

Data Acquisition Service (DAS)

Water Customer User Guide

Monitoring, Evaluation and Review, Revision History

| | |
|------------------------------|--|
| Name of Document | WaterNSW Water Customer DAS User Guide |
| Monitoring | <p>This manual is a guide only to Water Users intending to, or required by legislation, to use the WaterNSW Data Acquisition Service (DAS).</p> <p>There are no monitoring requirements associated with its use.</p> |
| Evaluation and Review | <p>This document is required to be reviewed at least Annually and republished whenever changes are made.</p> |
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Contents

| | |
|---|-----------|
| Glossary | 4 |
| 1. Data Acquisition Service (DAS) Overview | 5 |
| 1.1 About this guide | 5 |
| 1.2 What is the Data Acquisition Service (DAS)?..... | 5 |
| 1.3 Reporting faulty metering equipment - including LIDs..... | 6 |
| 2. How to access the DAS | 7 |
| 2.1 DAS registration | 7 |
| 2.2 Create a DAS user account | 8 |
| 2.3 Login to the DAS..... | 9 |
| 2.4 DAS Interface and navigation..... | 9 |
| 3. How to view your meter information | 12 |
| 3.1 Map view | 12 |
| 3.2 Dashboard..... | 13 |
| 3.3 Historic table | 14 |
| 4. Alarms | 15 |
| 4.1 What alarms are configured..... | 15 |
| 4.2 How to view and interpret alarms..... | 15 |
| 4.3 What notifications are sent out | 17 |
| 5. How to export data | 21 |
| 5.1 CSV export | 21 |
| 6. Support | 22 |
| 6.1 Channels for support | 22 |
| 7. Appendices | 23 |
| 7.1 Other reference material | 23 |

Glossary

| Terms | Description |
|-------------------------------|---|
| DAS | Data Acquisition System - cloud-based platform used by DPIE Water, WaterNSW or NRAR for the purposes of acquiring and storing data from meters. The DAS provider is eagle.io . |
| DPIE | The NSW Department of Planning, Industry and Environment |
| LID | Local Intelligence Device. A combined data logger and telemetry unit that complies with the Data Logging and Telemetry Specifications 2020. A list of devices that have been tested by DPIE/WaterNSW/NRAR is published on the NSW DPIE non-urban metering website. |
| Metering equipment | Includes any device used for, or in connection with measuring the flow of water and any ancillary wiring, pipework, telemetry equipment or apparatus and any supporting structure. |
| MeterSiteID | A MeterSiteID is a unique reference number generated by WaterNSW that contains the Work Approval Number, the ESID and a sequence number. |
| MeterID | The MeterID is a unique WaterNSW water accounting system reference number to the meter that contains the ESID and a sequence number. |
| Node | A Node is a container object that stores data and configurations for each meter. |
| Pattern Approved Meter | Pattern approval means the design of these meters has been verified by the National Measurement Institute (NMI) to meet national metrological specifications. A list of these meters is published here: https://www.mdba.gov.au/sites/default/files/pubs/pattern-approved-non-urban-water-meters.pdf |
| Regulation | Water Management (General) Regulation 2018 (NSW) |
| VPN | Virtual Private Network - secure method of encrypting data from the LID to the DAS. |
| Water Take Data | Means the flow rate and cumulative volume of water taken, or the height storage for floodplain harvesting data. |
| Workspace | A workspace in the DAS contains information of the MeterSiteID and MeterID. |

1. Data Acquisition Service (DAS) Overview

1.1 About this guide

This guide has been prepared by the NSW Government to assist water users with:

- understanding how the DAS operates and how meter data is transmitted
- understanding how to access DAS and view information

This guide is not intended to be an exhaustive guide to metering, data logging and telemetry requirements and should be read in conjunction with the following:

- NSW Non-Urban Water Metering Policy
- NSW Floodplain Harvesting Policy
- metering-related provisions of the Water Management (General) Regulation 2018
- metering-related provisions of the Water Management Act 2000

1.2 What is the Data Acquisition Service (DAS)?

Under NSW's metering rules, all surface and groundwater works captured by the rules need to be fitted with an accurate meter and a telemetry-capable data logger (a Local Intelligence Device or 'LID').

To enable the secure transmission of telemetered data, the department procured a cloud-based data acquisition service (DAS). The DAS is a cloud-based platform that collects and stores consumption data from non-urban water meters. The LID transmits meter data over a secure network to the DAS. Eagle.io provides the DAS on behalf of DPIE. The DAS makes data available to stakeholders such as NRAR, WaterNSW, DPIE and water users.

DAS transmission of data



Figure 1 DAS transmission of data

1.3 Reporting faulty metering equipment - including LIDs

It is an offence under the Water Management Act 2000 to take water while metering equipment (which includes any associated telemetry equipment or connection to the DAS), is not operating or not operating properly unless the holder of a work approval has given notice within 24 hours of becoming aware of that fact. This notification must be made to WaterNSW using the online Section 91i form.

The DAS telemetry system will automatically notify water users when their telemetry stops working.



Further information on the process can be found here:

<https://www.watersw.com.au/customer-service/service-and-help/forms/s91i-reporting-to-take-water-while-metering-equipment-is-not-operating-simplify>

2. How to access the DAS

2.1 DAS registration

The following welcome email will be sent to new DAS users. Click the **[Get Started]** button.

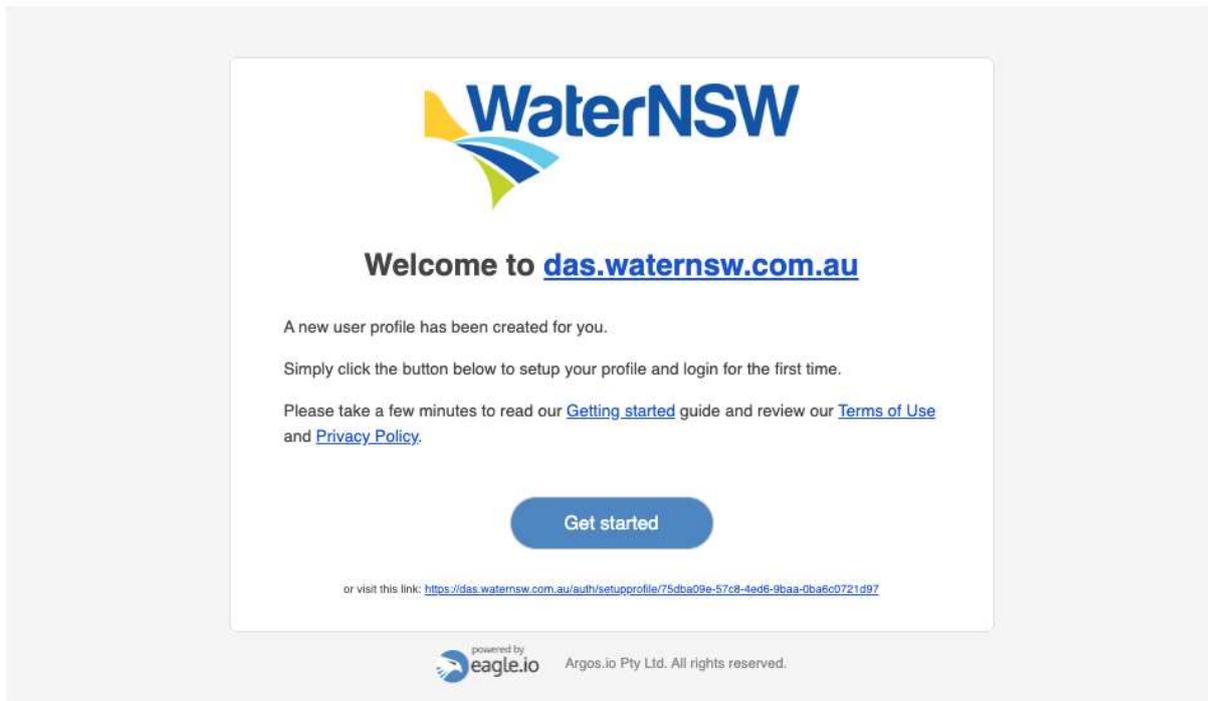


Figure 2 Email invitation to access your account

For existing DAS users, the following email will be sent if a new workspace is shared.

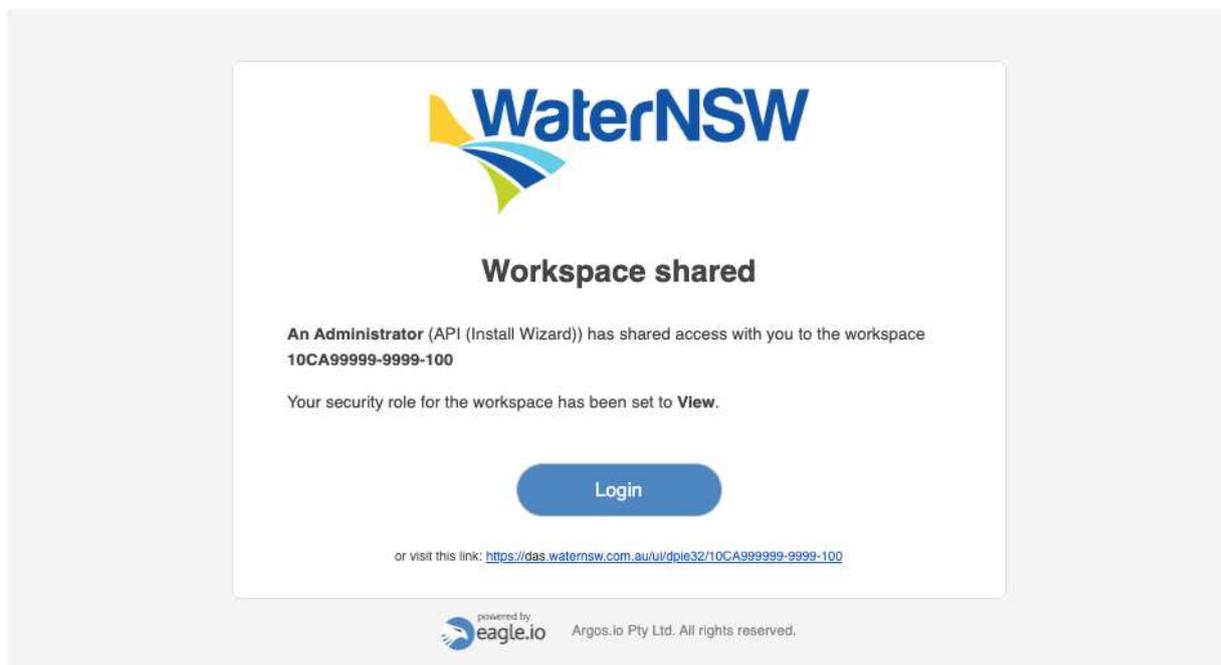
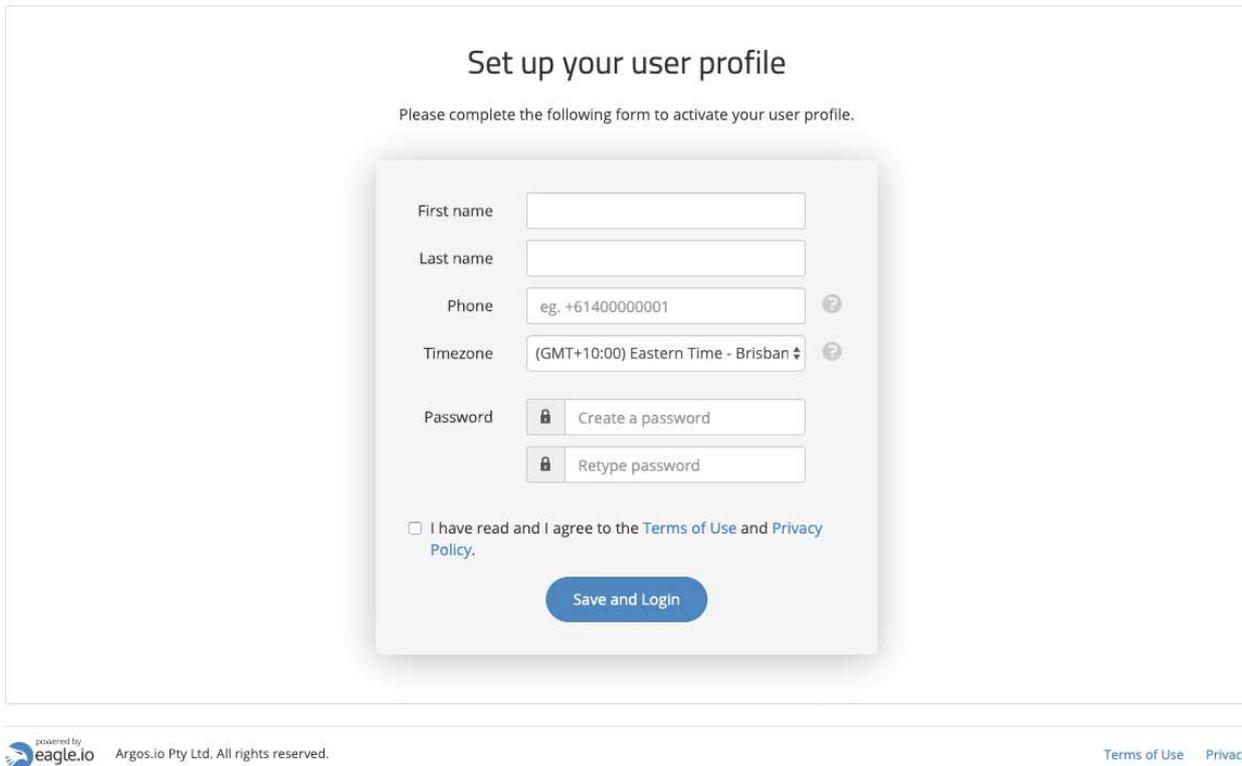


Figure 3 Email for existing DAS users

2.2 Create a DAS user account

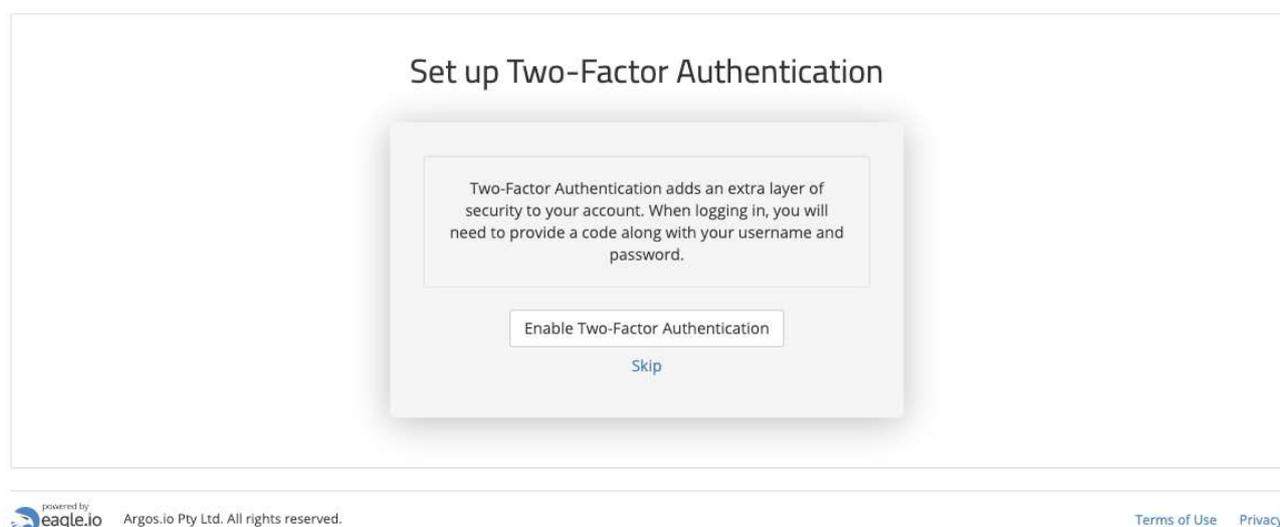
When the **[Get Started]** link is clicked in the email invitation, the following screen will appear. Complete the details to set up a user profile.



The screenshot shows a registration form titled "Set up your user profile". Below the title is the instruction: "Please complete the following form to activate your user profile." The form fields are: "First name" (text input), "Last name" (text input), "Phone" (text input with placeholder "eg. +61400000001" and a help icon), "Timezone" (dropdown menu with "(GMT+10:00) Eastern Time - Brisban" and a help icon), "Password" (two text inputs: "Create a password" and "Retype password", both with lock icons), and a checkbox for "I have read and I agree to the Terms of Use and Privacy Policy." Below the checkbox is a blue "Save and Login" button. At the bottom of the page, there is a footer with "powered by eagle.io Argos.io Pty Ltd. All rights reserved." on the left and "Terms of Use Privacy" on the right.

Figure 4 Set up your user profile to create an account

After completing the registration form, an option to enable Two Factor Authentication screen comes up. The user can skip this screen and will be taken to the DAS interface.



The screenshot shows a screen titled "Set up Two-Factor Authentication". The main text reads: "Two-Factor Authentication adds an extra layer of security to your account. When logging in, you will need to provide a code along with your username and password." Below this text are two buttons: "Enable Two-Factor Authentication" and "Skip". At the bottom of the page, there is a footer with "powered by eagle.io Argos.io Pty Ltd. All rights reserved." on the left and "Terms of Use Privacy" on the right.

Figure 5 Set up Two-Factor Authentication

2.3 Login to the DAS

Once registered, DAS users can access the DAS through the following website address.

das.waternsw.com.au

1. Enter your email address and password to **[Login]**
2. If you forget your password click on the **[Forgot password]** link from the login page to reset your password.

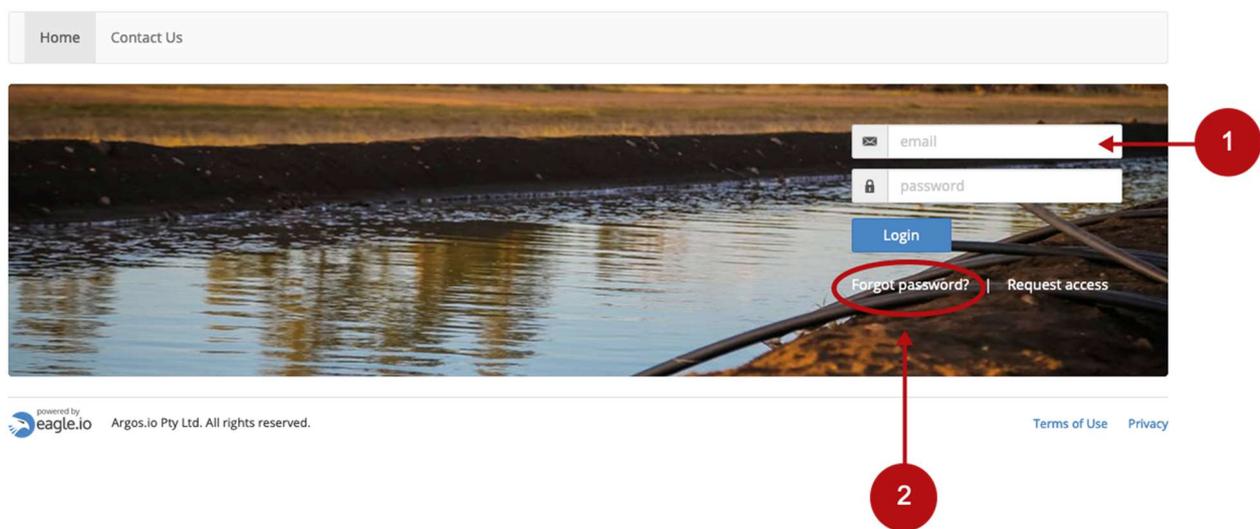


Figure 6 Login page to the DAS

2.4 DAS Interface and navigation

The DAS interface is divided into sections which group similar functionality and content. The layout of these sections will vary depending on the screen size of your device including its orientation (portrait or landscape). The images below highlight the main features of the interface as displayed on different devices.

2.4.1 Desktop layout

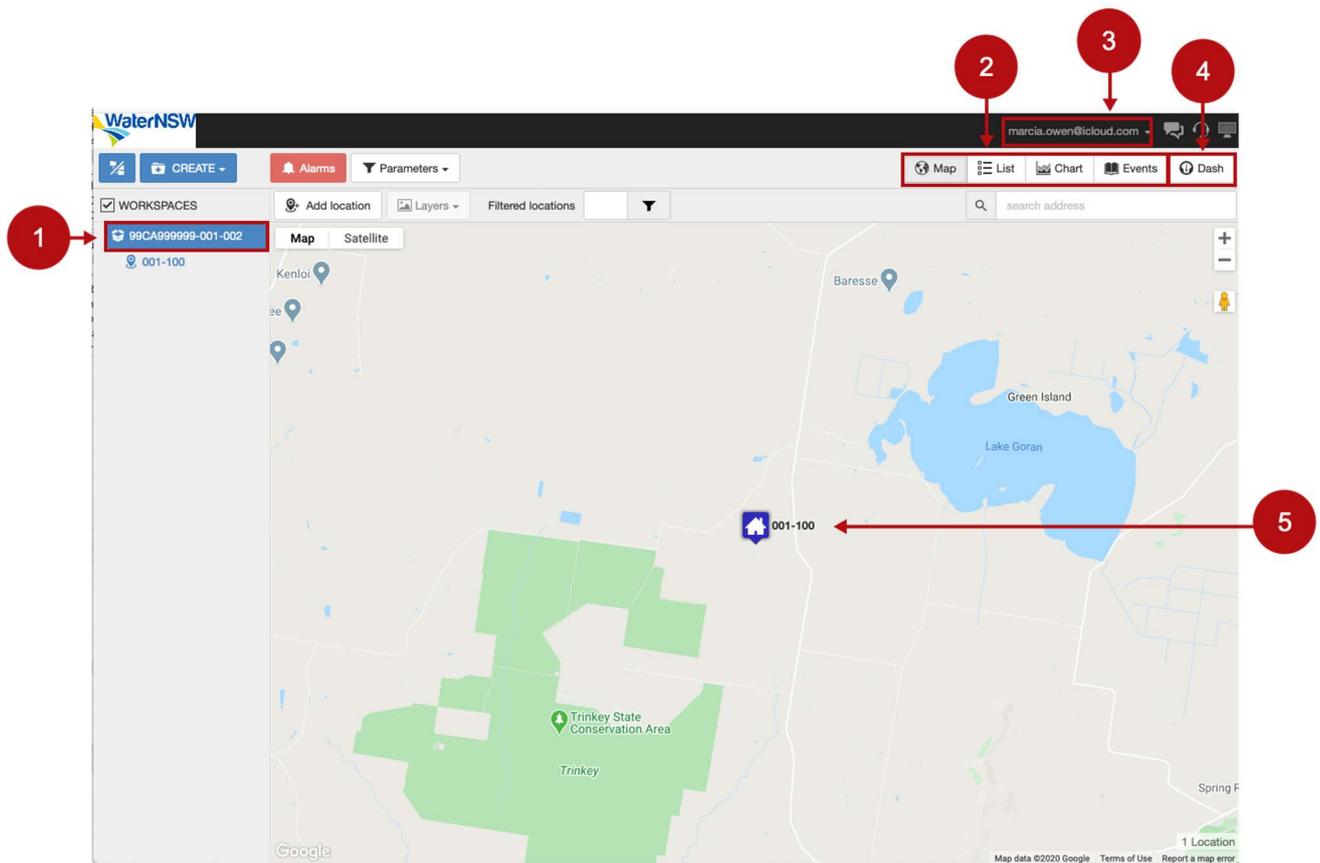


Figure 7 DAS home page desktop interface and navigation

This is the DAS desktop view of the home page.

1. MeterSiteID with meterIDs listed underneath
2. menu for different views that include:
 - list
 - map
 - chart
 - events
 - dashboard
3. user profile, account information and logout
4. dashboard
5. map view highlighting entitlement

2.4.2 Phone and tablet layout

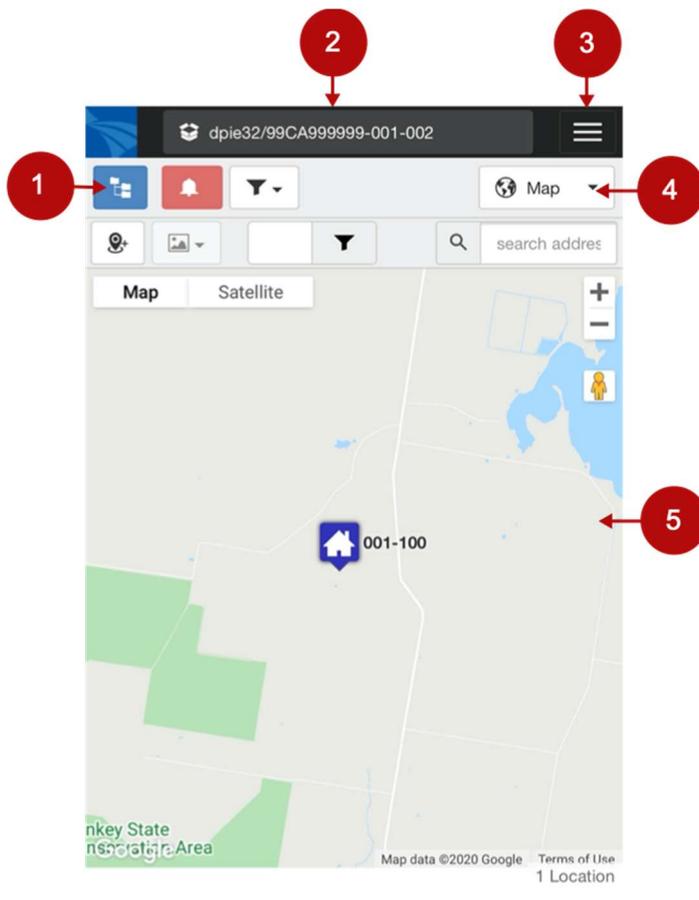


Figure 8 DAS home page mobile and tablet interface and navigation

This is the DAS mobile and tablet view of the home page.

1. MeterSiteID with meterIDs listed underneath
2. status bar
3. user profile, account information and logout
4. menu for different views that include:
 - list
 - map
 - chart
 - events
 - dashboard
5. map view highlighting entitlement

3. How to view your meter information

There are two ways to view data in the DAS.

1. Via the workspace
2. Via the menu at the top right

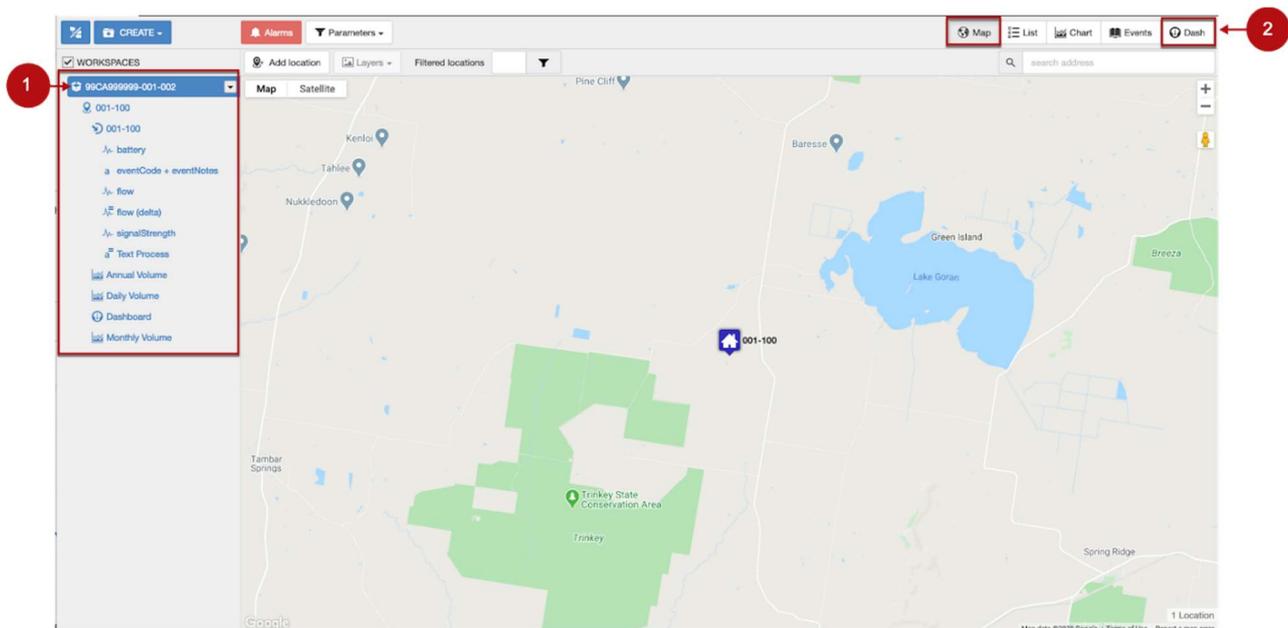


Figure 9 View Meter data

3.1 Map view

The map view as presented in **Figure 9** provides the geographical location of the meter within a google map. Click on the top right menu and choose **[Map]** to view the visual location of the meter in the DAS.

Scrolling over the location of the meter will open up a separate palette (see **Figure 10** below) to provide further details of the meter that include:

1. **battery** - indicates the value of the battery capacity
2. **eventCode + eventNotes** - provides information on the event alerts and notifications
3. **flow** - the cumulative take of water
4. **flow (delta)** - the difference between the current and previous cumulative flow value for the time period
5. **signalStrength** - indicates the signal strength of the LID modem



Figure 10 Meter parameters in Map View

3.2 Dashboard

The dashboard is the visual layout of the meter data that uses charts, lists, maps and other graphical controls.

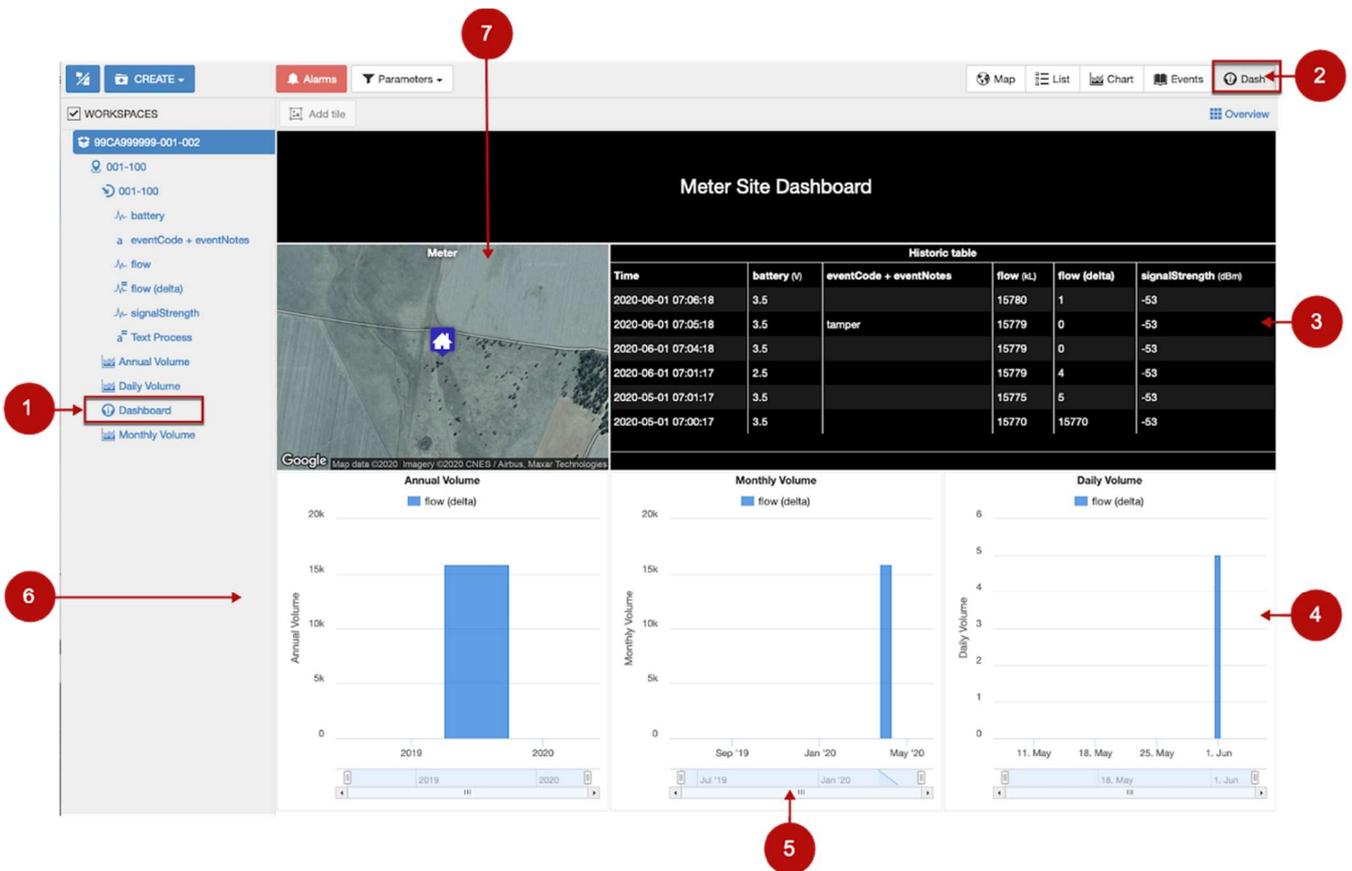


Figure 11 Meter Dashboard View

The dashboard can be viewed by clicking **[1] Dashboard** in the workspace on the left, or **[2] Dash** in the top right menu as presented in **Figure 11**.

The dashboard contains data for the meter and is visually represented in the following tiles.

3. Historic table
4. Daily Volume flow
5. Monthly Volume flow
6. Annual Volume flow
7. Site location

3.3 Historic table

The historic table contains the logged data of the parameters for the meter and can be accessed via the dashboard. Further details of each parameter node can be viewed on page 13.

| Historic table | | | | | |
|---------------------|-------------|------------------------|-----------|--------------|----------------------|
| Time | battery (V) | eventCode + eventNotes | flow (kL) | flow (delta) | signalStrength (dBm) |
| 2020-06-01 07:06:18 | 3.5 | | 15780 | 1 | -53 |
| 2020-06-01 07:05:18 | 3.5 | tamper | 15779 | 0 | -53 |
| 2020-06-01 07:04:18 | 3.5 | | 15779 | 0 | -53 |
| 2020-06-01 07:01:17 | 2.5 | | 15779 | 4 | -53 |
| 2020-05-01 07:01:17 | 3.5 | | 15775 | 5 | -53 |
| 2020-05-01 07:00:17 | 3.5 | | 15770 | 15770 | -53 |

Figure 12 Historic table

4. Alarms

An alarm is an indication of an abnormal condition or problem detected by the system. The DAS alarms identify a change to the state of incoming data streams. Alarms can, but may not necessarily result in an email notification being issued.

4.1 What alarms are configured

The following alarms have been configured:

Source out of date alarm

This alarm is raised when no new data has been received from the data logger after 49 hours (this period may be varied). A notification email is set up for the alarm and includes a direct link to the associated outdated datasource in eagle.io for diagnostic purposes. A 'source up to date' notification email will be sent once data is received from the data logger again.

Low Battery alarm

This alarm is configured on the battery parameter. If the battery value reduces below the threshold value, an alert is sent. The alarm level varies, and has been set in the template for each LID based on vendor provided information. A notification email is set up for the alarm.

Tamper alarm

This alarm is configured on the eventCode + eventNotes parameter and notifies a tamper event to either the meter cable or the LID enclosure. A notification email is set up for the alarm.

4.2 How to view and interpret alarms

Alarms are always shown in RED. When an alarm has been acknowledged it will be shown in ORANGE. When the alarm is cleared (e.g. the condition or problem has returned to normal) the node or content is displayed with its normal colour.

Workspace View

Alarms are shown in the Workspace as numbers indicating the total count of unacknowledged alarms on or within the Node.



Figure 13 Workspace View alarms

List View

The alarm icon in the List View when clicked will reveal the Alarm Panel. The Alarm Panel displays a list of the active or acknowledged alarms for the corresponding node.

Active Alarm

| | | | | | | | | |
|--------------------------|-----------------------------------|---------|--------------------------|--------|----------------------------------|---------------------|---|---|
| <input type="checkbox"/> | dpie32/99CA999999-001-002/001-100 | 001-100 | a eventCode + eventNotes | tamper | Tamper - Enclosure ²⁴ | 2020-06-05 07:09:18 |  |  |
|--------------------------|-----------------------------------|---------|--------------------------|--------|----------------------------------|---------------------|---|---|

Acknowledged Alarm

| | | | | | | | | |
|--------------------------|-----------------------------------|---------|-----------|-------|---------------------------|---------------------|---|---|
| <input type="checkbox"/> | dpie32/99CA999999-001-002/001-100 | 001-100 | ⌋ battery | 2.5 V | Low Battery ²⁴ | 2020-06-05 07:09:18 |  |  |
|--------------------------|-----------------------------------|---------|-----------|-------|---------------------------|---------------------|---|---|

Map View

The Map View applies the alarm colour variations to the location markers, temporarily overwriting the default marker colour of blue.

Active Alarm



Acknowledged Alarm



Scrolling over the location of the meter will open up a separate palette (see **Figure 14** below) to provide further details of the alarm states of the parameters affected.



Figure 14 Map View alarms

View Alarm History

Use the Events View with the Alarm Filter enabled to view all Alarm events that have occurred for the selected Node. Events are logged when an alarm is raised (becomes active), acknowledged and cleared. All information including the time, comments and user are logged with the event.

| | | | | |
|---|---------------------|---|--|----------------|
| ✉ | 2020-06-09 18:11:37 | a dpie32/99CA999999-001-002/001-100/001-100 /eventCode + eventNotes | 📧 EMAIL: Tamper - Enclosure Current value is tamper [Tamper - Enclosure] | user@gmail.com |
| 🔔 | 2020-06-09 18:11:37 | a dpie32/99CA999999-001-002/001-100/001-100 /eventCode + eventNotes | 📧 Tamper - Enclosure | System |
| 📉 | 2020-06-09 18:11:08 | 📉 dpie32/99CA999999-001-002/001-100/001-100/flow (delta) | 📧 Cleared QUALITY alarm | user@gmail.com |
| 📈 | 2020-06-09 18:11:07 | 📈 dpie32/99CA999999-001-002/001-100/001-100/flow (delta) | 📧 Acknowledged QUALITY alarm | user@gmail.com |

Figure 15 Alarm History

4.3 What notifications are sent out

Notifications are emails or SMS notifications that may be configured for alarms to notify users of alarm conditions. Eagle.io is configured to send email alerts to the DPIE admin user and the Authority holder in the event of an out of date alarm, low battery or tamper event.

Examples for each type of alarm notification are provided below.



Figure 16 Source out of date alarm notification

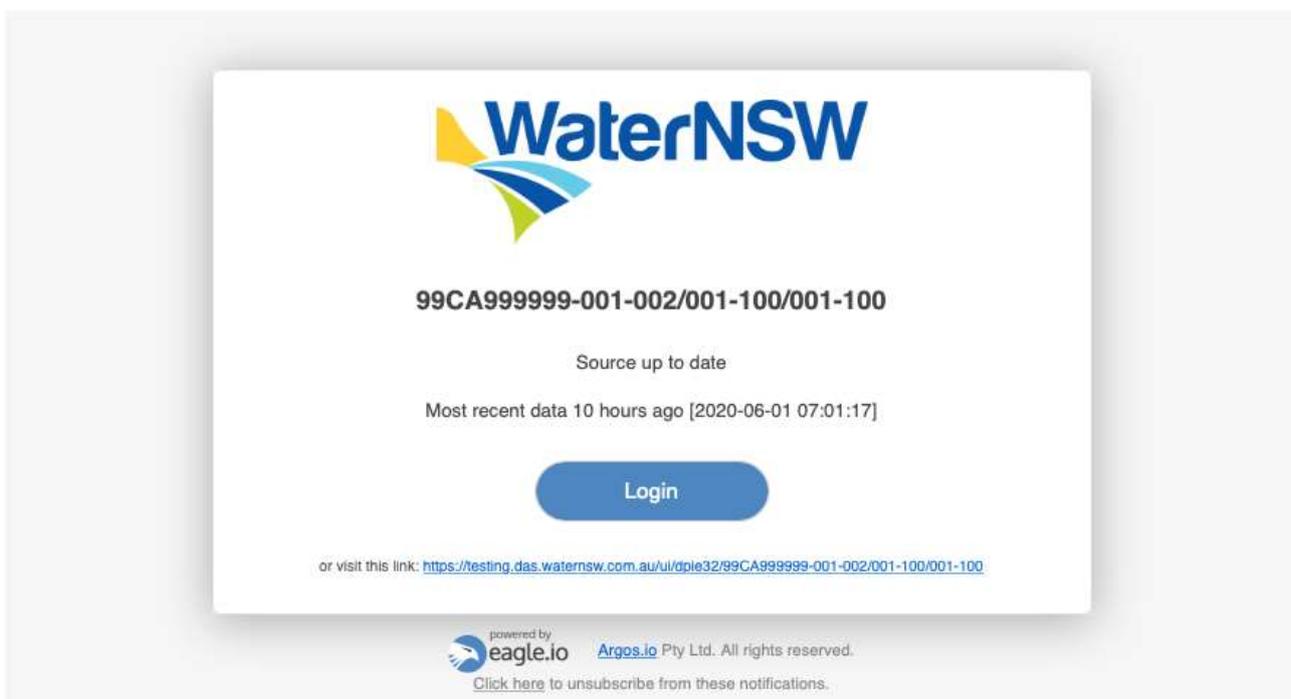


Figure 17 Source up to date alarm notification



Figure 18 Low Battery alarm notification

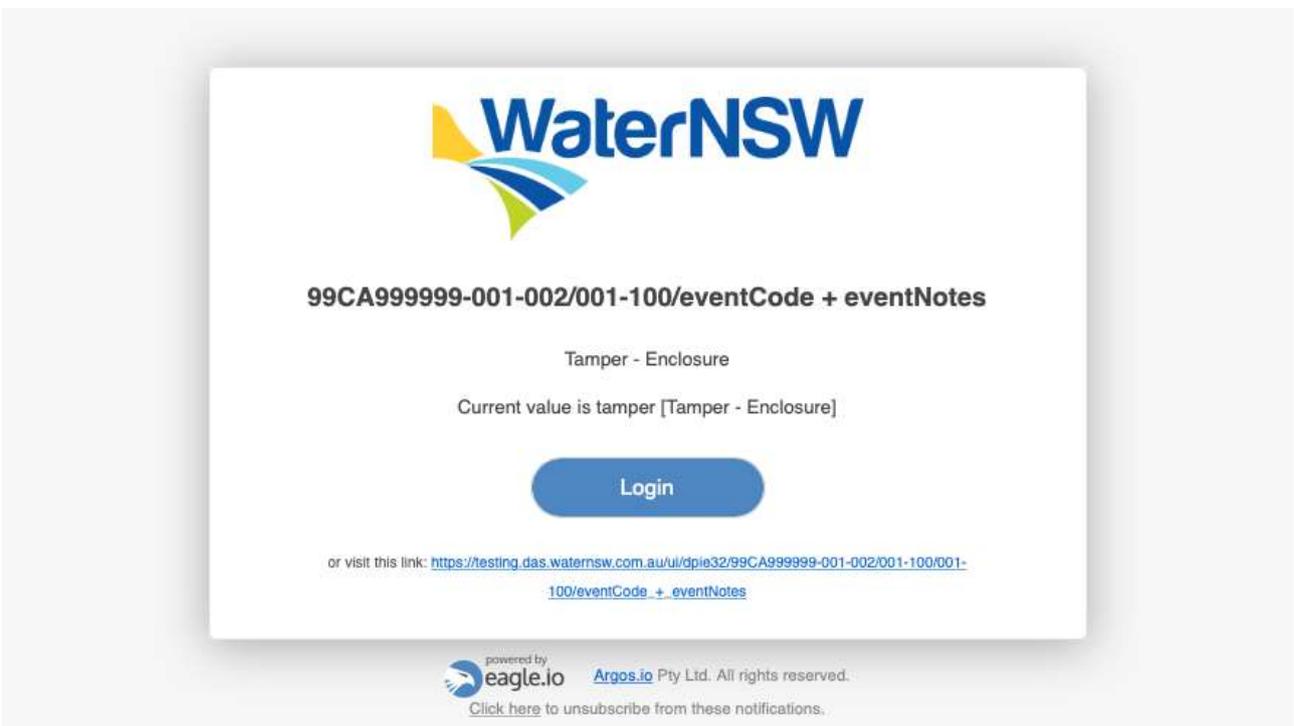


Figure 19 Tamper - Enclosure alarm notification

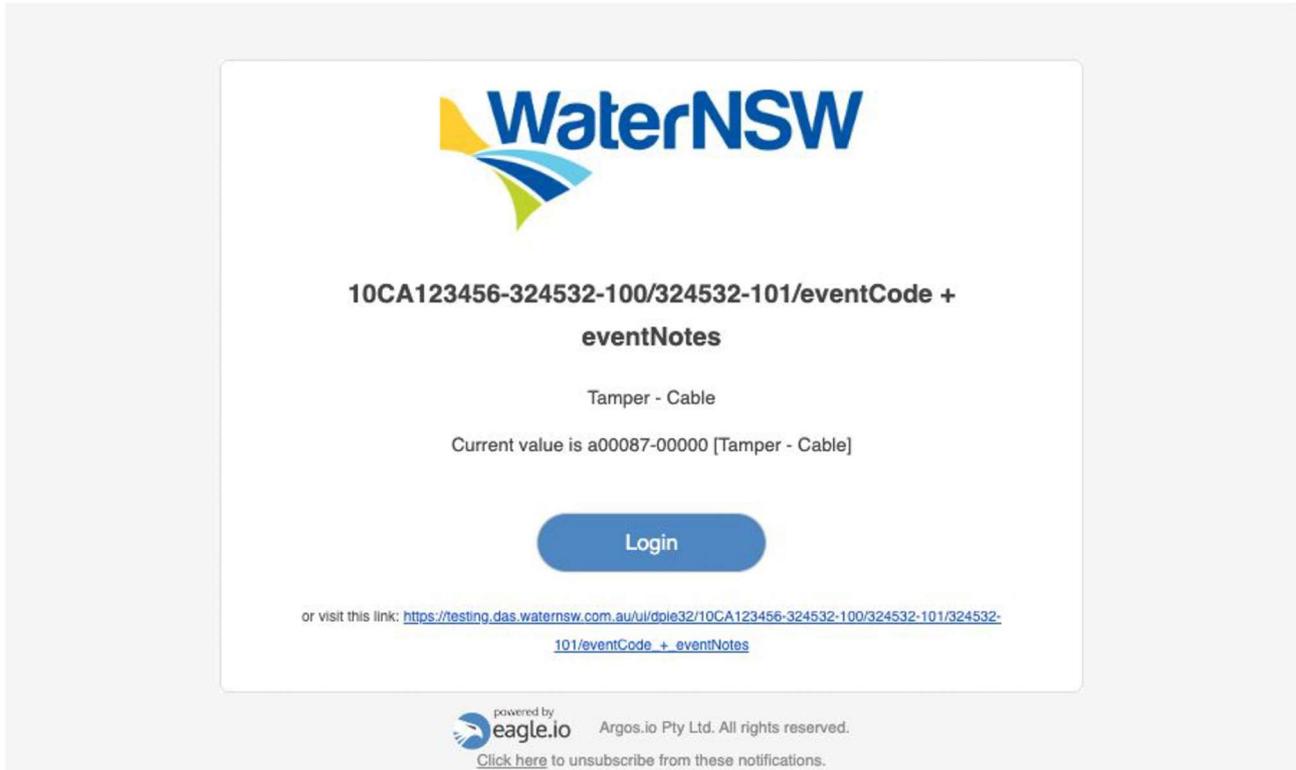


Figure 20 Tamper - Cable alarm notification

5. How to export data

Historic data can be extracted in CSV format. We recommend you limit the size of requests to 1000 records or less.

To export data from the DAS go to the Data Source node and click on the downward arrow to the right. A dropdown menu will appear. Click on **[Historic data]** and this will open into another menu. Choose the **[Export]** option.

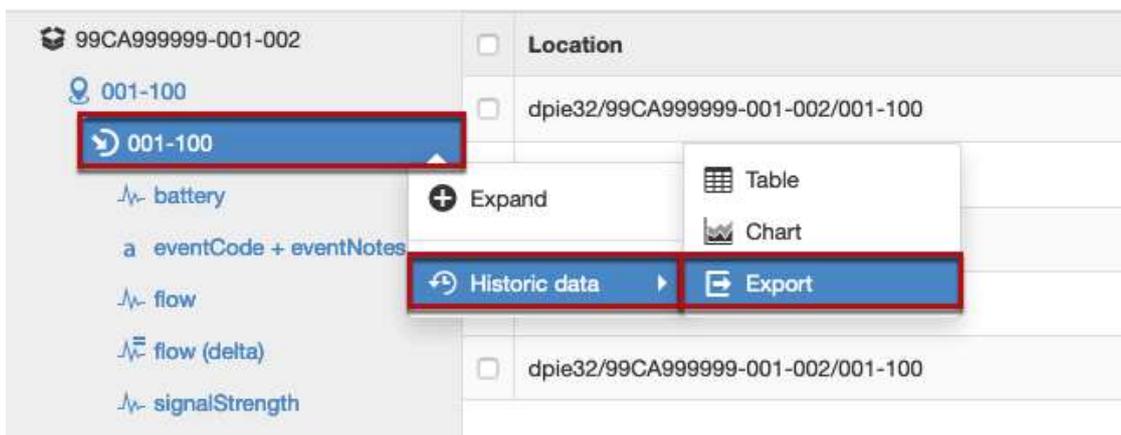


Figure 21 Export data

5.1 CSV export

To export data as a CSV file, choose the Delimited Text in the format option. Click on ADVANCED arrow for further export options and then **[Export]**.

Historic data
✕

Table
Chart
Export

Format ?

Delimited Text

←

Selection

7 Days

Y

ADVANCED ▲

Output ?

File per parameter

Include column headers

Delimiter ?

,

Text qualifier ?

"

Number format ?

Parameter format

Time format ?

YYYY-MM-DD HH:mm:ss

Timezone ?

(GMT+10:00) Eastern Time - Brisbane

Ignore Daylight Savings Time (fixed UTC offset)

Quality ?

Do not include

Annotations ?

Do not include

Export

5 / 5 Parameters selected
Close

Figure 22 CSV export data

6. Support

6.1 Channels for support

WaterNSW provides email support to water users for the DAS and associated processes. A water user can access this support by emailing their query to customer.helpdesk@waternsw.com.au or 1300 949 891.

7. Appendices

7.1 Other reference material

| Resources | Resource description and links |
|--|---|
| NSW Non-Urban Water Metering Policy | The policy explains the requirements of the new framework. https://www.industry.nsw.gov.au/_data/assets/pdf_file/0017/205442/NSW-non-urban-water-metering-policy.pdf |
| Maintenance specifications | These specifications set out the maintenance that needs to be carried out in relation to metering equipment. https://www.industry.nsw.gov.au/_data/assets/pdf_file/0014/224033/Maintenance-Specifications-Gvt-Gazette-No-27-Friday-29-March-2019.pdf |
| Metering guidance tool | Decisions support tool to assist water users to determine if they are required to comply with the current metering framework. It consists of a series of short questions and will take less than 5 minutes to complete. Access the metering tool from here . |
| Frequently asked questions | Find answers to frequently asked questions posed by water users and duly qualified persons. https://www.industry.nsw.gov.au/water-reform/metering-framework/faqs |
| Further information | Access the full suite of information regarding the NSW non-urban water metering framework, in the water reform section of the department's website. www.industry.nsw.gov.au/water-reform/metering-framework |
| Pattern approved non-urban water meters | From 1 April 2019, all new and replacement meters must be pattern-approved (except for open channels), the Murray Darling Basin Authority updates the pattern approval list as soon as any relevant new information is available. Access the most recent update list from here . |
| Data logging and telemetry specifications | https://www.industry.nsw.gov.au/_data/assets/pdf_file/0005/294134/5.-Data-logging-and-telemetry-specifications-2020.pdf |