

London Energy Partnership CHP for RSL's Workshop

CHP and Heat Networks: From Start to Finish

City Hall, London 29th January 2009

Heating, hot water & power generated locally...

...from an innovative combination of low carbon technologies, inc. CHP and Biomass

▶ **Mark Howell**

Business Development Manager

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- 1. Introduction**

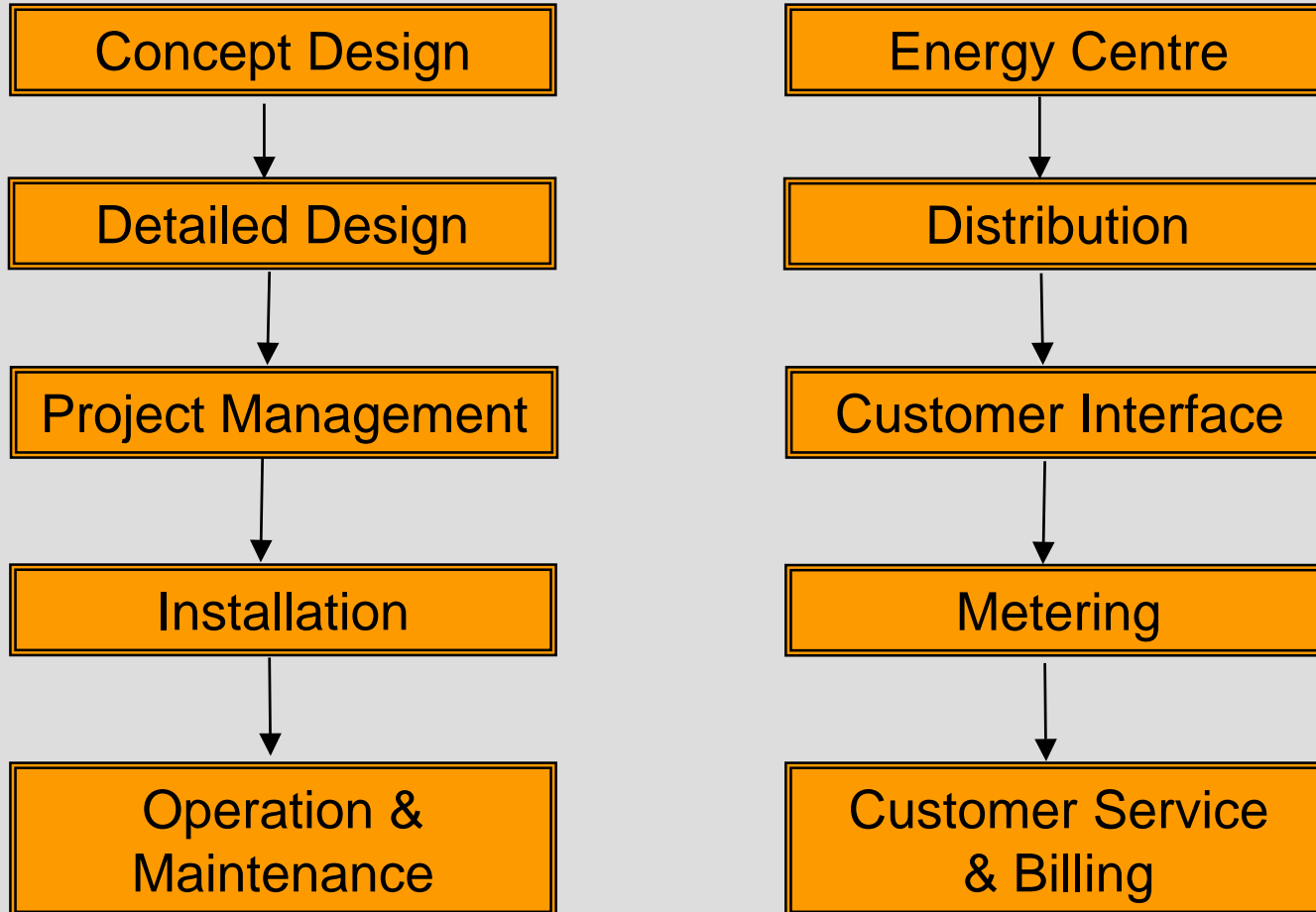
- 2. CHP / District Heating**
 - i. The Components**
 - ii. Applications**
 - iii. Planning**
 - iv. Procurement**
 - v. Construction**
 - vi. Operation and Maintenance**

- 3. Case Studies**
 - i. Connection to existing CHP scheme / Metering**
 - ii. Development Phasing**

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What We Do?



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Energy Centres



- Design
- Construction
- Operation and Maintenance



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Distribution – Pre-insulated Underground Mains



➤ Design

➤ Installation

➤ Operation and Maintenance



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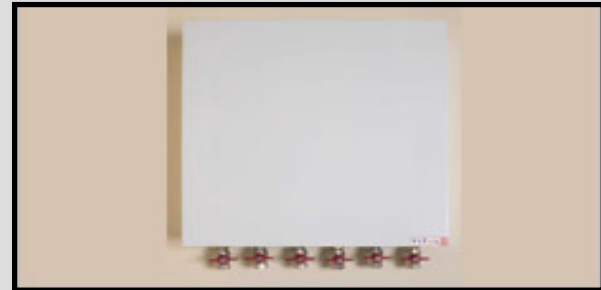
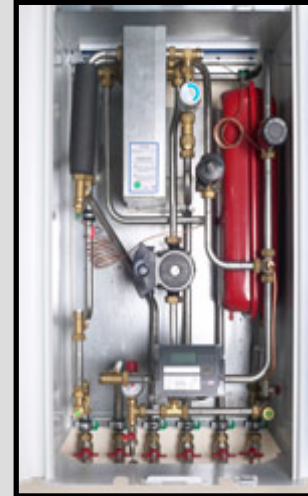
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Customer Interface



➤ Benefits

- Instantaneous Hot Water
- Customer Control
- Prepayment Facility
- Avoids DHW Storage



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Metering and Payment



➤ Heat Meter

- Compact heat meter using ultrasonic technology
- Highly accurate recording of all billing data in district heating systems



➤ Programmer/ Pre-payment Unit

- POS located in local shop
- System can eliminate risk of bad debt
- Residents choose amount of heat credit
- Facilitates the production of detailed exception reports
- System read remotely

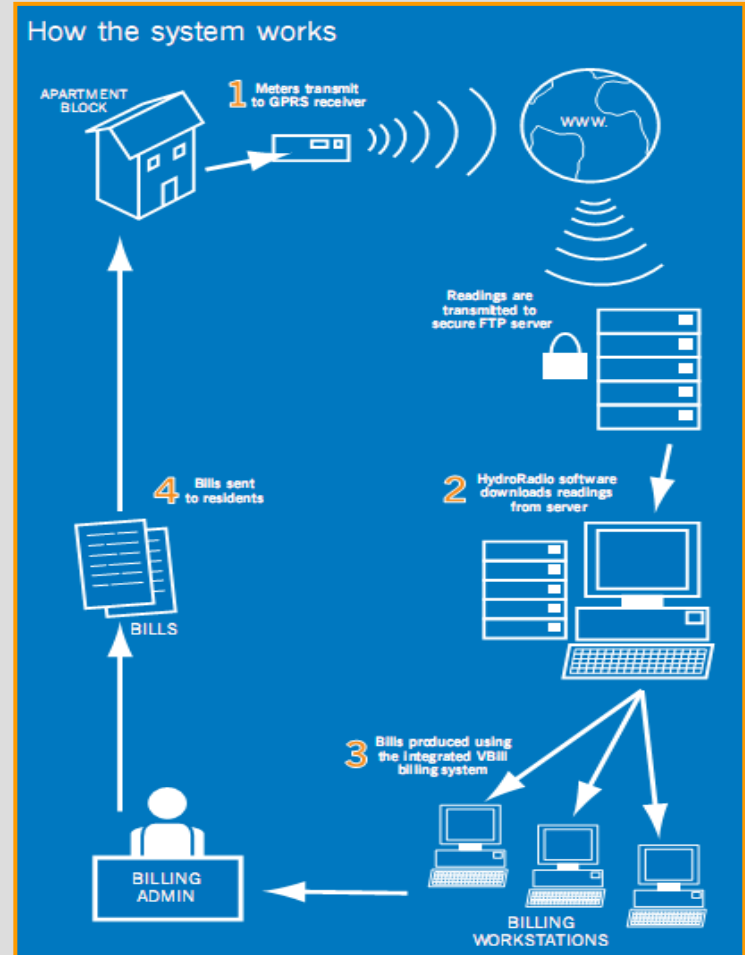


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Meter Reading System

1. Heat data transmitted to the receiver
2. Data is downloaded to the reading and billing system
3. Billing system is used to create direct debit bills
4. Bills sent to customer



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The Components



To FTP server
(hosted
anywhere in
the world)



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Customer Billing and Online Analysis

Sample Utility Bill

Your Heating Bill

Jean Boldero
Apartment No.: NS303
Royal Mills
2 Cotton Street
Ancoats
Lancashire
M4 5BW

Livingcity

Bill No.: 1
Billing Date 31/08/2006

Billing Statement
Heating charges for apartment no NS303
The period of this bill is from 01/08/2006 to 31/08/2006

Meter serial number 29865682

Start meter reading 122.10 kWh
End meter reading 129.80 kWh

Total Consumption 7.70 kWh
For Period: 01/08/2006 ... 31/08/2006

Heating charges £0.39
Charged @ £0.05 per kWh
Charge for VAT @ 5% £0.02

Standing Charge £12.40
Daily standing charge @ £0.40 per day
Charge for VAT @ 17.5% £2.17

Total amount due £14.97
Tariff: Standard

Payment of this bill is due on or before 30/09/2006
Please complete the remittance slip below and return it with your payment.
We cannot process your payment without a remittance slip. Please DO NOT send cash

Remittance Slip

We cannot process your payment without a remittance slip. Please DO NOT send cash

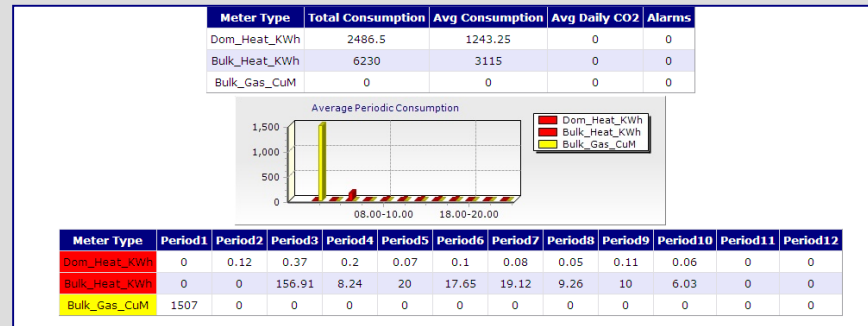
Apt No. NS303
Cust Acct 11
Billing Date 31/08/2006
Bill No.: 1
Tariff.: Standard

Amount Required £14.97

Amount Enclosed £ _____; Signed _____; Jean Boldero
Date _____

Send To: _____

Online Consumption Analysis



- > Analysis of Consumption
- > Analysis of Pre-Payment Revenue
- > Meter Error Information
- > Automated Data Refresh..

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Grosvenor Waterside

Client:

St James Homes

Contract Value:

£3,000,000

Scheme:

Responsible for all elements relating to the design, supply and installation of a new energy centre including the above and below ground heat distribution network, Vital Energi's solution incorporates CHP plant providing on-site generation and distribution of electricity for sales back to the grid, a wood chip fuelled biomass system together with fuels storage and fuel handling system. The installation also includes gas boilers, thermal store and associated equipment, as well as all pipework distribution and hydraulic interface units, providing increased control over when and how much hot water can be used.



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Charles Dickens Estate, Portsmouth



Client:

United House Ltd
Portsmouth City Council

Timescale:

April 2003 January 2004

Contract Value:

£3 million

Total Homes Connected:

530

Key Partners:

PB Power
Alstom Power FlowSystems

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Client:

Presentation HA

Consort Road, Peckham.

Timetable:

April 06 to Oct 06

Contract Value:

£425,000

Scheme:

Design and installation a CHP energy centre, heat distribution system using pre-insulated underground pipework and metering for 49 dwellings. Also operation and maintenance of the completed system including billing and account administration.

Savings:

Combined with other renewables technologies, CO2 emissions will be reduced by by 44% against standard new build and by 83% against typical existing buildings.



CHP 30kWe

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Questions to consider

- RSL only or mixed Private/RSL scheme?
- Scheme density / location
- No of dwellings
- RSL Previous experience?
 - Energy Centre O&M
 - Metering and billing
 - Utility trading – fuel purchase, elec and heat sales
- Establish common infrastructure
- Capital Cost vs Long-term Life-Cycle
- Revenue collection – Bad debt issues
- Management – RSL / Energy Facilities Company or ESCo

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Routes

- Consultant / Contractor
- Design and Build
- References
 - Successful proven schemes, designs work? components work?

Issues

- Boundary issues
 - Energy Centre / DH Network
 - DH Network / Hydraulic Interface Units (HIU)
 - Metering hardware / software
- Total package responsibility
 - Primary heating circuit (EC through to HIU / metering)
 - Plate heat exchanger in HIU provides natural breakpoint
 - One point of contact / one company responsible for working solution
- Products – correct for the job, Proven, Robust?

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Energy Centre

- CHP
- Biomass boilers
- VSD pumps

District Heating

- Optimisation?**
- Heat loss
 - Pumping
 - Life-Cycle (longevity)

Consumer

- Building regs (Thermal performance)
- Heating
- DHW

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Phasing

- Temporary boiler house
- DH Network
 - Valving
 - Ability to hot-tap
- Flushing regime
- Water treatment
- EC Pre-fabrication off-site



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➤ Energy Centre

- Design and Build through to Operation and Maintenance
- Two companies - Latent defects period / Operational running
 - Who to call out, delays in response / repair time.
 - Standby what you've built
 - Minimum - ensure installation Contractor undertakes O&M through latent defects period.

➤ Metering and Billing

- Robust solution
- Meter O&M with meter reading service
- Revenue collection – management service

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Case Study 1

Tachbrook Triangle
Connected to PDHU CHP scheme

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- Barratt Homes – BWL
- City West Homes – Pimlico District Heating Undertaking (PDHU)
- Central London
 - Vauxhall Bridge Rd (near Victoria)
- 54 Apartments
 - 37 Private
 - 17 RSL – Dominion HA
 - Surgery
- Vital Energi
 - DH mains connection
 - Internal pipework distribution
 - Hydraulic Interface Units
 - Metering solution



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➤ **External and Internal District Heating**



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➤ **HHW's, metering and metering solution**



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➤ Design and Build

- District Heating pipework
 - Connection to Pimlico DH Undertaking (City West Homes)
 - Internal risers and laterals to each dwelling
- HIU's and metering solution
 - Radio Communications – no door knocking
 - Estate Management collects money through Service Charge

➤ Clients

- Barratt Homes (Main Developer)
 - Private / Dominion Housing Association
- City West Homes (ALMO)

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Case Study 2

Littlecombe, Dursley
Dealing with Scheme Phasing

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View overlooking Zone B Ph 1 – Commercial Zone



Feb 08

Temp Boilerhouse

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Temp. G-F boilerhouse



One MW boiler



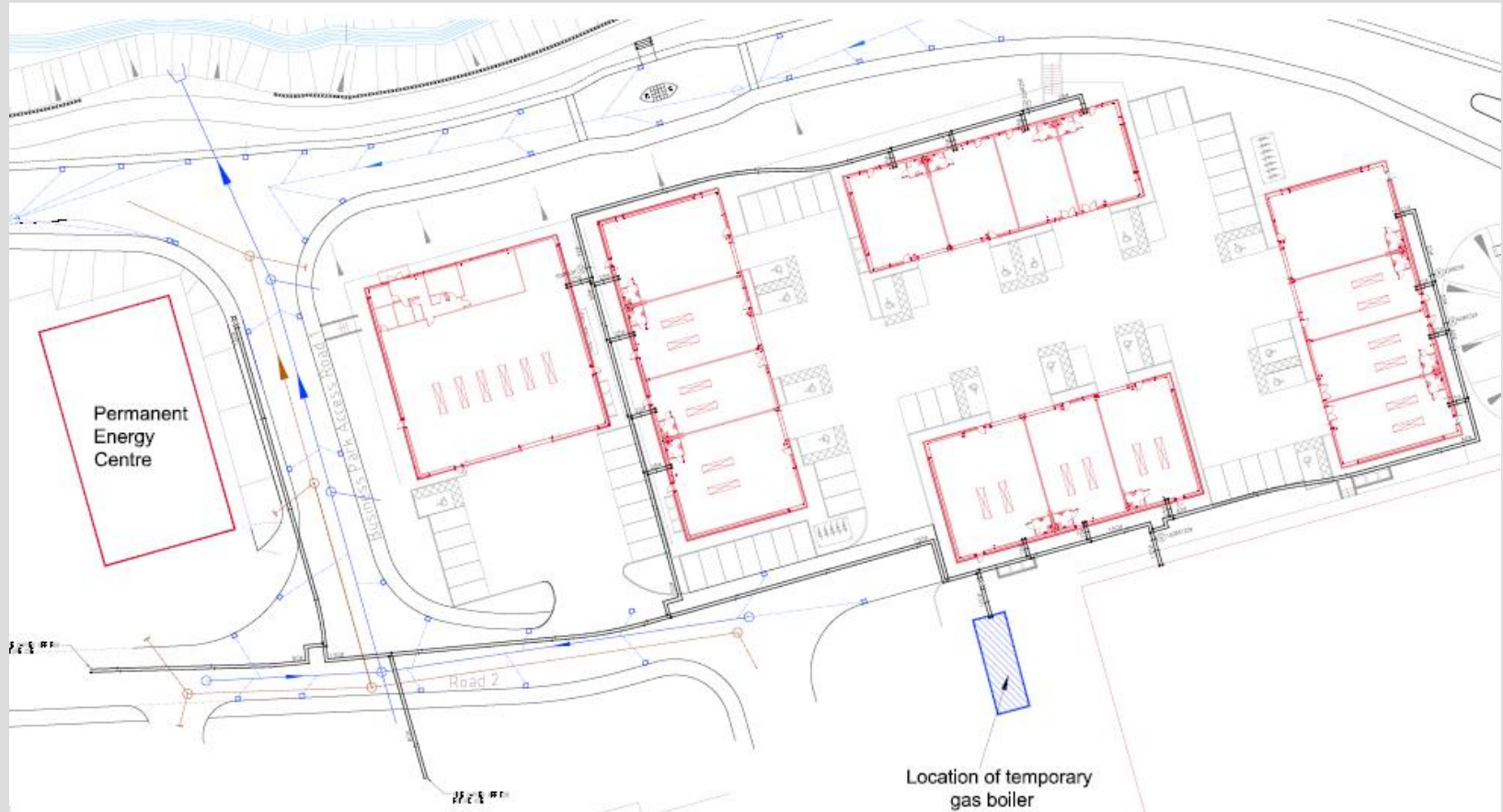
DH Network
for next
phase
connections



Connection to
DH Network

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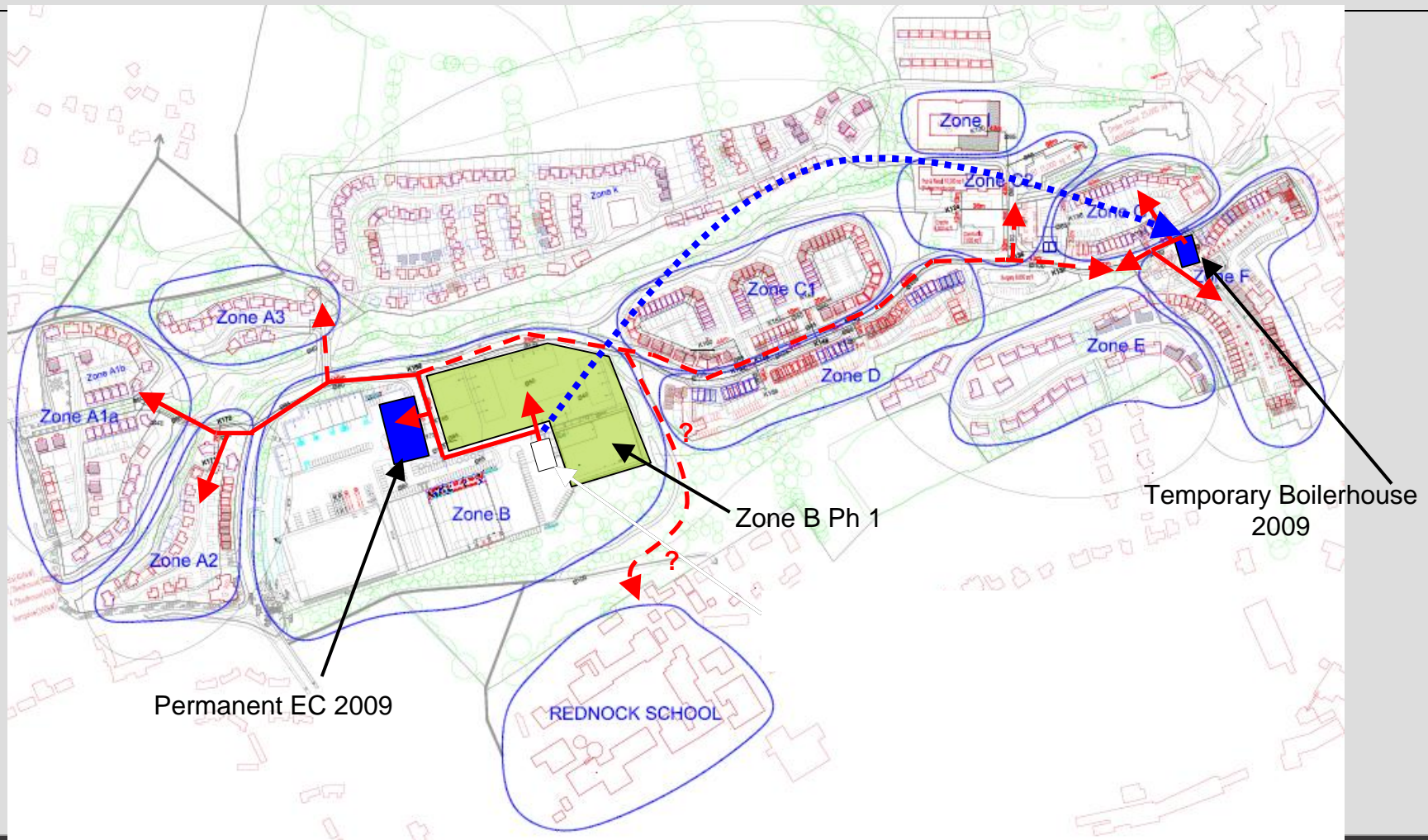
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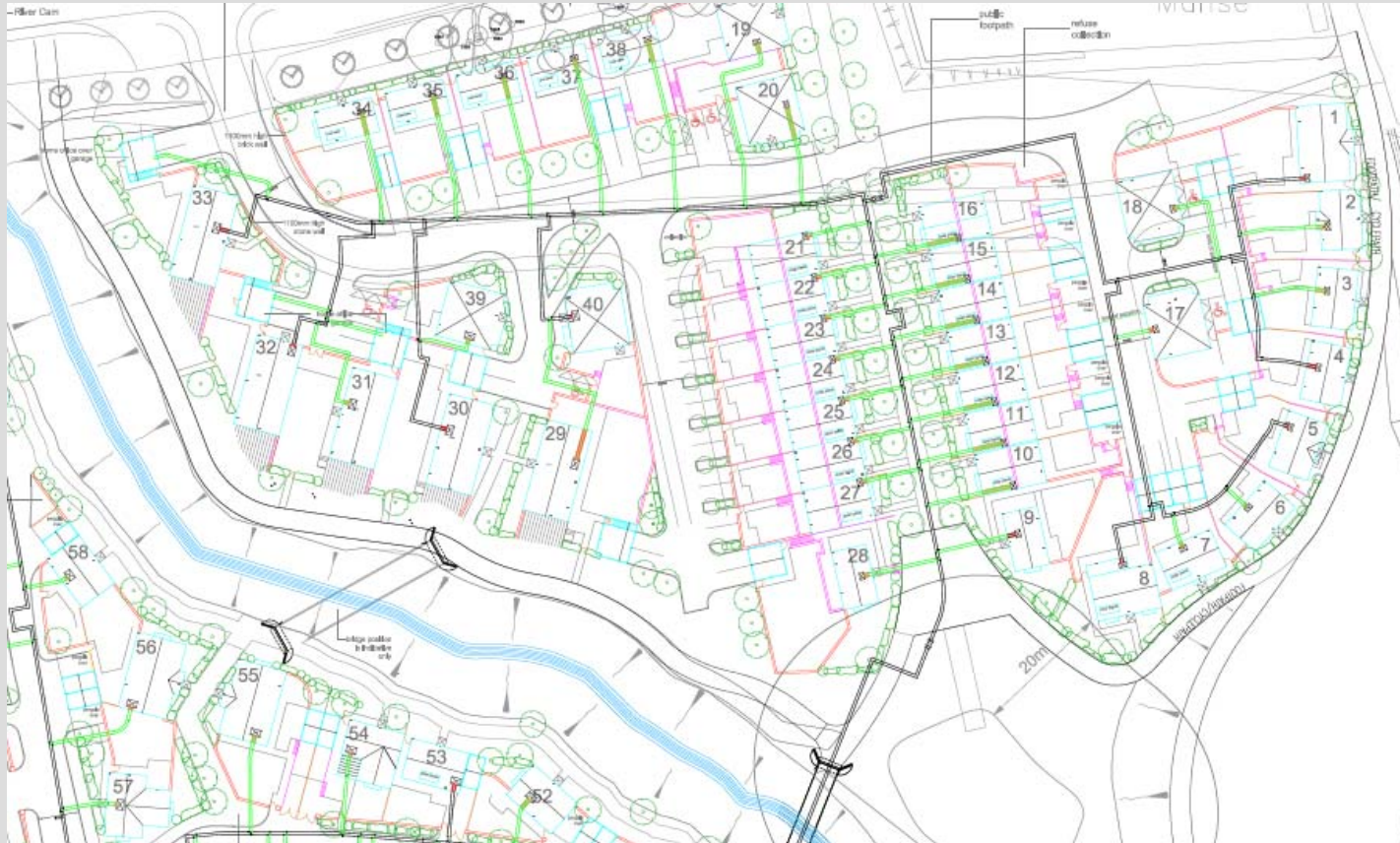
Littlecombe 5 Phased DH Network



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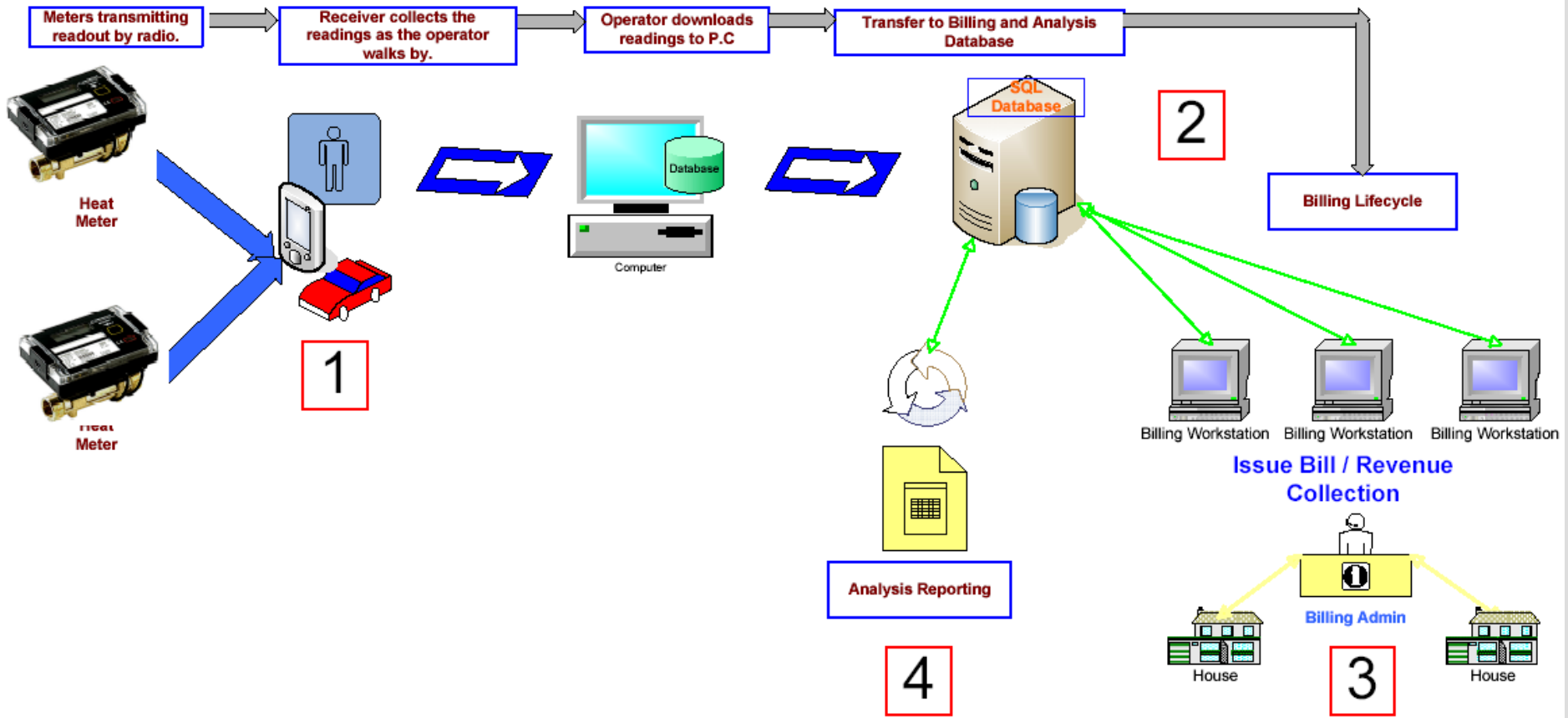
Littlecombe 6 - Phasing of house connections



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Metering Cycle



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Thank You

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