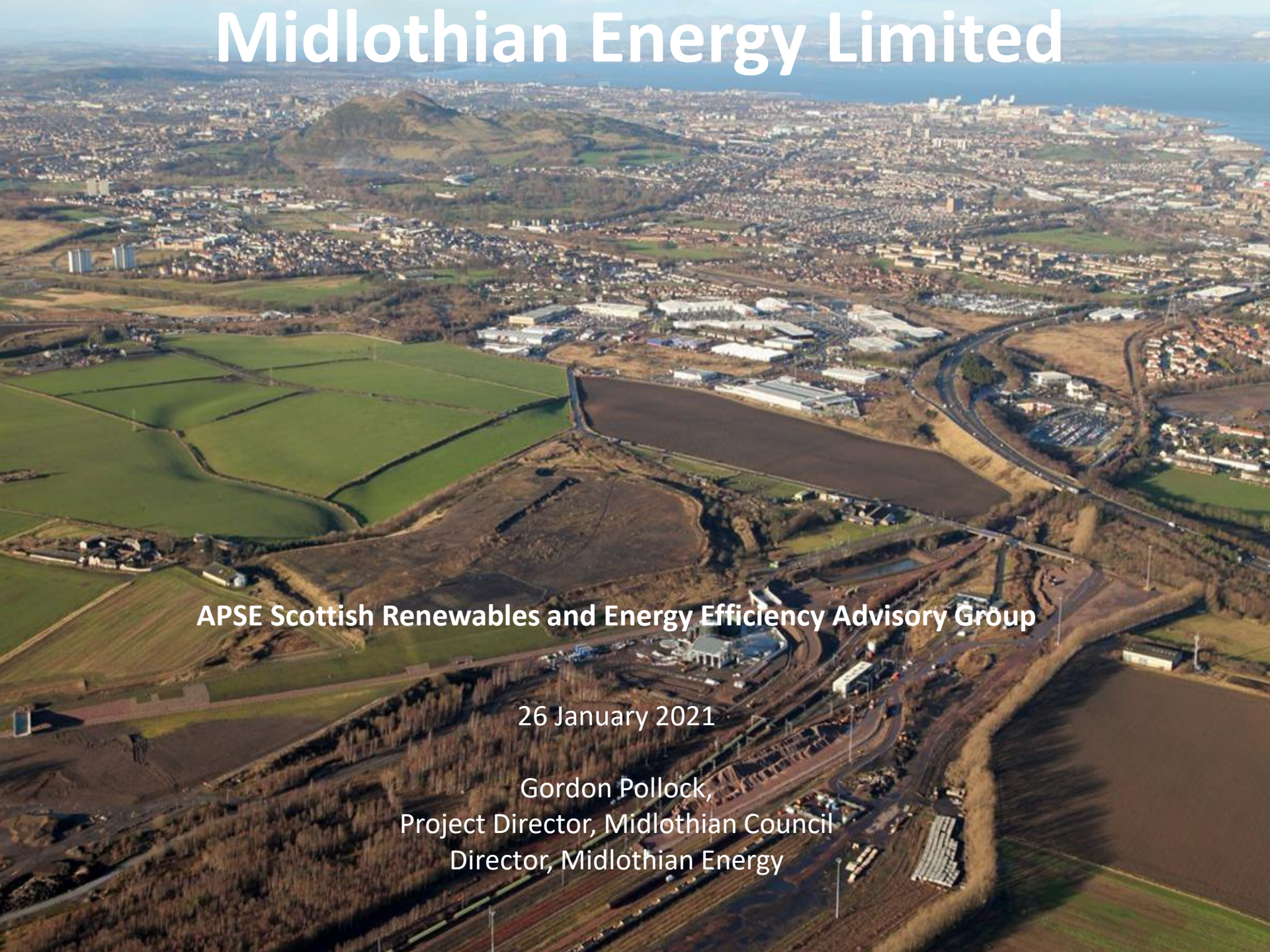
Midlothian Energy Limited



APSE Scottish Renewables and Energy Efficiency Advisory Group

26 January 2021

Gordon Pollock,
Project Director, Midlothian Council
Director, Midlothian Energy

Agenda

Midlothian

- Background to Zero Waste: Edinburgh and Midlothian
  - Anaerobic Digestion Plant for food waste
  - Energy from Waste Plant for residual waste
- Business Case for district heating at Millerhill
- Approach to procurement of a long term energy partner
- Midlothian Energy: a 50/50 Joint Venture ESCo

Zero Waste Project: Food Waste

Midlothian

Zero Waste Project: Food Waste

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- Joint Project with Edinburgh
- 20 Year Contract procured through Competitive Dialogue
- Anaerobic Digestion: Biogen
- 30k tonnes per year
- Commissioning Complete 2015
- Products: Electricity and Digestate

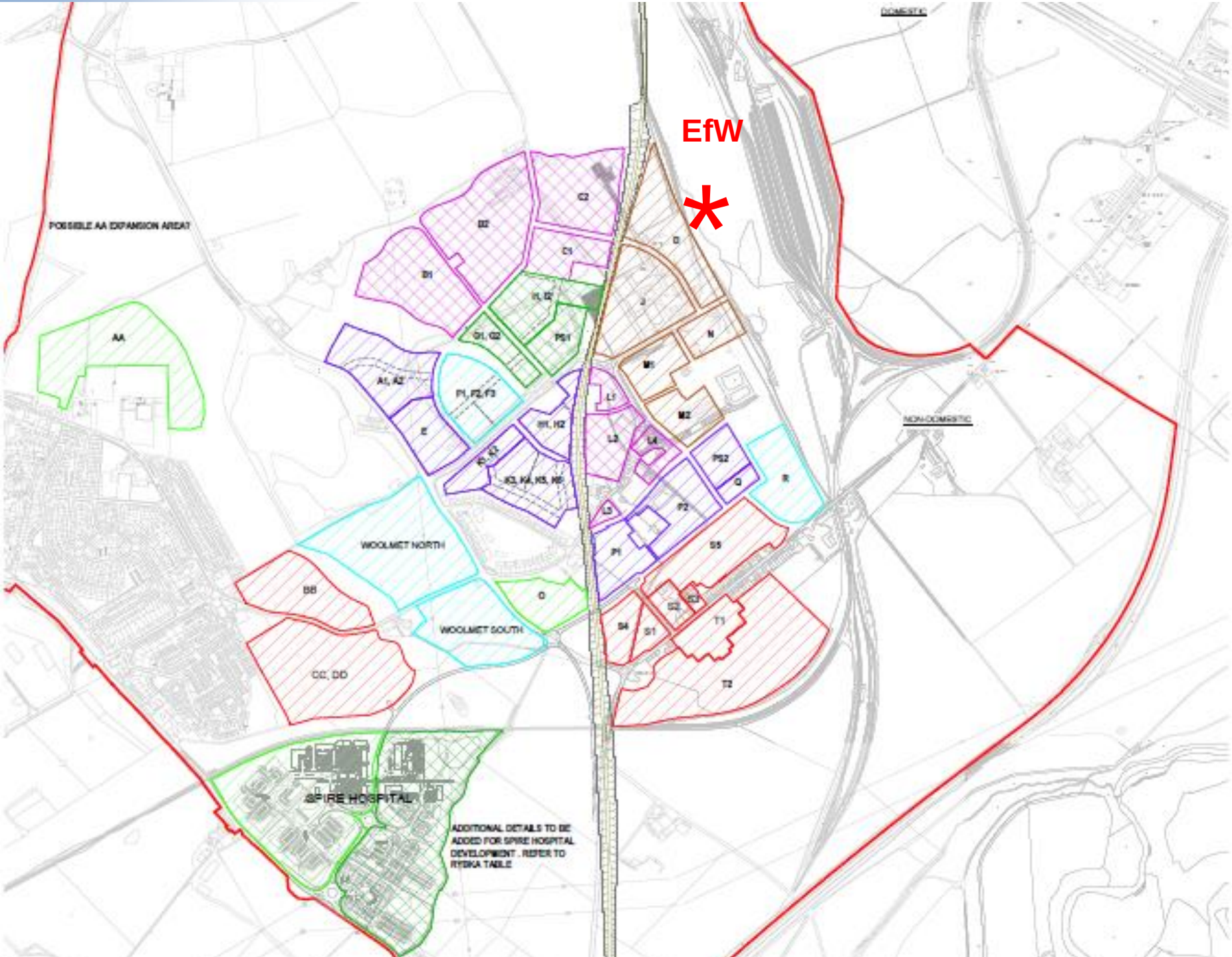
Zero Waste Project: Residual Waste

Midlothian

Zero Waste Project: Residual Waste

Midlothian

- Joint Project with Edinburgh
- 25 Year Contract EfW (Competitive Dialogue)
- FCC Environment
- Min 135k tonnes per year
- Commissioning Complete 2019
- Electricity production 13 MWe
- Heat potential 20MWth


EfW
*
POSSIBLE AA EXPANSION AREA?
AA
B1
B2
C2
C1
D1, D2
PS1
A1, A2
F1, F2, F3
E
H1, H2
K1, K2
K3, K4, K5, K6
L1
L2
L3
L4
M1
M2
N
D
J
PS2
Q
R
P1
P2
S5
S4
S1
S2
S3
T1
T2
WOOLMET NORTH
WOOLMET SOUTH
BB
CC, DD
O
SPIRE HOSPITAL
ADDITIONAL DETAILS TO BE ADDED FOR SPIRE HOSPITAL DEVELOPMENT . REFER TO RYDKA TABLE
NON-DOMESTIC

Heat Requirements

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EfW Plant

- SEPA Permit, Planning Permission and Project Agreement:
  - Requirement for an annual heat plan
  - Requirement to meet efficiency levels within 7 years

Planning and Heat

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- Policy NRG6 identifies sites where community heating is presumed, given the proximity to the plant at Millerhill.
- Supplementary Guidance on *Community Heating* identifies further sites and scenarios where the use of community heating is presumed and the desired content of feasibility/ viability reports

The Business Case for District Heating

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2018: Low Carbon Infrastructure Transition Programme Funding (£50k funding)

- Scope: District Heating from the FCC Energy from Waste Plant
- Joint project with Edinburgh- Led by Midlothian
- Edinburgh BioQuarter and new Shawfair town
- Output: Future Development Plan and Business Case for a Day One Project

Business Case Conclusions

Midlothian

- Scope: Shawfair Town only- Bioquarter less certain
- Conclusions
  - The EfW Plant provides a convincing primary source of low carbon heat
  - c. £24m first project- Shawfair Town
  - There is no viable project without 50% grant funding on capital
  - Internal Rates of Return too low to support a fully private sector investment
  - Preferred Option: Council Owned delivery Vehicle

Governance

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Joint Zero Waste Project Board

- Agreed to de-couple projects- no case for CEC to invest at present

Midlothian Council Steering Group

- Concern about Risk and Investment
- Joint Venture Option not investigated sufficiently
- Ener-Vate engaged for Market Sounding and Risk Appraisal
- Content to recommend a JV Approach be adopted as the preferred option

Timetable to Procurement

Midlothian

- April 2018- Business Case
- June 2018- Market Sounding
- July 2018- Heads of terms agreed for heat
- August 2018- Capital application submitted (£7.3M)
- February 2019- Successful grant application and Council agreement of procurement of a JV Partner
- March 2019- Advisers appointed
- Procurement Commenced June 2019

Procurement Strategy

Midlothian

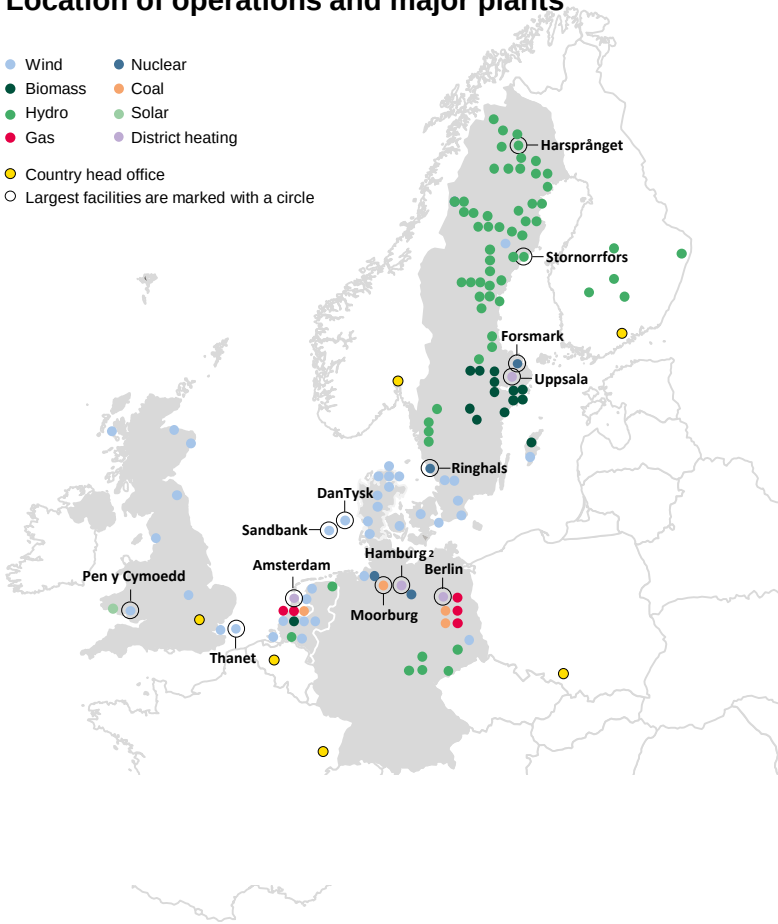
- Shortened Competitive Dialogue Process
  - Note of Interest
  - Invitation to participate in dialogue (3)
  - Draft Final Tenders (3)
  - Final Tenders (2)
  - Final Tenders December 2019
  - Formal PB Appointment February 2020
  - Joint Venture ESCo Established November 2020
- Project Director (No internal project team)
- Tight Governance with delegated powers essential
- Internal Steering Group and regular reporting
- Timeline Pressure from LCITP

Vattenfall

Basic Facts

- One of Europe's largest producers of electricity and heat
- Main products: electricity, heat, gas and energy services
- Main markets: Sweden, Germany, Netherlands, Denmark and the UK
- About 22,000 employees
- 100% owned by the Swedish state

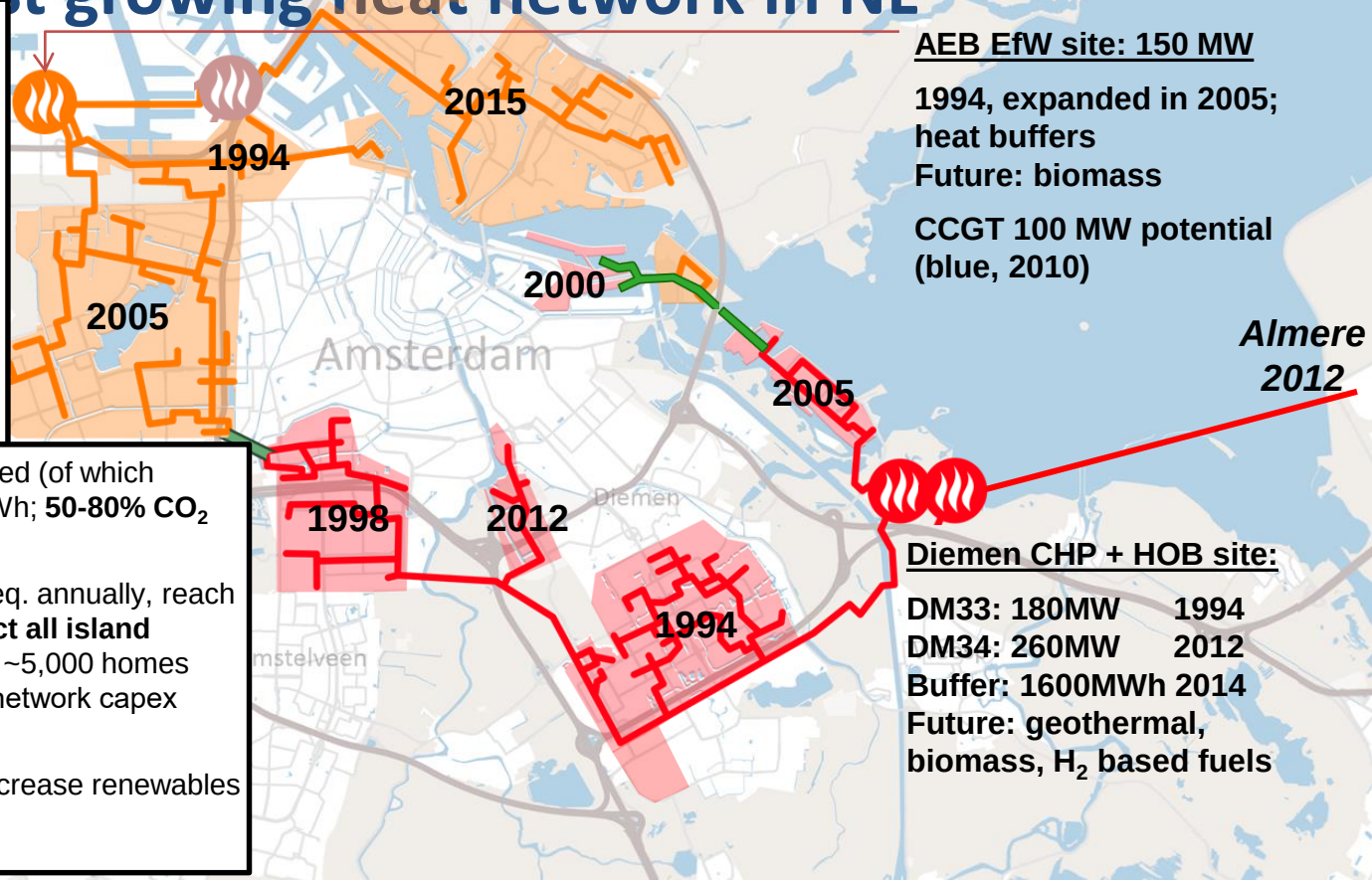
Location of operations and major plants



Case study: Amsterdam (pop: ~800,000) fastest growing heat network in NL

- **Inception in 1994**: **co-location** of heat generation and large scale city development; JV created (orange area)
- **Scale-up from 2005:** '**district heating unless**' policy enabling network investment ahead of need
- **From 2012: housing market recovery** lead to new connections; new CHP & buffer at Diemen; Almere link to replace ageing plant

- **Today**: ~140,000 homes eq. connected (of which ~70,000 in Amsterdam), total ~1.5 TWh; **50-80% CO_2 reduction compared to gas boilers**
- **2020 plan**: **connect >8,000 homes** eq. annually, reach ~170,000 homes eq. in 2020; **connect all island networks** (remove small gas CHPs); ~5,000 homes **converted from gas to DH**; 100M€ network capex program; start 3rd party feed-in
- **2040 vision**: **~50% market share**; increase renewables share to **reach zero carbon <2050**



AEB EfW site: 150 MW

1994, expanded in 2005; heat buffers
Future: biomass

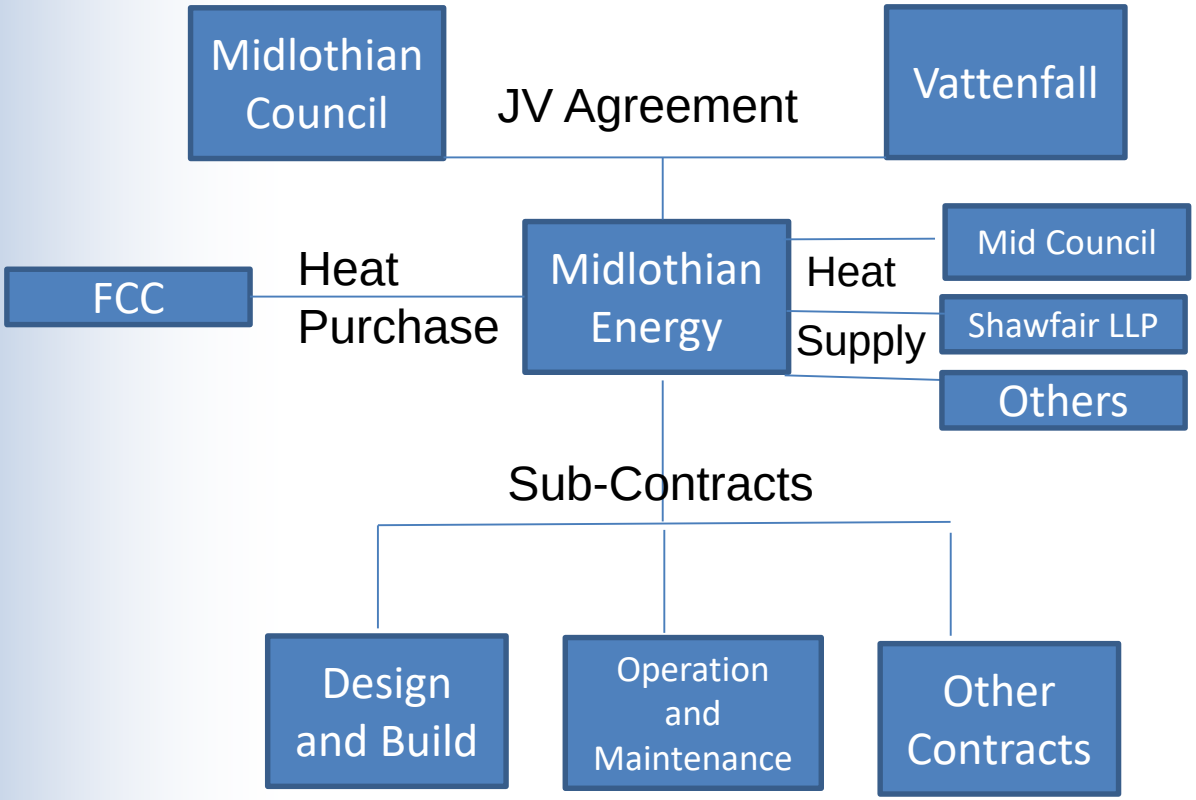
CCGT 100 MW potential (blue, 2010)

Diemen CHP + HOB site:

DM33: 180MW 1994
DM34: 260MW 2012
Buffer: 1600MWh 2014
Future: geothermal, biomass, H_2 based fuels

Preferred Option

Midlothian Energy Structure



JV responsible for full system beyond EfW connection.

- New Energy Centre
- Spine Network
- Distribution network to heat exchanger in property
- Metering and Billing

Midlothian Energy

- Shareholders Agreement
- 4 Directors: 2 Vattenfall, 2 Midlothian
- ME Board Meetings
- ME Committees
  - Project Origination Committee
  - Finance Committee
  - Various Project Committees
- ME/MC Concession Agreement
- Management Services Agreements

JV Structure Benefits

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- Council has an highly experienced commercial partner
- Council has existing relationships, land and resources
- Shared risks
- Ability to progress multiple projects smoothly without internal Council resource constraints
- Structure ensures partners interests are aligned

DH Technical Solution

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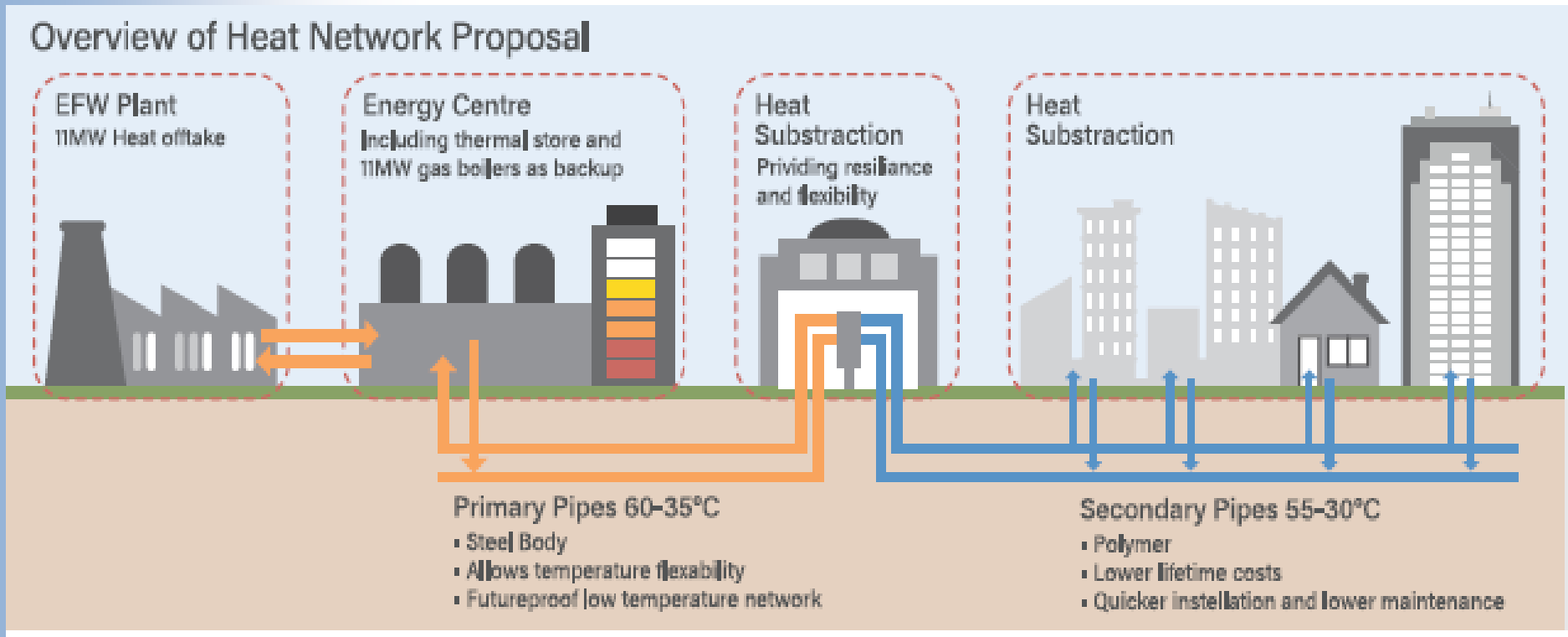

Business Planning
Millerhill Expansion Potential

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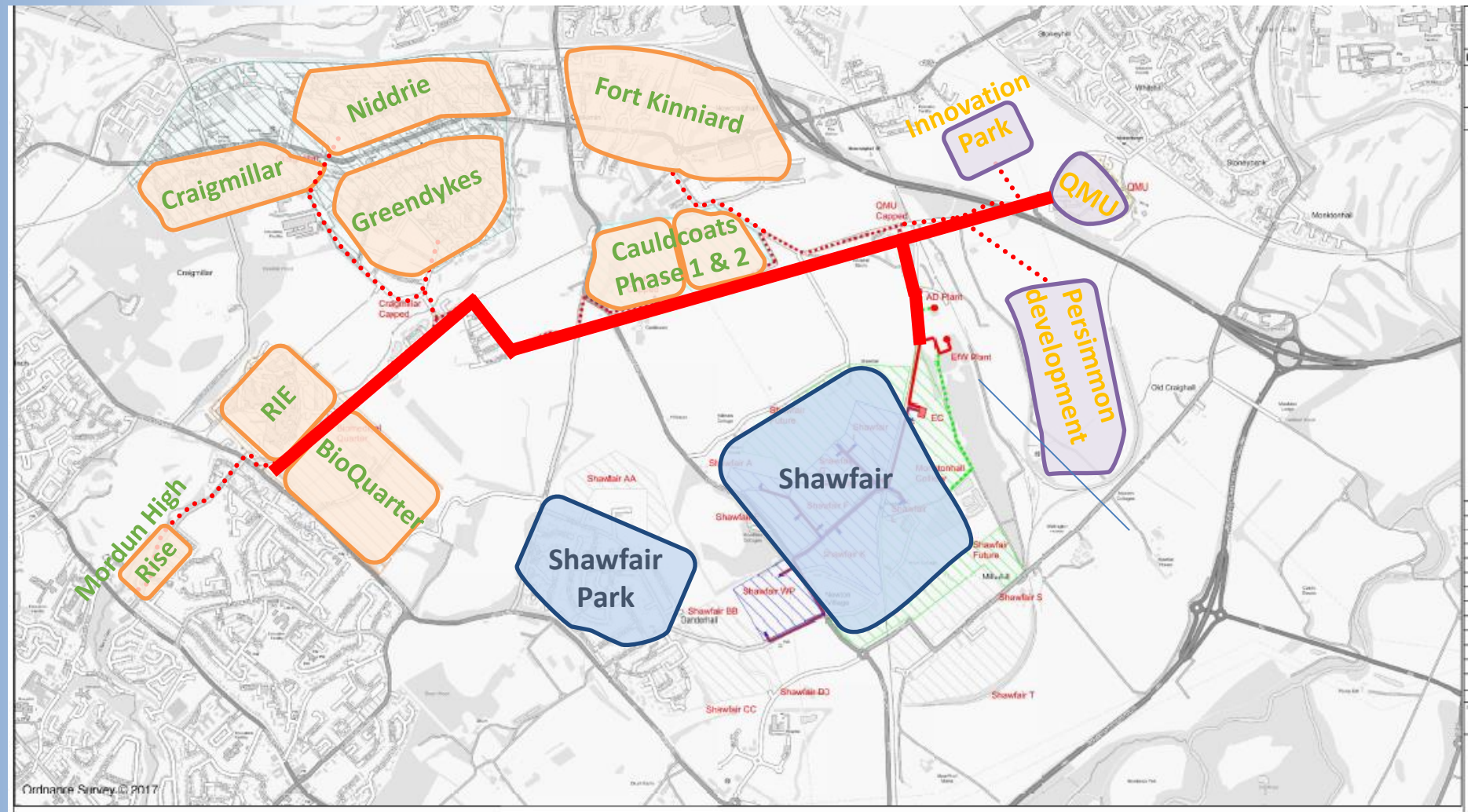

Midlothian Energy Business Plan Opportunities

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- ✓ Heat Networks
  - ✓ Expansion of Millerhill
  - ✓ Decentralised DH
  - ✓ Existing Bonnyrigg Scheme
- ✓ Heat Storage
  - ✓ Monktonhall Colliery
- ✓ Solar PV
- ✓ Electric Vehicle Charging
- ✓ Direct Wire Electricity
- ✓ NDEE
- ✓ Hyrdo
- ✓ Hydrogen

Midlothian

QUESTIONS