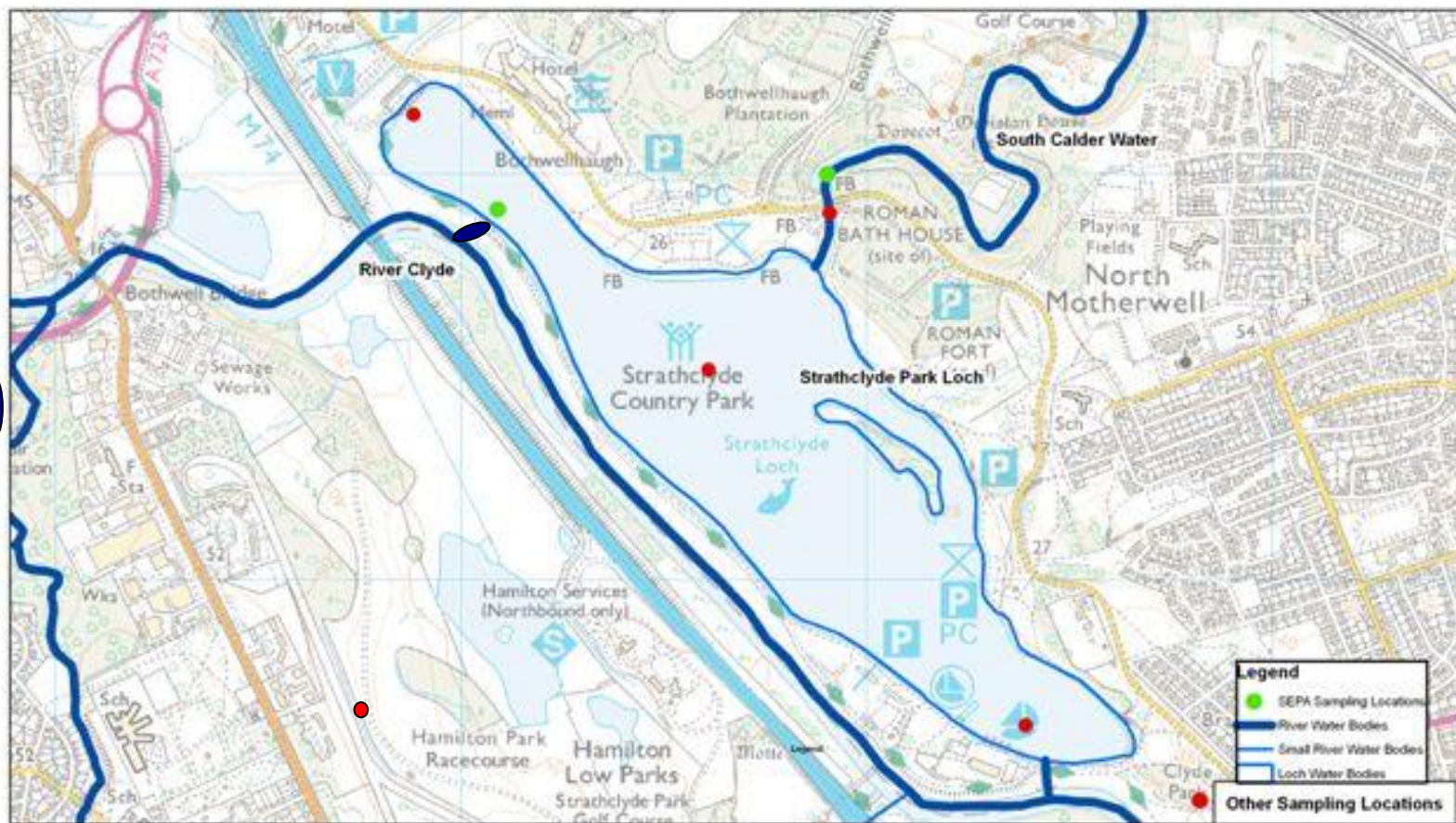


Strathclyde loch

Legacy for future recreational water sports events





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Strathclyde Park Loch



24 January 2015 Last updated at 00:59

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Algae-hit Strathclyde Loch set for swimming area



Temporary floating barriers were used to keep toxic algae at bay during the 2014 Commonwealth Games

An open water swimming area is to be created in Strathclyde Park's man-made loch, after local officials announced measures to tackle toxic algae.

North Lanarkshire Council is to re-install temporary floating barriers which were used to keep the algae at bay during the 2014 Commonwealth

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Games venue safe for

 **17:20: 'Regrets' over City Link purchase** Tim Reid Political correspondent, BBC News - the founder of the private equity firm Capital which bought the collapsed parcel delivery company - has told he regretted the purchase and the harm it had on his reputation.



The Scottish Affairs committee are trying to find out why the **firm collapsed over Christmas**.

More than 2,500 jobs were lost as a result.

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Recent water quality history

- Number of previous swim event cancellations
- Mostly Blue green algae related, but also rainfall related FIO pollution
- **22 July 2012**, 60 swimmers of 71 sick
- North Lanarkshire NHS 24h incident control
- Public health consultant took charge 8 weeks
- Planned 2013 British triathlon was cancelled
- 2014 Commonwealth Games – **RED risk**

Two main risk issues

- Risk of **blue green algae** outbreaks
- **FIO levels** exceed health standards.
- BGA blooms are most likely to occur during settled, warm and sunny periods,
- FIOs are most likely to occur following periods of heavy and/or prolonged rainfall.

South Calder catchment Waste water assets

- Combined Sewer Overflows (over) 40
- Sewage Treatment Works (6)
- Mainly - Swinstie (50% DWF),
and Coursington (30%)
- Rural diffuse pollution



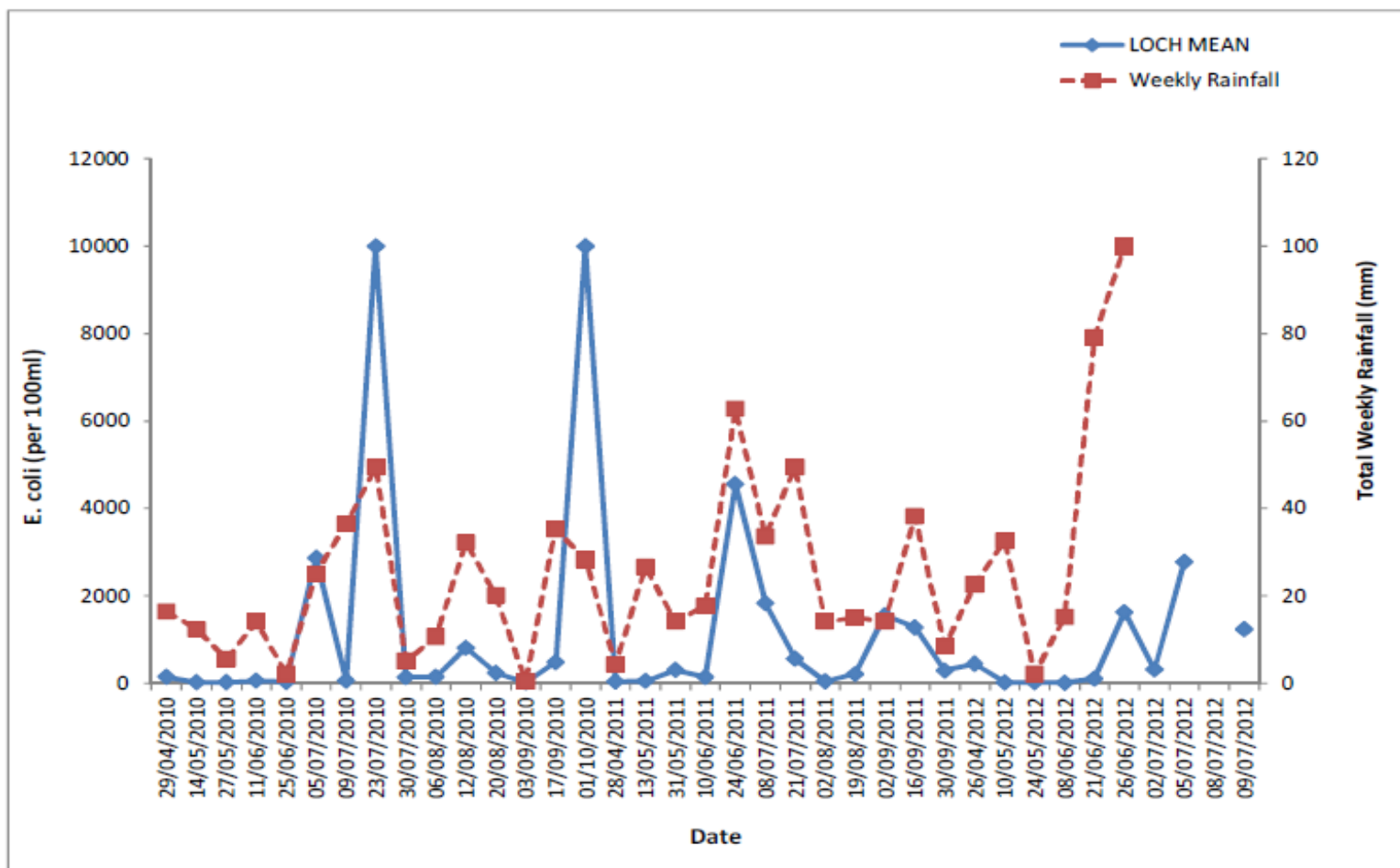
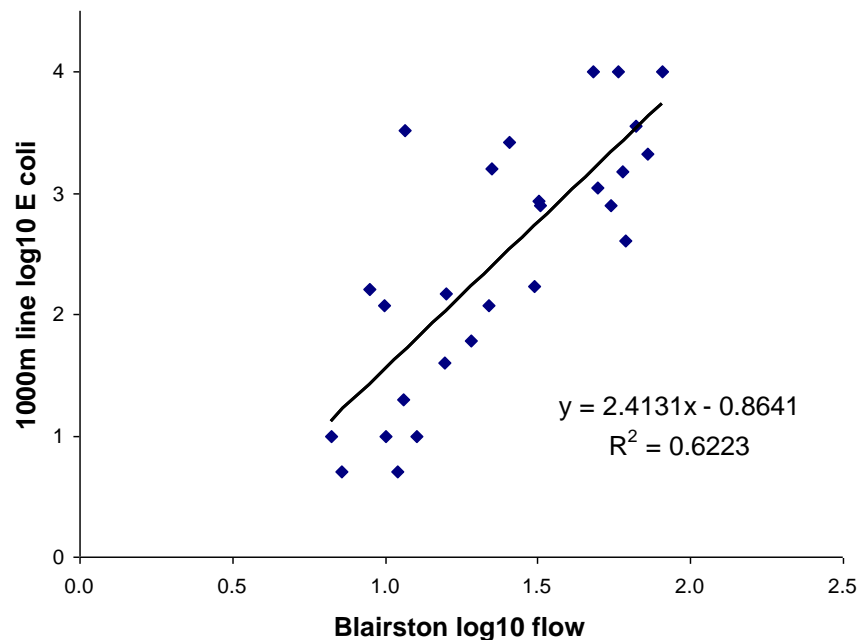


Figure 3.11 Mean *Escherichia coli* (EC) per 100ml at Strathclyde Loch and total weekly rainfall at Caldercruix WwTW, 2010 to 2012 (NLC data).

*Numbers of mean EC were also recorded at South Calder Water on four occasions in July 2010 and July 2012 and exceeded 10,000 cells/100ml on all four occasions.

Modelling work undertaken July 2012

1000m line log10 E coli against Blairston log10 flow



- Strong correlation between FIOs and flow
- Statistically significant at the 1% level
- SEPA WQ prediction model (same as for our bathing water signage)
- Daily values now provided to NLC for event decisions

http://www.glasgow2014.com/your-games/sports/triathlon

Triathlon | Glasgow 2014 - Commonwealth Games



Home > Sports > Triathlon

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start Microsoft PowerPoint ... Triathlon | Glasgow 2... SEPA Intranet - Hom...

6.2 Strathclyde Country Park – Individual Triathlon



International triathlon Union (ITU) Water Quality Tolerance Limits

- Sample three different locations on the swim course (report average)
- pH between 6 and 9
- EC (fresh water) not more than 500 per 100 mls
- IE - Enterococci 200 per 100mls
- Blue green Algae (BGA) - 100,000cells/ml

Triathlon - swim



Strathclyde Loch Restoration – Phase 1

Management by
Technical
Steering Group

North Lanarkshire Council
SEPA
Glasgow 2014
Scottish Water
Glasgow Scientific
Scottish Government
And Contracted Consultants

CLIENT: Scottish & Northern Ireland Forum for
Environmental Research (SNIFFER)

ADDRESS: Greenside House
25 Greenside Place
Edinburgh
EH1 3AA

APEM PROJECT NO: 412119

SNIFFER PROJECT CODE: RR03

DATE OF ISSUE: September 2012

TECHNICAL DIRECTORS: Dr Keith Hendry – APEM
Dr Adrian Williams – APEM
Steve Kenney – MWH

PROJECT MANAGERS: James Ellaway – APEM
Janeen Philp – MWH



Short-term options – 4 key recommendations

- 1. Temporary isolation barrier
- 2. Hydrogen peroxide
- 3. Phosphorus binding agent
- 4. **Considered** - in-loch UV pump ashore to reduce FIO concentrations in swim area (not required)
- Installed baffle system in Dec 2013

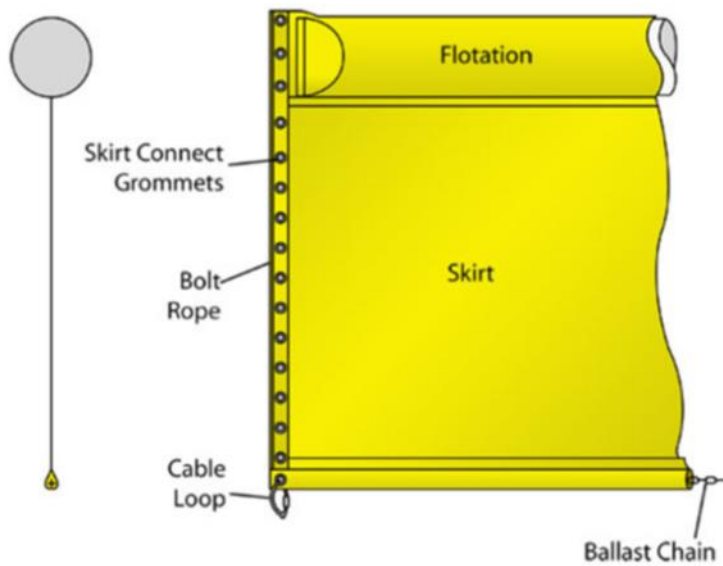


Barrier system location has been selected based on the Glasgow 2014 Commonwealth Games Triathlon route, allowing 20m clearance from the route to the barrier.

Surface area: 82,297 m²
Mean Depth: 3.73m
Estimated Volume: 310,000 m³

2012 Bathymetric Survey
Volume: 284,000 m³





Application of Phoslok

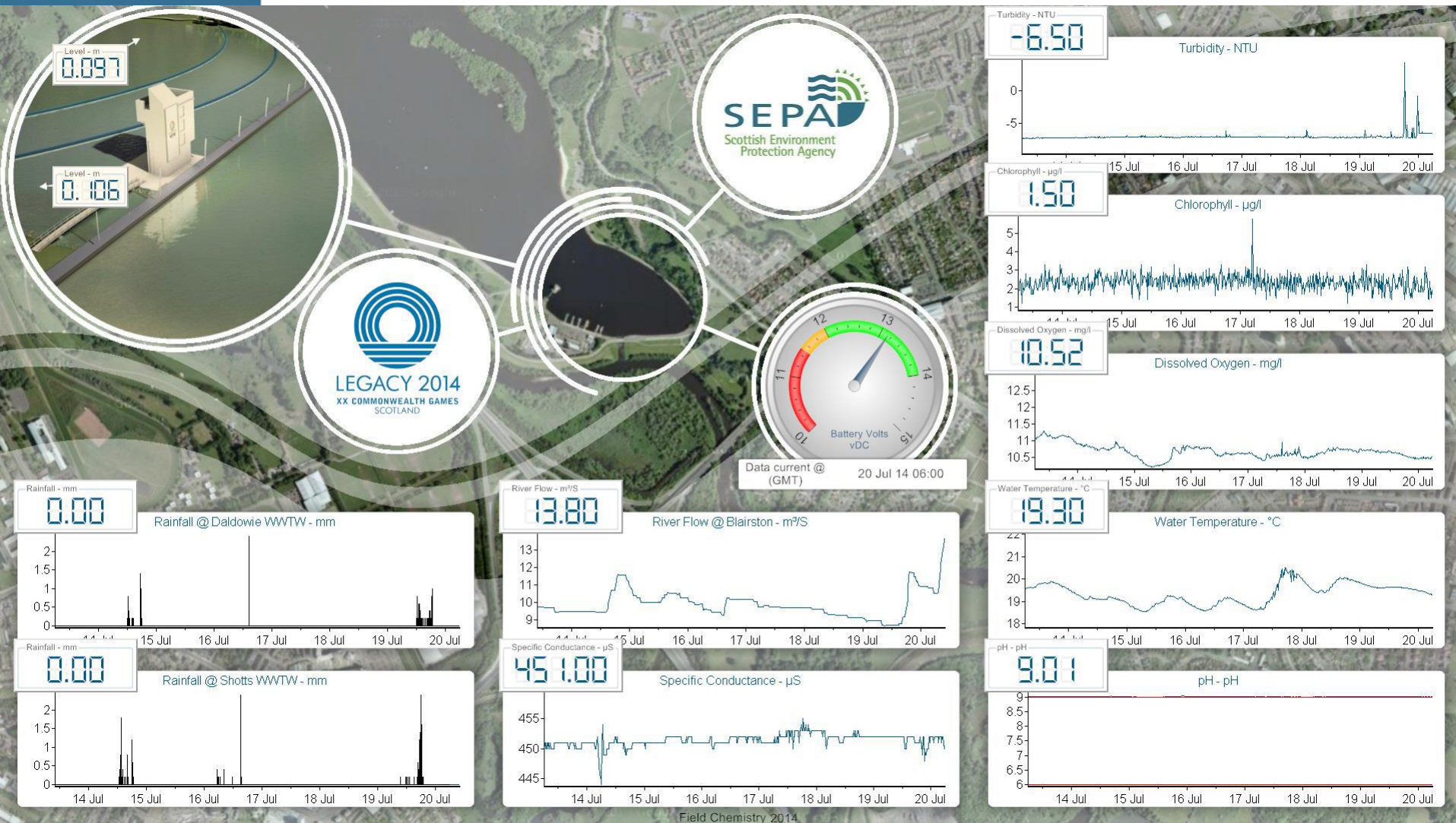




Hydrogen peroxide treatment



Intensive monitoring programme



Strathclyde Park Loch Water Quality Update

Issued: 20 July 2014

Period covered: 14 July – 20 July 2014

**This report provides the final week water quality summary
from Strathclyde Loch for the Glasgow 2014 Triathlon events on 24 and 26 July**

| Swim area | Date sampled | Parameter value | ITU limits | Status |
|---|----------------------|-----------------|-------------------|--------|
| pH | ¹ | 8.95 | 6-9 pH units | Good |
| Total Cyanobacteria (blue-green algae) | 16 July ² | 58 | <100,000 cells/ml | Good |
| Intestinal enterococci | 16 July ³ | 33 | <200 cfu/100 ml | Good |
| <i>Escherichia coli</i> | 16 July ³ | 106 | <500 cfu/100 ml | Good |

¹ pH data calculated from the average of the 3 official monitoring site surface samples as provided by Glasgow Scientific Services and analysed by accredited methods.

² Formal quantitative microscopic examination of one sample, taken at the SEPA buoy site.

³ Intestinal enterococci (IE) and *Escherichia coli* (*E.coli*) data provided by Glasgow Scientific Services, average of 3 surface samples taken weekly within the swim area (cfu = colony-forming unit).

All data above are analysed following standard procedures.

Summary:

All the key ITU event water quality results indicate **good water quality**.

Statistical evaluation of all 3 swim site IE/EC data (weekly sampling Feb-July 2014) has been calculated using a classification method similar to the 2008 EU Bathing Waters Directive (2006/07/EC). The resulting 95 percentiles were 50cfu/100 ml for IE and 317cfu/100 ml for *E.coli*. Although not strictly comparable, these would equate to an excellent freshwater bathing water quality.

Tracer release

Tracer suspension is mixed with loch water on board the vessel

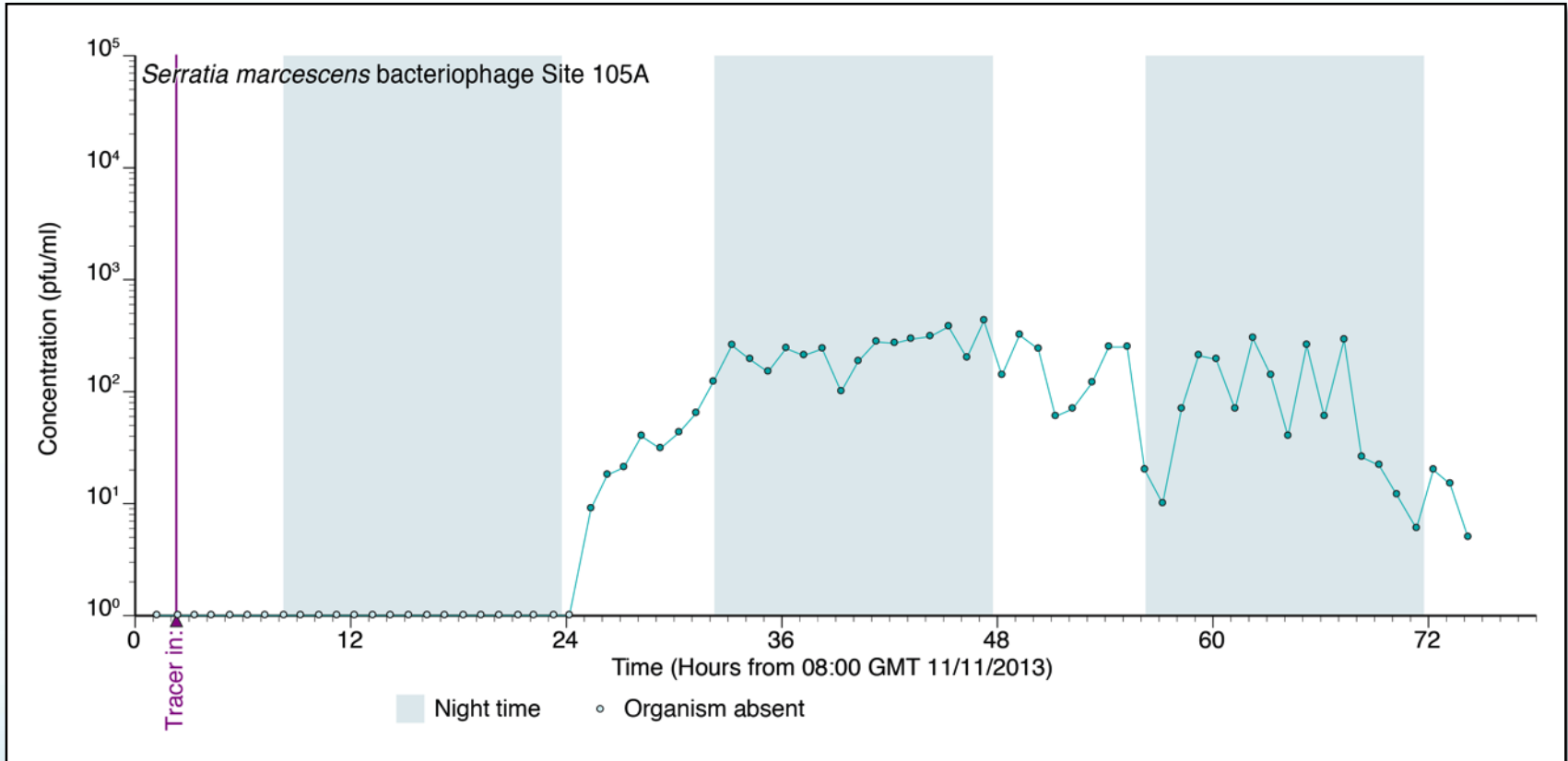


Tracer is carefully introduced to the loch whilst the vessel moves away from the release site



CREH

Results - tracer

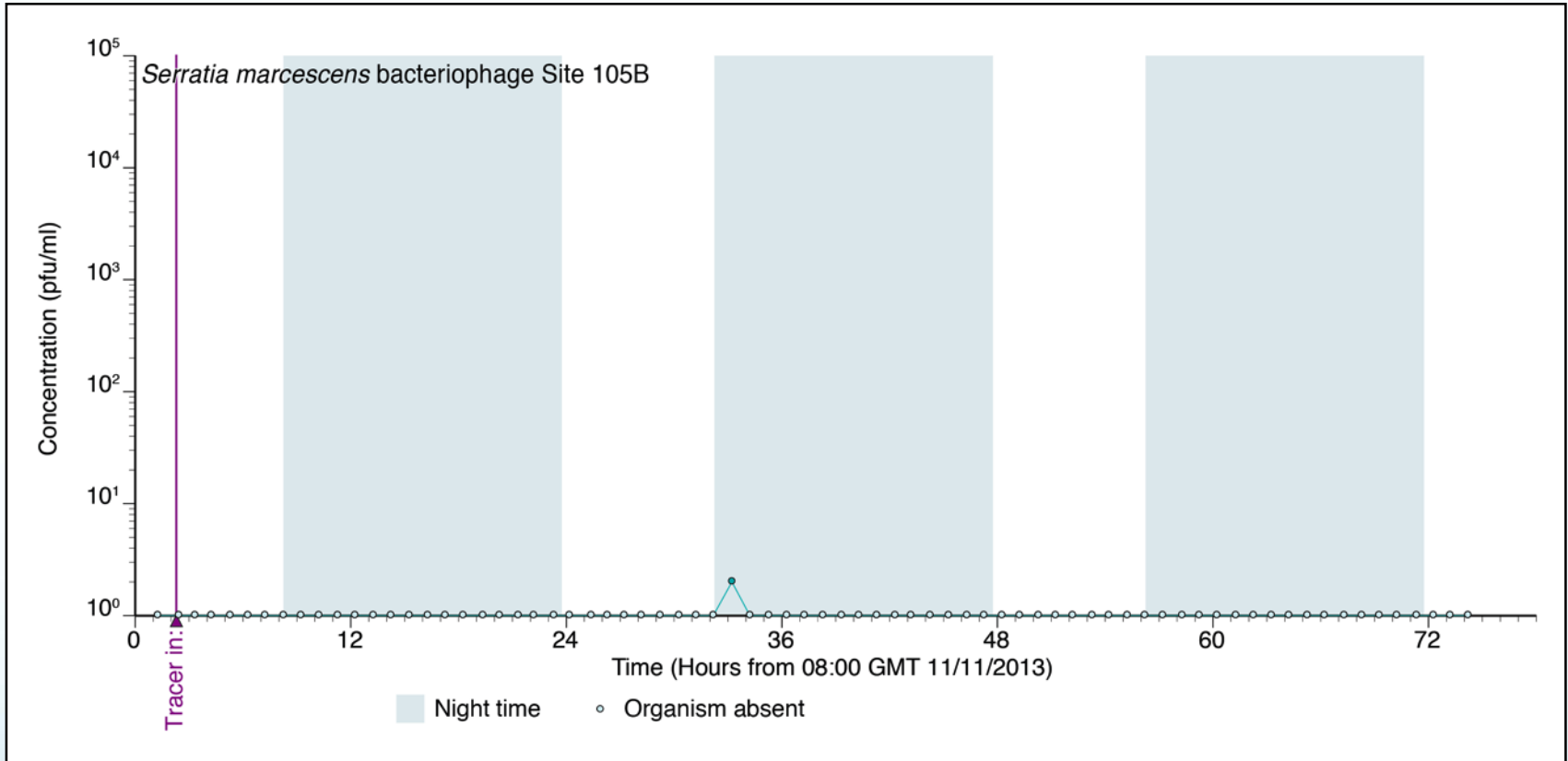


Outside barrier at pontoons
Tracer “breakthrough” 23 h after release



CREH

Results - tracer



Inside barrier near causeway to tower

Tracer present in one sample (2 pfu/ml) 31 h post release

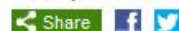
Suggests the curtain barrier is very effective at this site





Glasgow 2014: Sepa 'confident' about triathlon water quality

9 May 2014
Last updated at 19:48



By Jane Lewis
BBC Scotland

The Scottish Environment Protection Agency has said the water quality at Strathclyde Park loch will be safe for triathlon swimmers at Glasgow 2014.

The agency has worked to address problems with bacterial contamination and the threat of toxic algae ahead of the Commonwealth Games event in July.

North Lanarkshire Council has installed a floating barrier system to protect the swim area.

Sepa's Calum McPhail said the water quality would be checked weekly.

And the agency added the manmade loch is susceptible to bacterial contamination after

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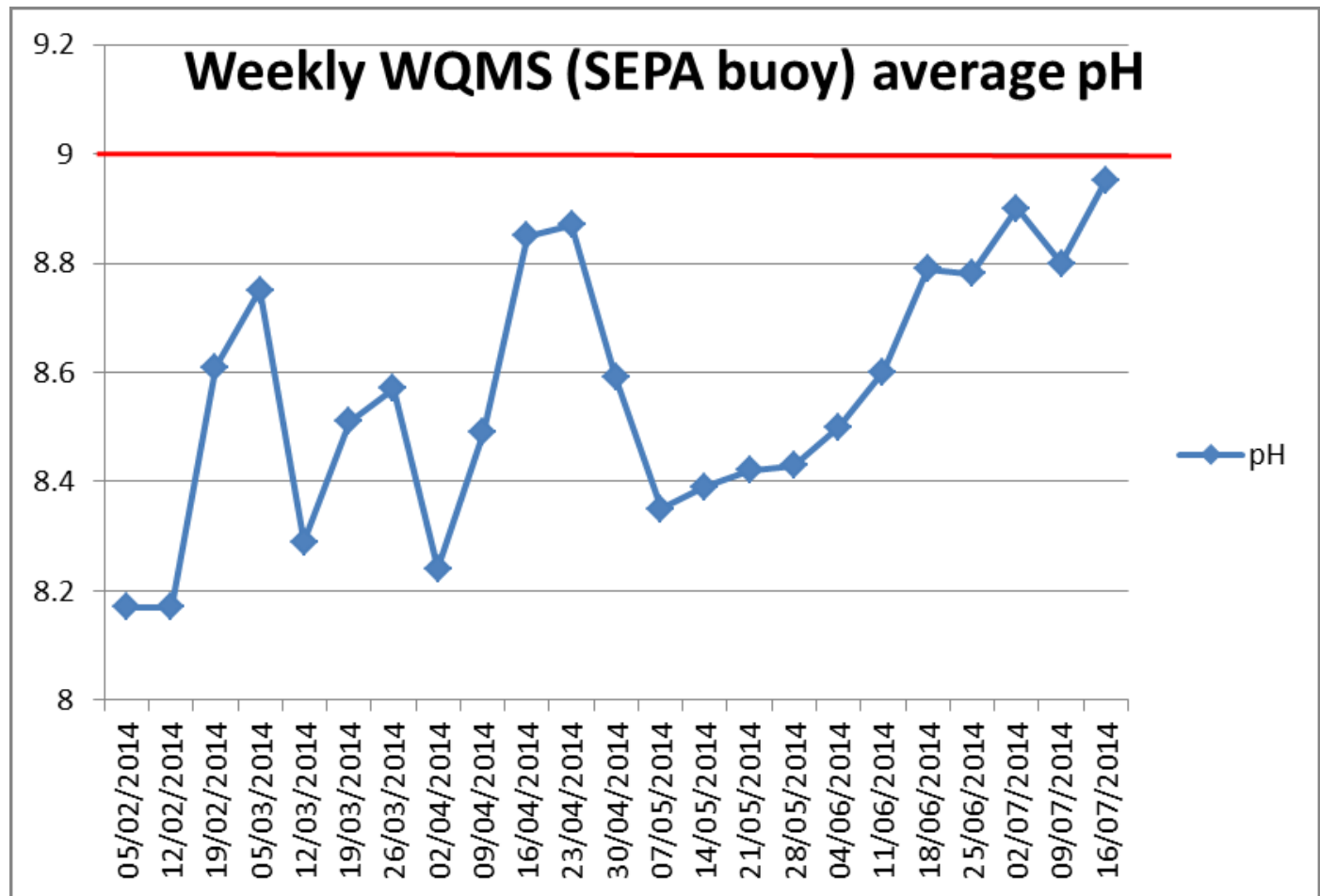
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How to get into sports and activities near you, plus more about our campaign

The last 2 week unexpected = slight panic!!



24 July - Did the athletes survive?



Sample bottle on competition day



Alastair Brownlee of England, to reporters: *"I was thinking while I was swimming: this is really nice water - dead clean."* Earlier in the

interview with some of the New Zealanders who were saying how clear it was, how they could dive in, look down through their goggles and see the bottom of the lake"

- BBC Video





North Lanarkshire Council Flickr site



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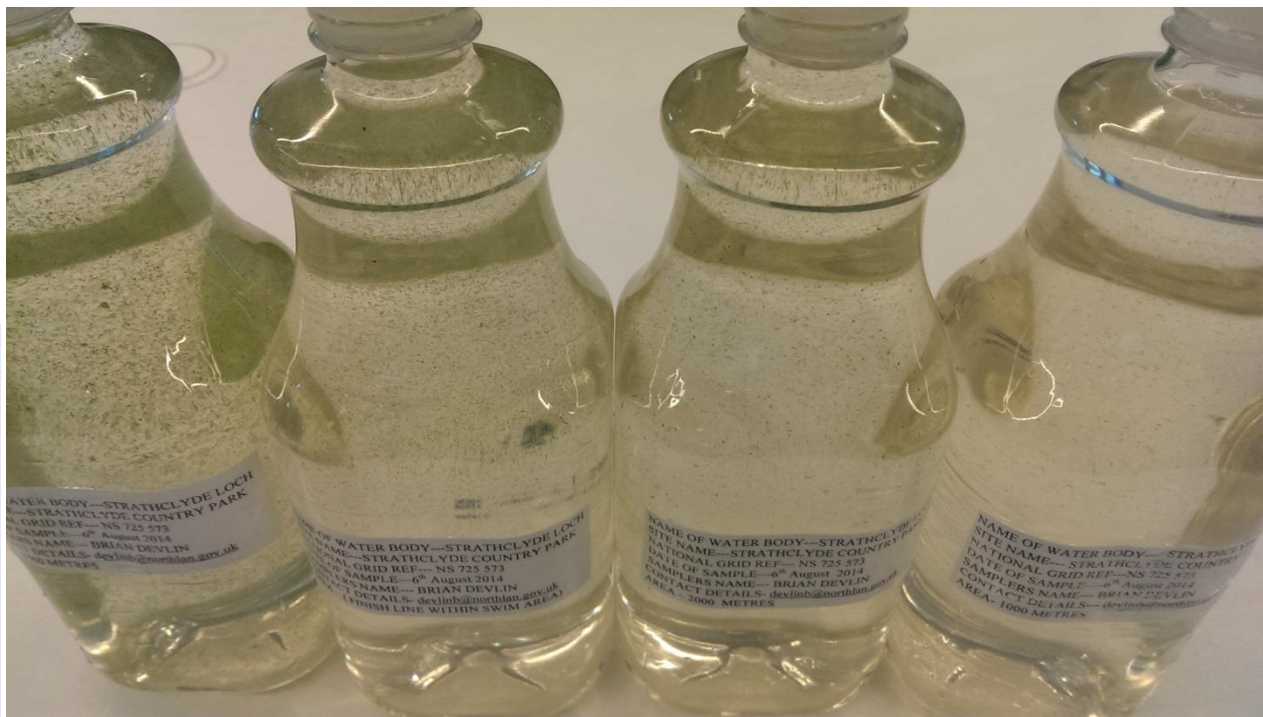
North Lanarkshire Council Flickr site



North Lanarkshire Council Flickr site

Ooops.

3 days after a SEPA sponsored swim,
and 10 days after the Triathlon!





Strathclyde loch

What next and legacy

- 2017 summer redeploy barrier enclosure
- Peroxide treatment options
- Finances?
- 2018 European championships