Northern Powergrid

Competition in Connections Seminar

30th June 2022
Hilton Hotel York

Welcome and overview

Clare Roberts
Connections Input Services Operations Manager

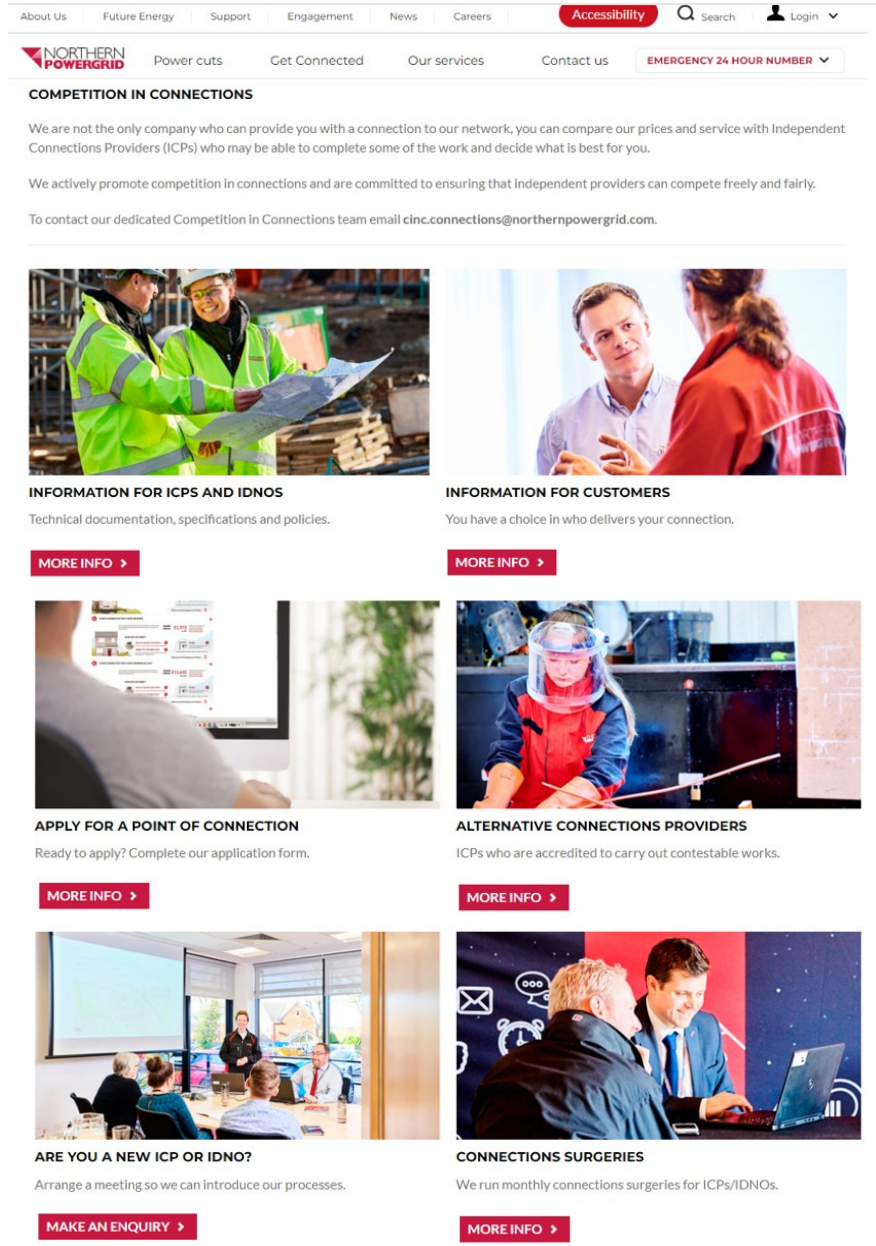
Since we last met

- Published our **business plan** for 2023-28
- **Storm Arwen** tested our network's resilience and our ability to respond
- Progressed our **Green Recovery Scheme** projects – accelerated investment to unlock capacity at 17 locations across our network

NORTHERN POWERGRID

In the last 18 months

- Changes to our Connections Input Services team
- Open data platform - PI (demonstration later in the day)
- Changes to the submission of as-laids/jointer sketches
- Monthly surgeries - virtual and in-person
- Changes to our competition in connection webpage
- What we're thinking about…
  - Design approvals - 60 and 80 day reminders
  - Policy changes - how to keep you updated?
  - Safety briefs
  - Wayleaves portal
  - Engagement strategy



SLC15 performance

- Numbers are increasing
- 2020 figures affected by COVID-19

SLC15 Dashboard summary						
	2018	2019	2020	2021	2022 - Week 22	2022 Forecast
Provision of PoCs	1660	1317	605	1889	1001	2366
Total number of acceptances	413	450	355	474	316	747
Technical Self-Determined	9	113	106	177	69	163
Matrix	432	324	124	439	246	581
Design Approval requests	632	748	459	1045	414	979
Self-Approved Design	228	201	73	193	113	267

2021-22 Annual RMS report

- Nine Ofgem defined Relevant Market Segments (RMS) in total
- In 2010 Northern Powergrid passed Ofgem's competition test in one of the nine RMS
  - LV HV end connections involving HV works
  - Annual report must be submitted to Ofgem each year

Table 1: Competitive activity in Northern Powergrid's DSAs in the Unregulated RMS in 2010-22

	Northeast DSA			Yorkshire DSA		
Report Year	Northern Powergrid market share	Competitor market share	Number of competitors winning work*	Northern Powergrid market share,	Competitor market share	Number of competitors winning work*
2010-11	23.0%	77.0%	6	81.0%	19.0%	8
2011-12	13.0%	87.0%	7	33.0%	67.0%	8
2020-21	9.8%	90.2%	14	23.0%	77.0%	24
2021-22	7.7%	92.3%	23	16.4%	83.6%	35

** These figures exclude a number of Independent Connections Providers ("ICPs") that quoted for work unsuccessfully and excludes any non-ICP related activity.*

Minimising input services

- Metered LV service disconnections (up to a 3ph 80A cut-out - BAU
- Enabling ICPs to create their own asset adoption agreements - BAU
- Revised link box policy - now a dual cut-out arrangement for connections up to 55kVA - BAU
- EHV 132kV PoC mast is now contestable works - BAU
- Any proposals/thoughts going forwards….?

What we've heard from you…

- Challenge of working across multiple DNOs – how to roll out a design that will be accepted by all DNOs?
- Who to contact at NPg?
- MPAN process – why can't it be automated?
- Communication and consistency
- Need for complete and comprehensive policies
- Accessibility and quality of cable records
- Timescales for design approvals
- Connection Offer Expenses
- Wayleaves – timescales and communication

Our business plan for 2023-28

RIIO-ED2 update

Phil Jagger
System Design Manager

RIIO-ED2 update

- Submitted December 2021
- Comprehensive programme of engagement and consultation to build a plan around the needs of stakeholders and customers
- Draft determination published 29 June

https://ed2plan.northernpowergrid.com/

Our Major Works Connections Strategy sets out the commitments we are making to our diverse range of major works connections customers and stakeholders:

- **better and more frequent** discussions with our engineers;
- a new **open insights platform** that will provide access to free analytical tools and comprehensive network data for those who prefer to self-serve; and
- **new automated processes** to streamline the notification of and application for EV charge points and heat pumps, making it quicker, cheaper and easier to connect LCTs.

Customer outcomes		Benefits	Deliverables	Output measure/[1] *indicative input measure*	ED1 to date	ED1 forecast	ED2 target
CN4	Continue to facilitate fair and open competition so that our customers have a choice in who delivers their connection ✓	— Increased choice of connection provider — Quicker connections — Cheaper connections — ICPs/IDNOs will have access to increased levels of network data	CN4.1) Work with ICPs and IDNOs to further minimise input services and extend the scope of contestable works ✓ CN4.2)) Publish guide prices and monthly performance metrics as well as providing clear cost breakdowns in connections quotations ✓ CN4.3) Develop a bespoke AutoDesign platform for ICPs and IDNOs with non-contestable costs. Go-live planned for 2024-25 ✓	**Introduction of customer satisfaction bespoke survey for IDNO and ICP customers**	-	-	2023-24

Open Insights

- Stakeholders told us that network data that is easy to access and understand is critical to making informed decisions about how and where to connect
- Open Insights is a new online platform that brings together all the analytical tools our customers need to self-serve, undertake network planning and connect LCTs

POWER ON

All Utilities. One Provider

HV and LV self-connects in the NPg Region

Peter Adams

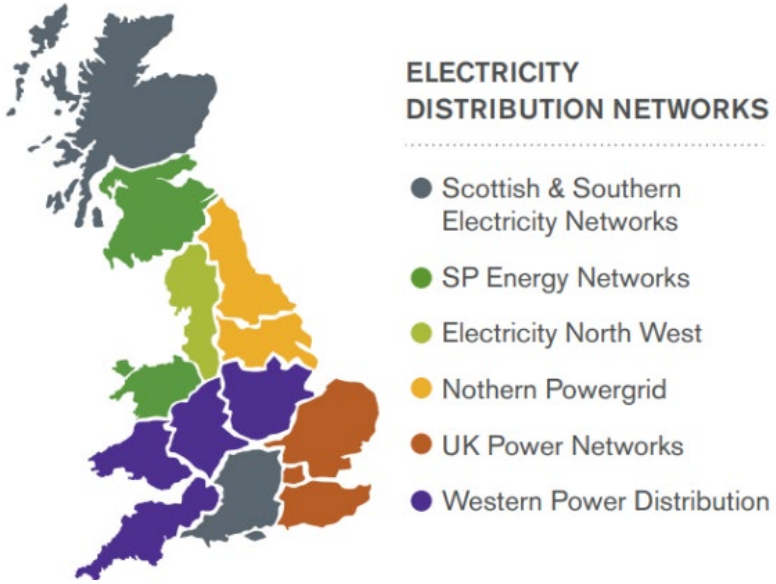
Electricity Water Wastewater Fibre Heat Gas

Today’s Items

- Who are Power On
- Where were we with connections??
- LV self-connects in NPg
- HV self-connects in NPg
- Power On Quality of install
- How to improve process

Who are Power On?

- Power On established in 2003
- Over 295 employees
- Currently one of the biggest ICP's
- 10no offices – National Footprint (incl Scotland)
- Connecting in excess of 1000no HV projects p.a.
- Nationally undertaking Self Determination, Self Design Approval and Self Connect
- Now undertaking MU – electric, gas, water, district heating and fibre



Connections – where we were 15 years ago?

- All design approvals, self-approvals, SAP work and jointing to NPg network was done by NPg
- Waiting times for approvals, getting a slot in the program for the connection
- All schemes and the program associated with it reliant on NPg
- Now in a position where the boundaries are broken down and reliance on Input Services is significantly reduced
- Power On now self approving and doing all schemes as a HV and LV Self-Connect if no overhead lines are involved and or customers interruptions required

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LV Self-Connects

- We undertake all LV connections excluding overhead line – have different jointers authorised with NPg for different cable
- No NPg involvement – excluding audits taken from the weekly whereabouts
- Power On issue connection call off, as laid info and NPg hand over certificate
- NPg have made the process easier – 90% of Link boxes are picked up from the local depot avoiding having to be refunded

HV Self-Connects

- Various Options - Power On carry works under delegated control
- SAP visits site, checks there are no security or access issues, the switchgear is in working order and test stalks are available
- A slot is booked with NPg control desk via the SAP (a slot must be given within 20 working days) and a connection call off from the engineer is submitted to competition in connections
- A HV schedule is then submitted to both NPg and GTC and approval is sent back. NPg confirm is there are any embargos on the switchgear involved
- GTC are involved as the works are carried out under a Transfer of Control Certificate and only moving the open point at the start of the schedule is carried out under NPg control. NPg are notified when the cable is spiked and the sub is made live. When the open point is moved again this is done under NPg control
- The Power On engineer will issue the commissioning documents and as laid info at least 48 hours before the connection date
- Main advantage is NPg involvement is nearly zero now and the time to get a scheme connected from legal engrossments being issued has massively reduced. We can now use our own authorised labour.

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How did we get to this position? *Quality*

POWER ON

Quality of work

- Our construction engineers are trained in the Self-Connect process
- All our jointers and the SAP have been authorised in the NPg school and their authorisations have been kept renewed through our quality team
- Our internal quality team provide workshops and technical audits to all our operational staff along with regular reviews of our authorisation codes
- NPg will audit a percentage of our works based on what we submit on the whereabouts
- All HV Self-Connects involve a video audit which is recorded between the construction engineer and a Senior Manager to check the sub going live. We will check HV terms, earthing install, sub is tidy, correct fire spec, locks and labels etc. at least 48 hours before the connection
- WSHS – Work Safe Home Safe – behavior training

Improvements that could be made

- Delegation of control increased to 48 hours
- AMS (asset management system) input timescales need to be put in place for the North East

POWER ON

All Utilities. One Provider

15 years ago, we were asked .....

When will GTC and Power On agree that competition is fully open in the NPg market?

Electricity Water Wastewater Fibre Heat Gas

POWER ON

All Utilities. One Provider

We responded with “when we can get a connection done in 4 weeks without NPg involvement”…….

Electricity Water Wastewater Fibre Heat Gas

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All Utilities. One Provider

Any questions???

Electricity Water Wastewater Fibre Heat Gas

Smart grid update

Including policy, low carbon technologies and AutoDesign

Chris Artist
Smart grid Development Engineer

Code of Practice updates

- IMP/001/010 - Code of Practice for Standard Arrangements for Customer Connections

  https://www.northernpowergrid.com/sites/default/files/2022-05/4627.pdf

- IMP/001/911 - Code of Practice for the Economic Development of the LV System

  https://www.northernpowergrid.com/sites/default/files/2022-05/4628.pdf

- IMP/001/107 - Code of Practice for Point of Connection assessment using Standard design rules for new and existing Low Voltage connections up to 69kVA

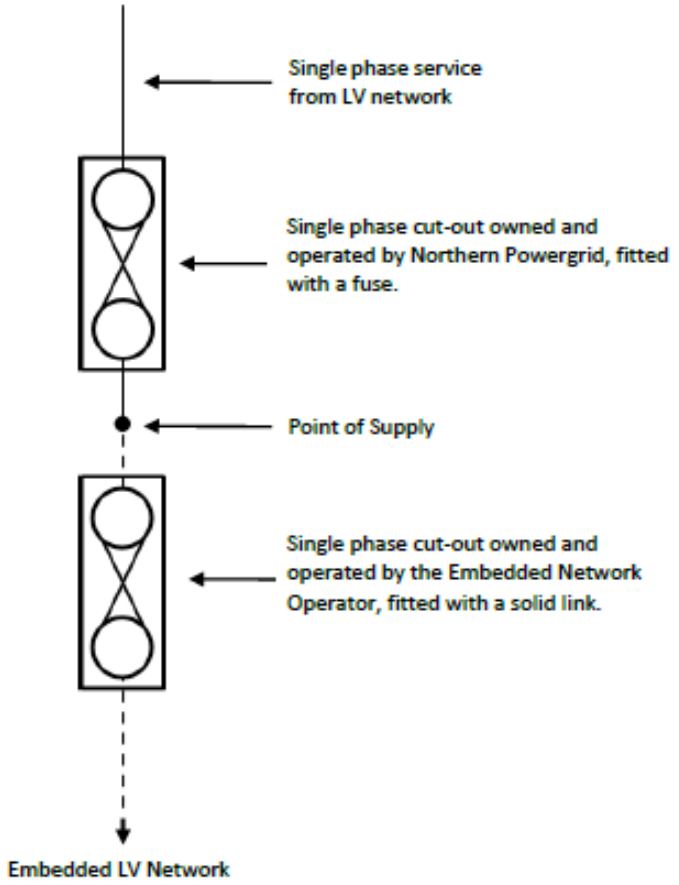
  https://www.northernpowergrid.com/sites/default/files/2022-05/4629.pdf

Code of Practice updates

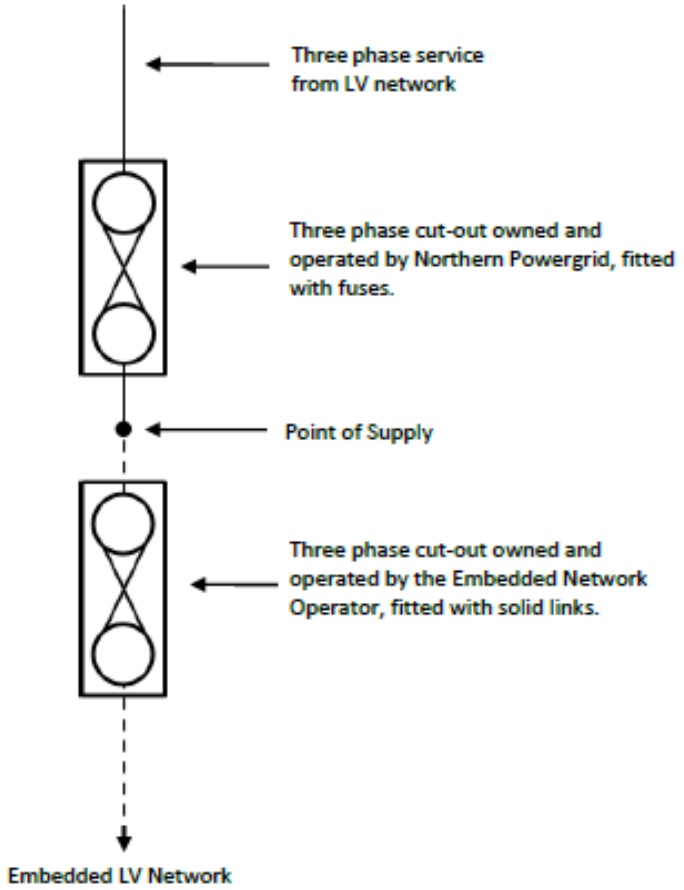
- IMP/001/010 - Code of Practice for Standard Arrangements for Customer Connections
  - Introduction of a dual cut-out arrangement as a point of isolation for embedded networks up to 80A
  - Two cut-outs to be located in a secure weather proof housing
  - Link box remains point of isolation remains for embedded supplies above 80A/55kVA
  - Document published www.northernpowergrid.com/sites/default/files/2022-05/4627.pdf

Single Phase and Two or Three Phase Arrangements

Arrangement 3.2 – Single Phase Supply to an Embedded Network



Arrangement 3.4 – Two or Three Phase Supply to an Embedded Network (Up to 55kVA)



Code of Practice updates

- IMP/001/911 - Code of Practice for the Economic Development of the LV System
  - General update to consider industry changes and net zero initiatives.
  - Guidance added around energy storage devices and customer limitation schemes
  - Pole mounted substation installations will be limited to 200kVA. For 315kVA pad mount substations shall be installed
  - Number of LV ways increased for distribution substation, i.e. 1000kVA will now require 9 LV ways as standard
  - Maximum connections reduced to 80 average across a distribution substation outgoing LV feeders. 100 connections maximum on a single LV feeder
  - 185mm² ABC added as an option for new/replacement O/H line
  - ADMD figures revised. Options for domestic customers with Heat Pump and EV Charge Points included
  - **Revision to be published in July 2022**

Demand calculator

- Demand Calculator to be published which considers all domestic design demand and provides a total for the development in line with the LV Code of Practice
- This will be published with the LV Code of Practice

			Heating/Demand (kW)			Electric Vehicle	
Row	No. Connections	Type	Demand/CR	Inline Heater	DASH Heating	No. Phases	Rating (A)
1	20	General Domestic				One	16
2	15	HeatPump >3.9kW	4	2	3		
3	10	DASH Heating			7		
4							
5							
6							
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20							

		Total		ADMD	
Connections	Number	Demand (kW)	Demand (kVA)	kW	kVA
Domestic	45	231.7	243.9	5.1	5.4
EVCP Only	0	0.0	0.0	0.0	0.0
Commercial	0	0.0	0.0	0.0	0.0
Total	45	231.7	243.9		

Transformer Selection	Tx Type	Demand (kVA)	Transformer (kVA)
New or Existing	Existing		
Transformer 1	GM	244	315
Transformer 2	GM	0	N/A
Transformer 3	GM	0	N/A
Transformer 4	GM	0	N/A
Transformer 5	GM	0	N/A
Transformer 6	GM	0	N/A
Transformer 7	GM	0	N/A

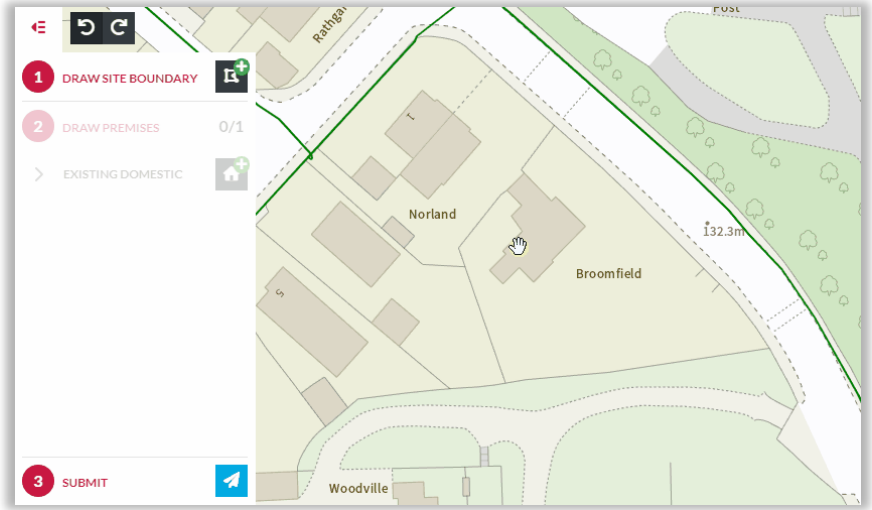
Code of Practice updates

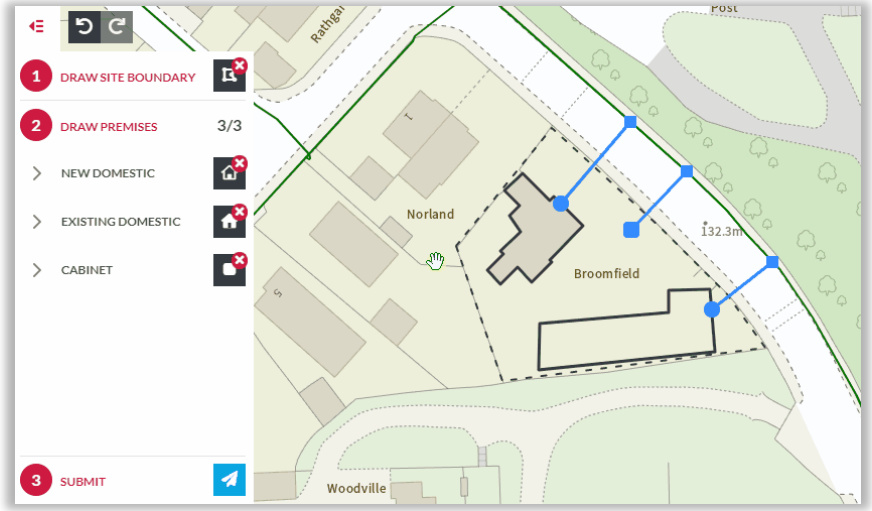
- IMP/001/107 - Code of Practice for Point of Connection assessment using Standard Design Rules for new and existing Low Voltage connections up to 69kVA
  - Maximum demand of connection assessment updated to 69kVA (80A increased to 100A)
  - Volume of permitted LCTs increased
  - Heat Pumps increased to 10
  - EV Charge Points table modified
  - Minimum transformer size reduced to 200kVA
  - General update to increase mains and service cable lengths
  - New section added around add load requests
  - **Revision to be published in July 2022**

AutoDesign

- **AutoDesign small works connections**
  - Revision to the existing AutoDesign system to allow users to apply for up to four single phase plots of a three-phase supply (up to 69kVA)
  - Automatic cable routing tool for customers (LV-ACE)

- **LV design tool**
  - Revised application for internal colleagues that replaces existing design tools
  - Able to import existing system layouts
  - Ability to model LCT demand, generation etc.
  - Will become an important asset as demand rises on the LV network driven by decarbonisation of heat and transport





LCT and industry update

- G99 fast track changes – July 2022
- ENA - digitalisation of connections project ongoing
- ENA – cut-out testing project ongoing
- LV Monitoring rollout expanded – aim to install 10,000 during RIIO-ED2 period
- Network asset database is being updated, this should improve the speed of iSmart (web GIS)
- Street Lamp EV Charge Points – currently under review
- Northern Powergrid Losses Strategy recently updated www.northernpowergrid.com/losses

Quality Assurance inspections update

Russ Tate
Field Audit Manager

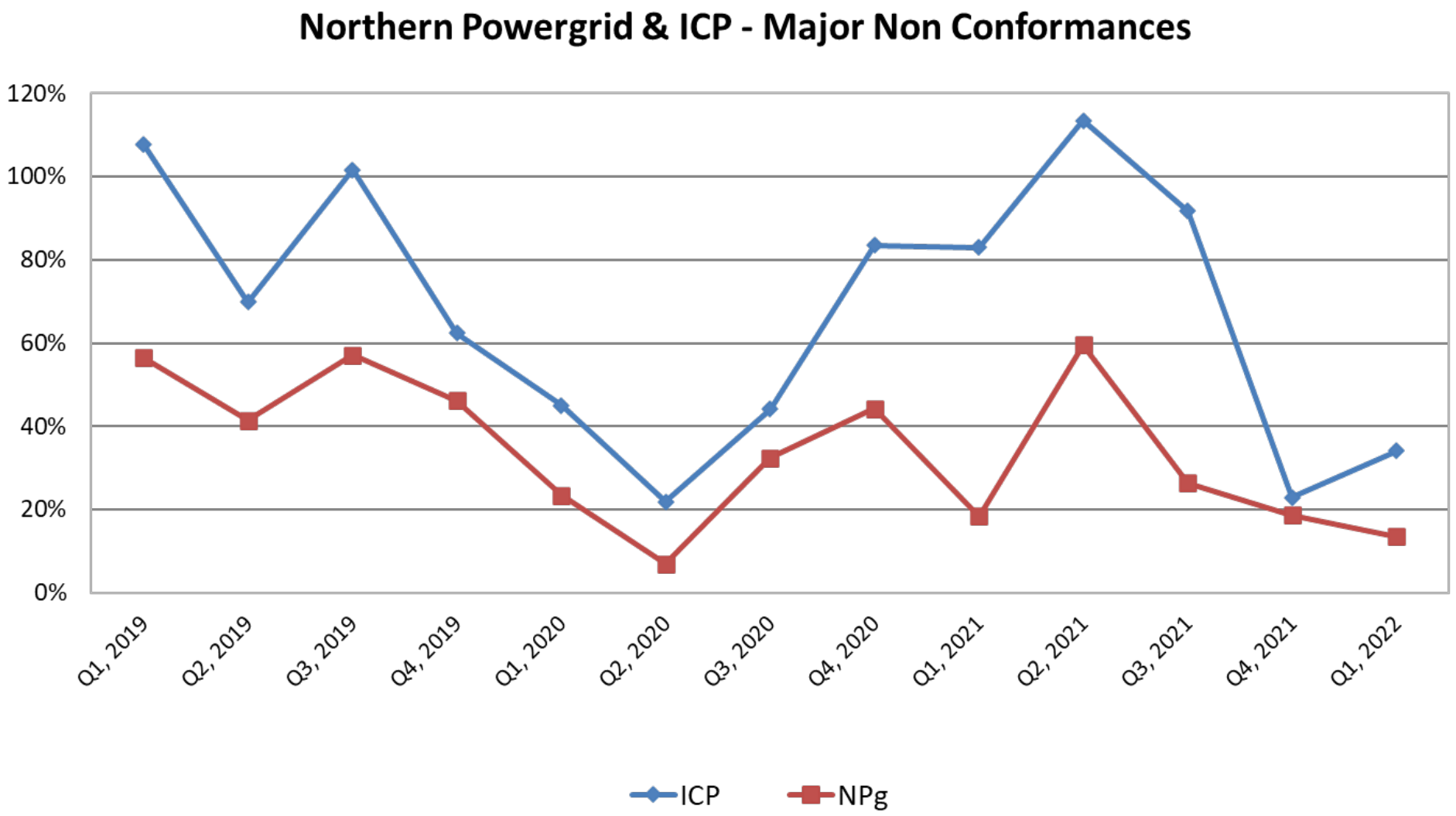
Inspections - requirements of the Code of Practice

- 6.2.1. DNOs shall be entitled to inspect ICP works. However, DNOs should be mindful of their obligations in respect of competition in Connections, and should therefore consider appointing independent inspectors to undertake this activity. In any case, such inspection should not unduly restrict or delay the Accredited ICP from undertaking work and must be no more onerous than the quality assurance regime used for the DNO's own Connections' activities.

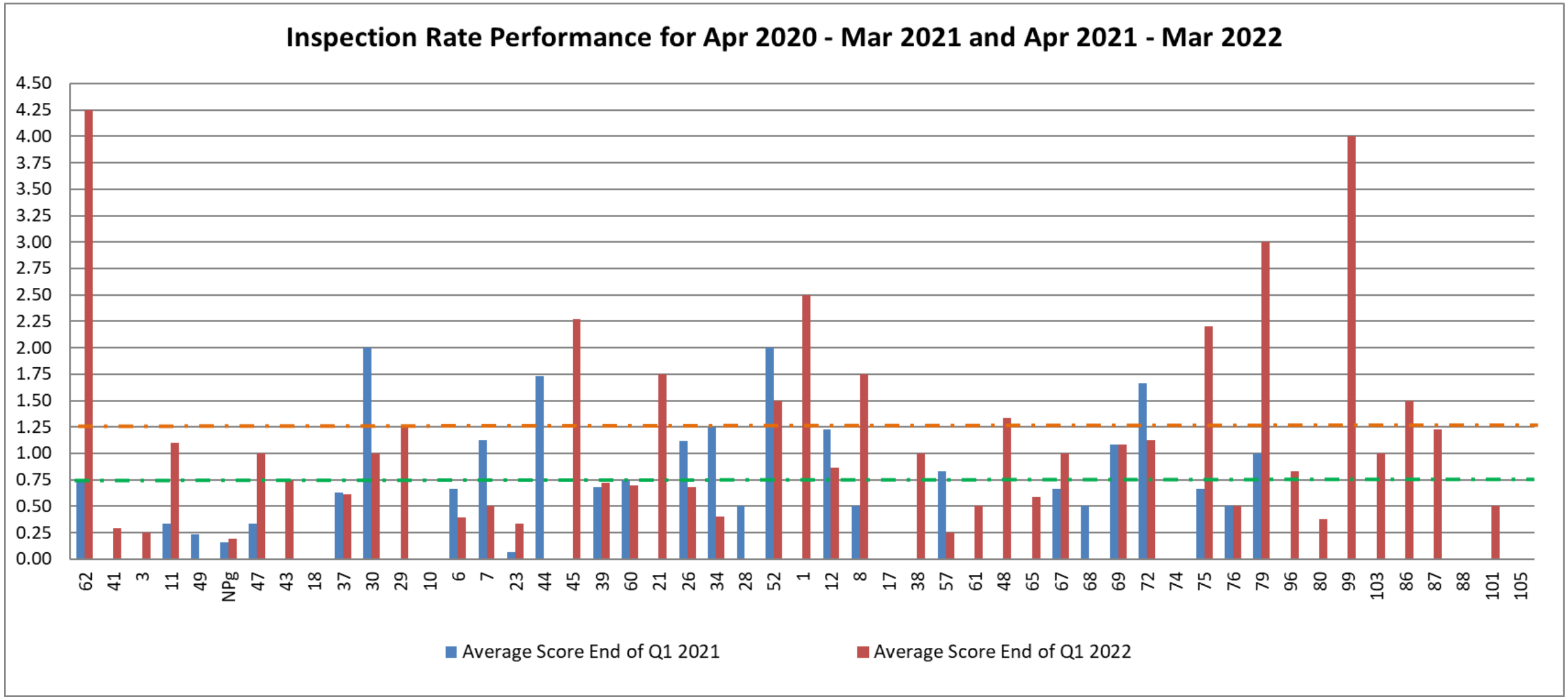
- 6.2.2. To facilitate inspection, ICPs shall provide DNOs with whereabouts sheets advising the DNO of when and where the ICP is undertaking work. The DNO will be entitled to visit the site identified in the whereabouts sheet to inspect the works.

- 6.2.3. If the DNO identifies a non-conformance, the DNO shall specify what the non-conformance is and set out the corrective actions that need to be undertaken. On completion of the corrective actions, the ICP shall advise the DNO and the DNO shall be entitled to revisit the site and carry out a further inspection.

Independent QA inspections



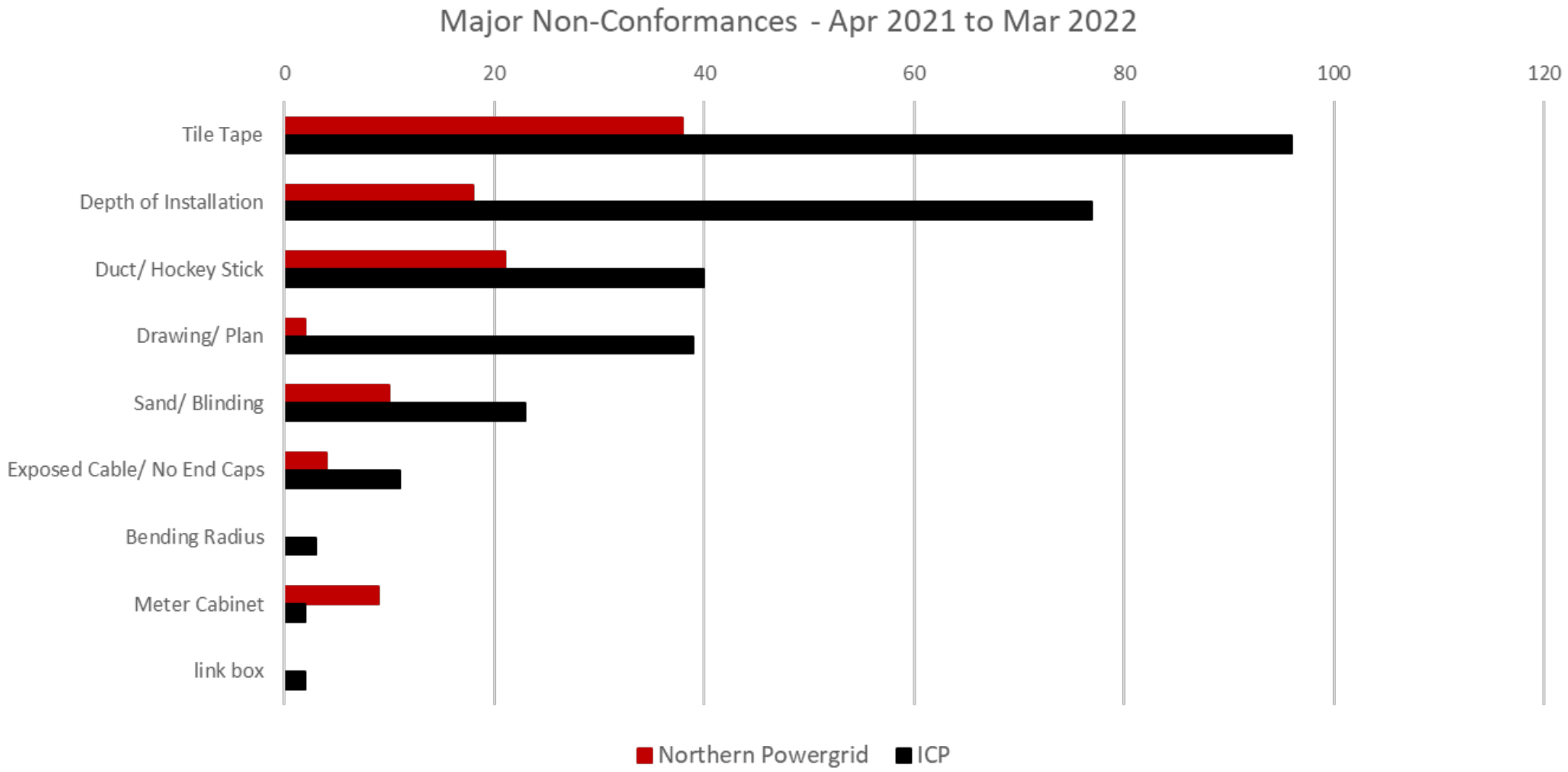
Inspections performance and operating levels



Payment for inspections

- Charges made retrospectively and based on actual number of inspections
- This is what ICPs asked for
- Cost per inspection is £160 + VAT
- Review costs
  - Look at cost to us
  - Other DNOs

Problem areas



Policy updates

NSP/002 – Policy for the Installation of Distribution Power Cables

4.3. Amendments from Previous Version Reference Description 3.2.10 Installation Medium and Positioning of Cables # Note 9: Clarification added that requires front and back kerb edges to be in place prior to installation of cables.

Note 9: All cables shall be installed in the footpath/verge where possible. To ensure that all cables are laid at the correct position/depth in line with the requirements of National Joint Utilities Group (NJUG) guidance.

3.2.6 Depth of Cables, the fixed/finished kerbs and back edges must be in place prior to cable installation.

Problem areas

But its not all bad…some examples of good installations

In summary

- Major non conformances are **decreasing**
- We continue to see an **enduring role** for independent inspection services
- Site **disputes process** is still there…but its quiet and that's welcomed

Group Discussion

Breakout Sessions

- Demonstration of PI – Bilal Amjad
- Delivery - Steve Crawford
- Wayleaves – Peter Richardson
- Information Management – Olwyn Ward

Breakout session

Steve Crawford
Delivery Manager

Objectives of the session

- Explain Northern Powergrid (NPg) project stages.
- Encourage a consistent approach.
- Set out the actions required from NPg and ICPs and highlight the possible risks which may delay the connection.

Project Scheme Allocation – Stage 1 (POC)

- Initial allocation to NPg Project Engineer, Wayleaves team, QA team and Information Management Scheme will only have an intended point of connection with no further detail included unless additional reinforcement works are required.
- NPg Project Engineer needs to review scheme content to confirm if any additional works are required to facilitate the connection. i.e. overlay works, bus bar extension, system alternation works.
- NPg Project Engineer should confirm full receipt of costs and arrange additional works asap.
- Upon completion ICP should be made aware that additional works have been completed and any future connections can be accepted.
- The scheme remains dominant until a Stage 2 (Design Approval) scheme is issued to the NPg Project Engineer. Note the ICP must submit a design approval request within 90 days of the POC application. Failure to do this will mean cancellation of the POC scheme.

Project Scheme Allocation – Stage 2 (DA)

- NPg Project Engineer, Wayleaves team, QA team and Information Management will receive the Stage 2 Design Approved pack. This pack will contain all detailed information for the connection.
- The ICP must submit whereabouts and may be subject to on site Quality Audits for any site works completed.
- The NPg Project Engineer can prepare for the future connection request however no works can be arranged until a call off is submitted by the ICP. The final connection could be completed as Self Connect or NPg Connected.
- The ICP will submit a call off request when ready for a connection to the NPg network.

Actions Required for Connection – 1 of 2

Following submission of the call off request the following actions will need to be completed.

- The NPg Project Engineer must discuss the future connection with the ICP and understand the preferred connection date (either agreed or within SLC15 timescales).
- Status of the wayleaves (if applicable) to be confirmed.
- Status of any non conformances on the site. All non conformances must be resolved prior to connection.
- Confirmation that front and back edgings have been installed.
- Asset details for the switchgear to allow the info to be registered. Substation name to be passed to CIC team for BCA.
- As Laid records to be provided 48hrs prior to connection or within 48hrs after connection (If Self Connect).
- Completion and handover certificate to be provided 48hrs prior to connection or within 48hrs after connection (if Self Connect).

Actions Required for Connection – 2 of 2

- NPg resources and materials to be booked for connection (if applicable).
- HV outage to be arranged by NPg or ICP (if Self Connect).
- Confirm BCA is in place. Applicable to all IDNO connections
- Confirm schedule 1 Adoption Agreement is in place.
- Arrange site witness tests and obtain test results.
- Confirm substation is water tight, secure, accessible, allowance for bending radius, unswitched spur for FPI has been installed. (S/S installs).
- NPg Project Engineer to arrange install of locks, labels, nameplates. (S/S installs).
- Completion and handover certificate to be returned to ICP after connection has been made.
- NPg Project Engineer to install any required labels (i.e. LV feeder way / link box) on network.

Connection Delays

Below is a list of the items which could contribute to a connection delay or cancellation.

- Outstanding wayleaves
- BCA not returned or fully signed.
- Schedule 1 not returned or fully signed.
- Front and back edgings not installed on site.
- Non conformances not resolved on site.
- Asset data not provided in a timely manner by the ICP.
- NPg Project Engineer not registering the substation site and assets in a timely manner.
- Additional Stage 1 works not completed in readiness for connection request.
- Excavation works not sufficient for connection.
- As Laid records not provided in time.
- Completion and handover certificate not provided in time.

Competition in Connections Seminar

Summary and closing thoughts

Phil Jagger
System Design Manager