



SP ENERGY NETWORKS

Mr Alun Ffred Jones
Chair, Environment and
Sustainability Committee
The National Assembly for Wales
Cardiff Bay
Cardiff
CF99 1NA

Your ref.

Our Ref
SAS/HTT

Date
6 November 2015

Dear Mr Jones,

Inquiry into 'A Smarter Energy Future for Wales?'

Further to our discussions at the Committee I am pleased to write to you with further information on our work on Smart Cities.

Key to the development of Smart Cities is new technology and innovation. Within SP Energy Networks, we are investing in innovation and have structured the business with a dedicated team focussed on Research and Development of new technologies to enable smart networks. Ofgem support this work through the Innovation Funding Mechanisms; Network Innovation Competition (NIC) for major development projects, Network Innovation Allowance (NIA) for smaller innovation development and the Innovation Roll out Mechanism (IRM) for large scale deployment.

We have a number of flagship projects which contribute within the area of maximising the use of existing assets, so avoiding additional infrastructure and reducing carbon footprint. These include the use of a 132kV Phase Shift Transformer, the first use of this technology in the UK on the 132kV distribution network, use of STATCOMS to regulate voltage and use of dynamic thermal ratings on overhead lines.

Other areas of innovation focus on active management of the distribution network. Distribution networks have traditionally been designed as passive networks, with a power flow in one direction towards the consumer. The scale of embedded "clean" generation within the distribution networks and advances in technology are enabling a fundamental move away from a passive network to active network management.

We have two smart energy cities in our license areas: Liverpool and Glasgow. We are looking to take the principles established with these two cities to other large conurbations within our area. As part of this we have been working with a number of Local Authorities and Enterprise Zones on Integrated Energy Investment Planning (IEIP).

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Through our work on IEIP with the Core Cities & Liverpool City Council, SP Energy Networks were the only DNO to submit 6 case studies to the Ofgem/DECC working group as part of the consultation on "Quicker and more efficient connections". The case studies included Anglesey and Deeside Enterprise Zones (selected by WG).

The Liverpool case study "Baltic Triangle & Ropewalks" has now been put forward as a pilot area as part of the same consultation for the Non-traditional Business Models. I enclose for your information a copy of the slides shared with Ofgem and DECC on this case study.

I would be delighted to take you or other representatives of the Committee through the work we have been doing in these areas, if you are interested in exploring this in more detail.

Yours Sincerely,

A handwritten signature in cursive script that reads "Stephen A Stewart". The signature is written in dark ink and is positioned above the printed name and title.

Stephen Stewart
SP Manweb Licence Director



**SP ENERGY
NETWORKS**



Strategic Investment in Electricity Distribution Infrastructure Baltic Triangle & Ropewalks Case Study

October 2014

Strategic Investment in Electrical Infrastructure



Planned developments at the Baltic Triangle & Ropewalks area of the City of Liverpool have been identified as:

86 Planned Developments delivering the following outputs:

- Residential 24,000m²
- Hotel 32,000m²
- Retail 14,500m²
- Office Space 4,500m²

- Total cost estimate £85m

Source: LCC

The characteristics of these developments make this area an ideal candidate for a new approach to strategic reinforcement.

Baltic Triangle & Ropewalks The Vibrant Scene



Identified as a new Cultural Quarter in City's 2009 Development Plan

Historic warehouses cut across 1960's industrial units

Live music venues, unique bars & restaurants

Home to city's creative industries

Adjacent to City Centre, close to Liverpool Waterfront and the Albert Dock



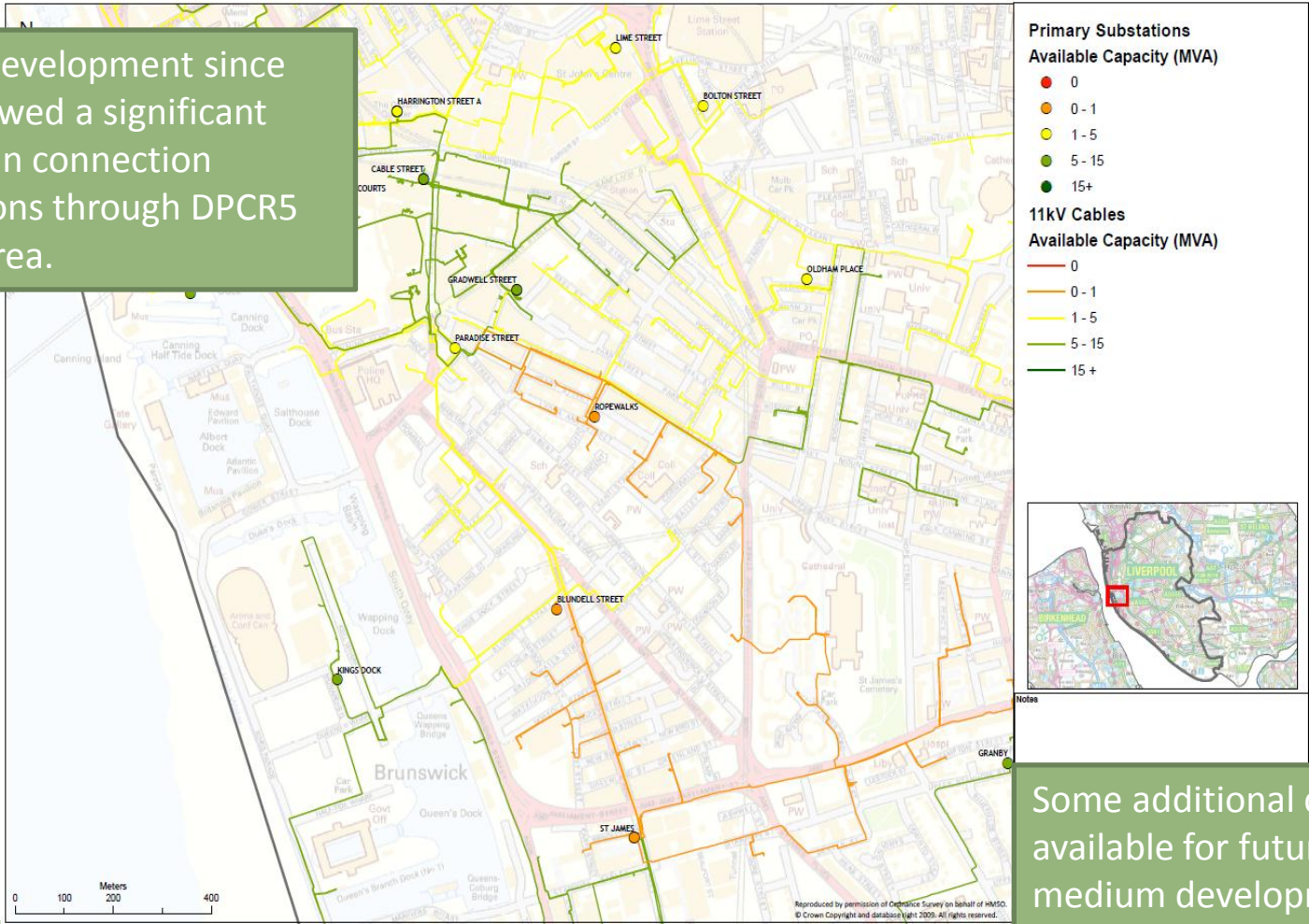
Baltic Triangle & Ropewalks

2015 - 11kV Network Predicted Available Capacity



Liverpool - Baltic Triangle & Ropewalks - SPEN HV Load Index, 2015

Further development since 2010 showed a significant increase in connection applications through DPCR5 for this area.



Some additional capacity available for future small to medium developments.

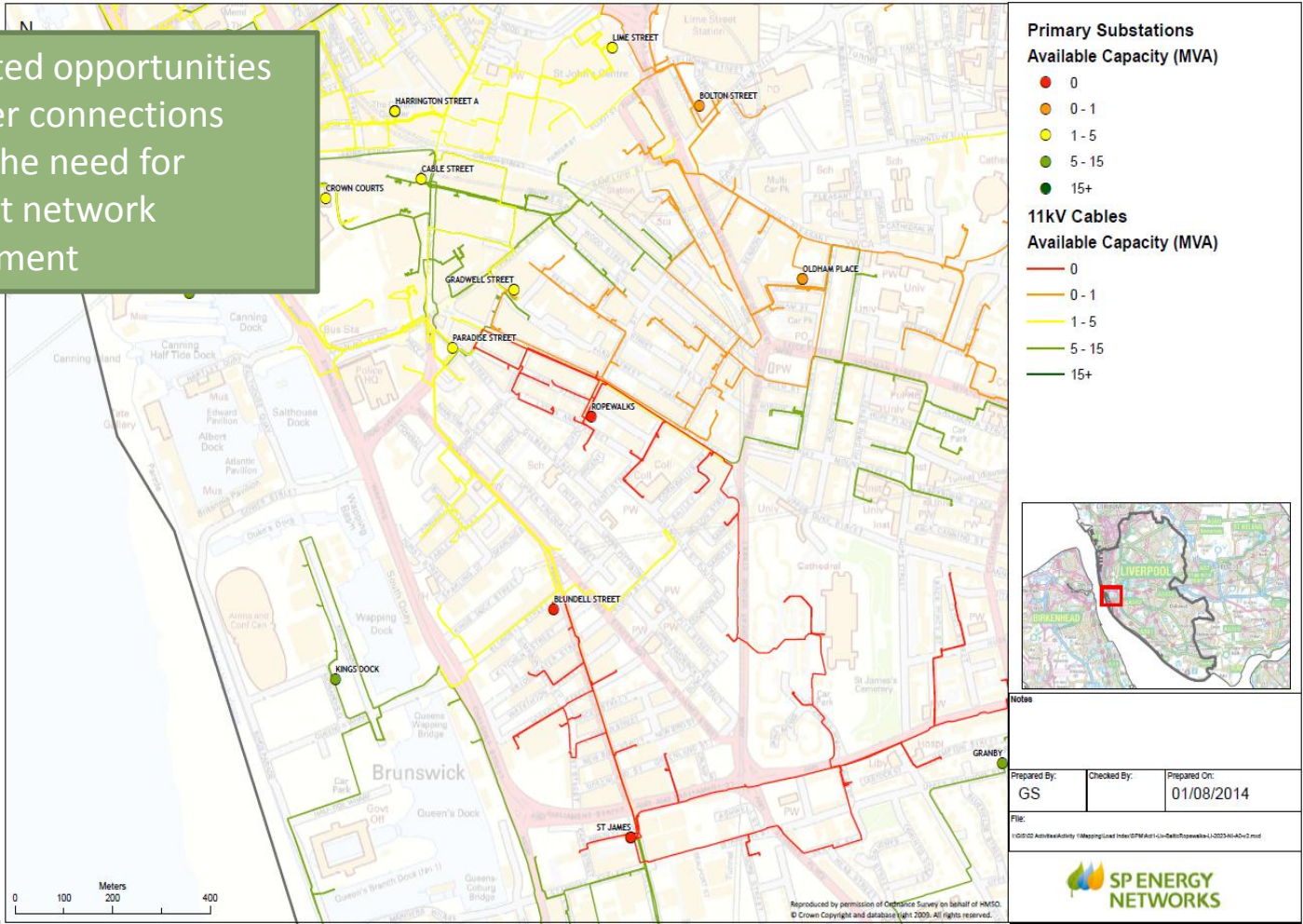
Baltic Triangle & Ropewalks

2023 - 11kV Network Predicted Available Capacity



Liverpool - Baltic Triangle & Ropewalks - SPEN HV Load Index, 2023

Very limited opportunities for further connections without the need for significant network reinforcement



Baltic Triangle & Ropewalks

Estimated New Load Required



Category Description	No. of Consented Planning Applications	Estimated New Load from Planning Applications (using ESDD-04-003 Issue 2 and 4) (kVA)	Estimated Net New Load (taking into account any existing load for each development site) (kVA)
Housing/Apartments/Residential Units/Student Accommodation	25	14,063	11,903
Hotels	14	5,840	4,666
Retail/Leisure	13	5,034	4,464
Employment Space/Office/Non-Residential/Other	10	3,710	3,686
Mixed Developments	24	13,304	9,139
Totals	86	41,951	33,858

Not all Planning Applications actually result in completed development. Historical analysis of Liverpool CC Planning Permission completions since 2002 has produced a completion rate of 70%. Therefore we have applied the 70% completion rate factor to the net new load.

Total Estimated Net New Load

23.7 MW

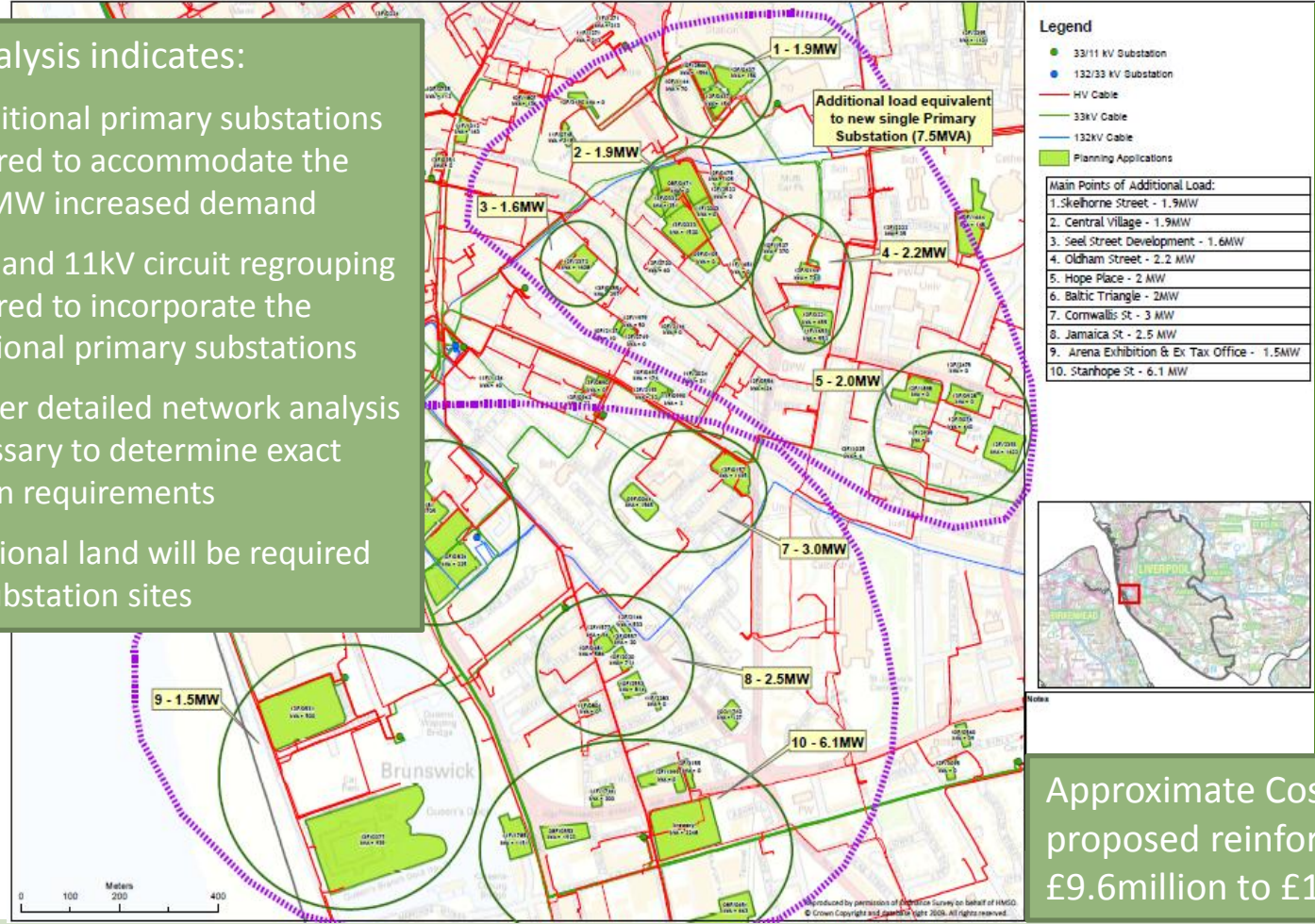
Baltic Triangle & Ropewalks

2023 - Network Reinforcement Analysis including Planning Application Load



Liverpool - Baltic Triangle & Ropewalks - SPEN Network and Planning Applications

- Initial analysis indicates:
- 3 additional primary substations required to accommodate the 23.7MW increased demand
 - 33kV and 11kV circuit regrouping required to incorporate the additional primary substations
 - Further detailed network analysis necessary to determine exact design requirements
 - Additional land will be required for substation sites



Approximate Cost of this proposed reinforcement - £9.6million to £12.1million

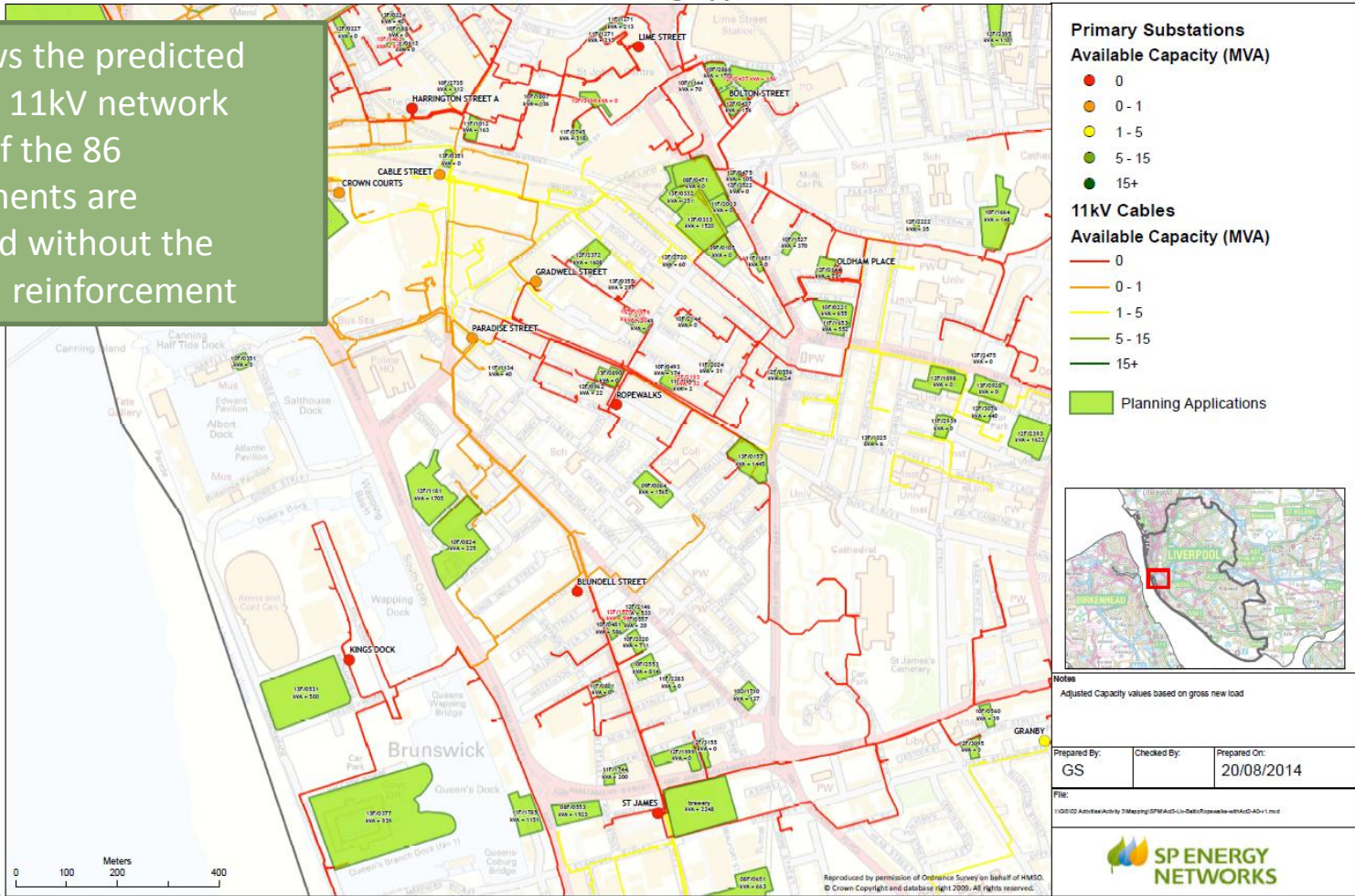
Baltic Triangle & Ropewalks

2023 - 11kV Network Predicted Available Capacity with additional Planning Application load



Liverpool - Baltic Triangle & Ropewalks - SPEN HV Load Index, 2023, with Planning Applications Load

This shows the predicted available 11kV network capacity if the 86 developments are connected without the proposed reinforcement



Baltic Triangle & Ropewalks

Current Options



**Cost
Apportionment
(CAF)**

**Speculative
Developments**

However, these current mechanisms are unsuitable:

- The majority of the developments planned are relatively small without one large lead developer.
- It is unlikely that any one of the developers will be able to afford to be the first comer under current methodology.
- Difficult for so many disparate organisations to come together behind one co-ordinated approach.

Further considerations:

- Incremental investment could lead to uneconomic development of the network.
- May act as a barrier to regeneration development.
- Current approach does not always accommodate rapid regeneration.

Liverpool City Council & Core Cities Summary

Find a solution that will:

- Improve long term planning and the role of infrastructure in economic regeneration
- Deal with the immediate situation in areas such as the Baltic Triangle & Ropewalks that come through outside the RIIO time frames

Implement a solution that will:

- Be in the best interest of consumers not reinforce development pressures in the south east.
- Be a joint submission from the appropriate local authority and the DNO
- Be transparent in reassuring leaders that any direct or indirect benefits to the DNO are accounted for and passed back to consumers