



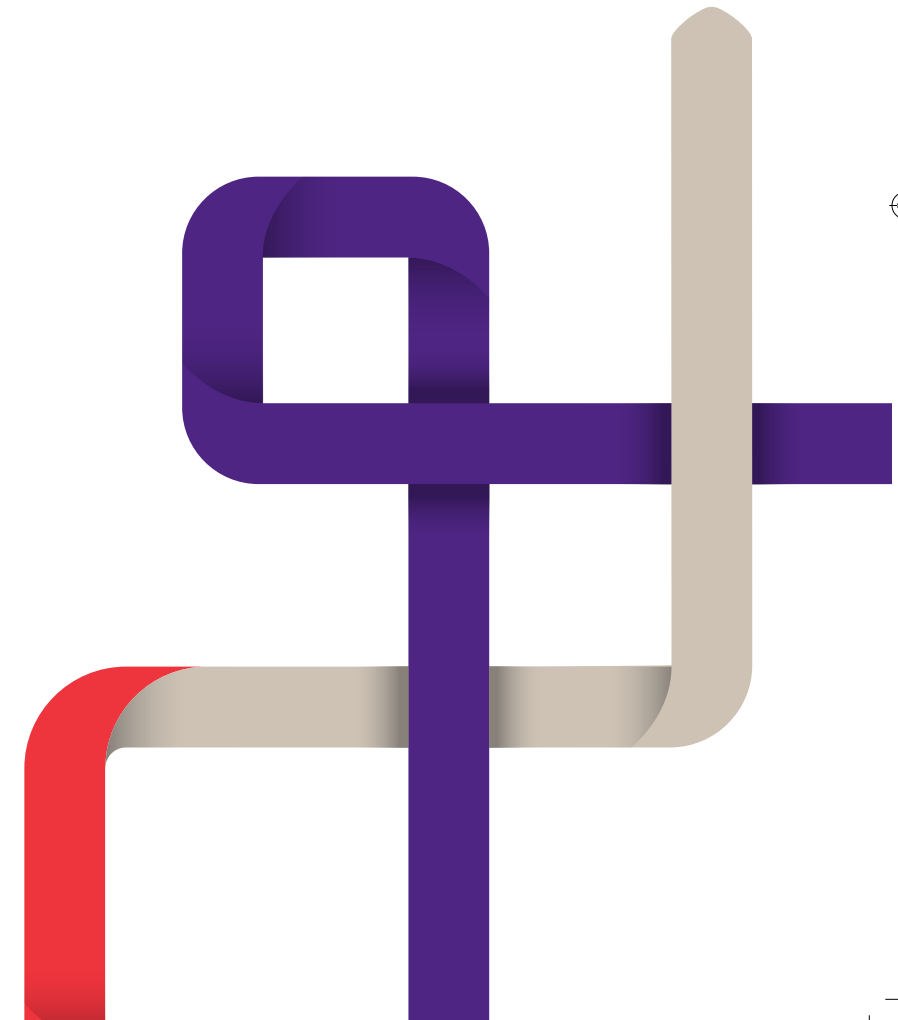
Financing Heat Networks in the UK

Guidebook

August 2018

Interactivity instructions

This guidebook has been prepared as an interactive PDF guide designed to allow the reader to access specific sections of the document at ease. Buttons and hyperlinks throughout link to web pages and also jump to specific sections within the document. Using the back (Alt+Left arrow) and forward (Alt+Right arrow) buttons on either a website or PDF view will allow the reader to return to the previous and next view respectively. There is also the navigation panel on the right of each page that allows you to move forwards and backwards, and also jump to specific sections within the guidebook.



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Glossary

Acronym	Full form
AIA	Annual Investment Allowance
CHP	Combined Heat and Power
CHPQA	Combined Heat and Power Quality Assurance
CIPFA	The Chartered Institute of Public Finance and Accountancy
CIR	Corporate Interest Restrictions
DBOM	Design, build, operate and maintain
DEFRA	Department for Environment, Food & Rural Affairs
DSCR	Debt Service Cover Ratio (definition provided)
EBITDA	Earnings before interest, tax, depreciation and amortisation
ECA	Enhanced Capital Allowances
EfW	Energy from Waste
EIS	Enterprise Investment Scheme
EPC	Engineer, procure and construct
ERDF	European Regional Development Fund
ESCo	Energy Service Company
ESIF	European Structural and Investment Fund
ETCL	Energy Technology Criteria List
ETPL	Energy Technology Product List
FRS	Financial Reporting Standard

Acronym	Full form
FYA	First Year Allowance
GBER	General Block Exemption Regulation
HMRC	Her Majesty's Revenue and Customs
HNDU	Heat Networks Delivery Unit
HNIP	Heat Network Investment Project
IFRS	International Financial Reporting Standard
IHRS	Industrial Heat Recovery Support (Programme)
IRR	Internal Rate of Return (definition provided)
LASAAC	Local Authority (Scotland) Accounts Advisory Committee
LEP	Local Enterprise Partnership
M&B	Metering and billing
NPV	Net Present Value (definition provided)
OJEU	Official Journal of the European Union
O&M	Operation and Maintenance
PWLB	Public Works Loan Board
RHI	Renewable Heat Incentive
SCA	Service Concession Agreement
SEIS	Seed Enterprise Investment Scheme
SITR	Social Investment Tax Relief

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Glossary

Acronym	Full form
SORP	Statement of Recommended Practice
SPE	Special Purpose Entity
SPV	Special Purpose Vehicle
TPI	Third Party Investor (definition provided)
UK GAAP	UK Generally Accepted Accounting Practice
VAT	Value Added Tax
VCT	Venture Capital Trust
VOA	Valuation Office Agency
WTCL	Water Technology Criteria List
WTPL	Water Technology Product List

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Term	Definition
AIM	The London Stock Exchange's international market for smaller growing companies.
CA 2006	Companies Act 2006.
CP1	This refers to Heat Networks: Code of Practice for the UK, Raising standards for heat supply – a heat networks market compliance standard.
Capacity Market	The Capacity Market is part of the government's Electricity Market Reform package and guarantees generators who are successful in the Capacity Market auctions a steady, predictable revenue stream (capacity payment) for availability of their generating capacity. This is to enable investment in new generation assets and to keep existing generation available on the system.
Debt Service Cover Ratio	The Debt Service Coverage Ratio is a financial ratio often used by lenders within loan covenants. The ratio states net operating income as a multiple of debt obligations due within one year.
Delivery structure – 3rd Party ESCo	As defined in Section 6.1 .
Delivery structure – Concession	As defined in Section 6.1 .

Term	Definition
Delivery structure – In-house Delivery	As defined in Section 6.1 .
Delivery structure – Joint Venture ESCo	As defined in Section 6.1 .
Delivery structure – Project Sponsor ESCo	As defined in Section 6.1 .
DPD Guidance	Detailed Project Development Guidance published by BEIS to support local authorities in developing business cases for heat networks. www.gov.uk/government/publications/heat-network-detailed-project-development .
Heat Trust	Heat Trust is leading customer protection for the district heating sector. Launched in 2015, Heat Trust puts in place a common standard in the quality and level of customer service that is provided to domestic and micro-business customers by their heat energy supplier. It also provides customers free access to the Energy Ombudsman. (from the Heat Trust website: heattrust.org).

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Term	Definition
Internal Rate of Return	<p>The Internal Rate of Return (IRR) of a series of cash flows (negative and positive) is a discount rate that would give an NPV of £0 on the cash flows analysed.</p> <p>To give a more intuitive explanation, the IRR represents the annual (or periodic, depending on the frequency of the cash flows analysed) interest rate that a loan with the same amount of capital invested would provide. Cash flows received prior to the end of the appraisal period are assumed to be re-invested and earn the IRR.</p> <p>This is a useful metric as project cash flows are typically lumpy in nature. By rendering them into an annual interest rate equivalent investors are able to compare the return to alternative investment opportunities.</p> <p>The key drawback of the IRR is that it assumes that cash flows received are re-invested at the IRR. This is unlikely ever to be the case. This is a key reason why NPV is preferable to IRR should the two metrics suggest different investment preferences when comparing options.</p> <p>Care should be taken to ensure that the period over which the IRR is calculated and the cash flows included and excluded are clearly understood by users of the IRR.</p>

Term	Definition
Joint Venture Partner	A shareholder in a Joint Venture EScO.
Levelised Cost of Heat	<p>At its core the levelised cost of heat is a calculated p/kWh price needed to be charged for each kWh of heat supplied to achieve a desired return within a certain period of time.</p> <p>In more detail, the levelised cost of heat (or 'whole life cost of heat') is the time value adjusted p/kWh cost of delivering heat accounting for all project costs, net of non-heat related income (e.g. income from electricity sales), over a specified period (typically the investment appraisal period) such that were a project to supply heat at that price the NPV of the project cash flows over the specified period would be £0.</p> <p>This method ignores a fixed/variable tariff structure and acts as a means of comparing different approaches to supplying heat to customers on a p/kWh basis.</p>
Net Present Value	The Net Present Value (NPV) is the value of a series of cash flows (positive and negative) accounting for an investor's time value preferences. An investor requiring a higher rate of return will attribute increasingly less value to cash flows that occur further away in time to those that occur closer in time. The NPV calculation accounts for this time preference.

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Term	Definition
Offtaker	The purchaser of heat or electricity.
Project IRR	<p>The internal rate of return (IRR) for a project. It is usually calculated from all of the non-financing project cash flows, including capital costs, operating and maintenance costs, revenues and working capital adjustments.</p> <p>It can be calculated on project cash flows that include an assumption for money inflation (nominal) or only real price inflation (real). It can also be calculated on project cash flows that include or exclude corporation tax.</p> <p>When referring to the project IRR it is important to understand exactly which type of cash flows have been included and for this reason further definition is often provided, i.e. pre-tax nominal project IRR, pre-tax real project IRR, post-tax nominal project IRR and post-tax real project IRR. It is also essential to understand how many years of cash flows have been included to derive the Project IRR.</p> <p>Without this being clear project comparison is not possible.</p>
Project Owner/ Operator	<p>Public or private sector companies owning and operating heat networks. This includes Energy Service Companies (ESCOs).</p> <p>(Definition from BEIS HNIP guidance: www.gov.uk/government/publications/heat-networks-investment-project-hnip-scheme-overview)</p>

Term	Definition
Project Sponsor	<p>Entities initiating development of a heat network (and normally providing a source of funding). This includes property developers, local authorities, universities, business park owners, leisure centres, schools, commercial/social landlords, community organisations, charities.</p> <p>(Definition from BEIS HNIP guidance: www.gov.uk/government/publications/heat-networks-investment-project-hnip-scheme-overview)</p>
STOR	This is Short Term Operating Reserve, organised and managed by National Grid, where signed up generators or consumers of electricity will be asked to increase capacity or reduce load within ten minutes and sustain this for up to two hours.
Third Party Investor	An investor in a heat network project who is not the Project Sponsor, Joint Venture Partner or 3rd Party ESCo (as the case may be). Examples may include a bank, a private equity funder or a lease provider.
Triad	Triad is a system used by National Grid to apply charges for the use of the transmission network. By reducing load and increasing generation when national demand is at its highest, customers and generators can save or earn money.

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1.1 Introduction

As set out in the Clean Growth Strategy¹, it is projected that heat networks will need to provide 17–24% of the UK’s heat by 2050 (currently less than 2%) in order to meet UK carbon reduction targets cost effectively. Achieving this objective requires the development of a sustainable heat network market; where a sufficient volume of strategic, optimised and low carbon heat networks are economically attractive without direct Government subsidy.

This guidebook has been developed to provide guidance to heat network sponsors, developers and funders to support them in understanding some of the issues, risks and opportunities around financing heat networks in the UK, to support this move to a self-sustaining heat network market.

This executive summary provides an overview of the wider guidebook, reproducing key areas of content and signposting the reader to where further detail can be found.

The guidebook is set out in the following sections, which have been mirrored in this executive summary:

¹ www.gov.uk/government/publications/clean-growth-strategy

Click arrow to access section directly

1.2 Navigation guide

The navigation guide at [Section 2](#) can be used to support the reader to navigate the wider document, providing links to the detailed content.

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1.1 Introduction

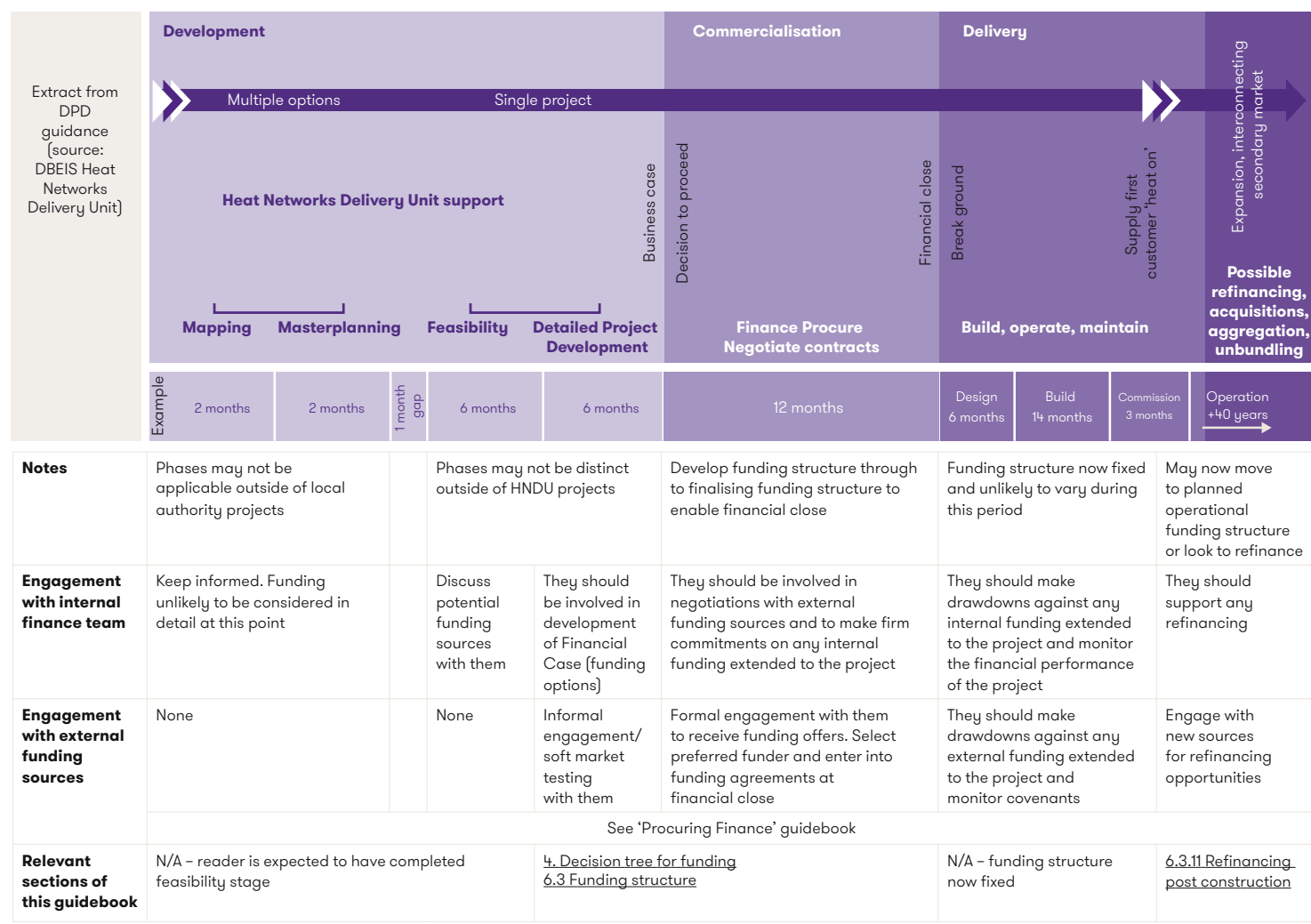
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1.3 Timeline for engaging with internal/external funding sources

This timeline at Section 3 can be used to understand how the Project Sponsor may consider engaging with internal/external funding sources over time. It is presented against the HNDU project timeline as many heat network projects will be following this process, be that with or without HNDU support.



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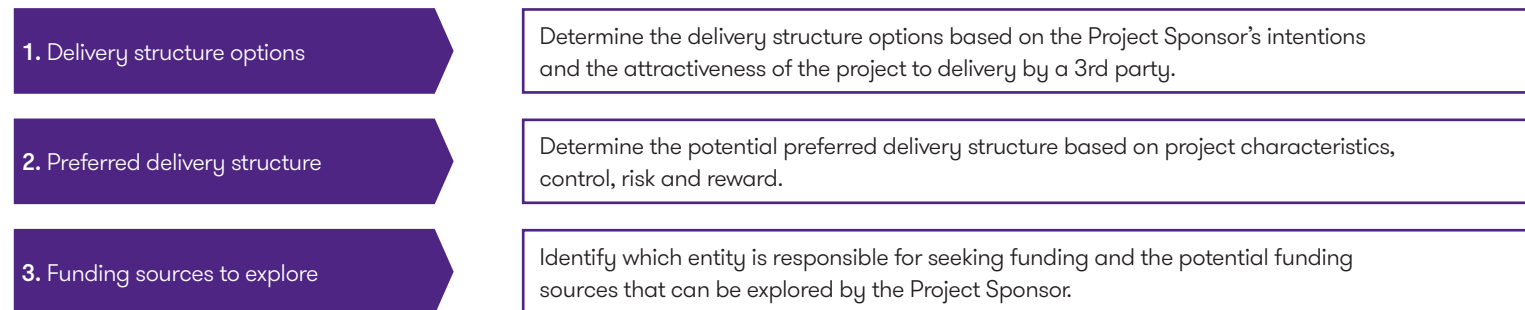


1.4 Decision tree for delivery structure and funding sources

Section 4 works through a decision tree to support the reader in determining the potential preferred delivery structure for the heat network project under consideration and to understand which funding sources can be explored by the Project Sponsor.

This decision tree is intended as a guide only, to explore some of the issues which are likely to impact a choice of delivery structure, and therefore which funding sources can be explored by the Project Sponsor. It is not prescriptive and the flow of decisions may not fit every project. For example, a funding source may already have been identified, in which case, the reader may wish to review the 'Funding sources to explore' page first, to understand which delivery structures may be applicable to the project.

The decision tree is mapped out over three pages:



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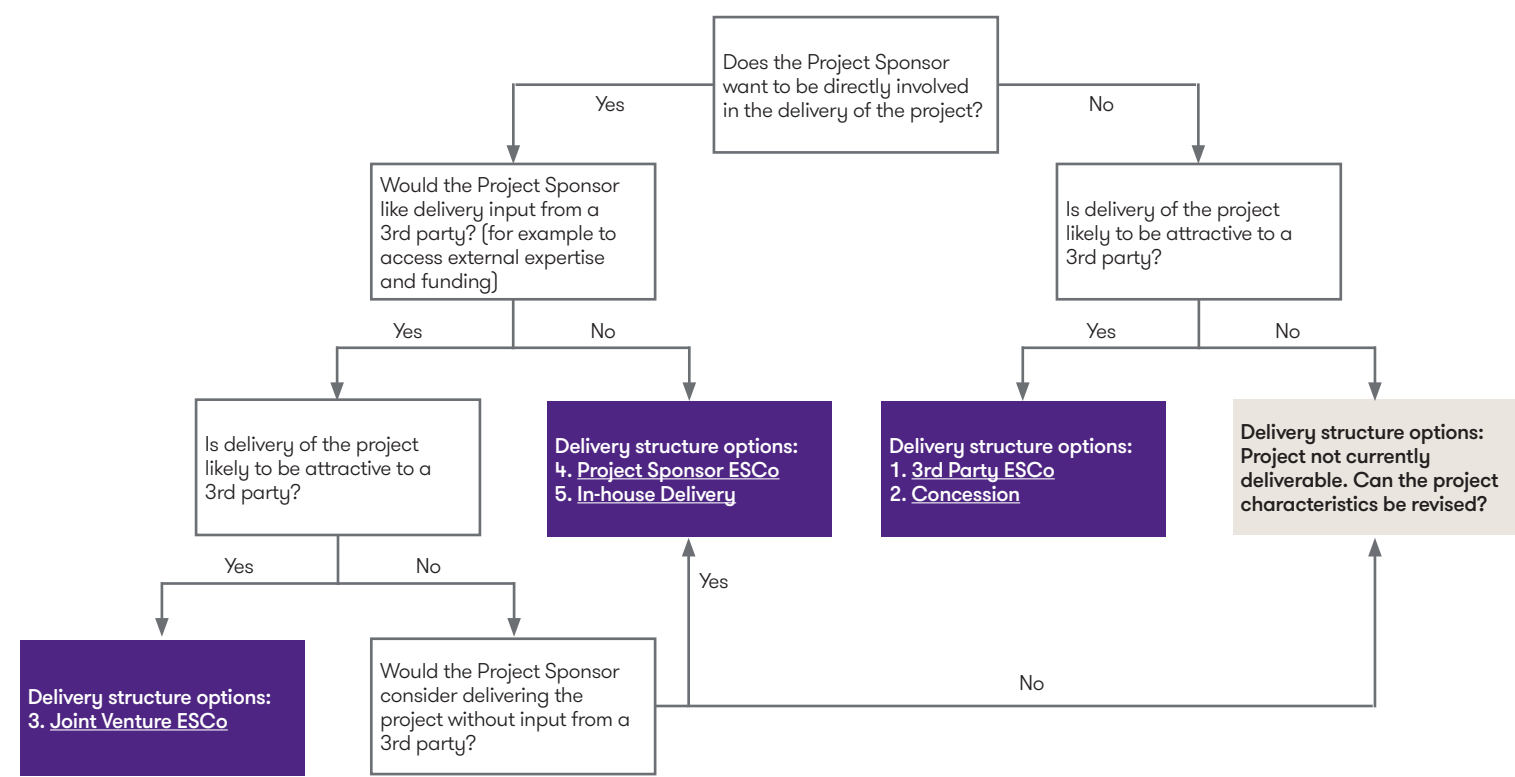
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Delivery structure options:

Answer the following questions in relation to the intention of Project Sponsor and attractiveness of the project to delivery by a 3rd party to determine the delivery structure options.



Go to next page (the three 'Delivery structure options' boxes which conclude this page, are the starting points for the next page).

■ Delivery structures □ Questions/decisions ■ Information



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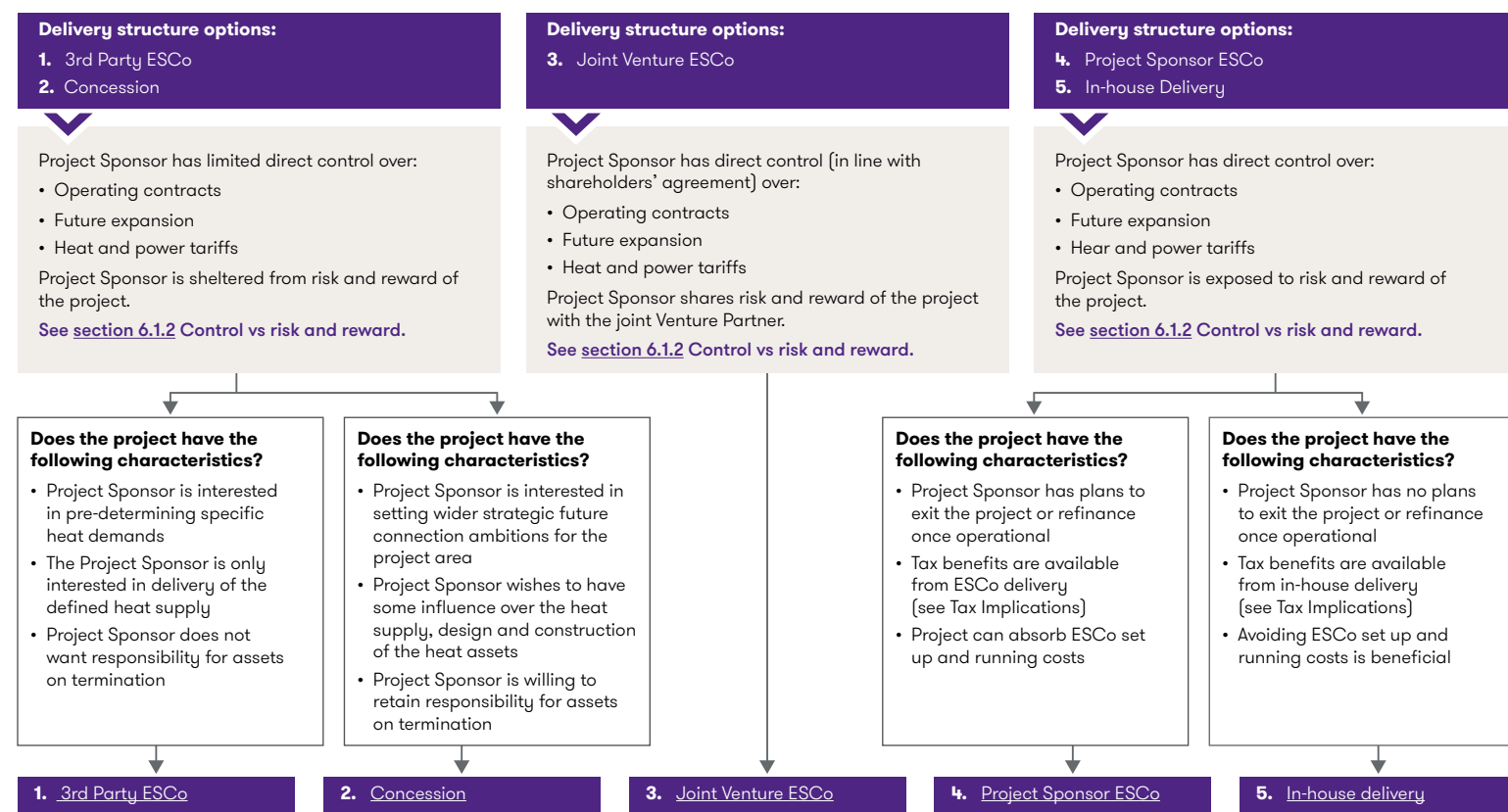
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Preferred delivery structure:

Based on desire for control (and exposure to risk and reward) and likely project characteristics, determine the potential preferred delivery structure.



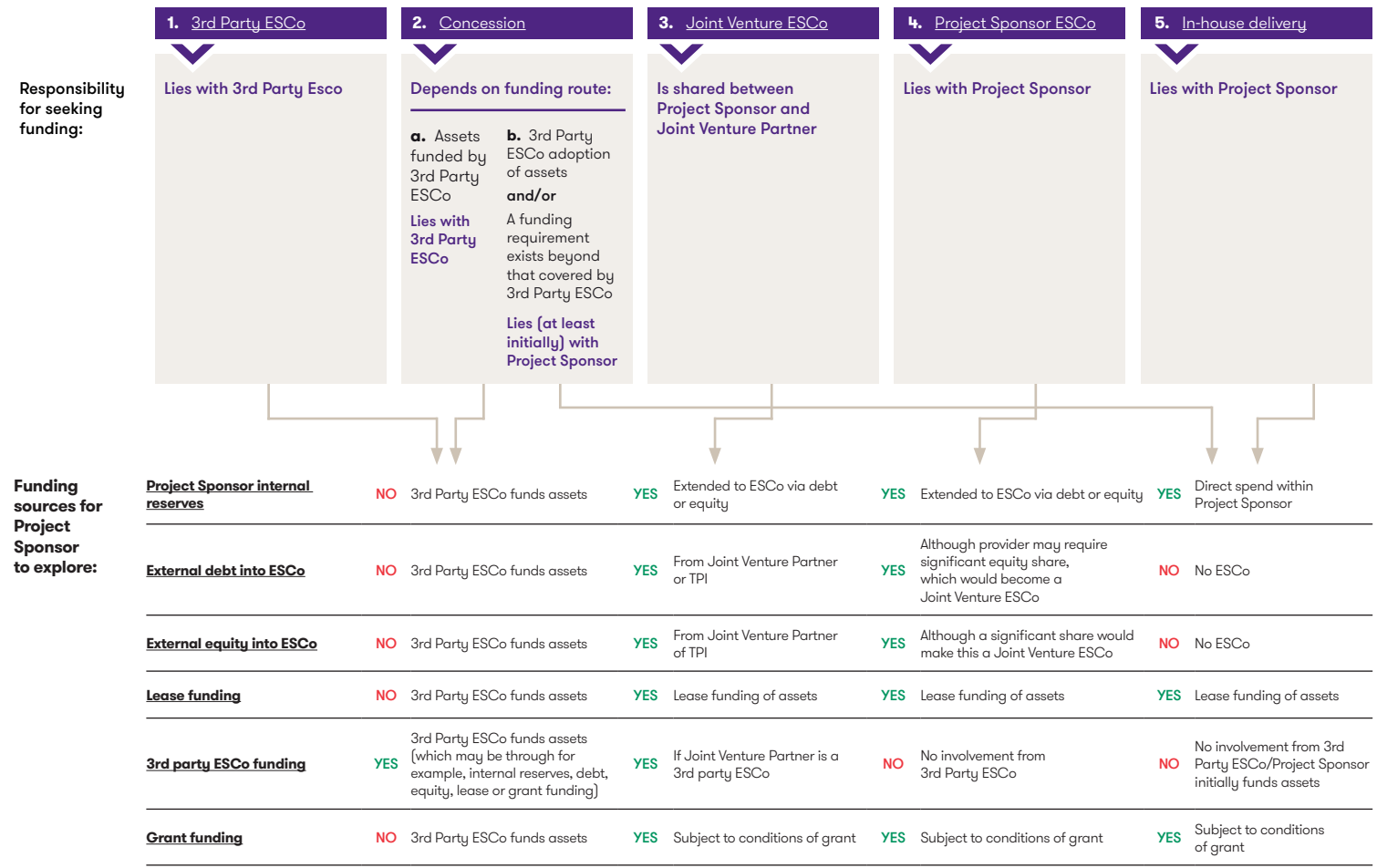
Go to next page (the five 'delivery structure' boxes which conclude this page, are the starting points for the next page).

■ Delivery structures □ Questions/decisions ■ Information



Funding sources to explore:

Find out which entity is responsible for seeking funding for the project and which funding sources can be explored by the Project Sponsor.



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1.5. Revenue streams

Revenue streams applicable to a particular project will vary based on the technical and commercial characteristics of the project, and will also vary in terms of value and the level of certainty over those revenues streams. Understanding revenue streams will be a priority for funders as they look to understand the dynamics of the project and the risk of revenue streams being less than anticipated.

Section 5 describes:

- operating revenue streams: heat revenues, electricity revenues, cooling revenues, other utilities, asset rental, government operating subsidies and energy market optimisation
- other revenues streams: customer connection charges, developer contributions² and development and planning obligations

The characteristics of revenue streams which are likely to be viewed positively by funders are discussed, which include having long term, index linked supply agreements with customers, minimum purchase provisions and creditworthy customers.

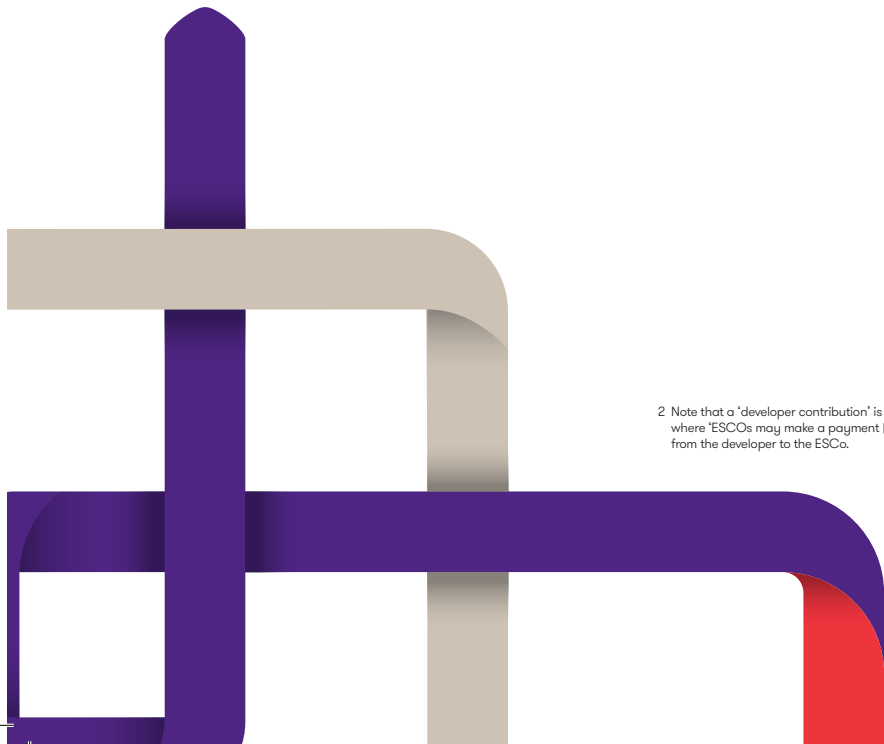
² Note that a 'developer contribution' is not the same as the 'capital contribution' referred to in the Competition & Markets Authority, Heat networks market study, May 2018, where 'ESCOs may make a payment (commonly known as a 'capital contribution') to the property developer in return for the access rights'. A 'developer contribution' flows from the developer to the ESCo.

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1.6 Commercial structures

There are several elements making up the 'commercial structure' of a project. In [Section 6](#), we define commercial structures as an overarching term which incorporates the delivery, contractual and funding structure of a project as shown in the diagram below.

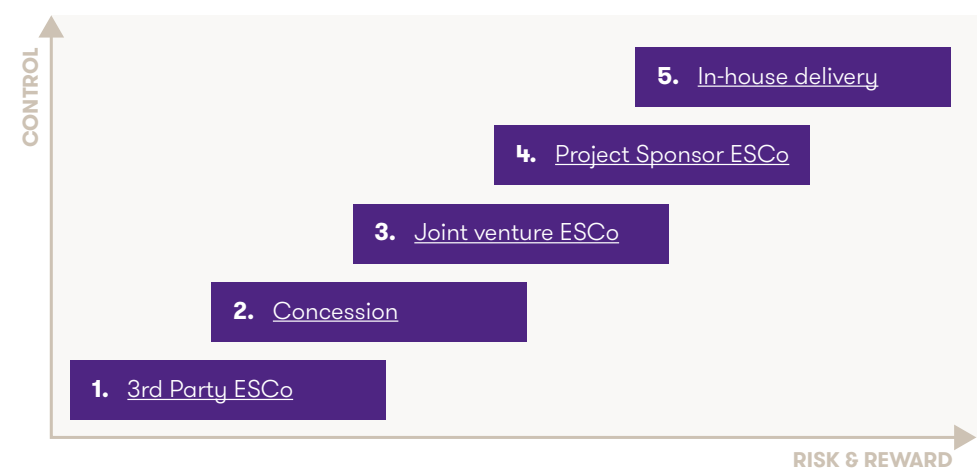


1.6.1 Delivery structure

There are many different delivery structures which can be used to deliver a heat network project. However, in [Section 6.1](#), this guidebook sets out the five delivery structures which are most commonly seen in the market to enable exploration of some of the issues and considerations when structuring and funding a project.

The delivery structure chosen will depend on the level of control desired by the Project Sponsor and its appetite for risk. The more control required, the higher the level of risk that will be faced by the Project Sponsor but also the higher the potential reward.

The diagram below shows the Project Sponsor's relative levels of control and risk and reward for the five delivery structures.





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Delivery structures may involve setting up formal corporate entities created for the purpose of delivering a heat network (e.g. an ESCo). If a corporate entity is created to deliver a heat network there are several legal forms this could take, which are discussed at [Section 6.1.1](#).

Each of the five delivery structures are discussed in detail in the guidebook (see [Sections 6.1.4 to 6.1.8](#)) and this discussion is summarised below. See the relevant section for a table of advantages and disadvantages of each delivery structure.

In each of the diagrams below, the black lines represent a contractual relationship. The only exception to this is in relation to funding provided through internal reserves, for which a contract may not be required. The equivalent diagrams have also been provided from a cashflows perspective in Appendix 3.

Delivery structure 1 – 3rd Party ESCo

The Project Sponsor enters into energy services agreement with a 3rd party to deliver the heat network through an ESCo.

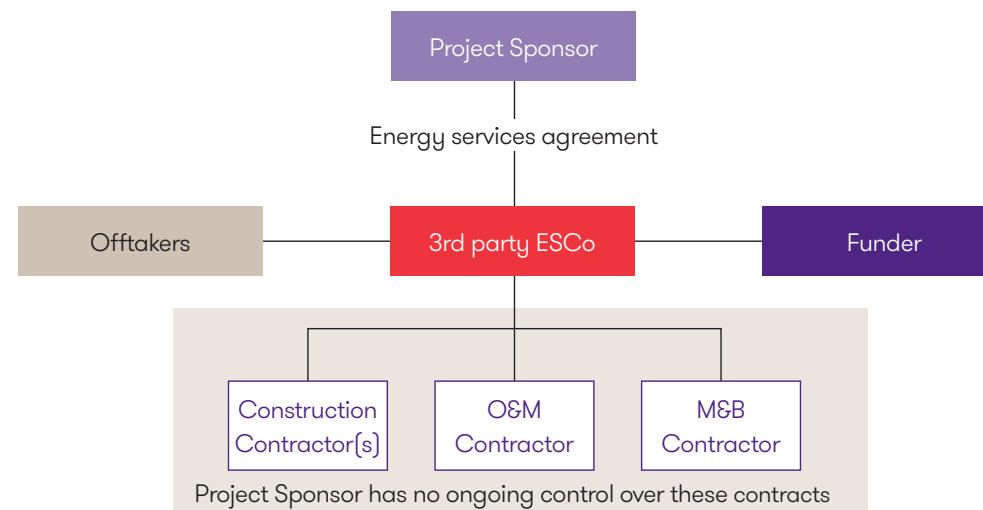
At the end of the energy services agreement (normally up to 25 years), the service provision to the Project Sponsor will cease. There are no remaining obligations on the Project Sponsor.

The 3rd Party ESCo is both the asset owner and operator.

Under this delivery structure, the 3rd Party ESCo is responsible for funding the project.

The Project Sponsor does not have any ongoing control over the 3rd Party ESCo's contractors, future expansion of the network or heat and power tariffs.

In this way, the Project Sponsor is sheltered from the risk of funding, constructing and operating the project. It will also not see any direct financial rewards from the success of the project, other than the energy saving costs relative to current energy costs and/or avoided costs of future maintenance and replacement of energy generating plant.





Delivery structure 2 - Concession

The Project Sponsor enters into a concession agreement with a 3rd Party ESCo to deliver the heat network.

The Project Sponsor owns the assets and the 3rd party operates them.

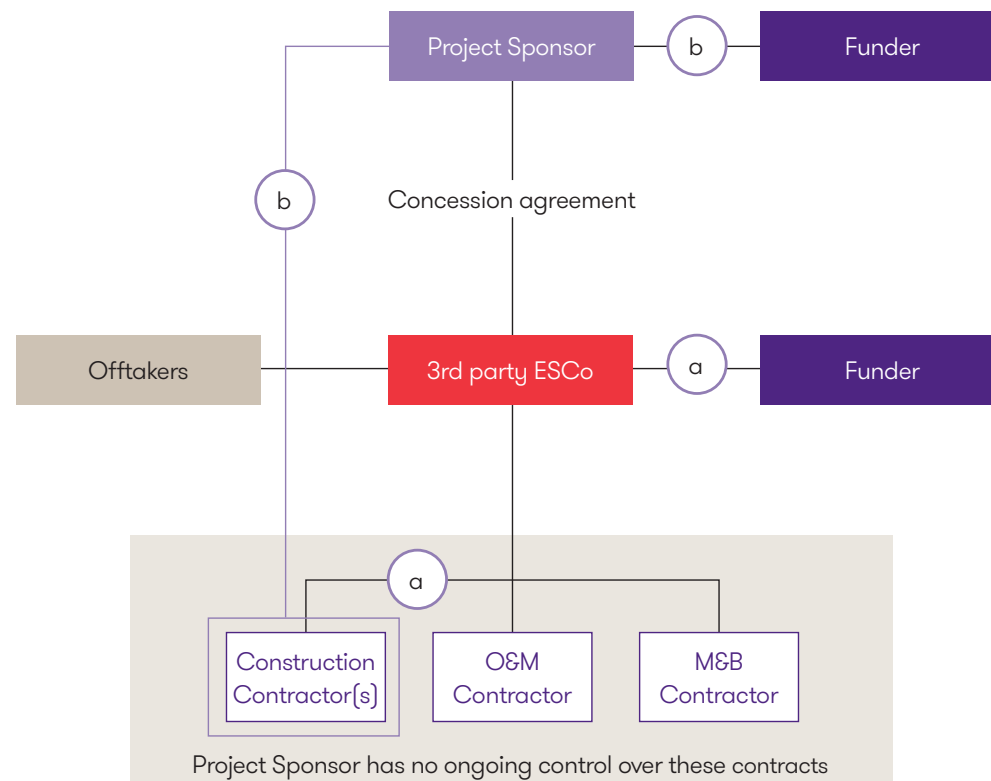
Under this delivery structure, there are two methods of funding:

- a assets funded by 3rd Party ESCo – The 3rd Party ESCo is responsible for funding the project. The 3rd Party ESCo then receives an agreed payment per connection from the Project Sponsor and/or offtaker. This is often referred to as the contribution or connection model.
- b 3rd Party ESCo adoption of assets – The Project Sponsor is responsible for funding/securing funding for the project and builds the assets. The 3rd Party ESCo then pays the Project Sponsor an asset value lump sum (as agreed in the concession agreement) for rights to use ('adopt') the assets.

The Project Sponsor retains limited control over the 3rd Party ESCo's contractors, future expansion of the network and heat and power tariffs (as defined in the concession agreement).

In this way, the Project Sponsor is exposed to some level of funding and construction risk. However, it is sheltered from the risk of operating the project and will not see any direct financial rewards from the success of the project.

At the end of the concession agreement (often 20-40 years), the Project Sponsor will be able to either become the operator, enter into a new concession agreement or sell the assets (if a market exists).



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Delivery structure 3 – Joint Venture ESCo

The Project Sponsor jointly establishes an ESCo with a Joint Venture Partner to deliver the heat network. The joint venture can be between two private sector entities, two public sector entities or most commonly between a public and private entity.

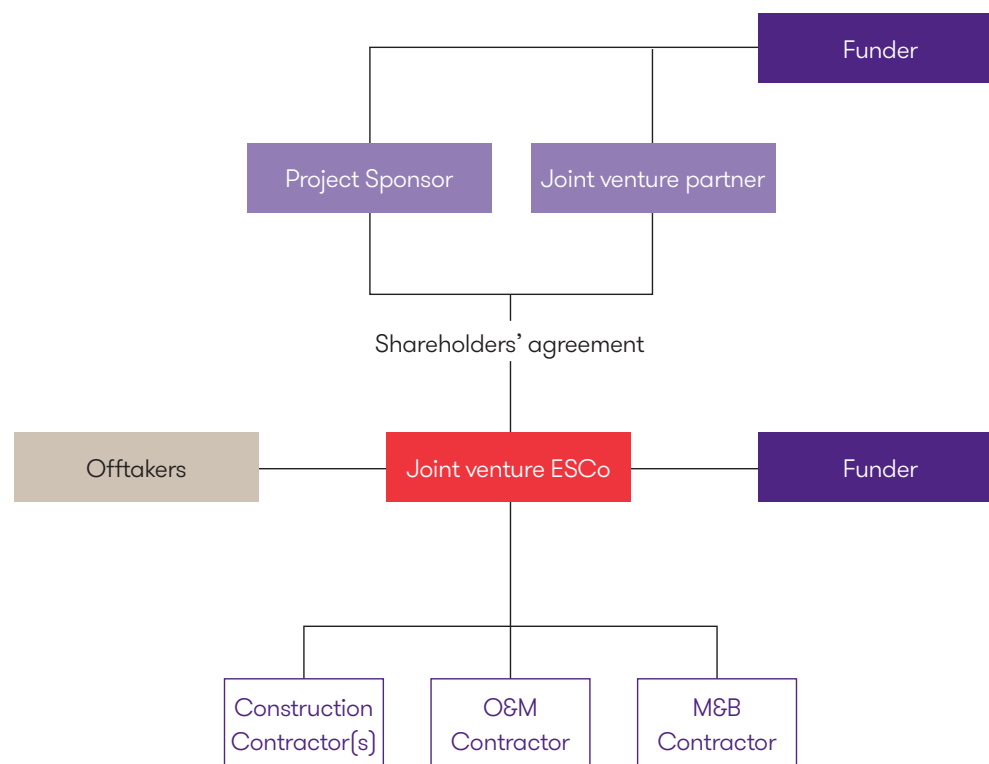
The Joint Venture ESCo is both the asset owner and operator.

Under this delivery structure, the Project Sponsor and its Joint Venture Partner are responsible for funding/securing funding for the project. Funding could come into the Joint Venture ESCo directly from 3rd Party Investors (TPIs) or via the Joint Venture Partners.

Via the Joint Venture ESCo, the Project Sponsor and its Joint Venture Partner will share control over the ESCo's contractors, future expansion of the network and heat and power tariffs.

In this way, the Project Sponsor and its Joint Venture Partner will share the risk of funding, constructing and operating the project. They will also share in the direct financial rewards from the success of the project.

In terms of exit strategy, the shareholders agreement is flexible and can allow for agreed exit strategies.





Delivery structure 4 – Project Sponsor ESCo

The Project Sponsor establishes a wholly owned ESCo to deliver the heat network.

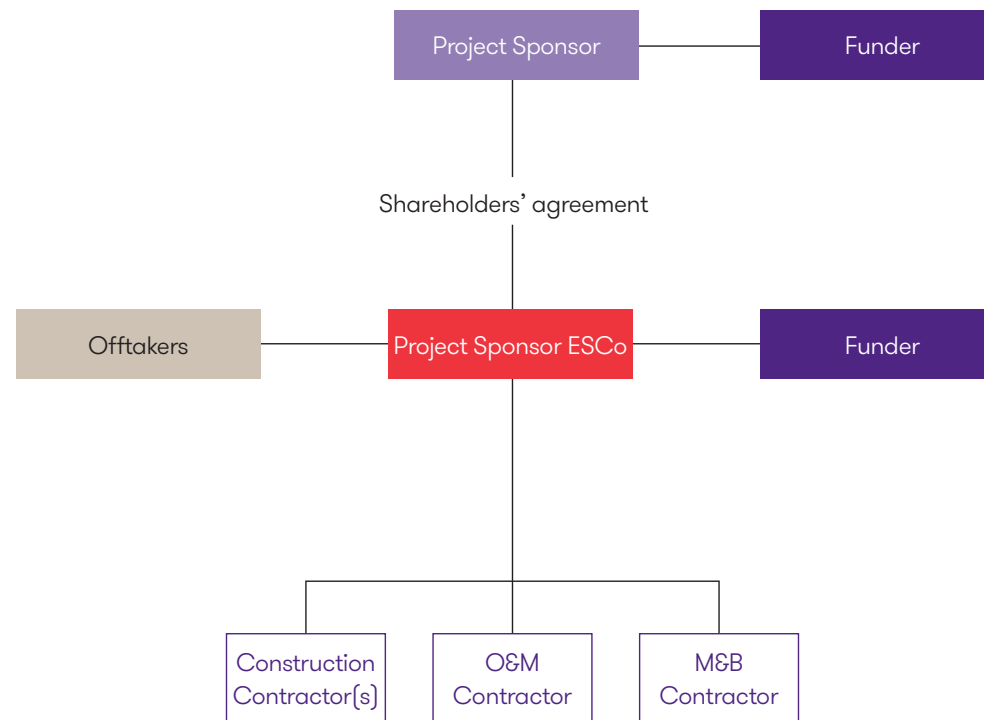
The Project Sponsor ESCo is both the asset owner and operator.

Under this delivery structure, the Project Sponsor is responsible for funding/securing funding for the project. Funding could come into the Project Sponsor ESCo directly from TPLs or via the Project Sponsor.

Via the Project Sponsor ESCo, the Project Sponsor will have control over the ESCo's contractors, future expansion of the network and heat and power tariffs.

In this way, the Project Sponsor bears the risk of funding, constructing and operating the project. It will also benefit from the direct financial rewards from the success of the project.

In terms of exit strategy, the Project Sponsor has the ability to sell its shares in the ESCo or refinance any debt extended to the ESCo.



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Delivery structure 5 – In-house Delivery

The Project Sponsor develops the heat network without establishing a stand-alone delivery vehicle.

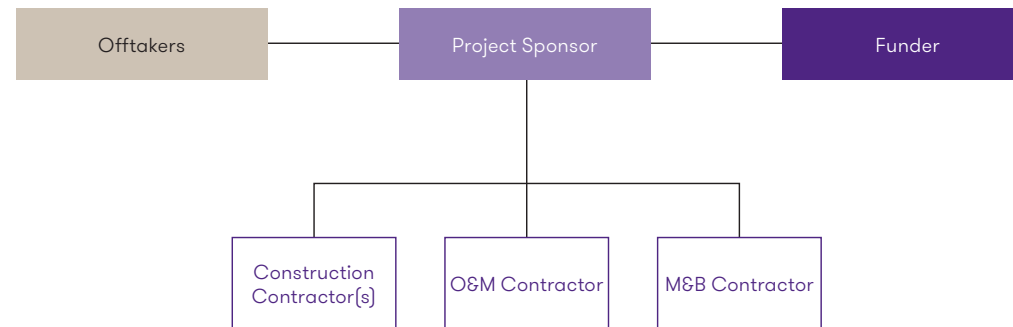
The Project Sponsor is both the asset owner and operator.

Under this delivery structure, the Project Sponsor is responsible for funding/securing funding for the project.

The Project Sponsor will have control over the delivery, including any contractors, future expansion of the network and heat and power tariffs.

In this way, the Project Sponsor bears the risk of funding, constructing and operating the project. It will also benefit from the direct financial rewards from the success of the project.

Exit strategies for In-house Delivery are limited as there is no separate entity (for which, ESCo) to sell shares in or refinance.



Delivery structure variant – disaggregation

As discussed in [Section 6.1.9](#), a heat network generally includes multiple functions so the delivery structure can be ‘disaggregated’ into constituent parts to ring fence risks into different entities. By splitting the project into separate corporate entities, the project may be able to attract investors with different risk appetites and investment requirements, for example based on asset lifespan or on risk of operations and stability of revenues.

Delivery structure variant – alliancing

As discussed at [Section 6.1.10](#), alliancing is a method of procuring, and sometime managing, major capital assets. Alliance contracting requires the parties to work together in good faith, act with integrity and make best-for-project decisions. The alliance participants work as an integrated, collaborative team to deal with key project delivery matters.

Delivery structure variant – strategic partnership

As discussed at [Section 6.1.11](#), a strategic partnership is a long term commitment between two parties to collaborate, usually on an exclusive basis. A partnering agreement could be entered into by two parties that wish to pursue individual heat network projects together.

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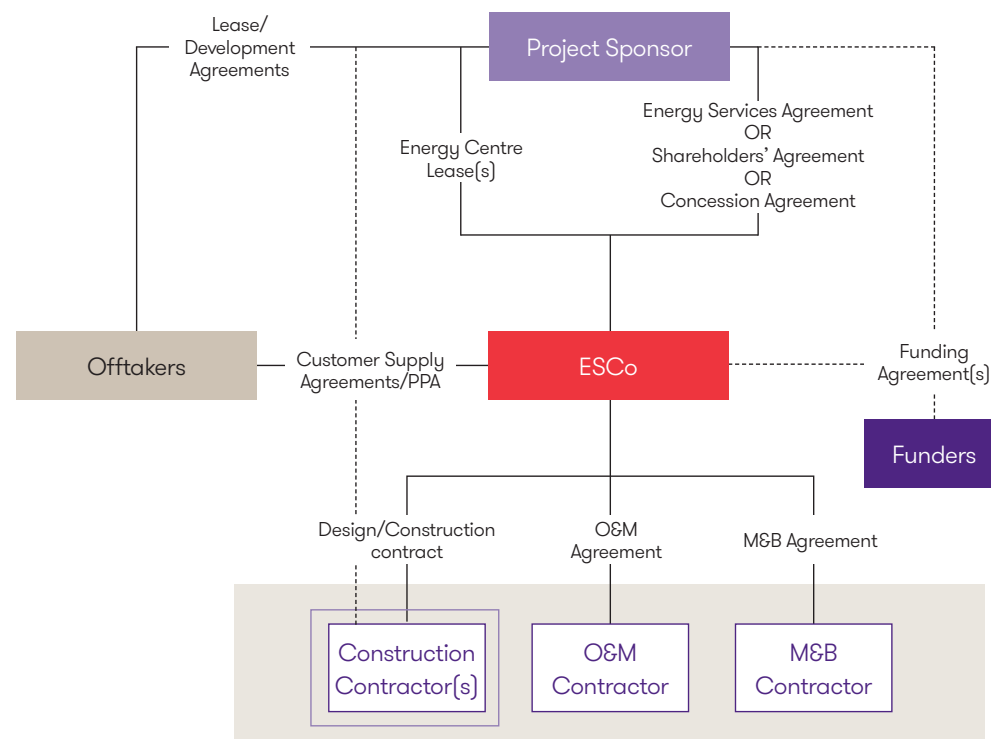
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1.6.2. Contractual structure

The contractual structure establishes how project risks are allocated (and payments are made) within contracts and is discussed at Section 6.2. Understanding the risks they are exposed to will be a key area of consideration for Project Sponsors, funders and contractors involved in a heat network project. The diagram opposite sets out the broad arrangements for a heat network, however, this may vary significantly from project to project and under the different delivery structures.





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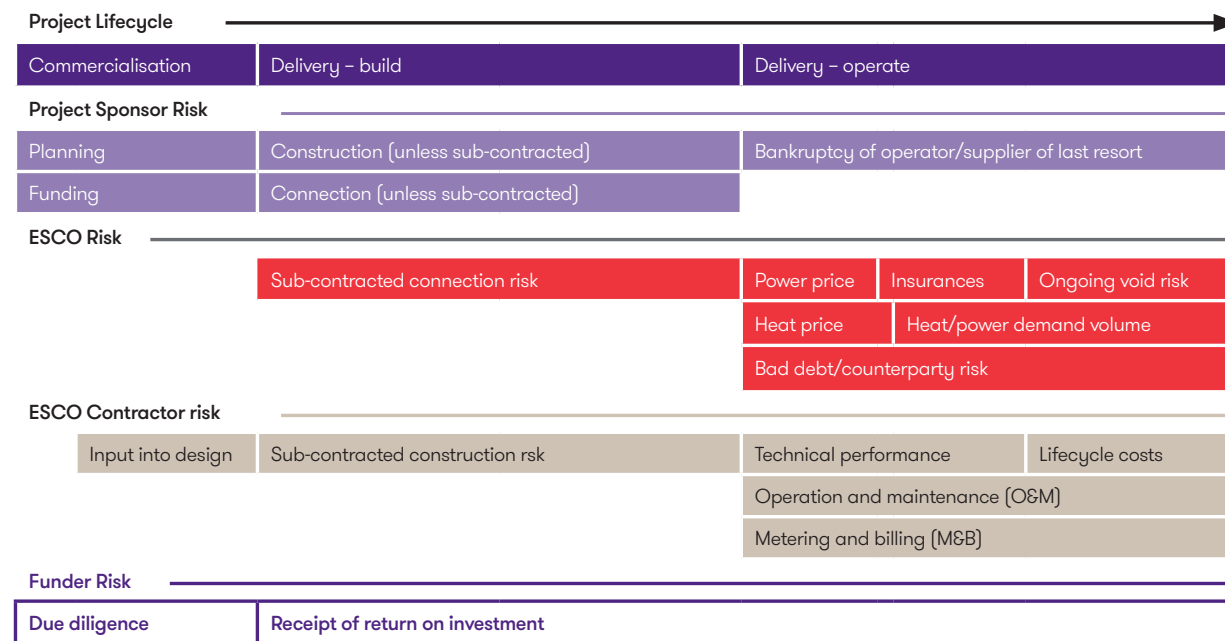
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The typical risks faced by the project will change during the project’s lifecycle, as illustrated in the diagram below. This diagram focuses on the commercialisation and delivery phases. These risks have been mapped against likely key players in a heat network.

The body of the guidebook (see [Section 6.2.1](#) Managing risk) provides a description of each of these risks and potential mitigation strategies. It also provides a risk diagram for each of the five illustrative delivery structures (see [Sections 6.1.4 to 6.1.8](#)) to show which risks are retained by the Project Sponsor and which have been passed to other parties.

There are several ways of contracting for construction which are described in [Section 6.2.2](#) Construction contracting within the detailed guidebook. Examples of this are design and build (D&B), engineering, procurement and construction (EPC) and design, build, operate and maintain (DBOM).





1.6.3. Funding structure

Funding for a heat network may come from a variety of sources and can be extended to the project in different forms (or ‘types’ of funding). Section 6.3 provides detail on the types of (long term/capital) funding which may be available to a heat network project, the implications of these types of funding and the delivery structures to which they are most suited.

Where reference is made to return requirements gleaned through ‘engagement with the funding market’, although every effort has been made to speak to a wide cross-section of the market, the figures provided are purely indicative and may vary significantly between funders or over time. The entities engaged with are listed in Appendix 2.

Project Sponsor internal reserves

At Section 6.3.1, Project Sponsor internal reserves are discussed. These are funds held by the Project Sponsor, which may be made up of (new or existing) corporate borrowing, accumulated profits and share capital. This is often referred to as corporate finance.

Both public sector and private sector entities may have access to internal reserves. New borrowing may be in the form of prudential borrowing or corporate borrowing.

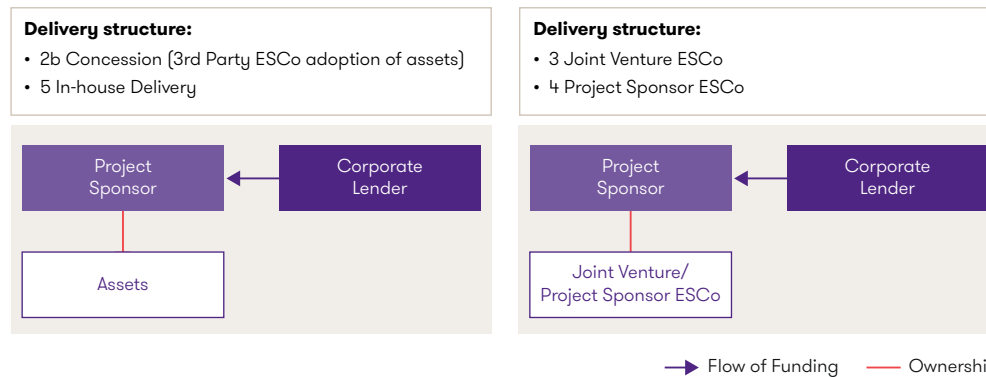
New corporate borrowing would be lent on the basis of the Project Sponsor’s creditworthiness; the lender would not perform due diligence on the project. An exception to this might be in the case of a project specific ‘soft’ loan, where some project due diligence may be undertaken.

Obtaining funding for a project on the basis of the Project Sponsor’s creditworthiness can result in lower cost funding when compared

to seeking funding directly into an ESCo. An example of this is the Lee Valley Heat Network (see Appendix 1), where Enfield Council borrowed from LEEF and EIB and on-lent this to its wholly owned ESCo.

Engagement with the funding market suggests that soft (ie non-commercial) loans to the public sector may be available at an interest rate of 2-3%, which is low due to the credit strength of the public sector.

The following diagram shows the standard flow of funding which would be expected when Project Sponsor internal reserves are a funding source for the project. Depending on the delivery structure being used, these funds will either be spent directly on assets, or will be extended to an ESCo in the form of debt or equity. Note that a corporate lender would only be involved if new corporate borrowing is required.



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Debt funding

Section 6.3.2 deals with debt funding from TPIs into an ESCo. Debt funding (or a loan) is interest bearing and repayable. Debt must be repaid irrespective of project outcomes and default on loans will result in recourse against any security provided. Payments to debt are made before those to equity (ie it is more senior) so the cost of debt funding is likely to be lower than for equity as the lender has more certainty of repayment.

Both public sector and private sector entities (including ESCos) have access to debt funding. The creditworthiness of the ESCo and/or the security provided by its parent(s) will impact the cost of finance and the term offered (see box opposite). External debt funding will be subject to a due diligence process which can give all parties comfort that the project is investible.

Engagement with the funding market suggests...

...that commercial debt funding into an ESCo is only likely to be achievable in the current market if:

- a** there is a direct relationship/ guarantees from the Project Sponsor in relation to revenues or debt service
- b** the project has a guaranteed revenue stream (for example 'take or pay' arrangement) with clear and strong counterparty strength
- c** the debt provider also has a controlling equity stake of the ESCo.

...that at this point in time it is unlikely that non-recourse project finance (ie the long-term debt financing of infrastructure projects based upon the projected cash flows of the project, without recourse to shareholders) is achievable for heat networks. However, as the market matures, it is anticipated that such funding will come forward.

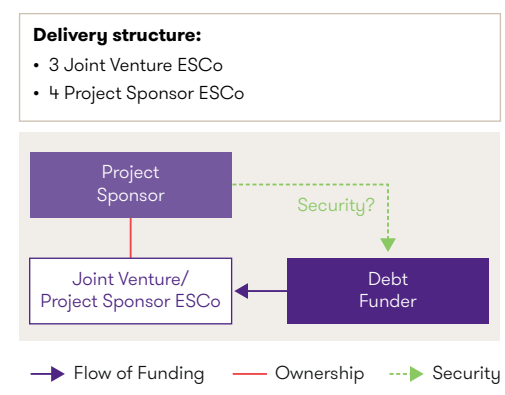
...where sufficient guarantees from the public sector are obtained, commercial debt into an ESCo may be available at around 5% interest rate.

...crowdfunding in the form of debt may be available at an interest rate of between 4 and 6%.

...that where a heat network project includes government operating subsidies, debt of an equivalent value may be available, based on the reliability of payments from central government under the relevant subsidy regime.

...that soft loans to ESCos may be available at an interest rate of around 2-5% in the current market.

The following diagram shows the standard flow of funding which would be expected when debt funding into an ESCo is a funding source for the project.





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Equity funding

Section 6.3.3 deals with equity funding from TPLs into an ESCo. Equity is funding extended in exchange for share capital of a company. Returns on equity are paid out to shareholders in the form of dividends. Dividends are paid out of profits after corporation tax. As there is uncertainty around these payments, equity investors generally require a higher return than debt investors.

External equity funding will be subject to a due diligence process which can give all parties comfort that the project is investible.

Shareholders control/influence decision making in line with the shareholder agreement. The amount of control corresponds to the proportion of shares held by each shareholder. For example where the Project Sponsor is not the majority shareholder their control will be diluted. Some equity investors will require a majority share of the ESCo in order to obtain control of the project and therefore influence their returns.

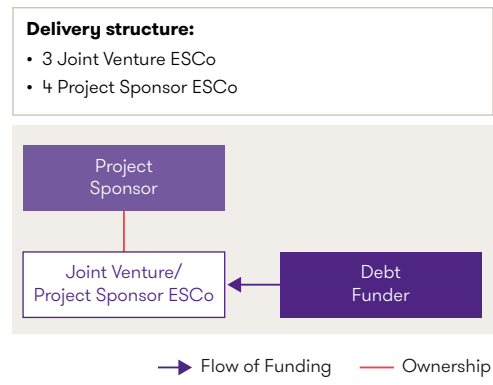
Engagement with the funding market suggests...

...that commercial equity returns (e.g. to infrastructure investment funds, where returns are the primary driver for investment) are required to be ≥10%, whereas equity from 'sympathetic' providers (such as crowdfunding or those with objectives to support low carbon energy projects) may be at the 6% level.

...that due to eligibility restrictions, tax efficient private equity (see Section 6.3.3.2) is not currently considered to be an accessible source of funding for heat networks.

...that crowdfunding may be available in the form of equity if a return of between 6 and 7% is achievable.

The following diagram shows the standard flow of funding which would be expected when equity funding into an ESCo is a funding source for the project.





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Lease funding

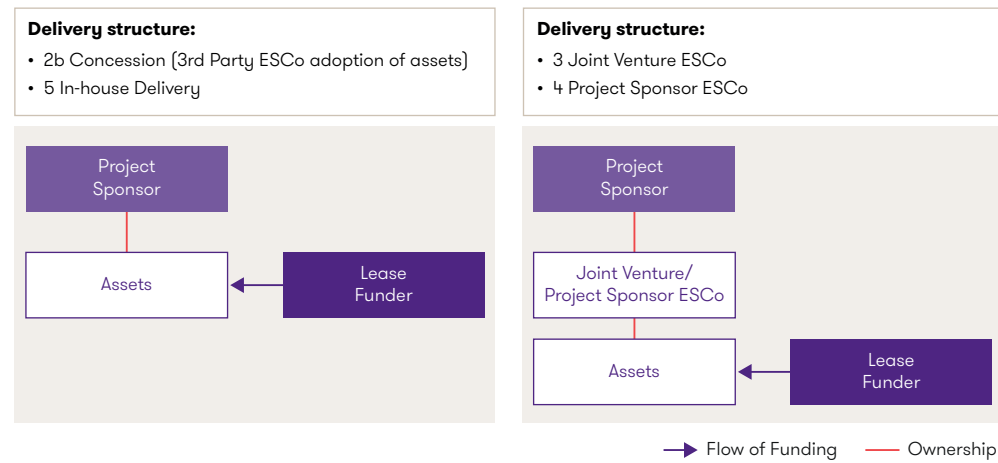
As discussed at Section 6.3.4, a finance lease is a method of funding new assets but rather than paying for them upfront, payment is made in regular instalments to the lessor over a period (often linked to the useful economic life of the asset) including a finance charge. A finance lease can be obtained from either the asset retailer or a bank. The lessor is usually the legal owner of the asset for the duration of the lease, whilst the lessee bears the risks and rewards of ownership. At the end of the lease, legal ownership usually reverts to the lessee.

Both public sector and private sector entities (including ESCOs) have access to lease funding.

Lease funding is often accessible as it is secured against the relevant asset with less reliance on the creditworthiness of the counterparty.

Engagement with the funding market suggests that lease funding may be available at a finance charge of 4–8%. Finance lease providers tended to prefer to fund assets which can be removed, reclaimed and their value recovered elsewhere (for example generating assets).

The following diagram shows the standard flow of funding which would be expected when lease funding is a funding source for the project. Depending on the delivery structure used, there may or may not be an ESCo sitting between the Project Sponsor and the relevant assets.

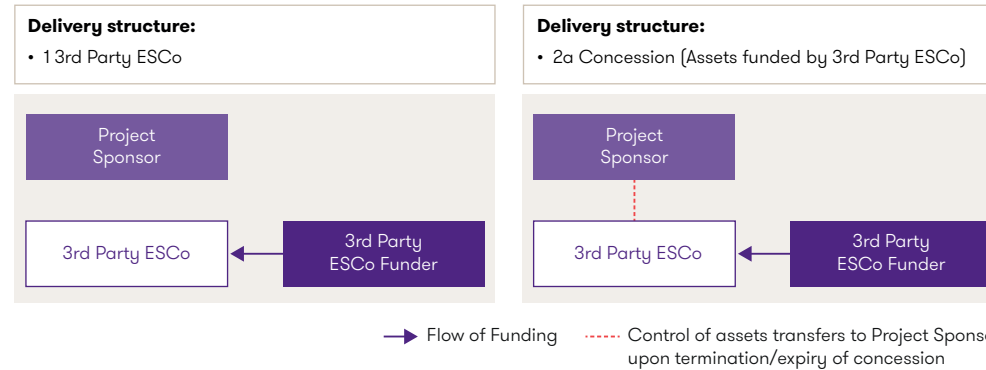




3rd party ESCo funding

As discussed at [Section 6.3.5](#), 3rd party ESCo funding is a method of outsourcing the funding (and other services) of a heat network to a 3rd party. In this way the Project Sponsor does not have control or risk in relation to the way the project is funded.

The following diagram shows the standard flow of funding which would be expected when 3rd Party ESCo funding is a funding source for the project. Note that there is no direct ownership relationship between the Project Sponsor and the 3rd Party ESCo. However, under the Concession delivery structure, the assets will be owned by the Project Sponsor and accounting treatments should be in line with [Section 8.2.8](#) Service Concession Arrangements.



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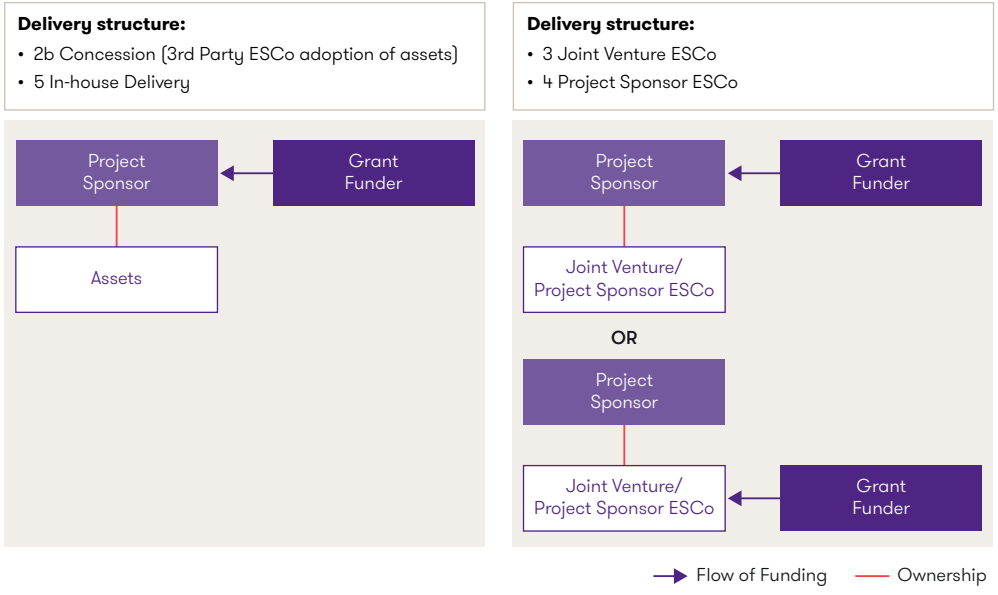
Grant funding

As discussed at Section 6.3.6, Grant funding is non-interest bearing and non-repayable. It is usually extended by a government body to support the development of projects meeting certain social or environmental objectives.

Both public sector and private sector entities (including ESCos) have access to different 'pots' of grant funding.

Being non-interest bearing and non-repayable, grant funding has a significant impact on the overall cost of funding a project, however, this benefit should be considered against the 'cost' of grant funding conditions/restrictions and reporting requirements.

The following diagram shows the standard flow of funding which would be expected when grant funding is a funding source for the project. Depending on the terms of the grant funding, the funds may flow to the Project Sponsor or directly to an ESCo.





Accessing low cost funding

As a general principle, the lower the risk perceived by the funder, the lower the cost of funding is likely to be. At [Section 6.3.7](#), the guidebook notes factors/project characteristics that are likely to reduce the perceived risk and therefore reduce the cost of funding from TPIs. These include having a high proportion of (long term) guaranteed revenues from a creditworthy entity, strong collateral in the event of default, and fixed price contracts with performance guarantees.

When approaching funders, Project Sponsors may consider developing an ‘information memorandum’ to set out key information and project highlights, as described at [Section 6.3.8](#) Information memorandum.

TPIs will want to satisfy themselves that the project is financially viable and is likely to be able to provide returns in line with their expectations. The guidebook sets out the areas that a funder is likely to scrutinise in [Section 6.3.9](#) Due diligence.

The guidebook sets out at [Section 6.3.10](#) Matching cost of funding and revenues, some methods of reducing the overall cost of funding through for example agreeing drawdowns in line with capital spend and rolling-up interest during the construction period.

Lower cost funding may be available once the project is operational as some risks such as construction risk have fallen away, as described in [Section 6.3.11](#) Refinancing post construction. This should be considered when setting up the project strategy to maintain flexibility to take advantage of this.

Any support from a government entity (local or national) must be state aid compliant. Grants and soft loans may well be considered as aid. One way in which this may be permissible is under Article 46 of the General Block Exemption Regulation (GBER), as described at [Section 6.3.12](#) State aid.

1.7. Business rates

Business rates can represent a significant project cost and the calculation of business rates for heat networks is an area subject to ongoing debate. At [Section 7](#) Business rates, the two methods of calculating business rates are set out (contractor’s method and receipts and expenditure method), along with potential reliefs and the implications of each. The business rates value and the timing of when those business rates liabilities commence may vary under each of the methods. The contractor’s method is the assumed approach under Valuation Office Agency guidance, however, it would appear to be open to heat networks to show the Valuations Office if the receipts and expenditure method is more appropriate on a case-by-case basis.

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1.8. Accounting implications

The way a project impacts the financial statements of funders and Project Sponsors can be an important consideration when developing the commercial structure for a project. At [Section 8](#) Accounting implications, the relevant financial reporting frameworks are set out, along with discussion on which entities are likely to report under which framework. These are Financial Reporting Standard (FRS) 102 and the International Financial Reporting Standard (IFRS). This section deals with the accounting considerations which are most likely to impact a heat network project under each of these standards.

In particular, parties will want to understand if the project (either through consolidation or through recognition of leases) will be recognised on or off their balance sheet, both now and in light of changing accounting standards under IFRS (see [Section 8.2.7](#) Leases). Where the project is to be recognised on balance sheet, this will impact the financial ratios (for which calculations based on financial statements, which are often used by funders and credit rating agencies to evaluate creditworthiness) of an entity and may have an impact on its borrowing potential.

Other areas discussed are joint venture accounting, recognition of debt, financial guarantees, government grants, service concession arrangements, property, plant and equipment and revenue.

1.9. Tax implications

Tax can represent a significant cost to a project and different taxes will be applicable depending on the parties involved and the delivery structure. [Section 9](#) Tax implications, provides an overview of the main taxes that should be considered in relation to the development and operation of a heat network.

Corporation tax is charged on any corporate body or unincorporated association on taxable profits. This typically includes private and public limited companies, but also covers unlimited liability companies and trade associations (see [Section 6.1.1](#) Legal form). Generally, the taxable profits of an ESCo would be comprised of the income received from the sale of energy less deductible expenses, capital allowances and tax allowable interest paid. Expenditure that is met through grant funding will not be deductible for tax purposes. Further detail is provided on capital allowances available, transfer pricing legislation and corporate interest restrictions. Certain entities are exempt from corporation

tax on some (or all of) their profits, such as local authorities, health service bodies and charities. This should be borne in mind in particular for the In-house Delivery structure.

VAT is charged on taxable supplies. This includes supplies by all types of entities including corporate bodies, public sector entities or unincorporated bodies. The guidebook sets out recoverability of input VAT for the ESCo and the risk of irrecoverability under self-supply. It also sets out the rate of VAT charged to customers and the likely recoverability of this VAT by those customers. Public sector bodies such as government departments, local authorities and NHS organisations have specific VAT recovery rules. In general, this improves their VAT recovery position and allows them to recover VAT incurred in respect of their non-business (and sometimes VAT exempt) activity.

Stamp Duty Land Tax (SDLT) is generally payable on the purchase or transfer of interests in land and buildings in England, Wales and Northern Ireland where the amount paid is above a certain threshold. Different rates of SDLT apply according to whether the property is in residential or non-residential use, and separate rates also apply where the transaction involves a lease.

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The Construction Industry Scheme (CIS) is aimed at preventing evasion of tax by subcontractors working in the construction industry who are not known to HMRC. The scheme operates by requiring a contractor to potentially withhold tax from payments made to subcontractors in respect of construction operations.

1.10. Links to other guidance

At [Section 10](#) Links to other guidance, reference is made to other guidance available in the market on key issues impacting heat networks.

1.11. Case studies

1.11.1. Lee Valley Heat Network

The Lee Valley Heat Network is being delivered in phases through energetik, a wholly owned ESCo of Enfield Council. Heat sources include Edmonton EcoPark (waste-to-energy) and gas-fired CHP to supply residential and commercial consumers. To fund the project, Enfield Council is borrowing £6 million from the European Investment Bank (EIB) and £6 million from the London Energy Efficiency Fund (LEEF), which is on-lent to energetik. This is an example of a public sector led Project Sponsor ESCo.

1.11.2. Cheshire East

Cheshire East Council has entered into a 30 year joint venture agreement with Engie to deliver heat networks. A limited company will be incorporated when the first deliverable heat network scheme has been identified and agreed. The joint venture partners will have 50:50 voting rights and 50:50 investment contribution to any future projects. This is an example of a public-private Joint Venture ESCo.

1.11.3. Royal Albert Docks

ABP RAD ESCO Limited (wholly owned ESCo of the developer Advanced Business Park (ABP) London) was incorporated to serve the 4.7 million square foot mixed-use Royal Albert Docks development in East London through a combination of boilers, chillers, CHP and storage technology. The ESCo has appointed a DBOM contractor. The ESCo is funded through a combination of equity and debt from ABP. This is an example of a private sector led Project Sponsor ESCo.

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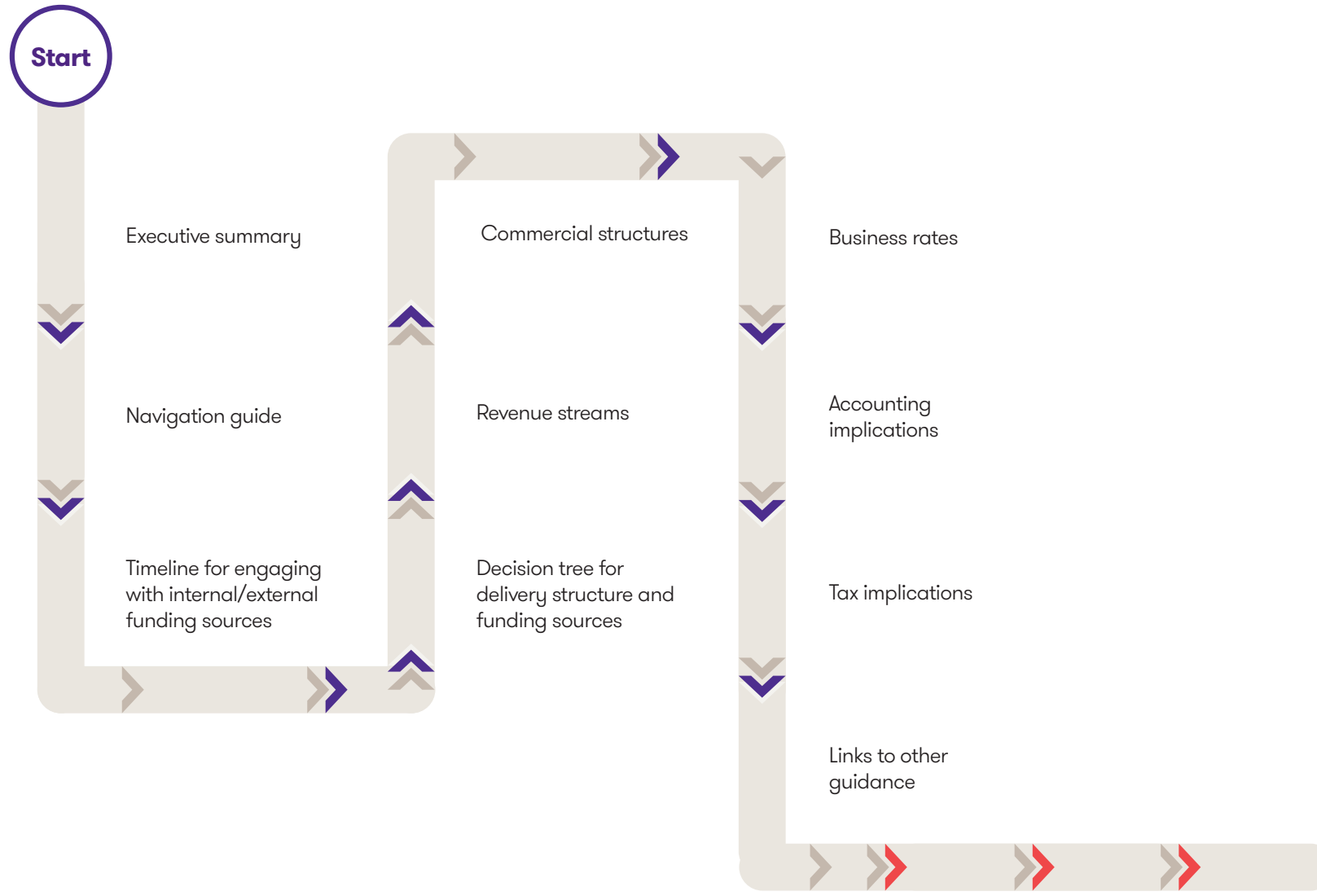
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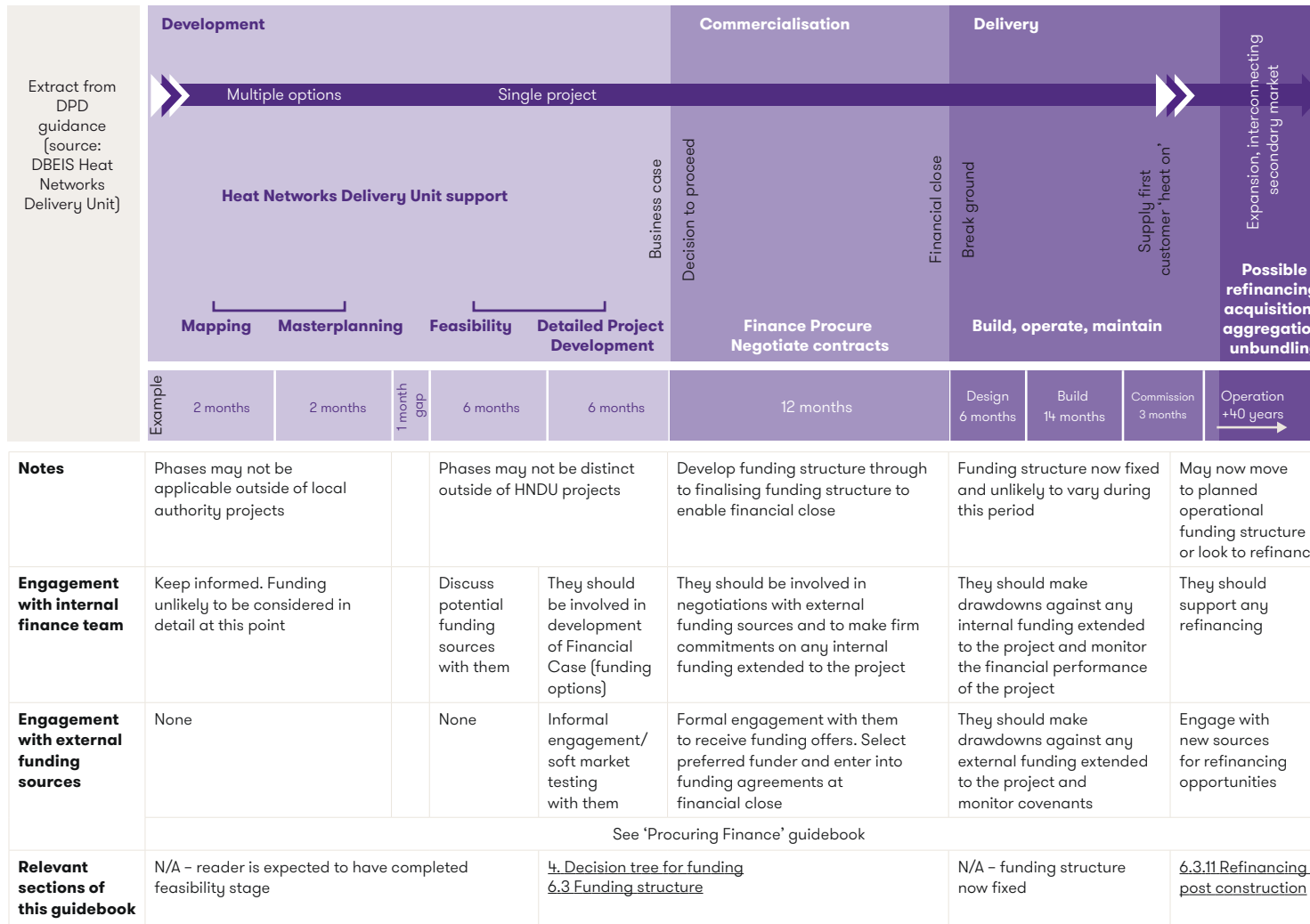
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This timeline at Section 3 can be used to understand how the Project Sponsor may consider engaging with internal/external funding sources over time. It is presented against the HNDU project timeline as many heat network projects will be following this process, be that with or without HNDU support.



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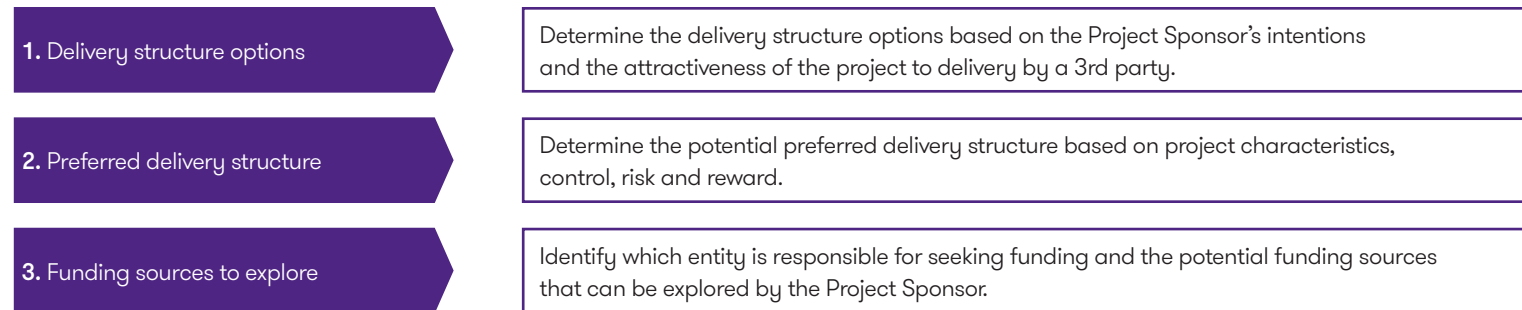
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This section works through a decision tree to support the reader in determining the potential preferred delivery structure for the heat network project under consideration and to understand which funding sources can be explored by the Project Sponsor.

The decision tree is mapped out over three pages:



This decision tree is intended as a guide only, to explore some of the issues which are likely to impact a choice of delivery structure, and therefore which funding sources can be explored by the Project Sponsor. It is not prescriptive and the flow of decisions may not fit every project. For example, a funding source may already have been identified, in which case, the reader may wish to review the 'Funding sources to explore' page first, to understand which delivery structures may be applicable to the project.

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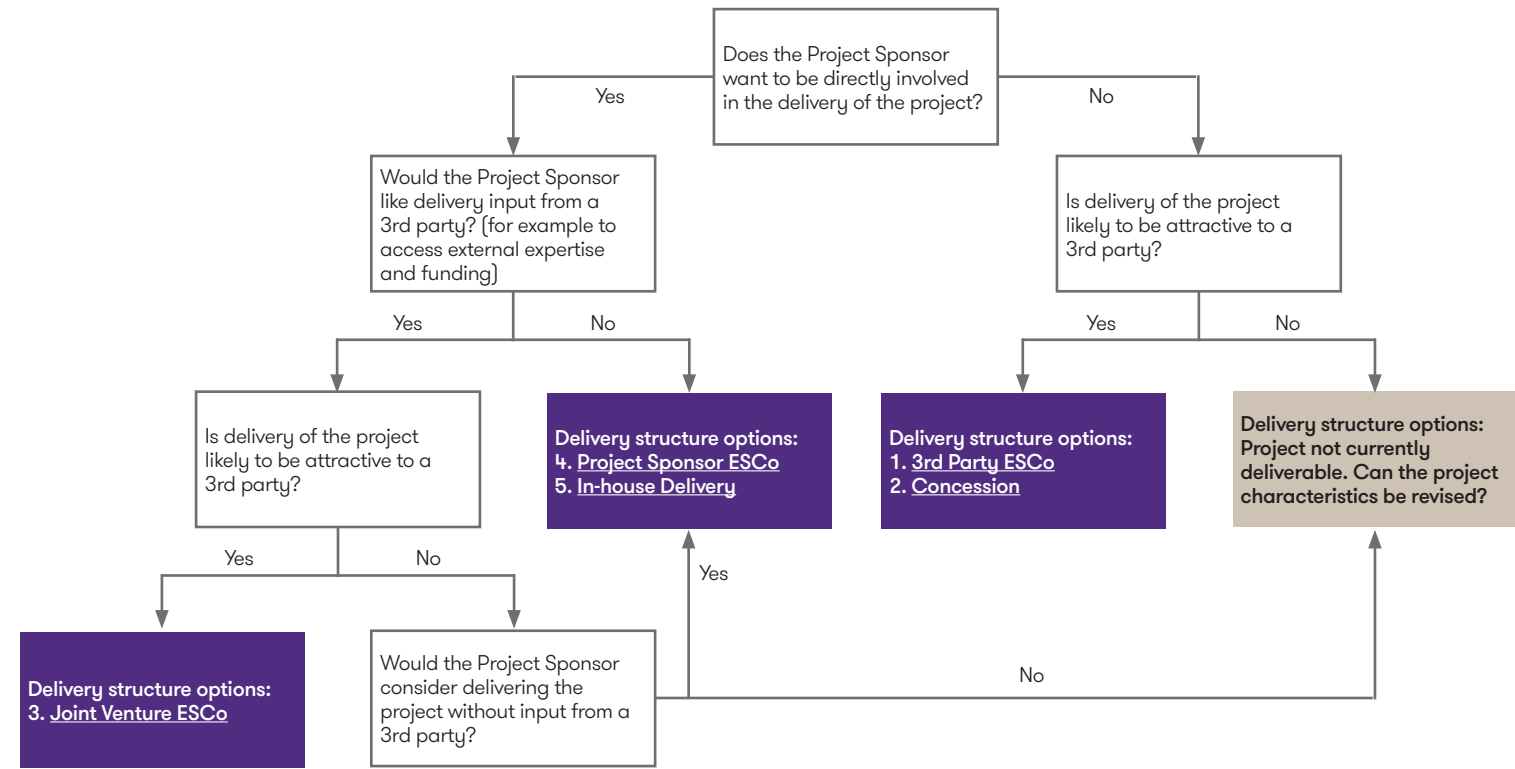
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Delivery structure options:

Answer the following questions in relation to the intention of Project Sponsor and attractiveness of the project to delivery by a 3rd party to determine the delivery structure options.



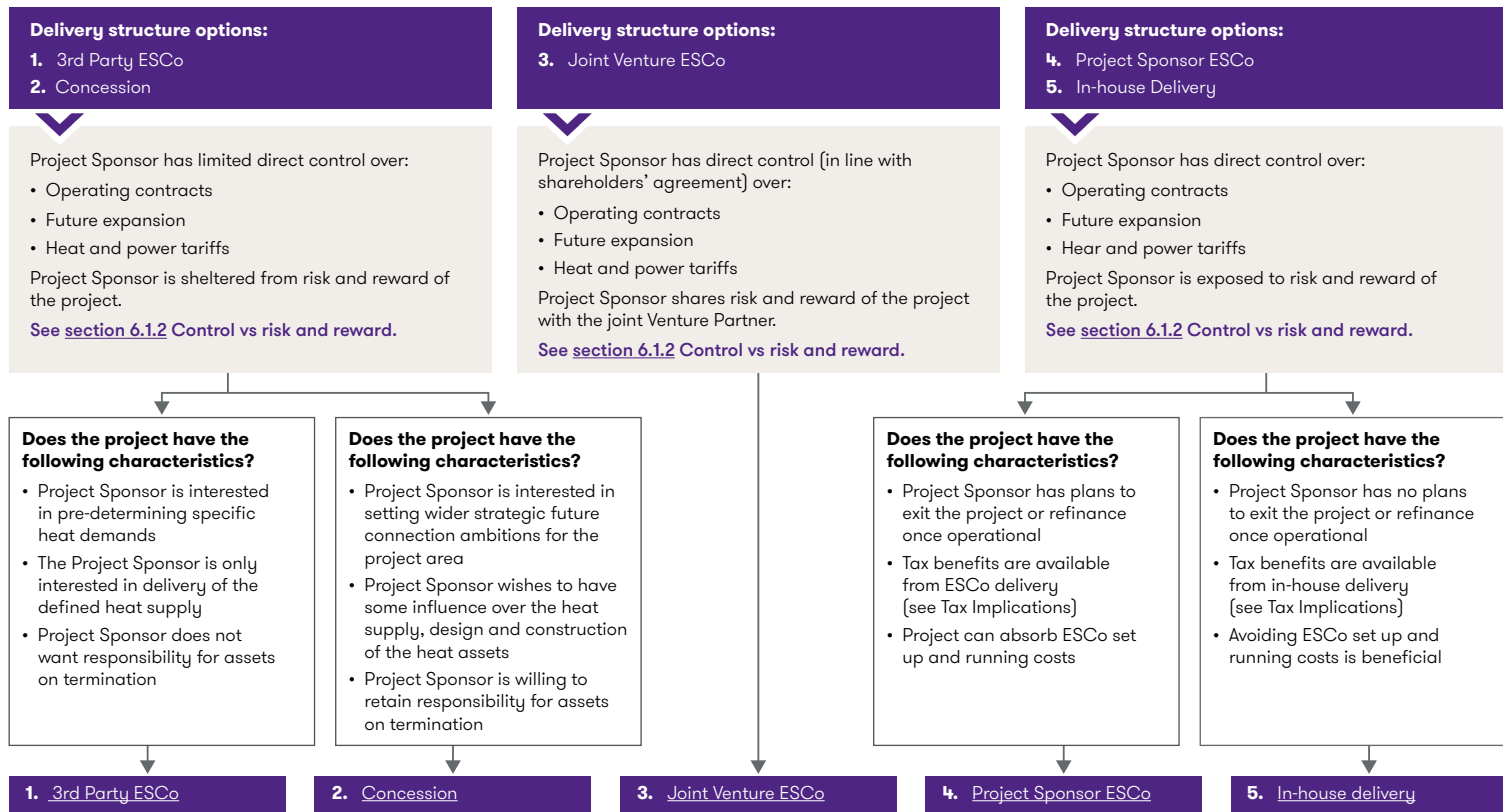
Go to next page (the three 'Delivery structure options' boxes which conclude this page, are the starting points for the next page).

Delivery structures
 Questions/decisions
 Information



Preferred delivery structure:

Based on desire for control (and exposure to risk and reward) and likely project characteristics, determine the potential preferred delivery structure.



Go to next page (the five 'delivery structure' boxes which conclude this page, are the starting points for the next page).

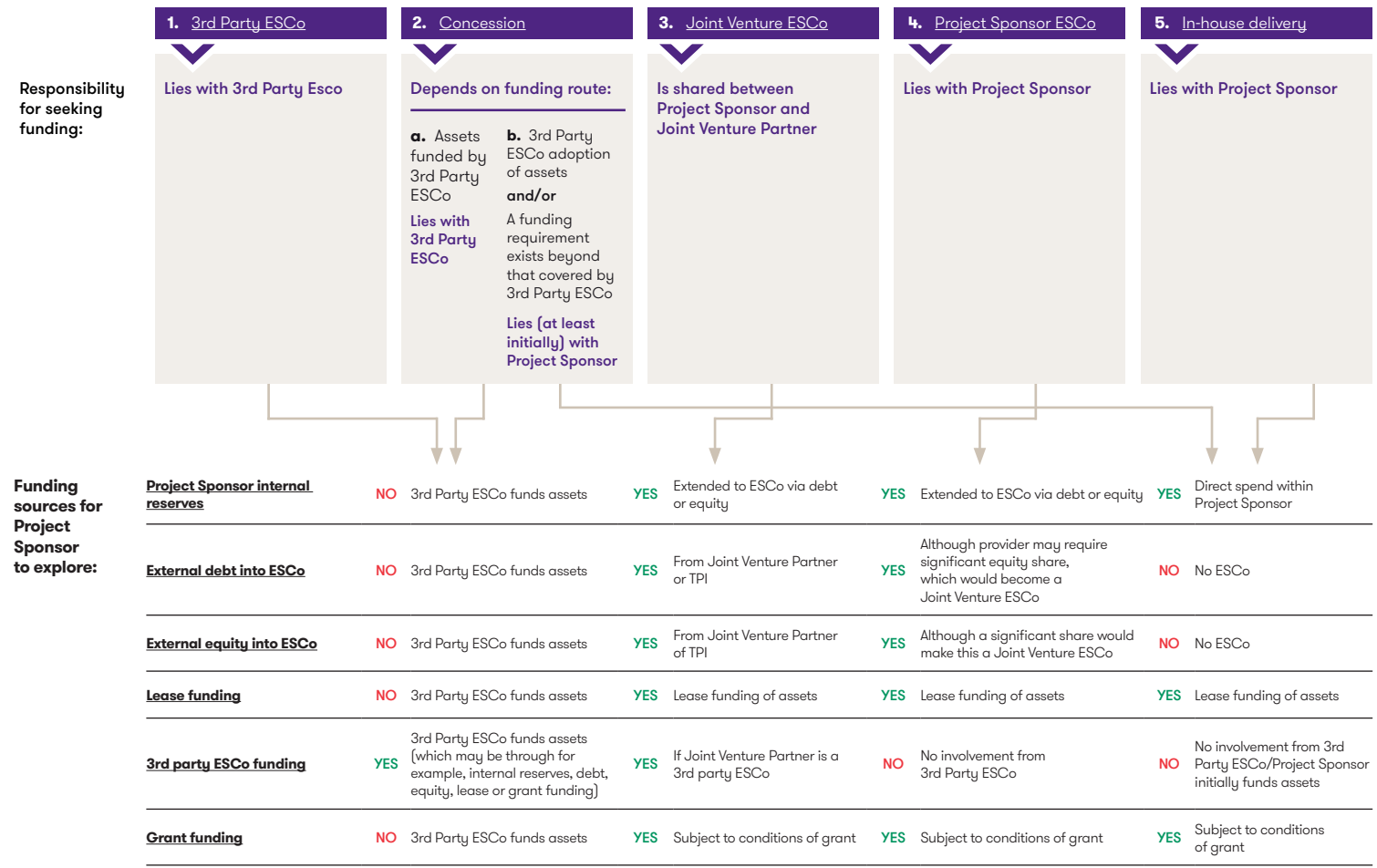
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Funding sources to explore:

Find out which entity is responsible for seeking funding for the project and which funding sources can be explored by the Project Sponsor.



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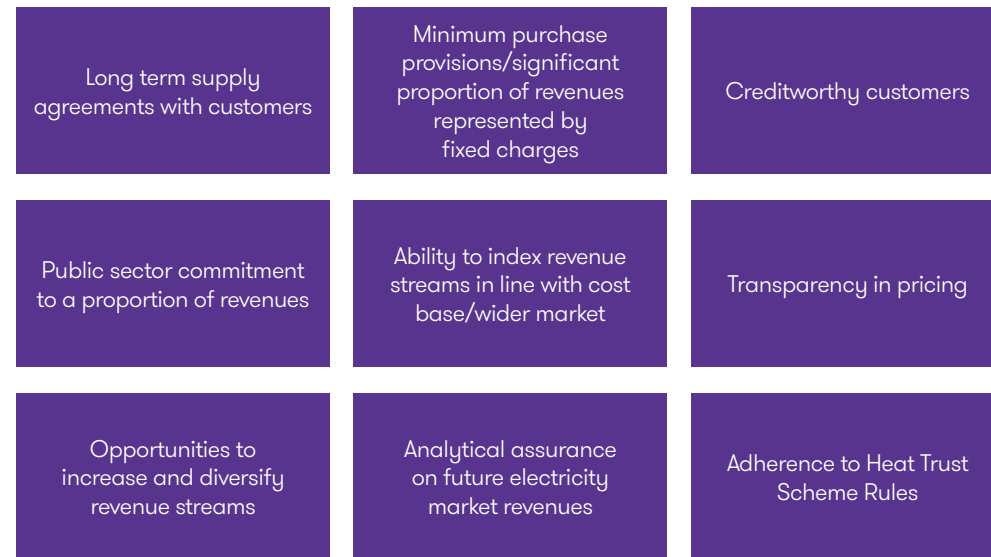
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In this section we will deal with two types of revenue streams:

5.1. Operating revenue streams

The certainty of operating revenue streams will be of particular interest to potential funders for the project and will be a focus of any financial due diligence undertaken. The following characteristics of operating revenue streams are likely to be viewed positively by funders:

- 1 Operating revenue streams
- 2 Other revenue streams



Heat Trust

“...is leading customer protection for the district heating sector. Launched in 2015, Heat Trust puts in place a common standard in the quality and level of customer service that is provided to domestic and micro-business customers by their heat energy supplier. It also provides customers free access to the Energy Ombudsman.”

www.heattrust.org/index.php





In the case of heat and electricity revenues, funders are likely to assess the demand risk of these revenues in three strands:

- Connection/demand build out risk
- Heat/power demand volume risk
- Bad debt/counterparty risk

See [Section 6.2.1](#) *Managing risk for a description of these risks, when they are likely to arise in the project lifecycle and how to manage these risks.*

5.1.1. Heat revenues

Heat revenues are a core revenue stream of a heat network. Part 2 of the Guidance on Economic and Financial Case within the DPD Guidance provides detailed information and considerations around 'Heat Pricing', including:

Context	The legislative and regulatory environment.
Pricing Structures	The various elements of pricing structures, including fixed/variable charges and connection charges (discussed in further detail below).
Pricing Levels	Determining tariffs and how these will change over time through price reviews and indexation.
Customer Types	How pricing may vary for different types of customer.
Revenue Collection	The process and impact of cash receipts against invoices.

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5.1.2. Electricity revenues

Electricity revenues and electricity market services are often available to heat networks where the heat generating technology is combined heat and power (CHP). Section 3b of Part 3 of the Guidance on Economic and Financial Case within the DPD Guidance provides an overview of potential 'Electricity Revenues', including:

On-site and Private Wire	Direct sales or consumption of electricity.
Exports via Distribution Network Operator	Sales of electricity via the national network, giving access to Triad, Short Term Operating Reserve (STOR) and Capacity Market revenues. Since publication of the DPD Guidance, a review of embedded benefits has been undertaken by Ofgem so Project Sponsors should make themselves aware of the current opportunities in this respect. A full list of balancing services can be found here – www.nationalgrid.com/uk/electricity/balancing-services/list-all-balancing-services – and include enhanced or firm frequency response, reactive power, demand side response and demand turn up.
Licence Lite	A junior electricity supply licence relieving the supplier of compliance with full licensing conditions.
Full Licence	Becoming a fully licensed electricity supplier.
Sleeving	Direct sales of electricity from a generator to an importer via the national network.
White Label	Sales of own-branded electricity via a licensed supplier.





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5.1.3. Cooling revenues

Cooling, as well as heating, is a saleable product and there are a number of opportunities for introducing cooling systems within a district heating network. Section 3c of Part 3 of the Guidance on Economic and Financial Case within the DPD Guidance provides an overview of potential revenues from ‘Cooling’.

5.1.4. Other utilities

Making use of the billing and customer services infrastructure, which will need to be present for the supply of heat, the project could consider providing additional utility services such as water/sewerage, telecoms and highways, or offering a dual fuel tariff. Section 3d of Part 3 of the Guidance on Economic and Financial Case within the DPD Guidance provides an overview of potential revenues from ‘Other Utilities’.

5.1.5. Asset rental

An entity owning assets which may be useful to an operator of a heat network (for example land, boiler house or plant and equipment) could rent these to generate a revenue stream. Section 3e of Part 3 of the Guidance on Economic and Financial Case within the DPD Guidance provides an overview of potential revenues from ‘Asset Rental’.

5.1.6. Government operating subsidies

Section 3f of Part 3 of the Guidance on Economic and Financial Case within the DPD Guidance provides an overview of potential ‘Government Operating Subsidies’ for Heat Networks, including:

Non-Domestic Renewable Heat Incentive (RHI)

A government financial incentive to increase the uptake of renewable heat.

Feed in Tariff (FIT)

A government programme designed to promote the uptake of a range of small-scale renewable and low-carbon electricity generation technologies.

Contract for Difference (CfD)

A payment designed to give investors the confidence and certainty they need to invest in low carbon electricity generation by ‘topping up’ the market price to reflect the cost of investment.

In addition to the above, the government is currently reviewing responses to a consultation on proposals to introduce a support programme to increase industry confidence in identifying and investing in opportunities for recovering and reusing waste heat from industrial processes. This is known as the Industrial Heat Recovery Support Programme (IHRS).

For more information, see www.gov.uk/government/consultations/industrial-heat-recovery-support-programme.

5.1.7. Energy market optimisation

Through ‘smart’ use of energy storage and managing demand in line with the energy market, revenues from heat (and electricity) can be optimised. Further detail on this is provided in Section 4d and 4e of Part 3 of the Guidance on Economic and Financial Case within the DPD Guidance. Analytical assurance of the future energy market or direct offtake agreements can help give comfort to funders.



5.2. Other revenue streams

Other revenue streams can generate significant cash available to offset funding requirements for the project. Timing of these revenues may not exactly match the timing of capital expenditure and therefore short term facilities may need to be put in place to 'bridge' the funding gap. Funders will look to see signed contracts/heads of terms to support such revenue streams and understand the creditworthiness of the counterparty.

5.2.1. Customer connection charges

Section 3a of Part 2 of the Guidance on Economic and Financial Case within the DPD Guidance provides information on connection charges.

For the consumer, the level at which the connection charge is set is likely to be a balance between the customer and the project perspective.

Customer perspective

Customer perspective: Customers will be particularly sensitive to their 'avoided cost'. For example, if the customer's boiler is nearing the end of its life and would need replacement, they may be willing to pay (up to) this budgeted spend to the heat network operator to reflect the avoided cost of a new boiler. Contrariwise, if their boiler is new or does not need replacing for several years, they are unlikely to accept a connection charge.

Project perspective

Project perspective: The project will look to recover an element of its capital expenditure from the customer. This could be in relation to the marginal cost of connecting a particular customer to the scheme or a percentage of its total capital expenditure.

Customers may be more willing to accept a connection charge if it is in exchange for a lower tariff throughout the service period.

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5.2.2. Developer contributions

Developer contributions³ are a form of connection charge paid by a property developer, rather than the customer. Property developers will incur a capital cost to ensure the property under development has a heat source. This may be through individual or communal gas boilers. If connecting to a heat network, they will avoid this capital cost and therefore may be willing to pay (up to) this avoided cost as a developer contribution.

Although paid by the developer, the outlay is likely to be passed through to the first owner of the dwelling/property via the initial purchase price.

In London, planning guidance⁴ suggests that £1,800/tonne should be applied to schemes to 'offset' CO2 underperformance. This is a one off cost, often as a condition of planning consent. Therefore, installation of a heat network which reduces underperformance can be seen as an avoided cost, which could be reflected in a developer contribution.

The extent of developer contributions available will be linked to the negotiating power of the developer in question (for which, how critical are they to the delivery of the scheme?) and the availability of alternative heat sources.

5.2.3. Development and planning obligations

Section 2d of Part 3 of the Guidance on Economic and Financial Case within the DPD Guidance provides information on the Community Infrastructure Levy and Section 106 agreements. In summary, these are charges payable by a developer to the Local Authority as a condition of planning consent, to reflect the increased requirement for infrastructure as a result of the development.

³ Note that a 'developer contribution' is not the same as the 'capital contribution' referred to in the Competition & Markets Authority, Heat networks market study, May 2018, where 'ESCOs may make a payment (commonly known as a 'capital contribution') to the property developer in return for the access rights'. A 'developer contribution' flows from the developer to the ESCo.

⁴ Para 2.5.13, Sustainable Design and Construction, Supplementary Planning Guidance, Mayor of London, April 2014.



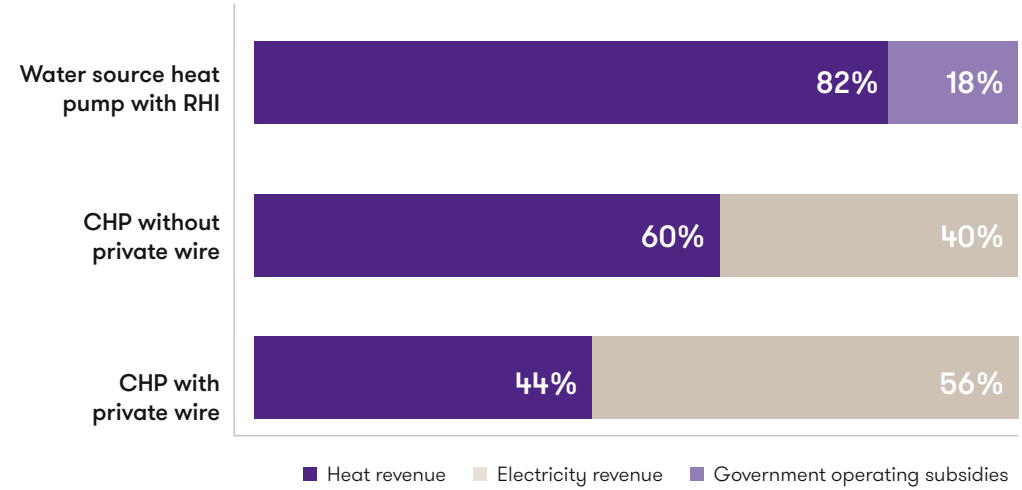


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5.3. Revenue stack

Depending on the generating technology and the offtakers involved, the 'revenue stack' can vary widely from project to project.

The graphic below shows the significant variation in how much of a heat network project's revenues can be represented by heat revenues, depending on these factors. Note that this data has been collected from a limited sample of projects and therefore may not be representative. Furthermore, the revenues shown are not exhaustive but are the main, more predictable ones. Other revenues may include balancing services (see [Section 5.1.2](#)) and Capacity Market (see [Section 5.1.6](#)).



Water source heat pump with RHI	As there is no electricity generated, the majority of revenues are in relation to heat. Such projects are likely to attract the renewable heat incentive (RHI), which is a government operating subsidy.
CHP without private wire	In this case, electricity is generated via the CHP and is sold to the grid (at wholesale prices). Electricity revenues make up a significant proportion of total revenues.
CHP with private wire	In this case, electricity is generated via the CHP and is sold via private wire (at close to retail prices). Electricity revenues make up a highly significant proportion of total revenues.

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The stakeholders involved, the heat sources, the consumers and the developmental heritage of heat networks can vary greatly. As such, there is no ‘one size fits all’ when it comes to delivering, contracting for and funding a heat network.

There is a range of language used in the market when discussing ‘commercial structures’. In this guidebook, we refer to commercial structures as an overarching term which incorporates the delivery, contractual and funding structure of a project as shown in the diagram below.



This guidebook is on ‘financing heat networks in the UK’ and so the focus is on the funding structure. However, as these three elements are so closely linked, the funding structure cannot be discussed in isolation. Therefore, this section deals with each element in turn.

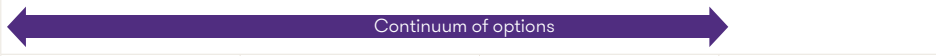
6.1. Delivery structure

There are many different delivery structures which can be used to deliver a heat network project. For illustrative purposes, this section sets out the five delivery structures which are most commonly seen in the market. These illustrations will be used to explore some of the issues and considerations when structuring a project. Project Sponsors should seek specific advice tailored to their project to optimise the delivery structure adopted.

	Delivery structure	Brief description
1	3rd Party ESCo	The Project Sponsor enters into an energy services agreement with a 3rd party to deliver the heat network through an ESCo.
2	Concession	The Project Sponsor enters into a concession agreement with a 3rd Party ESCo to deliver the heat network.
3	Joint Venture ESCo	The Project Sponsor jointly establishes an ESCo with a Joint Venture Partner to deliver the heat network.
4	Project Sponsor ESCo	The Project Sponsor establishes a wholly owned ESCo to deliver the heat network.
5	In-house Delivery	The Project Sponsor develops the heat network without establishing a stand-alone delivery vehicle.

The DPD Guidance sets out four broad categories of ‘Delivery Models’ used to develop heat networks, as described in the image opposite (taken from the guidance).

The delivery structures referred to in this guidance sit across the broad ‘Delivery Models’ defined in the DPD Guidance. For example, a Concession delivery structure could be public sector led, private sector led or a public-private shared leadership project.

A. Private sector led	B. Public-private shared leadership	C. Public sector led	D. Community Company (CoCo)
			
<p>Private sector company responsible for design, financing, building, owning and operation.</p> <p>The roles that define a project as private sector led are likely to be Funding, Asset Ownership and Operation</p>	<p>Local Authority and at least one private sector company share the risks and returns.</p> <p>The roles that if shared define a project as private-public led are likely to be Governance and Funding or anchor customer</p>	<p>Local Authority responsible for design, financing, building, owning and operation.</p> <p>The roles that define a project as public sector led are likely to be Governance, Funding and Asset ownership.</p>	<p>A community body has leading role in the business supplying heat.</p> <p>The roles that define a project as Community led are likely to be Customer, Governance and Sale of Heat.</p>

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6.1.1. Legal form

Delivery structures may involve setting up formal corporate entities created for the purpose of delivering a heat network (for example, an ESCo), or they may make use of existing organisation structures (for example, a 3rd Party ESCo or an In-house Delivery team). If a corporate entity is created to deliver a heat network there are several legal forms this could take, as summarised in the table below.

Legal form	Description
Company limited by guarantee	A company limited by guarantee does not usually have share capital or shareholders but has members who act as guarantors. Companies limited by guarantee are commonly used in the public sector. A company limited by guarantee is most suitable to a body that is not designed to be a wealth creator for the members, but rather a vehicle to manage specific activity.
Company limited by shares	A company limited by shares, has shareholders with liability limited to their shareholding. A company limited by shares can trade, raise finance and invest in or be sold to 3rd parties. This is the most common legal form.
Limited liability partnership	A limited liability partnership is a partnership in which the partners have limited liability, meaning they are liable only for debts incurred by the entity to the extent of their registered investment. The main difference to a company limited by shares is the corporation tax treatment, as discussed at Section 9.1.1 .
Community interest company	Introduced in 2005, a community interest company is a business with primary social objectives whose surpluses are principally reinvested for that purpose in the business or in the community, rather than being driven by the need to maximise profit for shareholders and owners.

This guidebook does not deal with the relative benefits of each legal form and specific legal/tax advice should be sought to determine the appropriate legal form in the context of each project.



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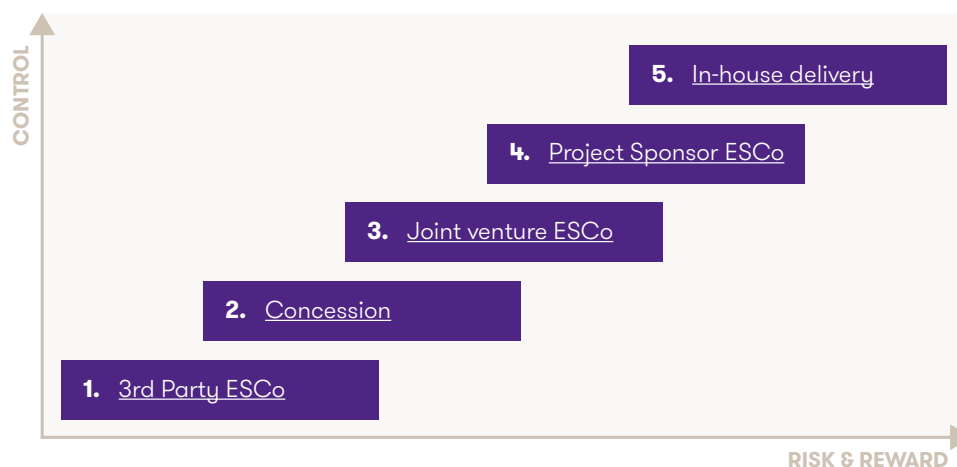
6.1.2. Control versus risk and reward

The delivery structure chosen will depend on the level of control desired by the Project Sponsor and its appetite for risk. Key areas which a Project Sponsor may want to control are:

- Operating contracts
- Future expansion
- Heat and power tariffs

The more control required, the higher the level of risk that will be faced by the Project Sponsor but also the higher the potential reward. Section 6.2.1 Managing risk, deals with the types of risks most often seen in heat network projects and how to manage these through the contracting structure.

The diagram below shows the Project Sponsor's relative levels of control and risk and reward for the five delivery structures explored in this guidebook.



The Concession and 3rd Party ESCo models pass risks (for example design and operational) to the existing ESCo market, at the cost of reduced (or removed) share in any project rewards. Under the Concession delivery structure, assets are retained by the Project Sponsor and it retains limited control over the ESCo's contractors resulting in slightly higher risk than the 3rd Party ESCo. These models might suit Project Sponsors with limited expertise and resources, or desire to develop a heat network.

The In-house Delivery model and the Project Sponsor ESCo model give the Project Sponsor high levels of control over the project, however, will also expose the Project Sponsor to more risk and reward. Setting up a Project Sponsor ESCo has the effect of ring fencing project operations so the Project Sponsor is slightly further removed from the project risk than through In-house Delivery. These models might suit Project Sponsors with some expertise and resources, and a desire to develop a heat network.

The Joint Venture ESCo model falls between these two positions with control being shared between the partners in the joint venture in line with the shareholders' agreement. The joint venture partners will also share in the risk and reward of the project.



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6.1.3. Selecting a delivery structure

The following Sections (6.1.4 to 6.1.8) set out key characteristics and considerations for each of the five illustrative delivery structures to support the reader to determine which delivery structure is most appropriate for their project.

For each delivery structure we set out:

Description	Diagram
Funding	Control versus risk and reward
Exit strategy	Advantages and disadvantages

Other considerations dealt with elsewhere in the guidebook are:

Please see also Section 4 Decision tree for delivery structure and funding sources, to assist in determining which delivery structure might be appropriate for your project.

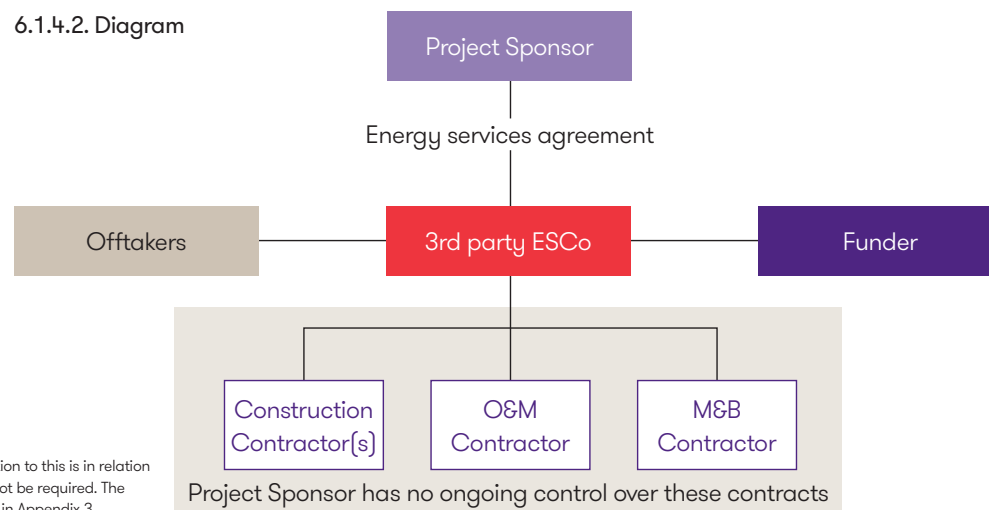
6.1.4. Delivery structure 1 – 3rd Party ESCo

6.1.4.1. Description

The Project Sponsor enters into energy services agreement with a 3rd party to deliver the heat network through an ESCo.

The 3rd Party ESCo is both the asset owner and operator.

6.1.4.2. Diagram



Note: The black lines represent a contractual relationship. The only exception to this is in relation to funding provided through internal reserves, for which a contract may not be required. The equivalent diagram has also been provided from a cashflows perspective in Appendix 3.



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6.1.4.3. Funding

Under this delivery structure, the 3rd Party ESCo is responsible for funding the project.

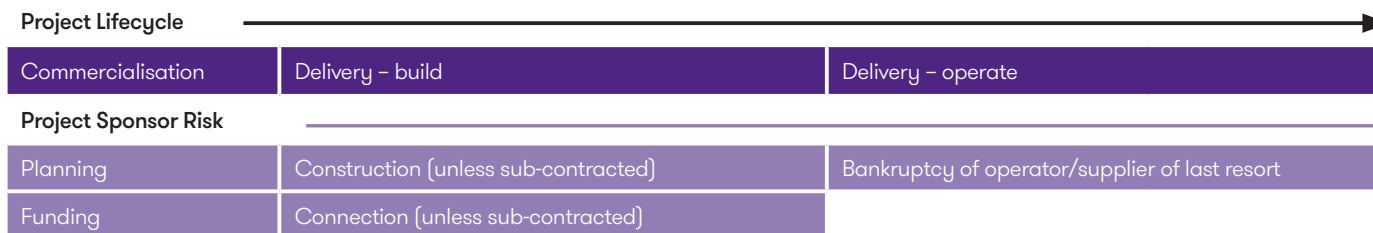
See [Section 6.3](#) Funding structure for further detail.

6.1.4.4. Control versus risk and reward

The Project Sponsor does not have any ongoing control over the 3rd Party ESCo's contractors, future expansion of the network or heat and power tariffs.

In this way, the Project Sponsor is sheltered from the risk of funding, constructing and operating the project. It will also not see any direct financial rewards from the success of the project, other than the energy saving costs relative to current energy costs and/or avoided costs of future maintenance and replacement of energy generating plant.

The diagram at [Section 6.2.1](#) Managing risks sets out the risks which need to be managed within a heat network project. The diagram below sets out the risks retained by the Project Sponsor under a 3rd Party ESCo delivery structure. All other risks are pushed down to the 3rd Party ESCo and its contractors.



See [Section 6.2.1](#) Managing risk, for further description of and methods of managing these risks.



6.1.4.5. Exit strategy

At the end of the energy services agreement under the 3rd Party ESCo delivery structure (normally up to 25 years), the service provision to the Project Sponsor will cease. There are no remaining obligations on the Project Sponsor, albeit it may need to seek a follow on energy service provision, in which case any of the delivery structure options contained within this guidebook (including extending the duration of the energy services agreement) are relevant. There may be an option within the energy services agreement for the Project Sponsor to buy the assets at fair value. Otherwise, or if this option is not exercised, the 3rd Party ESCo is responsible for disposal of the assets.

6.1.4.6. Advantages and disadvantages

The following table sets out some of the advantages and disadvantages of the 3rd Party ESCo delivery structure.

Advantages

- allows technical and performance risk to be transferred to a 3rd party. The 3rd party is likely to operate many district heating projects and therefore be well placed to manage these risks
- leverages 3rd party expertise and skills
- secures external funding

Disadvantages

- the Project Sponsor will have limited control over how the project is delivered. This may make it more challenging for the Project Sponsor to achieve its strategic objectives in relation to the project (e.g. future expansion, setting heat and power tariffs)
- project must meet 3rd party's return on investment criteria, which could result in higher heat and power tariffs

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6.1.4.7. Delivery structure example

Leicester District Energy Company (LDEC)

Local Authority not in an Asset

Ownership Role LDEC is a 25 year partnership between Leicester City Council and ENGIE (formerly Cofely) to initially link 4 district heating schemes and then extend the enlarged network across the City. The system is the largest of its kind within the UK to be installed city-wide in one phase.

LDEC is wholly owned by ENGIE, with an investment of £14 million by ENGIE as well as using over £1 million of Community Energy Saving Programme (CESP) funding to adopt LCC housing to the district heating networks.

The scheme has seen over 14km of insulated pipework laid across the city and provides heating and hot water to over 19 civic buildings including De Montfort Hall, the Town Hall and various schools, community centers and libraries. The scheme also includes the University of Leicester and close to 3,000 Council homes on six different housing estates. The scheme incorporates CHP & biomass and saves over 7,000 tonnes of CO2 per annum.

Source: DPD Guidance on Strategic and Commercial Case
Leicester City Council and Leicester University



This is an example of a 3rd Party ESCo Delivery Structure as:

- the ESCo (LDEC) is owned by a 3rd party (ENGIE)
- the assets are owned by the 3rd party
- a 25 year energy services agreement to supply heat is in place





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6.1.5. Delivery structure 2 – Concession

6.1.5.1. Description

The Project Sponsor enters into a concession agreement with a 3rd Party ESCo to deliver the heat network.

The Project Sponsor owns the assets and the 3rd party operates them.

Energy services agreement and concession agreement

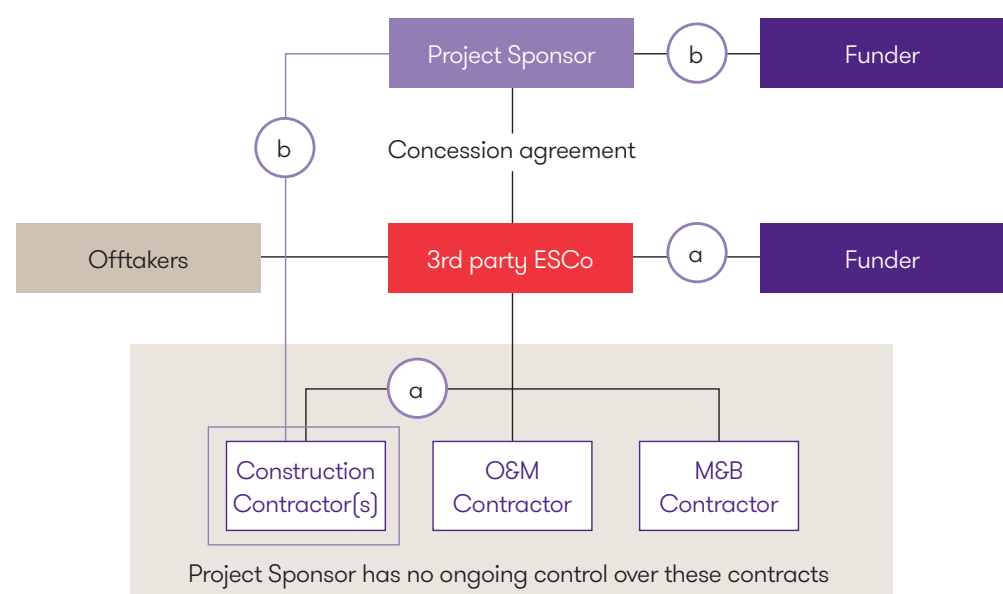
An energy service agreement is a contract granting the right to provide heat, power, cooling, or a combination of all three, within a specified area or development. An energy service agreement also sets requirements for how energy is provided. A concession agreement is one type of energy service agreement, and is usually used where the Project Sponsor anticipates retaining, or recovering, ownership of the generation and distribution assets after the end of the agreement.

It is important to note that while in other industries a concession is typically granted by the government or a public sector authority, that is not necessarily the case with heat network projects in the UK, where the granting body can be from either the public or private sector.

An energy service agreement is distinct from a customer supply agreement, which is the agreement between the offtaker and the supplier (for example, ESCo) for the supply of heat and/or power, whereas the energy service agreement is between the Project Sponsor and the supplier.

6.1.5.2. Diagram

Note: The black lines represent a contractual relationship. The only exception to this is in relation to funding provided through internal reserves, for which a contract may not be required. The equivalent diagram has also been provided from a cashflows perspective in [Appendix 3](#).





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6.1.5.3. Funding

Under this delivery structure, there are two methods of funding:

a Assets funded by 3rd Party ESCo

The 3rd Party ESCo is responsible for funding the project. The 3rd Party ESCo then receives an agreed payment per connection from the Project Sponsor and/or offtaker. This is often referred to as the contribution or connection model.

b 3rd Party ESCo adoption of assets

The Project Sponsor is responsible for funding/securing funding for the project and builds the assets. The Project Sponsor may wish to explore:

- (new or existing) internal reserves,
- lease funding, and/or
- grant funding

The 3rd Party ESCo then pays the Project Sponsor an asset value lump sum (as agreed in the concession agreement) for rights to use ('adopt') the assets.

Under both funding methods a. and b., there may be a funding requirement beyond that which is covered by the 3rd Party ESCo, which the Project Sponsor will be responsible for.

See Section 6.3 Funding structure for further detail.

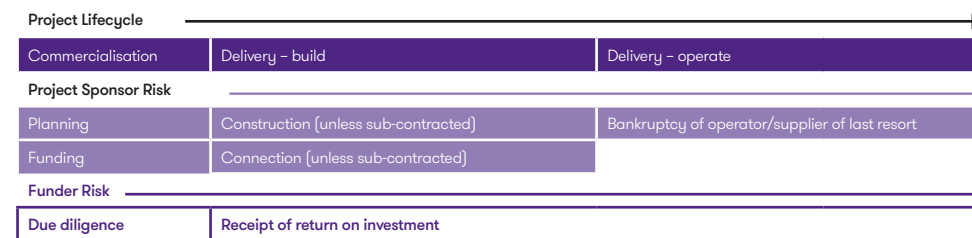
6.1.5.4. Control versus risk and reward

The Project Sponsor retains limited control over the 3rd Party ESCo's contractors, future expansion of the network and heat and power tariffs (as defined in the concession agreement).

The main area where the Project Sponsor will want to retain some level of control will be around the construction contractor(s). This is because the Project Sponsor will be the owner of the assets. At the same time, the 3rd Party ESCo will be using the assets and therefore will want to be comfortable that they meet its operating requirements. The 3rd Party ESCo may request some design input to ensure optimal performance of the network. If the assets have been built, they will want to review the installation and technical performance carefully.

In this way, the Project Sponsor is exposed to some level of funding and construction risk. However, it is sheltered from the risk of operating the project and will not see any direct financial rewards from the success of the project.

The diagram at Section 6.2.1 Managing risks sets out the risks which need to be managed within a heat network project. The diagram below sets out the risks retained by the Project Sponsor under a Concession delivery structure. All other risks are pushed down to the 3rd Party ESCo and its contractors. The 'funder risk' is only retained by the Project Sponsor in funding option b) or where there exists a funding requirement beyond that which is covered by the 3rd Party ESCo.



See Section 6.2.1 Managing risk, for further description of and methods of managing these risks.



6.1.5.5. Exit strategy

At the end of the concession agreement (often 20–40 years), the Project Sponsor will be able to either become the operator, enter into a new concession agreement or sell the assets (if a market exists).

6.1.5.6. Advantages and disadvantages

The following table sets out some of the advantages and disadvantages of the Concession delivery structure.

Advantages	<ul style="list-style-type: none"> allows technical and performance risk to be transferred to a 3rd party. The 3rd party is likely to operate many district heating projects and therefore be well placed to manage these risks leverages 3rd party expertise and skills secures some level of external funding Project Sponsor is able to influence expansion of the heat services to specific users
Disadvantages	<ul style="list-style-type: none"> the Project Sponsor will have limited control over how the project is delivered. This may make it more challenging for the Project Sponsor to achieve its strategic objectives in relation to the project (for example, future expansion, setting heat and power tariffs) project must meet 3rd party’s return on investment criteria, which could result in higher heat and power tariffs Project Sponsor retains liability for assets

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6.1.5.7. Delivery structure example

Birmingham District Energy Company Ltd

Local Authority undertakes a promotion role

Heat networks are an important part of Birmingham City Council’s vision to develop large scale sustainable energy infrastructure across the city and reduce its CO2 emissions by 60% by 2027, so it was keen to act as Promoter.

Before procuring a heat network, the Council aggregated demand for new buildings it was planning in the city centre, Aston University and Birmingham Children’s Hospital.

The key promotion activity undertaken by the City Council was to tender a 25-year concession for an ESCo organised in 2006.

The successful bidder, now part of ENGIE, set up Birmingham District Energy Company Ltd as a wholly-owned SPV to own and operate a series of heat networks to serve the heat loads identified and other public sector customers. ENGIE contracts separately with each customer; the City Council is one such customer.

Source: DPD Guidance on Strategic and Commercial Case



This is an example of a Concession Delivery Structure as:

- the local authority (Project Sponsor) is interested in setting wider strategic future connection ambitions for the project area
- the local authority entered into a 25-year concession agreement
- customers are served through energy supply agreements with the ESCo





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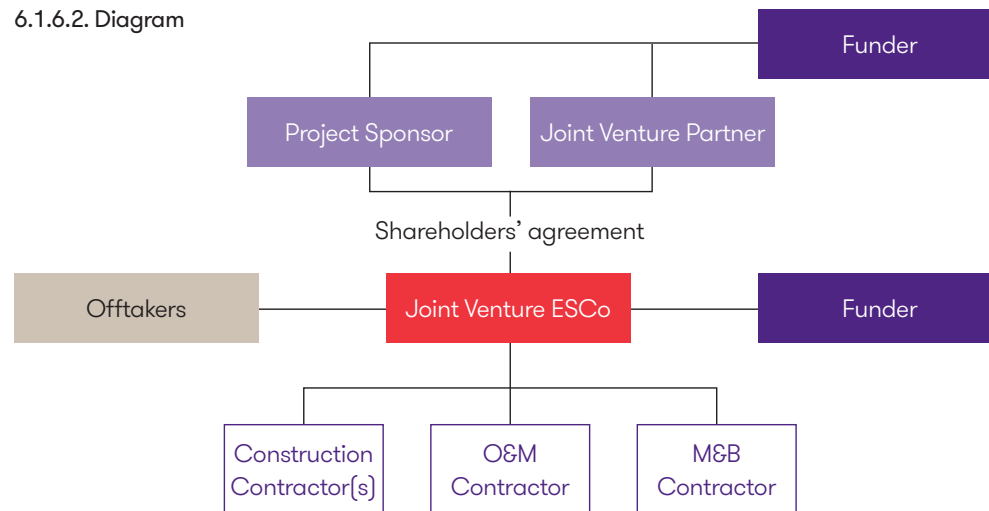
6.1.6. Delivery structure 3 – Joint Venture ESCo

6.1.6.1. Description

The Project Sponsor jointly establishes an ESCo with a Joint Venture Partner to deliver the heat network. The joint venture can be between two private sector entities, two public sector entities or most commonly between a public and private entity.

The Joint Venture ESCo is both the asset owner and operator.

6.1.6.2. Diagram



Note: The black lines represent a contractual relationship. The only exception to this is in relation to funding provided through internal reserves, for which a contract may not be required. The equivalent diagram has also been provided from a cashflows perspective in [Appendix 3](#).

6.1.6.3. Funding

Under this delivery structure, the Project Sponsor and its Joint Venture Partner are responsible for funding/securing funding for the project. These parties may wish to explore:

(new or existing) Internal reserves ESCo via debt or equity	Lease funding, and/or
3rd party debt	Grant funding
3rd party equity	

Funding could come into the Joint Venture ESCo directly from a 3rd Party Investor (TPI) or via the Joint Venture Partners.

See [Section 6.3 Funding structure](#) for further detail.



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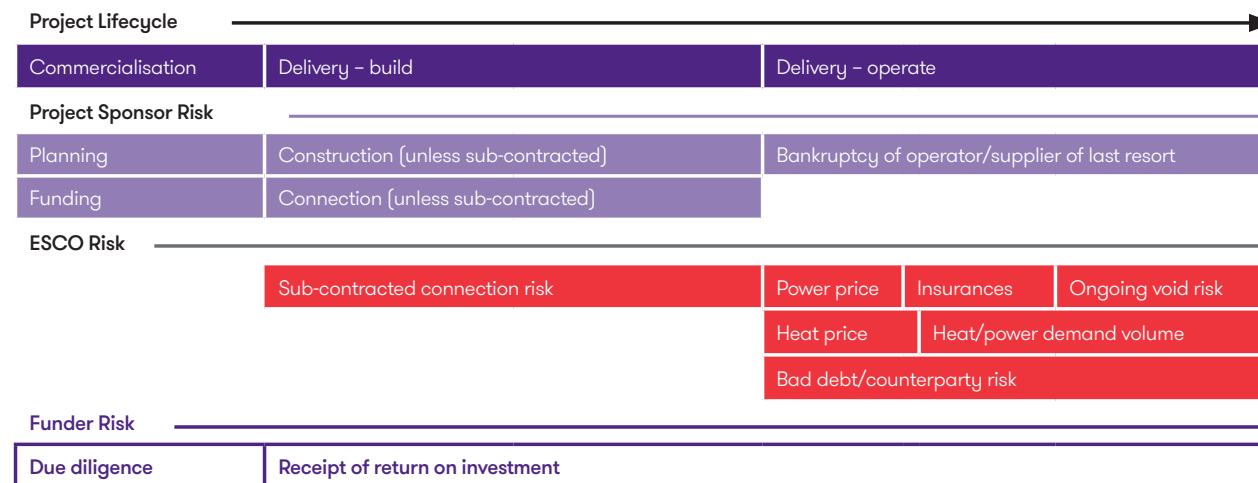
6.1.6.4. Control versus risk and reward

Via the Joint Venture ESCo, the Project Sponsor and its Joint Venture Partner will share control over the ESCo's contractors, future expansion of the network and heat and power tariffs. The Shareholders' Agreement will regulate the decision making in the ESCo, for example which decisions can be made by the ESCo and which decisions must be made by the shareholders. A key element of the agreement would be in relation to how cost overruns are handled.

In this way, the Project Sponsor and its Joint Venture Partner will share the risk of funding, constructing and operating the project. They will also share in the direct financial rewards from the success of the project.

The diagram at [Section 6.2.1 Managing risks](#) sets out the risks which need to be managed within a heat network project. The diagram below sets out the risks retained by the Project Sponsor (and shared with the Joint Venture Partner in line with the Shareholders' Agreement) under a Joint Venture ESCo delivery structure. It is assumed that the 'ESCo contractor risks' have been pushed down to the ESCo's contractors.

Risks shared between Project Sponsor and joint venture partner in line with Shareholders' Agreement



See [Section 6.2.1 Managing risk](#), for further description of and methods of managing these risks.



6.1.6.5. Exit strategy

Both partners within the joint venture have the ability to sell their shares in the ESCo. One common exit strategy is for one partner to progressively buy out the other party. Another approach is for one party to sell their shares to a 3rd party. There may also be the opportunity to refinance any debt extended to the ESCo.

A common juncture to do this would be once the project is operational. At this stage the design and construction risks have passed and the network might have a few years of revenue track record to be attractive to a secondary market and reduce the cost of funding.

The shareholders agreement is flexible and can allow for agreed exit strategies.

6.1.5.6. Advantages and disadvantages

The following table sets out some of the advantages and disadvantages of the Joint Venture ESCo delivery structure.

Advantages	<ul style="list-style-type: none"> • Project Sponsor retains some strategic control over the project • project risks are shared between the partners • Joint Venture Partner may bring expertise and skills • Joint Venture Partner may bring funding • opportunities to exit the project through sale of shares
Disadvantages	<ul style="list-style-type: none"> • legal complexity in set up and negotiating the relationship and risk sharing between the partners • the partners will need to agree on the direction of the project (e.g. future expansion, setting heat and power tariffs) • project must meet the Joint Venture Partners' return on investment criteria, which could result in higher heat and power tariffs

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6.1.6.7. Delivery structure example

Kings Cross

King's Cross Central Limited Partnership (KCCLP)

At Kings Cross a private sector joint venture was set up between Argent and Metropolitan to deliver the site wide district heating network to connect the Energy Centre to circa 2,500 flats, 100 shops and retails and 3.5 million sq ft of offices. The JV, Metropolitan Kings Cross Ltd (MKC), is 90% owned by KCCLP, 10% by Metropolitan. This gave the Developer significant control over the construction of the network, something they were keen to have to enable smooth delivery across the large and complex site. The assets were then handed over to the JV MKC, which undertakes fuel purchase, and sells heat through 95 degrees (the metering and billing face). MKC also sells electricity to the grid. Vital Energi undertook the design in collaboration with MKC and now manages operation and maintenance of the system on behalf of MKC.

Source: DPD Guidance on Strategic and Commercial Case
www.kingscross.co.uk



This is an example of a Joint Venture ESCo Delivery Structure as:

- Joint Venture Partners are shareholders in the ESCo
- the developer (Project Sponsor) was keen to retain strategic control over the project
- the ESCo has sub contracted O&M services

See also [Appendix 1: Case studies: Cheshire East](#)

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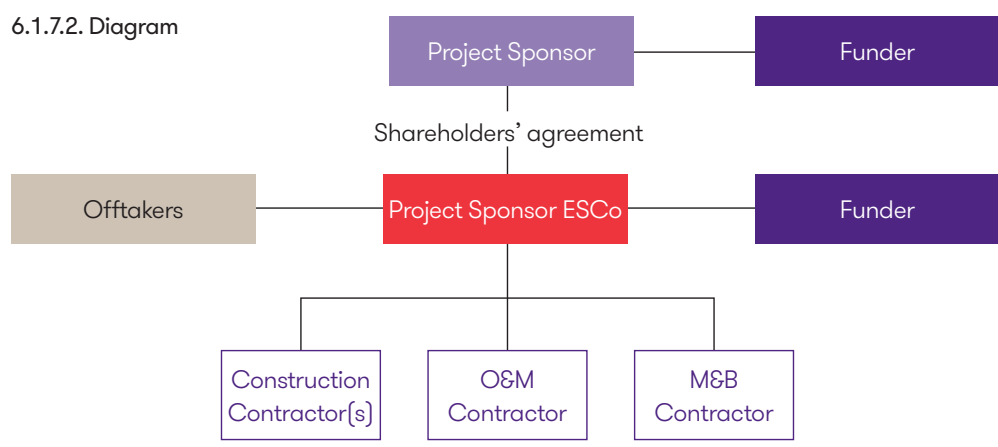
**6.1.7. Delivery structure 4
– Project Sponsor ESCo**

6.1.7.1. Description

The Project Sponsor establishes a wholly owned ESCo to deliver the heat network.

The Project Sponsor ESCo is both the asset owner and operator.

6.1.7.2. Diagram



Note: The black lines represent a contractual relationship. The only exception to this is in relation to funding provided through internal reserves, for which a contract may not be required. The equivalent diagram has also been provided from a cashflows perspective in Appendix 3.

6.1.7.3. Funding

Under this delivery structure, the Project Sponsor is responsible for funding/securing funding for the project. The Project Sponsor may wish to explore:

(new or existing) internal reserves extended to the ESCo via debt or equity	Lease funding, and/or
3rd party debt	Grant funding
3rd party equity	

Funding could come into the Project Sponsor ESCo directly from TPIs or via the Project Sponsor.

See [Section 6.3 Funding structure](#) for further detail.





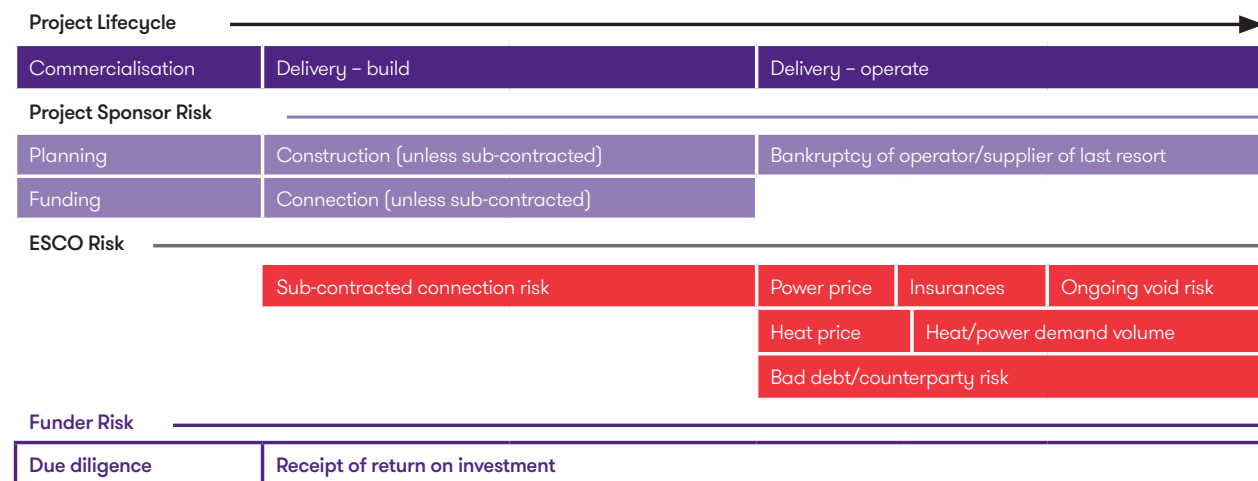
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6.1.7.4. Control versus risk and reward

Via the Project Sponsor ESCo, the Project Sponsor will have control over the ESCo’s contractors, future expansion of the network and heat and power tariffs. The Shareholders’ Agreement will regulate the decision making in the ESCo, for example which decisions can be made by the ESCo and which decisions must be made by the Project Sponsor as shareholder.

In this way, the Project Sponsor bears the risk of funding, constructing and operating the project. It will also benefit from the direct financial rewards from the success of the project.

The diagram at [Section 6.2.1 Managing risks](#) sets out the risks which need to be managed within a heat network project. The diagram below sets out the risks retained by the Project Sponsor under a Project Sponsor ESCo delivery structure. It is assumed that the ‘ESCo contractor risks’ have been pushed down to the ESCo’s contractors.



See [Section 6.2.1 Managing risk](#), for further description of and methods of managing these risks.

6.1.7.5. Exit strategy

The Project Sponsor has the ability to sell its shares in the ESCo or refinance any debt extended to the ESCo.

A common juncture to do this would be once the project is operational. At this stage the design and construction risks have passed and the network might have a few years of revenue track record to be attractive to a secondary market and reduce the cost of funding.

6.1.7.6. Advantages and disadvantages

The following table sets out some of the advantages and disadvantages of the Project Sponsor ESCo delivery structure.

Advantages	<ul style="list-style-type: none">• Project Sponsor retains all strategic control over the project (for example future expansion, setting heat and power tariffs)• Opportunities to exit the project through sale of shares and/or refinance project debt
Disadvantages	<ul style="list-style-type: none">• Project Sponsor is exposed to all project risks (if not passed down to contractors)• Responsibility for funding/securing funding lies with the Project Sponsor• Drawing on external expertise and skills is limited to contracting arrangements

6.1.7.7. Delivery structure example

See [Appendix 1: Case studies: Lee Valley Heat Network \(energetik\) & Royal Albert Docks.](#)

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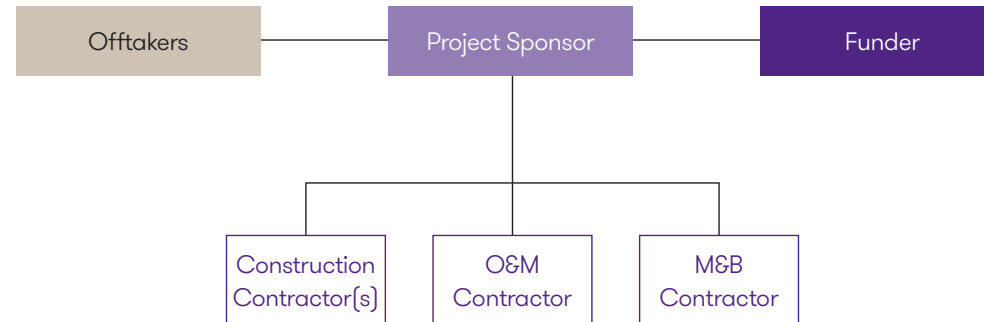
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6.1.8. Delivery structure 5 – In-house Delivery

The Project Sponsor develops the heat network without establishing a stand-alone delivery vehicle.

The Project Sponsor is both the asset owner and operator.

6.1.8.1. Diagram



Note: The black lines represent a contractual relationship. The only exception to this is in relation to funding provided through internal reserves, for which a contract may not be required. The equivalent diagram has also been provided from a cashflows perspective in [Appendix 3](#).

6.1.8.3. Funding

Under this delivery structure, the Project Sponsor is responsible for funding/securing funding for the project. The Project Sponsor may wish to explore:

(new or existing) internal reserves

Lease funding, and/or

Grant funding

See [Section 6.3 Funding structure](#) for further detail.

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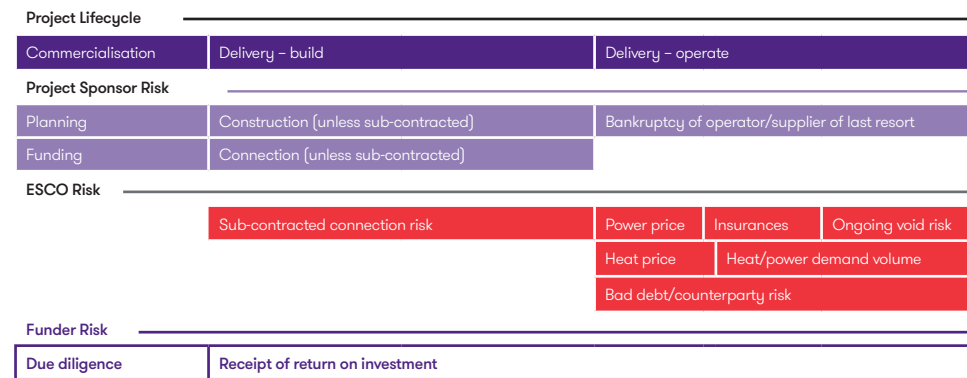
[Appendix 3: Cashflows for each delivery structure](#)

6.1.8.3. Control versus risk and reward

The Project Sponsor will have control over the delivery, including any contractors, future expansion of the network and heat and power tariffs.

In this way, the Project Sponsor bears the risk of funding, constructing and operating the project. It will also benefit from the direct financial rewards from the success of the project.

The diagram at [Section 6.2.1 Managing risks](#) sets out the risks which need to be managed within a heat network project. The diagram opposite sets out the risks retained by the Project Sponsor under an In-house Delivery structure. Note that the Project Sponsor is acting as an ESCo in this case. It is assumed that the ‘ESCo contractor risks’ have been pushed down to the Project Sponsor’s contractors.



See [Section 6.2.1 Managing risk](#), for further description of and methods of managing these risks.

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6.1.8.4. Exit strategy

Exit strategies for In-house Delivery are limited as there is no separate entity (for which, ESCo) to sell shares in or refinance. Assets could be sold to a 3rd party (subject to novation of any operating contracts). Alternatively, an ESCo could be set up retrospectively and the trade transferred into this ESCo to enable divestment of the project.

6.1.8.5. Advantages and disadvantages

The following table sets out some of the advantages and disadvantages of the In-house Delivery structure.

Advantages	<ul style="list-style-type: none"> • Project Sponsor retains all strategic control over the project (for example, future expansion, setting heat and power tariffs) • Costs of establishing and running an ESCo are avoided
Disadvantages	<ul style="list-style-type: none"> • Project Sponsor is exposed to all project risks (if not passed down to contractors), including limited commercial protection from the liability of the project if it fails • Responsibility for funding/securing funding lies with the Project Sponsor • Drawing on external expertise and skills is limited to contracting arrangements • Opportunities to exit the project are limited • May result in irrecoverable VAT – see Section 9.2.3.

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6.1.8.6. Delivery structure example

Bunhill

Islington

The London Borough of Islington has delivered the Bunhill Heat and Power network over a period of eight years.

The council has retained a strong level of control at each point in the delivery and operation of the scheme in order to ensure their interests are central during each decision making stage.

The Local Authority retains a team of dedicated inhouse specialists to manage the operation and expansion of the scheme, which is contracted to various engineering consultants, construction contractors and maintenance providers.

Retaining a controlling interest in the scheme was central to the council’s strategy, since the bulk of the heat demand on the scheme comes from public sector building stock. Controlling prices to alleviate fuel poverty in social housing was also a key driver for the Local Authority to deliver the scheme.

The project is currently in stage of expansion as Islington seek to connect more customers and grow the low carbon heat network in the area.

Source: DPD Guidance on Strategic and Commercial Case
www.islington.gov.uk/heatnetwork



This is an example of an In-house Delivery Structure as:

- the local authority (Project Sponsor) has developed the heat network without establishing a stand-alone delivery vehicle
- the local authority has retained all strategic control over the project
- the local authority has sub contracted construction and O&M services





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6.1.9. Delivery structure variant – disaggregation

As a heat network generally includes multiple functions, the delivery structure can be ‘disaggregated’ into constituent parts to ring fence risks into different entities.

Two of the most commonly referred to disaggregated models include:

- Infrastructure-operation split (where the assets and the operations of the heat network are held in separate corporate entities)
- Unbundled structure (where the generation, distribution and/or supply elements of the heat network are held in separate corporate entities)

By splitting the project into separate corporate entities, the project may be able to attract investors with different risk appetites and investment requirements. For example, asset-based entities with long term predictable revenues may be seen as low risk, low reward and therefore attract infrastructure funds.

By contrast, a supply-based company with variable revenues may be seen as high risk and higher potential reward (e.g. by connecting more offtakers, or making operational efficiencies) and therefore may attract equity investors.

Another consideration is the length of investment. For example, generation plant (e.g. a CHP) may be a 15 year investment, whereas the distribution network could be a 40+ year investment. This investment horizon will attract different types of funders.

These structures could be implemented with the delivery structures as described in the table below.

ID	Delivery structure	Disaggregated structure
1	3rd Party ESCo	• Compatible but less likely to be used where the project is effectively outsourced to the existing ESCo market.
2	Concession	• Compatible but less likely to be used where the project is effectively outsourced to the existing ESCo market.
3	Joint Venture ESCo	• Compatible
4	Project Sponsor ESCo	• Compatible
5	In-house Delivery	• Not applicable as no separate corporate entity exists

The costs of establishing and operating multiple corporate entities will need to be considered against the benefits of this structure.



6.1.10. Delivery structure variant – alliancing

Alliancing is a method of procuring, and sometimes managing, major capital assets. Under an alliance contract, a government body contractually works collaboratively with private sector parties to deliver a project. Alliance contracting requires the parties to work together in good faith, act with integrity and make best-for-project decisions. The alliance participants work as an integrated, collaborative team to deal with key project delivery matters.

In alliance contracting risks and rewards are generally shared. These contracts are often characterised by equal decision making and jointly managed risks. However, financial exposure lies mostly with the government body. Therefore, this type of arrangement is typically suitable for projects that have risks that cannot be adequately defined/measured or a collective approach is considered to provide a better outcome than contracted allocation of risk.

Alliance contracting has been used for infrastructure projects internationally, most notably in Australia. However, we are not aware of any heat network projects being developed under an alliance contract in the UK.

6.1.11. Delivery structure variant – strategic partnership

A strategic partnership is a long term commitment between two parties to collaborate, usually on an exclusive basis, according to the terms of a ‘partnering agreement’. A partnering agreement could be entered into by two parties that wish to pursue individual heat network projects together. The parties to the partnership could be public sector, private sector or a combination.

The partnering agreement sets out the terms of relationship including the criteria for identifying specific projects for development. It acts as an overarching framework. Each of the individual heat networks pursued under this agreement can have a different delivery structure.

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Nine Elms Vauxhall Partnership

Local Authority not in a funding role

The Nine Elms Battersea area is included as one of the 38 opportunity areas in the London Plan. It is therefore one of many being redeveloped.

The extensive redevelopment is being steered by the Nine Elms Vauxhall Partnership, which rather than following a development corporation model, is an informal partnership.

All new developments have planning requirements to install Combined Heat and Power within major sites, and to connect to a district heating network, or to provide a point of connection at their boundary.

This is an example of where an opportunity area has transferred responsibility for the funding to an ESCo and the various developers. The developers will pay the ESCo connection charges which will partially fund the network, while future revenues by the ESCo will fund the remainder.

This was achieved through facilitating a collaborative joint procurement exercise.

At the time of writing, detailed commercial terms are being agreed with each developer and the ESCo, prior to the construction of the first phase.

Source: DPD Guidance on Strategic and Commercial Case



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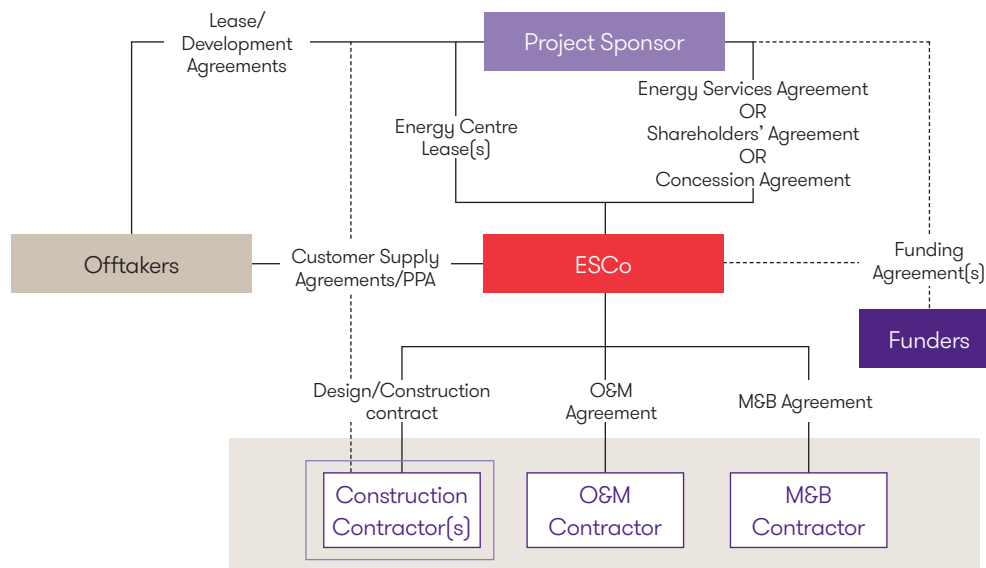


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6.2. Contractual structure

The contractual structure establishes how project risks are allocated (and payments are made) within contracts. Understanding the risks they are exposed to will be a key area of consideration for Project Sponsors, funders and contractors involved in a heat network project. The diagram opposite sets out the broad arrangements for a heat network, however, this may vary significantly from project to project and under the different delivery structures. Notably, for In-house Delivery, there would be no ESCo sitting between the Project Sponsor and the contractors.

Depending on the delivery structure used, the Project Sponsor will either enter into an energy services agreement, Shareholders' Agreement or concession agreement with an ESCo. If the Project Sponsor owns the energy centre assets then a lease may need to be entered into between the Project Sponsor and the ESCo. If the Project Sponsor has heat loads being constructed that will connect to the heat network then there will be a development agreement between the developers and the Project Sponsor.



The ESCo will enter into contracts with contractors to set up and run the network. Typically these include:

- Construction contractor(s) – to set out the detailed requirements for the design, installation and commissioning works of the project (see Section 6.2.2 Construction contracting).
- Operation and maintenance contractor (O&M) – to set out the requirements for the operation of the heat network and ongoing maintenance.
- Metering and billing (M&B) contractor – to set out requirements for metering and billing end users.

The ESCo will enter into Customer Heat (and power) Supply Agreements or Power Purchase Agreements (PPAs) with offtakers, agreeing heat and electricity prices.

Finally, funding agreements will also need to be in place between the ESCo and the relevant funders, or between the Project Sponsor and the funders.

Further details on contractual considerations can be found in Section 1.9 of the DPD Guidance.



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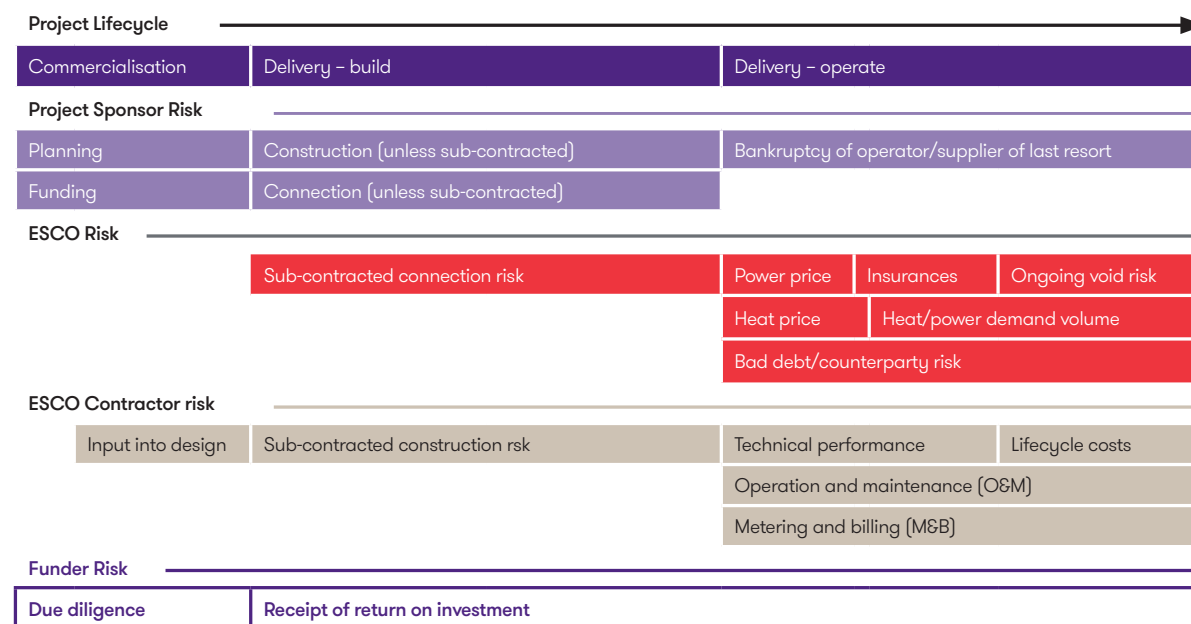
6.2.1. Managing risk

The higher the level of risk an entity is exposed to, the higher the reward they will expect, which will be reflected in their required return/reward.

As a general rule, it is most efficient for a specific risk to sit with the entity best placed to manage that risk. This can help to reduce risk premiums within that entity's required return/reward, reducing the overall cost of the project, and importantly, reducing the ultimate cost of heat to consumers.

The typical risks faced by the project will change during the project's lifecycle, as illustrated in the diagram below. This diagram focuses on the commercialisation and delivery phases. These risks have been mapped against key players to illustrate which risks might be retained by the Project Sponsor, which risks could be managed by the project ESCo (assuming the project is not delivered In-house), which risks can be transferred to the ESCo's contractors and which risks lie with the funder.

To support with effective management of risks, projects should maintain a risk register and actively seek to mitigate risks throughout the project's lifecycle.





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6.2.1.1. Project Sponsor risk

The table sets out the risks for the Project Sponsor over the project lifecycle and potential mitigation strategies for managing these risks.

Risk	Description	Mitigation strategy
Commercialisation		
Planning	Heat network design fails to meet required planning conditions.	Use of appropriately qualified and experienced design team, with appropriate checks and cover.
Funding	The project fails to attract funding.	Engagement with internal and external funding sources in line with Section 3 Timeline for engaging with internal/external funding sources.
Delivery – build		
Construction	Delays or cost overruns during construction of the energy centre/network impact projected costs and revenues.	Use of appropriately qualified and experienced design team, with appropriate checks and cover.
Connection/ demand build out	Delays in, or non-occurrence of, construction/occupation of the anticipated demand reduce potential heat volume.	Develop operational agreements such that they come into force based on demand build out. Delay risk can be shifted to heat demand developer where this is a separate body from the Project Sponsor. For example, this could be through an agreement with a two-way penalty clause if either the heat network developer doesn't deliver the pipework or if the property developer doesn't deliver the properties to connect to.
Delivery – operate		
Bankruptcy of operator/ supplier of last resort	The operator becomes bankrupt requiring the Project Sponsor to step in as the supplier of last resort.	Rigorous selection criteria for operator and effective monitoring of ongoing financial health of operator.

6.2.1.2. ESCo risk

The table sets out the risks for the ESCo over the project lifecycle and potential mitigation strategies for managing these risks.

Risk	Description	Mitigation strategy
Commercialisation		
N/A		
Delivery – build		
Sub-contracted connection risk	An element of the connection risk has been sub-contracted to the ESCo.	Develop operational agreements such that they come into force based on demand build out.
Delivery – operate		
Power price	Value of exported power is lower than expected or cost of imported power is higher than expected.	Consider length of power import/supply agreements in line with expectations of the market. Consider bulk supply agreements with an element of fixed charge/‘take or pay’ arrangements (see above).

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6.2.1.3. ESCo contractor risk

The table sets out the risks for the ESCo contractor(s) over the project lifecycle and potential mitigation strategies for managing these risks.

Risk	Description	Mitigation strategy
Commercialisation		
Input into design	Cost of input into design if project does not proceed.	Perform project viability assessment prior to engaging in design work.
	Liability for poor design.	Employ experienced and qualified design team.
Delivery – build		
Sub-contracted construction risk	An element of the construction risk has been sub-contracted to the construction contractor – see Section 6.2.2	Employ experienced and qualified construction team.
	Construction contracting.	Pass down liquidated damages to any sub-contractors.
Delivery – operate		
Technical Performance	Failure of equipment.	Pass risk to O&M contractor via O&M contract key performance indicator regime.
	Heat losses higher than expected.	Include rights to modify supply to mitigate return temperature impacts for bulk heat supply agreements (where ESCo has no control of secondary network).
	Return temperatures higher than expected, leading to inefficiency.	
Operation and maintenance (O&M)	O&M costs higher than expected.	Pass risk to O&M contractor via pricing mechanism.
Metering and billing (M&B)	Customer service standards lower than expected.	Inclusion of guaranteed service standards following industry best practice such as Heat Trust.
Lifecycle costs	Lifecycle costs higher than expected.	Pass risk to O&M contractor via pricing mechanism.

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6.2.1.4. Funder risk

The table sets out the risks for the funder(s) over the project lifecycle and potential mitigation strategies for managing these risks.

Risk	Description	Mitigation strategy
Commercialisation		
Due diligence	Cost of due diligence if project does not proceed.	Perform project viability assessment prior to commencing due diligence work.
Delivery – build		
Receipt of return on investment	Project fails to repay any construction funding.	Proper project due diligence and on-going monitoring of any covenants. Parent company guarantees of debt repayments. Note the parent company (in particular if public sector) will need to consider providing such a guarantee in light of the cost of other recourse finance available.
Delivery – operate		
Receipt of return on investment	Project fails to meet return on investment expectations. Default on loans.	Proper project due diligence and on-going monitoring of any covenants. Parent company guarantees of debt repayments. Note the parent company (in particular if public sector) will need to consider providing such a guarantee in light of the cost of other recourse finance available.

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6.2.2. Construction contracting

There are different contracting methods which can be used for the design and construction of a heat network, which are set out below. Construction contracting models aim to achieve procurement that integrates the supply chain, encourages innovation, and secures good working relationships between the Project Sponsor and contractor by managing the costs and risks of the design and construction process. Selecting a contracting method appropriate for the project will be dependent on the desire of the Project Sponsor/ESCO to flow down construction risk or retain control. Notably, the more risk pushed to contractors, the higher the risk premiums that will be charged.

6.2.2.1. General contracting

The design is completed fully before the tender process commences, providing the Project Sponsor with control over its quality, specification and cost. The Project Sponsor bears the risk of any unforeseen costs. The contractor has no responsibility for the design, although, depending on the contract specifics, some risk may be shared with the contractor.

6.2.2.2. Design and build (D&B)

The contractor becomes responsible for both the design and construction of the project, based on the Project Sponsor's pre-determined requirements. Risk is transferred to the contractor at a much earlier stage in the project, resulting in a higher level of cost certainty. If the Project Sponsor requires any changes during the works, these are controlled by the contractor and costs are likely to be borne by the Project Sponsor.

6.2.2.3. Engineering, procurement and construction (EPC)

The contractor will carry out the detailed engineering design of the project, procure all the equipment and necessary materials, and then construct to deliver a functioning facility or asset to their Project Sponsor. The Project Sponsor will likely set broad outcomes to be achieved but will have minimal involvement in design requirements. Normally the EPC contractor has to execute and deliver the project within an agreed timescale and budget or penalties will be due.

6.2.2.4. Design, build, operate and maintain (DBOM)

The DBOM approach combines the design and build (D&B) procurement with operation and maintenance (O&M). This approach allows the Project Sponsor to also gain certainty over operation and maintenance costs at an earlier stage in the project. The Project Sponsor will have less control over project changes and their impact on eventual operation and maintenance costs.

6.2.2.5. Partnering

A commitment by those involved in a project or outsourcing to work closely or cooperatively. A partnering 'charter' or 'code of conduct' forms the basis of a working agreement that is intended to shape a 'win-win' relationship between the parties.





6.2.2.6. Alliance contracting

Alliancing involves a formal contract in which the parties undertake to act in the best interests of the project, in contrast with partnering's more voluntary commitment. The commercial framework will include a pain/gain-share regime, with risks shared. Contractors can only increase profit by exceeding expected performance outcomes and requirements may be set for unanimous decision making to avoid risk of disputes.

6.2.2.7. Management procurement

The Project Sponsor's design team has responsibility for the design of the whole project, and the contractor is responsible for sub-contracting specific work and delivering the build. This approach increases speed of delivery by progressing design in parallel with construction. Design changes are possible, but only when relevant construction contracts have not started. The Project Sponsor does not have cost certainty until late in the process. The Project Sponsor retains control and responsibility for the design.

6.2.2.8. Construction management

The Project Sponsor's design team is responsible for the design of the project, with some overlap with the start of construction. The Project Sponsor's construction manager will be responsible for managing build through separate contracts. All of the build contracts are between the Project Sponsor and the trade contractors, not the construction manager, giving the Project Sponsor full responsibility to manage the build. The final cost of the project is not known until the end of the construction process.

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6.3. Funding structure

This section provides detail on the types of funding which may be available to a heat network project, the implications of these types of funding and the delivery structures to which they are most suited.

This section focuses on long term capital sources to cover the initial investment cost, rather than any short term funding for working capital requirements.

Where reference is made to return requirements gleaned through ‘engagement with the funding market’, although every effort has been made to speak to a wide cross-section of the market, these figures provided are purely indicative and may vary significantly between funders or over time. The entities engaged with are listed in [Appendix 2](#).

For more information on which TPIs are actively considering investment in the heat network sector, please go to: www.gov.uk/guidance/heat-networks-overview#investing-in-heat-networks

6.3.1. Project Sponsor internal reserves

Project Sponsor internal reserves are funds held by the Project Sponsor, which may be made up of (new or existing) corporate borrowing, accumulated profits and share capital. This is often referred to as corporate finance.

Both public sector and private sector entities may have access to internal reserves. Public sector reserves may be held under different accounts (e.g. Housing Revenue Account (HRA)), which may require specific approvals processes in order to be released for a heat network project.

Use of existing internal reserves reduces the resource requirements of seeking funding but it should also be considered in line with the wider spending requirements of the organisation.

New corporate borrowing would be lent on the basis of the Project Sponsor’s creditworthiness; the lender would not perform due diligence on the project. This would therefore not provide any external scrutiny of the project. An exception to this might be in the case of a project specific ‘soft’ loan – see [Section 6.3.1.3](#) Soft loan.

Obtaining funding for a project on the basis of the Project Sponsor’s creditworthiness can result in lower cost funding when compared to seeking funding directly into an ESCo. An example of this is the Lee Valley Heat Network (see [Appendix 1](#)), where Enfield Council borrowed from LEEF and EIB and on-lent this to its wholly owned ESCo.

Another example of a project funded from the Project Sponsor’s internal reserves is Royal Albert Docks (see [Appendix 1](#)) where funding was provided by ABP London into its wholly owned ESCo through a combination of debt and equity.

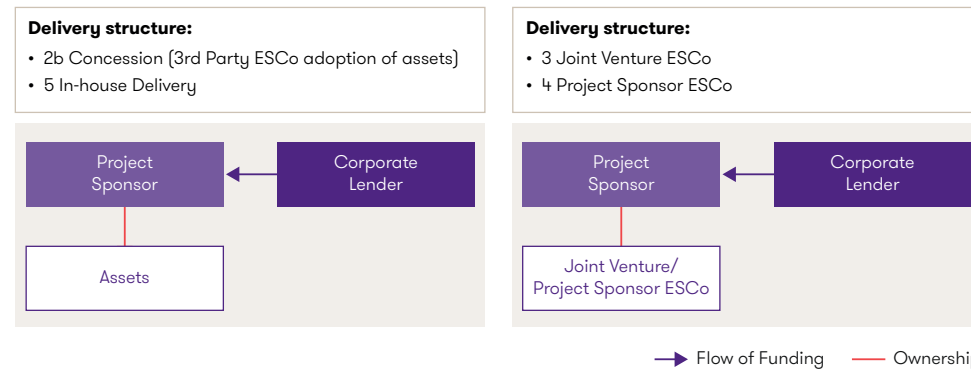




The following table shows the delivery structures into which Project Sponsor internal reserves may flow.

Delivery structure	Applicable?	Comment
1. 3rd Party ESCo	NO	3rd Party ESCo funds assets
2. Concession		
a. Assets funded by 3rd Party ESCo	NO	3rd Party ESCo funds assets
b. 3rd Party ESCo adoption of assets	YES	Direct spend within Project Sponsor
3. Joint Venture ESCo	YES	Extended to ESCo via debt or equity
4. Project Sponsor ESCo	YES	Extended to ESCo via debt or equity
5. In-house Delivery	YES	Direct spend within Project Sponsor

The following diagram shows the standard flow of funding which would be expected when Project Sponsor internal reserves are a funding source for the project. Depending on the delivery structure being used, these funds will either be spent directly on assets, or will be extended to an ESCo in the form of debt or equity. Note that a corporate lender would only be involved if new corporate borrowing is required.



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6.3.1.1. Prudential borrowing

Local Authorities have access to Prudential Borrowing from the Public Works Loan Board (PWLB), which is non-project specific and effectively becomes ‘internal reserves’ once obtained.

Interest and repayments to PWLB will be due regardless of the performance of the project and full recourse will be against the borrower.

This funding can be used in-house or on-lent to an ESCo. When on-lent to an ESCo, the difference between the interest rate of borrowing and the interest rate charged to the ESCo (the margin) will represent an income stream to the public sector. The interest rate charged to the ESCo may need to be at a commercial/arm’s length rate – see [Section 6.3.12](#) State aid considerations.

Fixed interest rates are based on gilt yields (therefore a cheap form of finance) depend on the duration of the loan requested. Variable interest rates are also available. Repayments can be made on an annuity, equal instalments of principal or maturity basis.

6.3.1.2. Corporate borrowing

Public and private sector entities have access to Corporate Borrowing from banks, which is non-project specific and effectively becomes ‘internal reserves’ once obtained. An organisation’s ‘relationship bank’ may be the first port of call for such funding.

Interest rates will be depend on the creditworthiness of the borrower and the duration of the loan requested. Interest and repayments to the lender will be due regardless of the performance of the project and full recourse will be against the borrower.

This funding can be used in-house or on-lent to an ESCo. As Corporate Borrowing is at commercial rates, there is less likely to be a margin arising from on-lending to an ESCo. However, where such a margin arises (e.g. to reflect risk of the project) and the on-lender is a public sector entity, State aid will need to be considered – see [Section 6.3.12](#) State aid considerations.

Although a public sector Project Sponsor has access to prudential borrowing, they may still wish to consider corporate borrowing due to the potential for more flexible/profiled draw down/repayment profiles (to fit project cashflows) and the potential to wrap interest into principal during construction. However, these benefits are likely to come at the price of higher fees/interest rates and charges on undrawn funds. The Project Sponsor should compare the effective overall cost of funding to decide which is most cost effective for the project. See also [Section 6.3.10](#) Matching cost of funding and revenues.

Project Sponsors should speak to their relationship bank to understand the terms and interest rates applicable to new corporate borrowing.

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6.3.1.3. Soft loan

Soft loans (at less than market rates) can come from a variety of sources, including central government (e.g. the Heat Network Investment Project (HNIP), the relevant Local Enterprise Partnership (LEP) or the European Structural and Investment Fund (ESIF), which includes the European Regional Development Fund (ERDF)).

If the soft loan is project specific, the loan provider may perform some level of due diligence on the project, albeit recourse in the case of default would typically be to the Project Sponsor and not the project itself.

Although the soft loan may be project specific, recourse in the case of default will be to the Project Sponsor rather than to the project. An example of this is the Lee Valley Heat Network (see Appendix 1), where Enfield Council borrowed from LEEF and EIB and on-lent this to its wholly owned ESCo. In the event of default, the lenders would seek recourse from Enfield Council.

Soft loans will give rise to State aid considerations (see Section 6.3.12) and Project Sponsors should work with the relevant funder to ensure the funding is State aid compliant.

Engagement with the funding market suggests that soft loans to the public sector may be available at an interest rate of 2-3%, which is low due to the credit strength of the public sector.

6.3.2. Debt funding

Debt funding (or a loan) is interest bearing and repayable. Debt must be repaid irrespective of project outcomes and default on loans will result in recourse against any security provided. Payments to debt are made before those to equity (i.e. it is more senior) so the cost of debt funding is likely to be lower than for equity as the lender has more certainty of repayment.

Default on a loan

Default is failure to meet the legal obligations (or conditions) of a loan, which could be in relation to:

- late, partial or total lack of payment of interest and/or principal
- violation of a covenant (e.g. meeting certain financial ratios, such as Debt Service Cover Ratio (DSCR))

When default occurs, the lender may have some recourse in the form of security provided (e.g. assets, parent company guarantee) to fulfil the legal obligations of the loan

Each loan agreement will vary in terms of what constitutes default and what level of security is provided to the lender

Both public sector and private sector entities (including ESCos) have access to debt funding. This section deals with debt funding from TPIs into an ESCo; debt funding extended to a Project Sponsor which is on-lent to an ESCo is dealt with in Section 6.3.1 Project Sponsor internal reserves.

Debt Funding can be arranged such that it is drawn down in line with the capital expenditure requirements of the project, including potential to roll up interest until the project is revenues generating. The creditworthiness of the ESCo and/or the security provided by its parent(s) will impact the cost of finance and the term offered.





Engagement with the funding market suggests that commercial debt funding into an ESCo is only likely to be achievable in the current market if:

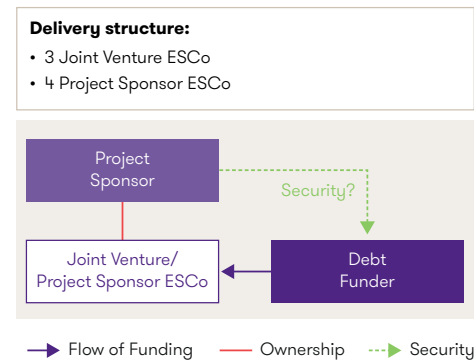
- a. there is a direct relationship/guarantees from the public sector in relation to revenues or debt service
- b. the project has a guaranteed revenue stream (e.g. 'take or pay' arrangement) with clear and strong counterparty strength
- c. the debt provider also has a controlling equity stake of the ESCo (so that the debt provider can protect their interests by having control of the project direction). Assuming the Project Sponsor retains an equity stake, this would represent a Joint Venture ESCo delivery structure (with debt provided by a shareholder) and the resulting debt would therefore have no recourse.

Where debt is provided by a shareholder, it may be classed as a shareholder loan – see Section 8.2.3 Debt: classification considerations debt versus equity.

The following table shows the delivery structures into which debt funding may flow.

Delivery structure	Applicable?	Comment
1. 3rd Party ESCo	NO	3rd Party ESCo funds assets
2. Concession		
a. Assets funded by 3rd Party ESCo	NO	3rd Party ESCo funds assets
b. 3rd Party ESCo adoption of assets	NO	No ESCo
3. Joint Venture ESCo	YES	From Joint venture Partner or TPI
4. Project Sponsor ESCo	YES	Although provider may require significant equity share, which would become a Joint Venture ESCo
5. In-house Delivery	NO	No ESCo

The following diagram shows the standard flow of funding which would be expected when debt funding into an ESCo is a funding source for the project. The Project Sponsor may provide some form of security to the debt funder, which may be through a parent company guarantee, first charge on specific project assets, or a charge on other assets (e.g. equity in other operating heat networks).



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6.3.2.1. Project finance (debt)

Project finance is the long-term financing of infrastructure projects based upon the projected cash flows of the project. Such debt is secured against the assets of the project, including any performance guarantees in place. In most cases these are non-recourse loans and so the liability of the shareholders is limited to their shareholdings. In some cases these may be limited recourse loans where certain of the shareholders' assets (as listed in the loan agreement) are provided as security.

If a heat network project fails and is unable to service the debt, the assets would be considered 'stranded'. This means that the assets have minimal recoverable value, which is especially true for assets underground. For this reason, debt funders may see minimal security in heat network assets.

Furthermore, unless a significant proportion of revenues in the project are underwritten by a creditworthy entity (such as the public sector), a debt funder may not extend funding on the basis of projected cash flows.

For these reasons set out above and the limited number of large transactions in the current market, heat networks may not attract project finance. However, if a project were to achieve project finance, this would be following significant project due diligence which would provide comfort over the project viability.

Engagement with the funding market suggested that at this point in time it is unlikely that non-recourse project finance is achievable for heat networks. However, as the market matures, it is anticipated that such funding will come forward.

6.3.2.2. Secured debt

Banks may be willing to lend directly into an ESCo if there is sufficient security provided by the shareholders. This security could be in the form of guarantees to meet payment shortfalls from the ESCo or in the form of assets which can be liquidated to repay the debt. In substance, this is more like corporate borrowing – see [Section 6.3.1.2 Corporate borrowing](#).

Engagement with the funding market suggests that where sufficient guarantees from the public sector are obtained, commercial debt into an ESCo may be available at around 5% interest rate.

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6.3.2.3. Crowdfunding debt finance

Crowdfunding is a means of raising capital from a large number of individuals who have an interest in the project, e.g. for social, environmental or ‘local’ reasons. It is therefore best suited to heat network projects which have a direct impact on individuals or is a Community Company.

The fund-raise is often performed through an entity providing a ‘crowdfunding platform’ service. Such funds can either be invested into a project through debt or equity.

Crowdfunding platforms usually perform due diligence on the project which could provide comfort over the project viability.

Engagement with the funding market suggests that crowdfunding in the form of debt may be available at an interest rate of between 4-6%.

6.3.2.4. Securitisation of subsidies

Securitisation of subsidies is a loan which will be repaid from the receipt of Government Operating Subsidies – see [Section 5.1.6](#) Government operating subsidies. Funders may view such revenues as highly reliable and therefore extend debt on this basis.

Engagement with the funding market suggests that where a heat network project includes government operating subsidies, debt of an equivalent value may be available, based on the reliability of payments from central government under the relevant subsidy regime.

6.3.2.5. Soft loan

See [Section 6.3.1.3](#) Soft loans. Project specific soft loans may also be lent directly to the ESCo. Even if lent directly to the ESCo, recourse in the case of default will be to the Project Sponsor rather than to the project. For example HNIP funding can be lent to either the Project Sponsor or the ESCo.

Engagement with the funding market suggests that soft loans to ESCos may be available at an interest rate of around 2-5% in the current market.

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6.3.3. Equity funding

Equity is funding extended in exchange for share capital of a company. Returns on equity are paid out to shareholders in the form of dividends. Dividends are paid out of any cumulative profits after corporation tax. As there is uncertainty around these payments, equity investors generally require a higher return than debt investors.

This section deals with equity funding from TPIs into an ESCo; equity funding extended by a Project Sponsor into an ESCo is dealt with in [Section 6.3.1](#) Project Sponsor internal reserves.

External equity funding will be subject to a due diligence process which can give all parties comfort that the project is investible.

Shareholders control/influence decision making in line with the shareholder agreement. The amount of control corresponds to the proportion of shares held by each shareholder. For example where the Project Sponsor is not the majority shareholder their control will be diluted. Some equity investors will require a majority share of the ESCo in order to obtain control of the project and therefore influence their returns.

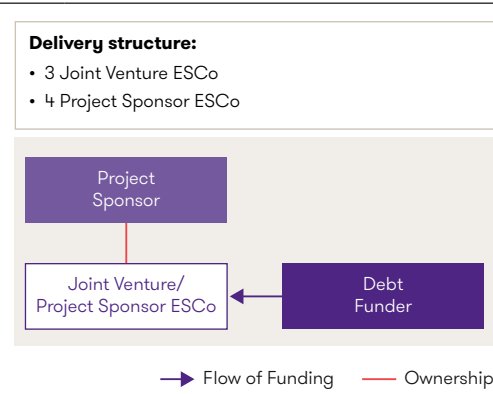
Equity investor returns are dependent on the success of the project and therefore some equity investors (see to the right) may support through being active participants in the management of the company and sharing their expertise.

Engagement with the funding market suggests that commercial equity returns (e.g. to infrastructure investment funds, where returns are the primary driver for investment) are required to be ≥10%, whereas equity from ‘sympathetic’ providers (such as crowdfunding or those with objectives to support low carbon energy projects) may be at the 6% level.

The following table shows the delivery structures into which equity funding may flow.

Delivery structure	Applicable?	Comment
1. 3rd Party ESCo	NO	3rd Party ESCo funds assets
2. Concession		
a. Assets funded by 3rd Party ESCo	NO	3rd Party ESCo funds assets
b. 3rd Party ESCo adoption of assets	NO	No ESCo
3. Joint Venture ESCo	YES	From Joint venture Partner or TPI
4. Project Sponsor ESCo	YES	Although a significant share would make this a Joint Venture ESCo
5. In-house Delivery	NO	No ESCo

The following diagram shows the standard flow of funding which would be expected when equity funding into an ESCo is a funding source for the project.





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6.3.3.1. Private equity

Private Equity funds exist which are set up to invest directly in infrastructure projects. These funds seek a return for their investors based on the dividend stream anticipated and the ultimate sales value of the shareholding. Some funds specifically target renewable or low carbon energy investments in line with the objectives of their investors.

6.3.3.2. Tax efficient private equity

Venture Capital Trusts (VCT), Enterprise Investment Scheme (EIS), Social Investment Tax Relief (SITR) and the Seed Enterprise Investment Scheme (SEIS) aim to help unquoted companies attract investment by offering investors a range of tax incentives. However, companies whose activities involve the generation of any form of energy (including the generation or export of electricity, the generation of heat and the production of gas or other fuel) are not eligible for this type of investment from 6 April 2016. (See www.gov.uk/government/publications/income-tax-exclusion-of-energy-generation-from-venture-capital-schemes/income-tax-exclusion-of-energy-generation-from-venture-capital-schemes)

Engagement with the funding market suggests that due to these eligibility restrictions, tax efficient private equity is not currently considered to be an accessible source of funding for heat networks. These investors suggested that even a disaggregated model (see Section 6.1.9) unbundling generation from distribution/supply may result in a form of lease payment between the corporate entities and ‘leasing activities’ are not a qualifying trade for this tax incentive⁵.

6.3.3.3. Crowdfunding (equity)

See Section 6.3.2.3 Crowdfunding. Crowdfunding can also be extended to a project in the form of equity.

Engagement with the funding market suggests that crowdfunding may be available in the form of equity if a return of between 6-7% is achievable.

⁵ www.gov.uk/guidance/venture-capital-schemes-raise-money-by-offering-tax-reliefs-to-investors#trades





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6.3.4. Lease funding

A finance lease is a method of funding new assets but rather than paying for them upfront, payment is made in regular instalments to the lessor over a period (often linked to the useful economic life of the asset) including a finance charge. A finance lease can be obtained from either the asset retailer or a bank. The lessor is usually the legal owner of the asset for the duration of the lease, whilst the lessee bears the risks and rewards of ownership. At the end of the lease, legal ownership usually reverts to the lessee.

Both public sector and private sector entities (including ESCos) have access to lease funding.

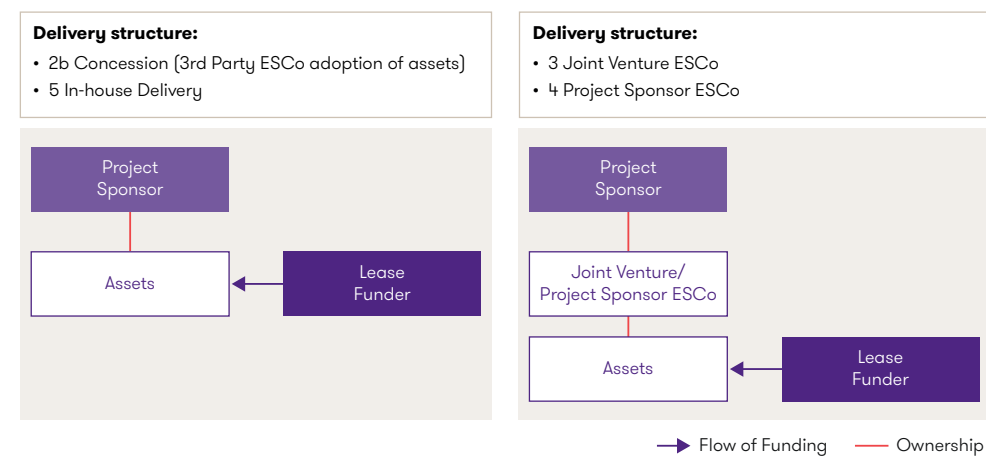
Lease funding is often accessible as it is secured against the relevant asset with less reliance on the creditworthiness of the counterparty. Lease funding is similar to debt in that repayments must be made irrespective of project outcomes and default on repayment will result in recourse against security provided (i.e. the relevant asset).

Engagement with the funding market suggests that lease funding may be available at a finance charge of 4-8%. Finance lease providers tended to prefer to fund assets which can be removed, reclaimed and their value recovered elsewhere (e.g. generating assets).

The following table shows the delivery structures into which equity funding may flow.

Delivery structure	Applicable?	Comment
1. 3rd Party ESCo	NO	3rd Party ESCo funds assets
2. Concession		
a. Assets funded by 3rd Party ESCo	NO	3rd Party ESCo funds assets
b. 3rd Party ESCo adoption of assets	YES	Lease funding of assets
3. Joint Venture ESCo	YES	Lease funding of assets
4. Project Sponsor ESCo	YES	Lease funding of assets
5. In-house Delivery	YES	Lease funding of assets

The following diagram shows the standard flow of funding which would be expected when lease funding is a funding source for the project. Depending on the delivery structure used, there may or may not be an ESCo sitting between the Project Sponsor and the relevant assets.





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6.3.5. 3rd Party ESCo funding

ESCo funding is a method of outsourcing the funding (and other services) of a heat network to a 3rd party. In this way the Project Sponsor does not have control or risk in relation to the way the project is funded.

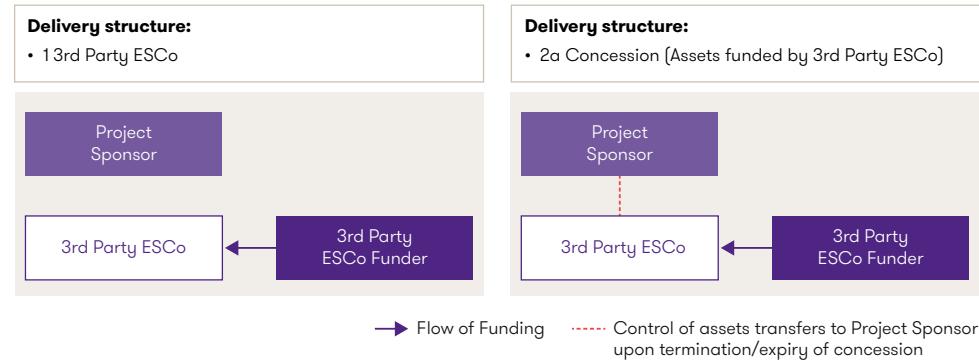
Under a Concession, where the 3rd Party ESCo is either funding the assets up front (Assets funded by ESCo) or where the 3rd Party ESCo is paying to adopt the assets (3rd Party ESCo adoption of assets), there may still be a difference between the cash outflows from the 3rd Party ESCo and the cost of the assets. In this case, the Project Sponsor will need to meet the residual funding requirement.

The following table shows the delivery structures into which 3rd Party ESCo funding may flow.

Delivery structure	Applicable?	Comment
1. 3rd Party ESCo	YES	3rd Party ESCo funds assets (which may be through e.g. internal reserves, debt, equity, lease or grant funding)
2. Concession		
a. Assets funded by 3rd Party ESCo	YES	3rd Party ESCo funds assets (which may be through e.g. internal reserves, debt, equity, lease or grant funding)
b. 3rd Party ESCo adoption of assets	NO	Project Sponsor initially funds assets
3. Joint Venture ESCo	YES	If Joint Venture Partner is a 3rd Party ESCo
4. Project Sponsor ESCo	NO	No involvement from 3rd Party ESCo
5. In-house Delivery	NO	No involvement from 3rd Party ESCo



The following diagram shows the standard flow of funding which would be expected when 3rd Party ESCo funding is a funding source for the project. Note that there is no direct ownership relationship between the Project Sponsor and the 3rd Party ESCo. However, under the Concession delivery structure, the assets will be owned by the Project Sponsor and accounting treatments should be in line with [Section 8.2.8](#) Service Concession Arrangements.



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6.3.6. Grant funding

Grant funding is non-interest bearing and non-repayable. It is usually extended by a government body to support the development of projects meeting certain social or environmental objectives.

Both public sector and private sector entities (including ESCos) have access to different 'pots' of grant funding. Grants can come from a variety of sources, including central government (e.g. Heat Network Investment Project (HNIP), the relevant Local Enterprise Partnership (LEP) or the European Structural and Investment Fund (ESIF), which includes the European Regional Development Fund (ERDF)).

Being non-interest bearing and non-repayable, grant funding has a significant impact on the overall cost of funding a project, however, this benefit should be considered against the 'cost' of grant funding conditions/restrictions and reporting requirements.

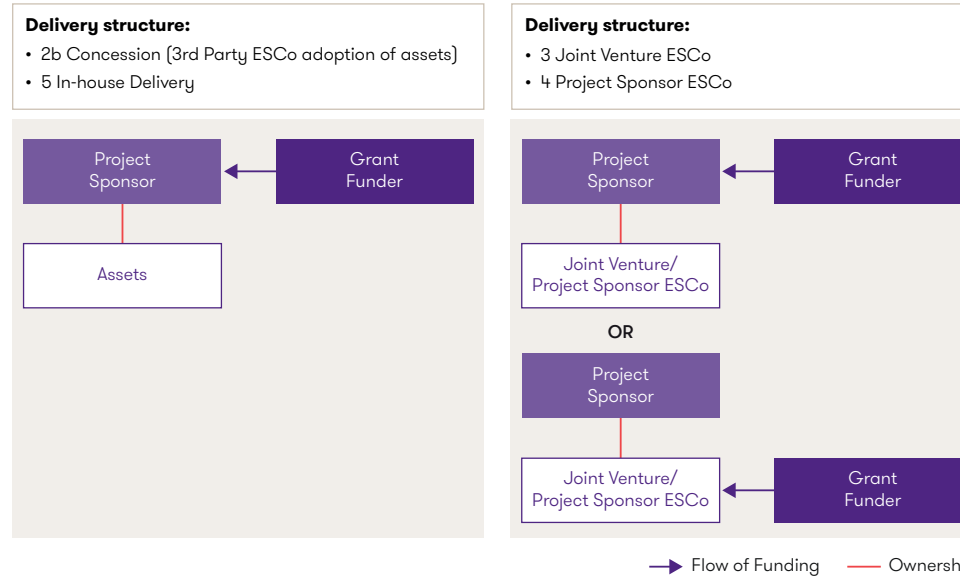
The following table shows the delivery structures into which grant funding may flow.

Delivery structure	Applicable?	Comment
1. 3rd Party ESCo	NO	3rd Party ESCo funds assets
2. Concession		
a. Assets funded by 3rd Party ESCo	NO	3rd Party ESCo funds assets
b. 3rd Party ESCo adoption of assets	YES	Subject to conditions of grant
3. Joint Venture ESCo	YES	Subject to conditions of grant
4. Project Sponsor ESCo	YES	Subject to conditions of grant
5. In-house Delivery	YES	Subject to conditions of grant





The following diagram shows the standard flow of funding which would be expected when grant funding is a funding source for the project. Depending on the terms of the grant funding, the funds may flow to the Project Sponsor or directly to an ESCo.



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6.3.7. Factors/project characteristics impacting the cost of funding

As a general principle, the lower the risk perceived by the funder, the lower the cost of funding is likely to be. The following factors/project characteristics are likely to reduce the perceived risk and therefore reduce the cost of funding from TPIs:

- a high proportion of (long term) guaranteed revenues from a creditworthy entity
- parent company guarantees from a creditworthy entity
- strong collateral in the event of default (in the case of recourse/limited recourse debt)
- fixed price contracts (e.g. D&B, O&M) with performance guarantees
- index-linked revenues
- a defined commercial structure
- appropriate risk distribution
- access to established secondary markets
- compliance with market standards – Code of Practice (CP1)/Heat Trust
- tried and tested technology
- scale of project/opportunity to expand/multiple project potential warrants investment in due diligence
- other funding already secured suggesting project viability
- project readiness (e.g. little negotiation required)
- funder priorities shared by the Project Sponsor (e.g. securing revenue certainty)





6.3.8. Information memorandum

When initially engaging with TPIs, a higher level of interest is likely to be obtained if a robust information memorandum is provided for the funder to review.

An information memorandum sets out key information and project highlights, which should include as a minimum:

- size of project (in heat demand and capital expenditure terms)
- key capital expenditure items
- location
- key counterparties (highlighting secured contracts)
- any guaranteed demand
- technology employed
- technology providers and guarantees offered
- readiness of project to build (e.g. planning permission, legal/environmental permits)
- key outputs of financial modelling showing project viability

6.3.9. Due diligence

TPIs will want to satisfy themselves that the project is financially viable and is likely to be able to provide returns in line with their expectations. The following areas will be a key focus for this due diligence:

6.3.9.1. Financial/commercial due diligence

- revenue streams (including energy tariff structure and indexation, duration of demand, proportion of demand guaranteed)
- alignment to standards (e.g. Heat Trust)
- taxation
- accounting treatment
- sources of other funding (including covenants and state aid implications)
- credit checks on counterparties
- review of the financial model for: assumptions made, integrity of the calculations and sensitivities on the project assumptions to develop as a minimum a base case, down side and upside scenarios. Typically an independent audit of the financial model would be required by TPIs.

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6.3.9.2. Technical due diligence

- appropriateness of the design and specification
- alignment to standards (e.g. CP1)
- capital costs
- operating costs
- reliability of heat/fuel source
- performance guarantees
- timeline deliverability

6.3.9.3. Legal due diligence

- review of heads of terms/contracts
- land rights and leases

6.3.9.4. Other due diligence

- planning application
- insurance
- review of regulatory environment and foreseeable changes
- review of risk register

Where external due diligence is taking place on the project, it is important to establish which party will bear the cost of this in both the case when the project does or doesn't ultimately go ahead.

6.3.10. Matching cost of funding and revenues

When interest on debt or asset finance is due prior to the project generating revenues streams (e.g. during construction), a mismatch between outgoing and income cashflows arises, which may reduce the overall return on investment and be unsustainable for the project. To avoid/reduce the impact of this mismatch:

- agree drawdowns in line with capital spend, to avoid holding cash not invested
- agree revolving facility debt which is drawn down as required and repaid as cash is available (up to agreed limits). Commitment fees will be payable on undrawn amounts to recognise the bank's commitment; however, they would be expected to be significantly lower than the cost of interest on loan principal drawn down
- roll-up interest during the construction period such that it adds to the balance of the loan rather than requiring payment
- invest free cash in short term investment to match the period of availability
- use short term debt (e.g. overdraft) to meet short term funding requirements

6.3.11. Refinancing post construction

The construction period is generally considered to be the highest risk phase of the project and therefore the cost of funding during this phase (or including this phase) is likely to be high. Once all planning risks are resolved, assets have been commissioned and offtake contracts are in place, a wider range of funders may become interested in the project. This may present an opportunity to refinance the project to a lower cost of finance and allow existing investors to release cash or indeed exit the project.

If refinancing is a desirable option, it would be wise to set up the project strategy to enable refinancing, e.g. through use of an ESCo to ring-fence re-financeable operations or use of loans from shareholders to maintain flexibility.

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6.3.12. State aid considerations

State aid can occur when public resources are used to provide an entity with a benefit that is not available on the ‘open market’, where such benefit has the potential to provide that entity with a competitive advantage and distort competition. Whether that State aid is ‘unlawful’ will need to be considered by the Project Sponsor, and may have the impact of limiting public resources into a project.

In relation to sources of funding, the following constitute State aid:

- grant funding from the public sector
- soft loan from the public sector – the State aid is the difference between the interests charged to the ESCo by the public sector compared to that which would be charged using a commercial/arm’s length rate

Article 46 of the General Block Exemption Regulation (GBER) permits investment aid to be given for energy efficient district heating and cooling projects. One way in which an element of State aid may therefore be ‘permissible/allowable’ is under this Article 46.

For a heat network, Permissible State aid under Article 46 is considered and calculated in two parts:

1. Production Plant – the eligible costs for the production plant shall be the extra costs needed for the construction, expansion and refurbishment of one or more generation units to operate as an energy efficient district heating and cooling system compared to a conventional production plant. The ‘aid intensity’ for the production plant shall not exceed 45% of the eligible costs. ‘Aid intensity’ means the aid amount expressed as a percentage of the eligible costs. In accordance with Article 107 (3)(c), the aid intensity for the production plant may be increased by 5% for investments located in assisted areas.
2. Distribution network – the eligible costs for the distribution network shall be the investment costs. The aid amount for the distribution network shall not exceed the difference between the eligible costs and the network operating profit (discounted). The operating profit shall be deducted from the eligible costs ex ante or through a claw-back mechanism.

For examples of using this methodology, see the HNIP pilot applicant guidance: www.salixfinance.co.uk/sites/default/files/hnip_pilot_full_applicant_guidance_2.0.pdf

See also DPD Guidance on Powers, Public Procurement and State aid.

6.3.13. Specific funding sources

Section 2b and 2c of Part 3 of the Guidance on Economic and Financial Case within the DPD Guidance sets out potential sources of funding for a heat network, including grants and development costs support.

Since this guidance was published the Heat Network Investment Project (HNIP) has been launched. HNIP is a Government Major Project, which will invest £320 million of capital funding in heat network projects through grants and loans. The HNIP pilot allocated £24 million of funding in March 2017 to nine local authority projects. The application process is set to open in Autumn/Winter 2018. The scheme will be open to all applicant types – public, private and third sector, except central Government Departments. Projects must demonstrate that a funding gap exists. For further detail on HNIP, see: assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/699303/HNIP_Scheme_Overview.pdf





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Project Sponsors and funders should be aware that business rates can be a significant element of the operating costs of a heat network. It is an area that may be subject to change and is currently undergoing consultation, which should be monitored. Legal advice should be taken for calculation of business rates for specific projects.

Business rates are charged on most non-domestic properties, like shops, offices, warehouses and factories. They are collected by local authorities. General guidance can be found at www.gov.uk.

The calculation methods discussed here build upon the Business Rates section of the DPD guidance.

7.1. Methods of calculation

Business rates are generally determined by multiplying the rateable value by the multiplier expressed in pence per pound of rateable value – effectively a percentage of the rateable value. For 2018-19, in England the multiplier is 49.3p (49.3%) and Wales 51.4p (51.4%).

The main issues in relation to business rates for district heating networks relate to the calculation of the rateable value. The issues are:

1. What method should be used to calculate the rateable value?
2. Which assets are rateable (contractor's method) or costs/income (receipts and expenditure method) should be used to calculate the rateable value?

There are two potential approaches to calculating the rateable value:

1. Contractor's method
2. Receipts and expenditure method.

Rateable value is normally re-assessed every five years.

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7.1.1. Contractor's method

The approved method of valuation of heat network assets is the Contractor's Basis of Valuation as this is the assumed approach under Valuation Office Agency guidance (Rating Manual, Volume 4, Section 7). In summary, the method involves calculating the adjusted replacement cost (Effective Capital Value) of the rateable assets, which may be the initial construction cost index-linked to the date of valuation, and adjusting for defects or obsolescence.

For assets to be separately rateable they must comprise a 'hereditament', a legal term which includes land, buildings and plant and machinery. The first issue to resolve, therefore, is which heat network assets comprise the hereditament.

District heating systems limited to serving a dwelling or block of flats are not rateable separately from the building (Valuation Office Rating Manual: Section 340, District Heating Undertakings). The boiler house and plant and equipment do not need to be inside the building for this rule to apply but must be wholly contained within the curtilage of the building (e.g. could be in the garden).

For the same reason, secondary networks and heat exchangers that connect dwellings to a district heating system external to the dwelling or block of flats are not rateable.

For other district heating systems, the rateable components include:

- energy centre building
- chimney or flue
- boilers and other generating plant (but see Section 7.2 Applicable reliefs)
- distribution pipework & pumps
- standby generators
- fuel and heat stores
- external works

Assessed rateable value cannot be adjusted to allow for grant funding of its construction.

The Effective Capital Value is calculated by:

1. Determine which assets are rateable (see above)
2. Take asset cost (e.g. initial construction cost index-linked to the date of valuation)

3. Adjust for defects/obsolescence and dilapidation (The Valuation Office suggests using an adjustment factor of 0.75 for old district heating systems.⁶)

To produce the rateable value, the Effective Capital Value is multiplied by the decapitalisation rate, which for heat networks is prescribed at 5%⁷. This decapitalisation rate could be interpreted as spreading the Effective Capital Value of the rateable assets over 20 years, i.e. assuming an average capital life of 20 years.

Example Calculation Methodology

The business rates payable on a district heating system with an Effective Capital Value of £10,000,000 is as follows:

Effective Capital Value x decapitalisation rate x multiplier = annual business rate liability

$$£10,000,000 \times 5\% \times 49.3\% = £246,500$$

This number may reduce as the assets age, when the adjustment factor can be applied.

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⁶ Rating Manual Section 6 part 3: valuation of all property classes, Section 340: district heating undertakings, www.gov.uk/guidance/rating-manual-section-6-part-3-valuation-of-all-property-classes/section-340-district-heating-undertakings
⁷ Rating Manual Section 6 part 3: valuation of all property classes, Section 340: district heating undertakings, www.gov.uk/guidance/rating-manual-section-6-part-3-valuation-of-all-property-classes/section-340-district-heating-undertakings



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7.1.2. Receipts and expenditure method

An alternative method of determining rateable value exists that is based on the receipts and expenditure method. This method is still used for pubs, electricity distribution networks, power plants, gas networks and telecommunication networks on the grounds that establishing a rateable value for their assets is not possible. The methodology as applied to distribution network operators effectively establishes the rateable value of the business by determining the 'landlord's share' of the residual income, after deducting running costs, depreciation and reasonable profit from revenues. It would appear to be open to heat networks to show the Valuations Office that the receipts and expenditure method is more appropriate.

7.2. Applicable reliefs

The following reliefs may be applicable for business rates:

- rateable value can be adjusted if the heat network incorporates specialised equipment whose value in use is less than its initial cost, because of cost over-runs or innovation.
- combined Heat and Power (CHP) engines or turbines rated as 'good quality' under the CHPQA scheme are exempt.
- 'The Valuation for Rating (Plant and Machinery)(England) Regulations 2000, 540, Class 1⁸, describes 'excepted plant and machinery' as being 'plant and machinery on a hereditament used or intended to be used for the generation, storage, transformation or transmission of power, where the power is mainly or exclusively for distribution for sale to consumers.' On this basis, power generating plant may be excluded or partially excluded from business rates calculations.
- small business relief from rates is limited to properties with a value less than £18,000 (£25,500 in London).
- under Section 69 of the Localism Act, a local authority has the discretion to reduce the business rates of any local business provided that doing so does not amount to state aid. No guidance exists on the use of this discretionary power). Prior to this enactment, local authorities already had the power to reduce business rates for any local business that would suffer hardship from paying in full. In doing so, the local authority has to take the interest of council tax payers into account.

7.3. Implications of different methodologies

A business rates expense would be expected when a building is capable of 'beneficial occupation', which may reasonably be assumed at the point construction has completed, which may be before the first heat supplies have been made.

Under the contractor's method, it can therefore be a significant expense in the early years as the Effective Capital Value is likely to be higher given there should be little to no obsolescence of assets at this point. For projects with phased development plant may be oversized to meet planned future loads. Projects will need to agree with the valuation officer to what extent adjustments can be made to the Effective Capital Value to reflect such oversizing.

The receipts and expenditure method allows for a phasing in of the rates payment as revenues come on line. It would therefore appear to represent the true revenue and cost base for a project but there is limited precedent for its use. However, as rateable value is normally re-assessed every five years, fluctuations in profitability could result in high or low rateable values being 'locked in' during these five year periods.

⁸ www.legislation.gov.uk/ukxi/2000/540/schedule/made

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This section discusses the key accounting considerations which are likely to arise under the five delivery structures described in [Section 1.6.1](#) Delivery structure. These considerations will vary depending on which financial reporting framework the ESCo and sponsors adopt.

8.1. Financial reporting frameworks

In the UK, all companies must comply with the provisions of the Companies Act 2006 (CA 2006). The CA 2006 allows companies, other than charities to prepare their individual and/or consolidated financial statements in accordance with either UK Generally Accepted Accounting Practice (UK GAAP) or International Financial Reporting Standards as adopted by the European Union (IFRS). Companies that are charities must prepare their individual and group financial statements in accordance with UK GAAP. In addition, groups with securities (either equity or debt) traded on an EU-regulated market, or listed on AIM are required to prepare their consolidated financial statements under IFRS.

UK GAAP is the body of accounting standards published by the UK's Financial Reporting Council (FRC). The UK accounting framework in the UK includes:

- FRS 100: 'Application of Financial Reporting Requirements' – this does not include any accounting requirements as such. Instead, it sets out the different standards which can be applied by different categories of entity
- FRS 101: 'Reduced Disclosure Framework' – is an optional standard available to 'qualifying entities'. It allows an entity to apply the requirements of IFRS but with a number of disclosure exemptions. It is primarily aimed at the individual company accounts of parents and subsidiaries of a group which prepares consolidated financial statements under IFRS, such as listed groups
- FRS 102 'The Financial Reporting Standard applicable in the UK and Republic of Ireland' – this financial reporting standard applies to the financial statements of all entities that are not applying IFRS, FRS 101, or FRS 105
- FRS 103 'Insurance Contracts' – applies to issuers of insurance contracts
- FRS 105: The Financial Reporting Standard applicable to the Micro-entities Regime – this standard is applicable to the micro-entities. It is a much cut-down and simplified version of FRS 102

As such, the accounting implications discussed below have focused on FRS 102 and IFRS only, as these are considered to be the most common accounting standards used by entities reporting in the UK.

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We have summarised a number of the accounting frameworks for particular entities below:

Entity	Financial reporting framework
NHS	International Financial Reporting Standards as adopted by the European Union 'IFRS', subject to adaptations from the Department of Health and Social Care Group Accounting Manual 2017-18.
Local Authorities	IFRS, subject to adaptations CIPFA and the LASAAC Code of Practice on Local Authority Accounting in the United Kingdom.
Higher Education/ Further Education	FRS 102 and the Statement of Recommended Practice: Accounting for Further and Higher Education.
Housing Authorities	IFRS, subject to adaptations from the Co-operative and Community Benefit Societies Act 2014, the Housing and Regeneration Act 2008, the Accounting Direction for Private Registered Providers of Social Housing from April 2015, and the Statement of Recommended Practice: Accounting by Registered Social Housing Providers 2014.

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8.2. Financial reporting treatment

The detail shown here summarises the key accounting implications which may be relevant to the five delivery structures.

8.2.1. ESCo: consolidation requirements

Consolidation of an entity results in all assets, liabilities, profits and losses (subject to consolidation adjustments) to be brought into the group financial statements. Under a Project Sponsor ESCo, consolidation will be required by the Project Sponsor. Under a Joint Venture ESCo, it will be necessary to consider which of the Joint Venture Partners control the ESCo and should therefore consolidate the ESCo into their group financial statements. Consolidation by the Project Sponsor would not be anticipated under any of the other delivery structures.

Where consolidation is required, this will impact the financial ratios (i.e. calculations based on financial statements, which are often used by funders to evaluate creditworthiness) of an entity and may have an impact on its borrowing potential.

FRS 102 Treatment

Whether or not a parent entity is required to consolidate all of its investments as subsidiaries (including special purpose entities ‘SPEs’) depends on whether control exists.

There are two criteria for control:

- 1. power over the financial and operating policies; and
- 2. benefits from the entities activities to be obtained from that power.

FRS 102 provides a ‘risk and rewards’ list of circumstances that may indicate that the entity controls an SPE.

Reference: FRS 102, Section 9 ‘Consolidated and separate financial statements’

IFRS Treatment (as it differs to FRS 102)

IFRS 10 states that an investor controls an investee when it has:

- 1. power over the investee
- 2. exposure, or rights, to variable returns from its involvement with the investee; and
- 3. the ability to use its power over the investee to affect the amount of the investor’s returns.

In simple situations where control is obtained through holding the majority of voting rights (e.g. a majority shareholder) and no other agreements are in place which impact this, the assessment of control may be straightforward under IFRS 10. However, in more complicated situations, the assessment of control may require significant judgement. Where it can clearly be demonstrated that ownership of the majority of voting rights does not give control, consolidation will not be required.

This difference in definition means that there could be circumstances when an entity is consolidated by a parent under FRS 102 and not consolidated under IFRS 10 (and vice versa).

A risks and rewards model applies for SPE’s in Section 9, whereas the single control model per IFRS 10 applies under IFRS.

As such a SPE under FRS 102 may not always be a SPE under IFRS (and vice versa).

Reference: IFRS 10 ‘Consolidated Financial Statements’

Determining whether one of the Project Sponsors controls the ESCo requires judgement and should be assessed in light of all legal and commercial agreements.





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8.2.2. Joint ventures

If it is unclear which Joint Venture Partner controls the ESCo (based on the guidance of [Section 8.2.1](#) above), consideration should be given as to whether the relationship constitutes a joint venture. In instances where it is deemed an entity is a joint venture, the accounting treatment differs to that of a fully consolidated entity. This is most likely to apply under a Joint Venture ESCo.

FRS 102 Treatment

A joint venture is defined as ‘a contractual arrangement whereby two or more parties undertake an economic activity that is subject to joint control.’ Joint control is defined as ‘the contractually agreed sharing of control over an economic activity.’ Joint control exists only when the strategic financial and operating decisions require ‘unanimous consent’ of the parties sharing control. None of the parties should have the casting vote that enables it to resolve a dead lock decision.

Joint ventures can take one of three forms:

1. **Jointly controlled operations:** Jointly controlled operations involve the use of assets and other resources of the venturers rather than the establishment of another entity. A venturer recognises the assets that it controls, the liabilities, expenses and share of income that it incurs.
2. **Jointly controlled assets:** Jointly controlled assets involve the joint control, and often the joint ownership of one or more assets. A venturer recognises its share of the assets it controls, any liabilities, expenses and share of income.
3. **A jointly controlled entity:** A jointly controlled entity is a joint venture that involves the establishment of another body in which each venture has an interest. In its consolidated financial statements, a venturer applies the equity method to account for investments in jointly controlled entities. Under the equity method the investment in the joint venture is initially recognised at cost. If the joint venture has more than one jointly controlled interest, it can choose to account for the entities either under the cost model (as further described below), or the fair value model (where the value of the investment is remeasured to fair value at each reporting period).

It is subsequently adjusted for changes in the investor’s share of the net assets of the associate or joint venture post-acquisition. The profit or loss of the investor includes its share of the profit or loss of the joint venture.

Reference: FRS 102, Section 15 ‘Investments in Joint Ventures’

IFRS Treatment (as it differs to FRS 102)

The definition of a joint venture is the same as FRS 102.

Unlike FRS 102, IFRS 11 defines two types of joint arrangement (removing jointly controlled assets):

1. **Joint ventures:** accounted for in both the consolidated and individual parent accounts using the equity method of accounting. Note, FRS 102 permits that joint ventures in the individual parent accounts can be accounted for using the cost model or fair value model.
2. **Joint operations:** Accounted for in the same way as FRS 102.

Reference: IFRS 11 ‘Joint Arrangements’, IAS 28 ‘Investments in Associates and Joint Ventures’

The key in determining joint control is to ensure no one Joint Venture Partner can make the final decision. This is generally clear in the legal agreements or ESCo incorporation documents.





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8.2.3. Debt: classification considerations debt versus equity

In the delivery structures where an ESCo is incorporated, it will be important to consider whether the ESCo's funding should be classified as debt or equity. The classification of funding can have a significant impact on the gearing ratio of the ESCo, as well as the subsequent measurement of the funding after initial recognition.

If funding is classified as debt, this will increase the gearing ratio of the ESCo. This may have an impact on future financing as a high gearing ratio may be deemed a high risk by lenders. Another consideration from a shareholder or Project Sponsor's perspective, is that if their funding is classified as equity and the ESCo comes into financial difficulty, their rights rank behind the creditors of the ESCo. Shareholders will only have rights to the net assets of the ESCo after all creditors are repaid.

FRS 102 Treatment

In structures where a loan is provided, consideration must be given as to whether the instrument should be classified as equity or debt. This is particularly key when the loan is provided by a shareholder. Funding with repayment terms and interest payments may mean it is classified as debt.

A financial liability (debt) is defined as:

- a contractual obligation to deliver cash or another financial asset
- a contract that will or may be settled in the entity's own equity instruments and the entity is or may be obliged to deliver a variable number of the entity's own equity instruments

If the issuer **does not** have the unconditional **right to avoid settling in cash** or by delivery of another financial asset, and where settlement is dependent on the occurrence or non-occurrence of uncertain future events beyond the control of the issuer and the holder, the instrument is a financial liability.

However, if part of the contingent settlement provision that could require settlement appears remote (is not genuine), or the issuer can be required to settle the obligation only in the event of liquidation of the issuer, or the instrument is a 'puttable' financial instrument, then the instrument is considered to be equity.

Reference: FRS 102, Section 22 'Liabilities and Equity'

IFRS Treatment (as it differs to FRS 102)

IAS 32, on which FRS 102 is based, has the same definitions for equity and financial liabilities, but less guidance.

The classification of an instrument (or its components) as either financial liabilities or equity will therefore normally be the same under both frameworks.

Reference: IAS 32 'Financial Instruments: Presentation'



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8.2.4. Debt: treatment

Where funding received by the ESCo is classified as debt, the accounting treatment can vary. Depending on its nature, the debt's initial recognition and measurement as well as how it is subsequently treated on the balance sheet will differ.

FRS 102 Treatment

Basic financial instruments are initially measured at the transaction price (including transaction costs). If the arrangement is a financing transaction (i.e. a non-arm's length transaction, such as an interest free loan between related parties) the instrument is measured at the present value of future payments discounted at a market interest rate.

Most basic financial instruments are subsequently measured at amortised cost using the effective interest method.

Non-basic financial instruments are normally recognised on the balance sheet and measured at fair value through profit or loss.

Reference: FRS 102, Section 11 'Basic Financial Instruments' and Section 12 'Other Financial Instruments'

IFRS Treatment (as it differs to FRS 102)

Standard loans are recognised at fair value less any directly attributable transaction costs.

Subsequently, they are measured and held at amortised cost using the effective interest rate method. The effective interest rate should be calculated taking into account all future expected cash inflows and outflows.

Reference: IAS 39 'Financial Instruments: Recognition and Measurement'

Future of IFRS (IFRS 9 'Financial Instruments', effective from 1 Jan 2018):

Note: IFRS 9 replaces IAS 39 'Financial instruments: Recognition and Measurement', and has also resulted in amendments to IFRS 7 'Financial Instrument Disclosures'. IAS 32 'Financial Instrument Presentation' has remained unaltered.

The initial measurement of financial instruments will remain unchanged.

IFRS 9 has different guidance in terms of classifying financial instruments. For 'standard' loans, where the objective is to solely collect contractual cash flows, an amortised cost classification will remain applicable.

IFRS 9 also introduces a new 'expected loss' impairment model, which focuses on the risk that a loan will default rather than whether a loss has been incurred. This is a more forward looking model for impairment as opposed to the retrospective model that current standard adopts.

New hedging criteria has also been introduced.

Unless the funding structure in a hedging arrangement, we would not expect IFRS 9 to have a significant impact on the delivery structures. Caution should be taken however, as the intricacies of the final funding structure would need to be reviewed in order to make this conclusion.

For government bodies, IFRS 9 is still due to be implemented, it is therefore difficult to judge whether or not the transition will have a significant impact on General Fund Balances. CIPFA is currently seeking an exemption from this.





8.2.5. Financial guarantees

A financial guarantee contract is a contract under which one party issues a guarantee to a lender in respect of the borrowings of a third party. A common example of this would be an intra group guarantee, most commonly where a parent (e.g. a Project Sponsor) guarantees the borrowings of a subsidiary entity (e.g. a Project Sponsor/Joint Venture ESCo). As noted in [Section 6.3.2](#) Debt funding, a guarantee from a creditworthy parent may be required to enable commercial debt funding into an ESCo.

FRS 102 Treatment

Where entities are using FRS 102 Section 11 and 12 to account for financial instruments, issuers of financial guarantee contracts should treat these under Section 21 'Provisions and Contingencies'.

Financial guarantees are recognised and measured when it is probable (i.e. more likely than not) that the entity will be required to transfer economic benefits in settlement. This is the best estimate of the amount needed to settle the obligation discounted to a present value. The discount rate shall be a pre-tax rate that reflects current market assessment of the time value of money and risks specific to the liability. The risks specific to the liability shall be reflected either in the discount rate of in the estimation of the amounts required to settle the obligation, but not both. Financial guarantee liabilities are not recognised when it is not probable that the entity will be required to transfer the economic benefits in settlement. Instead the entity will need to disclose a contingent liability in the notes to the accounts.

Subsequently, the discounting should be unwound and recognised as a finance expense. The provision should also be reviewed at each reporting date, and adjusted to reflect the current best estimate of the amount required to settle the obligation.

If entities have elected to apply IAS 39 and/or IFRS 9 to its financial instruments or made an election under FRS 102 to apply insurance contract accounting under FRS 103, the guidance for accounting for financial guarantees is consistent with IFRS.

Reference: FRS 102, Section 11 'Basic Financial Instruments', Section 12 'Other Financial Instruments' and Section 21 'Provisions and Contingencies'

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IFRS Treatment (as it differs to FRS 102)

Under FRS 102 financial guarantee contracts are scoped out of Sections 11 and 12 and fall within Section 21 'Provisions and Contingencies'. The effect of this scope exclusion from Sections 11 and 12 is that financial guarantee contracts in Section 21 are generally only recognised and measured when it is probable (i.e. more likely than not) that the entity will be required to transfer economic benefits in settlement (as discussed above). Otherwise, they are disclosed as a contingent liabilities in the notes to the accounts. Issuers of financial guarantee contracts under IFRS do not have this same scope exemption; instead they have an accounting policy choice to either treat them under the scope of:

1. IAS 39 'Financial Instruments: Recognition and Measurement'

Entities that issue a financial guarantee under the scope of IAS 39 must initially recognise the guarantee at fair value.

Subsequently the liability should be re-measured to the higher of the initial fair value less cumulative amortisation, or the amount determined in accordance with IAS 37 'Provisions, Contingent Liabilities and Contingent Assets' being the most likely amount expected to be paid.

2. Or, if the issuer explicitly declares that they regard these contracts as insurance contracts, they shall be treated under IFRS 4 'Insurance contracts'.

IFRS 4 does not set out detailed requirements on accounting for financial guarantee contracts. Broadly, it allows entities to continue with their existing accounting policies subject to a 'liability adequacy test'. This test assess whether its recognised liabilities are adequate using estimates of future cash flows.

Reference: IAS 39 'Financial Instruments: Recognition and Measurement', IAS 37 'Provisions, Contingent Liabilities and Contingent Assets' and IFRS 4 'Insurance contracts'

If a financial guarantee is provided by the Project Sponsor to the ESCo, it is the Project Sponsor who will need to account for the financial guarantee.

Future of IFRS (IFRS 9 'Financial Instruments', effective from 1 Jan 2018):

Please see [section 8.2.4](#) Debt: treatment for the future impact of IFRS 9 on financial liabilities

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8.2.6. Government grants

The source of a grant, e.g. HNIP or ERDF, does not impact the way that grant is recognised within the financial statements of the recipient. How these grants should be accounted for will depend upon the reporting framework chosen.

FRS 102 Treatment

Government grants are initially recognised at fair value.

There is an accountancy policy choice for subsequent measurement: performance model versus accrual model. Therefore the accounting treatment of the HNIP grant and the ERDF grant will depend on the policy chosen.

Under the performance model, grant income is recognised when the performance conditions are met. When the performance conditions are met will be dependent on the actual terms of the grant.

If there are no performance criteria, the grant is recognised when it is receivable. Consequently, under the performance model, it may be possible to recognise grant income immediately even if it relates to an asset that will be depreciated over many years.

Grants received before the performance conditions are satisfied are recognised as cash is received (asset) with a corresponding liability (deferred grant revenue). Therefore, it follows that until the performance conditions are met the grant must be recognised as a liability and only released to the income statement as and when the performance conditions are met.

Under the accrual model, grants relating to revenue are recognised in line with the recognition of the related costs. Grants relating to assets are recognised over the expected useful life of the asset.

Grants related to assets may not be deducted from the cost of the asset. Instead, the grant should be recognised as deferred income.

Reference: FRS 102, Section 24 'Government Grants'

IFRS Treatment (as it differs to FRS 102)

It is worth noting that the social housing SORP specifically requires that a social landlord which accounts for its housing properties at cost must recognise government grants using the accrual method; A social landlord which accounts for its housing properties at valuation must recognise government grants using the performance model.

Reference: Paragraph 13.7 Social Housing SORP

IFRS allows non-monetary government grants to be recorded at a nominal amount as an alternative to fair value.

IAS 20 does not permit an accounting policy model choice: Only the accruals method is allowed.

Unlike FRS 102, IFRS allows for the deferred element of a grant that relates to an asset to be either deducted from the carrying value of the asset, or shown separately as deferred income.

Reference: IAS 20 'Accounting for Government Grants and Disclosure of Government Assistance'





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8.2.7. Leases

As noted in Section 6.3.4, lease funding may be available for heat networks, although lenders may prefer to fund assets which can be removed, reclaimed and their value recovered elsewhere (e.g. generating assets). Leases may also require consideration where provision of an energy service depends upon a specific asset. The financial reporting implications of whether a lease is classified as a finance lease or an operating lease are discussed below.

(Service concession arrangements are discussed separately in Section 8.2.8)

FRS 102 Treatment

Lease classification for lessees is based on the extent to which risks and rewards incidental to ownership of a leased asset lie with the lessor or the lessee, i.e.

- finance lease: a capitalised asset and corresponding liability are initially recognised. Subsequently the asset is depreciated and lease payments are apportioned between finance lease charge and reduction in the liability
- operating lease: recognised as an expense on a straight line basis over the lease term

The key difference between the two classifications being that for an operating lease it is not necessary to recognise a

capitalised asset and corresponding liability on the balance sheet, and, the expense charge for an operating lease is not classified as depreciation (and therefore will not be an adjustment to earnings before interest, tax, depreciation and amortisation (EBITDA)). In contrast, a finance lease will increase the assets and liabilities recognised on the balance sheet. It will also result in depreciation. If debt covenants are linked to assets, liabilities or EBITDA, the recognition of finance leases will therefore impact debt covenant ratios.

Reference: FRS 102, Section 20 'Leases'

IFRS Treatment (as it differs to FRS 102)

The principles and guidance between FRS 102 and IAS 17 are very similar.

IFRIC 4 indicates that arrangements contain a lease if they have both of the following criteria:

1. Fulfilment of the arrangement depends upon a specific asset
2. The arrangement conveys a right to control the use of the underlying asset

The determination of whether a power purchase agreement contains a lease is an area of significant judgement. The purchaser may take all or substantially all of the output from a specified facility (asset). However this does not necessarily mean that the entity is

paying for the right of use of the asset rather than for its output. If the purchase price is 'fixed per unit of output' or equal to the current market price at the time of delivery, the purchaser is presumed to be paying for the output rather than leasing the asset.

Reference: IAS 17 'Leases' and IFRIC 4 'Determining Whether an Arrangement Contains a Lease'

Future of IFRS (IFRS 16 'Leases', effective from 1 Jan 19):

The fundamental change for lessee accounting brought in by IFRS 16 is that all leases (bar <12 month leases and low value assets <£5,000) will be recognised on balance sheet.

This effectively means if an entity (e.g. ESCo) has classified their leases as operating leases, these will need to be brought onto their balance sheets in a similar way as current finance leases.

For government bodies, IFRS 16 is still due to be implemented, and is expected to have the biggest impact out of the three new standards. CIPFA is determining which of the two exemptions (low value and less than 12 months) it will adopt. Early discussions are suggesting they may adopt one but not both.



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8.2.8. Service Concession Arrangements (SCA)

Service concession arrangements are only relevant to the Concession delivery structure.

FRS 102 Treatment

An arrangement is an SCA when the following conditions are met:

- the arrangement must be a contract between a public sector grantor and a private sector operator
- the grantor controls or regulates the services that the operator must provide, to whom, and at what price
- the grantor controls any significant residual interest in the assets at the end of the arrangement
- the infrastructure is constructed or upgraded in order to provide services to or on behalf of the public
- the operator either has a contractual right to receive cash from or at the discretion of the grantor; or a contractual right to charge users of the service

If the SCA criteria are met, Section 34 provides guidance on whether the financial asset or intangible asset accounting model should be applied by the operator (e.g. the ESCo).

1. Where the operator has an unconditional contractual right to receive a specified or determinable amount of cash or another financial asset from, or at the direction of, the grantor, it recognises a financial asset as consideration for constructing or upgrading the infrastructure assets. The ESCo would recognise a financial asset at fair value initially and then account for it in accordance with Section 11 Basic Financial Instruments or Section 12 Other Financial Instruments Issues (depending on the terms of the concession agreement). The financial asset would be measured at either fair value or amortised cost using the effective interest rate method.
2. Where the operator has a right to charge users directly for use of the infrastructure assets, it recognises an intangible asset as consideration for constructing or upgrading the infrastructure assets. The operator initially recognises an intangible asset at fair value and thereafter recognise amortisation through the income statement, in accordance with Section 18 Intangible Assets Other than Goodwill.

Under either of these accounting models, where an asset value lump sum is paid by the ESCo to the Project Sponsor for rights to use ('adopt') the assets (Delivery Structure 2b- Concession, 3rd party ESCo adoption of assets), the amount paid (whether at a discount or a premium against the actual value of the assets 'adopted') would be recognised as an intangible financial asset, either as a separate line item on the balance sheet (if the financial asset model is adopted) or as part of the overall intangible asset (if the intangible asset model is adopted).

If the SCA criteria are not met, the arrangement should be accounted for by the operator as property plant and equipment, intangible assets, a lease or revenue as appropriate, based on the nature of the arrangement.

Reference: FRS 102, Section 34 'Specialised Activities'

IFRS Treatment (as it differs to FRS 102)

Both IFRIC 12 and Section 34 contain the same control criteria for deciding whether an arrangement in scope of SCA's. However, FRS 102 provides much simpler guidance whereas IFRS contains examples of how the control criterial might be interpreted in different situations.

Reference: IFRIC 12 'Service Concession Arrangements'



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8.2.9. Property Plant and Equipment (PPE)

The most significant PPE in a heat network are likely to be plant and machinery and land. The accounting treatment of these assets are discussed below.

FRS 102 Treatment

Initially measured at cost.

The cost of an item should be allocated to an assets 'major components'. In general, these are the parts of an asset that if replaced, the cost of the replacing part may be recognised and the previous part derecognised.

The costs of day-to-day servicing, repair or maintenance of an item should not be capitalised.

Subsequently, entities have an accounting policy choice, to either continue to recognise the assets at cost less accumulated depreciation and impairment losses, or to revalue the assets to fair value.

If 'major components' of an asset are identified, each component may have a different useful economic life. Therefore each component should be depreciated separately.

Land generally has an unlimited useful life and therefore is not usually depreciated. Land and buildings are separable assets and must be accounted for separately, even when they are acquired together.

Reference: FRS 102, Section 17 'Property Plant and Equipment'

IFRS Treatment (as it differs to FRS 102)

The principles and guidance between FRS 102 and IAS 16 are very similar.

However, unlike FRS 102, the capitalisation of directly attributable borrowing costs is mandatory under IFRS (rather than an optional accounting policy choice).

Even when borrowings are not taken out specifically for the purposes of funding an individual asset, an element of finance costs relating to general borrowings still need to be capitalised. The capitalisation rate is calculated as the 'weighted average of the borrowing costs applicable to the borrowings of the entity that are outstanding during the period, other than borrowings made specifically for the purpose of obtaining asset.'

Reference: IAS 16 'Property Plant and Equipment'



8.2.10. Revenue

FRS 102 Treatment

Providing heat to customers would be considered to be the rendering of a service. Revenue in connection with the rendering of services is recognised by reference to the stage of completion where the outcome of the transaction can be estimated reliably, i.e. when:

- the amount of revenue can be estimated reliably
- it is probable that the economic benefits will flow to the entity
- the stage of completion can be measured reliably
- the costs incurred to date and the costs to complete can be measured reliably

Where connection charges are applicable, it is necessary to consider whether the customer can benefit from the connection with other suppliers (i.e. the connection has an ongoing unconditional benefit) or only from the specific ESCo (i.e. the connection can only be used with the respective heating service). Where a connection charge is integral to the service provided by the ESCo, its cost and related revenue is recognised together with the heating service, i.e. the revenue is recognised together with the rendering of services by reference to the stage of completion method. Where a connection charge is considered to have ongoing benefits this would be recognised as the sale of goods.

Revenue from the sale of goods is recognised when all of the following conditions are met:

- the significant risks and rewards of ownership of the goods have transferred to the buyer
- the entity does not retain continuing managerial involvement or control of the goods
- the amount of revenue can be measured reliably
- it is probable that the economic benefits will flow to the entity
- the costs in respect of the transaction can be measured reliably

Reference: FRS 102, Section 23 'Revenue'

IFRS Treatment (as it differs to FRS 102)

The principals and guidance between FRS 102 Section 23 and IAS 18 are very similar. Although there are some differences in how the standards are written, differences in accounting are not necessarily expected to arise.

Reference: IAS 18 'Revenue'

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Future of IFRS (IFRS 15 'Revenue from contracts with customers', effective from 1 Jan 2018):

IFRS 15 supersedes all current revenue recognition requirements under IFRS. The new standard introduces a five step approach to measuring and recognising revenue from contracts.

IFRS 15 moves away from the 'risks and rewards' concept of revenue recognition used by IAS 18 to a concept of 'transfer of control'. It should be noted that as a result of the introduction of IFRS 15, IFRIC 12 'Service Concession Arrangements' will refer to IFRS 15 for revenue recognition (as opposed to the old revenue standard, IAS 18).

Connection Charge & Service Charge

IFRS 15 has the concept of 'Performance Obligations'. These are promises within a contract with a customer to transfer a good or service. It will be necessary to determine whether the 'connection' to heating and 'provision' of heating are one bundled performance obligation or, two separate and distinct performance obligations.

If it is determined that they are two separate performance obligations, the transaction price will need to be allocated on a stand-alone selling price basis. The point at which revenue

is recognised will depend on whether revenue recognition meets the criteria of 'over time'.

An entity satisfies a performance obligation and recognises revenue over time if one of the following criteria is met:

1. The customer simultaneously receives and consumes the benefits provided by the entity's performance as the entity performs.
2. The entity's performance creates or enhances an asset that the customer controls as the asset is created or enhanced.
3. The entity's performance does not create an asset with an alternative use to the entity and the entity has an enforceable right to payment for performance completed to date.

If the criteria are not met, revenue must be recognised 'at a point in time'. This is at the point in time at which the customer obtains control of a promised asset and the performance obligation has been satisfied.

Revenue Recognition Over Time

If the IFRS 15 criteria for revenue recognition overtime are met, it is next necessary to determine the method that will most faithfully depict the entity's performance towards satisfaction of the performance obligation.

IFRS 15 permits either of the two methods:

Output Methods

These include: performance completed to date, appraisals of results achieved, milestones reached and time elapsed.

Input Methods

These include: resources consumed, labour hours expended, costs incurred and time elapsed

Further areas where differences may arise are multi-element arrangements, accounting for variable consideration and timing of revenue recognition.

It is worth noting that IFRS 15 only deals with revenue and thus there is a risk that the body receiving the revenue may account for a transaction in one way, and the other body may account for the expenditure in a completely different manner.

For government bodies, IFRS 15 is still due to be implemented, but is not expected to have a significant impact on most Public Sector bodies as the majority of their contracts are likely to not meet the definition of being covered by the new Standard (largely due to the funding being received directly from Central Government etc.).

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The UK tax system is complex with tax legislation and practice constantly evolving and changing. This section provides an overview of the main taxes that should be considered in relation to the development, ownership and operation of a heat network, being Corporation Tax, Value Added Tax, Stamp Duty Land Tax and the Construction Industry Scheme. The delivery structures set out in this guide, together with any refinements that may be made at the time a particular structure is being put in place, will each have their unique tax profile and it will be important for investors, developers and operators to take their own detailed professional advice before committing to transactions.

9.1. Corporation tax

This section sets out an overview of the main corporation tax charging provisions. Two important considerations will be who has the entitlement to claim capital allowances on qualifying capital expenditure, and the deduction against taxable profits for interest paid. With regards to the latter, the rules relating to thin capitalisation and recently introduced rules on corporate interest restrictions will be important. These are considered further below.

9.1.1. Overview

The Corporation tax profile of the chosen delivery structure will depend on the tax status of the individual investors and the legal form of the ESCo.

Corporation tax is charged on any corporate body or unincorporated association. This typically includes private and public limited companies, but also covers unlimited liability companies and trade associations. An ESCo established as a private limited company would therefore fall within the charge to corporation tax.

Certain entities are generally excluded from the charge to corporation tax and these include partnerships, limited liability partnerships, local authorities and health service bodies. So, for example, there should be no corporation tax arising under an In-house Delivery structure delivered by a local authority, whereas, if delivered by a private limited company then corporation tax costs are likely to arise,

Registered charities are exempt from corporation tax on most forms of investment income or income from property, but also on profits from their primary purpose trade provided they are applied solely for the charity's charitable purposes. However, trading profits from other activities are not exempt. Charities often set up subsidiary companies to conduct any non-primary purpose trading activities e.g. in the context of an ESCo this could be heat generation, as profits from these subsidiaries can then be paid via gift aid up to the charity, and should count as a deduction in arriving at the taxable profits of the subsidiary.

A community interest company, whilst established to benefit a community or undertake a social purpose, cannot register as a charity and so would be subject to corporation tax and unable to benefit from the gift aid planning referred to above.

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Limited liability partnerships are treated as 'look through' for corporation tax purposes which means that profits are not taxed at the partnership level, but instead are attributed to the partners who are then taxed according to their own tax profile. This could be particularly useful under a Joint Venture ESCo model where a partner is exempt from corporation tax (e.g. local authority, health service body) as profits attributed to it will not suffer corporation tax at either the partnership or partner level.

If an entity only trades with its members (shareholders), or the level of activity with external parties is considered to be insubstantial, an exemption from corporation tax may be available under the Mutual Trading Exemption. This could be beneficial where, for example, a local authority (or authorities) own and control an ESCo and the ESCo trades only with the local authority (or authorities) that control it and not with any third parties. In such circumstances, the ESCo may be able to claim the Mutual Trading Exemption.

In order for this exemption to be granted, the parties must demonstrate that they are 'trading' and the following conditions are met (and which must be set out in the governance documents of the entity):

- trading must be with members
- surpluses can only go back to members
- must be a reasonable relationship between return and contribution
- members must exercise control

An application for this exemption to apply must be made to HMRC, although HMRC do not provide a definition of 'not insubstantial'.

Companies which are resident in the UK are liable to tax on their worldwide income and gains. Foreign companies will be subject to UK corporation tax if they carry on a trade through a UK permanent establishment, or are dealing in or developing UK property for sale. Foreign companies investing in UK property for generating rental income and gains (which are currently subject to income tax on rental profits) are expected to be brought into the charge to corporation tax from April 2020, and capital gains will be subject to tax from April 2019.

Companies are liable to corporation tax for each chargeable accounting period. This is usually the period for which the company makes up a set of accounts, although a chargeable accounting period cannot exceed 12 months in length so that, for example, accounts covering an 18 month period would comprise two chargeable accounting periods of 12 months and 6 months respectively.

Corporation tax is charged on taxable profits. Generally, the taxable profits of an ESCo would be comprised of the income received from the sale of energy less deductible expenses, capital allowances and tax allowable interest (or finance cost) paid. Expenditure that is met through grant funding will not be deductible for tax purposes. Surpluses arising can be paid back to shareholders as dividends but these are not tax deductible.

The rate of corporation tax applicable from 1 April 2017 is 19%, and this will fall to 17% from 1 April 2020.

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9.1.2. Capital allowances

Capital allowances are a group of UK income and corporation tax reliefs that are available to tax paying entities for capital expenditure. Investment in heat network projects presents a number of opportunities for investors to potentially claim capital allowances but each delivery structure will need to be carefully considered to ascertain who has entitlement to claim capital allowances and to what quantum.

Entitlement to claim capital allowances

The overarching requirement for capital allowances is that it is a tax relief for capital expenditure; that is bringing into use an asset that will have an enduring benefit for the business. Further general conditions for claiming capital allowances are that the person or company carries on a qualifying activity (which is widely defined and would capture the vast majority of UK corporation tax payers) and incurs qualifying expenditure.

In general, qualifying expenditure:

- is capital expenditure on the provision of plant or machinery wholly or partly for the purposes of the qualifying activity carried on by the person incurring the expenditure
- the person incurring the expenditure owns the plant or machinery as a result of incurring it

Further, there are additional requirements for tax payers to meet in order to claim on plant and machinery 'Fixtures'. Fixtures are plant and machinery that are installed and fixed to a building or land so, in law, they have become part of the building or land. Fixtures will make up the majority of the plant and machinery that is likely to be installed within a heat network development project.

More specifically for the ESCos, a major consideration for each delivery model will be whether the ESCo has a relevant interest in the land upon which the new plant and machinery fixtures are installed. A fundamental entitlement requirement for fixtures is that an underlying interest in the land exists when the expenditure is incurred and the fixtures are installed. This interest can be either freehold or leasehold but can also include a licence to occupy, an agreement to acquire a lease or an easement or servitude.

There are special provisions for 'Energy service providers' who may be treated as owning fixtures on land without having an interest in the land. There are stringent rules in order to have entitlement to claim under this provision including a formal energy services agreement, the entity being provided the energy services having an interest in land, the plant and machinery must not be provided for leasing purposes, it must not be provided within a dwelling house and the energy service provider and the entity must not be connected parties. This would have to be carefully considered on a case by case basis.

Plant and machinery allowances

There are a number of different capital allowance reliefs available, the most common and perhaps familiar are plant and machinery allowances. Plant and machinery allowances are given for expenditure incurred on the acquisition and installation of plant and machinery for use within the course of the qualifying activity.

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The meaning of ‘plant and machinery’ is not defined in the legislation. Machinery takes its normal definition but what qualifies as plant is less precise and there is a raft of precedent case law that has formed the understanding of this term. Broadly, plant and machinery can be considered as whatever apparatus is used in carrying out the activities of the business, not the stock-in-trade, but all goods and chattels, fixed or movable which are kept for permanent employment in the business.

Plant and machinery allowances, once identified, are sorted into tax ‘pools’. ‘Pooling’ means that all qualifying expenditure with the same tax treatment is amalgamated into a single pool from which annual writing down allowances are deducted. The writing down allowance is set by legislation and is calculated on a reducing balance basis.

The first pool is the ‘Main Pool’ and plant and machinery within this pool is claimed at 18% (at the time of writing) as a writing down allowance in each period. Typical assets which would be allocated to this pool include furniture, racking, security systems and computer equipment. For heat networks, production plant and associated machinery installed will be considered main pool expenditure.

The second pool is the ‘Special Rate Pool’, which is claimed at 8% as a writing down allowance in each period. The most common form of special rate pool asset are ‘Integral Features’, defined within the legislation as electrical and lighting systems, cold water systems, space or water heating systems, air condition and ventilation systems, lifts, escalators and external solar shading.

There is also an ‘Annual Investment Allowance’ (AIA) that allows for a 100% first year capital allowance for £200,000 of expenditure on qualifying plant and machinery each year. The AIA amount has been altered on a number of occasions since its inception in 2008, with the current £200,000 amount applicable since 1 January 2016. The AIA can be claimed on either Main Pool or Special Rate Pool expenditure. The AIA is available for standalone companies but groups of companies under common control or related companies may have to share the AIA.

Long-life assets

Long-life assets can reduce the writing down rate at which plant and machinery allowances are given for certain assets that are expected to have a long economic useful life. If an asset that would be normally pooled into the Main Pool and written down at 18% is found to be a long-life asset, it will instead be subject to the reduced writing down rate at 8% as special rate pool expenditure.

A long-life asset is a plant or machinery asset that, when new, is estimated to have a useful economic life of at least 25 years. Once an asset has been designated as a long-life asset, this treatment is irrevocable even if the asset is disposed of and acquired by a purchaser who disagrees with the treatment. Hence, in a future secondary market sale, purchasers of shares in an ESCo or of heat network assets that are treated as long-life assets by the vendor will be bound by this treatment.

There are several rules that exclude assets from the long-life asset rules. This includes a ‘de minimis limit’, which states that the long-life asset rules will not apply if the total expenditure on potential long-life assets is less than £100,000 in the period. Further, cars and fixtures installed within office buildings cannot be considered long-life assets.

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A heat network may involve use of installed plant and machinery assets for 25+ years. A typical example of heat network plant and machinery that may be considered a long life asset would be the distribution pipework. The long life asset rules should therefore be carefully considered on a case-by-case basis, as it is likely that certain plant and machinery assets and fixtures installed as part of the heat network may be treated as long-life assets and therefore attract the 8% writing down rate.

Long funding lease rules

Another important consideration will be the long funding lease rules. The effect of long funding lease rules are to transfer the benefit of capital allowances to the lessee, who under the rules is treated as the economic owner, from the lessor, who may be the legal owner of the assets.

The long funding lease rules are complex and are currently being reviewed with the introduction of new lease accounting standards in IFRS 16 (see [Section 8.2.7](#) Leases within the Accounting implications section), and may be subject to significant modification.

Whether a lease is a long funding lease is subject to a number of considerations including:

- Is the lease a funding lease? – Is the lease to be treated under UK GAAP as a finance lease or a loan, will the lease payments over the lease exceed 80% of the market value of the leased plant and machinery and is the length of the lease more than 65% of the remaining useful economic life of the leased plant and machinery?
- is it a short lease? – Up to and including 5 years. It may be a short lease between 5-7 years but subject to stringent tests
- is it a lease of background plant or machinery? A lease of excluded background plant or machinery within a building is not treated as a long funding lease

Each of these considerations need to be carefully taken into account when determining whether a lease of plant and machinery will be a long funding lease. As referred to above, if the long funding lease rules apply then the entitlement to claim capital allowances on the asset moves from the lessor to the lessee. If the ESCo is lessor and the long funding lease rules apply, the lessee will be entitled to claim the capital allowances rather than the ESCo. It is also worth noting that accounting

depreciation is not an allowable tax deduction as an alternative should these rules apply. The long funding lease rules are complex and where the ESCo leases plant and machinery to a third party, the long funding lease rules should be considered carefully on a case by case basis.

Contributions

There exists a general rule that where a contribution, such as a grant or landlord inducement, has been received, the recipient is regarded as having not incurred capital expenditure to the extent of the sum received. As capital expenditure is a requirement to be entitled to claim capital allowances, this may restrict and effectively lower potential claims for the ESCo company if a contribution is received.

There are certain exceptions to this general rule, such as it not applying if the contributor cannot claim any form of tax relief, provided they are not a public body. Further, it may be possible through negotiation with the contributor to allocate the contribution to non-qualifying building or infrastructure works, which will still lower the overall capital expenditure but not the expenditure on qualifying plant and machinery.

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Where a third party, such as a landlord freeholder, contributes capital expenditure towards the ESCo fixtures, the contributor may claim capital allowances, and treat them as incurring capital expenditure on an asset for their own business and owning the asset as a result rather than the receiver of the contribution.

Any contributions received by the ESCo must also be considered to ascertain whether the reverse premium rules apply. The reverse premium rules state that where a company receives a payment or benefit by way of an inducement from a landlord in connection with a lease transaction where the company receiving the inducement will become entitled to an interest in land, that payment must be treated and taxed as an income receipt. Any contributions from landlords as part of an agreement for lease leading to the granting of a leasehold interest must be considered and structured carefully with regard to the reverse premium rules.

Enhanced Capital Allowances

Enhanced Capital Allowances (ECA) are a 100% First Year Allowance (FYA) available to businesses incurring expenditure on certain new energy saving and environmentally beneficial plant and machinery. As the name suggests, the relief must be claimed in the period in which expenditure is incurred.

There are restrictions to ECA that apply to businesses that invest in plant or machinery to generate electricity or heat that attracts either feed in tariffs or renewable heat incentives (see [Section 5.1.6](#) Government operating subsidies). No FYAs are given for energy-saving plant or machinery where payments are made, or incentives given under these schemes. Plant and machinery allowances may still be available even if ECA is not.

The management of ECA is split between energy saving technologies managed by the Carbon Trust and environmentally friendly or water saving technologies managed by DEFRA.

Available ECA technologies broadly meet two key conditions. Firstly, the asset must be included as a technology class within either the Energy Technology Criteria List (ETCL) or the Water Technology Criteria List (WTCL). Further details can be found through the following websites: www.gov.uk/guidance/energy-technology-list www.watertechnologylist.co.uk/

In addition, The Department For Business, Energy and Industrial Strategy issue regular updates.

These respective lists are updated periodically but currently include technologies such as boilers and boiler equipment, compressed air, heat pumps, water efficient sanitaryware, water meters and water reuse systems.

Further, under each technology class are sub-technology classes. Each sub-technology class features detailed guidance on specific performance and efficiency criteria that a technology must meet to satisfy the ETCL/WTCL condition.

The second key condition is that some specific technology classes must meet both the performance criteria set out in the ETCL/WTCL and also be specifically listed as a product on the Energy Technology Product List (ETPL) or the Water Technology Product List (WTPL).

Even if the technology meets the performance criteria under the ETCL/WTCL, if it should be also listed on the ETPL/WTPL and isn't, it will not qualify for ECAs.

On plant and machinery rich district heating projects, the potential ECA could include claims on combined heat and power (CHP) systems certified as 'good quality' under the CHPQA scheme, boiler equipment, heat pumps, motors and drives and pipework insulation, to name but a few technology classifications. A holistic review of the plant and machinery installed for the heat network development would need to be carried out alongside the development engineers and designers to ascertain ECA claims.

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9.1.3. Transfer pricing

Transfer pricing rules (referred to as Thin Capitalisation in relation to debt) apply to restrict the deductibility of related party interest where a company is financed by a disproportionate amount of debt (as compared with equity) or is paying a rate of interest in excess of an arm's length rate. Companies are related where one controls the other, or where both are under common control. In addition, under the 'acting together' rules, where a lender and other persons act together in relation to a financing arrangement, the rights of those other persons will be attributed to the lender when determining if it controls the borrower. This means that even though a lender may not control the borrower, a loan may fall within the transfer pricing rules if other (controlling) shareholders were involved in arranging the loan.

Exemptions from the transfer pricing/thin capitalisation rules are available for small and medium sized enterprises. A business is 'small' if it has no more than 50 staff and either an annual turnover or balance sheet total of less than €10m. It is 'medium sized' if it has no more than 250 staff and either an annual turnover of less than €50 million or a balance sheet total of less than €43 million.

Her Majesty's Revenue and Customs (HMRC) deems a company to be thinly capitalised when 'it has excessive debt in relation to its arm's length borrowing capacity, leading to the possibility of excessive interest deductions'.

Effectively, the thin capitalisation rules mean that interest payments made on excessive related party debt are re-characterised as distributions, although they remain interest for legal purposes. This would mean no corporation tax deduction for some or all of the 'interest'.

HMRC's approach will involve ascertaining how much a company or companies would have been able to borrow from an independent third party lender and comparing this figure with the amounts actually borrowed from related parties. A comparison is made between the interest payable on the actual debt and the interest which would be payable on the amount which could and would have been borrowed at arm's length. The company's corporation tax deductions are then limited to those on the latter amount.

Given the significant funding required to support the capital expenditure needed to construct a heat network, and the potential difficulty of obtaining commercial debt funding into an ESCo (see [Section 6.3.2](#)), thin capitalisation could be important when funding is provided between related parties, particularly under the Project Sponsor ESCo or Joint Venture ESCo models. The precise impact of any restrictions to the tax deductibility of interest should be included in the tax assumptions incorporated into financial models built to support the financial viability of a project.

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9.1.4. Corporate interest restrictions

In addition to restrictions to interest deductibility under the thin capitalisation rules outlined above, from April 2017 additional restrictions were imposed under rules relating to Corporate Interest Restrictions (CIR). Any restrictions under CIR would be in addition to those imposed under the thin capitalisation rules. The rules are extremely complex and require careful consideration to determine whether they apply and how they operate.

The starting principle is that any worldwide group with a net interest expense in the UK below a £2 million de minimis will not be subject to the CIR. The identification of the worldwide group is vital to establish which companies will comprise the group. A worldwide group will consist of an ultimate parent and its consolidated subsidiaries. It is possible to have both single-company and multi-company worldwide groups. An ultimate parent must be a company or other entity whose shares, or other interests, are listed on a recognised stock exchange and sufficiently widely held (i.e. no participator in the entity holds more than 10% by value of all the shares or other interests). This means that, for example, partnerships and local authorities cannot be an ultimate parent.

When considering the £2 million de minimis, broadly speaking, this will be the case where the group's deductible interest expense in the UK exceeds the group's taxable interest income in the UK by no more than £2 million. Subject to this de minimis level, CIR could apply across all five delivery structures given they all have funding requirements and so it must be considered by any entity in the structure that is looking to obtain a tax deduction for interest paid. For tax exempt entities, for example, if the Project Sponsor in the In-house Delivery model is an exempt local authority, CIR should not be in point.

Groups with a net interest expense above the de-minimis will be subject to a cap on interest deductions under the CIR. There are two methods of calculating the cap in any given year which will operate to limit relief – these two methods are referred to as the Fixed Ratio Rule and the Group Ratio Rule.

Fixed Ratio Rule – this is the default method and broadly works by limiting the available interest deductions to a fixed ratio equal to 30% of the group's UK earnings before interest, tax, depreciation and amortisation (EBITDA).

Group Ratio Rule – the group ratio method is an optional alternative mechanism for calculating a group's interest allowance for a particular

period of account. Where a group's net interest expense would exceed the maximum given by the fixed ratio method, a group may elect to calculate its interest allowance using the group ratio method instead.

An exemption from CIR exists for interest incurred on the third party finance of public benefit and infrastructure projects which may be excluded from the CIR under an optional elective regime. However, it is important to note that the exemption does not apply to interest paid on related party debt and so does not provide a complete exemption from CIR in such circumstances. For example, under the Project Sponsor ESCo model, if the Project Sponsor provides debt funding to its wholly owned ESCo then interest paid would be to a related party and so not covered by the potential exemption.

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The rules are complex and prescriptive, with a number of conditions that need to be met in order for the exemption to apply. One of the conditions is that the company is carrying on a ‘qualifying infrastructure activity’ which is met, in part, where the assets used in the activity are either used in the course of a regulated business or are procured by a relevant public body. This is likely to be a key factor in determining whether the exemption could apply. For example, should the ESCo’s activities comprise the regulated supply of electricity then the exemption may be available (subject to meeting all of the conditions). But if this is not the case then exemption could be available where assets have been procured by a relevant public body, which includes, amongst others, local authorities, health service bodies and designated educational establishments.

9.2. Value Added Tax

9.2.1. Overview

This section sets out an overview of the main Value Added Tax (VAT) accounting matters. The key considerations are (1) the VAT liability of the income received or activities undertaken, (2) the VAT recovery position on costs incurred, and (3) the VAT impact on other parties in the supply chain.

VAT is charged on taxable supplies, this includes supplies by all types of entities including corporate bodies, public sector entities or unincorporated bodies. VAT is chargeable depending on the type of business activity carried out. The VAT rates are as follows – standard rate of VAT is 20%, the reduced rate of VAT is 5% and there is a zero rate. In addition to taxable supplies, the other VAT categories are VAT exempt and outside the scope of UK VAT.

Entities incur VAT on their expenditure and the entity must consider whether the VAT incurred is recoverable or not. Under standard VAT recovery rules, an entity can recover VAT incurred depending on how the expenditure is ‘used’:

1. VAT incurred that is directly linked to an entity’s taxable activity is recoverable in full
2. VAT incurred that is directly linked to a VAT exempt activity (or non-business activity) is irrecoverable
3. VAT that is not directly linked to taxable, exempt or non-business activity needs to be apportioned and a portion of the VAT would be recoverable

Public sector bodies such as Government Departments, Local Authorities and NHS organisations have specific VAT recovery rules. In general, this improves their VAT recovery position and allows them to recover VAT incurred in respect of their non-business (and sometimes VAT exempt) activity. Please note that this must be considered in full on a project basis.

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9.2.2. VAT liability on supplies

Supplies of heat and/or electricity are treated as taxable supplies for VAT purposes. These supplies would be standard rated (20%) unless they qualify for a reduced rate (5%) in the following circumstances:

- domestic use
- charity – where the use is for a non-business purpose
- de-minimis supplies – for electricity this is 1,000 kwh per month to a customer

The above VAT liability treatment of heat and electricity does not depend on the legal form of the ESCo (see [Section 6.1.1](#) Legal form).

Where the ESCo provides any other services (for example administration or maintenance) or where the ESCo receives any other income that is not solely for the sale of heat or electricity it would need to determine the correct VAT liability and charge its customer the correct rate of VAT.

9.2.3. Consuming own supplies

If the entity does not make a supply of heat and power and consumes the heat and power in its own business (or where it provides heat and power for no consideration), it would need to consider this matter separately and a further analysis is required as to the VAT position. This applies where the supplies are consumed within the same legal structure.

The following are examples of ‘consuming own supplies’ and non-business activity:

- where a University acts as an ESCo and builds a heat network and provides heat to student accommodation or other buildings it would need to consider how the heat is used.
- this could also potentially apply to Housing Associations, other entities building to rent, NHS bodies as well as private sector entities.
- where an ESCo provides heat or electricity to another entity for no consideration it could be considered as non-business activity, e.g. an ESCo is grant funded and provides heat to local residents for no consideration.

The VAT risk of consuming its own supplies or non-business activity is that the entity is unable to recover some (or all) of the VAT incurred in the course of construction of the heat network as well as the ongoing operating costs. This could potentially result in a large irrecoverable VAT cost.

Where different entities – for example a local authority, private developer and university – come together to deliver a heat network, VAT efficiency should be considered. For example, it may be more VAT efficient for expenditure to be incurred by an entity that can recoup VAT on its expenditure to ensure any irrecoverable VAT costs are minimised. This should be considered on a case by case basis as there are other points that should be considered such as VAT grouping or forming a cost sharing group to ensure the chosen structure is efficient.





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9.2.4. VAT recovery on expenditure

In the cases where an ESCo is solely involved in making supplies of heat and electricity to users, be it individuals, public sector entities or corporates, the ESCo is likely to be ‘fully taxable’ for VAT purposes. Fully taxable means that the ESCo is entitled to recoup the VAT incurred on its expenditure.

- in general if the ESCo only makes taxable supplies, they should be able to recoup the VAT incurred on construction and ongoing operational costs. This includes ESCo contractor costs
- the vast majority of costs would ordinarily be incurred with VAT at 20%
- the supply of the underlying land is also important. Where the ESCo is fully taxable it should be able to recover the VAT incurred on the purchase price or the lease premium (if VAT is charged). This would not be the case where the ESCo is not fully taxable
- if the heat supplier is not fully taxable, for example, (1) it is consuming the heat/ electricity in its own VAT exempt business (e.g. a Housing Association operating a VAT exempt business of letting residential property), (2) it is making VAT exempt supplies to end customers or is, (3) involved in non-business activity (i.e. providing heat and power for no consideration) this is likely to result in an irrecoverable VAT cost for the ESCo

9.2.5. VAT position in wider supply chain

This section considers the VAT impact on the wider supply chain.

In addition to determining whether VAT should be charged on supplies of heat or electricity, it is important to note whether the customer can recover the VAT incurred. The following provides a guideline on the typical VAT recovery position. The actual position would be dependent on the individual customer’s VAT position:

- domestic users – not recoverable
- Local Authorities – recoverable
- Universities – not recoverable in full
- NHS – potentially irrecoverable but possible to be recoverable in certain circumstances
- other Government departments – potentially irrecoverable but possible to be recoverable in certain circumstances
- Retail and Commercial users – recoverable

The expectation would be that suppliers charge VAT on the vast majority of supplies. The key transaction where an entity may not incur VAT is on a land acquisition. However, as the VAT treatment of the supply of land is complex with potential large VAT amounts at stake due to the value of the land, detailed consideration should be given to ensure any potential irrecoverable VAT in the transaction is minimised.





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9.3. Stamp Duty Land Tax

Where an interest in land is being acquired under a heat network project then the Stamp Duty Land Tax (SDLT) position needs to be considered carefully. The purchaser of an interest in land could be the Project Sponsor, the Project Sponsor/Joint Venture ESCo, or a 3rd Party ESCo, depending on the specifics of the heat network project.

SDLT is generally payable on the acquisition of interests in land and buildings in England, Wales and Northern Ireland where the chargeable consideration is above a certain threshold. The chargeable consideration for the purposes of SDLT comprises anything given for the transaction that is in money or money's worth, hence includes cash and other non-monetary consideration. As a general rule, non-monetary consideration should be valued at its market value. In addition, most of these land and property transactions must be notified to HMRC on an SDLT return, even if no tax is due.

From 1 April 2015, SDLT no longer applies in Scotland. Instead a new tax, Land and Buildings Transaction Tax (LBTT), applies to the acquisition of chargeable interests in land and buildings in Scotland. SDLT has also been devolved to Wales from April 2018 with the introduction of the Welsh Land Transaction Tax (LTT). For simplicity this section has focused on SDLT – the broad rules for LBTT and LTT are quite similar to SDLT (although there are some areas where they differ), but the rates are different from those set out below. Further information on LBTT and LTT can be found on the following Revenue Scotland and Welsh Government websites:
www.revenue.scot/land-buildings-transaction-tax
www.beta.gov.wales/land-transaction-tax

A land transaction requires the acquisition of a 'chargeable interest' which is defined quite widely but the most common examples are the sale of freehold land and the grant or assignment of a lease. Under the Concession delivery structure it will be important to determine the precise legal interest transferred to the ESCo under the concession agreement. A lease interest would be caught under SDLT whereas, for example, a licence would not.

Different rates of SDLT apply according to whether the property is in residential or non-residential use, and separate rates also apply for rent on the grant of a lease. On the assumption that land transactions will be of non-residential property, the SDLT rates applicable on the most common transactions where consideration is paid for the transfer of a freehold or the assignment of a lease, or where a premium is paid on the grant of a lease, are as follows:

Non-residential or mixed property

Relevant Consideration	Rate of SDLT (on each tranche of consideration)
From 17 March 2016	
£0 to £150,000	0%
£150,001 to £250,000	2%
£250,001 and above	5%



Different rules apply to rent payable on the grant of a lease. The associated SDLT is calculated based on the net present value (NPV) of the rent payable over the term of the lease discounted at 3.5% per annum with rates applied as follows in the table below:

Non-residential or mixed property

NPV	Rate of SDLT (on each tranche of consideration)
From 17 March 2016	
£0 to £150,000	0%
£150,001 to £5,000,000	1%
£5,000,001 and above	2%

The chargeable consideration for a transaction is usually the consideration given for the land transaction in money or money's worth, directly or indirectly by the purchaser or a person connected with him. Specific rules apply for certain types of chargeable consideration such as the assumption of an existing debt by the purchaser, carrying out of works and provision of services. Should land be transferred to an ESCo in return for an equity interest this would represent chargeable consideration and so caught by SDLT (subject to the availability of any reliefs). Chargeable consideration is taken to include any VAT chargeable in respect of the transaction.

There are various exemptions and reliefs available to reduce or exempt a charge to SDLT. For example, the transfer of property between corporate entities within the same

group can be exempted from SDLT under the rules relating to group relief. This could apply where, for example, where the Project Sponsor transfers an interest in land to a Project Sponsor ESCo. It should be noted that this only applies where the ESCo is a company limited by shares – as a guarantee company would not qualify for group relief.

There also exist special rules where land is transferred to a partnership by either a partner, or person who becomes a partner. In such circumstances a partial relief from SDLT may be available. This relief could be useful in a Joint Venture ESCo arrangement where the ESCo is established as a partnership, and so the choice of ESCo vehicle (e.g. company v's partnership) could have a significant impact on the SDLT position.

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9.4. Construction Industry Scheme

The Construction Industry Scheme (CIS) is aimed at preventing evasion of tax by subcontractors working in the construction industry who are not known to HMRC. The operation of CIS will be particularly relevant during the construction phase of the heat network rather than once it becomes operational.

The scheme operates by requiring a contractor to potentially withhold tax from payments made to subcontractors in respect of construction operations. Construction operations are widely defined and could cover almost any work that is done to a building or structure, civil engineering work or installation. The work might include site preparation, alterations, dismantling, construction, repairs, decorating or demolition.

This means that where a heat network is being constructed, the CIS obligations of the Project Sponsor and/or ESCo should be considered. Under In-house Delivery it would be the Project Sponsor's responsibility to consider its obligations under the scheme, whereas with other models it may differ depending on the respective obligations of the Project Sponsor and ESCo. For example, under a 3rd Party ESCo, any CIS obligations are likely to fall onto the ESCo given it would be funding and

constructing the heat network, whereas under a concession delivery structure where the ESCo may provide funding for to construct the heat network then the position is more complex and will be determined by the contractual obligations between Project Sponsor, ESCo and the sub-contractors engaged to provide the construction services and should be considered when the delivery structure is being finalised.

Under the scheme, contractors are required to verify with HMRC the payment status of each subcontractor they engage prior to the first payment being made. If the subcontractor does not have gross payment status, the contractor would be required to withhold tax (at either 20% or 30%) and pay it over to HMRC. Deductions are only made from that part of the payment that does not represent the cost of materials incurred by the subcontractor, i.e. the deduction is only applied against the labour element of an invoice. Where no breakdown is provided by the supplier, the deduction is made against the full value of the invoice (excluding VAT). The tax withheld is then normally paid to HMRC on a monthly basis. The contractor must also submit a monthly return to HMRC setting out payments made. Contractor's should also send a monthly statement to each subcontractor confirming the amounts paid and any tax deducted.

A contractor is a business or other concern that pays subcontractors for construction work. The scheme recognises two types of contractor – mainstream and deemed. A mainstream contractor is one whose business is one of construction and who pays subcontractors for construction work. A deemed contractor is one whose business isn't one of construction but who spends an average of more than £1 million a year on construction in any 3-year period. The distinction is important to determine if and when a contractor has to register under CIS.

Payments made by a person (deemed contractors only) do not fall within CIS where they relate to property used for the purposes of the business of that person (or another group company). A property is not used for the purposes of the business for these purposes if it is for sale or to let. This relief could apply to an ESCo where it is constructing the heat network but the rules and their application are complex and so clarification should be sought from HMRC.

A payment under a construction contract is not a contract payment if the payment is made by any body of persons or trust established for charitable purposes only. However, a charity's subsidiary company without charitable status in its own right is within the CIS regulations.

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This section provides a directory for accessing other guidance available in the market on key issues affecting heat networks. For each key issue, some considerations are listed to help the reader navigate this 'other guidance'.

10.1. Legal implications

Other guidance available:

- [CIBSE/ADE Heat Networks Code of Practice](#)
- [Regen and Stephen Scowns Heat Networks: Providing Heat Locally](#)
- [DPD Guidance: Guidance on Strategic and Commercial Case](#)
- [DPD Guidance: Guidance on Powers, Public Procurement and State Aid](#)
- [UKGBC, Zero Carbon Hub Legal Frameworks for Sustainable Energy Infrastructure](#)
- [GLA London Heat Network Manual](#)
- [ARUP Decentralised Energy Masterplanning: A manual for Local Authorities](#)
- [WBD Heat Networks: Procuring Finance](#)

10.2. Regulatory effects

Other guidance available:

- [BEIS Metering and Billing Compliance and Guidance](#)
- [ADE Gas CHP policy and incentives](#)
- [DPD Guidance: Guidance on Strategic and Commercial Case](#)

10.3. Heat charges

Other guidance available:

- [CIBSE/ADE Heat Networks Code of Practice](#)
- [DPD Guidance: Economic and Financial Case – Development of the Financial Model, Heat Pricing and Maximising Opportunities](#)

10.4. Connection charges

Other guidance available:

- [DPD Guidance: Economic and Financial Case – Development of the Financial Model, Heat Pricing and Maximising Opportunities](#)

10.5. Electricity revenues

Other guidance available:

- [MEUC and National Grid Profiting from Demand Side Response](#)
- [ADE Gas CHP policy and incentives](#)
- [Cornwall Insight Heat Network Electricity Revenues and Licensing Guidance](#)
- [DPD Guidance: Economic and Financial Case – Development of the Financial Model, Heat Pricing and Maximising Opportunities](#)

10.6. Managing inflation related costs

Other guidance available:

- [DPD Guidance: Economic and Financial Case – Development of the Financial Model, Heat Pricing and Maximising Opportunities](#)

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Lee Valley Heat Network (energetik)

Project Name	energetik
Background	
Project Sponsor	Enfield Council
Image	 <p>For more information on energetik, please visit our website at www.energetik.london</p>

Project Description

energetik is a heat network company set up by Enfield Council to deliver a series of heat networks throughout Enfield that will eventually serve 15,000+ properties. This is a 100% owned private energy company of Enfield Council, created to provide better value and low carbon heat to customers. The company was set up in order to improve the industry and deliver efficient heat networks at a fair price to customers, putting quality and service ahead of profit.

There are currently four heat networks schemes planned or in development:

- 1 Meridian Water regeneration scheme: By far energetik's largest heat network in development, the network will eventually serve over 10,000 residential customers at the Meridian Water housing development. The company will utilise very low-carbon heat created as a by-product from the new Energy Recovery Facility (ERF) on the Edmonton Eco Park, provided by the North London Waste Authority (NLWA) through a heat sale agreement. The new facility is due to be complete in 2026 and will be connected to energetik's own energy centre. In the interim until the new facility is complete, energetik will operate gas-fired CHP to provide heat to the development.
- 2 Arnos Grove heat network: energetik accepted the heat network from the developer, built to the company's stringent technical standards, and received its first customers in late 2017. It is supplying low carbon heating and hot water to 40 residents in phase 1, and positive feedback has been received to date. When all phases are delivered, energetik will supply over 500 residential customers with heat and hot water, and will sell electricity generated by the gas-fired CHP engine to a hotel.
- 3 Ponder's End heat network: energetik received its first customers in December 2017 at Electric Quarter, supplying heating and hot water to the first 29 residents via a temporary boiler solution which was designed, built and commissioned by energetik. The nearby Alma estate renewal scheme is currently under construction, and will eventually serve over 1,000 customers via gas-fired CHP. Following delivery of the energy centre at the Alma estate development, the two networks will be connected.





Project Name	energetik
Background	
Project Description	<p>4 Oakwood scheme: This project is currently in progress with no work on site commenced as yet, however energetik is engaged with the developer and their design consultants to ensure that the right level of quality and resilience is designed into the heat network from the outset.</p> <p>Once complete, energetik’s three standalone heat networks at Arnos Grove, Ponder’s End and Oakwood will serve approximately 2,000 residential connections. Presently it is not economically feasible to physically connect these satellite networks to the main Meridian Water heat network, and instead they use a combination of high-efficiency gas boilers and Combined Heat and Power (CHP) to deliver low carbon heating and hot water to customers. These energy centres have been designed to adapt to growing demand as the number of connected properties increases.</p> <p>energetik’s customer base is expected to grow to over 15,000 connections as its heat networks are built and expand. There is inherent capacity built in to the design of the networks to expand to 30,000+ connections if required.</p> <p>The delivery of the energetik business plan will see the realisation of an £85 million capital project. The council will be investing around £55-60 million in energetik through two tranches of delivery, and the remainder will be covered by the company’s own generated revenue.</p> <p>Tranche 1 investment of £15 million by the council, approved in January 2017 is being used to:</p> <ul style="list-style-type: none"> • complete the operational set up of energetik as a business, including the finalisation of its suite of legal documentation • commence the delivery of the ‘satellite’ heat networks to supply low carbon heating and hot water to the Arnos Grove, Ponders End and Oakwood heat networks • complete the design phase of the energetik energy centre on the Edmonton EcoPark, and submission of its planning application in summer 2018 • provide a temporary heat supply to Zone 1 at Meridian Water if required

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Project Name	energetik
Background	
Project Description	<p>Tranche 2 investment expected in early 2019 will be for the remaining £40-45 million and will be used to:</p> <ul style="list-style-type: none"> • Commence and complete construction of energetik’s energy centre and distribution network at Meridian water to serve the development as it is built • Complete the development of its heat networks at Arnos Grove, Ponders End and Oakwood <p>Connection Fees and Asset Adoption</p> <p>Connection fees are charged where energetik is investing directly in the design, build and ownership of the heat network assets and includes Electric Quarter and Meridian Water.</p> <p>On the heat networks where the infrastructure is installed by the developer (Ladderswood, Alma Road and New Avenue Estate Renewal schemes), energetik will adopt the assets and make payments to the Council’s Housing Revenue Account (HRA), to compensate for payments made by the HRA to development partners in consideration of the improved heat network specification expected/specified by energetik. Payments are made per connection to the network based on an agreed formula with the HRA and there is a profit share mechanism should profits exceed a defined threshold. With this approach, there is an added opportunity for the HRA to benefit financially should the heat networks grow in size and profitability.</p>
Technology/heat source	<p>The anchor load for the project is based on very low carbon heat provided from the ERF when built. It would be expensive and inefficient to connect to the existing Energy from Waste (EfW) plant currently operating at the EcoPark, so energetik will employ gas-fired CHP to serve Meridian Water until the new facility is ready to provide heat. The three satellite schemes will also operate gas-fired CHP to provide low carbon heat.</p> <p>energetik will lease land at the Edmonton Eco Park to build its own energy centre which will house the CHP engines, boilers, and large thermal stores which will be used to ensure that heat is taken from the ERF at the most cost effective time for both parties. Thermal stores will provide substantial resilience should there be a failure in any of the heat generating technologies.</p> <p>Technical specification</p> <p>Overall, energetik use planning policy to ensure that its technical specification is followed by developers. The technical specification it has developed exceeds current British standards is on par with similar heat networks in northern Europe, to ensure that it operates as efficiently as possible, minimising heat loss and extending longevity as this directly contributes to operating costs and ultimately customer energy prices.</p>





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Background

Consumers (heat/electricity) At this stage, energetik is supplying heat only to its customers.

All energetik customers are charged the same fair price for their heat which is comparable in cost to traditional individual gas central heating. The heat tariff is updated annually in line with CPI (availability charge) and the retail component of gas (unit charge). The cost covers all supply and maintenance costs, and a higher standard of customer service than could be offered by similar private-sector Energy Service Companies (ESCOs).

Project development timeline The energetik Business Plan and delivery strategy has been developed over the last five years, evolving to suit updated delivery strategies at Meridian Water and the Estate Renewal sites, with each milestone unlocking the next stage of development. The key milestones are summarised below:

Milestone	Dates
Greater London Authority’s heat map: confirmed the opportunity for heat networks across London. www.london.gov.uk/what-we-do/environment/energy/london-heat-map	2011
Pre-feasibility and feasibility studies: confirmed the opportunity for Enfield Council to provide the low carbon energy infrastructure for Enfield’s sizeable regeneration agenda to deliver significant economic, environmental and social benefits.	2011 and 2012
Cabinet agreed to establish a private limited company (LVHN Ltd) as its preferred delivery option to design, build, operate and maintain a city-scale heat network in Enfield and the first board was appointed.	December 2012
First Business Plan approved by Full Council, demonstrating the original project’s viability and significant economic, environmental and social benefits. This secured a further £1.285 million development funding.	October 2014





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Project Name	energetik	
Background		
	Milestone	Dates
	First UK local authority to receive back to back funding from the European Investment Bank (EIB) and London Energy Efficiency Fund totalling £12 million investment in energetik, demonstrating that energetik is a financially sound low carbon business. The EIB's £6 million investment in energetik's low carbon business formed part of wider £80 million investment portfolio in Enfield's strategic infrastructure, including Meridian Water.	February 2015
	'Invest in Enfield' event at the top of the Gherkin for Meridian Water and energetik, with key note speech by European Investment Bank's Vice-President for Climate Change.	May 2015
	Full Council agreed to release further funding to enable further development works to create energetik. the decision was made to adopt a two tier structure, with a holding company (LVHN Ltd) consisting of council members and officers, and an operating company, made up of industry experts to run the heat business.	June 2015
	First LVHN Ltd (holding company) Board meeting. energetik (operating company) incorporated as a private limited company, and the board appointed.	September 2015
	NLWA Board Members approved the authority to enterin to the Heat Supply Agreement/Lease/Agreement for Lease.	October 2016
	Council's main investment decision in energetik.	18 January 2017 (Cabinet) 25 January 2017 (Full Council)





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Project Name	energetik
Background	
Individual project objectives	<p>This opportunity enables the Council to underpin its regeneration aspirations whilst providing fairly priced, low carbon heat to homes and businesses across the borough.</p> <p>Four key objectives were identified:</p> <p>1. Fair Heat Price to Customers:</p> <p>energetik’s business plan is underpinned by a financially viable model forecast to provide the Council with an acceptable Internal Rate of Return (IRR) for the business covering the cost of capital. In line with the Heat Trust principles, energetik is able to charge consumers across the borough the same fair price for their heat whilst covering the cost of capital.</p> <p>2. Community Benefits and Carbon savings:</p> <p>energetik will deliver wider benefits to the community through improved air quality, reduced carbon emissions, smart technology providing access to consumption information for customers, and a wide range of payment options to suit all circumstances. This helps create sustainable and comfortable places to live and work for Enfield residents and businesses. energetik’s base case Business Plan is forecast to save 250,000 tonnes of carbon and 70,000 kg of NOx over its 40-year business plan.</p> <p>3. Wider, non-financial benefits:</p> <p>These include strategic benefits of delivering a Council-owned heat company; the ability to provide warmer homes and cleaner air; and the benefits of providing state of the art smart metering to customers.</p> <p>4. Financial benefits:</p> <p>Please see ‘Project NPV’ section below for details.</p>





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Financials	
Upfront Capex (£)	<p>The initial funding by the council was £4.37 million to investment decision stage. The Tranche 1 drawdown of £15 million covers energetik’s operations to mid-2019 and includes the £4.37 million development funding. Tranche 2 funding will be for circa £40-45 million and will be requested in late 2018 or early 2019 once more information is received on the Meridian Water development phasing, as this will partly determine the total borrowing that will be required.</p> <p>Tranche 1 funding for energetik of £15 million consists in part of the £12million EIB/LEEF funding (for eligible expenditure) and further lending via the council under a separate facility agreement to cover ineligible expenses.</p>
Project NPV	<p>The energetik Business Plan is forecast to deliver significant non-tangible economic, environmental and social benefits, with up to £225 million gross monetised benefit over 40 years, a Net Present Value of £94.7 million and a cost-benefit ratio of 3:4.</p> <p>In addition to the revenue generated by the company that exceeds the cost of capital, the Council will receive an interest rate premium of circa £6 million Net Present Value from energetik due to the difference in council borrowing vs. the on-lending interest rate to the company, to satisfy state aid regulatory compliance. In addition to capital and interest repayments the company will pay up to £800,000 per year business rates once the main network is built, using the existing standard valuation method. The circa £6 million NPV is the difference between the NPV of interest charged and NPV of interest received on the on lending of the loan.</p>
Levelised Costed Heat	<p>To deliver a zero NPV pre-tax, the levelised cost would be 3.7064 pence per kilowatt hour.</p> <p>To deliver a zero NPV post tax, the levelised cost would be 3.6834 pence per kilowatt hour.</p>
Project IRR (%) and term	<p>energetik’s prudent Business Plan is financially sound and affordable, with a financially viable model forecast to provide the Council with an acceptable Internal Rate of Return (IRR) for the business.</p> <p>The IRR, based on present assumptions of development build-out rates, is 6.74% after tax. This is likely to change over time as development phasing changes.</p>





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Financials

Payback Period As the networks are being developed over a 40-year period, there needs to be consideration as to which element of the project is being referred to as ‘paid back’.

The initial funding of the business plan provides the capital to deliver the infrastructure on energetik’s heat networks and will keep the company solvent whilst connection revenues are generated. energetik’s own revenue streams will then cover the company’s operational costs going forward.

energetik will then require up to £10 million of loans to support the connection of the rest of the customer base at Meridian Water in future phases. It is estimated that this will drive a revenue that predicts a payback period for these loans of circa 10 years, although again the loan duration to the company will be 30 years.

Commercial Structure

Parties involved in the project and commercial interfaces energetik are the delivery vehicle for all its heat networks.

For energetik led heat networks (Meridian Water and Electric Quarter), the company has procured a design, build and operate partner through an official OJEU restricted tender process to build its main heat network.

The customer services function was also procured through an OJEU restricted tender exercise, and this delivery partner will provide call centre, internal dwelling maintenance and all customer payment services on energetik heat networks.

On the estate renewal schemes that energetik adopts, the heat networks are built to energetik’s technical specification by developers, and are monitored closely through delivery by the project team. Upon completion of the relevant phase of a network, following a thorough commissioning and testing process, energetik adopt the network, and its maintenance and management, including customer operations are transferred to its delivery partners.

energetik has a suite of legal documents for each heat network, that governs the relationship between the developer, the council, social and private landlords, leaseholders and freeholders, social customers as well as commercial connections.

Amber (LEEF) and EIB act as funders to the Council, who then on-lend to energetik.

The diagram overleaf explains the corporate structure and contract arrangements that underpin energetik’s procurement transactions.

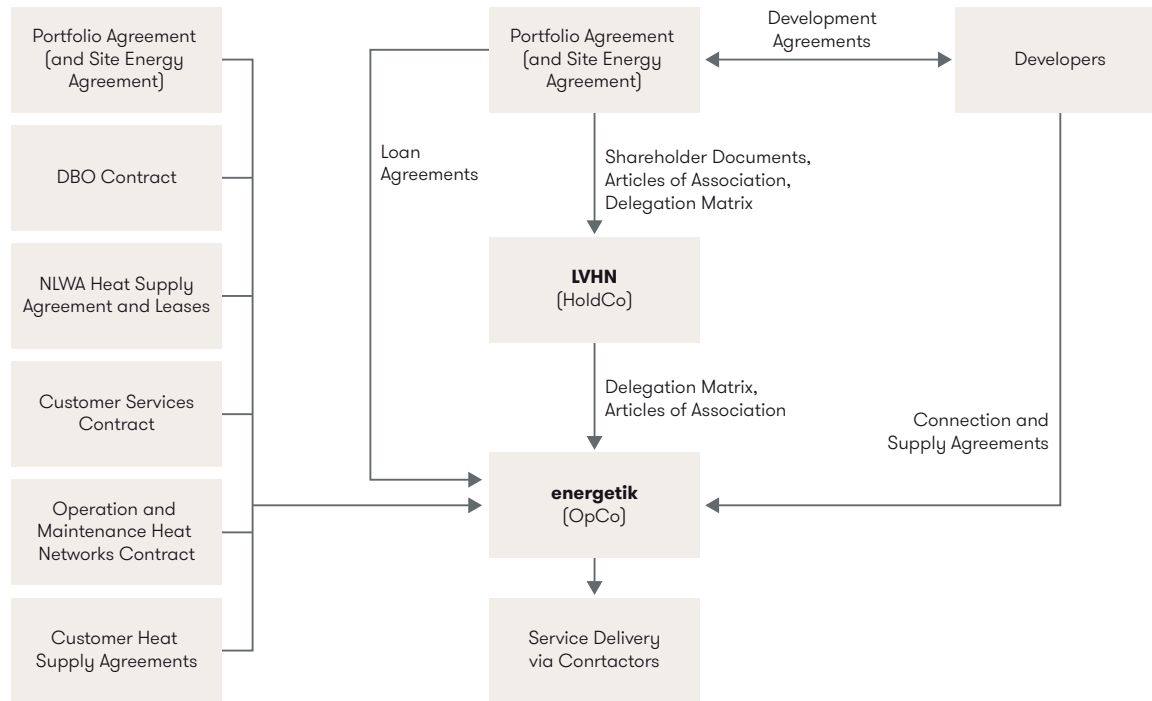




Project Name energetik

Commercial Structure

Parties involved in the project and commercial interfaces



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Commercial Structure

Parties involved in the project and commercial interfaces A complete set of governance procedures have been put in place to ensure energetik is governed in a prudent manner, aligned with the Council’s ambition to ensure effective delivery throughout the life of the business whilst the Council maintains ultimate control.

A Delegations Matrix is in place to govern spending limits and decision-making abilities of energetik. Depending on the threshold, items exceeding given decision-making powers are passed upwards to the holding company and ultimately the council.

The holding company board consists of senior council members and officers. Its function is to ensure the operating company follows the strategic direction of the council, and approves any decisions outside of the operating company’s remit. Two non-executive directors are appointed from the industry to provide strategic advice and to ensure that the business is informed of best practice within the industry.

An independent Audit Committee has been established for the energetik business that meets on a quarterly basis, chaired by the Council’s Director of Finance, Resources and Customer Services. The function of the committee is to monitor financial processes; supervise auditing functions; and to assess risks and liabilities, the implications for the finances and the reputation of the Council, and to consider actions proposed or taken to mitigate them. Any actions identified as a result of this Audit Committee meeting are discussed with energetik to action accordingly.

Driving factors for commercial structure As sole shareholder, the Council has ability to exercise controls over the company, and board appointments. The two-tier structure allows day-to-day operational decision making to happen quickly and efficiently by the management team, within approved decision making and spending thresholds, whilst the holding company provides strategic assistance and acts as an approvals board for decision making where approved thresholds are exceeded. Certain reserved matters are in place, and can only be approved at the highest level, through a Full Council decision.

The Council, as lender, is exposed to the potential failure of energetik, as borrower, and energetik’s inability to repay the money it owes to the Council. This is mitigated to a large degree by the terms of the loan agreements, the oversight the Council has over the running of the business as sole shareholder, and the governance measures implemented through the Delegations Matrix.





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Project Name	energetik
Commercial Structure	
Driving factors for commercial structure	As ultimate shareholder in the borrower, through requirements imposed on energetik to report to its Holding Company Board (which includes Council representation), and through Board and shareholder approval requirements, the Council has visibility of the ongoing financial and technical performance of the business. This gives the Council advanced warning of any issues arising, the ability to probe and seek guidance, and the opportunity to remedy such issues. This additional level of oversight, control and influence is significantly greater (in both a legal and practical sense) than a normal lender would have in a pure lender-borrower relationship (where security rights would be purely contractual).
Funding	
Funding profile	<p>Enfield Council’s commitment to invest circa. £54 million in energetik, per the January 2017 Cabinet report, consisted of:</p> <ul style="list-style-type: none"> • an initial £15 million to cover energetik’s operational expenditure and heat network development up to mid-2019 • a further estimated £39.5 million allocation to the indicative capital programme to cover energetik’s Tranche 2 drawdown request (subject to change based on latest figures), which is the remaining investment required to deliver the energetik heat networks • forecast £4 million allocation to the Council’s indicative capital programme to provide a business expansion fund. This will enable the company to expand if suitable connection opportunities are identified in the early years before it is able to meet its own expansion aspirations from its own revenues <p>The total cost of the identified in the Business Plan will initially be funded through borrowing from the Council, until energetik’s revenue income from connection fees and energy sales is sufficient to maintain it.</p> <p>Enfield was the first UK local authority to obtain back to back loans from EIB and LEEF.</p> <p>An initial £12 million of funding was secured by the Council, with £6 million from EIB and a further £6 million from LEEF (funded by ERDF) for on-lending to the business. These loans were assessed to ensure State aid compliance. The EIB’s £6 million investment in energetik’s low carbon business formed part of wider £80 million investment in Enfield’s strategic infrastructure, including Meridian Water.</p> <p>The balance of the funding required by energetik will be secured at the most cost effective rate to the Council in accordance with its Treasury Management Strategy.</p>





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Project Name	energetik
Funding	
Funding profile	<p>The capital expenditure is split into costs which are classed as ‘eligible expenditures’ and can be financed via the LEEF/EIB loans and those, which are ‘ineligible expenditures’ which must be funded via other funding streams. energetik has estimated that approximately £5 million is required to fund ineligible expenditures and £49.5 million for eligible expenditures over the 40 years.</p> <p>At the time of the initial borrowing, the loans from LEEF and EIB were on par or cheaper than Public Works Loan Board (PWLb). Loans to the company from the council are on-lent at a state aid compliant rate of circa. 5%.</p> <p>EIB was a match funder, with agreement based on similar terms to the LEEF loan. The Council is the borrower who then on-lends to energetik to ensure compliance with State Aid rules.</p> <p>Under the on-lending agreement between the Council and the company and in line with state aid rules under General Block Exemption Regulations (GBER), the overall blended rate of the company’s borrowing is set at a rate to comply with GDPR rules.</p> <p>The Council as borrower lends capital to the business and as such there is nothing to underwrite. The Council will provide Parent Company Guarantees for the Heat Supply Agreement and Lease for energetik’s energy centre at meridian Water.</p>
Other sources of funding explored	<p>A standard corporate loan was used to fund this project through LEEF, as confirmed by LEEF’s fund managers, Amber Infrastructure.</p> <p>Other project finance sources were considered initially but due to the infancy of the company and its lack of financial standing, it was impractical/non-cost effective to pursue alternative funding sources.</p>
Funding community perception of Project	Low risk, high profile project but ambitious in expectations, generating a relatively low return.
Barriers/issues in seeking funding	<p>Due to energetik essentially being a ‘start up business’ with no financial history, it could not pass the various financial tests in order to access cheap borrowing from financial institutions. Due to this, the LEEF funding was provided to the Council and on-lent to the company, and in doing so essentially the Council backed the company as its shareholder.</p> <p>It is expected that following several years of operation, or once the company reaches a significant number of customer connections, the company would have enough financial standing to access cheaper borrowing directly.</p>





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Project Name	energetik
Funding	
Timing of funder involvement	It is considered, due to changing development programmes, that the council may have borrowed slightly earlier than was required. However, Amber Infrastructure (administering the LEEF loan) have been supportive throughout, acting as an advisor. They were also accommodating through their willingness to change project timescales.
Procurement	
Implications of the procurement approach	<p>In the interest of procuring the best possible support to deliver its networks, energetik’s management team decided to split the procurement exercises so that specialists in the industry tendered to provide services within their area of expertise. energetik ensured in the creation of the tender package that stringent KPIs and service levels were built in.</p> <p>Procurements were tendered for two main workstreams:</p> <ol style="list-style-type: none"> 1. Design-build-Operate (DBO) of energetik’s main heat network at meridian Water as well as the provision of expansion works where required 2. Customer services contract for the provision of all call centre, internal property maintenance (for energetik managed equipment) and customer payment operations. <p>Both the DBO and Customer Services contracts were run as full OJEU compliant procurements, under the restricted process.</p> <p>Vital Energi were successful bidders and entered in to contract to design, build, operate and maintain the main energy centre for the Meridian Water development and the heat network for a period of 10 years.</p> <p>Switch 2 was awarded the Customer Services contract for a period of 10 years.</p>
Pricing	
Setting heat and power prices	<p>energetik’s business model and practices have been developed to address what it considers to be the biggest failings in the heat network market in the UK, and are aiming to be known as a trusted and reliable supplier.</p> <p>Heat prices are reviewed annually and increase/decrease in line with CPI and the retail component of gas. The company has the opportunity to fully review the tariff every 10 years.</p>





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Pricing

Setting heat and power prices The Company has pledged to sign all its heat networks up to the Heat Trust and has signed up its first two heat networks. energetik has built its business model around affordability- it charges the same, fair price to all residential consumers across the borough.

The objective is for residents to receive low carbon heating that is comparable in price to equivalent traditional heat sources. The total cost to customers is made up of two parts; a fixed availability charge covering system maintenance and replacement, call centre services, and an element of replacement costs and, a unit charge for the actual heat consumed (in kWh) which is made up of the cost to generate and distribute the heat to each property.

Stakeholder engagement

One of the main industry problems is a lack of transparency and understanding about energy pricing on heat networks. energetik have a dedicated team who engage and explain at the earliest possible stage with all stakeholders including Developers, Registered Provider's, sales teams, lawyers, councillors, customers et. al.

All energetik customers pay for heat and hot water supplies on a pay as you go basis, similar to Oyster, and as such do not receive bills. There is a variety of payment options available to suit all customers. Each home has a smart meter through which customers can access consumption and payment history by day, week or month. Customers can interrogate this spending data over time using their smart meter, and in addition in their online account.

- energetik provides information on its website and in the welcome pack and heat sale agreements with customers about how its tariff is structured, what it includes, and how it is reviewed
- to aid customer understanding energetik has chosen to use the term 'availability charge' to describe the fixed daily charge. This indicates to the customer that the charge represents a contribution from them to ensure the heat and hot water supply is available to them 24/7/365, regardless of whether they use heat or not

Taxation

Taxation considerations energetik is expected to pay corporation tax on dividends generated.





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Business Rates

Business Rates considerations In certain instances, the impact of business rates may be a significant enough factor to influence the decision to go ahead or not.

Business rates are estimated based on the build value of the four heat networks, the largest of these being Meridian Water. A valuation has not been completed for the first network, Arnos Grove, but it is estimated that it will be around £10,000 per year.

The majority of business rates contributions are expected to be required on the Meridian Water heat network once built in circa 2021/2022. The business plan for this project provides for the Council to receive up to £800,000 per year once the main network is built, using the existing standard valuation method.

It is important to note however, that gas network infrastructure is much cheaper than on heat networks. Heat networks are expected to be comparable in price to the same gas networks; however, it is an unfair playing field for heat networks as they are disadvantaged in this regard.

The estimate of business rate income is based on the market valuation model, but this methodology may change over time. The heat network industry is lobbying to create a more level playing field against the rest of the energy industry in terms of business rates.

Accounting

Accounting considerations energetik’s P&L account is consolidated onto the Council’s balance sheet
Thus, the ‘on-balance sheet’ treatment is followed.

energetik has a full suite of documentation including legal agreements, governance documentation, stakeholder engagement plans etc., which is available to help other organisations. For more information about how energetik could help your business, please contact Jeff Laidler on 0208 379 3410 or jeff.laidler@energetik.london.





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Background	
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Project Sponsor	Cheshire East Borough Council
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Project Description

Cheshire East Borough Council (CEC) developed its Energy Vision, with a key objective being to establish secure, decentralised and locally managed energy services.

An Energy Framework was commissioned which identified a range of potential projects to meet that vision. The Cheshire East Energy Framework sets out the business case for a range of renewable energy technologies which could be adopted to achieve the energy vision, including Anaerobic Digestion (AD) and photovoltaics (PV).

However, the primary focus has been the development of heat networks in the two main towns of Crewe and Macclesfield. In addition, the Council had been working to exploit the potential geothermal resource in the south of the Borough which could provide a renewable heat source for HS2 driven growth of Crewe and its surrounding area.

To further the development of heat networks and the geothermal potential, the council developed a procurement process for a Heat Network Delivery Partner, seeking to help deliver this through a Joint Venture (JV) structure.

In mid-2016, a Joint Venture was formed between Cheshire East and Engie – Cheshire Energy Networks Limited – which would facilitate a pipeline of heat projects in the short term, leading to development in the medium to long term, with an ambition to deliver wider opportunities, beyond geothermal. It does not have exclusivity on energy projects within Cheshire East, but could provide a platform for deployment depending upon compliance with funders requirements.

Investment into projects through this Joint Venture will be through an SPV. The Joint Venture is structured to be private sector led, but with split voting rights and an expectation of investment contribution by both parties to any project. Specific arrangements will be agreed as projects are brought forward.





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Project Description	<p>The company is currently awaiting opportunities which are emerging through the Cheshire East ELENA Energy Programme with the European Investment Bank (EIB), a three year programme starting in September 2017 to exploit a range of energy efficiency and generation projects. This programme is also being supported through Heat Network Delivery Unit (HNDU) funding for the heat network aspects, such as the Macclesfield Town Centre which has already had its Heat Mapping and Master planning conducted by AECOM and draft outline business case conducted by ARUP.</p> <p>The geothermal opportunity is a longer term ambition, which would support sustainable growth linked to the Crewe HS2 Hub. Research has demonstrated that there is a significant resource available which could be tapped into to provide renewable energy as the Crewe heat network gains sufficient scale. It was hoped that this resource would be exploited earlier, to drive the development of the heat network but this has not emerged due to lack of funding to de-risk the high capex, high cost nature of the exploratory phase.</p>
Technology/heat source	<p>The project was initially driven by the geothermal opportunity in south Cheshire with expectation of covering much wider opportunities ('Future Projects').The Joint Venture is now set up with the intention to deliver heat networks fueled by a range of renewable energy (biomass, solar thermal, solar PV, geothermal).</p> <p>The original heat network mapping was conducted in 2014 to support the development of the Crewe Deep Geothermal Energy Project in the Leighton West area of Crewe and identified a peak heat demand of 18.7 MW.</p> <p>Funding from HNDU and/or the EIB has enabled the council to undertake heat mapping and feasibility studies in Crewe Town Centre, Macclesfield (Hurdsfield Industrial Estate, Alderley Park, and the Town Centre), and in rural off-gas-grid areas of the Borough.</p> <p>More recently Detailed Project Development is underway for Macclesfield Town Centre and Crewe Town Centre, both of which are likely to initially rely upon gas infrastructure in the first instance.</p> <p>The role of the Joint Venture partnership in the delivery of these schemes will be informed through the commercial and financial arrangements, and this case study is based upon the anticipated projects planned in Cheshire East which could be delivered by the JV, especially within the Crewe area.</p>





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Background	
Consumers (heat/electricity)	<p>Overall, there is potential for consumers to use both heat and electricity but the outcome may vary with each project developed by the JV.</p> <p>The development of an energy centre and district heat network will initially be focused on town centre users in Crewe and Macclesfield, in particular public buildings. However it is anticipated that this will expand into other surrounding wards, and within Crewe the geothermal energy being connected in at a later phase.</p> <p>The 'Initial Site' identified in the Cheshire East Local Plan Development Strategy for geothermal exploration and then approved was Leighton West in the north east of Crewe.</p> <p>Initial figures showed there is around 50GWh/year gas use within 2.5 km and 100GWh/year within 10 km of the Initial Site from a few key users.</p> <p>A large car manufacturer and health organisation are close to the Initial Site and are significant consumers of heat and potential off-takes. In addition there is significant heat demand growth expected through development related to the HS2 Hub and the achievement of the aims of the Constellation Partnership locally.</p>
Project development timeline	<p>Preliminary studies in 2012 indicated that the deep Cheshire basin holds 4.6M GWh of energy reserves (more than six times the national heat demand of the UK at the time). Other reports by Arup 2013 and Atkins 2013 confirm the geothermal opportunity in Cheshire East.</p> <p>Following a successful funding award from the Heat Network Delivery Unit (HNDU) in January 2014, the Council undertook a detailed heat network mapping study to support the development of the Crewe Deep Geothermal Energy Project in the Leighton West area of Crewe. As part of this study, high level heat network mapping identified a peak heat demand of 18.7 MW and a technically feasible heat load (TFHL) of 37,146 MWh/a based on 13 heat nodes.</p> <p>Following a period of market consultation Cheshire East Council determined that to de-risk the procurement of a geothermal partner it would be appropriate to offer the opportunity as part of the long term development of a district heat network.</p> <p>Cheshire East Council also established a Knowledge Transfer Partnership with the University of Keele and has appointed a PhD student to undertake geological mapping in support of the geothermal project aspirations.</p>





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Background	
Project development timeline	<p>The Council issued a Prior Information Notice (PIN) on the 6th July 2015 to alert the European market to an opportunity to partner with the Council in a long term joint venture to develop heat networks in the Borough. The procurement sought a partner who could deliver district heating from a range of energy sources including Gas CHP, Biomass, Solar Thermal, Solar PV and geothermal as part of a phased approach based on an agreed business plan to be developed by the partnership.</p> <p>The Council held a Bidders Information Day on 23 July which attracted 44 attendees. The feedback from the Bidders Information Day was that the timescales were too short so an extension to the procurement timescale was incorporated in to the PQQ. The PQQ was issued on the 17 August 2015, with 31 companies expressing an interest.</p> <p>The Council continued to pursue other innovative renewable energy solutions to ensure value for money. The Cabinet decision of 29 September 2015 gave authority to appoint a joint venture partner.</p> <p>Cheshire Energy Networks was incorporated on the 27 February 2016 as a Private limited Company with shareholdings by Cheshire East Borough Council and Engie, and since then has agreed an initial business plan focused on developing a project pipeline.</p>
Opportunities/plans for expansion	<p>Whilst low carbon is a core focus of the council, the council has not excluded any other technologies, outside of those currently explored, to initiate a successful decentralised energy scheme.</p> <p>Engie also has experience of financing investments through developer contributions and connection charges. However, within this partnership with CEC, technologies to service decentralised energy have had limited development. Whilst retrofitting may be a more suitable opportunity in the short term to promote energy efficiency, it doesn't lend itself to developer contributions and may be difficult to finance.</p> <p>The council expects that there may be other projects in planning and is seeking out opportunities which may be explored further.</p>





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Project Name	Cheshire Energy Networks Limited
Background	
Individual project objectives	<p>Whilst no individual project has been defined as yet, these are to be in line with the Council’s energy plan and objectives of the Joint Venture company already created.</p> <p>Specifically, CEC wanted to make a measurable difference in the Cheshire East region to improve:</p> <ul style="list-style-type: none"> • the level of fuel poverty and health problems associated with under-use of energy in the Cheshire East region • residents’ average fuel bills • local businesses’ fuel costs and profitability <p>The principal objective of the Joint Venture Company is to contribute to making a measurable difference to the Cheshire East region over the term of this Agreement by:</p> <ul style="list-style-type: none"> • delivering a heat network to distribute low or zero carbon energy to consumers in the Cheshire East region and surrounding areas • expanding and connecting the heat network by maximising the use of geothermal and other renewable sources • expanding and connecting the heat network to provide affordable low carbon heat to residents and businesses. <p>Overall, there is flexibility on project objectives, to be decided as opportunities are progressed.</p>
Financials	
Upfront Capex (£)	<p>Project specific</p> <p>The total contract value will depend on the terms of a business plan to be agreed by the Joint Venture Partners. Projects delivered under the Joint Venture Agreement are anticipated to range from £1 million to £100 million with capital costs of drilling two deep geothermal wells is estimated to be £17 million. However, as no opportunities have been progressed to a project to be undertaken yet, the upfront capex is still unknown and will be project specific.</p>
Project NPV	Project specific, as above.
Levelised Costed Heat	Project specific, as above.





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Financials	
Project IRR (%) and Term	<p>An initial business plan has been agreed which sets out the overall priorities for the JV, based on the business plan principles agreed – there is an indicative IRR rate, but final IRR will be informed by the nature of the opportunity.</p> <p>No minimum IRR (influenced by the risk of the project) or carbon savings targets have been set. There are also no commitments for each party to invest, with investment to be agreed on a case by case basis though this is expected to be equal between both parties.</p> <p>Project specific IRR, term and investment is to be determined with further progress on development of projects.</p>
Payback Period	Project specific
Commercial Structure	
Parties involved in the project and commercial interfaces	<p>Whilst a 30 year Joint Venture agreement is in place with Engie acting as the Joint Venture Partner (JVP), The Joint Venture Company (JVC), Cheshire Energy Networks Limited (CENL), was incorporated on the 27 February 2016 as a private limited company with the following structure:</p> <ul style="list-style-type: none"> • A private structure with a minority shareholding by the Council, but the Shareholders’ Agreement provides the Council (as minority shareholder) with a significant degree of protection • £1 nominal consideration for each share • Voting rights are 50:50 for directors at board level <ul style="list-style-type: none"> – CEC can appoint up to 2 directors – JVP can appoint up to 2 directors • business undertaken and transacted by directors • alternating and non-voting chair • CEC can appoint observers to observe board meetings • monthly board meetings • business plan to be agreed within 6 months of contract commencement





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Commercial Structure

- Parties involved in the project and commercial interfaces**
- projects from business plan to be agreed by JVC on case by case basis
 - lock in period for 5 years from date of Shareholders’ Agreement (no sale or transfer of shares)
 - dispute resolution by way of senior officers of CEC and Engie.If no resolution, then deadlock referred to independent party.If no resolution, status quo prevails.
 - no employees in the first instance

An SPV, a separate operational and asset entity will be created below CENL for each project developed. CEN is expected to act as the holding entity for all projects. Currently, only one SPV is planned to run both construction and operation of each project/scheme. However, in practice, there may be operation SPV and asset SPV for each project.

Driving factors for commercial structure The ultimate aim of the Joint Venture is to deliver district heating fueled by a range of renewable energy including but not limited to biomass, solar thermal, solar PV, and geothermal energy.

The key reason to form a Joint Venture was so that a commercial partner can contribute their commercial expertise to the Joint Venture Company under a management agreement and minimise risk. As part of this agreement the partner provides sensible development solutions.

The intended duration of the Joint Venture contract is 30 years with an option to extend by 25 years at Council’s discretion.The length of the contract reflects the timescale required to develop a mature heat network in the current UK market.

Following expiry of the five year lock in period the Council or the Joint Venture Partner can seek to wind up the Joint Venture

Company by mutual consent.Shareholders (i.e. the Council and the Joint Venture Partner) also have the right to transfer or sell their shares to the other shareholder and may only transfer or sell to a third party subject to the terms of the Articles of Association.





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Commercial Structure

Driving factors for commercial structure Both shareholders will be able to appoint two directors each so the Council will retain equal voting rights at board level but will have minority voting rights at shareholder level. The Shareholders' Agreement provides a significant degree of protection for the Council as a minority shareholder because certain important decisions (as listed in the Shareholders' Agreement) can only be made with the consent of both shareholders.

The Joint Venture Partner will not have exclusivity to develop renewable energy projects in Cheshire East. It will only be able to pursue projects that have been developed as part of a business plan which has been approved by the Council and the decision to proceed with individual projects will need to be agreed by partners on a case by case basis.

Funding

Funding profile The Council entered into a nominal shareholding of the new company, with £1 shares.

There is no capital commitment from the Council to the Joint Venture at this stage. No projects have been delivered as yet, so no funding beyond nominal shareholding/set-up costs has been made so far.

Any contribution by the Council to the JV projects will only be made following development of a detailed business case this could include land, property, grant funding or power purchase agreements.

The intent is that investment into any project will be shared by both CE and Engie but the nature of the funding (equity/debt/combo) will be decided on a project-specific basis.

It is envisaged that the Council may also benefit financially from future energy generation either through commercially advantageous Heat Purchase Agreements or from profit sharing based on the extension and uptake of the network over time. This will be determined based on each individual business case with the Joint Venture Partner.

The funding approaches will be tested as decentralised energy options for Crewe and Macclesfield are further explored and their Outline Business Cases (OBCs) are developed.





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Funding	
Other sources of funding explored	<p>The Council has previously received funding for its community heating schemes and similar funding may be leveraged to projects of this Joint Venture. In late 2017, Cheshire East Council secured £1 million of European Investment Bank (EIB) funding to create the borough’s first district heating schemes, and accelerate the development of energy efficiency and large-scale energy storage combined with smart grid technology.</p> <p>The Joint Venture Company may pursue external grant for its projects from schemes in particular:</p> <ul style="list-style-type: none"> • European Structural Investment Funds (ESIF) and future iterations of regional funding, and • Heat Networks Investment Programme (HNIP) <p>It will also utilise the private sector partners financial resources & technical expertise to progress development of each project and pursue grant funding available through innovation and low carbon programmes.</p> <p>The JVC will also consider securitising incentive payments (eg: RHI) as a funding option, as external debt may be procured against this guaranteed cash flow.</p> <p>Lease funding not yet been discussed as an option but may also be considered.</p>
Funding community perception of Project	No projects developed yet, expected to be project specific as opportunities are developed further.
Barriers/issues in seeking funding	<p>As investment can only be made once a project is finalized, the biggest barrier to funding is the delay in project development.</p> <p>This delay is mainly due to technical challenges on the deep geothermal project (not within HNDU pipeline). Currently, as the heat network has not been planned and energy centre sites not finalized, it is unclear which heat user would be served as the initial site is relatively remote.</p> <p>The Council has identified development potential in the region and the JV partners are also currently looking at mechanisms to derisk its planned pilot geothermal opportunity. The key risks identified are around uncertainty of cost, volume of energy and offtake. The council is working with the British Geothermal Society. Engie has its own team in France which develops deep geothermal projects who are supporting the review of how to derisk the project.</p>





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Project Name	Cheshire Energy Networks Limited
Funding	
Timing of funder involvement	<p>The JV partners may make funding contributions on development of a detailed business case this could include land, property, grant funding or power purchase agreements.</p> <p>The JV would approach funders once the initial financial model is defined. This would be initial feasibility but before full commercialization.</p>
Procurement	
Implications of the procurement approach	<p>The Joint Venture has powers to determine the design build and operations structure. The presumption is that Engie would design build and operate for the JV but this would be subject to testing by the JV.</p> <p>The partnership doesn't anticipate the need to go through an OJEU process if approaching any new funders, but would need a commercial transparent procurement and meet any other requirements. The process doesn't need to fit under public procurement law if it fits within the original OJEU. Decisions would be based on the requirements of CE.</p>
Pricing	
Setting heat and power prices	These are not yet defined but the council has emphasized the need to ensure that the heat prices are lower/ equivalent to the counterfactual.
Taxation	
Taxation considerations	<p>In terms of funding, it is anticipated that a mix of loans and equity can be beneficial from a tax perspective.</p> <p>Further, consideration will also be placed on the availability of capital allowances as these will impact corporation tax liabilities of the SPV. Dividends may be considered as a more tax efficient distribution of cash, and VAT will need to be considered.</p> <p>The council considered Stamp Duty Land Tax (SDLT) may have some bearing through annual leases/rents but felt this was usually an issue for new developer-led ESCOs where the developer is seeking to rent land. It was not foreseen to have a significant impact for projects currently considered by this partnership.</p> <p>Tax issues are to be considered further as projects develop.</p>





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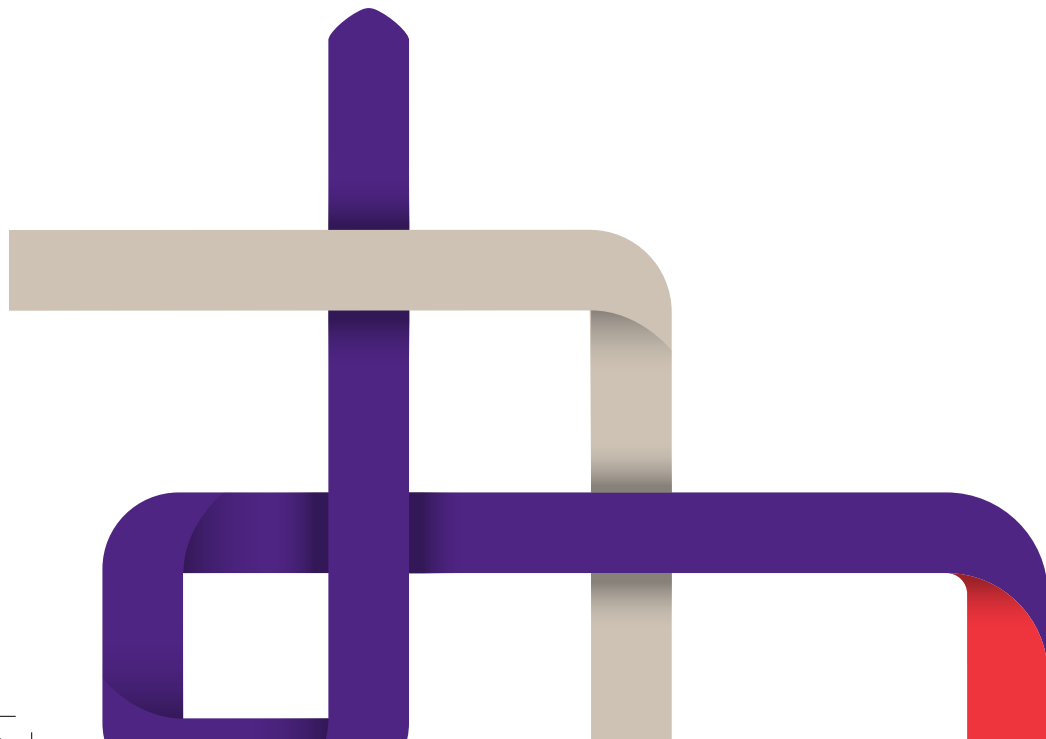
Cheshire East

Royal Albert Docks

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Project Name	Cheshire Energy Networks Limited
Business Rates	
Business Rates considerations	<p>Business rates are to be included within the financial model and are assumed to apply. However, there is uncertainty as to how these will be applied and this will need to be determined.</p> <p>The process followed by Engie is to use an external consultant and benchmark rates against existing schemes. It was understood that business rates can be material, in excess of £100,000 pa., which can be a challenge for marginal project. Detailed work on business rates will be performed as projects emerge.</p>
Accounting	
Accounting considerations	Engie assume the assets and liabilities will be fully consolidated, with all shown on Engie accounts as the majority shareholder.





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Royal Albert Docks

Project Name	Royal Albert Dock (RAD) scheme
Background	
Project Sponsor	Advanced Business Park (ABP) London
Image	
Project Description	<p>ABP RAD ESCO Limited was established to serve the 4.7 million sq ft. mixed-use Royal Albert Docks development in East London – a £1.7 billion project developed and operated by Chinese developer ABP and set to become London’s next key business district.</p> <p>http://www.abp-london.co.uk/</p> <p>The on-site energy centre will exclusively deliver heating and cooling to the development, with the option to extend and connect the networks to the wider area. Power created by the energy centre will also be fully utilized to benefit the customers of the development.</p> <p>The energy centre will operate to deliver peak demands of circa 25MW of heating, circa 35MW of cooling and circa 4MW of power to the site when fully operational.</p>
Technology/heat source	Boilers, Chillers, CHP, storage
Consumers (heat/electricity)	Heating, cooling and power
Project development timeline	<p>The project has been in development since 2012, with planning permission for the scheme granted in summer 2014.</p> <p>A detailed strategy for the commercial options of the ESCo was started alongside the project development and in line with the carbon saving and air emissions targets of ABP London in conjunction with the London Borough of Newham and the GLA.</p> <p>There were a number of commercial and technical options analysed and evaluated prior to developing the project as a Project Sponsor ESCo. These included 3rd Party ESCo, Concession and JV models.</p>





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Project Name	Royal Albert Dock (RAD) scheme
Background	
Project development timeline	<p>The DBOM partner was appointed in Q2 2016 along with approval for the commercial structure. The first Customer Supply Agreement was signed in Q1 2017.</p> <p>The project will be fully operational in March 2019 and Phase 2 is currently under development.</p>
Opportunities/plans for expansion	<p>The Energy Centre will be built in a phased manner to match the on-site supply.</p> <p>The Energy Centre solution has been designed for the potential connection to off-site users of power and for the potential connection to additional local heat or cooling networks.</p>
Individual project objectives	<p>The ESCo project objectives are to provide:</p> <ul style="list-style-type: none"> • deliver carbon savings • promote the use of efficient and clean energy on the site • deliver proven capital and energy cost savings for the customers of the RAD development • deliver quality and guaranteed standards of service to the customers of the RAD development • create ongoing value, continuous improvement and future opportunities for the RAD ESCo, the RAD development and – where feasible – the wider area <p>The strategy for the ESCo is to create ongoing value for the Royal Albert Docks, including ABP London, their investors and the users on site.</p> <p>There is a clear aim to exceed the relevant national, regional and local policy whilst creating a financially, socially and environmentally sustainable energy company.</p>





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Project Name	Royal Albert Dock (RAD) scheme
Financials	
Upfront Capex (£)	Confidential
Project NPV	Confidential
Levelised Costed Heat	Confidential
Project IRR (%) and Term	N/A to Project Sponsor ESCo model (unlimited term)
Payback Period	N/A to Project Sponsor ESCo model
Commercial Structure	
Parties involved in the project and commercial interfaces	<p>ABP London and HermeticaBlack have developed and executed the ESCo set up and structure, with Pinsent Masons providing legal advice.</p> <p>Vital Energi are the appointed DBOM contractor.</p>
Driving factors for commercial structure	<p>The aim of the commercial structure is to best deliver the project objectives above and deliver ongoing value to ABP London and the Royal Albert Docks development.</p> <p>The ability to retain commercial control over the development is a key factor in defining the Project Sponsor ESCo model, especially due to the phased build out of the wider heat and cooling demand on the site.</p> <p>ABP London are best placed to manage the initial build out risk of the energy system and the heat/cooling demand, so the structure was established to give them the ability to do this and raise external finance as required. The Project Sponsor ESCo allows ABP London to look at different sources of finance that best suits them in terms of type and timing. This includes external finance into the ESCo once it is established and some of the key risks have been reduced.</p> <p>ABP London are a long-term manager of the site, so the ongoing commercial control and route to value recovery – including retention of key risks, additional value and future opportunities – led to the Project Sponsor commercial structure.</p>





Project Name	Royal Albert Dock (RAD) scheme
Funding	
Funding profile	Project Sponsor funding. Mixture of debt and equity.
Other sources of funding explored	Private equity, LEEF finance, ESCo funding, asset finance.
Funding community perception of Project	Strong interest from all funding explored. ESCo and equity funder interest due to the scale of the project and the perceived lower risk of site demand build out and customer counterparty profile.
Barriers/issues in seeking funding	Project development timing, wider project restrictions, the benefit associated with the wider project funding options.
Timing of funder involvement	Funding options were investigated in detail. A strategic and project value decision was made to delay specific funding of the ESCo and heat network until later phases, where the perceived risks are reduced and easier to manage and the external funding market can price funding more efficiently.
Procurement	
Implications of the procurement approach	<p>The procurement routes investigated were EPC, DB and construction management.</p> <p>A specialist designer in Vital Energi was appointed to work alongside ABP and HermeticaBlack to develop the design and technical options of the project. Vital Energi were then appointed to finalise the design and construct the Energy System as a named sub-contractor under a wider EPC contract with CITIC Construction.</p> <p>This combined approach allowed the design to be developed collaboratively, with all options and opportunities reviewed with the ABP development team and HermeticaBlack, prior to committing to a full construction cost and contract.</p>

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Project Name	Royal Albert Dock (RAD) scheme
Pricing	
Setting heat and power prices	<p>Heat, cooling and power prices have been set in line with the project costs, the long term view of ABP and the desired energy cost savings for the customers of the development.</p> <p>The energy costs will be set in line with wider market benchmarks and norms to ensure comparable avoided cost savings for each customer of the development.</p> <p>The supply agreements and pricing mechanisms have been developed by ABP, HermeticaBlack and Pinsent Masons to reflect the ESCo and utility markets and ensure the guaranteed customer standards and service benefits.</p> <p>Inflationary mechanisms are linked to a basket of appropriate indices, including RPIx, BEAMA indices and the wholesale gas/electricity markets. This ensures that there is always a fair market price for the energy supply to the RAD customers.</p>
Taxation	
Taxation considerations	Ownership of assets, interest in land and implications of corporate structure were all considered. This included a strategy for the operational costs of the ESCo, including: SDLT, ECAs/CAs, Business Rates, VAT, CT etc.
Business Rates	
Business Rates considerations	<p>Business rates have been included in the ESCo cashflow and within the strategic business model based on the VOA guidance. These costs will be applied to the model and the supply prices.</p> <p>The rates are a relative constraint on the operation of the ESCo, especially in the early years of the project.</p> <p>It is considered that the heat network market could benefit significantly from further investigation on the impact of business rates – especially in line with the wider benefits of heat networks and ESCo structures on larger new build schemes such as the Royal Albert Docks.</p>
Accounting	
Accounting considerations	<p>A strategy for the assets and liabilities of the ESCo was established to ensure that the accounting principles of the ESCo lined up with the wider ABP London accounting considerations.</p> <p>The Project Sponsor ESCo structure allowed this strategy and the wider considerations to be easily incorporated at the appropriate time, with no additional external negotiation or third-party accounting implications.</p>



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3rd Party ESCo

Concession

Joint Venture ESCo

Project Sponsor ESCo

In House Delivery



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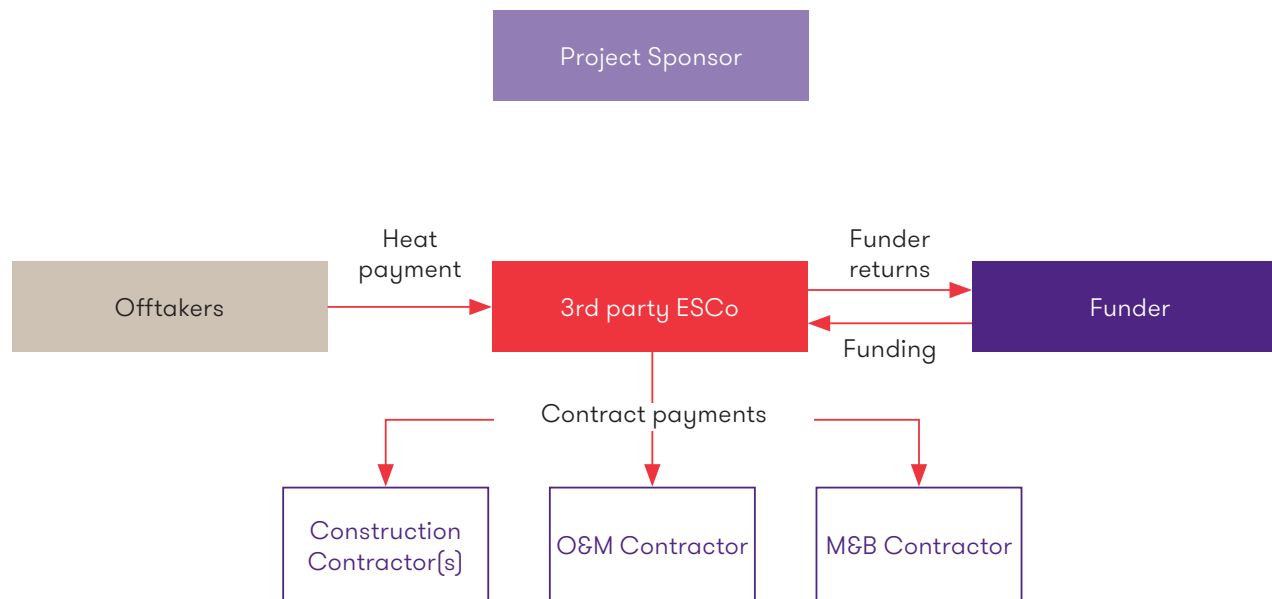
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3rd Party ESCo

- Concession
- Joint Venture ESCo
- Project Sponsor ESCo
- In House Delivery

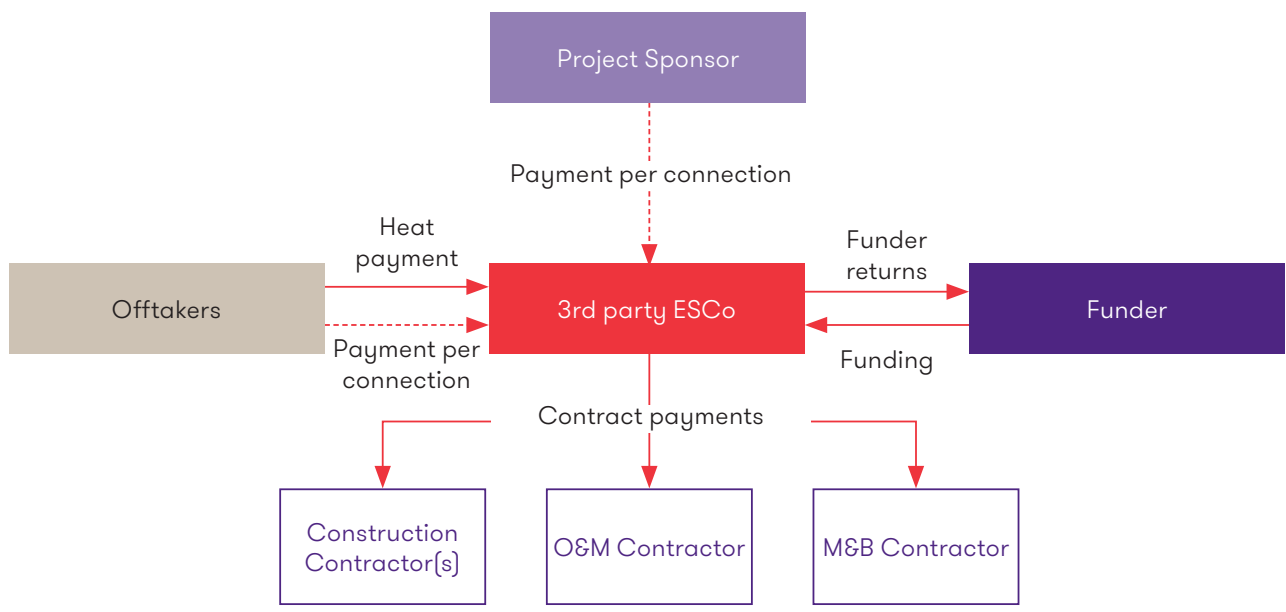
In the following diagrams, the red arrows represent cashflows. For equivalent diagrams representing contractual relationships, see [Sections 1.6.1](#) and [6.1.4 to 6.1.8](#).

Delivery structure 1 - 3rd Party ESCo





Delivery structure 2 - Concession
a. Assets funded by 3rd Party ESCo



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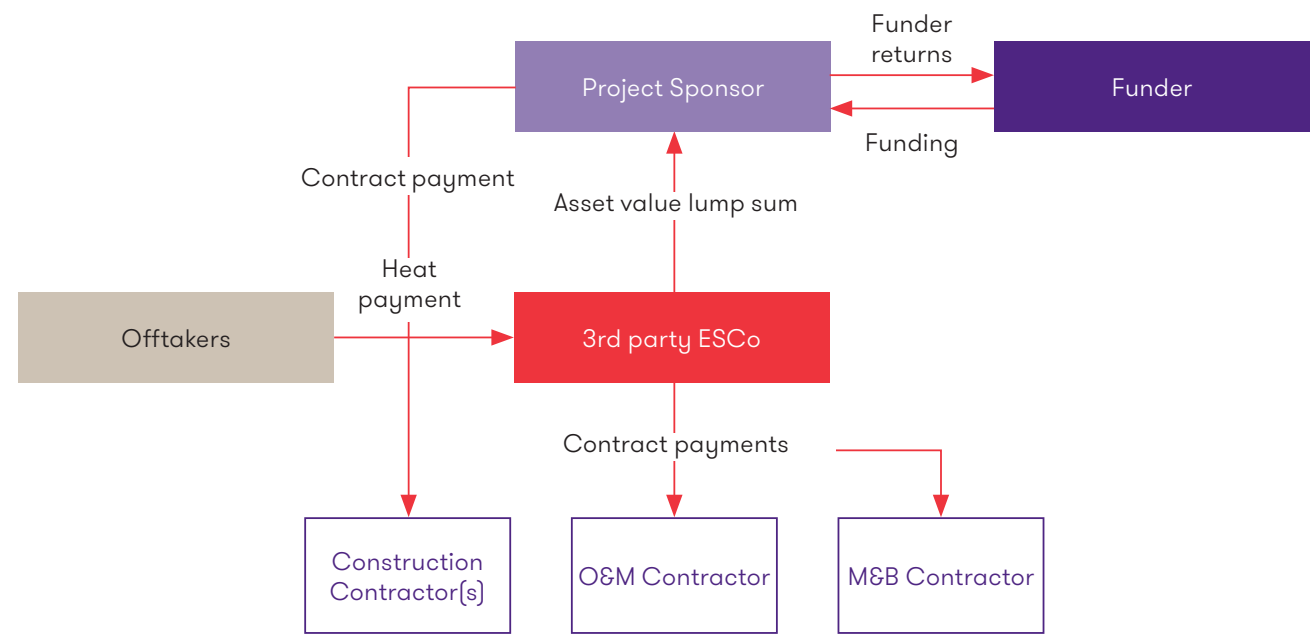
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b. 3rd Party ESCo adoption of assets



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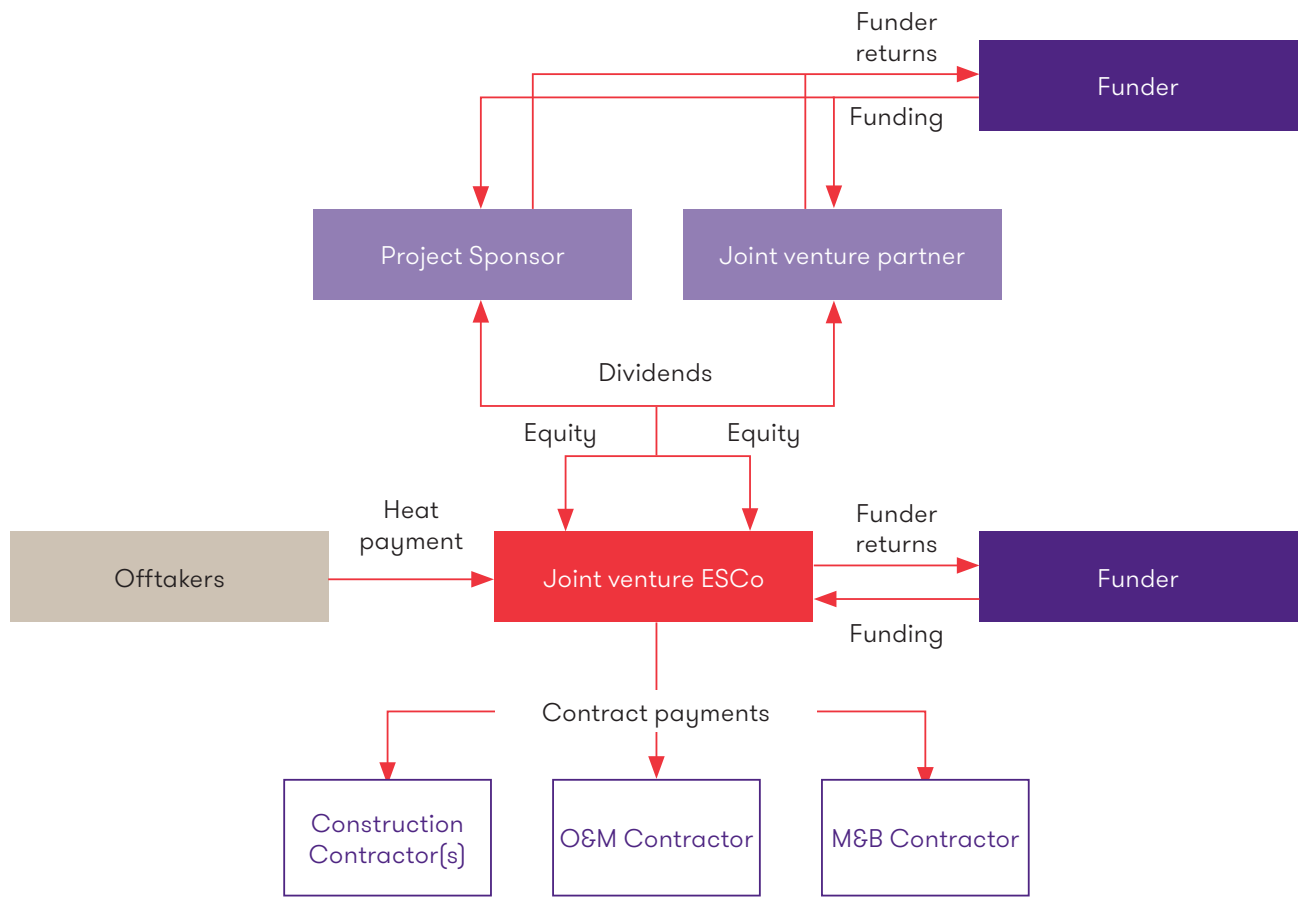
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Delivery structure 3 - Joint Venture ESCo



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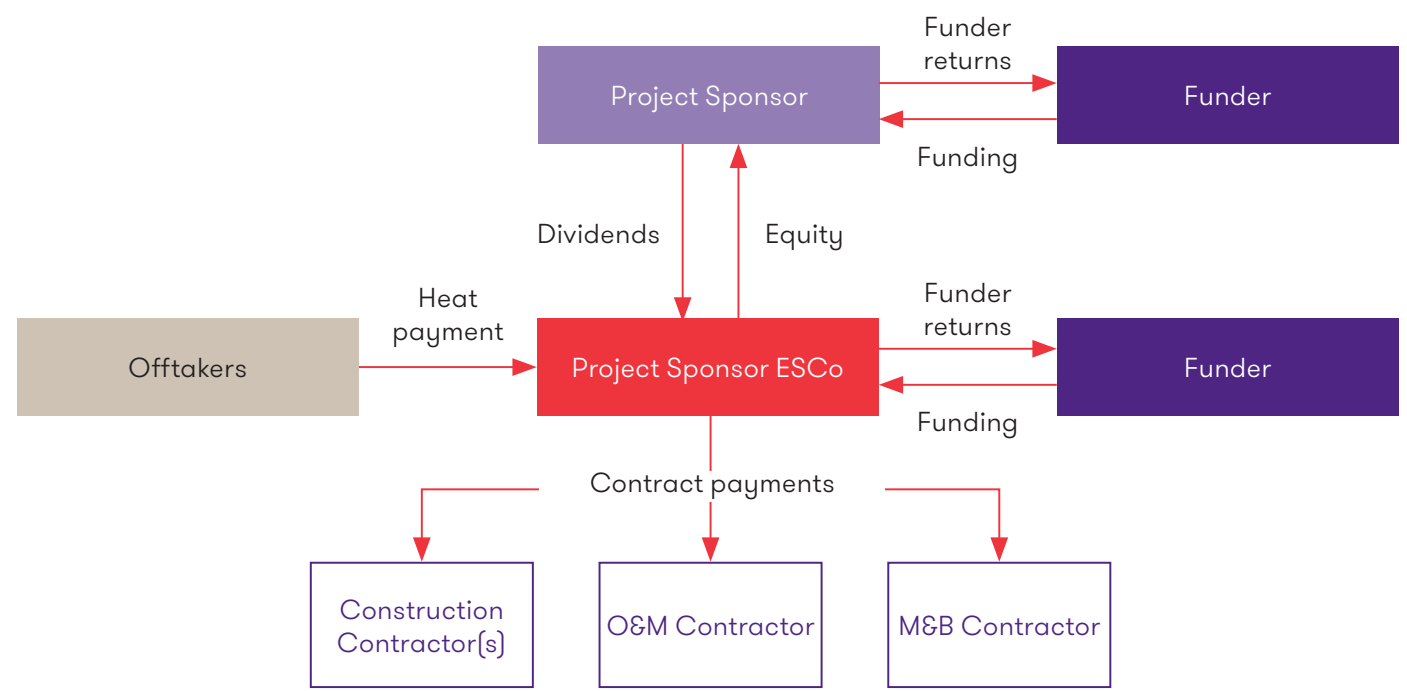
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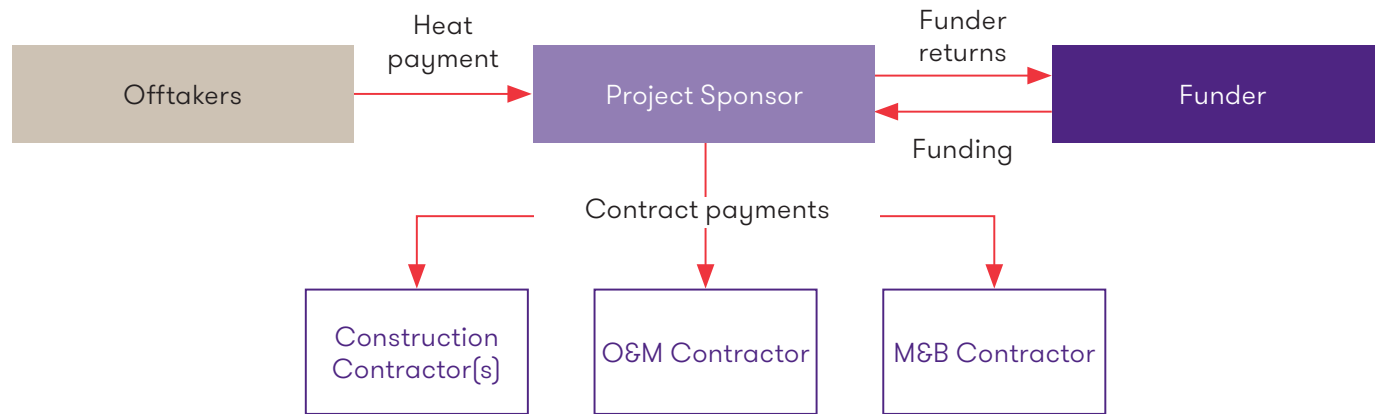
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Delivery structure 5 - In-house Delivery



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3rd Party ESCo

Concession

Joint Venture ESCo

Project Sponsor ESCo

In House Delivery





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