

Committee Report Checklist

Please submit the completed checklists with your report. If final draft report does not include all the information/sign offs required, your item will be delayed until the next meeting cycle.

Stage 1

Report checklist – responsibility of report owner

ITEM	Yes / No	Date
Councillor engagement / input from Chair prior to briefing	Yes	30/04/2026
Relevant Group Head review	Yes	21/04/2026
MAT+ review (to have been circulated at least 5 working days before Stage 2)	Yes	01/05/2026
This item is on the Forward Plan for the relevant committee	Yes	24/04/2026
	Reviewed by	
Finance comments (circulate to Finance)	AS	01/05/2026
Risk comments (circulate to Lee O'Neil)	LO	14/05/2026
Legal comments (circulate to Legal team)	JC	06/05/2026
HR comments (if applicable)	n/a	

For reports with material financial or legal implications the author should engage with the respective teams at the outset and receive input to their reports prior to asking for MO or s151 comments.

Do not forward to stage 2 unless all the above have been completed.

Stage 2

Report checklist – responsibility of report owner

ITEM	Completed by	Date rec'd
Monitoring Officer commentary – at least 5 working days before MAT	L Heron	11/05/26
S151 Officer commentary – at least 5 working days before MAT	T.Collier	10/5/26
Commissioner engagement	Yes	07/05/2026
		Comments in S. 7
Confirm final report cleared by MAT		

Environment & Sustainability Committee

18th June 2026

Title	<i>Hydromx Pilot Project Review</i>
Purpose of the report	To Note (Briefing Pack Only)
Report Author	Arthur Stokhuyzen
Ward(s) Affected	All Wards
Exempt	No
Corporate Priority	Resilience Environment Services
Recommendations	Committee is asked to: - Note the findings and performance outcomes from the Hydromx Pilot Project at the Greeno Centre. - Note the technical, operational and analytical learnings identified through the pilot.
Reason for Recommendation	The pilot was approved to test whether Hydromx could deliver performance improvements under real operating conditions. This report presents the outcomes of that pilot and captures the learning generated. Given the mixed performance across monitoring periods, asset condition risks, and the short duration of optimised operation, officers are not proposing any further deployment at this stage. The report is therefore presented to note the findings and retain the evidence for future reference.

1. Executive summary of the report *(expand detail in Key Issues section below)*

What is the situation	Why we want to do something
- In June 2025 the Environment and Sustainability (E&S) Committee approved the spend for a pilot of the Hydromx product at the Greeno centre. - The spend of £10,100 was approved to be funded from the Green Initiatives Fund (GIF) - The pilot has now been completed, and its outcomes provide a body of evidence on performance, risks, and system suitability	- The pilot was undertaken to test whether Hydromx could deliver meaningful gas, cost and carbon reductions within an operational Council asset. - The completion of the monitoring period provides evidence to assess the effectiveness of the technology under real operating conditions.

This is what we want to do about it	These are the next steps
- Provide the Environment & Sustainability Committee with a formal review of the Hydromx Pilot Project at the Greeno Centre. Detailing performance outcomes, technical and operational risks and key learnings relevant to future use.	- There are no proposed next steps at this stage. - The learning from the pilot will be retained and may be revisited if future policy, funding, or asset-condition considerations change.

2. Key issues

- 2.1 Hydromx is a heat-transfer fluid that contains nano-scale additives designed to enhance heat transfer efficiency compared with conventional water or glycol-based systems. It is typically used in heating and cooling applications where improved thermal conductivity can reduce energy consumption and system operating temperatures.
- 2.2 The Hydromx Pilot Project at the Greeno Centre was modelled by HMX (the distributor of Hydromx) to require a total of 460 litres of Hydromx. This modelling aims to ensure the volume of Hydromx in the heating system represents 40%-50% of the total fluid.
- 2.3 The installation took place on 28th July 2025 and was carried out by Highcliffe Contractors, a specialist Hydromx installer. A total of 350 litres of Hydromx was installed, representing approximately 76% of the modelled volume.
- 2.4 The installer suggested that he was unable to install the full modelled amount into the heating system because it was long and complicated, meaning there was likely to be pockets in the heating system that couldn't be reached. It was advised that consistent measurements should be taken going forward to understand the percentage of Hydromx in the Greeno heating system.
- 2.5 The installation process involved draining the existing heating system fluid and reintroducing Hydromx into the closed-loop heating system. No operational or installation issues were observed on the day of installation.
- 2.6 On 30th July the site manager at the Greeno centre raised the issue that there were several leaks across the community centre.
- 2.7 Both Spelthorne contractors and the Highcliffe installer attended the site to investigate the issue. Both parties concluded that the leak was not caused by the installation of the solution. It was deemed that due to the age and state of the system flushing the fluid and introducing a purer product (Hydromx) had dislodged rust and sludge that had initially kept the system from leaking previously.
- 2.8 The project lead, assets representative and specialist installer did not identify that the leaks in the system were a potential risk. It was later revealed that the heating system hadn't been flushed in over 12 years and there were other pre-conditions such as obvious rust and boiler issues identified.

- 2.9 If any further sites were to progress with the installation of Hydromx, technical risk would be considered in the feasibility and necessary surveys and actions identified prior to installation.
- 2.10 The first check of the system happened 20th September 2025, nearly 2 months after the installation. The numbers were surprisingly low returning the percentage of Hydromx in the system between 10%-20% across 6 different inspection sites. It was concluded the low figure was likely due to: the Hydromx not mixing as the heating had yet to be on; the low volume of Hydromx originally installed and the volume of Hydromx lost because of the ongoing leaks. It was deemed a further check should take place in early December after it could be confirmed the heating had been on.
- 2.11 The second check happened 2nd December 25, a further 2 months later. It was noted that although the major leaks had been patched up there were still ongoing issues with pin-hole leaks from the heating system. The costs associated with patching the system are not fully known but were significant. The heating system was reading 25% mix meaning the system still wasn't optimised.
- 2.12 This information was then returned to the project group who deemed a 'top-up' of Hydromx was required. However, it was decided this should be done after the busy Christmas period and if there had been a couple of weeks without leaks. It was then decided that a top up date of 4th February because the conditions for the 'top-up' had been met. This would also ensure that there would still be 2.5 months for analysing relevant winter data. After testing the system in early March, it was found that the system was estimated to have a 40% mix, suggesting it was optimised.
- 2.13 During the initial phase of the Hydromx pilot (with 25% mix), gas consumption between September 2025 and January 2026 was 10.07% lower than baseline monthly averages. Consumption was lower than baseline in every reporting month, with the largest saving observed in November (-21.31%), indicating that the system was delivering a measurable reduction in fuel use during the early pilot period.
- 2.14 In parallel, a regression analysis comparing gas consumption against Heating Degree Days (HDD) was undertaken to assess HDD-normalised performance. This assesses how gas use changes with the weather. By comparing gas consumption with Heating Degree Days (a measure of how cold it was), we adjusted for warmer and colder periods. This allows a fair comparison of performance over time, showing whether changes in gas use are due to efficiency improvements rather than just the weather.
- 2.15 This analysis indicated a 26.26% increase relative to the historical HDD relationship. This outcome should be interpreted with caution and is considered reflective of analytical and operational limitations, rather than a definitive indication of increased energy use attributable to Hydromx.
- 2.16 Several factors are likely to have influenced this result. The monitoring period was relatively short and coincided with higher heating demand and colder-than-average conditions, increasing the sensitivity of regression outcomes. Additionally, the system was operating at a sub-optimal Hydromx concentration, limiting the thermal performance benefits observed.

- 2.17 Post 'top-up' analysis demonstrates a substantial improvement in both absolute and HDD normalised gas consumption metrics. Following the system top up:
- 2.18 Regression analysis against Heating Degree Days (HDD) indicates a 42% reduction in gas consumption, representing a significant improvement in HDD normalised efficiency compared to the historical baseline.
- 2.19 Comparison against baseline monthly averages shows a 12% reduction in gas consumption, confirming that absolute gas use remained materially lower than pre installation levels.
- 2.20 The improved alignment between regression-based analysis and baseline comparison after top-up provides increased confidence in the underlying performance of the Hydromx solution.
- 2.21 These findings support the conclusion that performance during the initial September–January period was constrained by sub-optimal system concentration and that the full efficiency potential of the solution is realised only once appropriate dosing is achieved and maintained.
- 2.22 Both reporting periods are relatively short. Continued monitoring across a longer heating period will further validate these savings.
- 2.23 The original performance claim for Hydromx indicated a potential reduction in heat consumption of up to 30%. During the initial phase of operation at a 25% system concentration, observed savings fell below this headline figure, suggesting that performance was constrained by system conditions rather than the technology's full capability. Following system 'top-up' to the recommended 45% mix, regression-based analysis indicates savings in excess of the original claim, while baseline comparisons show reductions of approximately 10%.
- 2.24 Taken together, these results suggest that short-term performance can vary, the 'top-up' data is broadly consistent with the originally stated performance expectations.
- 2.25 Observing the savings from the pilot as a whole demonstrates that Hydromx can deliver material efficiency benefits when systems are appropriately assessed, balanced, and monitored. However, it also highlights the technical and analytical risks of short-term pilots on legacy assets.
- 2.26 Since September 2025 until March 2026 the Hydromx saved an estimated £700 and a 2.99tCO₂e (tonnes of CO₂ equivalent). These cost savings exclude the significant costs associated with patching the heating system from the assets budget.
- 2.27 Key conclusions to draw from this pilot project:
- (a) The pilot shows Hydromx can deliver meaningful gas and carbon savings when system conditions are suitable and dosing is correct.
 - (b) Early performance was constrained by legacy asset condition, incomplete mix, and ongoing leaks rather than the technology itself.
 - (c) Post top-up data aligns broadly with original performance claims, though monitoring periods remain short.
 - (d) The pilot highlighted non-trivial technical and asset-condition risks, which must be actively mitigated before any further deployment.

- (e) As a result, the pilot provides useful learning but does not support further deployment at this time
- 2.28 Further modelling and assumptions can be found in Appendix A (Appendix A: Hydromx Reporting Framework).
- 2.29 Figure A: Table of gas consumption compared to the baseline information for the initial months of the pilot where the heating system had a 25% Hydromx mix

Month	Phase	Gas Consumption (kWh)	Baseline Avg. for Month (kWh)	Consumption Diff. to Baseline	Consumption Diff. to Baseline (%)
Sep-25	Initial Installation	10,944.55	11,155.63	-211.07	-1.89%
Oct-25	Initial Installation	13,065.62	13,903.13	-837.51	-6.02%
Nov-25	Initial Installation	20,687.05	26,289.50	-5,602.45	-21.31%
Dec-25	Initial Installation	25,775.25	28,235.88	-2,460.62	-8.71%
Jan-26	Initial Installation	27,320.89	29,155.56	-1,834.67	-6.29%
Feb-26	Top Up	21,600.11	24,885.22	-3,285.11	-13.20%
Mar-26	Top Up	20,469.35	22,574.44	-2,105.09	-9.33%

3. Options appraisal and proposal

- 3.1 Option 1: Note the Hydromx Pilot Project Review (Recommended)
- 3.2 The Committee is asked to note the findings and learning from the Hydromx Pilot Project at the Greeno Centre.
- 3.3 This option closes the pilot as a completed evaluation exercise. It acknowledges the performance evidence, technical risks, and analytical limitations identified, and confirms that no further rollout or feasibility work is proposed at this time. The learning will be retained to inform any future consideration if circumstances change.
- 3.4 **Rationale for recommendation:**
This option provides a proportionate response to a time-limited pilot, reflects the mixed and short-term nature of the evidence, and avoids premature progression to further deployment.

4. Risk implications

- 4.1 The pilot identified a number of operational, asset, performance and financial risks associated with the use of Hydromx in legacy heating systems. These risks are documented to inform any future consideration but do not require mitigation at this stage, as no further action is proposed.

- 4.2 Operational and Asset Risk: Installation may introduce or expose issues within older or poorly maintained heating systems (e.g. leaks, corrosion, sludge), potentially leading to system disruption.
- 4.3 Performance and Data Risk: Short-term performance data may misrepresent long-term efficiency outcomes, particularly where weather, occupancy, or operational patterns fluctuate.
- 4.4 Financial Risk: Additional capital investment may not deliver value for money if performance outcomes fall below expectations or if unforeseen remedial work is required.
- 4.5 Legal and Compliance Risk: Failure to comply with procurement, health and safety, or asset management requirements could result in contractual or regulatory issues.

5. Financial implications

- 5.1 The pilot cost £10,100 and was funded from the Green Initiative Fund. There are no further direct costs associated with the Hydromx project expected.
- 5.2 The pilot project is expected to have saved the Council £700 across the monitoring period, excluding the significant costs required to repair the leaks.
- 5.3 Pilot evidence suggests potential for net revenue savings and carbon reduction.
- 5.4 While a reduction in gas costs from the project is shown, these are attributed to lower consumption. Gas prices are influenced by external market forces and are subject to volatility. While lower usage supports savings now, future gas costs may rise depending on market conditions and current savings may not be sustained.
- 5.5 There are no further financial implications arising from this report.
- 5.6 No further expenditure is proposed.
- 5.7 Any future consideration would be subject to a separate report and approval.

6. Legal comments

- 6.1 There are no immediate legal implications arising from this report as it is to note only.

Corporate implications

7. Commissioners' comments

- 7.1 Commissioners' view is that it is not sensible to proceed with project now, given the relatively long payback period for the investment, the risk the report highlights of additional costs, and forthcoming local govt reorganisation, where West Surrey may want to take its own view in time of where it wants to make such investments.

8. S151 Officer comments

- 8.1 The S151 Officer confirms that all financial implications have been taken into account and that the pilot has been fully funded.

9. Monitoring Officer comments

- 9.1 The Monitoring Officer has no further comments at this stage.

10. Procurement comments

- 10.1 This report has no direct procurement implications. No further procurement activity is proposed.

11. Equality and Diversity

- 11.1 The recommended proposal to explore a phased rollout of Hydromx is not expected to have any direct or disproportionate impact on equality or diversity. The proposal relates solely to building systems and does not affect service delivery, access, or employment. No mitigation measures are required at this stage.

12. Sustainability/Climate Change Implications

- 12.1 The proposal supports the Council's sustainability and climate change objectives by exploring a technology that has demonstrated the potential to reduce gas consumption and associated carbon emissions when correctly applied. Improved thermal efficiency within heating systems can contribute to lower energy demand and support progress toward the Council's net-zero commitments. No negative sustainability impacts have been identified at this stage.

13. Other considerations

- 13.1 No Assets Comments

14. Timetable for implementation

- 14.1 June 26: E&S Committee notes the findings from the pilot

15. Contact

- 15.1 Arthur Stokhuyzen: a.stokhuyzen@spelthorne.gov.uk (Climate & Energy Lead)

Please submit any material questions to the Committee Chair and Officer Contact by two days in advance of the meeting.

Background papers: There are none.

Appendices:

Appendix A Hydromx Reporting Framework