

<b>Project:</b>	Chippenham Town Hall and Neeld Hall Decarbonisation	Queen Square House
<b>Subject:</b>	Neeld Hall Heating Condition Survey Findings	18-21 Queen Square
<b>Document Ref:</b>	4887 DSN02	Bristol
<b>Date:</b>	12 Nov 25	BS1 4NH
		0117 238 0909

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## 1 Introduction

This document has been put together by E3 and is comprised of the information received via emails regarding the findings of the condition survey of the Neeld Hall.

Details of the surveyor are:

Conducted by: James, Director, Larkhall Construction Ltd

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W: [www.larkhallconstruction.co.uk](http://www.larkhallconstruction.co.uk)

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Conducted: 16<sup>th</sup> June 2025

## 2 Survey Notes

### 2.1 Survey Commentary

The following was received via email to the client, from Larkhall on 20<sup>th</sup> June 2025:

"We started to investigate the pipework starting at the plant room exploring through the floors and ceilings. Safety valve attached to the back of the boiler was passing and had water in a drip tray that had been previously placed there by others.

We found 2 x 3/4 loops on the heating circuit on the 2nd floor and 1st floor @ H/L (assumed for future use). Both were fitted with a gate valve and double regulating valve, with a commissioning set attached to each reg valve. These 4 valves had been previously left open, so we isolated them as there is no need for these to be left open as they are not feeding anything.

We couldn't find any other commissioning sets, reg valves, orifice plates or binder points on the job to take any flow rates from. We were unable to take any flow rates on the whole job due to none being installed. It would be possible to find out flow rates. However, this would mean extra work and extra costs to install them.

We investigated pipework running down the riser (next to kitchen) and found 2 x 1" pipes to be redundant (Assuming these were existing feed for the underfloor heating. We could not see where they are blanked/capped as a new wall has been built).

Running alongside are 2 x 1/2" pipes feeding the radiators on the ground floor, in the kitchen, gents and ladies toilets.

After further investigation we found that all radiator valves were seized shut and 1/2 gate valve on 1st floor valve seat had come away from the spindle (seat stayed in closed position even though the valve seemed like it was opening and closing).

We also discovered the 3 port valve was not opening when heating was on/calling for heat. We manually opened the 3 port valve to allow water to flow through to the radiator circuit VT. Eventually we managed to get heat around the toilet areas. However, we struggled to get flow into the kitchen radiator due to the system not being balanced correctly and valves shut off previously causing them to seize. We left the 2 radiators in the toilet areas on, and working as this is a public area. There were also another 2 x 1/2" pipes in the ceiling void going into the cupboard next to the kitchen that we could not find (assume for existing radiator in doc M).

I showed Tyson the issue with the 3 port, not opening or closing correctly when heating is on or off.

The pipework feeding the main hall is 2" leaving the plant room and reducing to 1 1/2" as it goes through the wall into (Tech Deck area). It then tees off in the boxing behind the area around to the outside wall of the hall @H/L with 3/4 pipe dropping feeding each radiator reducing as it goes past each radiator (unable to confirm due to trunking and electrical supplies being fitted on the face of the boxing). It also drops down to low level (in the boxing next to the main door by the bar). From here it runs along at floor level feeding each radiator. However, it drops to below floor level when passing through the door area then comes back up on the other side (see pictures).

We took water samples and they have been sent off for analysis, hopefully they will be back by the end of the week and provide a detailed analysis regarding the condition of the pipework. The samples were not the worst we have seen nor were they the best. There were signs of corrosion and leaks around the building. The 2 samples we took, 1 was from the back of the boiler and another from the radiators on the ground floor."

## 2.2 Survey Pictures

The following pictures and accompanying text were received with the previously noted email:

<p>A, shows the pipework running around the Tech Deck with a tee dropping to feed a radiator in the store area. Sizes are 1 1/2 with a 1/2 drop to low level and carrying on round in 1 1/4.</p>	
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B, shows what is behind the boxing in the corner of the Tech Deck area. 2 x 1 1/2 carrying on along at high level and dropping to low level to feed the radiators.



C, as above



D, shows the existing routes of the pipework for radiators on the wall (outside wall).



E, shows the passing safety valve and cup filled with water.

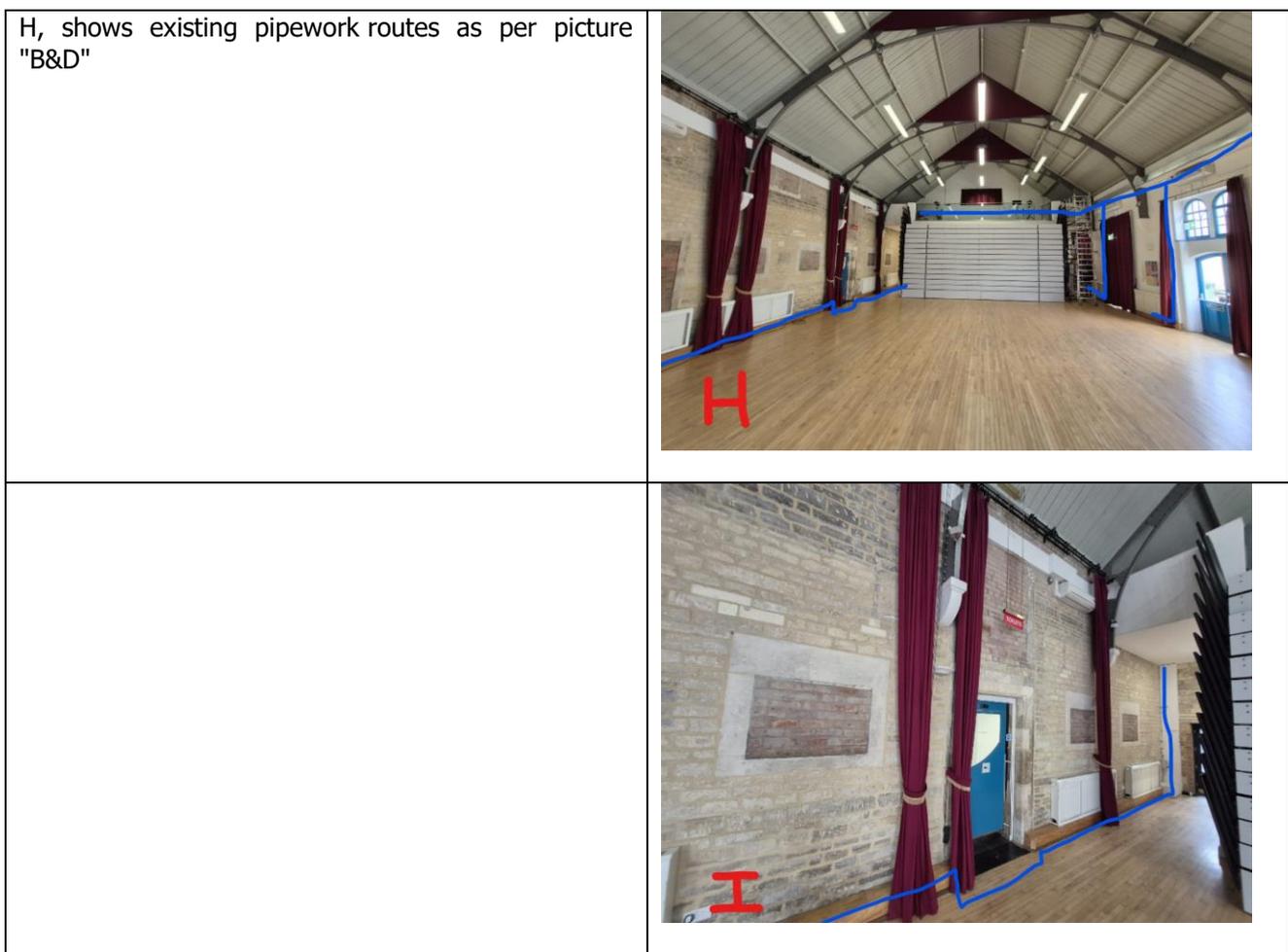


F, shows pump set up, with no binder/test points or commissioning sets in the plant room.



G, faulty radiator in kitchen.





### 2.3 Survey Recommendations

The following recommendations were received in the previously noted email:

"The existing pipework should be calculated to see if it is ok to use for a new system, otherwise install new correctly sized pipework.

Radiators will need to be upsized due to low flow temperatures of heat pumps and heat loss etc. As discussed more radiators could be put on the hall internal wall depending on radiator lengths.

Depending on what type of system is being installed, i.e. keeping the existing pipework (if sized correctly) will it still be a gravity fed system running through a heat exchanger? or will it be 1 sealed system?

If the above is ok, pipework should be tested and flushed to prevent any debris getting into the new system. Depending on the size of the whole installation a buffer tank may need to be installed in the existing plant room.

New BMS and controls would be needed.

I would also recommend keeping a minimum of 2 circuits. 1 for the hall and 1 for the toilet area. That way you can control heating separately and not have the hall heating on if people are only using bar/cafe areas and vice versa.

All pipework would need to be correctly insulated, existing and new. None of the existing pipework in the boxings is insulated @H/L and L/L.

New recirculation fans installed @H/L to help move air around. Some with a low Db rating due to acoustics.

### 3 Sample Results

#### 3.1 Certificates of Analysis

The following certificates were received as a result of laboratory analysis of samples from the heating system water, received via email from Bethany Dale (Adey) to the client 25<sup>th</sup> June 25:

**Customer Details:**  
 Nextgen Gas  
 8 Glanwern Av  
 Newport  
 nil  
 NP19 9BU  
 07528 948422  
 jack@nextgengas.co.uk

### CERTIFICATE OF ANALYSIS

**System Diagnostics - Laboratory Test Report**  
 This report supersedes all previous issued versions  
**Test Serial: SD 001220**  
**Version: 1.0**  
**Date Sampled\*: 16/06/2025**  
**Date Received: 17/06/2025**  
**Date Reported: 20/06/2025**



T: 01795 858628  
 E: commercialwateranalysis@adey.com  
 W: www.adey.com/commercial  
 A: Water Testing Service,  
 Kent Science Park,  
 Sittingbourne, ME9 8HL

<b>Water Sample 'A'</b>	SD 001220 A	Date Sampled*: 16/06/2025
<b>Sample Address*</b>	Chippenham Town Hall, High Street, Chippenham, SN15 3ER	
<b>Sample Location*:</b>	HTG Plantroom	

**Overall Recommendation for Sample 'A'**  
 System issues found. Please contact ADEY Commercial via commercialwateranalysis@adey.com to discuss the test results and any corrective actions required

**Test Result of Sample A:**

Analyte	Status	Commentary #	Result	Method
pH (25°C)	Pass	pH suitable for all metals	7.48	ADY-SOP-EQP-015
Total Suspended Solids (TSS) (mg/l)	Fail	Elevated level of debris, seek advice	116	ADY-SOP-OP-016
Chloride (mg/l)	Warning	Elevated chloride, seek advice	199.00	ADY-SOP-EQP-012
Dissolved Aluminium (mg/l)	Pass	Acceptable Aluminium level in system	0.26	ADY-SOP-EQP-011
Dissolved Copper (mg/l)	Warning	Acceptable Copper level in system	0.24	ADY-SOP-EQP-011
Dissolved Iron (mg/l)	Warning	Dependant on treatment, seek advice	76.12	ADY-SOP-EQP-011
Dissolved Zinc (mg/l)	Warning	Zinc corrosion detected, seek advice	2.09	ADY-SOP-EQP-011
Molybdate (Corrosion Inhibitor) (mg/l)	Fail	Corrosion Inhibitor required - ADEY MC1+ Recommended	1.69	ADY-SOP-EQP-011
Sodium Nitrite (Corrosion Inhibitor) (mg/l)	Fail	Corrosion Inhibitor required - ADEY MC1+ Recommended	<5	ADY-SOP-EQP-016
Conductivity (25°C) (µS/cm)	Warning	Dependant on system treatment	1,340	ADY-SOP-EQP-014
TDS By Calculation (mg/l)	Warning	Dependant on system treatment	893 #	ADY-SOP-EQP-014

TSS: Total Suspended Solids; TDS: Total Dissolved Solids

Approved by:  Sebastian Constable  
 Senior Analyst

\*Data supplied by customer. Data amended from previous versions.

The laboratory water test which the above results relate to was undertaken by Alpha Scientific Limited (company number 11506820), part of Adey group. This certificate shall not be reproduced, except in full, without the permission of the Laboratory. Sampling procedures used to collect these samples are outside the scope of this UKAS accreditation. Results in this report are only applicable to the location/address indicated and are based on the system process water sample being representative of the system, as a whole. Tests, decision rules, opinions and interpretations marked # in this report are not included in the UKAS Accreditation Schedule for our Laboratory. Method details, performance characteristics & Uncertainty of Measurement for all methods are available on request or via Commercial System Diagnostics Test Portal. All client supplied data is outside our scope and can affect the validity of results. This includes sampling date/time, sample location and items marked\*. Results apply to the sample(s) as received.



Customer Details:  
 Nextgen Gas  
 8 Glanwern Av  
 Newport  
 NP19 9BU  
 07528 948422  
 jack@nextgengas.co.uk

## CERTIFICATE OF ANALYSIS

**System Diagnostics - Laboratory Test Report**  
 This report supersedes all previous issued versions  
**Test Serial:** SD 001220  
**Version:** 1.0  
**Date Sampled\*:** 16/06/2025  
**Date Received:** 17/06/2025  
**Date Reported:** 20/06/2025



T: 01795 858628  
 E: commercialwateranalysis@adey.com  
 W: www.adey.com/commercial  
 A: Water Testing Service,  
 Kent Science Park,  
 Sittingbourne, ME9 8HL

Water Sample 'A'	SD 001220 A	Date Sampled*: 16/06/2025
Sample Address*	Chippenham Town Hall, High Street, Chippenham, SN15 3ER	
Sample Location*:	HTG Plantroom	

**Overall Recommendation for Sample 'A'**

System issues found. Please contact ADEY Commercial via commercialwateranalysis@adey.com to discuss the test results and any corrective actions required

**Test Result of Sample A:**

Analyte	Status	Commentary #	Result	Method
pH (25°C)	Pass	pH suitable for all metals	7.48	ADY-SOP-EQP-015
Total Suspended Solids (TSS) (mg/l)	Fail	Elevated level of debris, seek advice	116	ADY-SOP-OP-016
Chloride (mg/l)	Warning	Elevated chloride, seek advice	199.00	ADY-SOP-EQP-012
Dissolved Aluminium (mg/l)	Pass	Acceptable Aluminium level in system	0.26	ADY-SOP-EQP-011
Dissolved Copper (mg/l)	Warning	Acceptable Copper level in system	0.24	ADY-SOP-EQP-011
Dissolved Iron (mg/l)	Warning	Dependant on treatment, seek advice	76.12	ADY-SOP-EQP-011
Dissolved Zinc (mg/l)	Warning	Zinc corrosion detected, seek advice	2.09	ADY-SOP-EQP-011
Molybdate (Corrosion Inhibitor) (mg/l)	Fail	Corrosion Inhibitor required - ADEY MC1+ Recommended	1.69	ADY-SOP-EQP-011
Sodium Nitrite (Corrosion Inhibitor) (mg/l)	Fail	Corrosion Inhibitor required - ADEY MC1+ Recommended	<5	ADY-SOP-EQP-016
Conductivity (25°C) (µS/cm)	Warning	Dependant on system treatment	1,340	ADY-SOP-EQP-014
TDS By Calculation (mg/l)	Warning	Dependant on system treatment	893 #	ADY-SOP-EQP-014

TSS: Total Suspended Solids; TDS: Total Dissolved Solids

Approved by:

Sebastian Constable  
 Senior Analyst

\*Data supplied by customer. Data amended from previous versions.



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### 3.2 Commentary and Recommendations

#### SD 001220 A - Interpretation

The **pH** is 7.48, which is perfectly within the guidance range of 6.5-8.5.  
 The **dissolved Aluminium** is 0.26 mg/l. A healthy system should be < 1 mg/l so this is good.  
**Total Suspended Solids** are very high at 116 mg/l. The recommended limit is < 30 mg/l for a healthy system; so, this could be causing damage to the pipework.  
**Chloride** is 199 mg/l, whereas the recommended range is < 125 mg /l. Chloride can increase pH and accelerate corrosion if left in a system.  
**Dissolved copper** is 0.24 mg/l. The recommended limit is < 1 mg/l so this is not a cause for concern.  
**Dissolved Iron** is 76.12 mg/l, which is a very high result considering that a healthy system should be < 3 mg/l.  
**Dissolved Zinc** is 2.09 mg/l, being higher than the recommended limit of 1 mg/l.  
**Molybdate** is 1.69 mg/l, indicating that there is no corrosion inhibitor present in the system.  
**Sodium Nitrite** is < 5 mg/l. Typically, you would expect to see either Molybdate or Sodium Nitrite in the

system if there is corrosion inhibitor present, as many (not all) inhibitors have either one or the other; sometimes both.

**Conductivity** and **TDS** are dependent on the current state of the system. Looking at the results these levels are fine.

#### SD 001220 B - Recommendation

Due to the chloride and dissolved Iron, I recommended a full flush. This is because chloride cannot be corrected any other way and can accelerate corrosion. This increase in chloride may not be the sole factor for the high dissolved Iron result but could be playing a role in increasing it. Additionally, there is no corrosion inhibitor present in the system, so currently there is no protection for the system.

Once a full flush has been completed, I recommend a full dose of MC1+ to protect the system going forward. Also, consideration should be made for the installation of a side stream filter to capture magnetic and non-magnetic particulates from the system. I have attached a brochure for our side stream CMX filter. If a filter is already installed, I recommend more regular maintenance to ensure optimal capture. If you would like any assistance with how much MC1+ you would require for the size of the system, I would be happy to assist.

#### SD 001220 B - Interpretation

The **pH** is 7.48, which is perfectly within the guidance range of 6.5-8.5.

**Total Suspended Solids** are high at 62mg/l. The recommended limit is < 30 mg/l for a healthy system; so, this could be causing damage to the pipework.

**Chloride, Dissolved Aluminium, Dissolved Copper, Dissolved Iron, and Dissolved Zinc** are all within the recommended limits for a healthy system and are not a cause for concern.

**Molybdate** is < 0.3 mg/l, indicating that there is no corrosion inhibitor present in the system.

**Sodium Nitrite** is < 5 mg/l. Typically, you would expect to see either Molybdate or Sodium Nitrite in the system if there is corrosion inhibitor present, as many (not all) inhibitors have either one or the other; sometimes both.

**Conductivity** and **TDS** are dependent on the current state of the system. Looking at the results these levels are fine.

#### SD 001220 B - Recommendation

I recommend a full dose of MC1+ to protect the system from potential corrosion and keep the pH in a neutral state. Consideration should be made to install a side stream CMX filter as total suspended solids are high and could be causing damage within the system. If you would like any assistance with how much MC1+ you would require for the size of the system, I would be happy to assist."