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BLOOMSBURY SQUARE, LONDON

OUTLINE MEP STRATEGY

LISTED BUILDING CONSENT

REVISION P02

Document History

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S4	P01	20 July 2022	First issue	MT	MLC
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CONTENTS

1.0 INTRODUCTION

1.1 Project Overview

This document considers the Mechanical, Electrical and Plumbing Health Services works in support of the Listed Building Consent application for the conversion within Levels B1 to L10. The intent is to undertake the works in 3No separate phases.

Detailed in Appendix 1.0 are a set of drawings, which describe the final services arrangements for the following:

- Heating and cooling pipework
- Ventilation ductwork
- Above ground public health services
- High level electrical services, including lighting, fire alarm and containment
- Low level electrical services.

1.2 The Building

Although the building was constructed in the 1920's, with the exception of the below ground drainage the Mechanical Electrical & Plumbing (MEP) services were consented in 2001, constructed in 2002-3 and then a further refurbishment on a number of the floors in 2020. All of the floors are currently air-conditioned with 4-pipe fan coil units providing heating and cooling and the intention is to adapt this function in the write-up areas. It is envisaged that the lab-enabled areas will also be air-conditioned.

The intention of this project is to insert a life science function into the building (50% office & 50% lab-enabled) and re-use as much of the current MEP installation as possible. The life science function will require increased ventilation to be provided with air handling units in the atria and fume exhaust fans & flues on the roof.

2.0 ADAPT, REMOVE & RE-USE OF EXISTING SERVICES

The intent is to adapt the existing MEP services, which have been designed for office use to a blend of laboratory and offices usage. 50% of the building is to be office write-up and the intent is to adapt and re-use the services, such as lights, fan coil units etc. The remaining 50% of the building is enabled for future laboratory usage and as such will be left as a shell, with services available for future connection. The following works are envisaged;

2.1 Office Write-Up

- The fan coil units providing heating & cooling will be re-used elsewhere in the building.. This may involve slight adjustments to suit the new locations
- The lighting & emergency lighting system will be re-used. This may involve slight adjustments to suit the new locations
- The fire alarm system will be re-used, with local detectors adjusted to suit the new layout
- The power containment system will be adapted to suit the new locations
- The ventilation ductwork in the risers will be retained in the risers and replaced on the floors to suit the new configuration
- The heating and cooling pipework will be drained down and then replaced with new pipework around the perimeter to suit the new layout. New heat meters will be installed in the risers.

2.2 Laboratory Enabled

The laboratory enabled areas will be cleared of existing services, with most elements recycled or re-used elsewhere in the write-up areas. The only services remaining will be background lighting and fire-alarms. Thereafter a future Tenant will fit-out with new fan coil units, ventilation and lighting to serve the laboratory requirement. The fire alarm systems will be adapted.

3.0 BUILDING SERVICES STRATEGY

3.1 MEP Design Strategy

The new MEP installations shall be designed to:

- Provide a robust and resilient installation, capable of maintaining the specified internal environment
- Be energy efficient and minimise fossil fuel use
- Serve the range of uses and be adaptable to accommodate changes to tenancies
- Be simple to operate and maintain
- Be quiet in operation to minimise external and internal noise.

All MEP services installations will be optimised to limit energy use whilst delivering an optimal environment for occupants and building use. The building will be well measured so that in-use energy can be monitored and be accessible.

3.2 Description of Works

The existing building services will be adapted to CAT A for the write-up areas and shell & core for the laboratory enabled areas. The following description of works will be undertaken by the Landlord:

- Retain the incoming mains electrical supply and LV distribution to tenanted areas
- Retain the incoming water supply serving central landlord water storage tanks and booster to serve tenanted areas
- Retain the ducts, containment and a Comms Intake Room for incoming voice and data services
- Heating provided by existing central gas fired boiler plant, but supplemented by new air source heat pumps to reduce carbon emissions
- Cooling provided by existing central chillers and cooling towers. The systems will be retained other than the chillers will be replaced by heat pumps and cooling towers by dry air coolers.
- Chilled water & heating pipework to each tenant area, valved and metered at riser
- Laboratory ventilation provided by new central air handling units in the atria, positioned above the lifts and stairs
- Adapt the services to toilets on L7 and provide new toilet services on L3 & L1
- New services to toilets and changing in Level B1.
- Adapt the existing general supply / extract ventilation to each tenant area
- New Cat 5 Lab cold water & domestic cold water to each tenant area, valved and metered at riser
- Adapt the existing primary power distribution systems
- New power busbar risers and distribution board(s) to each tenant area & common areas

- Adapt the central fire alarm and detection system
- New above ground laboratory drainage provided
- Adapt the existing central building management system
- New fume exhaust discharge stacks, fans and ductwork distribution to the perimeter of the tenant area, where it will be capped
- New disabled refuge communication system
- Adapt the existing CCTV and access control
- New metering (electrical, water and heat)
- New Generator; Back up of Landlords life safety supplies and part-laboratory functions
- Adapt the existing Lighting & Emergency Lighting to Write Up and new background lighting to laboratory areas
- Adapt automatic addressable fire detection and alarm system (category L2) to be provided to all areas.
- New ventilation to specialist gas and chemical rooms in the Loading Bay.

3.3 Lab Enabled Areas

The area designated for laboratory function will be left as a shell, but with Landlord MEP Services capped at the perimeter for future fit-out by the Tenant. It is the design intent that the areas will be heated and cooled by 4-pipe fan coil units located in the ceiling with mechanical ventilation provided by roof mounted air handling units. A suspended ceiling is assumed in the laboratory function, but exposed services are envisaged in the write-up / office function. It should be noted that the MEP Concept Design Drawings indicate the design intent following a tenant fit-out.

Where services are currently located in an area designated as lab enabled, the existing MEP services will generally be stripped out. This is because the exact function of the space can only be determined by the incoming tenant. However, consideration should be given as to how the adjacent Write-Up Area's existing services are retained, as they are typically served from the Lab Enabled Area.

Detailed below are the various interface strategies for the MEP services between Landlord and Tenant in the Lab Enabled Areas;

- 2 pipe chilled water valved connections will be capped at the riser for future connection by the Tenant. The service will be metered by the Landlord.
- 2 pipe heating water valved connections will be capped at the riser for future connection by the tenant. The service will be metered by the Landlord.
- Mechanical fresh air and extract ventilation will be provided by the Landlord, with capped connections at the perimeter. At the point of interface, Constant Air Volume (CAV) boxes will be provided to regulate the specified airflow.
- Fume exhaust ductwork will be capped at the perimeter for future connection by the Tenant. This ductwork will form part of a central fume exhaust system.
- Potable cold water pipe connection will be capped at the perimeter for future connection by the Tenant. It is envisaged that hot water will be generated by the Tenant by local direct electric water heaters.
- CAT 5 laboratory cold water will be capped at the perimeter for future connection by the Tenant.
- Provision for lab gases shall be within each Tenant demise. Any lab gas systems shall be provided during the Tenant fit out. It is recommended that any lab gas systems stored internally are housed within proprietary fire-rated gas safety cabinets.
- LN2 storage will be within each Tenant demise. It is anticipated that Tenants will have dedicated dewars/storage vessels that will be filled by Goods entrance from a service provider's vehicle. For safety, provision will be made within the lift controls to enable LN2 vessels to be transported between floors without the need for an occupant in the lift car.
- Building Management System (BMS) touch screen user controls in the mechanical riser including graphical layout overview. Tenants can also access controller via web browser as part of Cat B fit-out.
- Below ground drainage connections for laboratory function will be provided at regular intervals. The drainage will be routed through the floor below for connection into the main drainage stacks.
- Power supply to each tenancy will be metered by the Landlord. A dedicated tenant distribution board will be provided in the riser. An essential services supply will be provided, which will be backed by the Landlord's standby generator.
- Lighting and emergency lighting will be provided to illuminate the shell space, but will be required to be upgraded by the Tenant.
- Fire Alarm; Automatic addressable fire detection and alarm system (category L2) to be adapted to all areas.
- Surveillance and Intruder alarm; No systems installed by base build in Tenant demises. Part of Tenant fit-out, if required.
- Access Control system provided on the stair door at every level
- Landlord video intercom handset located at entrance to floorplate with spare cable length to locate on a future tenant reception desk.
- Fully distributed fibre to each floor in the tenant comms riser, with at least 2No providers.
- Space allocated at roof level and in riser for future tenant plant.

3.4 Central Plant Arrangements

The rational for the additional roof plant is described in both text & images within the Corstorphine & Wright Application for Listed Building Consent Document, Section 4.2 Roof Plant. The locations of the plant are described in our drawing: L3221-KJT-ZZ-R-DR-M-5701-S2-P01

In support of these alterations is the following narrative:

1. Fume Exhaust Fans & Flues

   Located on the external terrace overlooking Bloomsbury Square are 4No fume exhaust fans / flues, which are required as a safety system to safely disperse diluted chemicals from fume cupboards within the building. The exact size and position of these fans have been determined by detailed wind dispersion modelling which is described in the Air Quality Report, produced by CPP.

2. Air Source Heat Pumps

   As part of the sustainability strategy for the building, the intent is to install air source heat pumps to produce low carbon heating and cooling and therefore significantly reduce the carbon emissions from the existing gas fired boiler plant. A single air source heat pump will be integrated within the existing plant enclosure on the roof in the north east quadrant, 6 new heat pumps located in Level B2 and the existing cooling towers on Level 10, will be replaced by dry air coolers.

3. Standby Generator

   The intent is to replace the 3 No existing standby generators with a single unit in the Loading Bay. The 3No 150mm dia flues, will be replaced by a single 400mm dia flue, terminating on the Roof in a similar position. Refer to the Air Quality Report produced by CPP, for analysis on the safe discharge of fumes.

4. Atria Air Handling Units

   To support the additional air requirements of the laboratory function, 4No new air handling units will be inserted into the atria at high level above the existing stairs and lifts. These units will provide both supply and exhaust air to the proposed laboratory lettable areas.

5. Replacement Air Handling Units

   The 4 No existing air handling units which currently serve the office function, do not have any heat recovery function. From an energy efficiency perspective, the intent is to replace the existing units with new ones, which will incorporate heat recovery and be able to accept heat from the air source heat pumps.

6. Future Tenant Plant

   As the existing locations under the ETFE Roof for tenant plant are insufficient in area terms, as seen by the positioning of the Sainsbury's Plant on the Terrace. The intent is to create a screen along the terraces to visually hide the tenant plant. This plant will be required for both office and laboratory functions.

7. Additional Louvres in Elevations

   Additional louvres will be required in the facades to support both office and laboratory functions. Following pre-app discussions, they were minimized as much as was possible. They are highlighted within the Planning Application and are located at either Level B1 or Ground Floor.

4.0 ON FLOOR SERVICES ARRANGEMENT

4.1 9th & 8th Floors (Phase 1)

The 9th & 8th Floors will be converted to CAT B offices and amenity spaces. Currently the 8th Floor is a shell, whilst the 9th Floor is currently fitted out as a marketing suite. It should be noted that the current ventilation strategy for both floors will be adapted. At present fresh air and exhaust ventilation is generated from the existing air handling unit on the South Roof Plantrooms. This ductwork will be stripped out and a local Mechanical Ventilation Heat Recovery (MVHR) will be installed on the 8th Floor and re-connected to existing ductwork up to the 9th Floor. A new louvre will be required to be discreetly positioned on the 8th Floor, under the external stairs.

Heating and cooling to the 8th Floor will be provided by local floor mounted fan coil units, connecting into pipework in the risers. New electrical services will be provided to the 8th Floor.

4.2 7th Floor (Incubator Floor: Phase 1)

The 7th Floor is currently a shell space with minimal services. The 7th Floor will comprise the Incubator facility, which will be fully fitted out and the Grow On facility which is a lettable unit of tenant laboratory spaces which will be fully fitted out.

The Incubator & Grow On Facilities will comprise of the following services:

- 4-pipe fan coil units delivering heating and cooling
- Mechanical ventilation to each space, comprising of ducted fresh air to the rear of the fan coils and a bell-mouth exhaust branch
- A fume exhaust system
- Laboratory CAT 5 water, potable water, local electric water heaters to sinks and wash hand basins
- Laboratory drainage to sinks, appliances and wash hand basins
- Power and data to all laboratory benches and appliances
- New lighting, fire alarm and access control to all areas.

4.3 6th Floor (Phase 3)

The Sixth Floor will form part of Phase 3. It is currently occupied as an office and is fully fitted-out. However, in order to enable this space and the space above for laboratory function a number of works have to be undertaken during Phase 1. The phasing relates to when space becomes available when space becomes vacant. These are described below:

- Laboratory drainage from the lab enabled spaces in Level 7 needs to penetrate the slab and run at high level to new downpipes in risers within the Level 6 space.
- Laboratory supply, extract and fume ducts from the adjacent atria need to enter or abut the space and be capped off for future use.
- The current heating and chilled water pipes serving the 6th Floor need to have heat meters fitted in the risers to ensure compliance with the heat meter regulations.

During Phase 3, the following works are envisaged;

- The Write-Up Areas will be fitted out to CAT A. For the description, refer to Section 2.1 Office Write-Up
- The Lab-Enabled Areas will be fitted out to shell standard. For the description, refer to Section 2.2 Lab Enabled Areas.

4.4 5th Floor (Phase 1)

The 5th Floor is currently a fully fitted-out office. The intent is to retain as much of the office servicing as possible within the write-up areas, whilst enabling laboratory functions in the designated areas.

The works will comprise the following:

- The Write-Up Areas will be fitted out to CAT A. For the description, refer to Section 2.1 Office Write-Up
- The Lab-Enabled Areas will be fitted out to shell standard. For the description, refer to Section 2.2 Lab Enabled Areas.

4.5 4th Floor (Phase 3)

The Fourth Floor will be retained as an office and minor alterations are envisaged to lights and fan coil units to reflect an open-plan layout.

The Fourth Floor will form part of Phase 3. It is currently occupied as an office and is fully fitted-out. However, in order to enable this space and the space above for laboratory function a number of works have to be undertaken during Phase 1. These are described below:

- Laboratory drainage from the lab enabled spaces in Level 5 needs to penetrate the slab and run at high level to new downpipes in risers within the 4th Floor space.
- The current heating and chilled water pipes serving the 4th Floor need to have heat meters fitted in the risers to ensure compliance with the heat meter regulations.

Within Phase 3, the 4th Floor will be retained as an office and minor alterations are envisaged to lights and fan coil units to reflect an open-plan layout. The part of the Heritage Suite, which is demised to the Landlord, will require the 4 pipe fan coil units to be replaced with new units, valves and controls. It is assumed that the pipework can be retained.

4.6 3rd Floor (Phase 1)

The 3rd Floor is currently a fully fitted-out office. The intent is to retain as much of the office servicing as possible for the write-up areas, whilst enabling laboratory functions in the designated areas.

The works will comprise the following:

- The Write-Up Areas will be fitted out to CAT A. For the description, refer to Section 2.1 Office Write-Up
- The Lab-Enabled Areas will be fitted out to shell standard. For the description, refer to Section 2.2. Lab Enabled Areas.
- The part of the Heritage Suite, which is demised to the Landlord, will require the 4 pipe fan coil units to be replaced with new units, valves and controls. It is assumed that the pipework can be retained.

4.7 2nd Floor (Phase 1)

The 2nd Floor is currently a fully fitted-out office. The intent is to retain as much of the office servicing as possible for the write-up areas, whilst enabling laboratory functions in the designated areas.

The works will comprise the following:

- The Write-Up Areas will be fitted out to CAT A. For the description, refer to Section 2.1 Office Write-Up
- The Lab-Enabled Areas will be fitted out to shell standard. For the description, refer to Section 2.2 Lab Enabled Areas.

4.8 1st Floor (Phase 2)

The 1st Floor will form part of Phase 2. It is currently occupied as an office and is fully fitted-out. The existing services are in a poor condition. However, in order to enable this space and the space above for laboratory function a number of works have to be undertaken during Phase 1. These are described below:

- Laboratory drainage from the lab enabled spaces in Level 2 needs to penetrate the slab and run at high level of Level 1 to new downpipes within the Level 1 space.
- Laboratory supply, extract and fume ducts from the adjacent atria too enter the space or abut and capped off for future use.
- The current heating and chilled water pipes serving the 1st Floor need to have heat meters fitted in the risers to ensure compliance with the heat meter regulations.

During Phase 2, the works will comprise the following:

- The Write-Up Areas will be fitted out to CAT A. For the description, refer to Section 2.1 Office Write-Up
- The Lab-Enabled Areas will be fitted out to shell standard. For the description, refer to Section 2.2 Lab Enabled Areas.

4.9 Upper Ground (Phase 1 & 2)

4.9.1 Unit 1 & Unit 2 Offices (Phase 1 & 2)

These units are currently fitted-out as offices and will be re-used as offices. The MEP installation dates from and should be able to function for a further 10 years. The works will comprise the following:

- Heating and chilled water valves at the fan coil units to be upgraded to PICV's and new controls fitted
- Re-commissioning of ventilation, heating and cooling within these areas
- Re-commissioning and testing of all electrical services within these areas
- Drainage from lab-enabled areas above to be integrated within the existing services. This may require re-configuration of existing pipework and ductwork to enable an efficient ceiling void
- It is likely that the ceiling will need to be replaced within this area. Allowance for new lighting
- New heat and chilled water meters
- New electrical meters for the distribution board.
- New heat meters for heating and cooling pipework.

4.9.2 Loading Bay

The Loading Bay will be modified to undertake the following works:

- 3No existing circa 100kW standby generators, will be stripped out. These units are now redundant. In their place will be located a new standby generator for the Landlord. This generator will provide essential power to life safety and laboratory tenants distribution boards. The existing flues to the roof will be stripped out and in the same location, a new 400mm dia flue will be routed to roof in the same position as the existing flues. New ductwork will be installed within the Loading Bay and new louvres are required on the Bloomsbury Square elevation to additional ventilation.

- New louvres will be created on the Bloomsbury Square elevation to facilitate a future liquid nitrogen store. New ducted ventilation will be provided to the specialist gas and chemical rooms in the Loading Bay.

4.10 Basement B1

The alterations proposed to Basement Level 1 involve the following MEP works;

- New services to the relocated North Core shower room (containing 7 showers and associated facilities)
- New services to a new protected corridor route to the main lobby
- New services to two new toilet blocks in the central lift area.

These services will include;

- New lighting, access control and fire alarms
- New extract ventilation ductwork, fans and grilles
- New radiators and LTHW pipework
- New plumbing services

4.11 Basement B2

New drainage from B1 above will be integrated into the existing foul drainage stacks at just above the floor of B2. The foul drainage outflows for the building will not be exceeded, when compared against the current arrangement. This is because any increase in outflows from laboratory sinks will be more than offset by the significantly reduced occupancy that is associated with laboratories, when compared against offices.

A new CAT 5 water tank will be inserted into the current water tank plantroom and new heat pumps will be installed in the chiller plant room in place of the existing chillers.

5.0 ENERGY & SUSTAINABILITY

5.1 Introduction

The existing central plant will remain operational throughout the conversion works in order to maintain services to the existing Tenants. However, it is the intent to significantly improve the buildings energy and sustainability credentials by implementing a number of energy efficiency measures.

As the building is currently air-conditioned and no new areas of air-conditioning are being created, there is no requirement to submit a statement demonstrating how the cooling hierarchy has been followed.

5.2 Improved Energy Metering & Analytics

The building will be well measured to enable operation to monitored, analysed and optimised. Smart metering and energy management systems are proposed to enable all energy use to be monitored, analysed and managed through the life of the building. An automated metering and targeting (AM&T) system.

All meters shall be compatible with the BMS and data acquisition system for automatic collation, recording, monitoring and billing of metering data.

Allowance will be made within the system for the monitoring and recording of all water, electricity, gas and heat meters. Meters will be grouped by area and end use, and aggregated into virtual meters such that energy consumption can be viewed by end use (e.g., total lighting consumption, or total heating consumption) or by area. The virtual meters are to be easily re-configurable by the FM Team such as to allow custom meter groupings.

5.3 Carbon Emission Reduction

5.3.1 Demand Reduction (Be Lean)

As the building is a conversion project, there is little scope to improve the buildings fabric beyond the current U-values. It would be uneconomic to add further insulation to the walls or to replace glazing units with the new double-glazed units.

The existing central plant will remain operational throughout the construction works in order to maintain services to the existing Tenants. However, it is the intent to significantly improve the buildings energy and sustainability credentials by implementing the following measures:

- Optimise Variable Speed Drives (VSDs)

Although the secondary LTHW & CHW pumps have VSDs fitted, it appears that they do not operate in variable flow mode due to balancing and control issues. The intent is to address this by changing the problematic valves and implementing a new control strategy. The VSD's operation will be assisted by fitting Pressure Independent Control Valves (PICV) to all the fan coil units.

- Heat Recovery to AHUs

The 4No supply air handling units do not incorporate heat recovery from the exhaust air. This could be achieved by replacing the supply air handling units and extract fans and introducing new units with heat recovery coils. It should be noted that these air handling units were installed in 2002/3 and are nearing the end of their life and require replacement.

- Reduce Lighting Energy

Lighting systems will be upgraded across the conversion floors to LED type of at least 110lm/W. They will be installed with associated lighting controls and daylight dimming to further reduce their energy usage.

5.3.2 Heating Infrastructure (Be Clean)

Utilising the London Heat Map, it can be seen that there are no existing heat networks in the vicinity of the building. There are a number of potential heat supply sites located nearby, however, there is no infrastructure in place to bring heat to the building.

5.3.3 Renewable Energy (Be Clean)

The incorporation of low and zero carbon technologies (LZCT) will reduce the demand on finite natural energy sources and by reducing the energy demand of the proposed development there will be both beneficial effects for the environment and a reduction in running costs.

The intention is to insert heat pumps, in place of the chillers, to generate low carbon heating and cooling. The heat pumps will be used to supply the majority of the buildings heating and hot water demand with the existing gas boilers being used to supply the remaining demand.

5.3.4 Estimate of Carbon Reduction

In line with guidance contained with the Greater London Authority Supplementary Planning Guidance document 'Energy Assessment Guidance 2022'[1] the building has been modelled using the Part L 2021 methodology with the carbon factors changed using the updated 'Carbon Emissions Reporting Spreadsheet 2022'.

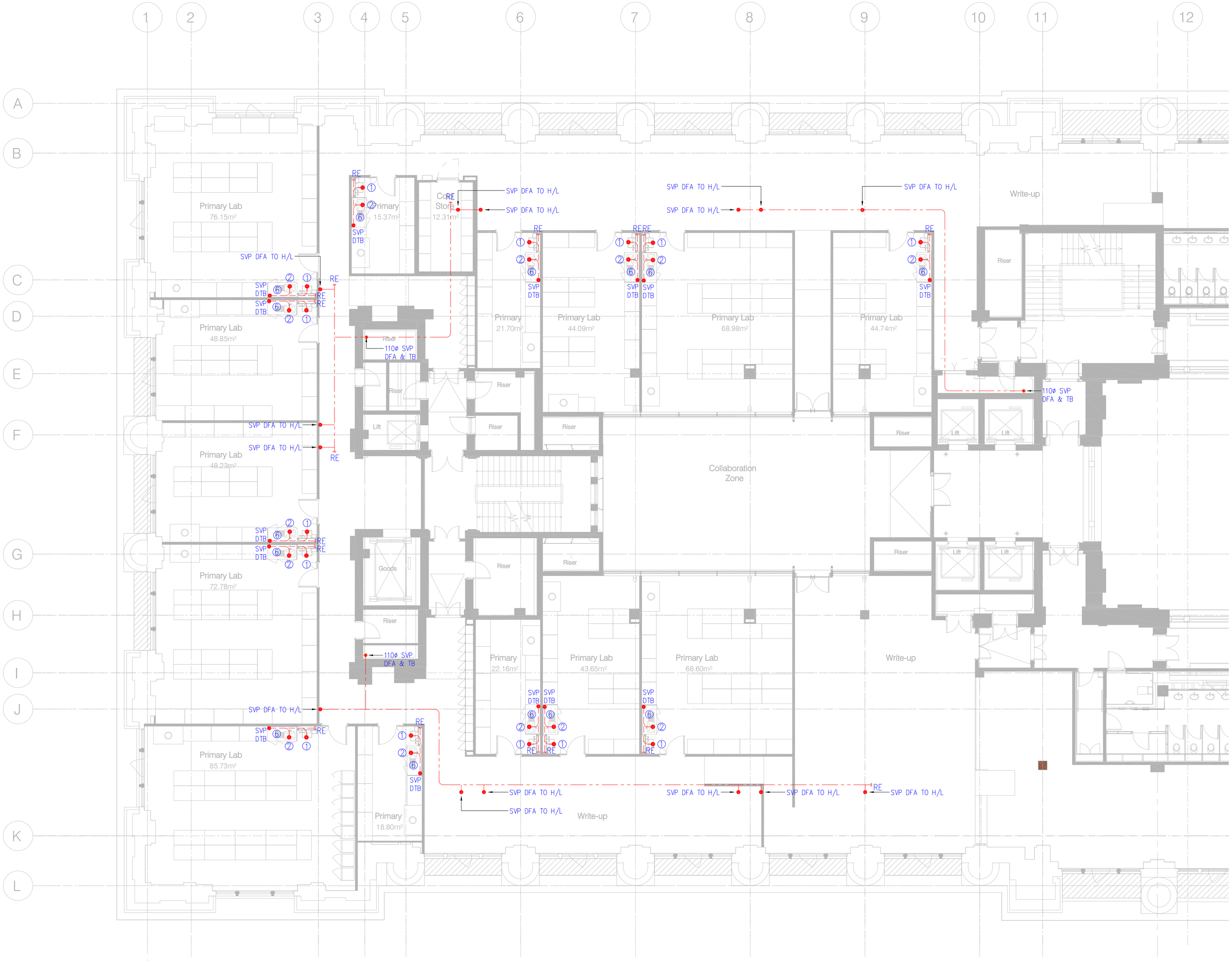
The conversion will be completed so that passive measures to reduce the energy demand are incorporated first. At the Be Lean stage, there will be a **15%** reduction in carbon emissions from the existing building by the installation of more energy efficient lighting systems and heat recovery on the ventilation plant. By the installation of an air source heat pump to supply a large proportion of the buildings heating demand, a further saving of **36%** has been achieved compared to the existing baseline of gas fired boilers supplying all of the buildings heating load. In total, there will be a **51%** reduction in carbon emissions compared to the baseline scheme.

	Regulated non-residential carbon dioxide savings	
	(Tonnes CO_2 per annum)	**(%)**
Be lean: savings from energy demand reduction	110.3	15%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	266.0	36%
Total Cumulative Savings	**376.3**	**51%**

[1] Energy Assessment Guidance – June 2022

APPENDIX 1.0

MEP CONCEPT DESIGN DRAWINGS



NOTES:

1. THE DETAIL ON THIS DRAWING IS SPECIFIC TO INTERNAL ABOVE GROUND DRAINAGE AND EXCLUDES BELOW GROUND DRAINAGE, SURFACE WATER DRAINAGE AND RAINWATER DRAINAGE.
2. THE COMPLETED SYSTEM SHALL BE A GRAVITY DRAINED SYSTEM UTILISING WHITE/GREY UPVC PIPEWORK AND FITTINGS TO DISTRIBUTE WASTE FROM ALL APPLIANCES LOCATED WITHIN THE BUILDING TO APPROPRIATE POP-UP CONNECTIONS FROM THE BELOW GROUND DRAINAGE SYSTEM DETAILED BY OTHERS.
3. ALL NEW FINAL APPLIANCE CONNECTIONS WILL BE WHITE MUPVC INCORPORATING MUPVC TRAPS FOR SINK, BASIN AND URINAL CONNECTIONS AND PROPRIETARY UPVC PAN CONNECTORS FOR WC CONNECTIONS.
4. ALL TRAPS TO BE OF THE ANTI-SYPHON TYPE TO PROTECT TRAP CONNECTIONS FROM LOSS OF WATER SEAL.
5. ALL MAIN SOIL/WASTE VENT PIPES SHALL RISE TO ROOF LEVEL AND TERMINATE WITH A VENT COWL BEFORE DISCHARGING TO ATMOSPHERE (NOTE THAT SOME VENT PIPES WILL BE COLLECTED TOGETHER WITHIN THE UPPER FLOOR CEILING BEFORE RISING TO ROOF LEVEL TO REDUCE NUMBER OF ROOF PENETRATIONS).
6. WHERE INDICATED ON THE DRAWINGS APPLIANCES TO BE VENTED USING SUITABLY SIZED AIR ADMITTANCE VALVES.
7. FALLS ON SOIL WASTE PIPES AND VENT PIPES SHALL NOT FALL BELOW THE MINIMUM STATED IN BS EN 12056:2000.
8. SUITABLE ACCESS SHALL BE PROVIDE AND ALL CHANGES OF DIRECTION, AT EACH FLOOR LEVEL ABOVE BRANCH CONNECTIONS AND AT THE ALL POP-UP CONNECTIONS TO THE BELOW GROUND DRAINAGE.
9. WHERE PLASTIC PIPEWORK PASSES THROUGH ANY FIRE RATED WALLS, FLOORS, PARTITIONS OR CEILING A SUITABLY RATED INTUMESCENT FIRE SLEEVE/COLLAR SHALL BE INSTALLED IN ACCORDANCE WITH BS276 TO PROTECT THE PENETRATION.

Abbreviations:

1. 32x75mm DEEP SEAL MUPVC BOTTLE TRAP TO EACH WHB.
2. 42x75mm DEEP SEAL MUPVC TUBULAR TRAP TO EACH SINK.
3. 42x75mm DEEP SEAL MUPVC BOTTLE TRAP SERVING URINAL BOWL.
4. 110ø MULTIKWIC CONNECTOR TO WC PAN.
5. 32ø MUPVC WP.
6. 42ø MUPVC WP.
7. 50ø MPVC WP.
8. 82ø UPVC WP.
9. 110ø UPVC SP.
10. CLAY TRAP WITH 50ø MUPVC INLET & OUTLET.
11. 50ø INTUMESCENT FIRE COLLAR/SLEEVE.
12. 82ø INTUMESCENT FIRE COLLAR/SLEEVE.
13. 110ø INTUMESCENT FIRE COLLAR/SLEEVE.

Legend:

- PIPEWORK WITHIN CEILING VOID
- PIPEWORK AT HIGH LEVEL
- PIPEWORK AT LOW LEVEL
- PIPEWORK BELOW FLOOR SLAB

SVP	SOIL VENT PIPE	AAV	AIR ADMITTANCE VALVE
WVP	WASTE VENT PIPE		PIPEWORK FROM ABOVE
VP	VENT PIPE		PIPEWORK FROM HIGH LEVEL/LOW LEVEL
SP	SOIL PIPE		VENT PIPE
S/S	STUB STACK		STUB STACK
WP	WASTE PIPE	FA	FROM ABOVE
RE	RODDING EYE	FB	FROM BELOW
BC	BLANK CAP	TA	TO ABOVE
FFL	FINISHED FLOOR LEVEL	TB	TO BELOW
	ACCESS PIPE	HL	HIGH LEVEL
		LL	LOW LEVEL

SUIT- REV	DATE	DESCRIPTION	DRN	CHK
S2 - P01	01/08/2022	INFORMATION ISSUE	AG	MT

STATUS

FOR INFORMATION

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PROJECT INFORMATION			
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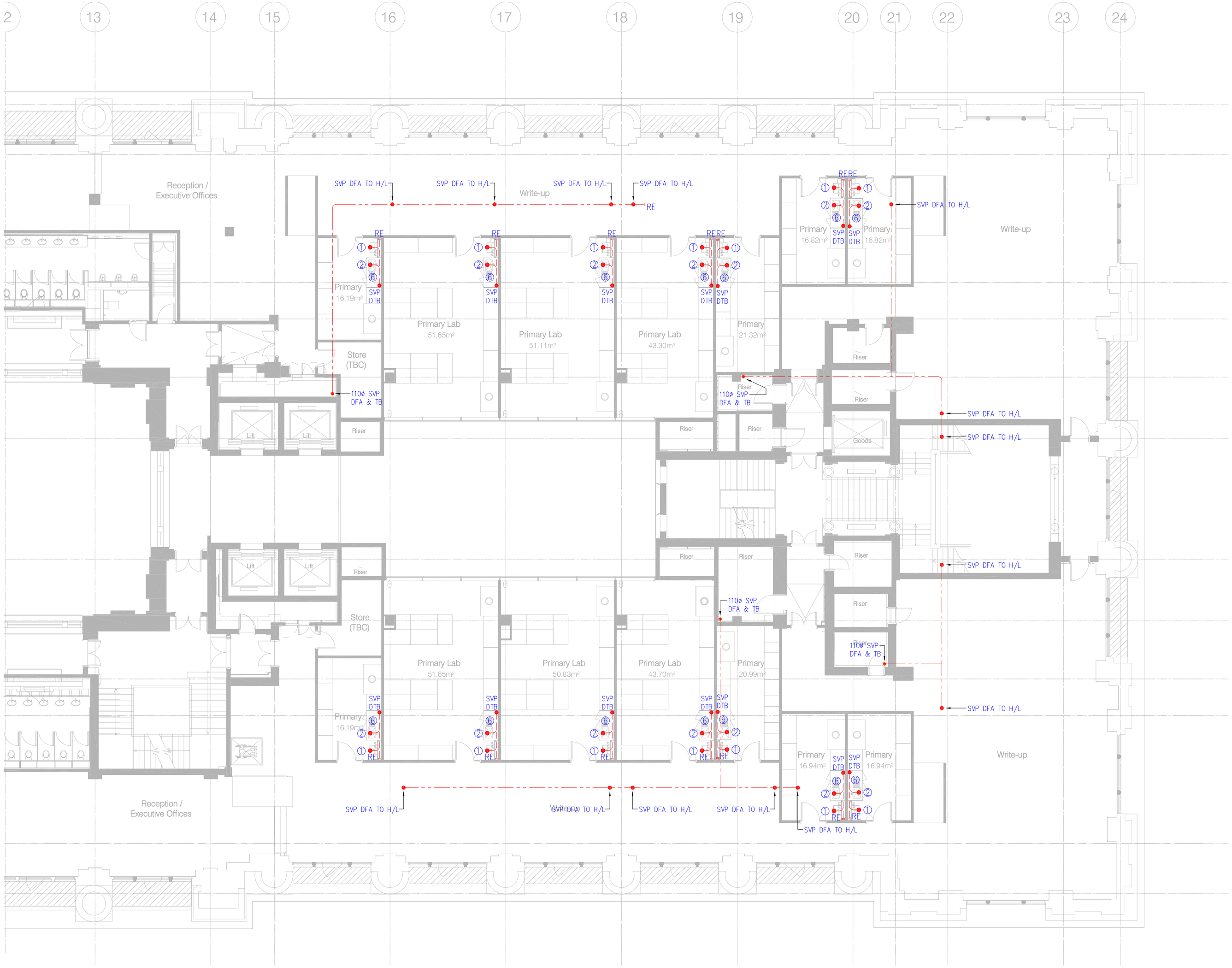
PROJECT	DEVELOPMENT LTD LONDON, WC1B 4DA		
DRAWING INFORMATION			
DRAWING TITLE	MECHANICAL SERVICES 1st FLOOR LAB DRAINAGE LAYOUT SHEET 1 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-01-DR-M-5201		S2-P01



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3. ALL NEW FINAL APPLIANCE CONNECTIONS WILL BE WHITE MUPVC INCORPORATING MUPVC TRAPS FOR SINK, BASIN AND URINAL CONNECTIONS AND PROPRIETARY UPVC PAN CONNECTORS FOR WC CONNECTIONS.
4. ALL TRAPS TO BE OF THE ANTI-SYPHON TYPE TO PROTECT TRAP CONNECTIONS FROM LOSS OF WATER SEAL.
5. ALL MAIN SOIL/WASTE VENT PIPES SHALL RISE TO ROOF LEVEL AND TERMINATE WITH A VENT COWL BEFORE DISCHARGING TO ATMOSPHERE (NOTE THAT SOME VENT PIPES WILL BE COLLECTED TOGETHER WITHIN THE UPPER FLOOR CEILING BEFORE RISING TO ROOF LEVEL TO REDUCE NUMBER OF ROOF PENETRATIONS).
6. WHERE INDICATED ON THE DRAWINGS APPLIANCES TO BE VENTED USING SUITABLY SIZED AIR ADMITTANCE VALVES.
7. FALLS ON SOIL WASTE PIPES AND VENT PIPES SHALL NOT FALL BELOW THE MINIMUM STATED IN BS EN 12056:2000.
8. SUITABLE ACCESS SHALL BE PROVIDE AND ALL CHANGES OF DIRECTION, AT EACH FLOOR LEVEL ABOVE BRANCH CONNECTIONS AND AT THE ALL POP-UP CONNECTIONS TO THE BELOW GROUND DRAINAGE.
9. WHERE PLASTIC PIPEWORK PASSES THROUGH ANY FIRE RATED WALLS, FLOORS, PARTITIONS OR CEILING A SUITABLY RATED INTUMESCENT FIRE SLEEVE/COLLAR SHALL BE INSTALLED IN ACCORDANCE WITH BS276 TO PROTECT THE PENETRATION.

Abbreviations:

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6. 42ø MUPVC WP.
7. 50ø MPVC WP.
8. 82ø UPVC WP.
9. 110ø UPVC SP.
10. CLAY TRAP WITH 50ø MUPVC INLET & OUTLET.
11. 50ø INTUMESCENT FIRE COLLAR/SLEEVE.
12. 82ø INTUMESCENT FIRE COLLAR/SLEEVE.
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Legend:

- PIPEWORK WITHIN CEILING VOID
- PIPEWORK AT HIGH LEVEL
- PIPEWORK AT LOW LEVEL
- PIPEWORK BELOW FLOOR SLAB

SVP	SOIL VENT PIPE	AAV	AIR ADMITTANCE VALVE
WVP	WASTE VENT PIPE		PIPEWORK FROM ABOVE
VP	VENT PIPE		PIPEWORK FROM HIGH LEVEL/LOW LEVEL
SP	SOIL PIPE		VENT PIPE
S/S	STUB STACK		STUB STACK
WP	WASTE PIPE	FA	FROM ABOVE
RE	RODDING EYE	FB	FROM BELOW
BC	BLANK CAP	TA	TO ABOVE
FFL	FINISHED FLOOR LEVEL	TB	TO BELOW
	ACCESS PIPE	HL	HIGH LEVEL
		LL	LOW LEVEL

SUIT- REV	DATE	DESCRIPTION	DRN	CHK
S2 - P01	01/08/2022	INFORMATION ISSUE	AG	MT

STATUS

FOR INFORMATION

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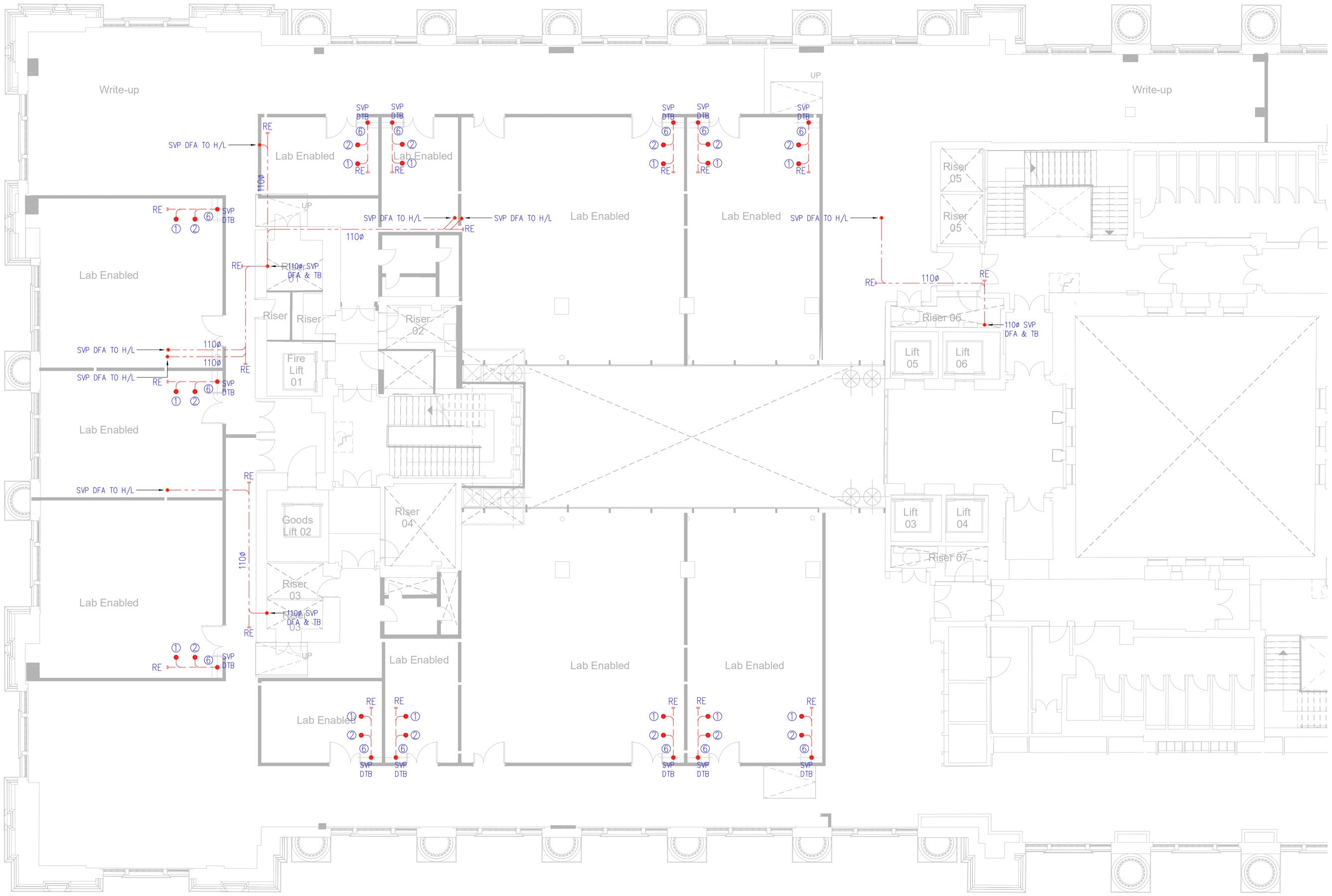
PROJECT INFORMATION

CLIENT	OXFORD VICTORIA HOUSE DEVELOPMENT LTD
PROJECT	LONDON, WC1B 4DA

DRAWING INFORMATION

DRAWING TITLE	MECHANICAL SERVICES 1st FLOOR LAB DRAINAGE LAYOUT SHEET 2 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-01-DR-M-5202		S2-P01



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SUIT- REV	DATE	DESCRIPTION	DRN	CHK
S2 - P02	01/08/2022	HIGH-LEVEL DRAINAGE UPDATE LAB ENABLED DRAINAGED ADDED	AG	MT
S2 - P01	20/07/2022	INFORMATION ISSUE	AB	AG

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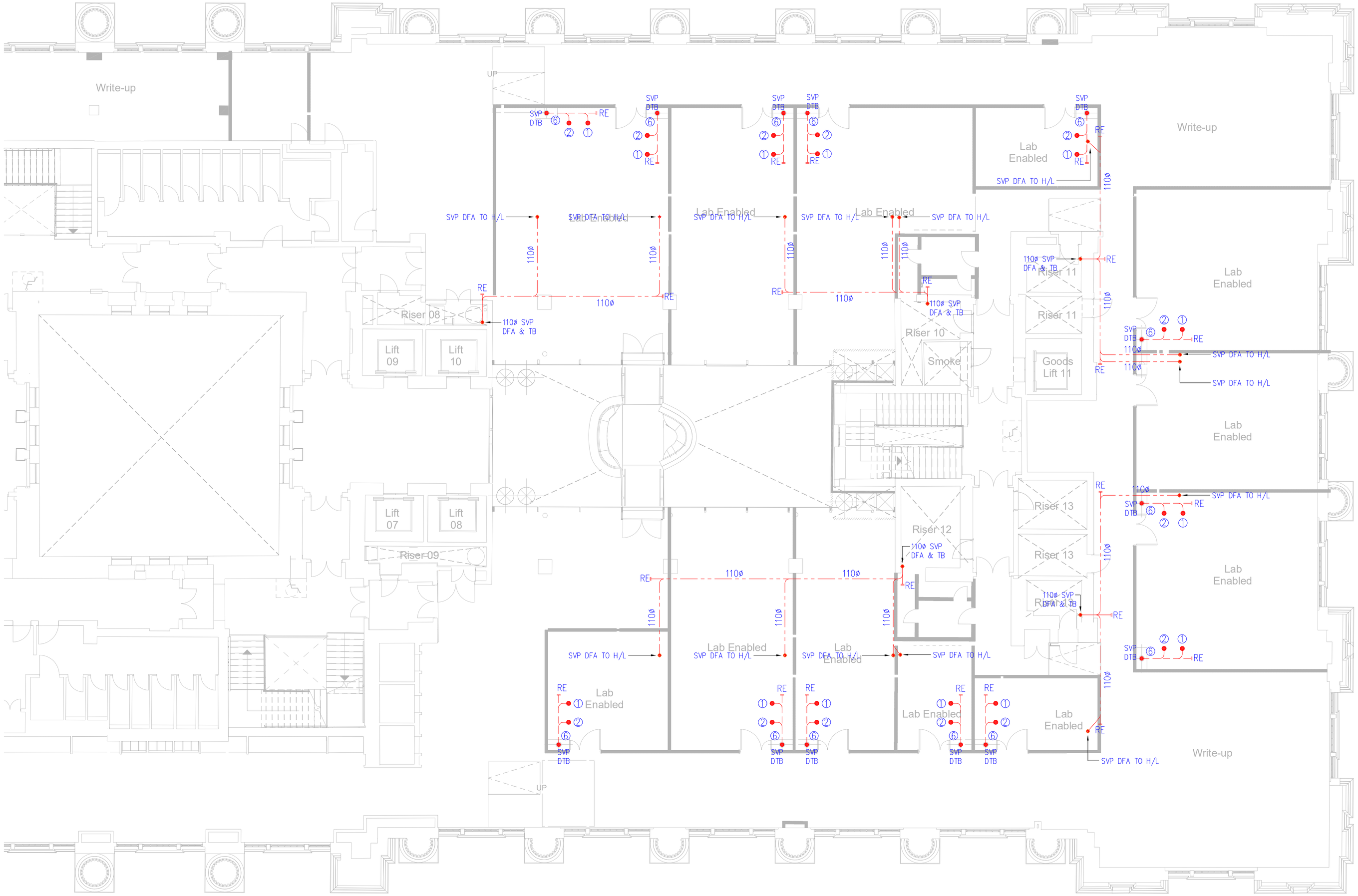
PROJECT INFORMATION			
CLIENT	OXFORD VICTORIA HOUSE DEVELOPMENT LTD		
PROJECT	LONDON, WC1B 4DA		
DRAWING INFORMATION			
DRAWING TITLE	MECHANICAL SERVICES 2nd FLOOR LAB DRAINAGE LAYOUT SHEET 1 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-02-DR-M-5201		S2-P02



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S2 - P02	01/08/2022	HIGH-LEVEL DRAINAGE UPDATE LAB ENABLED DRAINAGE ADDED	AG	MT
S2 - P01	20/07/2022	INFORMATION ISSUE	AB	AG
SUIT- REV	DATE	DESCRIPTION	DRN	CHK

STATUS

FOR INFORMATION

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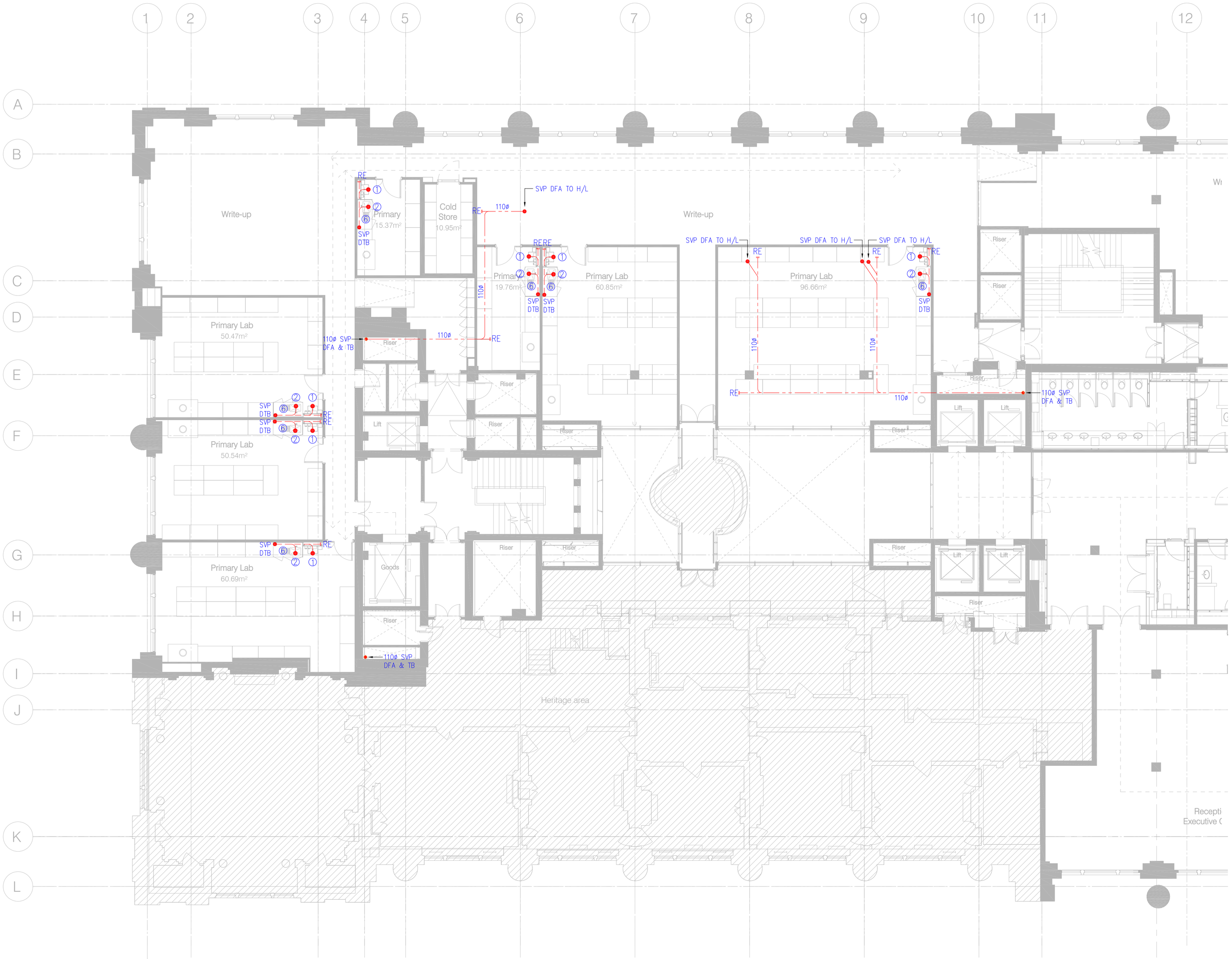
PROJECT INFORMATION	
CLIENT	OXFORD VICTORIA HOUSE
PROJECT	DEVELOPMENT LTD LONDON, WC1B 4DA

DRAWING INFORMATION			
DRAWING TITLE	MECHANICAL SERVICES 2nd FLOOR LAB DRAINAGE LAYOUT SHEET 2 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-02-DR-M-5202		S2-P02



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SUIT- REV	DATE	DESCRIPTION	DRN	CHK
S2 - P02	01/08/2022	HIGH-LEVEL DRAINAGE UPDATE	AG	MT
S2 - P01	20/07/2022	INFORMATION ISSUE	AB	AG

STATUS

FOR INFORMATION

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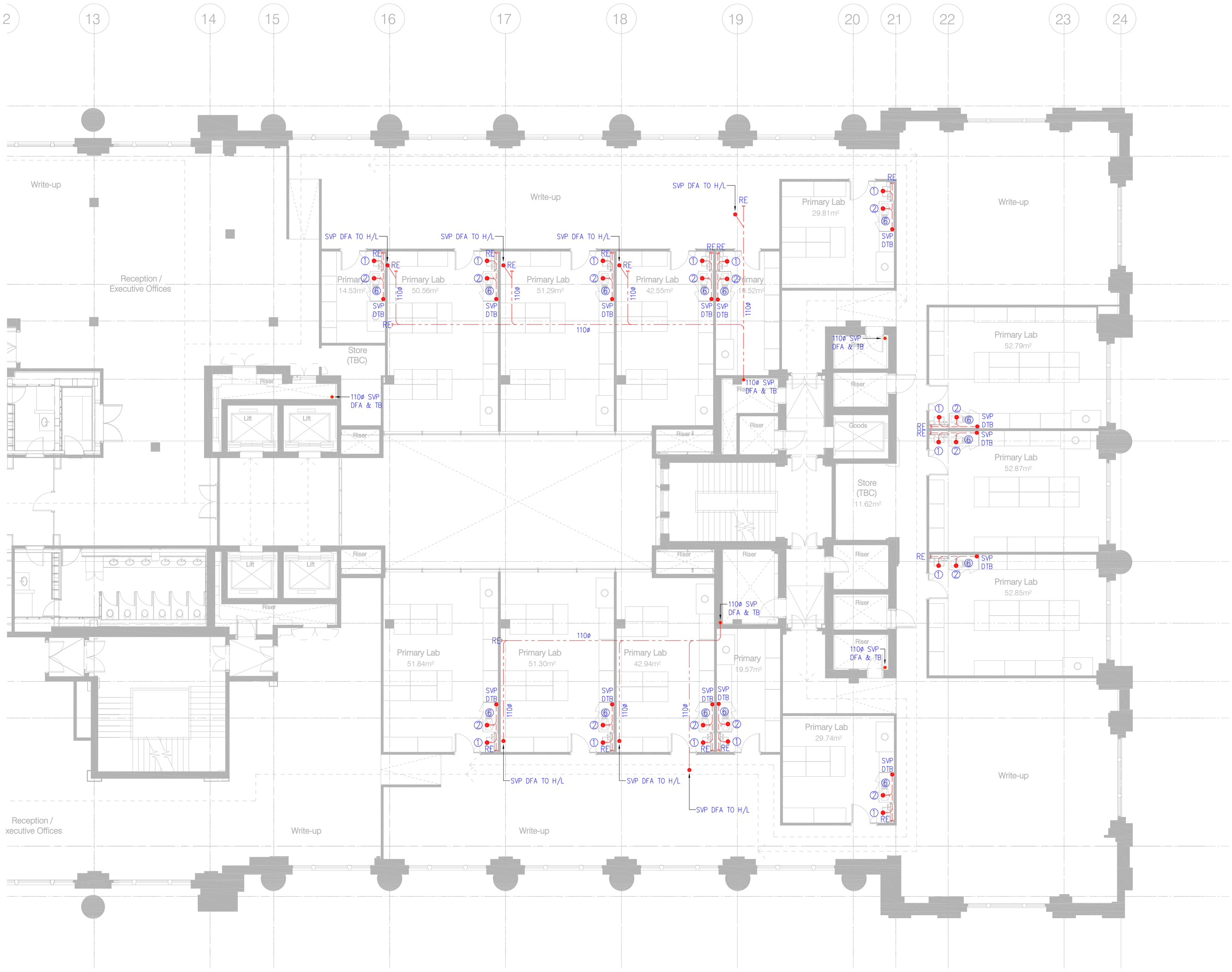
PROJECT INFORMATION	
CLIENT / PROJECT	OXFORD VICTORIA HOUSE DEVELOPMENT LTD LONDON, WC1B 4DA

DRAWING INFORMATION			
DRAWING TITLE	MECHANICAL SERVICES 3RD FLOOR LAB DRAINAGE LAYOUT SHEET 1 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-04-DR-M-5201		S2-P02



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SUIT- REV	DATE	DESCRIPTION	DRN	CHK
S2 - P02	01/08/2022	HIGH-LEVEL DRAINAGE UPDATE	AG	MT
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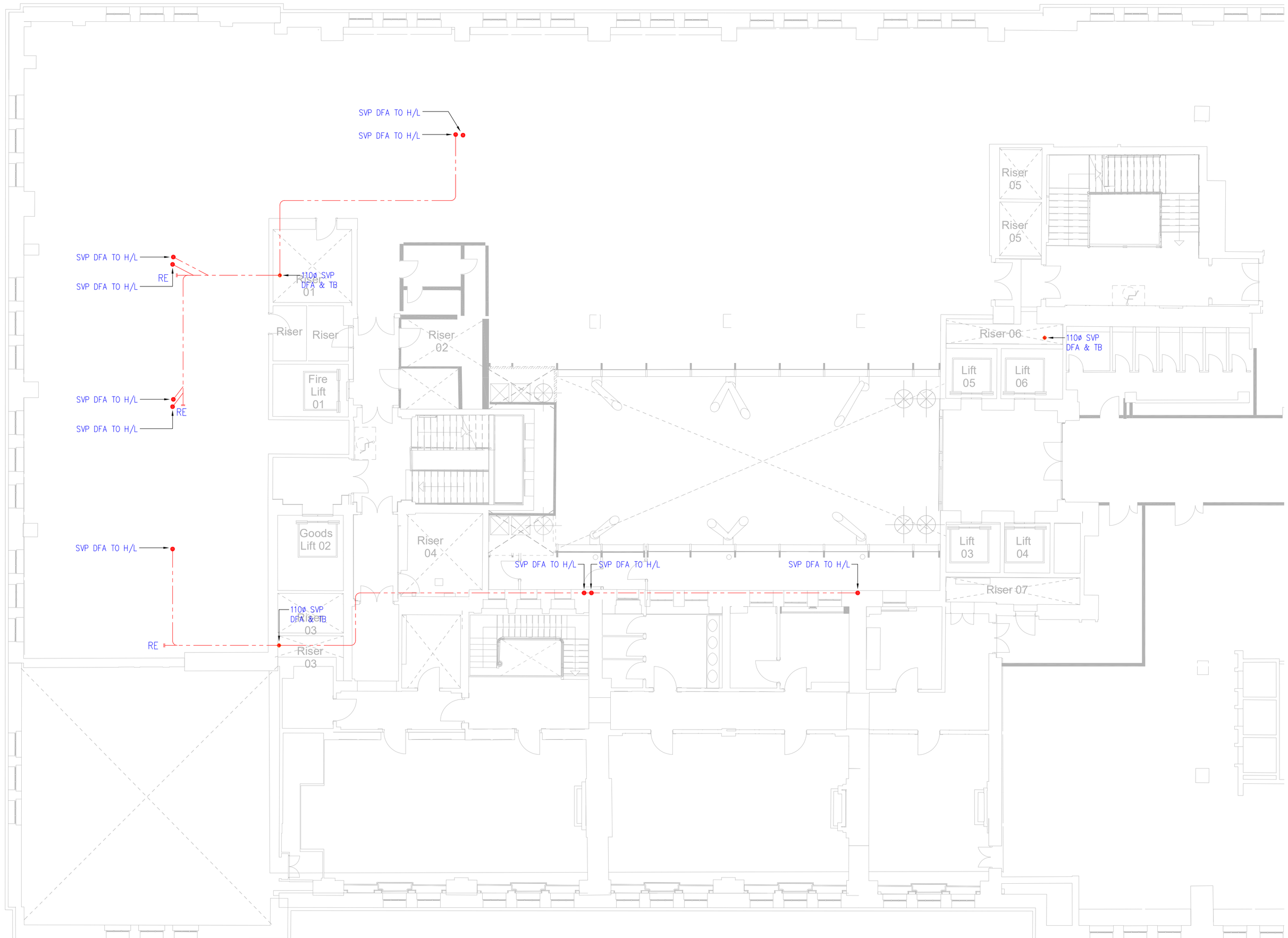
PROJECT INFORMATION	
CLIENT	OXFORD VICTORIA HOUSE
PROJECT	DEVELOPMENT LTD LONDON, WC1B 4DA

DRAWING INFORMATION			
DRAWING TITLE	MECHANICAL SERVICES 3rd FLOOR LAB DRAINAGE LAYOUT SHEET 2 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-04-DR-M-5202		S2-P02



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10. CLAY TRAP WITH 50ø MUPVC INLET & OUTLET.
11. 50ø INTUMESCENT FIRE COLLAR/SLEEVE.
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Legend:

- PIPEWORK WITHIN CEILING VOID
- PIPEWORK AT HIGH LEVEL
- PIPEWORK AT LOW LEVEL
- PIPEWORK BELOW FLOOR SLAB

SVP	SOIL VENT PIPE	AAV	AIR ADMITTANCE VALVE
WVP	WASTE VENT PIPE		PIPEWORK FROM ABOVE
VP	VENT PIPE		PIPEWORK FROM HIGH LEVEL/LOW LEVEL
SP	SOIL PIPE		VENT PIPE
S/S	STUB STACK		STUB STACK
WP	WASTE PIPE	FA	FROM ABOVE
RE	RODDING EYE	FB	FROM BELOW
BC	BLANK CAP	TA	TO ABOVE
FFL	FINISHED FLOOR LEVEL	TB	TO BELOW
	ACCESS PIPE	HL	HIGH LEVEL
		LL	LOW LEVEL

SUIT- REV	DATE	DESCRIPTION	DRN	CHK
S2 - P02	01/08/2022	HIGH-LEVEL DRAINAGE UPDATE LAB ENABLED DRAINAGE REMOVED	AG	MT
S2 - P01	20/07/2022	INFORMATION ISSUE	AB	AG

STATUS

FOR INFORMATION

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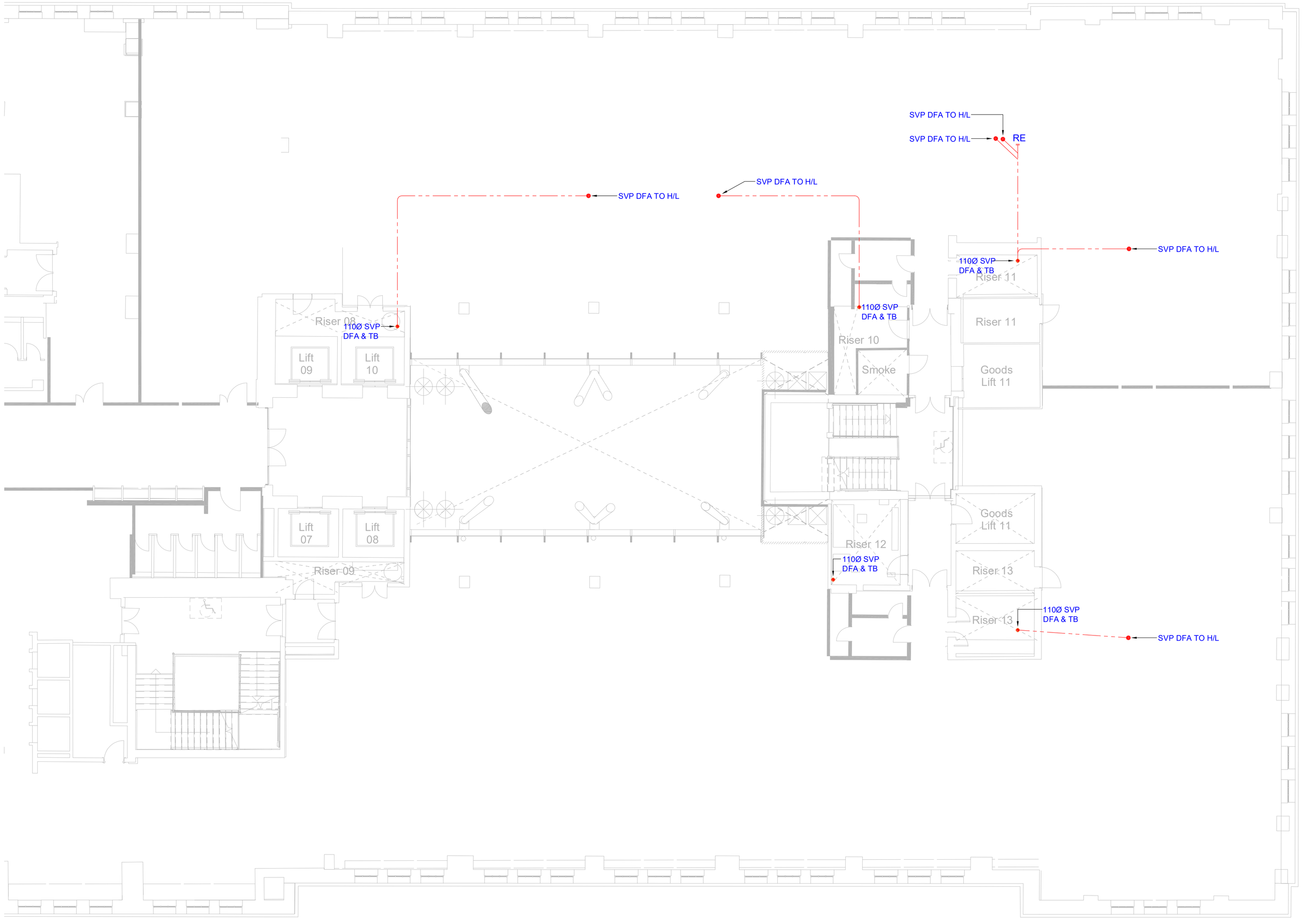
W www.kjtait.com

PROJECT INFORMATION	
CLIENT	OXFORD VICTORIA HOUSE
PROJECT	DEVELOPMENT LTD LONDON, WC1B 4DA

DRAWING INFORMATION			
DRAWING TITLE	MECHANICAL SERVICES 4TH FLOOR LAB DRAINAGE LAYOUT SHEET 1 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	L3221
SCALE	1:100 @ A1		
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-04-DR-M-5201		S2-P02



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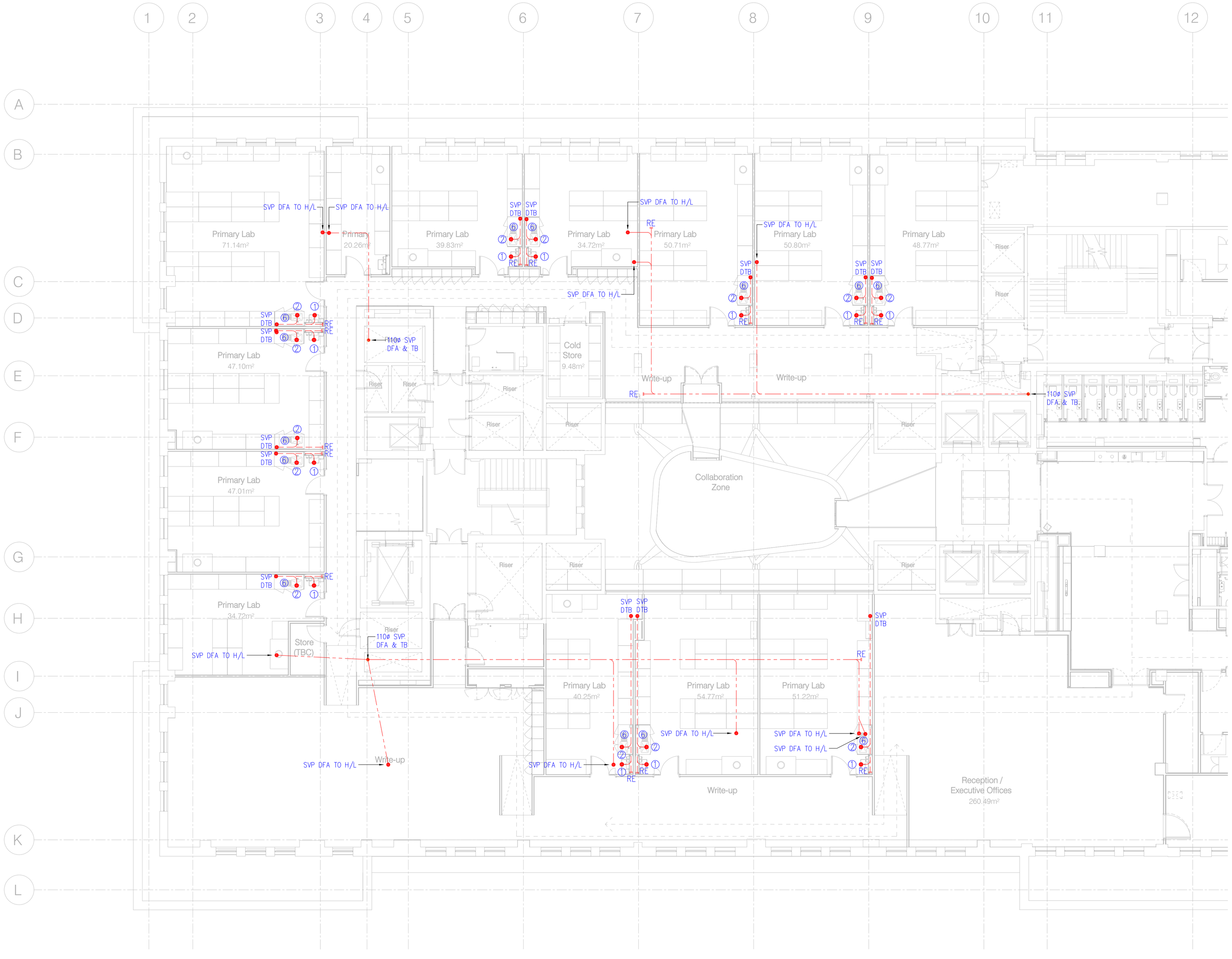
CLIENT	OXFORD VICTORIA HOUSE
PROJECT	DEVELOPMENT LTD LONDON, WC1B 4DA

DRAWING INFORMATION			
DRAWING TITLE	MECHANICAL SERVICES 4TH FLOOR LAB DRAINAGE LAYOUT SHEET 2 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-04-DR-M-5202		S2-P02



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CLIENT	OXFORD VICTORIA HOUSE
PROJECT	DEVELOPMENT LTD LONDON, WC1B 4DA

DRAWING INFORMATION

DRAWING TITLE	MECHANICAL SERVICES 5TH FLOOR LAB DRAINAGE LAYOUT SHEET 1 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221

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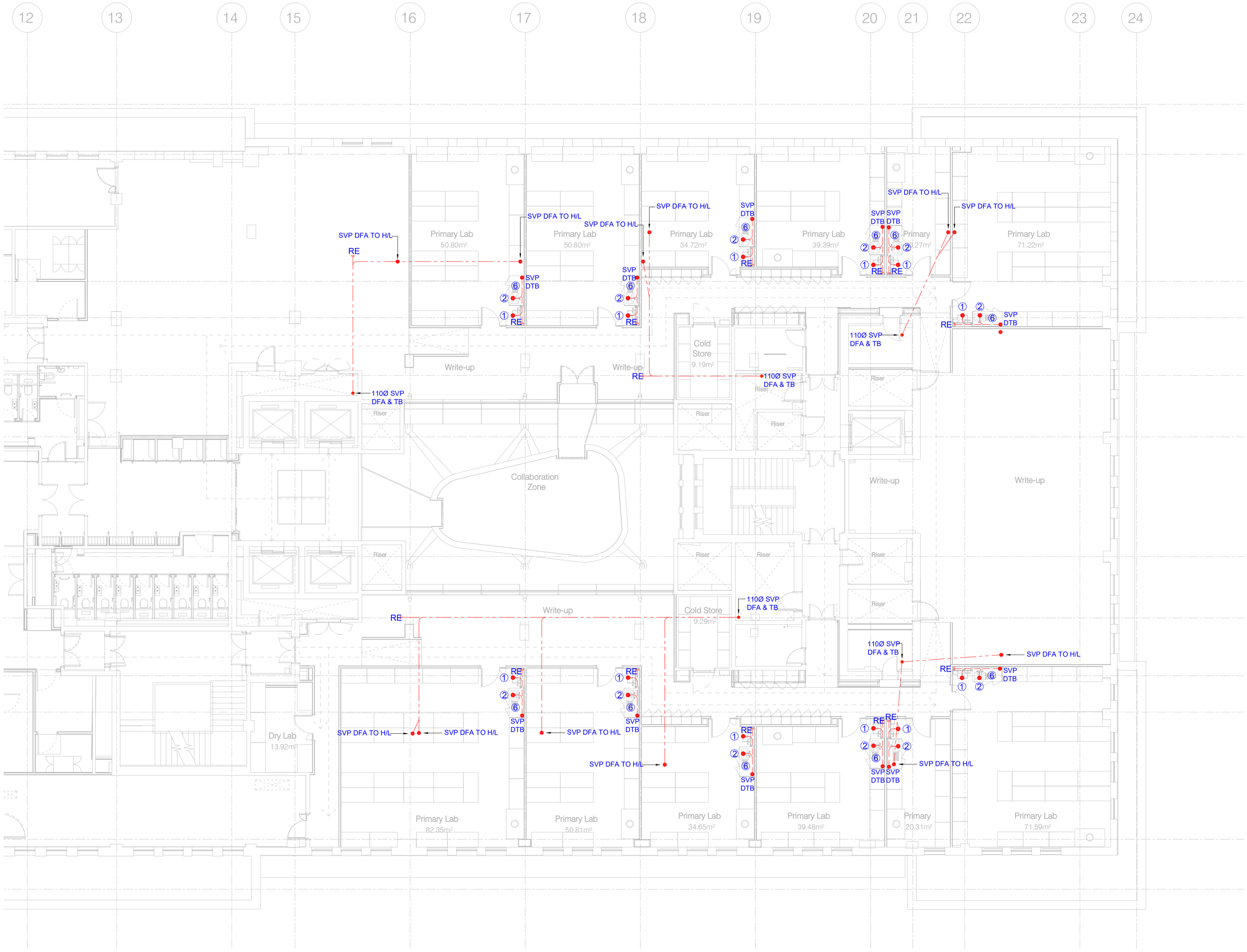

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S2 - P02	01/08/2022	HIGH-LEVEL DRAINAGE UPDATE	AG	MT
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SUIT- REV	DATE	DESCRIPTION	DRN	CHK

STATUS

FOR INFORMATION

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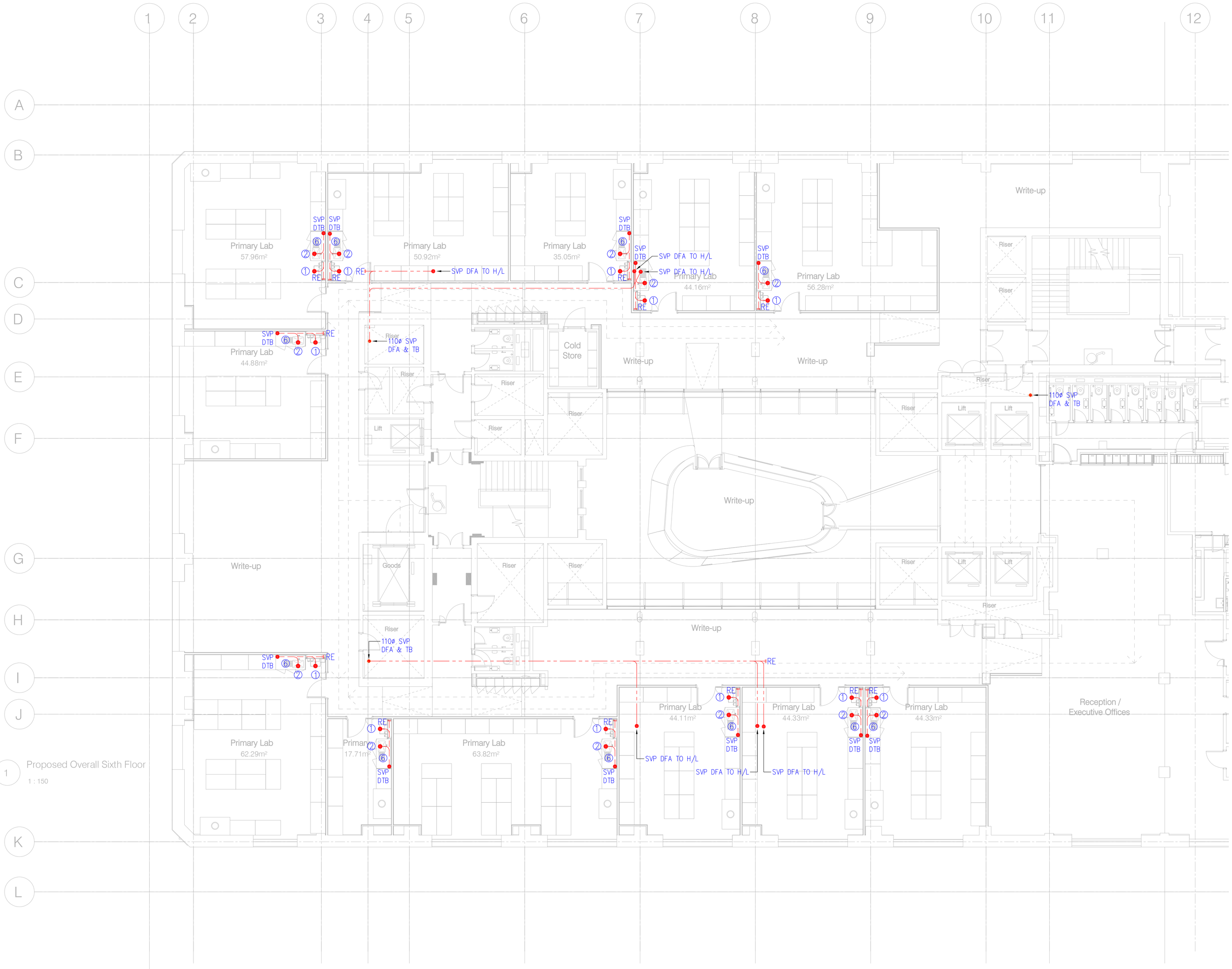
PROJECT INFORMATION	
CLIENT	OXFORD VICTORIA HOUSE DEVELOPMENT LTD
PROJECT	LONDON, WC1B 4DA

DRAWING INFORMATION			
DRAWING TITLE	MECHANICAL SERVICES 5TH FLOOR LAB DRAINAGE LAYOUT SHEET 2 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-05-DR-M-5202		S2-P02



1 Proposed Overall Sixth Floor
1 : 150

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PROJECT	LONDON, WC1B 4DA		
DRAWING INFORMATION			
DRAWING TITLE	MECHANICAL SERVICES 6TH FLOOR LAB DRAINAGE LAYOUT SHEET 1 of 2		
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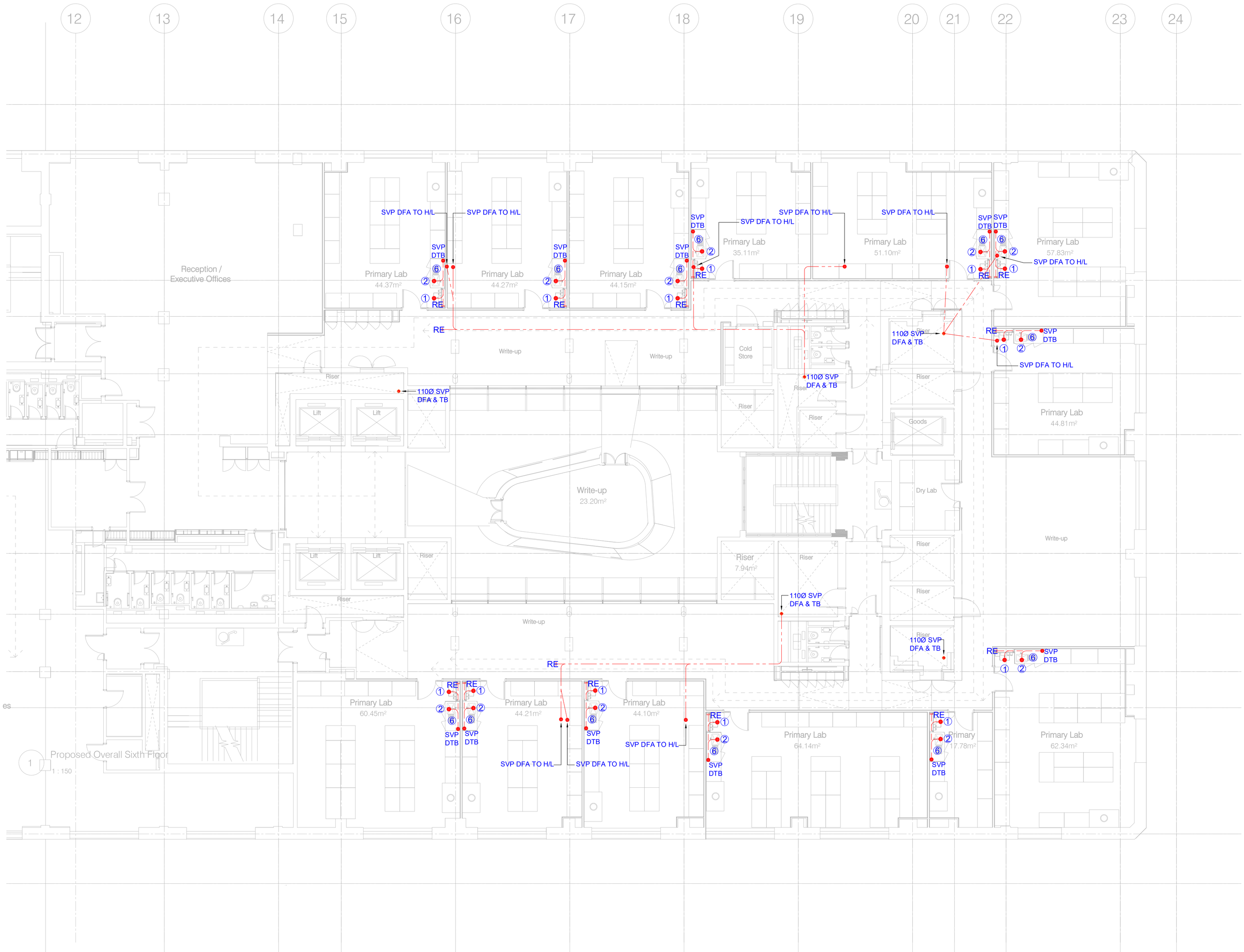

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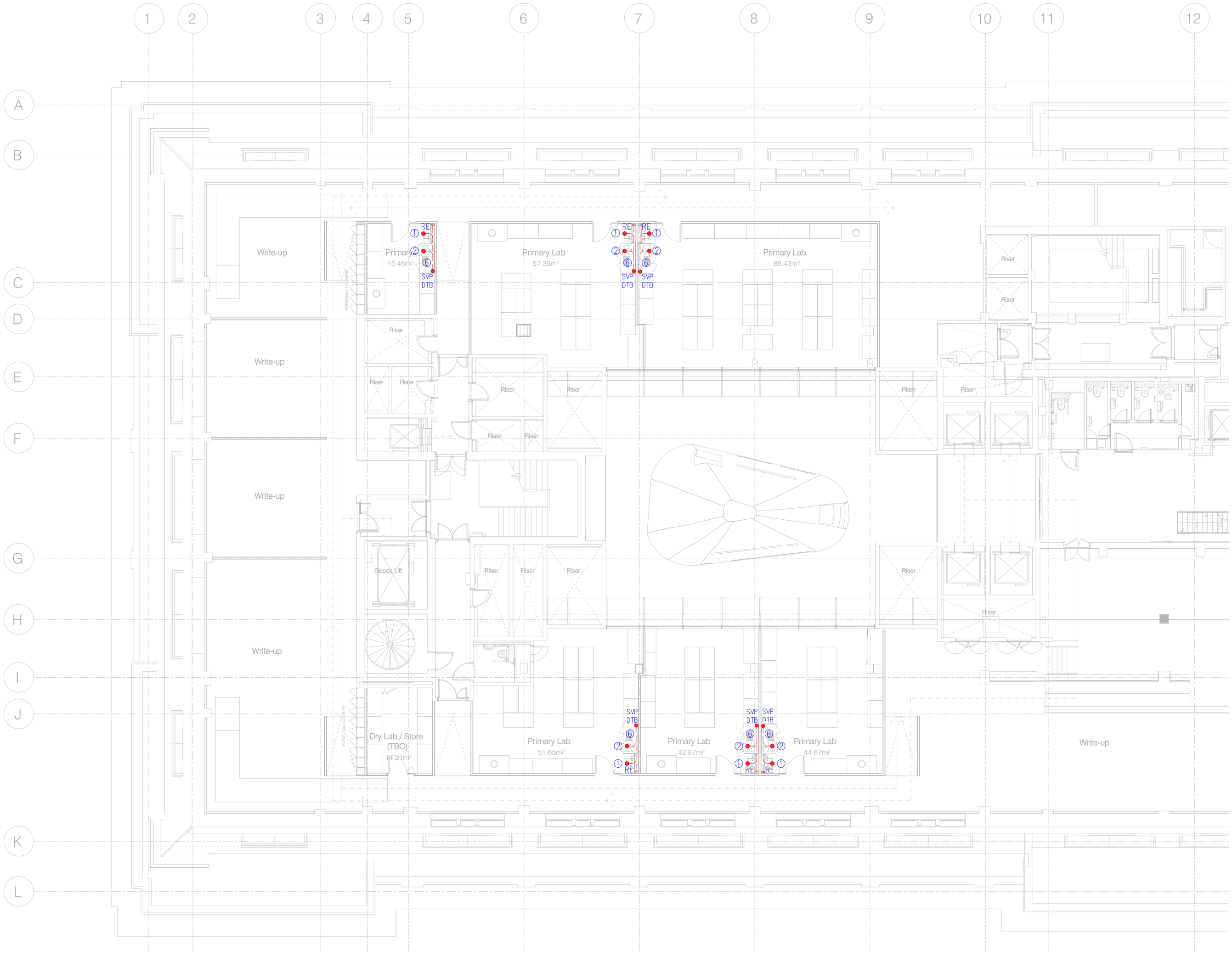
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-06-DR-M-5202		S2-P02



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6. WHERE INDICATED ON THE DRAWINGS APPLIANCES TO BE VENTED USING SUITABLY SIZED AIR ADMITTANCE VALVES.
7. FALLS ON SOIL WASTE PIPES AND VENT PIPES SHALL NOT FALL BELOW THE MINIMUM STATED IN BS EN 12056:2000.
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9. WHERE PLASTIC PIPEWORK PASSES THROUGH ANY FIRE RATED WALLS, FLOORS, PARTITIONS OR CEILING A SUITABLY RATED INTUMESCENT FIRE SLEEVE/COLLAR SHALL BE INSTALLED IN ACCORDANCE WITH BS276 TO PROTECT THE PENETRATION.

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9. 110ø UPVC SP.
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11. 50ø INTUMESCENT FIRE COLLAR/SLEEVE.
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Legend:

- PIPEWORK WITHIN CEILING VOID
- PIPEWORK AT HIGH LEVEL
- PIPEWORK AT LOW LEVEL
- PIPEWORK BELOW FLOOR SLAB

SVP	SOIL VENT PIPE	AAV	AIR ADMITTANCE VALVE
WVP	WASTE VENT PIPE		PIPEWORK FROM ABOVE
VP	VENT PIPE		PIPEWORK FROM HIGH LEVEL/LOW LEVEL
SP	SOIL PIPE		VENT PIPE
S/S	STUB STACK		STUB STACK
WP	WASTE PIPE	FA	FROM ABOVE
RE	RODDING EYE	FB	FROM BELOW
BC	BLANK CAP	TA	TO ABOVE
FFL	FINISHED FLOOR LEVEL	TB	TO BELOW
	ACCESS PIPE	HL	HIGH LEVEL
		LL	LOW LEVEL

SUIT- REV	DATE	DESCRIPTION	DRN	CHK
S2 - P02	01/08/2022	TITLE BLOCK UPDATED	AG	MT
S2 - P01	29/07/2022	INFORMATION ISSUE	AB	AG

STATUS

FOR INFORMATION

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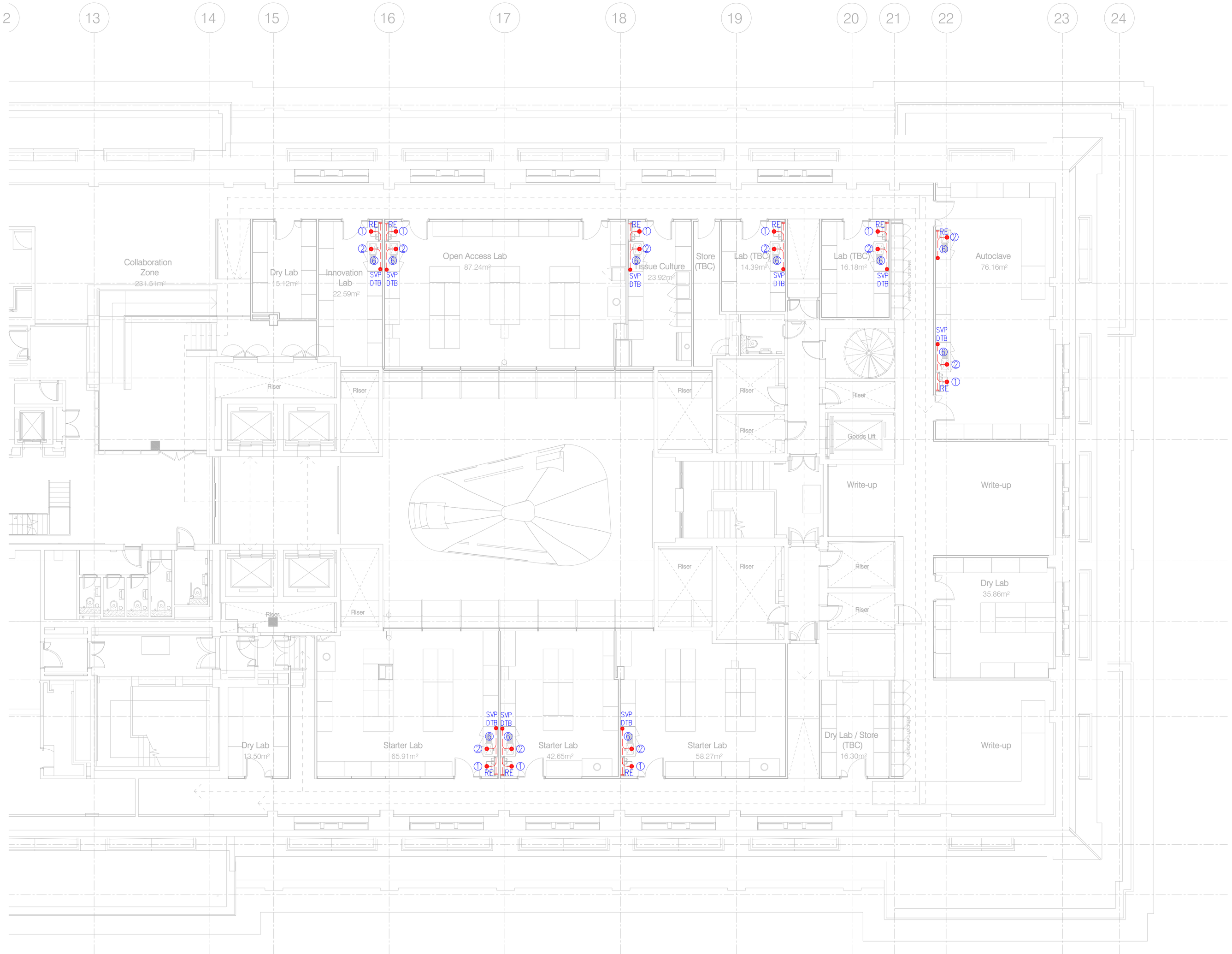
W www.kjtait.com

PROJECT INFORMATION

CLIENT	OXFORD VICTORIA HOUSE DEVELOPMENT LTD
PROJECT	LONDON, WC1B 4DA

DRAWING INFORMATION

DRAWING TITLE	MECHANICAL SERVICES 7TH FLOOR LAB DRAINAGE LAYOUT SHEET 1 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-07-DR-M-5201		S2-P02



NOTES:

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Legend:

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SUIT- REV	DATE	DESCRIPTION	DRN	CHK
S2 - P02	01/08/2022	TITLE BLOCK UPDATE	AG	MT
S2 - P01	29/07/2022	INFORMATION ISSUE	AB	AG

STATUS

FOR INFORMATION

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W www.kjtait.com

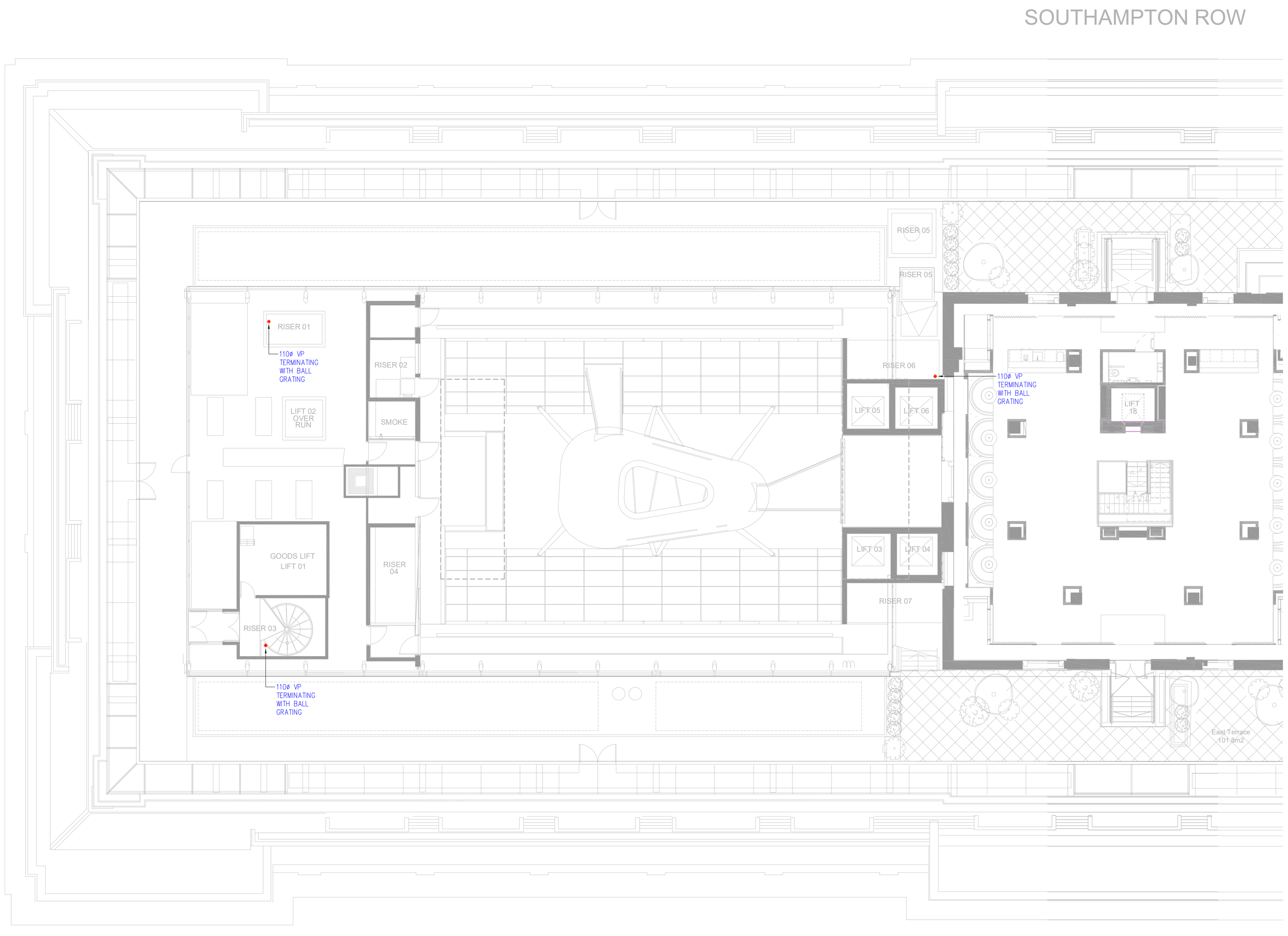
PROJECT INFORMATION

CLIENT	OXFORD VICTORIA HOUSE DEVELOPMENT LTD
PROJECT	LONDON, WC1B 4DA

DRAWING INFORMATION

DRAWING TITLE	MECHANICAL SERVICES 7TH FLOOR LAB DRAINAGE LAYOUT SHEET 2 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221

JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER	SUIT- REV
L3221	KJT-ZZ-07-DR-M-5202	S2-P02



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SUIT- REV	DATE	DESCRIPTION	DRN	CHK
S2 - P01	01/08/2022	INFORMATION ISSUE	AG	MT

STATUS

FOR INFORMATION

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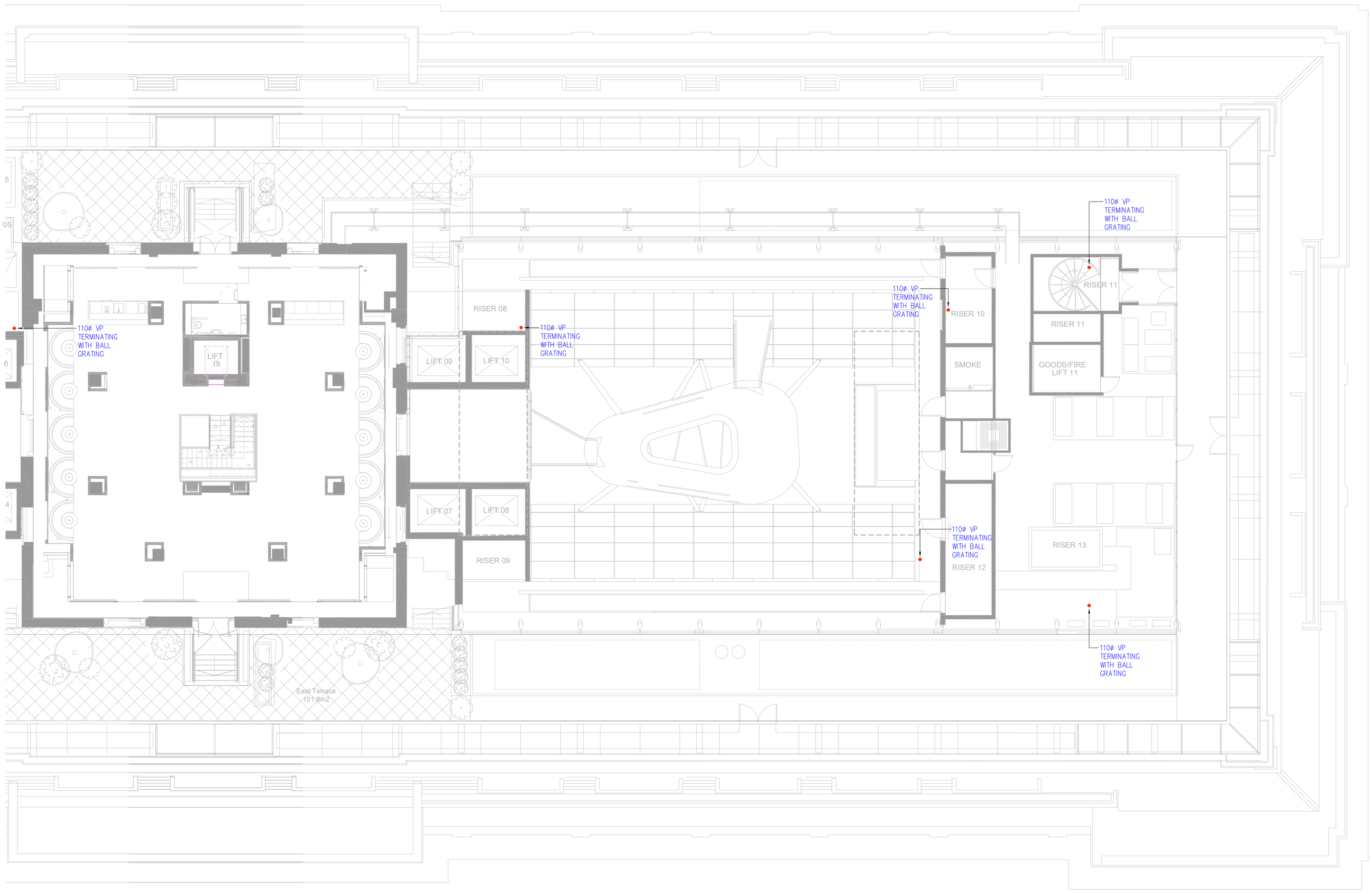
W www.kjtait.com

PROJECT INFORMATION			
CLIENT	OXFORD VICTORIA HOUSE		
PROJECT	DEVELOPMENT LTD LONDON, WC1B 4DA		
DRAWING INFORMATION			
DRAWING TITLE	MECHANICAL SERVICES 8th FLOOR LAB DRAINAGE LAYOUT SHEET 1 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-08-DR-M-5201		S2-P01



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BC	BLANK CAP	TA	TO ABOVE
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		LL	LOW LEVEL

SUIT- REV	DATE	DESCRIPTION	DRN	CHK
S2 - P01	01/08/2022	INFORMATION ISSUE	AB	AG

STATUS

FOR INFORMATION

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1 Fitzroy Square
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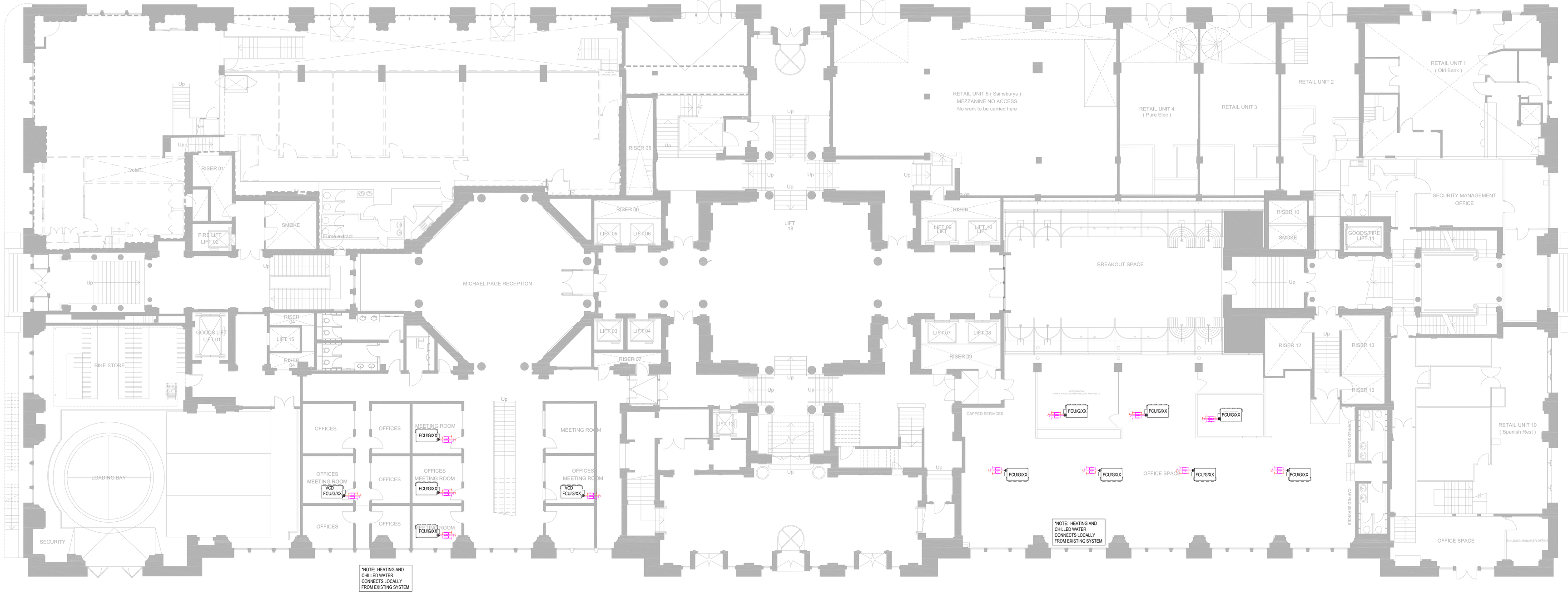
E london@kjtait.com
W www.kjtait.com

PROJECT INFORMATION	
CLIENT	OXFORD VICTORIA HOUSE
PROJECT	DEVELOPMENT LTD LONDON, WC1B 4DA

DRAWING INFORMATION			
DRAWING TITLE	MECHANICAL SERVICES 8th FLOOR LAB DRAINAGE LAYOUT SHEET 2 of 2		
DESIGNED BY	AB	DATE	May 2022
DRAWN BY	AB	KJT JOB No.	
SCALE	1:100 @ A1		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-08-DR-M-5202		S2-P01

SOUTHAMPTON ROW



BLOOMSBURY SQUARE

SUIT- REV	DATE	DESCRIPTION	DRN	CHK
S2-P01	20/07/2022	INFORMATION ISSUE	T.S	M.T

STATUS

INFORMATION

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London W1T 5HF
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PROJECT INFORMATION

CLIENT	OXFORD VICTORIA HOUSE DEVELOPMENT Ltd
PROJECT	VICTORIA HOUSE, LONDON, WC1B 4DA

DRAWING INFORMATION

DRAWING TITLE	UPPER GROUND, HEATING AND CHILLED WATER LAYOUT		
DESIGNED BY	A.G	DATE	JULY'22
DRAWN BY	T.S	KJT JOB No.	
SCALE	1:100@A0		L3221
JOB CODE	ORIGIN-VOL-LEVEL-TYPE-ROLE-CLASS NUMBER		SUIT- REV
L3221	KJT-ZZ-00-DR-M-5501		S2-P02