

#THEPERFECTSTORM

# Welcome

## The Perfect Storm

How to approach new build  
developments

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# Your hosts

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## **New Build – Procuring Low Cost Low Carbon Heat Networks**

Ian Allan, Head of Market  
Strategy

## **This webinar will cover**

New buildings and developments - how to ensure you procure low cost, high performance heat networks.

Moving away from risk-prone design, build and adoption

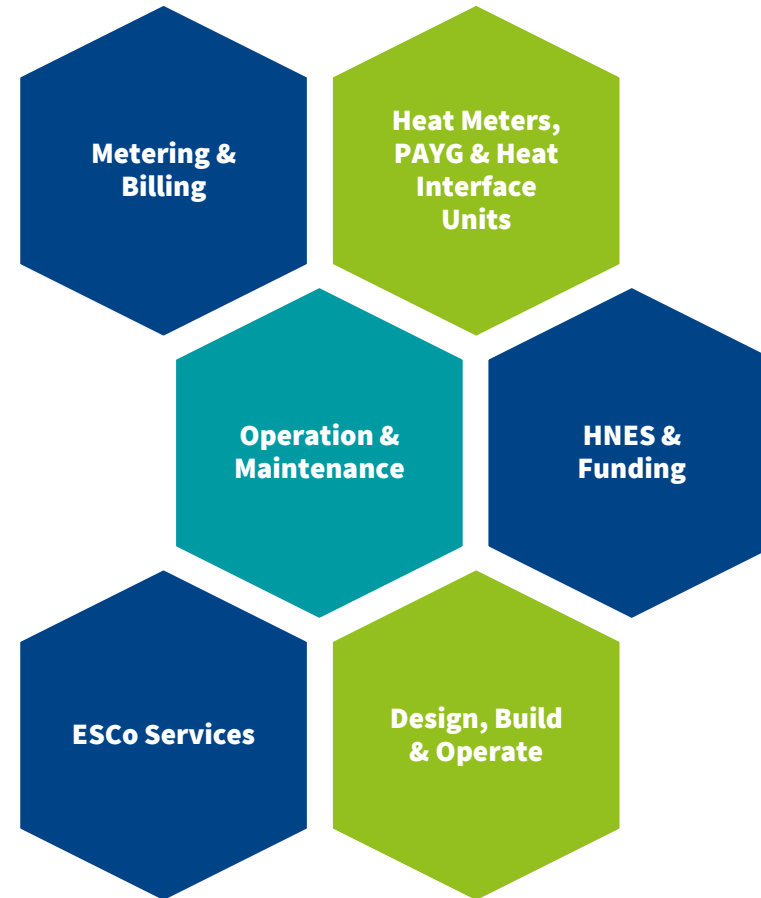
How early engagement of HN operators and DB&O can bring down CAPEX and operating costs

Integrated Local Energy Systems for your development – stacking benefits?

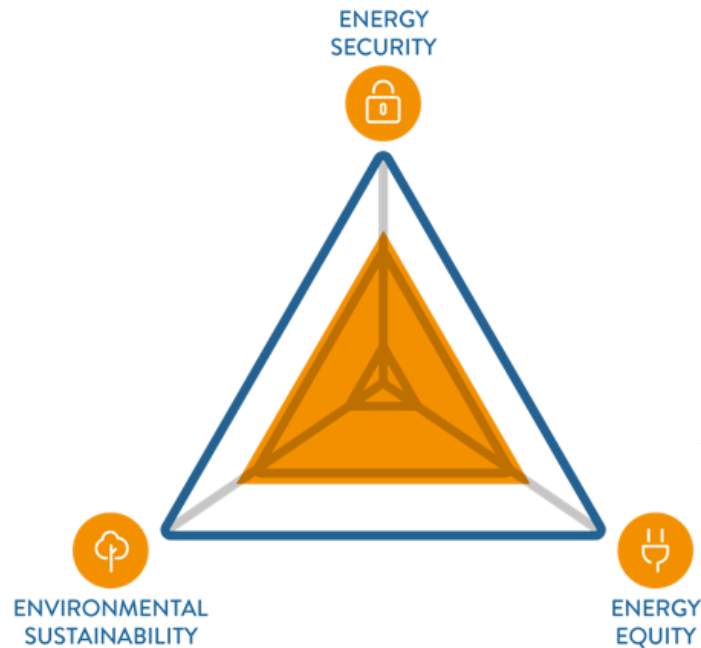


## Smart & Sustainable Heat Network Solutions

- 40+ years' experience
- 150 employees
- 80,000 properties
- 500 heat networks



# UK Heat Networks – key part of delivering on climate change



## Heat Network Advantages

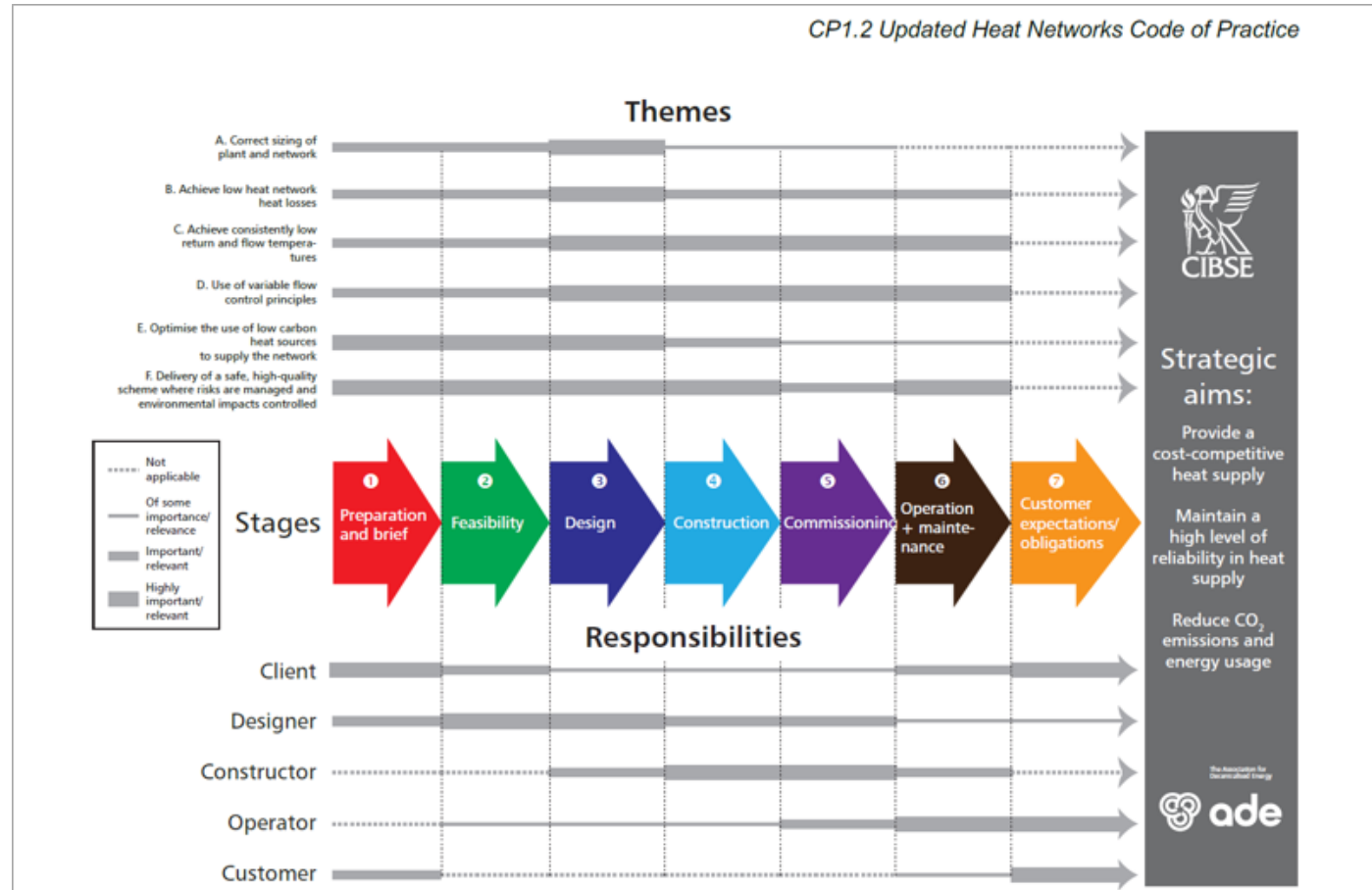
- Proved to be flexible for low carbon sources
- Centralised heat generation is cheaper than individual solutions
- Centralised energy storage is cheaper and more efficient

Gov. ambition for heat networks:  
**From 2% to 20% by 2050**

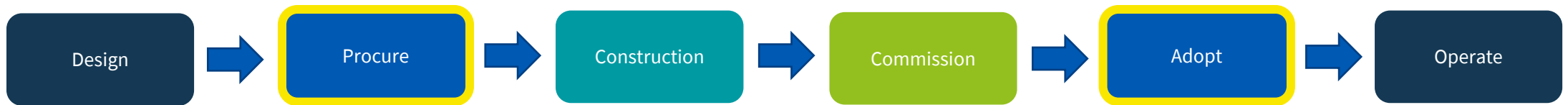
Regulation of Heat Networks:  
**Energy Bill progressing though Parliament**

**Mitigating rising cost of fuel and plant**

# Fixing the supply chain?



## Building performance: Avoiding adoption risk

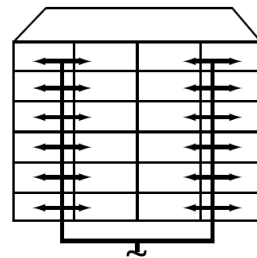
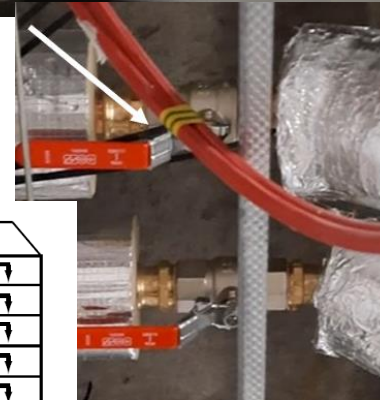


- The operator should be engaged with procurement, as they will take responsibility for meeting customer expectations over the long term
- Late involvement of the operator can reveal gaps in early stages of procurement
- Difficult to make changes once it is designed or built!

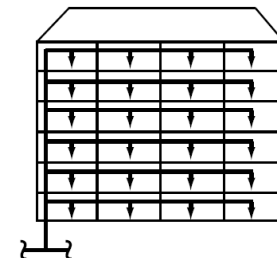


# Typical adoption report stats

- Compliance with CIBSE CP1
  - Only 13 out of 142 minimum requirements met
  - Only 3 out of 28 best practice
  - Distribution and terminal runs too long
- Capital savings
  - Removing plate heat exchangers
  - Reducing pipe sizes
  - Reducing generation capacity
  - Removing pumps
- Operational saving
  - Reducing flow temperature



(a) Shared risers, minimal horizontal distribution



(b) Single riser, horizontal distribution

## More on risers and terminal runs

Compliance with CIBSE CP1 means keeping **laterals as short as possible** to reduce distribution losses.

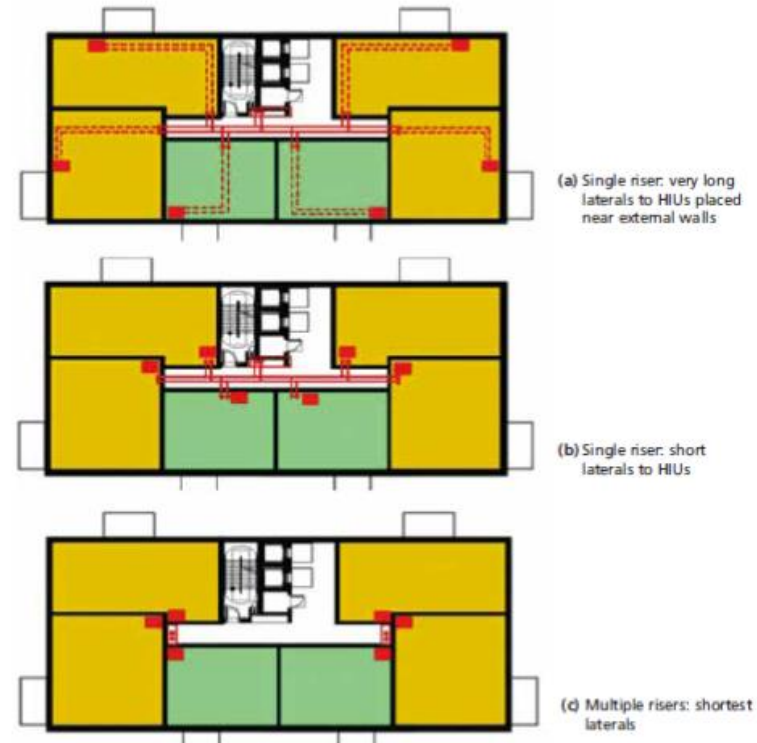
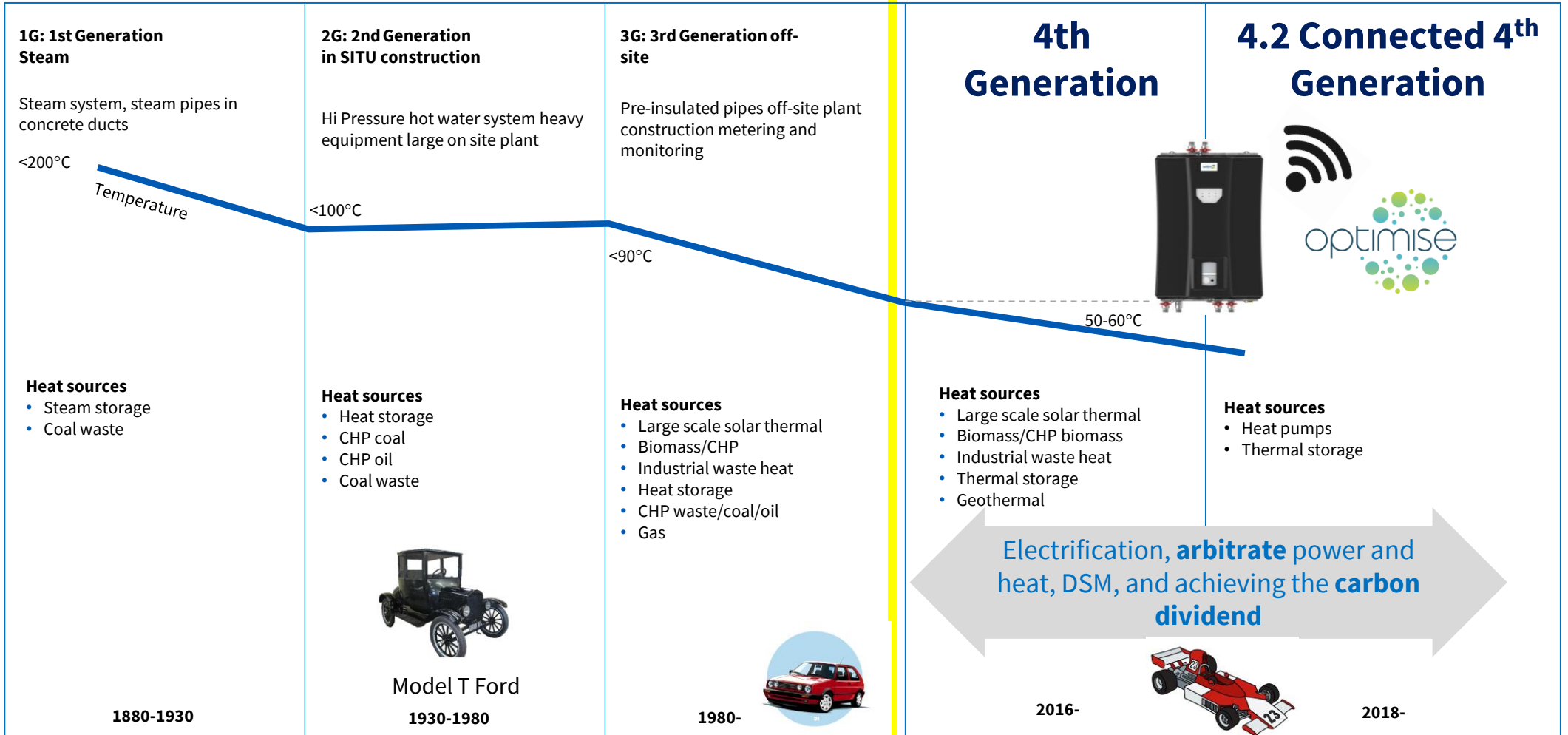


Figure 37 Typical floor plan showing effect of HIU location

Extract from CIBSE CP1

# Building performance: 4G Heat Networks and beyond

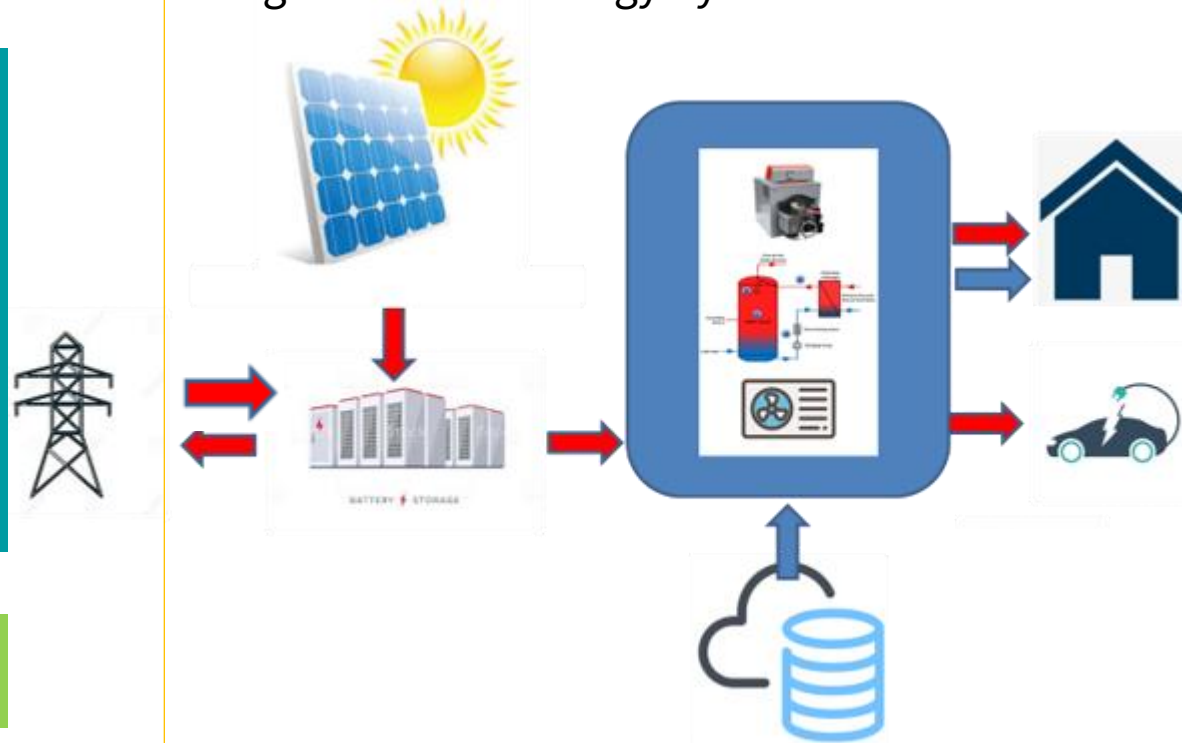


## Building performance: futureproofing example

- **Integrated local energy systems:** layering benefits to bring down the cost
- Procuring ILES; end to end design and engineering is more critical now

Low carbon net-zero solutions

Grid | Integrated Local Energy System



## Summary

Heat Network procurement should start early in the development pipeline and all stakeholders must be aware of technical standards required.

Consider engaging with your operations partner early or going down the Design Build & Operate route for your heat network.

Regulation for both technical standards and customer protection is imminent.





Thank you!

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# Energy Management

HERMETICBLACK

DEVELOPMENT & ASSET MANAGEMENT  
[www.hermeticblack.com](http://www.hermeticblack.com)

HermeticaBlack is a specialist in the investment, development and asset management of distributed energy projects.

We work on behalf of developers, investors, public sector and infrastructure investors to:

- Develop an energy strategy which creates greatest value to core business operations;
- Identify and structure projects to deliver the strategy and financing;
- Procure best-in-class, bespoke teams and supply chain partners;
- Deliver best possible contracts and undertake commercial / contractual due diligence;
- Manage the development, construction and operation of projects to deliver carbon savings and optimise returns while reducing and mitigating risks;
- Track and optimise operational and financial performance;
- Identify and secure external funding; and
- Manage the delivery and operation of successful projects.

Find us at [www.hermeticablack.com](http://www.hermeticablack.com)



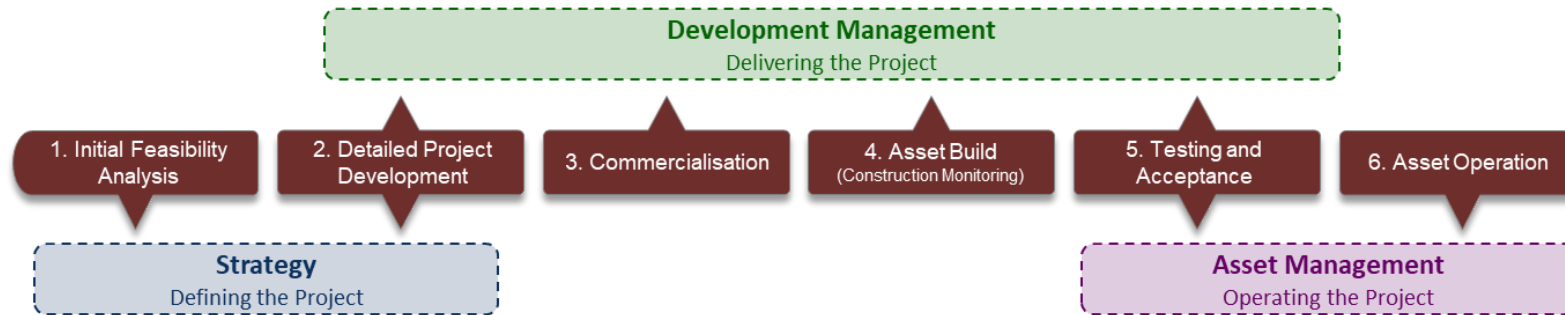
## HermeticaBlack – Who we work with



- **Developers:** Stanhope | Nuveen | Greystar | Chapter Living | Realstar | ABP London | UNCLE | Barratt London | Lend Lease | Galliard Homes | Countryside Properties | Taylor Wimpey | R&F Properties | Catalyst Housing | APO | Tide | Vita | Chapter Living | Quadrant Estates | Almacantar | Candour | Aldau | OPDC | City of Westminster | CIT | EcoWorld
- **Funders:** SDCL | SEEIT | Invesco | Amber | TriplePoint | HNIP | Ingenious | Green Investment Bank | Wren Capital Partners | Europa Capital | CBRE Global Investors | Savills IM
- **Large Energy and Advisory:** BEIS | HNDU | Siemens | AB InBev | Bart's Hospital Trust | Citibank | The Coal Authority | Grant Thornton | Kingsland Drinks | Deloitte | AECOM | Hilson Moran | Aspire | Open Energy Market | Moy Park | Huntsman | Santander | Kingspan | NCP | Virgin Group | Multiple Local Authorities | Covanta | GreenSCIES

# HermeticaBlack – How we work

- We cover the entire lifecycle of projects – including investor exit and feedback loops.
- Mixture of real estate and energy expertise.
- End to end process – all leads to delivery of the strategy / management of outcomes.



## Strategy

### Defining the Project

- Commercial / contractual structuring
- Value creation / analysis
- Funding options
- Financial modelling
- Commercial modelling and development appraisals
- ESCo Creation and contracts
- Delivery strategy / market analysis
- Business case ("5-case")

## Development Management

### Delivering the Project

- Development and project management
- Supply chain partnering
- Supply chain procurement
- Commercial negotiation
- Construction monitoring
- Cost and financial control
- Pricing & Tariff setting
- Handover management

## Asset Management

### Operating the Project

- Defects management
- Asset management
- Performance monitoring
- Detailed reporting (incl. ESG)
- Operational validation and reconciliation
- Utilities procurement
- Opportunity identification
- Re-finance / asset sale / disposal



# An energy management approach

## What?

- A company / or structure used to deliver energy supply and services
- Generally to deliver distributed generation of heat, cooling and power
- Distribution to end users through a combination of direct connection to customers and export through existing network infrastructure
- Facilitated by installation of efficient infrastructure
- Contains specific expertise in energy supply and services
- Services can be supplied by multiple partners
- An ESCo can have numerous types of funding, commercial structures and multiple contracts



## Who uses this approach?

Project sponsors such as:

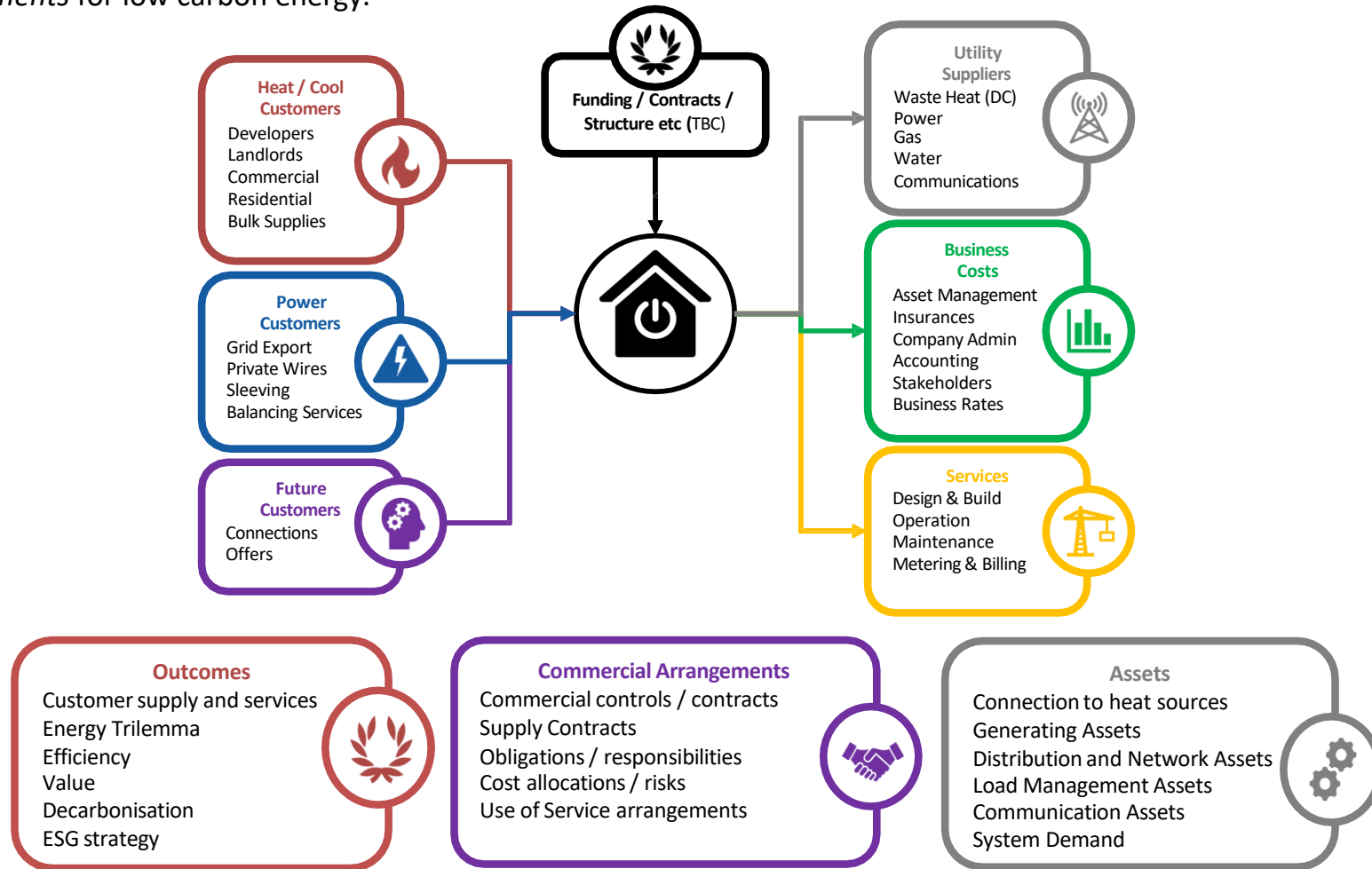
- Real estate developers and investors;
- Housing Associations
- Local Authorities
- Large energy users and Investors

## Why?

- Reduce cost and increase control and 'value'
- Support ESG strategy and decarbonisation
- Recovery of value / create different funding options
- Comply with regulation and legislation
- Future proof energy services and infrastructure on a site
- Deliver specific expertise in bespoke commercial contract(s) and contract length
- Increase attractiveness and "stickiness" of a place for business and residents
- Manage the control and risk of key commercial energy and infrastructure decisions
- Integration with other infrastructure and services

# Energy management – Where do you start?

An energy network / supply needs a range of *practical and commercial agreements* to govern strategic outcomes, funding, design, build, operation and maintenance of *physical assets*, and meet obligations of *customer supply agreements* for low carbon energy.



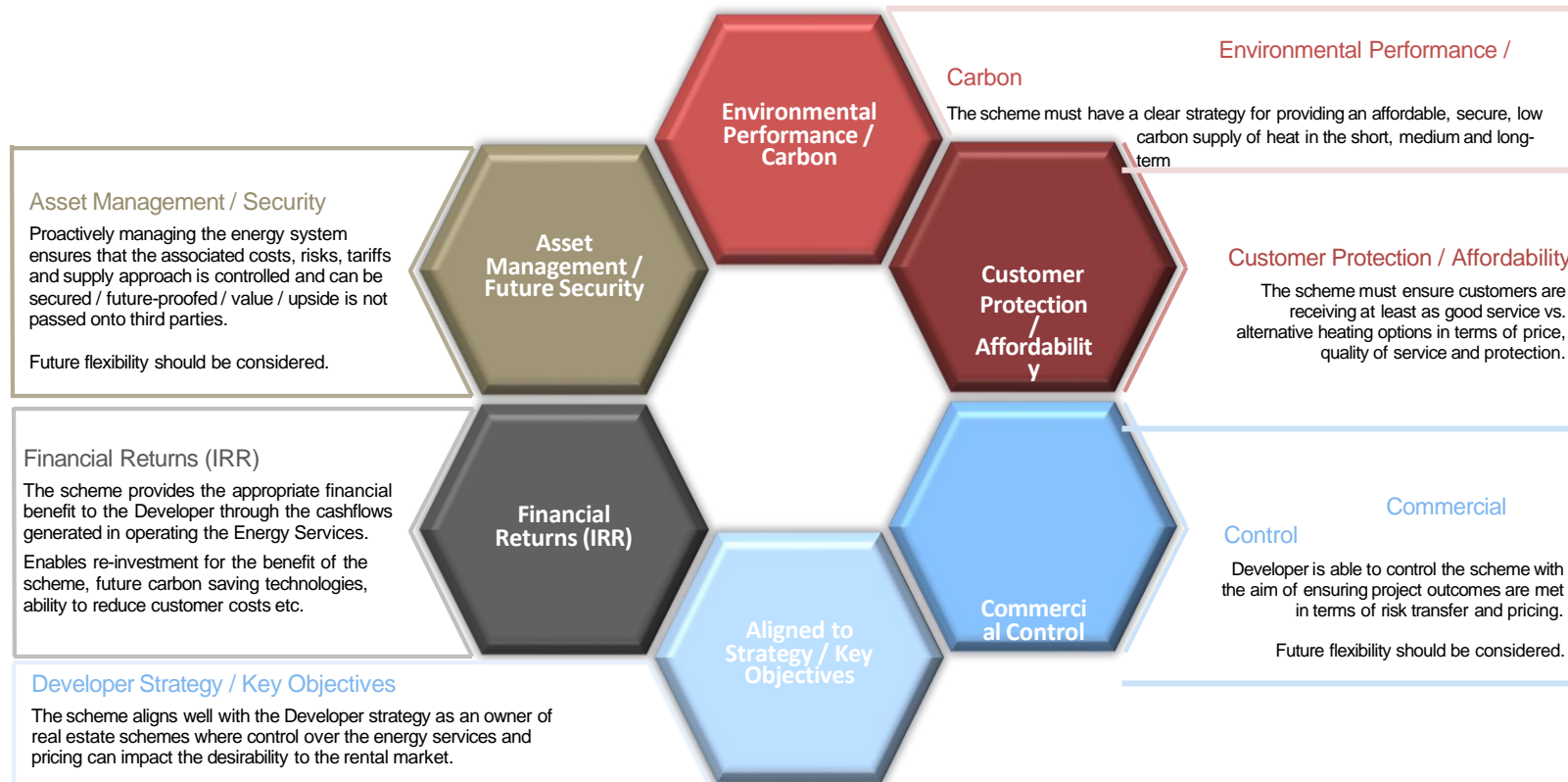
## What matters – Outcomes / strategy

The energy approach should align with the key objectives of the developer, and the development.

Currently the energy trilemma is critical and not considering it has long-term asset risk.

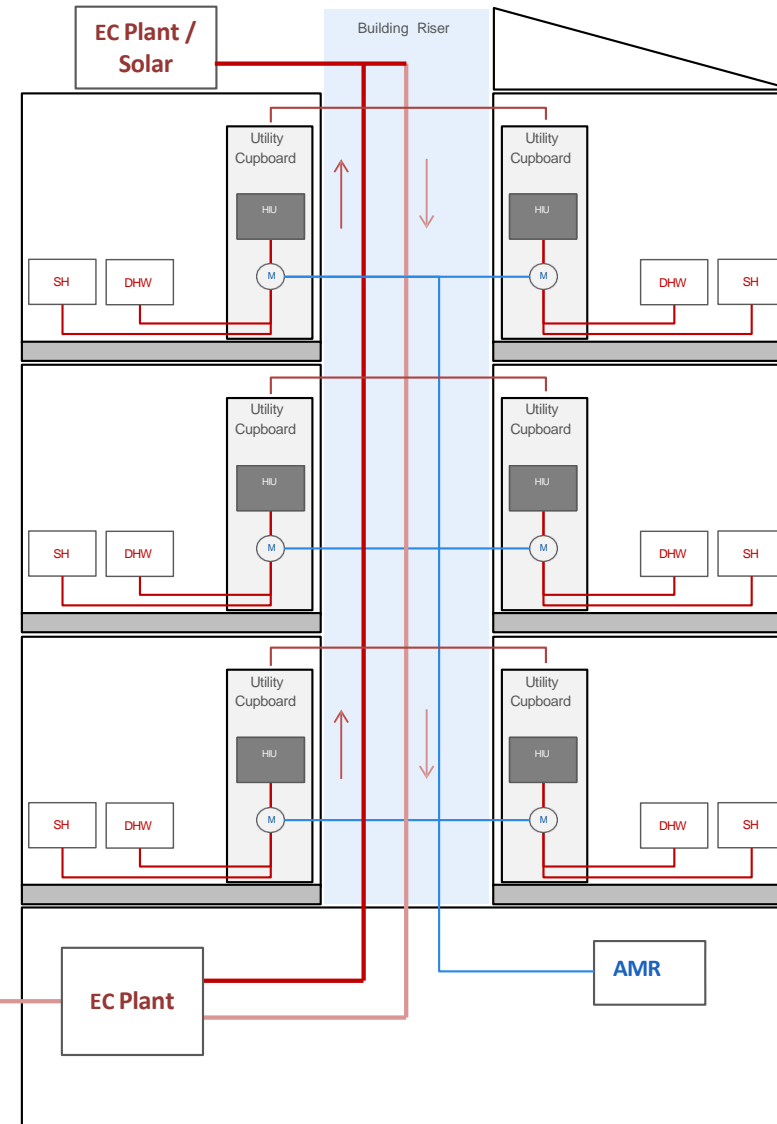
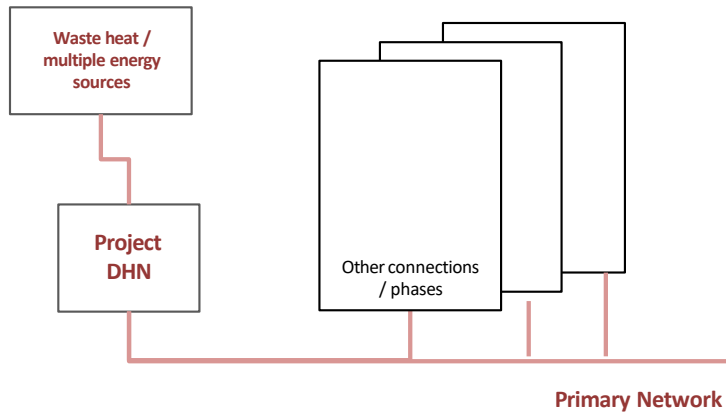
Understanding regulation and Government direction is critical.

Risks of challenge / litigation in ESG.



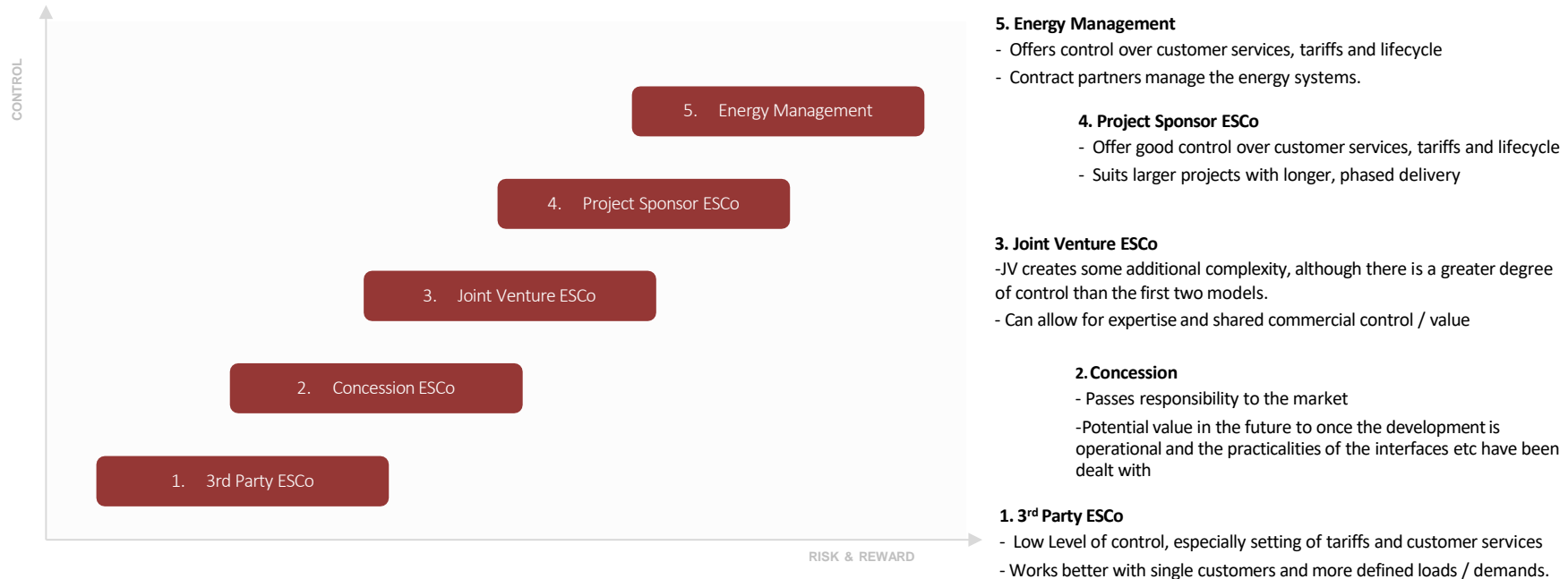
# What matters – Assets / design for operation

Description	
Asset Strategy	Ability to specify systems that fit the outcomes / evaluate design and specifications that manage security, sustainability, price etc. Future-proof where possible / social value where possible.
Internal System	Reduce losses, improve efficiencies etc. Future-proof the system (low temperatures / shared energy)
Metering / Data	Critical to support the function, improvement, reporting (and validation). Integration of multiple systems (power, heat, cooling)
Generation / Connection	<ul style="list-style-type: none"> <li>- Multiple sources of energy / integration</li> <li>- Waste heat / excess power</li> <li>- DHN or network Connections</li> <li>- Electric heat pumps (Air, ground, or water source)</li> <li>- Gas or combustion boilers, CHP</li> </ul>



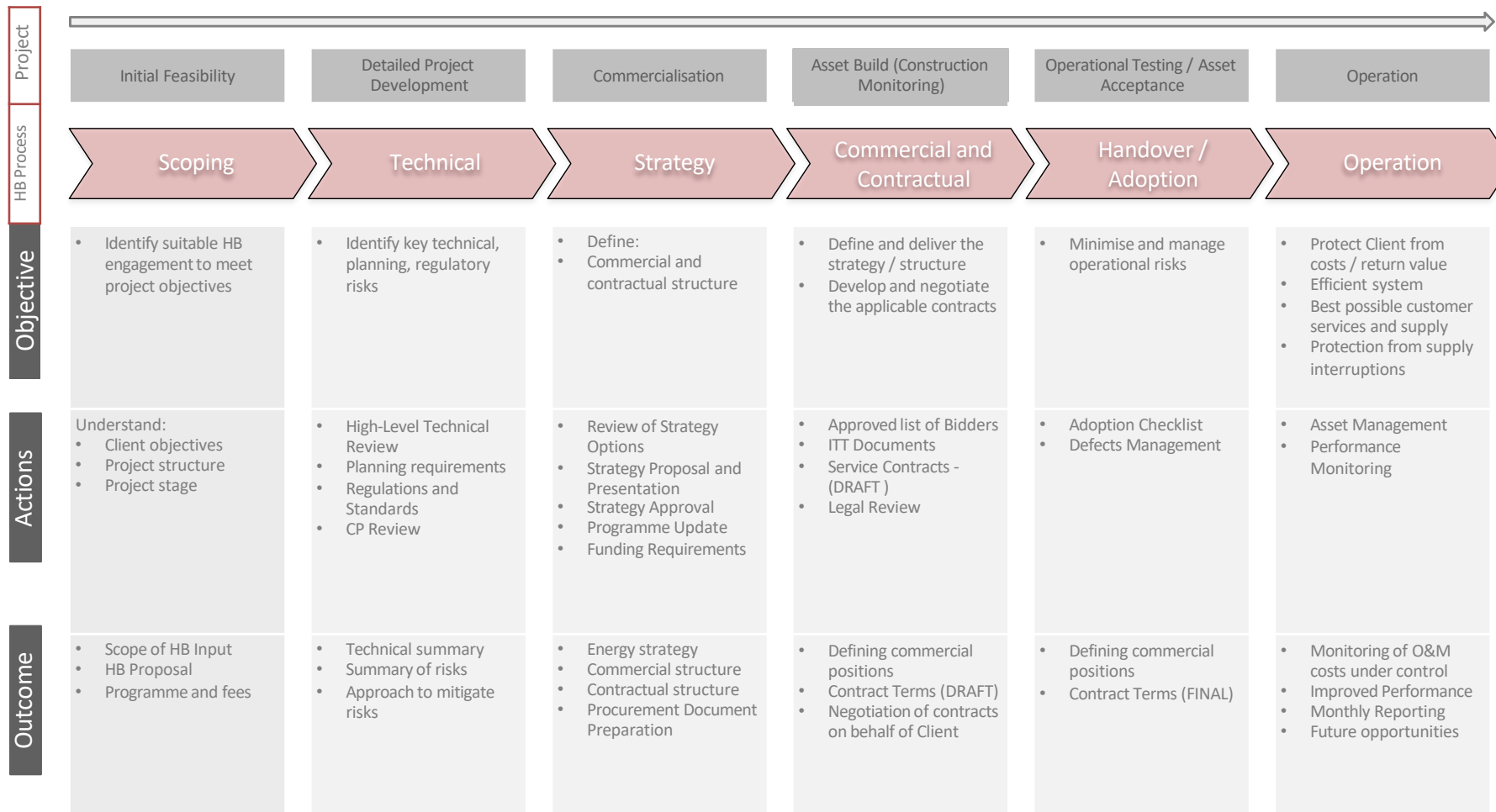
## What matters – Commercial structure

- There are multiple commercial, and contractual structures available that can be utilized – with multiple variables within each structure.
- Similar requirements in all scenarios. Strategy, scale, phasing, local opportunity becomes important.
- Each scenario requires a good installation, and approach to energy management in order to realise the key strategic goals / outcomes.
- The following outlines the general commercial options available:



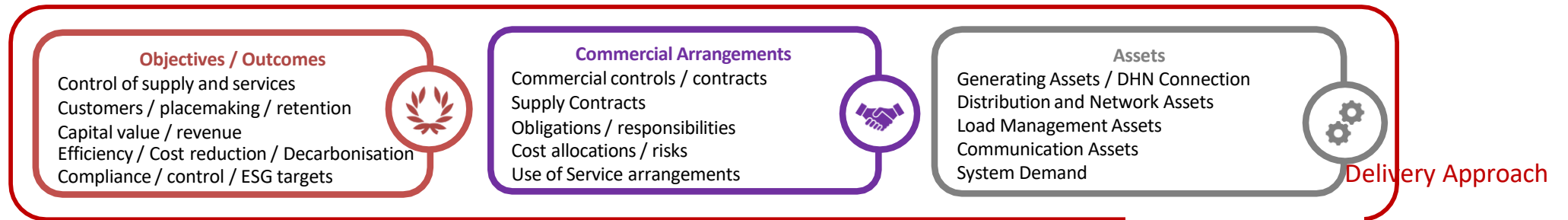


# What matters – Delivery and monitoring



## Energy management – Key considerations

- The energy approach must be structured to the needs of the Developer on the basis of the key commercial objectives through the best possible commercial arrangements.
- These objectives must be understood from a project owner and project customer perspective and align with the market options, energy assets etc.

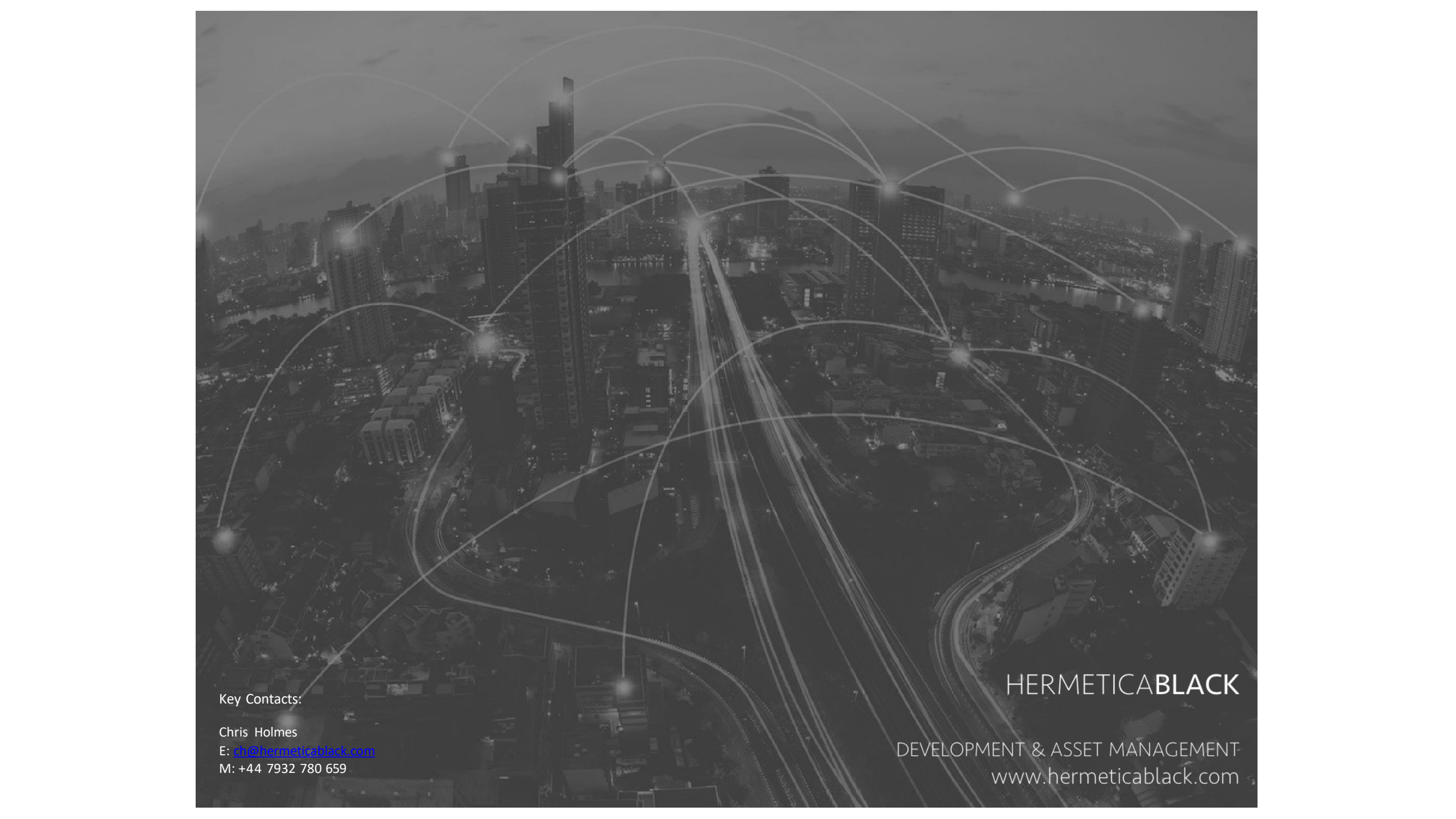


- It is important for the developer to understand the interplay between commercial arrangements value, control and costs (capital, operational and end user costs) of the energy approach.

*Selecting the right energy structure and putting in place a robust set of contracts will help ensure the energy system delivers the best value for the Developer and their developments.*

- How the developer plans to deliver the energy system (and monitor the delivery at each stage) to achieve the strategy and maintain the outcomes becomes critical. The costs and risks of getting it wrong are huge.

*Ensuring the energy strategy is delivered is critical to enabling the outcomes to be realised, value to be retained, and the development to be supported for the long-term.*



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# The Perfect Storm:

## How to approach new build developments

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# New heat networks – Introduction

- *Previous sessions*
  - Importance of experience and expertise in design, build and operation
  - Rationale and contractual structure for outsourcing or subcontracting
  - Key issues in Concession Agreement, in particular for existing networks
- *This session*
  - Context for new heat networks
  - Likely contractual arrangements
  - Key issues most pertinent to new heat networks



# Context & Contracts

- **Drivers behind new heat networks – carrot and stick!**
  - **Planning requirement**
  - **Condition of land transaction**
  - **Environmental commitments and benefits – reputation and marketability of development**
  - **Deliver energy security for residents – ability to disconnect from cost of gas crisis**
- **Benefits of new heat networks**
  - **No burden or risks of latent defects or underperforming older networks**
  - **Opportunities...**
    - **To deliver the best technical solution for building – for now and in the future**
    - **To appoint the an experienced operator/long term partner**
    - **To outsource responsibility and risk across both design & build and operation & maintenance**
- **What contracts may be put in place?**
  - **Design and Build Contract – fixed price, turnkey contract based on standard form for design, procurement and installation of heat network**
  - **Concession Agreement – long term operation and maintenance agreement**
  - **Supply Agreements – governing supply of heat (and electricity, if relevant) by Operator to Customer**
  - **Other agreements – Leases (between Clients and Customers) and Management Company agreements**

# Key issues for new networks

- Delivery of Works
  - Clear obligations to deliver network that meets specification and achieves required performance
  - Testing and commissioning process and/or adoption process
  - Delay damages and Excusable Events
- Defects
  - All responsibilities for defects sits with the D&B contractor to rectify within defects liability period
  - If operator is D&B contractor, operator to take defects and performance risk with very limited exceptions
- Cost and energy pricing controls
  - Factors causing increases in standing charges and unit prices
  - Ability to limit or restrict increases – gas cost comparator & Heat Trust
- Management and sufficiency of sinking fund
  - Easier to push responsibility for ensuring sufficiency of funds to operator
  - Protection of sinking funds between schemes
  - Change in Law risk – always an issue, particularly in relation to net zero, but new networks should be more future-proofed

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