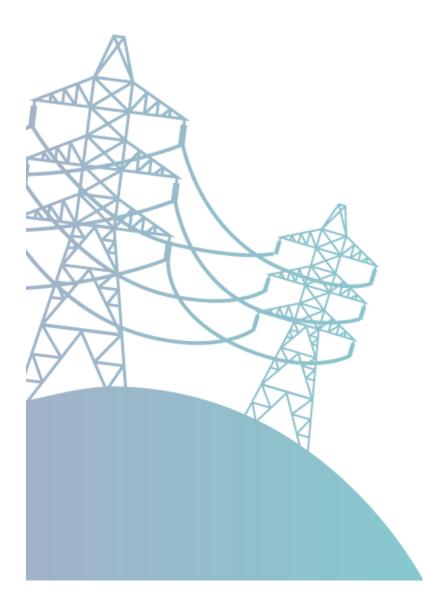


Serving the Midlands, South West and Wales

WPD DataPortal2

Online Maps (EMU Online)

Version 1.1 – August 2016



Contents

Online Maps (EMU Online)4
What Is It?4
How Do I Access It?4
The Interface5
Main Menu5
Menu5
View5
Tools
View Information6
Zoom Buttons7
Ordnance Survey Copyright7
The Map8
Controls
Pan / Move
Zoom In / Out8
Levels of Detail
Mapping Sets9
Main Mapping9
LV (Low Voltage) Diagram12
HV (High Voltage) and EHV (Extra High Voltage) Diagrams13
Functionality Guides
Load Location14
Save Location14
Gazetteer15
Place
Place Search Tips15
Equipment17

Grid Reference	
Print	19
Print Options	19
Area Selection	19
Printing	20
Display Options	21
Toggle LV Diagram	22
Toggle HV Diagram	23
Feature Information	25
Querying Features	25
Results	25
Feeder Highlight	
Measure Length	
Measure Area	
Where Am I?	
Geolocation	

Online Maps (EMU Online)

What Is It?

The **Online Maps** facility (also referred to as EMU Online), is a web browser based GIS (Geographic Information System) that provides easy access to our asset information and network records.

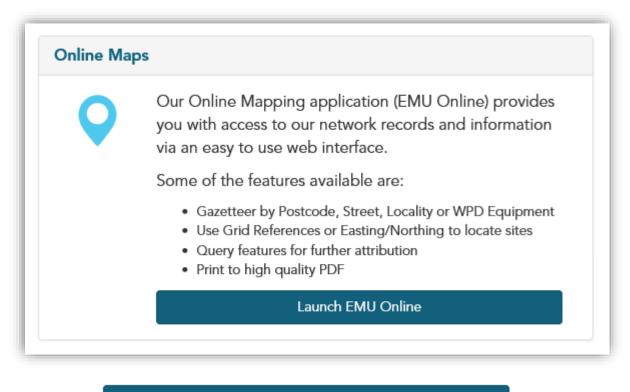
Some of the features available are:

- Gazetteer by Postcode, Street, Locality or WPD Equipment
- Use Grid References or Easting/Northing to locate sites
- Query features for further attribution
- Print to high quality PDF

How Do I Access It?

You will need to be a registered user of the WPD DataPortal2 service and have been granted access to the **Online Maps** functionality.

After logging in you should see the following item on the Home screen:



Click on the

Launch EMU Online

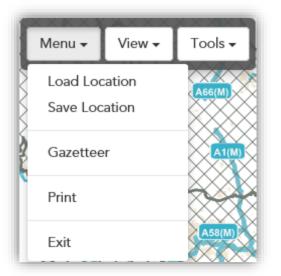
button to begin.

The Interface

Main Menu

At the top centre of the screen is the **Main Menu** bar. All of the core functions of the system are available from the three drop down menus. *Certain functionality may not be available in all Views or to all users.*

Click the [?] link next to each menu item to jump to a fuller explanation of each function.



Menu

Load Location [?] – As part of the Online Maps service we enable users to bookmark up to ten individual locations. You can load saved locations from this option.

Save Location [?] – Enables you to save the current onscreen location for future recall.

Gazetteer [?] – Opens the Gazetteer search options.

Print [?] – Open the Print to PDF dialog.

Exit – Returns you to the WPD DataPortal2 Home screen.



View

Display Options [?] – Some Views have the option to switch certain layers on or off.

Toggle LV Diagram [?] – Switches the View to the schematic view of the LV (Low Voltage) network. The LV Diagram is currently available in WPD East Midlands and WPD West Midlands only.

Toggle HV Diagram [?] – Enables switching to various different schematic views of the HV (High Voltage) and EHV (Extra High Voltage) network.



Tools

Feature Information [?] – Allows you to click on the map to gain further details about the features at that location.

Feeder Highlight [?] – By clicking on a cable the user can highlight the extents of the "feeder" an HV or EHV cable is associated with.

Measure Length [?] – Measure linear distances.

Measure Area [?] – Measure user defined areas.

Where Am I? [?] – Provides the user's current map location in a number of common formats (i.e. Grid Reference or Easting / Northing).

Geolocation [?] – Attempts to use your devices location services (i.e. GPS, etc) to position the map at your current location. The functionality of this service is highly dependent on the hardware and software configuration of your device.

View Information

The View Information bar is located at the bottom centre of the screen:



The Position field shows the current Easting / Northing location under the mouse cursor.

The Scale Line will resize dynamically as you zoom in / out to provide the user with a rough perception of distance at the current map scale. To accurately measure a distance, use the Measure Length [?] tool.

The **Scale** field displays an approximate value of the current view scale. Due to the variation in screen sizes and DPI (Dots Per Inch) of modern displays this figure is only an indicator and

distances should not be "scaled" from measurements taken with a ruler against the screen. Either use the **Measure Length** [?] tool or use the **Print** [?] function to print at an accurate paper based scale.

Zoom Buttons

If your mouse does not have a scroll wheel or your device does not support "Pinch to Zoom", you can use the + and - icons at the top right of the screen to zoom in and out.

Ordnance Survey Copyright

If the current View contains background mapping data licenced from Ordnance Survey, then the relevant copyright attribution statement will be displayed in the bottom right of the screen.

The Map

Controls

If you have used other popular online maps you should find navigating around the map familiar. If this is your first time using online mapping, do not worry, the controls are simple to pick up.

Pan / Move

To Pan / Move the map:

- Click and hold the left mouse button
- With the mouse button depressed move the mouse, the map will update relative to the speed and direction of travel
- Release the mouse button at the end of the move

Repeat the above steps to continue moving around. If you already know the specific location you are looking for, it may prove more efficient to use the Gazetteer [?].

If you are on a device with a touchscreen, in most cases you will be able to "Swipe" to move the map. *This functionality requires touchscreen hardware and software / browser support.*

Zoom In / Out

If you are using a mouse with a scroll wheel this will control zooming of the map. *Which scroll direction corresponds to zooming in and out varies across devices!*

If you are on a device with a touchscreen, in most cases you will be able to "Pinch to Zoom". This functionality requires touchscreen hardware and software / browser support.

Finally, if your mouse does not have a scroll wheel or your device does not support "Pinch to Zoom", you can use the + and - icons at the top right of the screen to zoom in and out.

Levels of Detail

The map is designed to display only the most pertinent information for the current view scale. As the map is zoomed in, more information is displayed; this helps to improve legibility and map performance.

Mapping Sets

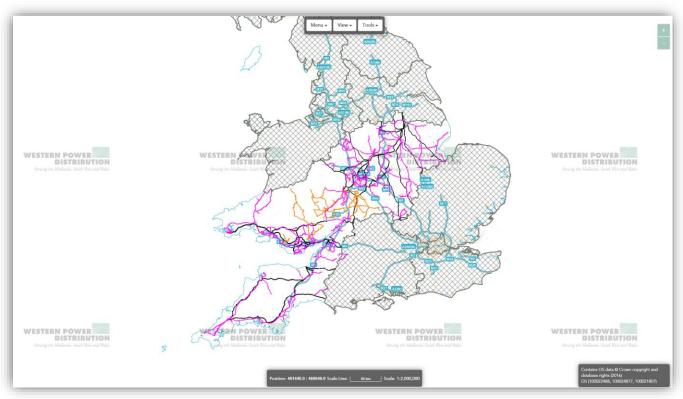
The Online Maps facility contains several different Mapping Sets (or Views) of WPD's network assets, details of which are described below:

Main Mapping

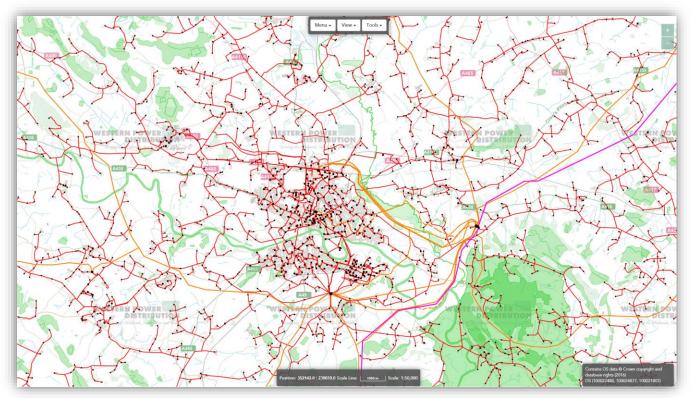
This view is the default view presented to the user upon loading EMU Online; it is the geographic representation of WPD's linear assets and associated equipment.

This view contains:

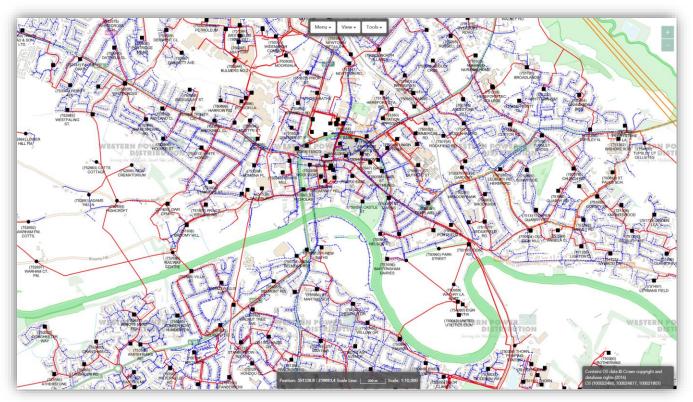
- Ordnance Survey Map Background A number of Ordnance Survey's Open Data products are displayed between the scales of 1:2,000,000 and 1:10,000. At 1:5,000 scale the map switches to detailed Ordnance Survey MasterMap. All prints produced from Main Mapping use MasterMap as the base map.
- WPD Asset Layers The position and location of WPD owned linear assets at various voltages (Underground Cables and Overhead Lines), along with associated equipment e.g. Poles, Towers, Substations, Link boxes or Joint locations.
- Third Party Data Where it adds value we may include additional data layers from Third Party suppliers e.g. Flooding Data



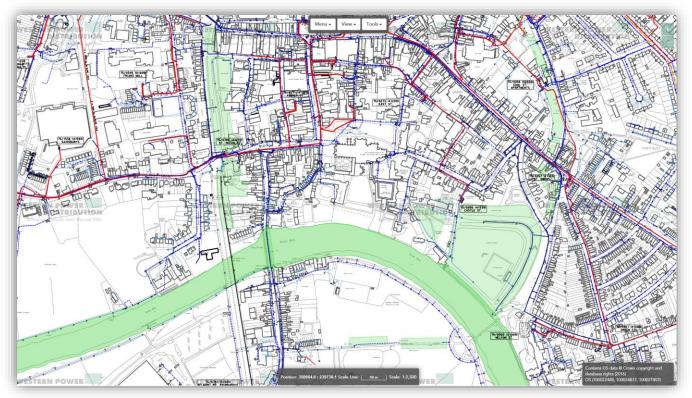
Main Mapping at 1:2,000,000 scale showing EHV network and WPD boundary.



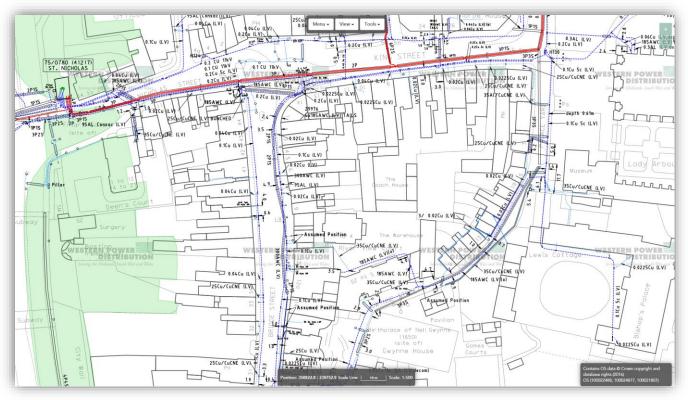
Main Mapping at 1:50,000 scale, EHV / HV network and substation locations are now visible.



Main Mapping at 1:10,000 scale, EHV / HV / LV network and substation labels are now visible.



Main Mapping at 1:5,000 scale, OS MasterMap now visible.



Main Mapping at 1:500 scale, detailed annotations and labels now visible.

LV (Low Voltage) Diagram

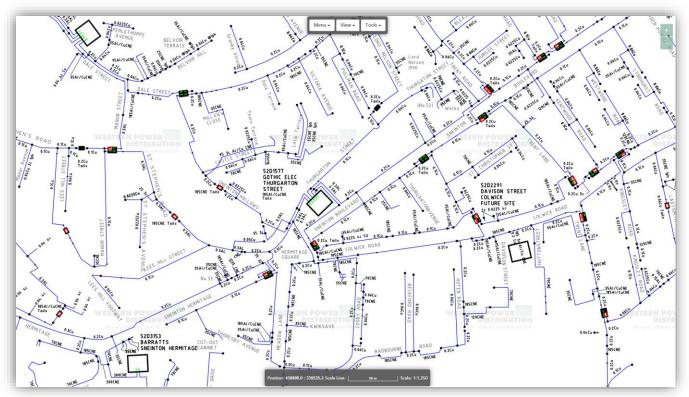
The LV Diagram is a geoschematic representation of the Low Voltage portion of WPD's network assets. The schematic diagram can be of assistance when viewing complex LV networks in urban areas.

This view contains:

- Simplified geoschematic route of linear assets
- Substation, Joint, Link box and Feeder Pillar locations
- Indicative feeding arrangements for Link boxes and Switches

The LV Diagram is accessed via the Main Menu -> View -> Toggle LV Diagram.

Please note that the LV Diagrams for WPD South West and WPD South Wales are not currently accessible via the Online Maps system. If you require access to this data, please make a request via the contact details provided at http://dataportal2.westernpower.co.uk/Home/Contact (A charge for printing and administration will apply in such cases)



LV Diagram showing an urban LV network, including substation and link box positions.

HV (High Voltage) and EHV (Extra High Voltage) Diagrams

The HV and EHV Diagrams are a purely schematic representation of the High and Extra High Voltage portions of WPD's network assets.

This view contains:

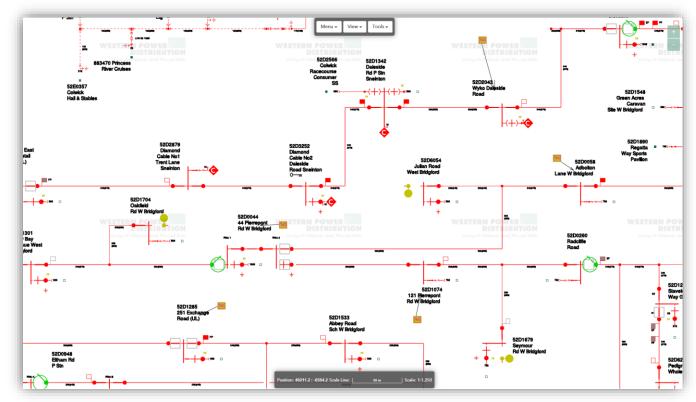
- Simple schematic representation of linear assets
- "Normal State" feeding arrangements for Circuit Breakers and Switches
- Additional information on certain assets e.g. Transformer kVA ratings

The HV / EHV Diagrams are accessed via Main Menu -> View -> Toggle HV Diagram.

Please note that the HV / EHV Diagrams are based on data extracted from WPD's PowerOn Fusion systems on a periodic refresh cycle. It may not reflect the current Operational Condition of the network and should not be relied upon for Operational use.

The HV and EHV Diagrams available are:

- 11kV Contains 6.6kV and 11kV network
- 33kV Contains 25kV, 33kV and 66kV network



132kV - Contains 132kV network

Sample view of the East Midlands 11kV Diagram.

Functionality Guides

This section details how to use each of the functions of the Online Maps service in detail.

Load Location

Loa	Load Location			
ma	cking the Load button will cl ap and navigate you to your ation.	-		
Slot	Location	Action		
1	Broad Street, Hereford	Load		
2	-	-		
3	-	-		
4	-	-		
5	-	-		

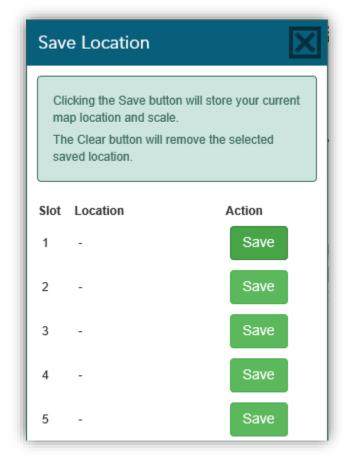
On selecting Load Location from the Main Menu, the Load Location side panel will be displayed.

If you have previously saved a site it will be displayed here. Click the Load button next to the site you wish to view.

The map will redraw to the same centre point and view scale as when the location was saved.

If you do not have any sites saved you will receive a short message notifying you as such.

Save Location



The Online Maps service enables users to bookmark up to ten sites; this is especially useful if you are likely to view mapping for the same site repeatedly.

On selecting Save Location from the Main Menu, the Save Location side panel will be displayed.

If you have save spaces available, click the Save button to bring up a dialog box to enter a Location name.

If all ten locations are "full" you will need to delete one first by clicking the Clear button on the relevant row.

Gazetteer

The Online Maps facility provides three separate Gazetteer options: **Place**, **Equipment** and **Grid Reference**. On selecting Gazetteer from the Main Menu, the Gazetteer side panel will be displayed.

Place

Gazette	er 🔀
Place	Equipment Grid Reference
Place Se	arch
Search Ter	m
Search Typ	Postcode 🔽
Limit Resu	10 🔽
	Search Clear

The **Search Term** field is the location you wish to search for (See the <u>Place Search</u> <u>Tips</u> below for details).

The **Search Type** field is a drop-down menu with the following options: Postcode, Road, Place, Whole.

The Limit Results field determines how many search results are returned. Be aware that if you search for a very common Search Term i.e. "High Street", that the specific result you are looking for may not be shown if Limit Results is too low.

Place Search Tips

When using the Place Search gazetteer the Search Term field is quite flexible:

- You may enter full or partial search terms for each of the gazetteer types
- You do not need to enter wildcard characters (i.e. *, ? or #)
- Postcodes can be entered with or without spaces
- *Road* searches can be combined with a place or locality to narrow the search results (i.e. instead of searching for "High Street", enter "High Street, Tipton"

Click the Search button to submit your search request.

Please note that depending on the number of search results that match your request or the specificity of your Search Term it may take up to twenty seconds to process your request.

Results		
Location	Туре	Grid Ref
DY4 8EA, Tipton, Sandwell	Postcode	SO9492
DY4 8LB, Tipton, Sandwell	Postcode	SO9591
DY4 8NH, Tipton, Sandwell	Postcode	SO9592
DY4 9AR, Tipton, Sandwell	Postcode	SO9492
DY4 8JY, Tipton, Sandwell	Postcode	SO9591
DY4 8JL, Tipton, Sandwell	Postcode	SO9591
DY4 8PE, Tipton, Sandwell	Postcode	SO9592

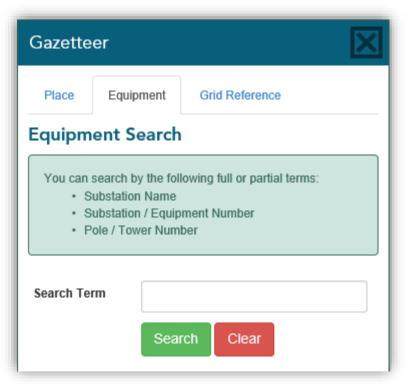
When your search has been completed, the Results will be shown underneath the search panel:

Clicking on any of the search results shown will cause the map to zoom to that location.

For each search result we attempt to display other information that will help you determine the correct location, for example providing a Grid Reference or showing the full Address / Location that your search term was matched to.

You can refine your location by using the Map to pan / zoom until your desired location is shown.

Equipment



Results

Site Number	Site Name	Description	Locality
915829 (22D8872)	HIGH STREET CAYTHORPE	Ground Mounted Site	Caythorpe (SK9347)
522230	HIGH STREET SWANSEA	Ground Mounted Site	Castle (SS6593)
110161	HIGH STREET	Ground Mounted Site	Hanham (ST6472)
910583 (22D0912)	HIGH STREET LITTLE BYTHAM	Ground Mounted Site	Little Bytham (TF0118)
943670 (44E8079)	UPPER HIGH STREET HARPOLE	Pole Mounted Substation	Harpole (SP6961)
180408	HIGH STREET	Ground Mounted Site	Weston-Super- Mare (ST3562)
890798 (12D9500)	BONSALL HIGH STREET	Ground Mounted Site	Bonsall (SK2758)

The Equipment gazetteer allows you to search WPD's named or numbered assets.

This includes:

- •Substation Names
- •Substation / Equipment Numbers
- •Pole / Tower Numbers

Enter the item you are looking for in to the **Search Term** field and then click the **Search** button.

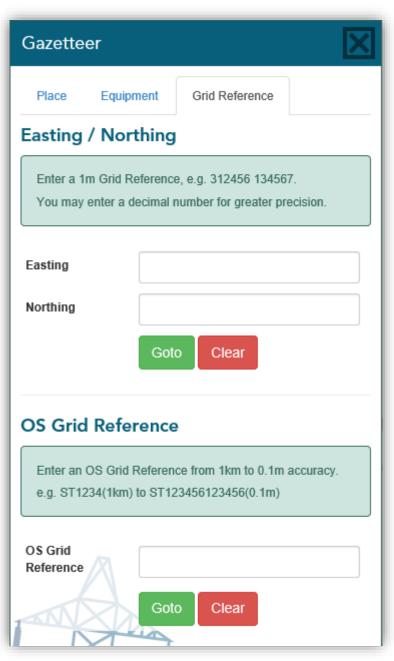
When your search has been completed, the Results will be shown underneath the search panel.

Clicking on any of the search results shown will cause the map to zoom to that location.

For each search result we attempt to display other information that will help you determine the correct location, for example providing a **Description** or showing the **Locality** and Grid Reference that your search term was matched to.

You can refine your location by using the Map to pan / zoom until your desired location is shown.

Grid Reference



If you already know the Ordnance Survey Grid Reference or Easting and Northing for your area of interest, you can use these to zoom the map directly to these locations.

Easting / Northing should be entered separately in to each relevant field.

OS Grid Reference can be entered with a precision of 1 kilometre to 10 centimetre precision

Once you have entered your coordinates press the Goto button, the map will zoom to that location.

You can refine your location by using the Map to pan / zoom until your desired location is shown.

Print

The **Print** function allows the user to print the onscreen map view to an Adobe PDF document. This document can then be downloaded and (if required) printed to produce a physical paper copy.

Print Options

Print output is configurable by the user via the drop-down menus in the Print side panel:

- Paper Size We offer printing to either ISO A4 or A3 sizes in Landscape or Portrait
- Scale Common map scales (1:50 to 1:1,250) are supported

Area Selection

The extent of the map which will be printed at the current **Paper Size** and **Scale** is indicated by the blue shaded "print area" rectangle. Any changes to the print options will be reflected in the print area on screen.

Whilst in **Print** mode, single left clicking anywhere on the map will define that location as the centre point for the print area. You may also continue to zoom and pan the map whilst in **Print** mode; easily allowing you to create a series of prints along a road or route.



The blue shaded print area denotes the extent of the map to be printed to PDF.

Printing

Click the **Print to PDF** button to submit your print request to the server. **Print** requests will be processed within five to ten seconds, after which you will be offered a download link to retrieve your document.

You should download your document immediately by clicking the link; this will cause your web browser to either prompt for a save location or to open the document automatically depending on your settings.

Display Options

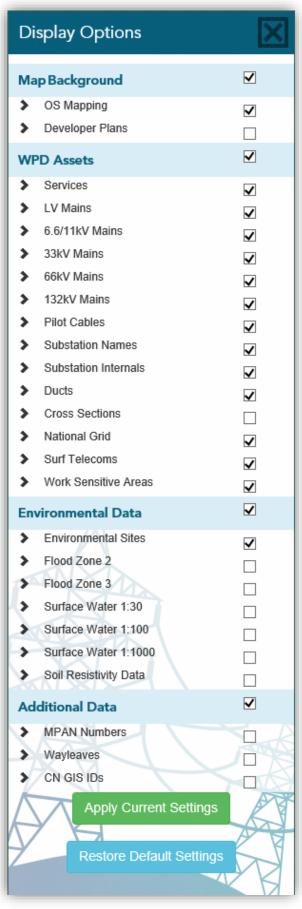


Image for illustration purposes, not all layers may be available.

The **Display Options** side panel contains a list of all the map layers that are configurable for the current view.

Layers that are currently enabled will display a check mark, those that are currently disabled will not.

For a number of reasons some map layers may be disabled by default, i.e. data that is not useful to all viewers or to reduce map "clutter".

Click in the relevant check box for layers you wish to show or hide.

Any changes made to these options will not take effect until you click the Apply Current Settings button.

After applying new settings, it will take a few seconds for the map to update to reflect your new choices.

If, after making changes, you wish to revert to the views default settings you may do so by clicking the Restore Default Settings button.

Please note that only some views have configurable Display Options.

Please note that your current Display Options are also applied to any prints you produce. Therefore, if you disable layers they will also be missing from your printed output!

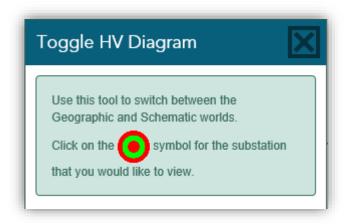
Toggle LV Diagram

Clicking the **Toggle LV Diagram** option on the **Main Menu** will swap the current view from **Main Map** to the LV Diagram.

The current geographic position and the view scale will be retained, enabling the user to simply switch between the two map views.

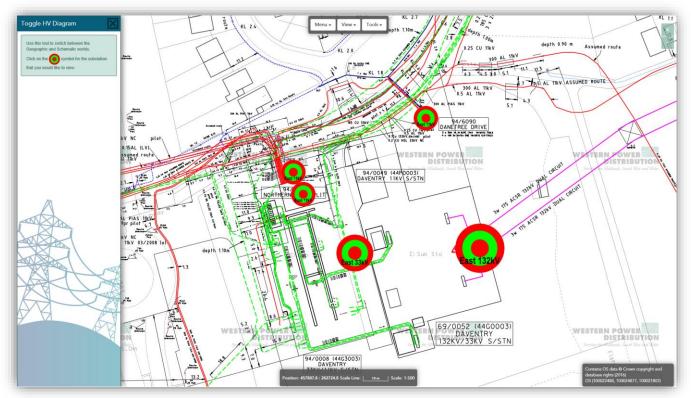
The Toggle LV Diagram tool has no user configurable options.

Toggle HV Diagram



Opening the **Toggle HV Diagram** tool will display the associated side panel with the adjacent message.

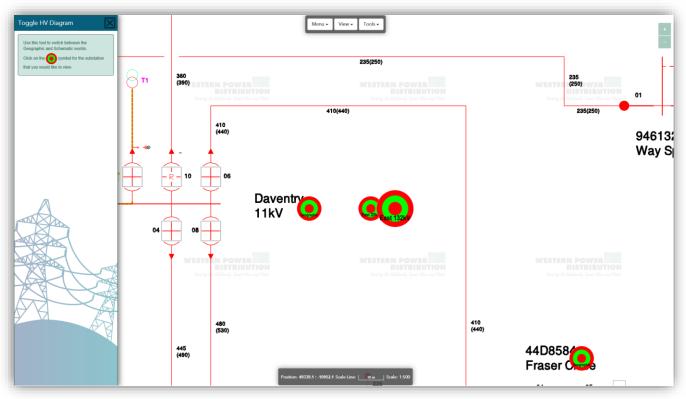
In the map view, assets that are represented in alternate views (i.e. the HV or EHV Diagrams) will display with a red and green "bullseye" symbol at their location:



In the above image you can see multiple bullseye symbols. This site has 132kV to 33kV and 33kV to 11kV transformers on site; it is therefore present in all three HV Diagram views. There are also two distribution substations (11kV to LV) in close proximity.

Single left clicking on a bullseye symbol will take you to the associated substations position in the HV / EHV Diagram.

When viewing one of the HV / EHV Diagrams, clicking the **Toggle HV Diagram** tool will also display bullseye symbols. In addition to seeing bullseye targets for other HV / EHV Diagrams, you will see "Geographic" bullseyes. Geographic bullseyes link to **Main Mapping**.



View of the above site in the East Midlands 11kV Diagram. Note that there are links to view the site in both the 33kV and 132kV Diagrams, in addition to the Geographic bullseye, which links back to **Main Mapping**.

Feature Information

The Feature Information tool allows you to query objects on the map to view any additional attribution or information that may be held for them.

Querying Features



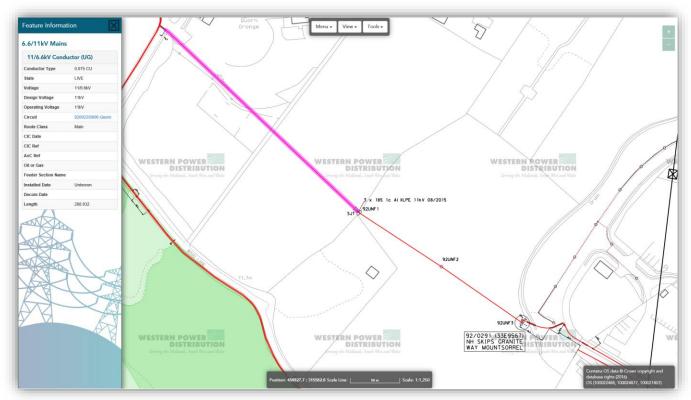
On opening the Feature Information tool, a short message in the side panel will instruct you to click in the Map view.

Single left click in the Map view to query features at that location for attribution; results are returned within a few seconds.

Results

Any attribution for features at your chosen location will be displayed in the side panel at the left of the screen. The complexity of the result will depend on the number of assets or features present at the location you queried.

Single Feature



In this example, a position with only a single feature present has been selected, an 11kV Underground Cable. The feature is highlighted with a magenta overlay.

The Feature Information panel contains three main sections:

Feature Information	X		
6.6/11kV Mains ←			Layer Name – Identifies which layer within the view this feature belongs to.
	or (UG) ←]	Feature Type – Identifies a broad descriptor of the selected feature.
Voltage 1 Design Voltage 1 Operating Voltage 1 Circuit 9 Route Class M CIC Date 1 CIC Ref 1 AoC Ref 1 Oil or Gas 1	1/6.6kV 1kV 1kV 220022/0006 Quorn Main		Feature Attribution – Attribution or information available for the selected feature, the contents of which will vary dependent on the type of feature selected. In this example the feature is an Underground (UG) 11kV Cable and relevant asset information is displayed. The Circuit field contains a clickable link which will perform a Feeder Highlight [?] for the associated 11kV Feeder.
Length 2	68.932		

The Feature Attribution is provided in a tabular format which most web browsers will enable you to select and copy. This would allow you to paste information into other documents.

If you have any queries regarding the specific attribution of a feature, please contact us via the details provided at http://dataportal2.westernpower.co.uk/Home/Contact

Multiple Features

Where there are multiple features present at your chosen location the Feature Information panel will contain a slightly more complex structure, especially if there are features from multiple different layers present.

Feature Information

6.6/11kV Mains

11/6.6kV Conductor (OH)

Conductor Type	3w 38 HDC
State	LIVE
Voltage	11/6.6kV
Design Voltage	11kV
Operating Voltage	11kV
Circuit	340011/0017 Chudleigh Knighton
Colour Plates	
Route Class	Main
CIC Date	
CIC Ref	
AoC Ref	
Installed Date	Unknown
Decom Date	
Length	48.650
11/6.6kV C	onductor (UG)
LV Mains	
LV Conduct	tor (UG)
	tor (UG)

In this example there are multiple HV and LV assets present at the chosen location.

As the assets are present in two different map layers you will see two corresponding Layer Names (6.6/11kV Mains and LV Mains).

Under each Layer Name are multiple Feature Type labels, each one of these corresponds to a separate asset.

By default, only the Feature Attribution for the first asset or feature is displayed.

To view the Feature Attribution for the other assets, click on the associated Feature Type label. As you mouse over the different Feature Type labels, the associated asset or feature will be highlighted with a magenta colour.

Feeder Highlight

Feeder Highlight	
Click on an 11kV or higher voltage conductor to visibly highlight the extents of the associated circuit to its Normal Open Point(s).	
Feeder 1	
Source No Breaker	
No Select Clear	

The Feeder Highlight tool enables the user to perform a visual trace of the extents of HV and EHV Feeders.

The highlight will extend from the feeding substation to the associated Normal Open Points.

Up to three feeders can be highlighted simultaneously.

Please note that you cannot highlight Non Energised, Non Connected, Low Voltage, Private or National Grid cables.

To perform a feeder highlight, click the Select button and then single left click in the Map view on the cable you wish to highlight. After a few seconds you will see the cable overlaid with a coloured highlight.

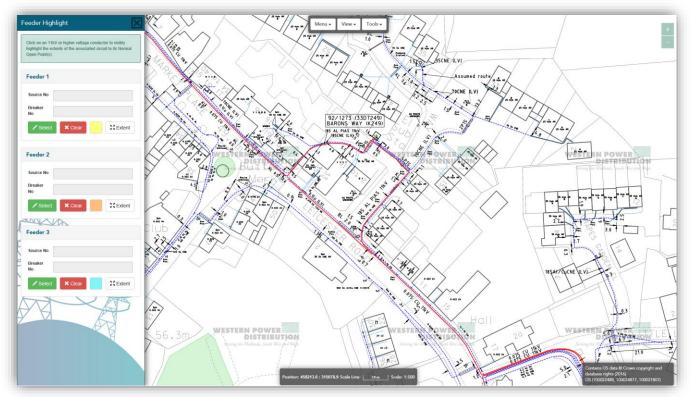
The Source No field will indicate the substation that the feeder is fed from.

The Breaker No field indicates the specific Circuit Breaker the feeder is fed from

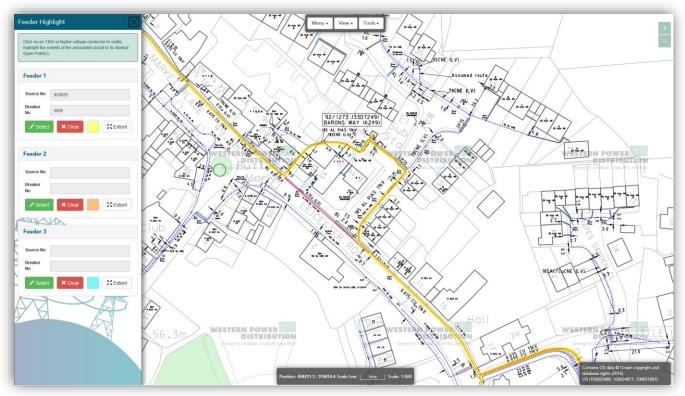
You can change the colour of the highlight by clicking in the **Colour Box** and choosing from one of the five predefined colours.

Clicking the **Extent** button will zoom the Map view to fit the full extent of the circuit in view. The coloured highlight will cover all cables or conductors that belong to the highlighted feeder.

Please note if your screen size / resolution is too low or the feeder is particularly large, the map may zoom to a scale at which the associated network is switched off by the Level of Detail switching. If this is the case the highlight will still be visible, but you will need to manually zoom back in to view the network.

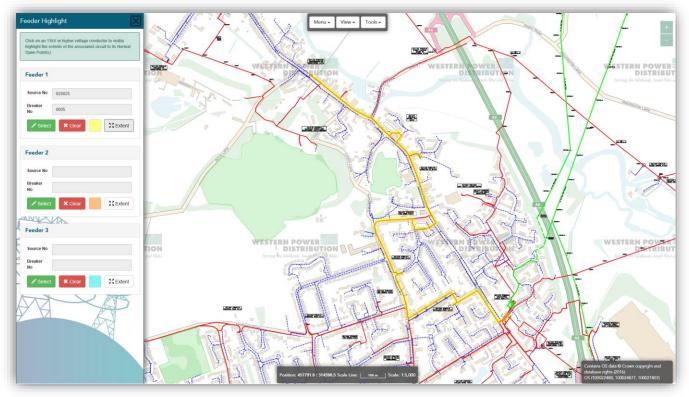


This screen shows the three **Feeder Highli**ght panels in their default state. Each one will highlight in a different colour unless otherwise changed.



After performing a **Feeder Highlight** you can see that the 11kV Feeder running diagonally across the screen is fed from Substation 920025 and specifically Breaker 0005.

To view the full extent of the Feeder you can click the Extent button.



After clicking the Extent button we can see the full 11kV Feeder highlighted in yellow.

The feeding substation 920025 (a 33kV to 11kV Primary) is visible in the lower right corner.

Measure Length

The Measure Length tool allows the user to measure simple linear distances.

To begin measuring:

- Activate the Measure Length tool, the Measure Length side panel will be displayed
- Single left click in the Map view
- Move the mouse, as you do so a running length total to the current mouse position will be displayed
- Continue single left clicking if you wish to measure along a route
- Double left click to finish measuring, the total length of your measurement will be displayed at the end point of the line / route

Measurements are retained on screen until you either close the Measure Length side panel, select a different tool from the Main Menu or click Clear Measurements the button.

Measure Area

The Measure Area tool allows the user to measure self-defined areas.

To begin measuring:

- Activate the Measure Area tool, the Measure Area side panel will be displayed
- Single left click in the Map view as the corner point of the area you wish to measure
- Move the mouse to the next corner point, single left click
- You will need to add at least three corner points to create a shape
- Double left click the final point to finish measuring, the total area will be displayed in the middle of the shape

Measurements are retained on screen until you either close the Measure Area side panel, select a different tool from the Main Menu or click the Clear Measurements button.

Where Am I?

Where Am I?	X
Click a location on the map and the sites coordinates will be displayed below.	
Easting / Northing	
Easting / Northing (0.001m)	
OS Grid Reference (1km)	
OS Grid Reference (0.1m)	

The Where Am I? tool allows the user to select a point on the map and get the exact location of that point in a number of common Mapping / GIS formats.

Easting / Northing – Location accurate to 1 metre precision. Easting / Northing is also commonly known as X / Y coordinates.

Easting / Northing (0.001m) – Location accurate to 1 millimetre precision.

OS Grid Reference (1km) – Gives the 1 kilometre Ordnance Survey Grid Reference, commonly used on printed paper maps.

OS Grid Reference (0.1m) – Gives the Ordnance Survey Grid Reference, accurate to 10 centimetres.

Where Am	?
	n on the map and the sites Il be displayed below.
Easting / Northing	350903 : 239881
Easting / Northing (0.001m)	350902.524 : 239880.865
OS Grid Reference (1km)	SO5039
OS Grid Reference (0.1m)	SO509025398808

Example of the format of responses after single left clicking in the Map view.

You can copy and paste the values from the text boxes for use in other documents.

Geolocation

The **Geolocation** tool attempts to use any hardware (GPS) or software features on your device to centre the map on your current location.

The functionality of this service is highly dependent on the hardware / software configuration of your device.

The accuracy of consumer GPS fluctuates wildly and even under ideal conditions the location reported may be +/- 20 metres from your true position.

Geolocation
Geolocation services are dependent on the Software and Hardware configuration of your device and may need to be enabled seperately for this functionality to work.
The accuracy of Consumer GPS equipment can be +/- 20m under ideal conditions.
Location information provided is not a substitute for accurate on- site location.
Locate

Click the **Locate** button in the **Geolocation** dialog box.

Many web browsers will acknowledge that the service is asking for your devices location and will prompt you to accept or deny this request.

If you accept, within a few seconds the map should pan to the location reported by your device.

If the map does not pan it is likely that your device does not have the required hardware or software or that it is not currently configured to work with your web browser. In this scenario you will need to liaise with your own IT provider to remedy this.