

Project:	DH Haringey	Job No:	60624663
Subject:	Wood Green – Previous Work Review		
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Wood Green – Review of Previous Feasibility Study

Introduction

The Wood Green feasibility study was completed in 2016, this memo summarises the outcomes of a compliance review with the CIBSE/ADE Heat Networks Code of Practice CP1 and to identify any further opportunities for the feasibility refresh. The purpose of this memo is to summarise the key points and recommended actions to ensure fully compliance is achieved and the development of the scheme reaches its full potential. A table detailing each point contained within in the standardised CP1 objectives checklist is presented in the Appendix. The sections of CP1 the study has been reviewed against is section 2. Items 2.1 to 2.12 covering feasibility.

Key Next Steps:

Following the review, the following next steps are proposed to ensure CP1 compliance and best practice for the DEN development; further feasibility work:

1. Peak heat demands and annual heat consumptions

- Revisit energy loads (incl. heat, cooling and electricity), as well as development timeframe based on updated masterplan/planning information and engage with LBH planning department /developers to confirm development accommodation schedule and timeframe. (Please see Appendix B and D for more details).
- For existing building, collect and analyse recent metered energy data, where available. In addition, obtain information on current thermal plant e.g. boiler capacity, boiler age, and how these are operated in practice. (Please see Appendix B and C for more details)
 - Identified existing buildings expected to be retained in their current state: Trinity Primary Academy, Alexandre Infants and Junior School, St Michael's CoE Primary School, LBH Civic Centre, Palm House and Council Owned Houses (North of Parkland Road).
 - Recent completed development (completed in 2016): Lymington Avenue/Noel Park Road (Artizan Court).

2. Low carbon heat sources and location of energy centre

- Revisit previous identified potential heat sources to confirm their suitability/unsuitability including heat pumps, heat from underground ventilation shaft (Piccadilly Tube Line), Crossrail 2, Edmonton EfW Plant, heat recovery from buildings, GSHP in Barratt Gardens etc. In addition, review technologies included in the 'Long List of Technologies' to be provided by LBH. (Please see Appendix B for more details on information required)
- Revisit phasing of the energy centre development and generation plant in the energy centre in light of updated/finalised planning application.

3. Location of top-up and standby boilers and use of existing boilers

- Review energy centre provisions based on current planning information/ latest St Williams designs.
- Revisit top-up boiler's capacity based on revised planning information, revisit assumptions around plant sizing, ensuring load diversity and provision of redundancy have been captured.

4. Operating temperatures

- Establish most suitable operating temperatures for the network and heat source(s) selected. As network is to serve predominantly new developments, operating temperatures likely to be determined to suit new development's preferred design operating temperatures. Impact of low operating temperature on existing buildings to be considered.
 - Identify and confirm whether existing buildings proposed to connect can operate at (70/40°C) and if not whether modifications can be made or whether top up existing heating plant should be retained.
 - Establish what temperatures buildings are being designed to operate at. Take all steps to drive down flow and return temperatures with pushing for best practice secondary side designs.
- 5. Heat network distribution routes, pipe sizes and costs**
- Confirm network extent. Revisit pipe route and sizing based on revised masterplan and network constraints.
 - Revisit pipe cost assumptions made around insulation series level and dig type/depth. Consider impact of network route on cost/scheme efficiency.
 - Review existing services (C2) records.
- 6. Building connection costs including heat metering**
- Revisit capacity of heat substation based on updated/finalised planning information.
 - Consider whether direct or indirect connections are required at building level and dwelling level and the type of domestic hot water services provision.
 - Revisit substation/connection costs (incl. provision of redundancy of heat exchangers).
 - Ensure accurate allowances for heat metering and billing costs are included in the TEM
- 7. Private Wire**
- Revisit opportunities for private wire connections, confirm potential customers and volume of electrical sales possible.
- 8. Minimise the negative impacts of phasing the development**
- Review the options for future phasing of the network as part of the wider Haringey DEN proposals.
 - Ensure EC design makes allowance of future installation phases where alternative generations technologies may be installed.
- 9. O&M**
- Ensure O&M costs for alternative technologies are specific to the technology and system being evaluated.
 - All OPEX assumptions and inputs need reviewing to ensure they are up to date and reflective of the current market conditions.
- 10. TEM**
- Power export prices to be reviewed.
 - All forecasts to be updated to 2019/20 projections.
 - Heat Tariffs option to use heat trust calculator rather than comparison to a boiler BaU case. (<https://heattrust.org/test-the-comparator>)
 - Review counterfactual case in new developments. These may no longer be gas boilers and instead a electric based solution – offering different heat tariff options.

Appendices:

- **Appendix A – CP1 Checklist**
- **Appendix B - Information Required (CP1 Objectives 2.1 and 2.2.)**
- **Appendix C – Load List (Existing Buildings)**
- **Appendix D – Economic Assumptions**
- **Appendix E – Review of Planned Developments**

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Appendix A – CP1 Checklist

CP1 Checklist			Previous Study (Feasibility Phase 2016)		Haringey Decentralised Energy Network (2019-2020)	
Item	Objective	Key Outputs	Has CP1 been followed?	Information from Previous Phase Report	Opportunities to improve compliance	Recommendations / Actions
2.1	To achieve sufficient accuracy of peak heat demands and annual heat consumptions	Output 2.1a - Energy (heat, cooling & electricity) mapping report	Met	New Developments: heat demands for both domestic and non-domestic buildings estimated using benchmarks taken from the 2015 GLA study for the London Energy Plan. Existing buildings: for the existing buildings identified, energy demand data (gas and electricity) have been provided for each site for the period April 2014 to March 2015. For the recent (recent in 2016) development (Lymington Avenue/Noel Park Road), number of flats was provided and the energy demands (heat and electricity) estimated using benchmarks for new residential developments (flats).	Revisit the heat and electricity loads for the new developments based on revised masterplan. Obtain metered energy data for the development completed in 2016; Lymington Avenue/Noel Park Road. Obtain recent metered energy data for identified existing buildings.	1) Revisit energy loads and development timeframe based on updated masterplan. Confirm development accommodation schedule and timeframe with LBH planning department and developers. 2) For existing buildings collect and analyse recent metered energy data, where available. In addition, obtain information on current thermal plant e.g. boiler capacity, boiler age, how these are operated in practice etc.
		Output 2.1b - Accurate estimates of heat demands				
		Output 2.1c - Predicted future heat demands				
		Output 2.1d - Report on potential stakeholders				
2.2	To identify the most suitable low carbon heat sources and location of an energy centre	Output 2.2a - Energy Masterplanning report	Met	Consideration of various heat sources was given including biomass boiler, industrial/commercial waste heat recovery (underground, Crossrail 2 and buildings), EFW and heat pumps (Table 4). While Gas-CHP was identified as initial technology, consideration has been given to the future linking with EFW or the replacement of the CHP with heat pumps.	Revisit previous identified heat sources to confirm suitability/unsuitability, including: heat pumps, heat from underground ventilation shaft (Victoria Tube Line or Crossrail 2), heat recovery from buildings, heat from Edmonton EFW plant etc.	1) Revisit previous identified potential heat sources to confirm suitability/unsuitability, including heat pumps, heat from underground ventilation shaft (Victoria Tube Line) or Crossrail 2, heat recovery from buildings, heat from Edmonton EFW plant etc. 12) Revisit phasing of the energy centre plant t in light of updated/finalised planning application.
		Output 2.2b - Heat network energy model				
		Output 2.2c - Heat source(s) assessment report				
		Output 2.2d - Energy centre location report				
2.3	To determine the location of top-up and standby boilers and use of existing boilers	Output 2.3a - Top-up & standby heat source(s) report	Met	Location of top up / back up assumed to be within main energy centre.	Revisit top-up boiler's capacity, installation phasing and revisit assumptions around plant sizing; ensure load diversity and provision of redundancy have been captured.	1) Revisit top-up boiler's capacity based on revised planning information, revisit assumptions around plant sizing, ensuring load diversity and provision of redundancy have been captured.
		Output 2.3b - Control strategy report				
2.4	To select suitable operating temperatures	Output 2.4a - Target operating temperatures report	Met	The network designs assumed an operating delta T of 30°C, representing a flow temperature of 70°C and a return temperature of 40°C. The limiting maximum flow velocity is assumed to be 2.5m/s, and the limiting pressure is assumed to be 250Pa/m of pipe length.	Further investigations into existing heating systems required to confirm whether 70/40 can be achieved for all networks. Confirm with developers whether their buildings were designed to operate at lower temperature.	1) Confirm whether the existing buildings proposed to be connected can operate at 70 / 40DegC and if not whether modifications can be made or whether top up heating plant should be retained. 2) Confirm with developers whether their buildings were designed to operate at lower temperature, confirm circuit types radiators, AHU, underfloor heating etc.
		Output 2.4b - Network control strategy report				
		Output 2.4c - Heat Exchanger approach temperatures report				

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2.5	To define heat network distribution routes, pipe sizes and costs	Output 2.5a - Network pipe routes & sizing report	Met	Route identified in Figures 10 (this is based on the EC being located within Clarendon Square (EC Location 5)). A check has been carried out on the effect of the energy centre being located near the waste depot adjacent to the railway (Location 2 identified in section 3) on the heat network layout and pipe sizing. This showed that the pipe sizes vary however the overall pipe length is very similar. Main barriers to the installation of a heat network are the Piccadilly underground line and the High Road on the eastern side of the area. While routes exist that avoid running down the High Road if required, it will still be necessary to cross this route, which runs above the Piccadilly Line. To the south of the masterplan area Turnpike Lane is a major traffic route and the over-ground railway line to the west are the other major constraints to expansion of the network in the future. Pipe sizes provided in Figure 9. Costs estimated can be found in Tables 6.	Revision of pipe route, sizing, in light of updated planning information and network constraints. Obtain and review detailed existing services record. De-risk and confirm previous proposed routes where necessary (e.g. pipework running down High Road, crossing of Piccadilly Line, pipework running down Turnpike Lane at one section of the network etc.)	1) Revisit pipe route and sizing based on revised masterplan and network constraints 2) Revisit pipe cost assumptions including series level and dig type
		Output 2.5b - Initial insulation thickness calculations				
		Output 2.5c - Initial network cost calculations				
2.6	To determine building connection costs including heat metering	Output 2.6a - Direct/indirect connection report	Met	Most of the sites that are assumed to connect are new build and therefore are anticipated to pay a connection charge. This charge is set below the cost of installing plant on each individual site to provide a financial incentive to developers to connect while providing income to the heat network. Retained sites that are assumed to connect will not pay a connection charge as they do not have any plant costs to offset at the time of connection.		1) Revise heat substations capacity (based on updated masterplan) (incl. the provision of redundancy of heat exchanger). 2) Consider whether direct or indirect connections are required at building level and dwelling level and the type of domestic hot water services provision 3) Revisit substation/connection costs (incl. redundancy of heat exchangers).
		Output 2.6b - Connection/metering cost report				
2.7	To minimise the negative impacts of phasing the development	Output 2.7a - Overall phasing plan	Met	At the time of writing the report a phasing plan had not been developed for the Wood Green masterplan. In order to allow for the impact of the build out of the masterplan over time an initial estimate of the potential phasing has been made based on information in Haringey's Local Plan Site Allocations DPD Consultation Document, and the estimated development time of Crossrail 2, seen as a major driver for the development and growth of the Wood Green area.	Review and confirm development phasing with developers/council.	1) Review updated masterplan/planning information to confirm development phasing. 2) Engage with developers to confirm development accommodation schedule and timeframe, where possible.
		Output 2.7b - Future proofing plan				
2.8	To assess lifecycle operation, maintenance and	Output 2.8a - Operational energy model	Met	Energy, maintenance and replacement costs are included in the economic model.	Revisit costs and assumptions made around operating and maintenance costs. Ensure costs and assumptions are up to date and reflective of the current market conditions.	1) Update operating and maintenance cost as necessary (Please see Appendix E for more detail).

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	replacement requirements, costs and revenues	Output 2.8b - Repair/replacement strategy				
2.9	To conduct a consistent economic analysis and options appraisal	Output 2.9a - Initial CAPEX model	Met	Techno-economic analysis has been undertaken for a number of options based on a consistent set of assumptions and data.		1) Review economic assumptions and update where necessary (Please see Appendix E for more detail). 2) Update inputs for the techno-economic model.
		Output 2.9b - Life cycle cashflow model				
		Output 2.9c - NPV and IRR calculations				
2.10	To analyse risks and carry out a sensitivity analysis	Output 2.10a - Risk register & risk analysis	Met	Sensitivity analysis carried out as part of techno-economic modelling, section 5 of report. Risk register presented in section 5.4 of the report.	Undertake sensitivity analysis to show impact of major risks on projects financial performance (parameters and lower/upper limits to be agreed with the client). Update risk register correspondingly.	1) Undertake sensitivity analysis and update risk register correspondingly.
		Output 2.10b - Sensitivity analysis report				
2.11	To assess environmental impacts and benefits	Output 2.11a.a - Life cycle CO2 emissions calculations	Met	CO2 emissions calculated as part of the techno-economic assessment and reported in		1) Update CO2 impacts and benefits.
		Output 2.11a.b - Network heat losses calculations				
		Output 2.11a.c - NOx emissions calculations				
2.12	To contribute to the development of business structure, contract strategy and procurement strategy	Output 2.12a – The business case (redacted if necessary, to protect sensitive commercial information).	Met	Business structures likely to be most appropriate to a Wood Green DH scheme discussed in the report.	Based on the results from the techno economic analysis identify the preferred business structure for developing the scheme – this part of the wider programme works.	This is to be looked at as part of the wider works to develop the DEN procurement processes. Project wider programme to capture all necessary steps to deliver required business structures.
		Output 2.12b – Procurement strategy				

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Appendix B – Information Required (CP1 Objectives 2.1 and 2.2.)

CP1 Objective	Items	Information required
		Peak heat demands and annual heat consumptions
2.1	New Developments	Accommodation schedule (number of flats, type of flats, commercial use type and commercial floor area etc.)
		Development timeframe
		Cooling requirement of the building and cooling system type
		Energy Statement Documentation including SAP calculations
		Energy supply proposed to be installed to serve development
		System operating temperatures, tertiary circuit (radiator, underfloor heating, AHU etc.)
		Plant Room location
		S106 Document – (For financial TEM inputs)
	Existing Buildings	Recent metered data ideally at half-hourly resolution (if available)
		Information on current thermal plant, including: boiler capacity, number of boilers, plant configuration (e.g. n+1), boiler age and condition, how plant operates in practice etc.
		Plant Room locations
		Planned future work e.g. fabric improvement works, control system improvement, building extension or demolition, change in use type
		Cost of gas unit cost and gas standing charge, electricity unit cost and standing charge, replacement cost, maintenance cost
		Cooling requirement of the building and cooling system type
		Building use type
		Low carbon heat sources
2.2	Heat from Underground ventilation shaft (Piccadilly Line)	Temperatures from ventilation shaft throughout the year
		Ventilation shaft location
		Physical space near ventilation shaft to accommodate heat exchanger (either nearby ventilation shaft or within the underground tunnel itself)

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		Airflow rates in m3/s
	Heat Recovery from Buildings	Establish which building will have cooling requirement
		Obtain/Estimate cooling load and heat available from cooling system
		Identify cooling system type (e.g. water-cooled chillers, air cooled chillers etc.)
	Heat Recovery from Crossrail 2	Temperatures from ventilation shaft throughout the year
		Development timeframe
		Ventilation shaft location
		Identify physical space near ventilation shaft to accommodate heat exchanger (either nearby ventilation shaft or within the underground tunnel itself)
		Airflow rates in m3/s
		Confirm whether cooling to be provided at station
		Obtain/Estimate cooling load and heat available from cooling system
		Identify cooling system type (e.g. water-cooled chillers, air cooled chillers etc.) – if applicable
	Heat from Barratt Gardens (GSHP)	Available m2 area in which to install collectors
		Objections – restrictions to installation.
		Indication of any 3 rd Party costs for using land etc

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Appendix C - Wood Green – Load List (Existing Buildings)

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Appendix D – Modelling Economic Assumptions

Category	Input	Source	Value (Previous Phase)	Feasibility Updates/Further Works
Network costs	Year investment commences	Assumed 2019	2019	This will depend on the development timescale.
	Year network becomes operational	Assumed 2020	2020	This will depend on the development timescale.
	Cost per metre of network pipework	Averaged quotes from network installers	See Table 11 (Report)	Cost of pipework to be based on latest manufacturers data.
	Capital cost per sqm energy centre	Based on AECOM experience of previous projects	£2,000	-
	Capex of gas CHP per kW	Averaged quotes from installers; plant size/type dependent	£1000/kW	To be based on recent supplier quotes
	Opex of gas CHP		£0.93 - £1 /MWh	To be based on recent supplier quotes
	Lifetime of gas CHP plant	Averaged quotes from installers and AECOM experience of previous projects	15 years	-
Energy Prices	Retail prices of electricity and gas by sector	DECC 2016: <i>Prices of fuels purchased by non-domestic consumers in the UK</i>	Refer to table 3.4.2 of referenced source.	Retail electricity and gas prices to be based on latest publication of table 3.4.1; DECC 19 Dec-2019, <i>Prices of fuels purchased by non-domestic consumers in the UK</i>
	Export tariff for electricity sold via GLA Licence Lite scheme	Recommendation from GLA	3.63p/kWh	To be revisited
	Tariff for heat sold on network		10% below cost of operating individual gas boilers. Individual gas boiler costs are made up of: Commercial Boilers - Replacement £138 per kW (annualised over assumed life) - Maintenance £4 pa / kW - Life 20 years - Average gas cost 3.41p/kWh Domestic Boilers - Replacement £3,000 per dwelling (annualised over assumed life) - Maintenance £200 pa per dwelling - Life 15 years - Average gas cost 4.3p/kWh	Average gas cost to be updated
	Gas costs for energy centre	DECC 2016: <i>Prices of fuels purchased by non-domestic consumers in the UK</i>	Refer to table 3.4.2 of referenced source.	Gas cost of energy centre to be based on latest publication of table 3.4.2; DECC 19 Dec-2019 <i>Prices of fuels purchased by non-domestic consumers in the UK</i>
	Forward projections for retail prices of electricity and gas	DECC/IAG: <i>2014 energy and emissions projections: projections of greenhouse gas emissions and energy demand 2014 to 2030.</i>	Refer to tables in Annex M of referenced source.	To be updated based on latest publication 2019 of DECC/IAG: <i>Energy and emissions projections: projections of greenhouse gas emissions and energy demand 2014 to 2030.</i>

Appendix E - Wood Green – Review of Planned Developments

Site Name	Developer	Application (Full/Outline/hybrid)	Building Name	Total Number of Residential Units	Non-Residential Use Class	Non-Residential Floor Area (m2)	S106	Carbon Offsetting Contribution	Energy Statement Available	Notes
22-42 High Road, Wood Green	Lazari Developments Ltd.	HGY-2018-3145 (Pending)	Block A	29	C1	3450	No S106 received, no S106 available on the online planning portal. CIL contribution mentioned in the Energy Statement.	£276,372	Yes (no SAP Calculations included). CIL payment to be around £276,372 (153.54 tonnes/year at £60 per tonne over 30 years). Centralized energy centre to comprise CHP and boilers as well as ASHP and PV Panels. Cooling demand of the retail areas will be served by Air Source Heat Pumps (ASHP). Combined Heat and Power (CHP) and instantaneous gas fired water heaters will provide hot water demand of the hotel, along with Air Source Heat Pump for cooling and space heating, as well as Photovoltaic panels to generate electricity	CHP, gas boilers, ASHP. 3-8 storey buildings.
			Block B	43						134-room Hotel on site (separate building?) Retail on ground floors of A and D, 3450 sqm total. Office space within some of the buildings -
			Block C	19						
			Block D	43	A1					
			Block E	45	B1	525				
			Block F							
Chocolate factory	Workspace	HGY-2017-3020	Chocolate Factory (Block A)		A1, A3, B1, D1 and D2	8,344	Carbon Offsetting Contribution £309,060 (Public Realm Contribution £150,000 towards improving the pedestrian public realm?)	£309,060	Yes. At this stage, and in line with the Council’s recommendations, a local heat network with its own energy centre and CHP is not proposed. Individual block boilers will provide heat to each building until the future Wood Green heat network becomes available.	3-16 storey buildings. Class C3 residential units. 4 new build blocks. Mixed use development comprising 9,376 sqm GIA commercial. Residential within blocks B, D and E. 6 floors of Commercial within block A and ground floors of E and F.
			Block B	64						
			Block D	57		570				1 floor of commercial
			Block E (courtyard)	109	A1, A3	1,014				2 floors of commercial
			Block F (western Road)		B1, D1, D2	729				3 floors of commercial
Clarendon Sq	National Grid Property Holdings Ltd / London Development Agency	HGY-2017-3117 (permission granted - outline)	Entire Development	1200	A1, A2, B1, A3, A4	2500	No mention of carbon offsetting contribution in S106 provided and in S106 taken from planning portal		Energy Statement provided (produced in 2009) - Proposed energy strategy for site consists of biomass boilers and gas CHP. Energy Statement from 2018 (online planning portal): Cooling is assumed to be provided to the commercial areas via Air Source Heat Pumps (HSHP) at efficiency (EER) of 4.5. Space heating and hot water for all non-residential units is anticipated to be provided by the heat network. For the Be Lean case, this is a 91% efficient gas boiler, as per GLA guidance. The North Energy Centre is intended to supply heat to the Wood Green Heat Network providing the network with a capacity of 15-20MW. At 800-1,000 m2 the North Energy Centre has been determined as sufficient to provide the 16MW loads desired by Haringey. Therefore, St William will provide this space for the London Borough of Haringey who will then take control (design, fit out, operation). Once completed the south Energy centre could be decommissioned, and heat supplied by the North Energy Centre should it be appropriate to do so. Therefore, pipe routes from north to south have been safeguarded. It is expected that an Energy Centre will be located in the south of the development to be nearest the first phase of the build. A larger second Energy Centre can be located in the North where the density of the development is greater and where the geography is preferable. The north Energy Centre allows for future connection and provision to provide heat to the wider area. (An Energy Centre of around 400-450m2 is required to serve the CGW loads, which is likely to require around 6-7MW of gas boilers.)	87,000 m2 of residential area, 700 m2 business/ workspace, 700 m2 retail, 550 m2 café/ bars, 550 m2 community space. CHP to be installed, with heat storage + gas boilers. Communal heating system. Thought to be small cost to connect to DEN. E bed has 2 bathrooms. Buildings A1-C1 in planning docs but these only cover 622 flats. Other flats shown in development site map, but detailed breakdown not included in planning application - possibly in another application.
			Clarendon Gas Works Building A1	35						
			Clarendon Gas Works Building A2	58						
			Clarendon Gas Works Building A3	99						
			Clarendon Gas Works Building A4	104						
			Clarendon Gas Works Building B1	20						
			Clarendon Gas Works Building B2	38						
			Clarendon Gas Works Building B3	41						
			Clarendon Gas Works Building B4	58	Nursery (D1)					
			Clarendon Gas Works Building C1	169						
			D1		A1, A3	549				
			D2							
			D3							
			D4		A1	120				
			E1		A1, B1	623				
			E2		A1, B1	683				
			E3		A1, B1	530				
			F1		A1, B1, D2	1200				
			G1		B1, A3	714				
			G2		A1, B1	708				
			H1		A1, A3, B1	673				
			H2		A1, B1	562				
			H3		A1, A3	399				
			J1		B1	574				
			J2		B1, A4	1435				

Heartlands High School		HGY/2008/1431 (Permitted)				10,930	No S106 received, no S106 found in the online planning portal. Also, no mention of it in the Energy Statement.		Yes (no SAP Calculations incl.), produced in 2008. Secondary School arranged over three to five floor levels (gross floor area 10,930 sq. metres). CHP + GSHP	Secondary School arranged over three to five floor levels (gross floor area 10,930 sq metres). CHP + GSHP
LAND OFF BROOK ROAD, WOOD GREEN	Austringer Capital Ltd	HGY-2017-2886 (Decision pending)		169	A1-A5, C3, D1, B1	1,100	No S106 provided and no S106 available in the planning portal. Carbon Offsetting Contribution information taken from Energy Statement	£261,900	Yes incl. SAP calcs. The remaining regulated emissions equate to 97 tonnes of CO2 per year 97tCO2 per year x £2,700 = £261,900 The total carbon offset payment for the proposed residential development is £261,900. The enhanced fabric, efficient servicing plus PV combined energy strategy will deliver a calculated 40.12% Dwelling Emission Rate reduction over Building Regulation Part L, 2013 standards. Proposed Low and Zero Carbon Energy Solution Photovoltaic (PV) arrays and district heating incorporating combined heat and power (CHP) are therefore selected as the appropriate low and zero carbon energy technologies to contribute to the CO2 emission reduction target. These are discussed in more detail below.	Onsite CHP communal system + gas boilers. 6-9 storey building providing residential accommodation (Use Class C3), medical centre (Use Class D1), four retail units (Use Classes A1-A5) and a flexible retail / office unit (Use Classes A1-A5 and B1). 4 retail units ranging in size from 179sqm to 449sqm at ground and first floor level. medical centre of c. 1,027 sqm at ground and first floor level. 1,036sqm of flexible and affordable commercial floorspace at ground and first floor levels. 64 m2 commercial office. 56 m2 medical centre on ground floor. Retail units on ground floor. 70 sqm of office space
44-46 HIGH ROAD, WOOD GREEN MIXED USE DEVELOPMENT (ICELAND)	PPR Wood Green LLP	HGY-2018-1472 (change of site location - unclear if approved)] (refused previously)	Block A High Road	48	A1-A5	1,548	Charge for DEN connection should be reasonable and not exceed Deferred carbon offsetting payment. Implementation of DEN connection no later than July 2029	£245,880	Yes - Suggested small scale CHP and PV panels to supply the development. The zero carbon homes CO2 offset payment is calculated to be £245,880 based on a rate of £90/tonne over a 30-year period.	3-9 storey building. Class C3 residential. 10,113 sqm of residential.
			Block B Bury Road	73						
Total				2,521		39,480		£1,093,212		