



APSE Energy - Newcastle's Net Zero Journey

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22nd November 2022

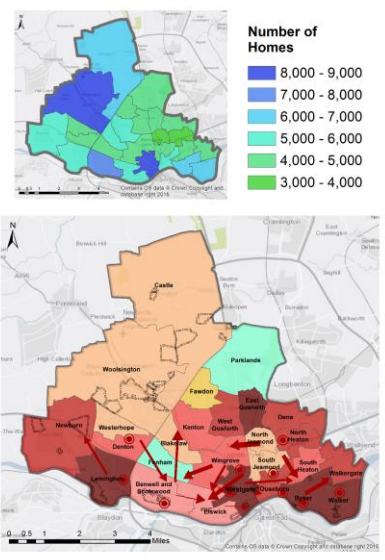
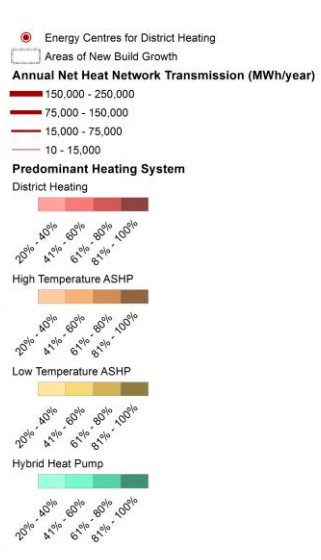
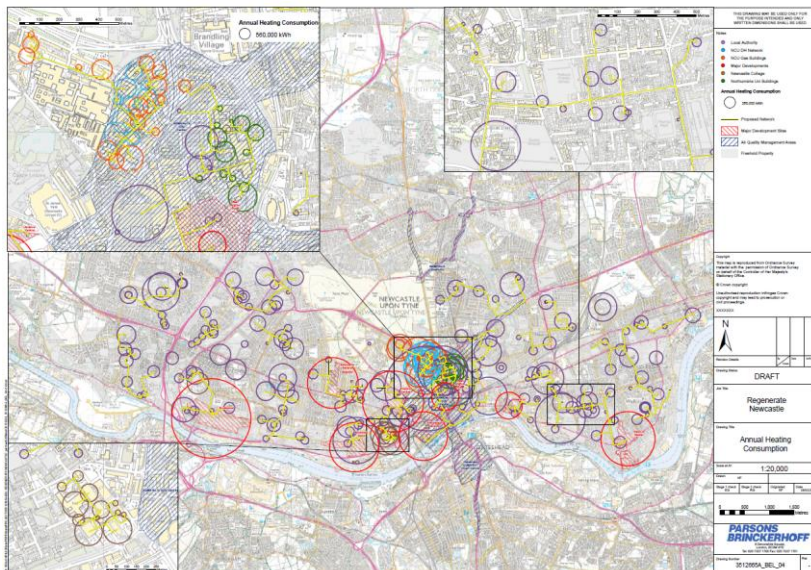




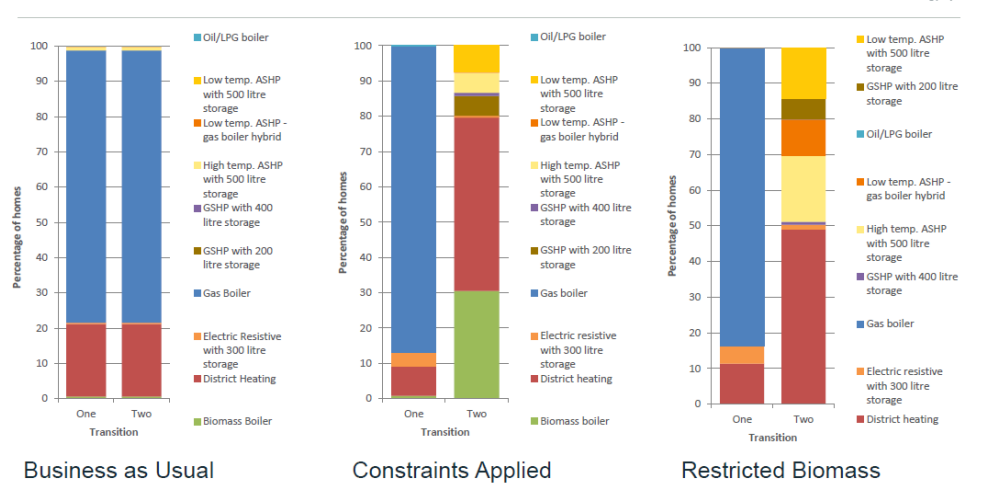
Newcastle has a rich history in tackling our energy needs and addressing climate change

Key initiatives included....

- Newcastle Warmzones (2012)
- Energy Materplanning, District heating schemes & Regenerate Newcastle partnership (2013)
- Plugged in Places (2013)
- Energy Technologies Institute (ETI) & Energy Systems Catapult's Smart System & Heating (2018)
- City Decarbonisation Delivery programme (CDDP) (2019)
- Electrification of Heat (2020)



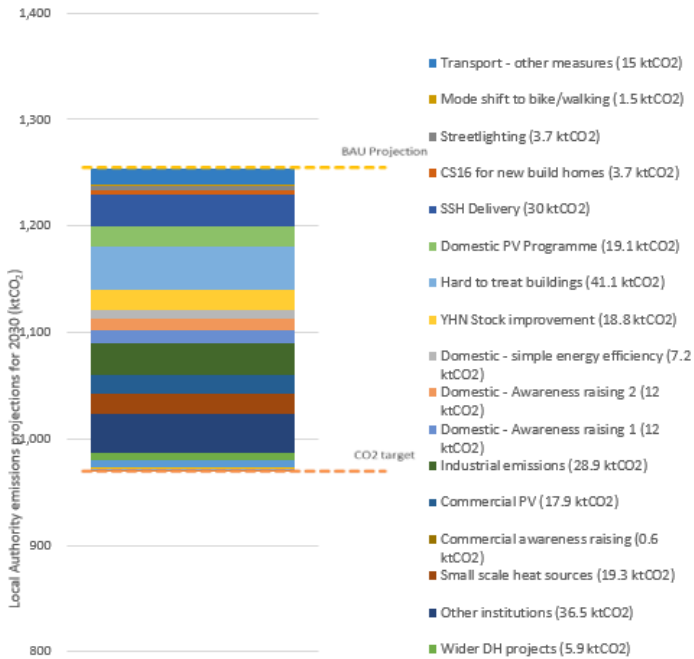
Heating Systems by Scenario



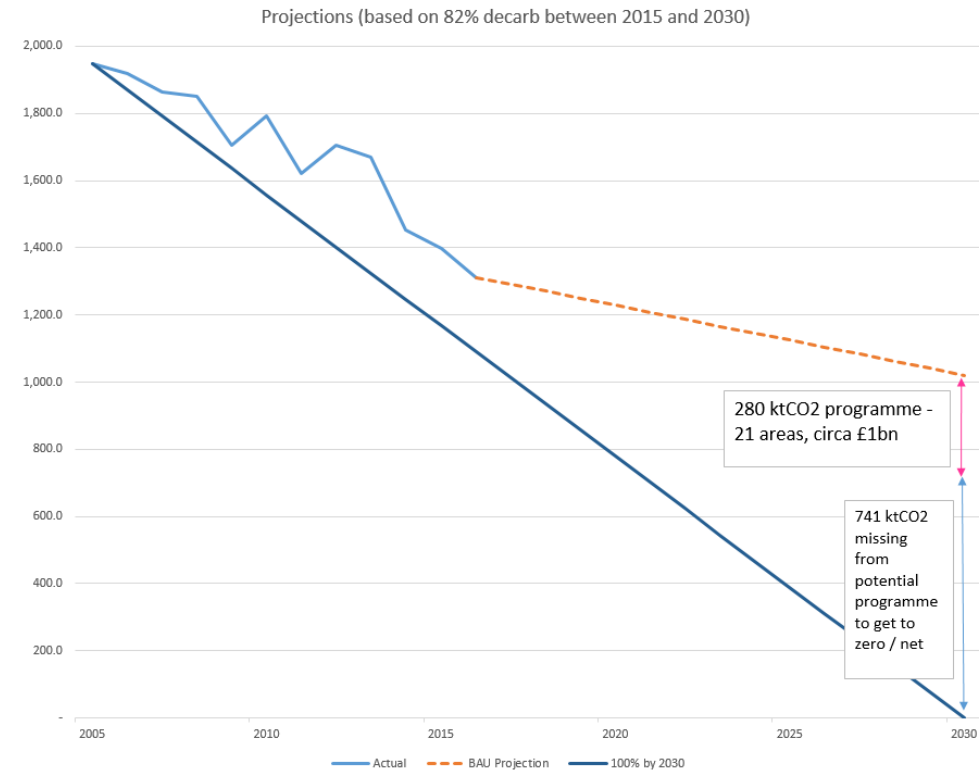


Newcastle City Council 50% carbon target

Pre-Net Zero Climate Mitigation Targets



Project	CO ₂ (ktCO ₂)*	
Transport	Suite of measures to be determined	15.0
	Mode shift from car to bike/walking for c. 5000 people	1.5
Lighting	Streetlighting replacement	3.7
Domestic	Tighter performance requirements on new build domestic	3.7
	SSH - commitment and delivery	30.0
	Renewable energy at domestic scale - support for PV	19.1
	Improved thermal performance in Hard to Treat (OO / Private) houses	41.1
	Improvements to energy performance of YHN stock.	18.8
	Improved efficiency of houses	7.2
	Awareness raising and behaviour change campaign	12.0
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Industrial and commercial	Interventions on industrial emissions	28.9
	Commercial PV Programme	17.9
	Awareness raising and behaviour change support	0.6
	Identify and exploit low carbon heat opportunities across the city - SMALL	19.3
	Working with other institutions in the city	36.5
Municipal	Delivery of remaining projects identified in the PB Report	5.9
	Delivery of Science Central and Civic Quarter West DH projects	7.6
	Council fleet replacement	1.5
	Application of Minimum Energy Efficiency Standards to council buildings which are not used for operational (i.e. let to other parties)	0.6
	Improvement to the Council operational estate	1.0
TOTAL	283.8	





Climate Emergency Commitment April 2019

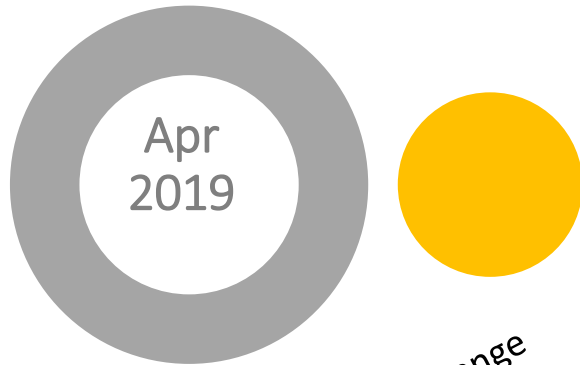
Key commitment Council agrees to:

- Declare a 'Climate Emergency'
- Update the 2010 Newcastle Declaration on Climate Change by pledging to make Newcastle upon Tyne carbon neutral by 2030, taking into account **both production and consumption emissions**;
- Call on the government to provide powers and resources to make the 2030 target possible;
- Work with other government bodies and NGOs to determine and implement best practice methods to limit Global Warming to less than 1.5°C;
- Work with partners across the city and region to deliver this new goal through all relevant strategies and plans recognising that the council cannot deliver on this ambition alone;
- Ensure that representatives on the **Tyne and Wear Pensions Fund** continue to lobby for further disinvestment in fossil fuels;
- **Report to Council** as soon as possible on the actions the Cabinet will take to address this emergency.

Key milestones

NCC declared a Climate Emergency and made a Net Zero by 2030 commitment

Launched 'Net Zero Newcastle - 2030 Action Plan'

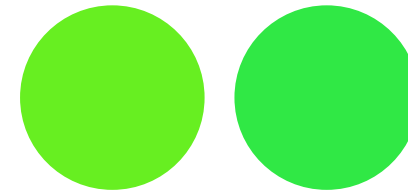


Climate Change Committee established



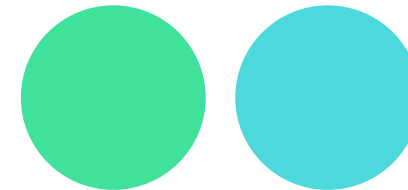
Carbon Disclosure Project A-rating (2020 and 2021 – 2022 pending)

Electrification of Heat programme



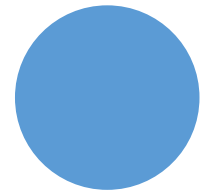
Delivered £27m Public Sector Decarbonisation Scheme funding

Over £15m of funding for residential programme improvements



North East Community Forest (NECF) starts delivering

Action Plan ranked 4th in UK of single tier authorities





Our Newcastle
Our Future

Net Zero Newcastle - 2030 Action Plan



September 2020



www.newcastle.gov.uk/netzero



Priority Actions update document

Started driving improvements across 100 Priority Actions from the Net Zero Action Plan. Progress measured through Priority Actions Update report – latest report covering period from April 2021 to August 2022 available [here](#). Effectively a Programme Management and Reporting tool.

Our Newcastle Our Future

Net Zero Newcastle – 2030 Action Plan

Priority Actions Update

April 2021 – August 2022

Net Zero Newcastle – Priority Actions Update (April 2021 to August 2022)

Net Zero Newcastle Priority Actions Update (April 2021 – August 2022)

Foreword from Councillor Jane Byrne

I'm delighted to have been appointed as Newcastle's Cabinet Member for Connected, Clean City. Connected, Clean City includes our environmental and waste services and transport as well as responding to the climate emergency and delivering our Net Zero commitment, which is one of our three core priorities for the city. Playing our part in reducing emissions of Carbon Dioxide and other greenhouse gases is an agenda which is of critical importance to the residents of Newcastle and our city's future for generations to come.

In July this year, we held a Youth Climate Change Summit, where we heard from young people (aged 14 to 18 years old) why climate change is important to them and what changes they want to see in the city – a Youth Climate Mandate for Newcastle was produced and is detailed at the end of this report.

The Energy Crisis has further focussed a spotlight on our need to improve the energy efficiency of buildings across the city and to start shifting away from gas heating to low and zero carbon technologies.

We also have to prepare our city for the changes in our local climate which we face as a result of the climate emergency. In the reporting period (April 2021 to August 2022), we have experienced extreme wind, severe flooding, heat waves and droughts, that most of us haven't seen in our lifetimes. These are stark reminders of the increasing frequency and intensity of events that Newcastle will have to prepare for. To understand the severity of these impacts, we commissioned the Met Office to undertake analysis of climate change impacts over the coming decades. The key findings are shown below:

	2030s	2050s	2080s
Summer Average Air Temperature (°C)	+0.3 to +1.0	+1.4 to +2.1	+2.1 to +4.3
Summer Maximum Air Temperature (°C)	+0.3 to +1.0	+1.4 to +2.1	+2.1 to +4.3
Summer Average Air Humidity (%)	+0.7 to +1.0	+1.1 to +1.4	+1.3 to +1.4
Summer Maximum Air Humidity (%)	+0.7 to +1.0	+1.1 to +1.4	+1.3 to +1.4
Annual Average Rainfall (mm)	+0.2 to +1.0	+1.1 to +1.4	+1.3 to +1.4
Annual Average Rainfall (Days)	+0 to -1.6	-7 to -10	-17 to -17
Annual Average Rainfall (Hours)	+1 to +1.1	+0 to +0.7	+1.3 to +1.4
Sea Level Change (m)	+0.30 to +0.39	+0.70 to +0.93	+0.84 to +1.04

Irrespective of the outcome of the COP meeting, I know that Newcastle is a leading city nationally and internationally on climate change mitigation and adaptation. I have seen first-hand many of the projects that we are delivering and the impacts these are having.

I'm pleased to report that Newcastle City Council has reduced its organisational emissions by 14% in 2021/22 from the previous year, which is a 52% reduction from our base year of 2009/10. We must continue to focus efforts on reducing our organisational emissions through green fleet programmes and decarbonising our buildings. We are also supporting residents to reduce their emissions through our home energy efficiency and Active Travel projects.

City partners including the Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle University, Northumbria University and Newcastle College Group have also made excellent progress with defining science-based targets, strategic action planning and delivering programmes of work for the Net Zero transition. I have also been delighted to see the rapidly growing commitment to the Net Zero agenda from a range of businesses, utility companies and community groups within the city and the region, which has been very clear in the Net Zero Business Forums held over the past year.

However, the hospital trust recently published an update on their progress to Net Zero (link [here](#)), noting that despite all their achievements over the past year, their emissions had increased from the previous year and they were eating into their carbon budget. This was a Red Flag report that the trust is not on track for the carbon reduction targets and a renewed urgency is needed to rectify the situation. This analysis reminds us that we must avoid complacency and continue to focus effort and drive forward our Net Zero programme across all Priority Actions.

I am pleased to present this report covering the period April 2021 to August 2022, which gives an update on citywide progress against the Priority Actions listed in the Net Zero Newcastle – 2030 Action Plan and demonstrates the enormous amount of progress that we have collectively made over the last six months towards our Net Zero goal.

Councillor Jane Byrne
Cabinet Member Connected, Clean City

Priority Actions Update

In September 2020, Newcastle City Council published the 'Net Zero Newcastle – 2030 Action Plan' – link [here](#). The Action Plan sets out (among other important things) the challenge facing the city, the vision for a Net Zero future, how we intend to engage with our residents, businesses and organisations, and very importantly establishes more than 100 Priority Actions that we can take over the coming years to set us off in the Net Zero transition. These Priority Actions cover three key themes (namely Energy, Transport, and Adaptation and Sustainability) reflecting the three primary elements of our emissions inventory (namely energy, transport and waste) which account for 99% of our Scope 1 and 2 emissions. For each of the Priority Actions listed in the 'Net Zero Newcastle – 2030 Action Plan', an update in the form shown below is provided.

Net Zero Newcastle – Priority Actions Update (April 2021 to August 2022)

Priority Action Description	Progress Update	Score
1. Develop list of carbon offset opportunities...	Knows that representatives on the Tyne and Wear Pension Fund continue to lobby for further investment to fund Carbon Offsetting.	Score: 1 out of 5
2. Ensure that representatives on the Tyne and Wear Pension Fund continue to lobby for further investment to fund Carbon Offsetting.	Knows that representatives on the Tyne and Wear Pension Fund continue to lobby for further investment to fund Carbon Offsetting.	Score: 1 out of 5
3. Explore whether a city-wide delivery programme would be suitable for Newcastle, and if so, how it would be implemented.	Discussed an initial list of potential delivery programmes with local organisations, businesses and other interested parties.	Score: 1 out of 5
4. Further develop the Performance Indicators and Lead Metrics of Performance.	Further developed a set of lead metrics of performance, data analysis and associated Net Zero research programme.	Score: 2 out of 5
5. Continue to engage with all of the City's key stakeholders on the Climate Change Strategy.	Engaged with Newcastle University, Newcastle City Council and the Tyne and Wear Pension Fund on the Climate Change Strategy.	Score: 2 out of 5
6. Progress our time local positive reporting further, identify an infrastructure to improve the visibility of Newcastle's emissions.	Progressed our time local positive reporting further, identifying an infrastructure to improve the visibility of Newcastle's emissions.	Score: 2 out of 5
7. Promote and encourage uptake of the Net Zero Project as a means to reduce the city's carbon footprint.	Promoted and encouraged uptake of the Net Zero Project as a means to reduce the city's carbon footprint.	Score: 2 out of 5
8. Progress our time local positive reporting further, identify an infrastructure to improve the visibility of Newcastle's emissions.	Progressed our time local positive reporting further, identifying an infrastructure to improve the visibility of Newcastle's emissions.	Score: 2 out of 5
9. Progress our time local positive reporting further, identify an infrastructure to improve the visibility of Newcastle's emissions.	Progressed our time local positive reporting further, identifying an infrastructure to improve the visibility of Newcastle's emissions.	Score: 2 out of 5
10. Progress our time local positive reporting further, identify an infrastructure to improve the visibility of Newcastle's emissions.	Progressed our time local positive reporting further, identifying an infrastructure to improve the visibility of Newcastle's emissions.	Score: 2 out of 5

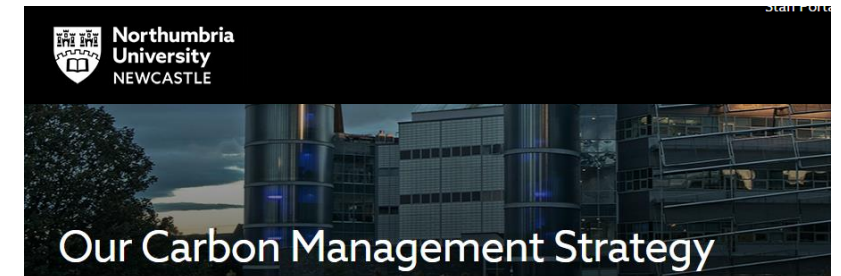


Progress to date

Newcastle is the first city in the world to have a local authority, hospital trust and university declare a Climate Emergency and make Net Zero commitments.



Northumbria University Carbon Management Strategy



Newcastle City Council

Newcastle Net Zero-2030 Action Plan

Newcastle upon Tyne Hospitals NHS Foundation Trust

Climate Emergency Strategy



Newcastle College Group

Environmental Strategy

Newcastle University

Climate Action Plan





Key projects and successes

Residential decarbonisation programmes

£1m upgrade for low income homes



Road space reallocation



Construction of Helix District Energy Centre



Public Sector Decarbonisation Scheme



Installation of fast charging points



Metro rolling stock replacement



Source: Nexus and Stadler Rail

Quayside barrier project under development



City Centre Transformation Programme



E-Scooter trial underway



Solar PV installation roll-out across city



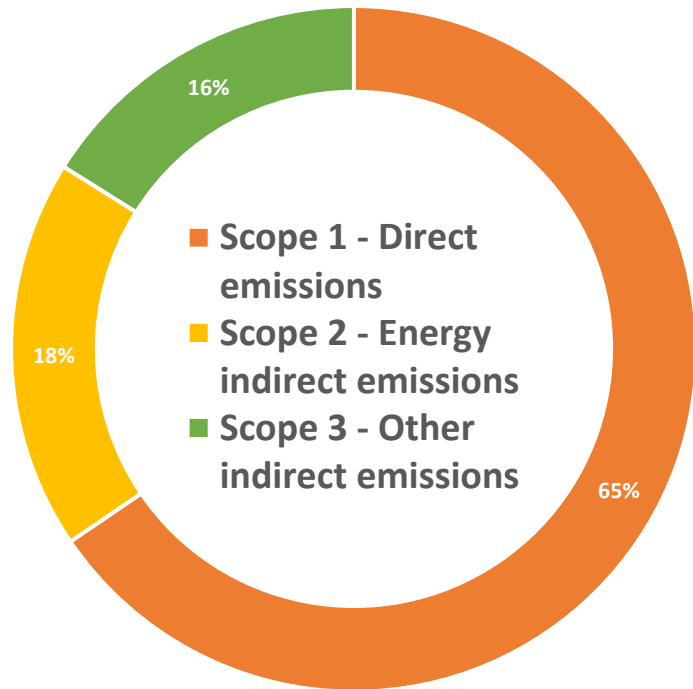
Electric bus programme launched



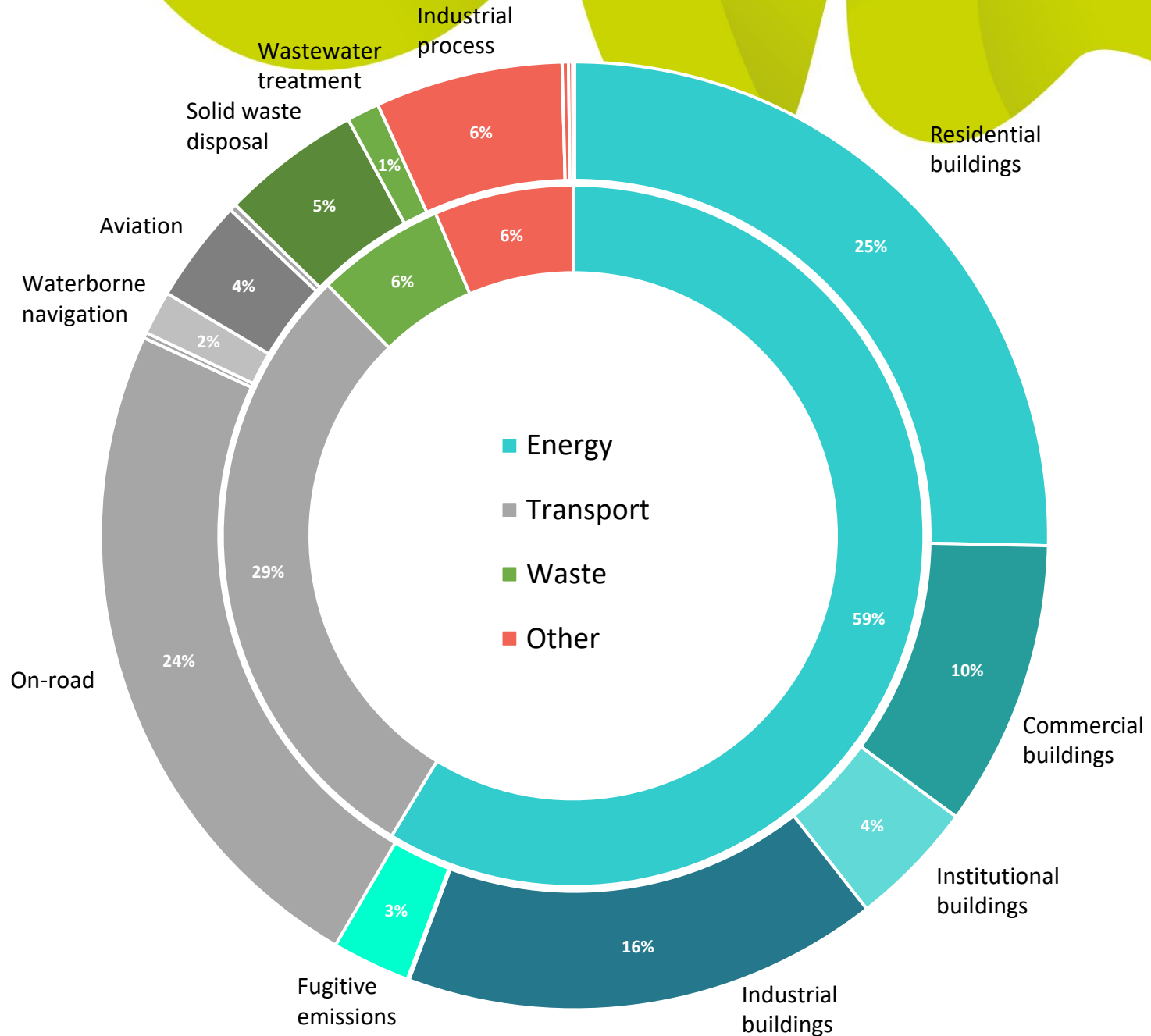


City wide emissions

Newcastle as a city emitted 1.885 million tonnes of CO2 equivalent during 2020/21.



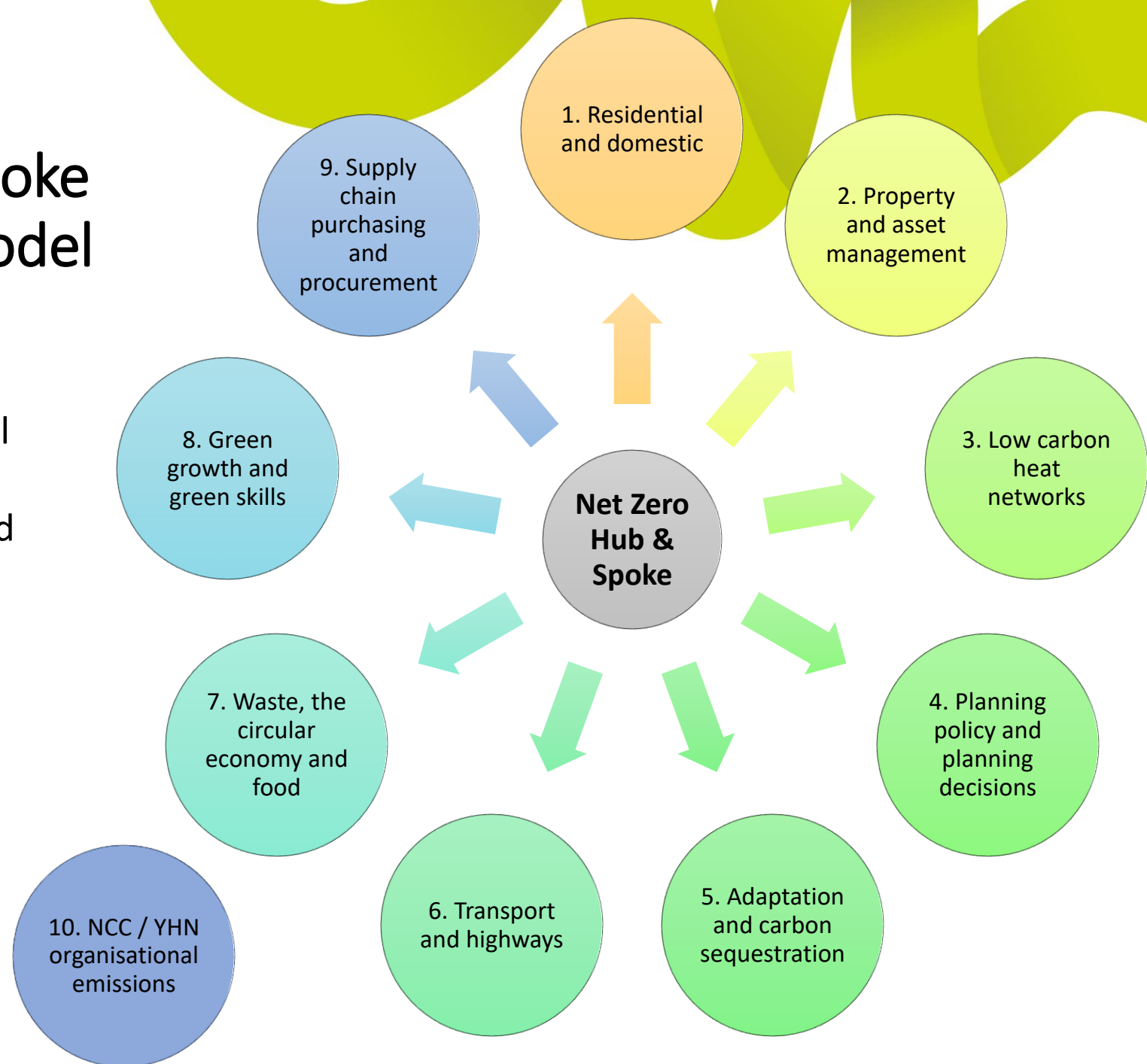
Based on latest **SCATTER** emissions inventory data.





Net Zero Hub and Spoke Delivery Model

- Net Zero Work Programmes covering all main emission sectors in city.
- Addressing both Net Zero transition and climate change adaptation.
- Commission an independent peer review of model a year after implementation.
- Net Zero Team to support Net Zero Delivery Groups.





Carbon Disclosure Project (CDP)

The industry gold standard for measuring impact and demonstrating progress towards Net Zero is the Carbon Disclosure Project (CDP).

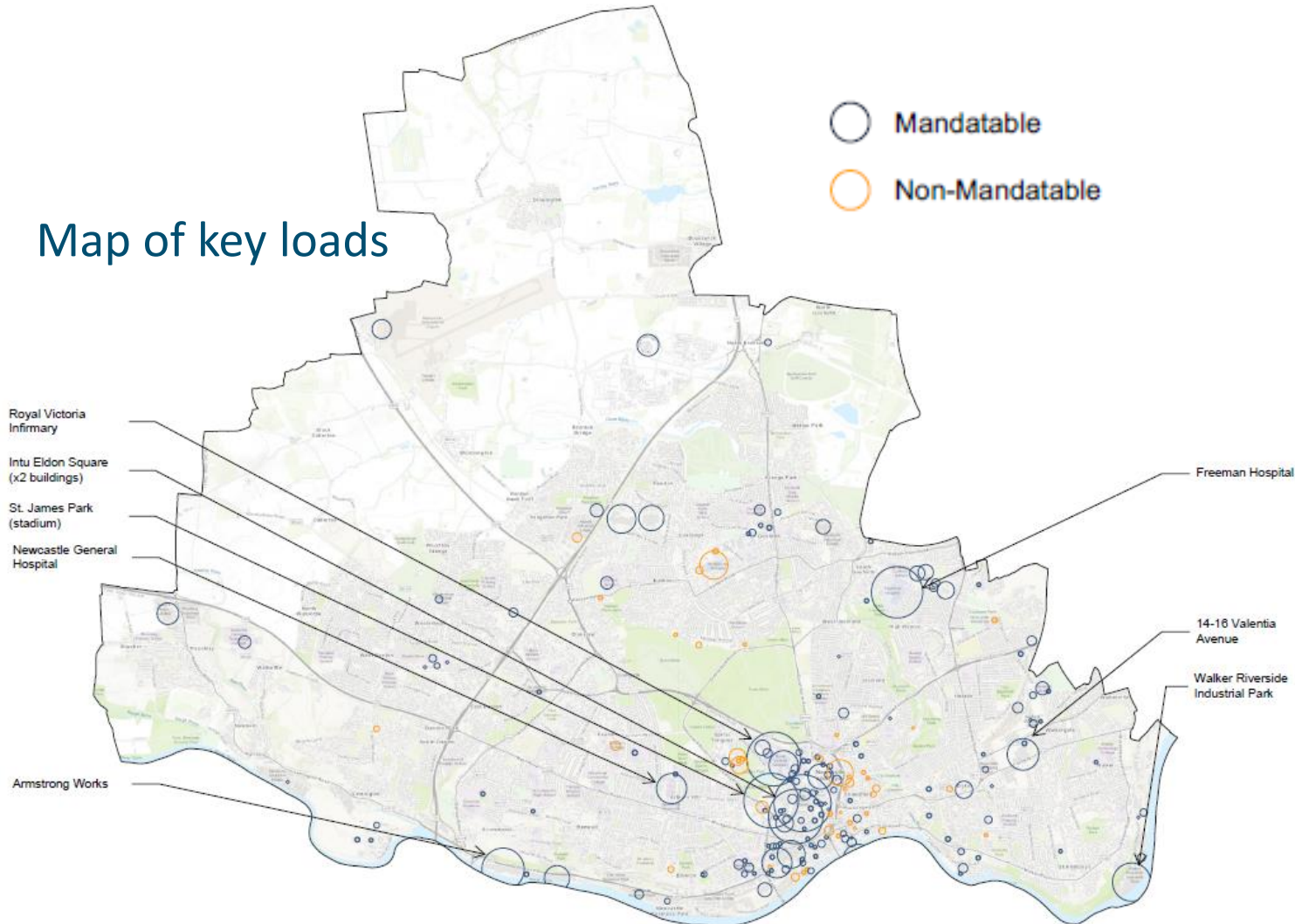
Newcastle has retained A-rating for three years.

This reflects our disclosure of a wide range of detailed information (including supporting evidence) on:

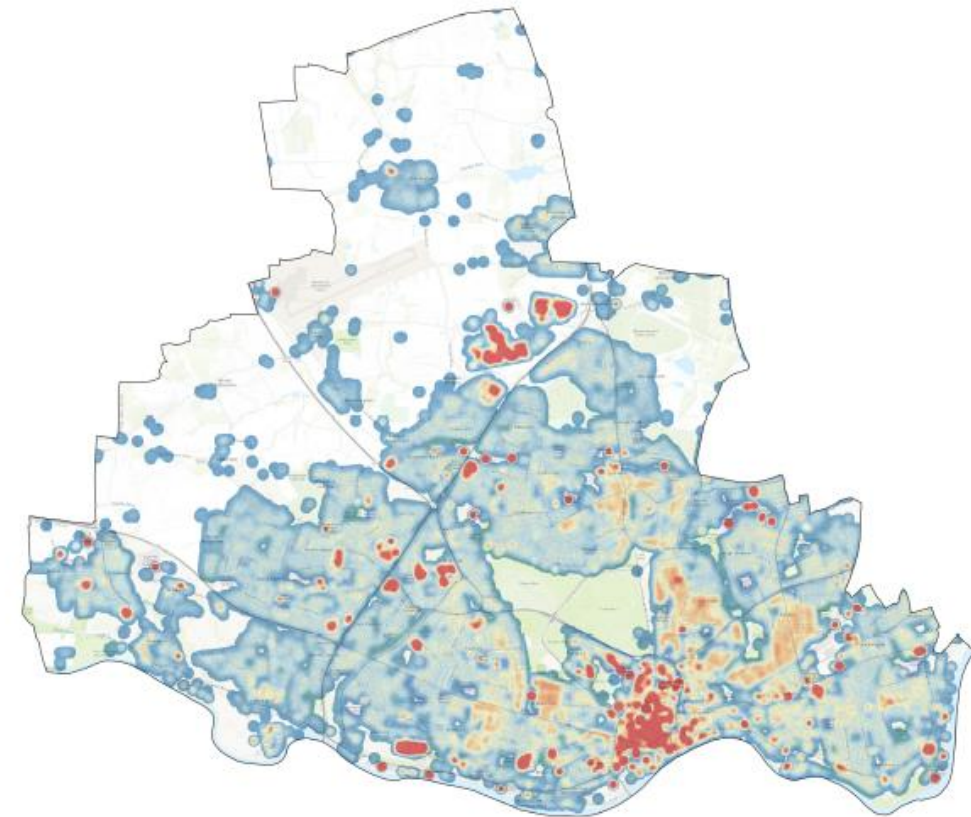
- Climate related risks, hazards and vulnerabilities
- Climate change adaptation plans and actions
- Co-benefits of Net Zero action (environmental, social and economic)
- Interaction with other levels of government
- Business and civil society collaboration on climate-related issues
- City-wide emissions inventory at Scope 1, 2 and 3
- Organisational emissions
- Detailed emissions (and other key data) on key sectors including energy, transport, waste, public health, food and water / wastewater.
- Mitigation targets (emission reduction targets) and progress towards those targets including key Net Zero actions and work programmes.
- Carbon credits and trading
- Other climate-related plans such as Biodiversity Action Plans
- Plans to reduce consumption emissions and drive a circular economy
- Investment opportunities and financing for Net Zero

Heat Network Zoning?

Map of key loads



Heat demand density map





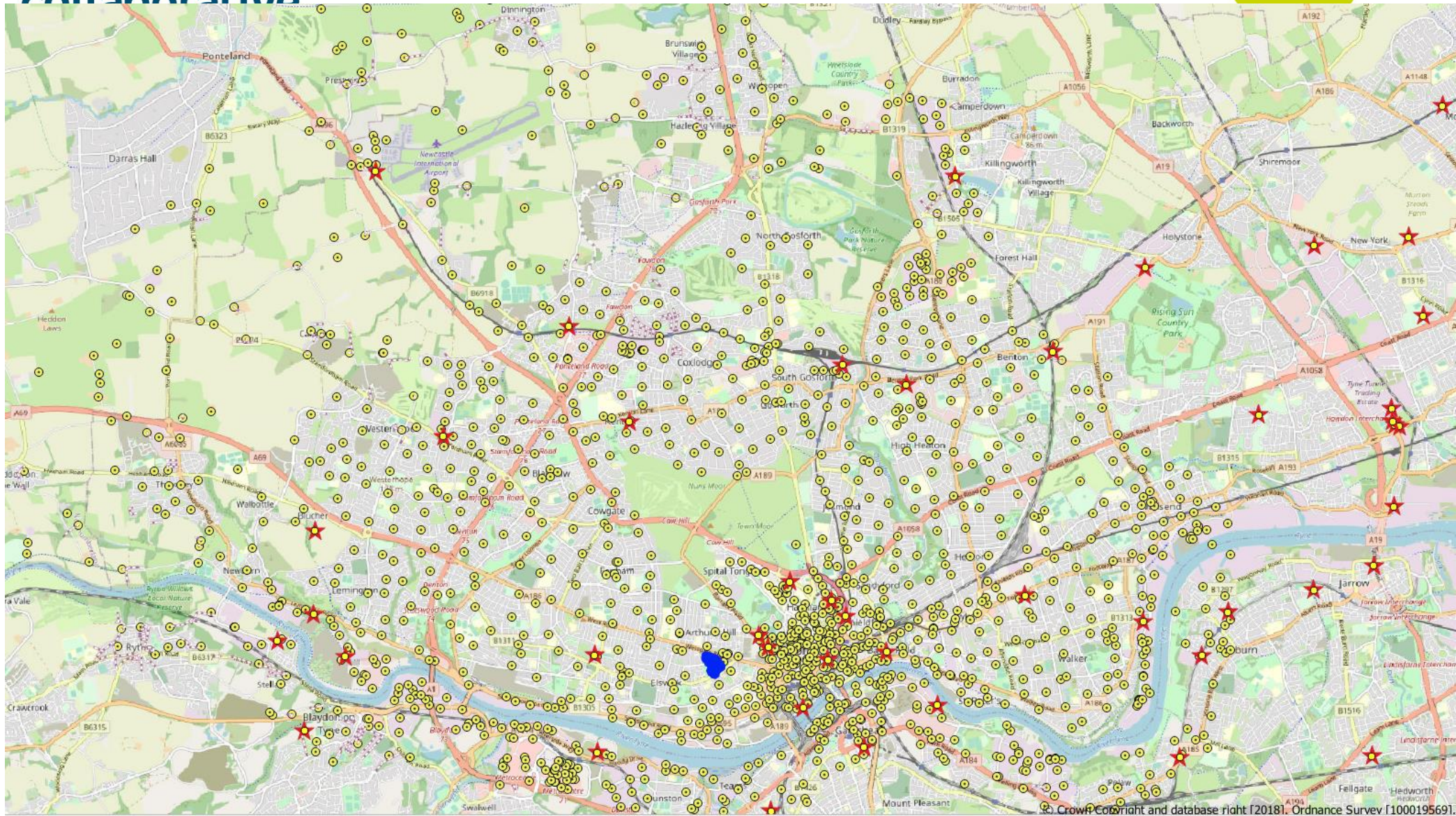
Low Carbon Neighbourhood (LCN)

LCN is an approach to developing full Net Zero domestic retrofit plans, built around individual homes and their relationship to the local distribution network (Northern Powergrid).

Fabric first and technology agnostic (discounting hydrogen), starting with low-rise, mixed tenure, but working with social housing clusters.

Current and planned activity:

- **Northern Powergrid Collaboration :**
 - Use of available records
 - Proof-of-concept deeper collaboration
- **Integrated In-Home Surveys :**
 - Sampling to reflect archetypes
 - In-Home surveys (to enable designs for multiple options), digital scans (point cloud) & drone assessments
 - Low Carbon Technology (LCTs) desktop design and area-wide extrapolation
 - Techno-economic modelling - cost & cash-flow models





228 homes of mixed tenure:

- 156 council owned, YHN managed
- Others include
 - Private Owner Occupied
 - Registered providers
 - Private Rented



NPg Substation “St Paul’s Place” 4 x Low Voltage Networks



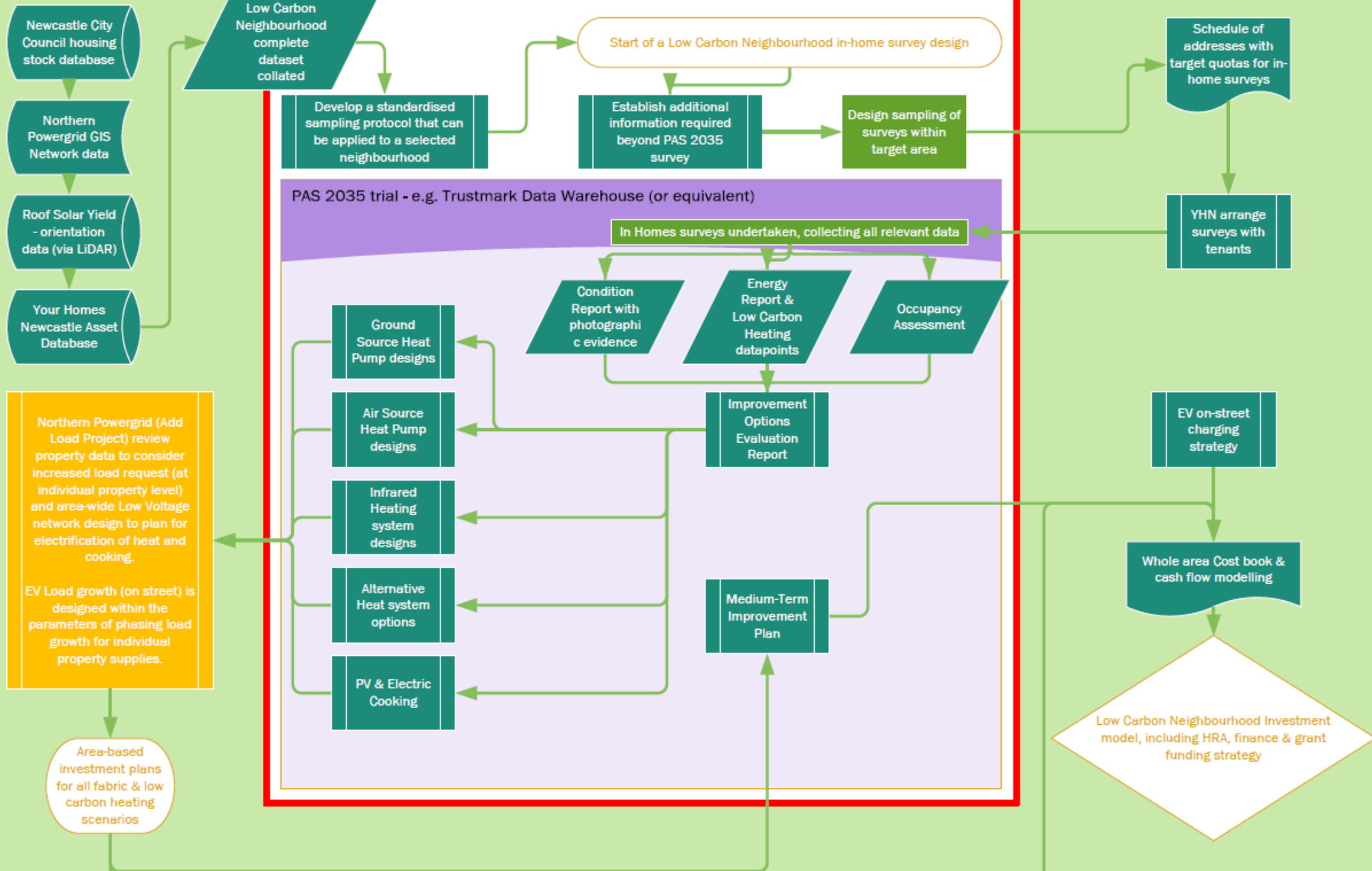
Substation Name	Way No / Substation	Ground Mounted/Pole Mounted	Postcode	X	Y	Premises Count	Half Hourly MPAN Count	Transformer Rating (from CNDB)	KW Max Demand	MD as % of Tx rating
ST PAULS PLACE	0101	GM SECONDARY SITE	NE4 6HJ	423517	564112	2	1	-1	5	
ST PAULS PLACE	0102	GM SECONDARY SITE	NE4 6HJ	423517	564112	86	0	-1	48	
ST PAULS PLACE	0103	GM SECONDARY SITE	NE4 6HJ	423517	564112	66	0	-1	46	
ST PAULS PLACE	0104	GM SECONDARY SITE	NE4 6HJ	423517	564112	62	0	-1	51	
ST PAULS PLACE	Substation	GM SECONDARY SITE	NE4 6HJ	423517	564112	216	1	500	141	28



Target Surveys to inform options for:
Insulation (fabric first)
PV
Ground Source, Air Source, IR, Alternative Heating
Storage
EVs &
Cooking...degassing



Supplier Role





Sample Data

B	BK	BL	EM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BV	BK
Lidar				LV Connection	Apex Data				ASHP					
UDPR	ROOF (kVh)	kVp	NO. OF INSTALLED P.	LV Areas	Council Owned Proj	CENTRAL HEATING BOI	CENTRAL HEATING SYSTEM RAE	ELECTRIC WIRING	CAPACITY	ELECTRICAL SUPPLY	POWER INPUT	NOMINAL RUNNING CURR	FUSE RATING	UNIT MODEL
15800379	4051.5	4.81	13	St Pauls Place W2	Council Owned	29/04/2005	19/05/2010	04/10/2013	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800375	3774	4.44	12	St Pauls Place W2	Council Owned	28/01/2009	28/05/2016	04/06/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800352	4051.5	4.81	13	St Pauls Place W2	Council Owned	10/08/2020	08/03/2010	08/03/2010	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800384	3737	4.44	12	St Pauls Place W2	Council Owned	16/02/2009	03/03/2009	03/03/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800377	6734	8.14	22	St Pauls Place W2	Council Owned	26/01/2009	26/01/2009	20/01/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800383	6216	7.4	20	St Pauls Place W2	Council Owned	15/04/2005	15/04/2005	26/01/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800390	5272.5	6.23	17	St Pauls Place W2	Council Owned	19/05/2010	20/08/2010	09/02/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800389	4051.5	4.81	13	St Pauls Place W2	Council Owned	17/09/2015	03/03/2009	03/03/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800391	5587	6.86	18	St Pauls Place W2	Council Owned	08/06/2005	19/05/2010	01/01/1977	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800382	3737	4.44	12	St Pauls Place W2	Council Owned	17/03/2009	02/03/2009	02/03/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800259	4323	5.18	14	St Pauls Place W2	Council Owned	13/05/2009	28/05/2009	28/05/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800100	5457.5	7.03	19	St Pauls Place W2	Council Owned	20/11/2013	01/01/1991	30/03/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800098	4828.5	6.23	17	St Pauls Place W2	Council Owned	15/04/2009	05/05/2009	05/05/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800099	4951	5.92	16	St Pauls Place W2	Council Owned	30/03/2009	30/03/2009	30/03/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800254	4366	5.18	14	St Pauls Place W2	Council Owned	13/02/2009	02/03/2009	02/03/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800256	3737	4.44	12	St Pauls Place W2	Council Owned	13/02/2009	02/03/2009	02/03/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800257	3737	4.44	12	St Pauls Place W2	Council Owned	12/02/2009	02/03/2009	02/03/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800380	3737	4.44	12	St Pauls Place W2	Council Owned	26/01/2009	01/01/1981	26/01/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800389	4366	5.18	14	St Pauls Place W2	Council Owned	17/01/2014	03/03/2009	03/03/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800246	3737	4.44	12	St Pauls Place W2	Council Owned	16/02/2009	02/03/2009	02/03/2009	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800255	3708	3.7	10	St Pauls Place W2	Council Owned	28/08/2013	01/01/1991	25/07/2013	8.30	220-240v, 50Hz	2.96	10.3(23)		25 Ecodan Monobloc Air Sour
15800270	7788.5	9.25	25	St Pauls Place W2	Council Owned	28/01/2009	06/02/2009	06/02/2009	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour
15800091	3089.5	4.07	11	St Pauls Place W2	Council Owned	18/11/2013	30/03/2009	30/03/2009	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour
15800305	7825.5	9.25	25	St Pauls Place W2	Council Owned	01/01/1981	25/08/2020	16/04/2004	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour
15800092	5550	7.4	20	St Pauls Place W2	Council Owned	21/01/2013	01/01/1991	30/03/2009	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour
15800093	5550	7.4	20	St Pauls Place W2	Council Owned	18/02/2010	11/03/2010	11/03/2010	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour
15800101	4791.5	6.23	17	St Pauls Place W2	Council Owned	10/11/2011	01/01/1991	10/02/2015	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour
15800087	4791.5	6.23	17	St Pauls Place W2	Council Owned	18/06/2015	25/03/2009	25/03/2009	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour
15800088	3404	4.44	12	St Pauls Place W2	Council Owned	15/05/2012	25/03/2009	25/03/2009	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour
15800089	3404	4.44	12	St Pauls Place W2	Council Owned	01/01/1995	01/01/1991	01/01/1971	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour
15800090	2063.5	4.07	11	St Pauls Place W2	Council Owned	08/08/2011	23/07/2011	23/07/2011	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour
15800290	8530.5	7.77	21	St Pauls Place W2	Council Owned	11/07/2017	11/07/2017	13/02/2009	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour
15800292	8177	9.82	28	St Pauls Place W2	Council Owned	05/05/2009	05/05/2009	05/05/2009	4.80	220-240v, 50Hz	1.63	5.4(13)		16 Ecodan Monobloc Air Sour

As Energised.....

[Low voltage network capacity study - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

- Phase Balancing (manual)
- Dynamic Voltage Management
- Dynamic Asset Ratings/Real Time Thermal Ratings
- Widening of Design Voltage Tolerance
- Smart Transformers
- LV DC Networks
- Microgrids
- D-FACTS
- Network Monitoring (LV assets)
- Smart EV Charging
- Dynamic Time-of-Use Tariffs
- Energy Storage (for smart HP demand shifting)
- Enhanced Automatic Voltage Control
- Switched Capacitors
- Generator Constraint Management
- Generator Providing Network Support, e.g., PV Mode
- DSR (residential and commercial)
- Meshing (temporary and permanent)
- Transformer Cooling (Active)

Behind-the-meter battery storage for DSR
 Manual Phase Balancing
 Network Data Monitoring
 Permanent Meshing
 Switched Capacitors
 Widening of the Design Voltage Tolerance
 Active Transformer Cooling

Pathway for every property
 Establish processes to bring forward loads reflecting NPG's network...
 BUT: Unresolved :
 - Looped services, cut out rating (surveys?), phasings, or property position on the LV network



Conclusions

- A rich and diverse programme
- Growing and deepening in scope
- Evidence based approach
- External platforms to report and monitor progress
- Collaborative and partnership working

Thank You

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