HEATNET PROJECT

TALLAGHT DISTRICT HEATING-

Waste heat recovery from data centre in Dublin



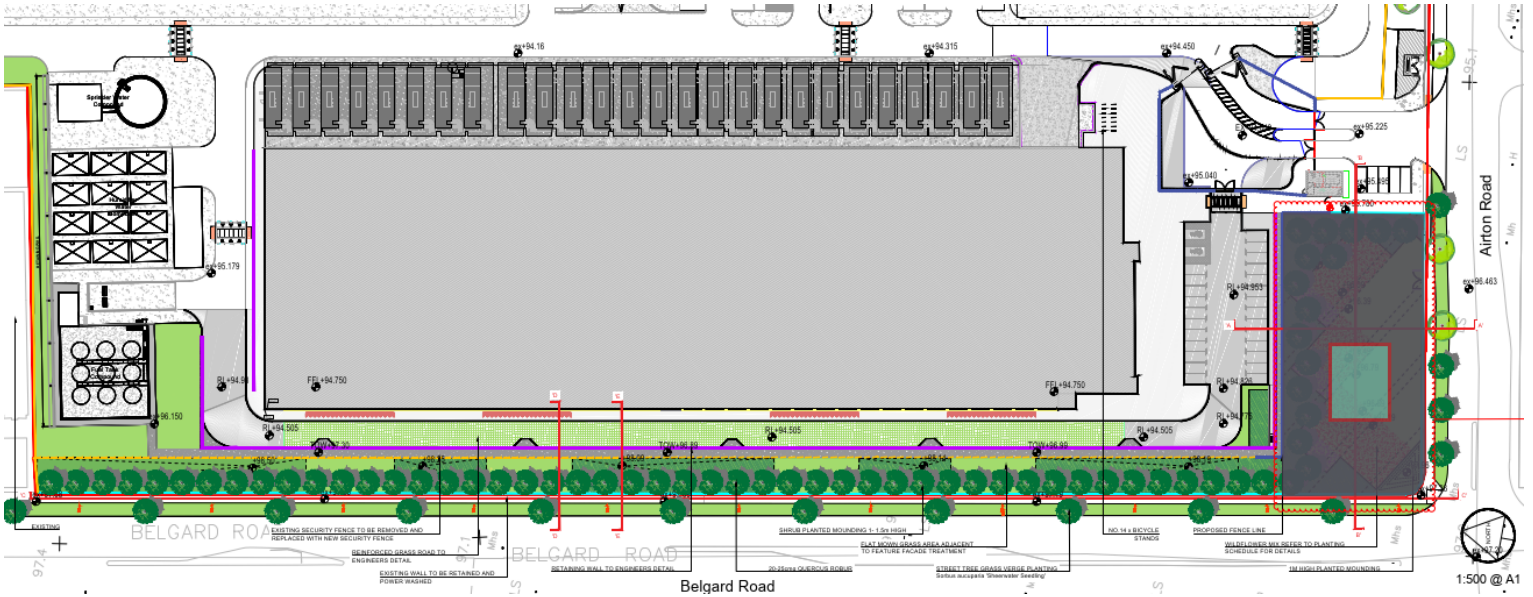
EDDIE CONROY
County Architect

Interreg North-West Europe HeatNet NWE

Comhairle Contae Átha Cliath Theas
South Dublin County Council

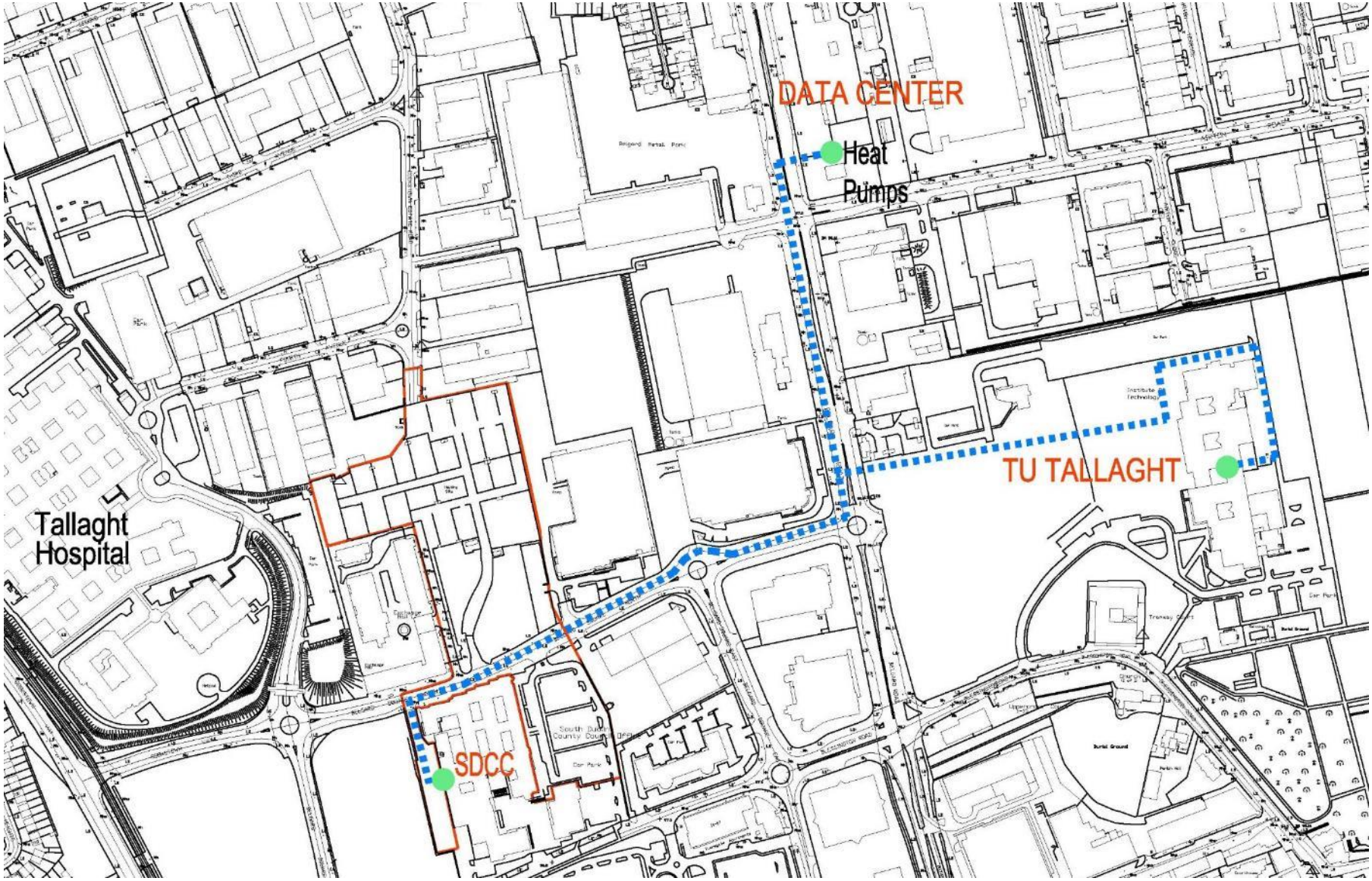
Codema
Dublin's Energy Agency

ENERGY CENTRE SITE

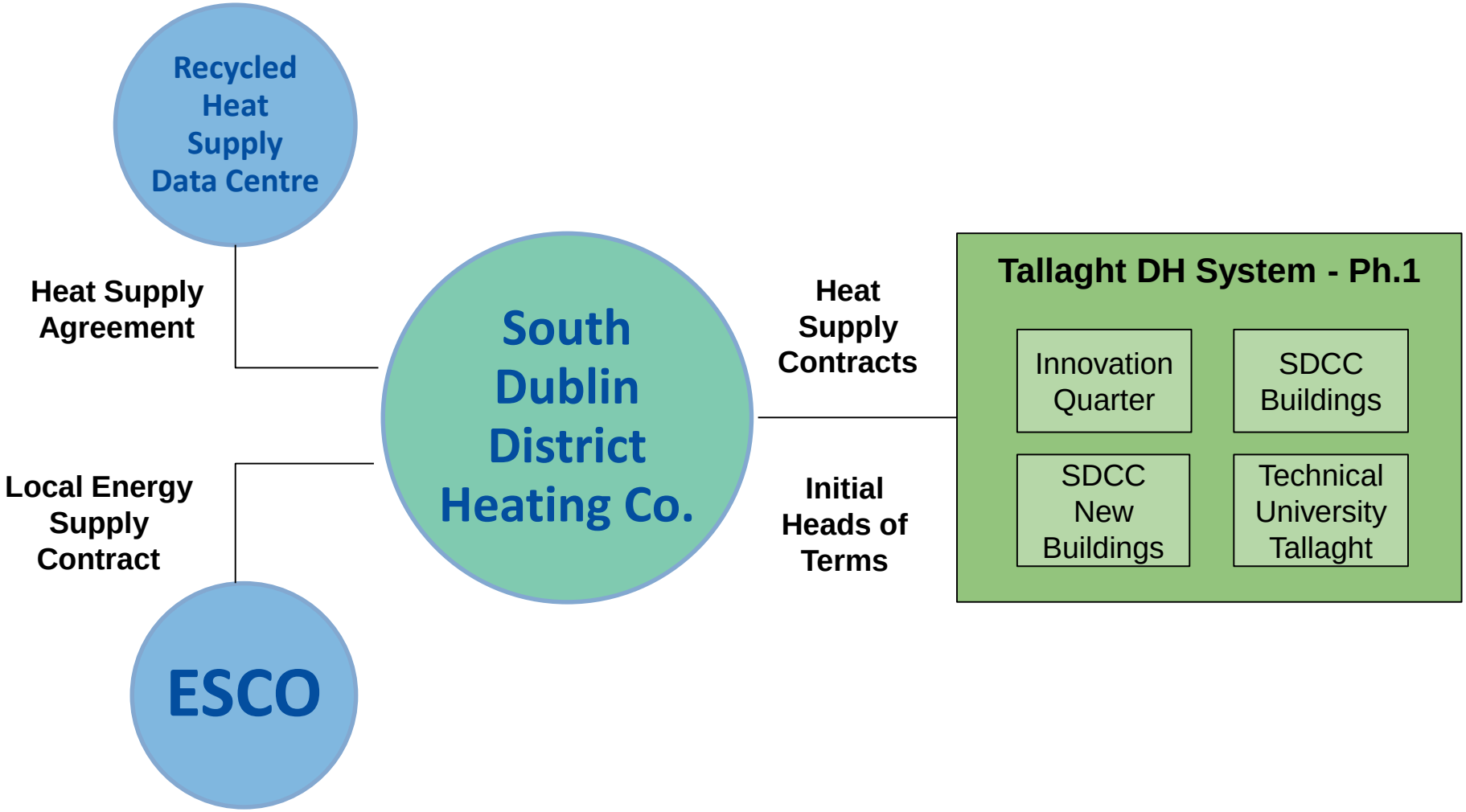


PREFERRED OPTION

- Data Centre used as main energy source



PROJECT OVERVIEW



SOUTH DUBLIN DISTRICT HEATING COMPANY

- Fully owned by SDCC
- Not – for – profit company
- Limited by guarantee
- No share capital and only one share owned by SDCC, sole member of the company
- Two directors for fiduciary purposes
- Advisory committee with representation from SDDC elected members, Codema, SEAI & Sectoral stakeholders

TDHS Design Concept

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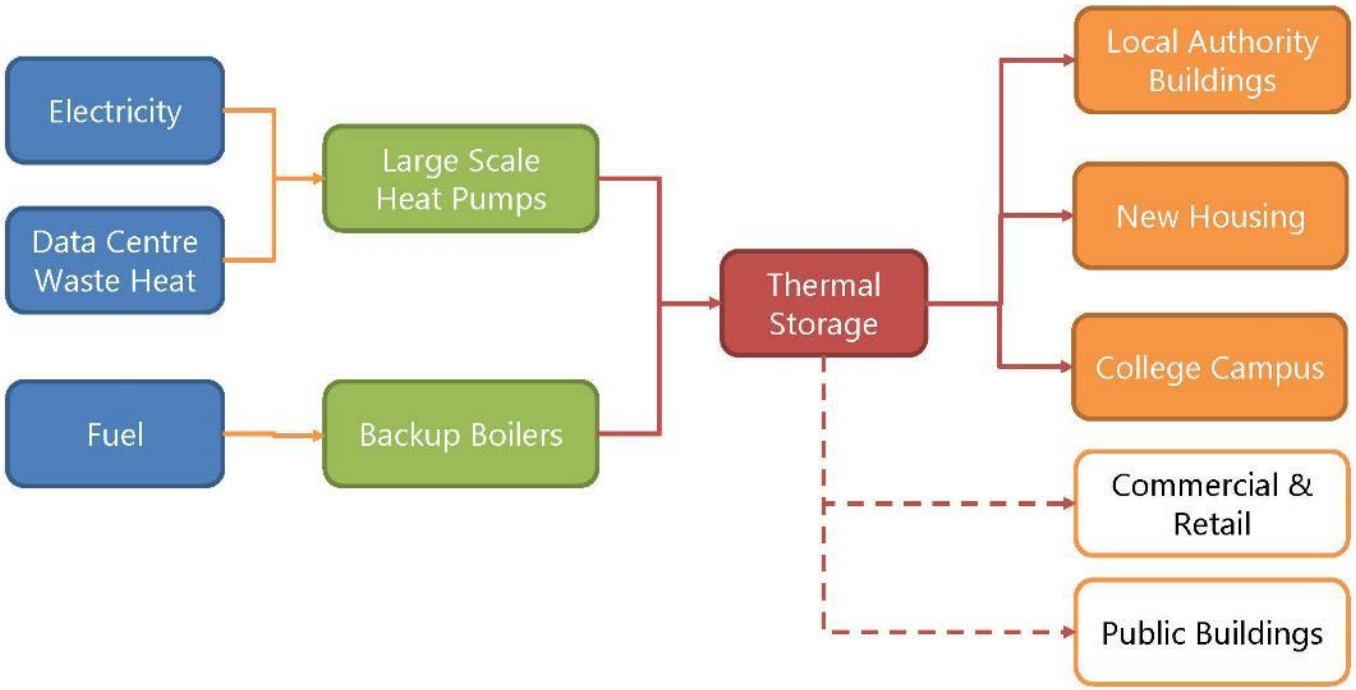

TDHS Design Concept

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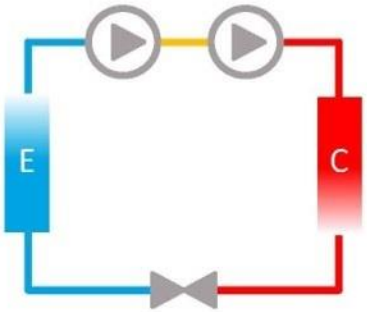
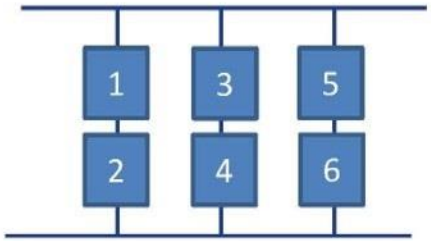
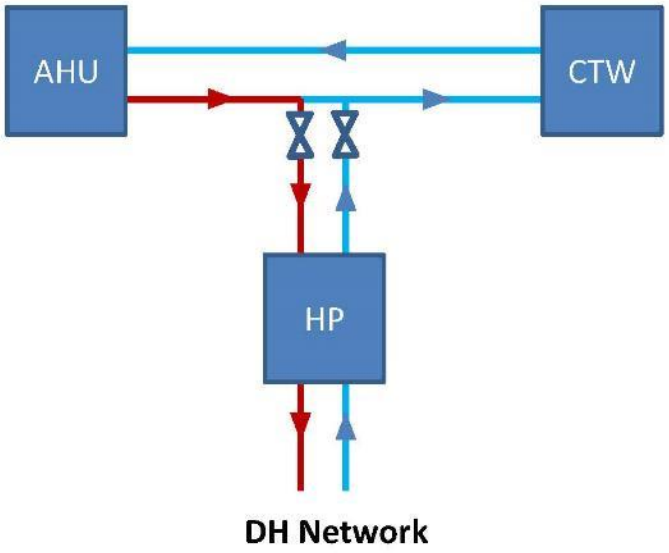
2-Stage Heat Pump





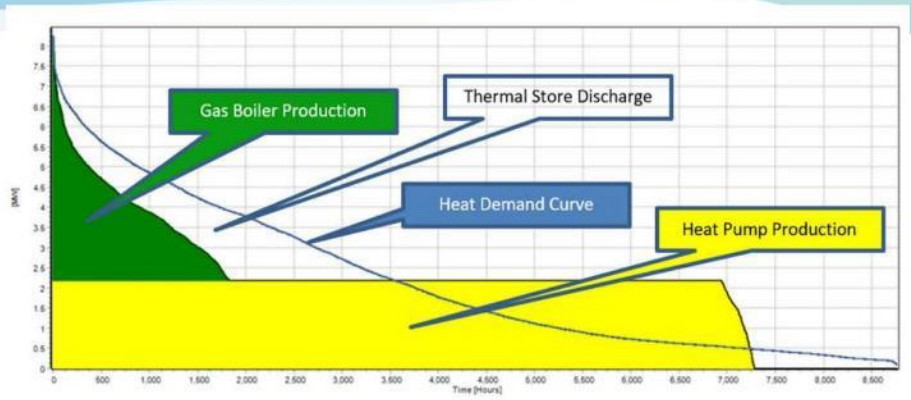
Connecting to a Cooling System

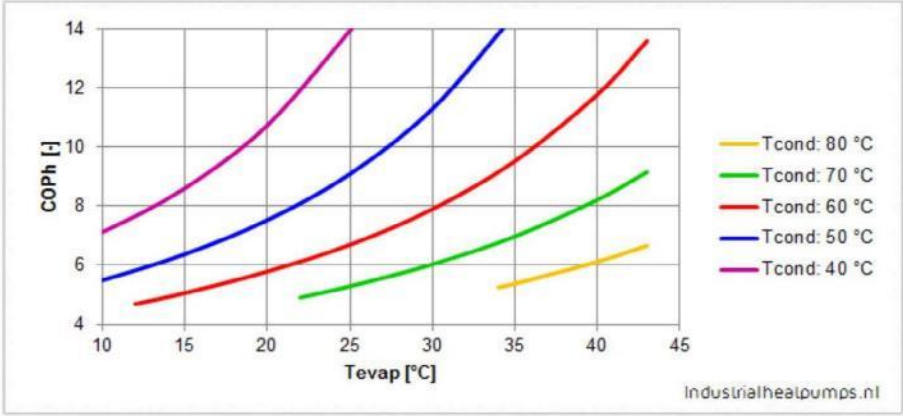
- Connect upstream of on-site cooling plant (chillers, CTW etc.)
- Reduced load on chillers, CTW
- High combined efficiency delivering both cooling and heating



The Heat Pump

- Refrigerant (GWP, ODP, Temps, H&S, F-gas regs)
- Compression stages/cascade
- Sizing and phasing – maximise HP contribution
- TES (Accumulator, Buildings) – more cost-effective alternative to batteries
- Effect of source & supply temperature regimes





Tallaght District Heating Scheme

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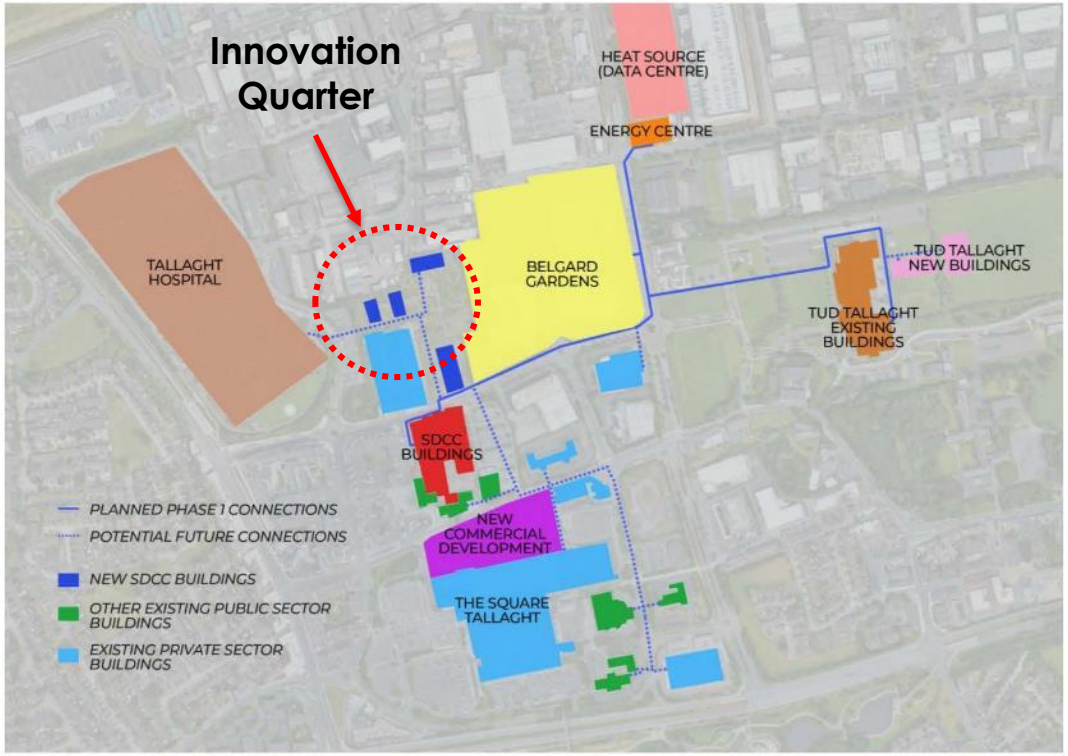


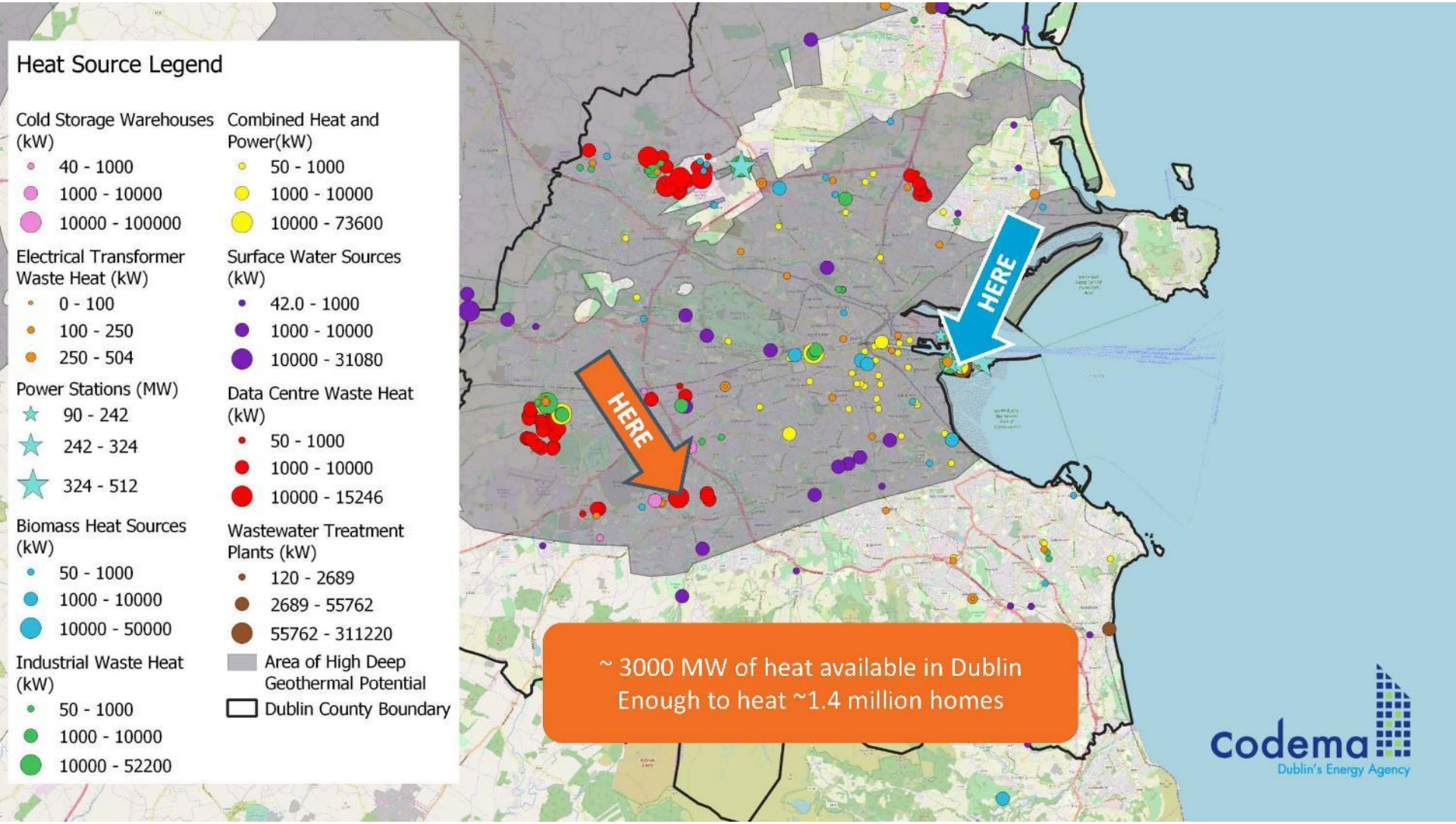
Energy System benefits:

- CO_2 savings of ~**1,400 tCO_2** per year for proposed Ph. 1
- Reduction in fossil fuel use for heating by **100%**
- Cleaner air – no particulates
- Utilises off-peak electricity
- Utilises waste heat which currently has no value
- Provides cooling as well as heating (high combined efficiency)
- Integrates electricity and heat networks – allows balancing of the grid, greater utilization of renewable electricity

Comhairle Contae
Átha Cliath Theas
South Dublin County Council

Thank you !

Eddie Conroy
County Architect
South Dublin County Council


Heat Source Legend
Cold Storage Warehouses (kW)
40 - 1000
1000 - 10000
10000 - 100000
Electrical Transformer Waste Heat (kW)
0 - 100
100 - 250
250 - 504
Power Stations (MW)
90 - 242
242 - 324
324 - 512
Biomass Heat Sources (kW)
50 - 1000
1000 - 10000
10000 - 50000
Industrial Waste Heat (kW)
50 - 1000
1000 - 10000
10000 - 52200
Combined Heat and Power(kW)
50 - 1000
1000 - 10000
10000 - 73600
Surface Water Sources (kW)
42.0 - 1000
1000 - 10000
10000 - 31080
Data Centre Waste Heat (kW)
50 - 1000
1000 - 10000
10000 - 15246
Wastewater Treatment Plants (kW)
120 - 2689
2689 - 55762
55762 - 311220
Area of High Deep Geothermal Potential
Dublin County Boundary
HERE
HERE
~ 3000 MW of heat available in Dublin
Enough to heat ~1.4 million homes
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ESCO TENDER SEQUENCE

- OJEU Notice
- Pre qualifications Questionnaire [PQQ]
- Shortcut of 4 – international firm
- Competitive dialogue in 2 –stages
- Invitation to submit final tender [IFT]
- Clarifications and appointment of preferred bidders

EVALUATION CRITERIA

Quality (60%) & Financials 40%

QUALITY:

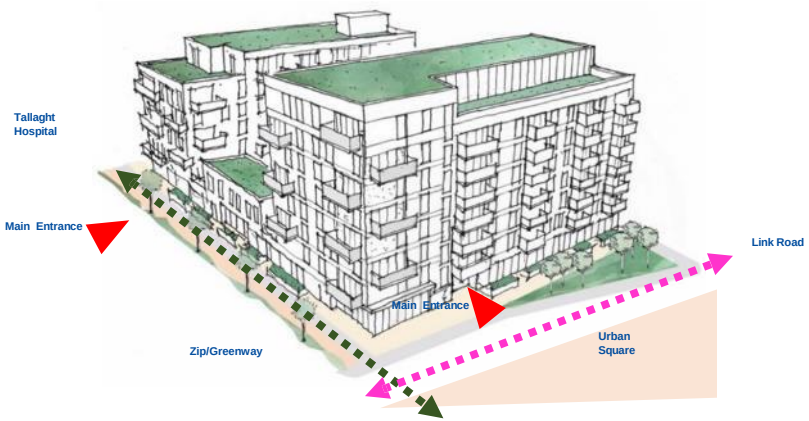
- Quality of energy system design (incl. carbon content of energy)
- Quality of proposed equipment
- Quality of proposed service delivery Incl. maintenance
- Project delivery plan
- Resources proposed for project delivery

FINANCIAL:

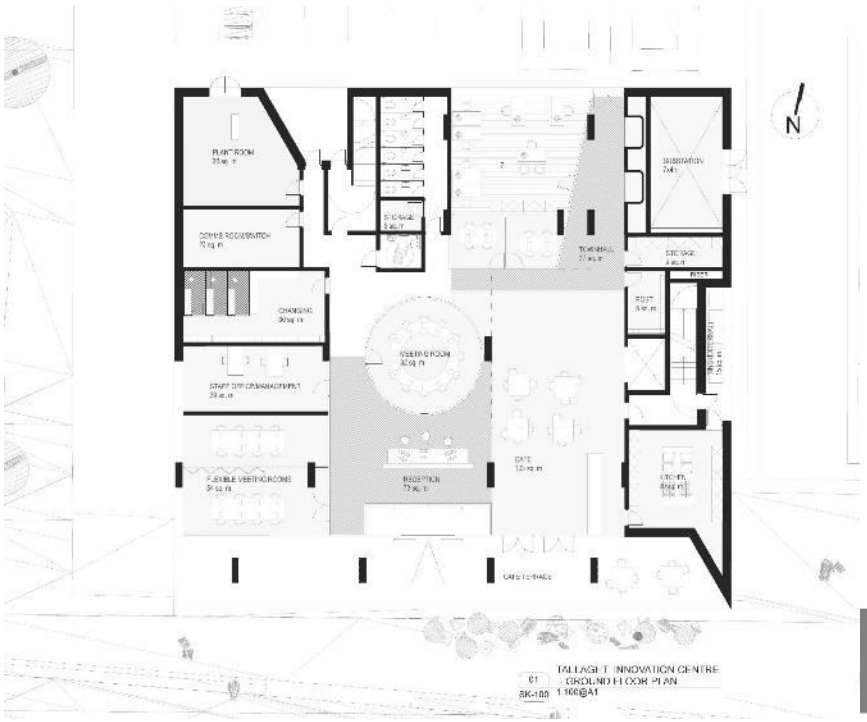
- Monthly payment

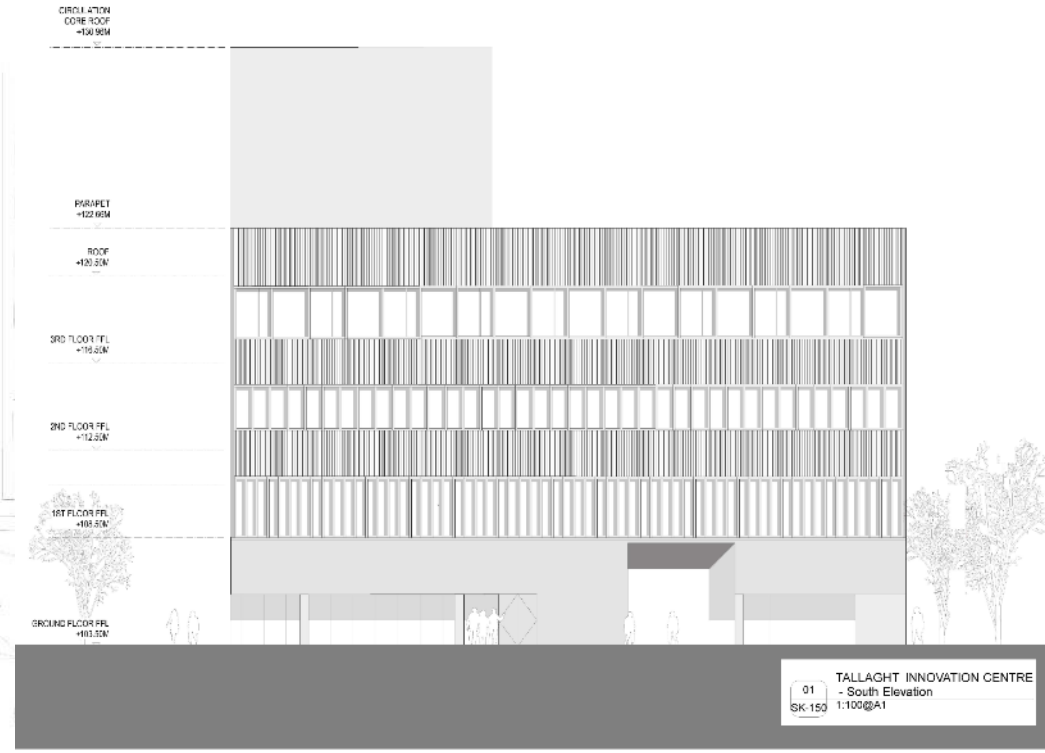
(fixed monthly payment (€) + Monthly units (KwH) X Supply price (€)

AFFORDABLE APARTMENTS



INNOVATION CENTRE





POSSIBLE FUTURE CLIENTS – BELGARD GARDENS SITE

DH – more than just a heating solution

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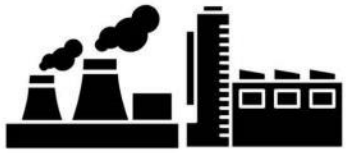
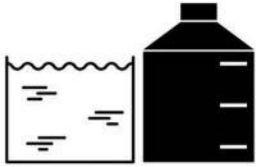


Industrial Waste Heat – increasing plant efficiency



Thermal Storage – Cheap Energy Storage for Large Scale Demand side Response

Customer Safety – no onsite combustion or fuels

Low-carbon & lower local air pollution

Integrate more Renewable Electricity – Large scale Heat Pumps & Electric Boilers & RE CHP

Less Fossil Fuel Imports – increased security of supply

Low-cost heat – utilises waste and renewable sources of heat

New market – new local employment