Data Acquisition Service (DAS)

Water customer user guide

Monitoring, evaluation and review, and revision history

Name of document	WaterNSW - Water customer DAS user guide
Monitoring	This manual is a guide only to water users intending to, or required by legislation, to use the WaterNSW Data Acquisition Service (DAS). There is no monitoring requirements associated with its use.
Evaluation and review	This document is required to be reviewed at least annually and republished whenever changes are made.
Revision history	Version 3.0
Date reference	30062025

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Glossary

Terms	Description
Data Acquisition Service (DAS)	The Data Acquisition System (DAS) is a cloud-based platform used by NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW), WaterNSW or Natural Resources Access Regulator (NRAR) for the purposes of acquiring and storing data from meters. The DAS provider is eagle.io.
Local intelligence device (LID)	A local intelligence device (LID is 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 NSW DCCEEW/WaterNSW/NRAR is published on the NSW DCCEEW non-urban metering website.
Metering equipment	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 extraction site ID (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.
Regulation	The Water Management (General) Regulation 2018 (NSW)
Virtual private network (VPN)	A virtual private network (VPN) is a secure method of encrypting data from the LID to the DAS.
Water take data	Water take data refers to 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 WaterNSW to assist water users with:

- understanding how the DAS operates and how meter data is transmitted and,
- 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 DAS?

Under the NSW 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 (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 NSW DCCEEW. The DAS makes data available to stakeholders such as NRAR, WaterNSW, NSW DCCEEW and water users.

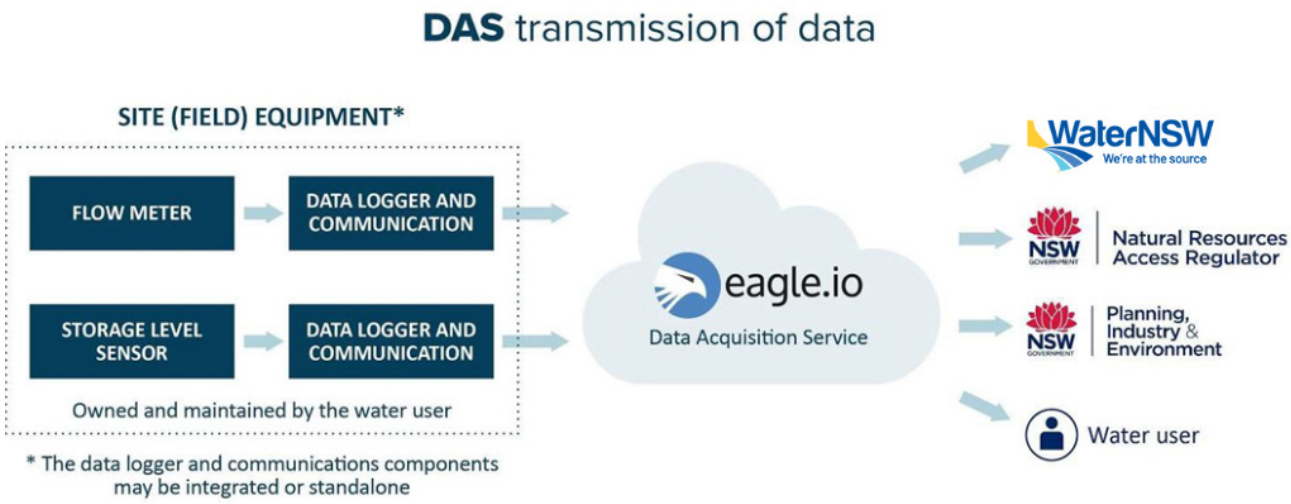


Figure 1: DAS transmission of data

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 72 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.waternsw.com.au/customer-services/metering/non-urban-metering

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

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

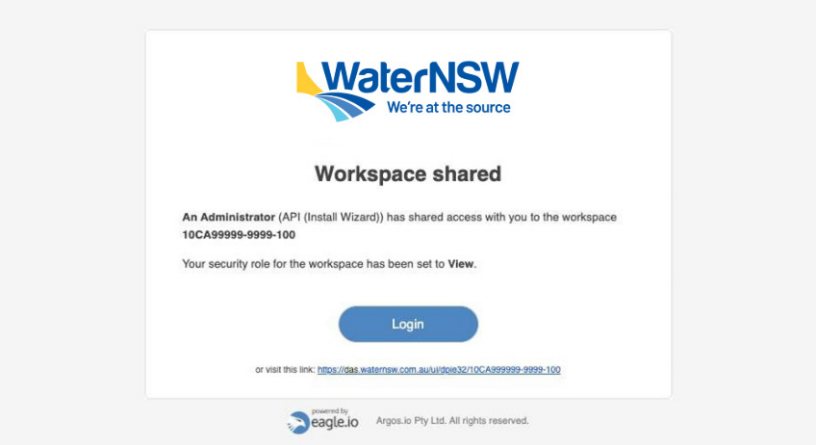


Figure 3: Email for existing DAS users

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.

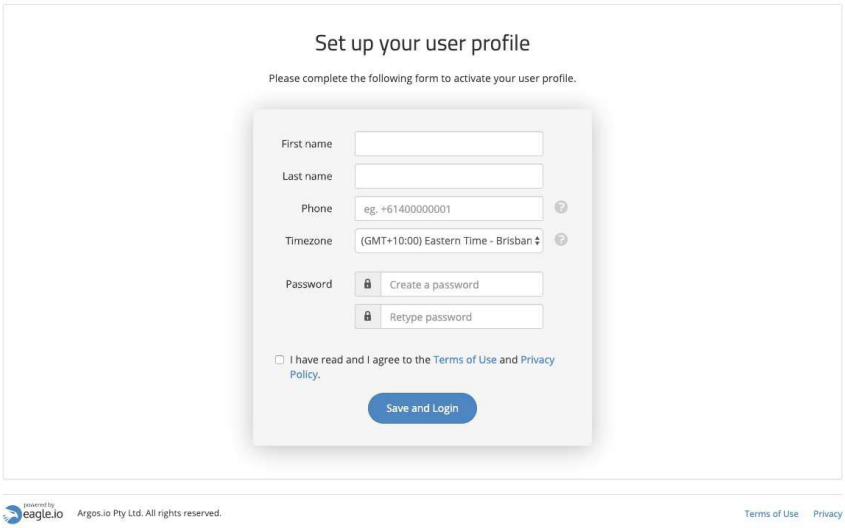


Figure 4: Set up your user profile to create an account

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.

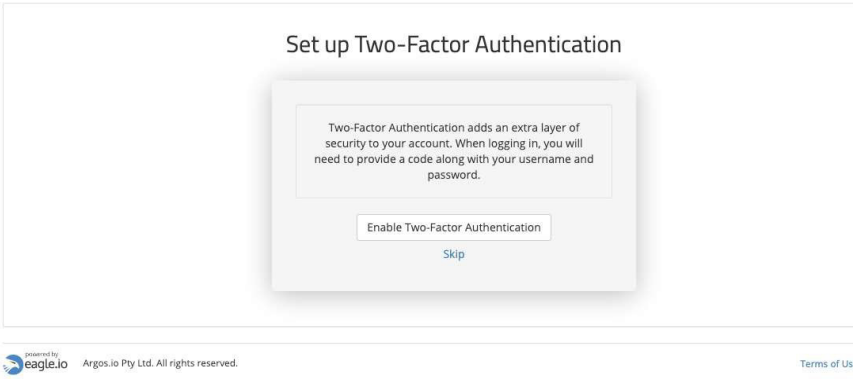


Figure 5: Set up Two-Factor authentication

To enable to factor authentication, install the Google authenticator application on the mobile device. It is available on both android and iOS devices. Press **[Enable two-factor authentication]** and it will open the below window.

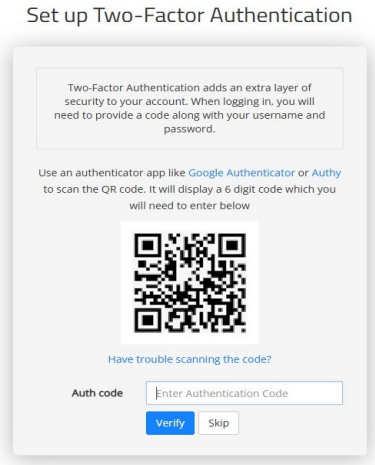


Figure 5a: Set up Two-Factor authentication

Use the authenticator app to scan the QR code and it will start generating 6-digit code in the authenticator. Use that 6-digit code in the **[Auth code]** field below the QR code and press verify.

It will enable two factor authentication and will provide you with a backup key.

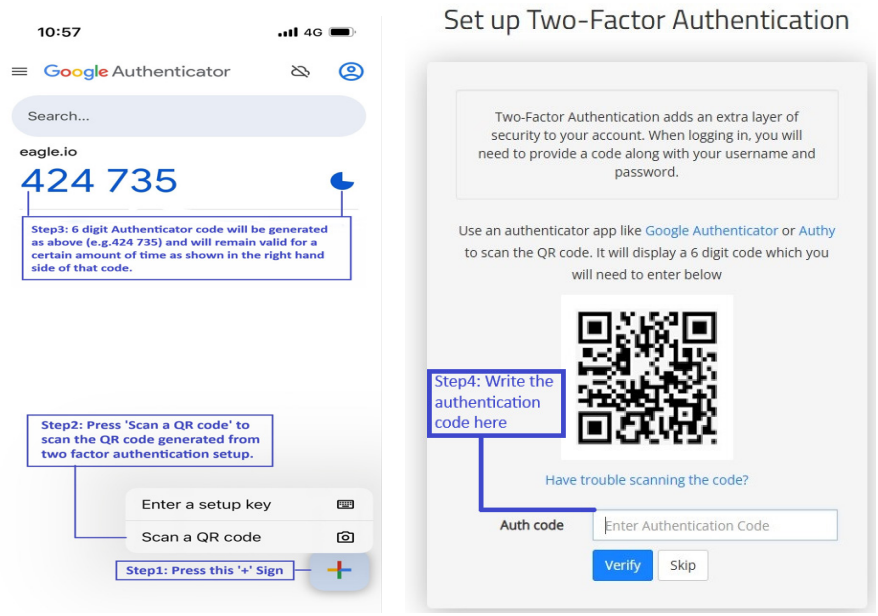


Figure 5b and 5c: Set up Two-Factor authentication

2.3 Login to the DAS

Once registered, DAS users can access the DAS through the following website address: das.waternsw.com.au

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

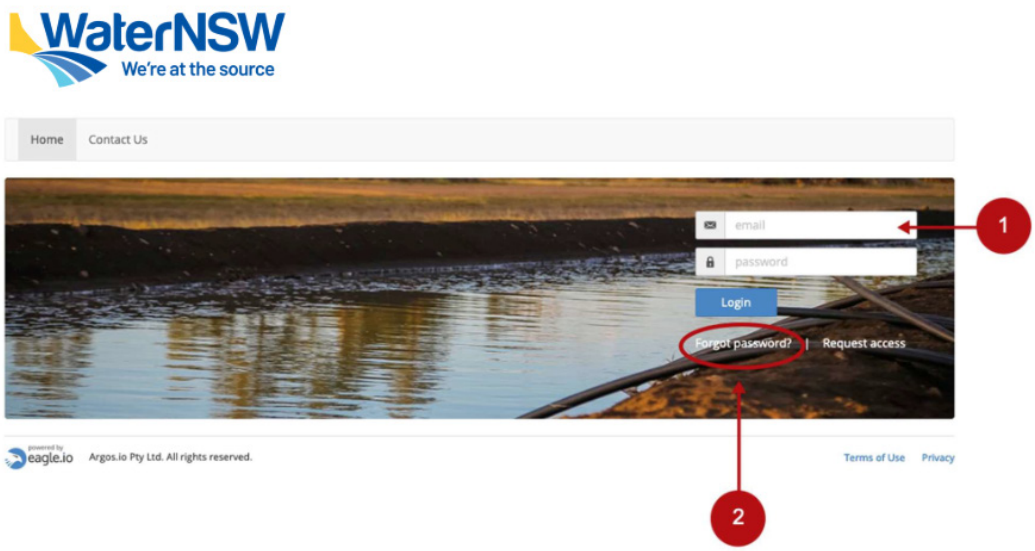


Figure 6: Login page to the DAS

- If two factor authentication is enabled, authentication code generated from the google authenticator needs to be entered into the below window.

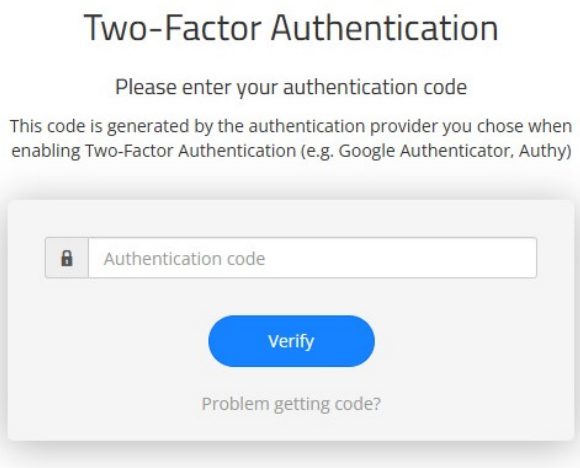


Figure 6a: Login page to the DAS

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

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

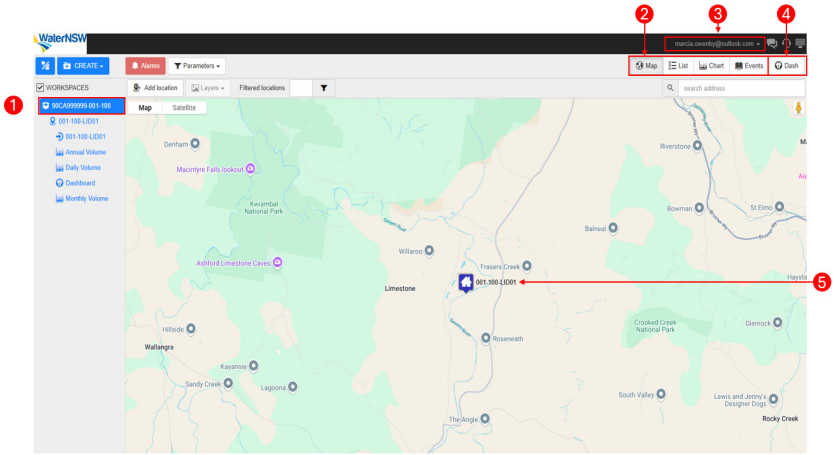


Figure 7: DAS home page desktop interface and navigation

2.4.2 Phone and tablet layout

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

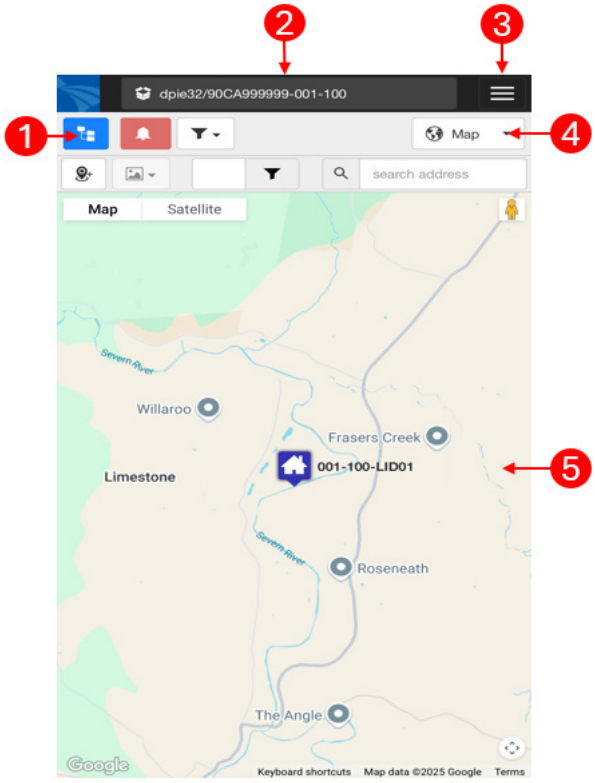


Figure 8: DAS home page mobile and tablet interface and navigation

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

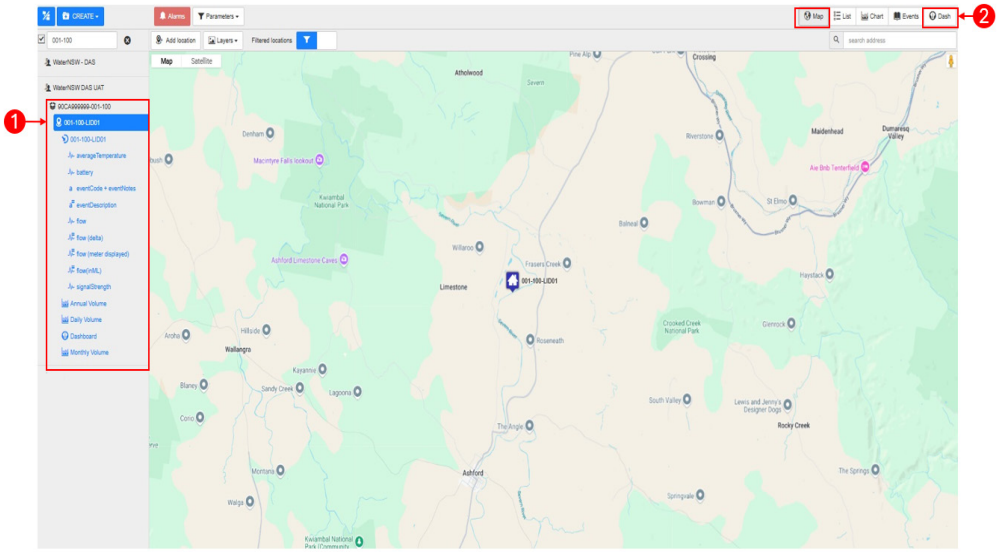


Figure 9: View meter data

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.

1. **Battery** - indicates the value of the battery capacity
2. **EventCode + eventNotes** - provides information on the event alerts and notifications
3. **EventDescription** – provides description of the event
4. **Flow** - the cumulative take of water
5. **Flow (delta)** - the difference between the current and previous cumulative flow value for the time period

6. **Flow (meter displayed)** - converts flow value in DAS using local meter display unit (e.g. ML)
7. **Flow (inML)** – converts flow value in ML
8. **SignalStrength** - indicates the signal strength of the LID modem

It can show additional parameters based on the type of the sites.

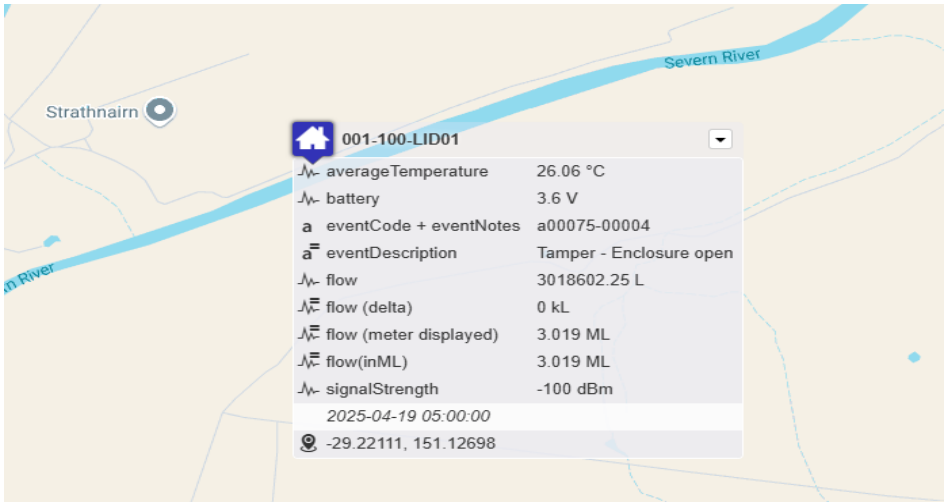


Figure 10: Meter parameters in map view

3.2 Dashboard

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

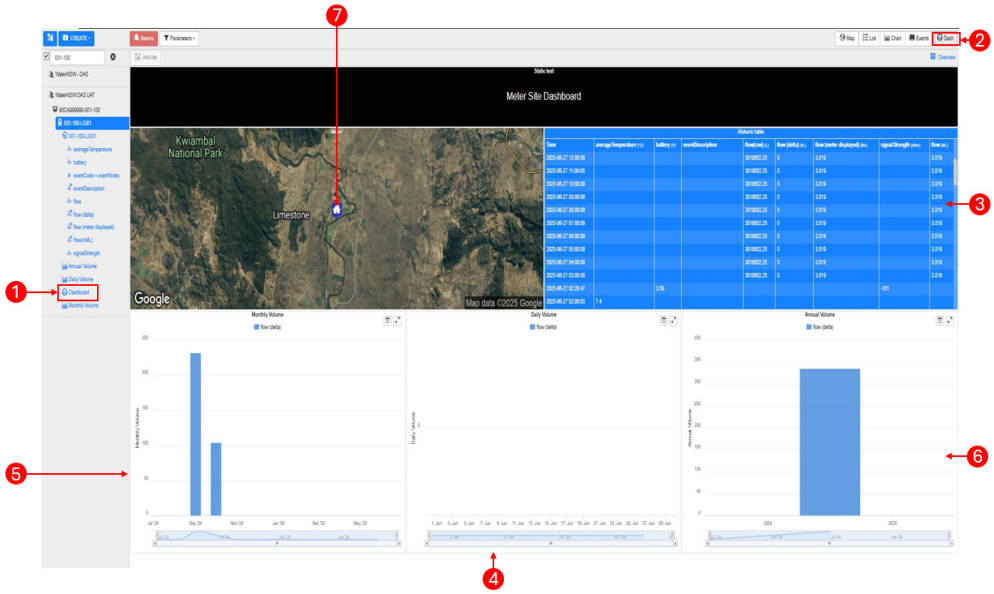


Figure 11: Meter dashboard view

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.

1. Historic table
2. Daily Volume flow
3. Monthly Volume flow
4. Annual Volume flow
5. Site location

3.3 Historic view

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.

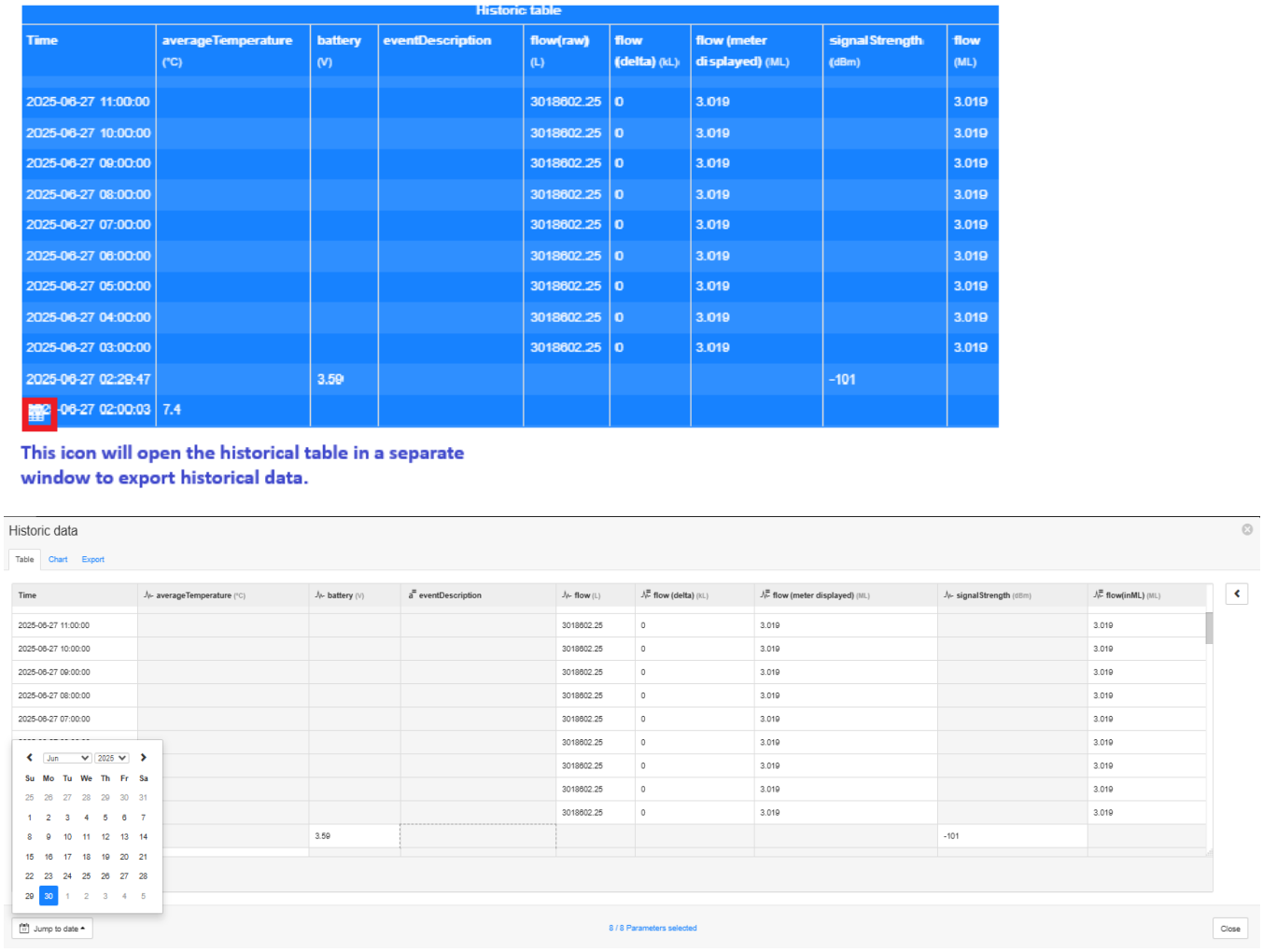


Figure 12: Historic table

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 data source 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 the 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.

Modbus communication alarm

This alarm is configured on the eventCode + eventNotes parameter and notifies a communication fail event LID and the modbus meter. 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 number of unacknowledged alarms on or within the Node.

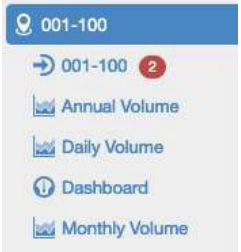


Figure 13: Workspace view alarms

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

dpie32/99CA999999-001-002/001-100	001-100	a eventCode + eventNotes	tamper	Tamper - Enclosure	2020-06-05 07:09:18		

Acknowledged alarm

dpie32/99CA999999-001-002/001-100	001-100	battery	2.5 V	Low Battery	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 NSW DCCEEW administration user and the authority holder in the event of an out-of-date alarm, low battery, tamper event or Modbus communication fail.

Examples for each type of alarm notification are provided below:

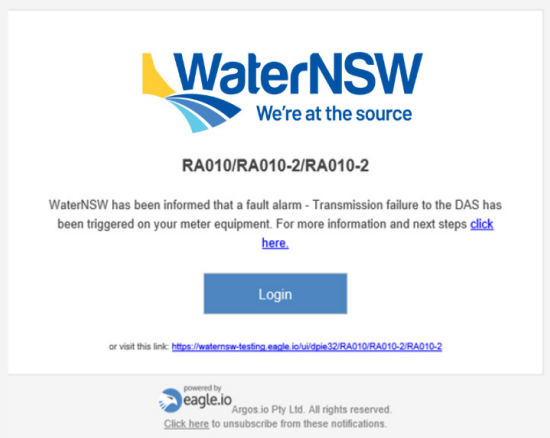


Figure 16: Transmission failure notification

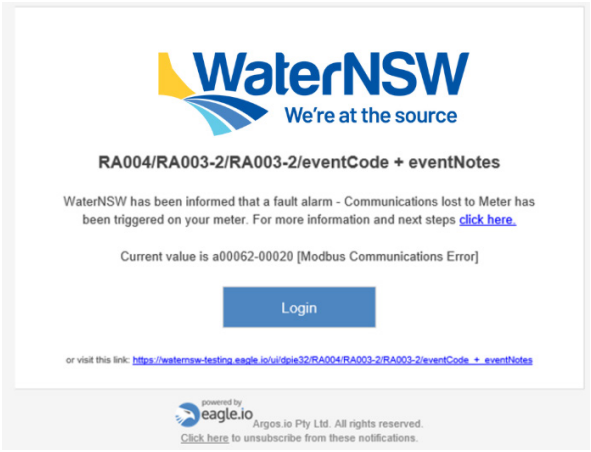


Figure 17: Communication lost notification

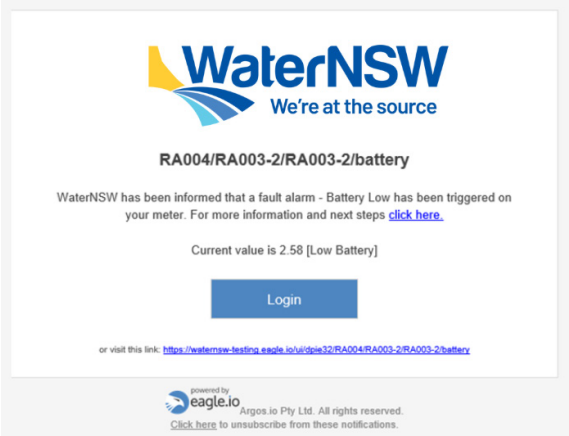


Figure 18: Low battery alarm notification

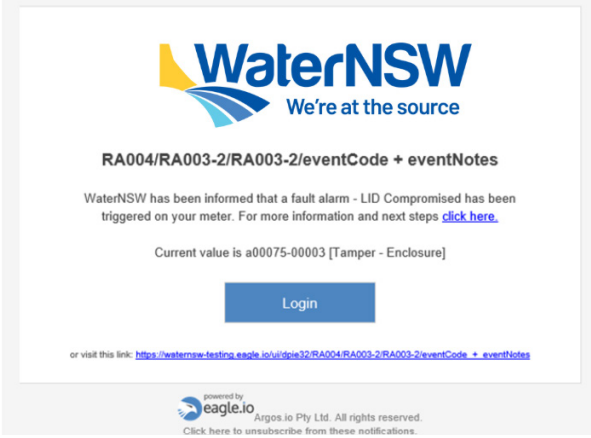


Figure 19: Tamper - enclosure alarm notification

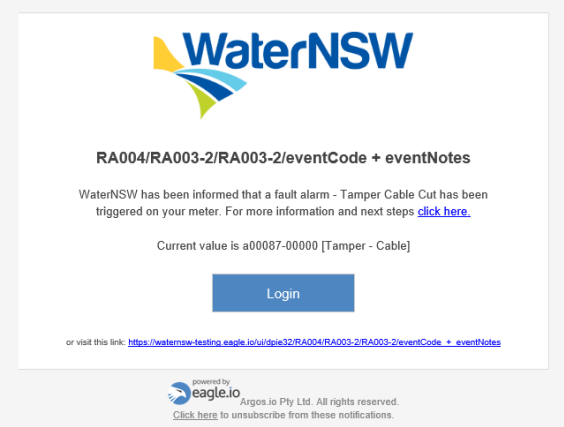


Figure 20 Tamper - Cable alarm notification

More information

You can find more information on our non-urban metering webpage. If you do not report a faulty meter, it is a breach of the *Water Management Act 2000*. Please see the links below for the relevant S91i form.

1. Report the faulty meter to us when you notice it isn't working properly, using our online s91i self-reporting form.
2. Repair or replace the meter within 21 days and have it certified by a DQP (if required). If you can't repair or replace the meter within 21 days of reporting it, you can apply for an extension using the s91i extension form.
3. Submit a S91i completion form within 28 days of repairing or replacing your equipment.

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.

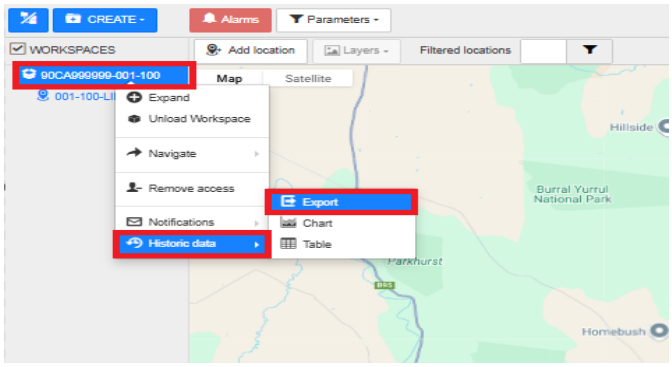
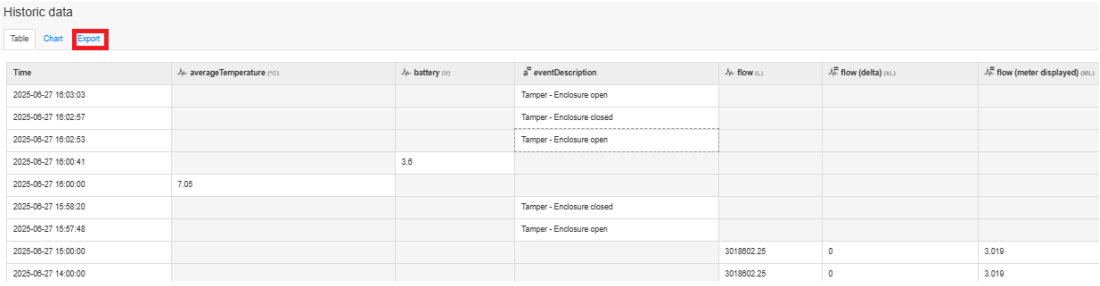


Figure 21: Export data

5.1 CSV export

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



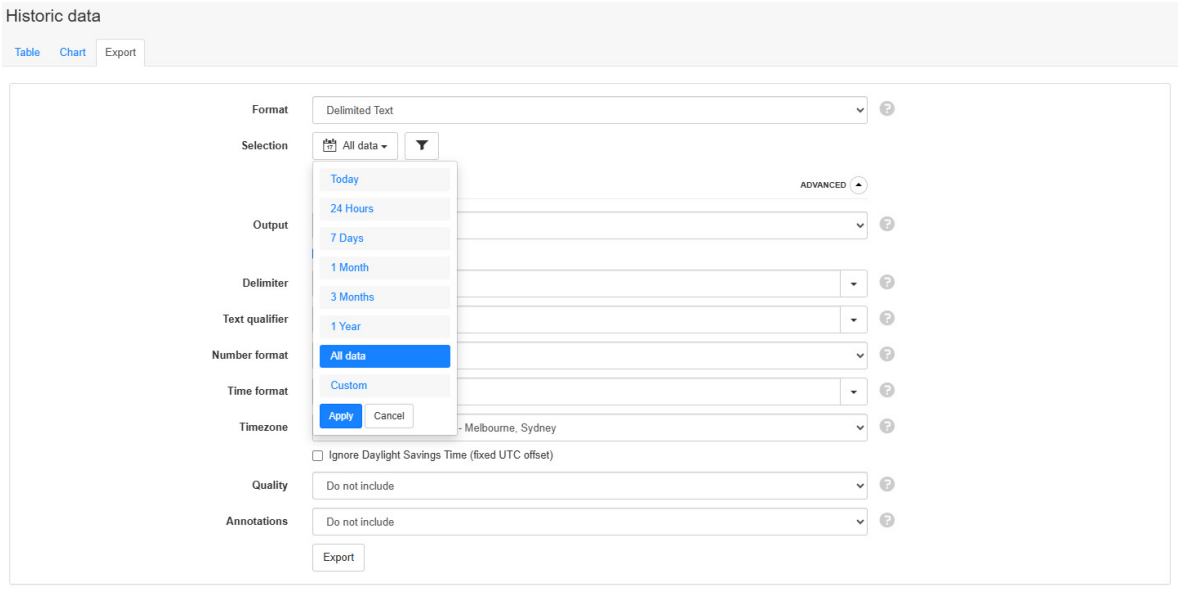


Figure 22a and 22b: CSV export data

6. Support

WaterNSW provides email support to water users for the DAS and associated processes. Customers can schedule a one-on-one meeting with our team to discuss their metering requirements. DQPs can schedule a one-on-one meeting with our DQP Concierge Team to discuss their questions.

Need help?

If you need more information, please contact our Customer Service Centre on 1300 662 077, Monday to Friday between 8am-5pm or email Customer.Helpdesk@waternsw.com.au

7. Appendices

Resource	Description and link
NSW non-urban metering rule amendments in the Water Management (General) Regulation 2018	The metering rule amendments in the Water Management (General) Regulation 2018 fact sheet explains the requirements of the new framework.
Maintenance specifications	These specifications set out the maintenance that needs to be carried out in relation to metering equipment.
Metering guidance tool	The metering guidance tool assists 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.
Non-urban metering frequently asked questions	The non-urban metering fact sheet outlines answers to frequently asked questions posed by water users and duly qualified persons.
Non-urban metering reform - what it means for you	The non-urban metering reform - what it means for you fact sheet helps you understand how the rules are applied and where to find more information.
Non-urban metering reform - exemptions	The non-urban metering reform - exemptions fact sheet outlines information on the different exemptions to the non-urban metering regulations.
How to find your total water entitlement	This guide and video will assist you in finding your total/cumulative entitlement, so you can understand your requirements under the non-urban metering regulation.
NSW DCCEEW non-urban metering webpage	Access a full suite of further information regarding the NSW non-urban water 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 (MDBA) updates the pattern approval list as soon as any relevant new information is available.
Data logging and telemetry specifications	You can find the data logging and telemetry specifications 2021 and data acquisition service logged data format guidelines

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