HOARE LEA

1 Museum Street
Wastewater heat recovery Feasibility Study.

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
P01	15.11.2024	Initial issue	SP	SD	RM
P02	25.11.2024	Second issue incorporating comments	SP	SD	RM
P03	17.12.2024	Comment update	SP	SD	RM

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This document includes contributions from Scotch Partners LLP, for the sections described within.

Hoare Lea LLP is a limited liability partnership and is registered in England and Wales with registered number OC407254.
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1. Introduction

1.1 Background

This document is written in response to the planning permission ref: 2023/2510/P, dated 7 March 2024 for the addresses comprising: Selkirk House, 166 High Holborn, 1 Museum Street, 10-12 Museum Street, 35-41 New Oxford Street and 16A-18 West Central Street, London, WC1A 1JR, hereafter referred to as 'the Site'

40 - Waste Water Heat Recovery:
Prior to commencement of development other than site clearance & preparation, a feasibility assessment into waste water heat recovery with the aim of maximising the energy efficiency of the development should be submitted to the local planning authority and approved in writing. The buildings shall not be occupied until the approved details have been implemented and these works shall be permanently retained and maintained thereafter.

1.2 Executive summary

Wastewater heat recovery has been considered for the various proposed buildings on the Site, with the following assessments:

1 Museum Street building:
Wastewater heat recovery from cycle centre showers is not feasible due to the constrained floor to floor height in basement, and lack of space to install equipment under shower trays.

West Central St buildings:
Wastewater heat recovery is not feasible due to constrained floor to floor heights within the buildings.

Vine Lane Buildings:
Wastewater heat recovery is not feasible due to constrained floor to floor heights within the building.

High Holborn Building:
Wastewater heat recovery is not feasible due to constrained floor to floor heights within the building.

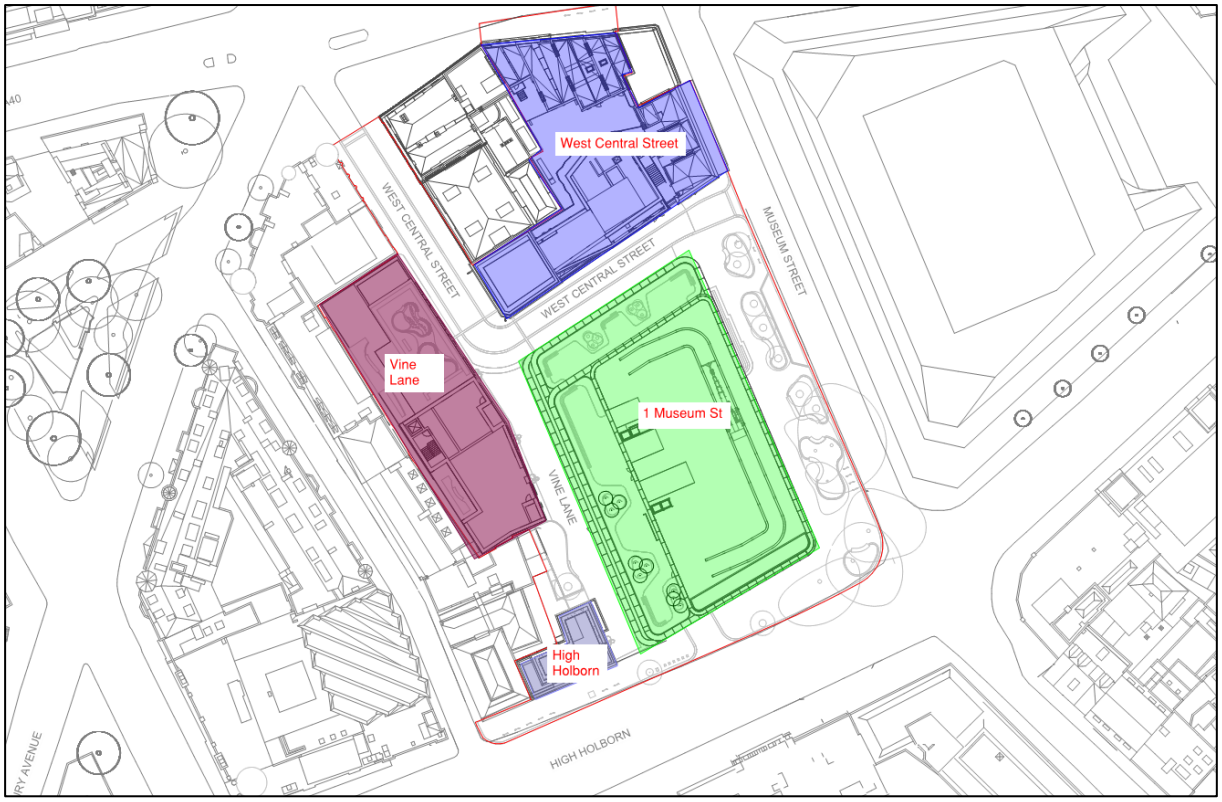
Whilst wastewater heat recovery has been found not to be feasible, the Applicant is committed to maximising energy efficiency through passive and active means across the site.

Energy consumption associated with the production and distribution of domestic hot water is intended to be minimised through:

- Use of electric heat pumps with heat recovery capability for domestic hot water generation generally across residential areas and 1 Museum St shower facilities.
- Enhanced thermal insulation standards on domestic hot water storage and distribution systems
- Use of water efficiency sanitaryware to minimise overall domestic hot water consumption
- Selection of domestic hot water generation and storage temperatures to maximise generation efficiency and minimise heat losses within the constraints of managing Legionella risk

1.3 Project description

The proposed development forms a 5-hectare site bounded by High Holborn, Museum Street and New Oxford Street, in central London. The scheme comprises several buildings: 1 Museum Street as an office-led tower, whilst West Central Street block, Vine Lane block and High Holborn building will provide low rise residential use with active ground floor spaces.



The Services design work for the site is split across more than one consultant.

- 1 Museum Street building services: Hoare Lea LLP
- West Central Street building services: Scotch Partners LLP
- Vine Lane Building Services: Scotch Partners LLP
- High Holborn Building Services: Scotch Partners LLP

The following sections of this report relating to those separate buildings have been authored by the respective consultant listed above.

2. Wastewater heat recovery for 1 Museum Street building

2.1 Basement showers

As an office building, the primary use for domestic hot water is the cycles changing showers. These are located to the north of the main core at B2 level in 1 Museum St. basement, see figure 1.

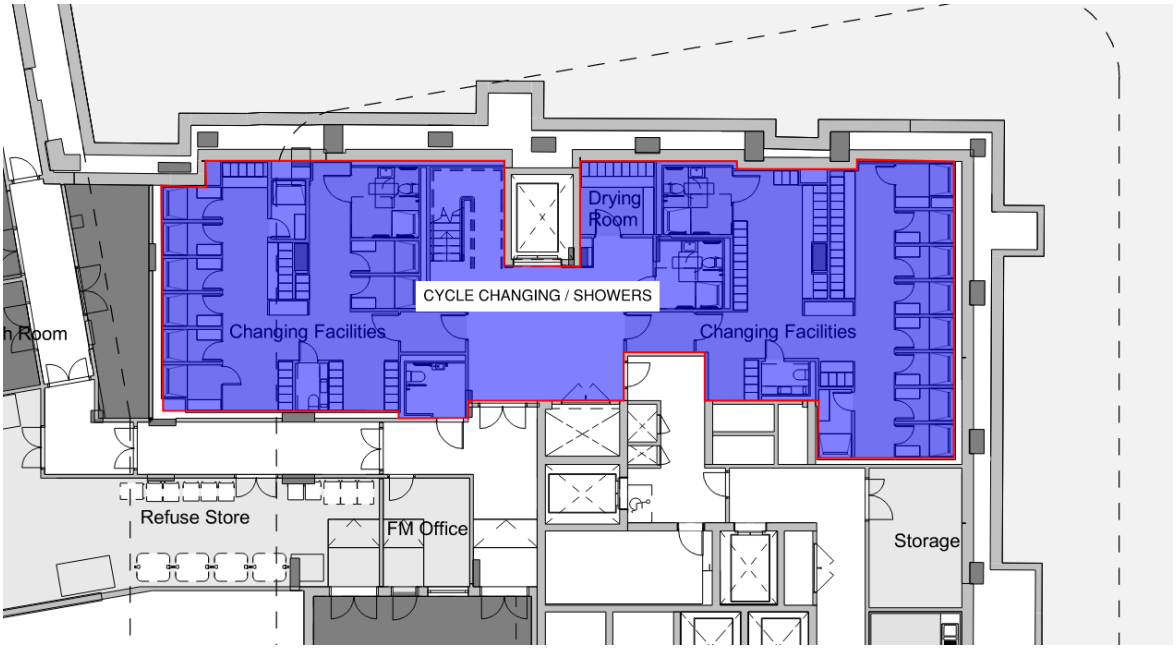


Figure 1 – proposed cycle showers at B2 level of 1 Museum St basement

The shower centre at B2 level and cycles storage at B1 level is substantially constrained with respect to floor-to-floor heights due to the two levels being accommodated in a pre-existing basement (the retained basement space from the Selkirk house tower), see figure 2.

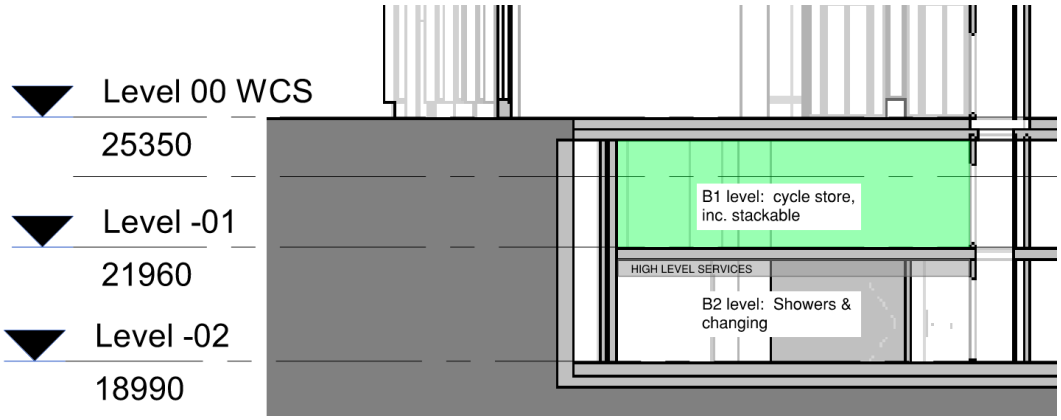
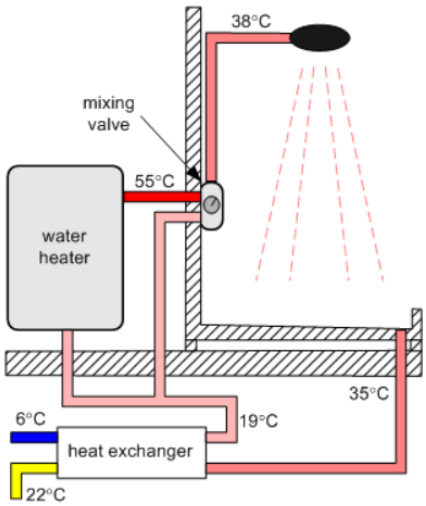


Figure 2 – proposed section view of showers at B2 level and cycle storage at B1 level of 1 Museum St basement

2.2 Heat recovery systems

Recommended systems for the effective heat recovery from showers are typically of the type described below in Figures 3 &4. These systems use the drainage of hot wastewater to pre-heat cold incoming water, thus reducing primary energy consumption.



ıt Typical water temperatures for a shower with WWHR

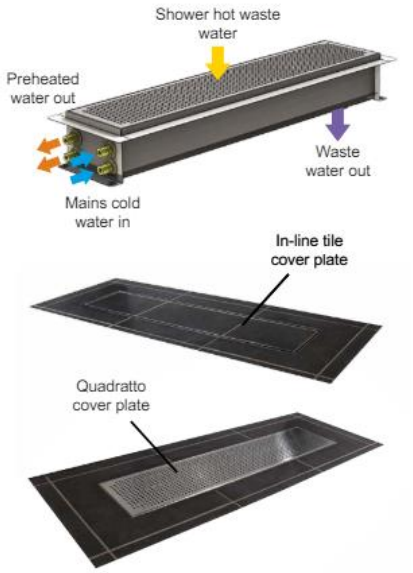


Figure 3 & 4 – Typical schematic and indicative product visuals for shower water heat recovery

These heat exchangers systems require locating within the floor buildup between shower tray and connection to drain. Because of the very limited floor to floor height in B2 and B1 levels illustrated in figure 2 above, there is restricted ability to create a floor void for these systems.

2.3 Conclusion for 1 Museum Street

Wastewater heat recovery from cycle centre showers is not feasible due to the constrained floor to floor height in basement, and lack of space to install equipment under shower trays.

3. Wastewater heat recovery for West Central Street buildings

3.1 Apartment Showers

A wastewater heat recovery system requires space to be allocated either within the floor build up or below the shower tray.

Figure 5 Wastewater heat recovery units.

Installing a wastewater heat recovery unit below the shower tray is not feasible due to constrained floor to ceiling heights. Increasing the height of the shower tray would have a knock on effect on the floor to ceiling height and also the ceiling void height. Installing drainage pipes and domestic water pipes underneath the shower tray could cause problematic due to space restrictions.

3.2 Conclusion

Wastewater heat recovery is not feasible due to the height restrictions within the West Central street buildings. The floor build up has space limitations so increasing any extra space has not been accounted for.

4. Wastewater heat recovery for Vine Lane buildings

4.1 Apartment Showers

A wastewater heat recovery system requires space to be allocated either within the floor build up or below the shower tray.

Figure 5 Wastewater heat recovery units.

Installing a wastewater heat recovery unit below the shower tray is not feasible due to constrained floor to ceiling heights. Increasing the height of the shower tray would have a knock on effect on the floor to ceiling height and also the ceiling void height. Installing drainage pipes and domestic water pipes underneath the shower tray could cause problematic due to space restrictions.

4.2 Conclusion

Wastewater heat recovery is not feasible due to the height restrictions within the Vine Lane building. The floor build up has space limitations so increasing any extra space has not been accounted for.

5. Wastewater heat recovery for High Holborn building

5.1 Apartment Showers

A wastewater heat recovery system requires space to be allocated either within the floor build up or below the shower tray.

Figure 5 Wastewater heat recovery units.

Installing a wastewater heat recovery unit below the shower tray is not feasible due to constrained floor to ceiling heights. Increasing the height of the shower tray would have a knock on effect on the floor to ceiling height and also the ceiling void height. Installing drainage pipes and domestic water pipes underneath the shower tray could cause problematic due to space restrictions.

5.2 Conclusion

Wastewater heat recovery is not feasible due to the height restrictions within the High Holborn building. The floor build up has space limitations so increasing any extra space has not been accounted for.