GO ULTRA LOW OXFORD

On-street electric vehicle charging points:

The Go Ultra Low Oxford Project

- **Oxford**: a city moving towards sustainable transport
- UK's first Low Emission Zone outside London
- High public and active transport
- Low Emission Strategy and Connecting Oxfordshire (LTP4)
- Focus on support for charging infrastructure
- ULEVs part of the jigsaw for a 'Cleaner, Greener Oxford'

The Oxford transport challenge

Nitrogen Dioxide (NO_2) pollution from road traffic in the city

Growing economy and population, high congestion, in-commuting

OXFORDSHIRE COUNTY COUNCIL
www.oxfordshire.gov.uk
Working for you

www.oxford.gov.uk
OXFORD CITY COUNCIL

On street charging

- ULEV uptake still low
- Housing situation a barrier?
- Historic & densely populated urban centre
- 28% live in terraced houses
- Requests for help with on-street ULEV charging
- Market research:
  - 74% of respondents want to charge ‘at home’
  - 75% of respondents parked their car on the street

The Go Ultra Low Oxford Project

- Technology trials
- University of Oxford;
  - Transport Studies Unit
  - Centre on Innovation & Energy Demand
- Technology neutral
- Up to 6 solutions from high to low tech
- Volunteer users & car club data
- User experience, behaviour change, efficiency, performance, value for money

Project Vision:

Identify an effective solution to 'at home' charging for residents who do not have access to private off-street parking

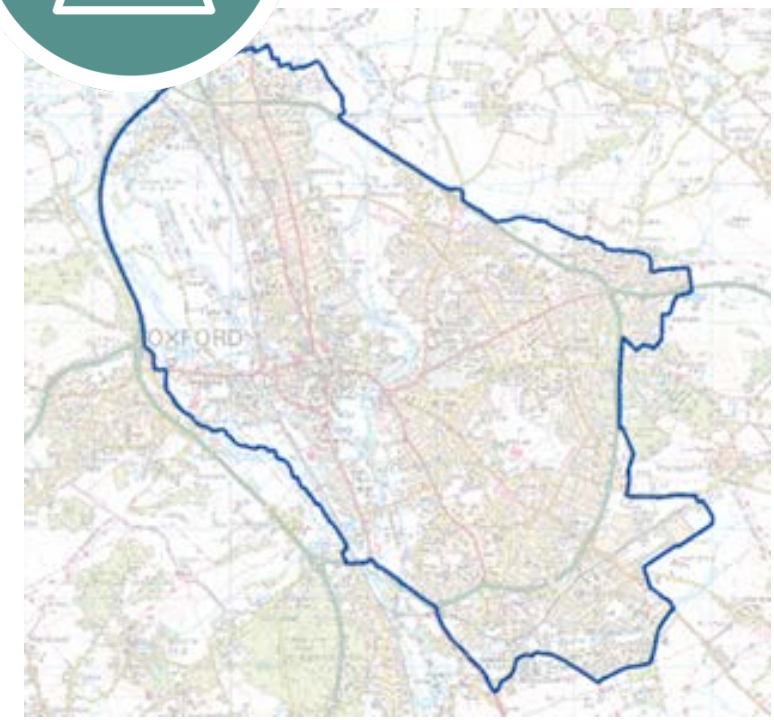
30 installations

20 volunteers

10 Co-wheels cars

Centre on Innovation and Energy Demand

TSU OXFORD



Next steps

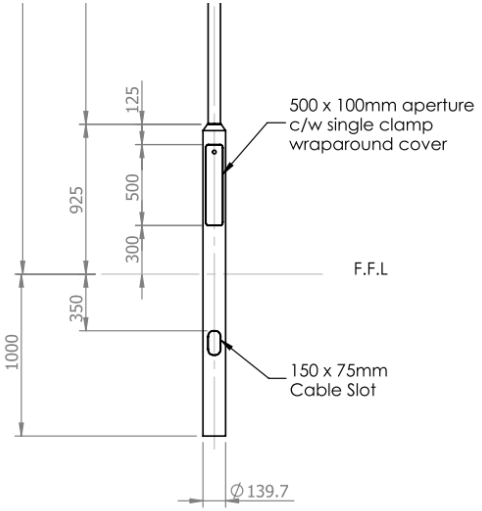
- City-wide expansion
- Up to 100 new solutions across the city
- Trial evaluations inform choices for expansion
- Legacy & sustainability:
- Minimise resource needs
- Revenue generation
- City-wide policy
- Share learning

Complexity

- Accessibility & safety
- Street furniture policy
- Streetscape
- Heritage
- Parking pressure
- Electrical connections
- Grid demand and resilience
- User requirements
- Will one size fit all?

Lamp column charging

- Evolt Opticharge
- Low cost for installation
- Paired with EV charging bays
- Fits to lamp column door
- RFID access or PAYG with app
- 3.5kW without disrupting lamp
- Higher power may require new supply
- Things to consider:
  - column position: must be kerb-side,
  - column diameter,
  - power capacity,
  - earthing

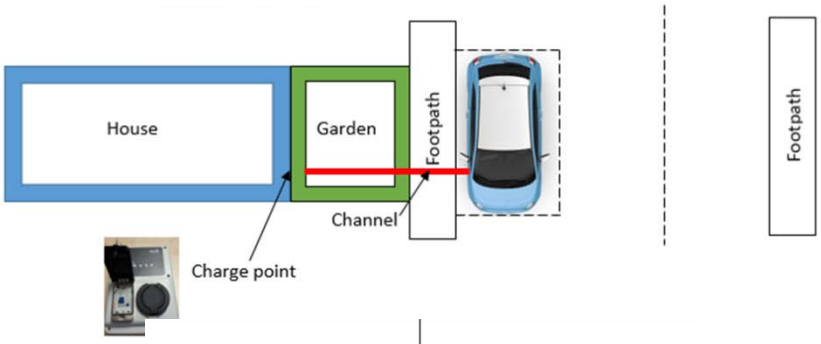


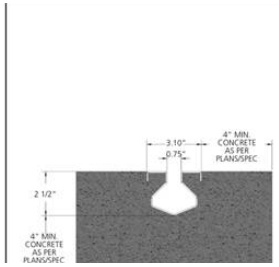
Lamp column charging

- Ubitricity
- Very low cost; 3 x sockets vs cost of a single standard lamp column charger or charging pillar
- Simple socket fitted to column door
- Data comms in ‘smart cable’
- Multiple sockets per street mean no EV charging bay is needed
- Socket activated using smart cable
- 3.5kW Standard Charging without disrupting lamp function

Cable channels

- Evolt eHome charger with pavement channel
- 7.5 kW ‘Fast’ charging (4 hours) using home electrical supply
- No dedicated EV charging space
- Access to charging is not public; only homeowner can use
- Narrow drainage channel opening
- Low cost
- Limited future revenue - no tariff
- Low future resource requirements





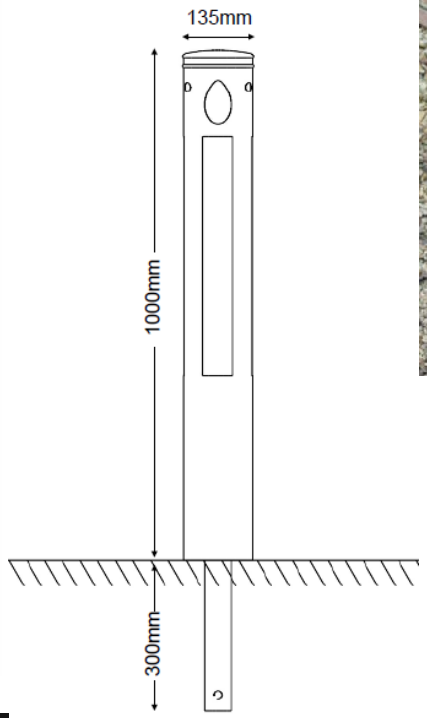
evolt

Charging pillars

- Evolt, Franklin Energy (Chago) & Zeta
- Free standing columns
- Access to charging is public
  - RFID card or app
- Dedicated EV charging space
- Higher power 7.5 kW fast charging
- Full vehicle charge in approx. 4 hours

Charging pillars

- DNO connections required
- Highest costs for hardware and installation
- Separate metred electrical supply
- Excavations and power supply connections require permissions and licences



FRANKLIN ENERGY

zeta

Procurement

- Open OJEU procurement - Supply & Installation of charging equipment:
  - Specific technologies of interest and encouragement of innovation
  - 3 categories: Lamp column charging, connection to home supply, ‘other infrastructure’
  - OCPP 1.5 compliance critical
- Concession Charge Point Network Operator :
  - Responsible for back office, maintenance, revenue collection, energy contracts
  - Experience of integrating OCPP 1.5 hardware critical

Business Model

- Capital funding only
- Resource demands: minimise on-going revenue costs and staff resource
- Revenue sharing: income stream opportunity
- Ownership: Retain ownership until project end in 2021
- Concession: ‘Charge Point Network Operator’ controls network including: Back office, maintenance, revenue collection, energy contracts.
- Public access supports business case –not restricted to residents only
- Variable tariffs for different user groups provide best value for residents

EV charging bays

- Traffic Regulation Orders
- Engagement with volunteers and stakeholders
- Residential use case: overnight charging at slower speeds
- 8am to 6pm
  - 3hrs maximum stay
  - cars must be plugged in
  - public access
- 6pm to 8am
  - no time restriction
  - cars must be plugged in
  - resident permit only (in permit areas)

GO ULTRA LOW OXFORD

THANK YOU

Bath & North East Somerset Council

Anthony Meehan
Corporate Sustainability Officer (Travel)
Strategy & Performance
Bath & North East Somerset Council

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Bath & North East Somerset Council

Delivering and influencing

Strategy & Policy

Sustainability Team

- Energy at Home
- Local food Strategy
- Corporate Travel Plan

FOOD

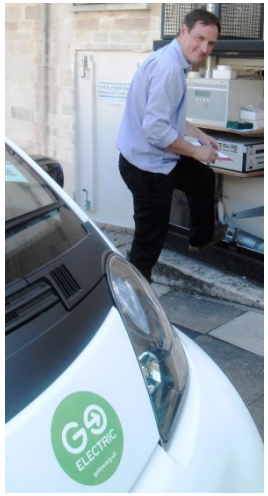
Energy

Carbon MGT

Bath & North East Somerset Council

If you build it….

Bath & North East Somerset Council



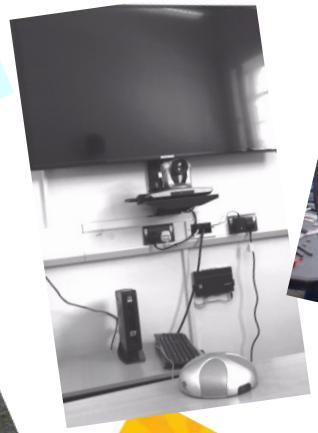
“We have about 70 tubes to monitor air quality in B&NES and we have to inspect & change them all each month. The E.V. is great for this as not only are we not contributing further to air pollution, but the public comment on the joined up thinking- for once!
Gary , Environmental Monitoring

“I am delighted we took the decision to replace two diesel vans with the all electric Nissan eNV200 vans. The drivers love them and we will deliver the same service 100% more sustainably and for less. Brilliant!”
Shaun Lawes, Information Management Service

Bath & North East Somerset Council

What have we done..?

Facilities



Incentives

Engaging

Tusker.

TICKETY SPLIT BETA

Grey fleet management

winner Bath and North East Somerset Council

Bath & North East Somerset - *The* place to live, work and visit

CUSTOMER SERVICE EXCELLENCE® CSE

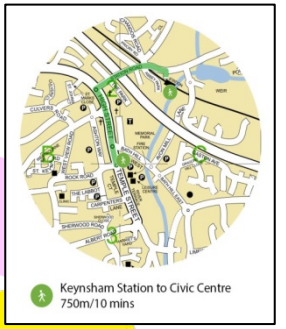
Bath & North East Somerset Council

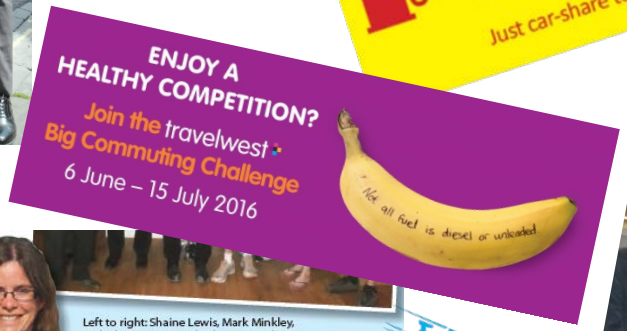
And…

Successful Pilots

Promotions

joinmyjourney





Sharing Good News

CUSTOMER SERVICE EXCELLENCE CSE

Bath & North East Somerset Council

For people like us…

"Being able to use a pool car now means I can work more flexibly between bases and save money and wear and tear not using my own car. And even a simple thing like a removable magnetic B&NES logo really helps when I need to drive with the children."

Becky - Children's Services

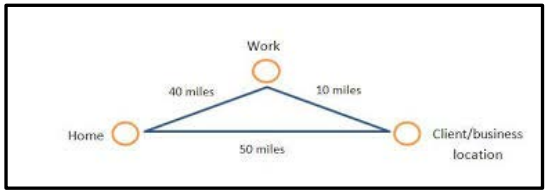
"It's just so much easier to use the pool bike and cycle to my appointments- I don't waste time getting to the car park or stuck in pointless traffic jams! And the electric pool bike means even Bathwick Hill is not a problem."

Suzie -Planning

Bath & North East Somerset Council

In 2010 business as usual was:

60% staff drove to work - on their own



We drove over 1.6 million miles for work

which cost over £1.1 million &

emitted 611 tonnes of CO_2

Bath & North East Somerset Council

Issues

- Cultural reliance on grey (private) fleet
- Grey what?- management of travel behaviour
- Duty of care exposure
- Little employee engagement with travel policy
- Historic anomalies – Parking Permits
- Perceived mileage payment as salary

Bath & North East Somerset Council

CTP Objectives

For Staff:
Health/wellbeing/active travel
Commuting choices
Save time/money
Less business mileage
Fair for all

For Council:
Reduce business mileage costs
Safer for staff & customers Address corporate liability risk
Improve local air quality & congestion levels
Reduce carbon emissions

Changing How We Work







CUSTOMER SERVICE EXCELLENCE CSE

Bath & North East Somerset Council

Results so far (2010-16):

£400k saved on ECU payments **annually**
£ 40k VAT recovered (**annually** pro rata) &
£240k reduction on mileage over period

CO2 reduced by 46% (283 tonnes)
11% reduction in staff driving alone to work
35% of staff using sustainable travel modes for in work travel

50k pool car miles / 16k E.V. (3 years)

Bath & North East Somerset Council

What does that deliver?

- Safer, cleaner & appropriate pool cars
- Flexible travel options for flexible working
- Partnerships

Published: Friday, February 24, 2017

Alice Kingham, a Senior Instrumental & Voice Tutor working in schools in Bath, has won a prize for achieving the most staff business miles travelled by bike last year!

CUSTOMER SERVICE EXCELLENCE® CSE

Bath & North East Somerset Council

- For team & individual level support

"Allegedly, I'm one of the highest users in the Council of a tablet computer on the move! The train journey & walk to the Keynsham offices only takes 20 minutes and feels like time well spent. I always arrange mgt. meetings at 15 minutes past the hour to align with the train timetable. A small detail but helps a lot."

Andrew Pate, Strategic Director - Resources

"Hi Anthony

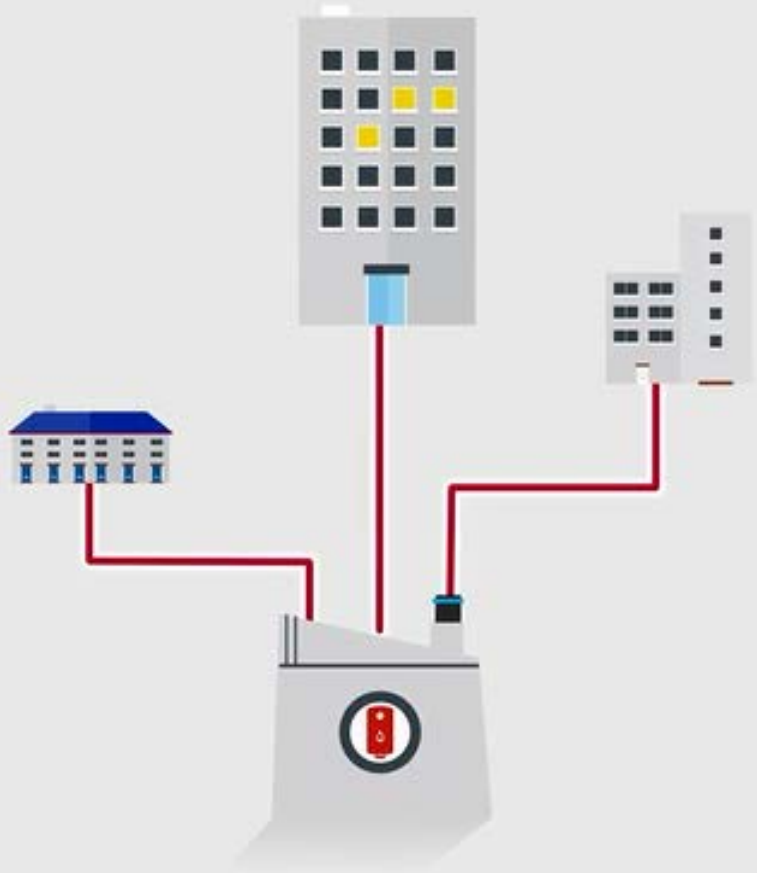
Just had loads of fun, clocked up a few miles and finished the survey in under what I had estimated. Came back along the river bank from Brassmill Lane. No traffic. What joy!

I will definitely be using it again and will promote it around the office. When can we have more?"

Paul- Highways

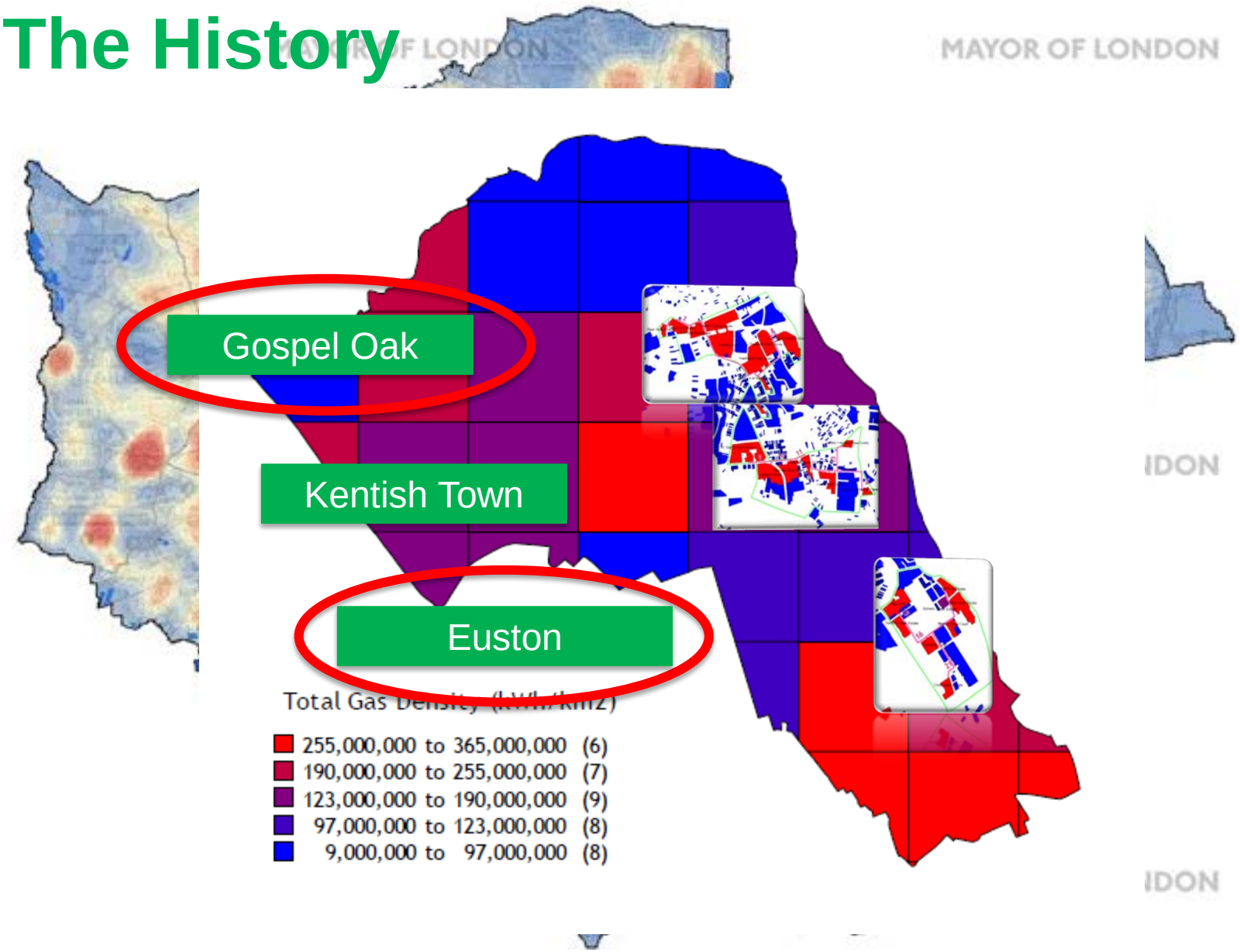
Decentralised Energy

District heat networks in the London Borough of Camden

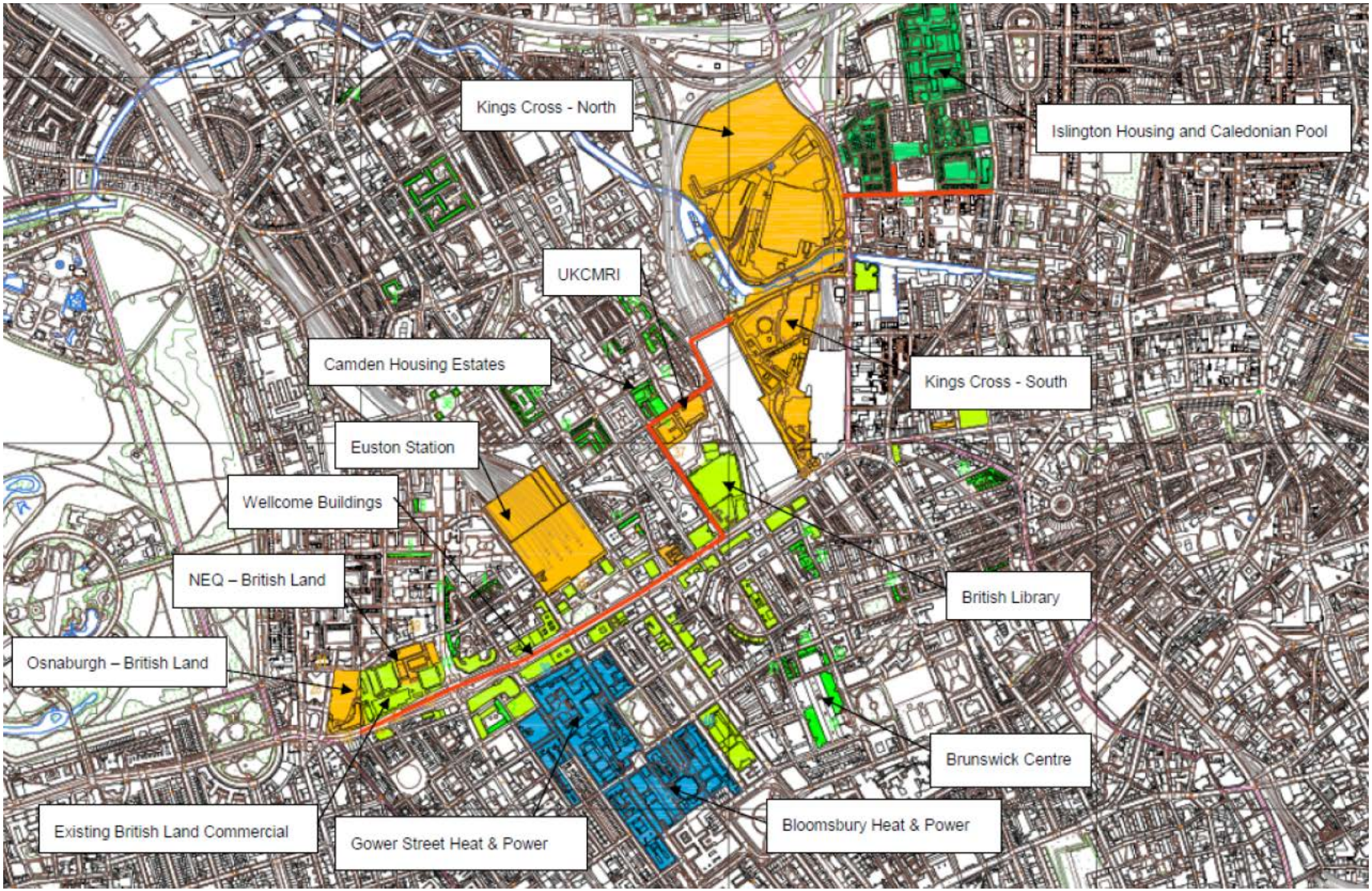


Jennifer Belk
Senior Sustainability Officer
(Low Carbon Energy)

The History


Gospel Oak
Kentish Town
Euston
Total Gas Density (kWh/km2)
255,000,000 to 365,000,000 (6)
190,000,000 to 255,000,000 (7)
123,000,000 to 190,000,000 (9)
97,000,000 to 123,000,000 (8)
9,000,000 to 97,000,000 (8)

How was Euston developed?



Somers Town Energy

We’ve made a video!

Points To Share

Financial Benefits	VS.	Non-financial Benefits
Savings over Business As Usual expenditure on plant replacement		Carbon reduction
Fixed plant replacement costs tied into maintenance charge		Ability to track emerging low carbon technology knowing that infrastructure is in place.
Long term (15 years) maintenance contract		Opportunity to provide new heating solutions to residents that will last.
Carbon reduction cost		Ability to retain control of heat pricing in order to protect residents.

Points To Share

The ability to retrofit

Making the most of the Council's traditional assets with little visual impact

Points To Share

Phasing

Reacting to replacement schedules and completion dates

Gospel Oak

Tripartite agreement

Royal Free London NHS Foundation Trust

mitie

Camden

- 1,449 homes
- 2,800 t of CO2 saved pa
- 51% of heat supplied by the waste from the CHP
- Launch 2015, heat since 2013

Royal Free's spare heat to warm up housing estates

SURPLUS heat generated from the Royal Free Hospital is set to be used to warm 1,500 homes in Gospel Oak.

The project, due to begin at the end of the year, will see heat, which would otherwise have gone to waste, captured and recycled for use on local housing estates.

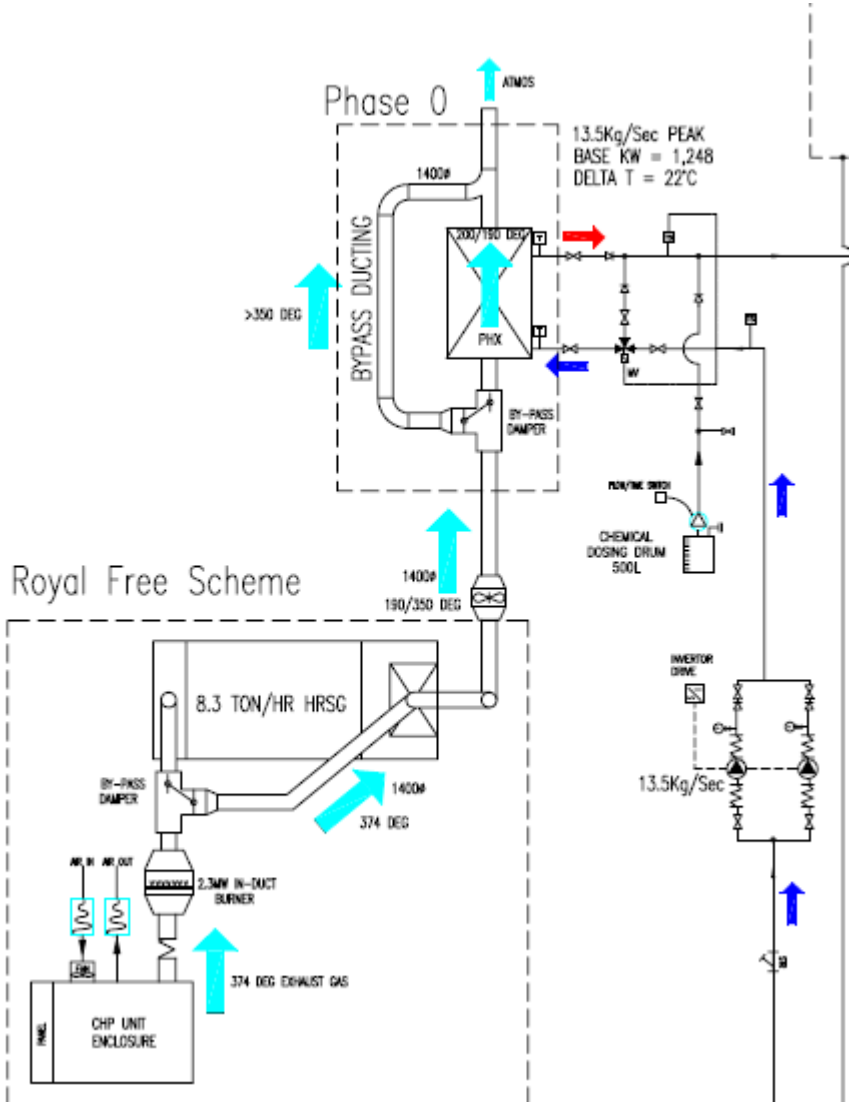
planned repairs. Estimates indicate that at least 2,800 tonnes of CO2 will be saved annually. This is equivalent to the same savings from insulating the lofts of around 4,000 typical semi-detached houses.

Work will also be done to look at the possibility of

- **Part funded by the GLA and CESP**
- **Savings realised from lower fuel costs will be used to set lower heating charges for residents**

Gospel Oak

- The gas turbine at the Royal Free hospital delivers electricity and heat to the hospital.
- The heat for the hospital is in the form of steam at circa 175 deg C
- Once this heat has been delivered there is still residual heat which can be recovered to generate hot water
- This is achieved by the addition of a heat exchanger which cools the exhaust from the Royal Free turbine down to 120 degrees C
- The heat exchanger delivers up to 1.5MW of heat to the pipe network. This is the “Camden” heat exchanger



Gospel Oak

- The Camden heat exchanger is located on the roof of the Royal Free and is connected by pipe work to the pump house at Fleet Road
- From here a circa 1 km network delivers heat to the six blocks of flats on the network
- Whatever heat cannot be delivered by the Camden heat exchanger is supplied by gas fired boilers

Further Opportunities

The scheme has been installed from day one with a peak capacity capability of 3.5 MW

The Camden heat exchanger at the Royal Free supplies 1.5 MW so 2.0 MW of capacity can be added

The additional capacity can be provided by a choice of energy sources such as;

- Sewer energy recovery heat pump
- 2 Mwe combined heat and power unit
- Medical waste to energy plant

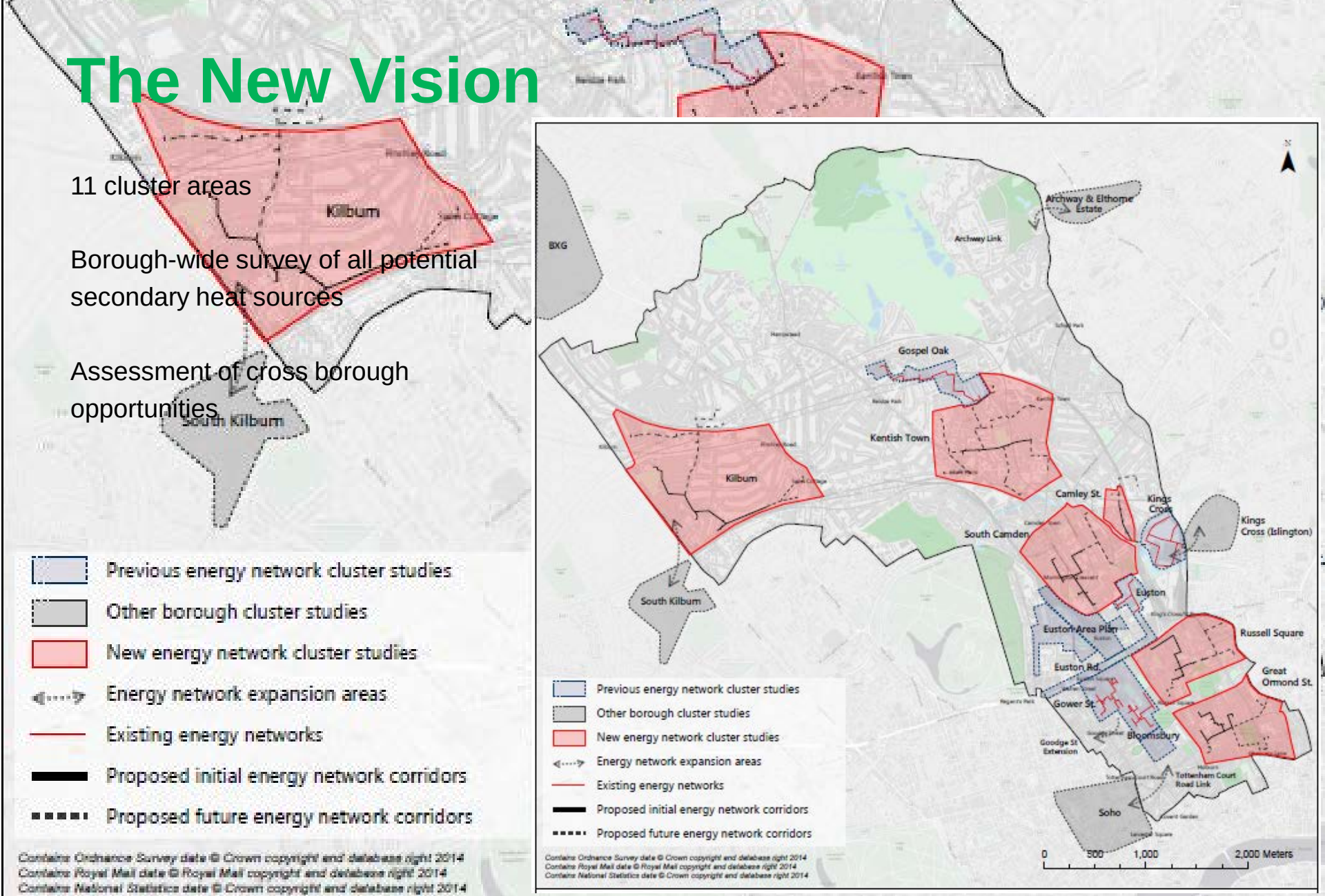
Whichever solution is chosen will maintain the ethos of joint benefits that have been delivered by this initial scheme whilst further maximising the efficiency of utilisation of every kWh of primary energy

The New Vision

11 cluster areas

Borough-wide survey of all potential secondary heat sources

Assessment of cross borough opportunities



Example Cluster

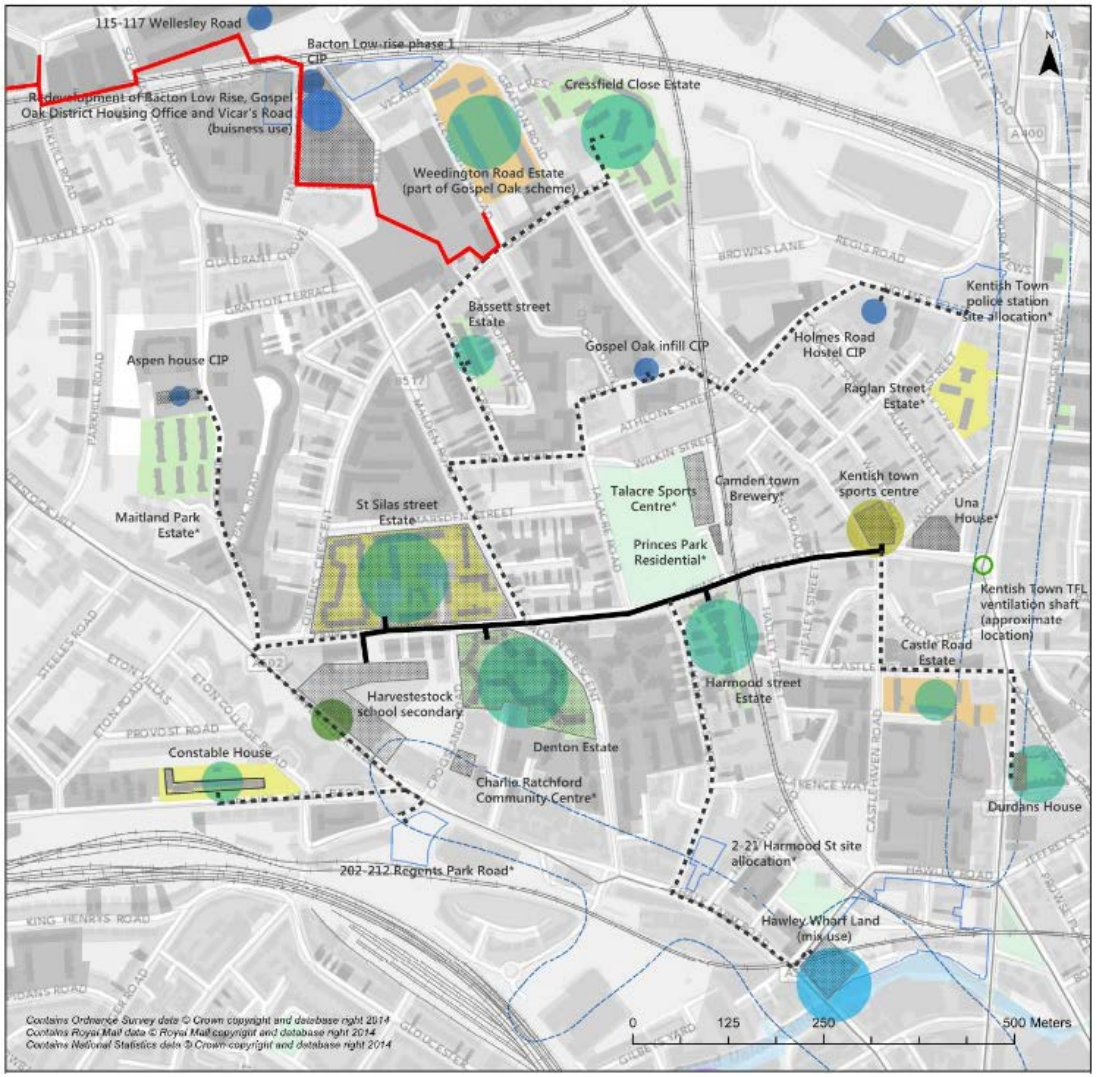
Kentish Town

Many of the loads Council owned

Mix of development including housing, sports centres and schools

Potential to link into our existing Gospel Oak network

Planning framework area to the south of the cluster in Chalk Farm



How have we progressed this cluster?

Applied for funding from HNDU to deliver a detailed feasibility study for this area.

£70,000 study instructed to provide a ‘governance ready’ project.

Study now in progress with objective to:

- Look beyond gas CHP and assess a wide range of different technologies
- Provide a long term strategy for various opportunities e.g. existing assets, the existing network and the development areas.
- Deliver an outline business case proposal for the preferred project

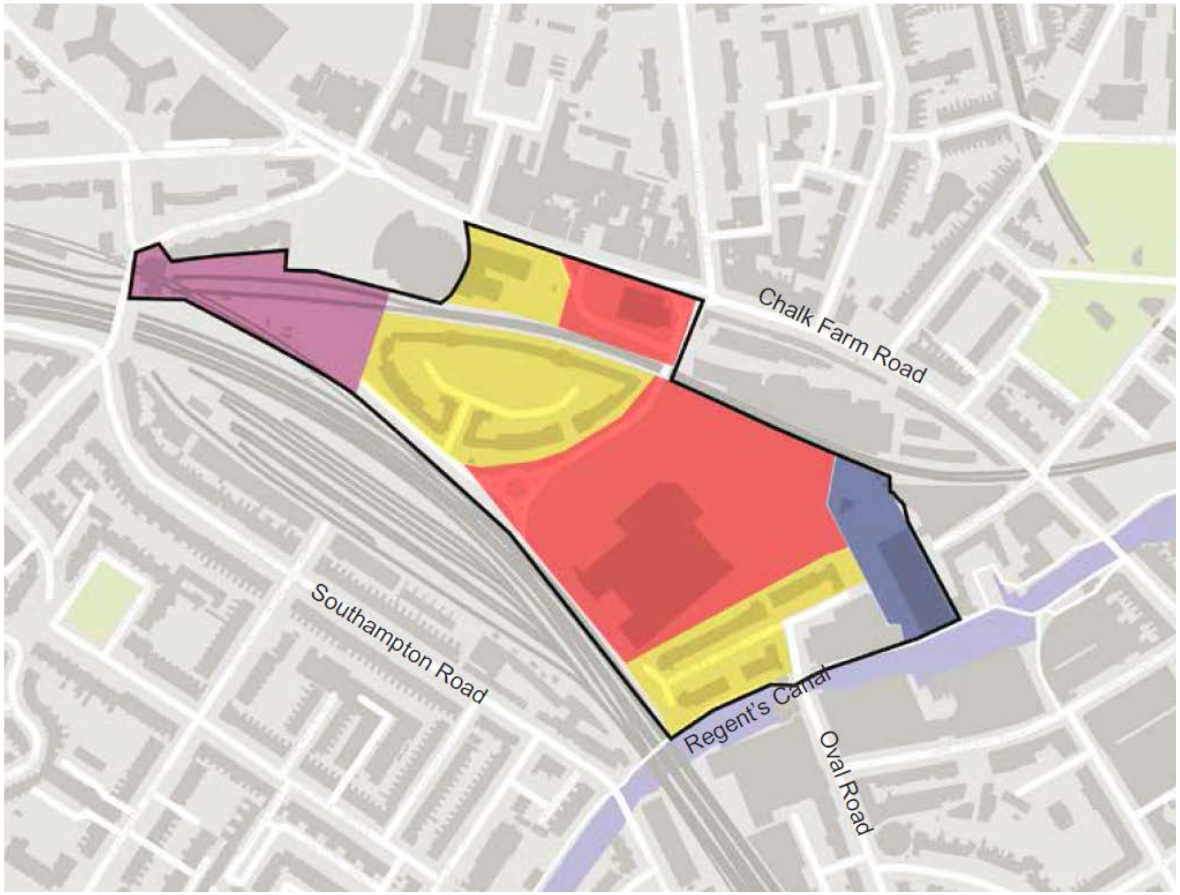
***A much greater emphasis placed on discussion and engagement has helped move things forward.**

Shaping new development

The Chalk Farm planning framework

To be used as Supplementary Planning Guidance for all developments in the area.

Since the Kentish Town study is still being completed, Camden has allowed for the study findings to ‘taken account of’ by new developments and that they should ‘support the realisation of its conclusions’.



What does the future look like?

Our ultimate objective is to have an in-depth evidence base for all of our 11 cluster areas so that the Council is prepared for opportunities arising from building refurbishments and planning applications.

In the short to medium term:

- Finish the Kentish Town feasibility study concluding a progressive and deliverable project option
- Contribute to the research and development of future technologies for this sector
- Start work on another cluster area to provide further opportunities for the borough

But, most importantly…

We have recently received £1.05m HNIP funding for the extension of our Somers Town Energy network!

So, 2017 -2018 will be spent delivering Phase 2 of the scheme. This will involve:

- The installation of a CHP to generate electricity as well as heat from the scheme
- The extension of the scheme to a further 230 residents, a school, a nursery and community facilities.

We were able to apply for the funding as a result of the feasibility work supported by HNDU.

What do you want to discuss?

To find out more, visit: www.camden.gov.uk/de

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