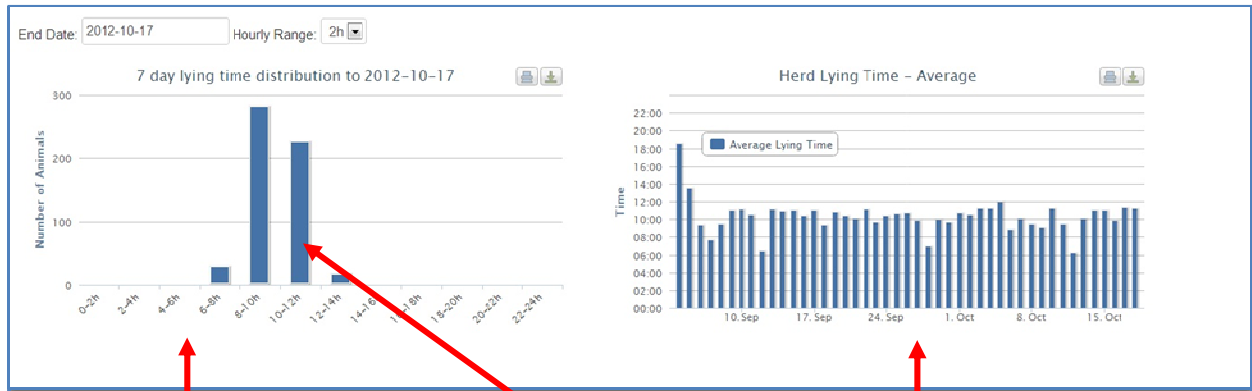


6.2 Lying behaviour for the group or herd

CowAlert allows the user to monitor the lying times of the group or herd and drill down to individual cow level.

From the Navigation bar select Reports: Lying Time. This will show 2 graphs. The left hand graph shows 7 day average lying time and the right hand graph shows herd average lying time over the last few weeks.



The horizontal axis of the graph shows the average hours of lying time and the vertical axis shows the number of cows lying within that period.

Average lying time of the herd over time

Moving the cursor over any of the bars on the chart shows the number of animals in that group.

Click on any bar to “click through” to the specific animals in that group

Search Refresh					
Page 1 of 1				25	View 1 - 3 of 3
	Cow #	Group	Day	7d Lying Avg	14d Lying Avg
1	751		2012-07-16	16:17:43	13:46:51
2	527		2012-07-16	16:33:26	16:52:43
3	127		2012-07-16	16:17:16	13:48:25

6.3 Lying behaviour graphs for an individual cow

Selecting **Behaviour** from the activity graph page accesses a comprehensive individual graphs for each cow showing trend analysis over a 90 day moving window

90 Days 60 Days 30 Days 72 Hours 12 Hours **Behaviour**



7 Managing Cows and IceQubes

7.1 Getting started – creating the initial association between Cows and IceQubes

When IceQubes are attached for the first time to cows the best method to organise your data is to create a manual list of which cows (freeze brand numbers) have been given which IceQubes.

Many farmers fill out a spreadsheet with this information. The date and time of attachment should be included.

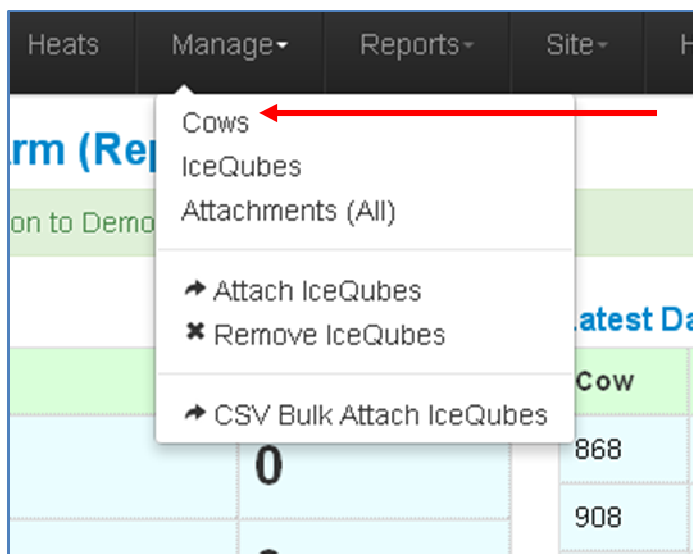
Cow Number	IceQube Number	Date attached	Time attached

IceRobotics can upload this spreadsheet for you into CowAlert to make the initial association easier for the farmer.

Note: If you wish to make the cow to IceQube associations yourself you **must** create the list of cows numbers in CowAlert first. Once the list of cows is created it is a simple task to match the cow to the IceQube – see section 7.4, adding a new cow to CowAlert.

7.2 Generating a list of Cow numbers

Select Manage from the main menu at the top of the Home Page, and then select Cows.



Clicking on the **Manage** link provides navigation options. Selecting **Cows** generates the table shown below

Enter a cow number here to identify a specific animal

Click here to scroll through the pages of data (it is not presented as one long page for ease of use)

Cows Filter ▾

Search Refresh Page 1 of 10 25 ▾ View 1 - 25 of 238

	<input type="checkbox"/>	Cow Number ↑	Eartag	Group	IceQube	Last Seen
1	<input type="checkbox"/>	1	uk583399600		40415332	Wed 18-Jul-2012 15:02
2	<input type="checkbox"/>	2	UK583399601	dry	40414379	Tue 17-Jul-2012 06:53
3	<input type="checkbox"/>	3	UK583399701		40414354	Wed 18-Jul-2012 14:11
4	<input type="checkbox"/>	4	UK583399401		40518689	Wed 18-Jul-2012 14:24
5	<input type="checkbox"/>	5	UK583399201		40415323	Wed 18-Jul-2012 13:37
6	<input type="checkbox"/>	7	UK583399100	dry	40414278	Thu 14-Jun-2012 10:07
7	<input type="checkbox"/>	9	UK583399601		40414299	Tue 17-Jul-2012 13:10
8	<input type="checkbox"/>	11	UK583399200	dry	40414331	Thu 21-Jun-2012 14:05
9	<input type="checkbox"/>	13	UK583399301		40415528	Wed 18-Jul-2012 13:53

Search feature is common to all pages

Click on cow number to go to the detailed graphs for this animal

Click up or down arrow to sort the column by either lowest or highest number. This is common feature on all

7.3 Generating a list of IceQubes

Select **Manage** from the main menu at the top of the HomePage, and then select **IceQubes**.

This list shows all IceQubes on site and the associated Cow to which they are attached. Various reports are accessible via the pull down menu.

Click here to see list of IceQubes last seen
(drop down menu provides options for the time period)

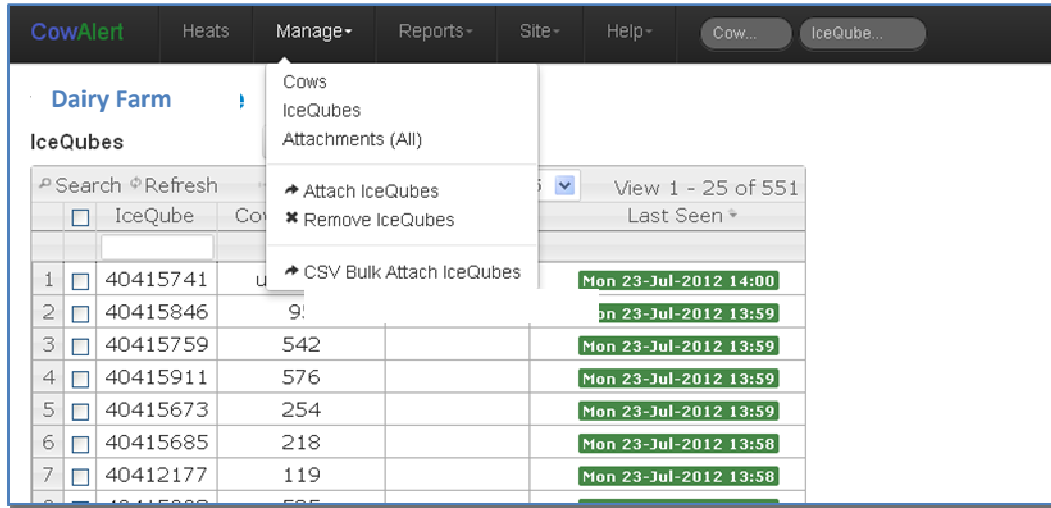
Click here to see list of unattached IceQubes

IceQubes			
Last Seen ▾		All Unattached	
Refresh Page 1 of 6 100 View 1 - 100 of 580			
	IceQube	Cow Number	Group
			Last Seen ▾
1	40531685	5803	Fri 19 Oct 2012 17:44
2	40532109	6077	Fri 19 Oct 2012 17:40
3	40532319	6326	Fri 19 Oct 2012 17:40
4	40531543	5867	Fri 19 Oct 2012 17:39
5	40532090	6423	Fri 19 Oct 2012 17:39
6	40532369	5693	Fri 19 Oct 2012 17:39
7	40532331	6526	Fri 19 Oct 2012 17:37
8	40532318	6247	Fri 19 Oct 2012 17:37

Date and time the IceQube was last seen

7.4 Attaching an IceQube to a Cow within CowAlert

Select Manage in the main menu, and then select Attach IceQubes.



A form will open that allows you to select the IceQube number, the cow that it is to be attached to and the date and time of attachment. Please be as accurate as possible with attach and detach times to avoid any data overlaps or gaps.

If you need to add a new cow, this can be done by clicking here

Attach IceQubes To Cows

You can associate unattached IceQubes to unattached cows here. If a cow or IceQube is not shown, it may still be marked attached in the system - detach it first! New cows may be added by using the button on the right.

Select Cows and IceQubes to attach

IceQube:	Cow:	Attached:	Placement:
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> Remove
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> Remove
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> Remove

Add another

Click here to submit the list of attachments

Select Cows and IceQubes to attach

IceQube:	40412157	Cow:	28
IceQube:	40412100	Cow:	
IceQube:	40412117	Cow:	
IceQube:	40412138	Cow:	
IceQube:	40412141	Cow:	
IceQube:	40412148	Cow:	
IceQube:	40412151	Cow:	
IceQube:	40412157	Cow:	
IceQube:	40412164	Cow:	
IceQube:	40412166	Cow:	
IceQube:	40412191	Cow:	
IceQube:	40412217	Cow:	
IceQube:	40415656	Cow:	
IceQube:	40415679	Cow:	
IceQube:	40415723	Cow:	
IceQube:	40415741	Cow:	
IceQube:	40415864	Cow:	
IceQube:	40415875	Cow:	
IceQube:	40415894	Cow:	
IceQube:	40416008	Cow:	

List of all available unattached IceQubes is shown in the pull down menu.

7.5 Adding new cows to CowAlert

To add a new cow number to CowAlert, click on the add Cow button from within the Attach IceQubes form.

Farm Attach IceQubes To Cows

You can attach unattached IceQubes to unattached cows here. If a cow or IceCube is not shown, it may still be marked attached in the system - detach it first. New cows may be added by using the button on the right.

Select Cows and IceQubes to attach Add Cows...

IceCube:	Cow:	Attached:	Placement: OPTIONAL	Remove
IceCube:	Cow:	Attached:	Placement: OPTIONAL	Remove
IceCube:	Cow:	Attached:	Placement: OPTIONAL	Remove

Add another

Enter the new cow number. If adding more than one cow, enter the numbers on separate lines. A group description can also be added for the cow(s)

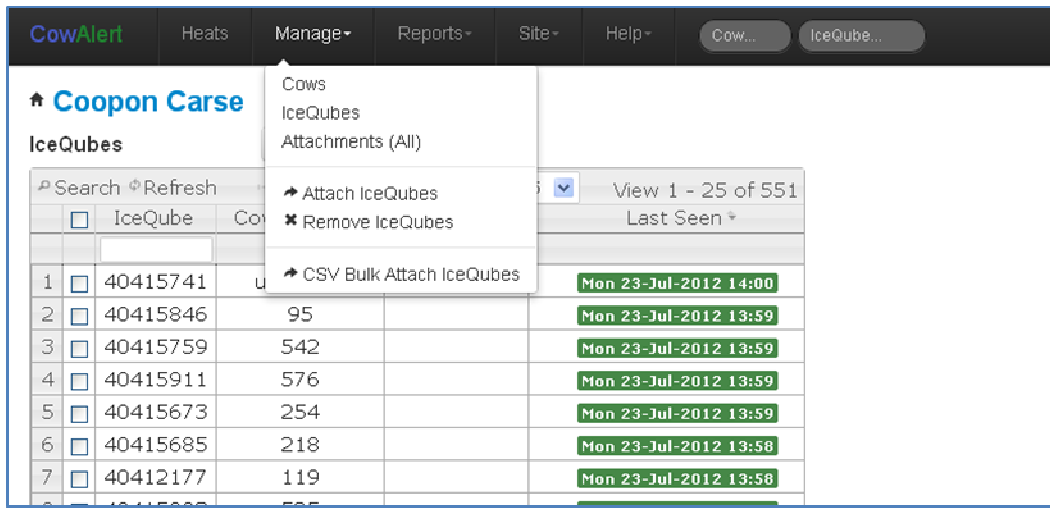
Cows (One per line please):

Group (Optional):

7.6 Detaching an IceQube from a cow number

If you remove an IceQube from a cow, then the change should also be made in CowAlert. To remove the association between a cow and an IceQube:

Select **Manage** in the main menu, and then select **Remove IceQubes**



1. Enter Any Cow Numbers ... and/or ... **2. Enter Any IceQube Numbers**

3. When Removed [Date/Time Picker]

4. Confirmation
Remove IceQubes From Cows...

attachments selected!

To remove associations, select the Cow Number or the IceQube number.

The Cow numbers can be separated with a space, with a copy or entered on separate line

When a cow number is entered, a dialogue box will open to confirm the cow number or to provide a warning if there is no IceQube currently attached to that cow.

Add the date and time of removal. Be as accurate as possible to avoid data gaps or overlaps

Click here to confirm the detachments. This opens a table that summarises the changes that you wish to make.

7.7 Deleting a Cow and its record from CowAlert

It is possible to delete a Cow completely from CowAlert. Note that this will delete **all** the data associated with that cow. Once the Cow has been deleted, the data **can not** be recovered. This function should be used with caution. To delete a cow, select the cow from the cow list to open the activity and behaviour information for that cow.

In the table to the left of the graph is a **Delete** option.

Details	
Identifier	226
Group	Open
Eartag	
Active	Yes
Current IceQube	40005560
Last Seen	19-Oct-2012 03:54 UTC
Days Since Last Heat	19 hours, 13 minutes

Delete a cow by clicking here. Note that this will permanently remove the animal from the cow list along with all its data. The data can not be recovered.

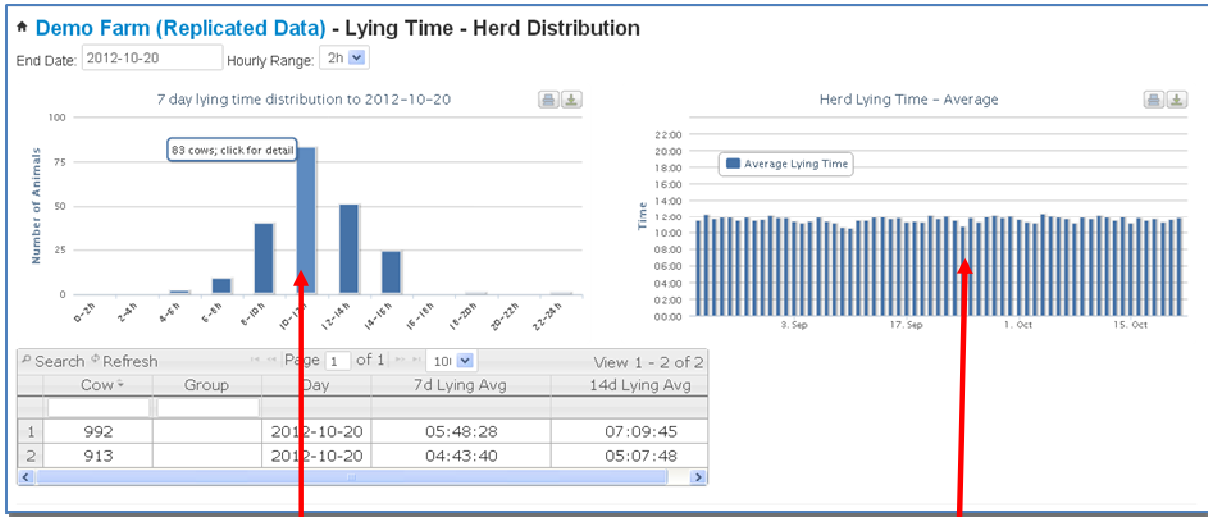
8 Reports

A variety of reports are available to farmers. These can be accessed from the **Reports** option on the main menu bar:-

- Lying time (see also section 6)
- IceScore and IceScore historic performance(see also section 4.4)
- 60 Day IceQube Visibility

8.1 Lying Time

Selecting lying time will show the lying herd distribution, similar to the graph example below.



This display shows the lying distribution for your herd. Each portion of the graph (each bar) equals the number of cows that are lying for XX hrs per day. For example on the graph above, 83 cows in this herd lay for 10-12hrs per day.

Click on the bar to display a list of the cows within that group.

This graph shows the total herd average lying time for each day over a 60 day period.

8.2 IceScore Mobility

IceScore Mobility is automated mobility scoring. IceScore Mobility indicates where a cow has a mobility issue that may indicate a health condition such as lameness. Note that it is not specifically lameness detection.

Scores are generated on a scale of 0-4. The animals are grouped visually on the systems as follows:

- Red (score of 3 plus): animal with very poor mobility. Animal should be investigated as high priority
- Amber (score of 2-3): animal's mobility is impaired. A health check is recommended
- Green (score of less than 2): animal's mobility is within an normal range and no issues are apparent

When interpreting the IceScore the user should consider that an animal flagged as amber or red may be suffering from a range of conditions that may affect mobility such as lameness or mastitis. Specific management or external events that may have affected the animal's normal behaviour patterns should also be taken into account.

IceScore Mobility is available free-of-charge during 2012 as a beta release for evaluation purposes. We are looking for as much feedback as possible during this evaluation phase to enable the detection algorithm to be further refined

The screenshot shows the 'IceScore Mobility' interface for a 'Demo Farm (Replicated Data)'. It includes a table with columns for Cow, Group, and Date. A dropdown menu is open, showing filter options for 'IceScore Mobility Range'.

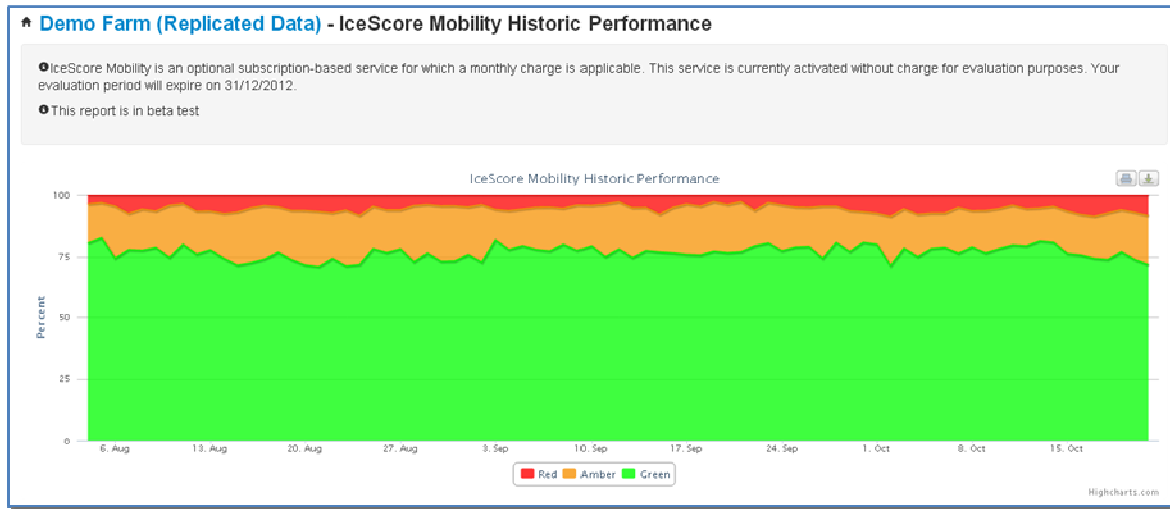
	Cow	Group	Date	Score
1	984		20 Oct 2012	
2	33		20 Oct 2012	4
3	519		20 Oct 2012	4
4	552		20 Oct 2012	4
5	464		20 Oct 2012	4

IceScore Mobility Range Filter Options:

- Yesterday - All Scores
- Yesterday - Less Than 2.0
- Yesterday - Between 2.0 - 3.0
- Yesterday - More Than 3.0
- Saturday 20th - All Scores
- Saturday 20th - Less Than 2.0
- Saturday 20th - Between 2.0 - 3.0
- Saturday 20th - More Than 3.0
- All Dates, All Scores

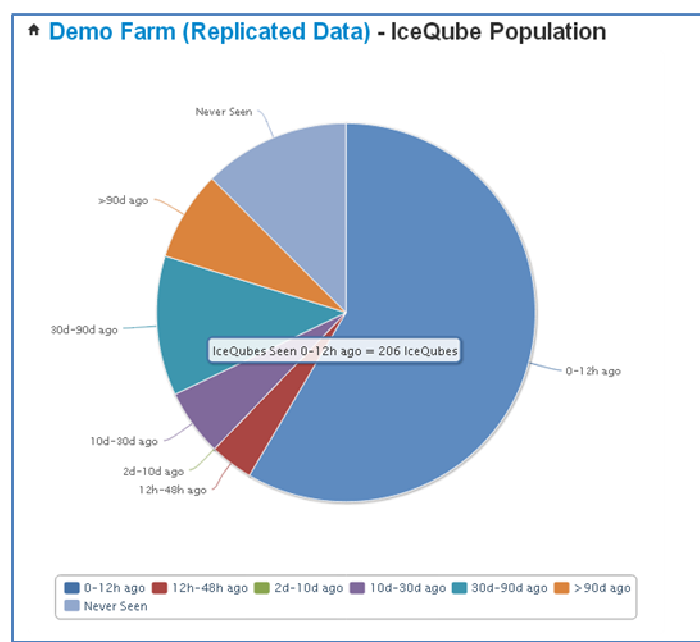
8.3 IceScore Mobility Historic Performance

IceScore Mobility Historic Performance shows the IceScores of the herd over time, allowing trends to be identified. This can be viewed by selecting the historic performance link. A graph similar to the one below will be shown.



8.4 IceQube Population

The IceQube Population chart shows the entire population of the IceQubes registered to the farm. Each segment of the pie chart shows the number of IceQubes seen over the indicated time period.



9 Site Information

The Site option from the main menu bar provides:

- Summary information on the farm and its location
- Settings information that the user can edit

9.1 User Settings

This section contains settings that the user can edit according to their preferences:

- Set the country code and timezone (these should be preset)
- Set the start and end times for the AI window
- Select the default data views for the activity graphs

Localisation		Site Settings	
Country Code	UK	AI Window Start (Hours)	8
Timezone	Europe/London	AI Window End (Hours)	20
Edit/Update these settings		Cow View Tab 1, Days To View	90
		Cow View Tab 2, Days To View	60
		Cow View Tab 3, Days To View	30
		Cow View Tab 4, Hours To View	72
		Cow View Tab 5, Hours To View	15
		Edit/Update these settings	

Edit Location Parameters

Ice Staff User: Ensure you have the permission of the location before changing these values

Preferred min number of hours after heat for insemination:

Preferred max number of hours after heat for insemination:

Day View Tab 1:

Day View Tab 2:

Day View Tab 3:

Hour View Tab 1:

Hour View Tab 2:

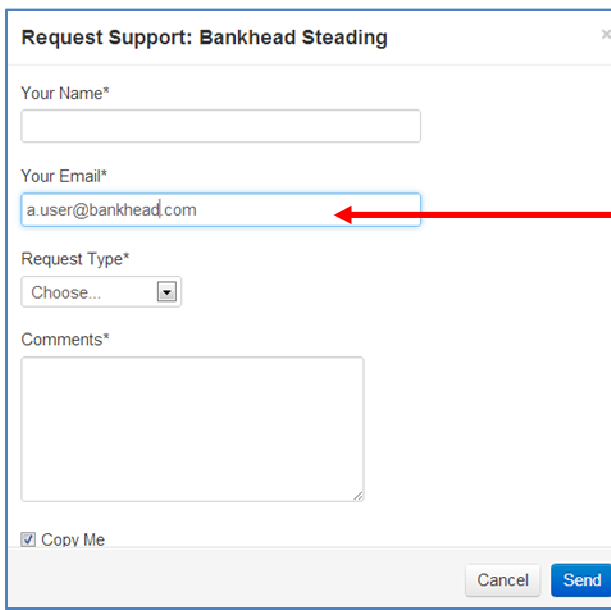
Values in this table can be edited by the user

Save or cancel the changes made

10 Help and Support

If you require assistance or have questions on CowAlert, the Support team can be contacted in 3 ways:

1. Select the Help option from the main menu. This will open up a web form which is shown below. Fill in the required details and follow the on screen instructions. An email will be set to support@icerobotics.com



Note that the email address can be edited

2. Email: support@cowalert.com
3. Telephone : 0131 541 2010 and select "Support" (option 2)

Telephone support is available between 0900 and 1700, Monday to Friday. Messages can be left on this number at any time.

Any support requests will be dealt with as quickly as possible.

11 Feedback

We welcome feedback on the systems and suggestions for future releases. Please use the webform above to submit these.

12 Attaching an IceQube to a cow's leg

Attaching the IceQube to the rear leg of the cow

IMPORTANT: The strap should not be attached to the leg of the cow too tightly; the IceQube must be able to rotate around the cow's leg. Once attached, it should be possible to insert two fingers between the cow's leg and the IceQube.



Starting with the 2cm square gripping Velcro, thread the Velcro strap between the slots on the IceQube housing. Note that the red side should be on the inside.



Next insert the other end as shown.



Now adjust the IceQube so it is in the middle of the strap as shown.



Make sure that the IceQube is positioned with the unique identification number pointing up. There are also arrows on the sides of the IceQube to show the correct way up.

Press the IceQube round the cow's leg, placing two fingers between the strap and the cow's leg.

Use the small gripping square to attach the IceQube at the correct tightness around the cow's leg.



Now wrap the remainder of the strap around the cow's leg. The strap should not overlap the IceQube if possible.



Finished!

Final Check:

- Is the IceQube the correct way up?
- Can you fit two fingers between the IceQube and the cow's leg?



The strap should **NOT** be too tight and should be able to rotate around the cow's leg.



<http://www.youtube.com/watch?v=cT5PmQ2V4g>

13 Removing an IceQube from a cow's leg

The IceQube should be removed from the cows leg by cutting off the Velcro strap.

	<p>FCC Compliance Statement</p> <p>This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by manufacturer could void the user's authority to operate the equipment.</p> <p>IMPORTANT! Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.</p> <p>NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:</p> <ul style="list-style-type: none"> • Reorient or relocate the receiving antenna. • Increase the separation between the equipment and receiver. • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. • Consult the dealer or an experienced radio/ TV technician for
	<p>Disposal and Recycling Information</p> <p>Your IceQube and associated equipment must be disposed of properly according to local laws and regulations. Because the IceQube contains a battery, IceQube must be disposed of separately from general waste. When an IceQube reaches its end of life, contact IceRobotics Ltd. or your local authorities to learn about recycling options.</p>