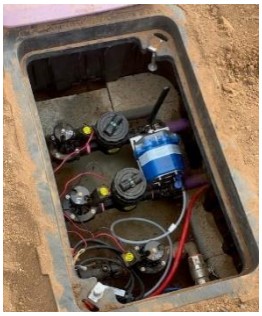
Wateresource

ABN 54 095 023 975

# Wateresource Nemos N200+WMSi Central Control Irrigation Management System

***Developed in South Australia with Councils for Councils***



## True Central Control Irrigation for unpowered Irrigated Sites

***Compare the cost of putting in power, above ground infrastructure and comms charges!***

## *Features*

Remotely managing 1 to 7 (or 6+mv) DC latching solenoid valves, the Nemos N200+WMSi has additional capabilities to monitor, record, and report

**Site water use of water utility meter including,**

- ✓ Daily/Weekly/Monthly automatic email reports showing usage and meter reading to all sites.
- ✓ Monitors and alarms for Zero Flow/Unscheduled Flow/High Flow of unpowered irrigation sites.

**Soil moisture**

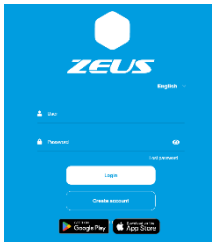
- ✓ Alarm notifications for low soil moisture
- ✓ 'Set & Forget' function to suspend and enable programs based on user defined high and low moisture thresholds.

- ***GLOBAL CONTROL***! Imagine being able to turn on and off ALL your DC controllers in 3 clicks! How many man hours will you save, and how much water!?
- **IP68 rated** means the Nemos200+ is not affected by seasonal flooding of valve boxes.
- **Battery life** as much as 5 years subject to configuration
- Retrofit to existing DC latching Valves
- **Zeusweb** accessible on any internet enabled device with multiple login capability.
- Fully exportable graphs, csv spreadsheets and reports tailored to your requirements.

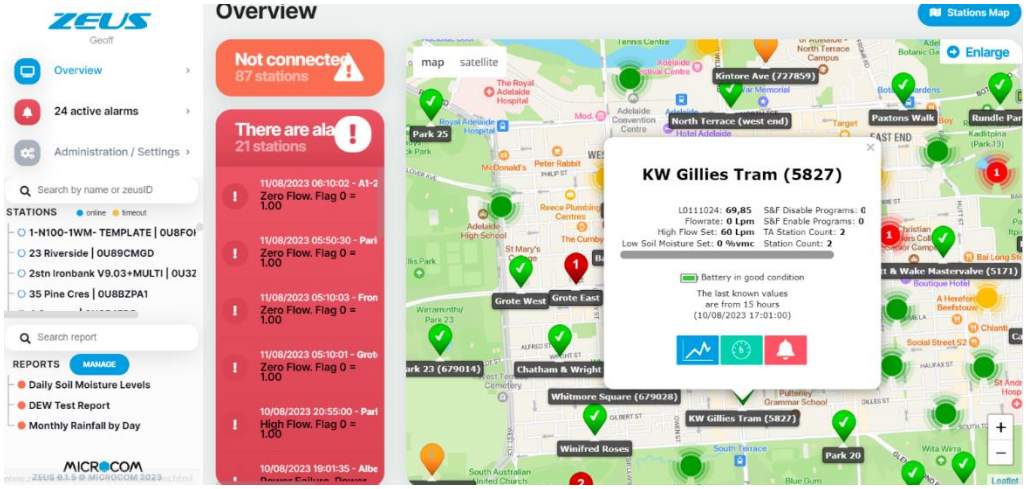
85 Vicks Road IRONBANK SA 5153, AUSTRALIA - Phone 08 8388 2042 - Mobile 0438 336148 - geoff@wateresource.com.au

# Zeus Central Control Platform

Desktop and mobile device friendly platform giving users in the field easy access to site information and control using the  ZeusWeb Map Overview as Central Control,




Secure login from PC, Tablet and Smartphone with ability to set a hierarchy for multiple user access

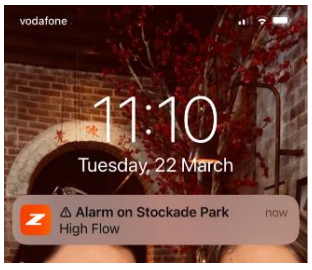


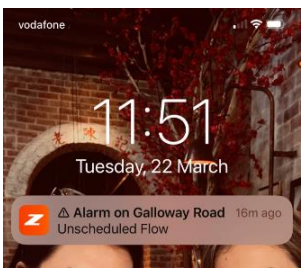


# Alarms & Notifications

Alarms can be Zeus notifications only, as highlighted below on the GIS, along with the ZeusMobile App Notification, and in the case of critical alarms, additional instant SMS notifications can be configured to upto 16 recipients for any input or multiple input alarms. Restoration messages can also be configured.

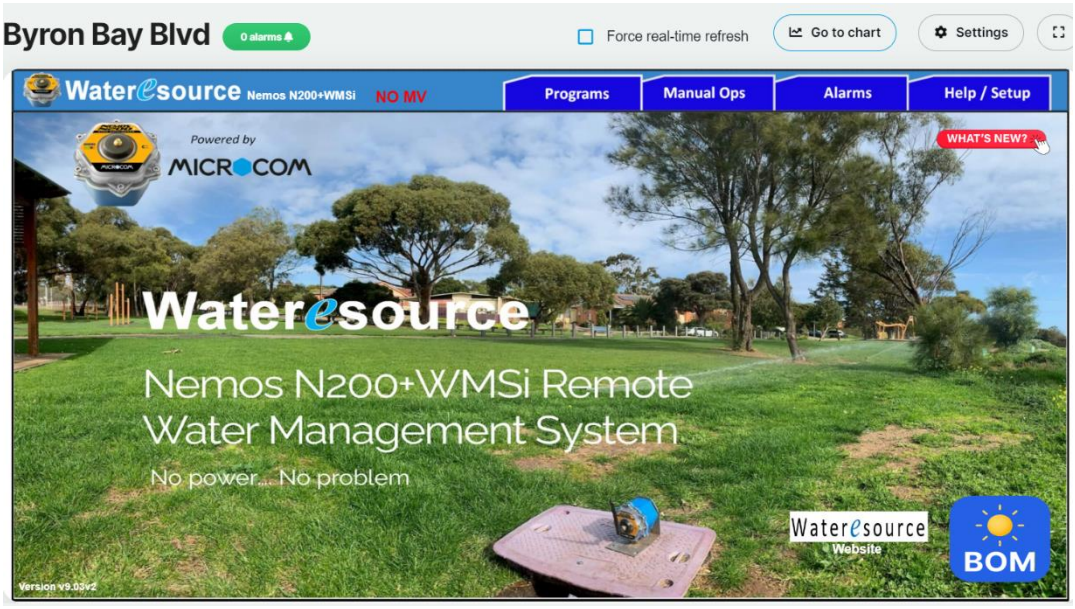
Upto 4 different Alarm conditions ***for every input***.

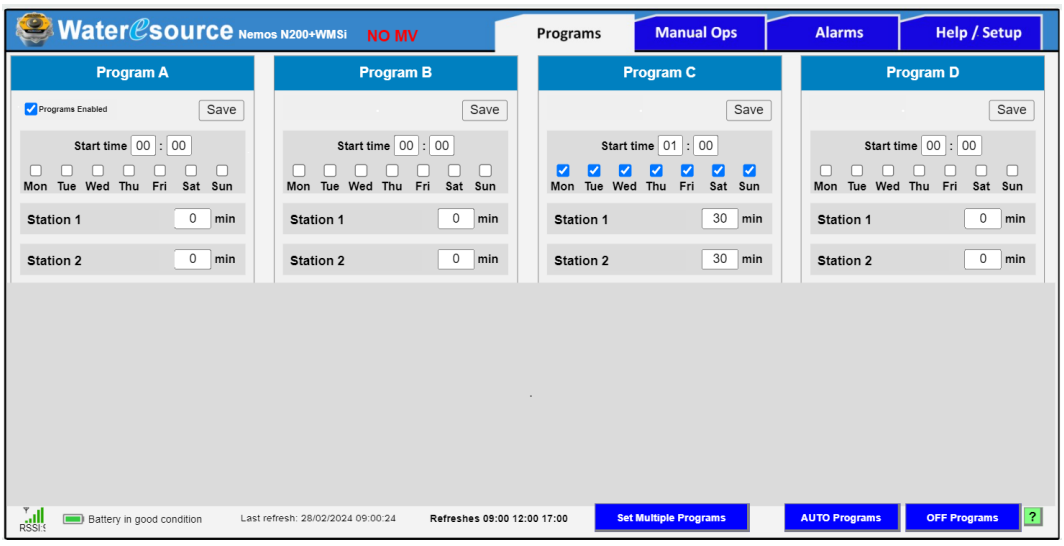



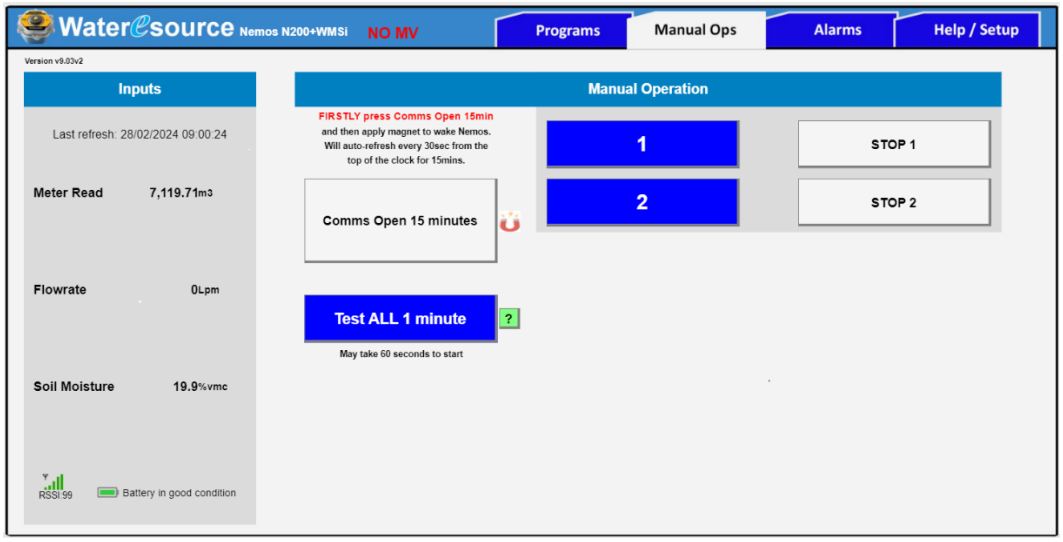



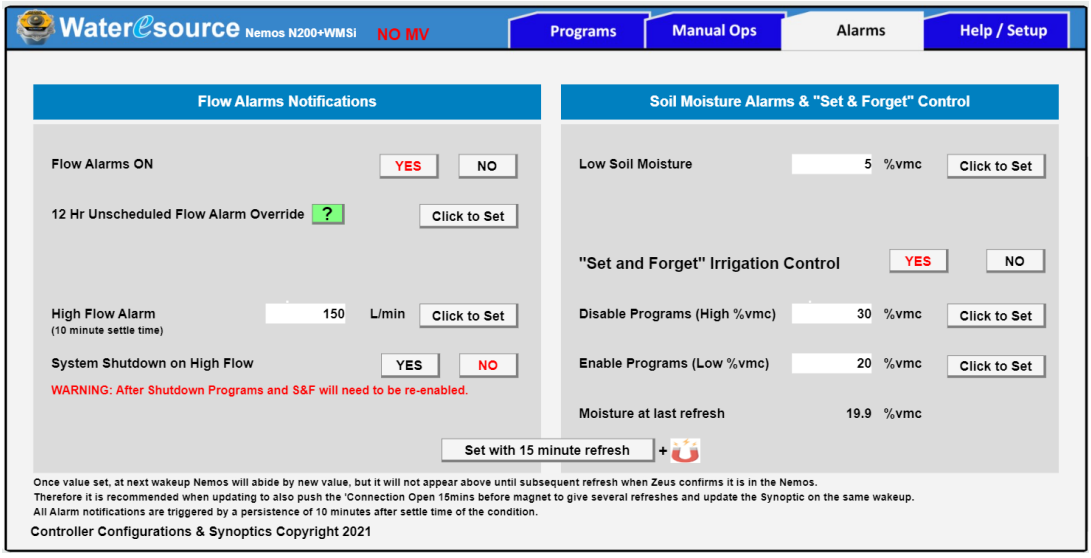


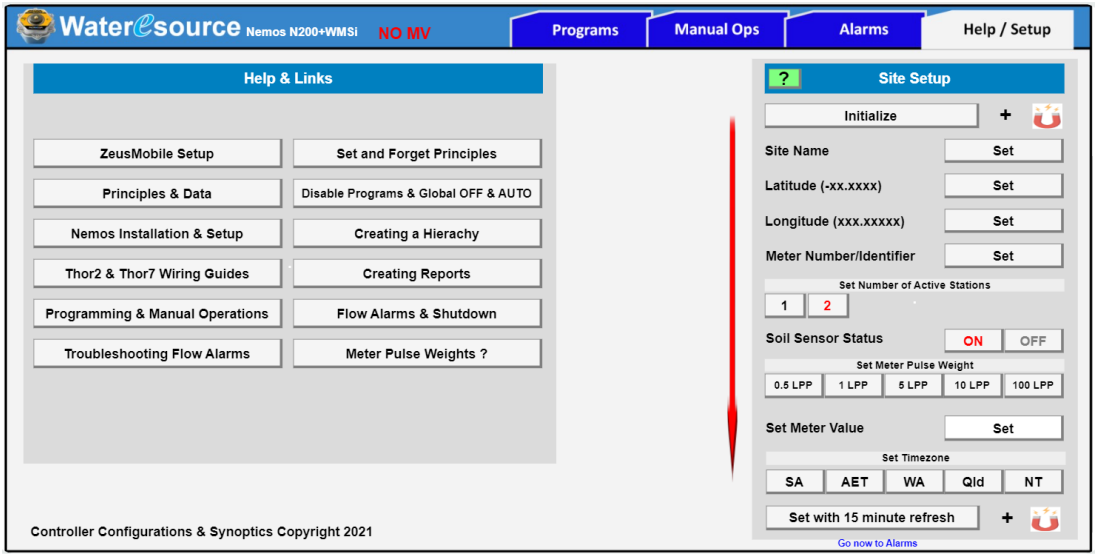

## Nemos N200+WMSi Thor2



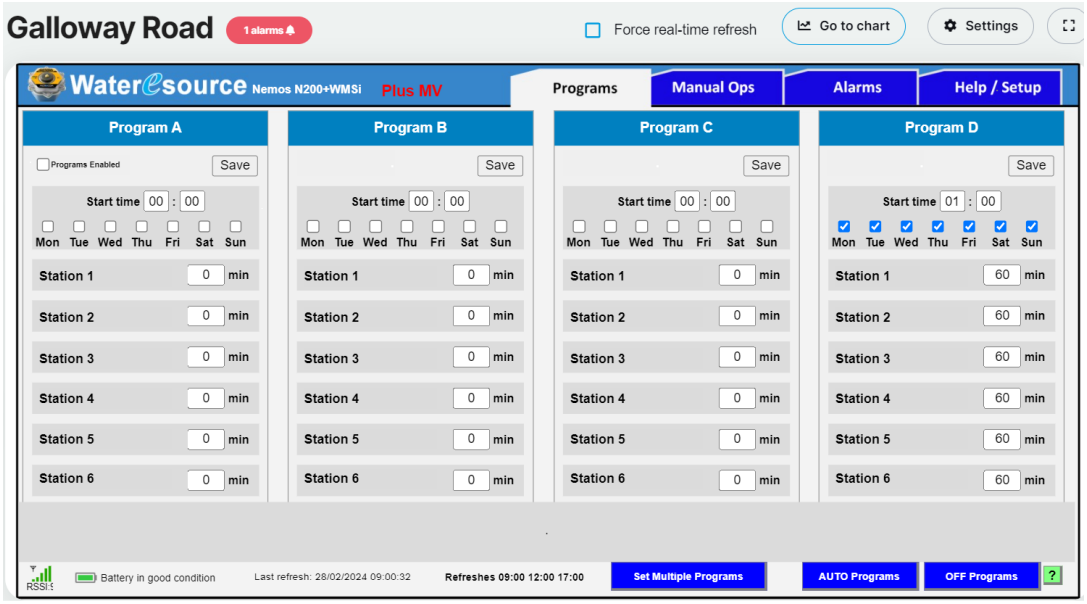






## Nemos N200+WMSi Thor7 (7stn or 6+MV)



## Global Control

All sites irrigation programs can be disabled and re- enabled in 4 clicks ***'Globally'***

## Flow Alarms & Shutdown

The Nemos N200+WMSi is configured for the following Flow Alarms, along with the ability to shut down and disable the programs on high flow.

**1** **High Flow**. (User defined)

Once a normal threshold has been determined, a high flow alarm threshold can be set on the Synoptic Control. By default, it will notify the operation via Zeus notification on their mobile device, with an alarm indicator on the Overview page. (If required, SMSs can also be configured).

To set the value, on the Synoptic control screen, go to the "Alarms" page, 'Click to Set', enter value and OK. On the next refresh the logger will receive the new value and react accordingly, however the value will not update on the control synoptic until the second refresh when Zeus reads the logger again to confirm it is in the logger.

**Alarm Only option**
The alarm notification will remain until it is acknowledged, or after 12 hours. Programs will remain enabled so will continue to run on programs.

**High Flow Shutdown**
If selected, Zeus will close ALL VALVES and disable all programming and alarm.
You will need to re-enable programming when ready to. The alarm will stay in the red state until you have re-enabled the programming or acknowledged as "Read".
"Set & Forget" will also be disabled.

**2** **Zero Flow**.

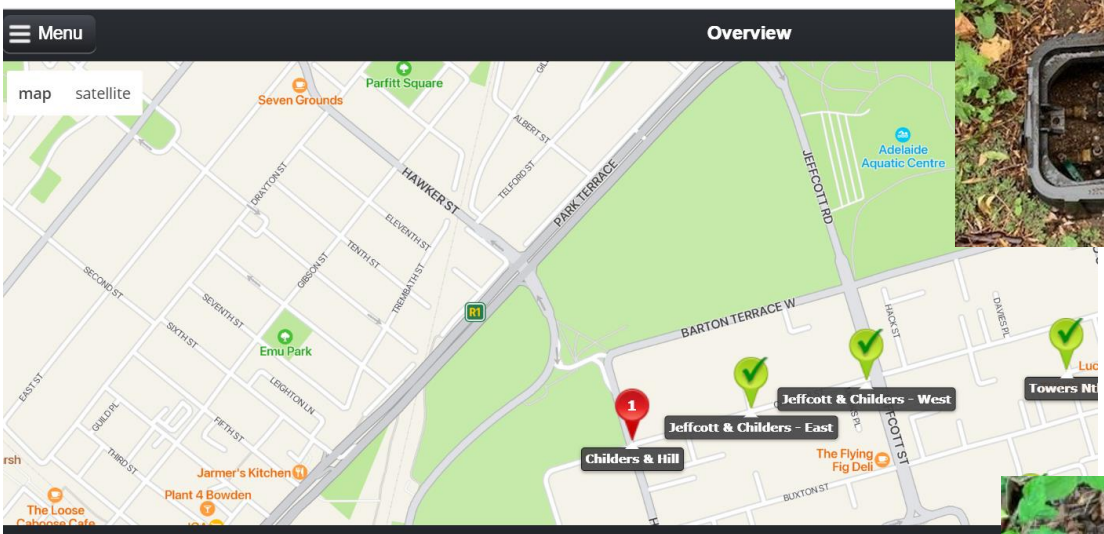
When an irrigation valve is programmed to run and there is no flow for >10mins, a Zero flow condition is registered.
The alarm notification will remain until it is acknowledged, or after 12 hours.

**3** **Unscheduled Flow**.

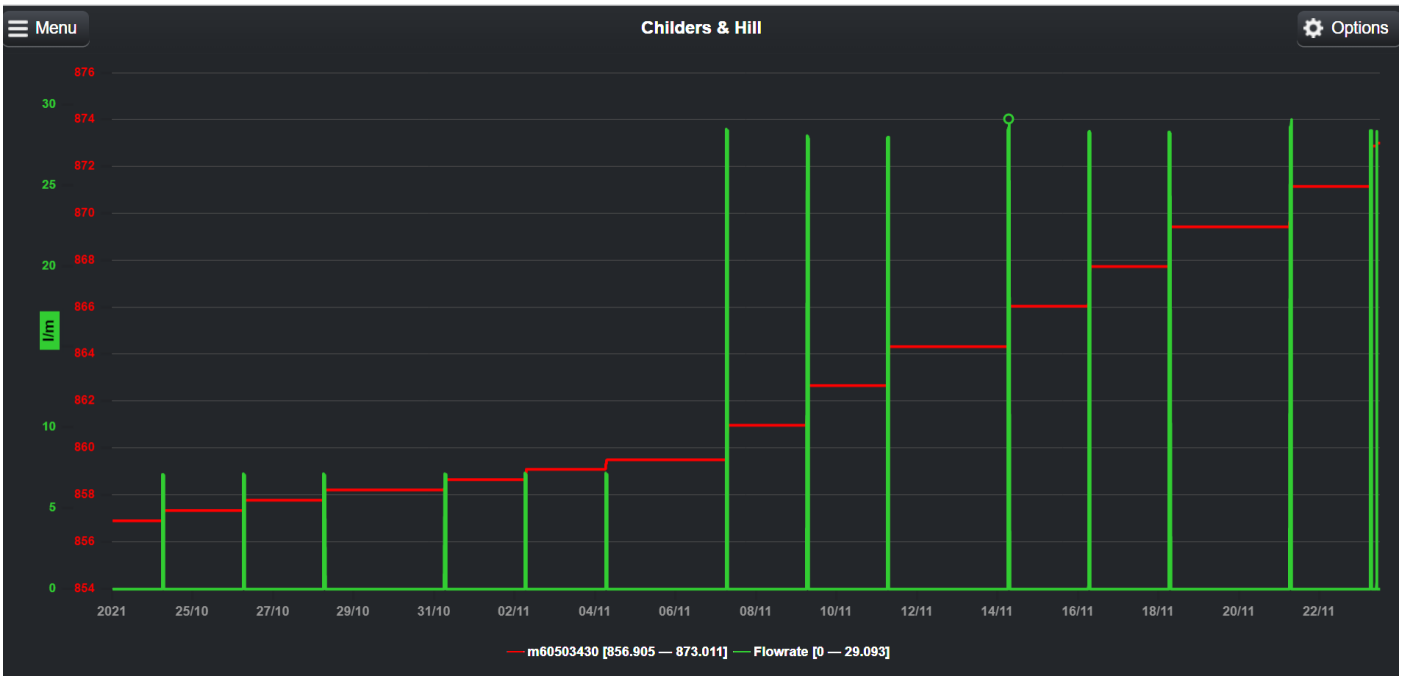
Where there is flow >1hr outside of an irrigation program i.e., valve stuck, on, leaking, or unauthorised bleeding of a valve.
A restoration notification will be sent if condition returns to normal for a minimum of 1hr.

For a continual chronic leak, on the next irrigation it will restore, but then if after the program is finished the leak continues, it will alarm again as unscheduled flow.

# Flow alarm examples for both chronic and high flow




| Date | Station | Alarm |
|---|---|---|
| 23/11/2021 06:15:01 | Childers & Hill | High Flow. Value in channel Flag 4 = 1.00 |
| 23/11/2021 05:10:03 | Frome- Wake to Angas | Zero Flow. Value in channel Flag 0 = 1.00 |
| 22/11/2021 05:20:01 | Hutt & Wake | Unscheduled Flow. Value in channel Flag 1 = 1.00 |



# Set & Forget Valve Control - Soil Moisture Management

'Set & Forget' is available on the Thor2 & 7 versions of the Nemos N200+WMSi and utilizes an attached soil moisture sensor to suspend (disable) and re-enable the irrigation programming based on a user defined high and low soil moisture thresholds.

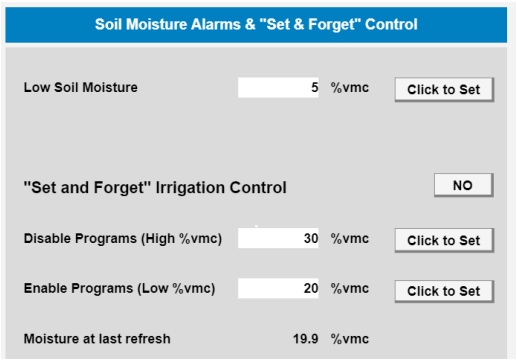
The principal use of this system is to act like an 'inground' rain sensor to minimize unnecessary watering during rain events in irrigation season or suspend the controller should you forget to turn off the programming during winter.

The SMT-100 Soil Moisture and Temperature sensor allows for effective rootzone monitoring and alarming.
The SMT-100 is suitable for any soil type and requires no on-site calibration.
(Other analogue soil sensors may be used subject to their compatibility)

Once the correct understanding of the moisture sensor location and of the soil moisture holding ability and crop demand, this function can also be utilized during the season to suspend programs when the soil moisture reaches your chosen 'full' level and re-enable irrigation programs when the soil moisture reaches your low refill point.

For this purpose, we recommend running programming for a couple of weeks to gain data whilst observing site conditions before setting levels.

Remember that all programs and stations will be disabled and re-enabled together, so if using on a 7 station system, it is advisable to monitor later stations. (Otherwise, if on station1, when disable occurs during irrigation of station1, subsequent stations will not get any irrigation).

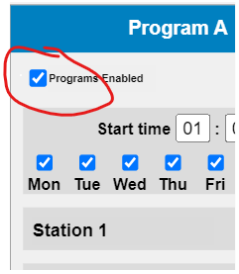



Note that should the high threshold point be recorded 'mid Irrigation' all programming will be turned off and disabled at that time.
Here is an example of settings.

A high threshold of 30%vmc and a low threshold of 20%vmc has been input.

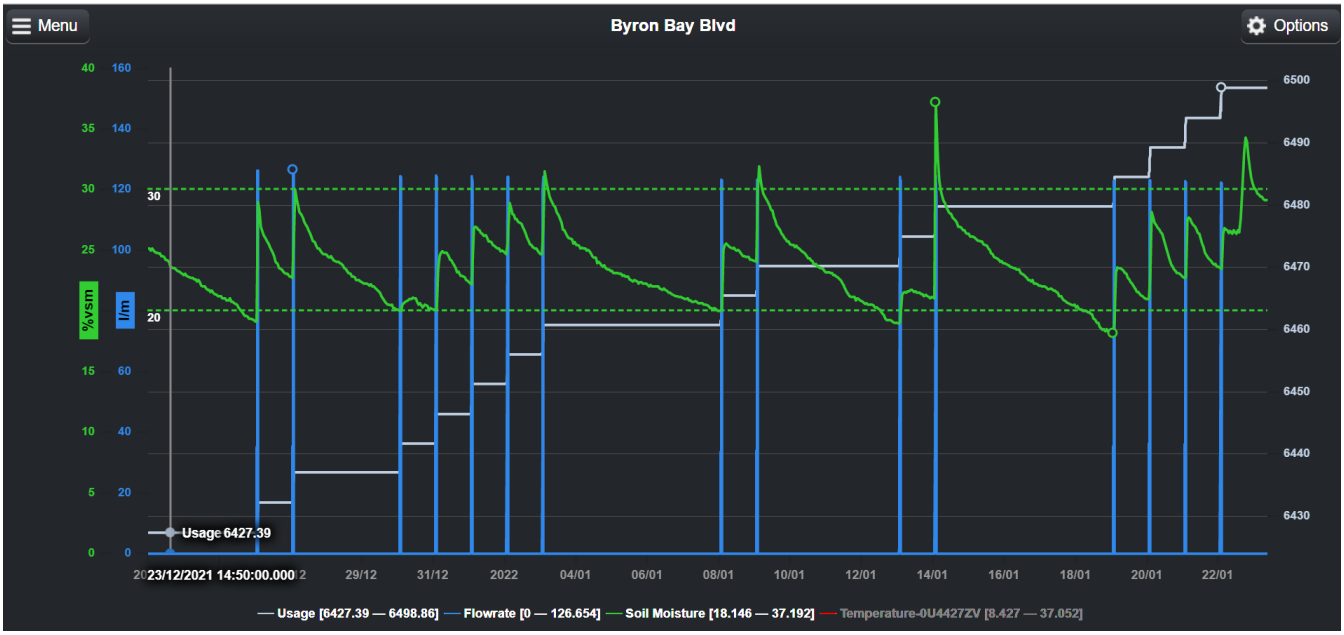
Note also there is also a fall-back alarm for a low soil moisture level to protect plant health against hardware fault or water supply issues that may have been overlooked from a zero-flow alarm, or low flow condition.

Once reaching the high moisture threshold (30%vmc), programs are disabled as indicated, and will not be re-enabled until breaching the low threshold (20%vmc).



Below are the results from the previous month.

Soil Moisture in Green, irrigation events in Blue. Dotted green lines are Enable/Disable thresholds.

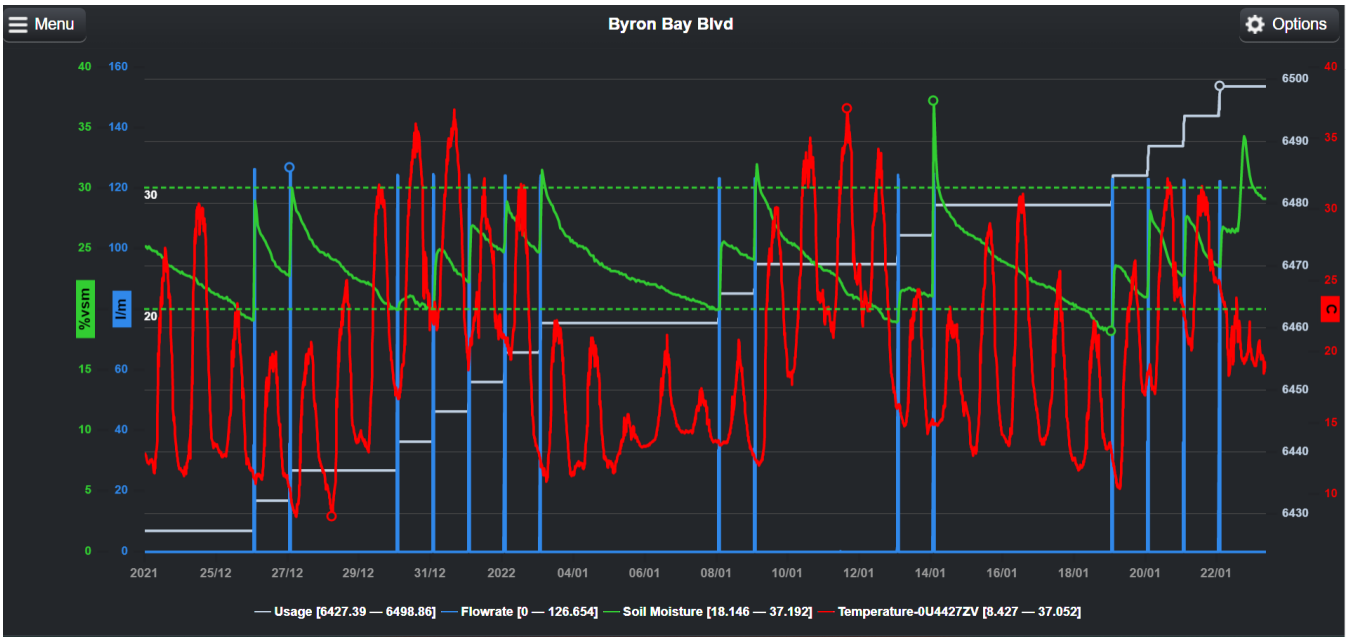



Now to show a correlation with actual air temperatures.

Temperature data from a neighbouring weather station (20Km away) has been overlayed in red.

You can see that when the daily temperature rose, the irrigation (in blue) was required nightly to keep moisture levels at the status quo, and when daily temperatures dropped to below 21C, soil moisture drops slowed, nightly irrigation was not required.

(Weather station located 25km away in Adelaide Hills so Nemos site temperatures would typically be 3 to 4C higher than those displayed)



## Easy to Follow wiring Schematics.

All required connectors supplied with easy-to-follow instructions.

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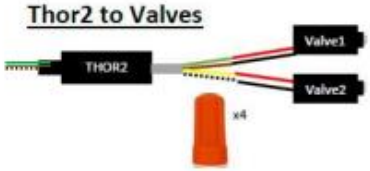
### Nemos N200+WMSi Wiring

**Do all wiring before connecting the Nemos main cable to the Nemos.**
**Strictly** follow wiring connections including recommended connectors (supplied)

**Step1 Wire Thor to DC Latching Solenoid Coils**

- Distances above 20m-100m use 1.5mm2
- If retrofitting, remove any Scotchlok connectors from the wire path.
- Always strip & pre-twist cables before putting supplied gel filled wire nuts.


**Thor2 to Valves**

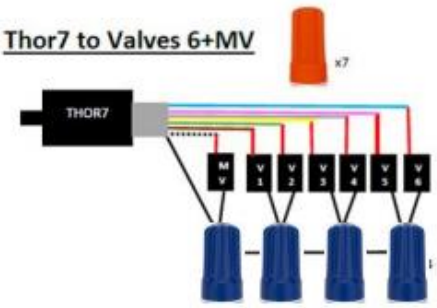



| Thor2 | Valves 12vDC |
|---|---|
| Green | V1 Red+ |
| Brown | V1 Black- |
| Yellow | V2 Red+ |
| White | V2 Black- |

**Special Configuration**
Where the Nemos/Thor2 has been configured for 1 station + Master valve

| Thor2 | Valves DC |
|---|---|
| Green | MV Red+ |
| Brown | MV Black- |
| Yellow | V1 Red+ |
| White | V1 Black- |

**Thor7 to Valves 6+MV**




| Thor7 | Valves 12vDC |
|---|---|
| White | MV Red+ |
| Brown | V1 Red+ |
| Green | V2 Red+ |
| Yellow | V3 Red+ |
| Grey | V4 Red+ |
| Pink | V5 Red+ |
| Blue | V6 Red+ |
| Black | Common GND |

**Special Configuration**
Where the Nemos/Thor7 has been configured for 7 stations ***no*** Master valve

| Thor7 | Valves 12vDC |
|---|---|
| White | V1 Red+ |
| Brown | V2 Red+ |
| Green | V3 Red+ |
| Yellow | V4 Red+ |
| Grey | V5 Red+ |
| Pink | V6 Red+ |
| Blue | V7 Red+ |
| Black | Common GND |

Protect joints with tape.

85 Vicks Road IRONBANK SA 5153 Ph 0438 336148 Email geoff@wateresource.com.au
Web www.wateresource.com.au

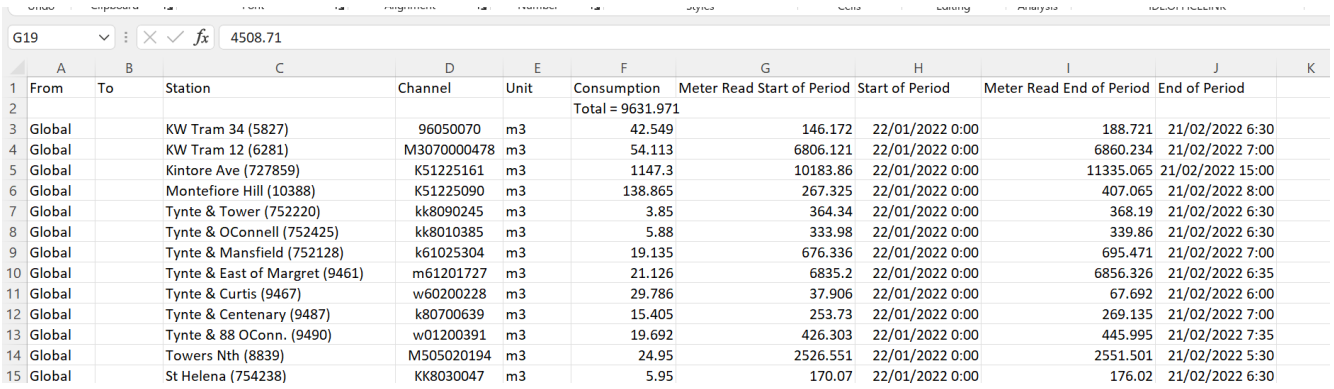
# Automatically emailed Usage Reports Daily/Weekly/Monthly to multiple email addresses in both pdf and csv.

CITY OF ADELAIDE

## Report Battery Nemos Irrigation Sites (Monthly) from 22/01/2022 to 21/02/2022

0

| | Station | Channel | Unit | Consumption | Meter Read Start of Period | Start of Period | Meter Read End of Period | End of Period |
|---|---|---|---|---|---|---|---|---|
| | | | | **Total = 9631.971** | | | | |
| **Global** | KW Tram 34 (5827) | 96050070 | m3 | 42.549 | 146.172 | 22/01/2022 00:00:00 | 188.721 | 21/02/2022 06:30:02 |
| **Global** | KW Tram 12 (6281) | M3070000478 | m3 | 54.113 | 6806.121 | 22/01/2022 00:00:00 | 6860.234 | 21/02/2022 07:00:02 |
| **Global** | Kintore Ave (727859) | K51225161 | m3 | 1147.3 | 10183.86 | 22/01/2022 00:00:00 | 11335.065 | 21/02/2022 15:00:00 |
| **Global** | Montefiore Hill (10388) | K51225090 | m3 | 138.865 | 267.325 | 22/01/2022 00:00:00 | 407.065 | 21/02/2022 08:00:00 |
| **Global** | Tynte & Tower (752220) | kk8090245 | m3 | 3.85 | 364.34 | 22/01/2022 00:00:00 | 368.19 | 21/02/2022 06:30:02 |
| **Global** | Tynte & OConnell (752425) | kk8010385 | m3 | 5.88 | 333.98 | 22/01/2022 00:00:00 | 339.86 | 21/02/2022 06:30:02 |
| **Global** | Tynte & Mansfield (752128) | k61025304 | m3 | 19.135 | 676.336 | 22/01/2022 00:00:00 | 695.471 | 21/02/2022 07:00:02 |
| **Global** | Tynte & East of Margret (9461) | m61201727 | m3 | 21.126 | 6835.2 | 22/01/2022 00:00:00 | 6856.326 | 21/02/2022 06:35:00 |
| **Global** | Tynte & Curtis (9467) | w60200228 | m3 | 29.786 | 37.906 | 22/01/2022 00:00:00 | 67.692 | 21/02/2022 06:00:02 |
| **Global** | Tynte & Centenary (9487) | k80700639 | m3 | 15.405 | 253.73 | 22/01/2022 00:00:00 | 269.135 | 21/02/2022 07:00:02 |
| **Global** | Tynte & 88 OConn. (9490) | w01200391 | m3 | 19.692 | 426.303 | 22/01/2022 00:00:00 | 445.995 | 21/02/2022 07:35:00 |
| **Global** | Towers Nth (8839) | M505020194 | m3 | 24.95 | 2526.551 | 22/01/2022 00:00:00 | 2551.501 | 21/02/2022 05:30:00 |
| **Global** | St Helena (754238) | KK8030047 | m3 | 5.95 | 170.07 | 22/01/2022 00:00:00 | 176.02 | 21/02/2022 06:30:02 |



G19 | fx 4508.71

| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | From | To | Station | Channel | Unit | Consumption | Meter Read Start of Period | Start of Period | Meter Read End of Period | End of Period | |
| 2 | | | | | | Total = 9631.971 | | | | | |
| 3 | Global | | KW Tram 34 (5827) | 96050070 | m3 | 42.549 | 146.172 | 22/01/2022 0:00 | 188.721 | 21/02/2022 6:30 | |
| 4 | Global | | KW Tram 12 (6281) | M3070000478 | m3 | 54.113 | 6806.121 | 22/01/2022 0:00 | 6860.234 | 21/02/2022 7:00 | |
| 5 | Global | | Kintore Ave (727859) | K51225161 | m3 | 1147.3 | 10183.86 | 22/01/2022 0:00 | 11335.065 | 21/02/2022 15:00 | |
| 6 | Global | | Montefiore Hill (10388) | K51225090 | m3 | 138.865 | 267.325 | 22/01/2022 0:00 | 407.065 | 21/02/2022 8:00 | |
| 7 | Global | | Tynte & Tower (752220) | kk8090245 | m3 | 3.85 | 364.34 | 22/01/2022 0:00 | 368.19 | 21/02/2022 6:30 | |
| 8 | Global | | Tynte & OConnell (752425) | kk8010385 | m3 | 5.88 | 333.98 | 22/01/2022 0:00 | 339.86 | 21/02/2022 6:30 | |
| 9 | Global | | Tynte & Mansfield (752128) | k61025304 | m3 | 19.135 | 676.336 | 22/01/2022 0:00 | 695.471 | 21/02/2022 7:00 | |
| 10 | Global | | Tynte & East of Margret (9461) | m61201727 | m3 | 21.126 | 6835.2 | 22/01/2022 0:00 | 6856.326 | 21/02/2022 6:35 | |
| 11 | Global | | Tynte & Curtis (9467) | w60200228 | m3 | 29.786 | 37.906 | 22/01/2022 0:00 | 67.692 | 21/02/2022 6:00 | |
| 12 | Global | | Tynte & Centenary (9487) | k80700639 | m3 | 15.405 | 253.73 | 22/01/2022 0:00 | 269.135 | 21/02/2022 7:00 | |
| 13 | Global | | Tynte & 88 OConn. (9490) | w01200391 | m3 | 19.692 | 426.303 | 22/01/2022 0:00 | 445.995 | 21/02/2022 7:35 | |
| 14 | Global | | Towers Nth (8839) | M505020194 | m3 | 24.95 | 2526.551 | 22/01/2022 0:00 | 2551.501 | 21/02/2022 5:30 | |
| 15 | Global | | St Helena (754238) | KK8030047 | m3 | 5.95 | 170.07 | 22/01/2022 0:00 | 176.02 | 21/02/2022 6:30 | |

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# Weekly Usage Checks to keep on top of off-season leaks.

City of West Torrens
Between the City and the Sea

Report Weekly Usage and Meter Reads - Streetscape from 02/05/2022 to 08/05/2022

0

| | Station | Channel | Unit | Period Usage (kL) | Meter Read Start of Period | Min date | Meter Read End of Period | Max date |
|---|---|---|---|---|---|---|---|---|
| | | | | Total = 36.25 | | | | |
| Global | Wainhouse West | Usage | m3 | 3.974 | 162.671 | 02/05/2022 00:00:00 | 166.758 | 05/05/2022 02:05:00 |
| Global | Wainhouse East | Usage | m3 | 2.57 | 139.83 | 02/05/2022 00:00:00 | 142.487 | 04/05/2022 01:10:00 |
| Global | Sherwin | Usage | m3 | 0 | 0 (= max) | 02/05/2022 00:00:00 | 0 (= min) | 02/05/2022 00:00:00 |
| Global | Orwin | K40401343 | m3 | 0 | 0 (= max) | 02/05/2022 00:00:00 | 0 (= min) | 02/05/2022 00:00:00 |
| Global | Marleston Ave | L00725094 | m3 | 17.02 | 417.08 | 02/05/2022 00:00:00 | 434.1 | 08/05/2022 10:30:00 |
| Global | Henning Court | L00625154 | m3 | 0 | 36.25 (= max) | 02/05/2022 00:00:00 | 36.25 (= min) | 02/05/2022 00:00:00 |
| Global | Eltham | Usage | m3 | 0 | 0 (= max) | 02/05/2022 00:00:00 | 0 (= min) | 02/05/2022 00:00:00 |
| Global | Atlantic Reserve | M50503359 | m3 | 0.006 | 2.946 | 02/05/2022 00:00:00 | 2.952 | 07/05/2022 18:25:00 |
| Global | West Beach Road | WBR Usage | m3 | 8.21 | 23044.105 | 02/05/2022 00:00:00 | 23052.315 | 04/05/2022 11:50:00 |
| Global | Airport Medium | Airport Usage | m3 | 3.285 | 5397.465 | 02/05/2022 00:00:00 | 5400.75 | 05/05/2022 14:00:00 |
| Global | Diosma | Usage | m3 | 1.185 | 4118.05 | 02/05/2022 00:00:00 | 4119.235 | 03/05/2022 23:00:00 |

# What your peers think of the Wateresource Nemos N200+WMSi?

(Here's a couple. After all, they helped build it!)

| | |
|---|---|
| Adam Gunn, City of Adelaide Technical Officer Irrigation & Horticulture | 0438 867681 |
| Scott Murray, City of Onkaparinga Operational Sustainability Officer | 0416254952 |
| Dave Ward, City of West Torrens, Work Group Leader, Turf & Irrigation | 0418 827046 |
| Simon Ruminski, City of Mitcham, Team Leader, Parks & Sportsground Maint. | 0488 101846 |
| Nick Pettigrew, City of Gawler, Supervisor Horticulture, Parks & Ovals | 0439 626157 |

Cheers

Geoff Zerna

Wateresource

0438 336148