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| Title   | Waste Water / Drainage Strategy       |
| Project | GREAT RUSSELL STREET – Basement Hotel |
| Date    | 28/11/2022                            |

## **Introduction**

The following document details the basis of design and operation strategy for the waste water management system at 112A Great Russell Street.

The project is to convert two basement parking floors into hotel accommodation. The floors are located on levels B-4 & B-5 with planning permission sought for a total of 187 bedrooms.

## **Drainage**

The hotel accommodation shall be provided with a new dedicated vacuum drainage system for waste water. The vacuum system shall discharge into the existing sump tank located on level -B5 which will be upgraded to make additional storage capacity alongside with contingency measures.

The existing discharge is via a pumped rising main that discharges to a foul water sewer at street level. The increase in waste water discharge from the building due to the new hotel accommodation shall not exceed previously approved 11l/s (Thames Water 20/08/18 - Pre-planning ref DS6050192).

As the drainage strategy for the new hotel accommodation will utilize existing drainage services to the utility network, there will be no impact on highways with no new drainage header outside the footprint of the building.

The water installation within the hotel has been designed in compliance with BREEAM guidelines to minimise water consumption thereby helping to reduce the demands placed on the drainage infrastructure.

The principle source of waste water is the hotel guest room comprising W/C's, showers & sinks. Other back of house areas that will produce waste water include staff sinks, W/C's, refuse area wash down and air conditioning condensate.

The hotel vacuum drainage system consists of multiple vacuum circuits that pump waste water under negative pressure back to a centralised vacuum collection plant. 2 centralised vacuum collection units will be located at -B5 level with multiple vacuum circuits serving levels -B4 and -B5. The vacuum collection units will discharge directly into the upgraded existing sump tank.

From the upgraded existing sump tank waste water is pumped through the existing rising main where it is discharged into the sewage utilities network. The existing sump pumps will be replaced to allow for the increase in flow and to ensure resilience will be controlled in a duty / standby operation. An additional standby pump will be stored ready for replacement in the case of one pump failure while the system can remain operational. The flow rate from the pumps will not exceed the Thames Water permitted discharge rate of 11l/s



A separate dedicated static emergency pump is proposed which will have the capability to pump waste from the sump tank to street level, via a separate dedicated pipe route, where a mobile sewage tanker can be positioned if required. This pump will be controlled under manual operation in the unlikely event that both the main sump pumps fail concurrently. The pump will have a bypass back to the main sump tank to allow the emergency system to be tested regularly and as specified in the O&M manuals.

The main sump pumps and the static emergency pump will be provided with 2 hours UPS backup at full capacity in the event of mains power failure. In addition, a 32-amp 3 phase socket will be included at street level which will be connected to the main and emergency pump control panel. With manual switch over this will allow a mobile backup generator to provide power at street level if required to allow operation of the pumps during a prolonged period of power outage.