

Section G

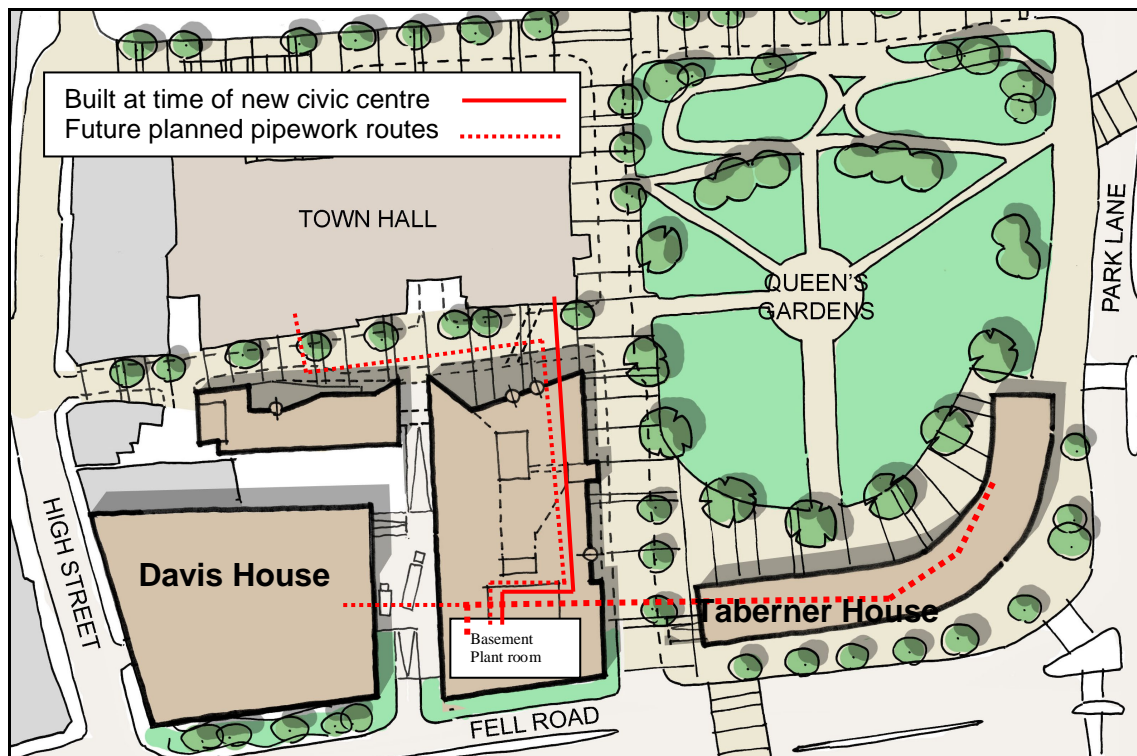
Based on these potential demands, reviews the construction and routing of the required pipe distribution system considering:

- a. The interconnection of new and existing energy loads
- b. The obstacles faced and how these might be overcome

This section of the report should be read in conjunction with the Croydon Decentralised Energy Study plan. The proposed strategy is to provide three separate energy distribution networks with interconnection link points to provide network back up and redundancy. Each energy network is connected into the other two networks. These zones are:

1. Zone 1: South Croydon
2. Zone 2: East Croydon
3. Zone 3: West Croydon

Each network has its own energy centre providing hot water flow and return pipework. Energy customers have their own point of connection. Primary pipework leaves the energy centre and runs along main routes. On some networks primary pipe runs split to form secondary runs. Tertiary branch connections provide flow and return hot water to customer points of connection.



Zone 1: South Croydon Energy Network

The proposed source of the pipe distribution system for zone 1 is at Taberner House energy centre. Energy flows out of Taberner House in two directions, across Fell Road to serve the C-CURV and Mid-Croydon energy clusters and across Queens's Gardens and Park Lane to serve the College Green and Law Courts energy clusters.

A third pipe link to Taberner House is a potential energy feed from the Rolls Royce power station. This is discussed later in this section.



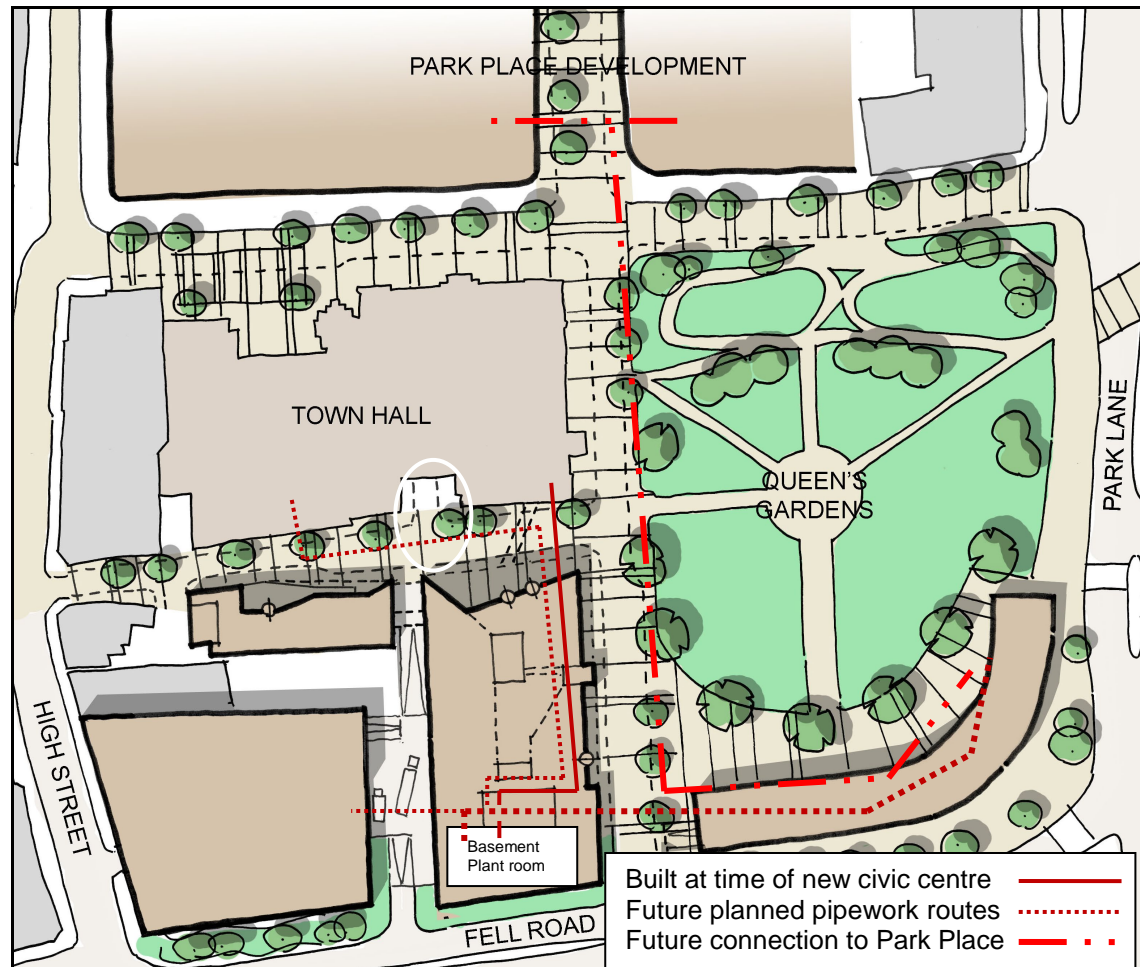
Taberner House to C-CURV

There is an existing underground pipework route, which currently serves the, soon to be demolished, Croydon Register Office, Davis House and the Town Hall. The intent would be to reuse this route across Fell Road. The new C-CURV PSDH building which will replace the Croydon Register Office will have its own energy centre and will serve the role of the disconnected Taberner House plantroom by serving hot water feeds to C-CURV PSDH, Davis House and the Town Hall. We would propose that the new C-CURV building design accommodates the provision for pipework to traverse across it to serve Davis House, the Town Hall and Mid-Croydon from Taberner House. i.e. the pipework service routes currently being proposed in the basement of the C-CURV PSDH building are oversized to cater for the connection back onto the Taberner House energy centre and across through to Mid-Croydon.



C-CURV to the Town Hall

There is an existing underground pipework route, originating at Taberner House feeding through Croydon Register Office and underneath Mint Walk to serve the Town Hall and the Library. The intent would be to reuse this route if possible.



C-CURV to Mid-Croydon

The intent would be to pick up the extra capacity pipework within the Town Hall and carry load across Katharine Street into the underground car park below Park Place. It may be more practical to take a separate feed from the PSDH building up Fell Road to Park Place thus bypassing the Town Hall. The possible links across Katharine Street and the extent of the underground car park below Park Place would have to be investigated. A suitable point of connection in the car park could be identified and pipework linked to this through a trench across the road in Katharine Street. Once in the car park pipework would distribute to the base of the Mid-Croydon energy risers at high level.



Energy Zone 1 to Energy Zone 3 Link

To generate the interlinking of energy zones we would propose connecting to the base of the Wellesley Road green energy spine with interconnecting pipework running up Park Lane next to or through the underpass.



Taberner House to College Green

The main barrier between Taberner House and College Green is the six lanes of Park Lane. A route across this barrier is the pedestrian subway, which goes from Queens Gardens to the front of Fairfield Halls. As you pass through this pedestrian subway there is access off to the left into the huge underground car park below College Green. A route would have to be found within Queen's Gardens and the pedestrian subway would have to become a service tunnel.



College Green Distribution

Once in the huge and high underground car park below College Green pipework would distribute at high level to the base of the College Green energy risers. This would pick-up all the buildings of the Croydon Learning and Cultural Quarter as well as Croydon College and the three buildings to the North along George Street (Suffolk House, Essex House and Chroma).



College Green the Law Courts

At the North East corner of the College Green underground car park pipework could rise up adjacent to the open stairwell and link up to the underside of the car park access bridge at the West end of Hazledean Road over the railway line. The feasibility of running pipework under-slung below this bridge would have to be verified. Once East of the railway line further investigations would be required to identify the distribution routes to the Law Courts, Croydon Park Hotel, Altitude 25 and No. 1 Croydon.

Energy Zone 1 to Energy Zone 2

To generate the interlinking of energy zones we would propose crossing George Street with interconnecting pipework from the North-west corner of College Green to the South edge of the Ruskin Square site.

Rolls Royce Power Station Connection

There is an alternative proposal for use the energy centre at location under Taberner House, to use it as a receptor station. The proposal would be to receive the medium temperature hot water produced at the Rolls Royce power station and convert it through heat exchangers to low temperature hot water for distribution and use around energy zone 1. Due to the nature of frequency of production of hot water by the Rolls Royce power station additional support plant in the form of boilers and/or CHP engines would still be required at the receptor station.

Roll Royce to Wandle Park

The proposed pipework route from the Rolls Royce power station to the West side of Wandle Park would be along the side of the railway lines. It is our understanding that a gas main pipe also runs along this stretch of railway line and that there may be a proposal to bury this pipe in this location. There would therefore be potential to share the cost of the pipe burial, by burying the energy pipe at the same time.

Crossing Wandle Park

One of the proposals for Wandle Park is to lift the Wandle River out of the underground culverts in which it currently flows up to the surface and reinstate the river flow through the park. Should this happen, with the river above ground, the underground culverts would be redundant. Therefore one of the proposals is to use these culverts as energy pipework corridors to cross Wandle Park underground from West to East.

Wandle Park to Roman Way

Once the pipes have resurfaced to the West side of Wandle Park the task would be to get the connection across to Roman Way. The most direct route would be to lay the pipe in the road along the length of Rectory Grove.

Roman Way to Taberner House

Once the pipework reaches the underside of Roman Way the road is elevated. This elevated section goes from Roman way which becomes Mitcham Road/Old Town to the South. At this point the elevated section drops back to being a surface street. The stretch of pipe between Roman Way and the roundabout at the junction with the Croydon Flyover would have to be laid in the road. Once at the elevated Croydon Flyover the pipework could potentially be run on the underside of the Croydon Flyover structure. The pipework would then follow the Croydon Flyover to the East until it reached Taberner House.

Zone 2: East Croydon Energy Network

The proposed source of energy for the pipe distribution network for zone 2 is in a general location at the North end of Lansdowne Road.



Along Lansdowne and Dingwall Roads

From the energy centre the network pipe would pass down Lansdowne Road, in the pavement or road in front of the Ruskin Square site. Some arrangement for energy network infrastructure on the Ruskin site could be arranged with the developer to save digging up the road along Lansdowne Road. The proposal would then be for branch connections to feed energy customers on either sides of these roads.



Energy Zone 2 to Energy Zone 3

To generate the interlinking of energy zones we would propose a link along the West end of Lansdowne Road with interconnecting pipework from the Lansdowne Road/ Dingwall Road junction to join onto the Wellesley Road green energy spine.



Ruskin Square to Cherry Orchard Road

As part of the proposals for a bridge over the railway line to the North of East Croydon station we have proposed a pipework link crossing integrated within the structure of the bridge. This link would provide a piped energy links, from West to East, from the Ruskin square development across to the Cherry Orchard Road development.



Cherry Orchard Road

We would propose that an energy spine runs in the road along Cherry Orchard Road between the Oval Primary School in the North and Head Post office to the South.

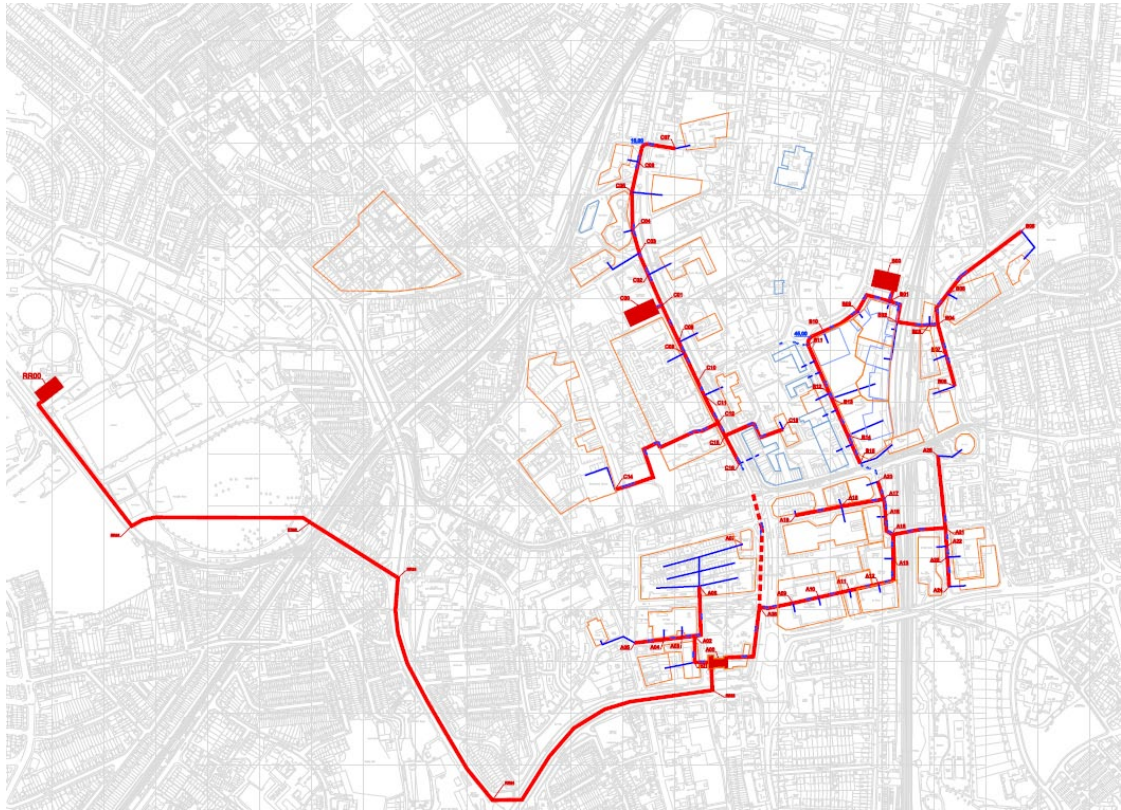
Zone 3: West Croydon Energy Network

The proposed source of energy for the pipe distribution network for zone 3 is in a general location along Wellesley Road. For the purposes of this exercise we have located it in the lowest basement levels of the Whitgift Centre.

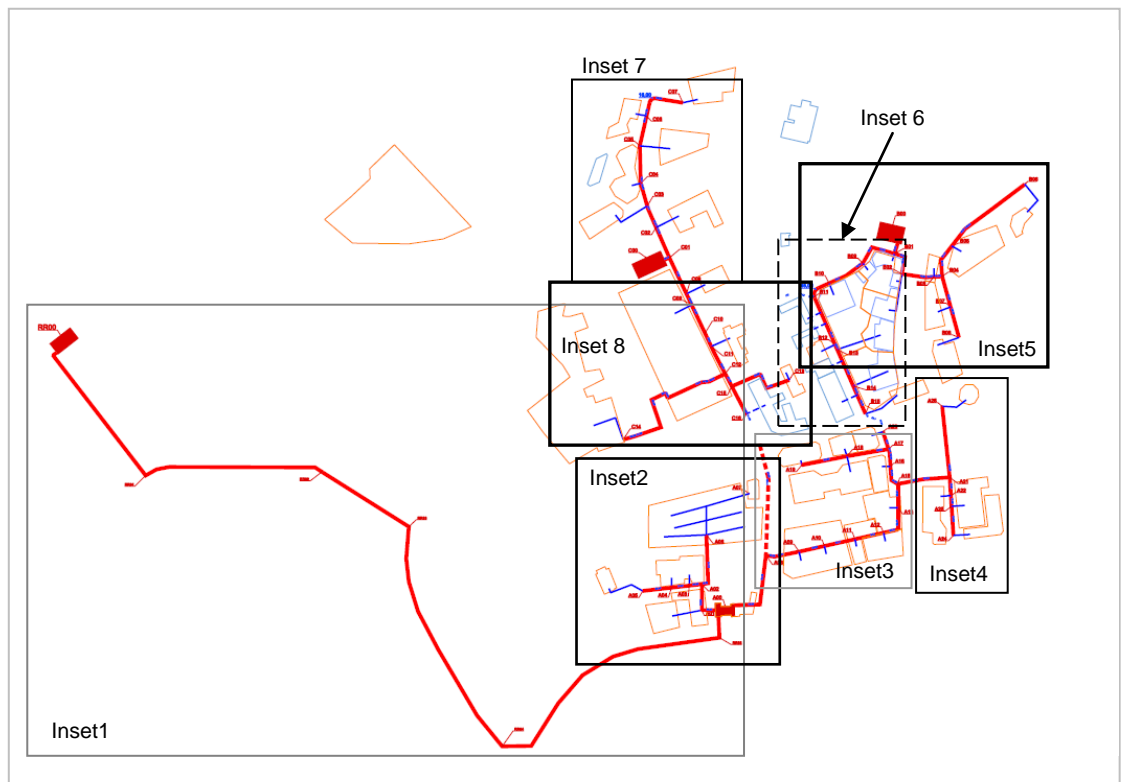


Wellesley Road Green Energy Spine

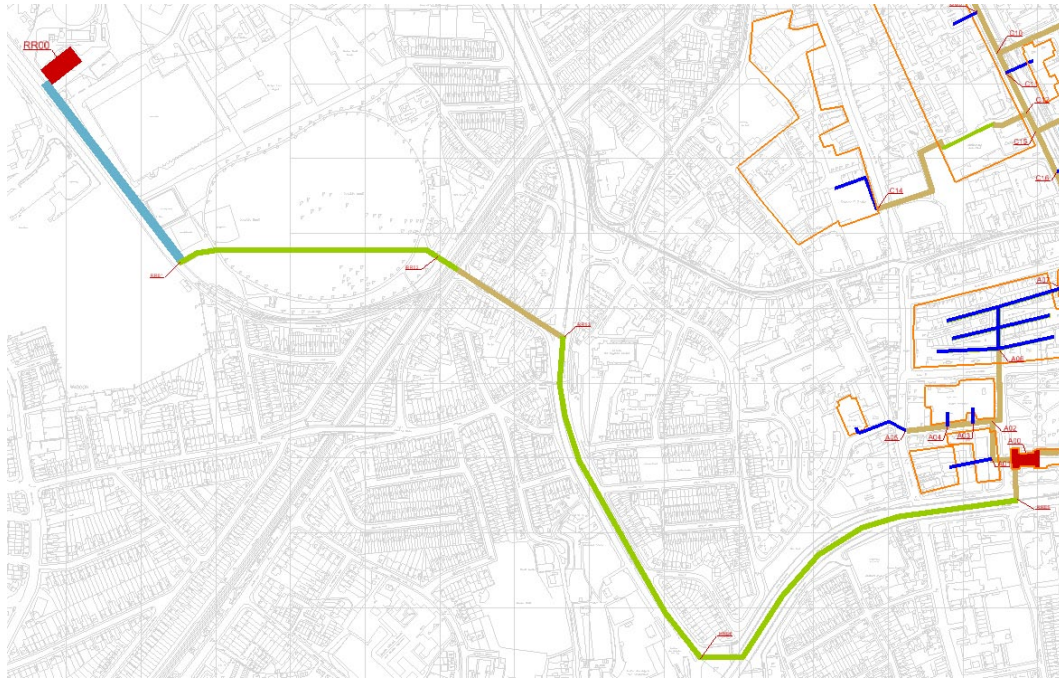
The Wellesley Road green energy spine will be integrated within the masterplan proposals for Wellesley Road. A multi-service trench with potential for both wet and dry services will run down the centre of Wellesley Road, with access panels along its length.



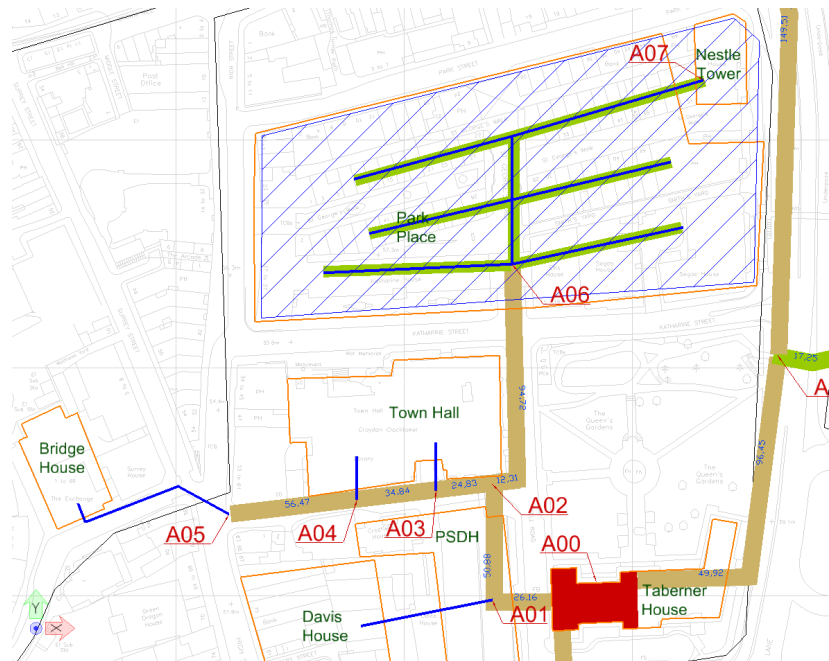
Map of the overall DE scheme network



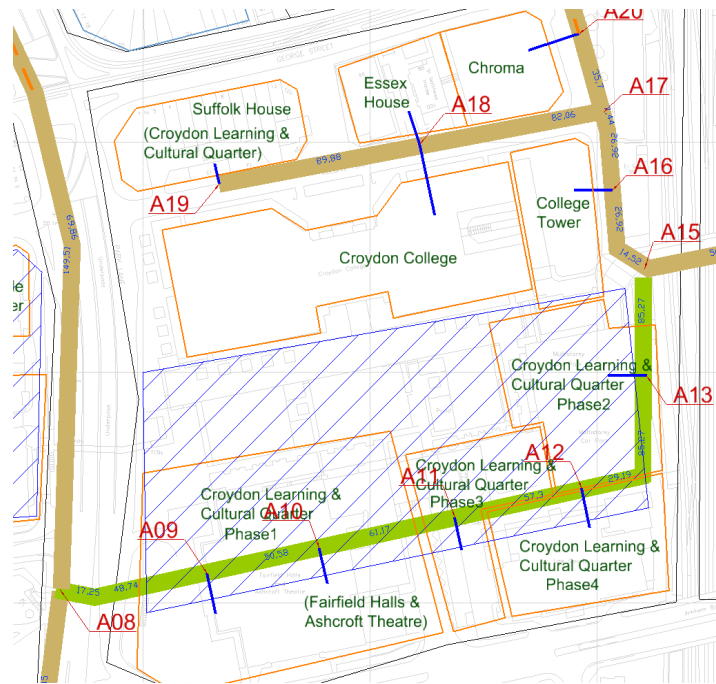
Map Inset Boxes



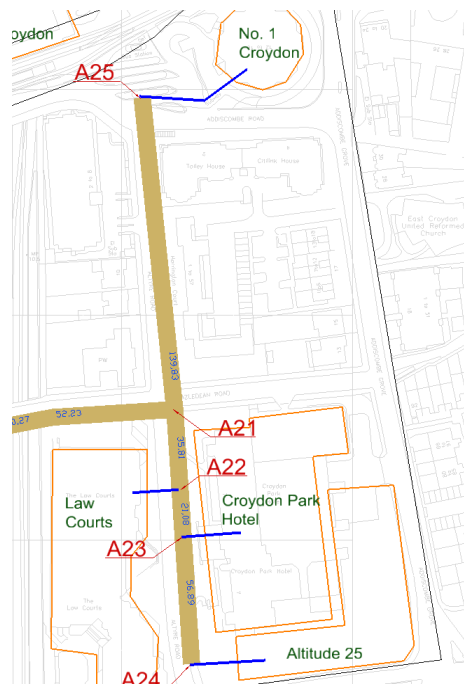
Inset 1 - Network between the Rolls Royce power plant to Energy Centre 1



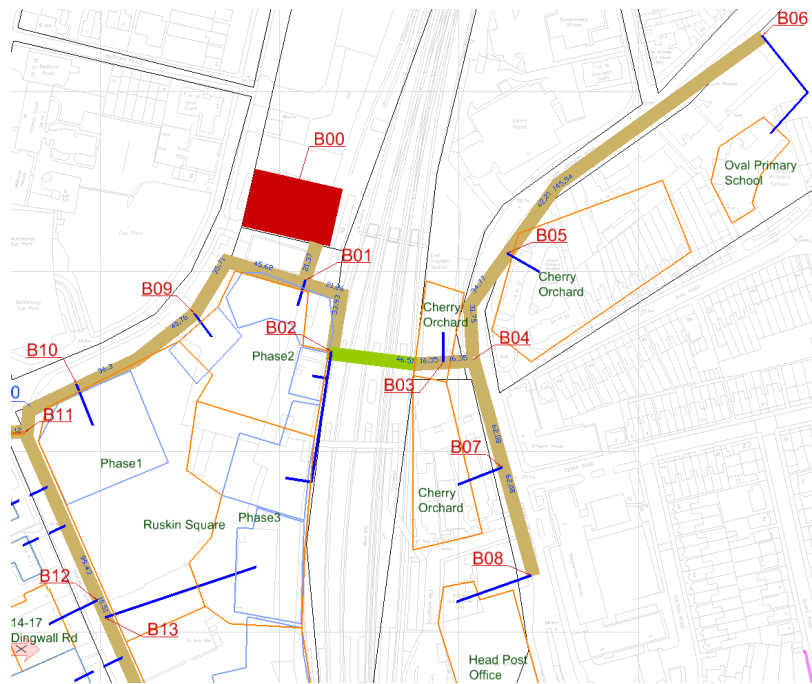
Inset 2 - Network branching out of Energy Centre 1 into Energy Cluster 1 feeding into the CURV PSDH building, David House, Town Hall, Bridge House, the Park Place development site and the Nestle Tower. Hashed zone is indicative of underground car park space



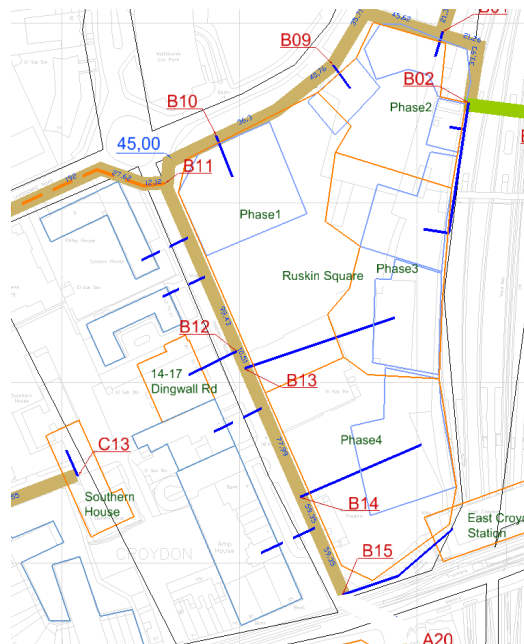
Inset 3 - Network in Energy Cluster 2 feeding into the Croydon College site. Hashed zone is indicative of underground car park space



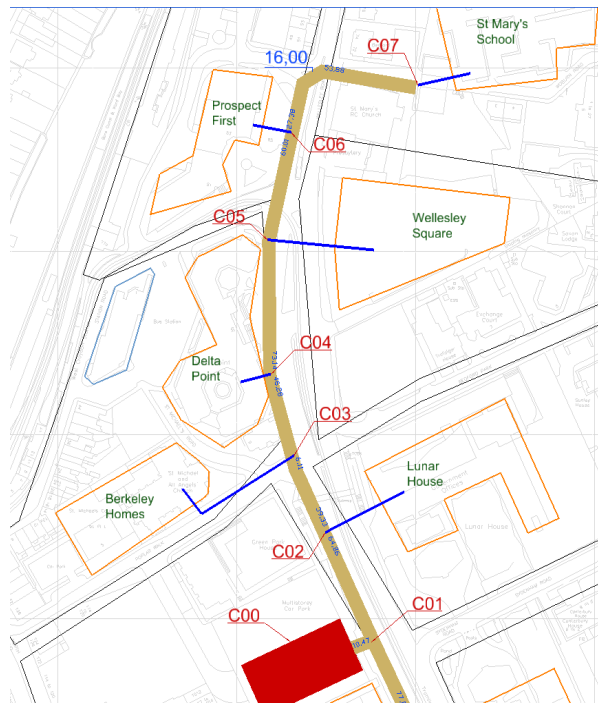
Inset 4 - Network branching into Energy Cluster 3 feeding into the Law Courts, Croydon Park Hotel, Altitude 25 and Croydon No.1 buildings



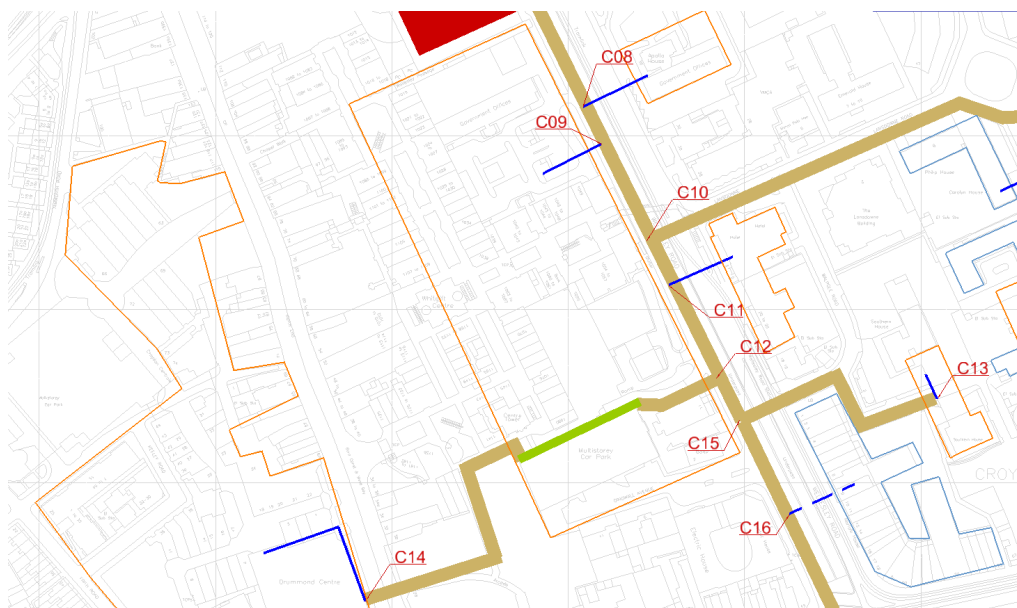
Inset 5 - Network branching from Energy Centre 2 into Energy Cluster 4, 5, 16 and 17 feeding into the Ruskin Square development site, the Cherry Orchard Road development site, the Oval Primary School and the Head Post Office



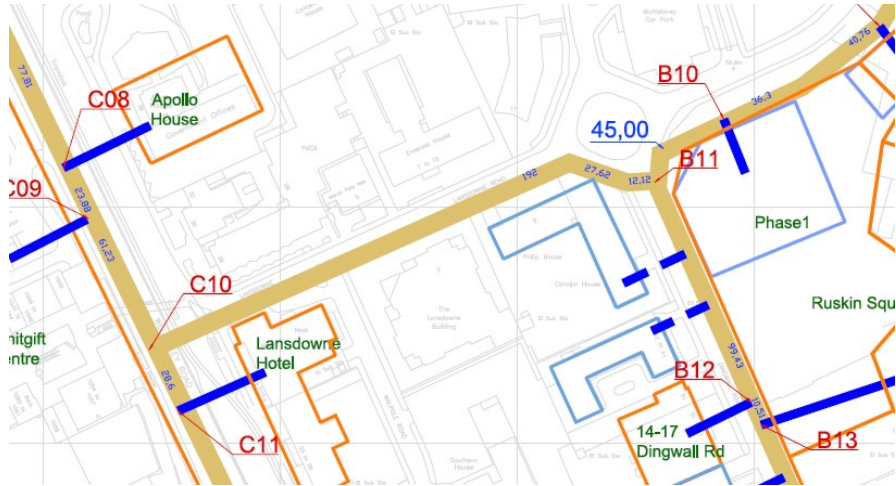
Inset 6 - Network branching from Energy Centre 2 into Energy Cluster 6 feeding into developments along Dingwall Road, parts of the Ruskin Square development and the East Croydon Station



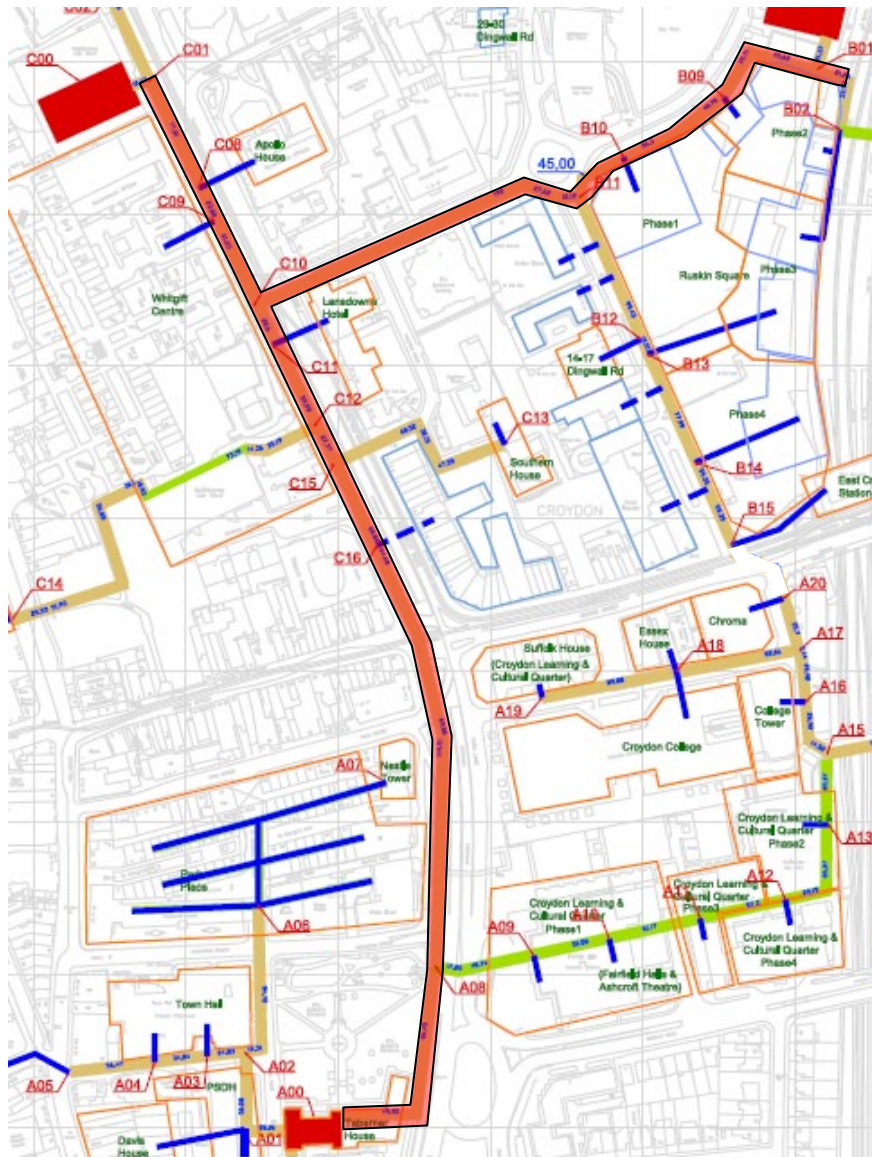
Inset 7 - Network branching from Energy Centre 3 into Energy Cluster 22, 23, 24, 25 and 26 feeding into Lunar House, Berkeley Homes, Delta Point, Wellesley Square, Prospect Point and St Mary's High School



Inset 8 - Network branching from Energy Centre 3 into cluster 7, 9, 13 and 14 feeding into Apollo House, the Whitgift Centre, the Centrale, Lansdowne Road Hotel and Southern House



Wellesley Road: North



Wellesley Road: South

Section G Addendum

Note on phasing of the decentralised energy scheme

The phasing of the project is possible but generally will reduce the economic benefit as some capital expenditure needs to be taken in advance. For example, although the connection of building can be phased the district heating infrastructure needs to be sized for the final extent of the scheme. There are also considerable uncertainties in the rate of development of new build projects. As a result there is a need for considerable flexibility at this stage in the way the district heating network could be developed.

This report envisaged that Zone 1 would form the first phase being mainly existing public sector buildings, Zone 2 would be the next phase which is mainly associated with the new build Ruskin Square development and the third zone (Wellesley Rd) would be completed as a final phase in association of the redevelopment of the shopping centre.

Since completing the report, in conjunction with LBC, we have defined a new first phase that incorporates the Ruskin Square development and an initial financial appraisal of this scheme has been taken forward by Ernst and Young with AECOM's support since the submission of this original report.