HydroMet



User Manual

HydroTab

KISTERS
Empowering decisions of tomorrow

09-2026 – 01-03-004

Table of Contents

I Disclaimer 4

II Scope of Delivery 5

III Safety Instructions 6

Part I Introduction 7

Part II Configuration 8

2.1 Bluetooth Device Connection ... 8

Part III Operation 13

3.1 Opening the HydroTab App ... 13

3.2 Operator Options / Settings ... 15

3.3 Fan Equations / Selection ... 17

3.4 Measure Only ... 18

3.5 Gauging ... 18

3.5.1 Creating a Gauging Site ... 20

3.5.2 Site Information ... 21

3.5.3 Deleting and Renaming Sites ... 22

3.5.4 Creating a new Gauging at a Site ... 23

3.5.5 Gauging Information ... 24

3.5.6 Gauging Summary ... 26

3.5.7 Deleting Gauging Data ... 26

3.5.8 Viewing and Editing Gauging History ... 27

3.5.9 Emailing Gauging Data ... 27

Part IV Maintenance 29

4.1 Connector / Socket Care ... 29

4.2 Battery Care ... 29

4.3 Touchscreen Care ... 29

4.4 Software Update ... 30

Part V Troubleshooting 31

Part VI Repair 34

Part VII Technical Data 35

7.1 Security / Warranty ... 35

Part VIII Obligations of the Operator and Disposal 36

8.1 Obligations of the Operator ... 36

8.2 Dismantling / Disposal ... 36

Part IX Appendices 38

9.1 Appendix A Samsung Galaxy Tab Active – Actual Size ... 39

9.2 Appendix B Vertical Weighting Factors ... 40

9.3 Appendix C Discharge Calculation Methods – Mean, Mid, CNA Format ... 41

© 2026 | KISTERS

9.4 Appendix D XML Output File Formats – ISO748-Mean, ISO748-Mid, CNA Format 46

© 2026 | KISTERS

I Disclaimer

The information provided in this manual was deemed accurate as of the publication date. However, updates to this information may have occurred.

This manual does not include all of the details of design, production, or variation of the equipment nor does it cover every possible situation which may arise during installation, operation or maintenance. KISTERS shall not be liable for any incidental, indirect, special or consequential damages whatsoever arising out of or related to this documentation and the information contained in it, even if KISTERS has been advised of the possibility of such damages.

Any errors found in any KISTERS product should be reported to KISTERS where every effort will be made to quickly resolve the problem.

Copyright Notice: No parts of this work may be reproduced in any form or by any means without the written permission of the publisher. KISTERS waives copyright for users to print out parts of the documentation in hard copy for their own use only.

Trademark Notice: KISTERS products and services referred to in this document are trademarks or registered trademarks of KISTERS. Other product names used may or may not be the trademarks of their respective owners.

© 2026 | KISTERS. Any rights not expressly granted herein are reserved.

This document is public.

II Scope of Delivery

- Standard: tablet and software (optional: software without tablet)
- Not included: current meter counter (e.g. CMCbt)

III Safety Instructions

-  Read the user manual including all operating instructions prior to installing, connecting and powering up the KISTERS HydroTab. The manual provides information on how to operate the product. The manual is intended to be used by qualified personnel, i.e. personnel that have been adequately trained, are sufficiently familiar with installation, mounting, wiring, powering up and operation of the product.
- Keep the user manual on hand for later reference!
- If you encounter problems understanding the information in the manual (or part thereof), please consult the manufacturer or its appointed reseller for further support.
- KISTERS HydroTab is intended to be used in hydrometeorological or environmental monitoring applications.
- Before starting to work, you have to check the functioning and integrity of the system.
  - Check for visible defects on the HydroTab, this may or may not include any or all of the following: mounting facilities, connectors and connections, mechanical parts, internal or external communication devices, power supplies or power supply lines, etc.
  - If defects are identified that could compromise operational safety, work must be stopped immediately. This applies to defects detected both before work begins and during operation.
- Do not use the KISTERS HydroTab in areas where there is a danger of explosion.
- The present user manual specifies environmental/climatic operating conditions as well as mechanical and electrical conditions. Installation, wiring, powering up and operating the KISTERS HydroTab must strictly comply with these specifications.
- Perform maintenance only when tools or machinery are not in operation.
- If guards are removed to perform maintenance, replace them immediately after servicing.
- Never make any electrical or mechanical diagnostics, inspections or repairs under any circumstances. Return the product to the manufacturer's named repair centre. You can find information on how to return items for repair in the relevant section of the KISTERS website.



Disposal instructions: After taking the KISTERS HydroTab out of service, it must be disposed of in compliance with local waste and environmental regulations. The KISTERS HydroTab is never to be disposed of in household waste!



Inputs and outputs of the device are protected against electric discharges and surges (so-called ESD). Do not touch any part of the electronic components! If you need to touch any part, please discharge yourself, i.e. by touching grounded metal parts.

1 Introduction

Thank you for choosing our product. We hope you will enjoy using the device.

KISTERS manufactures, sells, installs and operates quality instrumentation, data loggers and communication technology. Products are designed with passion for environmental monitoring and with a deep understanding of the quality, accuracy and robustness needed to fulfil the requirements of measurement practitioners in the field.

The present User Manual will help you understand, install and deploy the device. If, however, you feel that a particular information is missing, incomplete or confusing, please do not hesitate to contact us for further support!

The stream gauging computer HydroTab is an assembly of HydroTab software and an Android tablet suitable for harsh and wet environments. It is used for direct water velocity measurements, or collecting, calculating, recording, displaying and emailing full river gauging data.

The Tablet communicates via Bluetooth to the KISTERS' CMCsp, PVD100, PVD200, MAG1 and CMCbt Current Meter Counters.

2 Configuration

This chapter contains the following subsection:

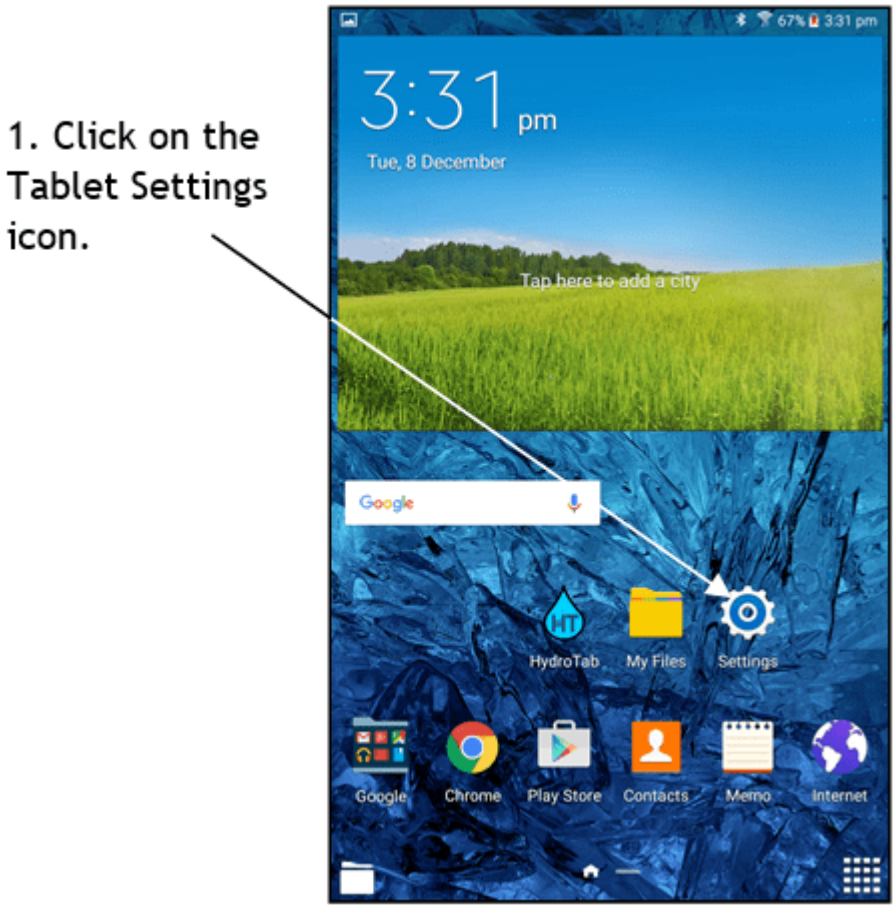
- Bluetooth Device Connection 8

2.1 Bluetooth Device Connection

When the tablet requires a Bluetooth connection with a Current Meter Counter, it will pop up a list of the devices found nearby – simply select the required device and operation will begin.

Note: The Bluetooth device should have been paired with the tablet in the Bluetooth Manager previously.

The pairing function can be started by going to the Tablet Settings as follows:



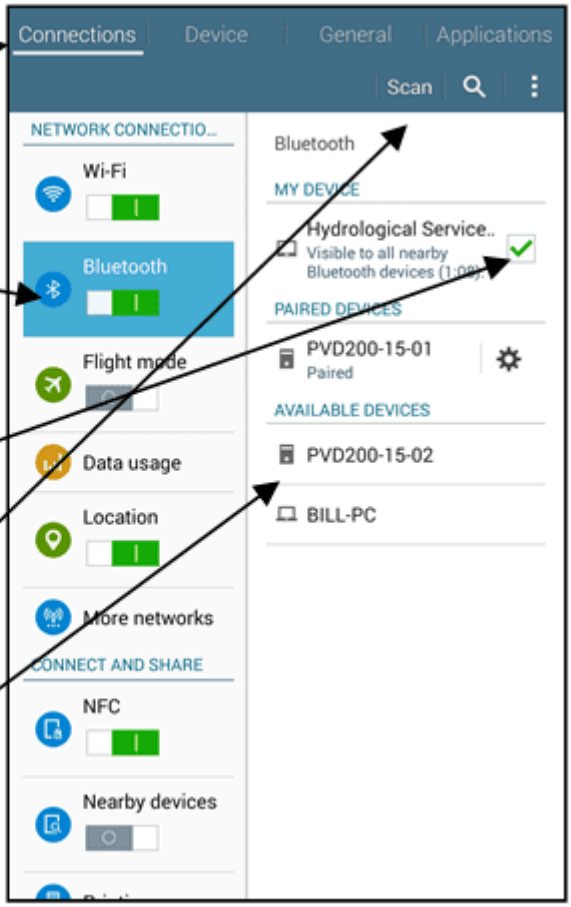
2. Click on Connections.

3. Click on Bluetooth.

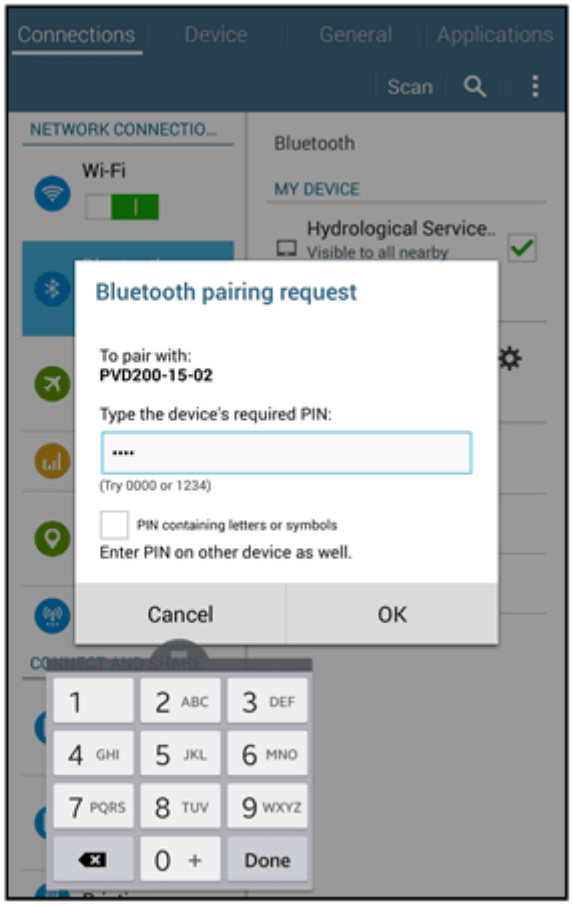
4. Check the box “to make visible to other devices”

5. Click on Scan.

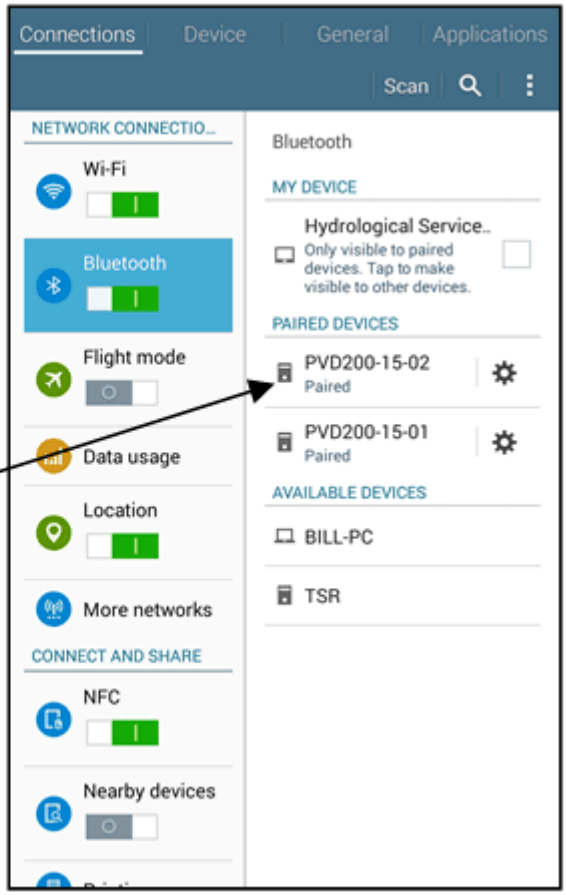
6. Select the device you wish to pair.



7. Enter the device PIN 1234 and click OK.



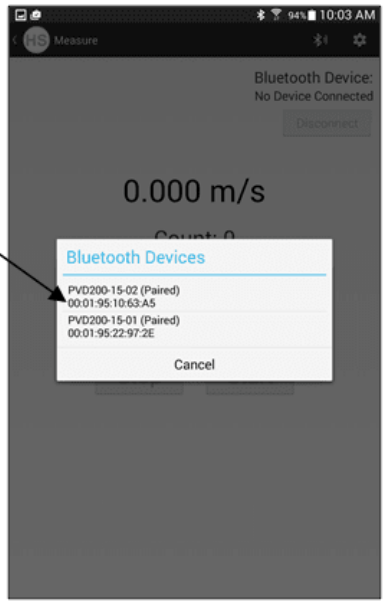
8. The new device will appear in the "Paired" list.



Once the desired device has been paired with the tablet, the HydroTab application will display a list of available devices whenever a Bluetooth connection is required. Please be patient, as this may take up to 30 seconds. Select the required device to establish the connection.

Select the CMC Bluetooth device.

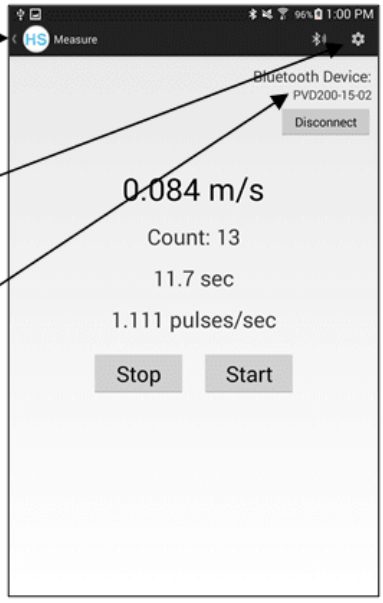
The blue Discovery LED on the device should stop flashing, and turn on steady.



Press here to return to previous dialog.

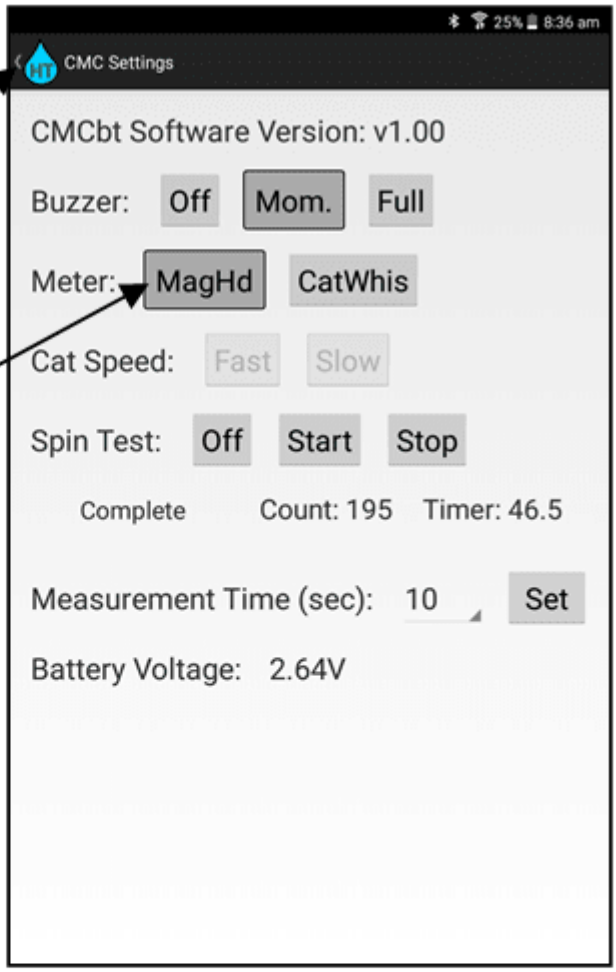
Select the CMC Settings (see dialog below)

Bluetooth device we are connected to (PVD200-15-02)



Press here to return to previous dialog.

CMC Settings in the device we are connected to.



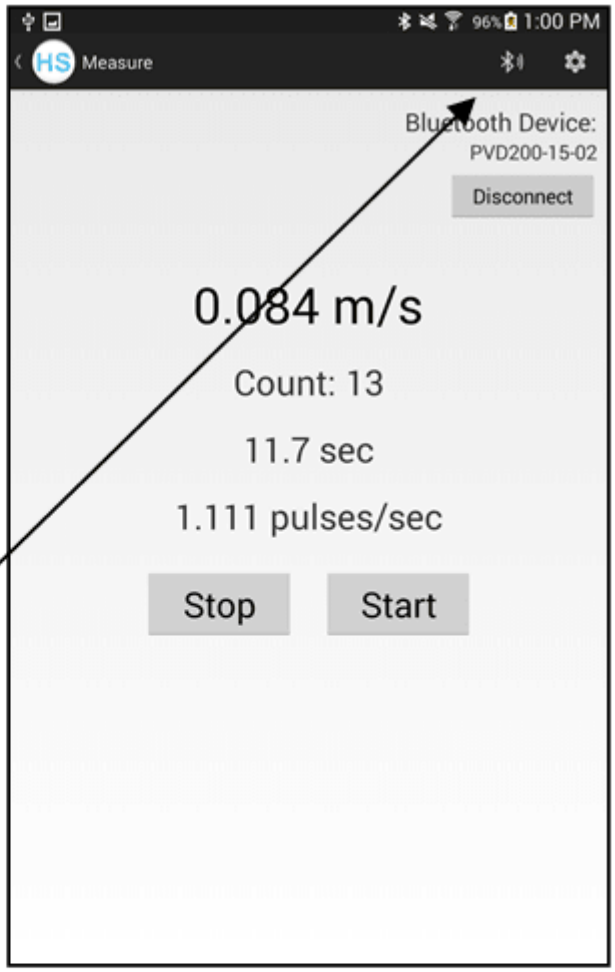
Note the options available for the CMCbt - S/W Rev, Buzzer setting, Meter type, Spin Test, Measurement Time and Battery Voltage.

Please Note: The layout and features on the CMC Setting screen will change depending on the Bluetooth device you are connected to, and the features available in that device.

Bluetooth Connection lost or no devices found

If the Bluetooth connection is lost during normal operation, the HydroTab will pop up a dialog and attempt to re-connect to the same device automatically.

If you cancel this cycle, you must press the Bluetooth icon to restart Bluetooth discovery.



***** NOTE *****

If Bluetooth devices are not found after say one minute, either power cycling the Tablet, or turning off then on the Bluetooth in the Tablet Settings menu may help.
Make sure the CMC Bluetooth device is on and the blue discovery LED is flashing.

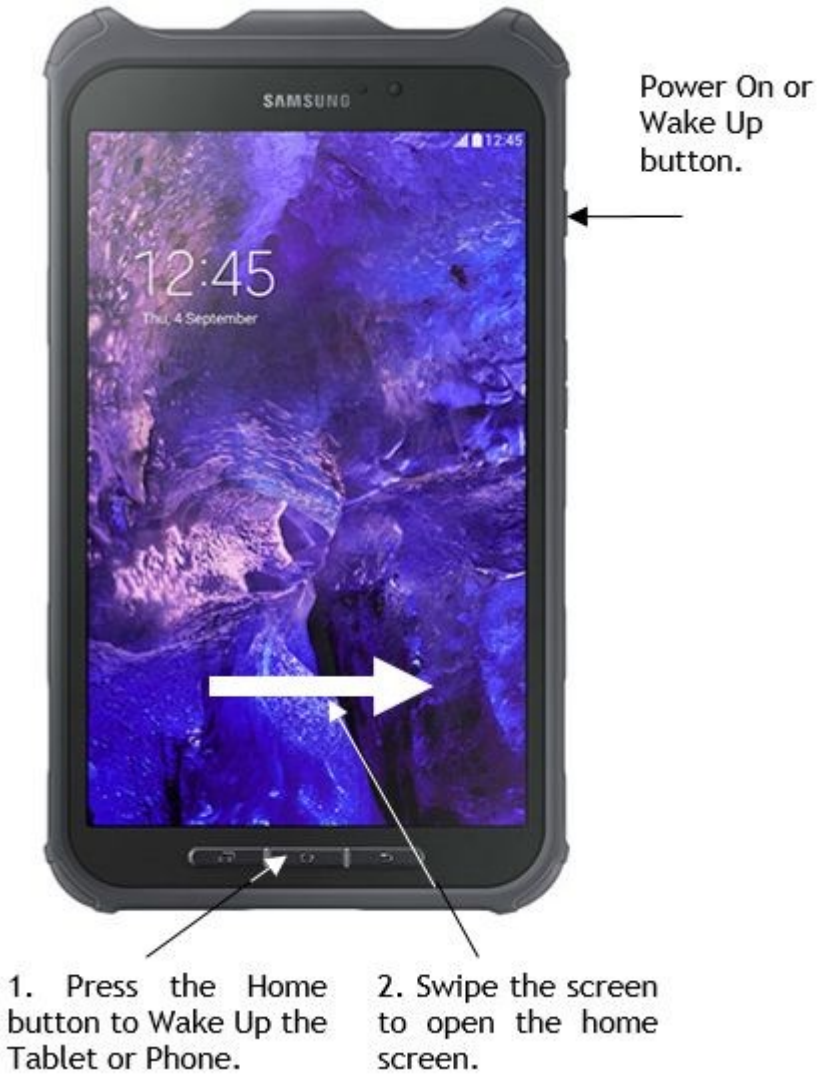
3 Operation

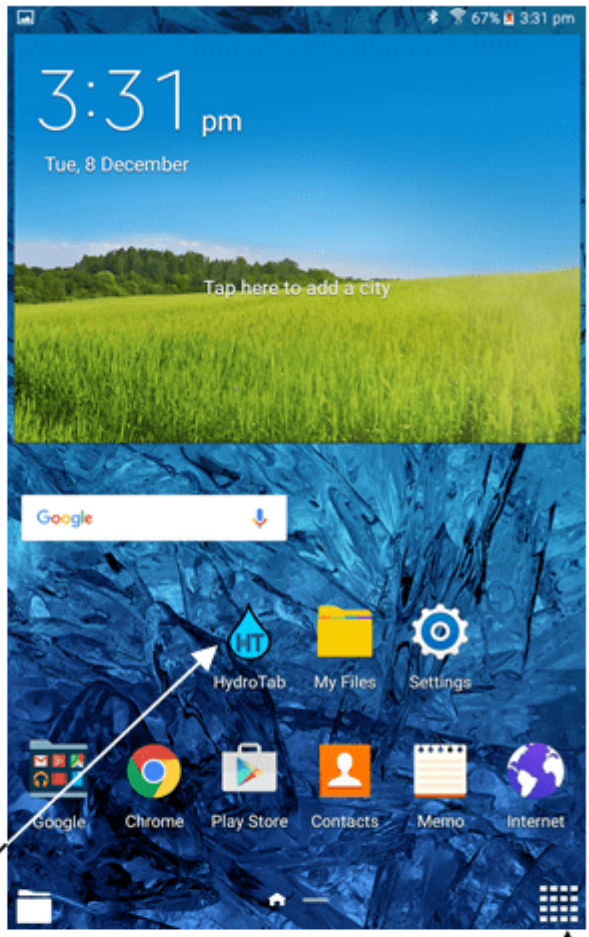
This chapter contains the following subsections:

- Opening the HydroTab App 13
- Operator Options / Settings 15
- Fan Equations / Selection 17
- Measure Only 18
- Gauging 18

3.1 Opening the HydroTab App

Once the Tablet is awake, the HydroTab Application is started by pressing the KISTERS icon in the home screen. The application operates in Portrait mode. In addition to the LCD being "sunlight readable", most screens have been created using black text on a white background, with a large text size to make it more easily readable when in the field.





3. Press the HT Icon to start the Application.

Press to show other Apps available on the Tablet.



Basic Tablet Functions.

To close an App on a Tablet, press the **RECENTS** button, and the active Apps are displayed – swipe the App upwards and it will be closed.

To change to another active App, press the **RECENTS** button and click on another active App.

To change to another App that is not active, press the **HOME** button, and select the App you wish to open.

3.2 Operator Options / Settings

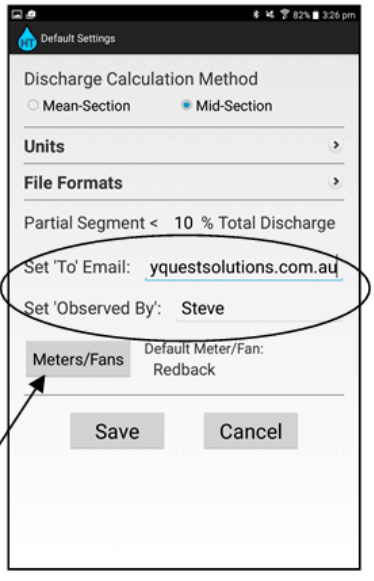


Click on the Options button

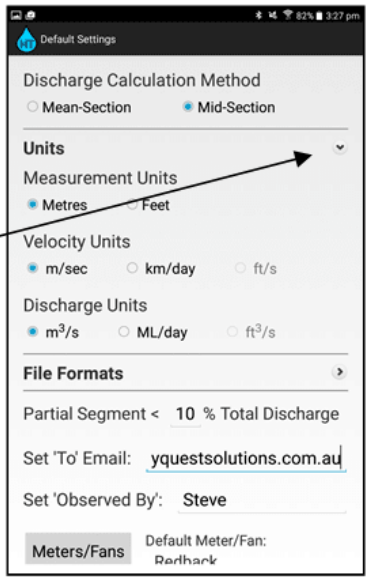
Set the required Discharge Calculation Method, Units and File Format.

The email address and "Observed By" operator will be auto filled into the forms - but the user will be given the choice to change these in the forms later.

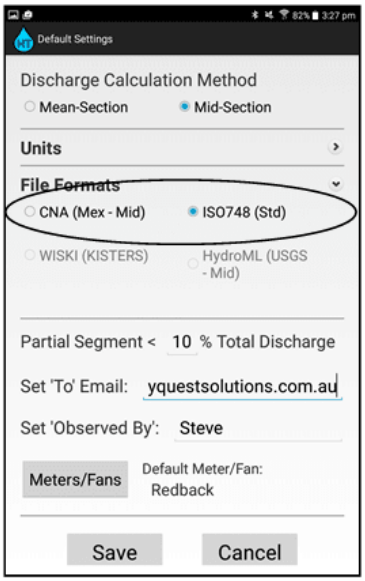
See the next section for setting the Fan equations.



Click on the arrow to expand and contract the "Units" section



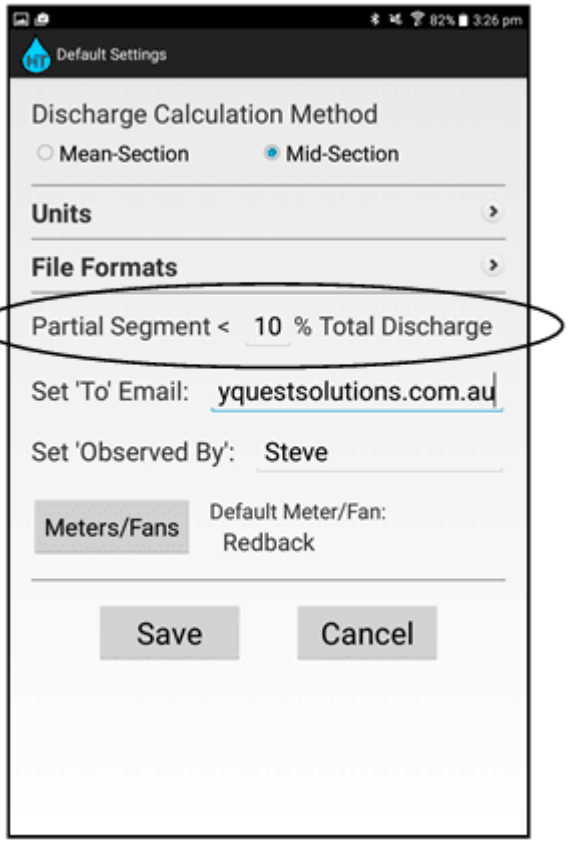
*** NOTE ***
At this time the only File Formats selectable are the CNA format for Mexico (similar to the Mid Section method) and the ISO748 format with Mid and Mean Section. (See Appendix C.)



Entering a value in the Partial Segment field, causes the HydroTab to check that the partial discharge in any one segment is less than the specified % of the Total Discharge.

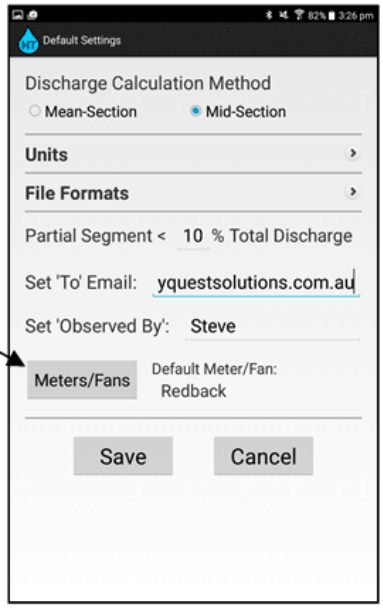
When a gauging is started, the operator may enter the Estimated Total Discharge (from known historical data), and the HydroTab will calculate the partial discharge after each vertical measurement, and alert the operator if this % is exceeded – otherwise the calculations are performed only when the gauging is complete. (See section Gauging Information 24)

This allows the operator to enter additional verticals, so the partial segment discharge meets these criteria.



3.3 Fan Equations / Selection

When in the Options menu, click on the Meters / Fans button.

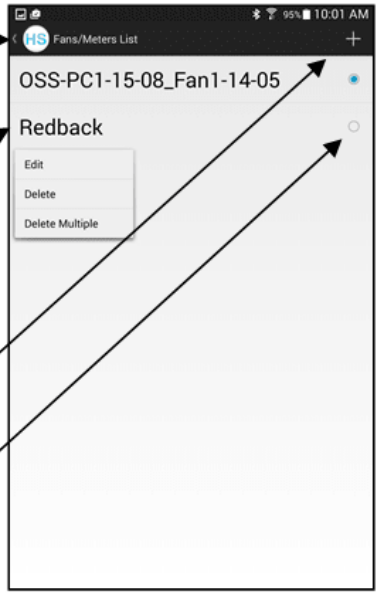


Press here to return to previous dialog.

Press and hold on the fan name to drop the list:
- Edit Fan
- Delete Fan
- Delete Multiple

Press on + to add a new Fan.

Touch a Fan to make it the new "Default" (or selected fan).

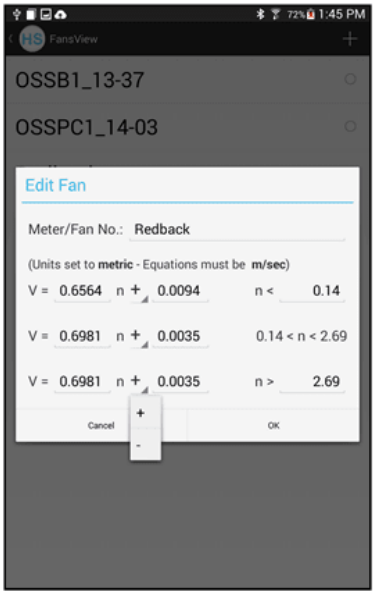


Adding a Fan:
Enter the fan no. (use the fan type and serial no.)
Enter the equations as shown on the fan calibration provided.



Editing a Fan:
Correct the name and or equations.

Note that the + / - is set with a drop list.

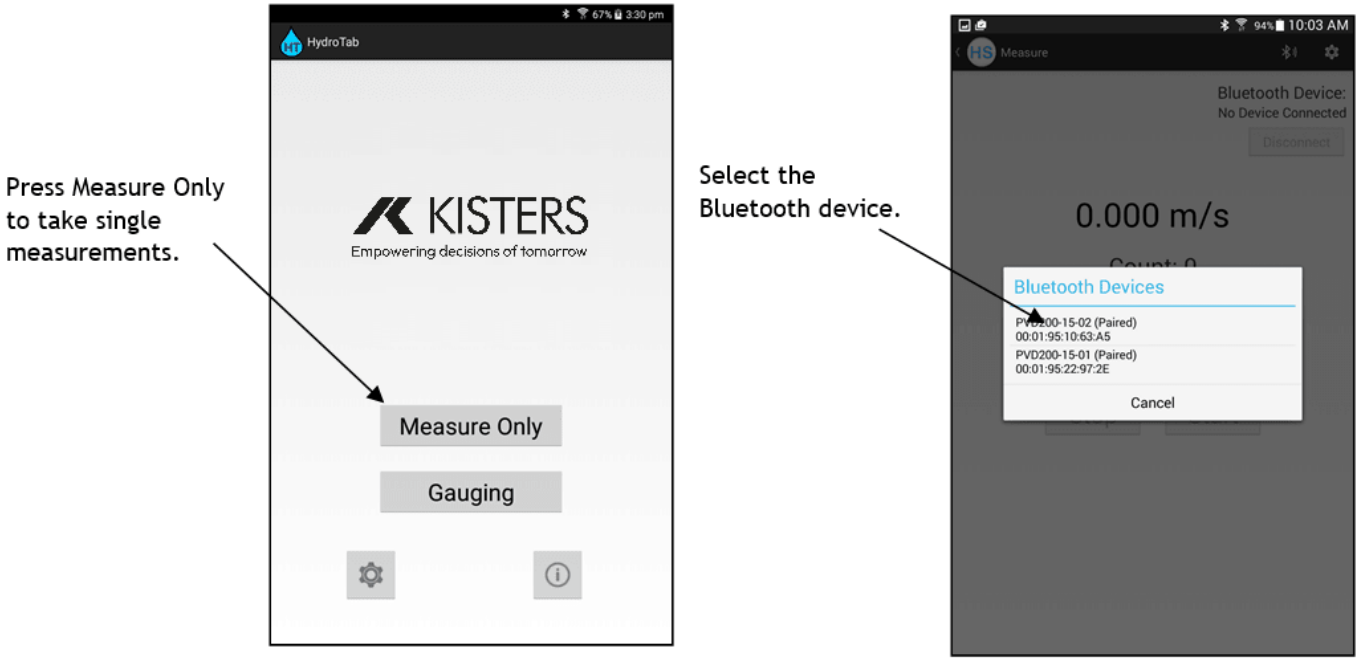


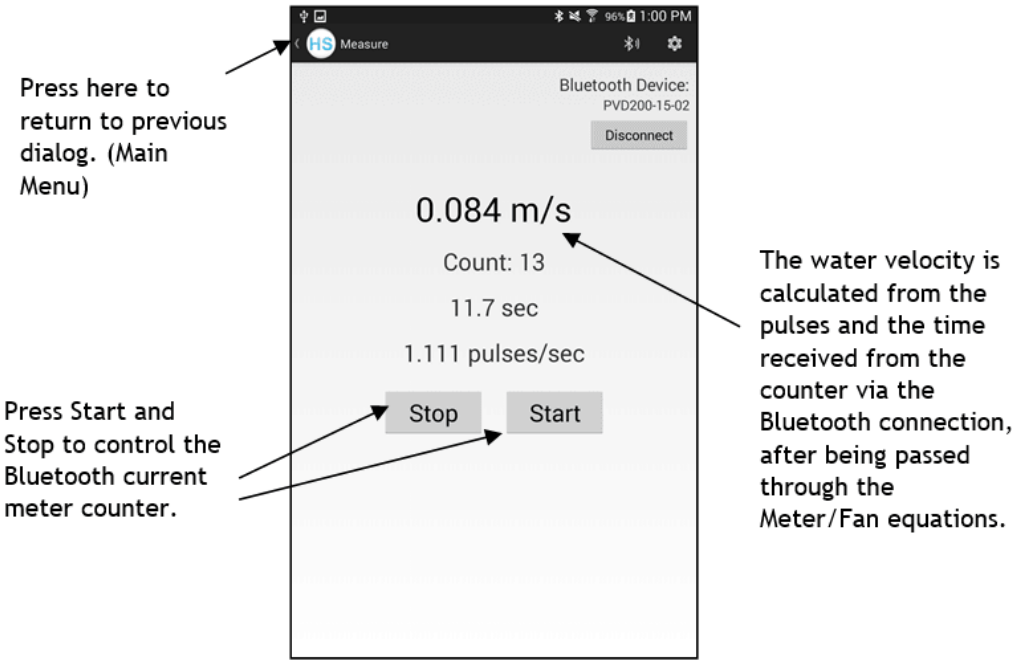
Some Fans have 1, 2 or 3 calibration equations:

3 Equations:	Enter all 3 equations and inequalities as shown above.
2 Equations:	Enter 1 of the equations twice. Assume equations are: V=0.6981n+0.0035 n>0.14 V=0.6564n+0.0094 n<0.14 Enter them as: V=0.6564n+0.0094 n<0.14 V=0.6981n+0.0035 0.14<n<0.15 V=0.6981n+0.0035 n>0.15 (make this inequality bigger than the first)
1 Equation:	Enter the same equation 3 times.

	The inequality doesn't matter, so just set it to n<1.00 n>2.00

3.4 Measure Only





3.5 Gauging

The gauging part of the Application provides a structure to manage the gauging data. Gauging sites are created, with information to define the site – such as site ID, location description, GPS co-ordinates, special notes, and a photograph. Multiple gaugings are then performed at each site over time, building up historical snapshots at that site.

Note:

It is up to the operator to create "Site Names" that reflect the exact location of the site. Some organisations use an ID number to identify the sites, some use the name descriptor and some use a combination of both. For example :

Site Name = `GeorgesRiver` or

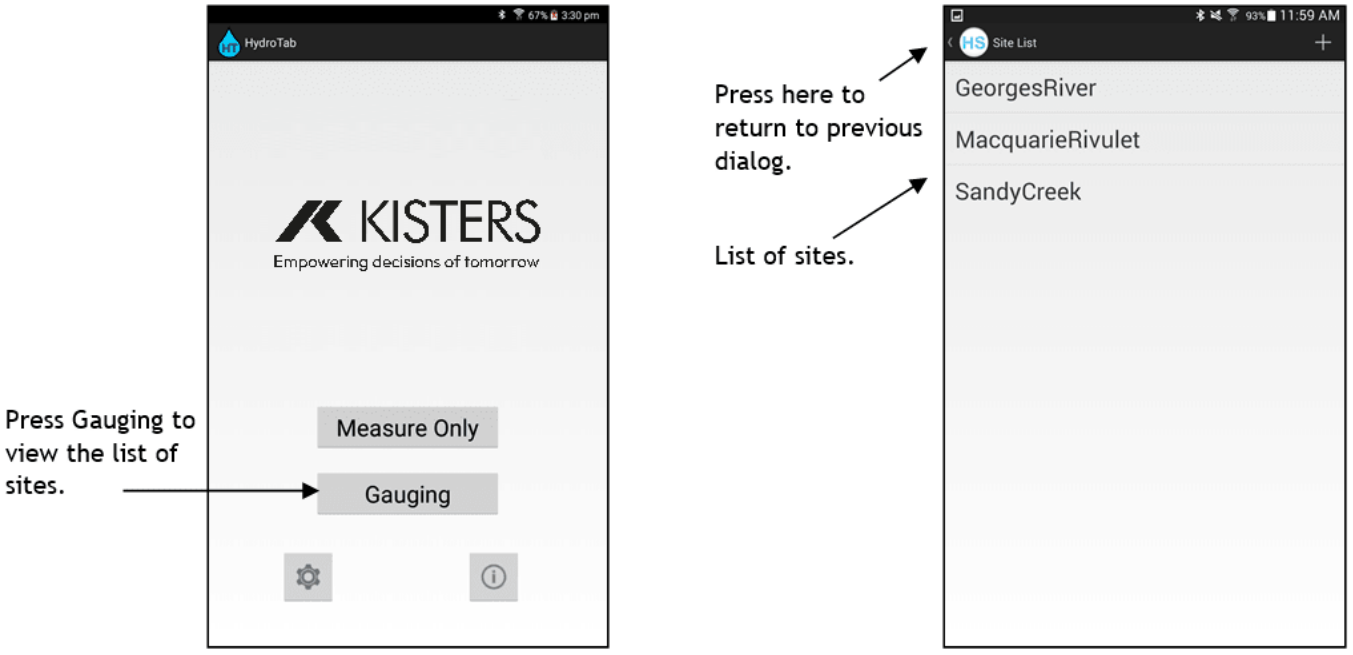
Site Name = `GeorgesRiv_PleasurePt` or

Site Name = `GeorgesRiver_12345` or

Site Name = `12345`

For example:

Site Names	Gauging history = SiteName+Date+Time
GeorgesRiver	GeorgesRiver_20140517_1115 GeorgesRiver_20140803_0912 GeorgesRiver_20141219_1402 GeorgesRiver_20150215_0845
SandyCreek	SandyCreek_20140417_1204 SandyCreek_20140603_1033 SandyCreek_20140928_0949
CooksRiver	CooksRiver_20140515_1003 CooksRiver_20140730_0755 CooksRiver_20141127_1139 CooksRiver_20150117_1332

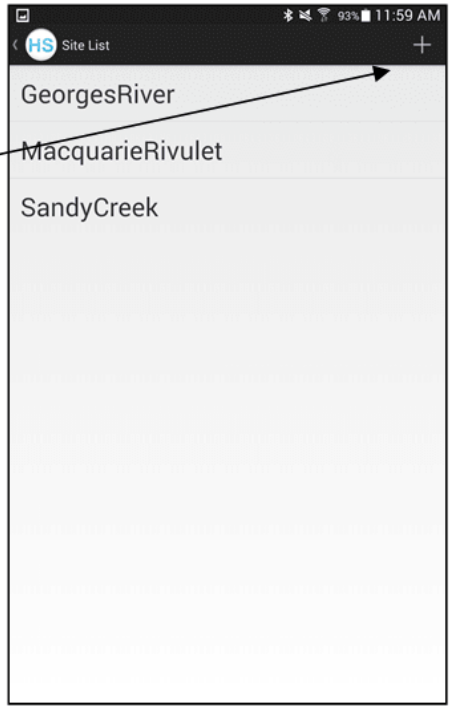


- Creating a Gauging Site 20
- Site Information 21
- Deleting and Renaming Sites 22
- Creating a new Gauging at a Site 23
- Gauging Information 24
- Gauging Summary 26

- Deleting Gauging Data 26
- Viewing and Editing Gauging History 27
- Emailing Gauging Data 27

3.5.1 Creating a Gauging Site

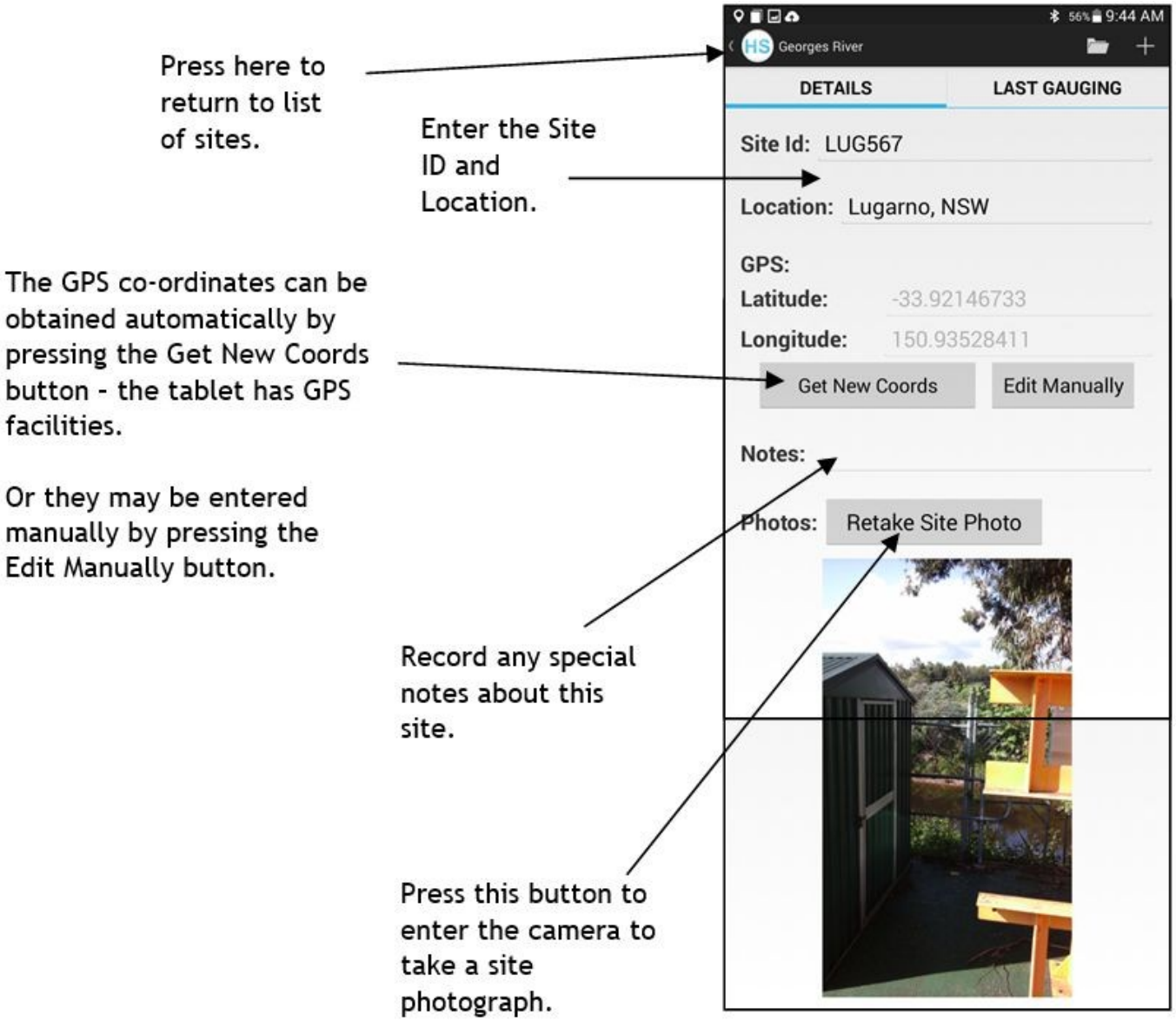
Press on + to create a new site.



Type in the site name and press Add.



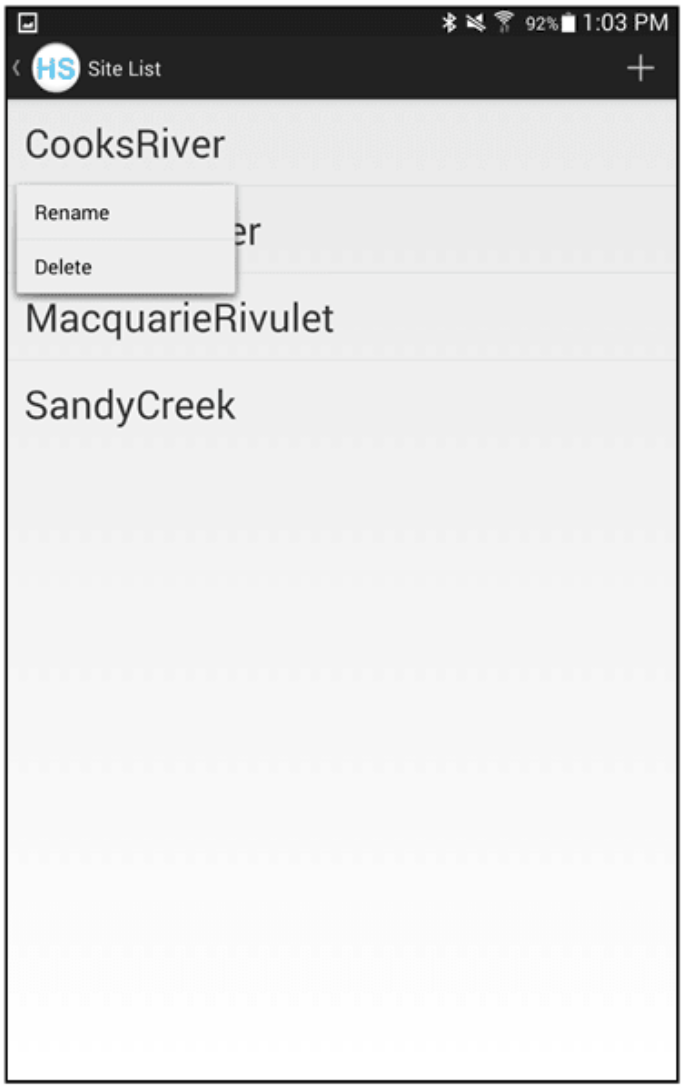
3.5.2 Site Information



Note: The GPS works best when outdoors. Please be patient, as this can sometimes take a few minutes.

3.5.3 Deleting and Renaming Sites

Press and hold on a site name - an option list will appear:
-Rename
-Delete

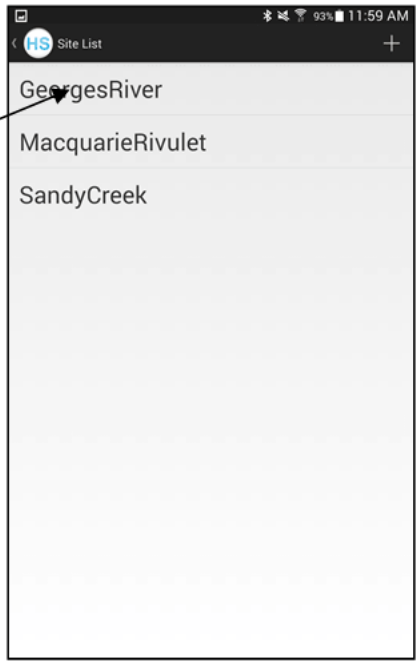


Note:

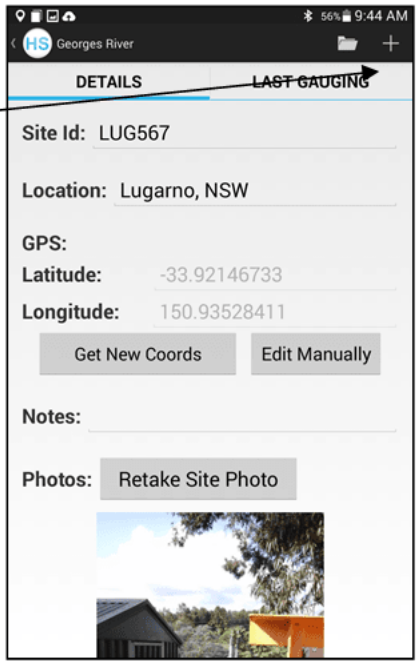
- If Delete is selected, a confirmation dialog will appear.
  All site history will also be deleted!
- If a site is renamed, then all site history files will also be renamed.

3.5.4 Creating a new Gauging at a Site

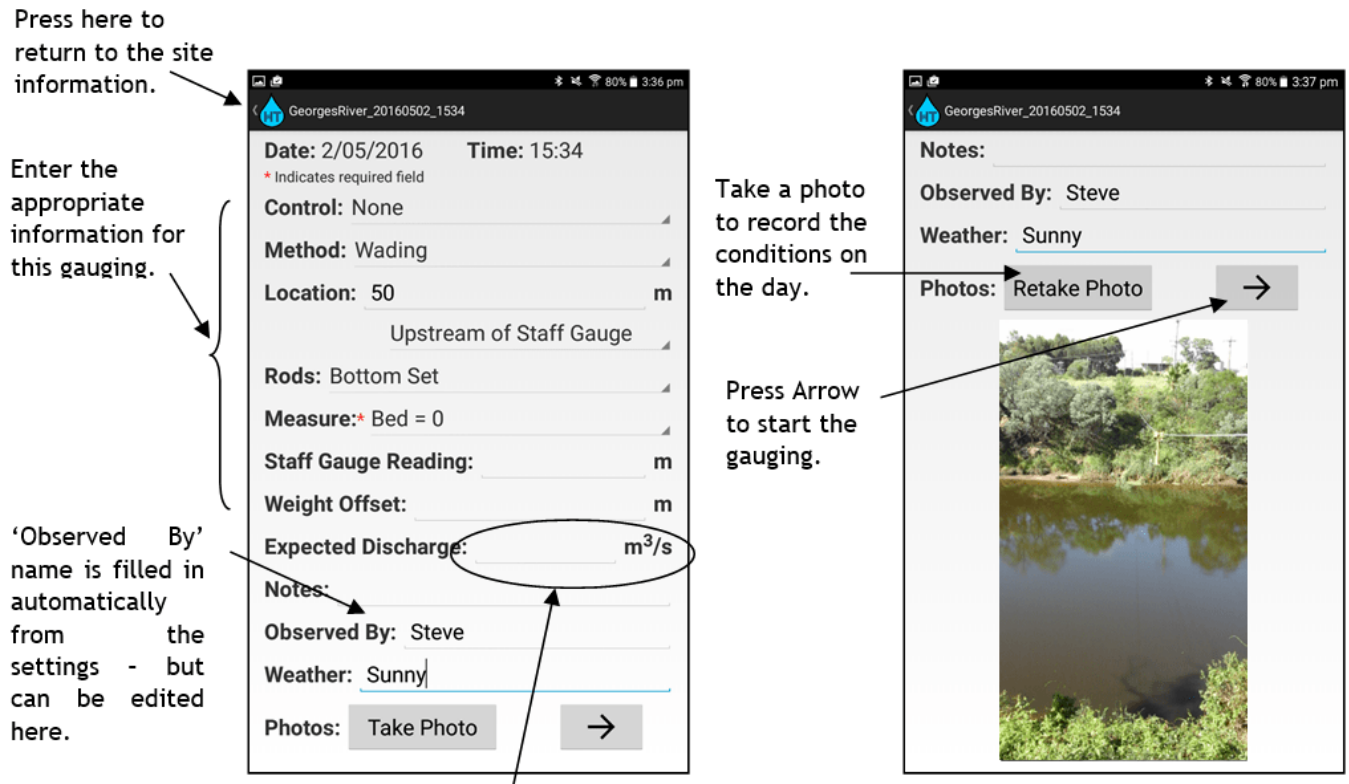
Press on the site name momentarily to select the site.



Press on the + to create a new gauging at the site.

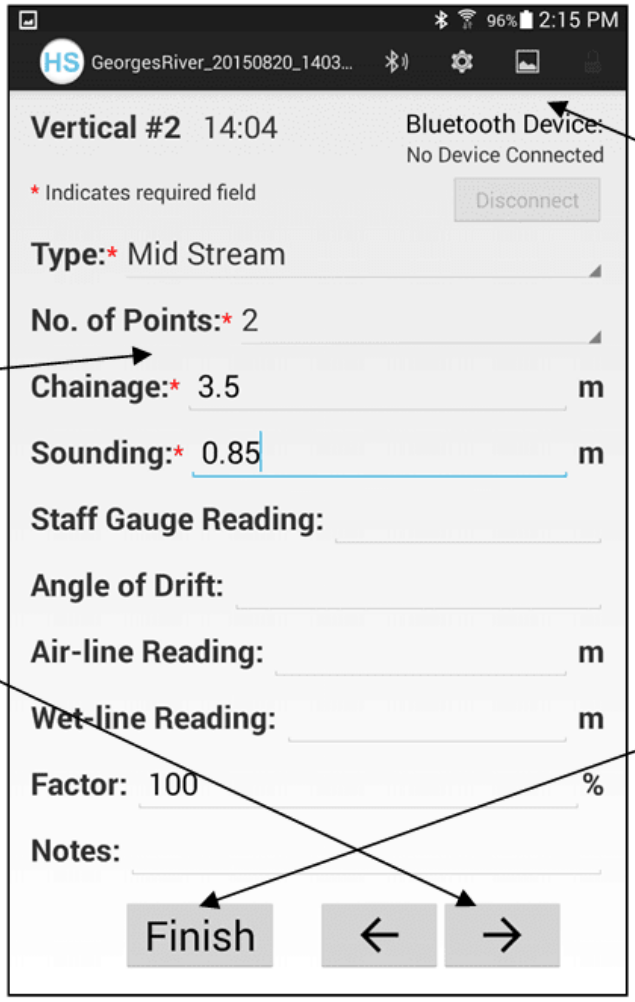


3.5.5 Gauging Information



***** NOTE *****

If the 'Expected Discharge' is entered here **AND** the 'Partial Segment < % Total Discharge' is entered as a Setting (in Section 3.1), then the discharge of each partial segment is checked after each vertical measurement is taken and an alert is given if the minimum % is exceeded. This allows the operator to add an additional vertical if required. If this field is left blank, the check is only performed at the end of the gauging.



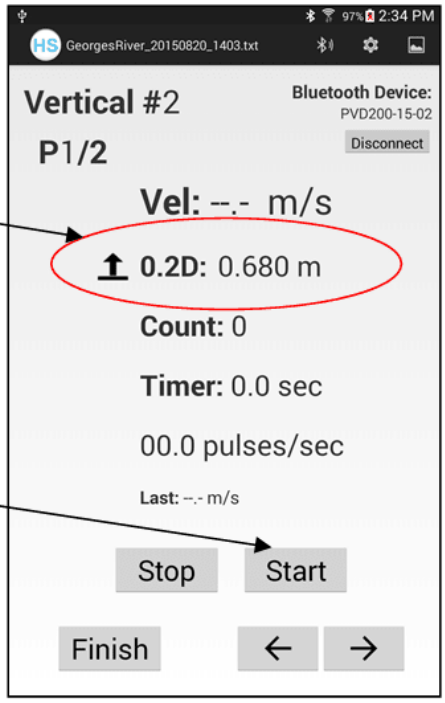
Press on the plot symbol to view the plot data so far.

Enter the appropriate information for each vertical.

Press on Next to start measurements at each point in the vertical.

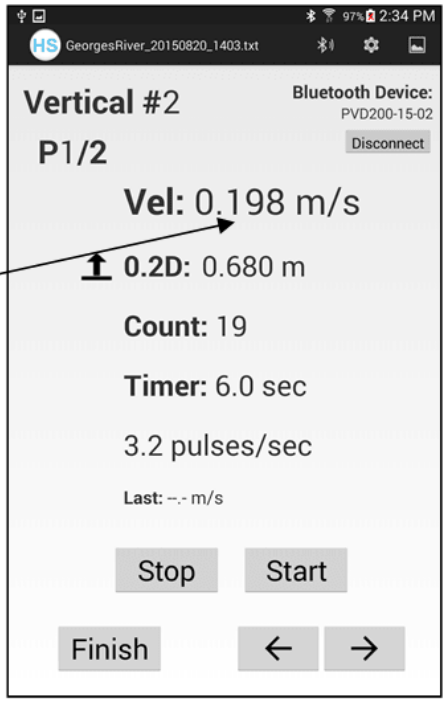
Press on Finish when all vertical measurements are complete.

1. Set the current meter to this depth, the symbol indicates it should be measured from the river bed up.



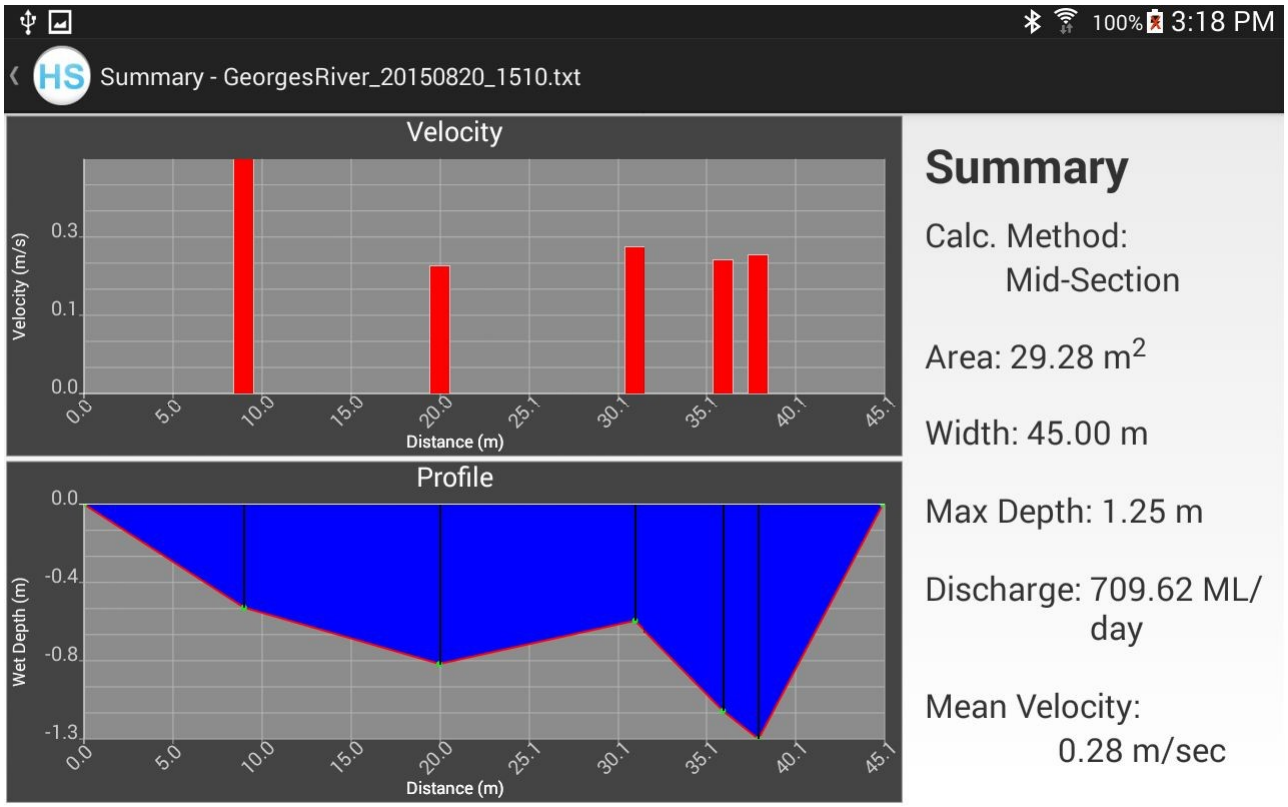
2. Press Start to begin a current meter measurement.

Water Velocity is displayed while measurement is in progress - and it will stop automatically at the time set in the CMC counter.

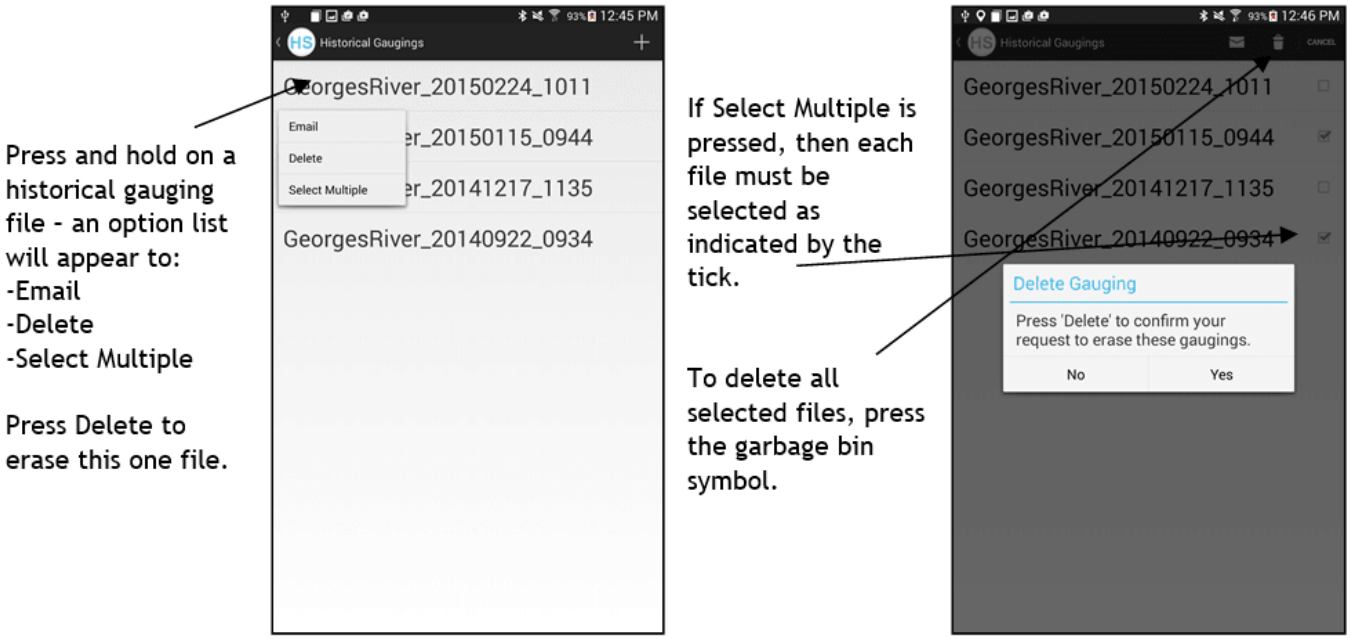


3.5.6 Gauging Summary

When a historical gauging is viewed, or gauging is complete, or if the plot icon is pressed – a summary of the gauging is displayed with a plot of the river profile and velocity data.

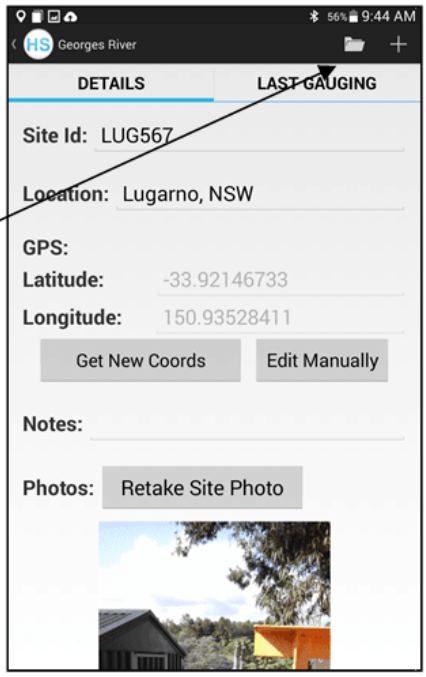


3.5.7 Deleting Gauging Data



3.5.8 Viewing and Editing Gauging History

When viewing the site information, press on the folder to see the list of historical gaugings.



Press on a filename momentarily to open the gauging data.

NOTE:
If the gauging is more than 1 day old, the operator will be prompted if they attempt to change the historical data.



3.5.9 Emailing Gauging Data

The Samsung Tab Active has Wi-Fi – and so to be able to email files in the field, the operator must first :

- Setup an email account on the Samsung Tab active tablet – click on tablet "Settings", then select the "Applications" tab, then select the "Email" App, and then click on "+ Add account", and then enter the account details.
- Create a wireless hotspot with their phone.
- Connect the Tablet to the internet through this hotspot – and follow the steps below…

Press and hold on a historical gauging file - an option list will appear to:
-Email
-Delete
-Select Multiple

Press Email to send this one file and the respective photo.

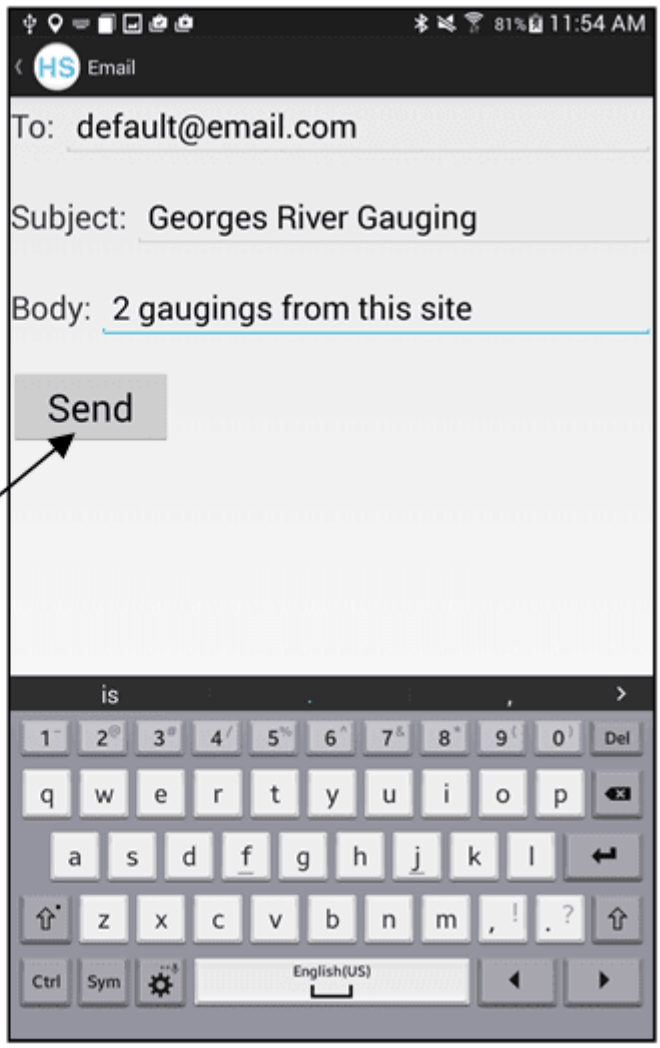


If Select Multiple is pressed, then each file must be selected as indicated by the ticks.

To email all selected files, press the mail symbol.



Type in the Subject and Body text of the email and press Send.



4 Maintenance

The HydroTab does not require much maintenance, but a few simple precautions will ensure a long life for this product.

- Connector / Socket Care 29
- Battery Care 29
- Touchscreen Care 29
- Software Update 30

4.1 Connector / Socket Care

The Galaxy Tab Active is submersible to 1m for 30 minutes. If the device is accidentally dropped into the water, remove quickly, switch it off and dry with a soft absorbent towel. Make sure the connector sockets are free from water, dust and dirt before plugging in the charging lead.



4.2 Battery Care

The Galaxy Tab Active contains a rechargeable 4.45 Ah battery which can be recharged via a standard 5 V USB wall or car charger. This battery is also replaceable.



4.3 Touchscreen Care

The touchscreen of the Galaxy Tab Active is a capacitive type, and may be damaged if not treated with a little care.

- **DO NOT** use a ball point pen or pencil or sharp object to touch the screen.
- **DO NOT** use excessive pressure when touching the screen.

A very light finger pressure is all that is required to perform a touch – or the supplied touchpen may be used.



4.4 Software Update

The latest HydroTab software will be available for download through the “i” screen – a Wi-Fi connection is all that is necessary. Follow the instructions that appear once the connection to the Software Update page has been established.

5 Troubleshooting

Please have a look through this list to solve possible problems before contacting the factory.

When the Application starts, it prompts me to enter a "key"!

- When the HydroTab Application starts, it looks for a "key" that was created by KISTERS when the application was installed and authorised. Either the key has been accidentally erased, or you are trying to install the application on your own Android device (tablet or phone). The HydroTab application will only operate on devices authorised by KISTERS – the Samsung Galaxy Tab Active is a rugged waterproof tablet specifically selected to guarantee customers have a "quality" field experience. It cannot be installed on customer's own Android tablets or phones.
- The "key" is provided on a label on the tablet. Simply touch on the **ENTER KEY** field, and type the key and then press OK and the application will start.
- If the "key" on the label has been removed, connect the tablet to a Wi-Fi network that can access the internet (maybe use your mobile phone hotspot), and click on the **GET KEY** button – the HydroTab App will automatically connect to the KISTERS server and retrieve the key for your authorised device. Press OK and the application will start.

The date and time on the tablet isn't correct!

- Go into the tablet Settings, and select the "General" tab, and then touch the "Date and Time" selection. If the "Automatic date and time" option is ticked, then you must be connected to a Wi-Fi network for the date and time to be updated. (After disconnecting from Wi-Fi, the date and time stay correct!)
- If you un-tick the "Automatic date and time" option, then you can enter the date and time manually in the fields that appear.

The GPS co-ordinates aren't appearing?

- You should be outside with a clear view of the sky for the tablet to be able to "see" the GPS satellites.
- You may need to wait 5 to 10 minutes for the tablet to synchronise with the satellites.
- If you still can't get your location co-ordinates, go into the tablet settings, select the **CONNECTIONS** tab and then slide the **LOCATION** setting to OFF, wait a few seconds, then slide it back "ON". Now retry the GPS location in the HydroTab Application.

The Current Meter Counter doesn't appear on the list of Bluetooth devices?

- Wait about 1 minute to make sure, sometimes the Bluetooth discovery takes a while for the device to appear, and sometimes it appears instantly!
- Very occasionally the Bluetooth connection between the Current Meter Counter and the Tablet gets confused. Turn **off** the Current Meter Counter, and power down the tablet (press and hold the lock button on the top right side of the tablet, then select **POWER DOWN** and then press the **POWER DOWN** button) – then turn them both on again and retry.

There are so many Bluetooth devices, which one is mine?

- The Bluetooth name that appears should match the KISTERS counter model and serial number. (eg. CMCsp-13-02, PVD100-14-05, CMCbt-15-01)
- If the Bluetooth device has been previously paired with your tablet, slide the **ONLY DISPLAY PAIRED DEVICES** selection to the **ON** position to reduce the list of devices.

The App asked me to pair the Bluetooth device – what device PIN do I use?

- Use the PIN 1234 and press **DONE**.

How do I return from the tablet Bluetooth Settings to the HydroTab App?

- Press the "Return" () key beneath the tablet screen. You may then have to touch the Bluetooth () symbol at the top RHS of the HydroTab App to restart the Bluetooth discovery.

The pulses from the Current Meter do not seem to be recognised by the Current Meter Counter?

- Maybe the counter buzzer is turned off – go into the HydroTab CMC settings (See Section Bluetooth Device Connection 8) and press the Buzzer "ON" button.

- Maybe the counter has been accidentally changed to CatsWhisker mode - this type of current meter contact offers the poorest quality of input signal to a counter and is typically adjusted to a dwell angle of about 60 degrees, whereas a mag head meter such as the OSSPC1 has a dwell angle of about 180 degrees and the OSSB1 has a dwell angle of about 150 degrees. A mag head meter pulses may not be recognised when the counter is in "CatWhis" mode.

Go into the HydroTab CMC settings (see Section Bluetooth Device Connection 8) and press the "MagHd" button.

- Check the current meter is actually rotating, and the fan is not jammed by weeds or debris.
- Check the counter operation – remove the current meter cable from the counter, and using a piece of wire, or metal paper clip, short the red and black banana plug sockets on the counter and check the pulses can be recognised.
- Check the current meter cable – plug the cable into the counter and remove the connection from the current meter itself – short the current meter end connections and check the pulses can be recognised.
- Check the current meter itself – using a multimeter in "continuity mode", touch one probe on the current meter body and the other probe on the meter connector, while rotating the current meter – the multimeter should "beep".

How do I change the measurement time of a current meter sample?

The "measurement time" of a sample is controlled by the Current Meter Counter, so accurate measurement can be achieved. (eg. 10 to 90 seconds)

- If the Counter has an LCD (CMCsp, PVD100, PVD200, MAG1) then the measurement time can be set via the buttons and LCD on the counter itself.
- If the Counter does not have an LCD (CMCbt) then the measurement time can be changed via the CMC Settings dialog – see section Bluetooth Device Connection 8 for an example.

How do I get my gauging data out of the Tablet?

You can either:

- Plug the tablet into your PC using the USB lead provided. Once the drivers have been installed, the Tablet will appear as a device on your PC. Using Windows Explorer on your PC navigate to the HydroTab \ Gauging folder, select the appropriate site folder and then copy the required files. (Photos (.jpg), raw gauging data files (.csv) and files to be opened by Excel (.xml))
- Or setup emails on the tablet – see section Emailing Gauging Data 27 – connect to a Wi-Fi network with Internet access, then in the HydroTab "Gauging" Site List select a site, then open the Historical Gauging List folder, then touch and hold a gauging and select "Email" from the drop-list – and then follow the prompts to send an email to your address.

What is an XML format file?

- The file type XML stands for "Extensible Markup Language" – and is an open file protocol supported by most word-processing and spreadsheet programs. The HydroTab creates files using this format so the files can be opened using Microsoft Excel.

The screen goes dim while I am using it?

- This is a tablet setting – to change it, go to the tablet "Settings" (on the tablet Home screen), select Device, Display, screen Brightness and turn "off" automatic brightness, then set the brightness level you desire.

When I'm not using the screen, it times out and turns off?

- This is a tablet setting – to change it, go to the tablet "Settings" (on the tablet Home screen), select Device, Display, screen Timeout, and select the desired timeout from the options available.

The tablet is in Spanish mode, and the Application crashes in a Gauging when trying to progress through a velocity measurement!

or

I'm operating in Spanish mode and there is a comma in the velocity, instead of a decimal point?

- You have the tablet set to European Spanish (Español (España)) instead of US Spanish (Español (Estados Unidos)) – this is configured in the tablet "Settings" (on the Home screen) – go to the General tab, touch "Language and input", and then select (Español (Estados Unidos). (**Note**: European Spanish uses a comma in numbers and US Spanish uses a decimal point.)
- Note that if the tablet is in the European Spanish mode, the Application may crash when trying to use data with a comma instead of a decimal point! (This is a known issue and will be addressed in a future release.)

When I select German as a language, the HydroTab App stays in English!

- The HydroTab Application has been written in English and only translated to US Spanish at this time. Other translations may be available in the future. Any language selected on the tablet that is not available in the App, will cause the App to operate in English.

How do I get the HydroTab to tell me that the Partial Discharge of a segment is more than a certain percentage of the Total Discharge?

- The Settings menu has a parameter “Partial Segment < % Total Discharge” which can be changed to suit the standard requirement in your country. See section Operator Options / Settings 15.
- When a Gauging is started, there is a field “Estimated Discharge” which you may either leave blank (and then the Partial Segments are only checked when the gauging is finished) – or a rating table may be used to estimate the discharge (and then the Partial Segment discharge is calculated as each vertical is completed – which would allow the user to go back and add an addition vertical if required, so the partial segment discharge meets the required criteria). See section Gauging Information 24.

6 Repair

KISTERS precision instruments and data loggers are produced in quality-controlled processes. All KISTERS production and assembly sites in Australia, New Zealand and Europe are ISO 9001 certified. All equipment is factory tested and/or factory calibrated before it is shipped to the client. This ensures that KISTERS products perform to their fullest capacity when delivered.

Despite KISTERS most rigorous quality assurance (QA), malfunction may occur within or outside of the warranty period. In rare cases, a product may not be delivered in accordance with your order.

In such cases KISTERS' return and repair policy applies. For you as a customer, this means the following:

- Contact KISTERS using the Repair Request Form and the Declaration of Contamination made available online:

Region (Language)	Download Link
Asia-Pacific (English)	Repair Request Form (APAC) Declaration of Contamination (APAC)
Europe, the Middle East and Africa (English)	Repair Request Form (EMEA) Declaration of Contamination (EMEA)
Germany (German)	Repair Request Form (DE) Declaration of Contamination (DE)

  In response you will receive a reference number that must be referenced on all further correspondence and on the freight documents accompanying your return shipment.
- Please provide as much information and/or clear instructions within the return paperwork. This will assist our test engineers with their diagnosis.
- Please do not ship the goods prior to obtaining the reference number. KISTERS will not reject any equipment that arrives without reference number; however, it may take us longer to process.

Custom requirements for items sent to KISTERS for warranty or non-warranty repairs: Check with your national customs/tax authorities for details, processes and paperwork regarding tax exempt return of products. Typically, special custom tariff codes are available (such as HS Code = 9802.00) that verify the item is being returned for repair and has no commercial value. Please note that the customs invoice / dispatch documents should also clearly state: "Goods being returned to manufacturer for repair – No Commercial value". It is mandatory to have any returned goods accompanied by a commercial invoice on headed paper. KISTERS reserves the right to charge the customer for time spent rectifying incorrect customs documents.

Note: Please ensure that your goods are packed carefully and securely. Damage that occurs during transit is not covered by our warranty and may be chargeable.

7 Technical Data

Power Supply	▪ Battery: rechargeable 4.45 Ah ▪ Battery life: up to 11 hours ▪ Charger: mains and car charger
Mechanical Features	▪ Dimensions: 130 mm × 230 mm × 14 mm ▪ Weight: 500 g ▪ Waterproof case, rating IP67 (submersible to 1 m for 30 mins) ▪ Shockproof case: can withstand a drop of up to 1.2 m ▪ Operating temperature: -20 °C to +60 °C ▪ Humidity: 0–100 %
Electronic Features	▪ Processor: min. quad core 1.2 GHz ▪ Storage: min. 16 GB ▪ RAM: min. 1.5 GB ▪ Operating system: Android ▪ Display: min. 8 inch, high resolution touchscreen ▪ Bluetooth: min. v4.0 (for communications with current meters) ▪ GPS ▪ Camera

7.1 Security / Warranty

The HydroTab Application is loaded onto the Samsung Tab Active by KISTERS – where a security key is generated for each specific tablet. This ensures the Application is compatible with, and has been tested on each device and has passed our quality assurance.

If for some reason the “key” is deleted from the tablet, the HydroTab Application will not run – the operator will be prompted to either:

- Enter the key manually – it will be provided on a sticker on the front of the tablet, or
- Get the pre-registered key automatically from KISTERS via the internet – the tablet must be connected to the internet via Wi-Fi for this feature to operate.

Note:

- The Application will not run on user provided android tablets or phones!
- The Samsung Tab Active has the standard Samsung warranty.
- Loading 3rd party Applications onto the tablet may introduce virus’ and void the KISTERS warranty – and is therefore strongly discouraged.

8 Obligations of the Operator and Disposal

This chapter contains the following subsections:

- Obligations of the Operator 36
- Dismantling / Disposal 36

8.1 Obligations of the Operator

European Union

In the Single European Market it is the responsibility of the operator to ensure that the following legal regulations are observed and complied with: national implementation of the framework directive (89/391/EEC) and the associated individual directives, in particular 2009/104/EC, on minimum safety and health requirements for the use of work equipment by employees at work.

Worldwide

Regulations: If and where required, operating licences must be obtained by the operator. In addition, national or regional environmental protection requirements must be complied with, regardless of local legal provisions regarding the following topics:

- Occupational safety
- Product disposal

Connections: Local regulations for electrical installation and connections must be observed.

8.2 Dismantling / Disposal

When disposing of the units and their accessories, the applicable local regulations regarding environment, disposal and occupational safety must be observed.

Before dismantling

- Electrical Devices:
  - Switch off the units.
  - Disconnect electrical appliances from the power supply, regardless of whether the appliances are connected to the mains or to another power source.
- Mechanical devices:
  - Fix all loose components. Prevent the device from moving independently or unintentionally.
  - Loosen mechanical fastenings: Please note that appliances can be heavy and that loosening the fastenings may cause them to become mechanically unstable.

Disposal

Operators of old appliances must recycle them separately from unsorted municipal waste. This applies in particular to electrical waste and old electronic equipment.

Electrical waste and electronic equipment must not be disposed of as household waste!

Instead, these old appliances must be collected separately and disposed of via the local collection and return systems.

Integrated or provided batteries and accumulators must be separated from the appliances and disposed of at the designated

collection point. At the end of its service life, the lithium-ion battery must be disposed of according to legal provisions.

EU WEEE Directive

As players in the environmental market, KISTERS AG is committed to supporting efforts to avoid and recycle waste. Please consider:

- Avoidance before recycling!
- Recycling before disposal!

This symbol  indicates that the scrapping of the unit must be carried out in accordance with Directive 2012/19/EU. Please observe the local implementation of the directive and any accompanying or supplementary laws and regulations.

9 Appendices

This chapter contains the following subsections:

- Appendix A Samsung Galaxy Tab Active – Actual Size 39
- Appendix B Vertical Weighting Factors 40
- Appendix C Discharge Calculation Methods – Mean, Mid, CNA Format 41
- Appendix D XML Output File Formats – ISO748-Mean, ISO748-Mid, CNA Format 46

9.1 Appendix A Samsung Galaxy Tab Active – Actual Size

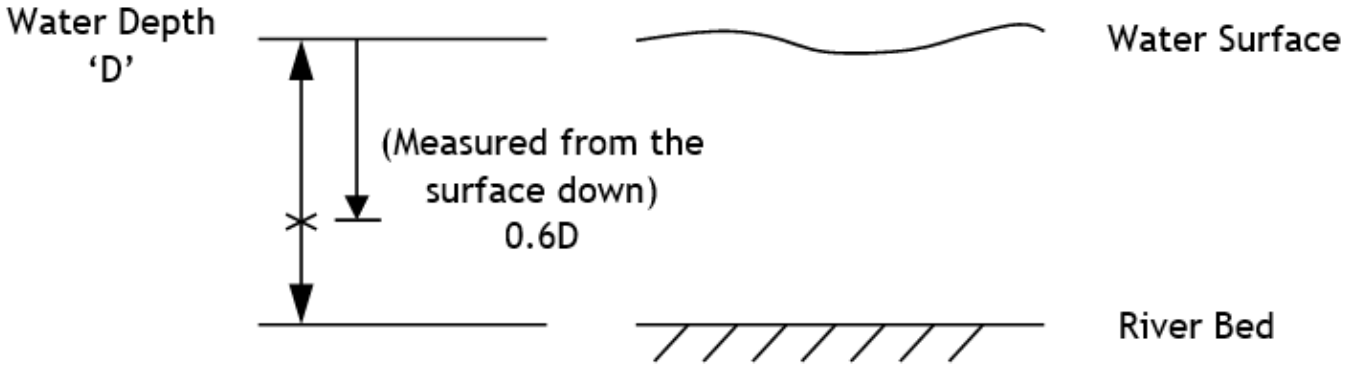


9.2 Appendix B Vertical Weighting Factors

The velocity measurements taken at each point on a vertical are weighted by a factor as indicated in the following table. This weighted average is used as the flow velocity for the vertical.

# Pts	1	2	3	4	5	6	7	8	9	10	11
1	0.6D										
1	100%										
2	0.2D	0.8D									
2	50%	50%									
3	0.2D	0.6D	0.8D								
3	25%	50%	25%								
4	0.2D	0.4D	0.6D	0.8D							
4	20%	30%	30%	20%							
5	Surface	0.2D	0.6D	0.8D	Bed						
5	10%	30%	30%	20%	10%						
6	Surface	0.2D	0.4D	0.6D	0.8D	Bed					
6	10%	20%	20%	20%	20%	10%					
9	0.1D	0.2D	0.3D	0.4D	0.5D	0.6D	0.7D	0.8D	0.9D		
9	11%	11%	11%	11%	12%	11%	11%	11%	11%		
11	Surface	0.1D	0.2D	0.3D	0.4D	0.5D	0.6D	0.7D	0.8D	0.9D	Bed

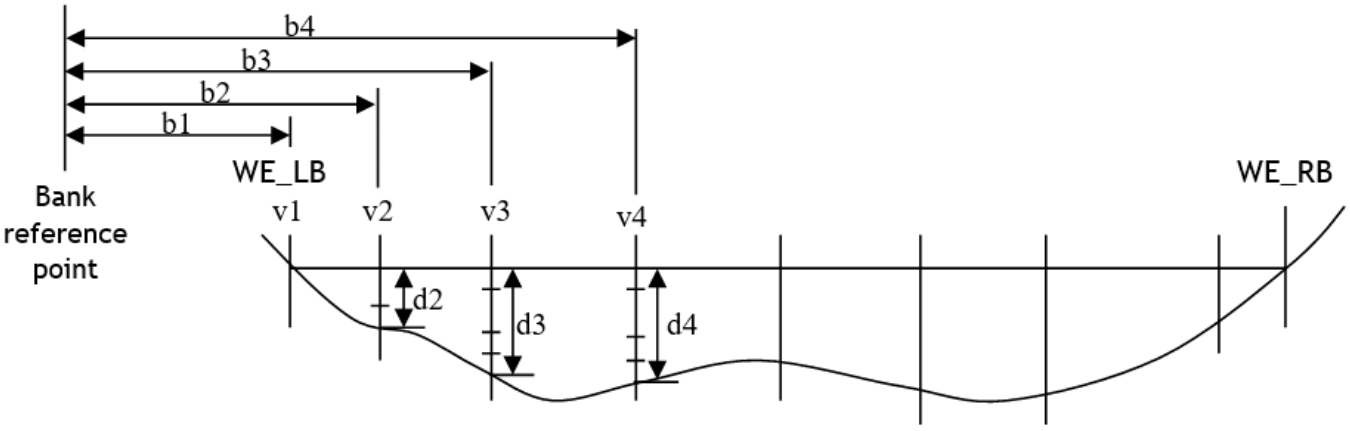
# Pts	1	2	3	4	5	6	7	8	9	10	11
11	9%	9%	9%	9%	9%	9%	10%	9%	9%	9%	9%



9.3 Appendix C Discharge Calculation Methods – Mean, Mid, CNA Format

In all methods the mean water velocity in each vertical is calculated by using the weighting table shown in Appendix B. For example, if 3 water velocities are measured in a single vertical, they would be measured at depths of 0.2D, 0.6D and 0.8D. The mean velocity of this vertical would therefore be: V_{mean} = ($V_{0.2D}$ x 0.25) + ($V_{0.6D}$ x 0.50) + ($V_{0.8D}$ x 0.25)

The following sketch shows a typical discharge with depth measurements d1, d2, d3, … taken at each vertical (note d0 is the depth at the bank, usually zero, but may be non zero) – and the distance from the bank reference to each vertical b1, b2, b3,… ..calculated from the distance from the reference point - and the mean water velocity v1, v2, v3, …. calculated for each vertical.



Measurements taken during a stream gauging.

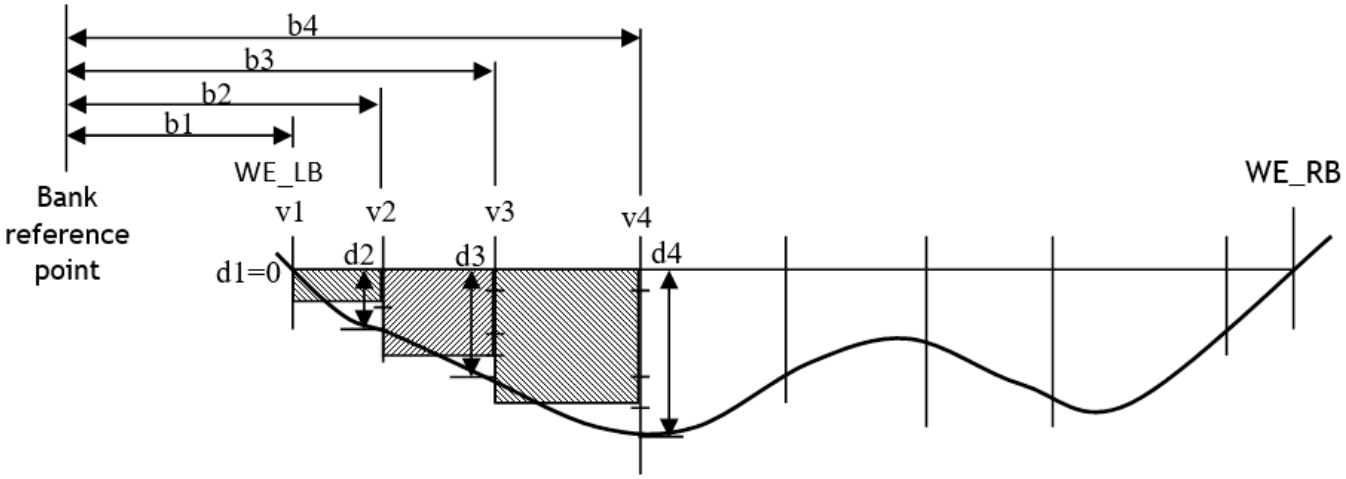
These measurements are then used to calculate the discharge using either the Mean Section method or the Mid Section method or the CNA method.

Please note: Each method will yield slightly different results, as described on the following pages.

Mean Section Method (From Australian Standard AS3778.3.1 ISO 748)

The cross section is regarded as being made up of a number of segments, each bounded by two adjacent verticals as shown in the following diagram.

Note: In the Standard, velocity measurements taken on each vertical.



Mean Section segments defined.

The discharge of each segment is calculated as:

Discharge of Segment = Mean velocity of Segment	**x**	**Mean depth of Segment**	**x**	**Width of Segment**
$q_{(1-2)}$ = (v1 + v2)/2	x	(d1+d2)/2	x	(b2-b1)
$q_{(2-3)}$ = (v2 + v3)/2	x	(d2+d3)/2	x	(b3-b2)
$q_{(3-4)}$ = (v3 + v4)/2	x	(d3+d4)/2	x	(b4-b3) etc…

where

Mean velocity of Segment	=	sum of mean velocity of bounding verticals	/ =	2(v2 + v3) / 2 (example)
Mean depth of Segment	=	sum of depth of bounding verticals	/ =	2(d2 + d3) / 2 (example) (d1 = depth at WE)
Width of Segment	=	distance between verticals	=	(b3 - b2) (example)

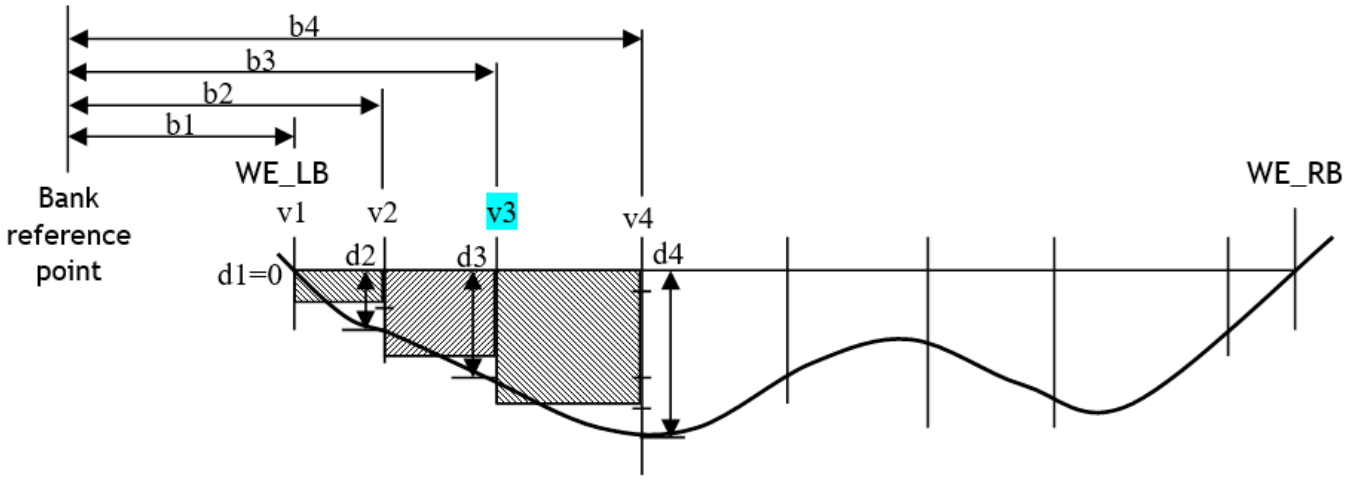
The total discharge is obtained by adding the discharge from each segment.

$q_{(total)} = q_{(1-2)} + q_{(2-3)} + q_{(3-4)} + \ldots\ldots$

Mean Section Method (continued…)

The standard does not cover cases where only the depth is measured on a vertical, and no velocity measurements are taken. This example shows how the HydroTab handles this situation in the Mean Section method.

Note: Some verticals have no velocity measurements. (v3 in this example!)



Mean Section segments defined.

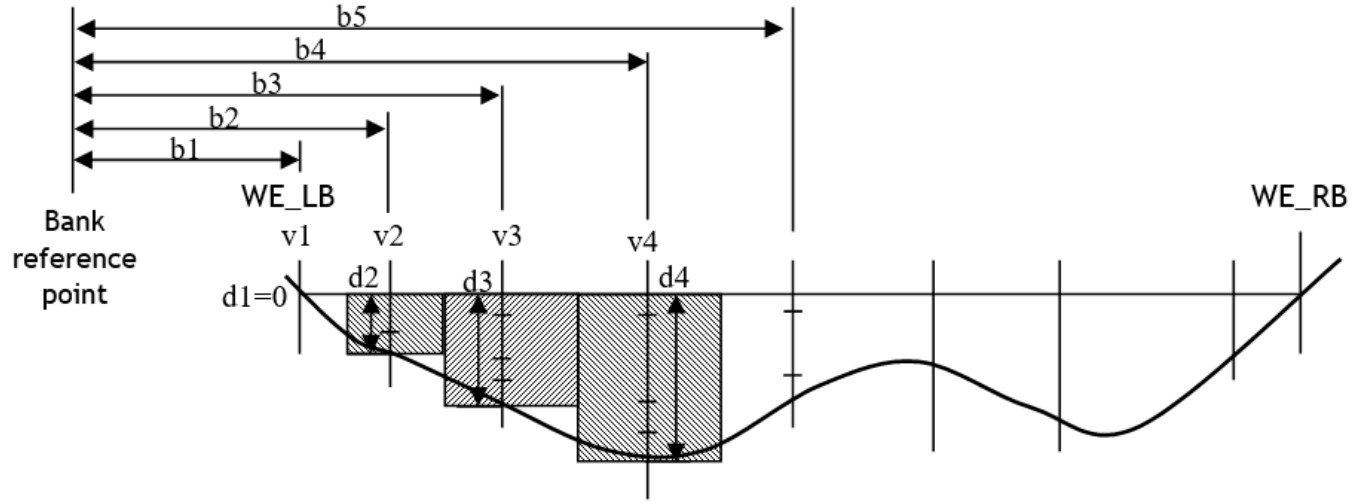
The velocity on vertical v3 = Mean velocity of adjacent verticals = (v2 + v4) / 2

The rest of the calculations are as per the Mean Section method described on the previous page.

Mid Section Method (From Australian Standard AS3778.3.1 ISO 748)

The cross section is again regarded as being made up of a number of segments, however in the mid section method each segment is bounded by the midpoint of two verticals.

Note: In the Standard, velocity measurements are taken on each vertical.



Mid Section segments defined.

The discharge of each segment is calculated as:

Discharge Segment	of=	Mean velocity ofx Vertical		Depth of Vertical x		Mean Width between Verticals	
q_1	=	0					
q_2	=	v2	x	d2	x	(b3-b1)/2	
q_3	=	v3	x	d3	x	(b4-b2)/2	
q_4	=	v4	x	d4	x	(b5-b3)/2	etc....

where

Mean Width Between Verticals = (b3+b2)/2 – (b2+b1)/2 (segment q2) (example above)

= (b3-b1)/2 (after simplifying)

= ½ width to adjacent verticals

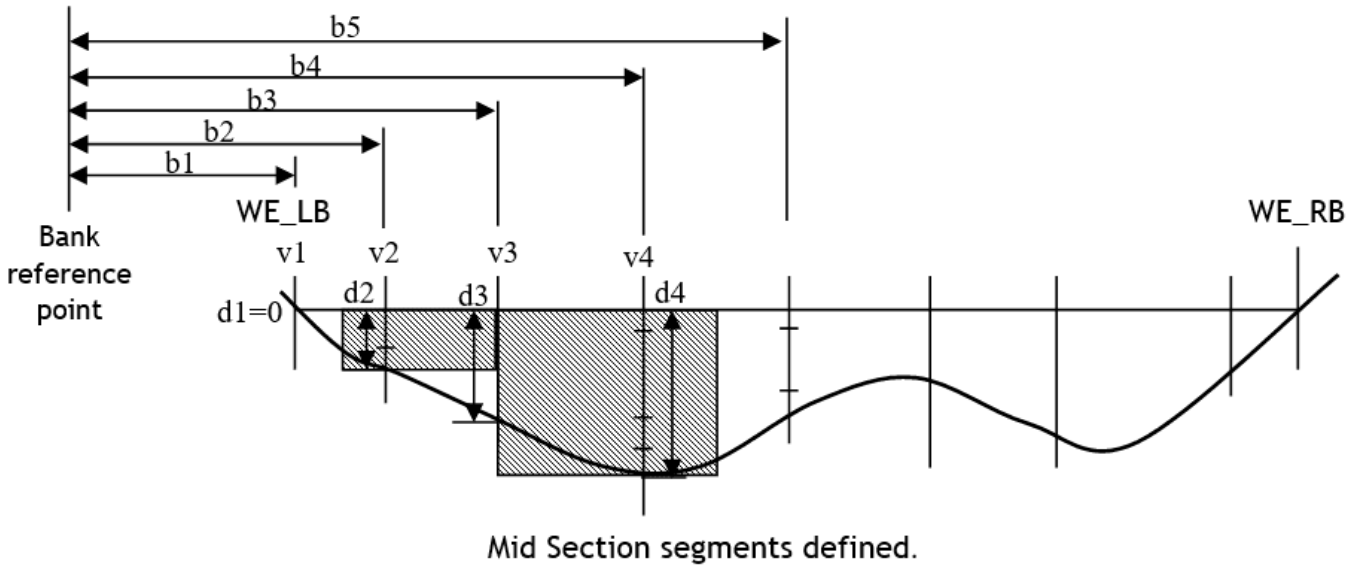
The total discharge is obtained by adding the discharge from each segment.

$q_{(total)} = q_1 + q_2 + q_3 + q_4 + \ldots\ldots\ldots$

Mid Section Method (continued…)

The standard does not cover cases where only the depth is measured on a vertical, and no velocity measurements are taken. This example shows how the HydroTab handles this situation in the Mid Section method.

Note: Some verticals have no velocity measurements. (v3 in this example!)



Mid Section segments defined.

The discharge of each segment is calculated as:

Discharge Segment	of=	Mean velocity ofx Vertical		Depth of Vertical x		Mean width between verticals with velocity measurements and to verticals
q_1	=	0				
q_2	=	v2	x	d2	x	(b3-(b2+b1)/2)
q_3	=	0				
q_4	=	v4	x	d4	x	(b5+b4)/2-b3) etc….

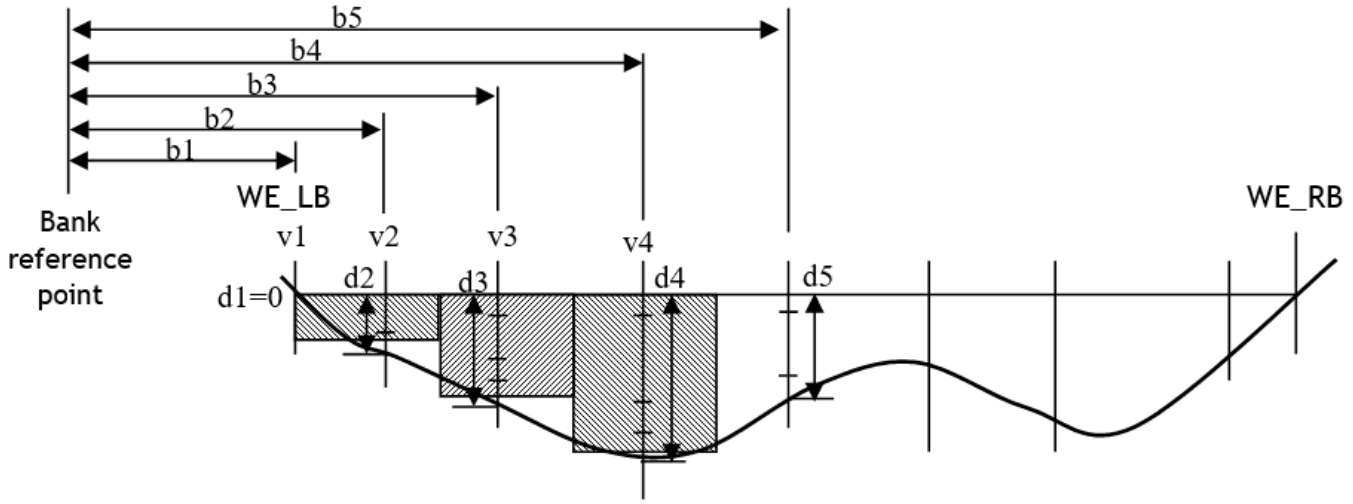
The total discharge is obtained by adding the discharge from each segment.

$q_{(total)} = q_1 + q_2 + q_3 + q_4 + \ldots\ldots\ldots$

CNA Method (used by CNA in Mexico)

The CNA method is very similar to the Mid Section method – the exact calculations were reverse engineered from a spreadsheet provided by CNA in Mexico. Subtle differences occur in the height of each segment, and in the segments next to the bank.

Note: In this example velocity measurements are taken on each vertical.



CNA Format segments defined.

The discharge of each segment is calculated as :

Discharge Segment	of=	Mean velocity of Vertical	x	Weighted Avg Depth of Vertical	x	½ x Width between Verticals
q_1	=	0				
q_2	=	v2	x	(¼xd1+ ¼xd3)	½xd2+	((b3+b2)/2 – b1)
q_3	=	v3		(¼xd2+ ¼xd4)	½xd3+	(b4-b2)/2
q_4	=	v4	x	(¼xd3+ ¼xd5)	½xd4+	(b5-b3)/2 etc….

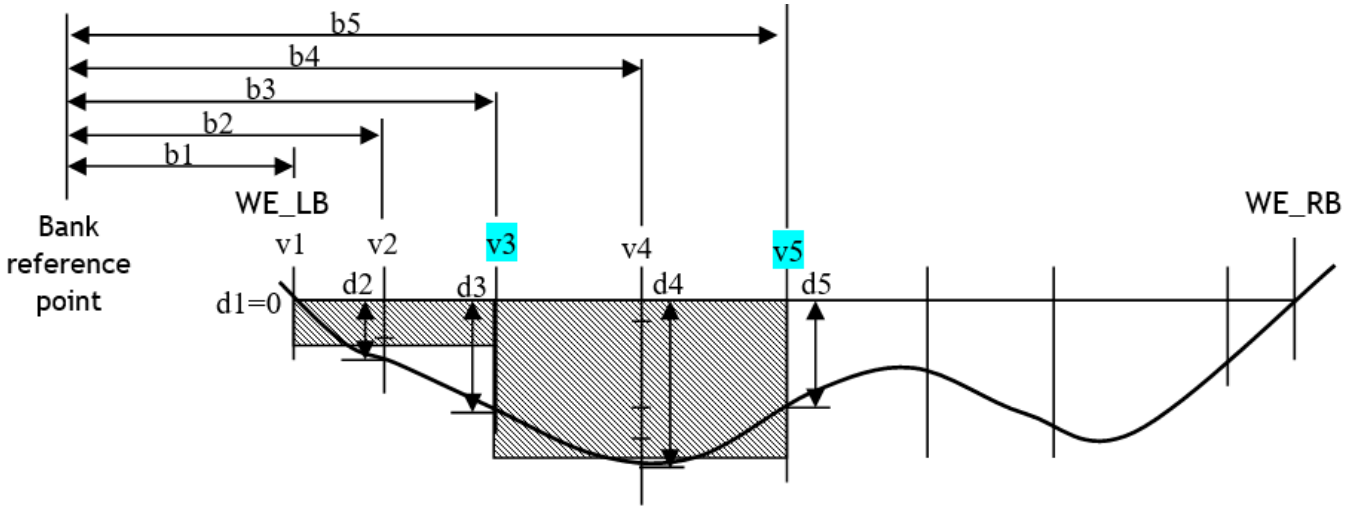
The total discharge is obtained by adding the discharge from each segment.

$q_{(total)} = q_1 + q_2 + q_3 + q_4 + \ldots\ldots$

CNA Method (continued…)

It has been noticed in the CNA gauging provided, that every second vertical has a depth measurement only – no velocity was measured. This example shows how the HydroTab handles this situation in the CNA method.

Note: Some verticals have no velocity measurements. (v3, v5 in this example!)



CNA Format segments defined.

The discharge of each segment is calculated as:

Discharge Segment	of=	Mean velocity of Vertical	x	Weighted Avg Depth of Vertical	x	Width between Verticals
q_1	=	0				
q_2	=	v2	x	(¼xd1+ ¼xd3)	½xd2+x	(b3-b1)
q_3	=	0				
q_4	=	v4	x	(¼xd3+ ¼xd5)	½xd4+x	(b5-b3) etc....

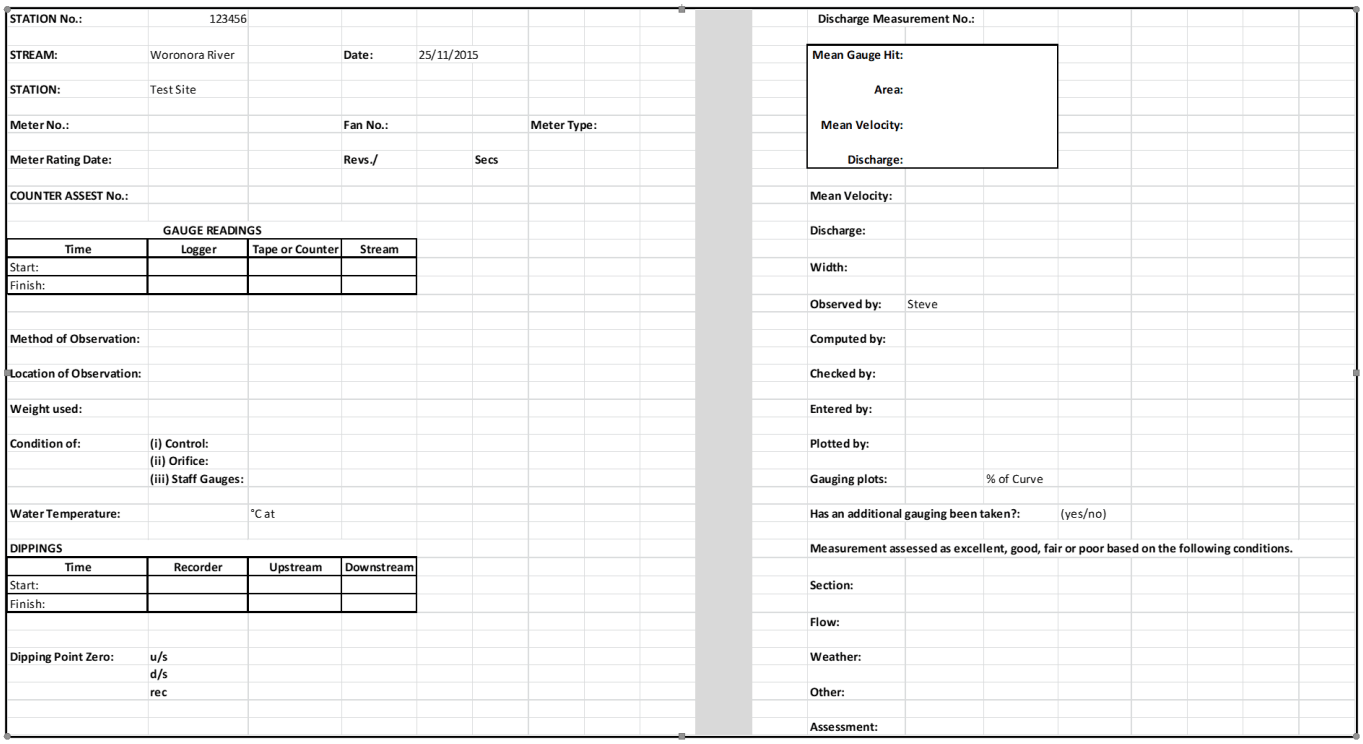
The total discharge is obtained by adding the discharge from each segment.

$q_{(total)} = q_1 + q_2 + q_3 + q_4 + \ldots\ldots\ldots$

9.4 Appendix D XML Output File Formats – ISO748-Mean, ISO748-Mid, CNA Format

Depending on the file format and calculation method selected, the output file will have a different format as shown below. The XML files are created to be opened by Excel directly!!

ISO748-Mean Section Format



STATION No.:	123456				
STREAM:	Woronora River		Date:	25/11/2015	
STATION:	Test Site				
Meter No.:			Fan No.:		Meter Type:
Meter Rating Date:			Revs./	Secs	
COUNTER ASSEST No.:					

GAUGE READINGS

Time	Logger	Tape or Counter	Stream
Start:			
Finish:			

Method of Observation:		
Location of Observation:		
Weight used:		
Condition of:	(i) Control:	
	(ii) Orifice:	
	(iii) Staff Gauges:	
Water Temperature:		°C at

DIPPINGS

Time	Recorder	Upstream	Downstream
Start:			
Finish:			

Dipping Point Zero:	u/s	
	d/s	
	rec	

Discharge Measurement No.:		
Mean Gauge Hit:		
Area:		
Mean Velocity:		
Discharge:		
Mean Velocity:		
Discharge:		
Width:		
Observed by:	Steve	
Computed by:		
Checked by:		
Entered by:		
Plotted by:		
Gauging plots:		% of Curve
Has an additional gauging been taken?:		(yes/no)
Measurement assessed as excellent, good, fair or poor based on the following conditions.		
Section:		
Flow:		
Weather:		
Other:		
Assessment:		

DISCHARGE OBSERVATION SHEET

STREAM NAME: Woronora River

STATION: Test Site

COMPUTED USING MEAN-SECTION METHOD

Chainage	Sounding	Depth of Obsvn.	Count			Revs/Sec	Velocity			Component Area	Component Discharge	Remarks and Intermediate Gauge
							Observed	Mean	Mean Vel. Ord.			
m	m	m				m	m/s	m/s	m/s	m^2	m^3/s	
0	0			WE-LB								
									4.636	0.5	2.318	
1	1	0.6	21			2.019	4.636	4.636				
									2.318	1.25	2.897	
2	1.5											
									5.302	1.75	9.278	
3	2	0.4	45			4.455	10.317					
		1.6	47			4.7	10.892	10.604				
									5.302	1.65	8.748	
4	1.3											
									5.916	0.95	5.62	
5	0.6	0.36	51			5.1	11.832	11.832				
									11.832	0.4	4.733	
6	0.2											
6	0.2			WE-RB								

Total Discharge:	33.594	m^3/s
Total Area:	6.5	m^2
Average Velocity:	5.168	m/s

ISO-Mid Section Format

STATION No.: 123456

STREAM: Woronora River **Date:** 25/11/2015

STATION: Test Site

Meter No.: **Fan No.:** **Meter Type:**

Meter Rating Date: **Revs./** **Secs**

COUNTER ASSEST No.:

GAUGE READINGS

Time	Logger	Tape or Counter	Stream
Start:			
Finish:			

Method of Observation:

Location of Observation:

Weight used:

Condition of: **(i) Control:**
(ii) Orifice:
(iii) Staff Gauges:

Water Temperature: °C at

DIPPINGS

Time	Recorder	Upstream	Downstream
Start:			
Finish:			

Dipping Point Zero: **u/s**
d/s
rec

Discharge Measurement No.:

Mean Gauge Hit:
Area:
Mean Velocity:
Discharge:

Mean Velocity:

Discharge:

Width:

Observed by: Steve

Computed by:

Checked by:

Entered by:

Plotted by:

Gauging plots: % of Curve

Has an additional gauging been taken?: (yes/no)

Measurement assessed as excellent, good, fair or poor based on the following conditions.

Section:

Flow:

Weather:

Other:

Assessment:

DISCHARGE OBSERVATION SHEET

STREAM NAME: Woronora River

STATION: Test Site

COMPUTED USING MID-SECTION METHOD

Chainage	Sounding	Depth of Obsvn.	Count			Revs/Sec	Velocity			Component Area	Component Discharge	Remarks and Intermediate Gauge
							Observed	Mean	Mean Vel. Ord.			
m	m	m				m	m/s	m/s	m/s	m^2	m^3/s	
0	0			WE-LB								
1	1	0.6	21			2.019	4.636	4.636	4.636	1.5	6.954	
2	1.5											
3	2	0.4	45			4.455	10.317					
		1.6	47			4.7	10.892	10.604	9.544	4	38.176	Factor = 90%
4	1.3											
5	0.6	0.36	51			5.1	11.832	11.832	11.832	0.9	10.649	
6	0.2											
6	0.2			WE-RB								

Total Discharge:	55.779	m^3/s
Total Area:	6.4	m^2
Average Velocity:	8.715	m/s

CNA Format

F.S.A.R.H.212-6

REGISTER OF MEASUREMENT WITH CURREN METER

Soundings		Current Meter					Velocity				Sections			
Distance from the start point	Depth	Depth of observation		Number of revolutions	Time in seconds	Revolutions by second	Point Number	Coefficient	Middle of Stretch	Width	Average Depth	Area	Partial Discharge	OBSERVATIONS RELATIVE TO THE VARIATIONS; OBSTRUCTIONS AND OVERFLOWS IN THE BED. USED METHODS. INDICATE POSITION RELATED WITH OFICIALSECTION AND RELATIONSHIP BETWEEN READINGS
m	m	Method	m				m/s		m/s		m	m^2	m^3/s	
0.00	0.00													
1.00	1.00	0.60	0.60	21	10	2.00	4.636	1.000	4.636	2.000	0.875	1.750	8.113	
2.00	1.50													
3.00	2.00	0.20	0.40	45	10	4.50	10.317							
		0.80	1.60	47	10	4.70	10.892	0.900	9.544	2.000	1.700	3.400	32.450	
4.00	1.30													
5.00	0.60	0.60	0.36	51	10	5.10	11.832	1.000	11.832	2.000	0.675	1.350	15.973	
6.00	0.20													
														MUNICIPALITY NAME:
														STATE:
														CALCULATION:
														REVISED BY:

SECRETARIA DE RECURSOS HIDRÁULICOS
SERVICIO HIDROMÉTRICO

STATION NAME: Test

STREAM NAME:

BASIN NAME:

DATE: 11/11/2015

CURRENT METER:
BRAND, TYPE AND SERIAL NUMBER

NUMBER OF TABLE:

OBSERVER:

START: 0 H 5 MIN. LECT. ESC: 0

START: 0 H 5 MIN. LECT. ESC: 0

MEASUREMENT NUMBER:

SCALE AVERAGE READING: 0.0

TOTAL AREA: 6.5m^2

AVERAGE VELOCITY: 8.698 m/sec

TOTAL DISCHARGE: 56.536m^3/s

Contact Data

Europe	KISTERS Europe	+49 2408 9385 0 hydromet.sales@kisters.eu www.kisters.eu
Australia	KISTERS Australia	+612 9601 2022 sales@kisters.com.au www.kisters.com.au
New Zealand	KISTERS New Zealand	+64 7 857 0810 sales@kisters.co.nz www.kisters.co.nz
Latin America	KISTERS Latin America	+57 350 575 4079 sales@kisters-latam.com www.kisters-latam.com
North America	KISTERS North America	+1 561 459 4876 kna@kisters.net www.kisters.net
Spain	KISTERS Ibérica	info@kisters.es www.kisters.es
France	KISTERS France	+33 1 4120 9200 info@kisters.fr www.kisters.fr
Canada	KISTERS Canada	kna@kisters.net www.kisters.net

© 2026 | KISTERS

www.kisters.eu
© 2026 | KISTERS
18/09/2026

KISTERS
Empowering decisions of tomorrow