecycle costs of network design, with one emphasising the inclusion of cost of carbon in the lifecycle costing along with other drivers and overall financial costs.

One respondent expressed the view that ER P2/6 should enable appropriate development of networks to cater for DG, active networks and other innovation.

Another respondent considers the need to invest to accommodate fault level contribution from decentralised generation such as CHP, since even if ER P2/6 compliant a first circuit outage (FCO) might require coupling of busbars and therefore increased fault contribution from DG.

Effects of climate change?

Several respondents consider that designs should be carried out to a probabilistic demand rather than an actual demand and that plant capacity should be reassessed in light of climate change and assessed against demand throughout the year.

One respondent emphasises that climate change is already an issue and that high summer loadings mean that the implicit assumption in ER P2/6 that maintenance can be scheduled when demand is less than 67% of Group Demand may no longer be valid.

Comments – HILP

There is consensus among respondents that HILP events should be considered in network design either within ER P2/6 or in a separate document but that further development of thoughts is required.

Three respondents raise the issue of HILP events that cause loss of supply to large groups of customers (for example from loss of a BSP or GSP) in addition to certain CBDs.

One respondent considers that a framework to justify expenditure beyond ER P2/6 should be developed to allow for HILP events and common mode failures. Another thinks that common mode failures need special recognition.

Comments on KEMA recommendations not covered above

“Energy exports and transfers across distribution networks: In future, it may be important to quantify distribution network security required to transport the output from offshore generation connected via distribution networks. A possible development path to accommodate such a scenario would be to ensure that the industry codes and governance procedures for both transmission (on and offshore) and distribution are developed on a consistent basis.”

Several respondents consider that the security requirements of DG connections (in particular offshore wind farms) need to be considered and standards laid down (either within P2/6 or separately).

One respondent highlights the need to recognise the contribution of offshore generation to security of supply.

“Operational co-ordination between DNOs and the TSO: It is recommended that requirements for DNOs to provide transfer capacity to the TSO are clarified in order that the risks apparent to the respective network operators (and the corresponding customer groups) are clearly understood and that co-ordinated approaches to risk mitigation can be adopted.”

One respondent considers the potential for tension between the DNOs and TSO where DNO transfer capacity is required to resolve a security non-compliance at a GSP, particularly where it is required to secure a first-circuit outage. The DNO may be required to implement a transfer which places its customers at single circuit risk for the duration of the first-circuit outage to mitigate the risk of a second transmission outage.

“Frequency of Supply Interruptions to customers: It is recommended that the distribution planning framework (planning standard, Guaranteed Standards or incentive arrangements) be developed to specify maximum expected interruption frequencies for individual customers. The determination of appropriate provisions will require further modelling and analysis.”

Two respondents bring this out as an issue. One suggests an incentive aimed towards discrete groups of customers (rather than individual customers). Another considers that whilst there is a Guaranteed Standard addressing this, it may be geared too low to drive investment. They suggest that there would be merit in considering an ER P2/6 style backstop (possibly in the form of a maximum customer-km product for HV lines).

"Lifecycle costing: In order to ensure network performance and costs are optimised in the long-run, it is recommended that DNOs increasingly adopt lifecycle costing practices when reinforcing and extending their networks."

Whilst not explicitly covered by the open letter this was covered by many respondents in their responses to the sustainability issue.

One respondent stresses the need to consider future known or likely developments, potentially beyond the normal planning period, when planning work on the system. This might result in a more expensive initial scheme but may be the economic solution over the lifetime of the assets.

Other respondents also consider the possibility of schemes with a higher initial cost but which might be economically justified over their lifetime when considering losses, social and environmental costs (such as the lifetime cost of carbon).

"Common Mode Failures: It is recommended that the risks associated with common mode failures be investigated further. Should these risks be confirmed to be material, it is recommended that ER P2/6 be amended to include guidance regarding the minimisation of Common Mode Failure risks."

Whilst not explicitly brought out by the open letter this features in several responses, often in HILP event discussions.

Respondents generally see a need to consider common mode failures in more detail, and to discuss how best to improve network resilience by economically designing out common mode failures.

"Distributed Generation Connection Criteria: It is recommended that connection requirements continue to be agreed on a bilateral basis between generators and DNOs. It is not essential for the distribution planning standard to contain prescriptive guidance with respect to generator connection criteria."

One respondent gives a counter viewpoint, saying that there should be a recognised baseline level of security in a standard connection arrangement, whether onto a distribution system or as an export from a distribution network to the transmission system.

