

User Guide

IMS - Irrigation Management System Revision 1.1







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1.0	July 2021
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First Issue Updates to scheduling, RXPS data interchange and auto backup feature



Introduction

The Water-Insight Irrigation Management System (IMS) is an advanced web-based application which creates visibility of farm operations, by allowing you to control and monitor your solid set (fixed grid) sprinklers from anywhere at any time.

IMS also offers sensor options that can provide real data to help support your irrigation decisions and aid with on farm water management.

This guide assumes some familiarity with the Water-Insight product range and covers:

- System Planning Considerations
- Account Management and Access
- Site Creation, Expansion and Editing
- Site Monitoring and Management
- Maintenance and Troubleshooting

Additional resources such as product information and training videos can be found at www.waterinsight.co.nz.

Account Access and Management

Creating an IMS Account

IMS can be used via a phone, tablet or desktop web browser. Farmers can sign up for the service and manage one or more farms or farm blocks.

In addition, the farmer can delegate operations and monitoring to trusted entities such as irrigation installers or farm hands, if they also sign up for an IMS account.

In creating an account, you agree to the terms and conditions of using the IMS site in regards to privacy and usage.

Signing up to IMS

There are two ways to sign up, you can contact Water-Insight to do it for you or you can sign up yourself as follows:

Step	Process	Note
1.	Open a web browser like Google Chrome, Firefox, Safari or Microsoft Edge and in the address bar type ims.qtech.co.nz Select the Create an account button.	Mol Sever-Circle Doussigners * *
2.	If you are the primary account holder and you have oversight over all farms and farm blocks, select Farm Owner . Anyone else who intends to access a Farm Owner's farms such as farmhands, installers, contractors, suppliers of services or even a delegated farm manager must choose Farm Delegate <i>If the farm you want access to has already been created</i> <i>in someone else's name you must select</i> Farm Delegate .	Image: State Amage:

Step	Process	Note
3.	Enter all your details, including a mobile phone number so that you can receive alert notifications from IMS.	© 105 Short-Often Designment × + -
	Create a password and make a note of it in a safe place. Once you are done click the Register button	Registration Void are one step of realing your account. Tare the submatrix of pare required. Name * Loc Blogs E-mail * Bloggs/Bigmail.com Country Code * Mobile * (read) Wer Zoaland Outry Code * Seasond * Outry Code * Sign up for our newsletters Cancel Ingister
4.	You will receive a welcome email which includes a link	
	for you to verify your account and complete the sign up process.	

Delegate Access

Farm Delegate's may receive invitations from a Farm Owner to access their site(s). This process is described in the Managing Access to IMS section.

Adding IMS to the Home Screen of your Phone

To simplify access to Water-Insight IMS you can add a website shortcut to your devices home screen. This allows one-touch access, in the same way as launching an app.

You'll need your sign in email address and your password to log in to IMS.

iOS iPhones and iPad devices

- First open Safari and enter ims.qtech.co.nz in the address bar, then tap the share arrow
- Find the Add to Home Screen button and tap it
- Edit the name of the shortcut to IMS so you can see it all in the small icon label
- Tap Add to add it

Now, tap the home button (or your iPhone X equivalent) to return to the home screen. You'll see a new icon, which can be tapped to take you straight to the IMS site.



Android Phones and tablet devices

- First open Chrome and enter ims.qtech.co.nz in the address bar
- Tap the three vertical dots (more menu) in the top right corner then select Add to Home screen
- Name the shortcut IMS so you can see it all in the small icon label
- Tap Add to add to your home screen



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E-mail	Recent tal	26			E-m	ail				1	Add to Horr	ne screen			28	245		04
Passwo	History				Add	d to Home s	creen				IMS	Sho	rteut		K			60
	Download	s			INS	MS			4			IMS					A-4	PAC-
	Translate.						Canoe	Ad	ы						2	A	NAS-	0
	Share			0		Create an	account					CANC	EL ADD				Ver.	
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	Desktop s	ite													S. I		12	
10 A	a set and																	00 00

There will now be a new icon on your home screen which can be tapped to go straight to the IMS site.

Managing Access to IMS

A **Farm Owner** (the primary account holder) can delegate operations and monitoring access to trusted entities, such as irrigation installers or farm managers. The intended delegate(s) must already have an IMS **Farm Delegate** account or will be required to create one.

Inviting Delegates

To manage access to their farm(s) the Farm Owner must:

- Sign in to their IMS account (ims.qtech.co.nz)
- Click the "more" icon (three vertical dots) in the top right of the screen and select Manage Access from the pop-up menu



Step	Process	Note
1.	To invite someone to access your farm(s), click the share button.	Implicit from the state of the state o
2.	First choose what to share.	Destruct Cost balances + -
	Click the down arrow at the end of the "what to share?" box.	★ II ↑ ▲ STIPC Welcome, Devel Q. ★ I Share S
	Select a farm/block you want to grant access to from the drop-down list. Repeat for as many farms/blocks as desired or you can remove a selection by clicking the cross at the end of the farm block name.	Control Participation
3.	When you are happy with your selection click the next button.	In the experiment product of the experiment of the experimen
		Selection Contacts Water Share Contacts Water Share Contacts Water Share Contacts Water Share Water Share Contacts Water Share Contacts Water Share Contacts Contact Contact Contact Contacts Contacts Contact
4.	Type in the email address of who you want to grant access to.	Image: The standard stan
	Then click the pop up button that says "send invite to"	Share Developed from Network King Waters 3 migre Selection Contacts Permissions What is Sware?
	Then click the next button.	STEP 2: WHOM TO SHARE? When Byon and Is User per-Venes refu and photodeo@gmal.com

Step	Process	Note
5.	Now decide what role your delegate will play and what you want to let them have access to or manage.	Image: State of the State State ★ </td
	Make sure you limit access to activities that they will normally undertake because an inexperienced person has the potential to affect your operations adversely.	Selection Contacts Permission What is abard What is Stard What is Stard What Stard permission? What is Stard permission? Stard as the permission permit algoes the permission is the permission of the permission is the permission is the permission of the permission is the permission of the permission is the permission of the permission
	If in doubt choose the guest template. You can customise exactly what they can do in the next step.	Our pre-offend operations implicit are: Current investing cancered by permittioner system Farm Manager: I mark tables unknown to the encyting for mail. Farm Kanager: I mark tables and not be also and or the encytement of the encytement Farm Kanager: I mark tables and not be also and or the encytement (mark) (mark tables) and tables and or the encytement of the encytement (mark tables) (mark tables)
6.	Here we have chosen the agent template and we can turn on or off various permissions.	
	In this example we are not going to allow the agent to manage schedules for watering, so they have been turned off. Once the permissions are decided on click share to go to the next step.	<complex-block> Processor Processor Processor Image: State State</complex-block>
7.	The delegate will be sent an email inviting them to access each of the farms. You can adjust the permissions and resend the invite if you wish.	Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute Image: Statute Statute
	You can also revoke the invite entirely by clicking the bin icon. The status of the invitation is shown. Once the recipient delegate signs up and accepts the invitation then then they will be able to see your farm information when they sign in and undertake whatever activities you allow.	Hittrest john dee@gmail.com Austing for regense I I I I I I I I I I I I I I I I I I I

Revoking Delegate Access

Delegates can be removed at any time by signing into your account, choosing **manage access** from the menu then clicking the bin icon next to the delegates name to revoke access.

Accepting an Invitation (Farm Delegate)

A IMS **Farm Delegate** account is required in order to accept the invitation. You will have received an invitation by e-mail to access a farm(s) which contains links for whether you have an existing account or not. Alternatively, to accept an invitation:

If you don't already have a Farm Delegate account, follow the Creating an IMS Account process.

Step	Process	Note
1.	Sign in to your IMS account	ims.qtech.co.nz
2.	Click the "more" icon (three vertical dots) in the top right of the screen and select Manage Access from the pop-up menu	Welcome, Q 🌲 😫 MY ACCOUNT Account Details Password & Security Manage Access



Creating a Farm in IMS

To create a new farm you must either be the **Farm Owner**, or a **Farm Delegate** who has been granted permission to do so by the **Farm Owner**.

Step	Process	Note
1.	Sign in to your IMS account	ims.qtech.co.nz
2.	Click the Add New Farm button	New Farm
3.	 Enter the farm details Select the Farm Owner (Delegate account only) Name of the farm Access Road – will offer suggestions once you start typing Description (optional) 	✓ Farm Information The fields marked with an asterisk (*) are required. Farm Owner* On behalf of? Name* Access Road * Icon Description Image: Construct on the state of t
4.	Farm GPS Location Click on the map to refine the position A house or dairy shed is a good option 	
5.	 Define the farm boundaries Select the Update Boundaries button Draw an outline of the farm by clicking on the map The boundary shape must enclose all of your solid set irrigation Use the erase and undo buttons if needed 	Charge Location Update Boundaries
6.	Once completed, click the Create button	Create

My Account & Settings

The **My Account & Settings** menu is always available in the top right corner of your IMS screen.



QT	ech-Farms 🔍 🌲 🚦
	MY ACCOUNT
	Account Details
	Password & Security
	Manage Access

Option	Details	Note
Account Details	Name – The account name displayed Country Code & Mobile – mobile number that alerts are delivered to e-mail – e-mail address associated with your account	Account Details "no in darge you be as symme thy using the firmt below." Nome * Country Code * Mobile * O'Tech-Farms
Password & Security	The account password can be changed here	Password Changing You can change you previous a drytome by using the form below. Current Password New Password Confirm New Password Minimum 6 characters. Change Password

Settings

Settings	×
General	2
Home/Farm Cards	>
Soil Moisture Stress Bands	>
Dashboard Card Order & Visibility	>
Alerts	>

Ontion	Dotaile	Noto	
Option	Detalls	Note	
General	Choose what is displayed in this IMS account	K BACK	
		Diselar Source Baddy Confirm Dialog	
		and a first start start start	
		MAP Shouehde Zams diaglayed in year maps.	
		Display Points of Interest (POI)	
		Display Sensors	
		Display Spares	
		Close	
Home/Farm	Choose which buttons are displayed on each farm	< BACK	
Courdo		CARDS	
Cards	card	Compo para se tra sam sano n'an rome.	
		which samply:	
		Display Sprinklers Map	
		Display Tank Map	
		Clúse	
Soil Moisture	Choose settings and colours for soil moisture stre	ESS Sail Maleture Street Pands for OTEAPM	
Chucas Davida	handa /if aail maistuma sansar is installad)	Level Soil Moisture (kPa) Color	
Stress Bands	bands (if soil moisture sensor is installed)	Too full O O	
		Full	
		Refii 60 😐	
		Stress 100 ●	
		Revent to Deduce	
		Close	
Dashboard	Choose which information is displayed on t	he Dashboard for QTFARM	
		Soil Moisture	
Card Order &	dashboard.	Tank Meter	
Visibility	Drag each item to change order displayed in	Eline Mater =	
-	Brag each item to change order applayed in.		
		Sprinkler Status	
		Sprinkler Health =	
		Sprinkler Communications =	
		Gateway I/O 😑	
		Reset to defaults	
Alerts	Choose how alert notifications will be delivered	C BACK	
		Send SMS Alerts 🕅	
		Send Instant Message Alerts 11	
		Send Enail Alerta P	
		Display Action Notifications 12	
		CONNECTED DEVICES To enable instant messages in this bronser/device click in the button below.	
		Subscribe to Instant Messages	
		No devices connected so far.	

MAC Address Lookup

Choose this option then enter an IPC serial number to display its MAC address.



Site Monitoring and Management

Basic IMS Navigation

	ॐ 斧 ↑ ୯	Welcome, QTech-Farms_ Q 🌲 🚦	
	Ø# Fa	arms 📚 Groups	
	.	٥	
	QTFARM QT Test array of IPCs		
	Dashboard		
	Sprinkters Tanks		
Dashboard	Displays the farm dashboard	with sensor data and sprinkler hea	
Sprinklers	Displays the farm map with d	levice status indicators	
🗯 Tanks	Displays the farm map showing	ng only tank level sensors (if applic	
Other Farms Seroups Q. ▲ :	Toggles between Farm view a	view and Groups view	
My Account & Settings - Account	it information and settings		
Farm Settings			
Farm si	pecific settings and options		

Sprinklers View

The sprinklers view displays a map of the farm populated with device status indicators

IPC Status Indicators

IMS uses a colour coding system when displaying sensors, equipment and sprinkler controllers (IPC) on the screen. Units will update as a periodic status response is received, this can be adjusted to be more frequently if the site is busy (in summer say) or infrequently in winter when watering does not normally occur.

This table provides a summary of the colour codes:

9	ОК	Status is normal	
0	Caution	IPC low battery, schedule problem, clock error	
9	Issue	IPC out of contact for more than 30 days	
0	Watering	IPC is active, valve open based on schedule	
9	Inhibited	IPC will not water, schedule interrupted	
9	Sensor	Position of sensor or gateway	
9	Spare	IPC is a spare or out of service	
0	POI	Point of interest, feature marker not an IPC	
\bigcirc	Filter	Excluded items when filtering is applied	

For the most part operators will check the condition of IPCs to see if they are **scheduled to water (blue)** and for any conditions that may need further investigation. Orange indicates a warning and should be attended to and red indicates that the unit has gone completely out of contact and should be visited.

More detailed explanations can be found in the Maintenance and Troubleshooting section.

Spares (Pink) can be held on site ready to replace non-functioning units in the field (see Managing Spares).

The figure below shows how these colour codes look on a site.





Filtering

The filter **T** tool in the **Sprinklers** view of IMS can be used to highlight or perform tasks on only a specific selection of the site.

Selecting the filter icon provides a number of different options to filter by. Only the filtered selection will be displayed in their colour on the map.



Any commands, found under the more options menu , are only actioned on the filtered selection, for example:

- Sending a schedule to IPCs reporting a schedule error, or inhibited IPCs
- Requesting the status of out of contact IPCs
- Generating a report of out of contact or low battery IPCs for a maintenance record

Dashboard View

Displays the farm dashboard with sensor data and sprinkler health information. Which information is displayed and in what order is configurable from the **My Account & Settings** menu.

Headlines

Headlines are a quick reference to information such as a rain forecast or current sensor readings and are displayed at the top of the Dashboard screen.



To configure simply double click the headline, choose which option to display, then save/close by selecting the arrow.

Soil Moisture – the time at which the soil moisture reading is displayed for is selected, e.g. the value at 9am every day.



Sensor Data

Sensor data (if applicable) is displayed on the dashboard. This could include tank levels, flow and soil moisture trends.



The time scale for graphs can be changed using the Υ and further tank level information (level history, usage, location and battery charge (if applicable)) can be accessed by selecting the appropriate icons.

Sprinkler Status, Health and Comms



These sections display the current status of the site, site "health" compared to all time maximum and minimum values and a communication summary.

Selecting any of the entries in Sprinkler Status will take you to a filtered map view of the selected item.

Due to factors such as obstacles, the lay of the land and weather conditions some IPCs will not be contactable by radio as often as others.

The Sprinkler Comms graph shows how many of the IPCs in your system are regularly in contact with IMS (this means they tend to get messages quickly), the number of IPCs that consistently struggle to get every message and lastly the number of IPCs that are completely out of contact.

Gateway I/O

The IMS gateway has 6 x digital inputs and 6 x digital outputs – refer to the **Irrigation Network Controller User Guide** for details.

- The displayed name for all I/O can be edited as desired in IMS.
- Input states are displayed and alerts can be configured for on, off or change of state conditions.
- Outputs can be manually turned on or off from IMS.

Managing Groups

IMS enables the user to create groups of sprinklers so that they can be managed collectively, for reason such as:

- Assigning all the sprinklers in paddock groups so that they can be inhibited to prevent watering if work is being carried out, for example, paddock is being ploughed or sown.
- Assigning IPCs to groups for scheduling purposes (management zones)
 - On a hill or in a gulley, beside a road, wet areas, part circle sprinklers
- Assigning IPCs to a group so that network communications can be optimised by using mesh, repeater or local (direct) communications.

Creating a Group and Adding Sprinklers to the Group

Step	Process	Note		
1.	- Select Groups at the top of the screen		∂ # Farms € Groups	

Step	Process	Note
2.	 If you want to add sprinklers to an existing group skip to step 3, otherwise create one as follows Select New Group Name the group Give the group a description if desired If this group defines its own lateral/zone, turn the slider on Select Create & Manage 	Circup Information The fails marked were average of the requirement Rame * Obsorigition Dissorigition U it is latered? Current Current Current
3.	Select either the Manage in a List or Manage in a Map option Accessed from the Group Settings [©] menu of an existing group	Image:
4.	Manage in a List Two lists are displayed, the right hand list shows devices in the group and the left hand list shows devices not in the group. Add units to the group - Select the desired units in the left list - Select the + to add Remove units from the group - Select the desired units in the right list - Select the desired units in the right list - Select the - to remove	← Group PC 15min retrockentration (metabolic retrockentration
5.	 Manage in a Map Navigate to the location of the sprinklers of interest Select the , then click on each sprinkler you want to add to the group Or Select the coption, then left click around an outline to select the target sprinklers (a white shape is displayed) There are options to erase the shape and start over, undo 1 point or redo 1 point. Add or remove sprinklers from the group by selecting Add Remove 	Green sprinklers are in the group, grey ones are not

Adding Points of Interest

Points Of Interest, displayed as brown dots, can be used as placemarks for anything you want to remember the location of. Examples include planned sprinkler locations, drain points or slave sprinkler locations.

Step	Process	Note
1.	 Open the Farm Settings menu Select Manage Assets > Points of Interest (POI) Select Add New POI 	Were the strength of the stre
2.	 Enter a Name Click on the map to assign the location Select Create 	Cercice Information The Name of the Astrony Piersonne. Name * 21927 CPS Location Gr Convert Location
	Repeat for as many POI as desired.	discussion and a second s
3.	- POI can be edited at any time using the 🖉	



IPC Operational Commands / Tasks

IMS Information Update Frequency

There are two aspects of updating information in IMS.

- IPC status information retrieved by the IMS Gateway
- The IMS Gateway is configured to request IPC status information on a periodic basis.
- Typically this is every 3 7 days.
- IMS website updated with latest information from the IMS Gateway
- The information displayed in IMS will update hourly.
- When a command is sent from IMS the information relating to the devices the command was related to is updated after two minutes.

If the IMS Gateway is performing other tasks, or simply due to their location, communication with IPCs can take longer than 2 minutes. Once the IPC has responded to the IMS Gateway the information on the website will be updated via the hourly update or if another request is sent from IMS.

Accessing Commands

1.

2.

Commands can be sent to individual IPCs, a group or a filtered selection. Commands for each option can be accessed as follows.

Туре	Process	Note
Individual IPC	 To check on an IPC simply select it from the Sprinklers view or search for it by name or serial number using the search icon Q. Select open card (sprinklers view) or the search 	IPC07 (7635) Ø ♦ × Schedules Details Communication Day Sast End Durston ● MAG № 6170 * 10(61/2021 15:00 15:40 10 minst 11(61/2021 15:10 15:20 10 minst 5 cheq • • • • • • • • • • • • • • • • • • •
	result to display the sprinkler card.	Last policie (8(0)(001 15.4) Last context (8(0)(2021 15.4) Replace Sord Schwidule Record Battery Replacement
Group	a Farms Select the Group view Select the Group view	GROUP ✓ Edit Group
	 Open the Group Settings menu I for the desired group 	O DIVICES IN Manage Devices (Map) III: Manage Devices (List) © Remove all Devices SCHEDULES O Inhibit whole Group L Unnhibit whole Group Send Schedule COMMUNICATIONS © Change Comms Mode S Pollow Group Z Deploy whole Group Z Deploy whole Group
Filtered Selection	1. Filter T on the desired option	
	 Open the more options • menu and select the desired command 	2 Out of Contact O Clock Error Low Battery
	The command will be sent to the filtered selection only	Schedule issues O Active Spares 8 Total

Command Options

Command	Individual IPC	Group	Filtered Selection
Status Request	The refresh icon ²² will request the status of the IPC	Under the communications section, select Poll Whole Group	Choose Request Status
Inhibit	Turn the Inhibited slider ON to	Under the schedules section, select	
	send the inhibit command	Inhibit Whole Group	
Valve Manual	Under valve operation choose		
Control	either the On or Off command to		
	send		
Send Schedule	Under maintenance choose	Select Send Schedule	
	Send Schedule Select the schedule to send, then Send to Devices		end to Devices



Command	Individual IPC	Group	Filtered Selection
	Select the schedule to se	nd, then	
	Send to Devices		
Replacing IPCs	The replacement procedure is described in the Managing Spares section.		
Battery	Select the Record	Battery	
Replacement	Replacement option make note		
	that a battery has been replaced		
	on this IPC.		

Gateway Commands and Settings

To access the gateway commands and settings navigate to Farm Settings > Manage Assets > Gateways, then

open the Gateway Settings menu

	\$	SETTINGS
		🖋 Edit
+ 00 -	FARM	Telete
	🖋 Edit Farm	NETWORK COMMANDS
QTFAF		Start Comms
est array	Delete Farm	Stop Comms
1		Image Timeset
	MANAGE ASSETS	Request All Status
Dashb	MANAGE ASSETS	Send All Schedules
	Irrigation Devices	Cancel Scheduling
Sprink	0	C Deploy
	Sensors	
	Demosters	GATEWAY COMMANDS
≡ lan	Repeaters	Update Settings
	Gateways	Update Time
	outerrays	C Update Device List
	Points of Interest (POI)	Backup Device List

Settings

Select Edit to review and change gateway settings. Type and Serial number should not be changed.

Setting	Description	Note
Network	 How the radio network behaves for each transaction Number of communication attempts How long to wait for a reply (TTL) 	Network Simple – 3 attempts, 4 TTL Compact – 3 attempts, 8 TTL Extensive – 5 attempts, 16 TTL Complex – 3 attempts, 16 TTL
Charge Threshold	If an IPC battery charge falls below this setting it will show as Low Battery	Charge Threshold (%) 50
Clock Threshold	IPC times more than this number of seconds different to the gateway time will show as a Clock Error	Clock Threshold 60
Status Period	How often the status is queried from all IPCs on the site	Status period (hrs) 72
Timeset Period	How often IPC time is synchronised with gateway time	Time set period (hrs) 72
Location	Click on map to set	

Network Commands

Command	Description
Command	Description
Start Comms	Starts gateway communication cycle. Any previous unsuccessful communication tasks to IPCs are reattempted
Stop Comms	Stops gateway communication cycle and clears all stored communication tasks
Timeset	Sends a command to synchronise IPC time with gateway time
Request All Status	Sends a status request to all IPCs on site
Send All Schedules	Sends the currently active schedule to all IPCs on site



Gateway Commands

Command	Description
Update Settings	Send gateway settings to gateway
Update Device List	Update gateway with current device list (podlist) from IMS and save to SD card
Backup Device List	Save backup of device list to SD card

Creating Schedules

The scheduling function in IMS is aimed at being easy to use while still being able to cater for the majority of common scheduling requirements.

If more complex scheduling is desired

- The IPC Manager or RX Pod Scheduler applications can be used, then the resulting schedules can be imported into IMS
- Schedules in a list form (csv) can also be imported into IMS

Only schedules that have been created in IMS can be edited in IMS. Any schedules that have been imported can be viewed and distributed from IMS, but not edited.

Scheduling in IMS

Groups

The configuration of groups is key to creating schedules and is the first step in scheduling in IMS. In the most basic form sprinklers should be grouped by their designed sublateral/zone groupings. This ensures the hydraulic design operational requirements can be accounted for in the scheduling.

Any additional collection of sprinklers that you intend to have different scheduling rules should be assigned to group(s).

Application Depth Configuration

With some additional configuration sprinklers can be scheduled by application (mm) or operation time.

Step	Process	Note
	Site Wide Configuration	Configured properties apply to all
		sprinklers on site
1.	From the Farm Card	*
	 Open the Farm Settings menu Select Edit Farm 	FARM CTFAI St arra Dashb MANAGE ASSETS Sprink MANAGE SCHEDULES View Schedules Schedule Management
2	- Select Application Depth Settings	ADVANCED
۷.	- Select Application Depth Settings	Application depth settings
3.	Option 1 – System Design Parameters	Water Application Level Configuration ×
	- Configure the target 24hr application depth and the	System disign parameters >
	corresponding sprinkler runtime	Target 24h application depth 5 mm Conseptuading spinitive ruitines 20 min
		Sprinkler parameters > Duration 13 min, application depth 3,3 mm
		Check results. (Settings: Water application lovel - 5 mm, Duration - 20 min.)
	Option 2 – Sprinkler Parameters	Water Application Level Configuration
	- Configure the sprinkler flow rate and spacing	comparison Synthe design parameters > Spitable parameters >
		Spinkler Draw 5 by Spinkler Drawing 35 width meters: 40 length meters Spinkler Coverage 5400 space meters
		Duradion 15 min. application depth 1,3 mm
4.	- Select Confirm	

Step Process Note Modify by Group Configuration Properties can be modified per group (e.g. lateral / Zone) 1. -Select Groups from the top of the home screen **∂*** Farms Sroups 2. Open the Group Settings 🌼 menu for the desired -GROUP group 🖋 Edit Group Select Edit Group 📋 Delete Group DEVICES Manage Devices (Map) I Manage Devices (List) Remove all Devices 3. Select Application depth settings -Configure properties for this group 4. Select Confirm Update group information 5. -Update

Create New or Edit Existing IMS Schedule

Step	Process	Note
1.	From the Farm Card	*
	 Open the Farm Settings menu Select MANAGE SCHEDULES > Schedule Management 	FARM FARM FARM FARM Farm Delete Farm Dashb MANAGE ASSETS Sprink MANAGE SCHEDULES View Schedules Schedule Management ADVANCED
2.	 To create a new schedule Select Create Schedule To edit or clone(copy) an existing schedule Select the actions menu for the schedule of interest Then select the desired action 	← Schedule Management. work resource was available of the set o
3.	A draft of your schedule can be saved at any time, to go back and edit later, using the Update Draft button	Previous Update Draft > Next

step	Process	Note
I.	Basic Info – Name and general rules	Basic Info Group
	- Name – A name for this schedule	Name and general rules How to schedu
	- Don't water for days – number of non-	Name *
	watering days in schedule cycle	Test schedule
	- Fill the day – Use all available 24brs by evenly	
	distributing between all sprinklers	Don't water for days ¹²
	Mu form is windy. Creates a 2 day schedule	My farm is windy [7]
	- Wy farm is windy – creates a 2 day schedule.	
	Sprinklers running in the morning of day 1 will	
	run in the atternoon of day 2 and vice versa	
	Groups – How to schedule what?	
	All rule sections can be expanded and collapsed for	Group Scheduling Create watering rules for groups of sprinklers.
	ease of viewing by selecting the heading with a >	Group Rules 1 (Zone1,Zone2)
		Group Rules 2 (Zone3)
		Irrigation Timing Restriction
		Additional Management Rules
i.	Group Rules	E Add
	- Fach set of Group Rules applies to the defined	Mad Add
	= Each set of Group Rules applies to the defined	To add a new set of Group Rules
	group(s) in that rule.	(*)
	- You can have multiple Group Rules	To delete a set of Group Rules
	Number of Sprinklors per group	Group Rules 1 (Zone1 Zone2)
	Horo the basic system limits are set	
	There the basic system limits are set	GROUP RULES 1
	- Define which group(s) that you want to apply	Number of Sprinklers per group *
	these scheduling rules to (e.g. a zone / lateral)	new version up of adult. Constraints for the 504em. How many sprinklers can operate at any one time?
	 Select the drop down box to add available groups 	Zone1 × Zone2 × × v
	- Choose how many sprinklers can run at a time	Run up to 2 sprinkler(s) at any one time Allow more than one sprinkler per group to run at a time •
	- Turn the slider on to allow more than one	
	sprinkler in a group to run at a time	
	Example	
	Example - Zone1 & Zone2 are configured groups	
	 Example Zone1 & Zone2 are configured groups Number of sprinklers is set to 2 	
	 Example Zone1 & Zone2 are configured groups Number of sprinklers is set to 2 Slider off – 1 sprinkler in each of Zone1 & Zone2 	
	 Example Zone1 & Zone2 are configured groups Number of sprinklers is set to 2 Slider off – 1 sprinkler in each of Zone1 & Zone2 is allowed to run at any one time 	
	 Example Zone1 & Zone2 are configured groups Number of sprinklers is set to 2 Slider off – 1 sprinkler in each of Zone1 & Zone2 is allowed to run at any one time 	
	 Example Zone1 & Zone2 are configured groups Number of sprinklers is set to 2 Slider off - 1 sprinkler in each of Zone1 & Zone2 is allowed to run at any one time Slider on - 2 sprinklers across all sprinklers in zone1 	
	 Example Zone1 & Zone2 are configured groups Number of sprinklers is set to 2 Slider off - 1 sprinkler in each of Zone1 & Zone2 is allowed to run at any one time Slider on - 2 sprinklers across all sprinklers in zone1 & zone2 are allowed to run at any time (could be 2 cone) 	
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Stop	Drocoss	Noto				
Step	FIDLESS	Note	Duration Rule		×	
	- Half circle sprinklers, sprinklers in an overly wet		Groups *			
	area		Wet Area ×		x ~	
			Operation * Reduce, increase or override?	Value 7ype * by %, minutes or mm?	Value * Charge by how much?	
			Reduce	Percentage v	50 %	
					Cancel Confirm	
10.	A group operation summary is displayed under the		Group Schedu	uling as of seconders.	🖬 Add	
	scheduling rules.		Group Rules 1 (Zone 1.	Zone2)	>	
			Group Rules 2 (Zone3)		>	
					D Add	
			Summary Groups	Info		
			B Summary Groups	ino		
			Group Sprint	klers Operation time,	min Water app, mm	
			Zone2	60 1	1/23 2.4/4.9	
			- Wet Area	8 1	1/24 2.4/5.1	
			- Night only	23	9/23 1.9/4.9	
	An overall schedule summary and any warnings or		Summary			
	errors are displayed in the right hand pane		Total Sprinklers		13	
			Total Sprinklers S Max Sprinklers O	icheduled n	14 2	
	e a sprinklers not covered by schedule		Min Sprinklers Or Total Operation D	n Days	1	
	c.g. sprinkers not covered by schedule					
			A Warnings			
			A Warnings			
			You must cover all currently scheduled	sprinklers in your site. : d.	3 not being	
			Cannot level the op	eration times in group	SubLateral 1	
			because the paddir	ng is greater than 5 mir	N.	
			padding is greater t	than 5 min.	Pok 1 because the	
11	Review – Is everything ok?			Sprinklers Opera	tion	
	Deview the resulting energian times from your		3.0	Total Sprinklers Operating	at a Time	
	Review the resulting operation times from your		2.5 2.0			
	configured rules		1.5 1.0			
	 Gaps in the scheduling can be identified from the 		0.0			
	graph showing the number of sprinklers on at		0000 01:0 01:0 02:0 02:0 02:0 02:0	050 060 070 070 070 070 070 070 070 070 07	1500 1600 1700 1800 1900 1900 1900 1900 2000 2000 2000 20	l .
	any time across your schedule period		Pdk 1	Pdk 2	SubLateral 1	
	A table of all start times and durations is also		Day 1	Day 1	Day 1	
	- A table of all start times and durations is also		GAP (1344 mins)	00:00 IPC10 [240 mins]	GAP [780 mins]	
	aispiayed		22:24 IPC09 (94 mins)	04:00 IPC10 [240 mins]	13:00 IPC03 [94 mins]	
			GAP [2 mins]	08:00 IPC12 [240 mins]	14:34 IPC04 [94 mins]	
			-	12:00 IPC12 [240 mins]	16:08 IPC05 [94 mins]	
			-	16:00 IPC13 [240 mins]	17:42 IPC06 [94 mins]	
			-	20:00 IPC13 [240 mins]	19:16 IPC07 [94 mins]	
			-	-	20:50 IPC08 [94 mins]	
			-	_	GAP [96 mins]	<u> </u>
12.	When you are happy with your schedule select		<pre>< Previous</pre>	🛱 Generat	te >Next	
	Generate					I.
	- Now the schedule is available to be distributed in					
	11/13					

Refer to appendix for a worked scheduling example.

Importing a Schedule from a Project File

Scheduling changes can be made in IPC Manager or RX Pod Scheduler applications and then the associated project file imported into IMS.

As these project files contain sprinkler name and IPC serial number information in addition to the scheduling details, it is important this is consistent with IMS. Any changes to naming or assigned IPCs (replacements or additions) made in IMS need to be made in the scheduling application also.

Failure to ensure consistency could result in duplicate and/or additional sprinklers/IPCs being created which can lead to a lot of confusion.

Importing the Project File

Step	Process Note		
1.	Access the Import menu from the IMS home screen	•	
	Farm Settings 🌞 > Advanced > Import	FARM FARM Farm Delete Farm MANAGE ASSETS MANAGE SCHEDULES	
		ADVANCED	
2.	From the IMS Import menu	Full site information	
	 Select Full Site Information Choose the type of file to import 	Import device and scheduling information for the site IPC Manager project file (prj) Legacy RXP project file (xml)	
	The RXP Pod Scheduler file (json) option is intended for two way compatibility with the RXP Pod Scheduler software	 RXP Pod Scheduler file (json) IMS backup file (json) 	
3.	 Select Choose File Navigate to your file Select Open to start the import process 	Choose File No file chosen	
4.	The import should take less than a minute to complete and the number of successfully imported Schedule sets will be indicated	As long as your sprinkler/IPC data is consistent with IMS there should be no imported IPCs indicated	
5.	To view the new schedule details, navigate to	This schedule can now be distributed from	
	Farm Settings > Manage Schedules > View Schedules	IMS as desired	
	If you decide what has been imported is not correct the previous state can be restored using the Backup & Restore feature	Refer to Backup & Restore section	

Importing a Schedule from a List (csv)

Schedules can be imported in a list form using the provided template. Complex scheduling can be defined, but care needs to be taken to ensure all desired sprinklers are covered and to avoid undesired behaviour such as unwanted overlaps in run times.

Step	Process	Note
Step 1.	Process Access the Import menu from the IMS home screen - Farm Settings * > Advanced > Import	Note
2.	 From the IMS Import menu Select Schedules A template can be downloaded via the link (if required) Template available here https://www.waterinsight.co.nz/importing-and-exporting-using-ims/ 	Schedules Import sprinkler schedules only (CSV) Update existing or add new schedules for existing sprinklers Please download the schedule import template (CVS) Choose File No file chosen
3.	 Complete the scheduling template with the desired scheduling details and save as a CSV. IPC NAME – Name of the sprinkler to schedule TIME – Scheduled start time (h:mm, 24hr format) DAY – Day of schedule DURATION – how long to run sprinkler for (h:mm) Multiple start times and/or days of operation can be defined 	IPC NAME TIME DAY DURATION 101 0:00 1 0:15 102 0:15 1 0:20 103 0:35 1 0:30 104 1:05 1 1:00 105 2:05 1 1:15 106 3:20 1 0:20 107 3:40 1 0:10 101 12:00 2 0:15 102 12:15 2 0:20 103 12:35 2 0:30 104 13:05 2 1:15 106 13:02 2 1:02 103 12:15 2 0:20 104 13:05 2 1:100 105 14:05 2 1:15 106 15:20 2 0:20 107 15:40 2 0:10

Step	Process	Note
4.	 Select Choose File Navigate to your file Select Open to start the import process The file name will be used as the schedule name 	Choose File No file chosen If the schedule name already exists in IMS, the schedule will be overwritten with the imported data
5.	The import will take less than a minute to complete and the successfully imported Schedule sets will be indicated	Any sprinklers named in the scheduling, that don't exist in IMS will be indicated
6.	To view the new schedule details, navigate to Farm Settings > Manage Schedules > View Schedules	This schedule can now be distributed from IMS as desired

Managing Spares

IMS uses the concept of spares which enables you to hold surplus IPC units on the farm and have them ready to swap out for non-functioning units in the field.

Spares may be used for quick replacements but if the battery of a device is at the end of its life it is preferable to replace the battery rather than swap out the unit. This means that no changes to IMS are generally required.

It is important that any Spare IPCs are configured with the correct Channel and Farm ID for use on the target site, the Deploy feature in IMS will attempt to achieve this.

Creation

In the same way as any other IPCs, spares can be added to a site individually or imported, as described in the **Site Creation**, **Expansion and Editing** section.

Create a Spares group (if there is not already one) and add your spares to the group.

Deploying IPCs

The Deploy feature will attempt to configure your IPCs with the correct channel and farm ID for use on your site using the IMS gateway. IPCs can be deployed as a group or selected individually.

Before running the deployment process for IPCs

- Place them in the sun, near to the IMS gateway
- Remove the storage magnets

If the IPCs have been in storage for some time, they may need a day or two of sun to charge before they will communicate and be able to be deployed.

Deploy a whole group

Step	Process	Note
1.	- Select Groups at the top of the screen	Harms Scroups
2.	 Open the Group Settings ¹ menu for the Spares group Select Deploy whole Group 	GROUP Celt Group Delete Group DEVICES
	The INC will scan each selected IPC and attempt to reconfigure it to the desired channel and Farm ID. This process can take up to a minute per IPC, so depending on how many IPCs have been added may take quite a while.	Manage Devices (Map) E Manage Devices (List) Remove all Devices schedules Schedules Inhibit whole Group
	Allow 1min per IPC being added before moving to the next step.	LATERAL 1 Uninhibit whole Group Send Schedule communications
	Note: If the site is in the middle of a poll cycle it might take some time for this command to be processed	SPARES Change Comms Mode Poll whole Group Change Comms Mode

Deploy Individually

If you do not need to configure the whole Spares group (e.g. units returned from service/repair), IPCs can be selected individually for deployment.

Step	Process	Note
1.	 Ensure the IPCs have had their magnets removed, are in the sun and are close to the IMS gateway. Open the Farm Settings menu Select Manage Assets > Irrigation Devices 	FARM QT QT Delete Farm MANAGE ASSETS Irrigation Devices
2.	 Scroll or use the filter option to display newly added IPCs and select each of them (e.g. filter on SP, then select SP1 & SP2) 	Cernm Cernm Cernm Cernm Cernms Groups Actions Cernms Constant Cernms Cernms
3.	 Select the more menu Select Deploy The INC will scan each selected IPC and attempt to reconfigure it to the desired channel and Farm ID. This process can take up to a minute per IPC, so depending on how many IPCs have been added may take quite a while. Allow 1min per IPC being added before moving to the next step. 	QTFarm Si QTFarm Si Comms Groups Si Comms Si Comms Si Comms Si Comms Groups Si Comms Groups

Confirming IPCs are Ready to be Installed

Step	Process	Note
1.	 From the Home screen select Groups Open the Group Settings menu for the Spares group Select Poll Whole Group 	SPARES (Sprinklers (2)
2.	 Wait for the polling completed message (approx. 2min) Repeat step 1 Again, wait for the polling completed message. 	O Polling sprinkler IPC04 (7638) was × completed.
3.	 Go back to the Farms view and select Sprinklers on the farm card. Select the list icon is to view the list of IPCs. 	QTFARM QT Test array Image: Dashboard Sprinklers
4.	Scroll or filter the list as needed and check the newly added IPCs. Icons beside the serial number indicate the status of the IPC. - Green tick – Ready to be installed - Red cross – Not ready – has not communicated or battery charge is below 70% The indication will update as communication is achieved with the IPCs (you may need to refresh the page C).	For any IPCs that do not move to a green tick, follow the Deployment Troubleshooting Guide (appendix) or contact Water-Insight or your irrigation provider

Your Spare IPCs are now ready to be used on site to replace a non-functioning unit.

If they are not to be used immediately the storage magnets can be reinstalled or they can be stored in a position that allows sun to the solar panel to keep the battery charged.

IMS - Irrigation Management System- User Guide



Replacing an IPC in IMS

The IPC replacement procedure in IMS can be carried out using your smartphone, tablet or PC as long as you have internet access

	2	All of the
Step	Process	Note
1.	Login to your IMS account	
	- Go to ims.qtech.co.nz	
	- Sign in using your e-mail address and password	
2.	- Select the Sprinklers button from the farm card	
	Select the IPC you want to replace	
	 Select sprinkler on map > open card 	SPRINKLERS SUMMARY
	- Select the list icon \equiv to view the list of IPCs and	1 Det of Constant C Cose Brand
	select from list	
	Click the secret icen Q > onter the name or	
	- Click the search icon > enter the name of	
	the result to bring up the sprinkler card	
2	Soloct the cog icon from the sprinkler card	IPC07 (7635) ● 22 ♥ ×
5.	- Select the cog icon from the sprinkler calu	Schedules Details COMMANDS
	- Onder the maintenance heading select replace	Day Start End Duration @ MAC InHIBITED 18/02/2021 00:00 03:20 200 mins Farr 0 fing >>>>>>>>>>>>>>>>>>>>>>>>>>>>
		19/02/2021 17:20 20:40 200 mins P have Optimation
		Last polied: 18/02/02/1 13:47 MAINTENANCE
		Last contact 10/02/02/11847 IS SART SPARTSPARTS
		Send Schedule
		Record Battery Replacement Record Battery Replacement Record Battery Replacement
4.	- Select the "new" Spare from the drop down list	Replace Unit - IPC07
	- Turn off the Sync FarmID/Channel slider if your	Old Serial Number & MAC 7635 - 0000C098D628
	spare has been confirmed ready for use - as	New Serial Number New MAC Address
	described above	Salart from Soura Holtz
	- Select the Replace button	Select from spare
	The old unit being replaced will become the Spare and	Sync Farmid/Channel Cancel Replace
	the "new" Spare will get assigned to the sprinkler	
	the new spare winger assigned to the sprinker.	
	Alternatively, you can enter the serial number of the	
	new IPC and keep the sync FarmID/Channel slider on.	
	- The IPC will need to meet the conditions	
	described above in the Deploying IPCs section	
5.	After two minutes the app will notify you that the	Replaced sprinkler IPC07 (7641) ×
	device has been replaced.	successfully. New serial number and mac
	- IMS will attempt to schedule, then request the	address are: 7655, 00:00:C0:96:D6:2b.
	status of the new IPC.	
	- You will see the new device status if you refresh	
	the screen using the refresh icon C	
	If communication with the new unit takes longer than	
	two minutes you may need to send a status request	
	later to confirm it has received its schedule	
1		

Managing Repeaters

Repeaters provide an option when obstacles or long distances prevent line of sight from the IMS gateway to IPCs. The repeater(s) must be within **local** communication range of the IMS gateway and repeater to repeater communication is **not** supported.

Adding a Repeater to IMS

Step	Process	Note
1.	 Login to your IMS account Open the Farm Settings menu Select Manage Assets > Repeaters 	FARM FARM CTFAF est arra; Dashb MANAGE ASSETS Irrigation Devices Sensors Tan Repeaters
2.	- Select the Add New Sensor button	Welcome, QTech-Farms_Q Q O New Repeater Z Update Gateway
3.	 Give the repeater a Name, e.g. RPTR1 (5 characters or less) Enter the serial number of the repeater Enter the MAC Address of the repeater Enter the Farm ID and Channel for the site Select the location of the repeater on the map Select Create to add the device to IMS Note The repeater will need to be programmed with the correct channel and farm ID for the site.	Repeater Information The fields marked with an asterisk (*) are required. Name * Serial Number * MAC Address * Farm Id Channel Device or Group * Select a group or ipc? GPS Location



Configuring a Repeater

Step	Process	Note
1.	 Login to your IMS account Open the Farm Settings menu Select Manage Assets > Repeaters 	
2.	 Open the Repeater Settings menu > Edit 	Name Serial Number Actions RPTR1 11436 Image: Comparison of the second section of the second
3.	 Select the Device or Group drop down menu Select all groups or devices that will be communicating via this repeater Select Update 	Device or Group * SubLateral 1 x SubLateral 2 x SubLateral 3 x SubLateral 4 x
4.	- Select Update Gateway	CUpdate Gateway

Managing Sensors

IMS offers several sensor options including tank level, water flow, soil moisture and temperature. The general process is described here, refer to <u>www.waterinsight.co.nz</u> for individual manuals with specifics on

installing and setting up sensor options in IMS.

Refer to **Dashboard View** section for how sensor data is displayed in IMS.

Adding a Sensor to IMS

Step	Process	Note
1.	 Login to your IMS account Open the Farm Settings menu Select Manage Assets > Sensors 	 FARM FARM ✓ Edit Farm Test arra Delete Farm Dashb MANAGE ASSETS Irrigation Devices Sensors
2.	- Select the Add New Sensor button	Welcome, QTech-Farms_Q A
3.	 Give the sensor a Name, e.g. Top Tank (must be 15 characters or less) Enter the serial number of the sensor Select the Gateway the sensor will communicate with (INC or LoRa) Select the Sensor Type, e.g. Level-MM Enter any other required information, e.g. tank details for a level sensor Select the location of the sensor on the map Select Create to add the device to IMS 	Channel Serial Number MAC Address Channel Sensor Type LoRa Gateway Confister (P) [7] Top Water Level (D) [7] Offset (P) [7] Tank Volume (V) [7] Tank Volume (V) [7] Offset Current Location Create
4.	If prompted - Select Update Gateway	C Update Gateway



Editing a Sensor and Checking Sensor Readings

Step	Process	Note
1.	 Login to your IMS account 	
	 Open the Farm Settings menu 	
	 Select Manage Assets > Sensors 	
2.	To Edit sensor details	← 🔒 QTFarm
	- Select the 🖉	Filter by s/n, name Q
		Status Name S/N Actions
3.	To view the 3 most recent readings from a sensor	Test TLMQA
	Coloretation status has at here the set in the	Created At Value Raw Value
	- Select the status heartbeat icon	02/05/2021 18:47 64.1% 3107.96728515625
	 Data displayed by IMS refreshes every 10s (actual 	02/05/2021 18:46 63% 3048.62646484375
	values dependent on how often sensor is transmitting data)	02/05/2021 18:44 61.9% 2993.921630859375
		Close

Defining an Alert Notification

IMS has the capability to create alerts and notifications to inform you when the state of your sensor or irrigation system has changed. Alerts are defined for a particular IMS account, if multiple accounts have access to a particular site then alerts can be configured for each account.

Defining an alert has two parts – What triggers the alert & How is the alert notification delivered.

Tygers the Alert	
Process	Note
Accessing the Alerts menu	Welcome, QTech Q 🌲 🚦
From your IMS home screen	MY ACCOUNT
	Account Details Password & Security
 select My Account & Settings 	Manage Access
Manage Alerts	ALERTS
	Mariage Alerts
- To add a new alert select <a>Create Alert Event	ở 😤 🏭 ↑ C ⁴ Welcome, QTech Q. 🌲 ፤
	Alerts Management
- To edit an existing alert select	Click on "Create Alert Event" to start. Enabled Event Actions
- To enable/disable an alert select the slider 🔵	If tank level at Meadowlands on Tank 1 Level is less than 40 %
Configuring an Alert Event	
What will Trigger the Alert	Alert Event
Choose from the drop down menu	Enabled Trigger Unit war and you when an even occurs.
- Sensor trigger (e.g. Tank Level)	Tank Level
- IPC replacement (Sprinkler swap) with IMS	Select Farm Select Sensor Which farm is this for? Which sensor is this related to?
in e replacement (oprinkler swap) with his	Meadowlands V Tank 1 Level V
	Select Operation Value Whether the value should be equals, greater or less than. True/false, on/off or numeric
	Less Than ~ 40 %
	Advanced Settings
	Cancel Update
Which Farm is the alert for	Select Farm
- Choose the desired farm from the drop down	Which farm is this for?
menu	Meadowlands 🗸 🗸
Which Sensor will trigger the alert	Select Sensor
- Select the desired sensor from the drop down	Which sensor is this related to?
menu	Tank 1 Level 🗸 🗸
The Operation (condition) that triggers the alert	Select Operation
- Select from the drop down menu	Whether the value should be equals, greater or less than.
less than, areater than, equal to	Less Than
	Intervention of the second se

Step	Process	Note
7.	The condition Value that triggers the alert	Value
	- Enter the desired value	True/false, on/off or numeric
		40 %

How is the Alert Notification Delivered

These settings cover how all alerts are to be delivered for your IMS account.

Step	Process	Note
1.	From your IMS home screen	Settings ×
		General >
	 Select My Account & Settings 	Home/Farm Cards
	- Settings	Soil Moisture Stress Bands
	- Alerts	Dashboard Card Order & Visibility
		Alerts
		Close
2.	Turn on the slider for the desired notification type(s)	Settings ×
	- Your account profile must have an e-mail address	< BACK
and mobile number theses notification	and mobile number configured in order to use theses notification types	Send SMS Alerts ^[7]
		Send Instant Message Alerts [7]
	These are updated from My Account & Settings ¹ > Account Details	Send Email Alerts 171
		Display Action Notifications [7]
	 Instant messages need to be subscribed to on the device you want to receive them on. iOS (Apple) devices currently do not support this method 	CONNECTED DEVICES To enable instant messages in this browser/device click in the button below. Subscribe to Instant Messages No devices connected so far.
		Close

Backup & Restore

Step	Process	Note	
	Whenever an import process is run in IMS a backup of the previous state is created. Backups can also be manually created & deleted.	Sprinkler/IPC details, Sprinkler locations, Groups & Schedules are backed up.	
1.	To restore the IMS configuration from a backup access the menu from the IMS home screen Farm Settings * > Advanced > Backup & Restore	FARM FARM Edit Farm Delete Farm MANAGE ASSETS MANAGE SCHEDULES ADVANCED MINOPT Export BExport BExport BEXPORT BEXPONT CONTERCTION BEXPONT CONTERCTION BEXPONT CONTERCTION CONTERCTI	
2.	 Select the backup to be restored from the drop down list Select Restore 	Restore Configuration Of The farm Sets a lockup turn the far Sets. Set 12 at 260,0221 1168 And hology at 700,0221 1053 Restore Comparison Comparison Comparison Comparison Comparison Comparison Comparison Comparison Comparison Comparison Comparison Comparison Comparison Comparison Compar	
3.	Backups can be manually Created and Deleted using the available options	Restore Configuration Of The Farm * Edite is backup from the far* * Extra 2 40000011 105 * Control advection of backup * Control advection of backup * Control backup * Output to at 140000211 105 * Control backup * Control backup * Output to at 140002211 105 * Control backup * Control backup * Control backup * Control backup *	



System Planning Considerations

The following information is required before IMS can be configured & installed on a site.

1. Completed Site Details/Farm ID Application Form

- Template provided by Water-Insight on request.
- All mandatory fields filled and including as much other detail as known. Farm name, contact person and details (phone, e-mail), site location including GPS coordinates and equipment supplier and contact person.
- If a farm ID has not already been allocated for the site, this will happen as part of the IMS deployment process.

2. Subscription Billing Account

- Contact details (if different from above) for the primary account holder.
- Name, e-mail address and phone number required.

3. Additional Delegate Access

• Name, e-mail address and contact number of any additional users to be given Delegate access to IMS.

4. IPC Details

- List of sprinkler (post/pod) names.
- List of IPC serial numbers and (if applicable) which names they are assigned to.
- These could be as a project file from an IPC scheduling application (QTech IPC Manager or RXP pod scheduler).

5. Sprinkler (Post/Pod) Location Details

- A Google Earth (kml/kmz) file showing GPS coordinate information for each post/pod location.
- Naming to match that provided under IPC Details.
- 6. Scheduling Information (if an existing site)
 - Any existing scheduling information.
 - A project file from the IPC scheduling software (QTech IPC Manager or RXP pod scheduler).
 - Often the scheduling can be created in the IMS scheduling tool once the site is configured.

Sprinkler (post/pod) naming

Naming is limited to 5 characters, commonly used options are:

Zone/Position

- Hydraulic zoning of sprinklers is used in naming
- Simply zone number followed by position in zone, e.g. Z2P17, Z3P09, etc

Paddock/sprinkler

- Paddock identifier followed by sprinkler number.
- Sprinkler number may restart each paddock or be 1 (total IPCs on site)
- Example 12004 (paddock 12, sprinkler 4), E5112 (paddock E5, sprinkler 112)

Site Survey

The next step is a site visit to undertake a radio survey to identify potential installation locations for the IMS gateway & antenna, the key aspects being:

- Physical mounting location Acceptable location to physically mount the cabinet that also satisfies all other requirements.
- Power availability 230V mains.
- Internet availability This is required. Cabled ethernet connection available.
- Radio survey Determine coverage to all existing IPCs or proposed locations and identify suitable antenna positioning.
- Any site access issues.



IPC Configuration

Firmware Upgrades (if required)

Version 5.01 or above firmware is a requirement for an IMS installation. All IPCs on the site must be upgraded (if required) prior to IMS installation/commissioning.

Channel and/or FarmID Programming

If the site needed to be upgraded to v5 firmware a FarmID will also need to be allocated by Water-Insight and programmed as part of the firmware upgrade process.

Based on the results of the site radio survey an IPC radio channel change may be required to give the most reliable performance.

Scheduling

Hydraulic Design

How the sprinklers are grouped (laterals/zones) based on water delivery constraints, where usually one sprinkler in each lateral/zone can run at any one time.

The maximum duration each sprinkler should irrigate for (per 24hrs) to achieve the designed application rate. This is often tied to the number of sprinklers in each lateral/zone, e.g. 48 sprinklers running for 30min each. This should be provided as part of the system design and is usually the baseline consideration for scheduling.

Other Requirements

Any other management requirements such as wetter areas that require less irrigation, restricting irrigation in specified areas to certain times of the day or changing irrigation timing over a two day cycle in order to minimise wind effects.

Site Creation, Expansion and Editing

To add IPCs to a farm in IMS and get them ready for operation, follow the appropriate sections. If you are adding a new farm to your account follow the **Creating a Farm in IMS** section of this guide.

There are several different import options in IMS which are accessed from Farm Settings * >Advanced>Import

		\$	
FARM			
🖋 Edit	Farm		
T Dele	ete Farm		
MANAG	E ASSETS		
MANAG	E SCHEDULE	ES	
ADVANO	ED		
-5 Imp	ort		

Import Configurations	>
Choose the type of data to be imported	
Full site information	
Location	
List of Devices	
Schedules	
Choose File No file chosen	

Existing Site Migration to IMS

If you have developed an IPC configuration file and schedules using Water-Insight 's IPC Manager software or the RX Plastics Pod Scheduler software then you can use the project files created by these applications as a starting point to migrate your site into IMS.

The sprinkler names, corresponding IPC serial numbers and scheduling information from these files will be imported into IMS.

Importing Full Site Information (Project File)

Step	Process	Note
1.	From the IMS Import menu	Full site information
	 Select Full Site Information Choose the type of file to import 	Import device and scheduling information for the site
	The RXP Pod Scheduler (json) option is intended for two way compatibility with the RXP Pod Scheduler software	 Legacy RXP project file (xml) RXP Pod Scheduler file (json) IMS backup file (json)
2.	 Select Choose File Navigate to your file Select Open to start the import process 	Choose File No file chosen

Step Process Note 3. The import should take less than a minute to complete and the number of successfully imported IPCs, Schedule sets and Groups will be indicated Groups will be indicated

Importing Locations

WATER-INSIGHT

It is useful to display sprinkler locations in the map IMS provides for the site. Locations can be imported from GPS coordinates defined in a kml/kmz (Google Earth) file.

The naming in your kml/kmz file must match the naming of any existing sprinklers in IMS.

Step	Process	Note
1.	From the IMS Import menu	Location >
	- Select Location	Import sprinkler locations for existing devices (kml/kmz) Create POI only for sprinkler location Device assigned to boation liter
2.	- Select Choose File	
	 Navigate to your kml/kmz file 	Choose File No file chosen
	- Select Open to start the import process	
3.	The import will take less than a minute to complete and will indicate the number of successfully imported IPC Locations	
	If you decide what has been imported is not correct the previous state can be restored using the Backup & Restore feature	Refer to Backup & Restore section

Adding IPCs to a Farm

Whether you are expanding an existing site or setting up a new site (for which there is no existing project file from one of the scheduling applications) there are options for adding new IPCs to IMS individually, or a bulk IPC list import is possible using a spreadsheet (e.g. Microsoft Excel).

A good approach (described below) is to add new IPCs as Spares, which can then be assigned to sprinkler locations as required.

New IPCs can also be added as sprinklers (leave **Is spare** slider off) with locations defined individually or imported (rather than POI). Care would then be needed to ensure the correct IPC was installed at the assigned sprinkler.

Adding IPCs Individually

Step	Process	Note			
1.	 Login to your IMS account Open the Farm Settings me Select Manage Assets > Irriphic 	nu 🌣 gation Devices	FARM TFAI Edi st arra Del Dashb MANAG	it Farm lete Farm SE ASSETS on Devices	
2.	- Select the Add New Sprinkl	er button	Welcom	e, Team-IMS Q 🌲 🚦	
3.	 Give the IPC a Name like SP characters or less) Enter the serial number of f The Farm ID and Channel w populated with your site co Turn on the slider control Is Select Create to add the de Repeat from step 2 if there are spares 	01 (must be 5 the IPC ill already be nfiguration a Spare unit vice to IMS more IPCs to add as	Device Informati beliate nucleat with an astronk (Hannon Nume* Sertal Number * Farm Id Ottol Commo Mode Local Gr5 Location Or Ger Group	ion and MAC Address * Channel 21 Varient Location	
			Select a group? Is Spare Unit Is Part Sprinkler	Create	



StepProcess4.When all

When all spares have been added

- Select Update Gateway

Note

C Update Gateway

Create a Spares Group and add IPCs to the Group

Only required if the bulk IPC list import option has not been used

Using a group is very useful for easily managing your Spares. If one does not already exist, create a Spares group and add your new IPCs to it.

Importing a List of IPCs

The Device Import template can be found here https://www.waterinsight.co.nz/importing-and-exporting-using-

te A B C 1 Serial Name Group 2 12345 IPC01 Group1 3 - - - 4 - - - 5 - - - 6 - - -
A B C 1 Serial Name Group 2 12345 IPC01 Group1 3 4 5 6 7 7 7
Windows (C) File anne Import test.cv File anne Import test.cv Seve as type CSV (Comma delimited) *Crav) Excel Workbook *(valid) Excel Workbook *(valid) Excel Workbook *(valid) Excel Binay Workbook *(
Account Formatted Text (Space delimited) (*pm) Import Configuration > Count of sign of also to imported. List in domain Import align Import align Import align "Start Schwarz Import align "Distart Schwarz Import al
Import Configurations Import Configurations What the you want to load? What the Type? Tomar Time? Other Time?
SP_79 7640 Local Spares
-

Deploying New IPCs for a Site

The Deploy feature will attempt to configure your IPCs with the correct channel and farm ID for use on your site, using the IMS gateway. IPCs can be deployed as a group or selected individually.

Before running the deployment process for IPCs IMS - Irrigation Management System– User Guide



- Place them in the sun, near to the IMS gateway ٠
- Remove the storage magnets

Deploy a Whole Group

Step	Process	Note
1.	 Select Groups from the top of the IMS home screen 	Harms
2.	 Open the Group Settings menu for the Spares group Select Deploy whole Group The INC will scan each selected IPC and attempt to reconfigure it to the desired channel and farm ID. This process can take up to a minute per IPC, so depending on how many IPCs have been added may take quite a while. Allow 1min per IPC being added before moving to the next step.	GROUP Edit Group Delete Group DEVICES Manage Devices (Map) Edit Group DEVICES Manage Devices (Ust) Remove all Devices SCHEDULES O Inhibit whole Group Uninhibit whole Group O Inhibit whole Group O Inhibit whole Group O Inhibit whole Group O Deploy whole Group O Deploy whole Group O Deploy whole Group O Deploy whole Group Inhibit take some time for this command to be processed

Deploy individually

If you do not need to configure the whole Spares group, IPCs can be selected individually for deployment.

Step	Process	Note
1.	 Ensure the IPCs have had their magnets removed, are in the sun and are close to the IMS gateway. Open the Farm Settings menu Select Manage Assets > Irrigation Devices 	FARM FARM CTT FARM CTT FARM CTT FARM CTT FARM FA
2.	 Scroll or use the filter option to display newly added IPCs and select each of them (e.g. filter on SP, then select SP1 & SP2) 	✓ ● QTFarm □ × Q Second devices 2 ■ ■ 1 Name SN Comms Groups Actions S901 2001 1 S91 2001 1 S91 2001 1 S92 Hold Sparse 1
3.	 Select the more menu Select Deploy The INC will scan each selected IPC and attempt to reconfigure it to the desired channel and Farm ID. This process can take up to a minute per IPC, so depending on how many IPCs have been added may take quite a while. 	With the site is in the middle of a poll cycle it might take some time for this command to be

Allow 1min per IPC being added before moving to the next step.

processed

Confirm IPCs are Ready to be Inst	alled
-----------------------------------	-------

Step	Process	Note
1.	 Select Groups from the top of the IMS home screen 	∂ # Farms € Groups
	 Open the Group Settings menu (cog) for the Spares group Select Poll Whole Group 	SPARES
		Note: If the site is in the middle of a poll cycle it might take some time for this command to be processed.

Step	Process	Note
2.	 Wait for the polling completed message (approx. 2min) Repeat step 1 Again, wait for the polling completed message. 	Polling sprinkler IPC04 (7638) was × It may take longer than 2min to communicate with all IPCs being polled
3.	 Go back to the Farms view and select Sprinklers on the farm card. Select the list icon is to view the list of IPCs. 	
4.	 Scroll or filter the list as needed and check the newly added IPCs. Icons beside the serial number indicate the status of the IPC. Green tick - Ready to be installed Red cross - Not ready - has not communicated or battery charge is below 70% The indication will update as communication is achieved with the IPCs (you may need to refresh the page ℃). 	For any IPCs that do not move to a green tick, follow the Deployment Troubleshooting Guide (appendix) or contact Water-Insight or your irrigation provider.

Configuring IPCs with EP3

If the IMS gateway is not installed on site yet, the site configuration can be exported from IMS for use in an EP3 for configuring the channel, farm ID and scheduling of IPCs.

Exporting Full Site Configuration - Creating a SD Card for an EP3

Access to a computer with a SD card reader (or using an USB card reader adapter) is required to generate and load the required files to an SD card.

Step	Process	Note
1.	From the Farm Settings menu - select Advanced > Export	FARM FARM FARM Farm Delete Farm MANAGE ASSETS MANAGE SCHEDULES ADVANCED ADVANCED Export Export
2.	 Choose Export Full Configuration of the Site A compressed (zip) file (Site.zip) will be downloaded to your default downloads folder Save this file to a new location if desired 	Export Configurations × What config file you want to download? Export Pod List file only Export Pod Scheduler/MS backup file (son) Export full configuration of the Site Export full configuration of the Site Coop
3.	 This file must be unzipped for use on the EP3 Right click on the file and choose extract all 	Two folders will be created called pods and schedules
4.	Insert your SD card into the computer (or adapter) Open the drive folder using file explorer Copy the pods and schedules folders onto the card Safely remove (eject) the card for use in your EP3	Ensure they are copied to the root folder on the card and not to any sub folders. Right click on the drive name in file explorer and select eject

Defining Locations

Locations can be assigned based on choosing a location on a map, entering known GPS coordinates (WGS:84 format) or importing a Google earth kml/kmz file.

A kml/kmz file can be generated in a number of ways, an option for plotting locations using a smart phone application (Map Marker) is described in the **appendix**.



- This can be done as a preparation task prior to visiting site.
- There is an opportunity to update the location when installing the IPC using IMS on your phone.

Sprinkler locations can be defined as Points of Interest (POI). Then IPCs can be assigned to each location as they are installed. Alternatively, the sprinkler location can be defined at the time of installation.

A partially complete site (or site expansion) will show the new sprinkler locations (POI) as brown dots and the active sprinklers in green (if they are operating normally).



Import Locations as Points of Interest

Step	Process	Note
1.	From the IMS Import menu	Location >
	- Select Location	Import sprinkler locations for existing devices (kml/kmz) Create POI only for sprinkler location
	 Turn Create POI slider ON 	Device assigned to location later
2.	- Select Choose File	
	 Navigate to your kml/kmz file 	Choose File No file chosen
	- Select Open to start the import process	
3.	The import will take less than a minute to complete and will indicate the number of successfully imported IPC Locations	

Manually Create Locations as Points of Interest

Step	Process	Note
1.	 Open the Farm Settings menu Select Manage Assets > Points of Interest (POI) Select Add New POI 	Construction Construction Has by same or ground. Construction Name Groups Actions PO3 - ZP12 -
2.	 Enter a Name Click on the map to assign the location Select Create 	← Device Information In the formated of a state of cyst regions Nume* 21927 CPS Location
	Repeat for as many POI as desired.	Note: The location can be updated when the IPC is physically installed.

Converting POI to Sprinklers

Now that the IPCs are ready for installation and there are sprinkler locations assigned in IMS, it is time to allocate specific IPCs to each location.

If there **is cellular network coverage** on the site, each IPC can be allocated and tested as it is installed. If there is **no cellular network coverage** on site, IPCs can be allocated before installing (where you have internet access available), then (once installed) tested with an EP3 if desired.

Option 1 – From the POI list

Step	Process	Note
1.	 Open the Farm Settings menu Select Manage Assets > Points of Interest (POI) 	Image: Constraint of the system of the sy
2.	 (Optional) If your POI positions have been estimated only, now is a good time if you want to update the location using the GPS on your phone. Scroll or use the filter option to display the desired POI Select Edit POI Select Get Current Location Update 	Everice Information The fields marade with an asterisk (*) are required. Name * ZP12 GP5 Location
3.	 Scroll or use the filter option to display the desired POI Select Convert to Sprinkler <i>convert</i> Select the desired IPC from the drop-down list Change Comms Mode if desired Select Convert 	CONVERT TO SPRINKLER Name * Z2P12 Serial Number * MAC Address * Select from Spare Units Select from spare Farm Id Channel 01:15 1
	range of the IVIS gateway and mesh otherwise. If you are unsure choose mesh.	Comms Mode Local ✓ ★ Cancel
4.	 Select Update Gateway The IPC will take the name of the POI The IPC will no longer be assigned as a spare The IPC will be removed from the Spares group 	♥ New POI

Option 2 – From the Sprinkler Map

Step	Process	Note
1.	- Select the Sprinklers view from the Farm Card	
2.	 Navigate to the POI that you wish to convert to a sprinkler Select the POI dot and select Convert 	Z1P04 × Convert
		Z1P04

Step Process	Note
 Enter / confirm the details Device type – Sprinkler (conversion to IPC) Name – The name can be changed at this point if desired Select from Spare Units – Select the desired IPC 	CONVERT POI Z1P04 TO: Device type Sprinkler (convertion to IPC) v
 from the list of Spares Comms mode – Change if desired Select Convert 	Serial Number * MAC Address *
Repeat for as many POIs you want to convert to sprinklers	Farm Id Channel 9985 5 Comms Mode Local ★ Cancel
 When you have finished converting all desired POIs to sprinklers Open the Farm Settings menu Select Manage Assets > Irrigation Devices 	FARM FARM FARM Edit Farm St arra Delete Farm
- Select Update Gateway	Dashb MANAGE ASSETS Irrigation Devices

Setting the Sprinkler to Work

These steps should be performed from IMS when possible. An EP3 can be used if there is no cell coverage on site.

Step	Process	Note
1.	 From the farm card select Sprinklers Select the IPC of interest on the map Select Open Card 	IPC03 (7639) ★ ■ 87% ③ 0s Open Card
2.	 A status request can be sent by selecting the icon Any clock errors will be automatically corrected next time IMS synchronises the time on the site Select the options menu If a schedule is available in IMS for this IPC, it can be sent to the device using the Send Schedule option To test the solenoid operation, select On/Off (Valve Operation) 	COMMANDS @ MAC: 00:00 WHIBTED @ Charge: 83 VALVE OPERATION Charge: 83 Y 2 hops - Me Schedule Id MAINTENANCE IS PART SPRINKLER Send Schedule

Editing an Existing IMS Site

Editing Farm Details

Step	Process	Note
1.	Access the Farm Information page	*
	- Farm Settings > Edit Farm	FARM
		C 🧬 Edit Farm

Step	Process	Note
2.	Edit farm details - Name - Access road - Location - Farm Boundaries	・ C = Constante de la
	Select Update	Lindate

Editing Sprinkler Details

Step	Process	Note
1.	Access the Manage Irrigation Devices page - Farm Settings > Manage Assets > Irrigation Devices	FARM QT Te: MANAGE ASSETS Irrigation Devices
2.	 Scroll or use the filter option to display the desired sprinkler(s) Open the Device Settings menu > Edit 	Ipc0 X Q Name 5/N IPC05 7634 Local IPC05 IPC07 7635 Local IPC07 IPC07 7635 Local IPC07 IPC07 F036 IPC07 F036 IPC07 F037 IPC07 F037 IPC07 F038 IPC07 F037 IPC07 F037 IPC07 F037 IPC07 F037 IPC07 F038 IPC07 F039 I
3.	 Edit desired details Name – sprinkler name Comms Mode – Local or Mesh Location – choose location or Get Current Location if using mobile device Group(s) – Group(s) sprinkler belongs to 	Center de la martina de la ma de la martina de la marti
4.	Update Gateway if prompted	C Update Gateway

Editing Gateway Details

Step	Process	Note
1.	Access the manage gateways page	*
	- Farm Settings > Manage Assets > Gateways	FARM ✔ <

Step	Process	Note
2.	The INC type gateway communicates with all IPCs on site.	🗲 🦀 QTFarm
	- Open the Gateway Settings ^I menu > Edit	Name Type Actions
		INC001 INC
		LoRaGTW LO
3.	Edit desired settings	← Device Information
	- Network – determines communication parameters	Name * Type *
	(# attempts, how long to wait for response)	INC001 INC Gateway V
	• Consult Water-Insight before adjusting this setting	Serial Number * MAC Address *
	- Charge Threshold (%) – below this is considered low	1105 EC:FE:D7:73
	battery	Network
	- Clock Threshold (s) – above this is considered a	Simple Compact Extensive Complex
	clock error	Charge Threshold (%) Clock Threshold
	- Status period (h) – how often to query status of site	Status period (hrs) Time set period (hrs)
	- Time set period (h) – how often to sync time on site	72 72
		GPS Location
	Then Undate	Get Current Location
		172.61647011716923
		-43.53570884118707
		Update
4.	Update settings to Gateway	Sena All Schedules
	Any changes now need to be sent to the IMS gateway	Cancel Scheduling
	hardware.	С Періоу
	Open the Gateway Settings manus Undete	GATEWAY COMMANDS
	- Open the Gateway Settings • menu > Opdate	C Update Settings
	Settings	Update Time
		Backup Device List
		Backup Device List

RX Plastics Pod Scheduler Data Interchange

Two-way compatibility with the RX Plastics Pod Scheduler software is achieved by using the RXP Pod Scheduler (json) import/export option.

This allows sprinkler/IPC details, groups and schedules to be transferred between IMS and the RXP Pod Scheduler software.

Step	Process	Note
1.	From the Farm Settings menu - select Advanced > Export	FARM FARM Farm Edit Farm Delete Farm MANAGE ASSETS MANAGE SCHEDULES ADVANCED ADVANCED Export
2.	 Choose Export RXP Pod Scheduler/IMS backup file (json) The file will be downloaded to your default downloads folder Save this file to a new location if desired 	Export Configurations × What config file you want to download? Esport file only Export RXP Pod Scheduler/IMS backup file (sonl
		Close

Exporting for use in RXP Pod Scheduler



Step	Process	Note
3.	This file is designed for importing into the RX Plastics Pod	

Scheduler.

- Confirm with RX Plastics for version and availability

Importing from RXP Pod Scheduler

Step	Process	Note
1.	To import a site configuration (json) file generated from RX Plastics Pod Scheduler - Open the Farm Settings menu - Select Advanced > Import	FARM FARM Farm Edit Farm Delete Farm MANAGE ASSETS MANAGE SCHEDULES ADVANCED ADVANCED Export Export
2.	 Choose Full site information Then select RXP Pod Scheduler file (json) Replace IPCs slider is turned on All existing IPC details in IMS will be replaced by the imported data Replace IPCs slider left off Any serial number changes for existing sprinkler names will be skipped 	Import Configuration * Uncode the type of data take interaction * In the Mathematican Control of
3.	 Select Choose File > navigate to the desired file > Open A success message will be displayed including any serial numbers that were skipped. Select Update Gateway to update the IMS gateway with the changes Once successful, can then Close. 	Import Configuration > Close the type of data is the imported > Ind the fortunation > Lata fortunation > Lata fortunation > Lata fortunation > Close of topper the successfully updated. Becaused by input sets > For delayers we successfully updated. Becaused by input sets > Lata for delayers we successfully updated. Becaused by input sets > Lata for delayers we successfully updated. >

Maintenance and Troubleshooting

Status indicators

Orange – Caution

Clock Errors

Indicate IPCs whose time clock have fallen outside the configured threshold compared to the gateway time (default 60s).

- This usually requires no action as the IMS gateway periodically synchronises the time on the site (timeset).
- A timeset can be manually triggered by selecting the Fix it option from the sprinkler card.
- Units that drift out of time frequently should be returned for service.

Low Battery

Indicates the number of IPCs that have fallen below the threshold for low battery capacity in your system (default 50%).

Considerations for IPCs reporting Low Battery:

- The location of the IPC in a valley or other shade and not be exposed to many daylight hours
- The weather or the time of year affecting the amount of solar energy the IPCs receives



- Excessive radio communications, the radio circuit is the heaviest user of power in the IPC and if the radio happens to be running a lot, for example the status polling rate is high, then this will drain the battery possibly more than it can be replenished by the solar panel.
- An electrical fault in the IPC, causing the battery to not charge properly, this ultimately drains the battery
- The battery is at the end of its life. Every battery eventually runs out of capacity but batteries can take different lengths of time before they reach this state. Battery life depends on battery chemistry, usage, temperature and manufacturing variances, to name a few reasons.

Just because the capacity drops it does not mean the battery must be replaced. The unit may well recover without any issues at all.

Battery voltages go up and down but voltages that are "tanking" may indicate the end of life of a battery if it has been in for a few years.

Schedule issues

Show the number of IPCs in the system that have a discrepancy between when IMS thinks that watering should be active and when the IPC is actually scheduled to water.

• This is fixed by sending a schedule from IMS

Red – Out of contact (offline)

No contact with the unit has been made for the last 30 days.

Possible reasons:

- The battery voltage has fallen below 20% and the IPC has entered hibernation (stops radio communication but will continue to operate the solenoid).
- Reduced radio signal e.g. due to a tall crop, tree size/leaf growth
- Location of the device (perhaps in a deep gully or behind a hill)

Investigating Issues and Pre-season Checks

When there are IPCs reporting issues, such as out of contact or low battery, IMS can help with troubleshooting these. This is ideal for pre-season checks, but the method is equally valid at any time. **Important Consideration when looking at Battery or IPC Replacement**

If an IPC has had limited sun exposure over winter, the battery charge % may be low. As we move into Summer, the battery may very well recharge as expected.

A guide to specific IPC troubleshooting involving the use of an EP3 can be found in the appendix.

Identification and Navigation

Sprinklers of interest are easily identified via the status indication colours.

If there is mobile coverage on site IMS can also help guide you to the sprinklers of interest from your smart phone.

Select the sprinkler view, then tap the icon and a yellow figure will be displayed on the map indicating your current position.

Visual Inspection

Some basic checks can be undertaken to cover some common easily identified issues.

Physical condition

- Confirm solar panel is clean
- Solenoid wires are connected correctly
- Battery magnet is not installed (used for storage and transit)
- No physical damage to IPC

Serial Number

• Confirm the IPC serial number matches the configured location in IMS.

Hibernation

Check if IPC is in hibernation (more details found below)

• LED flashes briefly every 10s

Flat Battery

If you have a magnet available, place it briefly on the IPC magnet label

Confirm LED starts flashing quickly (entered bootloader mode)



 If LED does not start flashing the battery may be completely flat For IPCs with field replaceable batteries refer to *Replacing an IPC Battery*

For IPCs without field replaceable batteries, return to Water-Insight for service

Communication

Out of contact units where the last reported battery level was good and there are no other obvious reasons for non-communication.

- A good first option is changing the configuration to use **Mesh** communication (if not already), then check if a status request is successful.
- Refer to Editing an Existing IMS Site

IPC Battery History

IMS logs the battery charge % of each IPC every time a status response is received. The resulting history can be displayed and analysed to detect the end of life of an exhausted battery or possibly to detect other failure modes such as a hardware fault in the unit.

To check on an IPC simply select it from the Sprinklers view or search for it by name or serial number using the search icon \mathbf{Q} .

When you have selected the IPC its details "card" is shown. If the unit has a low battery the history graph is immediately displayed. Otherwise just click on the **charge** link highlighted in blue.

	The battery	charge is	very low	/!			
	Schedules				Details		
<	Day	Start	End	Duration	중 FarmId: 00:00		>
	27/09/2019	16:30	16:48	18 mins	Clock: 0s		
					🕻 1 hop - Mesh - Ch3		
					Schedule Index: 14		

To get back to the details card when viewing the battery graph just click on the IPC name or serial number in blue in the top left corner.



Watch out for batteries that start to "tank" quickly, rapidly losing charge, they could be end of life but also it could be an indication they are not charging due to lack of sunlight, a broken solar panel or excessive bird fouling on the panel.





Battery voltages that oscillate wildly up and down, especially down at night and up during the day can indicate that the battery is not holding charge.

IPC Hibernation

There are two specific charge levels at which an IPCs communication behaviour changes.

- 1. Battery Charge % falls below 20% (IPC enters hibernation)
 - When an IPC enters hibernation, radio communication is halted to preserve battery for the primary function of solenoid/valve control.
 - An IPC in hibernation can be identified by the LED flashing briefly every 10 seconds. Older IPCs with red LEDs can be difficult to see, you may need to shield the IPC from the sun.
- 2. Battery charge % increases to over 40% (IPC exits hibernation)
 - IPC radio communication is resumed.

Solenoid/valve control continues as per the IPCs schedule until the battery is completely flat, regardless of radio communication.

Communicating with an IPC in Hibernation

If an IPC is in hibernation, there is still a way to query its status using an EP3.

- 1. Briefly place a magnet on the IPC magnet label
- LED will start flashing quickly (bootloader mode active)
- 2. Wait for the LED to stop flashing (approx. 60s)
- 3. Send a status request
 - You will have approx. 30s, after the LED has stopped flashing, in which a status response can be retrieved.

Reports

A PDF report can be generated of any filtered selection of sprinklers in IMS. As an example, this gives you an offline record to refer to if there is no mobile coverage on site.

reating	a report in livis	
Step	Process	Note
1.	From your IMS home screen - Select the Sprinklers view for the desired farm	
		Tanks
2.	 Display the sprinkler list Filter the displayed selection as desired Sort the list as desired Open the More Options menu Select Export Report 	★ ● Meadowlands SPRINKLERS SUMMARY 3 0 Out of Clock Error Bartery Connact Error Bartery Spares Approx Approx
3.	The PDF document can then be printed or saved for offline reference.	SPRINKLERS STATUS REPORT MEADOWLANDS



Solenoid Operation

An IPC controls a valve by passing current through the solenoid in one direction to turn the valve ON and in the opposite direction to turn the valve OFF, so the correct connection of the solenoid wires to the IPC is **critical**.

- When an IPCs internal clock matches it's scheduled on/off time (or if a manual on/off command is issued) it will send a **pulse** to the solenoid in the appropriate direction for an open/close operation.
 - There is no feedback of whether the solenoid plunger has moved or any indication the valve has actually operated as intended.
- At midnight (IPC time) all schedules are recalculated and solenoids are attempted to be switched to match intended scheduling
- After a timeset (e.g. global timeset to site) IPCs recalculate their schedule and solenoids are attempted to be switched to match intended scheduling (v5 firmware and above only)
- Valve ON (open) solenoid plunger is pulled in; bonnet drain orifice is open
- Valve OFF (closed) solenoid plunger is pushed out; bonnet drain orifice is closed

Quick Solenoid Check

To determine the correct solenoid wiring perform the following test:

1. De-Power the IPC by installing the power ON/OFF Magnet in the shipping position (i.e. <u>not</u> the end

marked with the label "magnet" this end is for putting the unit into a special programming mode)

- 2. Connect the IPC to the solenoid in use.
- 3. Apply water at operating pressure to the solenoid valve.
- 4. Remove the ON/OFF magnet from the IPC.
- 5. The IPC will power up, then after 10 seconds the IPC will turn the solenoid valve OFF.
- 6. If the solenoid turns ON then the solenoid connecting wires to the IPC need to be reversed.

Unexpected Valve Behaviour

• Query the IPC for its Status

If the valve state reports as OFF (but valve is still ON) then the IPC has tried to turn the valve off

- At the time of the off signal (pulse), for some reason the solenoid could not move the solenoid plunger
- Solenoid is wired incorrectly
- Some other physical reason for valve not turning off

If the valve state reports as ON, but is scheduled to be OFF

• The IPC has not tried to turn the valve off

This could be because

- The IPC internal time is not as expected (confirmed in the status reply), so has not reached the scheduled off time
- IPC schedule is not as expected reports as wrong in the status reply
- The comparison is against the schedule the has been loaded in the EP3
- A manual ON command has been issued

Replacing an IPC battery

Installing an IPC Battery

Step	Process	Note
1.	 A syringe of Silicon water proofing grease is provided with a replacement battery package. Inject a small amount of silicon grease into the battery cable connector housing. 	

Step	Process	Note
2.	 Hold the battery socket and plug connectors by the wires and align the polarizing ridge on the plug with slot in the connector. Push the plug into the socket by the wires. 	
	Note: Do not push the connectors together by the connector housing as this can push out the connector pins.	

Removing an IPC Battery

Step	Process	Note
1.	 To remove the battery, grasp the battery connector plug and socket and pull out the battery plug. 	
	Note: Do not pull the battery connector socket and plug apart by the wires as this will tear the wires out of the connectors.	JAN C

Confirm IPC Operation

- Status response received in IMS
- Confirm/set IPC clock(time)
- Confirm/send schedule
- Confirm solenoid operation with manual ON/OFF commands

Record Battery Replacement in IMS

Step	Process	Note
1.	 Select the sprinkler of interest from the Sprinklers view or search for it by name or serial number using the search icon Q. Select open card (sprinklers view) or the search result to display the sprinkler card. 	IPC3 (7637) IPC3 (7637) The ipc has a schedule errort Fix it Schedules Day Start End Day Start End 13/05/2021 00:30 01:00 30 mins Charge 68% P1 http:-Local - Ch1 Schedule (ics, Name: IPC07+IPC05- 9cc8fa02
2.	 Open the options menu Select Record Battery Replacement 	Larg polied: 3004/2001 1118 Ext contact 3004/2001 1118 IPC3 (7637) • The ipc has a schedule errort Fix it Schedules Day Start End Duration 13/05/2021 00:30 01:00 30 mins Lat polied: 3004/2001 1118 Lat splited: 3004/2001 1118 Lat splited: 3004/2001 1118 Lat splited: 3004/2001 1118



IPC to Baccara Solenoid Valve Jointing

Step	Process	Note
	A typical IPC and a typical solenoid valve	
1.	Remove any existing insulation and straighten the wires If necessary strip back the wire insulation by 15mm with a wire stripper	
2.	Carefully twist the 2 black wires tightly together. Then repeat for the 2 green wires	
3.	Screw the silicon filled wire joiners onto each of the green and black wire joints (the wire joiners screw onto the wired in joint in a clockwise direction). Silicon grease will extrude from the joiners as shown	

IPC Battery Magnet

An IPC is supplied with an external magnet installed that turns the IPC Power Supply OFF to preserve the battery during storage and transit.

When removing the IPC from operation for storage or for transit, the Battery Magnet should be re-installed to conserve the power supply battery.



Appendix

Mapping Sprinkler Locations for use in IMS

This section provides a method for mapping sprinkler locations using a smart phone which can then be imported into IMS. This is especially useful when installing a new site, extending an existing site or migrating an existing site to IMS.

Install Map Marker App

The app described here is Map Maker. This is a free app available for Android and Apple devices and has been identified as an easy to use option.

1. Go to the App Store (Apple) or Google Play (Android)

		Map Marker	
		theandroidseb	
2.	Search Map Marker	Contains ads • In-app purchases	

Install the app

5. 1				
Step	Process	Note		
1.	- Go to the App Store (Apple)	or Google Play (Android)		
2.	- Search Map Marker	Map Marker theandroidseb Contains ads - In-app purchases		
3.	- Install the app	Install		

Initial Configuration

There are some configuration options which may help with your mapping task.

Step	Process	Note
1.	- Open the app	Allow the access permissions
2.	- Open the Options menu	
3.	 Folders New folders can be added to store location data in using Add folder 	Imperiation Imperiation
4.	Map type - Select the type of map to be displayed	Satellite can be useful to confirm your locations Help and settings Map type Satellite
5.	Settings - Marker instant adding mode	Allows one touch adding of location markers



Step Process Note - Offline maps Follow the tutorial to add offline maps, which are useful if you won't have mobile coverage on site Offline maps Offline maps Image: Storage folder No folder Researce Storage folder No folder Researce Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Storage folder No folder Researce How to do it? Image: Sto

Ларрin	g Sprinkler Locations	
Step	Process	Note
1.	 Folder/Site selection Choose which folder/site you want to record locations in Options menu > highlight only the folder you want to work in 	Folders All 5 markers in 2 folders Default folder 4 markers New farm 1 markers
2.	Centre on your location Enable the centre on location option Highlights blue when active 	
3.	Add Marker At the first sprinkler location - Select Add Marker	If marker instant adding is enabled a marker will be placed immediately If maker instant adding is not enabled - choose position > OK
4.	Select Edit and name the sprinkler location as desired	Marker 6 Long press to drag and move the marker Title Marker 6 Description Icon and color
5.	Move to next sprinkler location and add the next marker	



Exporting Locations for use in IMS

Once you have finished mapping the sprinkler locations, they can be exported (KML) for use in IMS.

Step	Process	Note
1.	Select the Share	Share
	All markers and folders can be exported	Snapshot of the map
	Or	All markers and folders
	Choose Other Options > select an individual	· Other options
	folder to export	CANCEL
2.	File export type	What format to you want to use
	- Select KML as file export type	to export?
		KML Standard Google Earth format. Cannot contain media.
		KMZ Zip Google Earth format. Can contain media.
		CSV Standard text spreadsheet format. Cannot contain media, Cannot contain lines or polygons.
		CANCEL
3.	How to share	
	- Choose how you want to share the KML file,	
	e.g. via Gmail	
4.	Send to desired recipient	

Importing location data into IMS

When importing location data for sprinklers into IMS it is required that the naming of the locations matches the naming of the IPC import list.

If available IPC information (project file, podlist) should be imported to the IMS site first, then the location data (KML) imported second.

Step	Process	Note
1.	 Select the Import option for the required site Open the Farm Settings menu > Advanced Import 	FARM FARM
2.	 Choose the import type If there has already been IPC data imported (project file or podlist) choose location Posts will import the location data as Points Of Interest these can then be converted to sprinklers later 	Import Configurations x Which they are not haid w Interface instance w Interface instance x Interface x
3.	 Choose file to import Select Choose File Navigate to and select desired file Select Open 	Import Configurations What file you want to load? location (kmz,kmi) Choose File No file chosen
4.	The site will be populated with the location data from your KML file	

Investigation Using an EP3

Familiarity with the use of an EP3 is assumed, please refer to the EP3 User Guide.



Prepare EP3

- Check that batteries are not nearing flat and ensure you have spare batteries
- Latest EP3 firmware is installed (v5.x or later)
- Set the EP3 time to match the site time
- Sites with INC use same time as INC
- Sites without INC request status from several IPCs to gauge current site time
- Export podlist and schedules from IMS (full site info)
- Load podlist and schedules from SD card

Investigate each IPC in Turn

- 1. Visual checks
 - Confirm solar panel is clean
 - Solenoid wires are connected correctly
 - Storage magnet is not installed
 - No physical damage to IPC
- 2. Check serial number of IPC matches that in podlist(EP3)
 - If not refer to *Replacing an IPC in IMS*
- 3. Check if IPC is in hibernation LED flashes briefly every 10s
 - Refer to *IPC Hibernation*
- 4. Briefly place a magnet on the IPC magnet label
 - Confirm LED starts flashing quickly (entered bootloader mode)
 - If LED does not start flashing the battery may be completely flat For IPCs with field replaceable batteries refer to *Replacing an IPC Battery*

For IPCs without field replaceable batteries, return to Water-Insight for service

If you have a spare IPC available refer to *Replacing an IPC in IMS*

5. Send a Status request - wait for the LED to stop flashing first

- Confirm the IPC responds, check the battery charge %, schedule matches and time is correct
- If IPC was in hibernation, you will have ~30s after the LED stops flashing to get a status response If the charge % is unexpectedly low, you may wish to replace the battery or replace/service the IPC
- 6. If IPC does not respond to a status request, but did respond to magnet (fast flashing LED)
 - First check the firmware version is as required for your site
 - Upgrade firmware if required
- 7. Confirm channel and/or FarmID (V5) are set correctly
 - This is only likely to occur if the IPC has been replaced at some stage and has not communicated since
 - Configure using IMS Deploy feature or with EP3 if required
- 8. Check Solenoid Operation
 - Perform manual ON and OFF commands and confirm sprinkler starts/stops (if water available) or solenoid clicks (no water available)
 - Refer to **Solenoid Operation** for more detailed description of behaviour

Actions

If an IPC needs replacing, has a flat battery or if the charge % is unexpectedly low

- If you have a spare IPC available refer to *Replacing an IPC in IMS*
- For IPCs with field replaceable batteries see IPC Battery Replacement
- For IPCs without field replaceable batteries, return to Water-Insight for service



Scheduling Example

Requirements

- Site has sprinklers split into 3 zones/laterals (Zone1, Zone2 & Zone3)
- One sprinkler in each zone can run at any one time
- The nominal run time desired is 20min
- Zone3 is only allowed to run from 8am to 8pm
- There is an area in Zone2 which gets overly wet

Step	Process	Note
1.	Create Groups & Assign Sprinklers	
	- Zone1, Zone2 & Zone3	If not already existing, you will need to create the
	- Wet Area	groups and assign the relevant sprinklers
2.	Basic Info	Basic Info
	- Give the schedule an appropriate name	Name and general rules
	- Leave all slider controls off	Name *
		Summer2020
		Don't water for days ^[4]
		My farm is windy [?]
•		Group Rules 1 (Zone 1 Zone 2)
3.	Group Scheduling	
	Group Rules 1	Best: Streduling rules
	Groups – Zone1 & Zone2	n cumuer o i permiterar per group - The default province constraints for the the system. How many teprinklers can operate at any one time?
	Number of Sprinklers – 2, slider control off	Zone1 × Zone2 × ×
	Irrigation Amount – override duration to 20min	Allow more than one sprinkler per group to run at a time
	Irrigation Timing Restrictions – none	Irrigation Amount Enter spinisker Serv saget application depth(ent) or run time(min).
	Additional Management Rules – group Wet Area set	Override calculated values Duration to 20 minutes, or application depth to 0 mm
	to reduce operation by 5min	Irrigation Timing Restriction
		Additional Management Rules >
		Reduce, increase or override irrigation amount for these selected groups only. NOTE: Sprinkers defined here wUST ALSO BE MEMBERS of one of the subgroups defined above to have their scheducia effected.
		Add Additional Management Rule Configure any part circle sprinklers for these selected groups only
		Add Part Circle Sprinklers Buke Reduce operation in group <u>Wet Area</u> by 5 min [Edit Delete]
4.	Group Scheduling	GROUP RULES 2
	Group Rules 2	Number of Sprinklers per group * The default hydrault constraints for the system.
	Groups – Zone3	How many sprinkles can operate at any one time? Zone3 × × × ×
	Number of Sprinklers – 1, slider control off	Run up to 1 sprinkler(s) at any one time
	Irrigation Timing Restrictions – Limit watering period	Allow more than one sprinkder per group to run at a time
	between 08:00 – 20:00	Irrigation Amount Enter sponkier 24in target application depth(rmt) or run time(min).
	Additional Management Rules	Duration to minutes, or application depth to mm
	- none	Irrigation Timing Restriction
		any impact boxes the selected times Add Operation Time From 3740 to 00000 [Initial Designs]
		Do not irrigate between the selected litres
		Add triggition Restriction No restrictions configured.
5.	Summary	🖬 Summary Groups Info
	- Zone1 sprinklers run for 20min	
	- Zone2 sprinklers nominally run for 20min	Group Sprinklers Operation time, min Water app, mm
	- Those in Wet Area run for 15min	Zone2 60 15/20 3.2/4.3
	- Zone 3 sprinklers run for 12min between 8am	- Wet Area 8 12/15 2.6/3.2
	and 8pm	Zone3 60 12 2.6
	and spm	



Deployment Troubleshooting Guide





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QTech Data Systems Limited does not warrant the suitability of this product for any particular application as the conditions in which it is used are beyond our control. This is not withstanding warranty of merchantability.

Additional Information and Support

If you have problems try the following:

- Visit the Water-Insight web site for application notes and guides
- Refer to the troubleshooting section if one is present in this document
- Contact the support desk at support@qtech.co.nz
- Phone the support desk, contact details at beginning of this document



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