

Creekside Discovery Centre

Proposed Installation of Water and Air Sensors - Draft 001

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Sensor location

Two sensors, one for water temperature the other air temperature, will be installed in the Creek. The location is based on the need for water being present at low tide but the exact location is yet to be agreed. One consideration is the proximity of the control box to the sensors, which should minimal.

Control Box

A locked, electrical containment box will provide secure, weather proof housing for the control system (Raspberry Pi). The box will be secured to an appropriate surface such as the Creek wall or a fence post.

Cable Runs

A single cable provided by the '1 Wire' system will run from the sensors to the control box. The sensors and cables are designed for outdoor use and have been weather proofed.

From the control box to the server room within the Creekside Discovery Centre three CAT-6 cables will be installed.

- One cable will be used to carry a signal from the ip camera
- The second CAT-6 cable will carry signal data from the Raspberry Pi
- The third is for further expansion

Where there is no thoroughfare or public access the cable will be surfaced mounted. Other locations, such as where the cable will cross a path, the three CAT-6 cables will be encased in Copex and buried.

All aspects of the installation will be agreed with Creekside Discovery Centre staff before any works commences.

Data Presentation

As part of the first installation we will be using two sensors; water and air temperature. The data from the sensors will be fed, via the Raspberry Pi, to a webpage and displayed as a graph (see figure 1). A website will be constructed consisting of the graph, some background on the installation process and other relevant information.

On the site visitors will be able to compare the Creekside Discovery Centre data with other, similar installations around the country.

The raw data will be available to the Creekside Discovery Centre.



Creekside Discovery Centre Sensor Data Graph



Proposed Installation Layout



Exterior Cable Run will be buried

Cable run

Control Box (Exact placement TBC)



Equipment List

The following list is a guide only. The first install of sensors at the Creekside Discovery Centre is a proof of concept and will likely use a lot of equipment we all ready own or can get.

Item	Qty	Unit Cost	Inc VAT	Total	Notes
Cat-6 Ext Cable	3	£29.15	£34.98	£104.94	3 x 50m Lengths
Сорех	1	£9.62	£11.54	£11.54	
Control Box	1	£0.00	£0.00	£0.00	Pre-owned
Sensors	2	£1.67	£2.00	£4.01	
PoE Injector	2	£23.47	£28.16	£56.33	
Raspberry Pi	1	£32.06	£38.47	£38.47	
Total				£215.29	

Phase Two

Both for the benefit of the Creekside Discovery Centre and my MA/MSc in Digital Sociology there is a plan for a phase two installation.

The proposed phase two install will consist of:

- replacing donated hardware
- fund raising
- additional sensors
- expanded data comparison using CDC's sensors and national statistics
- possible installation of sensors at another site with the aim of building a partnership
- sonic installation in nearby gallery responding to the sound of the creek
- physical representation of low and high tide on top of CDC
- video interviews and documentation of CDC and the sensors



Schedule

As I haven't had a chance to speak with anyone about actual dates this schedule is just a guide.

Week Beginning	Action			
30.03.15	Visit CDC to collect existing sensors			
	Confirm cable run and therein cable lengths			
	Confirm sensor and control box location			
	Confirm cable entry to main building			
	Confirm access to server room			
	Purchase sensors and other required hardware			
07.04.15	Configure and test hardware off site			
	Install sensors			
	Install control box			
	Install cables			
	Document process			
13.04.15	Build web interface			
	Link data graphs to existing to CDC website			
	Test			
20.04.15	Review install and make changes where necessary			
20.01.10	Validate data			
	Evaluation			
27.04.14	Produce report of the process and findings			
	Propose second phase			