

08 MAINTENANCE ACCESS



Maintenance and access has been considered in detail on the Global UTC project. The whole design team have worked collaboratively to ensure all aspects of health and safety and building regulation has been addressed in the maintenance and access of the building.

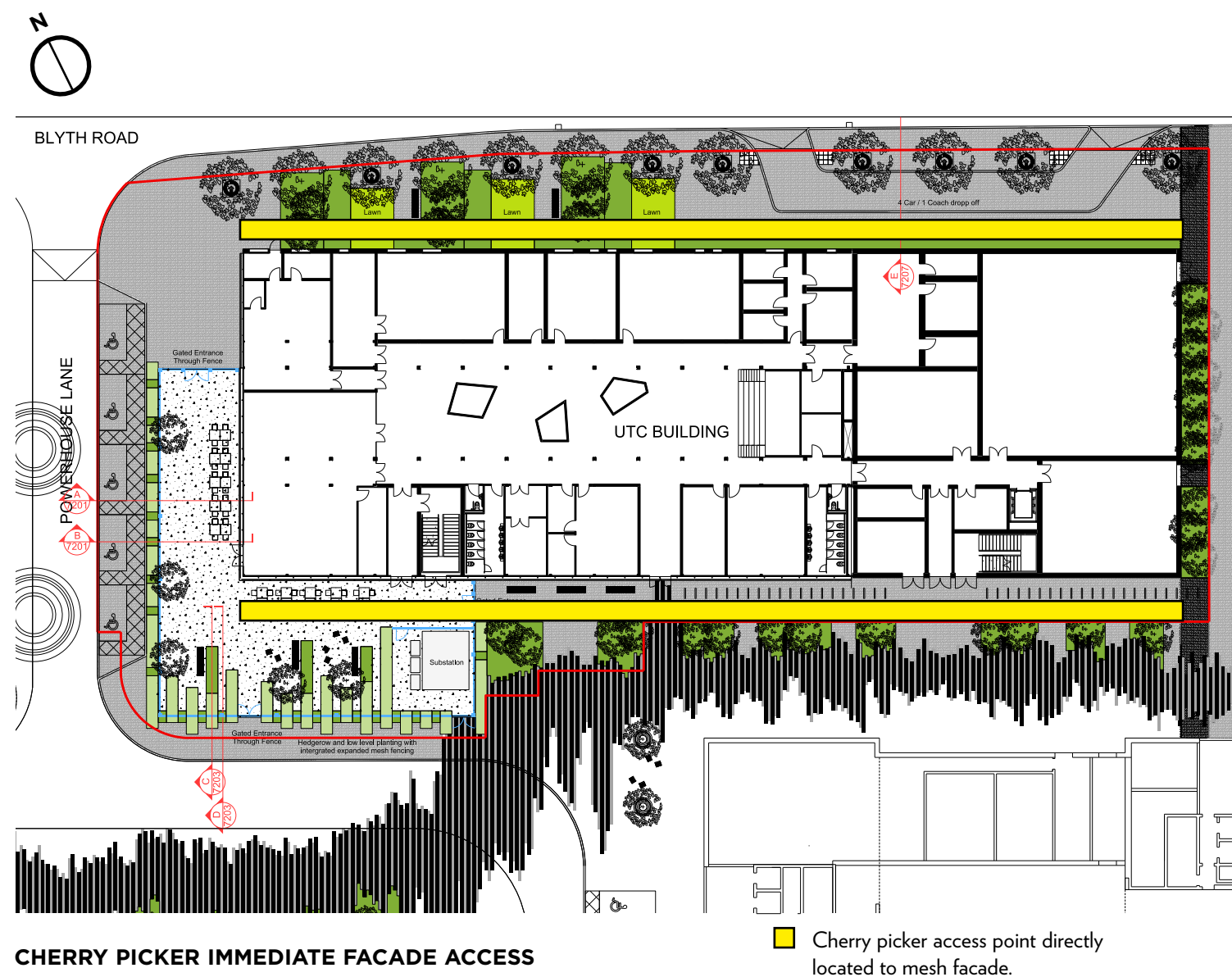
This section summarises the key points relating to maintenance access.

08.1 MESH

The mesh will be cleaned and maintained by workers within a cherry picker. This will be driven off Blyth Road and across Vinyl Square to reach the required facade. The cherry picker's route and proximity to pedestrianised areas has been fully considered by the landscape and architecture teams.

08.2 WINDOWS

The open-able windows to the Global UTC façades have been designed to be inward opening allowing cleaning from the building interior - negating the need for any external cleaning access. All windows and polycarbonate surfaces are either able to be cleaned from ground level or with the use of a cherry picker.



CHERRY PICKER IMMEDIATE FACADE ACCESS



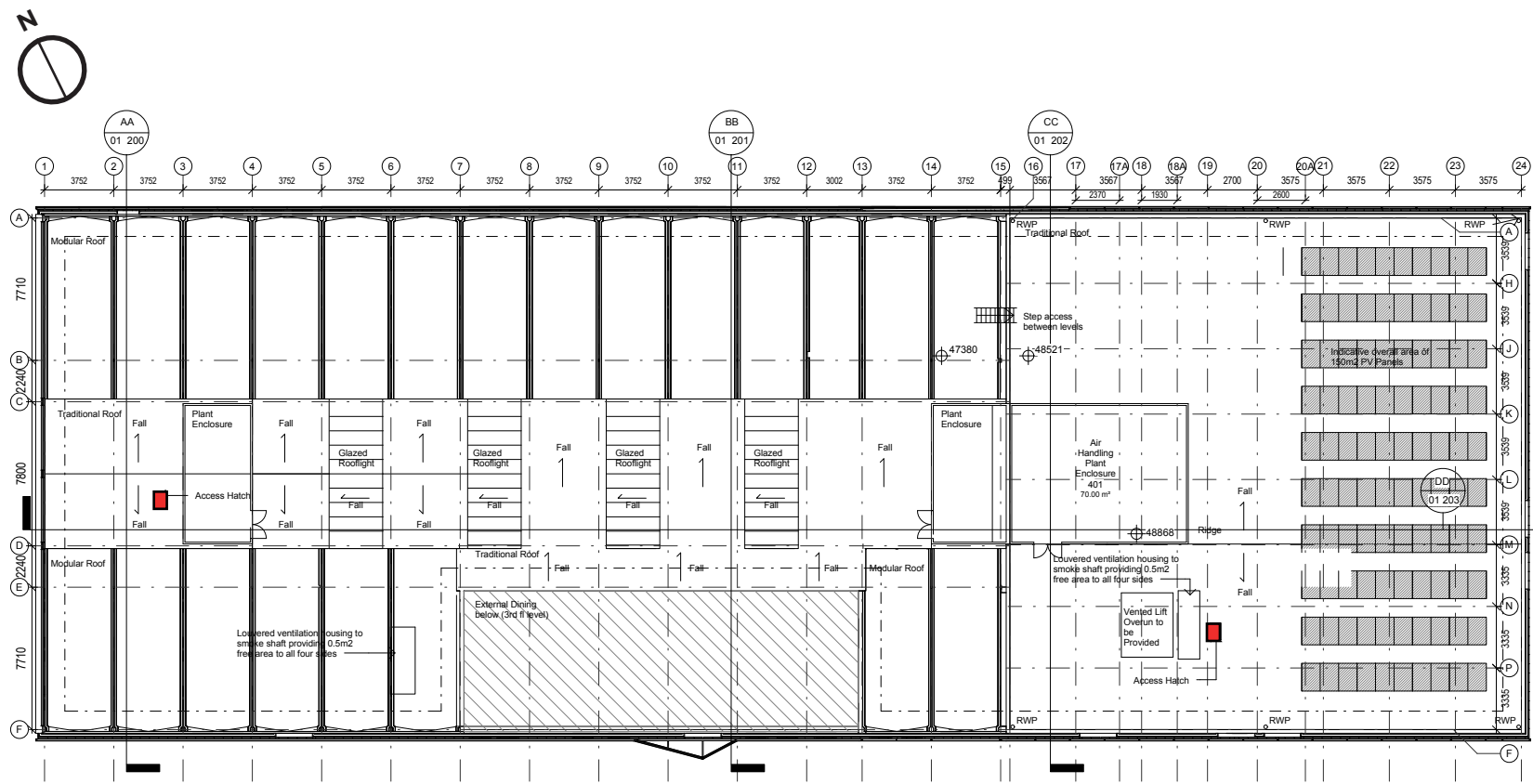
EXAMPLE OF CHERRY PICKER FACADE CLEANING

08.3 SITE

Refer to Section 7.0 Access & Safety for further information regarding the maintenance access of the external site areas surrounding the Global UTC.

08.4 ROOF

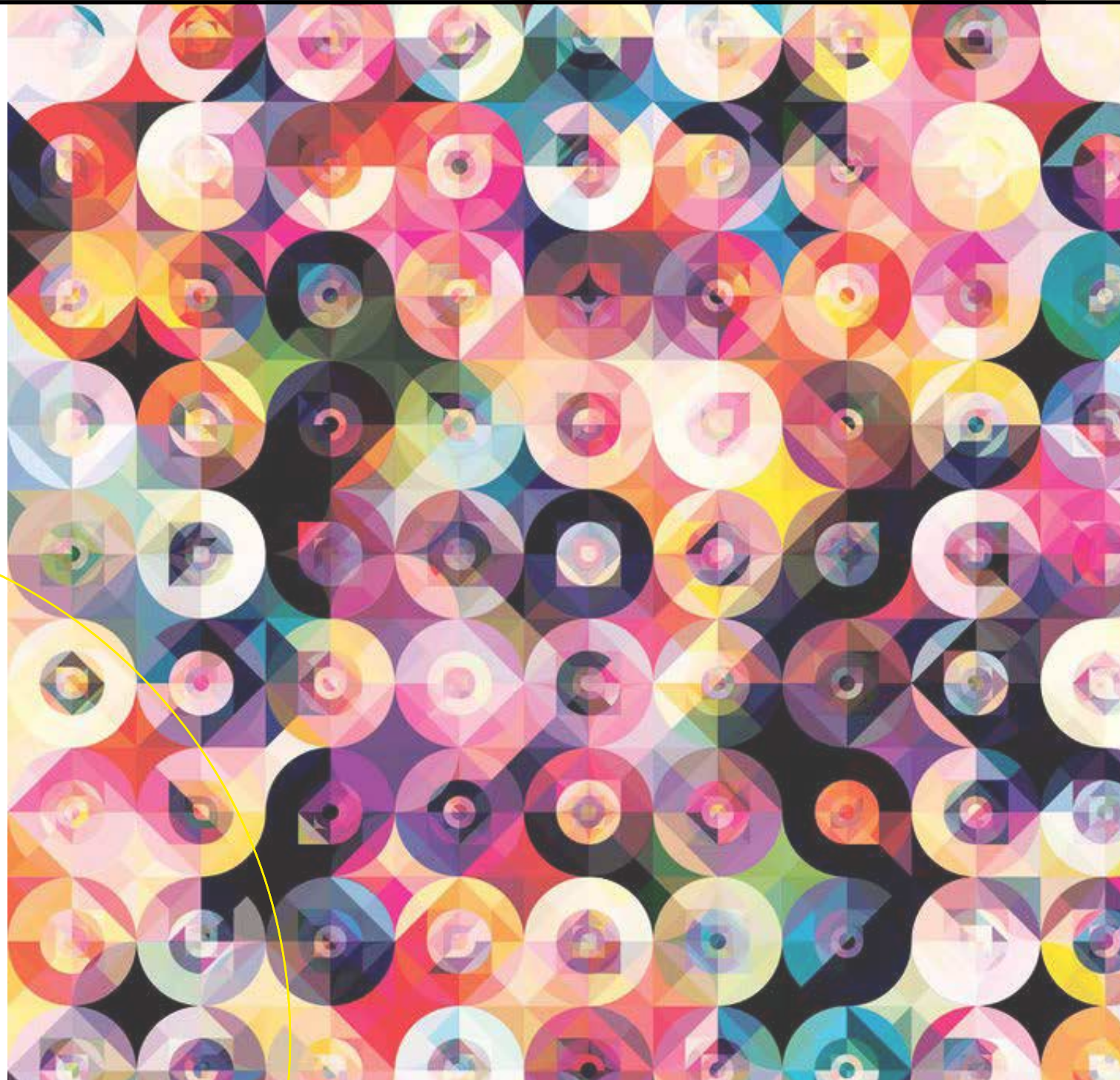
There will be adequate safe access to the roof with use of a ‘full restraint’ system. The roof access points are shown in the adjacent roof plan.



ROOF PLAN

Access hatch

09 ADAPTABILITY + SUSTAINABILITY



Reduce, Reuse, Recycle...

09.1 BUILDING ADAPTABILITY

This proposal also considers longer-term adaptability to accommodate a changing curriculum, teaching styles and legislation without whole-scale demolition and re-modelling of areas. To achieve this, the design has, as far as possible:

- Included partitions which are easily demountable (light-weight materials, e.g. plywood with plasterboard facings, in lieu of load bearing partitions) but are also sufficiently robust to deal with secondary age pupils, and to allow fixings to be as flexible as possible whilst minimising the transfer of noise.
- Allowing additional door sets to be inserted easily into walls to facilitate future sub-division of rooms;
- Included floors designed for a minimum floor loading of 5kN/m², such that users are not aware of any flexing in the course of normal use.

09.2 SUSTAINABLE DESIGN PRINCIPALS

Sustainable design needs to be integral to the design process. An integrated design team means that this proposal has been reviewed at early design stages to ensure that the architecture is sympathetic to energy efficiency, while reducing overheating.

The following factors have also been taken into account during the design process:

- Thermal modelling/ daylight analysis
- Fabric U-values
- Ventilation type
- Air permeability
- Specific fan powers
- Glazing specification
- Lighting controls
- Heating COP
- Lighting efficiency
- Heating distribution efficiency
- Power factor
- LTHW DHWS
- Metering
- Incorporation of Photovoltaic panels

These items have been assessed in order to create a workable, low energy building. Energy efficient LED lighting will be specified, complete with daylight control and occupancy/absence control where appropriate. This reduces energy consumption by ensuring that lights are not left on when rooms are not occupied. In non-transient spaces (e.g. classrooms) manual on/auto off lighting controls are used along with daylight linking.

SOLIDITY

With a very high percentage of the building having a solid facade instead of glazing, the U-Values are very favourable when it comes to heat gain/ loss. The energy strategy report should be consulted for figures.

DISTRICT HEATING

The site wide infrastructure is providing a Domestic Hot Water System (DHWS) and a Low Temperature Hot Water system (LTHW) which we are utilising for potential underfloor heating to the atrium and sports hall. These water systems are being provided by an adjacent gas fired Combined Heat and Power (CHP) plant allowing our site to remain gas free running solely from electricity. Refer to Energy Strategy Statement.

SHADING

The mesh facade allows indirect light through the open holes while helping to block a good percentage of direct sunlight both landing on windows and insulated walls which would otherwise cause solar gain, and increase energy usage within the building for cooling requirements.

09.3 MODULAR WASTE SAVING ETHOS

The design team subscribes to the ‘reduce, reuse, recycle’ hierarchy, which is key to minimizing waste. Waste is reduced in factory processes. Precision cutting instruments and precise 3D design modelling allow waste to be vastly reduced in the manufacture of standardised elements within the project. Waste will be reused wherever possible, and any remaining waste is segregated.

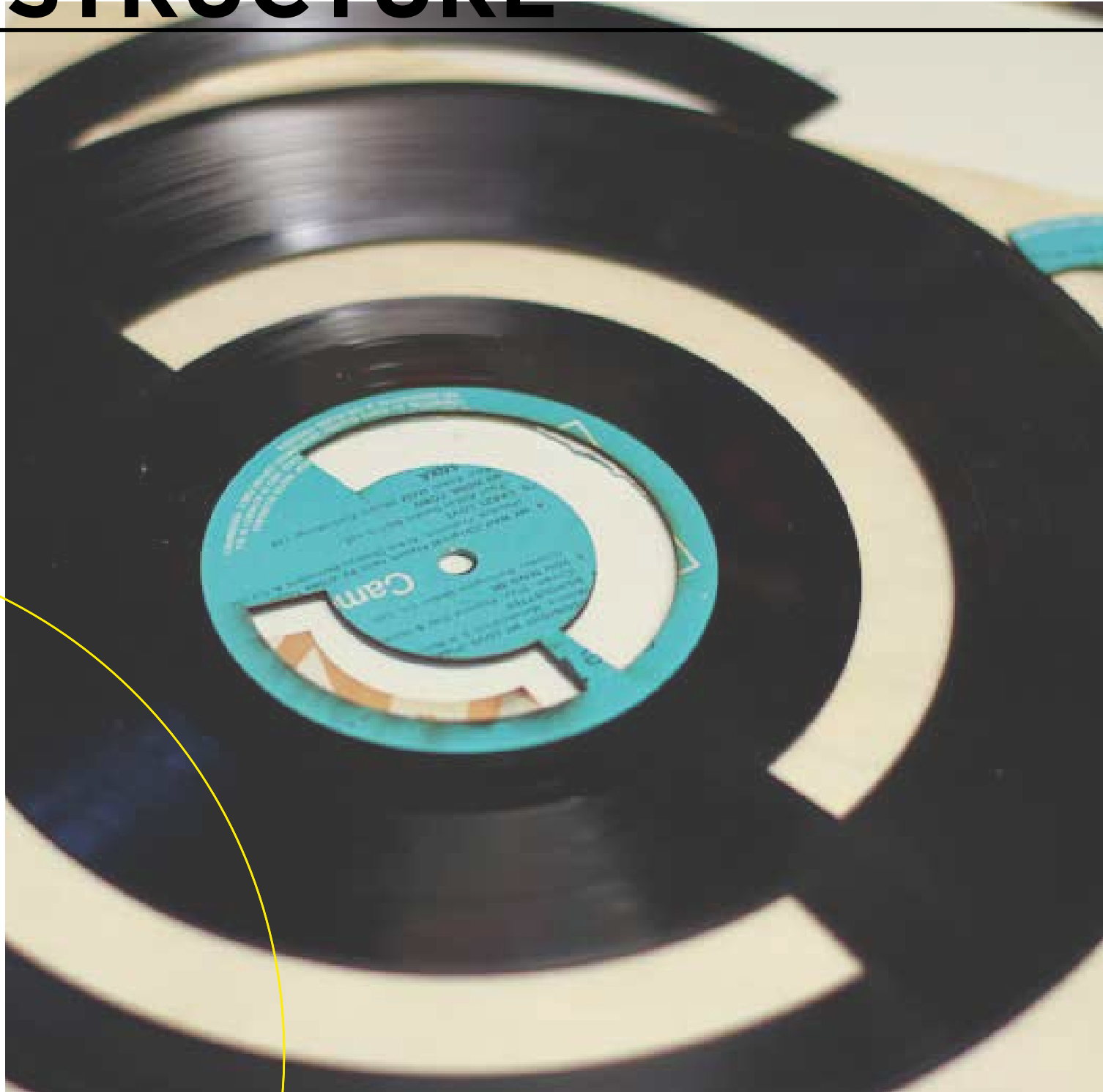
As well as reducing waste in the construction process, the buildings will be designed to be adaptable. A modular building can be de-constructed into its modular form and relocated in a different configuration elsewhere. The majority of elements, especially steelwork, are readily recycled.

Some of the resource efficiency features of the modular building system are as follows:

- Zero waste to landfill
- The use of standard materials dimensions, which reduces off-cuts and waste.
- Reuse of materials, e.g. cut-outs for window and door apertures are used elsewhere for floor insulation.
- Boards and structural steel beams are supplied to the site pre-cut at the correct size, which again reduces waste.
- Good levels of air tightness are an inherent part of the factory build process.

Producing quality buildings is an important and often overlooked part of creating a sustainable building. Putting quality first ensures that this proposal will produce educational environments that are long lasting and function well.

10 STRUCTURE



Engenuiti have been appointed to provide civil and structural engineering design services for the proposed new Global Academy University Technical College (UTC). Engenuiti have written a Civil and Structural Engineering Report which should be read in conjunction to this Design & Access statement. A summary - taken from their Executive Summary - can be found within this section.

10.1 SUMMARY OF STRUCTURAL REPORT

The four-storey building proposed comprises two wings of classrooms constructed from pre-fabricated modules on either side of an open atrium. An additional four-storey wing at the end of the atrium houses a sports hall and performance spaces and is constructed using a traditional steel frame. The building is supported by trench-fill concrete foundations and a ground-bearing ground slab.

The atrium structure is supported on the frame of the modules. The module columns have been assessed for this load.

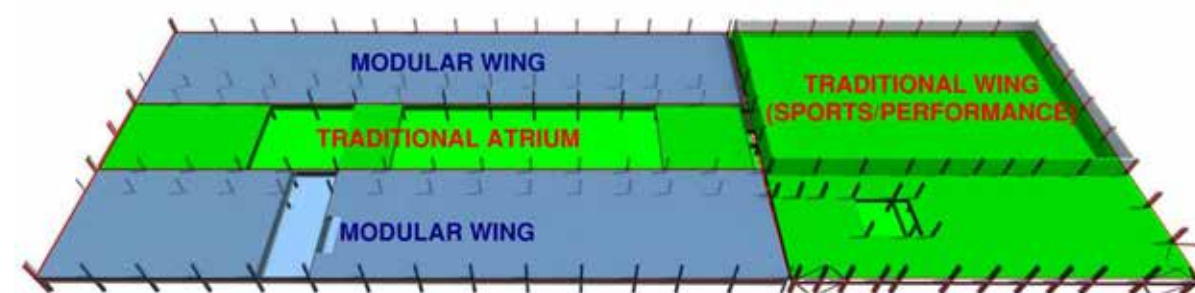
The sports hall is located on the second floor of the traditional wing to allow the necessary clear internal height without introducing steps into floor levels. Vibration analysis shows that a sufficiently high natural frequency can be met to meet the acoustician's design requirements.

An in situ reinforced concrete roof cast on metal decking is provided to the traditional steel frames to house plant and PV installations, which provides flexibility at this stage at the request of the project quantity surveyor.

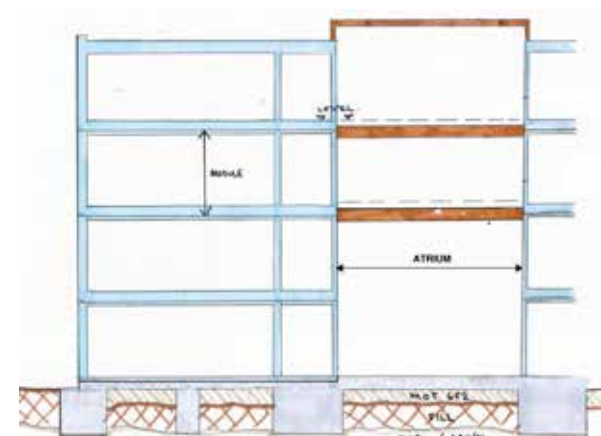
The design of the modular structure by Engenuiti has been limited to the specification of suitable column sections, co-ordination of connections to the modules by the atrium structure, and the design of foundations to the modules.

The overall sway of the combined building (combination of module and traditional elements) has been assessed by Engenuiti, based on information provided by Yorkon with regard to their modular construction systems.

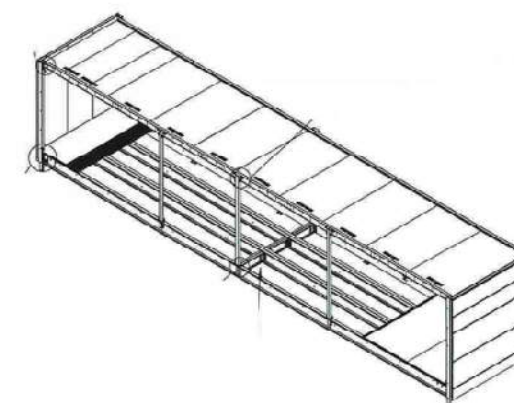
The building is provided with a weather resistant façade of metal panels (to traditional areas) and composite panels (to modular areas). An additional over-cladding of aluminium mesh is applied to the long elevations of the building. The end elevation of the modular building is clad in a glazing system (by specialist), supported on the steel frame.



STRUCTURAL AREA DIAGRAM



TYPICAL SECTION THROUGH MODULE WINGS / ATRIUM

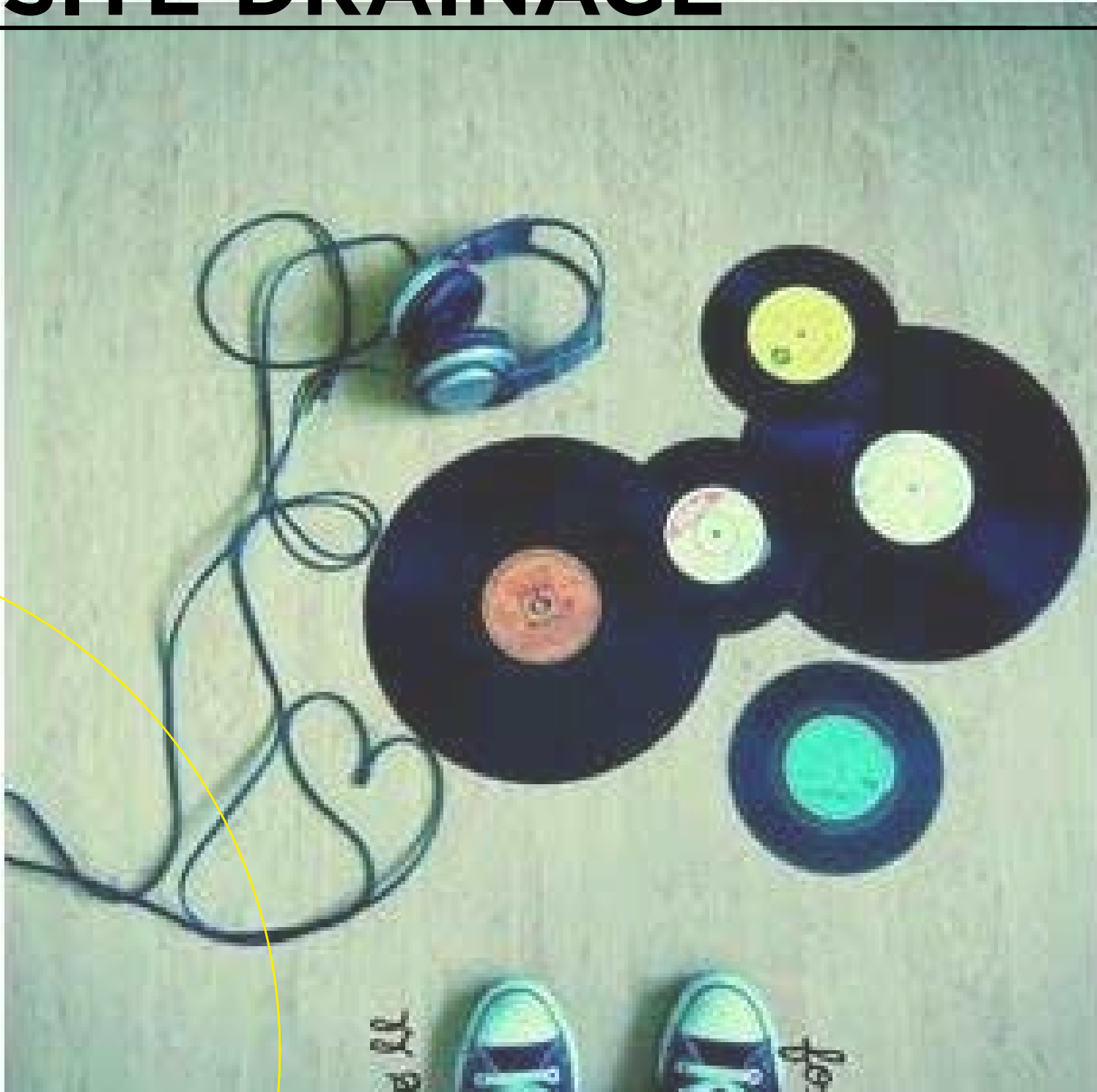


TYPICAL YORKON MODULE



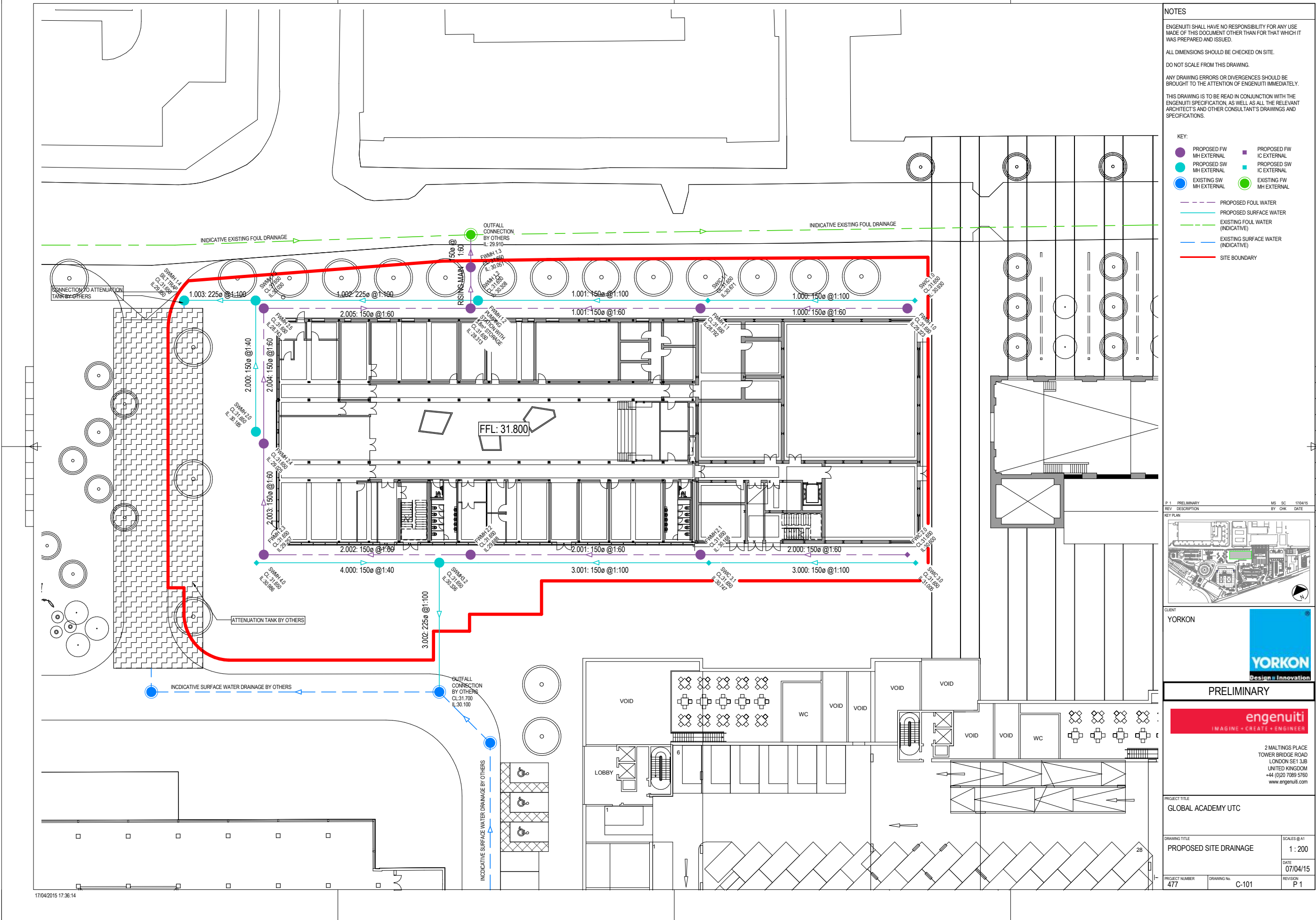
STRUCTURAL FRAME PROPOSAL

11 SITE DRAINAGE



The following drawing shows the site drainage strategy.

11.1 SITE DRAINAGE STRATEGY



12 MECHANICAL + ELECTRICAL



EDP London have been appointed to provide mechanical and electrical engineering design services for the proposed new Global Academy University Technical College (UTC). EDP London have written a M&E Services & Environmental Strategy Report which should be read in conjunction to this Design & Access statement. A summary - taken from their Introduction & Building Services and Environmental Overview - can be found within this section.

12.1 SUMMARY OF MECHANICAL + ELECTRICAL REPORT

The Strategy proposed for the whole project is based on the following key principles:

- Simplicity, Flexibility and controllability
- High quality and performance standards
- Compliance with EFA funding targets
- Very Low carbon emissions
- Highly efficient, low running costs and ease of maintenance

The building services will generally follow the EFA generic design guidelines and output specification and client specific requirements to suit the site and the building layouts and acoustic requirements. This is a multi-use building and with the highly variable usage patterns it is proposed to decentralise the systems to each area to satisfy the principles above. Each designated area and teaching space will have individually controllable temperature control, ventilation and lighting to provide maximum flexibility whilst minimising carbon emissions when occupancies are lower or rooms not in use.

Due to the building form, orientation, ambient site noise levels, acoustic requirements and other factors, a passive approach to vent and comfort control can only be adopted in a few areas, such as the sports hall and atrium. In the majority of the building, mechanical ventilations and highly efficient HVAC systems will be employed, each system tailored to suit the room/area it serves.

A high degree of air quality and acoustic performance will be provided in all areas. Where mechanical ventilation is provided, fresh air shall be filtered and tempered to ensure good air quality at the right temperature is provided to each area plus energy efficient heat recovery devices. Kitchen exhaust will all be sensitively designed and located to ensure air quality to occupied areas or neighbours is unaffected by these systems. Science labs will utilise recirculating fume cupboards where required and will also have decentralised systems for heating, cooling and ventilation.

LED lighting will be utilised throughout with automatic lighting controls including digital dimming, absence, daylight sensing and occupancy sensing by PIR's to reduce energy costs, carbon emissions and to minimise heat gains from lighting in internal areas to limit potential for overheating.

Where passive ventilation techniques using roof ventilators to benefit from natural buoyancy forces are used, these systems shall be integrated with smoke ventilation systems and controls as part of the fire engineered solution, which will include sprinkler protection to the atrium as required.

With a combination of good solar controls, shading and glass selection, thermal capacity of the building, passive ventilation measures and mechanical cooling designed to suit the casual heat gains from users etc. By incorporating suitable architectural design and techniques in an integrated manner in the building including passive features to limit solar gains, glazing selections and sizes relative to orientations, window Brie Soleil, solar glass, the worst effects of summer heat gains can be minimised in most areas thus minimising mechanical cooling system loads and attendant increases in energy and running costs to the absolute minimum.

In addition, the building will be thermally modelled to satisfy the carbon emission targets of the Building Regulations and planning conditions to provide very low carbon emissions and low running costs.

It will be controlled by a suitable Building Management System (BMS) system to provide a comprehensive control, alarm and monitoring system of all plant and equipment, all energy systems, main and sub-meters etc linked to the fire protection and Fire Alarm systems and include out of range energy usage alarms.

Solar Photovoltaic PV Panels - Renewable Energy: In addition to the use of low zero carbon technologies such as CHP district heating, heat pumps, LED light and other systems, extensive amounts of PV panels will be installed and will provide power generation which will be used in the building when possible and exported to the grid when possible creating potential income for the UTC.



SOLAR PHOTOVOLTAIC PV PANELS

The complete mechanical and electrical services installations will be designed, Installed and commissioned in accordance with all relevant statutory requirements, British Standards, building regulations, planning conditions and CIBSE guides. Building bulletin design standards for schools will also be considered and implemented where appropriate.

The new building will comply with the building regulations Part L2A 2013 and other associated documents including HM Government – non-domestic building Services compliance guide. In addition, the building design will endeavour to attain the London plan target of 35% improvement in TER if possible and affordable.

For further information regarding the bespoke lit elements to the external architecture please refer to Section 5.0 Sponsor Branding Opportunities and 4.0 External Lighting.

