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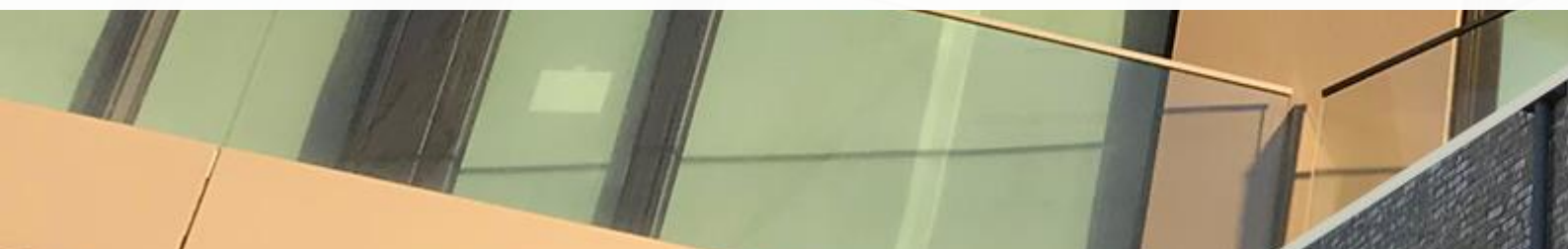
Craig y Parcau
Utilities Strategy Report
CYP(S)-TBA-XX-XX-RP-ME-800001

June 2020



PROJECT
Craig y Parcau

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REPORT
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Kevin Searle

Partner

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Executive Summary

Under this report multiple options have been considered for the supply of utility services (electricity, gas and water) across the Craig y Parcau development site.

The site is being promoted as a suitable area for mixed use development in the new Bridgend Local Development Plan (LDP).

While each option represents a viable solution considerable constraints to its ongoing development may be incurred through the availability of supply capacities within the local supply company networks.

As local supply companies are unable to provide firm commitments to the availability of supply capacities. Options that are technically feasible may, through continue dialogue, become unviable due to connectivity issues that cannot be overcome.

Under the development of the scheme the options presented will need to be verified and expanded through detailed design.

1. Introduction

This report reviews the current local supply company infrastructure that serves the areas around the Craig y Parcau development site in Bridgend, South Wales. The site is being promoted as a suitable area for the allocation of a mixed use development in the new Bridgend Local Development Plan (LDP).

In addition, proposals are presented for the servicing of the site against the proposed nature of its development, as further defined with Section 2 of this report.

We would highlight that the proposals have, wherever possible, been developed in align with the following:

- **Roberts Limbrick Architects:** Craig y Parcau Proposed Masterplan
- **WL2:** Craig y Parcau Drainage Strategies
- **Troup Bywaters + Anders:** Craig y Parcau Energy Strategy Report

In reading this report full reference should be made to the above documentation.

1.1 Development Site

DEVELOPMENT SITE BRIDGEND SOUTH WALES

1.2 The Brief

In completing this work Troup Bywaters + Anders (TB+A) have considered the following in terms of an agreed brief:

- The provision of a utilities strategy the content of which will be limited to:
  - Predicted energy demands / supply capacities in terms of:
    - Electricity

        - Gas
        - Water
    - High level utility distribution strategies
    - Local supply company mapping *(where obtainable)*

Note: The above being conducted for both individually served properties fed directly from the local supply companies and via the utilisation of a centrally served energy centre.

1.3 Stakeholders and Consultation

The detail within this report is subject to further consultation with the following bodies:

- HD Limited
- Bridgend County Borough Council
- Robert Limbrick Architects
- Savills
- The local supply companies

1.4 Assumptions

In presenting our proposals the following assumptions have been made:

- The development site will be individually served by its own infrastructure arrangements
- The existing local supply company infrastructure arrangements are capable of being reinforced to enable the provision of the connected loads defined

1.5 Limitations

The limitations of this report are as defined below:

- The technical discussions presented in this report are based on the information made available to TB+A at the time of writing
- The solutions presented are subject to confirmation from the local supply companies in terms of supply availabilities and connection arrangements
- Mapping information is based on documentation received from the local supply companies ‘on-line’ portals and is subject to verification by the completion of ground investigatory surveys

2. Summary of the Overall Development Works

As derived from the Robert Limbrick Architects masterplan the overall development will generally consist of the following, on which the technical discussions presented within this report have been based.

2.1 Craig y Parcau Site – Dwellings

Description: The development of 100 to 125 new build 2, 3 and 4 bedroom houses on a 30 / 40 / 30 ratio.

Proposed floor areas: An assumed size of the units being:

- 2 - bed: 710 to 770ft^2
- 3 - bed: 875 to 1180ft^2
- 4 - bed: 1200 to 1650ft^2

3. Predicted Energy Demands / Supply Capacities

3.1 Electrical Distribution

3.1.1 Overview

Based on the information detailed in Section 2.0 of this report and by utilising BSRIA benchmark loads[1] and local supply company (Western Power Distribution (WPD)) data the following estimated demands have been determined.

3.1.2 Option A1: Individually served properties *(gas fired heating)*

This option utilises gas for the provision of heating (space and water) across each property. In addition, gas is utilised for servicing hobs within each dwelling.

All other appliances and services being electrically served.

Development Site	**Craig y Parcau**
Development Type	Dwellings *(125 new build 2, 3 and 4 bedroom houses on a 30 / 40 / 30 ratio)*
Estimated Maximum Demand	537kVA
Development Totals	**537kVA**
Overall Total kVA (MVA)	**537kVA (0.5MVA)**

Notes:

1. Dwellings based on the use of gas fired boilers and gas hobs with an electric oven
    a. Dwellings based on a diversified load of 5kVA per property (inclusive of a 3.5kVA allowance for an electric vehicle charging point across 80% of dwellings)

The above figures and loading estimates will need to be verified and confirmed against the final design parameters of the development site. The figures indicated represent 'high level' evaluations to outline potential supply capacity requirements.

[1] Rules of Thumb Guidelines for Building Services (5th Edition) BG 9/2011

3.1.3 Option A2: Individually or centrally served properties *(electric heating and cooking)*

This option utilises electricity for the provision of heating (space and water) across each property. The provision of the electrically driven heating being individual to each property or central via an energy centre.

In addition, electricity is used for the provision of all cooking.

No gas connections will be afforded under this option.

Development Site	**Craig y Parcau**
Property Type	Dwellings *(125 new build 2, 3 and 4 bedroom houses on a 30 / 40 / 30 ratio)*
Estimated Maximum Demand kVA	1,069kVA
Development Totals kVA	**1,069kVA**
Overall Total kVA (MVA)	**1,069kVA (1MVA)**
Notes: 1. Dwellings based on electric heat pumps and cooking a. Dwellings based on a diversified load of 9.25kVA per property (inclusive of a 3.5kVA allowance for an electric vehicle charging point across 80% of dwellings)	

The above figures and loading estimates will need to be verified and confirmed against the final design parameters of the development site. The figures indicated represent 'high level' evaluations to outline potential supply capacity requirements.

3.2 Gas Distribution

3.2.1 Overview

Based on the information detailed in Section 2.0 of this report and by utilising BSRIA benchmark loads and local supply company (Wales and West Utilities (WWU)) data the following estimated demands have been determined.

3.2.2 Option A1: Individually served properties *(gas fired heating)*

This option utilises gas for the provision of heating (space and water) across each property. In addition, gas is utilised for servicing hobs within each dwelling.

All other appliances and services being electrically served.

Development Site	**Craig y Parcau**
Development Type	Dwellings *(125 new build 2, 3 and 4 bedroom houses on a 30 / 40 / 30 ratio)*
Estimated Maximum Demand	1.1MW
Development Totals MW	**1.1MW**
Notes: 1. Dwellings based on the use of gas fired boilers and gas hobs with an electric oven	

The above figures and loading estimates will need to be verified and confirmed against the final design parameters of the development site. The figures indicated represent 'high level' evaluations to outline potential supply capacity requirements.

3.2.3 Option A2: Individually served properties *(electric heating and cooking)*

This option utilises electricity for the provision of heating (space and water) across each property. The provision of the electrically driven heating being individual to each property or central via an energy centre.

In addition, electricity is used for the provision of all cooking.

No gas connections will be afforded under this option.

3.3 Water Distribution

3.3.1 Overview

Based on the information detailed in Section 2.0 of this report and by utilising BSRIA benchmark loads and local supply company (Welsh Water) data the following estimated demands have been determined.

3.3.2 Option A1: Individually served properties *(gas fired heating)* / Option A2: Individually served properties *(electric heating and cooking)*

It should be noted that water supply requirements will remain constant under any given option.

Development Site	**Craig y Parcau**		
Development Type	125 Dwellings *(2 Bed / 3 Bed / 4 Bed)*		
Estimated Peak Flow L/sec (each)	0.75	0.75	0.78
Development Totals L/sec	**8.0L/sec**		
Notes: 1. Dwelling flow rates assume that tank storage will not be provided			

The above figures and loading estimates will need to be verified and confirmed against the final design parameters of the development site. The figures indicated represent 'high level' evaluations to outline potential supply capacity requirements.

4. High Level Utility Distribution Strategies

4.1 Electrical Distribution

4.1.1 Existing services

A utility search for the Craig Y Parcau site indicates the presence of buried HV (11kV) services. These services appear to serve existing properties located within the demise of the site itself along with an additional property located to the South of the site. Consideration will need to be given as to whether these buried services are to remain in situ (to serve the site) or be removed / diverted. In either instance, the final development plans will need to be co-ordinated to reflect safe spatial allowances and existing wayleave agreements.

The mapping provided, through the utility search, did not provide any form of indication as to the capacities of these mains. Also as the surrounding areas are subject to 'on-going' development the accuracy of the mapping will therefore need verification.

4.1.2 Option A1: Individually served properties *(gas fired heating)*

A budget quotation has been requested from the local supply company (Western Power Distribution (WPD)) to afford the following across the Craig y Parcau development site.

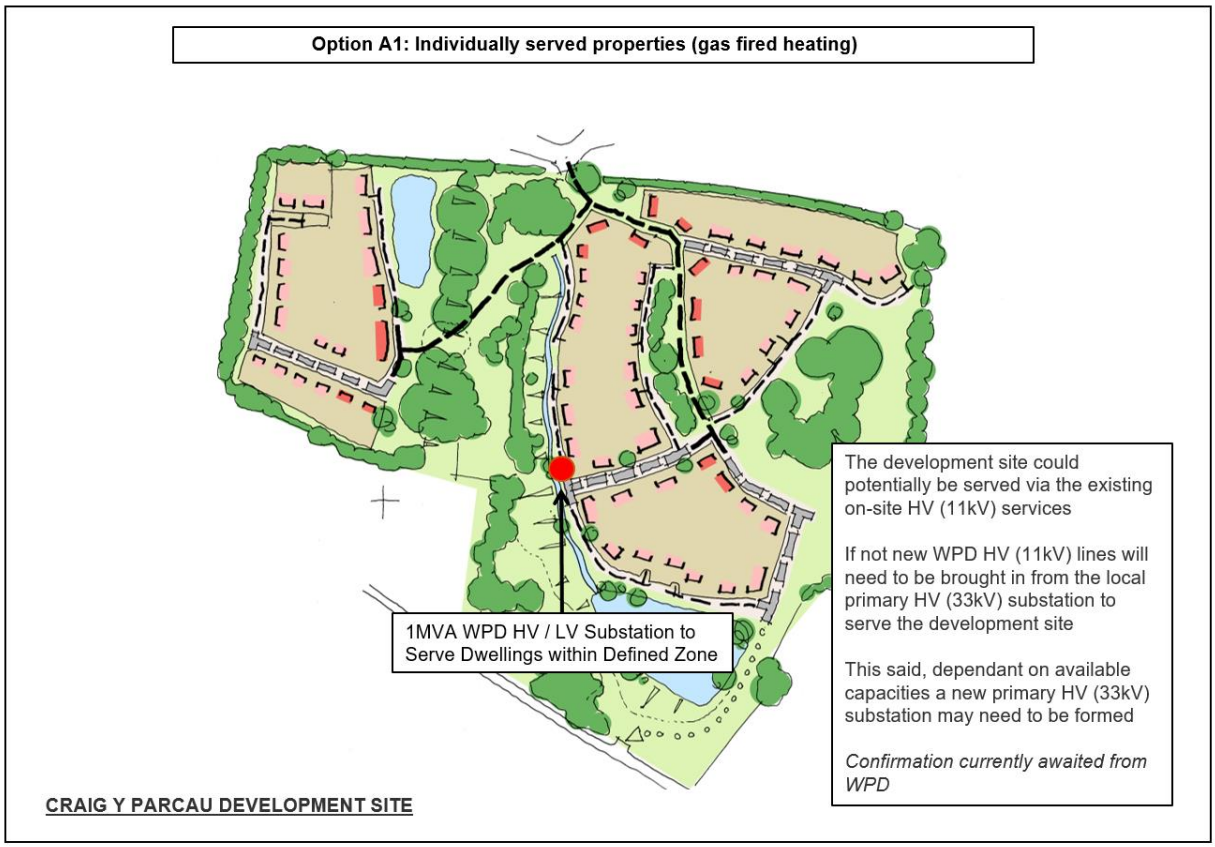
Development Site	**Craig y Parcau**
Property Type	Dwellings
WPD Supply Request	The provision of one 1MVA HV / LV sub-stations to afforded the estimated demand of 537kVA

The above being aligned with predicted electrical energy demands detailed within section 3.1.2 of this report.

The Craig y Parcau development site could potentially be served via the existing on-site WPD HV (11kV) services. If not new WPD HV (11kV) lines will need to be brought in from the local primary HV (33kV) substation to serve the development site. This said, dependant on available capacities a new primary HV (33kV) substation may need to be formed.

Confirmation as to the workability of this proposals is currently awaited from WDP.

The following diagram indicates possible locations for the electrical infrastructure required under this distribution option (exact locations will depend on final strategies and detailed design).



4.1.3 Option A2: Individually or centrally served properties *(electric heating and cooking)*

A budget quotation has been requested from the local supply company (Western Power Distribution (WPD)) to afford the following across the Craig y Parcau development site.

Development Site	**Craig y Parcau**
Property Type	Dwellings
WPD Supply Request	The provision of two 1MVA HV / LV sub-stations to afforded the estimated demand of 1069kVA

Notes:

1. If an energy centre where to be adopted the number of 1MVA HV / LV sub-stations provided across the Craig y Parcau development site would drop to one

   A connection would then be required to serve the energy centre through the provision of an additional 500kVA HV / LV sub-station

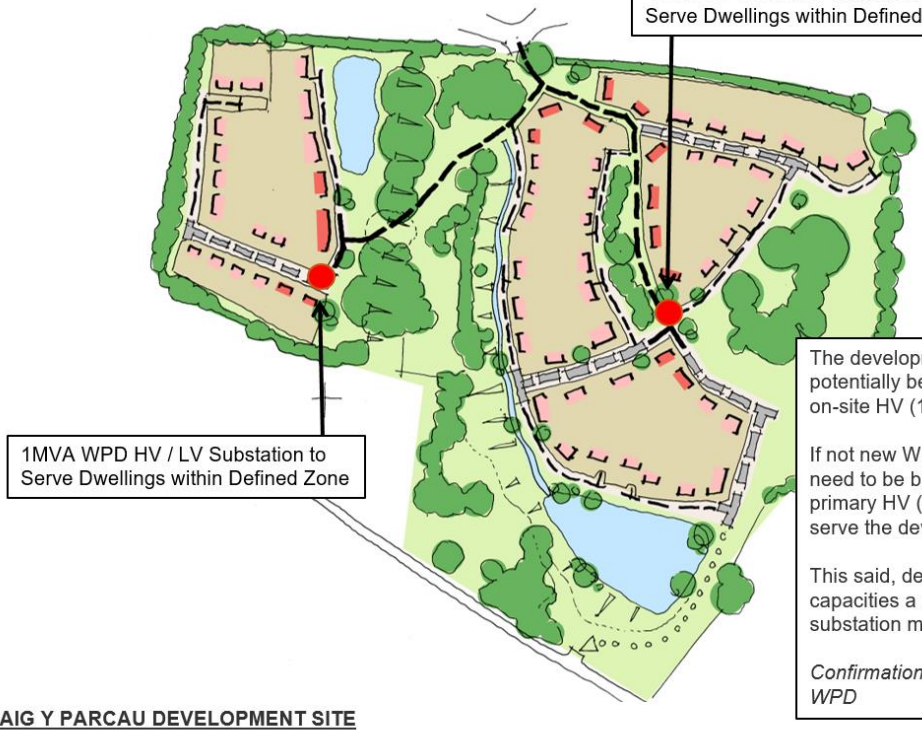
The above being aligned with predicted electrical energy demands detailed within section 3.1.2 of this report.

The Craig y Parcau development site could potentially be served via the existing on-site WPD HV (11kV) services. If not new WPD HV (11kV) lines will need to be brought in from the local primary HV (33kV) substation to serve the development site. This said, dependant on available capacities a new primary HV (33kV) substation may need to be formed.

Confirmation as to the workability of this proposals is currently awaited from WDP.

The following diagrams indicates possible locations for the electrical infrastructure required under this distribution option (exact locations will depend on final strategies and detailed design). The diagrams illustrate options for both individually and centrally served properties.

Option A2: Individually served properties (electric heating)



The development site could potentially be served via the existing on-site HV (11kV) services

If not new WPD HV (11kV) lines will need to be brought in from the local primary HV (33kV) substation to serve the development site

This said, dependant on available capacities a new primary HV (33kV) substation may need to be formed

Confirmation currently awaited from WPD

CRAIG Y PARCAU DEVELOPMENT SITE

Option A2: Centrally served properties (electric heating and cooking)

The development site could potentially be served via the existing on-site HV (11kV) services

If not new WPD HV (11kV) lines will need to be brought in from the local primary HV (33kV) substation to serve the development site

This said, dependant on available capacities a new primary HV (33kV) substation may need to be formed

Confirmation currently awaited from WPD

CRAIG Y PARCAU DEVELOPMENT SITE

4.2 Gas Distribution

4.2.1 Existing services

The utility search for the Craig Y Parcau site did not indicate the presence of any gas mains.

This said, as the surrounding areas are subject to 'on-going' development the accuracy of the mapping will therefore need verification.

4.1.4 Option A1: Individually served properties *(gas fired heating)*

A budget quotation has been requested from the local supply company (Wales and West Utilities (WWU)) to afford the following across the Craig y Parcau development site.

Development Site	**Craig y Parcau**
Development Type	Dwellings *(125 new build 2, 3 and 4 bedroom houses on a 30 / 40 / 30 ratio)*
Estimated Maximum Demand	1.1MW
Development Totals MW	**1.1MW**

The above being aligned with predicted gas demands detailed within section 3.2.2 of this report.

The Craig y Parcau development site could potentially be served via the existing gas connection located at the Merthyrmawr Road junction with the A48, the main infrastructure will require extending and possible reinforcement works will be required to facilitate this supply.

Confirmation as to the workability of these proposals is currently awaited from W&WU.

The following diagrams indicates possible routes for the new gas mains required under these distribution options (exact locations will depend on final strategies and detailed design).

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4.1.5 Option A2: Individually or centrally served properties *(electric heating and cooking)*

This option utilises electricity for the provision of heating (space and water) across each property. The provision of the electrically driven heating being individual to each property or central via an energy centre.

In addition, electricity is used for the provision of all cooking.

No gas connections will be afforded under this option.

4.3 Water Distribution

4.3.1 Existing services

The utility search for the Craig Y Parcau site did not indicate the presence of any water mains.

This said, as the surrounding areas are subject to 'on-going' development the accuracy of the mapping will therefore need verification.

4.3.2 Option A1: Individually served properties *(gas fired heating)* / Option A2: Individually served properties *(electric heating and cooking)*

A budget quotation cannot be requested from the local supply company (Welsh Water (WW)) to afford the following across the Craig y Parcau development site until a formal planning application has been submitted.

Development Site	Craig y Parcau		
Development Type	125 Dwellings *(2 Bed / 3 Bed / 4 Bed)*		
Estimated Peak Flow L/sec (each)	0.75	0.75	0.78
Development Totals L/sec	**8.0L/sec**		

Notes:

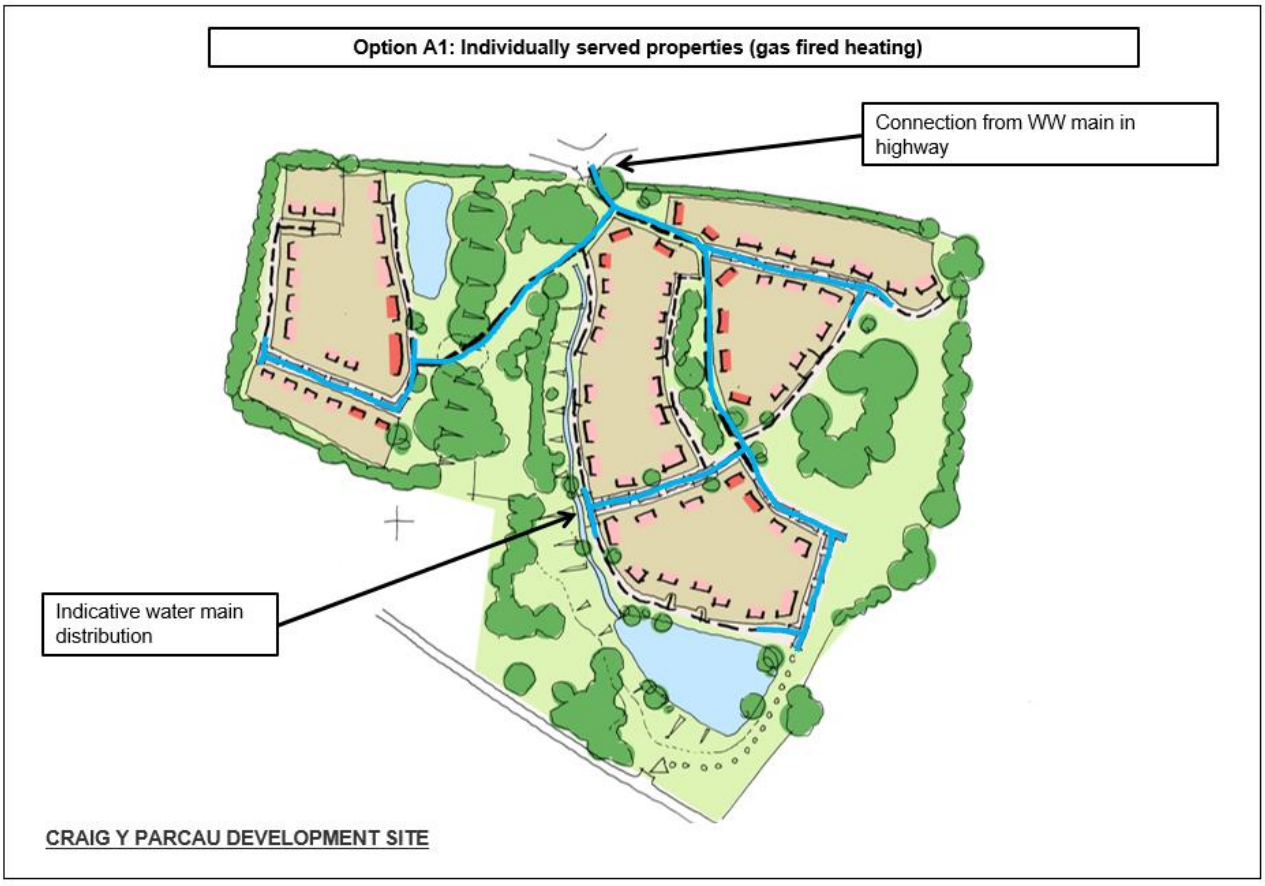
1. If energy centre where to be adopted additional water connections would be required to each energy centres.

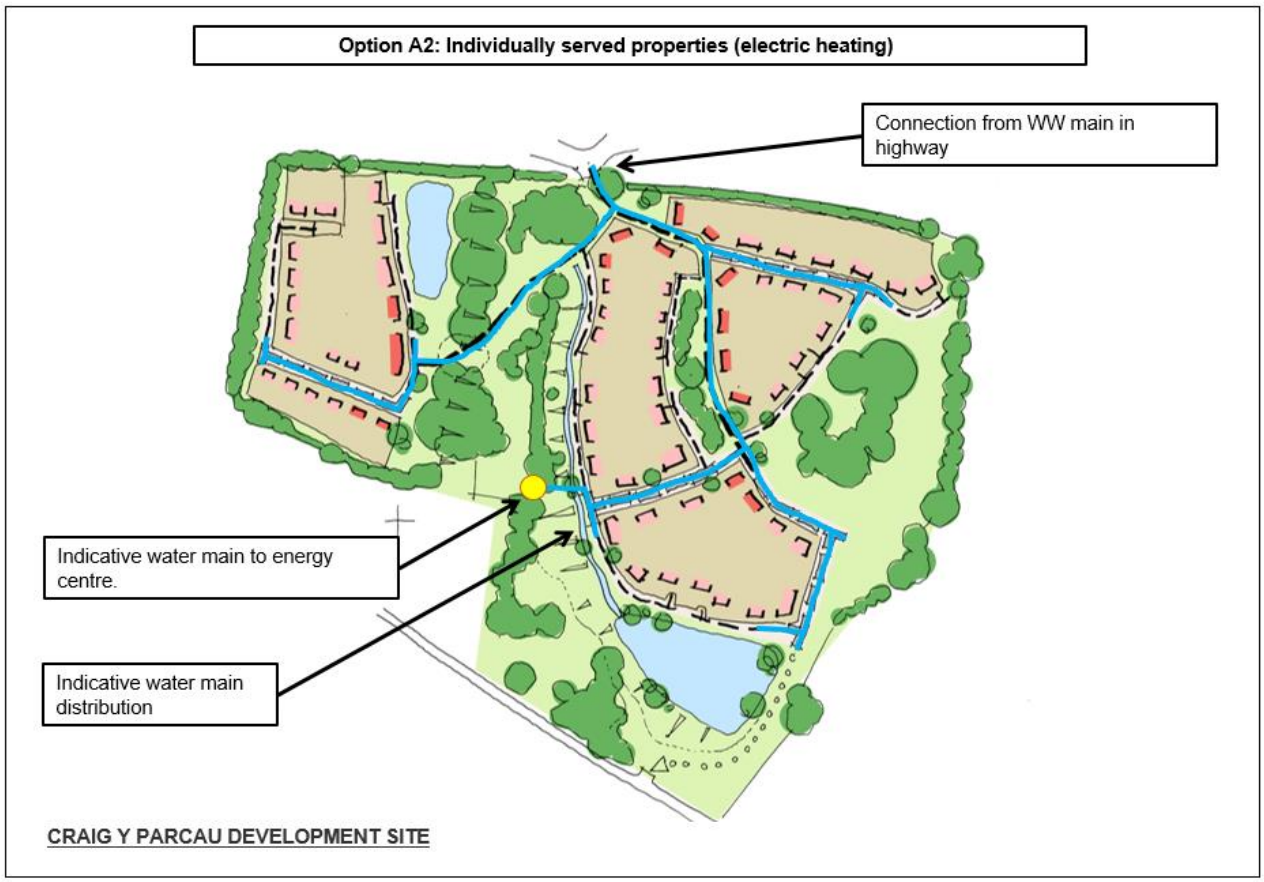
The above being aligned with predicted gas demands detailed within section 3.3.2 of this report.

The utility search for the Craig Y Parcau site did not indicate any local water mains, therefore, the WW infrastructure will possibly require extending. This said, it is likely that due to recent developments in the area that the utility mapping services require updating and local services are now present.

Confirmation as to the workability of these proposals is required from WW.

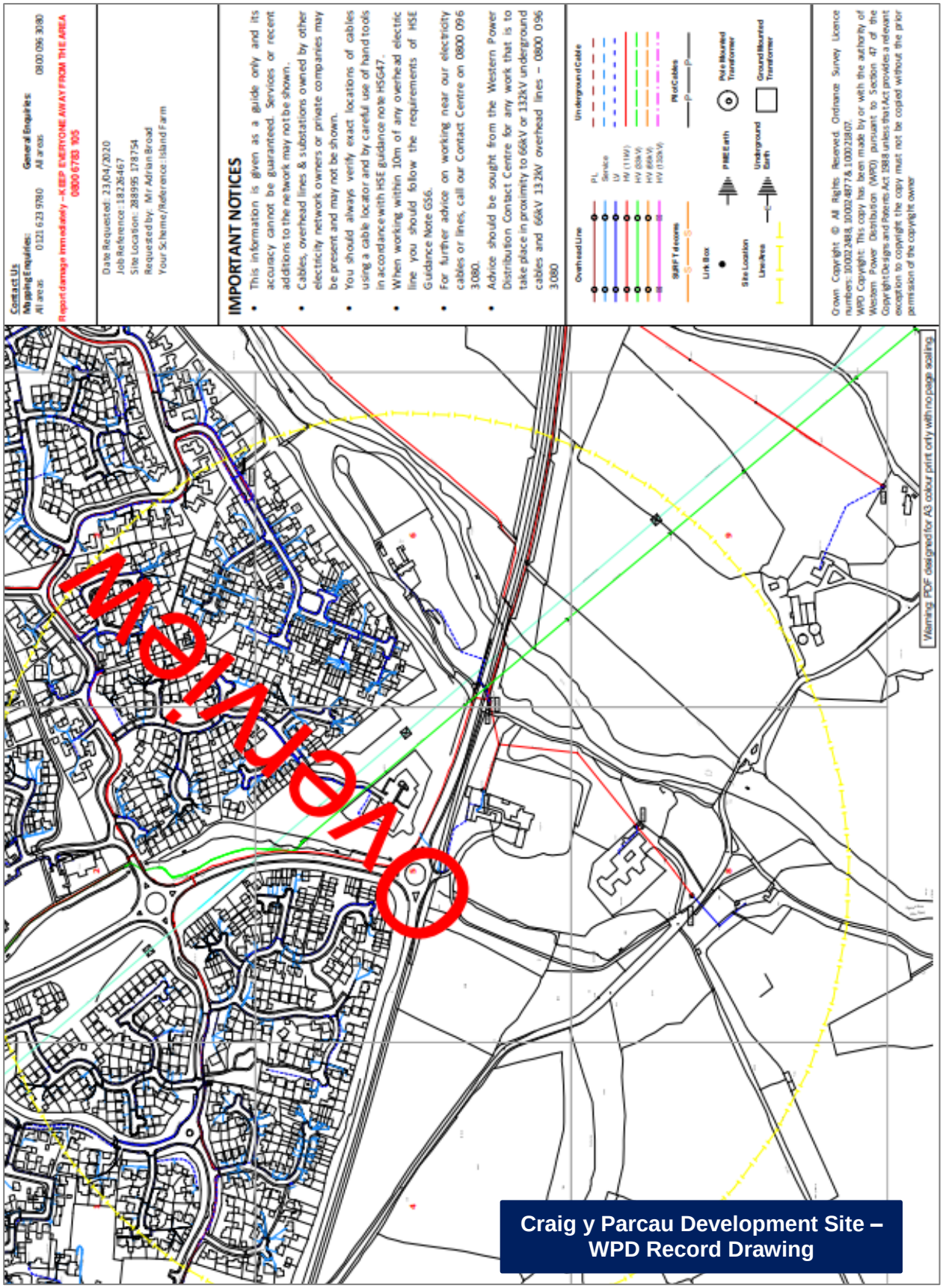
The following diagrams indicates possible routes for the new water mains required under these distribution options (exact locations will depend on final strategies and detailed design). The diagrams illustrate options for both individually and centrally served properties.



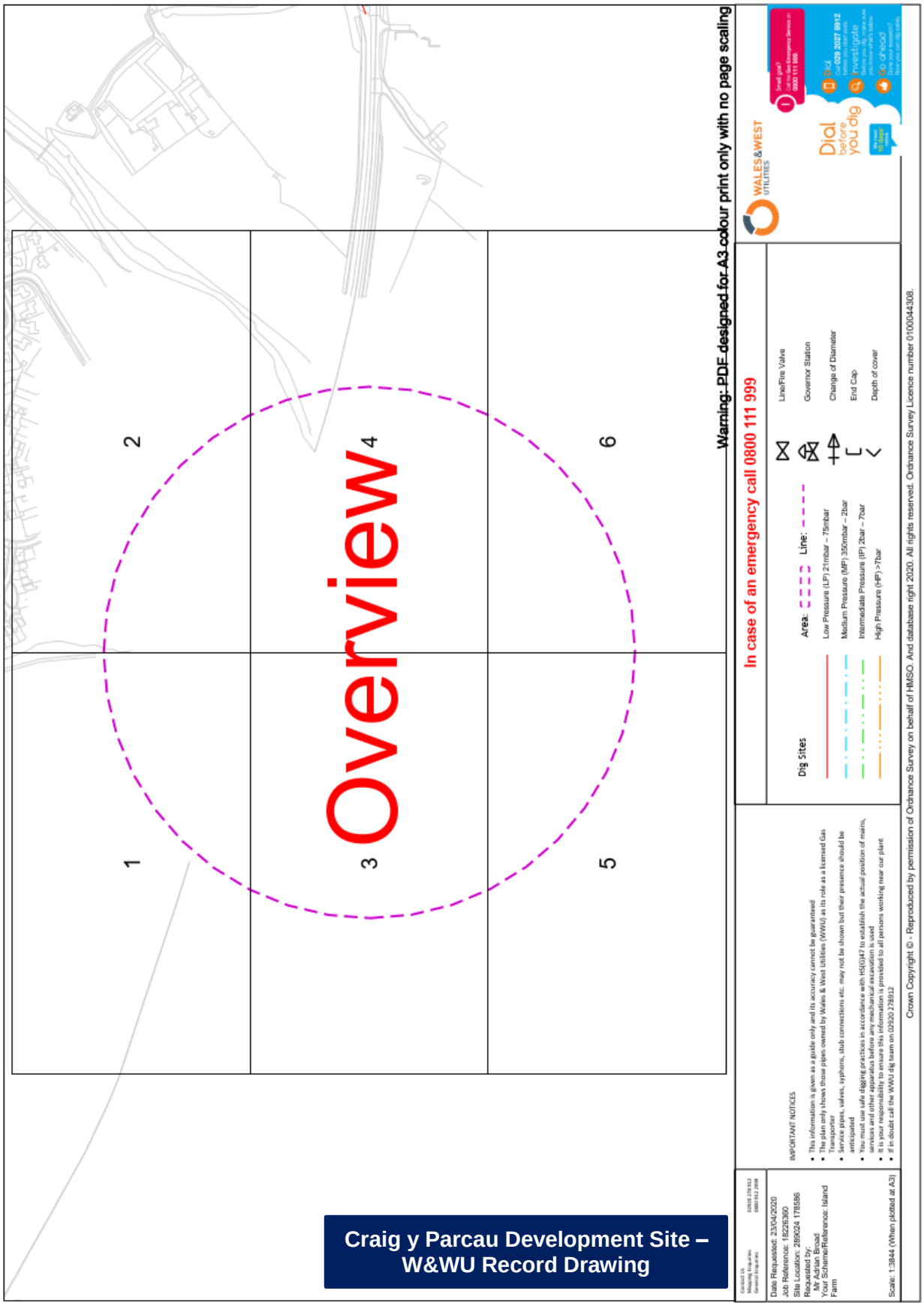

Option A2: Individually served properties (electric heating)
Connection from WW main in highway
Indicative water main to energy centre.
Indicative water main distribution
CRAIG Y PARCAU DEVELOPMENT SITE

5. Local Supply Company Mapping

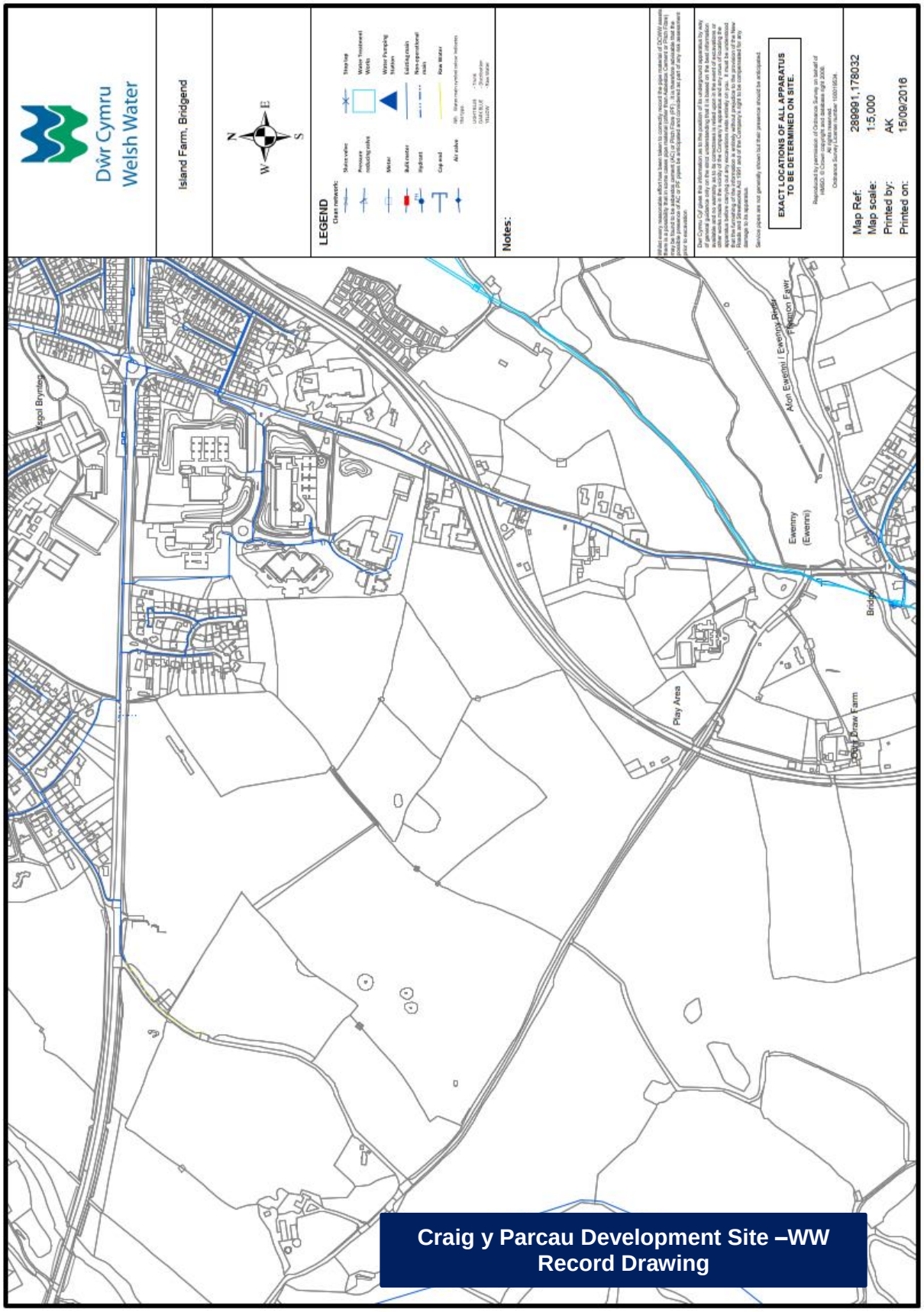
5.1 Electrical Distribution



5.2 Gas Distribution



5.3 Water Distribution



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