

# Falkirk Council – Legionella Control and Remote Temperature Monitoring/Flushing



# Overview

A brief overview of the recent improvements to Legionella management within Falkirk Council and the use of remote temperature measurement and flushing.

# What Is Legionella?

- Legionella is a type of bacteria found naturally in freshwater environments,
- The bacteria multiply where temperatures are between 20-45°C and nutrients are available,
- The bacteria are dormant below 20°C and do not survive above 60°C.

## What is the Risk?

- Legionnaires' disease is a potentially fatal type of pneumonia, contracted by inhaling airborne water droplets containing viable legionella bacteria. Such droplets can be created, for example by:
  - Hot and cold-water outlets,
  - Shower heads / atomisers,
  - Wet air conditioning plant,
  - Whirlpool or hydrotherapy baths.

## Who is at Risk?

- Anyone can develop Legionnaires' disease, but the elderly, smokers, alcoholics and those with cancer, an impaired immune system, diabetes or chronic respiratory or kidney disease are at more risk,
- If you run a care home or healthcare premises, it is likely that you will have residents or patients that are at higher risk of contracting the disease. It can be contracted by breathing in tiny droplets of water, for example when using showers, taps or fine sprays etc.

## Premises Type and Risk?

- Any property with water systems to supply hot and cold-water services; these can range significantly in scale and complexity. All can present a foreseeable risk of exposure to legionella.
- **Temperature control** is the traditional strategy for reducing the risk of legionella in hot and cold-water systems.

## Legionnaires' disease – Monitoring and record keeping cont'd

- Any outlets not used over 7 days are required to be flushed at the end of that period and this is recorded (along with the monthly temperature checks) on our compliance software (Evotix Assure),
- Site staff are currently responsible for assessing and designating little used outlets for weekly flushing,
- Any site closed for a period exceeding 7 days has a weekly flushing regime implemented - this is particularly important for Schools etc during extended holidays.

## Legionnaires' disease – Monitoring and record keeping – Remote Monitoring

- Routinely, water temperatures are manually checked at designated sentinel outlets on a periodic basis or on the surface of pipework, this provides some assurance that the system is operating within the acceptable limits ( $\leq 20^{\circ}\text{C}$  storage and distribution,  $\geq 50^{\circ}\text{C}$  /  $55^{\circ}\text{C}$  distribution and  $\geq 60$  storage),
- Additionally, or as a replacement to manual checks, **remote monitoring systems** can be used to monitor hot and cold-water outlets and distribution pipework,
- These automated systems allow for early detection of control regime failures and a more robust demonstration of compliance (particularly in higher risk environments),
- The design, implementation and use of these systems should, ideally, be based on a specific legionella risk assessment and the installation agreed and overseen by a competent person.

## Legionnaires' disease – Monitoring and record keeping – Remote Monitoring

- The installation of remote sensors allows for more frequent temperature measurement intervals without having to visit the site or rely on delegated site staff,
- The system implemented currently at two Care Home sites operated by Falkirk Council was initially led by our IoT officer and subsequently verified by the Legionella Compliance Officer,
- Sensor locations were selected and verified such that they satisfied the recommendations from the Legionella risk assessment and temperature measurements were verified to be comparable to readings obtained manually using externally calibrated thermocouples,
- The sensors on site are connected via a local hub to the national IoT network established by the Scottish Government,
- As a key part of the public-private partnership to establish the network, **North** was appointed to design and deliver this essential infrastructure,

## Legionnaires' disease – Monitoring and record keeping – Remote Monitoring cont'd

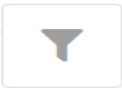
- Using LoRaWAN technology, the IoT network enables applications and services to collect data from devices and send that data without the need for cellular, Wi-Fi or human involvement. The network is available across all cities and major towns in Scotland, as well as rural areas,
- The data collected from our two Care Homes is displayed on a custom dashboard on the DAIZY IoT platform,
- The DAIZY platform supports any IoT device on any communication technology and provides easy data integration through open web standards. The system can support any application e.g. intelligent street lighting, smart parking, environmental and water risk monitoring and smarter property management.
- The DAIZY system can be custom configured re compliance limits and update frequency and will generate compliance reports in addition to sending non-compliance alerts as required.

# Daizy System Screenshot 1:

COMPLIANCE & USAGE

SCALD & FREEZE

SERVICES



Time filter

RESET

Time  
Relative

Duration  
30

Time Period  
Days

APPLY

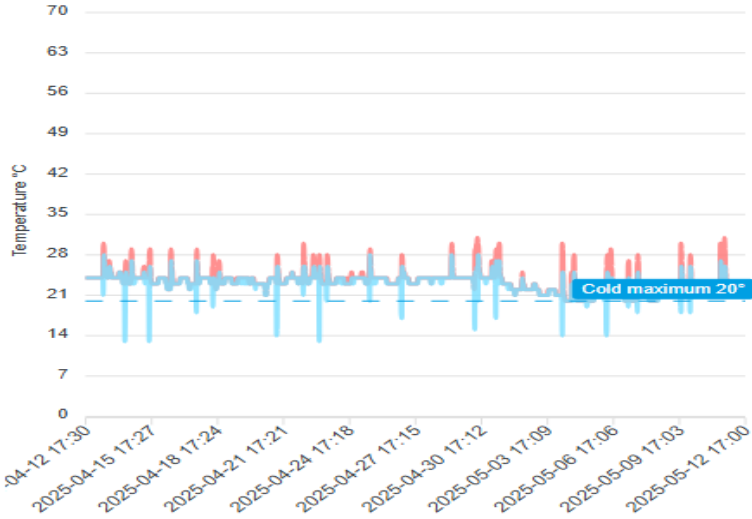


Service details

Grahamston House  
BLUE W.C. 3

S1 - Cold Outlet

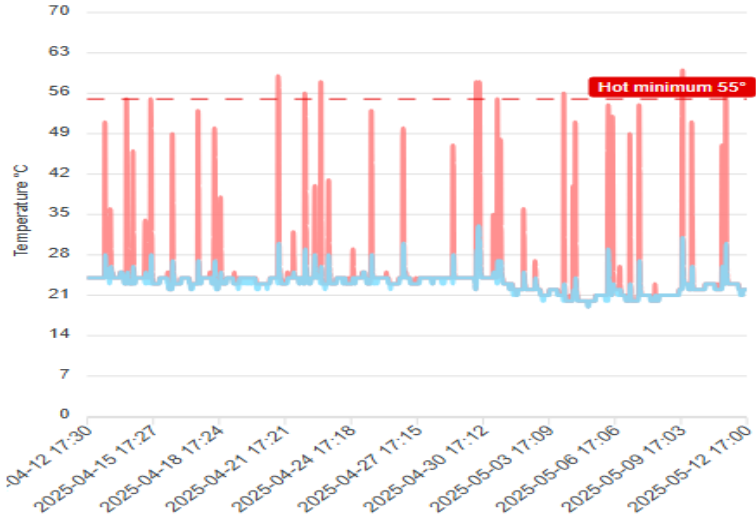
Min/Max Temperatures



Grahamston House  
BLUE W.C. 3

S2 - Hot Outlet (Healthcare)

Min/Max Temperatures

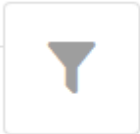


# Daizy System Screenshot 2:

COMPLIANCE & USAGE

SCALD & FREEZE

SERVICES



Time filter

RESET

Time

Relative

Duration

30

Time Period

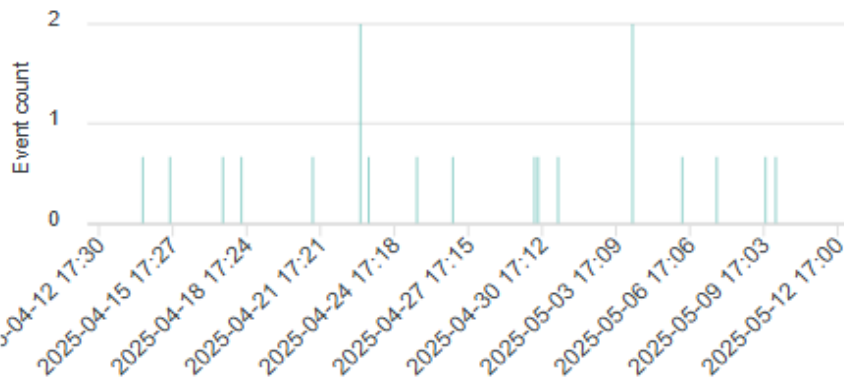
Days

APPLY

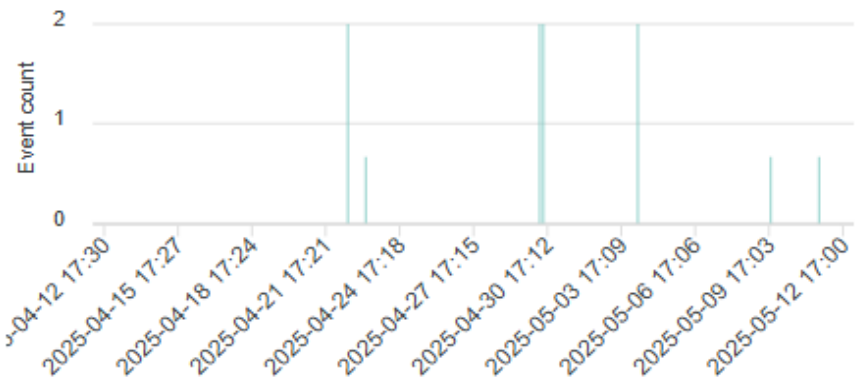


Service details

Compliant Events



Compliant Events



# Daizy System Screenshot 3:

The screenshot displays the Daizy System interface for the Falkirk Health and Social Care Partnership. The main dashboard shows 0 Freeze alerts and 389 Scald alerts in the last 30 days. An alert summary table lists various locations with their respective alert counts and types. A detailed alert log on the right provides a chronological list of all alerts, including time, sensor ID, alert type, and temperature.

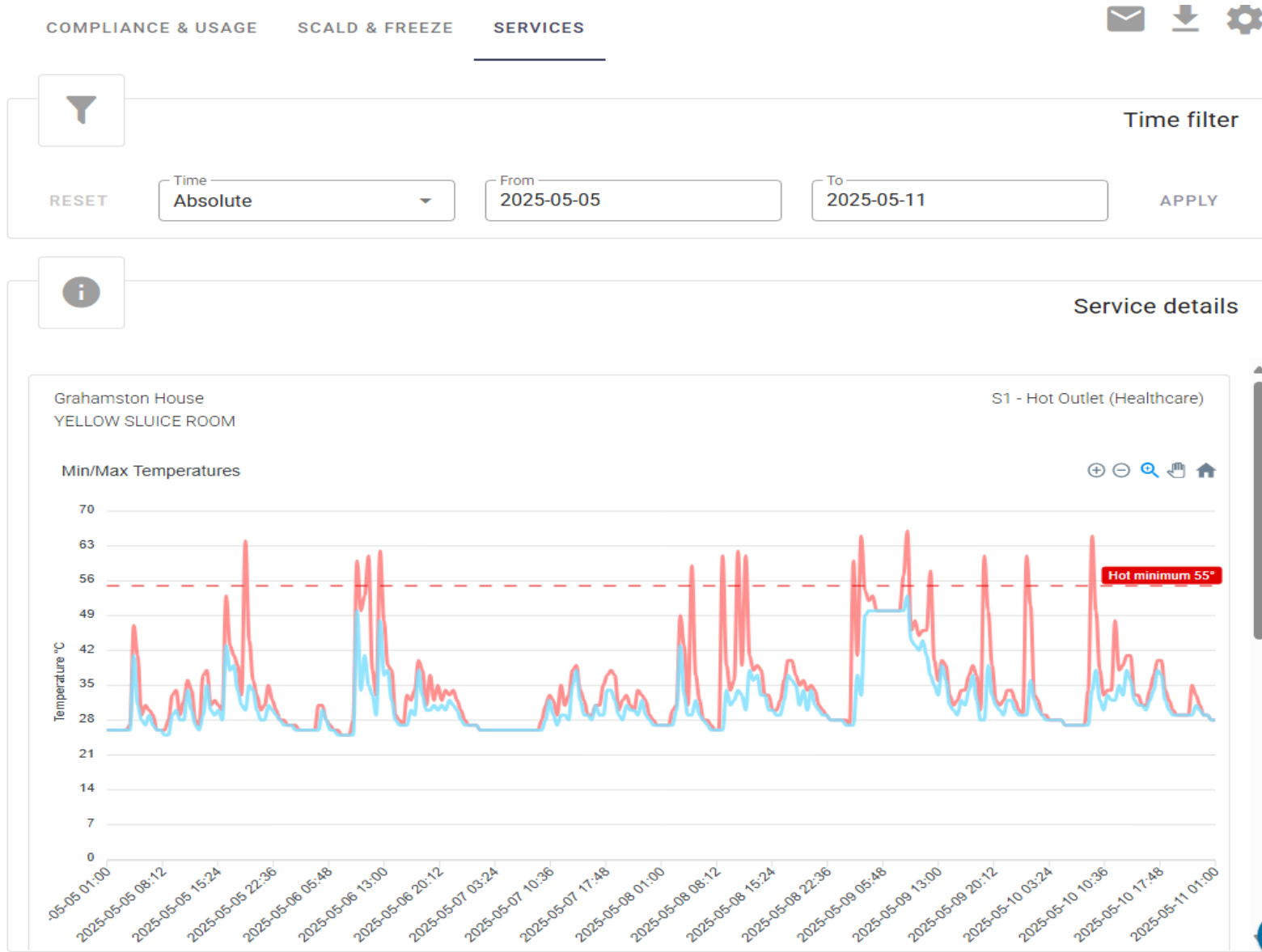
**Alert summary for the last 30 days**

Location	Last alert type	Alerts in period	Go to service	See details
<b>+ Burnbrae Care Home</b>				
<b>- Grahamston House</b>				
BLUE W.C. 3	Scald	11	<a href="#">📄</a>	<a href="#">→</a>
BLUE SLUICE ROOM	Scald	61	<a href="#">📄</a>	<a href="#">→</a>
RED W.C. 3	Scald	15	<a href="#">📄</a>	<a href="#">→</a>
STAFF CLEAN ROOM	Scald	1	<a href="#">📄</a>	<a href="#">→</a>
YELLOW W.C. 3	Scald	1	<a href="#">📄</a>	<a href="#">→</a>
YELLOW SLUICE ROOM	Scald	91	<a href="#">📄</a>	<a href="#">→</a>
GREEN SLUICE ROOM	Scald	84	<a href="#">📄</a>	<a href="#">→</a>
GREEN W.C. 3	Scald	5	<a href="#">📄</a>	<a href="#">→</a>

**Alert details**

Time	Sensor	Alert type	Temperature °C
Mon, 12 May 2025 08:00:06 GMT	S1 - Hot Outlet (Healthcare)	Scald	56°
Mon, 12 May 2025 07:52:06 GMT	S1 - Hot Outlet (Healthcare)	Scald	59°
Sun, 11 May 2025 02:16:25 GMT	S1 - Hot Outlet (Healthcare)	Scald	56°
Sat, 10 May 2025 11:00:03 GMT	S1 - Hot Outlet (Healthcare)	Scald	62°
Sat, 10 May 2025 10:56:13 GMT	S1 - Hot Outlet (Healthcare)	Scald	59°
Fri, 09 May 2025 11:15:10 GMT	S1 - Hot Outlet (Healthcare)	Scald	61°
Fri, 09 May 2025 11:09:18 GMT	S1 - Hot Outlet (Healthcare)	Scald	60°
Fri, 09 May 2025 02:44:17 GMT	S1 - Hot Outlet (Healthcare)	Scald	57°
Fri, 09 May 2025 01:29:35 GMT	S1 - Hot Outlet (Healthcare)	Scald	60°
Thu, 08 May 2025 08:51:21 GMT	S1 - Hot Outlet (Healthcare)	Scald	59°
Thu, 08 May 2025 07:39:09 GMT	S1 - Hot Outlet (Healthcare)	Scald	56°
Thu, 08 May 2025 02:31:12 GMT	S1 - Hot Outlet (Healthcare)	Scald	60°
Tue, 06 May 2025 12:43:58 GMT	S1 - Hot Outlet (Healthcare)	Scald	61°
Tue, 06 May 2025 08:31:52 GMT	S1 - Hot Outlet (Healthcare)	Scald	59°
Tue, 06 May 2025 07:25:21 GMT	S1 - Hot Outlet (Healthcare)	Scald	56°
Mon, 05 May 2025 10:11:10 GMT	S1 - Hot Outlet (Healthcare)	Scald	56°
Mon, 05 May 2025 01:51:09 GMT	S1 - Hot Outlet (Healthcare)	Scald	55°
Mon, 05 May 2025 01:00:07 GMT	S1 - Hot Outlet (Healthcare)	Scald	61°
Mon, 05 May 2025 00:57:57 GMT	S1 - Hot Outlet (Healthcare)	Scald	56°
Sun, 04 May 2025 02:49:06 GMT	S1 - Hot Outlet (Healthcare)	Scald	61°
Sun, 04 May 2025 02:48:34 GMT	S1 - Hot Outlet (Healthcare)	Scald	61°
Sun, 04 May 2025 00:25:47 GMT	S1 - Hot Outlet (Healthcare)	Scald	58°

# Daizy System Screenshot 4:



## Legionnaires' disease – Remote Sensing etc Further Expansion

- It is intended, budgets allowing, to extend the remote temperature sensing system to cover our remaining 3 Care Homes, and then beyond that in a risk-based approach,
- A remote sensing and **flushing** installation has also recently been commissioned at a Business Centre facility in Grangemouth, this site has no Falkirk Council staff on-site and relied on external contractors to complete weekly flushing to ensure compliance,
- The installation of a fully automated flushing system, by **North**, designed in conjunction with the Legionella risk assessment and the Legionella Compliance Officer will ensure robust compliance for both usage and temperature monitoring,
- Following this installation, depending on individual risk assessments and business needs/budgets etc, additional remote flushing and monitoring systems will be added to the Councils property portfolio.

# Questions?

