

Cabinet

12 January 2022

Supplementary Report - Graphical Summary of Jerome Measurements From August 2021 Onwards.

Introduction.

As part of the Council's work to address the odour issues arising from the Walleys Quarry Landfill operation, it has deployed Jerome monitoring devices in sample residents' homes to measure H₂S levels. The purpose behind this deployment has been to identify cases where the level of H₂S is above either the annoyance level or health protection level described by the World Health Organisation (WHO) has been breached.

The deployment has a role in both gathering intelligence and providing reassurance to residents concerned by the odours. In addition, the deployment affords an opportunity for the Council to work with other agencies with the aim of improving the ongoing advice to members of the public as to how best to manage instances of high odour in their homes.

This report provides a graphical summary of the findings of each deployment of the Jerome hydrogen sulphide monitoring instruments since the service of the abatement notice. Each graph shows concentration (ppb) plotted against time.

Deployment

The Jeromes were deployed at selected properties, where they were left to continuously monitor ambient concentrations of hydrogen sulphide, taking a measurement every 10 minutes. The aim was to deploy the instruments at properties which would be downwind of Walleys Quarry, or at least in close proximity of the site, during the deployment period. In addition, the equipment was periodically deployed either at the Council Depot, or at locations remote from Walleys Quarry from time to time to provide some control measurements.

Assessment Criteria

With regards to health impacts, there is no statutory limit which relates to environmental exposure to hydrogen sulphide. However, the World Health Organisation air quality guidelines have been used which define:

- **Annoyance** - 7 µg/m³ averaged over 30mins, which approximates to 5 parts per billion (ppb) averaged over 30 minutes. This is equates to a distinct odour (perceived intensity score of 3)
- **Protection of health** - 150 µg/m³ averaged over 24 hours, which equates to 107ppb averaged over 24 hours.

Limitations

The limit of detection of the Jerome J605 is 3ppb. Any measurement below this value would be reported as 0. This does not necessarily mean that odour or gases associated with the landfill were absent, it can only be said that hydrogen sulphide concentration was below 3ppb at the time of measurement.

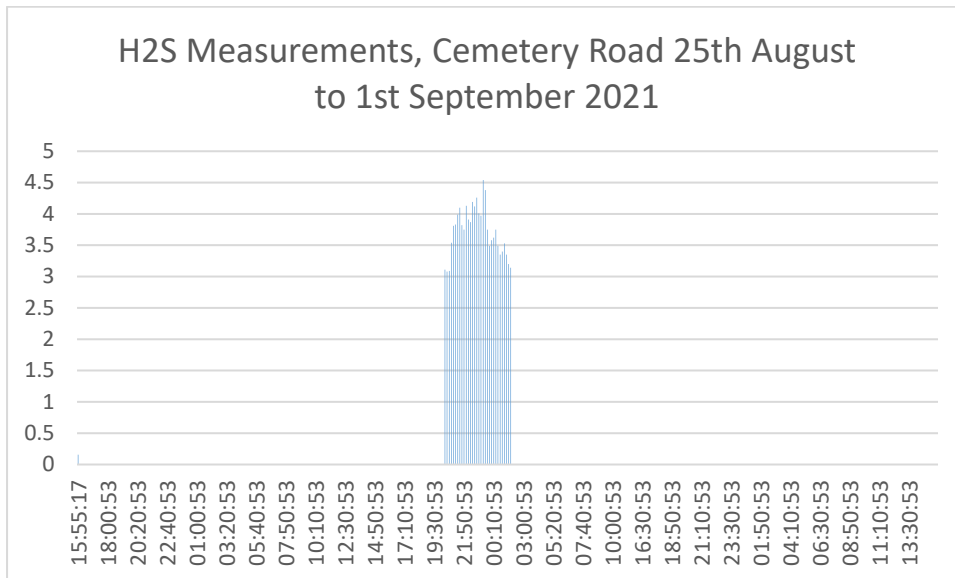
Additionally, it is possible for Jeromes to show "spikes" in readings when the equipment goes through a regeneration cycle. They may also pick up certain household emissions, such as from gas appliances. Their location within a property is therefore important.

Conclusions from Deployments August 2021- Date

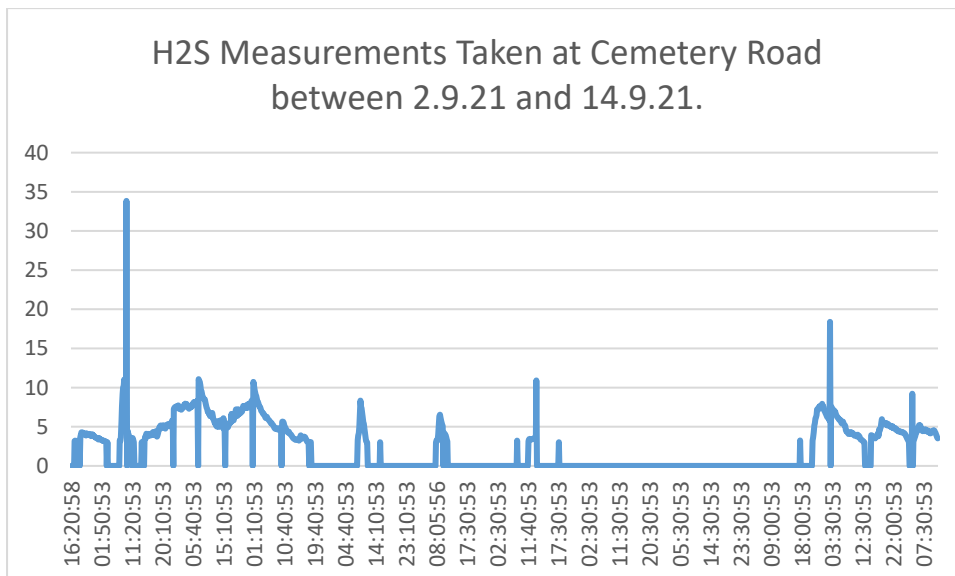
Collectively, the graphs below show that since August:-

- Hydrogen sulphide concentrations inside properties are below the instrument's limit of detection (i.e. below 3ppb) for most of the time.
- Some measurements were observed to be above the limit of detection, for significant periods in some cases; indicating that emissions from the landfill were likely entering homes.
- The measurements indicated that the WHO guideline for the prevention of annoyance was occasionally exceeded inside properties.
- The measurements indicated that the WHO guideline for health protection was not exceeded at any of the deployment locations.
- Daytime events were observed, and typically the night time period was where elevated concentrations were identified.
- Monitoring at control locations, identified peaks which were associated with cooking activities.

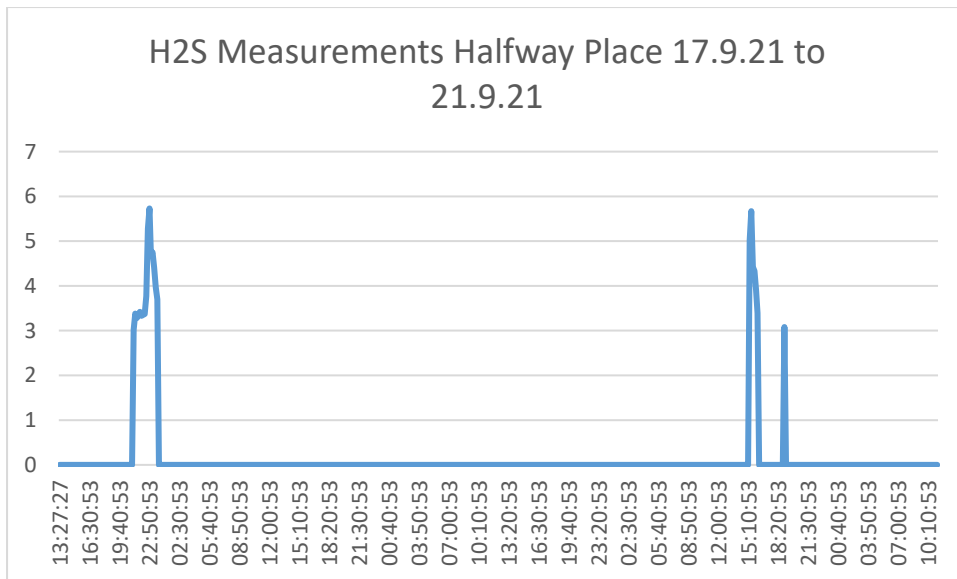
Deployments of Jerome SN 577.



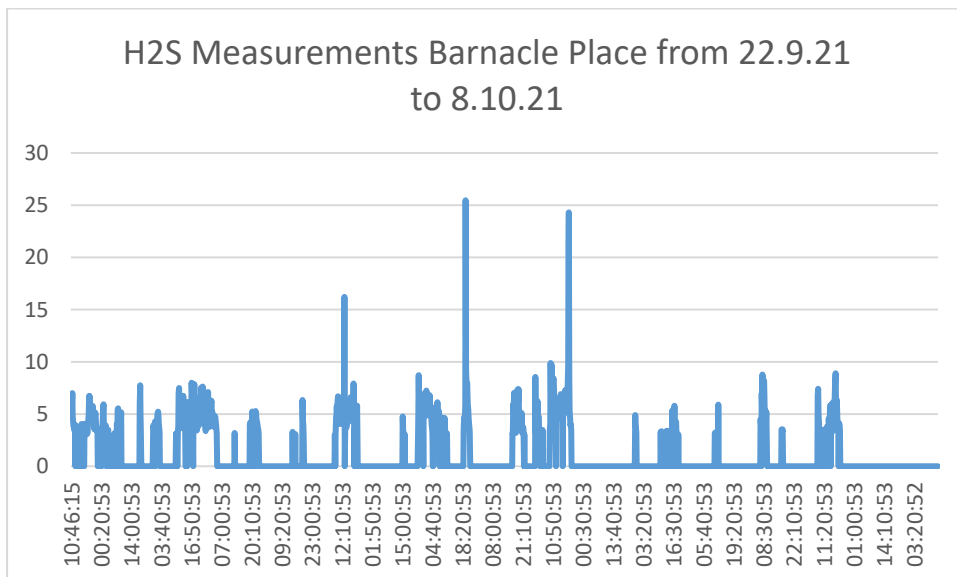
The measurements above were taken within an office upon the façade facing the landfill.



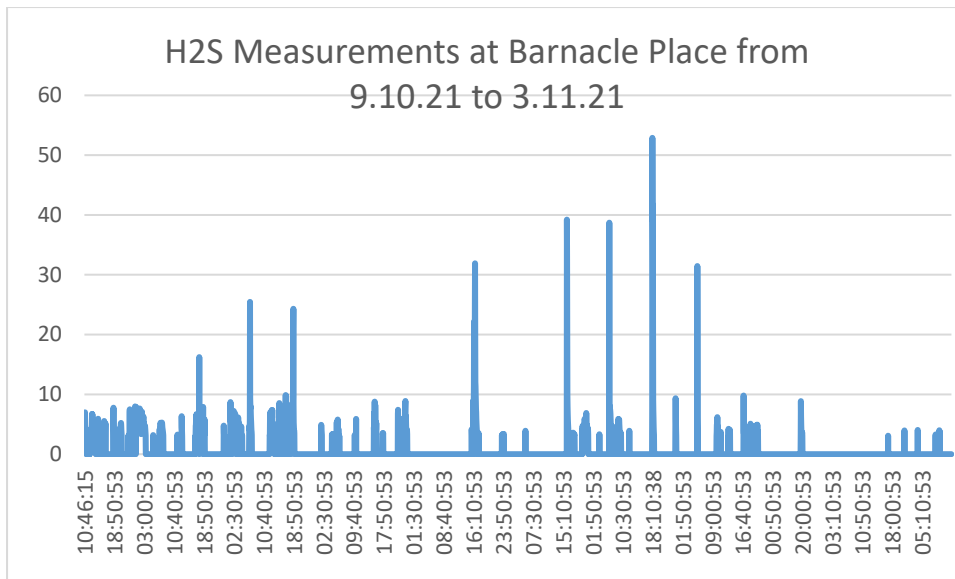
The measurements above were taken within an office upon the façade facing the landfill.



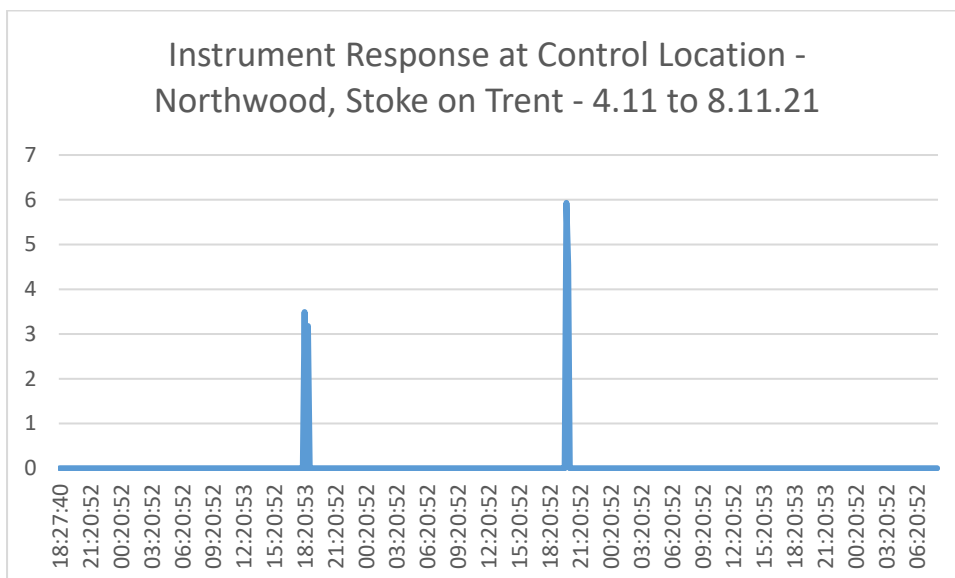
The measurements above were taken within the living/dining area of the property.



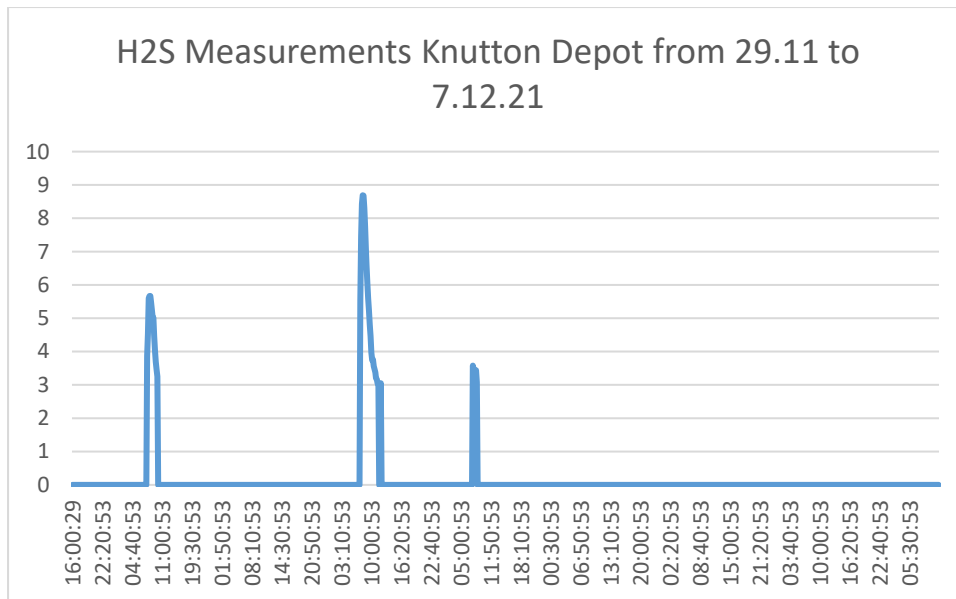
The measurements above were taken within the conservatory of the property.



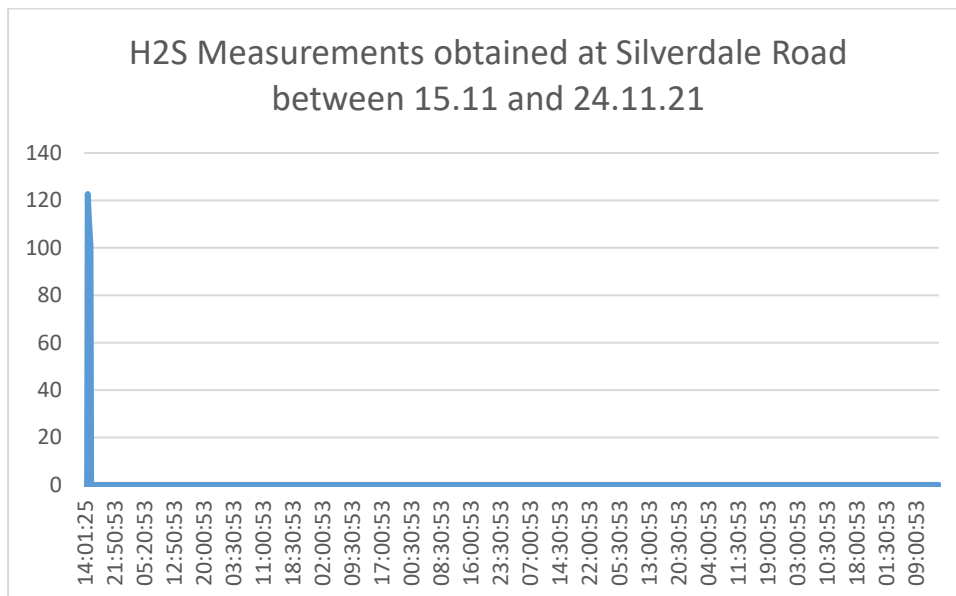
The measurements above were taken within the conservatory of the property.



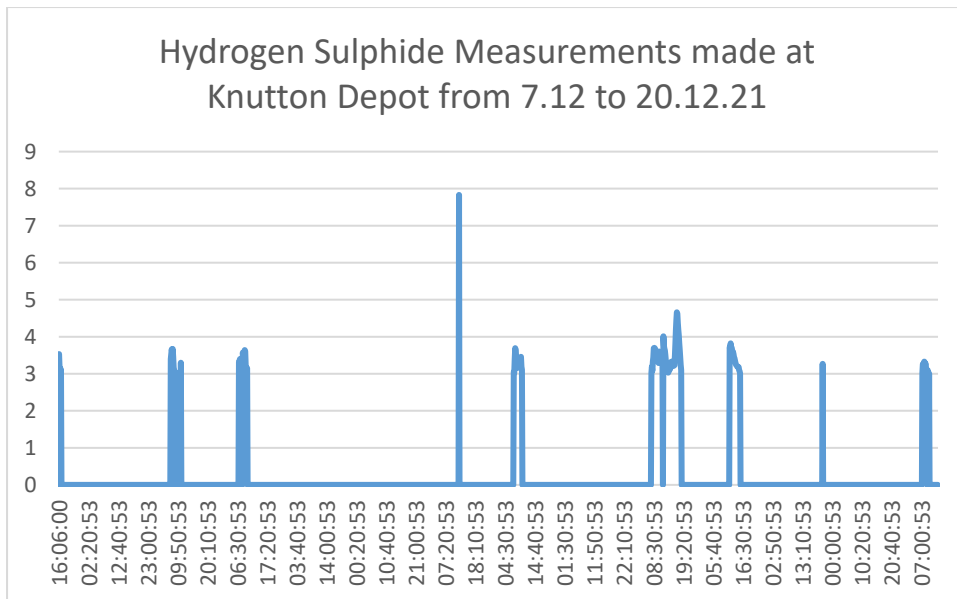
The measurements above were taken within the kitchen/dining area at a control location circa 5 miles to the East of the landfill. The elevated measurements observed related to periods where cooking was taking place upon an electric hob within the same room.



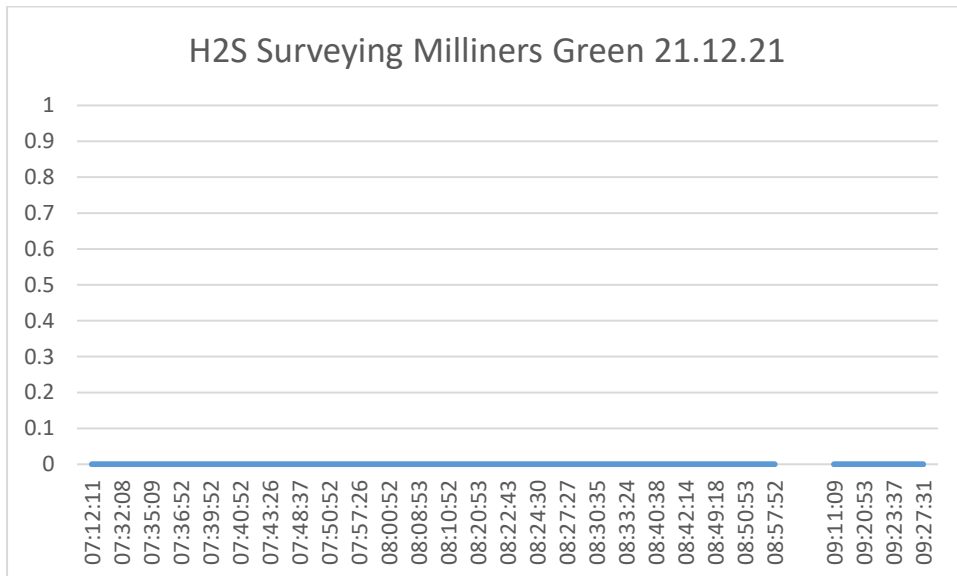
The measurements above were taken within a first floor office of the Council's Depot.



The measurements above were taken within the living room of the property. High readings were observed after instrument underwent a regeneration cycle and where the resident had turned off the power supply. A temperature differential was subsequently observed within the instrument before and after the regeneration cycle, and so it is likely that the high measurements observed are not true measurements.

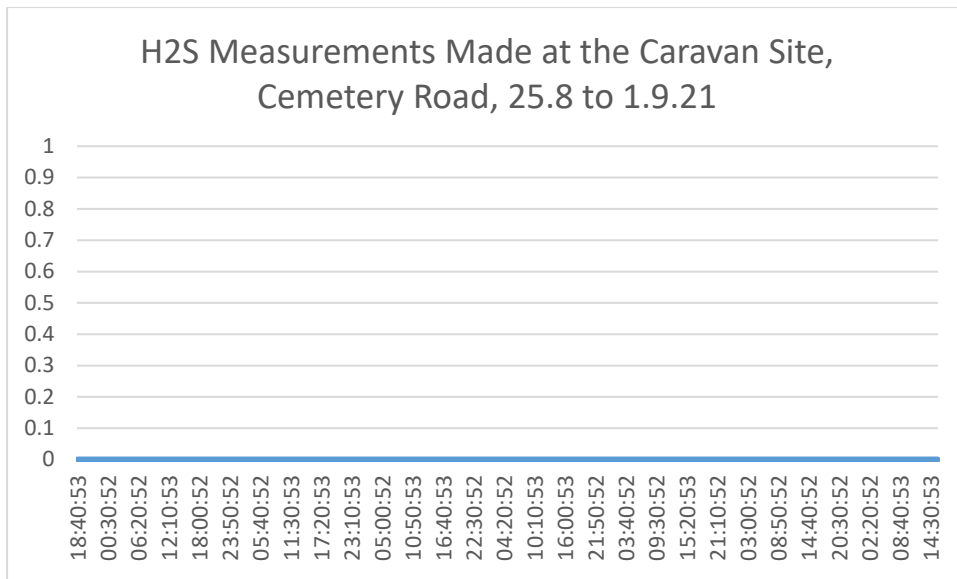


The measurements above were made within a first floor office of the Council's Depot.

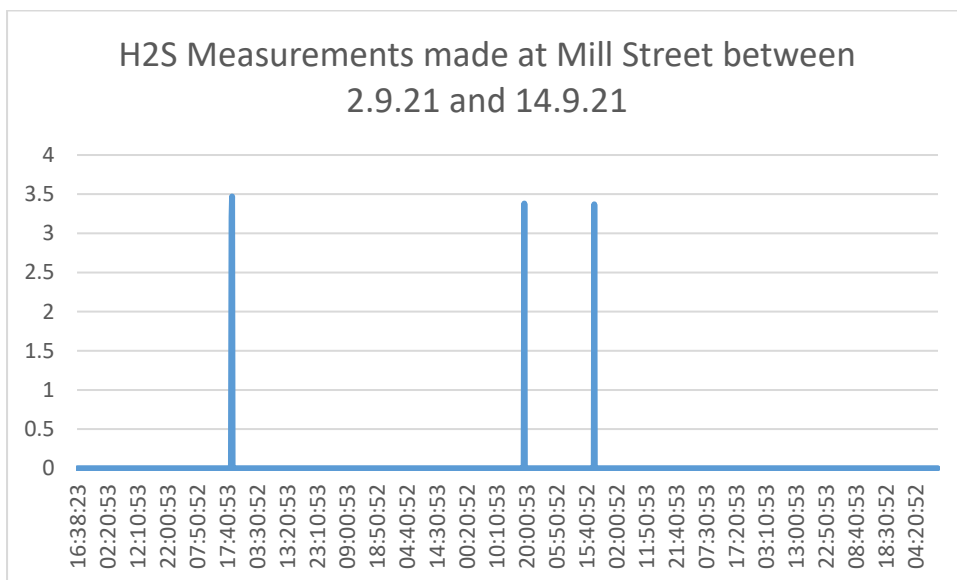


The measurements above were over multiple locations upon the Milliners Green Estate, particularly around the culvert and the area of the acoustic fence.

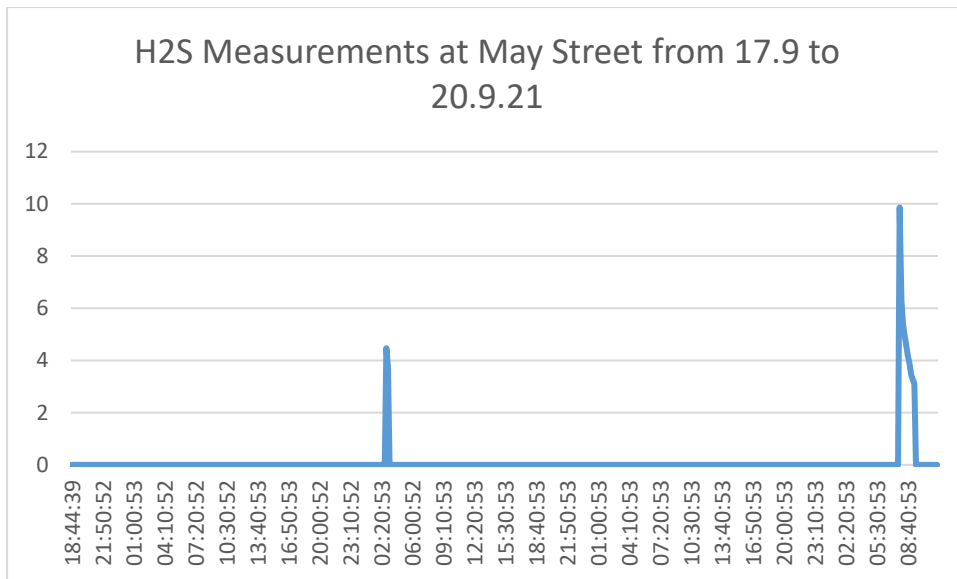
Deployments of Jerome SN 576.



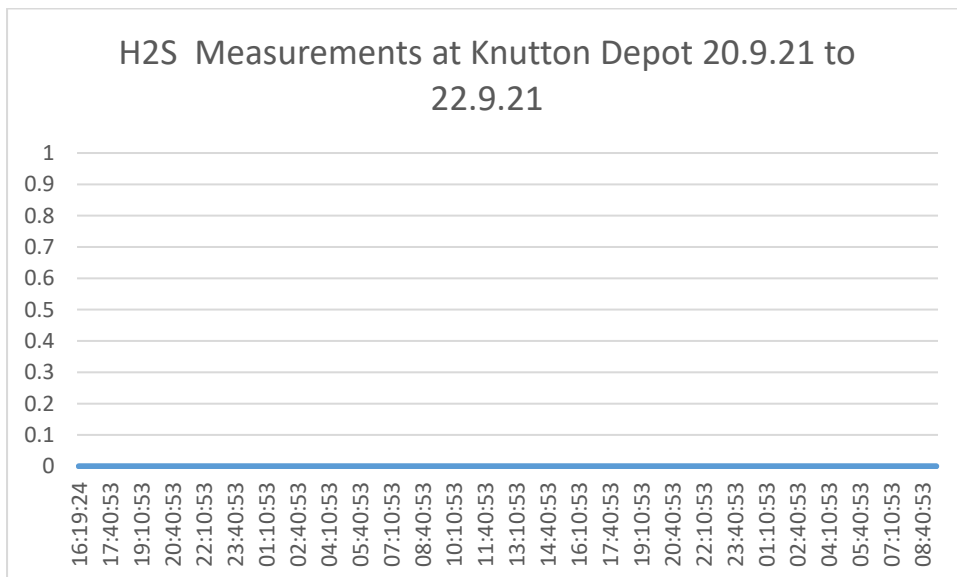
The measurements were made within the living area of a caravan.



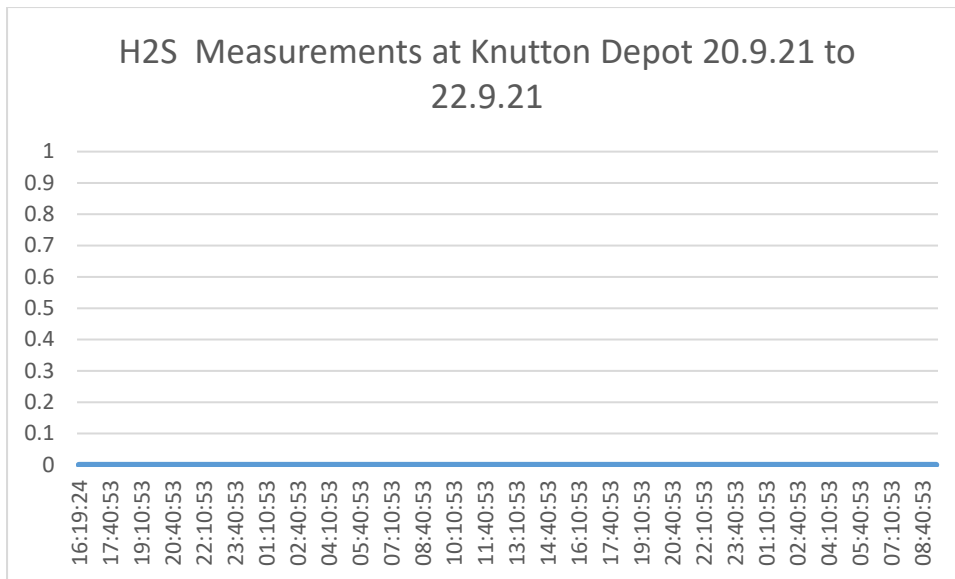
The measurements above were made within the dining area.



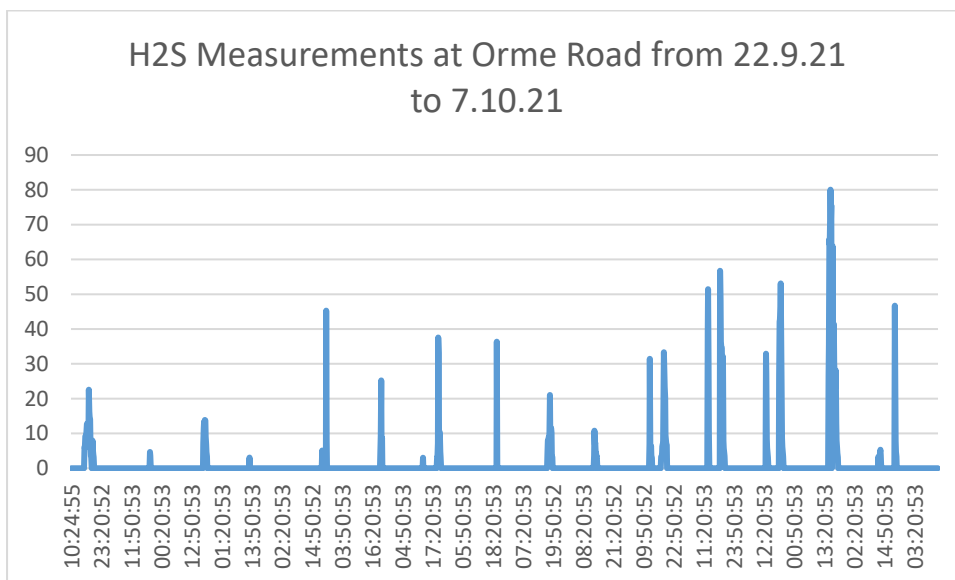
The measurements above were made within the living room.



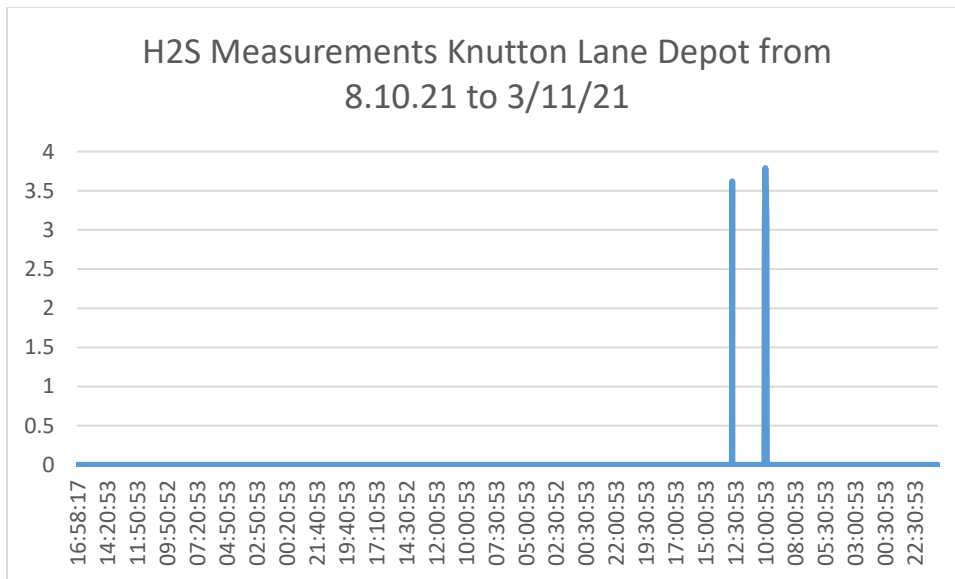
The measurements above were made within a first floor office at the Council's Depot.



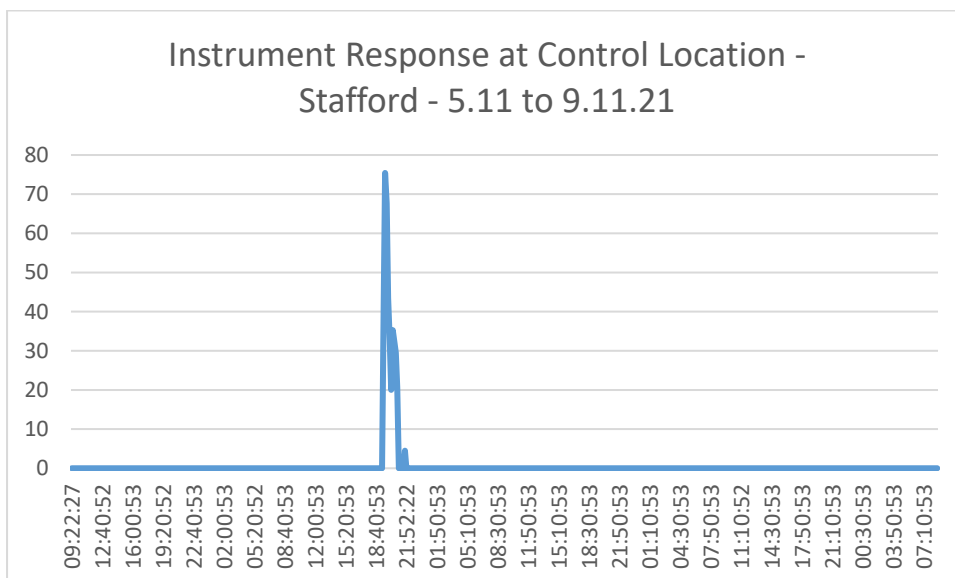
The measurements above were made within a first floor office at the Council's Depot.



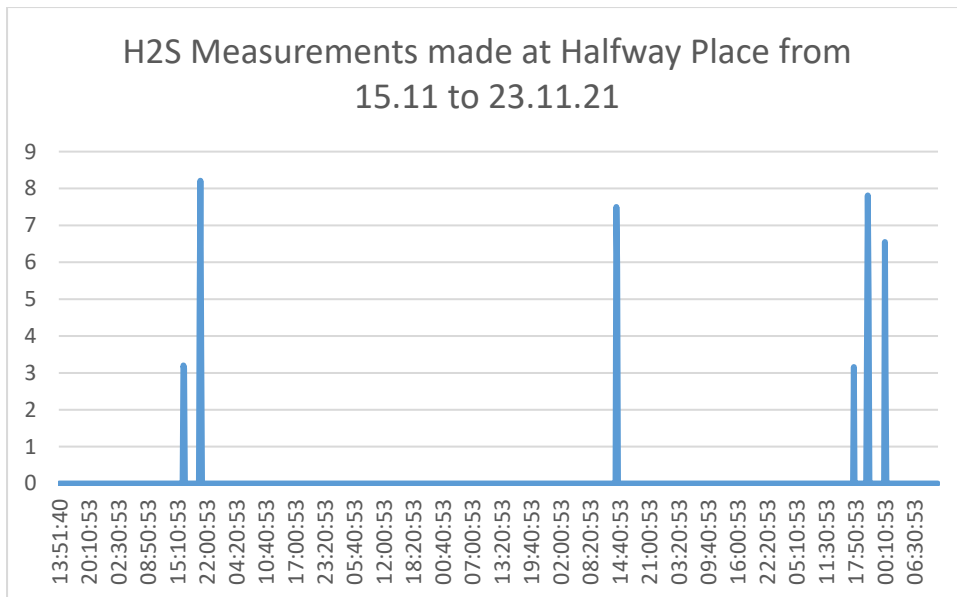
Despite the relatively high values observed, no odour was reported by the resident during the deployment period.



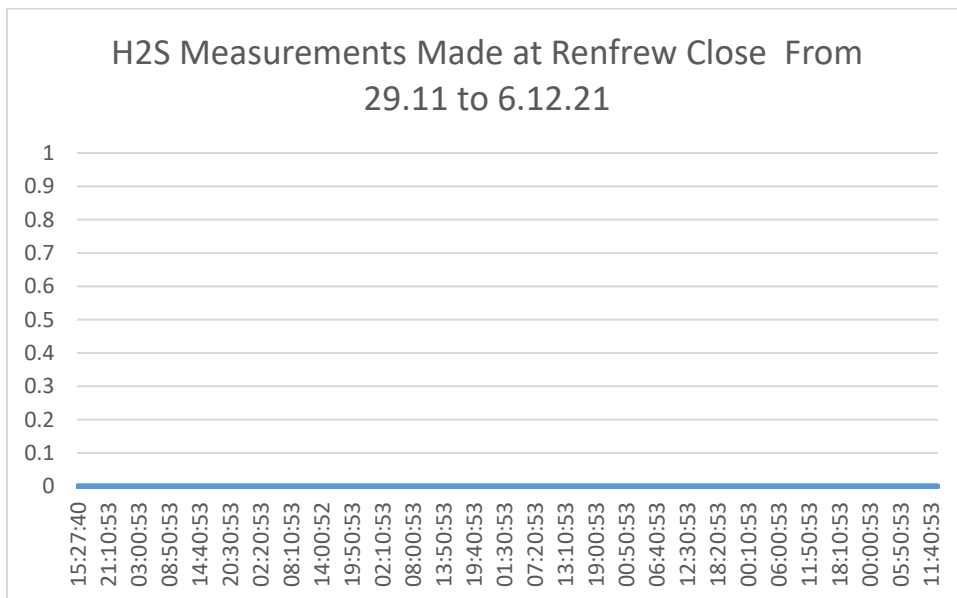
The measurements above were made within a first floor office at the Council's Depot.



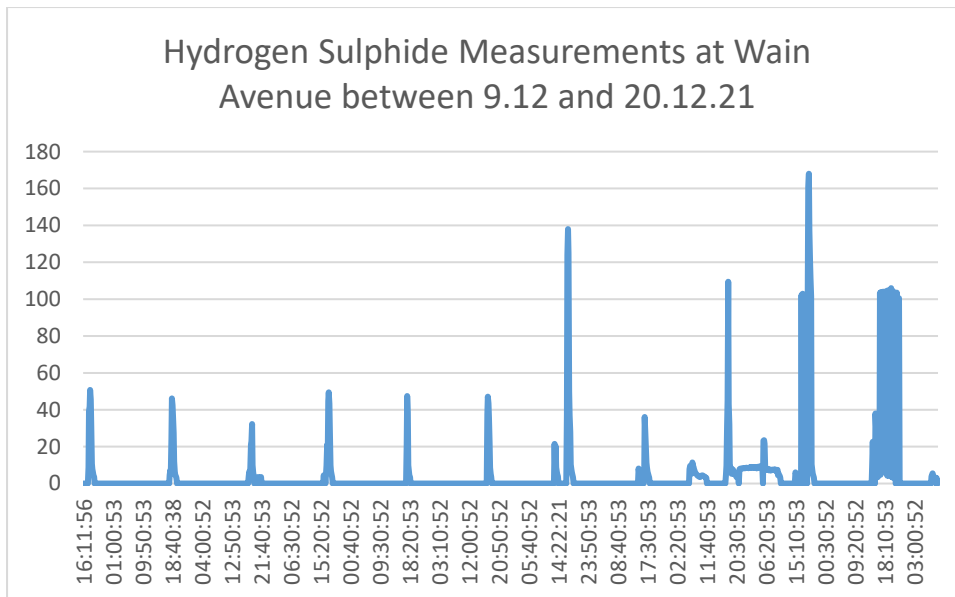
The deployment above relates to a control location circa 18 miles to the South of Walleys Quarry. The high measurements observed related to a period of cooking upon a gas hob within the same room.



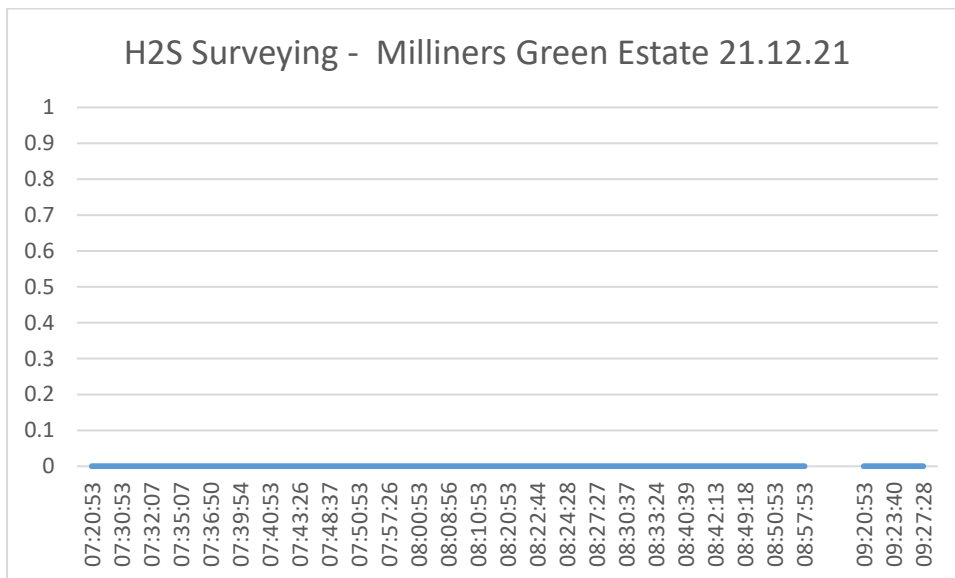
The measurements above were made upon the landing of the property.



The measurements above were made within the living/dining area of the property.



The measurements above were made within the living room of the property.



The measurements above were over multiple locations upon the Milliners Green Estate, particularly around the culvert and the area of the acoustic fence.