

Zednet User Documentation



14 August 2015

Index

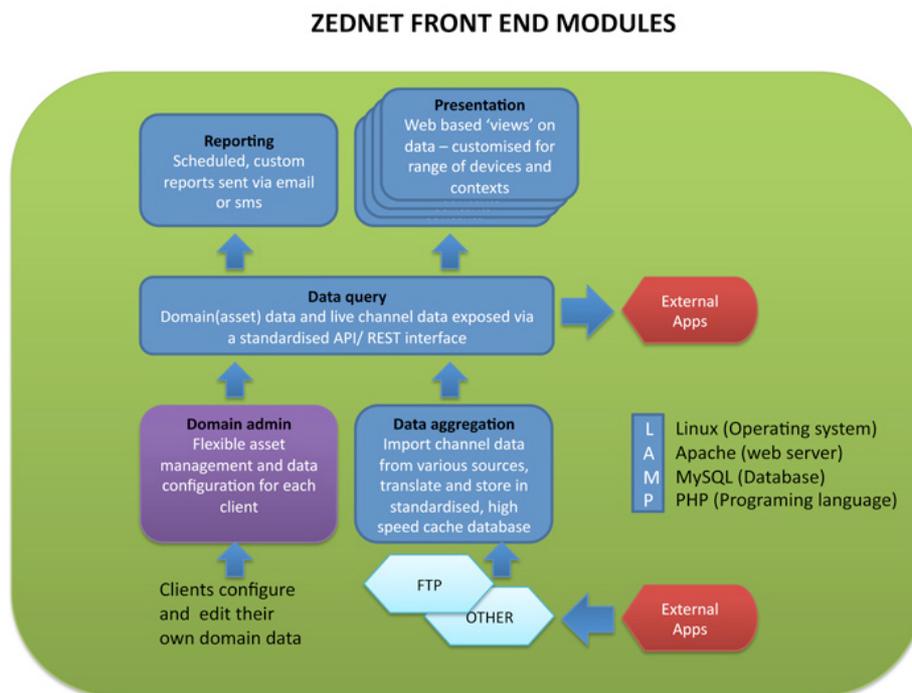
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Zednet Overview

Zednet consists of a number of **modules**, all working together to provide a robust system that can be used to interrogate and manipulate data coming from water distribution networks. In this section we provide a brief overview of the various modules making up Zednet. If anything seems confusing, don't worry! We will go into more detail on how to use Zednet in the **Data Views** and **Admin Interface** sections of this documentation.

1. The **Aggregation Module** receives logger data via GSM (Global System for Mobile communications) or, alternatively, data can also be uploaded manually. It then cleans up the data by, for example, applying conversions and offsets. It then uploads the data to a centralised data store in standard format.
2. From here the **Query Module** makes it possible to interrogate the stored data, for example, by supplying daily averages or even raw data on one or more 'data-inputs'. Typically, we refer to 'data-inputs' as **channels** of data coming from hardware assets installed in water distribution networks. The query module supplies data to all the Zednet front-end interfaces. Alternatively, it can be accessed via a web API (**Data Export API**) to integrate directly with existing 3rd party applications.
3. In the **Presentation Layer** (or **Data Views**), a number of purpose specific interfaces present "views" on the data. Most of these views are interactive, allowing a user to select what data is viewed and how it is presented.
 - o The **Live Map** interface shows data channels on a Google style map, presenting a high level overview of the state of the system.
 - o With the **Live Data** interface, users can dig deeper into the system by querying specific data channels over customisable time ranges, viewing graphs, and exporting the data in different formats.
 - o With Zednet's **Mobile Interface**, users can view channel data, graphs, properties and statistics on their **smart-phones** and **tablets**, including iPads, iPhones, Windows Phone devices and any Android device.
4. Finally, the **Administration Module** makes it possible for users to set up and configure the administrative side of their water distribution network.
 - o **Users** can be configured with different permission levels within the system.
 - o Automated email **reports** can also be set-up and configured to display daily, weekly or monthly data on a clients water distribution network.
 - o **Hardware**, including **sites** where water systems are being monitored, **assets** within those sites, like PRV chambers, water meters and reservoirs, and **channels** of data coming into Zednet from those assets can all be set-up and configured.
 - o In addition **geographic** information for a clients water distribution network can be customised.

The diagram below shows how the modules fit together. Each module is divided into its own block and arrows indicate the direction in which data is flowing between the modules.



A summarised overview of how Zednet's front-end modules fit together

Data Aggregation and Query Modules

Most of what goes on in the **Data Aggregation** and **Query** modules happens "behind the scenes". For this reason we cover these modules very briefly. We provide some background information on how Zednet works, as well as to describe some of the terminology used in the Zednet interfaces. Some of the details are often implementation specific for different clients, depending on the specific type of loggers as well as method of data transfer used in a particular installation.

How data is imported and aggregated

Loggers and channels

Typically **measurement instruments**, what we call "**assets**" in the Zednet system, are connected to GSM (Global System for Mobile communications) capable loggers in the field. Measurements might include pressure, flow, water quality, water level and so on.

On the Zednet system, the **time-series data-stream** produced by a measurement instrument is referred to as a "**channel**". While **assets** may be replaced, and loggers physically moved from site to site, the data **channel** representing the state of the water resource at a particular measurement point remains valid.

Loggers typically have polling intervals between 5 and 15 minutes, and send data to the Zednet server using GPRS modems between 1 and 4 times per day. For practical purposes the information is not effectively "live" in other words. This is part of the design methodology that allows the logging equipment to operate for more than 5 years on a single battery supply without any external power. Shorter download times can be accommodated, however, for most practical applications this is not necessary and will simply reduce the battery life of the logging unit without adding any real benefit.

Alternative sources

Zednet presently mainly receives data via GSM. The system is however also able to "pull", or receive "push" data via any of the standard web protocols (FTP, HTTP, SCP).

This means that data can also be **manually imported** where GSM equipment is not available.

Conversion

In most cases data will be uploaded to the Zednet servers in the proprietary format of a particular logger manufacturer. This then requires that data files are converted to a generic format after they are received. For example, Zednet is able to integrate with the *PMAC* software distributed by Technolog to help convert the data uploaded by Technolog's *Cello* logging equipment.

The system implements a range of data filters, and can therefore receive data in standard CSV or XML formats as well. These formats can be extended to meet your requirements.

Aggregation

Once data is converted to standardised format, a number of data scrubbing operations are optionally made:

- Calibration offsets can be applied where it is necessary.
- Data can be converted using analog look-up table. This is useful when converting between water measures, or providing computed/compound data.
- Meter start values, overruns etc. are accommodated.
- Gaps in the data set are filled and data is re-requested where needed.

Storage

Scrubbed data is stored in a standardised, central database which acts both as data archive and query cache. This means that data from a range of devices can be queried in a standardised format, and data sets compared or combined regardless of source. The database runs in a dedicated environment, optimised for fast retrieval of records spanning even years of data. Data is also backed up from here in an offsite location.

Query

In most cases, end users engage with the query module via the various **front end interfaces**. The query module supplies a user with data when they view a chart, edit a channel's properties, or do anything to manipulate data via any of Zednet's front end interfaces. You don't need to know the intricate details of the query module, just that it "wraps" the data storage to let users get at data in intelligent ways.

Data Views

Zednet's **Data Views** (you can think of them as 'interfaces' more conventionally) are used to dynamically display, save and export various 'live' **channels** of data coming in to Zednet from loggers in the field.

Live Data

With the Live Data interface, you can view data from one or more **channels**, all in one place. Channels are grouped by **site** (the geographic location where your channel's of data are coming from), in turn presented in a navigation tree grouped by geographic district or region. The interface further allows you to choose how the data is displayed, using tools such as charts and grids.

Date ranges, intervals and interpolation can be manipulated to drill right down into a data set. From here the data set can then be exported, or a chart printed, saved or emailed directly from the interface.

Live Map

The Live Map interface combines your most recent data readings and stats with a geographic representation of your data. View data for your sites and channels by clicking the respective site's icon on a Google Maps style interface. In addition to viewing data summaries for your sites and channels, you can also view, export and manipulate channel data in chart or grid format.

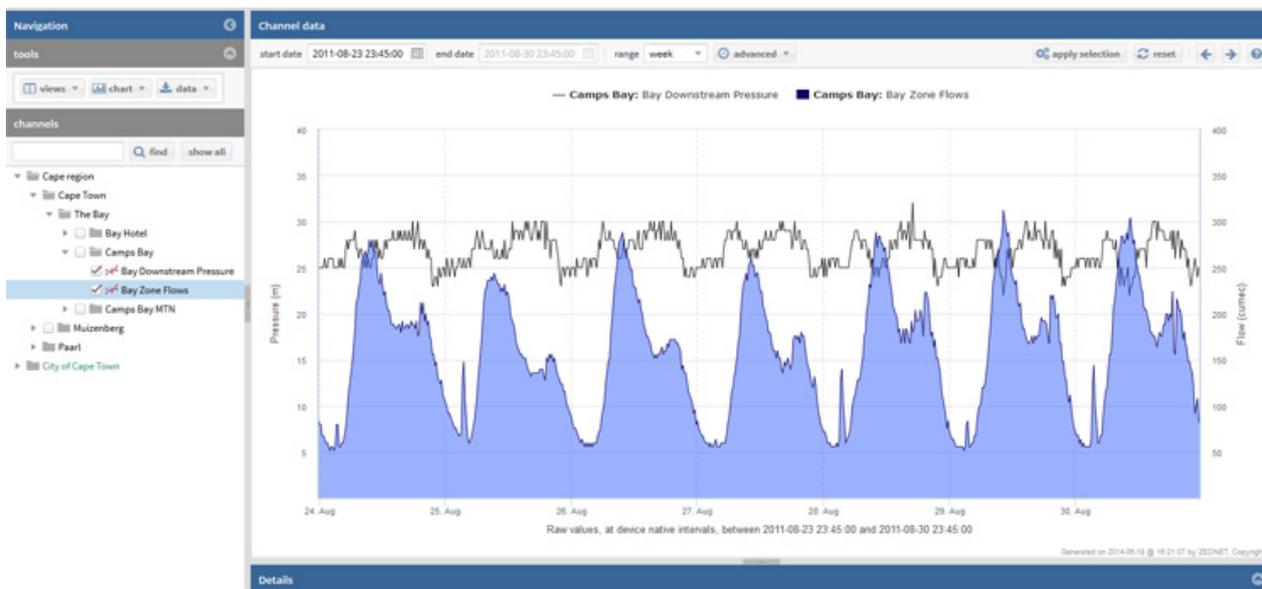
Mobile Interface

With Zednet's mobile interface , you can use your smartphone or tablet device to view your channels of data. You can choose how you would like the data to be displayed, for example as a chart or a grid. In addition, you can also view a channel's properties as well as average data values, max and min values and determine when the last data reading was logged.

Live Data

The Live Data interface can be broken down into two primary panels: the Navigation panel on the left and the Channel Data panel on the right.

- The navigation panel is used to select **channels** of data you are interested in viewing. You can also perform various data operations from the **Tools toolbar**.
- The channel data panel is where your selected channel(s) data is displayed. A primary feature of the channel data panel is the **Filters toolbar**, which lets you filter your channel(s) data just the way you want to see it. For example you can select the **date-range** of data you would like to view, or change the **interval** between each data reading.



The **Live Data** interface, with the **Navigation panel** on the left and the **Channel Data panel** on the right.

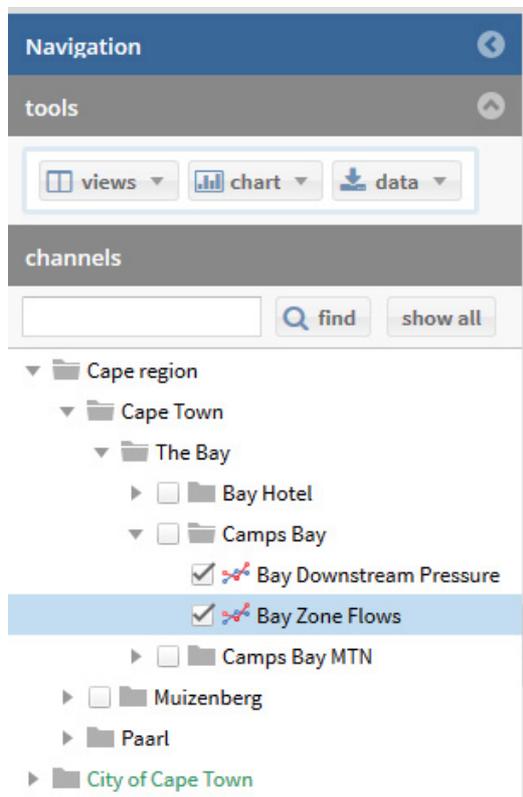
Navigation

Situated on the left hand side of the **Live Data** interface is the **navigation panel**. Within the navigation panel you will see two sub-sections: **tools** and **channels**. The channels sub-section is used to select the channel(s) of data you are interested in viewing. The **tools** sub-section is used to perform data operations including: selecting how your data is displayed; viewing related data; exporting, saving, printing and emailing data.

How to view the data from one or more channels:

1. In the **channels** panel select which **region** your intended site is located in
2. Select which **site(s)** you would like to view the channel data for
3. Lastly, click the check-box next to the **channel(s)** you would like to see displayed in the Channel Data panel.

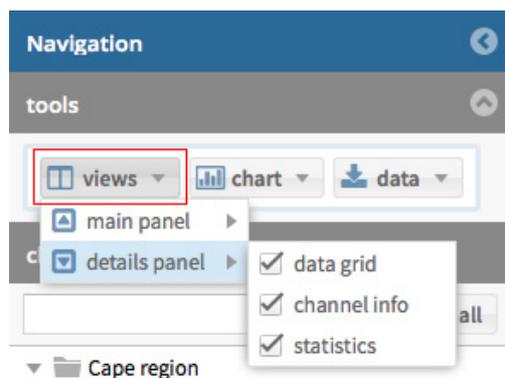
Note: Multiple channels can be viewed simultaneously on a single chart by checking multiple channels at the same time.



The **Navigation panel**: Selecting multiple channels of data to view

How to select different views of the channel data:

1. In the **Navigation** panel expand the **tools** toolbar (if it is not already expanded).
2. Click on the **views** button.
3. From the drop down menu, select which views you would like to have enabled or disabled. Your selected views will then be displayed simultaneously in the Channel Data panel.



The **tools** toolbar: Select views button results in a drop down list of the available views

Tools: print, email, save and export chart/data

How to print, email or save a chart:

1. In the **tools** toolbar click on the **chart** button
2. Click the **print** option and follow the printing wizard to print the chart
3. Click the **email** option and fill in the email form to send the chart via email
4. Click the **save** option and select your desired format to save the chart as an image

Note: You can also edit the display of the chart (such as type, line colour, icon etc.) by clicking on the **edit** option and then clicking on **edit settings** in the **Display** column

Data Export

You can export your raw channel data out of Zednet at anytime. You can choose which channels of data you would like to export, the date period for which you would like to export as well as the format you want your data to be in.

The following export formats are available:

1. **CSV** export will give you one .csv file per channel. If you set the "reference" field for a channel in the [Admin Interface](#), this export will use the channel "reference" as its ID in your resulting .csv file.
2. **Excel** export will give you a single .xls file containing all your selected channel data. The first "worksheet" in the Excel document contains a weekly summary for each selected channel. Each subsequent "worksheet" represents a site and contains raw channel data for that respective site.
3. **WAS** export works in the same way as the CSV export.
4. **SHEF** and 5. **Hydstra** exports follow their respective specification and formatting. Contact support@zednet.co.za for more details.

Note: The SHEF export does not export all types of data - only those that have been allocated a SHEF code.

In brief, these data type IDs are:

7: river level (up and downstream)

8: dam or reservoir level

11: precipitation accumulator

12: precipitation

16: ph value

22: dissolved oxygen in ppm

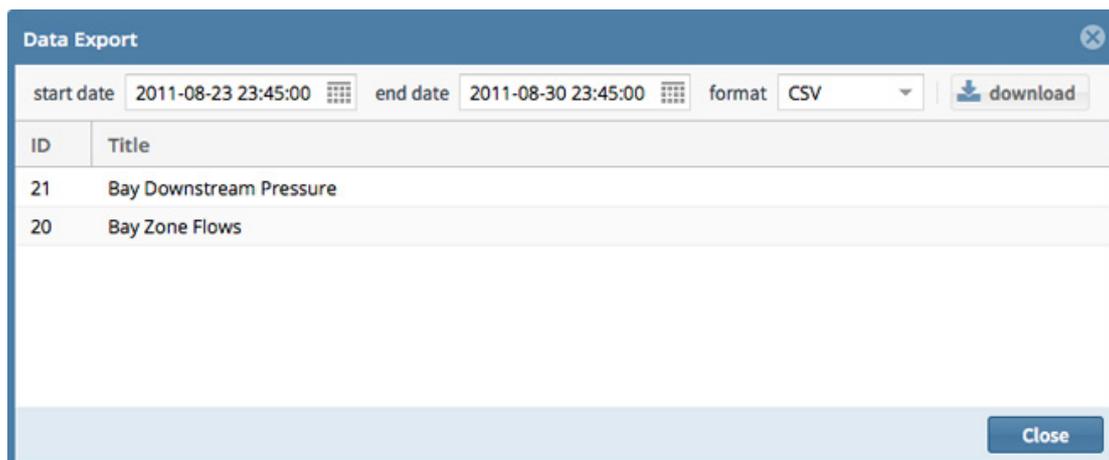
24: water conductance

28: turbidity

How to export data from a chart or grid:

1. In the **tools** toolbar click on the **data** button
2. Click the **export** option to launch the **Data Export** wizard.
3. Select your desired start date and end date from the start date and end date fields.
4. Select which format you would like to export the data in (i.e. CSV, SHEF, EXCEL, WAS or HYDSTRA)
5. Choose the channels you want to export by clicking on them in the list. If you have any channels selected in the **Navigation** panel these will be listed automatically, otherwise you can press the **show all channels** to view all your available channels.
6. Once you have highlighted the channels you want to export, click the **download** button to save your data file in your chosen format.

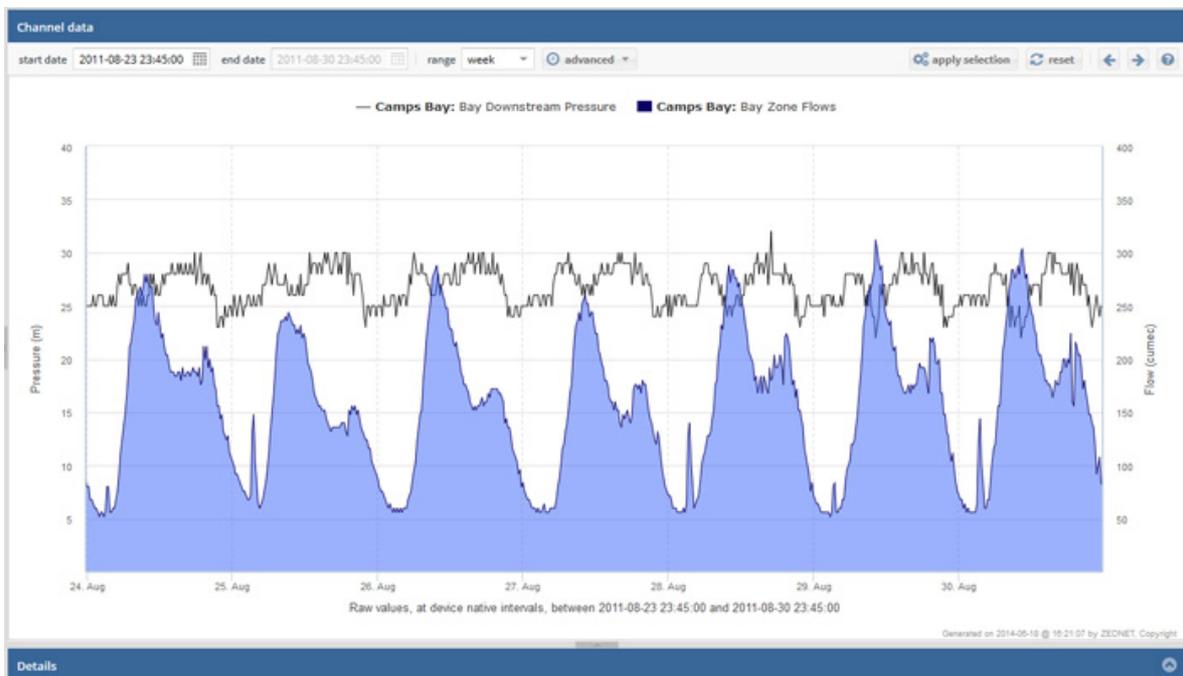
Note: To print, email, save or export data, you first have to have selected at least one channel of data to view.



The **data export** wizard.

Channel Data

To the right of the Navigation panel is the **Channel Data** panel which displays the selected channel data in various ways. Here the selected channel data is viewed in a **chart** or **grid** and additional channel properties can also be displayed. It is possible to view the data in a chart or grid format simultaneously or separately.



The **Channel Data panel**: Viewing two channels as a chart.

Filters Toolbar

The **Filters Toolbar** is located at the top of the Channel Data panel . With the Filters toolbar you can specify the **dates**, **range**, **interval** and **interpolation** of your chart.



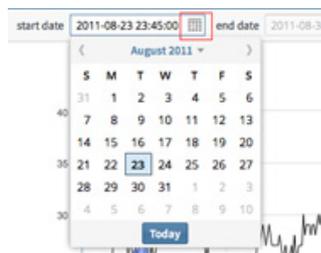
The **Filters Toolbar**

Working with Dates and Range

You can select start and end **date** in order to display channel data between a specified time period. You can also select the **range** of data you would like to view from a specified date, i.e. day, week, month or year.

How to select a new date and a range:

1. In the **Filters Toolbar** enter in the **start date** manually (*year-month-day*) or by clicking on the **calendar** icon next to the date input field and selecting a date from the calendar.



Click the **calendar** icon to select your start and end dates

2. Click on the drop down arrow next to **range** and select day, week, month, year or custom.

Note: By selecting the **custom** option in the **range** dropdown menu, you will be able to set the end date manually, allowing for viewing of data for any desired length of time. Also bear in mind that - when you set the range as month, or year - the data is automatically summarised over 2 hourly intervals. Raw data over a month or year is likely to take long to download, and also to overload the browser based charting tools if you are on a slower computer. This can be changed in the advanced toolbar - see below.

3. Click **apply selection** in the Filters Toolbar

You can also step forward and backwards through **ranges** of data (eg. the next or previous day, week, month) by clicking on the **blue arrows** on the right side of the **Filters Toolbar**

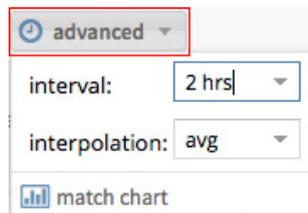
Advanced options: Interval and Interpolation

The **Filters Toolbar** allows you to set more **advanced** charting options. You can select the time **interval** between each point on the chart as well as the **interpolation** for the data points.

How to change the Interval and select the Interpolation:

1. In the **Filters Toolbar** click on the **advanced** button.
2. In the drop down menu, click on the arrow below **interval** and select your desired interval from the list.
3. You can change the **interpolation** (eg. avg, sum, max, min) in the same way directly below the **interval** option in the **advanced** drop down menu
4. Click **apply selection** in the Filters Toolbar

Note: *Interpolation is not required when you set your interval to raw.*



The **advanced** menu

Advanced options: Match chart

The **match chart** button in the advanced toolbar offers a quick way of setting the start and end **date** filters to the values that are visible on the chart at that moment. This assumes that you may e.g. have zoomed in on the chart to view a feature in more detail, and that you would like to run a query, or export data for just that period. This is particularly useful when viewing a month's data (2 hourly averages) and finding an unexpected peak in the chart. You can zoom in to the area of interest, click 'match chart' and then run the query. The chart is updated with more detailed data for just the period previously selected on the chart.

Sorting and applying data filters to a grid

- In the **data grid** view you can apply various sorting options and filters to manipulate how the data is represented in each column.
- Each channel has 3 columns in their respective data grid, namely: **Date**, **Value** and **Meter**. By simply clicking on the column heading you can toggle between sorting the data ascending or descending according to Date, Value or Meter.
- To the right of each column heading (Date, Value, Meter) is a dropdown arrow which allows for more specific actions and filters. Each column has its own filters which can be changed by selecting the relevant options in the drop-down menu. For example you can filter data between specified **dates** or between certain **values**.

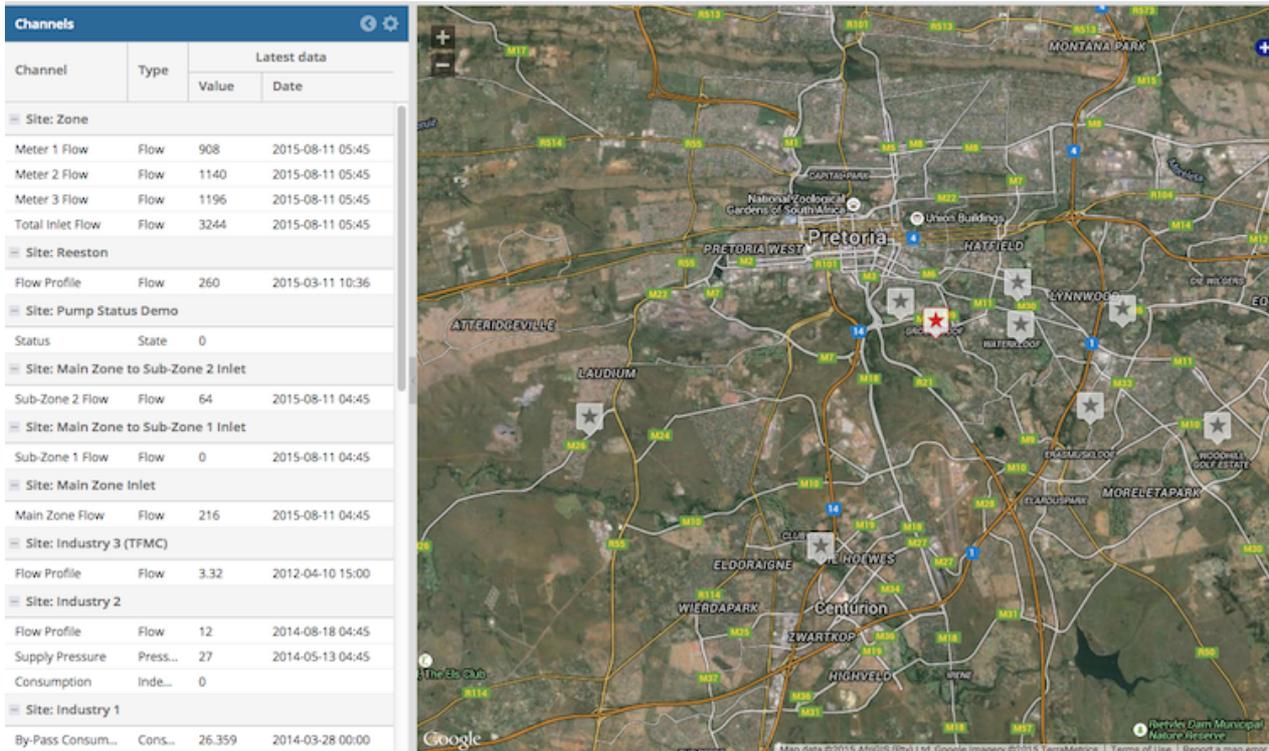
Details			channel properties	
Channel:Bay Downstream Pressure		Channel:Bay Zone Flows		
channel data			channel properties	
Date	Flow (cumec)	Meter Reading	Name ↑	
2011-08-23 23:45:00	88.000		name	
2011-08-24 05:15:00	92.000		type	
2011-08-24 05:30:00	112.000			
2011-08-24 05:45:00	124.000	n/a		
2011-08-24 06:00:00	136.000	n/a		
2011-08-24 06:15:00	148.000	n/a		
2011-08-24 06:30:00	164.000	n/a		

Data Grid view: Click the drop-down arrow next to each column heading to get advanced filtering and sorting options

Live Map

The Live Map interface consists of two main panels: the Channels Grid panel on the left and the Map panel on the right.

- In the Channels Grid panel you can view the most recent data readings, stats and summaries for all your sites and channels.
- The Map panel displays a geographic representation of your data. View data for your sites and channels by clicking the the respective site's icon on a Google Maps style interface.
- By default, both map and grid show all the sites (and associated channels) owned by your account.
- Clicks on the Channels Grid are mirrored on the Map, and vice versa.



Live Map view with **Channels Grid** panel on the left and **Map** panel on the right.

Channels Grid

By default the **Channels Grid** is grouped by site and shows the most recent data value imported for each of your channels. The grid checks for new data on Zednet every 5 minutes and updates itself accordingly.

Note: Most loggers however only transmit data to Zednet every 6 to 12 hours to save battery power.

The **Channels Grid** can be optionally collapsed (or expanded) by clicking on the **arrow** in its header. You can also configure how the grid and map respond to actions by clicking on the **gear** icon in header.



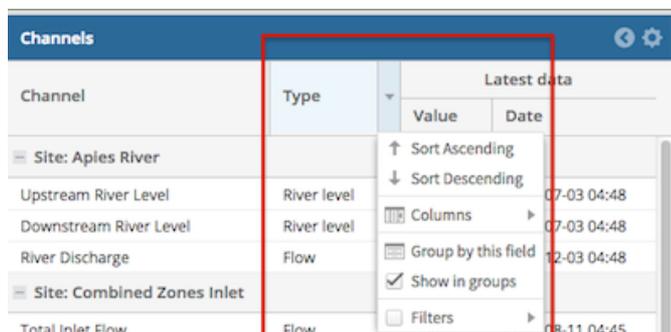
Click the **arrow** in the blue header of the **Channels Grid** panel to collapse or expand the grid. Click the **gear** icon in the same header to configure the grid and map.

Working with the grid

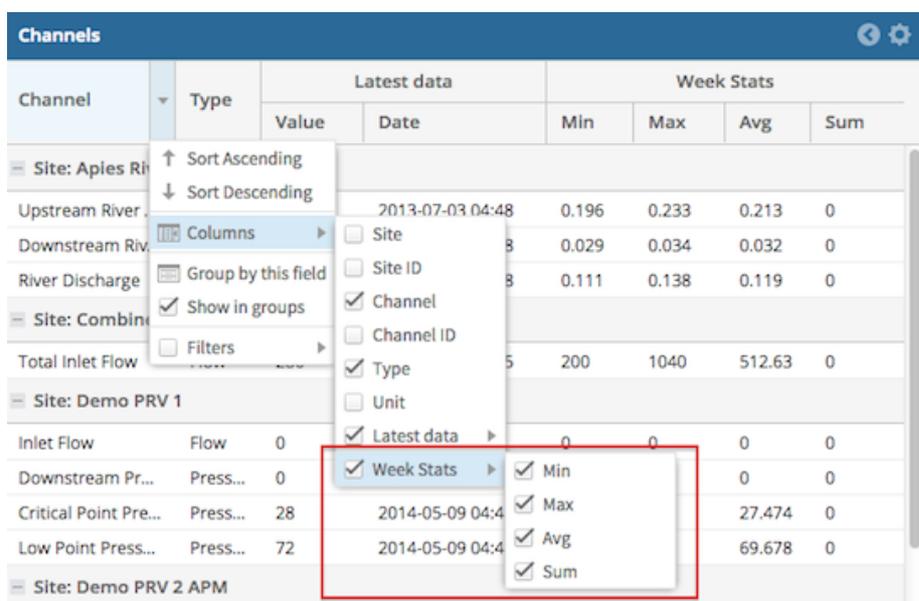
The grid header allows you to alter what is displayed in the **Channels Grid**. You can filter, sort and group columns in the grid by clicking the arrow on the right side of any column heading.

How to manipulate the grid:

1. Click the arrow on the right side of any column to show an options menu.
2. Most columns can be filtered. By default these filters also affect the map - click on the gear on blue panel to change the behaviour.



3. The column header also allows you to change grouping, and show/hide specific columns.
4. You can also show a week of summary data by enabling the respective "Week Stats" column on the grid.



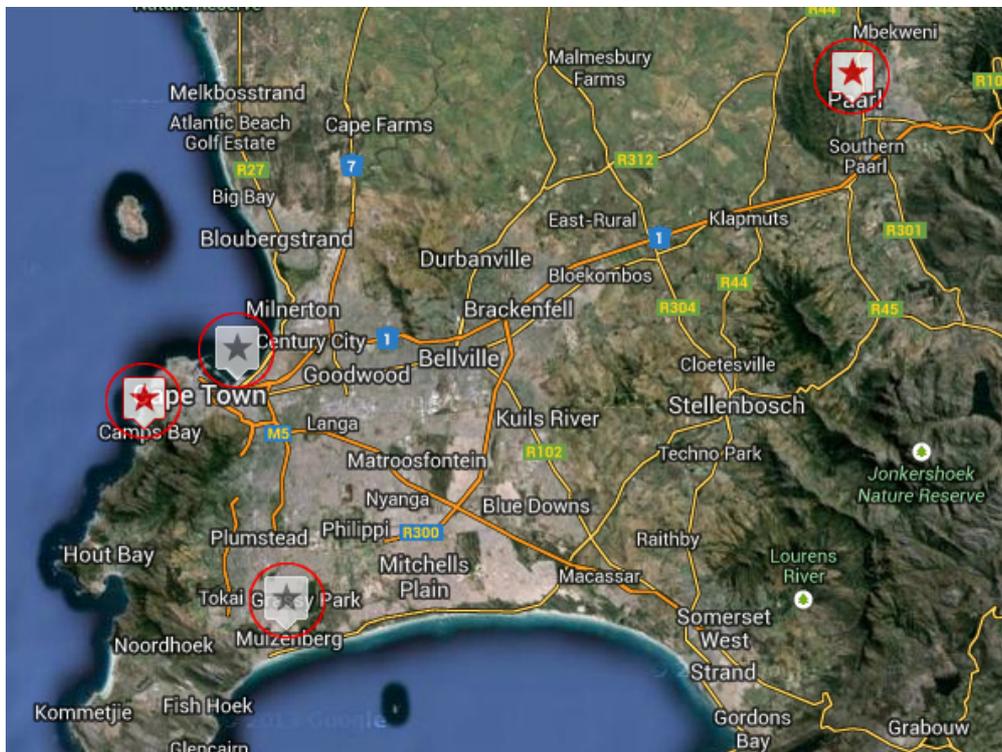
The Map

On the **Map** panel sites and channels (or points of measurement) are represented by a **star icon** giving a spatial overview of the water system. For some use cases, this is a more efficient way of gaining an overview of the water system than drilling down through the more detailed data interfaces.

Click on a red star to view a list of sites at the star's location. A grey star represents a single site at its given location. Zoom in to view a finer grained detail of the map and exact locations of sites.

Once you have selected a site you can view its channel summary or open the sites full details in the **Live Data** interface.

Note: The map allows for various options native to 'Google Maps' which include zooming, satellite view, street view etc.

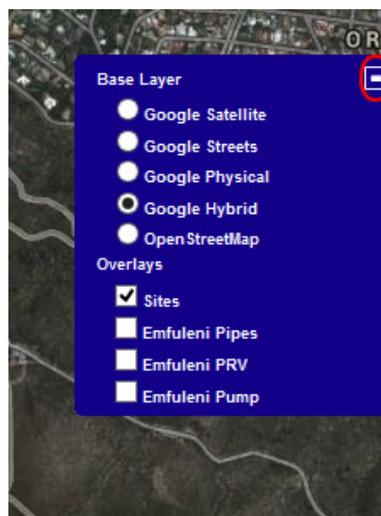


Live Map with channels of data

Working with the map

The map can be viewed in various ways (eg, satellite view or street view), allows for zooming in and out and also offers the manipulation of layers which are displayed on top of the map.

- **Zooming:** Roll the mouse wheel forwards and backwards to zoom in and out. OR click on the '+' and '-' buttons in the left corner of the map.
- **Layers:** Click on the blue tab with white '+' icon in the **top right** hand corner of the map to view 'Layer' options.
From the drop down menu select how you would like the map to be viewed.
Note: You can choose *Satellite view*, *Streets view*, *Physical view* or a *Hybrid* of them in combination
- **Overlays:** You can also select which layers you would like to display over the map (e.g., a previously marked out region/zone or your own GIS asset representing spatial data related to your system).

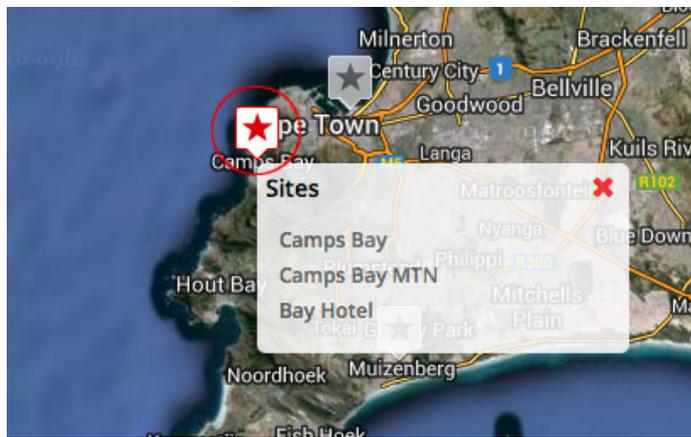


Live Map layers and overlays options

Viewing and manipulating channel data

How to select a site and view it's summary and channel data:

1. To select a site, simply click on the **star icon** that pinpoints the location the site you're interested in.
2. If you click on a red star you will see a list of sites at that location. Select a site from the list to view its **summary**.



3. If you click on a grey star (only one site at that location) you will go directly to the **summary** for that site.
4. While viewing the channel summary for a site, you can click '**show details**' to view to launch the **Live Data** view in a new window and view the channel data.

Channel	Last Import	Value	Min	Max	Avg	Sum*	Unit
Bay Zone Flows	2011-08-30 23:45:00	80.000	52.000	312.000	157.028	--	cumec
Bay Downstream Pressure	2011-08-30 23:45:00	25.000	22.000	32.000	26.768	--	m

* min, max, avg and sum are for latest 7 days' data available.

Note: When working with channel data for a site you are essentially viewing with the **Live Data** interface, so you can work with the data in the same way as you would using the Live Data interface.



Live Data window opened through the Live Map interface

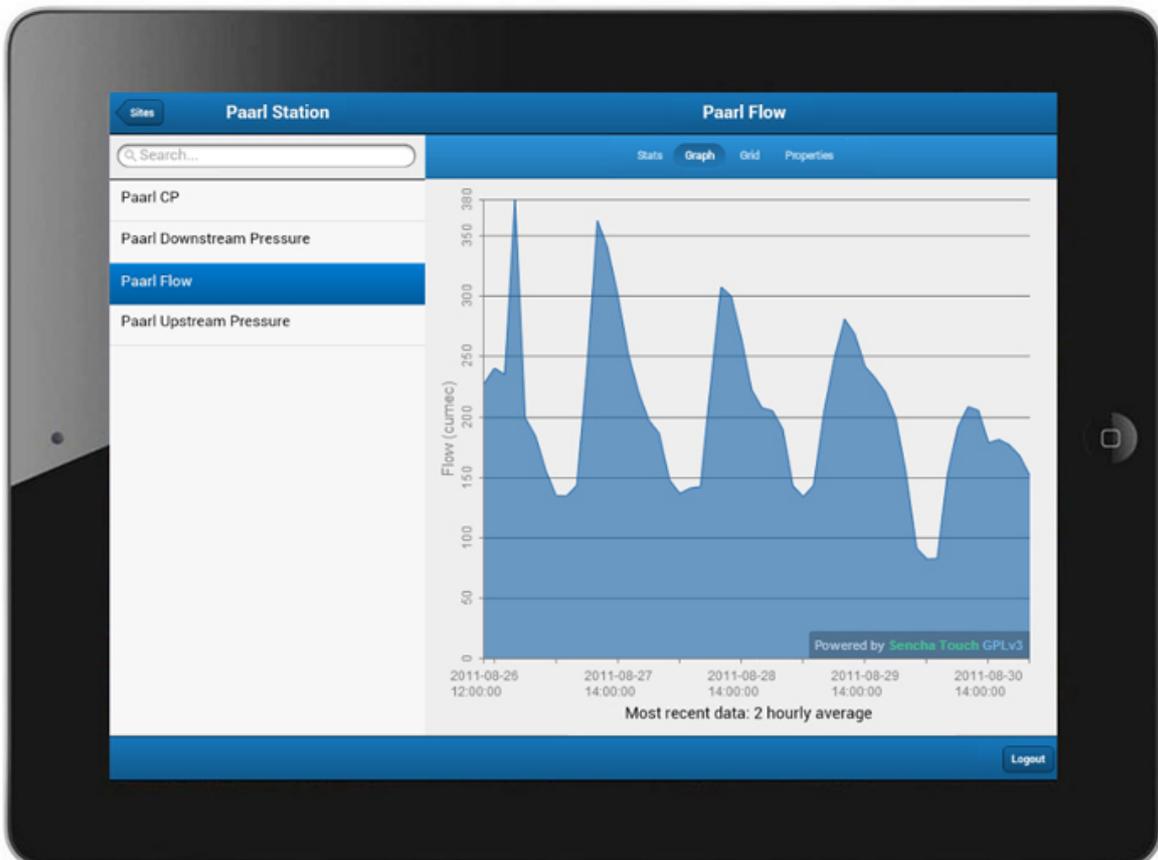
Mobile Interface

Designed specifically for mobile devices, including smartphones and tablets, the mobile interface is a quick and easy way for you to check up on the state of your water system 'on-the-go'. You can use it with your new iPad, or even on your favourite Android smartphone. Its simple interface allows for easy navigation and viewing pleasure.

How to select a channel and view its data:

1. First login to mobile.zednet.co with your unique Zednet username and password.
2. Select the site that your desired channel of data is coming from.
3. Select the channel of data you would like to view.
4. You will then be presented with the **Stats** for that channel.
5. To view the channel data in a chart/graph, click the **Graph** button.
6. To view the channel data as a grid, click the **Grid** button.
7. To view the channel properties, click the **Properties** button.
8. To go back, simply click the **back** button.

Note: You can use Zednet Mobile on your iPad, iPhone, Android device, Windows Phone Device, BlackBerry and more.



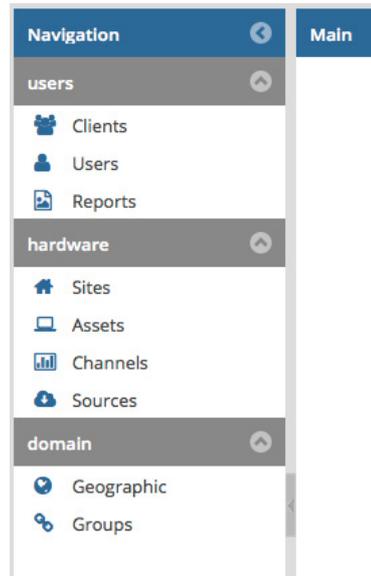
Zednet Mobile on a tablet

Admin Interface

The **Admin Interface** allows you to manage which users have access to Zednet and what reports they receive. It also allows you to administrate hardware assets, data channels and sources, as well as the geographical organisation of your system in Zednet. In this section we begin by explaining **how the admin interface is organised**, and give a basic summary of how to use its most general features. We then go on to describe in more detail the admin interface's primary features, namely: Users and Clients , Reports , Sites, Assets and Channels , Sources and Geographic Groups

How the Admin Interface is organised

- In the **navigation panel** on the left hand side of the screen you will see the three primary sections of the admin interface, namely: **Users, Hardware** and **Domain**. Each of the primary sections has a number of sub-categories, for example the sub-categories under **Hardware** are: **Sites, Assets, Channels** and **Sources**.



The Admin Interface's navigation panel

- By selecting any of these sub-categories you will see a list of records relevant to that category in the centre of your screen. For example if you click on the **Sites** category, a list of your client's sites will be displayed.
- You can then **add** and **delete** records by simply clicking on the add and delete buttons. You can also view the properties of an existing record just by clicking on it.
- You will notice the properties of a record are immediately displayed on the right hand side of your screen. We call this the **properties panel**. For example, if you select one of the sites under the **Sites** category, you will see additional information including its geographic co-ordinates displayed in the properties panel.
- You can then directly edit this information by clicking on the appropriate value in the **Value** column of the properties panel. For example, if you wanted to change the name of a site, you would simply click on its name in the **Value** column and type in your new site name.
- In this way you can add, delete and edit information from the highest to the lowest level within your management system.

Note: The **Sources** sub-category does not contain a properties panel. Sources are simply edited by **double-clicking** on a source in the list.

The screenshot displays an Admin Interface for 'Sites'. On the left is a navigation panel with categories: users, Clients, Reports, hardware, Sites, Assets, Channels, Sources, domain, Geographic, and Groups. The main area contains a table with the following data:

ID	Site	Client	Type	Geo	Reference
51	Bay Hotel	Water Leakage Summit	AMR	The Bay	
47	Camps Bay	Water Leakage Summit	PRV Chamber	The Bay	
49	Camps Bay MTN	Water Leakage Summit	PRV Chamber	The Bay	
75	CBD Harbour	Water Leakage Summit	Water Purification Works	Cape Town	
252	Muizenberg	Water Leakage Summit	PRV Chamber	Cape region	
50	Paarl Rugby	Water Leakage Summit	AMR	Paarl PMZ	
48	Paarl Station	Water Leakage Summit	PRV Chamber	Paarl PMZ	

On the right, a properties panel shows details for the selected record (ID 51):

Name	Value
ID	51
Name	Bay Hotel
Group	none selected
Geo	The Bay
Client	Water Leakage Summit
Type	AMR
Reference	
Location	edit value
Notes	

Organisation of the Admin Interface: **Navigation panel** on the left, **records panel** in the centre and **properties panel** on the right

Users and Clients

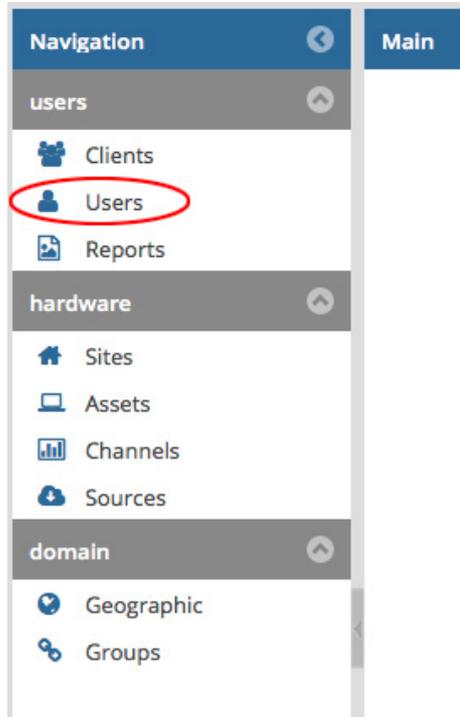
Depending on your administration permission level you can **view**, **add** and **delete** users, as well as edit the information for each independent **record** of a user. You can also view your client's related users, sites, assets, channels and reports by clicking the **show related** button in the **Clients** section.

Working with users

There are **four** types of users in the system, each with their own permission levels. Depending on your permissions, you will be able to do different things in the system. The four permission levels are: **admin**, **client admin**, **client user** and **end user**. The **admin** level of permission is reserved for system admins who need to set up new client accounts or migrate bulk data.

How to add a new user:

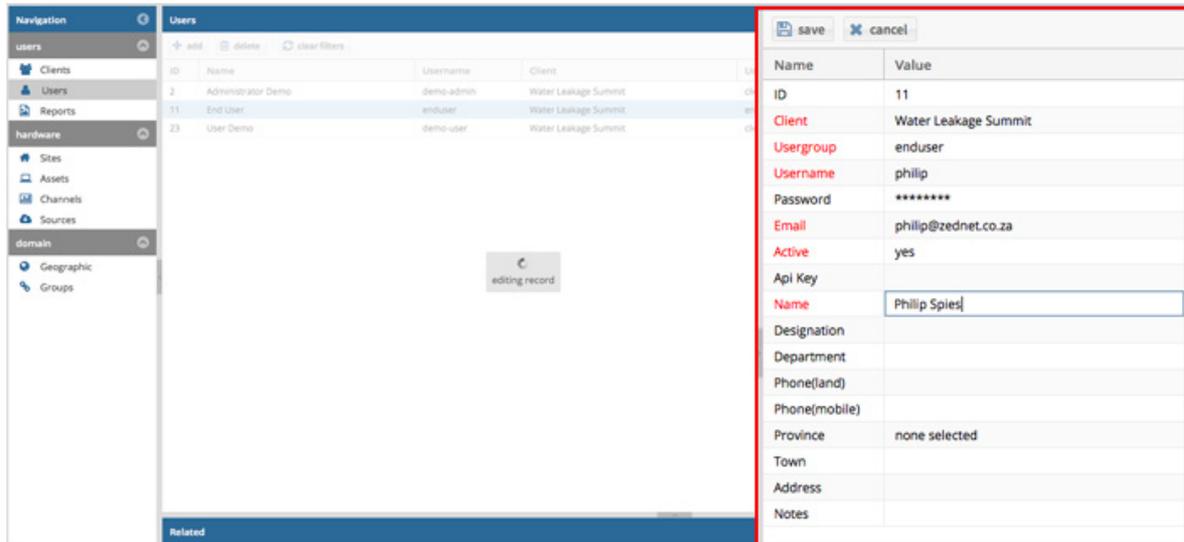
1. In the **navigation panel** click on **Users**.



2. Click on the **add** button at the top of the centre panel.



3. Fill in your new user's details in the **properties panel** on the right. When creating a new user, be sure to fill in all their required fields in the properties panel:
 - o Firstly, specify which **client** the user belongs to in the 'Client' field.
 - o Then, specify which **user group** the user belongs to in the 'Usergroup' field. The chosen user group will determine your new user's permission levels in the system. For example, if they have administrator rights, or if they can just view data for your client.
 - o Next fill in your new user's **username** and **password**. This will be their username and password for logging into Zednet.
 - o Make sure you also provide an **email** address and a **name** for your new user.
 - o Finally, specify whether your new new user is an **active** user. This option allows you to deactivate users that no longer have access to Zednet or are no longer affiliated with your client.



Creating a new **end user** by filling out their details in the **properties panel**

4. When you're done click the **save** button to save your new user.

Note on the API Key: When creating or editing a user, you will notice the '**API Key**' field. In the '**API Key**' field you can assign a key to a user which allows them to access the **Data Export API**. API Keys should only be assigned to **client-user** level users, as it is not secure enough to allow for editing. With the Data Export API, a user can then use their API Key to download channel data directly by simply typing a URL into the address bar of their browser. See the [Data Export API](#) section of this documentation for more information on how it works.

Note: All fields marked in **red** in the properties panel are required fields and you will not be able to save a record if you do not complete all its required fields. For example, a user will always need to be affiliated to one of your clients. Therefore, you can not leave the 'client' field blank when creating or editing a user. Optional fields for users include their phone numbers and physical address.

How to edit or delete an existing user:

- Click on **Users** in the **navigation panel**.
- To **edit** an existing user, select the user you would like to edit and change their information in the properties panel. When you're done click the **save** button in the properties panel to finalise your changes. If you would like to cancel your changes simply press the **cancel** button.
- To **delete** an existing user, select the user you would like to remove and then click the **delete** button at the top of the centre panel. Press the **yes** button to confirm your deletion.

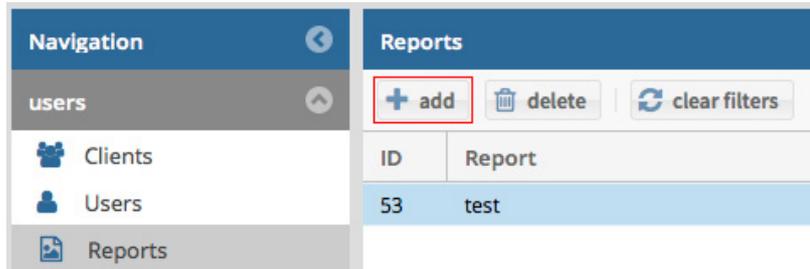
Reports

You can schedule **daily**, **weekly** or **monthly** reports. Once scheduled, reports are automatically emailed to your chosen recipients and include summaries for sites (and associated channels) of your choosing. You can optionally include charts and alarm notifications for a more detailed report, and can download a PDF of your report at any time. You can customise your reports extensively, including what sites you would like to report on, who the report should be emailed to, what day and time the report should be emailed and what the report should look like.

Setting up automated reporting is easy. In this section we show you how to **create**, **edit** and **delete** your Zednet reports.

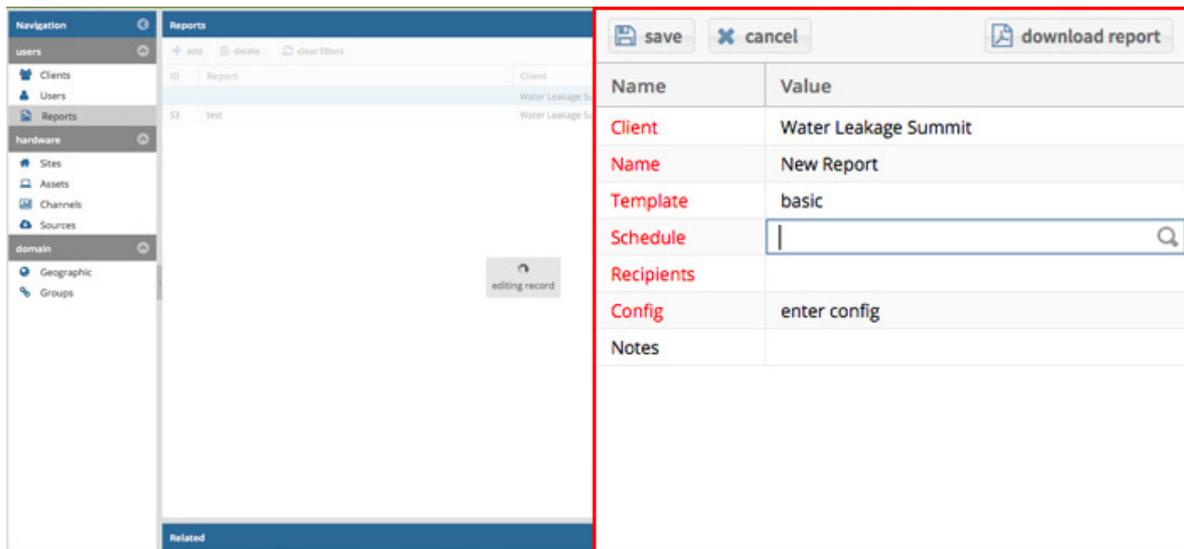
How to create a report:

1. In the **navigation panel** select the **Reports** option.
2. To **add** a new report, click on the **add** button at the top of the centre panel.



Creating a new report

3. Select the **client** that your new report belongs to, give your report a **name** and choose a **template** for your report in the properties panel on the right.



Fill in the basic report details

4. The most important part of your report is its **schedule**. To specify your report's schedule, click on the magnifying glass in the 'Schedule' field.

save cancel download report	
Name	Value
Client	Water Leakage Summit
Name	New Report
Template	basic
Schedule	<input type="text"/>
Recipients	
Config	enter config
Notes	

Clicking the magnifying glass lets you edit more complex fields

- You will then be prompted to choose how regularly you want your report to be sent. Start by specifying if you want the report to be sent every **day**, **week** or **month**. If you are creating a weekly or monthly report, select the **day** of the week or month that you would like the report to be sent on. Lastly, select the **time** of day that you would like your report to be sent at.

Report schedule ✕

Report every:

On day:

At time:

Choose your schedule

Note: A report will contain data for your client's sites only as far back as you select in your report's schedule. In other words, if you select a daily report, the report will contain the last 2 days of data. If you select a weekly report, the report will contain the last 7 days of data. Similarly, if you select a monthly report, the report will contain the last month of data.

- To specify **who** you would like the report to be emailed to, first click on the magnifying glass in the **recipients** field. Then, choose the **recipients** of your new report by clicking the check-boxes next each **user's** name in the resulting list and press the **submit** button.

Report recipients ✕

Send	ID	Name	Client	Email
<input type="checkbox"/>	2	Administrator Demo	2	rean@zednet.co.za
<input type="checkbox"/>	11	End User	2	rean@zednet.co.za
<input type="checkbox"/>	23	User Demo	2	marcel@zednet.co.za

Select recipients

- Next, **configure** the contents of your report by clicking the magnifying glass in the **configuration** field. Start by filling in the report's **intro text**, which forms the email reports body. You can then choose which of your client's **sites** you would like to include in your report. By default **all** of your client's sites will be included in the report. By pressing the drop-down arrow in the 'Report on' field you can also choose to **exclude** selected sites or only **include** selected sites from the site selection box below. Once you have finished configuring your report, click the **submit** button to save your configuration.

Report configuration

Intro text: Hello, this is the body of your report's email,|

Report format: Rich text email

Report on: Include only selected sites

Channel type: Include all types

site selection

Incl	ID	Name	Client
<input checked="" type="checkbox"/>	51	Bay Hotel	Water Leakage Summit
<input checked="" type="checkbox"/>	47	Camps Bay	Water Leakage Summit
<input checked="" type="checkbox"/>	49	Camps Bay MTN	Water Leakage Summit
<input type="checkbox"/>	75	CBD Harbour	Water Leakage Summit
<input type="checkbox"/>	252	Muizenberg	Water Leakage Summit

Submit Cancel

*Configuring a report to only **include** sites of interest by clicking their check-boxes*

- Finally you can add **notes** to your report. You can use this to record any information relating to the report that might be of interest to you. These notes will not be included in the report itself.

A note for advanced users: You can manually input your own schedule under the 'Schedule' field using standard **Cron syntax**. For a detailed breakdown of Cron's scheduling syntax visit: <http://www.nncron.ru/help/EN/working/cron-format.htm>

How to edit or delete an existing report:

- To **edit** an existing report simply **click** on the report you would like to change. Then, make your desired changes in the properties panel and don't to press the **save** button to save the changes.
- To **delete** an existing report, select the report you would like to delete and press the **delete** button. If you are certain you would like to delete that report, click **Yes**.

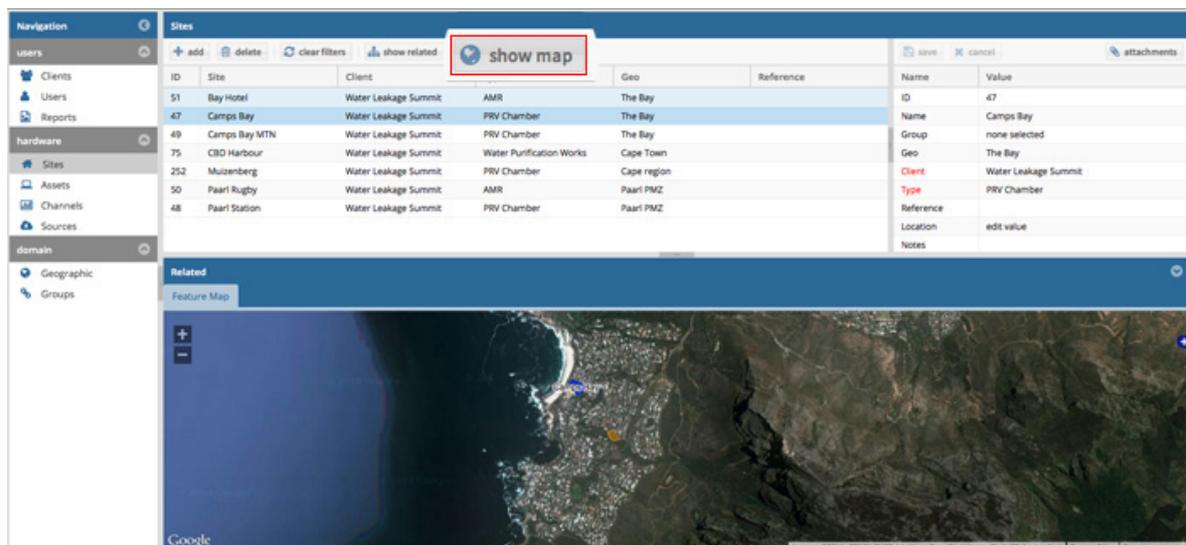
Sites, Assets and Channels

In this section we show you how to manage tangible things like **Sites** where water systems are located and **Assets** within those sites, for example, reservoirs, PRVs and water meters.

You can also manage streams of data (i.e., **Channels**) coming from hardware attached to these sites/assets. A **channel** would, for example, be the pressure at point A, or level of dam B. Note however that a channel is an abstract concept representing a stream or collection of timeseries datapoints. Even if the meter or logger is replaced, the channel remains valid.

Note: Channels are linked to data **sources** in the system. For more information on sources and how to link a source to a channel go to the [Sources](#) page.

- In the same way that you add, edit and delete **user** records, you can also add, edit and delete **site**, **asset** and **channel** records.
- Use the **show map** feature to view the geographic location of your sites, assets and channels.
- The **show related** feature lets you view how your sites, assets and channels are related.



Select the 'show map' button to view the location of a site, asset or channel

Creating/editing sites, assets and channels

How to add a new site, asset or channel:

1. In the **navigation panel** click on **Sites**, **Assets** or **Channels** depending on what kind of hardware you would like to add.
2. Click on the **add** button at the top of the center panel.
3. Fill in your new site, asset or channel details in the **properties panel** on the right.
 - For new **sites**, be sure to specify the client the site belongs to and what type of site it is by filling in the 'Client' and 'Type' fields in the properties panel.
 - For new **assets** you will need to already have created a site that that asset belongs to. Be sure to fill in the correct site in the 'Site' field as well as the assets type in 'Type' field of the properties panel.
 - For new **channels** you will also need to have created a site that the channel of data is coming from. In the properties panel, fill in the 'Site' field as well as the 'Data Type' field to specify what type of data is represented by that channel. In addition, you can specify if the channel is one of the following types of **derived** channels: **consumption**, **conversion**, **calculation** or **comparison**. If you do not intend to create a derived channel, simply select **none** under the derivation field.
4. When you're done filling in the properties for your new site, asset or channel, click the **save** button.

How to edit or delete an existing site, asset or channel:

- Depending on whether you would like to edit/delete a site, asset or channel click on **Sites**, **Assets** or **Channels** in the **navigation panel**.
- To **edit** an existing site, asset or channel, select the record you would like to edit and change your desired information in the properties panel. When you're done click the **save** button in the properties panel to finalise your changes. If you would like to cancel your changes simply press the **cancel** button.
- To **delete** an existing site, asset or channel, select the record you would like to remove and then click the **delete** button at the top of the centre panel. Press the **yes** button to confirm your deletion.

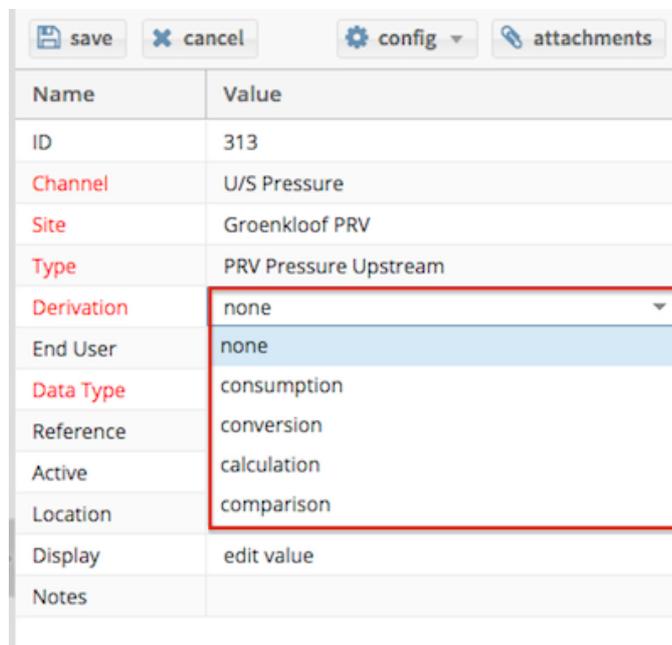
Working with derived channels

A derived channel is a channel of data that is derived from a mathematical function of your data. There are four types of **derived** channels:

1. Firstly, **consumption** is a channel of data representing the daily consumption flowing through a hardware asset, for example an AMR.
2. Secondly, **conversion** simply converts values using a pre-calculated lookup table. This is used where a simple linear formula cannot do the conversion (e.g., to convert river level into flow based on survey data).
3. Thirdly, a **calculation** can be used to calculate differences between channels or combinations of channels, for example, one can add and subtract channels to get a combined input or output flow. A **calculation** can also be used to add or a remove a factor from the measurement of a channel of data, for example convert kilo-litre to litre.
4. Fourthly, **comparison** can be used to compute the relationship between two channels. Comparative operations include a/b or $a/(a+b)$ and the result can be output as a percentage or a decimal fraction.

How to create a derived channel

1. In the **navigation panel** click on **Channels**.
2. Create a new channel or select an existing channel to turn into a derived channel.
3. In the **properties panel** click inside field labeled **Derivation**
4. Click the drop-down arrow that appears in the Derivation field.



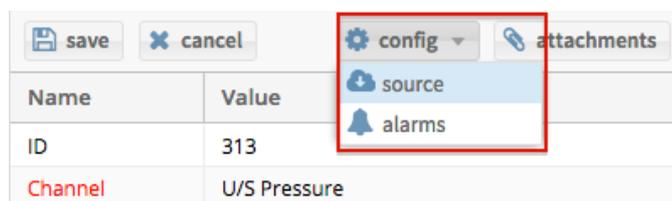
The screenshot shows a form for editing a channel. At the top are buttons for 'save', 'cancel', 'config', and 'attachments'. Below is a table with the following fields and values:

Name	Value
ID	313
Channel	U/S Pressure
Site	Groenkloof PRV
Type	PRV Pressure Upstream
Derivation	none
End User	none
Data Type	consumption
Reference	conversion
Active	calculation
Location	comparison
Display	edit value
Notes	

The 'Derivation' field is highlighted with a red box, and its dropdown menu is open, showing options: 'none', 'consumption', 'conversion', 'calculation', and 'comparison'.

Click the drop-down arrow next to the 'derivation' field to select different kinds of derivations.

5. Select if you want your channel to be a derivation of **consumption**, **conversion**, **calculation** or **comparison**
6. Make sure all your the other properties of your channel have been filled in accurately, including its name, source and data type.
7. Click **save** to save your derived channel.
8. Once you have saved your derived channel click the **config** dropdown for that channel and select **source** to configure the specifics of your new channel conversion, calculation or comparison.



The screenshot shows the same channel properties form as above. The 'config' button at the top is highlighted with a red box, and its dropdown menu is open, showing options: 'source' and 'alarms'.

*Click the **config** drop-down and select **source** to configure your derived channel.*

Working with locations and attachments

Pinpoint the location of your hardware and streams of data on a Google style map. Also, learn how to add attachments (like images or documents) to your sites, assets and channels.

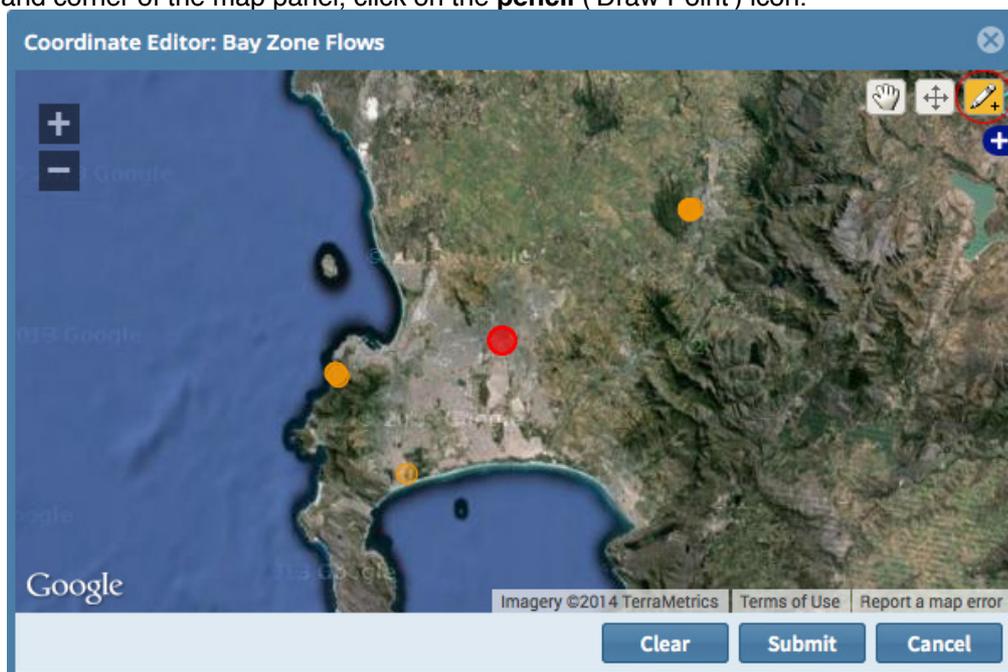
How to specify the location of a site, asset or channel:

1. First, select the **site, asset** or **channel** you would like to specify the geographic location for.
2. In the properties panel for that site, asset or channel, click on the 'Location' field to edit its value.
3. Now, click the **magnifying glass** in the 'Location' field. A map will show up on your screen.
Note: If you want to view the location of a site, asset or channel, make sure you specify its geographic location by filling in its 'Location' field.

 save	 cancel	 source	 attachments
Name	Value		
ID	20		
Channel	Bay Zone Flows		
Site	Camps Bay		
Type	Zone Flows		
Derivation	calculation		
End User	none selected		
Data Type	Flow (cumec)		
Reference			
Active	yes		
Location	<input type="text"/>		
Display	edit value		
Notes			

Click on the magnifying glass in the 'Location' field of your site, asset or channel's properties.

4. Navigate to the location of your site, asset or channel on your map. To move around on your map, make sure you have the **hand** ('Navigate') tool selected.
5. In the right hand corner of the map panel, click on the **pencil** ('Draw Point') icon.



Click on the **pencil** icon to select the 'Draw Point' tool

6. After selecting the pencil ('Draw Point') icon, click on the location of your site, asset or channel on your map. A red dot will pop up on your map representing your site, asset or channel's new location.
7. Click the **submit** button to save your new location.

How to add attachments to Sites, Assets and Channels

1. Select the **site, asset** or **channel** that you would like to add an attachment to.
2. In the **properties panel**, click the **attachments** button.

Name	Value
ID	47
Name	Camps Bay
Group	none selected
Geo	The Bay
Client	Water Leakage Summit
Type	PRV Chamber
Reference	
Location	edit value
Notes	

- In the **Attachments window** click the **add** button
- Fill in the resulting form and click the **Select a file** icon in the 'File' field

Title	Type	Date
		2014-06-17 17:29:15
Inspection report	.pdf	2011-11-30 22:14:52
Installation photograph	.jpg	2011-12-04 13:06:08
Schematic of site	.pdf	2012-01-09 00:03:04

Title:
 File:
 Notes:
 Format:
 Size(kB):
 Date:

- Select the file you would like to attach from your computer
 - Click **Save changes** to save the attachment
- Note:** You can download and edit attachments by selecting an existing attachment and clicking the **download** or **edit** buttons

The 'show related' feature

The **show related** button lets you view and edit hardware that is related to other hardware or streams of data. For example, a site's related channels, or a channel's related sources.

How to view a Site's related Channels and Assets, or a Channel's related Sources:

- Select the **Site** or **Channel** that you want to view the related hardware for.
- Click the **show related** button.

ID	Site	Client	select which child r
51	Bay Hotel	Water Leakage Summit	AMR
47	Camps Bay	Water Leakage Summit	PRV Chamber

- Click on the **check-box** next to each type of related asset you would like to see for that site or channel.

site:assets
 site:channels

Click multiple **check-boxes** to view more than one type of related hardware at a time

- The **Related** panel will then pop-up at the bottom of your screen, displaying a list of the related hardware you selected.

The screenshot displays a software interface with a navigation sidebar on the left and a main content area. The main content area is divided into two sections: 'Sites' and 'Related'.

The 'Sites' section contains a table with the following data:

ID	Site	Client	Type	Geo	Reference
51	Bay Hotel	Water Leakage Summit	AMR	The Bay	
47	Camps Bay	Water Leakage Summit	PRV Chamber	The Bay	
49	Camps Bay MTN	Water Leakage Summit	PRV Chamber	The Bay	
75	CBD Harbour	Water Leakage Summit	Water Purification Works	Cape Town	
252	Mulzenberg	Water Leakage Summit	PRV Chamber	Cape region	
50	Paarl Rugby	Water Leakage Summit	AMR	Paarl PM2	
48	Paarl Station	Water Leakage Summit	PRV Chamber	Paarl PM2	

The 'Related' panel is highlighted with a red border and shows a list of related channels for a site. It has two tabs: 'Related site:channels' and 'Related site:assets'. The 'Related site:channels' tab is active and shows the following data:

ID	Channel	Site	Type	Reference	Active
20	Bay Zone Flows	Camps Bay	Zone Flows		yes
21	Bay Downstream Pressure	Camps Bay	PRV Pressure Downstream		yes

The 'Related' panel also includes a 'Name Value' table on the right side, which shows the following data:

Name	Value
ID	47
Name	Camps Bay
Group	none selected
Geo	The Bay
Client	Water Leakage Summit
Type	PRV Chamber
Reference	
Location	edit value
Notes	

The **related panel** showing related channels for a site on the left and their properties on the right.

Note: You can also edit a related channel or asset's properties directly in the related panel.

Sources

In this section we show you how to create and manage data **sources** for your channels. You can link and unlink data sources to and from channels. You can also view, upload or remove data for specific sources. Sources are one level nearer to the hardware than channels, and a single channel can have multiple sources of data. For example, if hardware is replaced, a new source may be created to allow for specific calibrations/corrections on data transmitted by the hardware. This new source is then linked to a Channel with the older source so that the Channel displays a continuous data set.

Working with sources and source ID's

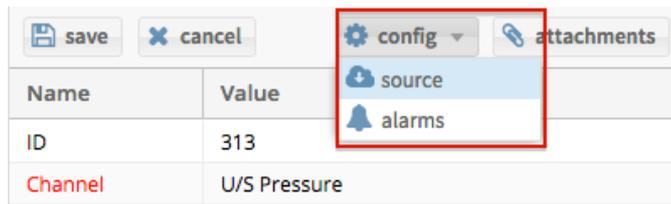
Sources can be thought of as the sources of data making up the channels that you see. They are one level closer to the actual hardware recording the data readings, and each channel is made up of one or more sources of data. Each source has **two ID's**: a Zednet system ID, and an **External ID**. The external ID is the ID defining where Zednet receives the data from. In the case of data coming into Zednet 'live' from data loggers in the field, the external ID would be the ID assigned by the data logger itself, for example, a *PMAC* ID. Data can also be manually uploaded to the system. In this case the external ID is defined in the data file being uploaded, for example, the ID is defined in a *CSV* file before it is uploaded.

After an external ID is assigned to a source, Zednet will also generate its own internal system ID.

Note: *When working with sources, you will always refer to them by their **external ID**, for example, when assigning a source to a channel.*

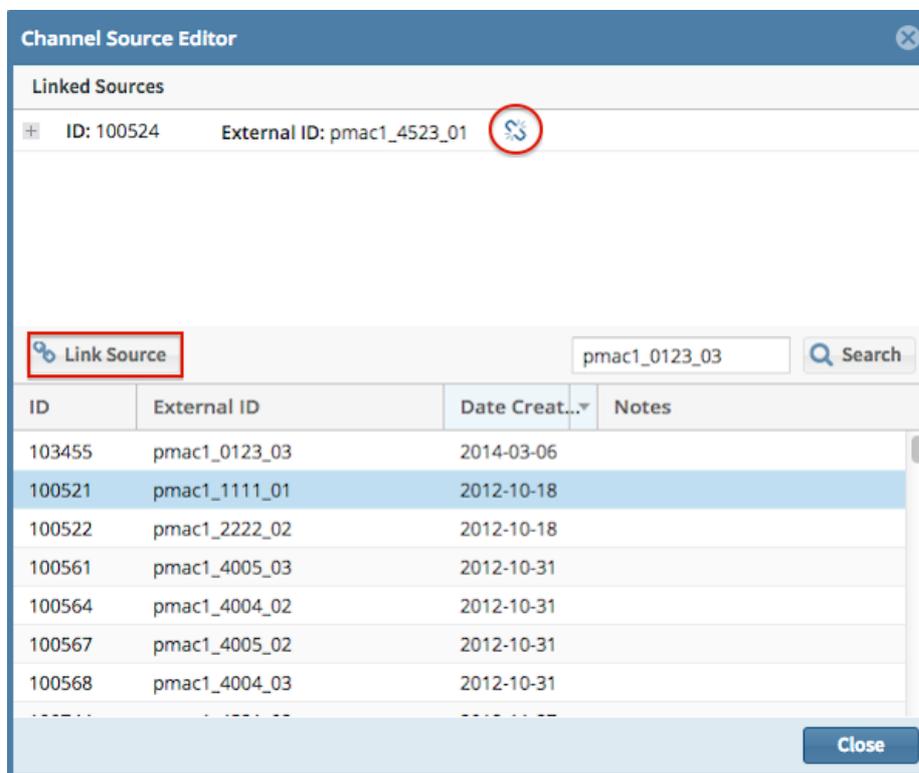
How to link and unlink sources and channels:

1. In the navigation panel click on **Channels**.
2. Select an existing channel you would like to link a source to (or unlink a source from), or create a [new channel](#) to assign sources to.
3. Once you have selected a channel, click the **config** drop-down button in the channel's **properties panel**.
4. Select **source** from the resulting menu.



The config drop-down menu is located at the top right of your channel's properties panel.

5. The **Channel Source Editor** will pop up. The top panel displays sources that are already linked to the selected channel. The bottom panel allows you to search for new unlinked sources that you can link to this channel.
6. To link a source to a channel enter the **external source id** into the search box and press **search**.
7. Select the desired source from your search results and click the **link source** button.
8. To unlink a source simply press the **unlink** icon next to its External ID in the list of linked sources.



To unlink a source click the **unlink** icon next to the linked source's External ID. To link a new source you have searched for, select it and click the **link source** button.

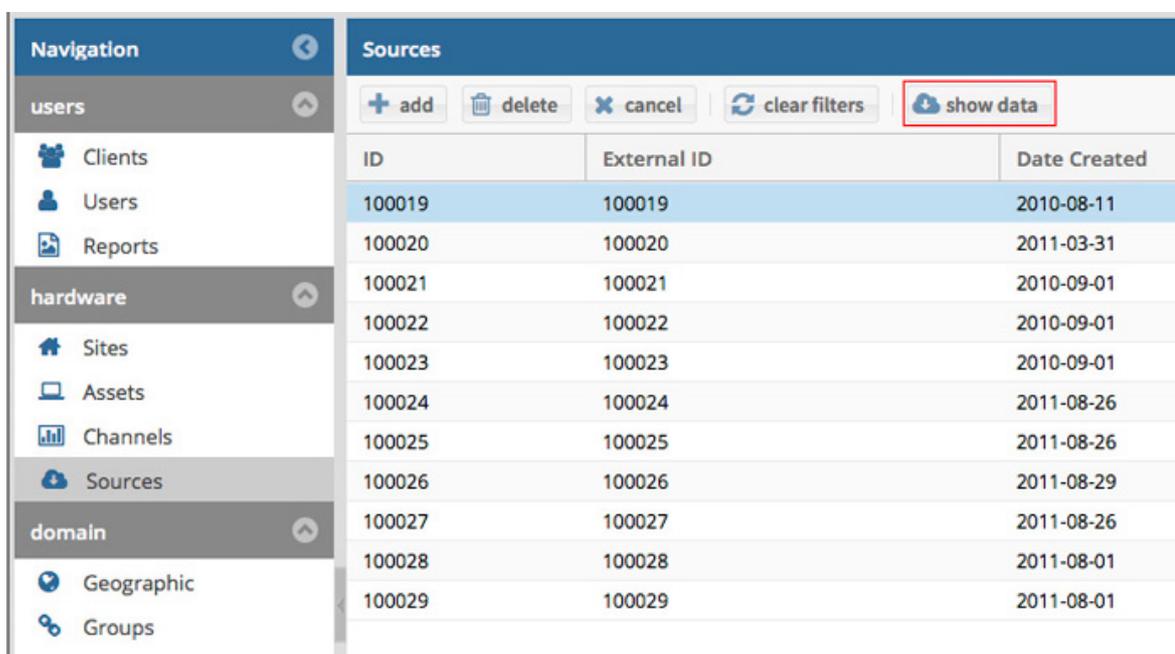
Note: To search for sources of data on Zednet an administrator must have assigned **Data Sources** to your client account.

How to add a new source:

1. In the navigation panel click on **Sources**.
2. Click the **add** button.
3. Fill in the **external ID**, **date created** and add any **notes** for your source
4. Click the **update** button to create your new source.

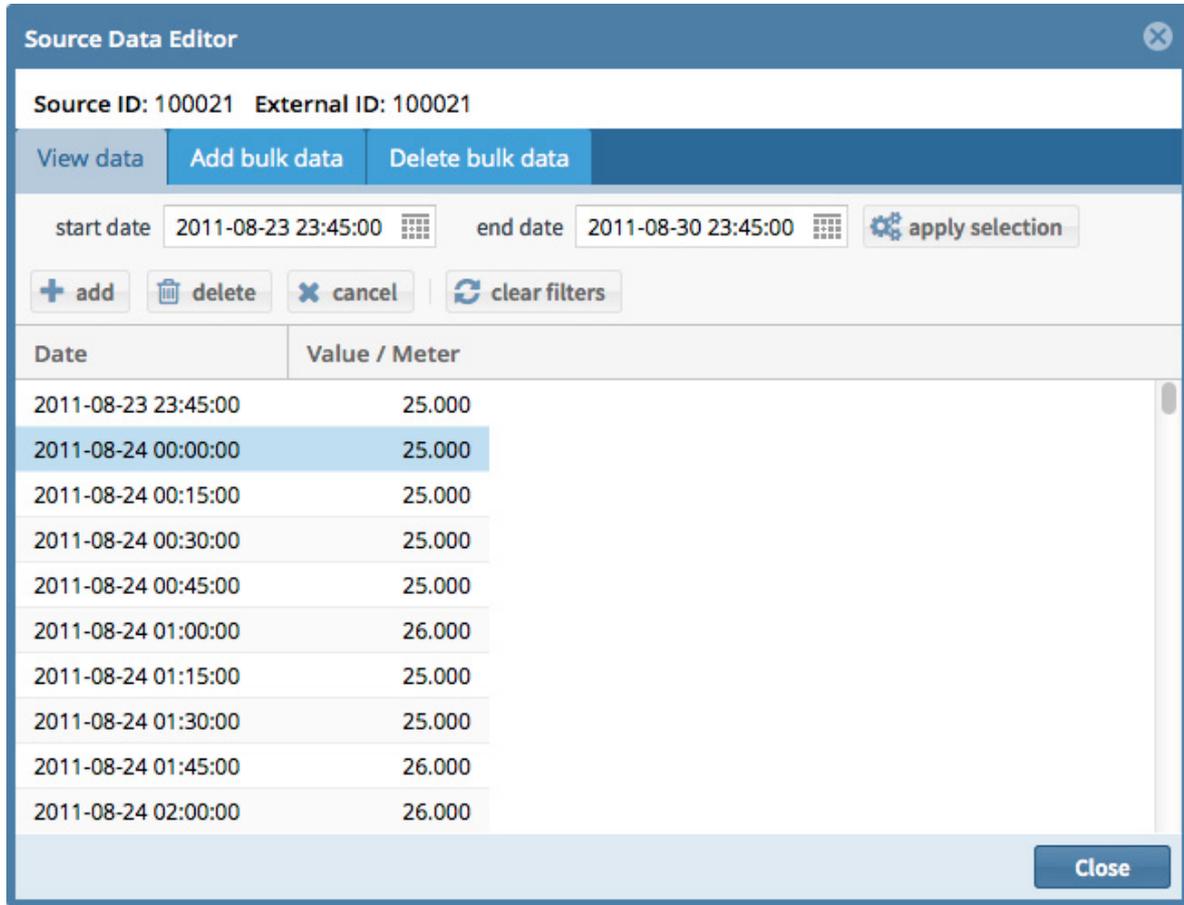
How to view, add or delete data for a source:

1. In the navigation panel click on **Sources**.
2. Click on the source you would like to view, add or delete data for.
3. Click the **show data** button.



Click **show data** for a selected source.

- The **Source Data Editor** window will then open.
- Under **View data** you can specify the start date and end date for the data you would like to view



The **source data editor window**: click the 'view data', 'add data' and 'delete data' headings to switch between data editing views.

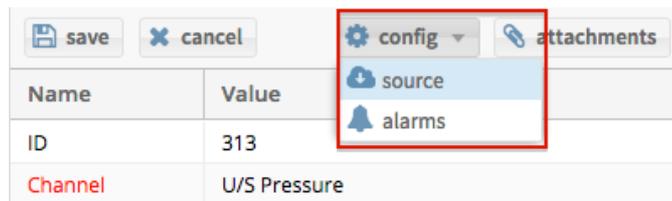
- To add data, click the **Add data** tab. Follow the instructions in the **data editor** carefully on how to input your new data.
- To delete data, click the **Delete data** tab and select the start date/time and end date/time during which you would like to delete the data for a source.

Alarms

In this section we show you how to configure channel **alarms**. You can set **high** or **low** alarms on any channel in Zednet by specifying a threshold value that will trigger the alarm. You can set alarms to only trigger between certain times, set the the alarm sensitivity (e.g., how many consecutive values below or above the threshold will trigger the alarm) and specify who alarm notifications should be emailed to.

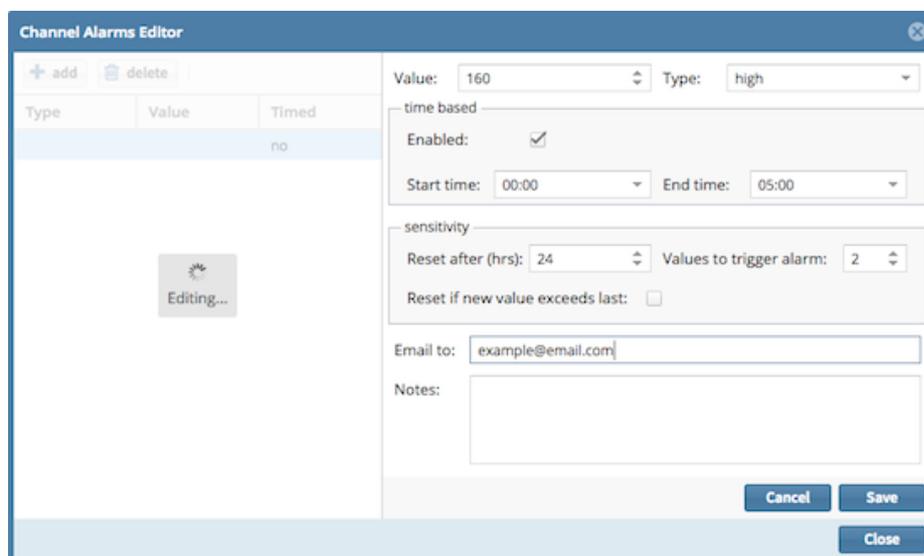
How to create a channel alarm:

1. In the navigation panel click on **Channels**.
2. Select an existing channel you would like to add an alarm to or create a new channel to add an alarm to.
3. Once you have selected a channel, click the **config** drop-down button in the channel's **properties panel**
4. Select **alarms** from the resulting menu.



The config drop-down menu is located at the top right of your channel's properties panel.

5. The **Channel Alarms Editor** will pop up. In the left panel click **add** to add a new alarm to your selected channel.



The channel alarms editor.

6. Configure the **threshold value** for your alarm and choose the alarm **type (high or low)**.
7. If you want your alarm to only trigger between certain times of day check the **enabled** checkbox under "time based" and specify a start time and end time.
8. Customise the **sensitivity** of your alarm by configuring how long before an alarm is reset (an alarm only triggers once until it is reset). You can also specify how many consecutive values above (high alarm) or below (low alarm) the threshold are required to trigger the alarm.
9. Add the email addresses you want the alarm notifications to be sent to. Separate multiple email addresses by a "," (e.g., example@email.com, example2@email.com).
10. Once you have configured your alarm press the **save** button to add it to your selected channel.
11. To remove an alarm, simply select the alarm in the left panel of the channel alarms editor and press the **delete** button.

Geographic Groups

In this section we show you how to group your **sites** into **geographic** regions, districts, zones and locations. You can also specify whether a region, district, zone or location resides within another region, district, zone or location. We call these kinds of hierarchical geographic groupings **geo groups**. Regions, districts, zones or locations that contain other regions, districts, zones or locations are called **parent** groups. For example, the city of Cape Town could reside within the parent group called the Cape region.

How to create a Geo Group

1. Under the **domain** section select '**Geographic**'
2. To **add** a new Geo Group, click the '**add**' button at the top of the center panel and fill out the properties of your Geo Group in the right hand panel
3. Click on the '**magnifying glass**' icon next to the location field to edit the location of your geo group

Name	Value
Geo Group	
Parent	
Client	Water Leakage Summit
Type	none selected
Location	<input type="text"/>
Notes	

4. The **Coordinate Editor** window will pop up. Click on the '**draw polygon**' tool in the right hand corner of the Coordinate Editor



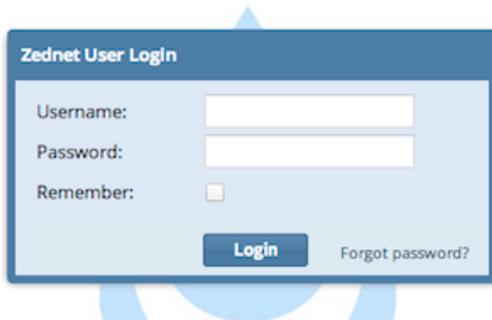
A new region drawn with the 'Draw Polygon' tool

5. After selecting the 'draw polygon' tool, pinpoint each corner of your desired region by clicking on the map, creating a polygon like that seen in the image above
6. When you are satisfied with your polygon, **double click** on your last point to finalise the shape
7. Click the '**submit**' button to save the polygon
8. Click the '**save**' button to save your new region

Password Reset

If you've **forgotten your password**, you can request a new one by following these steps:

1. Visit the **Login page** for your Zednet account.



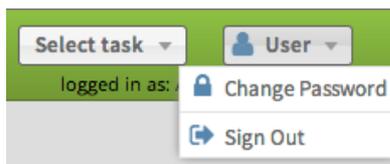
2. Click the 'Forgot Password' link.
3. In the resulting window provide your unique **Username** and click 'Request new password'.
4. A confirmation email will be sent to your email address. If the email address for your Zednet account is not correct please contact your Zednet system administrator.
5. In your confirmation email click the '[reset your password](#)' link to request your new password
6. Your new password will then be emailed to you.

Note: After logging in with your new password you can change your password to something more memorable following the instructions below.

Change Password

You can **change your password** for your Zednet account as follows:

1. Log in to Zednet with your existing username and password.
2. In the right hand corner of your screen click the 'User' drop-down menu.



3. Click the 'Change Password' menu option.
4. In the resulting window fill in your **current password** followed by your **new password** and a confirmation of your new password.

Note: Your new password has to be at least 8 characters long and can not be the same as your Username.

Data Export API

With the Data Export API, you can download your channel data directly by simply typing a URL into the address bar of your browser. The Data Export API allows you to customize which data you want to download as well as how your data is saved. It provides flexible options for specifying channels, start and end dates, formats and data types, making it ideal for exporting large amounts of data all at once.

How it works: The URL

The Data export API provides direct access to your data via a URL in the following format:

[https://live.zednet.co.za/index.php/export_bulk_data/get_data/\[api-key\]/\[channel-id\]/\[start-date\]/\[end-date\]/\[format\]/\[data-type\]](https://live.zednet.co.za/index.php/export_bulk_data/get_data/[api-key]/[channel-id]/[start-date]/[end-date]/[format]/[data-type])

For example, if you wanted to get all the data for channel 222 and channel 223 starting from 19 October 2012 and ending 20 October 2012, and save the data in CSV format you would use the following URL:

https://live.zednet.co.za/index.php/export_bulk_data/get_data/lpGpBx-rf/222-223/2012-10-19/2012-10-20/csv/0

The URL can be divided into six chunks, each chunk is easy to understand and using the example above we will explain each of these chunks in detail.

The Base Address

The base address makes up the first part of the URL, namely:

https://live.zednet.co.za/index.php/export_bulk_data/get_data/

The base address will always be the same. There is nothing you need to change or insert into the base address as it is just used to access the Data Export API.

API Key

In order to gain permission to use the Data Export API, you must provide an API key. The API key comes directly after the base address. In our working example our API key is **lpGpBx-rf**.

Each client that uses the Data Export API will need to create a new user, with permission level of 'client-user', and allocate that user a random **API key**. See [Admin Interface ->Users](#) for instructions on how to create users and assign them an API key.

Note: When you use the Data Export URL you are automatically logged in to Zednet as the user who owns that API key, even if you were already logged in as a different user.

Channel ID

The Channel ID chunk of the Data Export URL determines which subset of the client's channels are exported. There are three easy ways to specify which channel(s) you would like to export.

1. Provide a list of Zednet channel ID's separated by the "-" character, for example: **/123-345-14-16/**.
2. Provide single Zednet channel ID, for example: **/123/**.
3. Simply use 0 (zero) instead of providing channel ID's to export **ALL** the client's channels: **/0/**.

In our working example, we have used the first option to request channel IDs 222 and 223, separated by "-" characters: **/222-223/**.

Start and End Date

After the Channel ID chunk the start date is specified, followed by the end date. This is simply a date formatted as **year-month-day** for both the start date and the end date.

In our working example we are only interested in channel data starting from the 19th October 2012 and ending on the 20th October 2012, specified as: **/2012-10-19/2012-10-20/**.

Format

This chunk of the URL allows you to specify the format in which you would like to export your data. Currently, we offer data exports in the following 4 formats: **CSV**, **Excel**, **SHEF** and **Hydstra**.

You can choose which format you want your data to be exported in by simply specifying the name of one of the supported formats. In our working example we wanted our data to be saved in CSV format, specified by the `/csv/` chunk of the URL. If you would prefer your data in SHEF format, you would simply replace `/csv/` with `/shef/`.

Note: Channels that are exported in CSV or Hydstra format are identified by their 'reference' provided by the client. If there is no 'reference' for the channel, Zednet's channel ID is used. Channels that are exported in SHEF format are identified by a combination of Site Name and SHEF code.

Data Type

The last chunk of the URL allows you to export limited types of data, using Zednet's data type ID's. There are three easy ways to specify different data types:

1. Provide a list of type ID's separated by the "-" character, for example: `/7-8-12/`
2. Provide single type ID: `/7/`
3. To export **ALL** types use `/0/` or just leave it blank

Visit our [Data Type IDs](#) page for a full list of available data types and their corresponding IDs.

Note: The SHEF export does not export all types of data - only those that have been allocated a SHEF code. In brief, these data type IDs are:

- 7: river level (up and downstream)
- 8: dam or reservoir level
- 11: precipitation accumulator
- 12: precipitation
- 16: ph value
- 22: dissolved oxygen in ppm
- 24: water conductance
- 28: turbidity

Custom Cases

There are two "custom" cases that need to be accommodated.

1. Backup channels

Channels are SHEF exported on site ID and SHEF code. However, there are also backup channels, meaning in some cases we would have two channels with same shef code, and same site name. For these, the export appends a "B" to the end of the site name. To indicate a backup channel, add **[backup]** anywhere in the notes field for the channel.

2. Derived/disabled channels

Since not all data types are exported for SHEF, all derived formats are skipped. A user may however still want to disable a particular channel for bulk export. To do this, add **[noexport]** anywhere in the notes field of the channel.

Use Case

This all sounds very complicated, but in practice it's actually very simple.

A user would simply have a saved URL for each regional client - and would only change the dates each time new data is exported.

So, in our working example, if you wanted to export the data from the 10th of December to 13th of December (instead of for October) you would simply change the URL to:

https://live.zednet.co.za/index.php/export_bulk_data/get_data/lpGpBx-rf/222-223/2012-12-10/2012-12-13/csv/0

Or if you decided you wanted to export all the channels instead of just two channels, you would change the url to:

https://live.zednet.co.za/index.php/export_bulk_data/get_data/lpGpBx-rf/0/2012-12-10/2012-12-13/csv/0

Data Type IDs

Type ID	Data Type	Unit
1	Pressure	m
2	Pressure	bar
3	Flow	m ³ /h
4	Flow	l/s
5	Flow	cumec
6	Flow	m ³ /s
7	River Level	m
8	Dam Level	m
9	Level	%
10	Megaliters	MI
11	Daily Precipitation	mm/day
12	Precipitation	mm
13	Consumption	kl
14	Consumption	m ³
15	Index Value	m ³
16	Acidity	pH
17	Voltage DC	V
18	Degrees Celsius	C
19	Degrees Fahrenheit	F
20	Oxidation Reduction Potential	mV
21	Dissolved Oxygen	mg/L
22	Dissolved Oxygen	ppm
23	Dissolved Oxygen	%
24	Conductivity	uS/cm
25	Conductivity	mS/cm
26	Salinity	PPT
27	Total Dissolved Solids	g/L
28	Turbidity	NTU
29	Clorophyll	ug/L
30	Nitrate	mg/L-N

Chart Export API Endpoints

With the Chart Export API endpoints you can download chart image files directly from Zednet by simply typing a URL into the address bar of your browser.

How the Endpoints Work

The Chart Export API endpoints allow you to request and download charts containing specified channel data via a REST API style URL.

There are two endpoints available, one for requesting charts based on a **channel ID** (or a list of channel IDs) and one for requesting charts based on **site ID** as follows:

1. Get charts based on Channel ID(s):

[https://live.zednet.co.za/index.php/export_charts/get_charts/\[api-key\]/\[channel-id\]/\[start-date\]/\[end-date\]/\[frequency\]/\[interpolation\]](https://live.zednet.co.za/index.php/export_charts/get_charts/[api-key]/[channel-id]/[start-date]/[end-date]/[frequency]/[interpolation])

2. Get charts based on Site ID:

The only difference between getting charts based on channel ID and getting charts based on site ID is that you replace the "get_charts" portion of the URL with "get_site_charts" and replace [channel-id] with your desired [site-id] as follows:

[https://live.zednet.co.za/index.php/export_charts/get_site_charts/\[api-key\]/\[site-id\]/\[start-date\]/\[end-date\]/\[frequency\]/\[interpolation\]](https://live.zednet.co.za/index.php/export_charts/get_site_charts/[api-key]/[site-id]/[start-date]/[end-date]/[frequency]/[interpolation])

Note: [start-date], [end-date], [frequency] and [interpolation] are all **optional parameters**. Click [here](#) to view the default values for optional parameters.

URL Breakdown

- https://live.zednet.co.za/index.php/export_charts/ - The base URL. This part of the URL will remain fixed for all chart export requests.
- **get_charts** or **get_site_charts** - Use **get_charts** for requesting charts based on channel ID and use **get_site_charts** for requesting charts based on site ID
- **[api-key]** - Your unique API key - See [Admin Interface](#) ->[Users](#) for instructions on how to create users and assign them an API key..
- **[channel-id]** - In the case of a **get_charts** request - A single channel ID or a list of channel IDs separated by "-" characters e.g. 12-29-288
- **[site-id]** - In the case of a **get_site_charts** request - A single site ID only
- **[start-date]** - *Optional parameter* - The date from which you would like the data for the chart to start at. Date format: **Y-m-d H:i:s**
- **[end-date]** - *Optional parameter* - The date at which you would like the data for the chart to end at. Date format: **Y-m-d H:i:s**
- **[frequency]** - *Optional parameter* - the frequency of each data point in the chart.
Options:
 - **0** = raw
 - **1** = 2 hourly
 - **2** = daily
- **[interpolation]** - *Optional parameter* - the interpolation of the data in the chart.
Options:
 - **0** = none
 - **1** = average
 - **2** = sum
 - **3** = max
 - **4** = min

Default Values

The default value for an optional parameter is only used if you do not specify the parameter yourself.

Defaults for start-date and end-date:

If you do not provide a start-date and an end-date, your chart will by default contain the **most recent 7 days** of data. If you provide a start-date but no end date we will assume your end-date is 7 days later than your start-date and vice versa.

Defaults for interpolation and frequency:

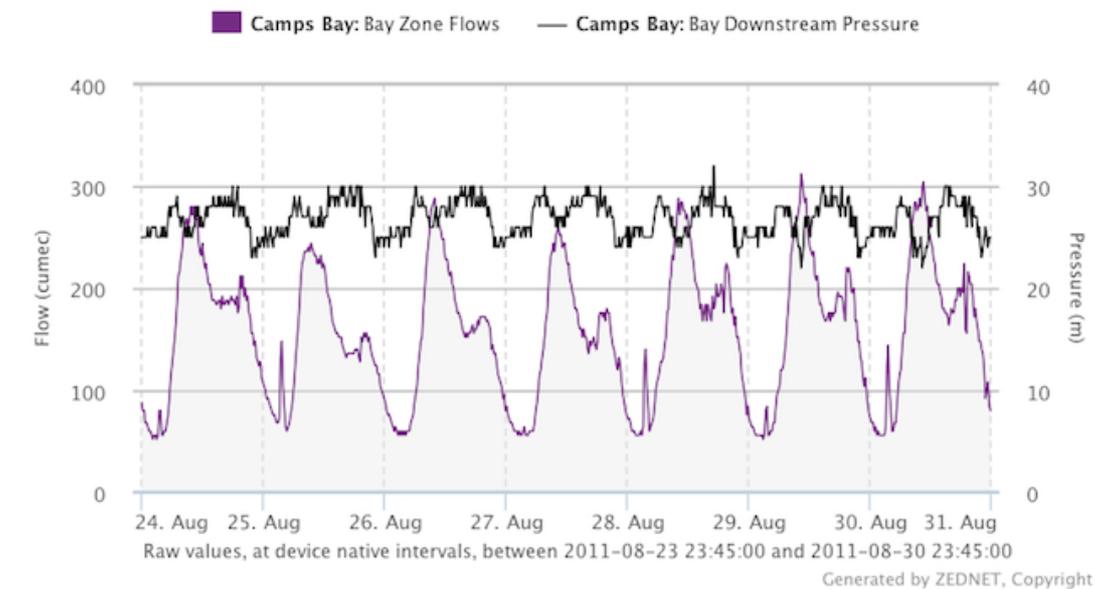
1. For data requests of **7 days or less** the default for both frequency and interpolation is **0** (frequency = raw, interpolation = none)
2. For data requests of **more than 7 days** the default for both frequency and interpolation is **1** (frequency = 2 hourly, interpolation = average)

The Response

Upon a successful request Zednet will generate a **.PNG** image file containing a chart constructed from the requested channel data.

If you specify a list of channel IDs or a site ID that has more than 2 data types you will receive a **.ZIP** file containing **1 chart for every 2 data types**.

Appropriate error messages will be returned in JSON format if, for example, you do not have permission to access data for certain channels, if you request too large a data set, if you specified dates or other parameters in the wrong format or if you request channel IDs that do not exist.



Example of a PNG chart response containing 2 data types.

Examples

All examples assume your API key is: XYZ.

1. Get chart containing the most recent 7 days of raw data with no interpolation for site ID 23:

https://live.zednet.co.za/index.php/export_charts/get_site_charts/XYZ/23

2. Get chart containing 2 hourly average data for channel IDs 12, 23, 77 and 186 between 1st November 2014 and 1st December 2014:

https://live.zednet.co.za/index.php/export_charts/get_charts/XYZ/12-23-77-186/2014-11-01/2014-12-01

3. Get chart containing daily maximum values for channel ID 23 and 77 between 1st November 2014 and 1st December 2014:

https://live.zednet.co.za/index.php/export_charts/get_charts/XYZ/23-77/2014-11-01/2014-12-01/2/3

Source URL: <http://dev.zednet-website.co/documentation/zednet-support>