Sealite®
www.sealite.com

SL-PEL Series
Sectored Port Entry Light

GSM Cell-Phone Monitoring & Control System

Version 2.2

Disclaimer:
It is the customer's responsibility to check with their service provider (prior to installation) to ensure there is network coverage in the area in which the PEL(s) will be installed. Sealite Pty Ltd will not be held responsible if the network coverage of the service provider should fail.

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1.0	Manual Launch	Feb 2014	D. Tomaszewicz
2.0	Update web reporting number	October 2015	Y. Chambers
2.1	Update GSM Module Photos	March 2017	A.Dixon
2.2	Update GSM Drawings	August 2017	C. Bernardo

Introduction

Welcome to GSM monitoring and control of your PEL. The Sealite GSM Monitoring and Control System is a complete integrated module designed to allow convenient monitoring using a cellular telephone and web access from remote locations that have GSM network coverage.

The GSM circuit monitors the data from the PEL and will report to designated cell phones a number of pre-programmed alarm conditions if they occur.

The GSM System is internally housed within a sealed unit providing convenient installation and retaining the IP68 waterproof rating of the PEL.

The user can also send an SMS text message to the designated PEL to receive a status report from the PEL by return SMS text message. In addition, the user has complete control over the types of alarms received should a fault occur, as well as an array of remote control options including operational mode, flash code and intensity settings.

The user can also set the PEL up to regularly report to a secure area of the Sealite website (the Sealite web gateway). This will provide details of the PELs operation and it's GPS position and includes historical graphed statistics of the PEL.

All functions can be programmed into the remote PEL by sending an appropriate SMS text message from a designated cell phone.

Tracking flash codes or being alerted to a potential power disruption has never been easier.

The Sealite GSM Monitoring and Control System is secure – unauthorised access to the PELs data cannot occur as only the designated cell phone numbers programmed into the light will respond to a remote SMS text message.

Data transferred to and maintained on the Sealite website is user password protected.

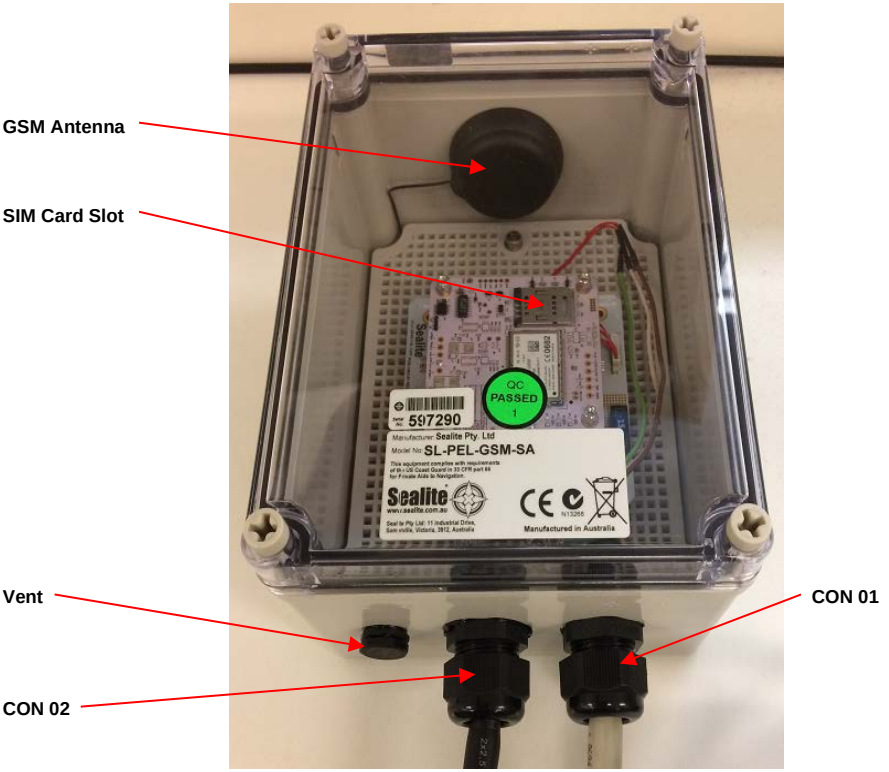
Key Features:

- Access of current lantern status at any time by sending an SMS text message to the PEL from any designated cell phone number. The lantern status is sent by return SMS text message;
- Regular reporting of PEL status to designated cell phone numbers and/or web server;
- Reports any pre-programmed alarm condition to designated cell phone numbers, and/or email addresses;
- Remote control of lantern features by sending an SMS text message to the PEL including flash & intensity setting and operation mode;.
- Versatile configuration allows lanterns with or without GPS modules fitted to be monitored remotely.

Available Data from PEL:

- Battery voltage
- Solar module charging current
- Lantern current draw
- Lantern position - Latitude and Longitude (including 'off-station' facility)
- Day/night on status
- Current operation mode
- Current flash code setting
- Current intensity setting

System Components



All components of the GSM Receiver / Transmitter are enclosed within the PEL GSM Unit.

Installation:

When mounting the GSM transceiver ensure the GSM Module is not damaged in any way by drilling through the mounting plate.

Always mount the GSM enclosure with CON-01 and CON-02 exiting the base of the GSM unit.

A number of factors affect signal strength, such as proximity to a cellular tower, obstructions such as buildings or trees etc. These factors will determine the final position of the GSM Module.

Avoid mounting the GSM inside any metal enclosures or in underground structures.

Getting Started
Setting up your GSM Module

Setup of the Sealite GSM Monitoring and Control System is a simple 4-step process, outlined below;

STEP 1:

Purchase, Record and Insert SIM Card into GSM PEL Unit

- **Similar to a cell-phone, a valid SIM card needs to be acquired and inserted into the GSM module prior to use (see "Purchasing a SIM Card" section of this manual). Refer to *Installing the Sim Card* section of this manual for a step-by-step guide to installing your SIM card.**

STEP 2:

Program Cell Phone Access List, Web Reporting and Essential Commands

- **The access list is a list of cell phone numbers from which the Sealite GSM Monitoring and Control System will accept configuration commands and report requests. Web reporting and essential commands may also be setup at this step.**

STEP 3:

Program Desired Cell Phone Reporting List and Alarms

- **The report list is the list of cell phone numbers which the PEL may send any SMS text message alarm report to. Alarm emails may also be activated from Sealite's secure GSM Web Portal.**

STEP 4:

Accessing the Sealite GSM Web Portal

- **By sending a report to the Web gateway and providing access via the Sealite website, historical data and graphs may be viewed on each PEL.**

GSM Monitoring & Control System Ready for Operation

STEP 1:
Purchase, Record and Insert SIM Card into PEL GSM Unit

Purchasing a SIM Card and Recording Details

Ensure the SIM card is unlocked prior to installing into the PEL GSM Unit.

One SIM card is required per PEL GSM Unit and can be purchased from your local telecommunications dealer. You may decide to purchase a pre-paid SIM card, or set the SIM card up on a plan (this is similar to purchasing a new cell phone).

Sealite's GSM enabled PELs require a Mini-SIM or 2FF SIM Card with a 6 pin contact arrangement.

RIGHT:
Mini-SIM or 2FF SIM Card (2nd Form Factor)
- 6 pin contact arrangement

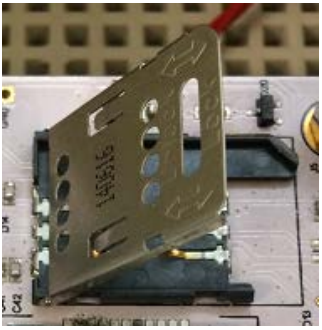
WRONG:
- 8 pin contact arrangement

Each PEL with GSM Monitoring and Control System will have an individual cell phone number. This number is unique to the PEL and should be recorded for reference purposes against the PEL it is installed in. To assist in recognition it is advisable that a description be included as well as the number (For example, PEL #12, +61400123456). A similar recording in user cell phones will assist in identifying PEL installations to which SMS text message commands are sent (the same process as adding a new contact in your cell phone address book).

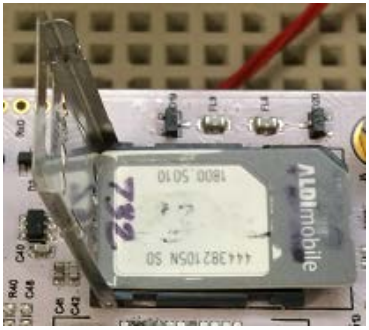
Installing the SIM Card

Pic 1

1. Open the GSM enclosure by unscrewing the four screws in each corner of the unit. (Pic 1)
2. Open the SIM Card holder. (Pic 2)
3. Place the SIM into the holder. (Pic 3)
   - Make sure the SIM Card is positioned correctly.
   - Make sure the SIM Card is 'Unlocked' before inserting in the holder (ie. the SIM card password has been disabled).
4. Fold the SIM Card holder and slide and click it back into the closed position. (Pic 3)
5. Replace the cover of the GSM enclosure and ensure the unit is properly sealed. Make sure the lid is aligned correctly and the screws are tightened appropriately.



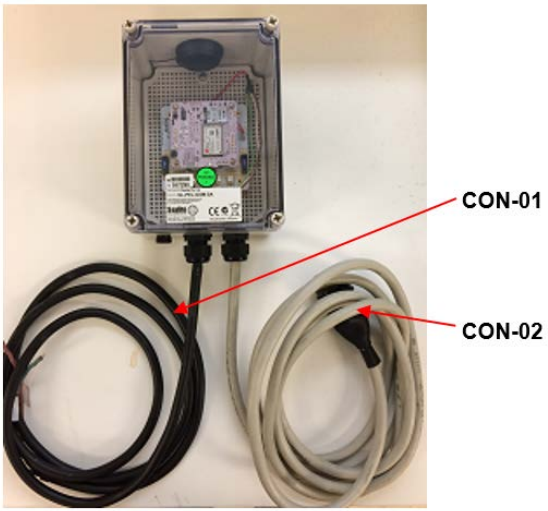
Pic 2



Pic 3

Pic 4

The Sealite PEL GSM Unit is the central communications access point for the user to control and monitor the operation and status of the Sealite Port Entry Light system via a mobile handset.



POWER SOURCE AND CHARGE CONTROLLER INTERFACE (CON-01)

The GSM unit monitors the input current from the power source and the current consumption required by the system through the removable CON-01. The pinout configuration for CON-01 is shown below:

Pin	Signal	Signal Type	Description
J1	**-Vbatt_In**	1	Connect the Negative DC Power Supply (12V or 24V) & Negative of PEL (CON-02 Blue wire)
J2	**+Vbatt_In**	2	Connect to the positive DC Power Supply (12V or 24V)
J3	**+Vbatt_out**	3	Connect the Positive of PEL (CON-02 Red wire)
J4	**+PV_out**	4	Connect to the Solar (if used)
J5	**+PV_in**	5	Connect to the Solar (if used)

[1]Used in systems with battery backup
[2]Used in systems with battery backup

Note: The PEL voltage range when stand alone is higher than with GSM. DO NOT power the PEL in line with the GSM over 18V

PEL INTERFACE (CON-02)

The GSM unit interfaces with the PEL through the cable gland of CON-02. The GSM unit uses two types of connections to interface with the PEL:

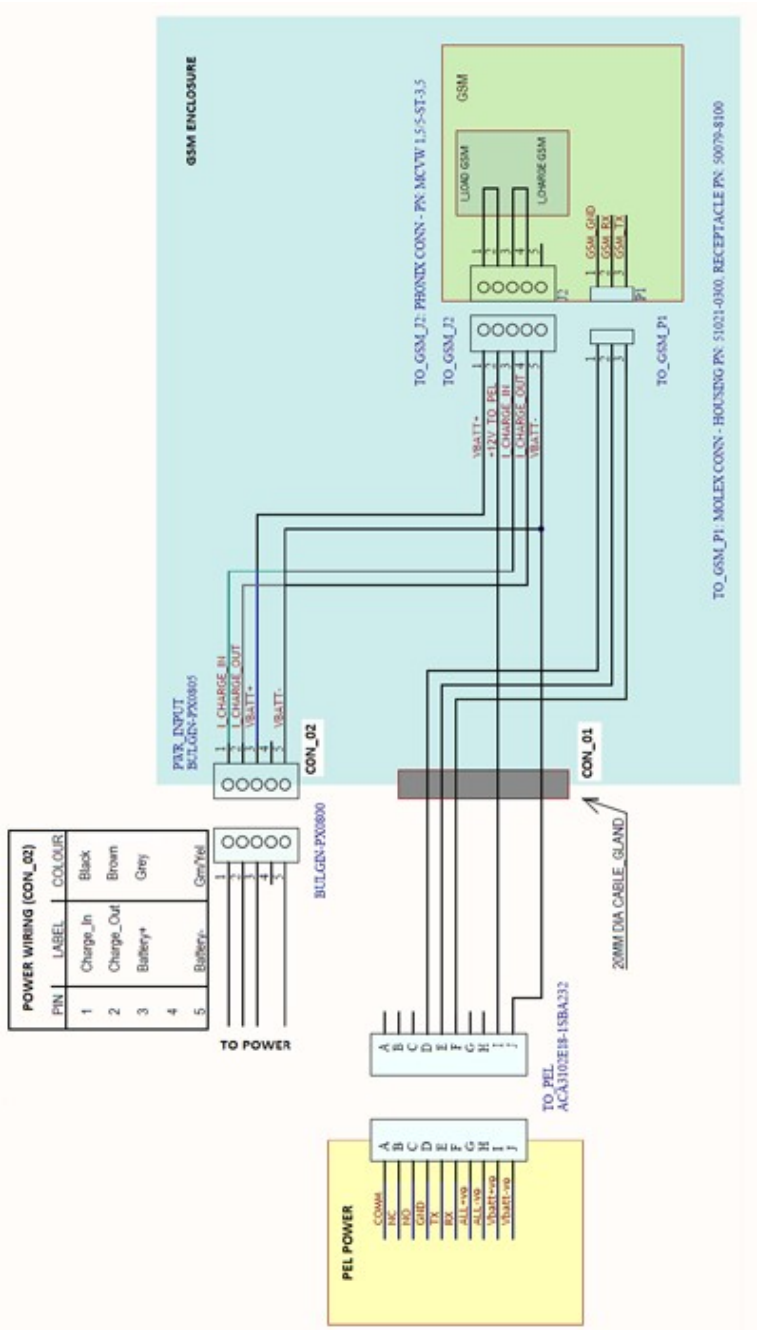
- RS232 Interface: used for communications between the GSM unit and the PEL
- RF Interface: used to communicate with the mobile handset through radio communications media.

The GSM unit feeds through the power for the PEL from the power source and monitors the total current consumption by the system. The pinout configuration for CON-02 is shown below:

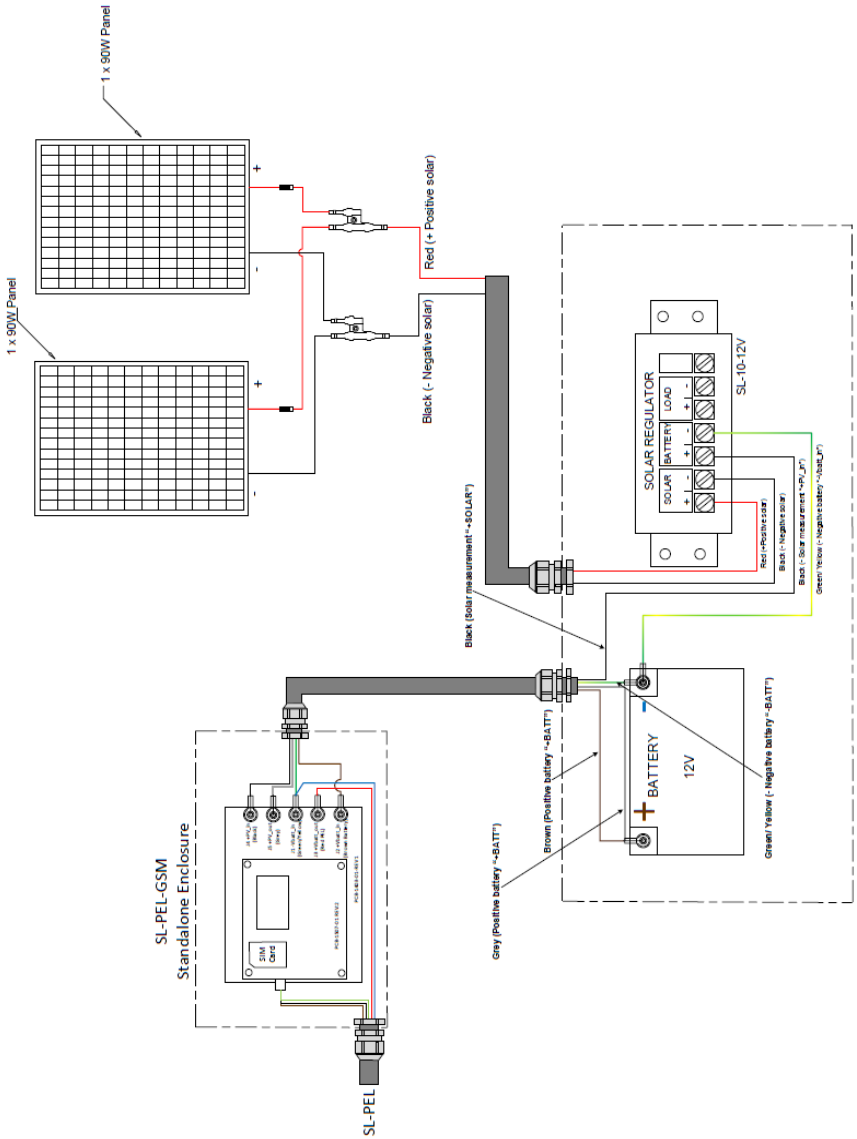
Pin	Signal	Signal Type	Description
A	Not Connected		
B	Not Connected		
C	Not Connected		
D	Ground	Ground	System common ground reference
E	RX	RS232	RS232 receive data into GSM from PEL
F	TX	RS232	RS232 transmit data from GSM to PEL
G	Not Connected		
H	Not Connected		
I	VBATT+	Power	Positive 12V to PEL
J	VBATT-	Power	Negative Battery

The operating frequency range for the transmit band and receive band used by the GSM unit is shown below:

RF Bandwidth	Transmit Band (TX)	Receive Band (RX)
GSM 850	824 to 849 MHz	869 to 894 MHz
E-GSM 900	880 to 915 MHz	925 to 960 MHz
DCS 180	1710 to 1785 MHz	1805 to 1880 MHz



RS232 COMMS Interface and Power


1 x 90W Panel
1 x 90W Panel
Red (+ Positive solar)
Black (- Negative solar)
SOLAR REGULATOR
SL-10-12V
SOLAR
BATTERY
LOAD
Black (Solar measurement "+SOLAR")
Brown (Positive battery "+BATT")
Grey (Positive battery "+BATT")
Green/ Yellow (- Negative battery "-BATT")
BATTERY
12V
SL-PEL-GSM
Standalone Enclosure
SIM Card
SL-PEL

STEP 2:
Program Cell Phone Access List, Web Reporting & Essential Commands

The Access List is a list of cell phone numbers from which the Sealite GSM Monitoring and Control System will accept configuration commands and report requests. Web reporting and essential commands may also be setup at this step.

Follow the process below to program the Access List, Web Reporting and Essential Commands;

Select a cell phone from which the GSM Monitoring and Control System module will be activated.

- The PEL will accept the first cell phone contact for instructions.
- The first instruction must be correct as the PEL will then only respond to the access cell phone number(s) given.

*Two numbers should be provided to the PEL to ensure there is a backup access**.*

Add cell phone numbers to the permitted access list by sending the SMS text message:-

add access +(country code)(phone number)

More than 1 cell phone number can be included in the SMS text message. To do this separate each cell phone number with a 'comma' character.

- "+" and the country code (eg. 61 for Australia, or 44 for U.K) are required to establish the country prefix in which the GSM unit is to operate in. Additional cell phone numbers can then be added by sending commands from those numbers given access.
- For example, to add an Australian cell phone number to the access list the SMS text message command would be: **add access +61400987654**

All additional telephone numbers added to the access list must continue to be in international format.

- Once the number has been added to the access list the Sealite GSM Monitoring and Control System will accept commands from these numbers and acknowledge confirmation via reply SMS text message.

Enable web reporting by sending the SMS text message:-

add autoreport
or add alarm web

- This command initiates the daily web reporting, which sends a daily diagnostic update to be viewed from your secure login at the Sealite Website.

Only phone numbers listed in the Access List will be able to "Set" and "Get" PEL information.

**In the event that the access cell phone number(s) is lost or no longer in service, Sealite can reset the PEL from the factory if required.

From an authorized Access Cell Phone send a new SMS with text message 'status' or 'report' to the designated SIM card number of your GSM PEL.

Within a few minutes expect a reply in similar format as the following:

Status Report
Volts: 12.5V
Charge: 0.33A
Mode: Day and Night
FCode: 051
Night
Lat: 38 13.2988 S (Latitude 38° 13.2988')
Long: 145 10.8529 E (Longitude145° 10.8529')
OnStation

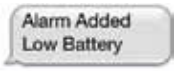
Note: The actual layout of the message is dependent on your cell phone screen.

User Case #1: Setting up the PEL to report an alarm to a cell phone

In this example, a cell phone with the phone number +61491570166 is used to enable the alarm function *low battery*. When the alarm condition occurs, the PEL will alert cell phone +61491570156.

Note: it is allowable to assign a different cell phone number to receive the alarm reports.

The following messages will be texted to the PEL:
add access +61491570166
add report +61491570156
add alarm batlo

	SMS text message to PEL	SMS text message received on cell phone	Comment
Step 1			Configures the PEL to allow commands **Note:** The cell number must be formatted as: +(country code)(phone number)
Step 2			When an alarm condition occurs, a text message will be sent to phone number. Note it is allowable to assign a different cell phone number to receive the alarm reports.
Step 3			The PEL will send a text message to all phone numbers in the report list when the battery voltage falls below 10V.

User Case #2: Setting up the PEL to report to the Sealite web gateway

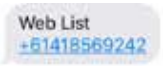
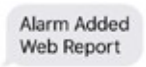
In this example, a cell phone with the phone number +61491570166 will configure the PEL to send daily reports to the Sealite web gateway.

The following messages will be texted to the PEL:

add access +61491570166

add web +61418569242

add autoreport web or add alarm web

	SMS text message to PEL	SMS text message received on cell phone	Comment
Step 1			Configures the PEL to allow commands **Note:** The cell number must be formatted as: +(country code)(phone number)
Step 2			When an alarm condition occurs, a text message will be sent to the Sealite web gateway. This the phone number for Sealite's web gateway.
Step 3			Enables a daily web report to be sent to the Sealite web gateway number

Notes:

1. In order to view web reports, please refer to "Accessing the Sealite Web Reports" section of this manual.
2. If the PEL is located outside of Australia, the PELs SIM card will need permission to be send text internationally. Please consult with your SIM card provider to ensure that this feature is enabled.

STEP 3:
Program Desired Cell Phone Report List & Alarms

An alarm is an SMS text message which is sent after a preset alarm condition programmed into the PEL is triggered. Care should be taken when selecting suitable alarms as they can generate large numbers of SMS text messages if not carefully selected.

The report list establishes the cell phone numbers that the alarms will be sent to.

Programming Report List

The following process will create a list of approved cell phone numbers from which desired alarm reports will be sent;

Use a cell phone in the access list to create the report list by sending the SMS text message:-

add report +(country code)(phone number)

More than 1 cell phone number can be included in the SMS text message. To do this separate each cell phone number with a 'comma' character.

- This creates an authorised list of cell phone numbers belonging to staff, on-call company maintenance officers or contractors.
- For example, to add an Australian cell phone number to the report list the SMS text message command would be: **add report +61400987654**

A successful update will result in an SMS text message reply:-

Report List
+(designated cell phone numbers)

The designated cell phone number has now been added to the 'report' list. The Sealite GMS module will now accept an SMS text message request for status 'report' from this number.

- The SMS text message 'report' sent from on-call company maintenance officers or contractors in this list will now generate the standard report SMS text message reply from the PEL.

A typical response SMS text message report message from a PEL will display as below:

Report List
+61400111222

Note: The actual layout of the message is dependent on your cell phone screen.

Creating Individual Alarms to be sent to the Cell Phone Report List

Specific alarms can be created and sent as an SMS text message to cell phones listed in the Report List.

The following process will enable desired alarms;

Use a cell phone in the access list to enable desired alarms by sending the SMS text message:-

add alarm (alarm parameter)

More than 1 alarm can be included in the SMS text message. To do this separate each alarm parameter with a 'space' character.

- An example of an actual alarm SMS text message would be:

  add alarm batlo

- This sets the low battery alarm. No cell phone number is required following the SMS text message

A successful update will result in an SMS text message reply:-

Alarm Added
(list of all alarms currently setup)

- A successful update of the above example would result in a reply SMS text message:

  Added Alarm
  Low Battery

A typical response SMS text message report message from a PEL when alarms are set up will display as below:

Alarm Added
Low Battery
Web Report

Note: The actual layout of the message is dependent on your cell phone screen.

Once an alarm condition has occurred/been triggered an SMS text message will be sent reporting the alarm to all cell phone numbers listed in the "Report List" and/or to the email addresses listed in the enabled "Alarm Emailing List" from the Sealite GSM Web Portal. Alarm conditions will continue to be reported once every 24 hours. This is to prevent constant reporting of the same alarm or multiple alarms. The PEL can still be accessed by requesting a report via SMS text message.

Alarm Sources Summary

All of the following alarm conditions can be programmed via SMS text message to be either ENABLED or DISABLED.

If an alarm condition that has been enabled occurs, an SMS text message will be automatically sent to all the cell phone numbers listed in the Report List.

Command	Parameter	Function	Enable Command Format	Disable Command Format
add alarm	**batlo**	Alarm SMS "batlo" is asserted when the battery voltage falls to a low level (flat battery). An alarm condition will be set if the system battery voltage falls below 10.0v indicating a flat battery. The PEL will be turned OFF if the battery voltage falls below 10.0v.	**add alarm batlo**	**delete alarm batlo**
	nodata	Alarm SMS "nodata" is asserted when the GSM module loses communication with the PEL circuitry.	**add alarm nodata**	**delete alarm nodata**
	ledfail	Alarm SMS "ledfail" is asserted when any LED fails. LEDs are shut off when this condition occurs.	**add alarm LED**	**delete alarm LED**
	Mains fail	Alarm SMS Mains Fail is asserted when AC power is disrupted and the lantern sends a signal to the GSM.	**add alarm mains**	**Delete alarm mains**
Daily Reporting Alarms				
add alarm / add autoreport	**daily**	Enables a daily status report from the PEL to be sent to all cell phone numbers in the report list. This report occurs 4 hours after daybreak each day.	**add alarm daily or/ add autoreport status**	**delete alarm daily or/ delete autoreport daily**
	power	Enables a daily battery status report to be sent to all cell phone numbers in the report list. This report occurs 4 hours after daybreak each day.	**add alarm power** or/ **add autoreport battery**	**delete alarm power** or/ **delete autoreport battery**
	web	Enables a daily web report to be sent to Sealite's GSM Web Portal, web gateway numbers in the web list. This report occurs 4 hours after daybreak each day.	**add alarm web** or/ **add autoreport web**	**delete alarm web** or/ **delete autoreport web**
ALARMS AVAILABLE FOR GPS ENABLED PELS ONLY				
add alarm	**nogps**	Alarm SMS "nogps" is asserted when the GPS data is not available - usually due to GPS signal loss.	**add alarm nogps**	**delete alarm nogps**
	nodata	Alarm SMS "nodata" is asserted when the PEL does not communicate with the GSM.	**add alarm nodata**	**delete alarm nodata**

Accessing Your PELs Data

A) Via Cell Phone

General data about the PEL is accessed via simply sending the SMS text message; 'status' or 'report' from an authorized cell phone number (must be listed in the 'access' list or 'report list') to the designated PELs SIM card number.

An automatically generated reply SMS text message will then be sent to your cell phone which includes information about the PEL status.

1. A typical requested SMS text message report from a PEL will display as below; 'status' or 'report'

Status Report
Volts: 12.5V
Charge: 0.33A
Mode: Day and Night
FCode: 051
Night
Lat: 38 13.2988 S (Latitude 38° 13.2988')
Long: 145 10.8529 E (Longitude145° 10.8529')
OnStation

Note: The actual layout of the message is dependent on your cell phone screen.
If the PEL is not fitted with GPS the message "No GPS Data" will be given in place of the Latitude & Longitude data

Note: The PEL will report the first non-zero flash code if multiple flash codes are set. If all are set to 000 the status will show 000

2. Specific battery data from your PEL is accessed via the SMS text message; 'power' or 'battery'

Power Report:
Battery: 12.5V
Charge: 0.24A
Load: 0.02A

Yesterday
Min: 14.1V
Max: 14.3V
Max Solar: 0.36A
Charge: 1.76Ah
Load: 0.56Ah

Note: The actual layout of the message is dependent on your cell phone screen.
Ah = Ampere Hours = current x time (24 hour running).
Yesterday's power data is only available if the GSM has been running for more than 24 hours

3. . A more detailed report from the lantern is available by sending the SMS text 'status full'. This will result in your lantern sending 4 x SMS replies to your phone

----
Extended Status
Volts: 14.1V
Charge: 0.33A
Mode: Dusk to Dawn
FCode: 051
Night
Lat: 38 13.2988 S (Latitude 38° 13.2988')
Long: 145 10.8529 E (Longitude145° 10.8529')
OnStation
Product ID: SL PEL (Example only)
Product Name: Sealite Test Sample (20 Character Limit)

Colour: White
Status Flags: 00018
Temperature Sensor: OK
Lantern Temperature: OK
Intensity: 100%
Adv Op Mode: All
Sync Offset: 0.0s
GPS Mode Normal

GPS Watch Circle: 200m
Lantern Voltage: 14.1V
Lantern Battery: OK
GSM Voltage: 13.9V
GSM Battery: OK
GSM Mode: Normal
GSM Carrier: Telstra

GSM Signal: Max
Triggered Alarms: None

Note: The actual layout of the message is dependent on your cell phone screen.
If the lantern is not fitted with GPS the message "No GPS Data" will be given in place of the GPS data
This message is requires 4 x Text Messages to be sent. There may be cost implications depending on your Sim Card Phone Plan

B) Via Sealite GSM Web Portal

To configure your GSM PEL to send daily reports or alarms to Sealite's secure online GSM Web Portal the following messages MUST be sent via SMS text message to your PEL:

"add web +61418569242"

Then send the SMS text message:

"add autoreport web"

The add Command

The “add” command allows;

- Cell phone numbers to be added to the ‘access’ and ‘report’ lists and;
- Required alarms and autoreports to be enabled.

Only users listed in the Access List are able to use the “add” commands

Full cell phone numbers including ‘+’ and country code must be used when adding cell phone numbers to the ‘access’, ‘report’ & ‘web’ lists.

To add the cell phone number 0402123456 to the ‘report’ list the following command would be sent in an SMS text message from any cell phone number listed in the access list:

“add report +61402123456”

A successful update would result in an SMS text message reply:

“Report List
+61402123456”

To add a low battery alarm trigger the following command would be sent in an SMS text message from an authorised cell phone:

“add alarm batlo”

A successful update would result in an SMS text message reply:

“Alarm Added
Low Battery
No Lantern Data
No GPS Data”

Command	Parameter	Function	Example Command Format
add	**access**	Adds additional cell phone number(s) to the permitted access list. More than one cell phone number can be included in the SMS by separating each number with a "comma" character. The same cell phone number may also be programmed into the "report" list. The access list can contain a maximum of 16 cell phone numbers.	**add access +61402123456** or/ **add access +61402123456, +61402654321**
	report	Adds additional cell phone number(s) to the permitted report list. More than one cell phone number can be included in the SMS by separating each number with a "comma" character. The same cell phone number may also be programmed into the "access" list. The report list can contain a maximum of 16 cell phone numbers.	**add report +61402123456** or/ **add report +61402123456, +61402654321**
	alarm / autoreport	Adds the required alarm or autoreport functions that will report to the cell phones in the report list. More than one alarm can be included in the SMS. Separate each alarm condition with a "space" character. Possible alarms are: **batlo, nodata, daily, nogps, offstation, web, power, ledfail** Possible autoreports are: **status, daily, battery, power, web**	**add alarm batlo** or/ **add alarm batlo, nogps** or/ **add autoreport status**

All cell phone numbers must be presented in international format – ie/ In Australia '0402123456' becomes '+61402123456'. In the United Kingdom, '07791234567' becomes '+447791234567'. The maximum phone number can be 15 digits long, if you require more than 15 digits please contact Sealite.

The list Command

The “list” command allows the operator to view:

- Cell phone numbers listed in the ‘access’, ‘report’ and ‘web’ lists and;
- List enabled alarms and autoreports programmed into the PEL.

Only users listed in the Access List are able to use the “list” commands

To determine the cell phone number entries in the ‘report’ list the following SMS text message command would be sent:

“list report”

The GSM Monitoring and Control System would SMS text message a response containing the contents of this list:

“Report List:
+61402123456,
+61402654321”

To determine the ‘alarm’ list the following SMS text message command would be sent:

“list alarm”

The GSM Monitoring and Control System would SMS text message a response containing the contents of this list:

“current alarm list: nodata, nogps, batlo”

Command	Parameter	Function	Example Command Format
list	**access**	Requests a list of the current cell phone numbers in the access list. An SMS is returned showing the current access list.	**list access**
	report	Requests a list of the current cell phone numbers in the report list. An SMS is returned showing the current report list.	**list report**
	web	Requests a list of the current Sealite web gateway phone number. An SMS is returned showing the current report list.	**list web**
	alarm / autoreport	Requests a list of the current alarms and autoreports programmed into the alarm list. An SMS is returned showing the current alarm list.	**list alarm** or/ **list autoreport**

All telephone numbers must be presented in international format – ie/ In Australia ‘0402123456’ becomes ‘+61402123456’. In the United Kingdom, ‘07791234567’ becomes ‘+447791234567’.

The delete Command

The “delete” command operates in the same way as the “add” command. The difference is the “delete” command will also accept the keyword “all”. This allows the list to be cleared in a single SMS text message.

Only users listed in the Access List are able to use the “delete” commands

To remove the cell phone number 0402123456 from the report list the following command would be sent:

“delete report +61402123456”

A successful deletion would result in an SMS text message reply:

“Report List
Empty”

When the report list is “empty”, this means that there are no cell phone numbers in the ‘report’ list, therefore disabling the automatic alarm function.

To remove an alarm from the alarm list the following command would be sent:

“delete alarm batlo”

A successful deletion would result in an SMS text message reply:

“Alarm Deleted
No Lantern Data
No GPS Data”

Command	Parameter	Function	Example Command Format
delete	access	Deletes the requested cell phone number from the permitted access list.	delete access +61402123456
	report	Deletes the requested cell phone number from the permitted report list.	delete report +61402123456
	web	Deletes the requested cell phone number from the permitted web list.	delete web +61418569242
	alarm / autoreport	Deletes the requested alarm or autoreport from the current alarm list.	delete alarm batlo

All telephone numbers must be presented in international format – ie/ In Australia ‘0402123456’ becomes ‘+61402123456’. In the United Kingdom, ‘07791234567’ becomes ‘+447791234567’.

The get Command

The “get” command is used to retrieve or “get” information from the PEL.

Information that can be retrieved includes

- Lantern Type
- Software Version
- Flash Code
- Intensity
- Operation Mode

Only users listed in the Access List or Report List are able to use the “get” commands. Some commands are only available to Access List users.

To retrieve the current flash code setting in the lantern, the following command would be sent

“Get fc” or “Get Flashcode” or “Get Flash code”

A successful reply would result in an SMS text message reply:

Lantern Config
Mode: **Dusk to Dawn**
Flash Code: **051**
Intensity: **Low**

Note: The 51 indicates the flash code as it relates to the sequence found in the Sealite Flash Code Tables

To retrieve the current intensity setting in the lantern, the following command would be sent

“Get intensity”

A successful reply would result in an SMS text message reply:

Lantern Config
Mode: **Dusk to Dawn**
Flash Code: **051**
Intensity: **Low**

Note: The lantern was set to Low intensity

Command	Parameter	Function	Example Command Format	Permission
get	**Type**	Gets the lantern hardware type	**Get type**	**Report & Access**
	Version	Gets the lantern’s hardware & software version Gets the GSM Module’s hardware & software version	**Get version**	**Report & Access**
	Operation Mode	Gets the lantern’s operational mode	**Get Mode** **Get Op**	**Report & Access**
	Fc **Flashcode** **Flash code**	Gets the lantern’s flash code *Note: the lantern will respond to any of the options shown to the left.*	**Get fc** **Get flashcode** **Get flash code**	**Report & Access**
	Intensity	Gets the Lantern’s current intensity setting	**Get Intensity**	**Report & Access**

get	**gsmmode**	Gets the Lantern's current GSM Operational Mode	**Get gsmmode**	**Report & Access**
	gpsmode	Gets the Lantern's current GPS Operational Mode	**Get gpsmode**	**Report & Access**
	syncoffset	Gets the Lantern's current Sync Offset	**Get syncoffest**	**Report & Access**

All telephone numbers must be presented in international format – ie/ In Australia '0402123456' becomes '+61402123456'. In the United Kingdom, '07791234567' becomes '+447791234567'.

Below is a table showing which intensities will be reported during which operational states:

Operation Mode	During Day	During Night
Day and Night	Day Intensity	Night Intensity
Dusk til Dawn	Night Intensity	Night Intensity
Always On	Night	Night
Standby	Night	Night

The set Command

The “set” command is used to enter or “set” information on the lantern.

Information that can be set by the user includes

- Operation Mode
- Flash Code
- Intensity

Only users listed in the Access List are able to use the “set” commands

To set a new flash code, the following command would be sent

“Set fc 83” or “Set Flashcode 83” or “Set Flash Code 83” (the flash code used was 7,3 (0.3On, 0.7Off)

A successful reply would result in an SMS text message reply:

Lantern Config
Mode: **Dusk to Dawn**
Flash Code: **083**
Intensity: **Low**

Note: The 0x indicates the number is in Hexadecimal Format
Note: The 51 indicates the flash code as it relates to the sequence found in the Sealite Flash Code Tables

To set a new intensity, the following command would be sent

“Set intensity high”

A successful reply would result in an SMS text message reply:

Lantern Config
Mode: **Dusk to Dawn**
Flash Code: **051**
Intensity: **High**

The default values for the lantern are:

- Operation Mode – Dusk to Dawn.
- Flash Code – is factory set to 51 via the Rotary Switches.
- Intensity – is factory set to 100% via the DIP Switches.

Command	Parameter	Function	Example Command Format	Permission
set	**Mode**	Sets the PEL's operation mode. • Dusk to Dawn, on • Standby, off • Day and Night, on	**Set mode Dusk to Dawn** **Set mode Standby** **Set mode Day and night**	**Access**
	gsm defaults	This resets the GSM settings. It clears the Access and Report number lists and disables all alarms.	**Set gsm defaults**	**Access**
	gsmmode	Sets the Lantern's GSM Operational Mode. It alters the power saving strategy.	**Set gsmmode slow** **Set gsmmode normal** **Set gsmmode always on**	**Report & Access**
	gpsmode	Sets the Lantern's GPS Operational Mode. It alters the power saving strategy.	**Set gpsmode slow** **Set gpsmode normal** **Set gpsmode always on**	**Report & Access**
	syncoffset	Sets the Lantern's GPS Sync Offset. If two lantern's are flashing with the same flashcode but need to be distinguished, the GSM Module can offset the Synchronisation of the lantern. The offset is 0 – 300 secs. (0.1 increments) For example if you wish to offset a lantern 1.5seconds send the following example.	**Set syncoffset 1.5**	**Access**

All telephone numbers must be presented in international format – ie/ In Australia '0402123456' becomes '+61402123456'. In the United Kingdom, '07791234567' becomes '+447791234567'.

GPS Mode
To reduce power consumption in your Lantern over a 24Hour period it is now possible to change the number of times the GPS module activates.
The default setting is Normal
Only users on the Access List can change this setting

GPS Mode	Description	Example Command Format
Off	The GPS is always off	**Set gpsmode off**
Normal	The GPS is turned off for 15 minutes (Night) and 30 minutes (Day)	**Set gpsmode normal**
Fast	The GPS is only turned off for 5 minutes (Night) and 10 minutes (Day)	**Set gpsmode fast**
On	The GPS is always left on	**Set gpsmode on**

GSM Mode
To reduce power consumption in your Lantern over a 24Hour period it is now possible to change the number of times the GSM module activates.
The default setting is Normal
Only users on the Access List can change this setting

GSM Mode	Battery State	Module Usage
Slow	Normal (> 11.5V)	On for 5 minutes Off for 55 minutes
	Low (10V to 11.5V)	On for 5 minutes Off for 115 minutes
	Flat (<10V)	On for 3 minutes Off for 235 minutes
Normal	Normal	On for 5 minutes Off for 15 minutes
	Low	On for 5 minutes Off for 30 minutes
	Flat	On for 3 minutes Off for 57 minutes
Fast	Normal	On for 5 minutes Off for 5 minutes
	Low	On for 5 minutes Off for 30 minutes
	Flat	On for 3 minutes Off for 57 minutes
Always On	Normal	Always On
	Low	Always On
	Flat	On for 3 minutes Off for 57 minutes

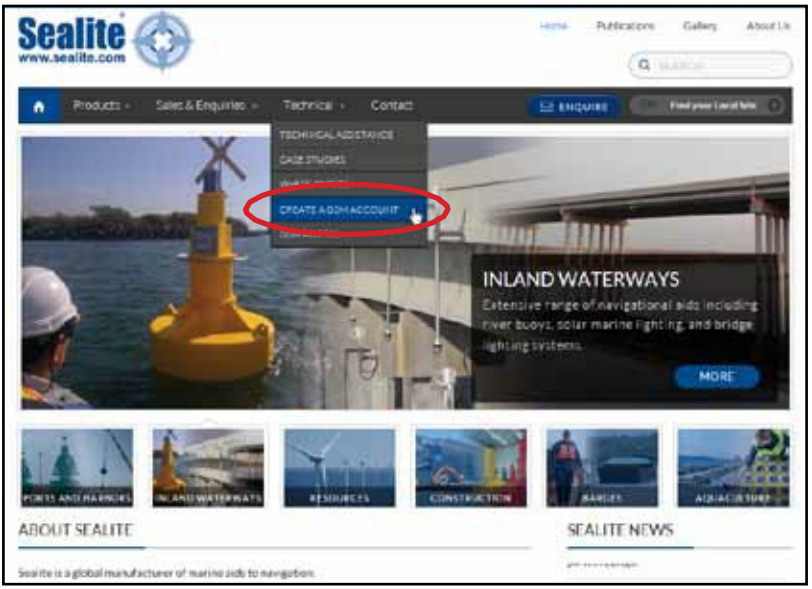
STEP 4:
Accessing the Sealite GSM Web Portal

CREATE A GSM ACCOUNT

After daily web reporting has been enabled via SMS text message command and your GSM PEL, access to historical data and graphs about individual PEL installations is available via the Sealite website.

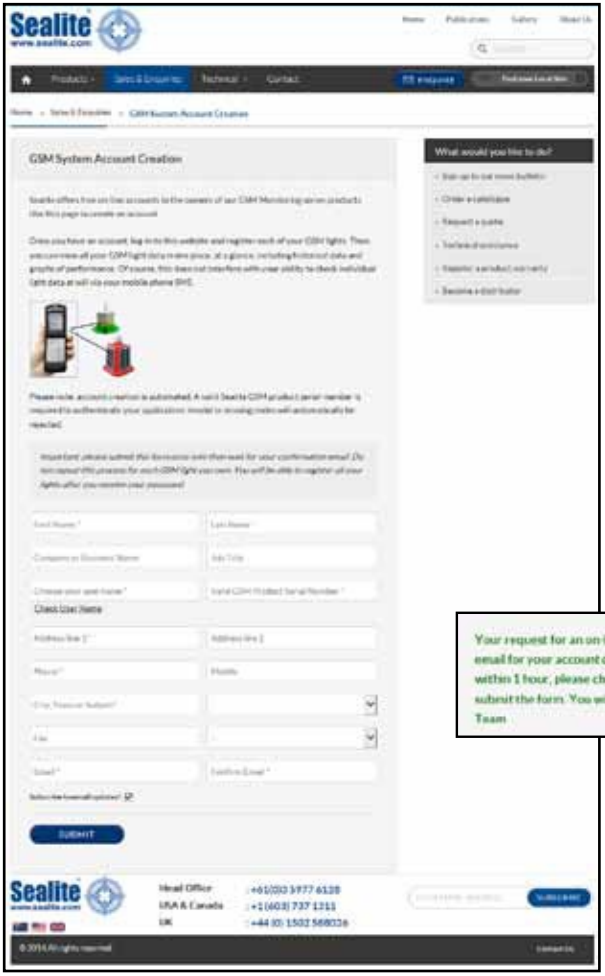
Follow the steps below to access your PEL operational data;

1. Go to **www.sealite.com** on the internet, select the **Technical** tab, then select **Create a GSM Account**.



For PEL data to be updated daily in the Sealite GSM Web Reports, users must first send the SMS text message command “add alarm web” to the designated PEL(s).

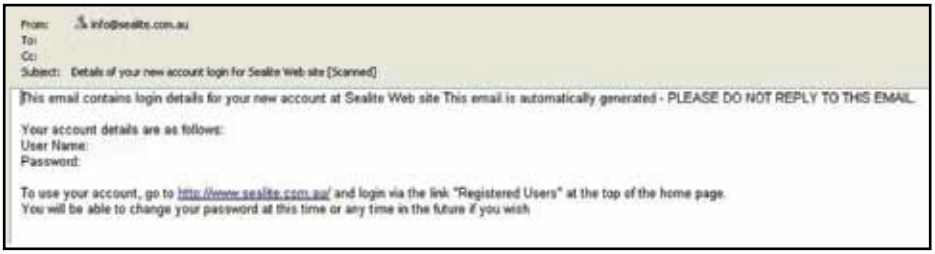
2. Complete the details on the **GSM System Account Creation** screen including your contact details and valid Sealite GSM Product Serial Number, and click **Submit**



Successful submissions will display the message below.

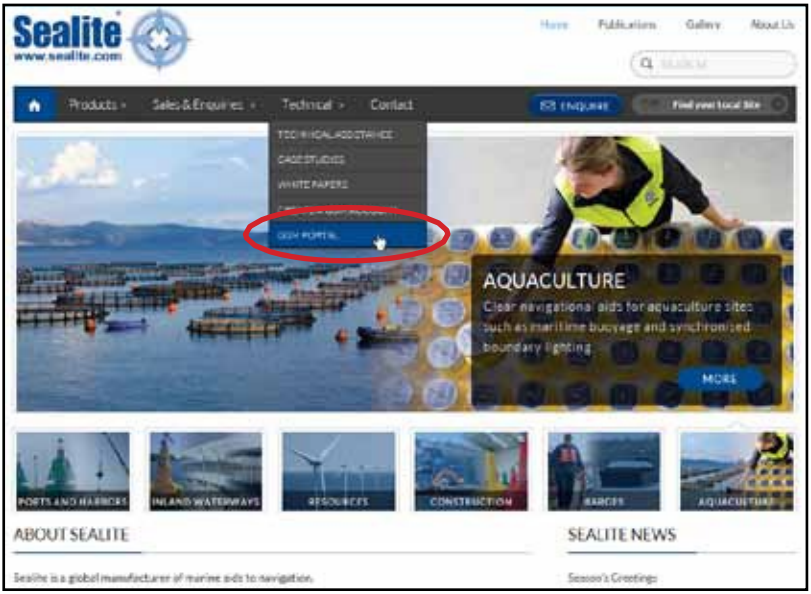
Your request for an on-line GSM account has been sent successfully. Please check your email for your account details and further instructions. If your account details do not arrive within 1 hour, please check your email junk folder. If still no success, please DO NOT re-submit the form. You will need to contact Sealite for assistance. Regards from the Sealite Team

3. Check your email account for confirmed secure login details.

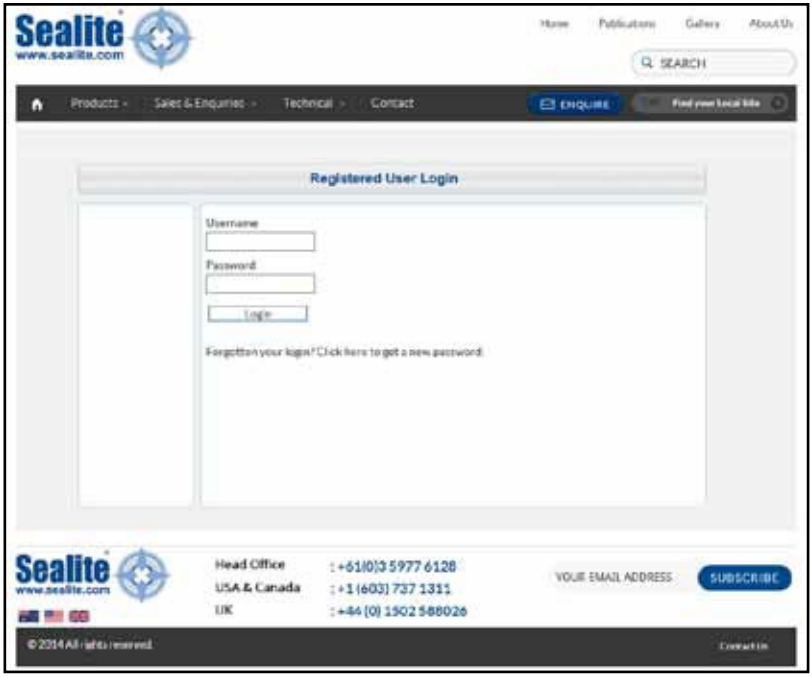


LOG INTO YOUR GSM ACCOUNT

4. Go to **www.sealite.com** on the internet, select the **Technical** tab, then select **GSM Portal**.

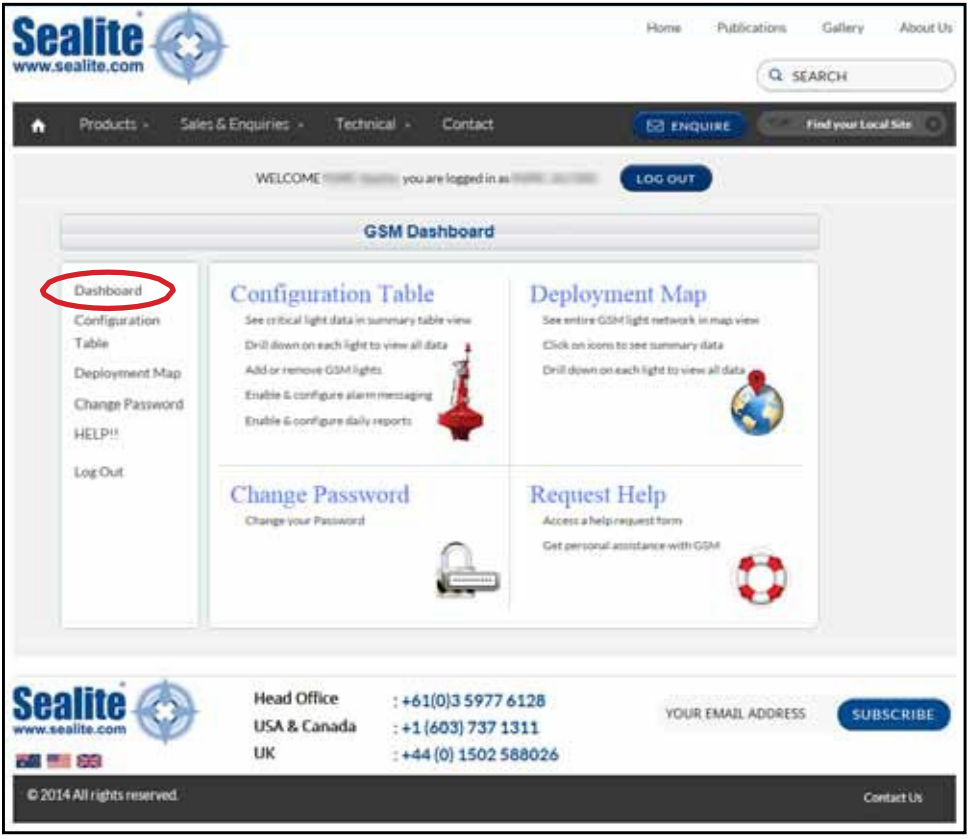


5. Complete your login details.



GSM Dashboard

Once logged in, you will come to the **GSM Dashboard** page.



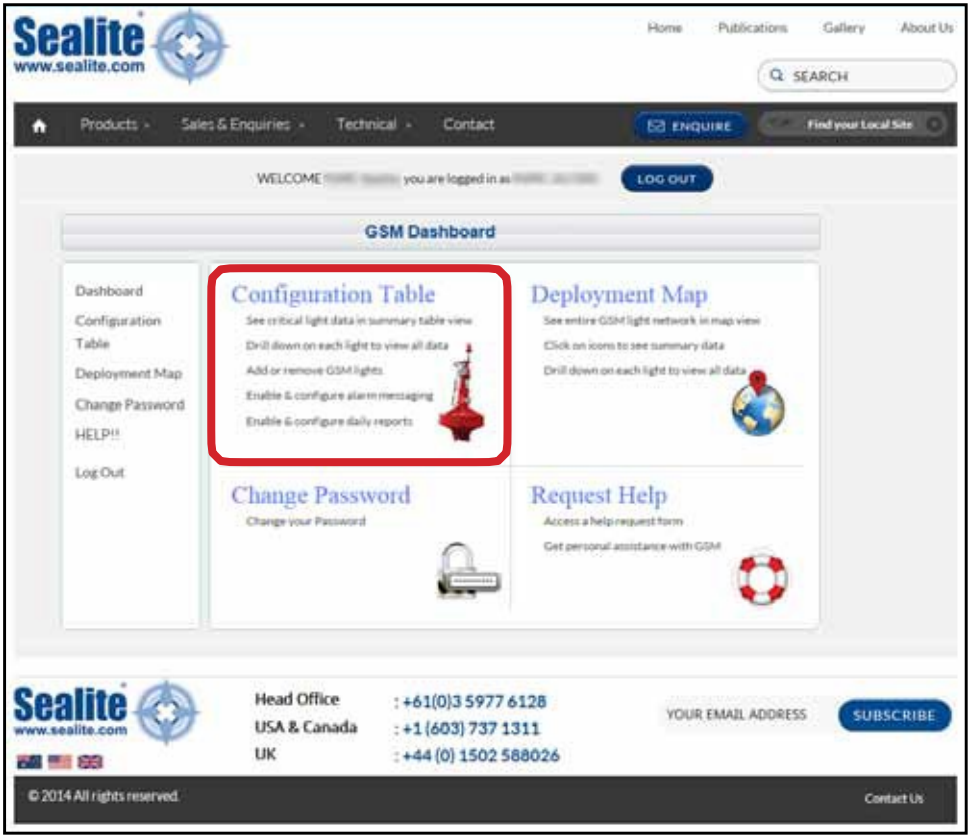
This page has menus you can use to navigate your way around Sealite's GSM Web Portal where you can perform a variety of tasks such as adding or removing GSM PELs, viewing your PEL installations on a map, view critical PEL data or request help.

You can easily return to this page at any time by selecting **Dashboard** in the menu on the left of the page.

CONFIGURATION

The **ConfigurationTable** menu of the **GSM Dashboard** enables you to do the following:

- See critical PEL data in summary table view
- Drill down on each PEL to view all data
- Add or remove GSM PELs
- Enable & configure alarm email messaging
- Enable & configure daily email reports

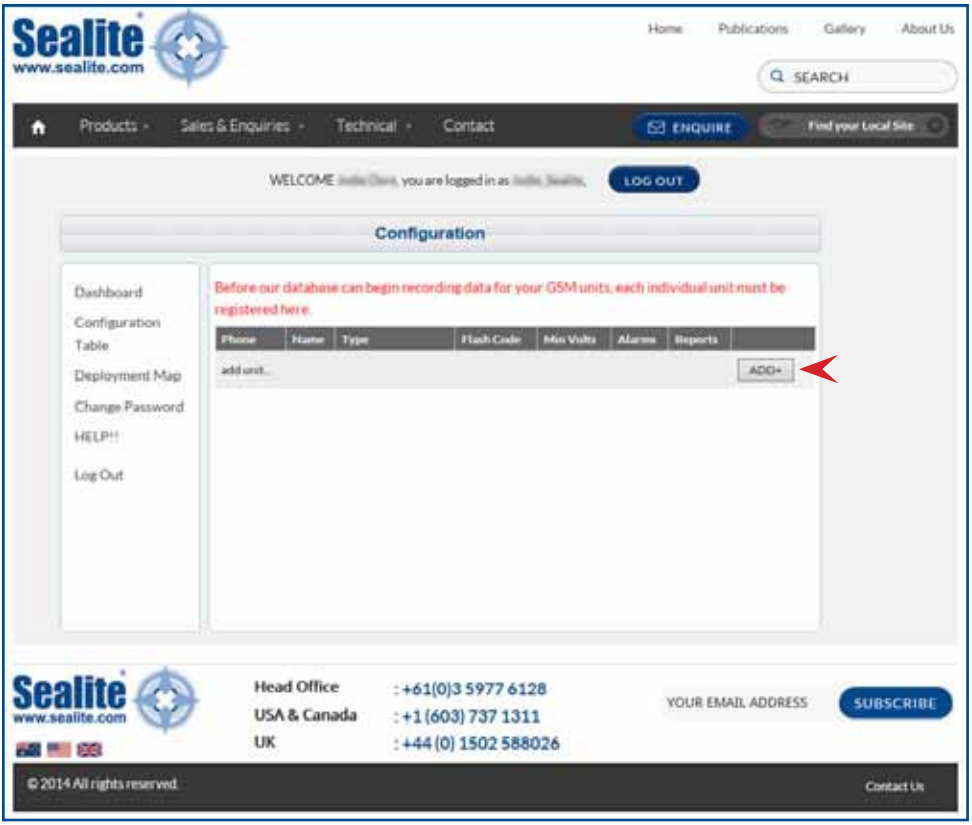


Add GSM PELs

To register your PEL with Sealite's secure online web reporting system you need to add it to your account:

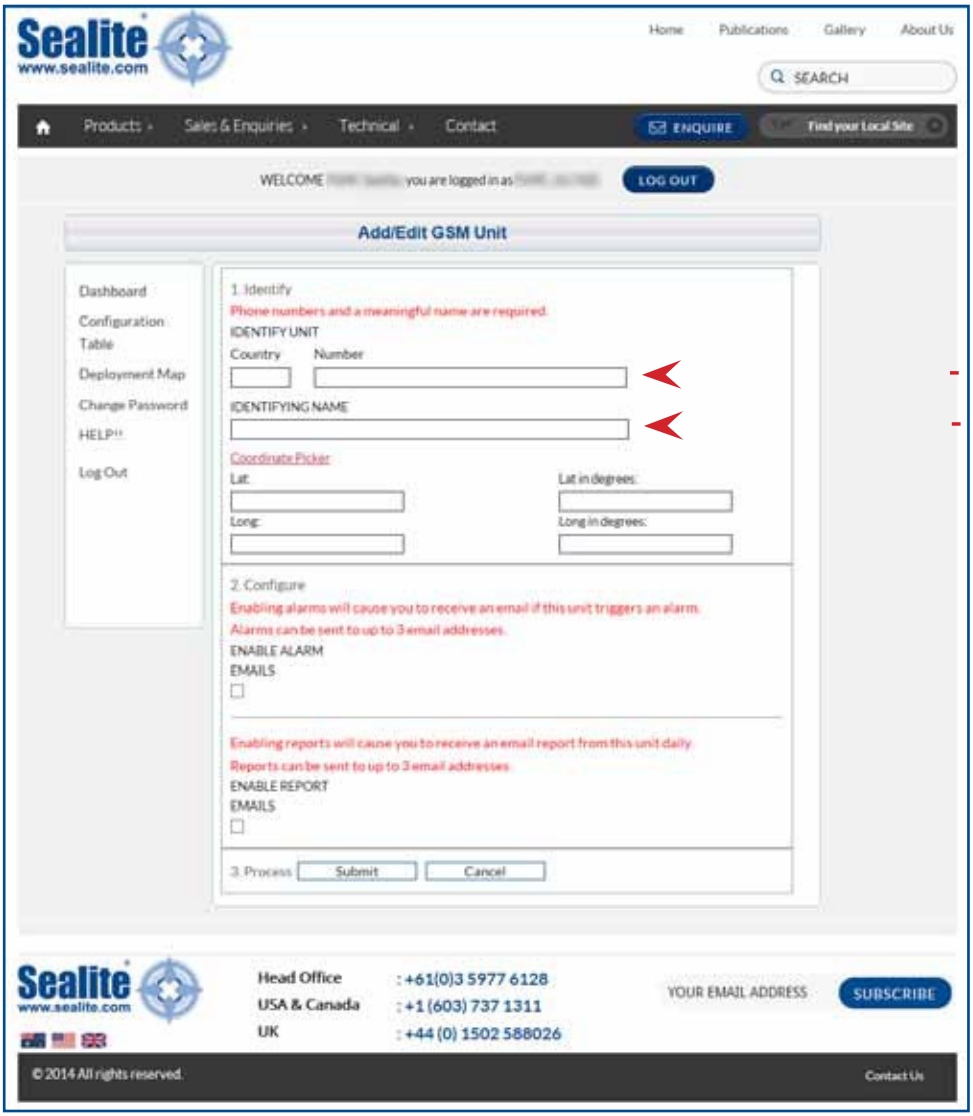
1. Select **Configuration Table** from the **GSM Dashboard** or select **Configuration Table** in the menu on the left of the page.

2. Click on ***ADD+***
This can be found at the bottom right of the table.



For PEL data to be updated daily in the Sealite GSM Web Reports, users must first send the SMS text message command "add alarm web" to the designated PEL(s).

3. The following page will appear on your screen.



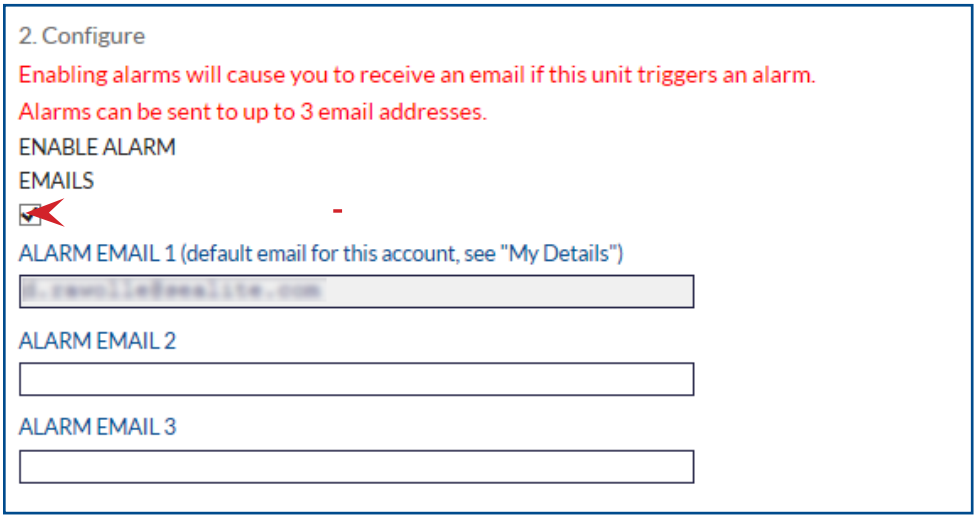
4. Fill in the details of your PEL:

Identify: Enter the PEL's individual cell-phone number and identifying name.
It is suggested that the name of the PEL be descriptive for easy identification.

5. Activate Alarm emails

Configure: ENABLE ALARM EMAILS

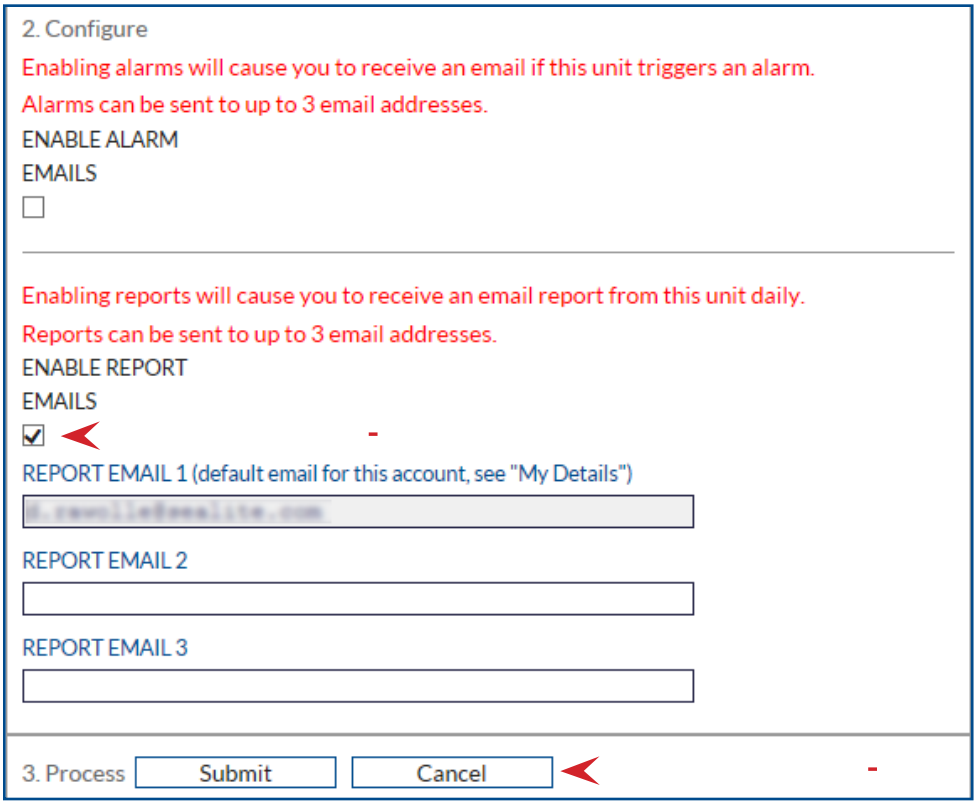
Check this box if you wish to receive an email if this PEL triggers an alarm.
Enter the email addresses of the personnel that you wish to receive alarm messages.
You can enter the email addresses of up to 2 additional recipients.
If an alarm is triggered an email will be sent to these addresses.



For PEL alarm data to be sent to the Sealite GSM Web Portal when triggered, users must first send the SMS text message command to the PEL to set up the particular alarm required.

5. Activate Report emails

Configure: **ENABLE REPORT EMAILS**
Check this box if you wish to receive an email report from this PEL daily.
Enter the email addresses of the personnel that you wish to receive daily reports.
You can enter the email addresses of up to 2 additional recipients.

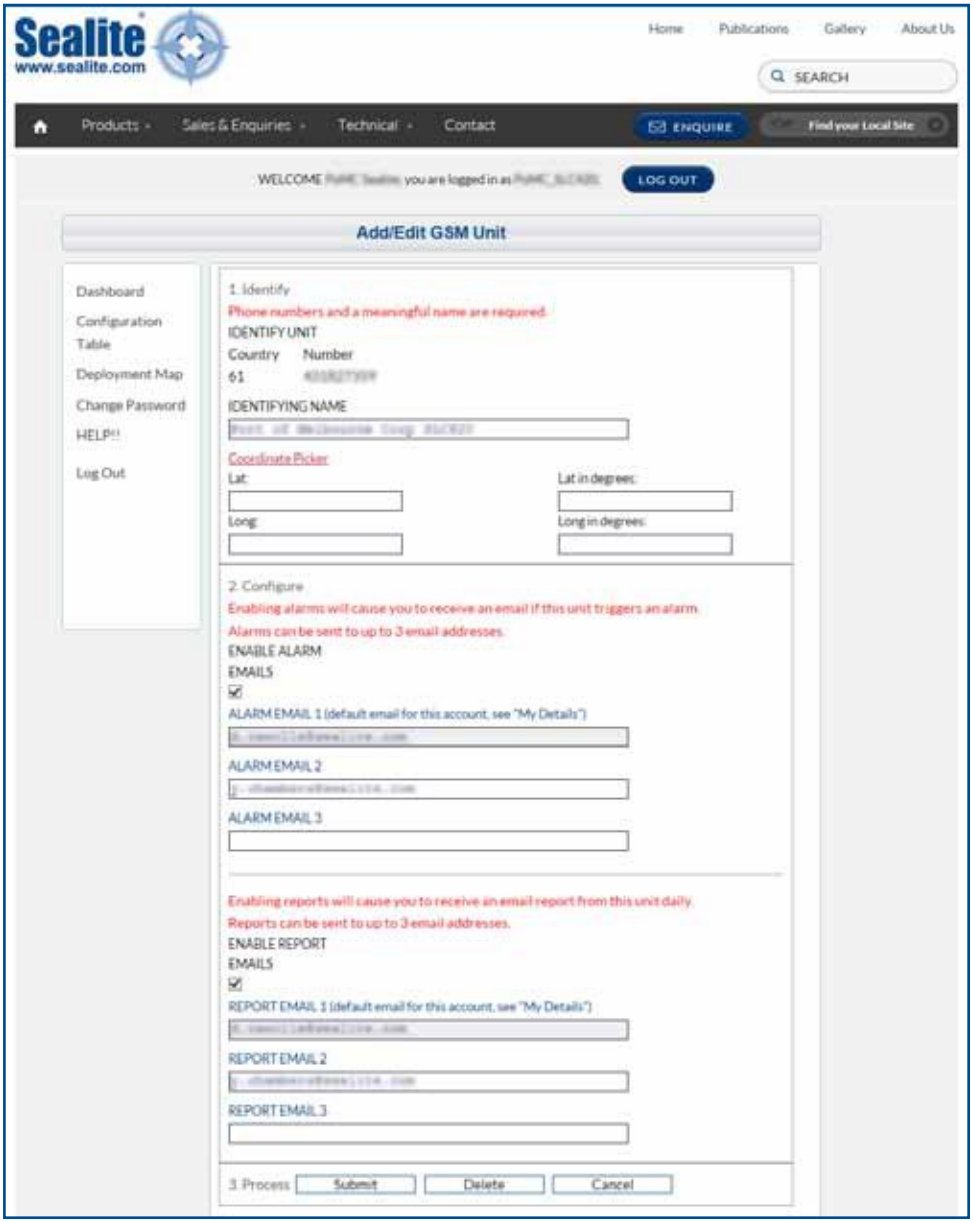


Process: Click the **Submit** button to register your PEL.
Data for your PEL will be available approximately 24 hours from the time the PEL is put into actual service or powered up.

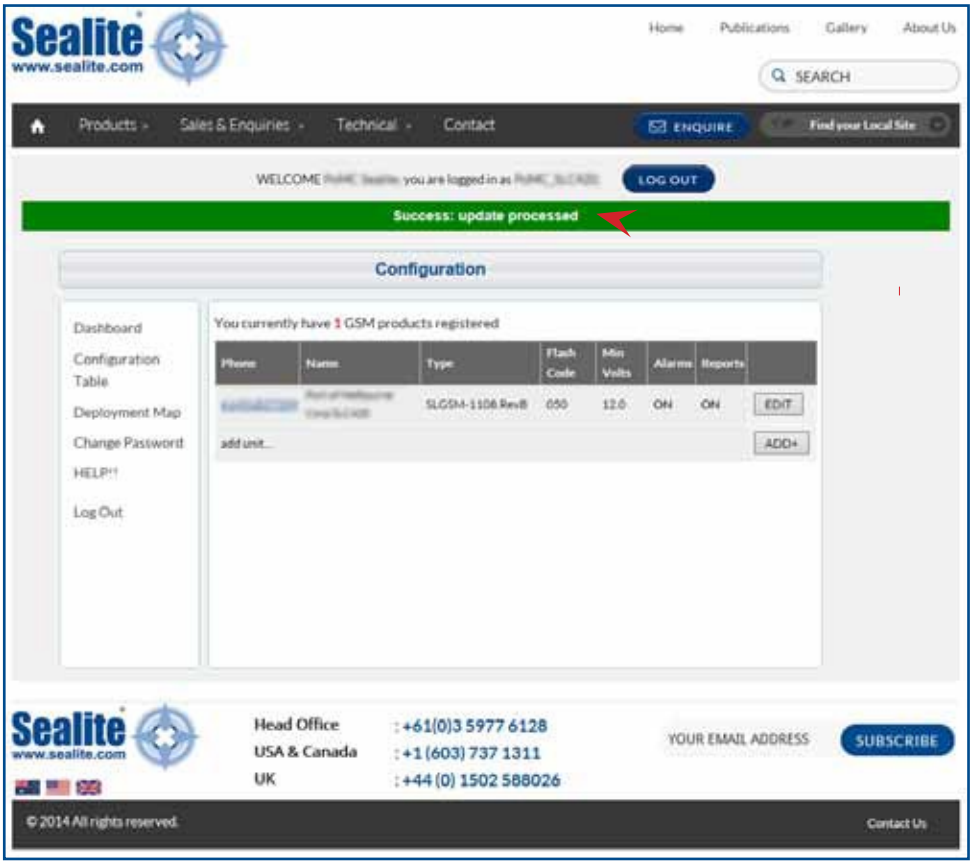
Edit GSM PEL Information

To modify the PELs information:

1. Select **Configuration Table** from the **GSM Dashboard** or select **Configuration Table** in the menu on the left of the page.
2. Locate the PELyou wish to modify and click on ***EDIT*** **(**this appears to the right of the PEL).
3. Modify the PEL details and click the **Submit** button at the bottom of the page.



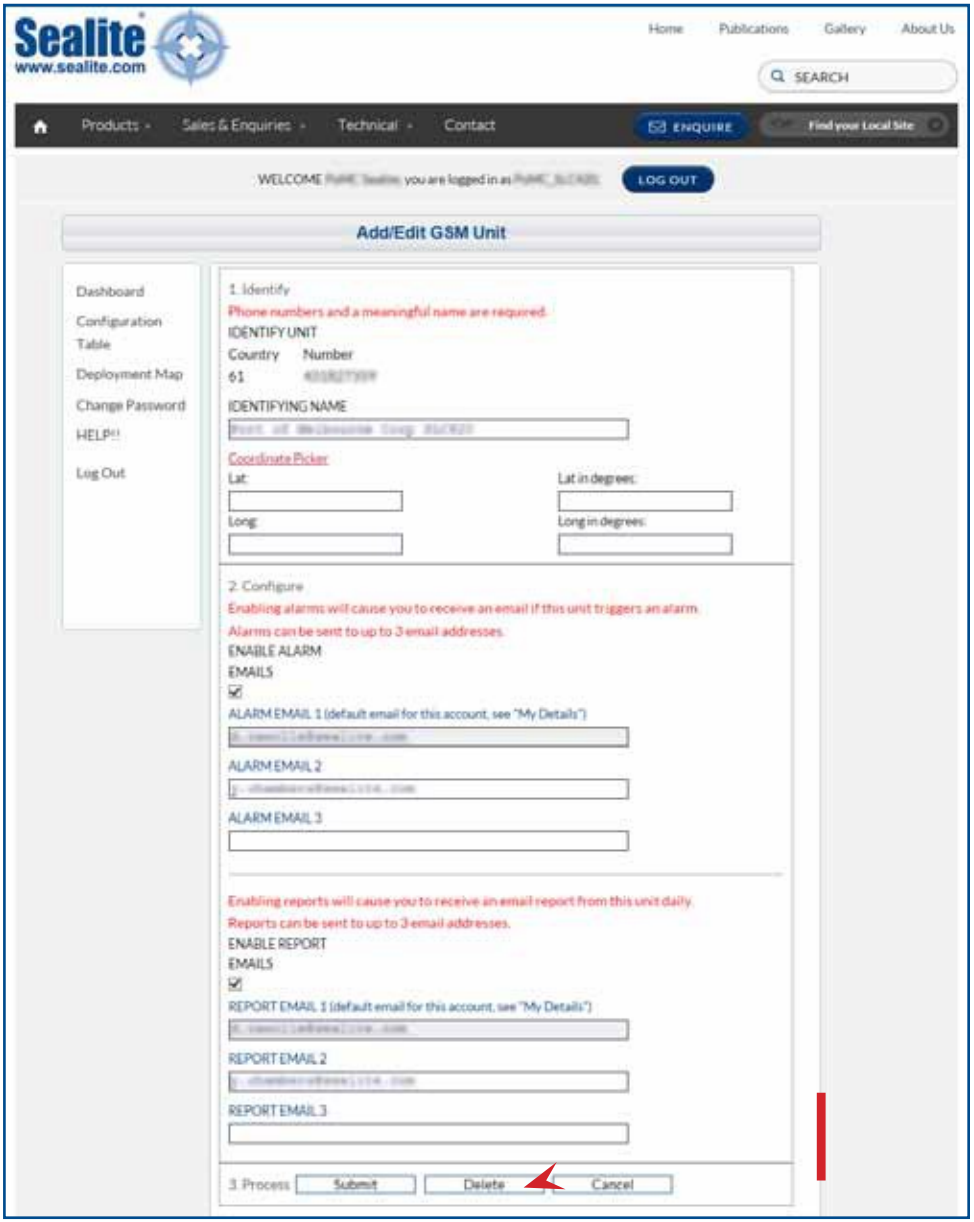
4. The following screen will appear to inform you that your update was processed successfully.



Remove GSM PELs

To remove a PEL:

1. Select **Configuration Table** from the **GSM Dashboard** or select **Configuration Table** in the menu on the left of the page.
2. Locate the PEL you wish to remove and click on ***EDIT*** **(**this appears to the right of the PEL).
3. Click the **Delete** button at the bottom of the page to remove the selected PEL.

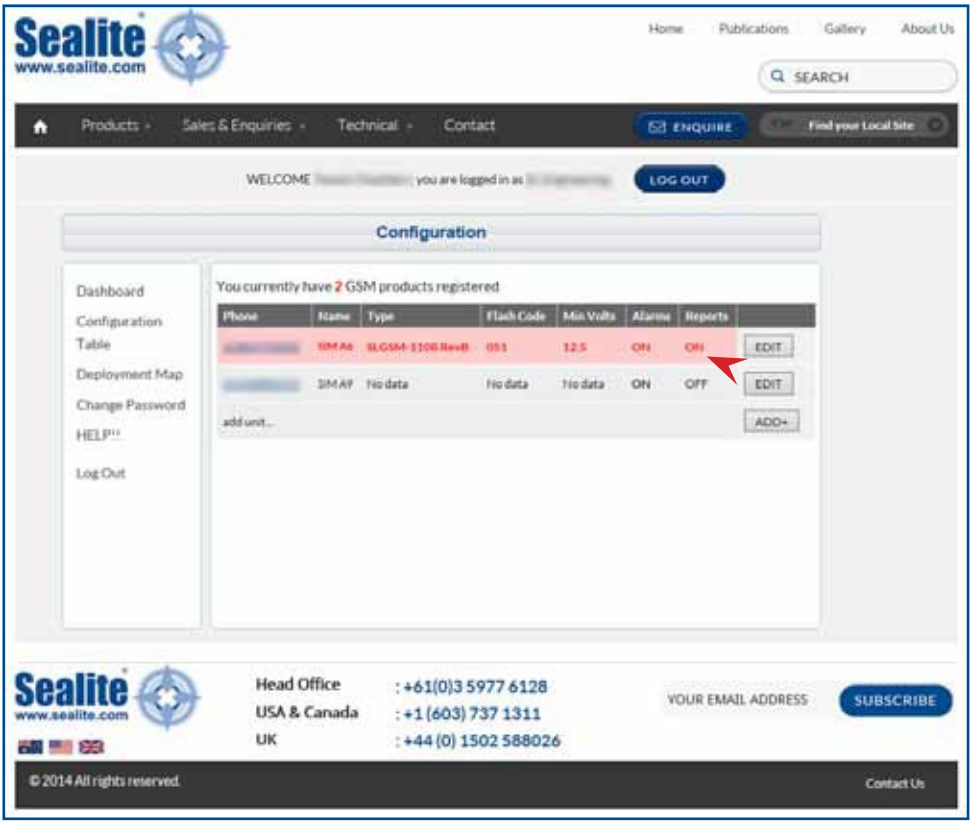


See Critical PEL Data in Summary View Table

This will take you to a new page with a summary listing of all your GSM PELs registered in the system.

1. Select **Configuration Table** from the **GSM Dashboard** or select **Configuration Table** in the menu on the left of the page.

2. The following table summary will appear:

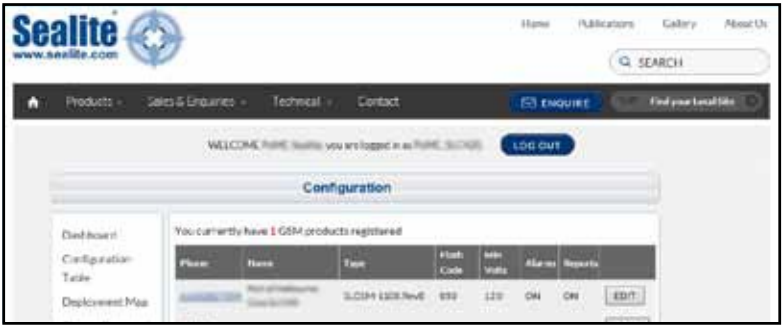


3. The background colour of a particular PEL will change to a red colour if an alarm condition is present.

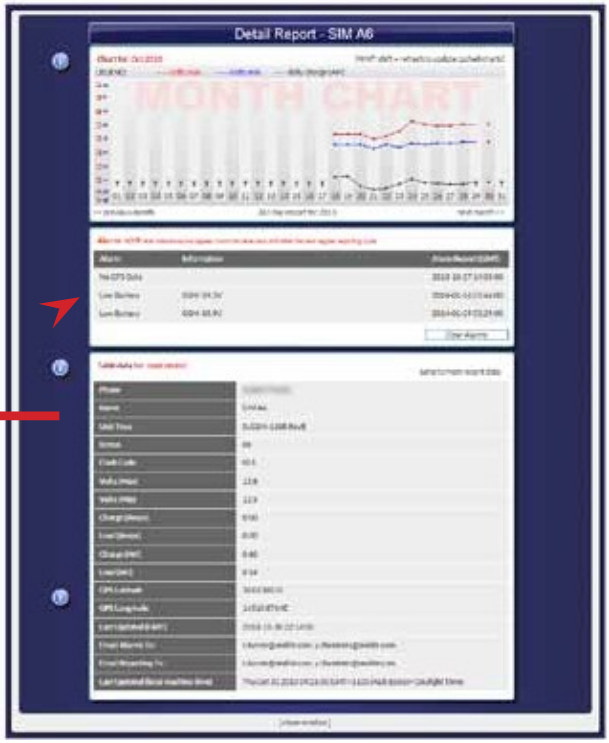
Drill Down on Each PEL to View All Data

This will take you to a new page showing detailed information for the GSM PEL selected.

1. Select **Configuration Table** from the **GSM Dashboard** or select **Configuration Table** in the menu on the left of the page.
2. The following table summary will appear:

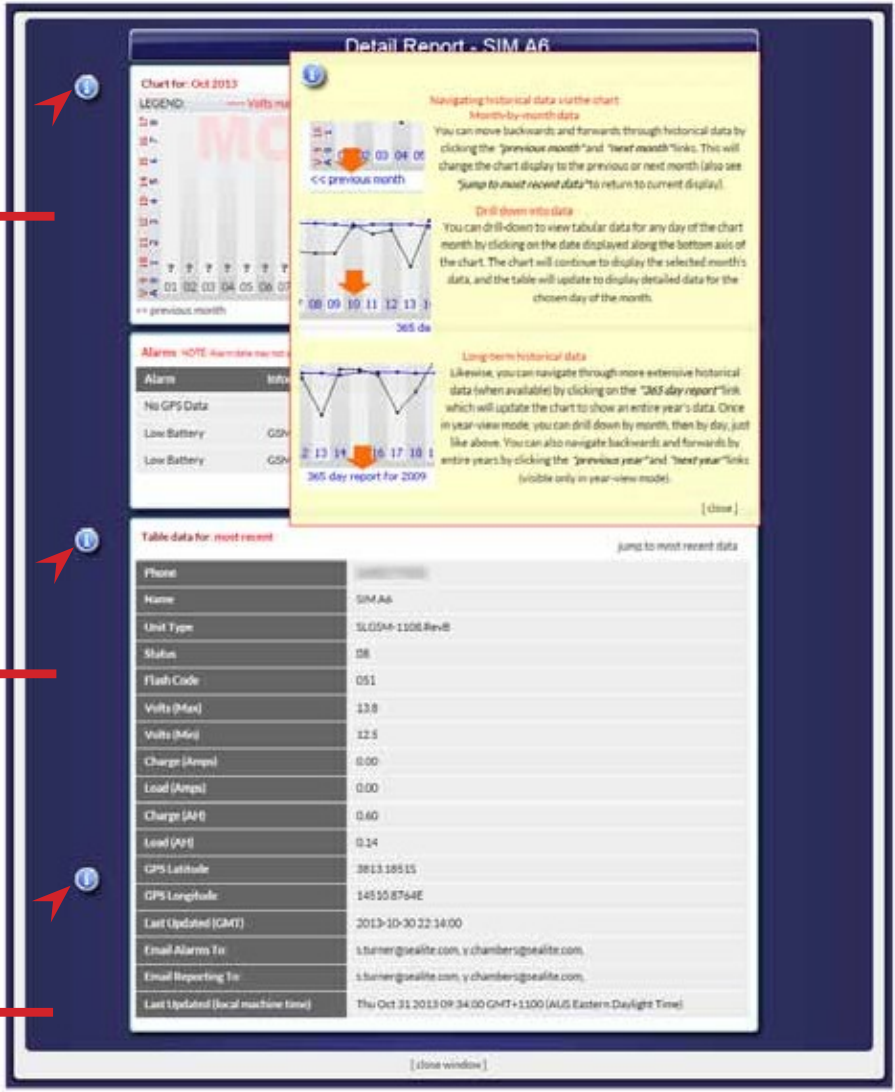


3. Click the cell-phone number of the PEL you wish to view in more detail.
4. The following detailed report for the PEL will appear in a new window.
   Breaks in the data represent periodic absence of data transmission or removal of PEL for servicing.



Lantern with an alarm

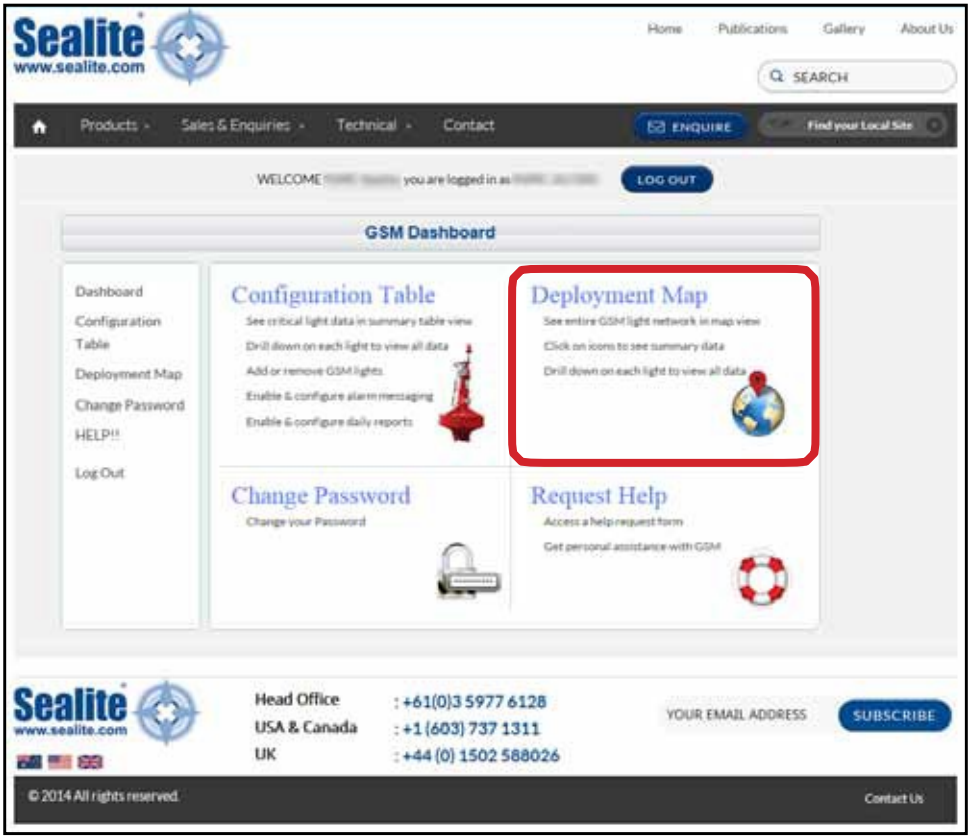
5. For help viewing detailed information about Charts, Data and Email Reporting click on the 'i' button to the left of the screen:



DEPLOYMENT MAP

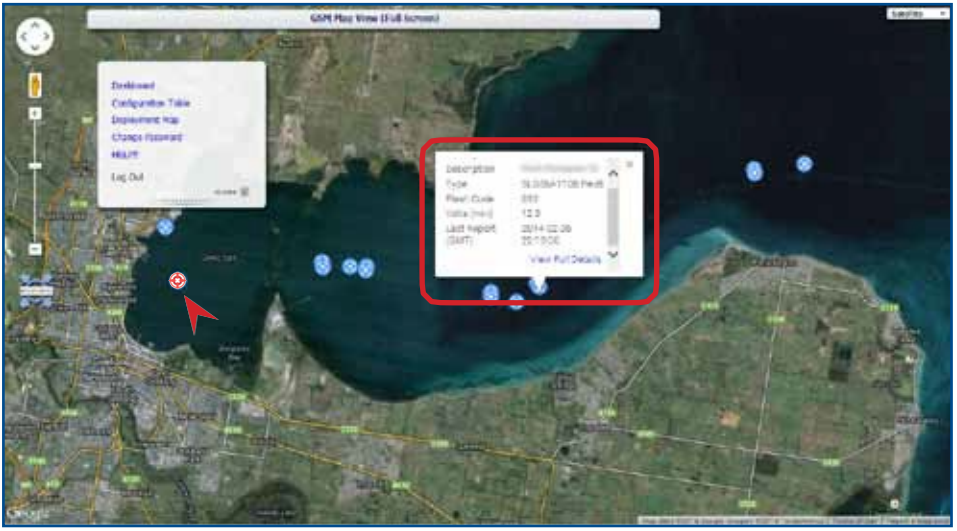
The **Deployment Map** section of the **GSM Dashboard** enables you to do the following:

- See entire GSM PEL network in map view
- Click on items to see summary data
- Drill down on each PEL to view all data



This allows you to view the location of your GSM PEL installations via map.

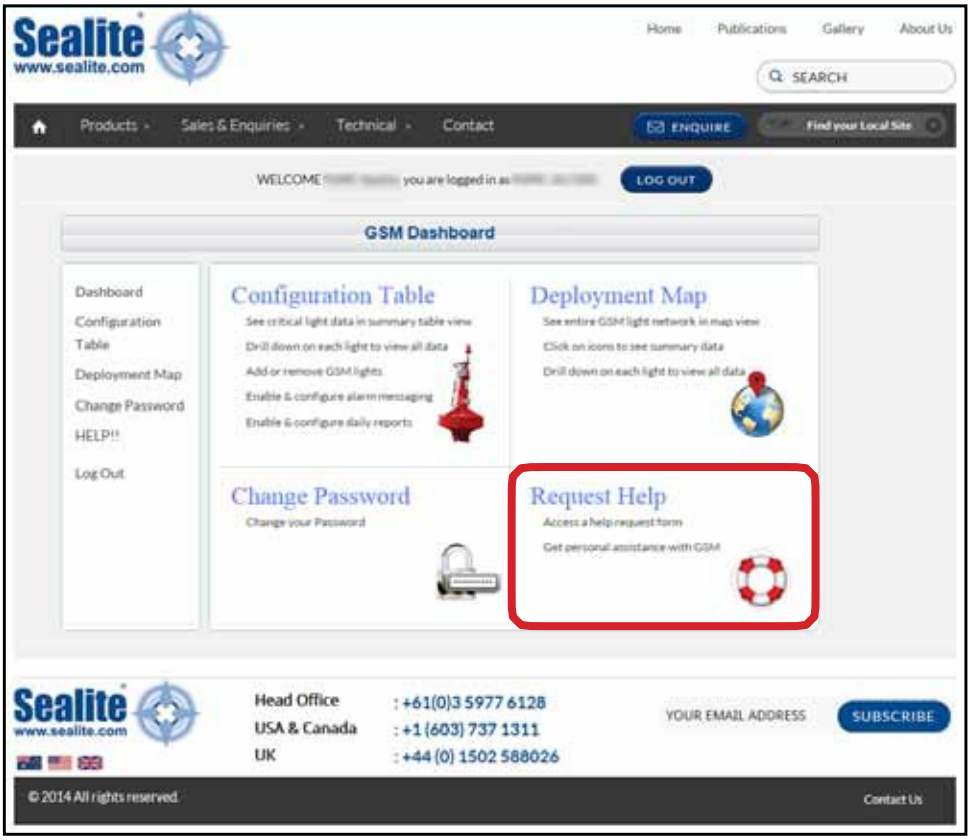
1. Select **Deployment Map** from the **GSM Dashboard** or select **Deployment Map** in the menu on the left of the page.
2. A map of your GSM PELs will appear with the Sealite Logo indicating the location of your installation(s). Use the zoom in/out tool bar at the top left of the page to navigate around the map.
3. To see summary data for a specific PEL, click on the Sealite icon on the map.
   A call-out box appears on the map with the summary data of the PEL.
4. The Sealite Logo will be highlighted in red if an alarm condition occurs.
4. To drill down on the PEL to view all data, click on **View Full Details** in the call-out box and a new window will open displaying detailed information about the PEL.



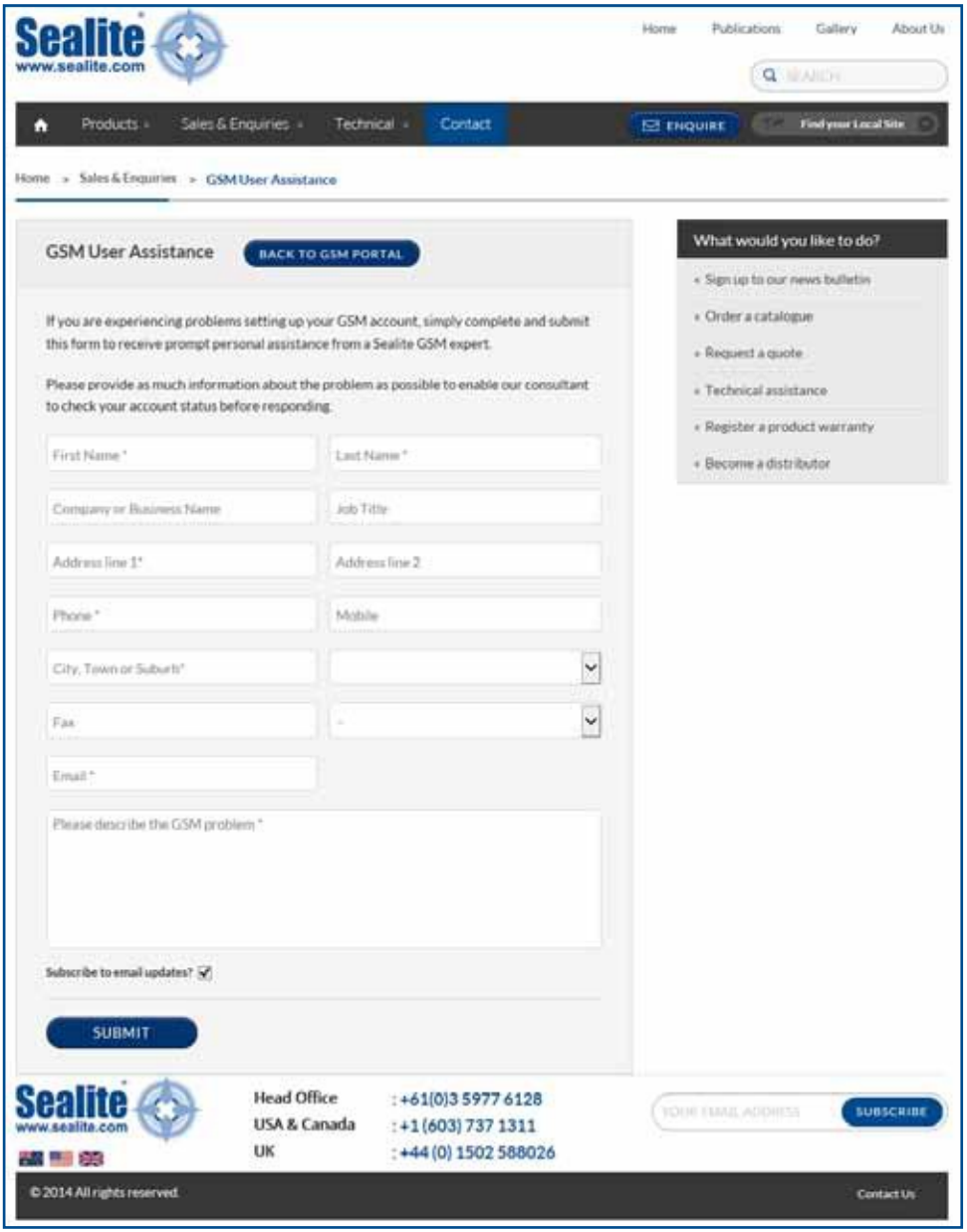
PEL with an alarm condition

REQUEST HELP

The **Request Help** menu of the **GSM Dashboard** enables you to submit a form to Sealite to request assistance from a Sealite GSM expert.

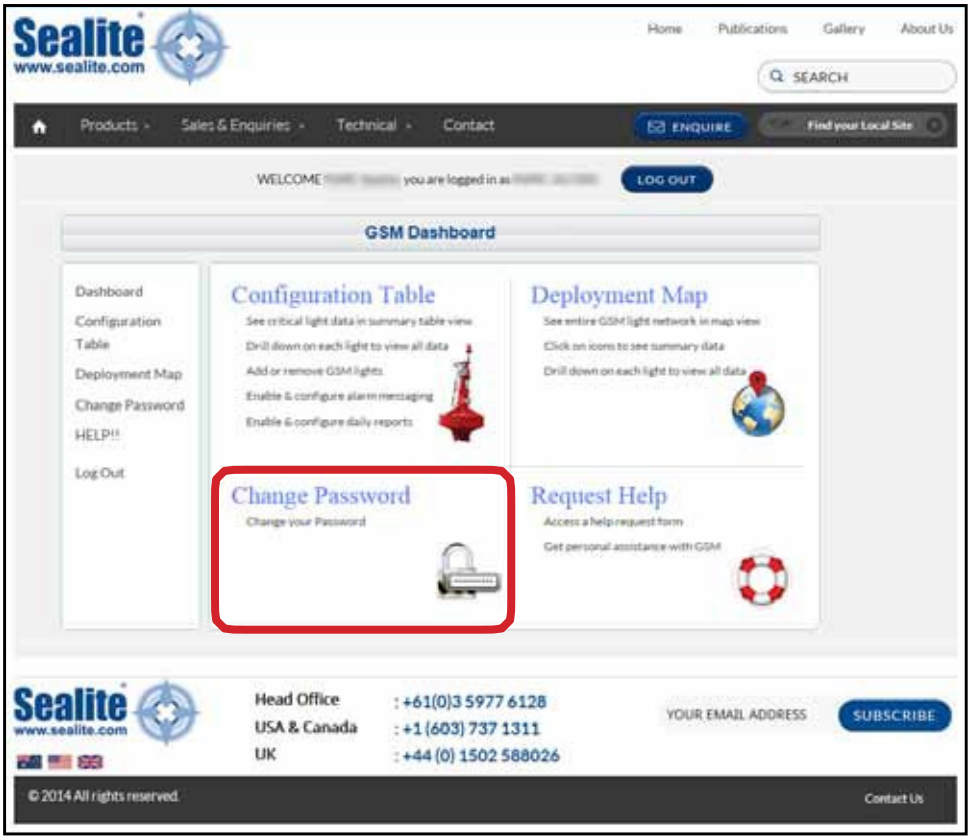


1. Select **Request Help** from the **GSM Dashboard** or select **HELP!!** in the menu on the left of the page.
2. The following form will appear.
3. Complete the details.
4. Click **Submit**

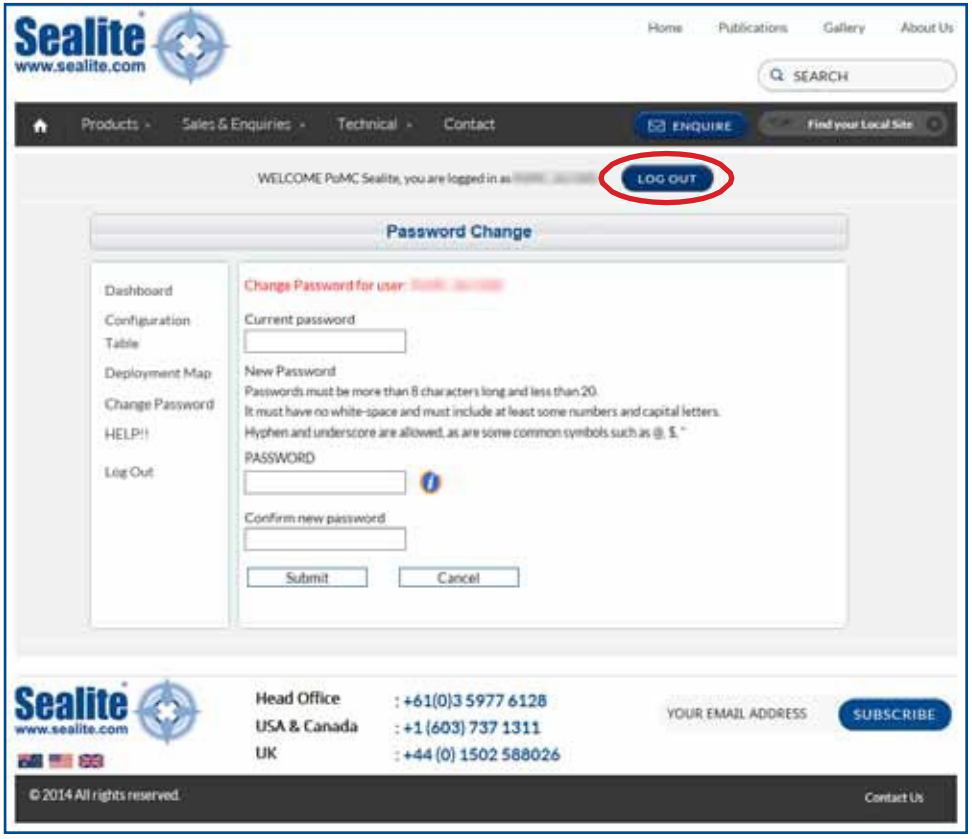


CHANGE PASSWORD

The **Change Password** menu of the **GSM Dashboard** enables you to change your password:



1. Select **Change Password** from the **GSM Dashboard** or select **Change Password** in the menu on the left of the page.
2. Complete the details.
3. Click **Submit**



REMEMBER TO LOG OUT WHEN YOU HAVE FINISHED VIEWING YOUR GSM PEL DATA

(click "LOG OUT" at the top right of the page)

PEL Installation Location

The PEL with GSM must be installed in a location where there is adequate GSM and if fitted GPS signal coverage from your service provider.

Final GPS location of your PEL can be obtained via SMS text message once it is installed and the power is connected.

Data will not be available from the GSM Monitoring and Control System for a minimum of 1 minute after the power has been connected.

GSM MONITORING AND CONTROL PELS: DESIGNATED PEL SIM CARD NUMBERS

PEL Name (eg. PEL 1)	Installation Location	Cell phone Number (eg. +61432123456)	Master Telephone Number (eg. +61456123456)

REMOTE REPORT CELL PHONE NUMBERS & EMAIL CONTACTS

PEL Name	Contact Name	Cell phone Number (eg. +61432123456)	Email Address

Trouble Shooting

Initial Setup

The most important step in the process of setting up your GSM monitoring and control module is to ensure desired cell phone numbers are programmed into the access list.

Use the list access command (see “Sending Commands” on page 20) to confirm cell phone numbers are correctly entered. Re-enter from a correctly listed cell phone the numbers required.

If the initial access list number(s) are incorrectly entered, lost, or if the PEL’s cell phone number will not respond, power up the PEL and email Sealite technicians (info@sealite.com) the following details:

- Designated PEL SIM Card Number
- Country Code
- PEL Serial Number **

** *Please Note: A charge may be levied for this service*

Web Reporting

If no data is available from your secure web login after following the outlined procedure:

- Send the SMS text message “list alarm” to check that the alarm to the web has is enabled
- It may be necessary to wait up to 24 hours for the unit to update the GSM Portal.
- If the alarm has been enabled, then re-send the SMS text message “add web +61418569242” to ensure the gateway is open.

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Trouble Shooting Table

Problem	Remedy
PEL will not activate.	• Ensure PEL is in darkness. • Wait at least 60 seconds for the program to initialise in darkness. • Ensure switch setting is on a valid code (not unused flash code). • Ensure battery terminals are properly connected. • Ensure battery voltage is above 12volts.
Timing codes will not change.	• Cycle PEL Power.
PEL will not operate for the entire night.	• Check PEL Operation Mode settings. • Expose PEL to direct sunlight and monitor operation for several days. Sealite products typically require 1.5 hours of direct sunlight per day to retain full autonomy. From a discharged state, the PEL may require several days of operational conditions to 'cycle' up to full autonomy. • Reducing the light output intensity or duty cycle (flash code) will reduce current draw on the battery. • Ensure solar module is clean and not covered by shading during the day.
My PEL won't respond to the 1st message I send on setup.	• Ensure SIM card is active, has credit, and is fitted correctly. • Ensure there is no PASSWORD on the SIM card account and the SIM Card is unlocked.
My SMS reports are sometimes showing N/A or reports that "no data" has been received.	• This indicates that the GPS or battery charge at night is not available. Otherwise the PEL may have failed therefore responding with a reading of "N/A" (not available). Contact Sealite for further help.
When I send an SMS there is no SMS response from the PEL within 5-20 minutes.	• The cell phone monitoring system is reliant on cell phone coverage and gateway traffic, and may suffer from occasional drop outs, or the PEL may be located in a marginal GSM coverage area (check with your local network provider for coverage details). One or all of these parameters affect the performance of your monitoring system. • The GSM implements a sleep cycle to save power. Under normal conditions the GSM will be put to sleep for 15 minutes at a time.
When I send an SMS there is no response.	• Check the number you are ringing from is listed in the access list or the report list. • Try sending the SMS from a different phone using a different network.

Lantern Board Indicator / Status LED's

All Sealite lantern boards are fitted with two Indicator LED's. These are positioned on the edge of the board, near the Flash Code Rotary Switches. Use the table below to help determine operational status.
Note: these Status LED's are only visible if you remove the rear cover of the PEL. Removing the rear cover will void your warranty. Use the GSM to determine the status of the PEL.

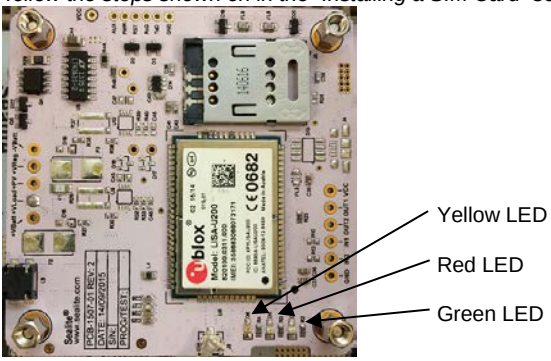
Yellow Status LED	Condition
Off	Daylight, Standby
Quick Flashing	Day to Night transition
2 Quick Flashes	Night Operation, Not Synchronized
1 Quick Flash	Night Operation, Sync in Progress
Slow Flashing	Night Operation, Synchronized

Red Status LED	Condition
Steady	Flat Battery cutoff is in effect (Below 10.0V)
Slow	High Voltage (Above 13.5V)
Off	Optimal Voltage (12.5V to 13.5V)
1 Quick	Ok Voltage (12.0V to 12.5V)
2 Quick	Low Voltage (11.5V to 12.0V)
3 Quick	Poor Voltage (10.0V to 11.5V)
4 Quick	Flat Voltage (Below 10.0V)

Phone Module Indicator / Status LED's

The GSM board is fitted with a number of Indicator LED's. Use the diagram below to help determine operational status.

To view Indicator LED's follow the steps shown on in the "Installing a SIM Card" section of this manual



GSM Module Status LEDs

LED Combinations			Condition
Green LED	Red LED	Yellow LED	
Steady	**Off**	**Off**	The setup of the GSM module has failed. Check that the module is present. Reset the unit and try again. *Note: The unit will automatically reset within 1 hour and try again.*
Slow	**Steady**	**Steady**	The GSM module is in the process of being setup. (Approx 30Seconds) The SIM card has failed. Check that the SIM card is present and inserted correctly.
Slow	**Slow**	**Steady**	The GSM module is in the process of being setup. (Approx 15Seconds) The SIM card is locked, please insert the SIM card into a handset and unlock the PIN.
1 Quick	**1 Quick**	**Steady**	The GSM module setup is complete. The SIM card is ready for operation. The signal is not detectable. Check that the antenna is present and connected to the GSM module.
1 Quick	**1 Quick**	**Slow**	The GSM module setup is complete. The SIM card is ready for operation. The network is NOT ready.
1 Quick	**1 Quick**	**1 Quick (Low)** **2 Quick (OK)** **3 Quick (Good)** **4 Quick (Max)**	The GSM module setup is complete. The SIM card is ready for operation. The network is ready. The yellow status LED indicates signal strength.
2 Quick	**Off**	**Off**	GSM Module setup is complete and the GSM module is asleep.

Notes

Notes

Sealite LED Light Warranty V2.1

Activating the Warranty

Upon purchase, the Sealite Pty Ltd warranty must be activated for recognition of future claims. To do this you have two (2) options:

1. **Postal Registration** - please complete the Sealite Warranty Registration Card and return to Sealite within 30 days of your purchase.
2. **Online Registration** - please complete the Online Registration Form at; www.sealite.com

Sealite Pty Ltd will repair or replace your LED light in the event of electronic failure for a period of up to three years from the date of purchase.

The unit must be returned to Sealite freight prepaid.

Warranty Terms

1. Sealite Pty Ltd warrants that any Sealite marine products fitted with telemetry equipment including but not limited to AIS, GSM, GPS or RF ("Telemetry Products") will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of twelve (12) months from the date of purchase by the original purchaser.
2. Sealite Pty Ltd warrants that any BargeSafe™ Series of LED barge light products ("BargeSafe™ Products") will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of twelve (12) months from the date of purchase by the original purchaser.
3. Sealite Pty Ltd warrants that any LED area lighting products ("Area Lighting Products") but not including sign lighting products will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of twelve (12) months from the date of purchase by the original purchaser.
4. Sealite Pty Ltd warrants that any LED sign lighting products ("Sign Lighting Products") will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of three (3) years from the date of purchase by the original purchaser.
5. Sealite Pty Ltd warrants that any Sealite marine lighting products other than the Telemetry Products, BargeSafe™ Products, and Area Lighting Products ("Sealite Products") will be free from defective materials and workmanship under normal and intended use, subject to the conditions hereinafter set forth, for a period of three (3) years from the date of purchase by the original purchaser.
6. Sealite Pty Ltd will repair or replace, at Sealite's sole discretion, any Telemetry Products, BargeSafe™ Products, Area Lighting Products or Sealite Products found to be defective in material and workmanship in the relevant warranty period so long as the Warranty Conditions (set out below) are satisfied.
7. If any Telemetry Products, BargeSafe™ Products, Area Lighting Products or Sealite Products are fitted with a rechargeable battery, Sealite Pty Ltd warrants the battery will be free from defect for a period of one (1) year when used within original manufacturer's specifications and instructions.

Warranty Conditions

This Warranty is subject to the following conditions and limitations;

1. The warranty is applicable to lanterns manufactured from 1/1/2009.
2. The warranty is void and inapplicable if:
   a. the product has been used or handled other than in accordance with the instructions in the owner's manual and any other information or instructions provided to the customer by Sealite;
   b. the product has been deliberately abused, or misused, damaged by accident or neglect or in being transported; or
   c. the defect is due to the product being repaired or tampered with by anyone other than Sealite or authorised Sealite repair personnel.

3. The customer must give Sealite Pty Ltd notice of any defect with the product within 30 days of the customer becoming aware of the defect.
4. Rechargeable batteries have a limited number of charge cycles and may eventually need to be replaced. Typical battery replacement period is 3-4 years. Long term exposure to high temperatures will shorten the battery life. Batteries used or stored in a manner inconsistent with the manufacturer's specifications and instructions shall not be covered by this warranty.
5. No modifications to the original specifications determined by Sealite shall be made without written approval of Sealite Pty Ltd.
6. Sealite lights can be fitted with 3rd party power supplies and accessories but are covered by the 3rd party warranty terms and conditions.
7. The product must be packed and returned to Sealite Pty Ltd by the customer at his or her sole expense. Sealite Pty Ltd will pay return freight of its choice. A returned product must be accompanied by a written description of the defect and a photocopy of the original purchase receipt. This receipt must clearly list model and serial number, the date of purchase, the name and address of the purchaser and authorised dealer and the price paid by the purchaser. On receipt of the product, Sealite Pty Ltd will assess the product and advise the customer as to whether the claimed defect is covered by this warranty.
8. Sealite Pty Ltd reserves the right to modify the design of any product without obligation to purchasers of previously manufactured products and to change the prices or specifications of any product without notice or obligation to any person.
9. Input voltage shall not exceed those recommended for the product.
10. Warranty does not cover damage caused by the incorrect replacement of battery in solar lantern models.
11. This warranty does not cover any damage or defect caused to any product as a result of water flooding or any other acts of nature.
12. There are no representations or warranties of any kind by Sealite or any other person who is an agent, employee, or other representative or affiliate of Sealite, express or implied, with respect to condition of performance of any product, their merchantability, or fitness for a particular purpose, or with respect to any other matter relating to any products.

Limitation of Liability

To the extent permitted by section 68A of the Trade Practices Act 1974 (Cth), the liability of Sealite Pty Ltd under this Warranty will be, at the option of Sealite Pty Ltd, limited to either the replacement or repair of any defective product covered by this Warranty. Sealite will not be liable to Buyer for consequential damages resulting from any defect or deficiencies.

Limited to Original Purchaser

This Warranty is for the sole benefit of the original purchaser of the covered product and shall not extend to any subsequent purchaser of the product.

Miscellaneous

Apart from the specific warranties provided under this warranty, all other express or implied warranties relating to the above product is hereby excluded to the fullest extent allowable under law. The warranty does not extend to any lost profits, loss of good will or any indirect, incidental or consequential costs or damages or losses incurred by the purchaser as a result of any defect with the covered product.

Warrantor

Sealite Pty Ltd has authorised distribution in many countries of the world. In each country, the authorised importing distributor has accepted the responsibility for warranty of products sold by distributor. Warranty service should normally be obtained from the importing distributor from whom you purchased your product. In the event of service required beyond the capability of the importer, Sealite Pty Ltd will fulfil the conditions of the warranty. Such product must be returned at the owner's expense to the Sealite Pty Ltd factory, together with a photocopy of the bill of sale for that product, a detailed description of the problem, and any information necessary for return shipment.

Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor.
Sealite products are subject to certain Australian and worldwide patent applications.

Other Sealite Products Available

Marine Lanterns (1–19NM)

Monitoring & Control Systems

Bridge & Barge Lights

Marine Buoys (up to 3mt in diameter)

Area Lighting

Mooring Systems & Accessories

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