

# North Tottenham Decentralised Energy Network

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## Glossary

BEIS	Department of Business, Energy and Industrial Strategy
CHP	Combined Heat and Power
COP	Conference of the Parties
DBFO	Design, Build, Finance and Operate
DCLG	Department for Communities and Local Government
DECC	Department of Energy and Climate Change
DEN	Decentralised Energy Network
DH	District Heating
DHN	District Heating Network
EfW	Energy from Waste
ESCo	Energy Services Company
GenCo	Energy Generation Company
GLA	Greater London Authority
GVA	Gross Value Added
HCA	Homes and Communities Agency
HDV	Haringey Delivery Vehicle
HMT	Her Majesty's Treasury
HNDU	Heat Networks Delivery Unit
HRW	High Road West
IRR	Internal Rate of Return (nominal)

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JV	Joint Venture
KW	Kilowatt
kWh	Kilowatt-hour
LA	Local Authority
mod	money of the day
MOU	Memorandum of Understanding
NPC	Net Present Cost
OJEU	Official Journal of the European Union
PipeCo	Pipeline Company
PPA	Power Purchase Agreement
PWLB	Public Works Loans Board
RDA	Regional Development Agency
RHI	Renewable Heat Incentive
RIF	Regional Infrastructure Funding
Spurs	Tottenham Hotspur Football Club
SPV	Special Purpose Vehicle
THFC	Tottenham Hotspur Football Club
VAT	Value-Added Tax
VFM	Value for Money

## Executive Summary

### 1.1 Approval sought

This Outline Business Case (“OBC”) seeks approval of funding for the development of a Council owned and controlled SPV delivering a Decentralised Energy Network across the North Tottenham area. The total funding ask includes the capital expenditure for the supply and install of the required plant, distribution pipework and associated works, as well the cost of financing debt whilst the project is built out and lifecycle commitments.

Under this proposal the Decentralised Energy Network will provide the space heating and hot water requirements for all the development at High Road West, Tottenham Hotspur Development Site and Northumberland Park regeneration.

This Business Case has been prepared for submission to Cabinet. Using the Business Case, Cabinet will be able to make an informed decision as to whether to proceed with preferred approach to establish a 100% owned Council SPV and procurement of contractors.

The Business Case was prepared by Deloitte LLP, with the input of WSP PB, and Pinsent Masons LLP.

### 1.2 Introduction

Haringey Council is seeking to deliver both a reduction in carbon emissions as well as ambitious housing and economic growth in the borough. The purpose of the OBC is to examine and set out the results of analysis to develop a Decentralised Energy Network (DEN) in the North Tottenham area (“the Project”) as a means of delivering low carbon regeneration and supporting the Council’s aims as set out in the Corporate Plan.

The geographic area of focus is the Northumberland Park Ward, specifically the area in the vicinity of the Tottenham Hotspur Football Club (Spurs) redevelopment, as well as High Road West and Northumberland Park regeneration schemes.

A Decentralised Energy Network<sup>1</sup> (DEN) is a system of highly insulated pipes that move energy in the form of hot water or steam from where it is created, to where it is needed for use in space heating and hot water production. A DEN has the potential to provide energy in a more efficient (and lower carbon), cost competitive, and locally secure and environmentally beneficial manner, over conventional energy supply.

The OBC assesses the case for change, and outlines the relevant strategic, technical, financial, commercial and management considerations for the Project. And provide a recommendation as to the most appropriate corporate delivery structure and arrangements to deliver the Project.

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<sup>1</sup> A Decentralised Energy Network may also be referred to as District Heating, District Energy, or simply a heat network



### 1.2.1 The case for change

Tottenham, in the east of the Borough, has the potential for up to 10,000 new homes and 5,000 new jobs. The change at North Tottenham is already evident, with construction commencing on the £600m new Tottenham Hotspur Football Club Stadium and mixed-use redevelopment at White Hart Lane, and the Council launching two major procurement exercises in 2016 to deliver a significant number of new homes and jobs at High Road West and Northumberland Park as part of its regeneration programme. Given the projected growth in the borough, without action, carbon emissions would be expected to increase.

The Government has set ambitious carbon reduction targets to reduce carbon emissions by 80% by 2050 as well as recent COP 20 targets around climate change, and the Council has made its own 40:20 pledge to reduce carbon emissions in the borough by 40% by 2020.

The London Plan also contains policies to reduce carbon emissions and increase the amount of decentralised energy in London, whilst setting challenging economic and housing growth targets for Haringey.

Against this context, the Council wishes to consider the case for a Decentralised Energy Network (DEN) at North Tottenham as a means of delivering the regeneration, growth and carbon priorities set out in the Corporate Plan whilst also delivering on National and Regional and Local policies. The Council sees the development and expansion of the DEN in the North Tottenham area as being a core contribution to the Corporate Plan Priority 4:

Corporate Plan Priority	Objective
<p><b>Priority 4: Drive Growth and Employment from which everyone can benefit</b></p>	<p><u>Objective:</u> Manage the impact of growth, by reducing carbon emissions across the borough with the aim of meeting our 40:20 goal, while growing the green economy</p>

In addition, the DEN Project at North Tottenham also supports the following Council Corporate Plan Priorities and objectives:

Corporate Plan Priority	Objective
<b>Priority 4: Drive Growth and Employment from which everyone can benefit</b>	<u>Objective:</u> Enable growth, by securing key infrastructure – including transport, broadband, schools and health services – and providing a great planning service
<b>Priority 5: Create homes and communities where people choose to live and are able to thrive</b>	<u>Objective:</u> Achieve a step change in the number of new homes being built  <u>Objective:</u> Drive up the quality of housing for all residents

### 1.2.2 The role of the Council

The Department for Communities and Local Government (DCLG) through the National Planning Policy Framework (NPPF) and the Department of Business, Energy and Industrial Strategy (BEIS), as well as the Mayor of London through the London Plan have stated that local authorities should play a proactive role in identifying appropriate locations and sponsoring the initial development of Decentralised Energy Network opportunities in their local area. As a project promoter or sponsor these may include:

- Local Authorities have greater knowledge over their own local issues such as the specific nature of existing heat demands (often these may be public sector properties), prospective new build and regeneration schemes, and local heat supply opportunities that the private sector might not be sighted on
- A DEN may contribute to a Local Authority's wider social, economic and environmental objectives such as improving energy affordability, fuel poverty, and local energy security, creating local jobs and growth, and reducing carbon emissions
- Local Authorities may act as a relationship broker between parties, influence developers through the planning process and stimulate regeneration to deliver homes;
- As applicable to the local opportunity, Local Authorities may choose to fund a range of infrastructure (including DENs) to de-risk and unlock development sites and regeneration; and
- In addition Local Authorities may choose to access lower public sector borrowing rates to improve the viability of low carbon schemes above a fully private sector funded option.

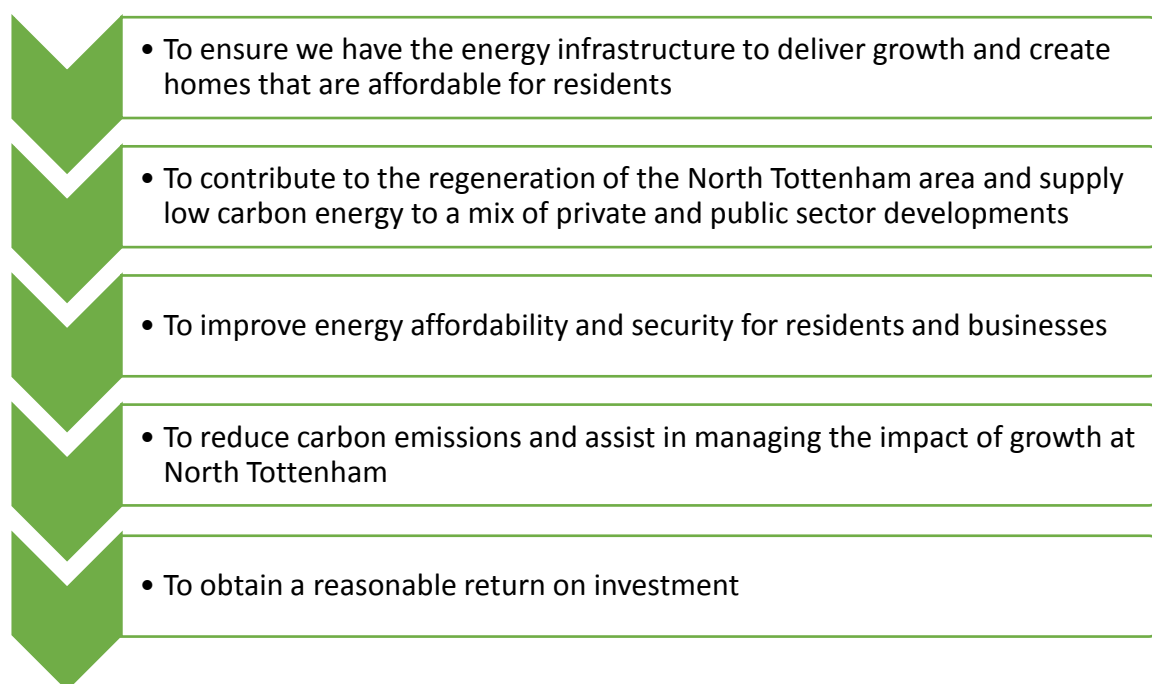
Recognising the role of LA's as project sponsors for DENs, the Government established the Heat Network Delivery Unit (HNDU) as part of the Department of Energy and Climate Change (now part of the Department for Business, Energy and Industrial Strategy) to provide grant funding and guidance to local authorities in England and Wales. The Council has secured support for the development of the North Tottenham DEN project from both HNDU and GLA.

The Commercial case examines in more detail the North Tottenham DEN opportunity and options for the public sector and private sector in delivery.

### 1.2.3 Objectives for the Council

The overall objective of this business case is determine the optimal scope and technical feasibility of the DEN in the North Tottenham area and, if feasible, to establish an appropriate corporate delivery structure and arrangements to deliver the Project.

The Council held stakeholder meetings and workshops<sup>2</sup> to define the Project's core strategic objectives. This OBC focuses on these underpinning strategic objectives shown in Figure 1 below and the ability of any proposed solutions to meet them.



**Figure 1 – Strategic objectives**

The OBC considers each proposed option against these Project objectives, from a techno-economic then commercial stand point.

### 1.3 Techno-economic assessment

The techno-economic assessment considers the overall design and related economic positions of options proposed to determine an economically preferred technical solution and to determine, via a NPV analysis, if this technical solution should be taken forward to the commercial options appraisal.

The assessment considers the technical operating costs and revenues of the DEN such as sale of heat and electricity to consumers and costs of constructing the infrastructure and purchasing fuel<sup>3</sup>.

<sup>2</sup> See 2.8 Business Case Methodology Figure 5 – Table of Workshops

### 1.3.1 Preferred technical option

The preferred scheme, following techno-economic modelling, is to connect Spurs, High Road West and Northumberland Park Regeneration schemes to a single energy centre at HRW. The design would include connection options to other sites in the wider area.

On completion, the Spurs redevelopment will consist of a new 61,000 seat stadium, hotel, extreme sports centre, residential towers, and a community/health facility. To assess the potential heat loads for the High Road West and Northumberland Park regeneration schemes, three heat load scenarios were modelled, varying the quantum of domestic and non domestic development at these sites. The analysis is on the basis of the following spread of housing demand scenarios shown below in Table 1.

Development load scenario	High Road West homes	Northumberland Park homes
Low	1,400	2,700
Medium	1,700	3,200
High	2,000	3,600

Table 1 – Spread of homes

### 1.3.2 1.3.3 Conclusion on techno-economic assessment

Based on the results above, each of the three load scenarios have a positive NPV, without the inclusion of financing costs or on-costs (included in the next section), suggesting that there is positive value in the system and the DEN is potentially viable.

## 1.4 Commercial Options Appraisal

The techno-economic assessment has determined the most economically preferred scope and technical specification of the DEN. The commercial options appraisal seeks to determine the level and nature of involvement the Council should have (if at all) and the funding vehicle/strategy that should be employed in order to achieve the preferred technical solution. The commercial options considered are in Table 4 below:

Option	Council Involvement?	Ownership & Council Impact
Option 1: Do nothing –	None.	None.

<sup>3</sup> Therefore the NPV analysis does not consider all costs and benefits which may be included in the preferred solution, such as finance costs, administrative costs, procurement implications and wider social benefits. A more comprehensive financial analysis including these elements will be assessed in Section 4, pending the outcome of the techno-economic assessment.

base case		
Option 2: 100% owned Council SPV	Council funds SPV and procures supply chain delivery partners	Council retains ownership, flexibility, risks and reward
Options 3: 50/50 JV	Council partners with a private sector partner to deliver the Project	50/50 ownership, equal share of risk and reward
Option 4: Outsource / Concession	Council procures partner and influence DEN roll out on a strategic level.	100% owned by private sector so no risk/reward (Council retain IP and strategic shaping of DEN)
Options 5: GLA Infrastructure Led	GLA procure partner and influence DEN roll out on a strategic level (working with GLA).	100% owned by GLA so no risk/reward

**Table 4 – Summary of the Commercial options**

## 1.6 Non-monetary assessment of options

### 1.6.1 Key non-monetary benefits

Potential non-monetary benefits were identified, mapped to objectives and assessed against each option. Non-monetary benefits have been considered in fine detail when assessing options to determine which option best meets the Council's objectives. The results of the detailed analysis are attached in Appendixes 2a, 2b, and 2c, with outline results shown in this section. Benefits will also be tracked by the Council throughout the Project in order to monitor the realisation of these benefits. Although an option may provide less or no monetary benefit to the Council, it may provide non-monetary benefits.

The analysis in Appendixes 2a, 2b, and 2c indicated that Options 1, 4 and 5 meet few of the Council's objectives and provide few benefits. A high level summary is provided in Table 6 below:

Option	Meets Council Objectives?	Notable Benefits	Notable Downsides/Risks
1 – do nothing	No	<ul style="list-style-type: none"> <li>- Low risk; and</li> <li>- No upfront costs</li> </ul>	<ul style="list-style-type: none"> <li>- Objectives aren't met at all;</li> <li>- No change;</li> <li>- No impact on energy affordability; and</li> <li>- No control over strategy.</li> </ul>
2 – 100% SPV	Yes	<ul style="list-style-type: none"> <li>- Objectives are fully met</li> <li>- Maximises the Council's flexibility and levers/options to adjust DEN delivery and expansion</li> <li>- The Council retains Governance and Regulation roles, setting policies on consumer protection and transparency of heat tariffs;</li> </ul>	<ul style="list-style-type: none"> <li>- Potential for increased reputational, operational, construction risk to the Council through no private sector partner (although can mitigate through effective contract negotiation and risk transfer with supply chain);</li> </ul>

Option	Meets Council Objectives?	Notable Benefits	Notable Downsides/Risks
		<ul style="list-style-type: none"> <li>- Council maximises nominal cash return potential (reward);</li> <li>- The SPV can be sold, or new partners could take a stake in the SPV in future (transitioning to a JV) once the strategic objectives are delivered; and</li> <li>- Maximises the Council's flexibility over exit options and has full control in that exit process.</li> </ul>	<ul style="list-style-type: none"> <li>- Council to secure 100% of initial funding;</li> <li>- Skills and profitability from performance may be missed (but could be put into contracts or share offer).</li> </ul>
3 – 50/50 JV	Yes	<ul style="list-style-type: none"> <li>- Council shares funding required;</li> <li>- Council shares risk;</li> <li>- Leverage private sector skill base to deliver Project (potentially reducing risk);</li> </ul>	<ul style="list-style-type: none"> <li>- Council shares reward;</li> <li>- Council has to share decision making and loses half of its control over delivery of DEN and regeneration; and</li> <li>- Conflict between affordable tariff pricing and commercial return.</li> <li>- High profit expectations in the private sector (15% plus) exceed project IRR (meaning unlikely to attract a JV partner)</li> <li>- Any exit strategy will have to be agreed with JV partner</li> </ul>
4 – 100% private sector	Few	<ul style="list-style-type: none"> <li>- Accesses 3rd party private sector expertise;</li> <li>- Transfers risk away from Council</li> </ul>	<ul style="list-style-type: none"> <li>- Risk strategic objectives are not fully met. Less ability to meet carbon reduction, energy affordability and infrastructure to deliver growth objectives</li> <li>- High profit expectations in the private sector (15% plus) exceed project IRR</li> </ul>
5 – GLA led	Some	<ul style="list-style-type: none"> <li>- It is assumed that the GLA and Council would have aligned views on Project development so civic benefits and ability to connect to other LA projects would be maximised</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of Council control/influence</li> <li>- No operating or planned examples of this option in London</li> </ul>

**Table 6 – non monetary benefits**

## 1.7 Conclusion of most preferred commercial option

The techno-economic assessment has established that the DEN is potentially viable with a forecast positive NPV. The commercial options appraisal has discussed various commercial structuring options for implementing the DEN in terms of monetary, non-monetary benefits and risks.

***Therefore, the recommended commercial option is Option 2 – the Council SPV option.***

## **1.9 Procurement and commercial development**

The final Procurement Strategy, along with the evaluation strategy, will provide a blueprint for the procurement phase of the Project.

### **1.9.1 1.9.2 Market interest and capability**

Similar models of this projects are taking place in boroughs surrounding the area (Enfield, Islington, Barking & Dagenham) as decentralised energy grows through the support of the Mayor of London, GLA and London Plan Policy.

Discussions have taken place with Tottenham Hotspur Football Club (THFC), one of the main customers of the network, for both heat and electricity. For the two other anchor heat customers of the network, for HRW regeneration, the procurement documents for a Development Partner outlines the DEN requirements to bidders, and for Northumberland Park regeneration, discussions will also take place with the short-listed bidders for the Haringey Delivery Vehicle (HDV).

The Council will need to approach the market to perform soft market testing for potential private sector partners. And establish through the procurement process the level of investment a private sector partner may be willing to make in the SPV, if at all. This will include decisions around the level of debt / equity mix, and governance arrangements. The Council's advisers are aware of similar schemes in the market place which are attracting market attention, which suggests that pending successful approval of the OBC, this Project will be of interest to the market too.

### **1.9.2 1.9.3 Procurement Strategy**

It is expected that full competition will be considered to be the most appropriate as a procurement solution for any private sector partner and the Competitive Dialogue procedure will be the favoured option. It is preferable to run a detailed procurement process due to the nature of the technical and commercial solution which may need to be refined through procurement and the level of private sector partner investment to be decided. This will enable the market participants to put forward their solutions so that these can be developed as part of the procurement, and encourage competitive bids and ensuring value for money.

## **1.10 Programme management**

The project will be delivered by the Carbon Management Service, with support from a team of advisors including financial, legal and technical specialists. If a private sector partner takes a stake in the entity, it will be expected to provide expertise and management of the entity.

The Council will appoint directors to the SPV to safeguard the assets and provide a governance framework over the Project. The SPV management and financial accounts will be presented to the Council on an agreed regular basis.

### **1.11 Conclusion on achievability**

The Council has considered the Projects risks and mitigating actions, the potential benefits and realisation tracking of these, and practical arrangements to deliver the Project including procurement considerations, services required and project management arrangements. The project is expected to be achievable for the Council, with a dedicated project manager and staff input into the Project as well as support from specialist legal, technical and financial advisors.

### **1.12 Conclusion and Next Steps**

The conclusion of the OBC recommends that a North Tottenham DEN is viable under the assumptions modelled, and the monetary and non-monetary analysis undertaken of the options, concluded that Option 2: 100% owned Council SPV would be the most suitable delivery approach for the Council in order to fulfil the Council's objectives and aims of the Corporate Plan. It also provides the flexibility to support the development programmes for HRW and Northumberland Park, and longer term exit options for the Council.



## 2. Strategic Case

### 2.1 Purpose

This OBC aims to assess the case for change and developing a Decentralised Energy Network (DEN) (the “Project”) in the North Tottenham area. This section is to provide the strategic justification for the project, including outlining the background and Haringey Council’s (“the Council”) strategic case and associated objectives for the Project.

### 2.2 Background to the Project

The Council has set out in its Corporate Plan and associated strategies, a set of challenging social, economic and regeneration objectives. The London Plan also sets out challenging economic and housing growth targets for the borough.

Tottenham, in the east of the borough, has the potential for up to 10,000 new homes and 5000 new jobs to be delivered by 2025. In North Tottenham, the change is already evident with construction commencing on the new £600m Tottenham Hotspur Football Club Stadium and mixed-use development, delivery of over 200 homes at Brook House and a new school, Transport for London have submitted plans for the upgrade of White Hart Lane station, and Council led regeneration is also progressing following Cabinet approval of the procurement of a private partner for the ‘Haringey Delivery Vehicle’ and procurement of a Development Partner for the High Road West (HRW) regeneration scheme.

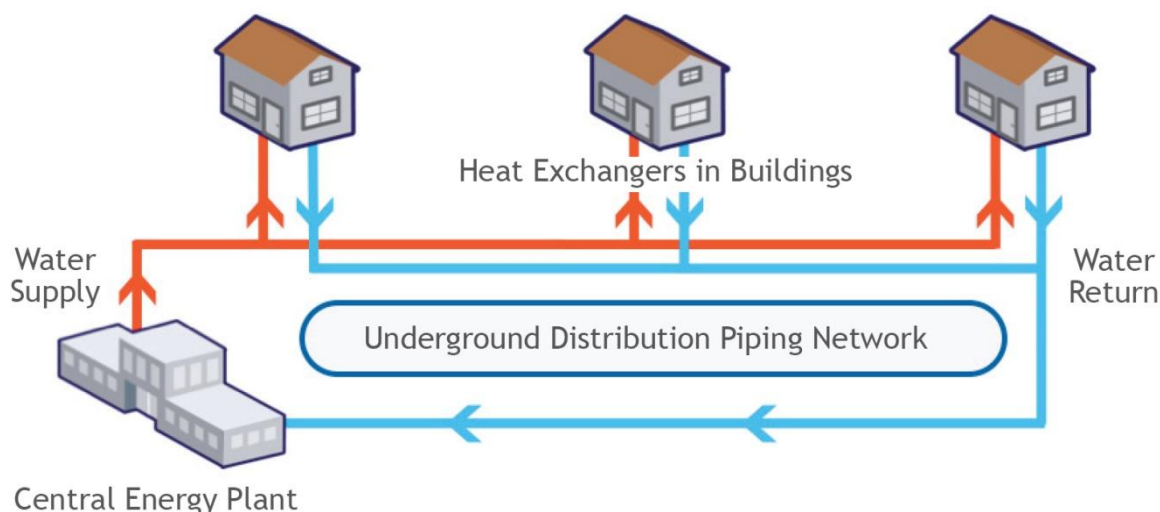
The Council has clearly set out in its Corporate Plan the commitment to reduce carbon emissions and manage the impact of growth in the borough. The Council seeks to balance the energy trilema of: carbon reduction and reducing reliance on fossil fuels; energy affordability and energy security in the short and longer term.

Against this context, the Council wishes to consider the case for a Decentralised Energy Network (DEN) at North Tottenham as a means of delivering the regeneration, growth and carbon priorities set out in the Corporate Plan whilst delivering on National and Regional and Local planning policies.

A Decentralised Energy Network<sup>4</sup> (DEN) is a system of highly insulated pipes that move energy in the form of hot water or steam from where it is created, to where it is needed for use in space heating and hot water production. A DEN has the potential to provide energy in a more efficient (and lower carbon), cost competitive, and locally secure and environmentally beneficial manner, over conventional energy supply in the UK. The strategic case for North Tottenham is considered in more detail below.

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<sup>4</sup> A Decentralised Energy Network may also be referred to as District Heating, District Energy, or simply a heat network



**Figure 1 – Schematic of a District Energy Network**

### 2.2.1 National, Regional and Local Policy

European and UK legislation recognises the importance of reducing carbon emissions. The carbon targets in question have their basis in several levels of legislation<sup>5</sup> including the National Planning Policy Framework (NPPF), London Plan, and Haringey's Local Plan. At the continental level, the European Union aims to improve energy efficiency by 20% and to increase the supply share of renewable energy to 20% by 2020. There are three relevant levels of policy guidance:

- **National** - The United Kingdom has a target of an 80% carbon emission reduction by 2050 over a 1990 baseline under the Climate Change Act
- **Regional** - The London Plan targets a 60% carbon emission reduction by 2025 over a 1990 baseline, as well as to increase the supply share of decentralised energy to 25%
- **Local** - Inspired by a local residents' campaign, Haringey Council has responded to these developments by committing to the Haringey 40:20 pledge, setting a borough-wide 40% carbon emission reduction target by 2020 over a 2005 baseline. The local development plan requires all major development sites to deliver district energy networks supplying all space heating and hot water loads in all new units and taking opportunities to grow this network when situations arise.

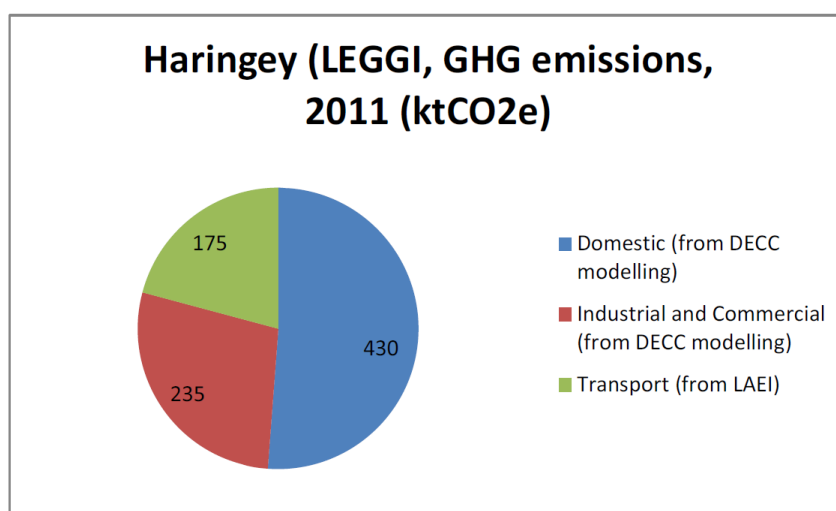
Emissions associated from energy use in buildings (including space heating) will have to fall to close to zero by 2050 in order to meet the overall UK carbon reduction target. In 2012, the Government published 'The Future of Heating: A strategic Framework', setting out the challenge of providing affordable, secure and low carbon heating up to 2050 in the UK. This was followed in 2013 with 'The Future of Heating: Meeting the Challenge', and in 2015 the Government published 'Delivering UK Energy Investment: Networks'. The reports set out the potential benefits of heat networks in appropriate locations as a viable means of decarbonising heat, providing local energy resilience, and ensuring energy security in the UK. In addition, the Government established the Heat Network Delivery Unit (HNDU) as part

<sup>5</sup> NPPF para 17/93/96, London Plan policy 5.5/5.6, LBH local plan SP4

of the Department of Energy and Climate Change (now part of BEIS) to provide grant funding and guidance to local authorities in England and Wales. The Council has secured support for development of the North Tottenham DEN from both HNDU and GLA.

The Government also estimates up to £800m of capital investment opportunity for heat networks over the next 10 years<sup>6</sup>. As a result of the various assessments, the Government has allocated £320m of capital funding to increase the volume of heat networks being built, deliver carbon savings, and help create the conditions necessary for a self-sustaining heat network market.

Figure 2 below illustrates that the main source of emissions in Haringey currently arise from domestic consumption. Given projected population growth, Haringey carbon emissions would be expected to increase. Therefore the Council is undertaking a range of measures.



**Figure 2 - Sources of Green House Gas emissions in Haringey**

The National Planning Policy Framework (NPPF), which sets out the planning guidelines for Local Plans, highlights that Councils should use planning to support the development of delivery infrastructure such as low-carbon district heating networks.

As illustrated in Figure 2 above, the majority of carbon emissions emanates from the domestic sector. By constructing a heat loss map, the Council has identified that many residential properties are “*very energy inefficient*”. The Local Plan calls for carbon reduction measures such a retrofitting with low carbon technology, while the Sustainability Appraisal of Strategic Policies Alterations identifies renewable energy generation and decentralised energy as important options. However, it is noted that any measures taken may be offset by population growth, and that progress regarding efficiency standards for new homes and appliances will have a significant impact as well.

<sup>6</sup> Department of Energy and Climate Change, 2015, ‘Delivering UK Energy Investment: Networks’

### 2.2.2 Local Context

In general, household incomes in Tottenham are around £8,000 below the London average. Haringey is ranked as the 4<sup>th</sup> most deprived borough in London and the 13<sup>th</sup> most deprived local authority in England. These statistics emphasise the need for action in order to impact energy affordability, as a large fraction of these households is likely to spend a significant amount of their disposable income on heating and energy.

According to the latest version of the London Plan, informed by the 2011 Census projections, Haringey has a target of providing 1,502 new homes per annum (up from the previous target of 820 per annum), with a total planned delivery of 19,800 new homes by 2026. At least 40% of these homes are expected to be affordable housing. This is somewhat below the affordable housing requirement identified in the Strategic Housing Market Assessment 2014, which puts the required fraction closer to 60%. The London Plan sets an employment target of 22,000 additional jobs in Haringey by 2036.

Increasing funding constraints are putting considerable strain on Local Authority revenue and capital budgets.

Based on these facts, Haringey Council has a clear set of incentives to support regeneration, affordable housing, energy efficient homes and affordable warmth for its citizens. This is reflected in the stated priorities, and the establishment of DE networks is a solution that supports the majority of these priorities.

### 2.2.3 Haringey Corporate Plan

The priorities of the Haringey Corporate Plan 2015-2018 are depicted in Figure 3 below.



Figure 3 - Corporate Plan 2015 – 2018 Priorities

The Council sees the development and expansion of the DEN in the North Tottenham area as being a core contribution to the Corporate Plan Priority 4:

Corporate Plan Priority	Objective
<b>Priority 4: Drive Growth and Employment from which everyone can benefit</b>	<u>Objective:</u> Manage the impact of growth, by reducing carbon emissions across the borough with the aim of meeting our 40:20 goal, while growing the green economy

In addition, the DEN Project at North Tottenham also supports the following Council Corporate Plan Priorities and objectives:

Corporate Plan Priority	Objective
<b>Priority 4: Drive Growth and Employment from which everyone can benefit</b>	<u>Objective:</u> Enable growth, by securing key infrastructure – including transport, broadband, schools and health services – and providing a great planning service
<b>Priority 5: Create homes and communities where people choose to live and are able to thrive</b>	<u>Objective:</u> Achieve a step change in the number of new homes being built  <u>Objective:</u> Drive up the quality of housing for all residents

## 2.2.4 The Case for Change

The Council's key drivers for considering the Project are:

- to deliver carbon savings aligned with local, regional and national policies
- to support the regeneration, new developments and growth ambition for North Tottenham
- to improve energy affordability, and deliver local energy security.

London Plan policy is focused on reducing carbon emissions, and 'zero carbon' targets come in to force in 2016. In the absence of a dedicated programme developing a district heat network and CHP scheme, carbon reduction targets will have to be met through capital investment on a site by site basis.

As presented in Section 1.2.1, the carbon reduction targets and strategy of the Council, as well as the new developments underway in the coming years indicate a strong case for change from the current system. Fuel supplies may come under pressure or be subject to price increases, leaving consumers subject to price volatility, while climate change is a high priority challenge being tackled by Government.

The new developments in North Tottenham are required by planning policy to contain energy centres for supply of the local development and using low carbon technologies. The

traditional system of using boilers for heat will not meet these targets, so developers will have to consider CHP and DEN type systems. This means they will be incentivised to work with the Council or private providers to secure low carbon heating systems and may be willing to be involved with energy centre schemes sized to serve wider areas. Further, implementing carbon reduction or energy saving equipment on a piecemeal basis building by building or even site by site can be expensive and inefficient. Implementing area-wide schemes which service a larger number of buildings and heat loads may prove to be more efficient, provide better returns and improve carbon reduction results.

Consideration of energy provision solutions in the North Tottenham development is no different in this regard: planning targets include the development of DENs and emphasise carbon efficiency, and a DEN for the proposed developments may create overall energy saving efficiencies, energy security and affordability in the borough via the establishment of an area-wide scheme. Without it, the North Tottenham development is greater exposed to higher carbon, energy price inflation and associated higher costs of regeneration from alternative piecemeal energy solutions. Additionally, heat networks at scale can take advantage of the benefits of more than one heat source at a time (lower carbon / lower cost of heat), and also allows heat sources to be changed with little disruption to customers once the heat network is in place, which further supports the transition to lower carbon sources in the future.

## **2.3 Project Scope**

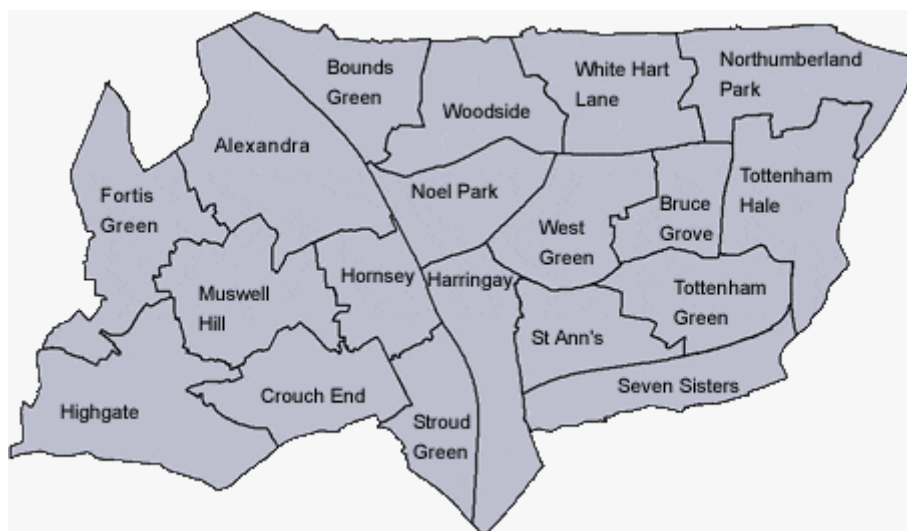
### **2.3.1 Preliminary Studies Performed**

Energy planning for Haringey has been considered in the following most recent studies, which inform the background section above and this business case overall:

- WSP | Parsons Brinckerhoff / London Borough of Haringey – Energy Master Plan (January 2016)
- Haringey Council - Haringey's Local Plan: Development Management Policies (January 2016)
- URS / Haringey Council - Sustainability Appraisal (SA) of the Strategic Policies Alterations (February 2015)
- Haringey Council – Fifth Annual Carbon Report (2015)
- Haringey Council – Corporate Plan 2015-18 (2015)
- WSP | Parsons Brinckerhoff – Techno feasibility study (2015-2016)

### **2.3.2 Project Focus - Site & Technology**

The scope and focus area for the Project is North Tottenham, in the Northumberland Park Ward, and including the area in the vicinity of the new development at the Tottenham Hotspur Football Club (Spurs), as well as High Road West (HRW) and Northumberland Park regeneration.

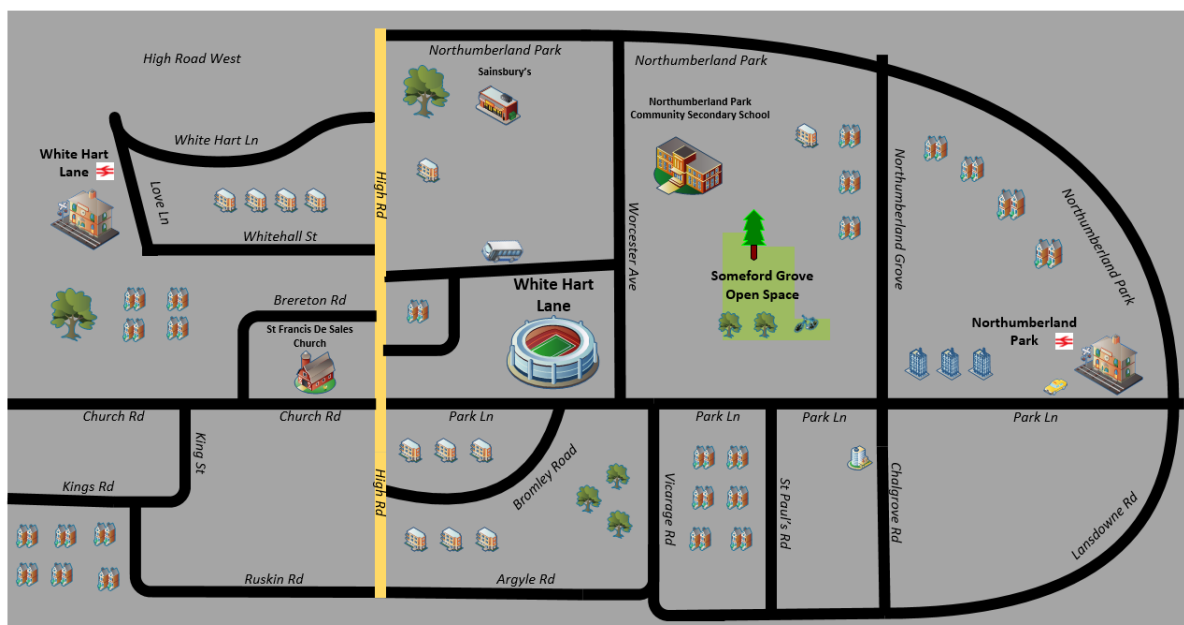


**Figure 4 - London Borough of Haringey ward map**

These three key new developments at North Tottenham consist of:

- High Road West regeneration scheme: a c.11ha redevelopment, anticipated to include at least 1400 new dwellings and c.10,000 m<sup>2</sup> of commercial space and new community facilities situated to the west of the High Road in Tottenham. The Council commenced procurement of a development partner (s) in mid 2016 and anticipates the preferred bidder will be confirmed in mid 2017
- Northumberland Park regeneration scheme: a c.32ha redevelopment anticipated to include 2300-2800 new dwellings, and a new all-through academy school, situated between Northumberland Park, the High Road and Park Lane. It is proposed that this regeneration scheme will be led by the Haringey Development Vehicle (HDV), a 50:50 JV between the Council and a private sector partner. Following a competitive procurement process by the Council, the HDV preferred bidder shall be confirmed in Q3/4 16/17.
- Spurs Stadium development: redevelopment of the Tottenham Hotspur Football Club (THFC) stadium site, comprising a new 61,000 capacity stadium, extreme sports centre, residential towers (579 homes), community/health building and a hotel (180 bedrooms). This redevelopment is being led by THFC.

Figure 5 below shows the area in question:



**Figure 5 - Map of area**

The preferred option, subject to techno-economic assessment (set out in Chapter 3), is to connect HRW regeneration, Northumberland Park regeneration, Spurs and any other feasible sites with a single energy centre. The design is to include connection options to other potential regeneration sites and other DE networks in the wider area.

In terms of technology approach, WSP | Parsons Brinckerhoff expect that “*there will be a tipping point in a medium-term timeframe at which efficient heat-pumps operating in conjunction with low temperature heat distribution networks deliver greater carbon savings than gas-fired CHP. However, heat pumps will never deliver entirely carbon-free heat, which is the case with renewable CHP. The recommended strategy for Haringey, therefore, is to develop the key enabling technology that is district energy infrastructure, and to plan for a mix of gas-fired CHP and heat pumps in the short and medium terms, with a view to moving toward renewable-fuelled CHP generation in the longer-term*”. As the Haringey Strategic Policy SP4 sets out the target for residential development to be zero carbon by 2016 and non-residential development to be zero carbon by 2019, Parsons Brinckerhoff notes that “*the only technologies with sufficient carbon-saving potential to make significant contribution towards this aspiration are renewable-fuelled CHP units – i.e. biofuel CHP engines*”, as formulated in the Energy Master Plan<sup>7</sup>.

With HRW and Northumberland Park regeneration going ahead over the next three to five years, the development partners will need to include zero carbon solutions and energy centres as part of the infrastructure. The Council can capitalise on this planning and development process to ensure an area wide solution is selected and developed in order to meet its objectives and carbon targets.

With the new developments going ahead around the North Tottenham area, several sites have been suggested as suitable for a large energy centre to serve the area. These are in the High Road West Development, Northumberland Park school site, or at the Spurs

<sup>7</sup> PB – Energy Master Plan

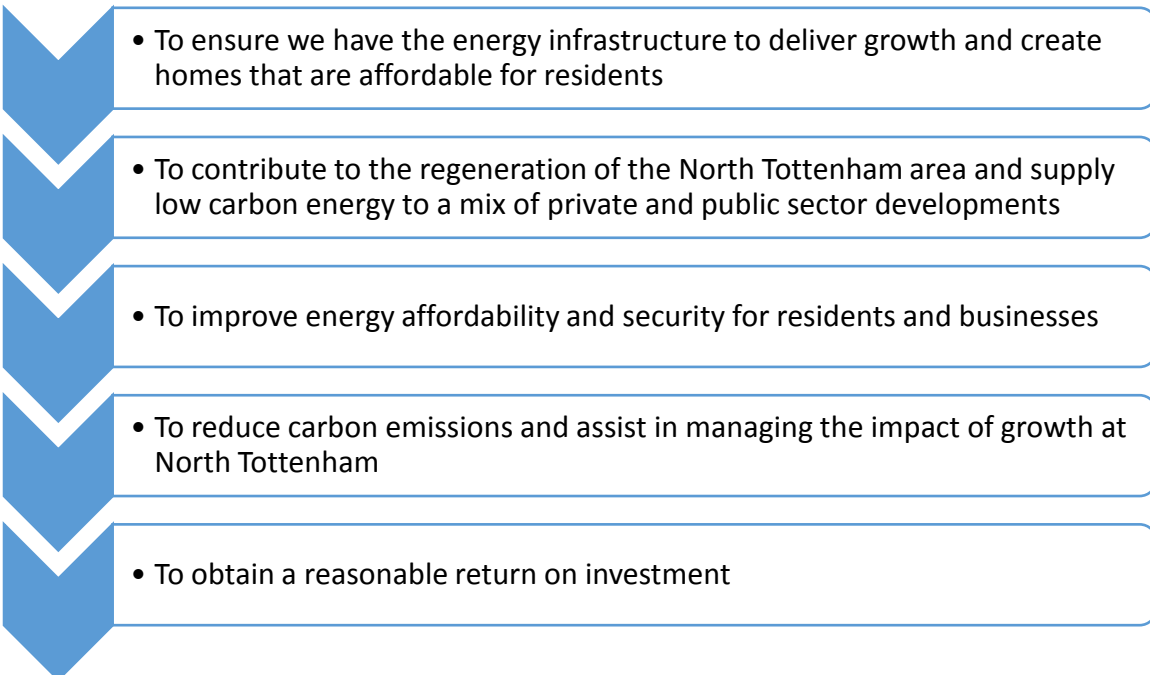


redevelopment. These sites have been investigated by the Council and WSP | PB through feasibility studies and this outline business case to find the optimal solution (in Section 3).

## 2.4 Project Objectives

The Council has held stakeholder meetings and workshops, and through these workshops developed core objectives it wishes to achieve from the Project, operating within the EU/UK policy and regulatory framework as well as in line with the Council's Corporate plan.

In light of the strategic context outlined above for both pursuing decentralised energy and for Council involvement in the project, the key Council objectives for business case purposes are as follows:

- 
- To ensure we have the energy infrastructure to deliver growth and create homes that are affordable for residents
  - To contribute to the regeneration of the North Tottenham area and supply low carbon energy to a mix of private and public sector developments
  - To improve energy affordability and security for residents and businesses
  - To reduce carbon emissions and assist in managing the impact of growth at North Tottenham
  - To obtain a reasonable return on investment

All viable options which meet these objectives will be considered by the Project team. These objectives will be used to assess the options and develop a short list of options to take forward to the commercial options appraisal. They will also be used in the technical design and techno-economic assessment leading to a go/ no-go decision. Any chosen solution must align with the stated strategic objectives in terms of financial results as well as qualitative benefits, risks, commercial structures and procurement routes.

## 2.5 Benefits Sought

This section sets out high level expected benefits of establishing a DEN. Achievement of the Council's objectives will deliver many benefits to North Tottenham and the wider community. Benefits, both monetary and non-monetary, are discussed in greater detail in the commercial options appraisal section and include improved regeneration, positive financial returns for the Council, improved affordable energy and stability of energy supply. These benefits are expected to extend from the DEN to the Council and the surrounding area. These are based

on discussions with stakeholders at the Workshops, and relate to the Council's objectives and other benefits to stakeholders of implementing a DEN. A comprehensive list of potential benefits which may be realised from the project is attached in Appendix 2a. The key benefits are mapped to the objectives in Appendix 2b and are used to score options in the commercial options appraisal in Section 4.

## 2.6 Inter-Dependencies, Assumptions, Constraints & Limitations

The success of the DEN project is dependent on a number of key factors, both internal and external.

Internally, the project is dependent on and constrained by the availability of funding. The case for change, project modelling and affordability analysis must demonstrate enough robustness in the scheme and structure to secure the investment required. Equally, and for example where Council funding is preferred, there must be sufficient access to funding in light of the Council's other broader capital project needs.

The risks associated with the above project limitations are discussed both in the next section and in Appendix 3. A full list of assumptions underpinning the project and the financial modelling is contained in Appendix 6.

## 2.7 Risks to Consider

This business case considers all viable options for achieving the strategic objectives, assessed against the key benefits, risks and constraints inherent to the project. In this section we outline the key risks and constraints which have the greatest impact on the selection of a preferred option. A full list of risks which have been considered further during the project and corresponding mitigation measures is attached in Appendix 3.

Some of the key risks to note at the strategic phase include:

Risk	Mitigation
<b>Failure to secure public or private funding</b>	Develop robust feasibility studies and financial modelling to ascertain the benefit to the public sector of investment. Identify various potential sources of investment and hold meaningful negotiations with flexibility around pricing structure, commercial structure and contract terms
<b>Fuel price inflation – unable to pass on to consumers</b>	Long term fuel contracts or flexible contracts to be considered. Contingencies built into business plan and feasibility assessment
<b>Lack of consumer uptake; heat offtake risk</b>	Price offer differential for new/existing customers, build into pricing structure through procurement. Secure contracts with developers, housing associations and sites with strong council influence and an anchor load early on in process. Secure long-term offtake contracts from developers and anchor loads

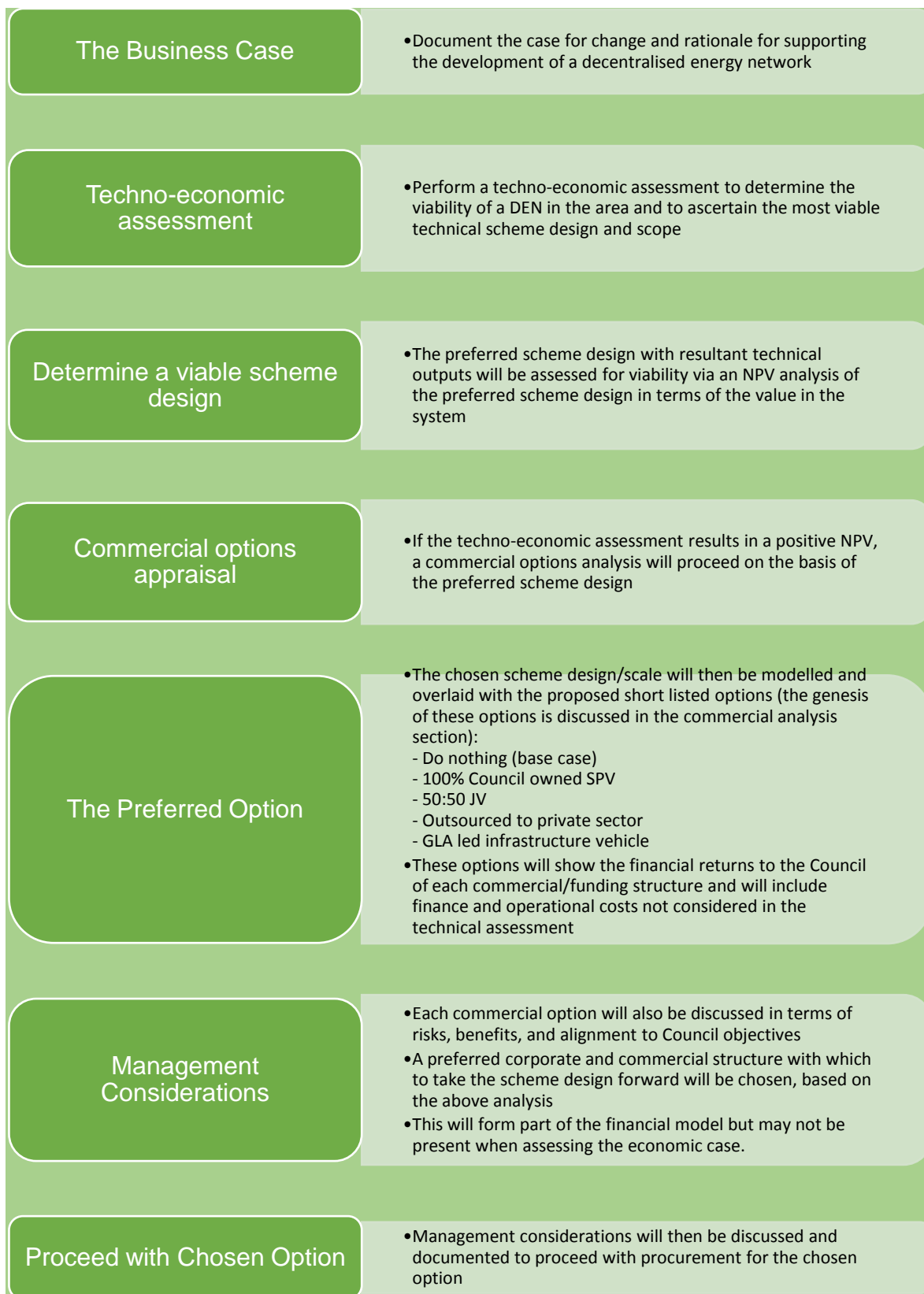
**Technology risk/obsolescence risk**

Engage with a private sector partner with relevant experience and presence in the market to respond to changes in technology and the market. Robust feasibility study performed. Build flexibility into the project for potential future changes. Demonstrate a feasible and viable technical solution including supply chain.

These key risks along with those in Appendix 3 will be considered throughout the business case and in particular in the evaluation of the short list of commercial options to arrive at a preferred option.

## 2.8 Business Case Methodology

The case for change has been made and the Council intends to support the development of a decentralised energy network if it is deemed viable and feasible. The Council, through this Outline Business Case, wishes to determine a viable scheme design and, if feasible, the preferred commercial solution. The business case has therefore been structured to perform a techno-economic assessment first, followed by a commercial options appraisal. The Outline Business Case will take the following approach:





### **3. Techno-Economic Assessment**

#### **3.1 Purpose**

This element of the business case seeks to arrive at the economically preferred technical solution, and to determine via a net present value analysis if this technical solution should be taken forward to the commercial options appraisal. The information in this Section is based on the report provided by WSP | PB entitled 'North Tottenham Techno Economic Modelling' in September 2016. The full report is attached in Appendix 15. The information contained in the report has been extracted and summarised here to demonstrate the process taken and rationale for the technical solution chosen.

The process of establishing a preferred technical specification included:

- Heat load profiling
- Head and electricity demand assessment
- Resultant CHP sizing
- Energy centre initial design and layout
- Energy centre location
- Assessment of various infrastructure options to determine the preferred infrastructure to use;
- Monetary assessment of costs and benefits associated with the preferred option to determine Net Present Cost/Value of the proposed system;
- Decision whether or not to proceed with preferred technical solution to a more detailed commercial and financial analysis
- Only monetised benefits

The techno-economic assessment has taken account of the costs and monetary benefits of the DEN system such as sale of heat and electricity to consumers and costs of constructing the infrastructure and purchasing fuel. Therefore the NPV analysis does not consider all costs and benefits which may be included in the preferred solution, such as finance costs, administrative costs, procurement implications and wider social benefits. A more comprehensive analysis including these elements will be assessed in Section 4, pending the outcome of the techno-economic assessment.

#### **3.2 Identification and analysis of heat loads**

The technical specification is based on identified heat loads in the connection area. The proposed loads which are included within the North Tottenham network are attached in Appendix 5 and are based on the proposed developments which would connect to the DEN and build data provided by the Council. The development build quantities and split of property type for each development, which was used to estimate heat demands, is also attached in Appendix 5.

There are three large developments within the North Tottenham area. These are the Spurs redevelopment (consisting of a new stadium, hotel, extreme sports centre, community/health building and residential towers), High Road West and Northumberland Park regeneration. As new builds, these are attractive for connection to a district heating system for the following reasons:

- New developments are required under the London Plan to connect to a district heating system if one exists in the vicinity to which connection can be made. This is an incentive that does not apply to existing buildings
- Developers are able to save on installing heat provision technology, and as such a connection charge can be levied by the network for connection. This is in contrast to existing buildings, where there are likely to be additional costs involved in retrofitting to allow connection to be made
- On-site heat distribution technologies can be tailored to the district heating system. For example, under-floor heating systems allow lower operating temperatures, which can be beneficial for heat networks. This is generally not possible with existing buildings.

In terms of existing developments, there is a preference to connect to existing communal heating networks and Council or other public sector owned buildings,.

To assess the potential heat loads for the High Road West and Northumberland Park regeneration schemes, three heat load scenarios were modelled, varying the quantum of domestic and non domestic development at these sites. These scenarios provide a key sensitivity for the network and relate to the scale of build out of the development which will impact the heat demand and resultant revenue and costs. The analysis is on the basis of the following spread of housing demand scenarios shown below.

Development load scenario	High Road West homes	Northumberland Park homes	Non residential space
Low	1,400	2,700	-30%
Medium	1,700	3,200	Base scenario
High	2,000	3,600	+ 30%

In order to calculate annual heat usage from the data provided, heat demand benchmarks were applied. It is assumed that the decentralised energy network would have a phased implementation, with construction of the first phase in 2018 for operation in 2019 in line with the build out of the first phase of houses. As more houses are built and connected to the network, the network is expanded.

### 3.3 Identification and analysis of heat demands

Heat demand was calculated from the data provided on the number of dwellings and space above. In order to do this benchmarks were applied to estimate the total heat demand on the network under the various scenarios. Non-domestic heat demand benchmarks were based on CIBSE TM:46 figures. For residential units, heat demand was calculated using SAP methodology.

These heat demands together were used to model the required fuel input (gas required in the CHP) and heat demand and resultant sales (heat output from the CHP) in the techno-economic model.

### **3.4 Identification and analysis of electricity demand**

The financial viability of a CHP district heating scheme is highly influenced by the ability to obtain a competitive price for the electricity generated. This is best achieved through sales to a private wire network – where electricity is sold direct to the end user, and thus a higher price is able to be commanded than for sales to the grid.

### **3.5 Technical specification – preferred technical solution**

#### **3.5.1 CHP sizing**

The CHP will produce the required heat for the DEN with electricity also produced as a by-product to be sold. The energy centre containing the CHP has been designed with plant to meet the medium load scenario, but is future proofed allowing sufficient space for plant to meet the high load scenario/ future loads to connect.

One aspect of heat supply which needs to be considered is that of increasing demand through time. Although initially a small CHP will easily meet initial heat demands, something much larger is required later in the project lifetime.

As such, it is proposed that two CHPs be installed, one at the start of the project and the second when required by future proofing heat demand.

Several CHP sizes were tested with sufficient thermal storage to deal with low demand times and were analysed for heat output per engine, electrical output per engine and fuel input per engine.

#### **3.5.2 Technical specification- energy centre location**

A long-list of potential energy centre locations was compiled, and split into locations suitable for temporary energy centres (i.e. interim location to serve phases of development which might come forwards before a permanent energy centre is built – most likely for siting containerised boiler plant) and permanent energy centres.

A detailed analysis of potential sites and commentary on the assessment is attached in Appendix 10. An analysis was also carried out on required flue heights, air quality control measures and building sizes. Following the analysis carried out, and discussions with Council and other stakeholders, it was agreed that the energy centre would be located on the HRW “cinema” site for the purposes of modelling. The exact location is not fixed: this will depend on the ultimate design selected for HRW by the developer.

An initial network was plotted taking the following factors into account:

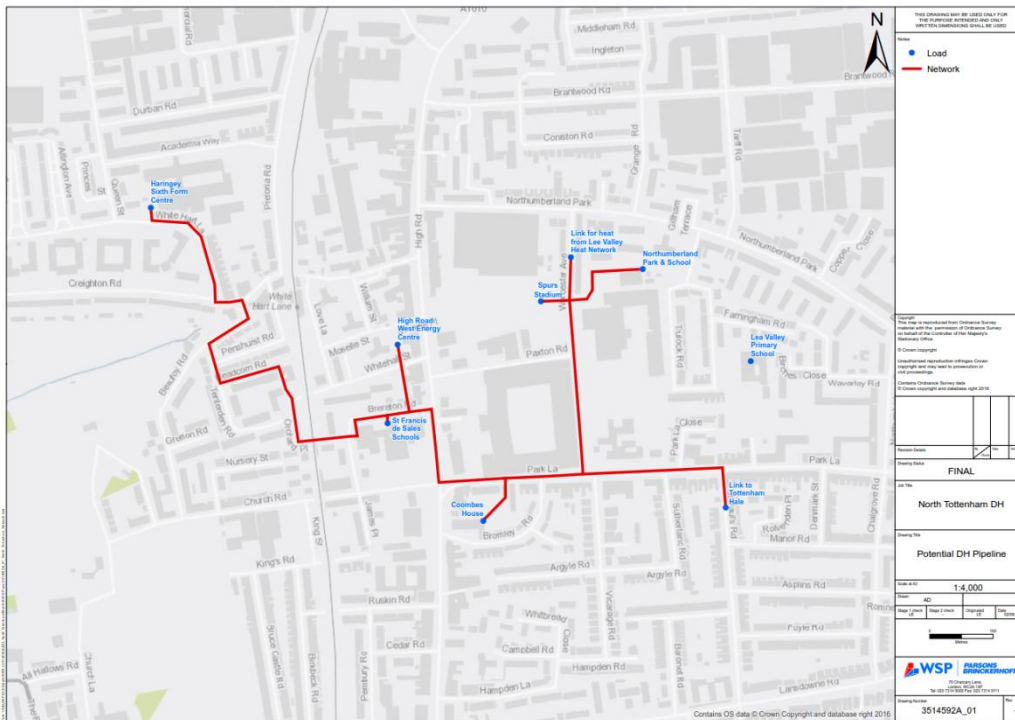
- Avoidance of major utilities



- Avoidance of major roads (works on major roads likely to engender significant cost and disruption)
- Minimising the distance between the energy centre and loads
- Use of soft dig where possible to minimise costs

The modelling assumes a single point of connection from the DEN to each development, with the respective developer responsible for designing and delivering their onsite heat network to the DEN specification.

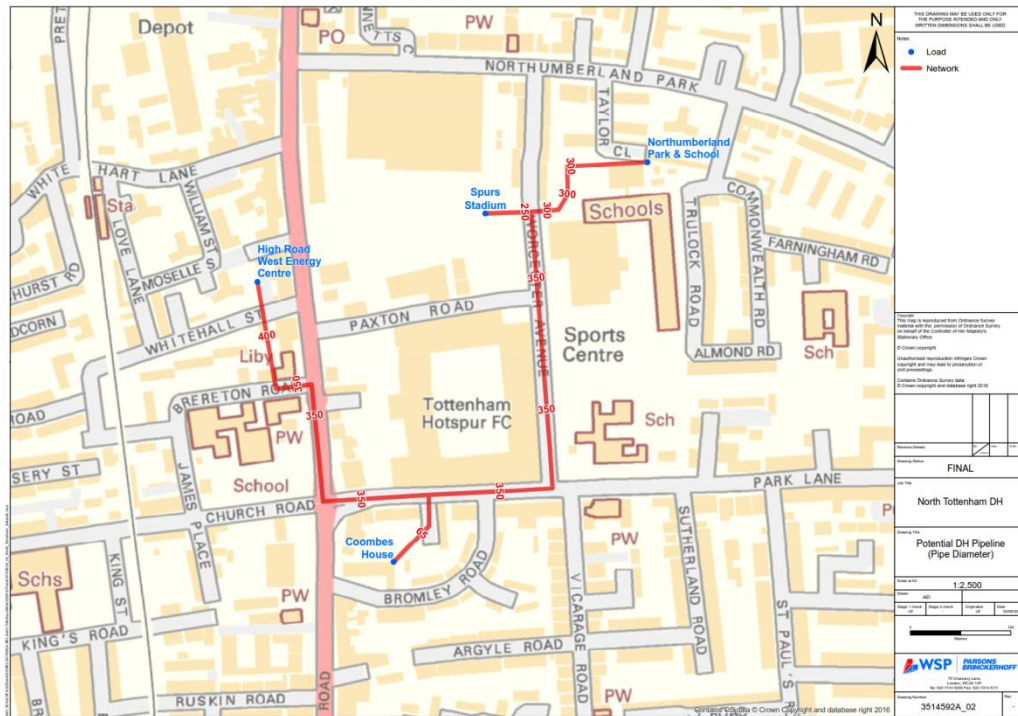
The resultant energy centre together with the network route showing proposed initial and future connections is presented in Figure 6 below.



**Figure 6 - Network Route**

WSP | PB's proprietary pipeline model was used to model the pipe networks. This allows the diameter of pipe lengths to be calculated, DH network pumps to be sized, and indicative heat loss and network cost to be calculated. This has led to the chosen Network Route and

pipeline sizing. The output of pipeline modelling is illustrated in Figure 7 below.



**Figure 7 - Pipe diameters**

### 3.7 Net present value analysis of preferred technical solution

#### 3.7.1 Introduction

The basis for the comparison is the Net Present Value (NPV), calculated on the basis of benefits and capital and revenue expenditure incurred. This gives the value in the system of the chosen technical specification. Based on the technical solution specified in the Sections above, the net present value of the scheme has been calculated. This was calculated in order to determine the viability of the DE network and to inform the decision to proceed with the options appraisal. The NPV analysis assessed potential revenues from selling heat to the developments in line with the estimated heat demands and prices rising in line with the applicable DECC curves.

#### 3.7.2 Net present value of preferred technical solution

This section shows the resultant cash flow under each of the low, medium and high load scenarios.

##### 3.7.2.1 Low load scenario

This section shows the results of the low load scenario.

### **3.7.2.2 Medium load scenario**

This section shows the results of the Medium load scenario.

### **3.7.2.3 High load scenario**

This section shows the results of the High load scenario.

## **3.8 Conclusion on techno-economic assessment**

Based on the results above, each of the three load scenarios have a positive NPV, without the inclusion of financing costs or on-costs resulting from a preferred commercial structure. The results indicate that there is positive value in the system and the DE Network is potentially viable.

## **4. Commercial Options Appraisal**

### **4.1 Introduction**

The techno-economic assessment has determined the most economically preferred scope and technical specification of the decentralised energy network. This was based on WSP | Parsons Brinkerhoff's technical study.

The commercial options appraisal in this section seeks to assess the preferred funding method, corporate structure, legal and commercial structure, in light of the Council's objectives and constraints. It will assess a variety of options for the monetary impact on the Council, whilst also considering each option's risks and benefits. The objective of the commercial options appraisal is to determine, based on the scheme design set out in Section 3, what level and nature of involvement the Council should have (if at all) and what funding vehicle/strategy should be employed in order to achieve the preferred technical solution. In addition, legal considerations for each option are discussed.

### **4.2 Case for Council Involvement in one or more project roles**

The Department for Communities and Local Government (DCLG) through the National Planning Policy Framework (NPPF) and the Department of Business, Energy and Industrial Strategy (BEIS), as well as the Mayor of London through the London Plan have stated that local authorities should play a proactive role in identifying appropriate locations and sponsoring the initial development of Decentralised Energy Network opportunities in their local area.

### **4.3 Commercial options**

#### **4.3.1 Long list options**

To determine the options to be taken forward (shortlisted) for detailed financial and commercial analysis a long list of options has been drawn up. The long list of options was derived during the Workshops carried out by the project team. These options were considered for their risks, benefits, and ability to meet the Council's objectives.

The table in Appendix 1a describes the comprehensive long list of options that was considered during the workshops and the risks and benefits associated with each one. Each option was then assessed against the Council's objectives. Options which best met the Council's objectives were taken forward to the shortlist. Options which did not meet the Council's objectives were rejected. This shortlisting process is depicted in Appendix 1b.

#### **4.3.2 Shortlist options**

Through the selection process described above, five commercial options were chosen which best meet the Council's objectives. The Council decided on the following short list of options

which it wanted to analyse further. Table 10 below outlines the five shortlisted commercial options.

Short list commercial option	Description
<b>Option 1: Do nothing – the base case</b>	No council led DEN. Heating for each site being otherwise developed in the area is done on a site by site basis by developers in line with planning regulations. No incremental revenues, benefits, risks or costs to council.
<b>Option 2: 100% Council owned SPV</b>	The Council will set up a wholly owned subsidiary which will be responsible for developing the DEN. The SPV will procure a private sector contractor for construction and operation of the DEN, but will maintain control over the DEN and all DEN revenues.
<b>Option 3: 50:50 JV</b>	The Council will partner with a private sector partner to form a joint venture company. This will be shared 50:50 between the private and public sector. The JV will own the DEN. The JV will procure construction and operation of the DEN. Profits will be shared between the private and public sector owners.
<b>Option 4: No Council involvement - fully outsourced to private sector</b>	The Council will outsource the project completely to the private sector. The private sector will control all aspects of the DEN including construction, operation and revenues. Strategic control is given to the private sector. The Council will procure an ESCo to deliver the DEN, for example through a concession agreement.
<b>Option 5: GLA led infrastructure vehicle</b>	This option is similar to option 4- private sector led solution; however it would be led by the GLA with the Council handing over strategic control.

**Table 11: Shortlist of options**

These five shortlisted commercial options will be subject to detailed analysis within this Section in order to determine the preferred way forward.

#### 4.4 Identification and description of options

Each of the shortlisted options is described in more detail below.

#### **4.4.1 Option 1: Do nothing**

##### Overview:

This option is included in the shortlist to provide a base case comparator. Under this scenario no DEN network is developed, and the energy solutions and planning requirements are undertaken by the private sector on a site by site basis in line with planning regulations. Each public sector building included within the Project's catchment area would have to upgrade its existing energy infrastructure as and when required through maintenance programmes and government policy around carbon targets. In addition, developments of new housing would be left to developers and the private sector to connect to the grid or alternative heat and electricity supplies, within planning regulations, and may result in multiple energy centres and no area wide DEN.

Multiple energy centres would not offer the support to the local grid and further public investment in the grid would be required. The Council would still be required to invest in infrastructure on its own sites or sites that it brought forward with partners such as the HDV. Multiple energy centres would be less efficient and result in higher carbon emissions

In this case the public sector would not have control over reducing carbon emissions or delivering low carbon energy for new or existing developments in North Tottenham except through planning requirements. There would also be no commercial structure in place for the connectivity of future schemes or projects. The potential revenues from selling heat and/or electricity to the private sector developments would not be harnessed by the Council or a vehicle in which it was a participant.

##### Outline contract structure:

N/A – there is no contract structure under this option. Developers will set up energy solutions privately and separately in line with planning requirements.

##### Corporate Structure:

N/A - there is no separate corporate structure set up. The Council carries out planning activities as part of Council functions.

##### Funding Structure:

Developers fund energy solutions and infrastructure. The Council pays for its own heat / electricity on an ongoing basis.

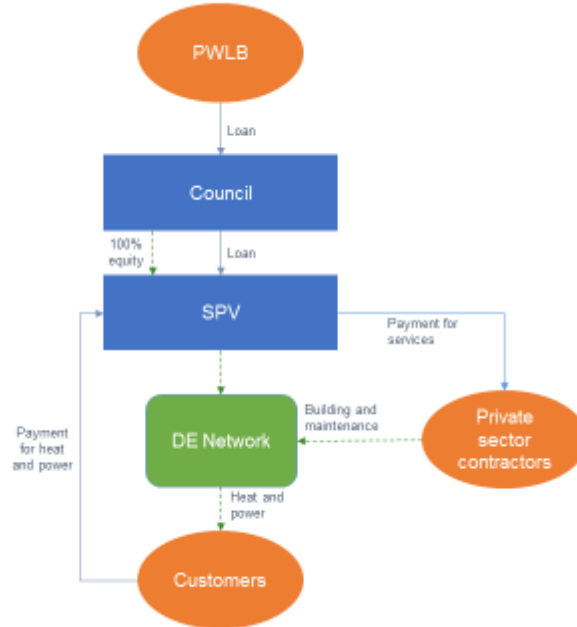
##### Legal implications of Option 1:

N/A there is no separate corporate structure or commercial arrangements against which to consider legal arrangements.

The risks and benefits are analysed in detail for all options in Sections 4.7 and 4.8.

#### 4.4.2 Option 2: '100% Council owned SPV'

##### Overview:



**Figure 8 - Option 2 structure**

Under this option, the Council would be responsible for developing and implementing the DEN. In order to do so, it would create a wholly owned subsidiary. A separate SPV has been chosen in order to limit the Council's liability to creditors, to provide flexible exit options and potential exit gains and to enable it to trade for profit with more flexibility. The SPV will be responsible for implementing and operating the DEN. It would contract with private sector contractors for the necessary works such as construction and maintenance. Strategic control will be retained by the Council through its ownership of the SPV, and the Council could make the major decisions about the delivery and operations of the DEN without a third party complexity. This option maximises the Council's flexibility and levers/options to adjust DEN delivery and expansion with strategic regeneration partners and development phasing at North Tottenham

The Council can enable the Governance and Regulation roles, setting policies on consumer protection and transparency of heat tariffs for residents (in the absence of regulation by ofgem or equivalent).

##### Outline Contract structure:

The SPV procures private sector contractors to build and operate the DEN. The SPV sells heat and electricity to consumers connected to the network.

##### Outline corporate structure:

##### Outline funding structure:

Legal structure:

The legal structure is constructed around a corporate vehicle wholly owned and established by the Council. The SPV has a separate legal identity which can contract and own assets in its own right. The Council's governance arrangement and scope of delegation will be enshrined within the incorporation documentation for the vehicle (e.g. voting right and matters reserved for the Council). The SPV will procure and contract with private sector contractors for the design, build and operation of the DE Network. The SPV will contract directly with the residential and commercial customers for the supply of heat and retain all revenues. There are various forms a corporate vehicle can take. These have been considered in the long list of options in Appendix 1a and in the SPV structuring advice in Appendix 14.

The choice of vehicle for the SPV will be need to be reviewed following confirmation of the funding sources for the SPV, however given that the Council is seeking for the SPV to be revenue generating, a company limited by shares, would appear the most suitable vehicle.

Exit strategy:

Once the DEN has been fully built out with the regeneration programme at North Tottenham, the Council may take a position that it is confident that scheme has been implemented such that the strategic objectives will be delivered. In addition, as the scheme demonstrates full operation, the private sector may take an improved view of investing in and/or owning the DEN the project.

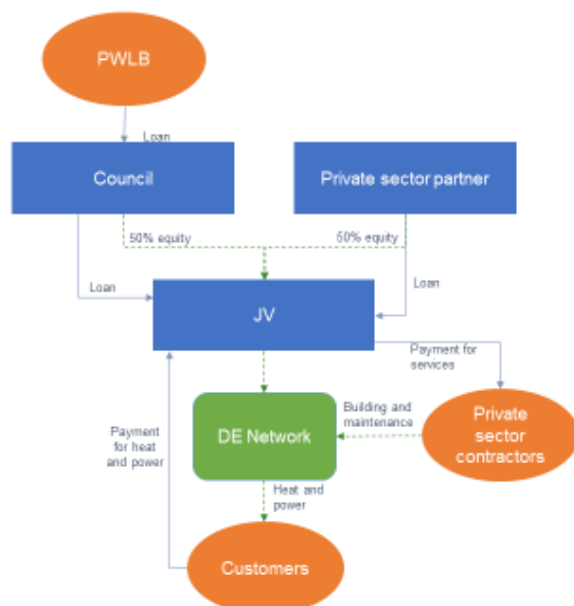
Although there are various ways the Council could develop the DEN in-house, its potential exit strategy has been a key factor in the selection of an SPV as a short listed option. This option would allow the Council to refinance or sell the SPV to a third party as an exit route in future if the need arises (without the complication of a private partner) or new partners could take a stake in the SPV in future (potentially transitioning to a JV) once the strategic objectives are delivered.

Further, if the Council were to develop the DEN in-house without a separate legal vehicle, it may be difficult to then sell the DEN as a ring-fenced business at a future date. However, if it has an SPV, such as a company limited by shares, it may be able to sell the shares in that company to a third party as an exit route. As well as the relative ease of selling shares rather than a group of assets, the SPV would also have financial statements showing the performance and position of the company, making it easier for a potential buyer to value the company in the event of a sale. For this reason, an in-house solution was not shortlisted despite the corporation tax benefits of a Council division as distinct from a Council subsidiary.



### 4.4.3 Option 3: '50:50 JV'

#### Overview:



2

**Figure 9: Option 3 structure**

In this option the Council will partner with the private sector to form a joint venture company. For modelling purposes this will be a 50:50 joint venture with the private sector partner, with investment in the JV and profits both split 50:50. In reality, this would need to be tested commercially to determine market appetite to join the JV. The JV will finance, develop, implement and operate the DEN in which the private sector partner may be involved. The JV will contract with separate private sector companies to perform tasks such as construction and maintenance.

Both the Council and the private sector partner will invest share capital into the JV. This is likely to be pinpoint equity (minimal up-front cash as share capital). The remainder of the JV funding will be debt finance from the JV partners. The mix of share capital v debt will depend on the cash available in both the Council and private sector partner and the offer that the private sector partner brings to procurement.

#### Outline contract structure:

The JV would contract with third parties to construct and maintain the DE Network. The JV would sell heat and electricity to consumers on the network and collect revenues.

#### Outline corporate structure:

The Council and the private sector will both own 50% of the equity in a newly formed company.

#### Outline funding structure:

It would be funded by equity and loans from the two JV partners. Loan repayments including interest would be made to the lenders. Remaining profits would be distributed as dividends to the JV owners in proportion to their shareholding.

#### Legal structure of option 3:

The legal structure for option 3 is similar to option 2 and the same governance, structural and legal considerations will apply save that the private sector partner (PSP) will share all risk and revenue on a 50:50 basis. The Council and the PSP shall enter into a shareholders agreement to regulate their respective roles and responsibilities with a view to achieving an alignment of economic and strategic interests. This will need to align with the Council's scope of delegation and, in particular, key strategic decisions may be reserved for the Council (e.g. funding commitments). This will create a commercial tension and increase the risk of the parties reaching deadlock / impasse. For example, the PSP may block a decision to expand the heat network where the increased capital investment does not satisfy its commercial viability tests/requirements. The PSP will not share the Council's wider socio-economic aspirations and requirements for the DE network (e.g. alleviating energy affordability).

The shareholders agreement will also need to include a controlled winding up process in the event the parties opt to or are forced to wind up the entity with rights reserved for the Council to acquire the DEN assets to enable continuity of supply to the residents (subject to a valuation mechanism). In the event of default by the PSP, we would expect the Council to have the right to acquire PSP's interest in the SPV and act as the supplier of last resort unless and until a replacement contractor can be procured. The shareholders agreement will need to be carefully considered to determine whether there is joint control, or whether the Council is deemed to control the entity, as this will impact upon the accounting treatment and resultant budgetary impacts for the Council. At the outset it is assumed control would be shared, resulting in equity accounting by the Council.

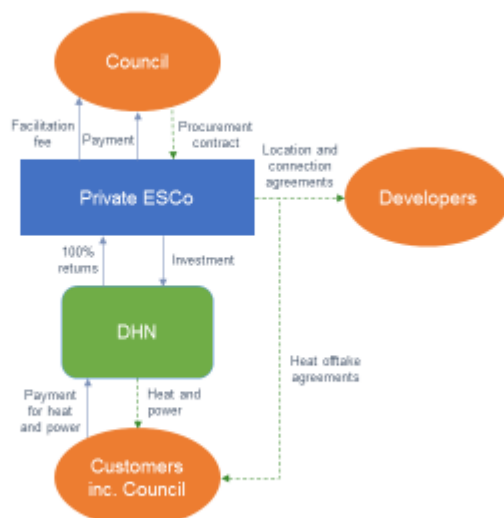
The JV partner would be selected following a competitive procurement process.

#### Exit strategy:

This option would also allow the Council to sell its stake in the JV to the private partner or to a third party as an exit route in future if the need arises. However it may be complicated as the interests of the private partner would need to be considered, as well as third party market appetite to take on part ownership.

### **4.4.4 Option 4: Outsource fully to private sector**

#### Overview:



**Figure 10: Option 4 procuring an ESCo**

In this option the Council will actively procure and then allow the private sector to develop, implement and operate the DEN. The private sector will provide all investment required and take all variable returns in the DEN. All aspects of the DEN including strategic control will be retained by the private sector other than through planning permissions which the Council (in its capacity as planning authority) may influence. The Council buildings within the catchment area will connect to the DEN. The Council will therefore have to pay the private sector for the heat it purchases. It may negotiate preferential rates for its heat offtake, although the baseline model assumes consumers are no worse off with the DEN so it is unlikely rates paid under this option would vary from the other options modelled.

In this case the Council loses strategic control of the DEN and there is the risk the private sector partner may not be found to develop it and the Council would have no control over the pace of development or expansion in the future. However the objectives of lowering carbon emissions and improved energy affordability could still be achieved if it was a private sector led solution, given the scale of the overall scheme.

This Option could be executed by the Council procuring a private ESCo. The only Council involvement would be at procurement stage to set out the contract at the outset and procure the right partner. The Council would incur costs of procurement with this approach, but may, subject to the commercial viability of the DEN, also be able to charge an up-front fee for facilitating the project for a private sector supplier. See Figure 10 above for a diagram of this option. The Council selected this option for the shortlist as an example of ring-fencing the IP for the project with a view to being able to market this to the private sector to deliver the DEN on an area wide basis (as distinct from the site by site basis in the developer led do nothing option).

Outline contract structure:

Potential contract with private sector to sell the intellectual property including technical scheme design of DE Network and agree facilitating heat off-take agreements/ developer agreements.

Corporate Structure:

N/A No corporate structure with Council involvement.

Funding Structure:

Up-front costs incurred by Council to find an operator and negotiate with the private sector. Potential for payment from the private sector partner if it presents an attractive opportunity for the market.

Legal implications of Option 4:

Option 4 would be structured as a services concession under which a private sector ESCo would:

- a. be granted the right to exploit the DE Network;
- b. derive its income directly from the third party customers who purchase the supply of heat and/or electricity from the DE Network; and
- c. assume all risks inherent in designing, constructing and operating the DE Network.

Under this option all risk will be passed to the ESCo and the Council's role will be limited to the procurement of the concession. The concession length would be procured in accordance with the new Concession Contracts Regulations 2016. The Council may, as part of the procurement, include safeguards within the concession agreement around minimum requirements for supply, connection terms (e.g. customer care charter and transparency over heat and electricity tariff pricing models), although the extent of such contractual controls may impact on the commercial attractiveness of the opportunity.

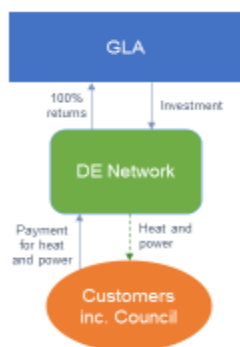
The ESCo will assume entire responsibility for the design, build and operation of the DE Network and, typically, it will undertake such works/services intra-group or as part of a consortium arrangement.

The Council will need to consider the implications of the ESCo defaulting (e.g. insolvency or abandonment if not commercially viable) and contractual safeguards may need to be included in the concession agreement to enable it to step-in and either act as the supplier of last resort or procure a replacement contractor.

Exit Strategy

The Council would have no need of an exit strategy as the asset would be managed and owned by another individual.

#### 4.4.5 Option 5: GLA led infrastructure vehicle



**Figure 11 - GLA led solution**

##### Overview:

This option is similar to Option 4; the private sector led solution, except it is led by the GLA instead and the Council would not go through a procurement process to identify an operator. The Council would not have involvement in operating the DE network and would not invest in the scheme or earn returns on the business. The GLA would maintain strategic control of the network except through planning permissions issued by Haringey. The Council may be involved in the initial discussions with the GLA and key developers or stakeholders in order to hand over the scheme and project information already gained through the business case process. There may be an opportunity for the Council to invest in the scheme, or to secure preferential rates from the GLA led scheme. This would need to be explored in consultation with the GLA.

##### Outline contract structure:

N/A no contracts with Council involvement

##### Corporate Structure:

N/A no corporate vehicle with Council involvement

##### Funding Structure:

No funding provided by the Council. GLA will obtain funding for the project and retain the profits.

##### Legal Structure of Option 5:

N/A there is no separate corporate structure or commercial arrangement against which to consider legal arrangements.

## **4.5 Additional Legal considerations concerning all options**

### **4.5.1 Powers of the Council to develop a district heat network**

The Council can take comfort from the fact that, from a consolidated position, the powers to develop and participate in decentralised energy networks are relatively well established and understood in this context. Specifically, the Council has sufficiently broad powers to enable it to produce heat and/or electricity; enter into agreements for the supply of heat and electricity (as long as produced in association with heat); establish a company to trade; borrow funds (e.g. PWLB) and on-lend to the company (i.e. ESCo).

The precise powers to be relied upon should be continually reviewed and tested as the project scope evolves and the Council's role is more clearly defined. The Council should also remain mindful of State aid considerations which are set out in Appendix 13. The full legal considerations regarding the powers to invest and powers to trade are set out in Appendix 11.

### **4.5.2 Regulation**

Currently customers on district energy networks are not covered by regulation. “The Heat Trust Code of Practice” is designed to protect customers who are on energy networks. And this is funded by membership fees. This Code provides best practise support, minimum operations standards, advice on billing, and signposting to dispute resolution. The government has stated that if this code of good practise is not effective, they will regulate this market to ensure consumer protection. The Council will adhere to the guidelines set out in the Heat Trust code of practise and will monitor any future regulatory developments and work towards these standards. The Council has yet to determine whether it would pay for membership for the Heat Trust Code of Practice and as has to determine whether this offers value for money. As a public body users would have several routes of recourse in any dispute and other issues covered by the Code will be embedded through the procurement and design of the network. The business case has been designed to ensure that bills are transparent and customers protected, this includes the management of light regulation. But if regulation is enforced and is too burdensome for the SPV to manage the Council will have greater flexibility for managing this under the SPV model, through developing strategic partnerships, while ensuring customers are protected.

The regulations requiring schemes to connect and deliver district energy networks are set in the National Planning Policy Framework (NPPF), the London Plan and the Haringey Local Plan. The refresh of the London Plan (due 2019) aims to continue the requirement for district energy networks as these offer low carbon energy and local energy generation for London. The schemes that are designed into this business case will have received planning permission before any of these changes are able to be enforced.

Regulatory changes are therefore picked up in the risk register.

## **4.6 Monetary evaluation**

### **4.6.1 Introduction**

In this section the monetary benefits and costs of applicable shortlisted commercial options are examined. The basis for the comparison is a series of metrics which result from the varying levels, and the nature of participation from the Council. These include ROI, NPV and the overall cumulative contribution to the Council's budgets, where applicable to the option. The results of each commercial option are predicated on the financial health of the project itself, shown first in the next section, with the impact of the corporate and financing structure then overlaid in the following sections.

### **4.6.3 Financial results of each applicable option**

This section builds on the financial results of the core project from the previous section, with the inclusion of financing costs and equity profiling. The impact of these inclusions is different across the various options presented here. The financial results of each applicable option described above are set out below<sup>8</sup> and are processed from a financial model and on the basis of a series of detailed assumptions

## **4.7 Financial results under alternative scenarios (sensitivity analysis)**

This Section analyses the cumulative cash position of the Council (i.e. returns to the Council) under various sensitivities

### **4.7.2 Further Sensitivity: connection to the Lee Valley Heat Network (LVHN)**

The LVHN exists as a potential future source of heat for the SPV or JV. A prudent assessment of when this heat source would be available for connection is around 10-15 years after the commencement of the core scheme in North Tottenham, and the potential timeframe for a new Energy Recovery Facility (ERF) to be delivered at the Edmonton Eco-Park.

## **4.8 Non-monetary assessment of options**

### **4.8.1 Introduction**

In addition to a monetary assessment, the business case must assess the non-monetary benefits associated with each option. The benefits identified are qualitative factors underpinned by the Council's objectives.

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<sup>8</sup> The results are based on a draft model and as such are subject to change

The adopted approach to addressing non-monetary factors has been designed to take account of best practice. In considering the non-monetary benefits with the options, two principles should be observed:

- non-monetary analysis must be conducted with reference to the needs and Objectives established at the beginning of the appraisal in Section 2.8 and
- the analysis must be clear on how the options compare in regard to these factors.

Given this guidance, the approach has been to identify and define a set of key non-monetary benefits which map to the Council's objectives, and, to compare each option against these benefits.

As discussed in Section 2.4, the objectives of the project are to:

- To ensure we have the energy infrastructure to deliver growth and create homes that are affordable for residents
- To contribute to the regeneration of the North Tottenham area and supply low carbon energy to a mix of private and public sector developments
- To improve energy affordability and security for residents and businesses
- To reduce carbon emissions and assist in managing the impact of growth at North Tottenham
- To obtain a reasonable return on investment

These objectives were used to develop the key non-monetary benefits and assess the impact of each option on those benefits. A long list of benefits was brainstormed using the objectives. This is attached in Appendix 2a. The long list of non-monetary benefits was then mapped to objectives as shown in Appendix 2b.

#### 4.8.2 Key non-monetary benefits

Identification and scoring of the non-monetary benefits was based on The Workshops with the key stakeholders. Through the brainstorming and mapping process, the Council and stakeholders agreed the following key non-monetary benefits which could be used to differentiate between options.

<b>Benefits</b>
<b>Improved energy affordability</b>
<b>Reduced carbon emissions</b>
<b>Regeneration of North Tottenham</b>
<b>Alignment to planning requirements</b>
<b>Contribution to government green energy targets</b>
<b>Improve links to community/ other associations in North Tottenham</b>
<b>Build skills and capabilities at Council</b>
<b>Improve commercialisation and opportunities for future revenues at Council</b>
<b>Reduce heating costs in area including Council owned buildings</b>
<b>Job creation and economic activity in the area</b>
<b>Attract third party capital into North Tottenham</b>
<b>Haringey known as 'green' borough</b>
<b>Meet Haringey 40:20 plans</b>
<b>Income stream for Council activities</b>



<b>Potential for future expansion</b>
<b>Support developers in meeting carbon neutral requirements</b>
<b>Connect to other local authorities</b>
<b>Stable heat price</b>
<b>Council influence in North Tottenham energy strategy</b>
<b>Council stake in value in the system</b>
<b>Ability to recycle capital receipts for future investment</b>

These benefits have been considered when assessing options to determine which option best represents the Council's objectives. They will also be tracked by the Council throughout the project in order to monitor the realisation of these benefits.

#### 4.8.3 Impact upon the non-monetary benefits

This section explores the impact of each option on the non-monetary benefits underpinned by the Council's objectives. During the Workshops, the Council requested that non-monetary benefits are assessed on the basis of pass/fail in respect of each option. As a result, the Table 15 below shows the pass/fail applicability of each non-monetary benefit on each option.

Non-monetary benefit	Option 1- Do nothing Business as Usual	Option 2 -SPV	Option 3 – 50:50 JV	Option 4 – Outsource to private sector	Option 5 – GLA led
Improved energy affordability	X	✓	✓	XX	✓
Reduced carbon emissions	X	✓	✓	✓	✓
Regeneration of North Tottenham	X	✓	✓	XX	✓
Alignment to planning requirements	X	✓	✓	XX	✓
Contribution to government green energy targets	X	✓	✓	XX	✓
Improve links to community/ other associations in North Tottenham	X	✓	✓	XX	XX
Build skills and capabilities at Council	X	✓	XX	XX	XX

Non-monetary benefit	Option 1- Do nothing Business as Usual	Option 2 -SPV	Option 3 – 50:50 JV	Option 4 – Outsource to private sector	Option 5 – GLA led
Improve commercialisation and opportunities for future revenues at Council	x	✓	✓	XX	XX
Reduce heating costs in area including Council owned buildings	x	✓	✓	XX	XX
Job creation and economic activity in the area	x	✓	✓	✓	✓
Maximise Exit Gains for Council	x	✓	XX	XX	XX
Haringey known as 'green' borough	x	✓	✓	✓	✓
Meet Haringey 40:20 plans	x	✓	✓	XX	✓
Income stream for Council activities	x	✓	✓	XX	XX
Potential for future expansion	x	✓	✓	XX	✓
Support developers in meeting carbon neutral requirements	x	✓	✓	✓	✓
Connect to other local authorities	x	✓	✓	XX	✓
Stable heat price	x	✓	✓	XX	✓
Council influence in North Tottenham energy strategy	x	✓	✓	XX	XX
Council stake in value in the system	x	✓	✓	XX	XX
Ability to recycle capital receipts for future investment	x	✓	✓	XX	x
<b>Total</b>	<b>0</b>	<b>21</b>	<b>19</b>	<b>4</b>	<b>12</b>

Table 16 - Key non-monetary benefits applicable to each option

Option 1, 4 and 5 meet few of the Council's objectives and provide fewer benefits.

#### **4.8.4 Option 1**

Option 1 does not achieve the Council's objectives and is therefore not considered appropriate. It does provide some benefits in that it is low risk and the Council does not incur any up-front procurement or investment costs.

#### **4.8.5 Option 4**

Option 4 crystallises very few benefits underpinned by Council's objectives. However, it represents a private sector comparator for the Council. If the project does not progress at the public sector level in any fashion then the Council, via this option, will have the management information and intellectual property to go to market to offer out the DEN to the private sector as a complete package. A benefit with this option would be bringing third party expertise to the project, as a private sector owner may have the capabilities and experience to govern the DEN most effectively. It also transfers risk away from the Council and on to the private sector.

#### **4.8.6 Option 5**

Option 5 meets the third highest number of non-monetary benefits. It is assumed that the GLA's objectives in controlling the scheme would be similar to the Council's. Therefore, many of the civic benefits connected with a Council-led solution are assumed to be crystallised under a GLA led solution. However, the GLA option fails to meet the benefits of improving skills and capabilities at the Council, improving future commercial opportunities for the Council or influencing heating prices in the area.

#### **4.8.7 Options 2 and 3**

The Figure 12 above indicates that Options 2 and 3 have the greatest impact on the Council in terms of non-monetary benefits. Both of these options demonstrate a fundamental Council involvement in a decentralised energy scheme, where the Council is both controlling stability and the economics around heat and electricity provision to the local area. They also allow control of heat pricing better under a 'do no harm principle, where heat should be no more costly to users than the counterfactual.

Conversely to the above, there is potentially a skillset issue to consider in Option 2. Generation and provision of energy supply is not typically a core Council skill. A private sector partner may have experience operating a DEN company, have access to economies of scale and bring with it governance procedures and processes. In this way having a JV partner may enable the company to access a greater wealth of knowledge and experience in operating the DEN in a more successful fashion and mitigate some of the risks associated with setting up ESCos. In this way Option 3 provides a key specific non-monetary benefit that could have a material impact on the success of the project.

This risk of skills can be overcome by bringing on board the expertise of a Private Sector Partner which, to secure the benefits of their expertise and to get them engaged is often better done if it has a 'stake' in the business. Therefore, we recommend the SPV option but

further recommend that the Council market tests the option of having a contractor as a minor investor in the project. The investment could be just as a lender, or very minor equity, or it could be set up as a joint operation, all of which have different implications from and are a different legal structure to a JV, and incentivises increased performance.

#### **4.8.8 Conclusion on non-monetary benefits**

In light of the above it can be argued that Option 2 and 3 score similarly well and both provide many non-monetary benefits underpinned by the Council's objectives. Option 2 would leave the Council with more flexibility and ultimate control over the contract, while Option 3 may provide greater comfort in terms of running and operating a successful business in the DEN sector.

### **4.9 Risk Assessment**

#### **4.9.1 Introduction**

The purpose of this section of the business case is to identify and analyse the risks that might impact upon the project. This section considers how sensitive options are to changes in particular risk factors not already analysed through optimism bias and sensitivities. The assessment will consider whether there are risks and uncertainties in relation to any of the shortlisted options that:

- Would prevent any of them being the preferred way forward; or
- Provide more clarity on the differentiating factors that will help identify which is the preferred way forward.

The Council has also considered whether those risks can be mitigated and managed in order to proceed with the option and realise the financial and non-monetary benefits.

#### **4.9.2 Risk descriptions**

A full list of risks with descriptions and mitigation actions is set out in Appendix 3. These risks have been considered when assessing the preferred option to take forward. This was further refined through The Workshops where the key risks and constraints were identified to assess the shortlist of options against.

The mitigating actions will be monitored and updated by the Council as the project progresses through the programme management process.

#### **4.9.3 Discussion of shortlisted options based on risk**

A list of key risks was identified. Where an option would be likely to cause the risk occurring it has been given a red tick. Where the option does not present that risk it has been left blank. The impact of each risk has been developed based on the project intelligence that is currently available including feasibility studies and The Workshops. Table 16 below depicts the key risks and applicability to each option.

Risks	Option 1 - Do nothing Business as Usual	Option 2 - 100% Council owned SPV	Option 3 - 50:50 JV	Option 4 - Outsource to private sector	Option 5 -GLA led option
Loss of potential NPV from not investing in the project	✓			✓	✓
Liability to third parties resulting in financial loss					
Complex commercial structure resulting in protracted negotiations			✓	✓	
Decision making complexity and conflict			✓		
Strain on Council resources		✓	✓		
No exit strategy - tied in to contract			✓		
Appropriate bidders- JV partner or other private sector partner			✓	✓	✓
No public sector approval		✓	✓		✓
Failure to secure public or private funding		✓	✓	✓	✓
Operational cost increases		✓	✓		
Fuel price inflation		✓	✓		
Poor installation		✓	✓		
Optimism bias on forecast cash flows		✓	✓	✓	✓
Lack of consumer uptake- heat offtake risk		✓	✓		
Technology risk/ obsolescence risk		✓	✓		
Ability to secure anchor load: Spurs buy in		✓	✓		✓
Timing and caps on funding received		✓	✓		
Availability of contractors to build DE network		✓	✓	✓	✓
Timing to meet any housing development requirements	✓	✓	✓	✓	✓
Carbon reduction targets not met	✓	✓	✓	✓	✓
Obtaining planning and other third party consents		✓	✓		
Delivery of technical plans and specification		✓	✓	✓	

Risks	Option 1- Do nothing Business as Usual	Option 2 - 100% Council owned SPV	Option 3 - 50:50 JV	Option 4 - Outsource to private sector	Option 5 -GLA led option
Meter readings and data collection		✓	✓		
Regulatory change		✓	✓		
State aid rules		✓	✓	✓	✓
Licensing (e.g. utilities licence)		✓	✓		
Variable returns		✓	✓		
Credit risk		✓	✓		
Pricing structure		✓	✓	✓	
Managing contracts		✓	✓		

**Table 17 - Key risks applicable to each option**

### Option 1:

This option carries low financial risk, as the Council would not develop any new infrastructure or DE scheme. However, this option carries the greatest risk of not meeting the Council's objectives of tackling carbon emissions, regeneration and energy affordability. In particular:

- The Council may suffer carbon penalties, the cost of sustained fuel poverty or lost future economic gains through regeneration plans, DEN profits and business rates
- Risk of not meeting the 40:20 carbon reduction targets
- No impact upon energy affordability
- No strategic control over a DEN

### Option 2:

While it is recognised that both options 2 and 3 trigger the highest number of risks shown in the table above, as denoted by a ✓ and which distinguish them from options 1, 4 and 5, the quantum of these risks is ultimately informed by the ownership structure. This is because in the JV scenario the Council would share the risks and rewards with the JV partner and would only be subject to half of the variable returns.

The 100% SPV option carries the greatest financial risk for the Council, as it would own 100% of the infrastructure and DE Network without the ability to rely upon the knowledge and expertise of a private sector partner. It also results in greater potential reputational, operational, demand and construction risk for the Council.

However, this Option leaves strategic control and decision making to the Council, reducing the risk of conflict with a corporate partner, or third party conflict with the objectives of improved energy affordability and carbon emissions. The construction and operation would also be contracted out to a private sector contractor.

### **Option 3:**

This option reduces the financial risk to the Council by involving a private sector partner to share the investment requirements. It also reduces the reputational and operational risk by bringing in external expertise.

However, this option still leaves the Council open to some construction, operational and residual value risk, as well as the added risk of any conflicts arising in decision making. This may be able to be mitigated through the shareholders agreement. It also increases the risk of non-delivery of strategic objectives around ensuring fuel affordability.

### **Option 4:**

This option leaves the Council with low financial risk as it will not have to invest in or operate the DE network. However, as with option 1, there is the risk that carbon reduction and energy affordability targets will not be met.

There is also the risk that a private sector ESCo may not be found to develop the DE Network in which case the objectives of the Council would not be met. Other points worth noting for this option in particular are:

- Loss of strategic control by the Council
- Loss of future revenue streams for the Council
- May not be able to attract private sector investment and funding
- If returns do not meet private sector thresholds parts or all of the network may not be developed

### **Option 5:**

This option leaves the Council with low financial risk as it will not have to invest in or operate the DE network. However, the loss of strategic control implies the possibility of Borough-specific carbon reduction and energy affordability targets not being met.

In addition, obtaining the required buy-in and funding approval by the GLA may prove challenging and time-consuming, with no known operating or planned examples of this option in London.

### **Conclusion:**

The risk analysis indicates that Option 1, 4 and 5 have less impact on the risks for the Council, however they mean the Council may not achieve its strategic or financial goals set down at the outset of this project.

Although Option 2 and 3 place the greatest risk on the Council, these risks may be mitigated and managed through robust planning and project management and a shareholders agreement in the case of a JV.

Option 3 specifically triggers a number of risks in Appendix 3 such as more protracted negotiations, decision making complexity, finding an appropriate partner at the outset and potentially a more difficult exit strategy for the Council. However, it follows that with the Council owning 100% of the shares in the SPV option 2, it has a higher share of overall project risk. The experience of the JV partner may mitigate some of these project risks.

Option 3, although triggering many of the same risks as Option 2, transfers half of those risks to a JV partner.

### **Legal risk considerations/ mitigations**

In addition to the risks identified above there are legal risks to be considered. Option 2 and 3 would also allow for setting up a separate corporate entity. This provides mitigation against the following legal risks to a project such as this undertaken by a local authority:

- **Insulation of risk:** depending on the structure, an SPV could obtain limited liability status which is not available to the Council. HM Treasury encourages local authorities to not underwrite the cost/losses of trading ventures making them non-recourse to the relevant local authority. Even though any venture will be subject to detailed business case analysis, a prudent local authority should not be taking on unnecessary business risk.
- **Funding:** the establishment of a company opens up additional potential sources of finance outside of the Council, although some sources of funding available to the Council may not be available to an SPV (e.g. Public Works Loan Board (PWLB)). The Council may consider "on-lending" to the SPV (via PWLB), thus creating a commercial return in the Council on monies lent to the SPV (as any on-lending would need to be consistent with Market Economy Investor Principles (MEIP) – please also refer to Appendix 13 for further details.
- **Non-core Council business:** Along with the specialist nature of the skills and knowledge required to manage an ESCo/SPV (e.g. contracting for gas/heat offtake contracts to provide energy security at a best value price, managing O&M contracts, heat supply agreements, etc.), an SPV would need to be better placed to source and retain such skills. The SPV would have to ensure it was able to source and retain the necessary skills/knowledge required to manage the decentralised energy network (including energy trading, contract management, etc.).
- **Trading risk:** again this is non-core Council business and may be better managed by an ESCo/SPV with dedicated skills and resources to undertake this activity. Further discussion in relation to the 1976 Act is attached in Appendix 11.
- **Price risk:** any heat price charged to customers must be capable of adapting to market conditions. This will normally be captured through "heat tracker" and benchmarking which will take into account the general price of gas, the maintenance and servicing costs of a domestic boiler and the replacement cost against the price of district heat. The Council may not be able to take this risk without adverse reputational damage. An SPV creates a degree of separation which may be helpful to mitigate any political/reputational risk.

### **4.10 Conclusion of most preferred commercial option**

The techno-economic assessment has established that the DEN is potentially viable with a forecast positive NPV. The commercial options appraisal has discussed various commercial structuring options for implementing the DEN in terms of monetary, non-monetary benefits and risks.



#### **4.11 Accounting treatment of preferred option**

The preferred commercial option represents an SPV, and is a Council controlled subsidiary.

## **5. Procurement and commercial development**

### **5.1 Procurement and commercial development**

In developing the commercial options appraisal, alternative structures have been examined to determine the most appropriate fit to achieve the Council's objectives and the requirements of the preferred option. This involved assessing the correct allocation of risk and responsibility, the legal implications of alternative structures, and practical considerations.

This section examines the following areas:

- services that the preferred option seeks to procure in order to meet the project objectives;
- capacity and interest of the market to supply the required services and the implications of this for the Procurement Strategy;
- sourcing options;
- most suitable procurement approach with risks and recommendations; and
- proposed outline procurement timetable.

The aim of the Procurement Strategy is to ensure that:

- there is an awareness of correct procedures to be followed ensuring a fair and open approach is adopted throughout the procurement;
- recommended sourcing option is justified;
- whole life value for money is achieved;
- timescales are realistic;
- key commercial milestones are identified;
- an appropriate balance is achieved between commercial risk and cost and commercial risks have been identified and considered; and
- final contractual arrangements deliver a flexible arrangement that is fit for purpose and can as far as can be foreseen adapt to future legislative and political changes.

The final Procurement Strategy, along with the evaluation strategy, will provide a blueprint for the procurement phase of the project.

## **6. Programme Management Case**

### **6.1 Introduction**

The purpose of this section is to assess the 'achievability' of the project on the basis of the preferred option. The project will be delivered by personnel experienced in de-centralised energy project management, and with support from a team of advisors including financial, legal and technical specialists.

### **6.2 Project Management Arrangements**

The project is being managed by the Council's Carbon Management service, with representatives from finance and planning. The Project has a dedicated project manager. These officers will be responsible for the project management and procurement of the SPV and DEN. It has also procured the services of financial, technical and legal advisors who are working with the Project team throughout the business case process and planning of procurement and implementation. If a private sector partner takes a stake in the SPV, it will be expected to provide expertise and management of the SPV.

### **6.4 Decision making in the SPV**

#### **6.4.1 Board of Directors of the SPV**

The mechanics of setting up the SPV are fairly procedural but it will be important consider the governance arrangements in the terms of the memorandum and articles of association of the SPV and who the directors will be to ensure that the correct skills set and appropriate expertise is available for the delivery of the scheme.

The directors of the SPV are responsible for managing the business of the SPV on a day to day basis within the parameters of their delegated authority. The Council will need to understand the differing role it will be playing as a shareholder and "owner" of the SPV (which has no obligation to the SPV and the Councils decisions will be unfettered) and the fiduciary duties of the directors of the SPV who must act at all times in the best commercial interests of the SPV.

The Council may consider senior officer representation on the board of directors of the SPV given the statutory obligations of the directors and the relevant need to act in the best commercial and fiduciary interest of the SPV (and potential reporting requirements to Companies House etc.). The advantage of senior officer representation is that it provides for continuity upon changes in administration and ensures that the business plan of the SPV continues in the long term. It also helps to mitigate the risk of conflicts. It is suggested that in any quorum in order to conduct a meeting of the directors that the relevant quorum required to conduct and resolve issues at board level should include two directors.

#### **6.4.2 Shareholder decisions**

Certain key strategic decisions of the SPV may be reserved for determination by the Council as the majority shareholder of the SPV. Decisions taken by the Council as a shareholder will

be taken in its capacity as a local authority and will therefore be "unfettered" by the interests of the SPV.

There will be a list of matters reserved to the Council as a shareholder of the SPV in relation to those decisions which sit outside the day to day activities of SPV. It is envisaged that such reserved matters will include:

- any amendment to the objectives of the SPV;
- signing off business plans or material variations to the business plans for SPV;
- committing to finance or procuring external finance;
- admitting new shareholders;
- making any decision to wind up the SPV.

The shareholder agreement and reserved matters will need to be tested at procurement and agreed with the potential private sector partner.

## **6.5 Benefits management strategy**

The Project's key benefits have been described in this business case. These benefits, along with the key risks inherent in the project, were used to analyse the options and arrive at the preferred option.

The key benefits, both monetary and non-monetary will be documented in a benefits management strategy, with a description of the benefit, measurement, key dates, dependencies, risks and the owner. Benefits must be measured regularly and reported on to the Board or Council. Each benefit will have an owner who is responsible for measuring and reporting back on the benefit realisation.

An example of a Benefit Realisation Tracker is attached in Appendix 9.

## **6.6 Risk management**

Key risks have been identified in Section 4.9. The key risks of the project have mitigating actions, as described in Appendix 3. Risks will be monitored through the monthly board meetings, benefits realisation tracking, and project reviews throughout the project.

Regular reviews and updates to the risk register will ensure mitigating actions are carried out to minimise the impact of risks upon the project.

## **6.7 Change Management**

This investment will involve minimal change for the Council other than in additional capacity and capability in managing the SPV. The change required needs to be managed and embraced.

## **6.9 Conclusion on achievability**

The Council has considered the Projects risks and mitigating actions, the potential benefits and realisation tracking of these, and practical arrangements to deliver the Project including procurement considerations, services required and project management arrangements. The project is expected to be achievable for the Council, with a dedicated project manager and staff input into the project as well as support from specialist legal, technical and financial advisors.

## **6.10 Conclusion and Next Steps**

The conclusion of the OBC recommends that a North Tottenham DEN is viable under the assumptions modelled, and the monetary and non-monetary analysis undertaken of the options, concluded that Option 2: 100% owned Council SPV would be the most suitable delivery approach for the Council in order to fulfil the Council's objectives and aims of the Corporate Plan. It also provides the flexibility to support the development programmes for HRW and Northumberland Park, and longer term exit options for the Council.

**Appendix 1a: Identification of long list of commercial funding and structuring options**

## Appendix 1b: Short listing of options

## Appendix 2a: Benefits



## Appendix 2b: Benefits Mapping

## Appendix 2c: Benefits Scoring

## Appendix 3: Risks & Mitigations

**Appendix 3a: Risk Scoring**

**Appendix 4: Example template responsibilities matrix**

## Appendix 5: Heat load data

## Appendix 6: Assumptions

## **Appendix 7: Energy Centre Requirements for High Road West**



## Appendix 8: Potential Energy Centre Locations

## Appendix 9: Energy Centre Design

## Appendix 10: Assessment of Energy Centre Location

## Appendix 11: Powers to trade

### **Powers of the Council to discharge its functions by provision of the a District Heating Network**

The main powers in relation to local authority functions regarding heat and electricity are set out in Section 11 of the Local Government (Miscellaneous Provisions) Act 1976 (1976 Act). Except in relation to restrictions on the sale of electricity, these powers are without prejudice to the exercise of any other power that may be available apart from this Section. The powers provided by Section 11 of the 1976 ought to be sufficient to enable the Council to carry out the district heating activities as envisaged for the decentralised energy network.

In summary, Section 11 permits the Council to:

- produce heat or electricity or both
- establish and operate generating stations or installations for such production
- buy or otherwise acquire heat
- use, sell or otherwise dispose of heat produced or acquired or electricity produced by the Council
- enter into and carry out agreements for the supply of such heat to premises within or outside of the Council's area

Although Section 11 of the 1976 Act permits the sale of heat (whether purchased, acquired or produced by the local authority) to public and private sector third parties, a local authority cannot purchase electricity under Section 11 or sell electricity it has purchased, acquired or produced, unless, in the case of production only, the requirements of Section 11(3) are met. Section 11(3) limits the power to sell electricity to where it has been produced *in association with heat*, or as may otherwise be prescribed (e.g. from certain specified renewable sources - wind, solar, biomass, landfill gas, etc. - see Sale of Electricity by Local Authorities (England and Wales) Regulations 2010). For the purposes of the decentralised energy network, the Council would be selling electricity that had been produced in association with heat. Note that any top up electricity purchased from the grid would not be permitted to be sold under this power.

In relation to heat infrastructure, Section 11(4) provides the power to:

- construct, lay and maintain pipes and associated works for the purpose of conveying heat produced or acquired by the Council; and

- contribute towards costs incurred by another person in providing or maintaining pipes or associated works connected with pipes provided by the Council.

Section 11(5) provides the power to break open roads to lay pipes and carry out associated works.

No specific statutory power to oversize or “future proof” the district heating network is needed, but any decision to oversize or future proof will need to meet the tests of best value and affordability. Future-proofing will also need to form part of the risk analysis, in particular the question of sharing this risk with other public and private bodies where future supplies will be made beyond the Council’s own estate.

There are a number of more general powers which can be relied on by the Council for carrying out activities via an ESCo which are relevant to the options analysis below:

Section 1 of the Localism Act 2011 (2011 Act) "General Power of Competence" ("GPC") provides: "*A local authority has power to do anything that individuals generally may do*" even if:

- It is unlike anything else the authority may do.
- It is unlike anything that other public bodies may do.
- It is carried out in any way whatever, including:
  - anywhere in the UK or elsewhere;
  - for a commercial purpose or otherwise for a charge, or without charge; and
  - for, or otherwise than for, the benefit of the authority, its area or persons resident or present in its area.

The GPC is a very broad power and the general application of the power is not limited by the existence of any other local authority power that – to any extent – overlaps the GPC.<sup>9</sup> However, there are limitations set out in Section 2 of the 2011 Act and imposed on the GPC. These are:

- if the exercise of the GPC overlaps with a power that pre-dated the commencement of the GPC, then the GPC is subject to the same restrictions as that power;
- the GPC does not enable a local authority to do anything which it is unable to do because of a limitation that pre-dated the commencement of the GPC; and

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<sup>9</sup> Equally, any such other power is also not limited by the existence of the general power.

- the GPC does not enable a local authority to do anything that it has been unable to do because of a limitation that existed prior to the commencement of the GPC, even if it is expressed to apply to GPC.

### **The Power to Trade:**

Section 95 of the Local Government Act 2003 ("**2003 Act**") enables local authorities to trade in function related activities through a "company". The section provides that the relevant Secretary of State may authorise local authorities to do for a commercial purpose anything which they are authorised to do for the purpose of carrying on any of their ordinary functions.

A local authority must have regard to any guidance issued by the Secretary of State in relation to the exercise of this power. Detailed guidance has been published (the "**Guidance**").<sup>10</sup>

Under section 95 of the 2003 Act, a local authority cannot be authorised:

- to do in relation to a person anything which it is required to do in relation to him under its ordinary functions; or
- to do in relation to a person anything which it is authorised, apart from this section, to do in relation to him for a commercial purpose.

The current implementing instrument for section 95 of the 2003 Act is the Local Government (Best Value Authorities) (Power to Trade) (England) Order 2009 ("**2009 Order**"). In conjunction with section 95 of the 2003 Act, the 2009 Order authorises all local authorities to trade, provided that certain conditions are fulfilled:

- trading must be through a "company";
- before exercising the power, the local authority must prepare and approve a business case in support of the exercise of the power; and
- the authority must recover the costs of any accommodation, goods, services, staff or any other thing that it supplies in pursuance of or to facilitate the arrangement.

A "business case" is defined in the 2009 Order as a comprehensive statement as to the objectives of the business, the investment and other resources required to achieve those objectives, any risks the business might face and how significant those risks are and the

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<sup>10</sup> Guidance issued by ODPM in 2004 together with updated addendum issued in 2007 by DCLG

expected financial results of the business and the outcomes the business is expected to achieve.

**It should be noted that if the Council is relying on Section 11 of the 1976 Act, a local authority is not required to establish a Section 95 trading company in order to sell heat, irrespective of whether profits are generated or not.**

### **The Guidance to the 2003 Act**

Under the Guidance, in deciding whether and how to exercise the power to trade, authorities must still have regard to "their own procedural rules; Wednesbury principles of reasonableness; proper purposes; and fiduciary duty."<sup>11</sup>

Furthermore, the Guidance outlines the limited extent to which it expects a local authority to assume the losses and obligations of a subsidiary trading company. It implies that, in principle, a local authority can give a guarantee to a trading company, but also notes that a local authority should take "*appropriate steps to avoid automatically assuming responsibility for any aspects of an unsuccessful company*":

The local authority will only be responsible for debts and losses of a limited liability company to the extent of the nominal value of its shareholding, and, more significantly, **to the extent of any guarantee or contractual arrangement that it has entered into**. If there is no such guarantee or agreement, the local authority would not be under any obligation to meet the company's debts, and if it wished to do so it would have to satisfy itself that it had the legal power and that it was exercising that power properly.

However there are other risks if the company cannot meet its debts, if that company provides services that would otherwise be provided by the authority. This might arise in the context of insolvency or where the company is unable to deliver on any contracts with the authority which may give rise to losses or liability on the authority in respect of any failure by the company to deliver. In considering structures, **the authority should ensure that it takes appropriate steps to avoid automatically assuming responsibility for any aspects of an unsuccessful company**. This should include the actual provision of services.<sup>12</sup>

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<sup>11</sup> *Ibid*, para 30.

<sup>12</sup> *Ibid*, paras 68 & 69.

Aside from highlighting various diligent precautions that a local authority should take before entering into any type of contractual arrangement in the exercise of its power to trade, the Guidance does not in principle preclude a local authority from giving a parent company guarantee to a subsidiary trading company.

### **Power to borrow and invest**

Section 1 of the Local Government Act 2003 – provides local authorities a power to borrow for any purpose relevant to their functions under any enactment or for the purpose of the prudent management of its financial affairs. So long as the authority is borrowing for a function it can on-lend to a corporate vehicle in addition to making loans from other funding services.

Section 12 of the Local Government Act 2003 – provides a separate power to invest for any purpose relevant to their functions. In exercising their powers of investment, local authorities must have regard to the statutory guidance issued by the Secretary of State and specified guidance published by CIPFA.

Section 111 of the Local Government Act 1972 ("**Incidental Power**") – provides that a local authority shall have power to do anything (whether or not involving the expenditure, borrowing or lending of money) which is calculated to facilitate, or is conducive or incidental to, the discharge of any of their functions. The Incidental Power may not be relied upon in its own right for the establishment of the district heating network and it requires a valid underlying power to attach the Incidental Power.

### **Best Value**

In terms of Section 3 of the Local Government Act 1999, the Council will be required to obtain best value in the provision of a decentralised energy network by:

- securing continuous improvement in the performance and delivery of a decentralised energy network
- maintaining an appropriate balance between quality and whole life cost
- having regard to efficiency, economy, effectiveness and equal opportunities and
- contributing to sustainable development.

### **Conclusion**

The Council can take comfort from the fact that the powers to develop and participate in decentralised energy networks are relatively well established and understood in this context.



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Specifically, the Council has sufficiently broad powers to enable it to produce heat and/or electricity; enter into agreements for the supply of heat and electricity (as long as produced in association with heat); establish a company to trade; borrow funds (e.g. PWLB) and on-lend to the company (i.e. ESCo).

## Appendix 12: Procurement

**Appendix 13: State Aid**

## Appendix 14: ESCo Structure

**Appendix 15: WSP | Parsons Brinckerhoff technical feasibility study**

## **Appendix 16: Council financial impact Option 2 base case**

## **Appendix 17: Council financial impact Option 3**

**Appendix 18: Income Statement of SPV/ JV**



**Appendix 19: Balance Sheet of SPV/ JV**

**Appendix 20: Cash flow statement of SPV/ JV**

**Appendix 21 – Detailed graphical Results for the Techno-economic study**