1. Proposals Summary

The Royal Free Hospital – Imaging department replacement project involves refurbishment of some of the treatment rooms, control rooms and ancillary spaces that are part of the Imaging department (Ground floor). Mainly the works include:

Internal works:

- Replacement of 3 units of X-ray, 1 unit of MRI and 3 units of CTs.
- Complete renovation of all finishes in treatment rooms, control rooms and ancillary areas adjacent to those treatment rooms.
- Replacement of furniture, IPS panels and doors.
- Replacement of sanitaryware with new units that comply with the current HBN and HTM regulations and are aligned with the hospital Infection Control and Prevention guidelines.
- Upgrade to M&E services in these areas (replacement of the lighting with more efficient units and upgrading the pipework and ventilation system to a more efficient and sustainable equivalent).

Various new plants located externally on different levels of the roof:

- **Plant 1st level**. 4 new AHUs units: AHU-1.01, AHU-1.02, AHU-1.03 and AHU-1.04.
- **Plant 4th level.** 2 new chillers: CH-5.01 and CH-5.02. Including acoustic screen.
- **Plant 5th level.** 3 new Condenser units: CON-5.01, CON-5.02 and CON-5.03. Including acoustic screen.
- **Plant 5th level.** 3 new Chiller units: CH-5.01, CH-5.02 and CH-5.03 and GRP enclosure. Including acoustic screen and supporting structure.
- **Plant 5th level.** 1 new AHU units: AHU-5.01.Including acoustic screen and supporting structure.
- **Plant 5th level.** 2 units x Maternity Condensers relocated.

The refurbishment will require one work on the building facade: the vertical ducting joining AHU on 5th level roof with the 4 AHU units seat on first level roof including structural fixing to the façade.

2. Access

The refurbishment of the Ground floor has no significant impact on the public access within or around the hospital. Any construction works will be within the boundaries of the relevant floor with proper contractor's hoarding and protection.

The installation and lifting of the AHU and associated attachments will be through deliveries to site and lifted over the roof with crane which will be coordinated with the Hospital and the Trust Resilience team but shall not have any influence on patient access and with no, or minimal, impact on the traffic flow around the hospital.

Future maintenance access to the new roof plant is from within the existing hospital via existing restricted-access routes and will be available only to maintenance personnel.

3. Plant Summary

The works include the creation of a new plant room, and provision of AHU and air source heat pump equipment, located on the 4th floor roof above H West plantroom, along with the replacement of 2 No AHUs located at first floor level currently serving the Imaging department at Ground Floor. The plant room would house the heating and cooling infrastructure, buffer vessel, pumps, pipework associated with providing the Air tempering.

The new centralised AHU will be provided at roof level to serve 4 No air tempering sub-AHU units at first floor level. The fog and reheat coils to the AHUs shall be served via Steam-to-LTHW new plate heat exchangers within the plant room with the steam distribution extending from the existing infrastructure within H West plant room below. The sub-AHU cooling coils shall be served by new packaged chiller units located outside of the new plant roof. The chillers shall be provided with acoustic screening, in line with the atmospheric plant noise report undertaken and issued by RSK Acoustics.

The fresh air intake and extract air discharge from the new centralised air handling unit ventilation system shall discharge to atmosphere via new external louvres. Each of the fresh air and extracted air discharge systems shall be installed with new duct mounted acoustic attenuators, in line with the atmospheric plant noise report undertaken and issued by RSK Acoustics.

The MRI 3 scanner shall be provided with chilled water from 2 No new packaged air-cooled chillers located externally to the H West plant room at 4th floor level. The MRI chillers shall run in a duty/standby configuration to provide ‘N+1’ resilience to the MRI service. The chillers shall be provided with acoustic screening, in line with the atmospheric plant noise report undertaken and issued by RSK Acoustics.

It is also proposed to install variable refrigerant flow (VRF) systems to serve the space heating and cooling to ancillary spaces, and technical/equipment rooms. There shall be 2 No VRF systems serving technical/equipment rooms which shall run in a duty/standby configuration to provide ‘N+1’ resilience, without the need to pepper the roof spaces with heat rejection equipment.

The external condensers shall be provided with acoustic enclosure, in line with the atmospheric plant noise report undertaken and issued by RSK Acoustics.

The proposed external plant is to be supported via a purpose designed roof support frame raised above the existing roof finish.

An acoustic survey was carried out to determine the background noise level at the neighbouring properties. The ventilation plant will be designed to meet the design criteria as set out by the acoustician based on the planning requirements and the environmental health requirements. The units will be specified with casings with excellent sound reduction performance if necessary so as to minimise noise breakout. Suitable in-duct sound attenuators will be fitted similarly.