Royal Veterinary College
University of London

HAWKSHEAD REDEVELOPMENT SITE A
STAGE 3 REPORT
NOVEMBER 2018

NORR AECOM conisbee Quantem LWF Lawrence Webster Forrest Fire Engineering & Fire Risk Management Consultants turkington martin

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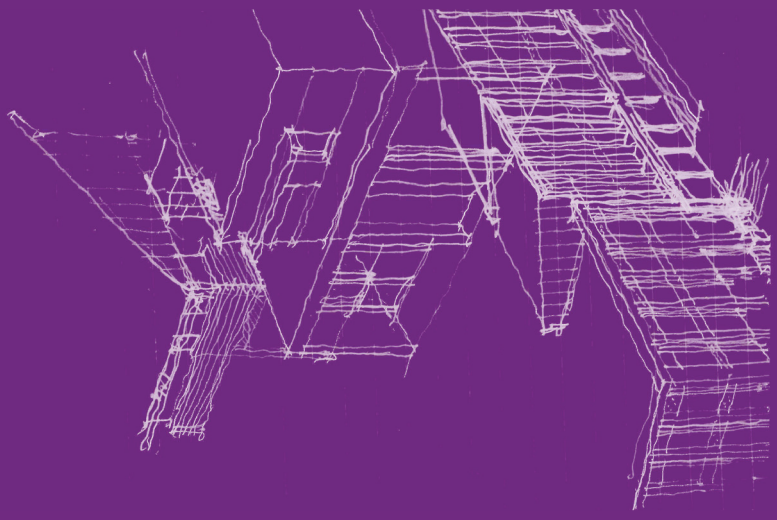

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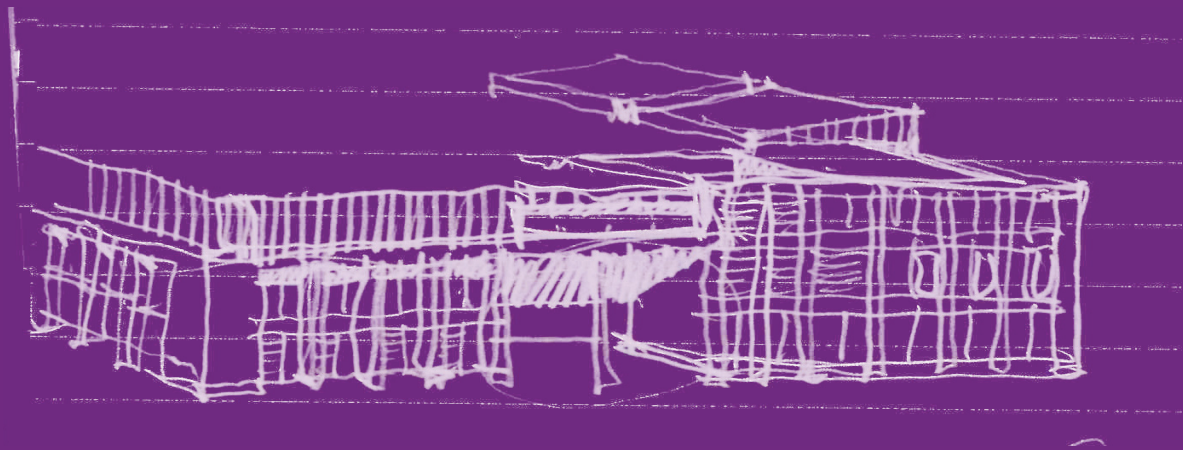
1.0 INTRODUCTION



This report presents the design at RIBA Stage 3 'Developed Design'. This work stage followed the approval of the Stage 2 'Concept Stage' Report dated 27.07.18.

The purpose of the Report is to outline the development of the design and the activities during this Stage, and to seek approval of the same.

This Stage also incorporates the development of the design and formulation of the Planning Application. The Planning Application was issued w/c 05.11.18.

The key objective of Stage 3 is to develop the design of the building in conjunction with the Engineering Consultants; Civil and Structural, and Mechanical and Electrical, and Fire, as well as develop the design of the associated external space with the Landscape Architect.

The design proposals have been developed to ensure that spatially these coordinate the building's design with the structural, mechanical and electrical proposals. The team have worked together, holding fortnightly workshops to review and develop the proposals. Spatial coordination has been developed using the Revit model. While specialist subcontractors will undertake their design work at Stage 4, we have sought some technical input with regard to envelope design development in order to facilitate a more robust developed design.

The phasing strategy has now been agreed, allowing the main new hub building to be constructed in a single phase. Once the final demolition works to the Main Clinical Block have been undertaken the works to extend the lab facilities adjacent to CEEED will be completed, together with final landscaping.

The required extent of the enabling works is now fully understood, with a programme of works for the design team to collate a package for implementation early 2019 due to commence following completion of this Stage.

A cost check was carried out ahead of finalising the proposals for issue as part of the Planning Application. This report covers the aligned Cost Estimate, the agreed Project Budget, as well as the agreed Procurement Strategy.

During this stage the Design Team have held fortnightly Design Team Meetings or Workshops in order to progress the Design. Each member of the team at this stage have contributed to this report;

Architect - NORR Consultants Ltd.

Cost Consultant - Quantem Consulting LLP

Civil and Structural Engineer - Conisbee Consulting Structural Engineers

Mechanical and Electrical Engineer - Aecom

Turkington Martin - Landscape Architects

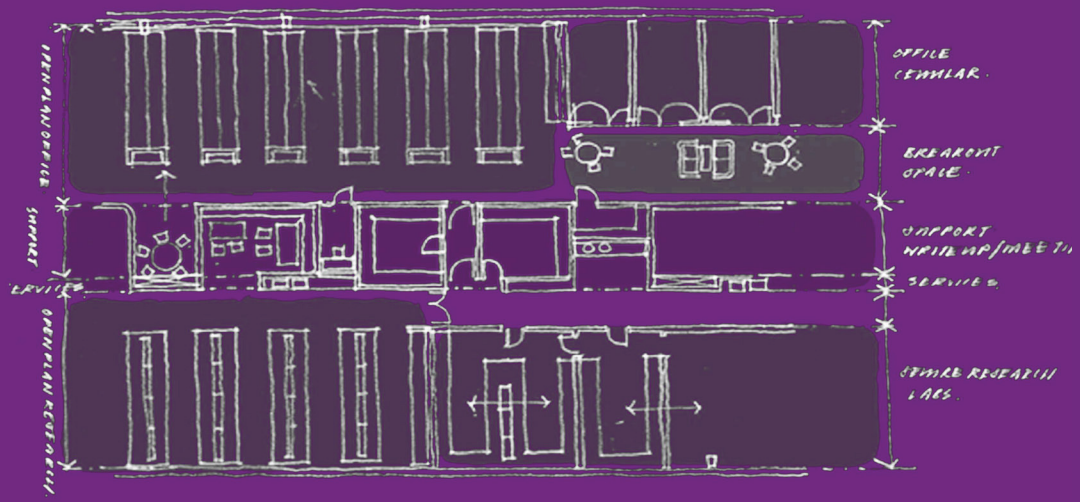
Planning Consultant - Aecom

Fire Consultant - Lawrence Webster Forrest

Principal Designer - Fulkers

As we progress into Stage 4 the design services of a specialist Acoustic and AV/IT Consultant will be incorporated in order to integrate these aspects fully into the design.

2.0 FINAL DESIGN PROPOSALS



The design of the building has developed since completion of the Stage 2 document in July 2018. These changes were the direct result of brief development, Statutory Compliance, structural design development, mechanical and electrical design development. During the course of Stage 3 we have also met with the Planning Authority regularly to review the developing design ahead of the formal Planning Application, presenting design proposals in September to the Hertfordshire Design Review Panel, (an independent review panel). Feedback was received via a report; many of these points taken on board in the refinement of the design ahead of the final Planning submission. This is outlined within this section of the report.

STAGE 2 DESIGN REPORT COMMENTS

Following agreement at the end of Stage 2 in respect of departmental adjacencies and required areas to all accommodation through the various stakeholder engagement meetings, there were still a number of areas which still required to be resolved.

Comments were received following issue of the Stage 2 Report and were responded to either directly or as part of the developed design, some of which are incorporated into layouts, or room layouts. These key items which are addressed specifically in this report are as follows;

Visiting Academic Lounge - the layout for this area has been in development following the refinement of the building's design in this area. This is covered under Room Layouts in Section 3.0.

Office areas - detail of desking, tea point and printer zone strategies are currently under review with RVC as part of RDS exercise. See also options for Visiting Academic Lounge Zone re Staff Kitchen.

Lecture Theatre - sight-lines to upper zone are indicated on building sections included in this section of the report.

Teaching lab - gas requirement has yet to been confirmed.

Service Yard - the design of this area now incorporates a larger zone for delivery vehicles to the immediate eastern edge of the TaRC extension. The size and requirement for gas cylinder requires to be concluded by RVC and the end users.

PROJECT DESIGN DEVELOPMENT

General;

-Circulation; the passenger lift has been repositioned within the atrium space, which not only rationalises the atrium floor-plate, it also simplifies the structural solution.

-The design of the second floor Visiting Academic lounge and upper floor generally has been developed as a result of reconfigured plantroom requirement, escape strategy, simplifying the structural solution and following comments from Design Review Panel.

-A Design Freeze was reached once all Design Review Panel comments were cost checked and confirmed by RVC.

Fire Strategy;

-The design has developed in more detail in relation to fire escape provision across the floor plate including confirmed stair widths, ensuring compliance with escape distances and evacuation requirements adjacent to voids, as well as ensuring fire exit door levels are coordinated with the external landscape levels.

Structural and M+E Design;

-The services strategy has been refined as the structural solution solidifies. Risers, comms rooms (and associated risers), plant space have all been developed to ensure the design is flexible and future proofed. The ventilation strategy has been coordinated with structural and services design.

-A structural grid was frozen on agreement of the plan layout.

-The elevations have been refined to align with all of the above and to co-ordinate with the structural proposals, as well as addressing feedback received from the Design Review Panel.

BRIEF FINALISATION

Room layouts;

The Stage 3 process required RVC, NORR and Aecom to undertake a workflow in briefing the particular requirements for all spaces in relation to FF+E; furniture, fittings and equipment. This workflow ideally is carried out in parallel with the development of the design during this Stage 3 as the content informs the content of both Stage 3 and ultimately Stage 4.

Workshops have progressed well with teaching spaces. Due to the extent of input required progress has been more limited with the laboratories. Office spaces require further discussion, however numbers were agreed previously for all areas. All areas are served by raised access floors therefore should agreement be reached with regard the strategy for tea points, printer zones etc. we should have sufficient to conclude the RDS.

As the process is yet to be concluded for all areas. A further series of focused workshops have been arranged over the following weeks to ensure we get this concluded ahead of commencing Stage 4.

The list below outlines the workshops held on Room Layouts since Stage 2;

14.09.18 - Teaching Spaces Workshop;

1st discussion of teaching spaces. Discussed directed learning / small teaching rooms / group teaching room / teaching lab

(Adrian Boswood, Ken Smith, Richard Scott, Ian Humphreys, Ching Yeh, Craig McCrory, Chris Collins)

14.09.18 - Labs Workshop;

1st discussion of lab spaces, with exception of SME labs.

Basic room layouts discussed.

(Frederique Guesdon, Damer Blake, Richard Scott, Ching Yeh, Craig McCrory, Chris Collins)

27.09.18 - Labs Workshop;

2nd discussion of lab spaces, with exception of SME labs. Initial equipment added and labs taking shape.

(Frederique Guesdon, Ian Humphreys, Ken Fonso, Chris Collins)

15.10.18 - Labs Workshop;

3rd discussion of lab spaces. Need further input from the actual lab users in order to complete the drawings. M&E input required.

(Frederique Guesdon, Ian Humphreys, Chris Collins)

15.10.18 - SME Labs;

1st discussion of SME labs. Happy with sizes of the labs. Some tweaks to be made to increase flexibility. Office accommodation looks oversized. Open plan for 15 with smaller, more private spaces required.

(Janette Pickles, Ken Larkin, Ian Humphreys, Chris Collins)

15.10.18 - Library;

1st discussion of library. Have a greater understanding of the types of spaces required.

(Sally Burton, Ian Humphreys, Chris Collins)

Forthcoming meetings;

08.11.18 -

Office space meeting.

Labs (4th meeting)

Shop

09.11.18 -

Library

Labs (5th meeting)

There are a further number of spaces requiring RDSs to be populated. These are;

Ground Floor

Main Lecture theatre

Student Social Learning Area – Discussed briefly at library meeting

Flexible Indoor / Outdoor Space

Reception / Shop within atrium

Flexible Seminar Room (Within Eclipse)

Extended Café Servery (Within Eclipse)

First Floor

First Floor Lecture Theatre

Student Social Learning Area - Discussed briefly at library meeting

SME Office – Discussed at labs meeting with SME. Will require 15 workstations, 5 people per lab within open plan arrangement. With smaller, more private and meeting spaces available.

Office write up space

Second Floor

Reconfigured office spaces within Eclipse – Open plan and single / four person offices

Store / Prep room and cold rooms for the teaching lab

Finalisation of the brief during this stage has concluded the following with regard the teaching spaces within the building.

Teaching Spaces;

-Direct Learning Rooms- provision for this type of teaching space had been agreed. A decision required to be made whether there would be two or three, and whether a flexible partition between the spaces was practical in relation to flexibility of data and power and room/furniture type and layout.

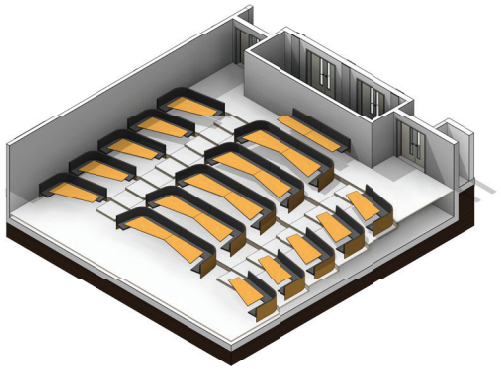
Agreed Outcome - It was decided to maintain 3 teaching spaces to take 60 students in each. Further it was agreed that there was no requirement for flexibility across these spaces, due to preference for fixed type furniture arrangements and as there are other spaces within the teaching provision where larger numbers can be accommodated.

-Main Lecture Theatre - Required numbers were confirmed during Stage 2. The technical requirements of coordinating structural and M+E services in the 320 fixed seat main lecture theatre, with a further 100 students within a flexible arrangement at first floor has been developed. A series of down-stand beams are required to both spaces in order to span the large spaces. Ventilation supply and extract has also been designed and coordinated with the proposed sections, ensuring sight-lines are maintained. Due to the large volume of these spaces, and coordination of structure and services, the section across these spaces, as well as the Group Learning space are key within the overall building.

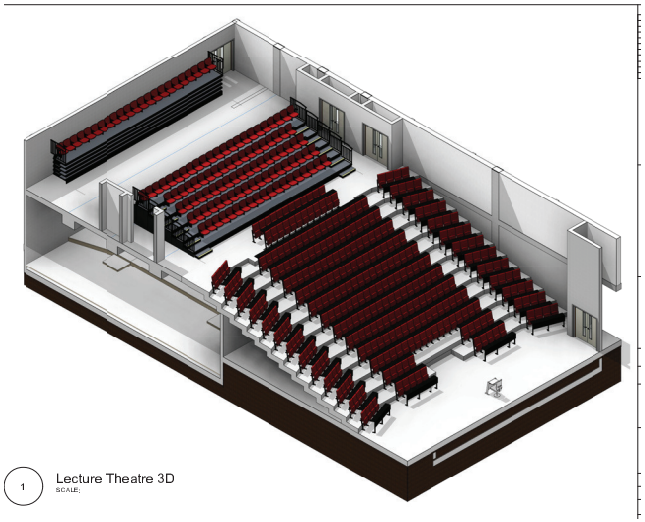
-Group Learning Space – at the end of Stage 2 we were asked to review to ascertain whether the space could accommodate an increase from 120 to 150.

Outcome – through development of the structural design of the building section with the M+E requirements we have been able to accommodate the increase within the available space, as we are able to use the underside of the main lecture theatre seating to widen the overall Group Learning Space. The design incorporates a dropped floor slab, which facilitates not only the low gradient stepped seating, but also a route for mechanical ventilation from the riser within the adjacent stairwell to the plenum beneath the main lecture theatre which provides ventilation to this seating zone of this space.

•Teaching lab –the cohort of 120 was agreed at Stage 2. The layout has developed through further consultation with the end users, incorporating a flexible partition to allow the space to be split into two. Further ancillary accommodation to allow the lab to work as two spaces has been incorporated.



1 Group Learning 3D
SCALE:



1 Lecture Theatre 3D
SCALE:

NORR presented the proposals, as current at the time, to the Hertfordshire Design Review Panel, on the 10/09/18. Although not an obligation of the Planning Application Process, it was a considered appropriate due to the scale and prominence of this building on the Campus. The proposals were generally well received, with a number of issues were raised for our consideration. We have addressed each of these in turn in the following pages:

- RVC Campus identity and architectural cohesion
- Unresolved areas: roof level at TaRC, scale of eastern elevation, north elevation refinement.
- Connectivity and legibility
- Landscape strategy and intervention

Legibility of Main Entrance:

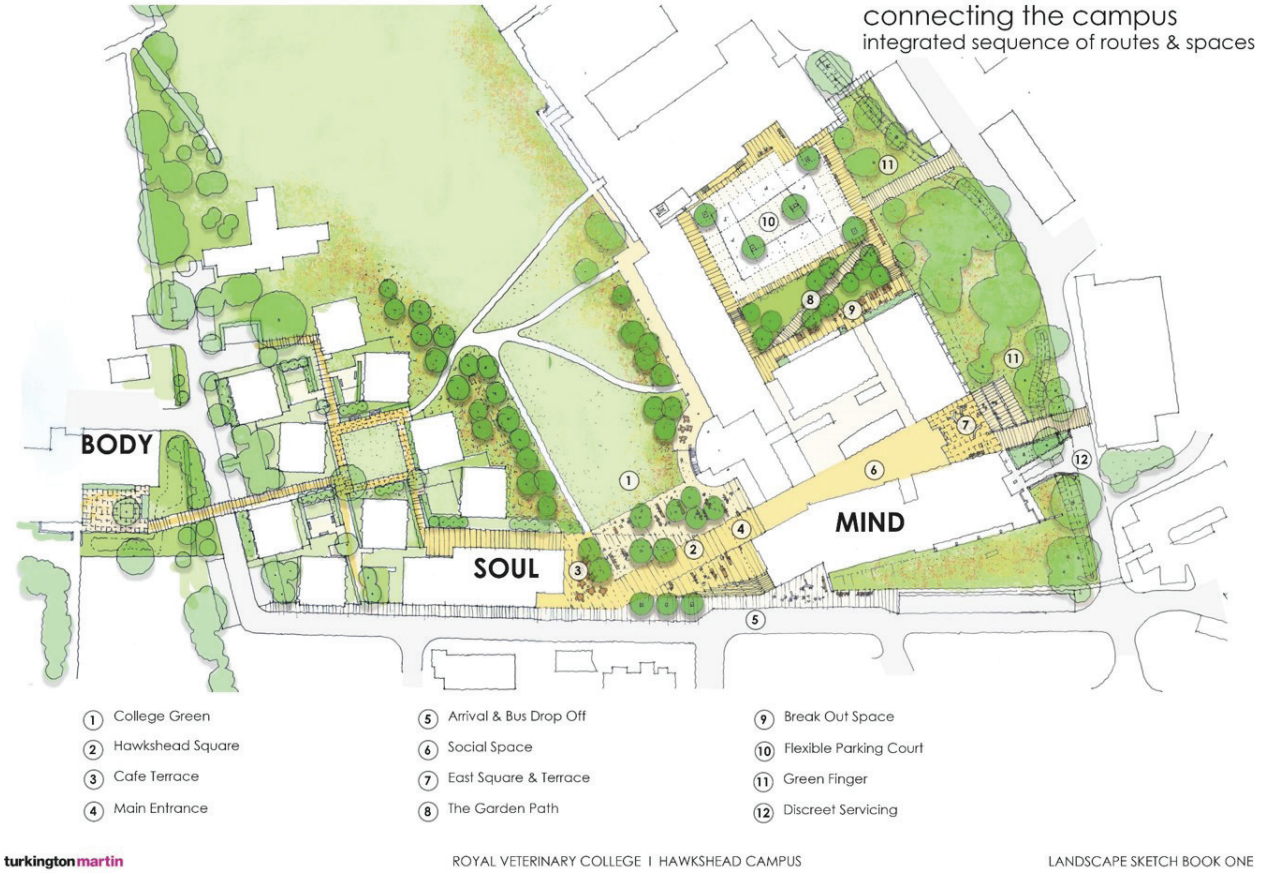
Issue- As the primary entrance to the building, there was concern that the entrance wasn't legible from the car-park. There was concern that the landscape to the front of the building didn't compliment the approach from the south.

Solution- NORR altered the entrance 'frame' by introducing a pre-cast plane to the existing glazed frontage and original entrance door to TaRC, retaining the existing cantilever. This effectively retains the strong individual aesthetic of the TaRC primary elevation, limits disruption to the existing fabric and opens up the entrance to the car-park approach from the south aswell as from the refectory and entrance gate from the west. The new façade included replacing faceted structural glazing within TaRC whilst still creating an entrance lobby to the main building. Whilst the Review panel questioned the scale of this entrance it was recognised that the existing soffits to both TaRC and the Eclipse and the bridge link between limited available height.

Landscape Strategy and Intervention:

NORR and Turkington Martin Lanscape Architects addressed concerns over a cohesive landscape approach at the main entrance area by reviewing and proposing to open up the existing east-west orientated main entrance landscape solution towards the south by introducing a stepped access to blend with the existing steps at the current TaRC entrance. The ramp is then retained but the new steps offers direct access from the car-park and bus drop off zone, whilst improving the existing plaza space for students and staff to occupy socially between the new building and the existing conference/social building, whilst recognising the need to blur the edge into the main green space running south to north along the front of Eclipse. This is done with further external seating/ teaching space and tree planting.

- Mown lawn providing flexible amenity space
- Wild flower planting, long grass and trees to frame green
- Bound gravel social space with seats at heart of campus providing key east west connection
- Ramped link between restaurant and academic quarter
- Re-orientated steps providing direct link from drop-off and car-park
- •Waiting space for taxis and buses
- •Restaurant terrace



South Elevation and East Elevation:

Issue- Design Panel felt that the termination of the continuous façade screen at the junction between TaRC and the new build extension was unresolved. Whilst they recognised this device unified the overall scale and massing it did not respond well to the step in height specifically where the external plant area met the adjacent plant area on TaRC. In addition the panel questioned why the rhythm changed across each elevation. The panel also question the continuation of the framed façade across the rear elevation and the resultant scale created by this visually for what is in effect the secondary entrance.

Solution- NORR reconfigured the elevations to be more responsive to changes of use, introducing a more malleable colonnade maintaining an equal spacing whilst stepping down at the library to the north elevation and at the entrance to the east which continues at 2 storeys around to meet the existing TaRC building on the south elevation. The plantroom is then set back on the second floor to align with the existing plant screening which continues around to the east façade terminating at a setback visitors lounge- this screen will graduate from timber slats to 'brass' slats as it moves toward the north east. This effectively reduces the scale and sits more comfortably against the existing buildings to either side.

Recess to east entrance:

Issue- The panel raised a question over the depth of this entrance and the quality of the space.

Solution- NORR carried out a study and considered alternative solutions in conjunction with amendments to the façade and visitor lounge above. The proposed change moves the entrance door/screen toward the east increasing the usable space within the concourse and reducing the depth of the covered external space. This allows a deeper draft lobby and an additional room which can be used as a breakout space for conference or lectures, a museum or exhibition space (temporary or permanent) or an additional large scale meeting room or teaching space. In addition the design allows this to open out into a covered sunny and sheltered external area offering the College an inside/outside room for social functions or teaching. The new entrance is designed to align with landscape layouts externally and offers a more integrated and holistic approach to both links to the research areas and social seating areas stepping down toward the trees and grass.

Landscape Strategy:

The panel asked that the College consider an overall campus master-plan landscape strategy which integrated sequence of routes and spaces, considered long term sustainable solutions, minimised maintenance through future planning and embraced its parkland setting with appropriate landscape solutions. Turkington Martin have looked at a wider landscape proposal which links the sports building, restaurant building, central green finger and arrival area through the new heart of campus atrium to the research zone to the east.

This was titled MIND-BODY-SOUL. In addition Turkington Martin have been asked by the college to look at a full master-plan strategy which links these proposals to other key campus areas and addresses campus landscape management, long term planting plans and parking.

The proposal addresses the following

- Retain, protect and enhance green fingers
- Create flexible paved space for parking and other managed uses
- Develop garden walk as part of accessible pedestrian route
- Terrace as break-out and social space overlooking green finger
- Building elevations engage with existing landscape
- Limit routes across green finger

outside Eclipse

Parking:

Issue- the design team to consider removing parking to courtyard space.

Solution- Parking was introduced into this space to reprovide heavily used parking spaces removed as a result of the new building location.

The design proposes using a lightweight flexible surface which will drain naturally, remain aesthetically pleasing when not used as a car park area. This strategy will ensure that parking numbers are maintained.

The design allows flexibility at off peak times and can be used for events, markets over summer periods when not required for parking.

sketch parking plan

ACCOMMODATION SCHEDULE;

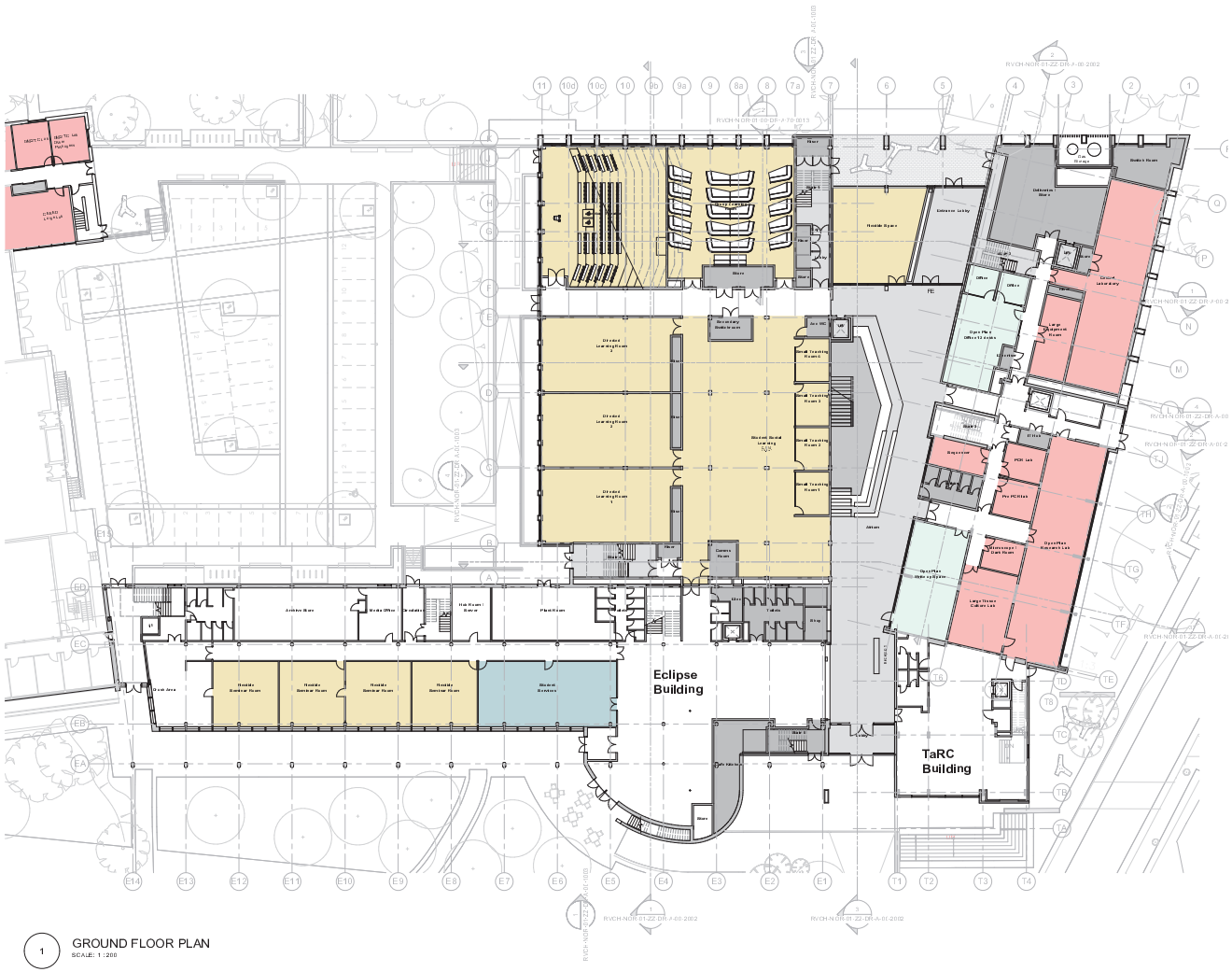
The associated accommodation schedule which reflects the frozen floor plans, and takes account of the design development noted within this section is included within the appendix.

THE PROPOSED BUILDING

Limited by the height of the existing buildings and by a need to tie into existing floor plates the proposed massing is three storeys generally linking Eclipse and TaRC. In linking with the existing buildings the plan arrangement is a horse shoe form around a central street and 2 storey high atrium.

GROUND FLOOR

The primary move on ground floor is rationalisation of entrance which is placed between TaRC and Eclipse on the west façade. The former front door at TaRC is screened off an a new portal frame to the underside of the existing cantilever- retaining the overall massing and form of both existing buildings whilst creating a clear front door further reinforced by extended public realm to the front landscaped area. The new entrance leads to a reception, public concourse and direct links to the secondary entrance at the east façade to the clinical research area to the east of the campus. This two storey high internal street is top lit and allows visual links to all other parts of the building. At ground level and first this is primarily student social learning and gathering space including café, breakout space and bookable rooms. There is direct access to a 320/420 person lecture theatre and 120 person group lecture theatre as well as write up space and research laboratory space within both new build and existing TaRC teaching labs. The labs are serviced by a dedicated service drop off and store accessed directly from a discreet yard to the east elevation. The ground floor links through to Eclipse at the large scale flexible teaching spaces to the north of the new build element and at the extended café space to the west. Existing smaller direct learning rooms are retained and modified to be more flexible. The east entrance widens to embrace the clinical research zone and associated green finger. This space is occupied by a draught lobby and flexible exhibition space/ garden room effectively extending the concourse into the landscape.



1 GROUND FLOOR PLAN
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CEEED Building:

As the existing research space is demolished there is a need to terminate the comparatively new research laboratory space at CEEED including extension and refurbishment of existing labs and new emergency stair. This gable frames the new courtyard space and offer external access to the new build element to the east.

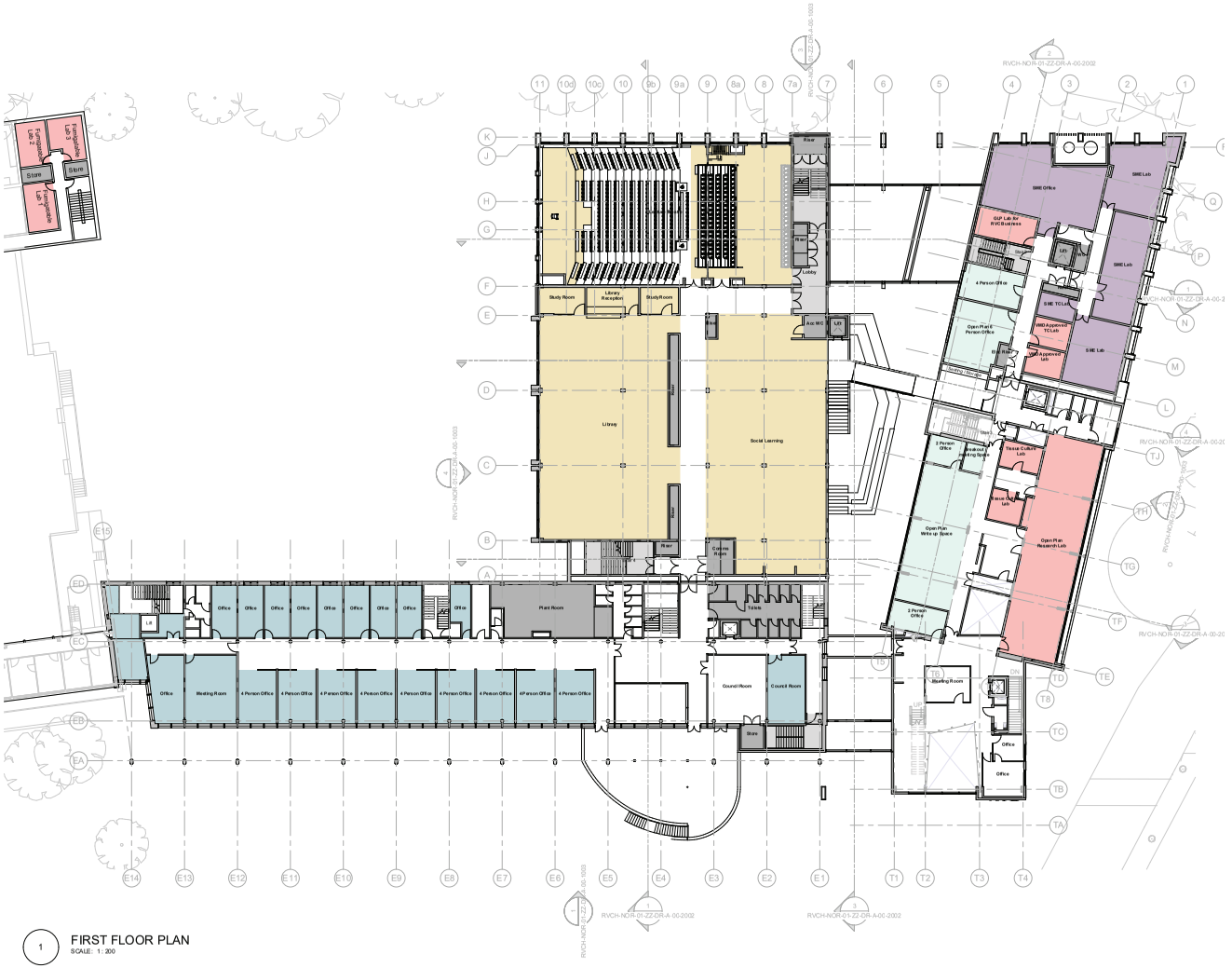
FIRST FLOOR:

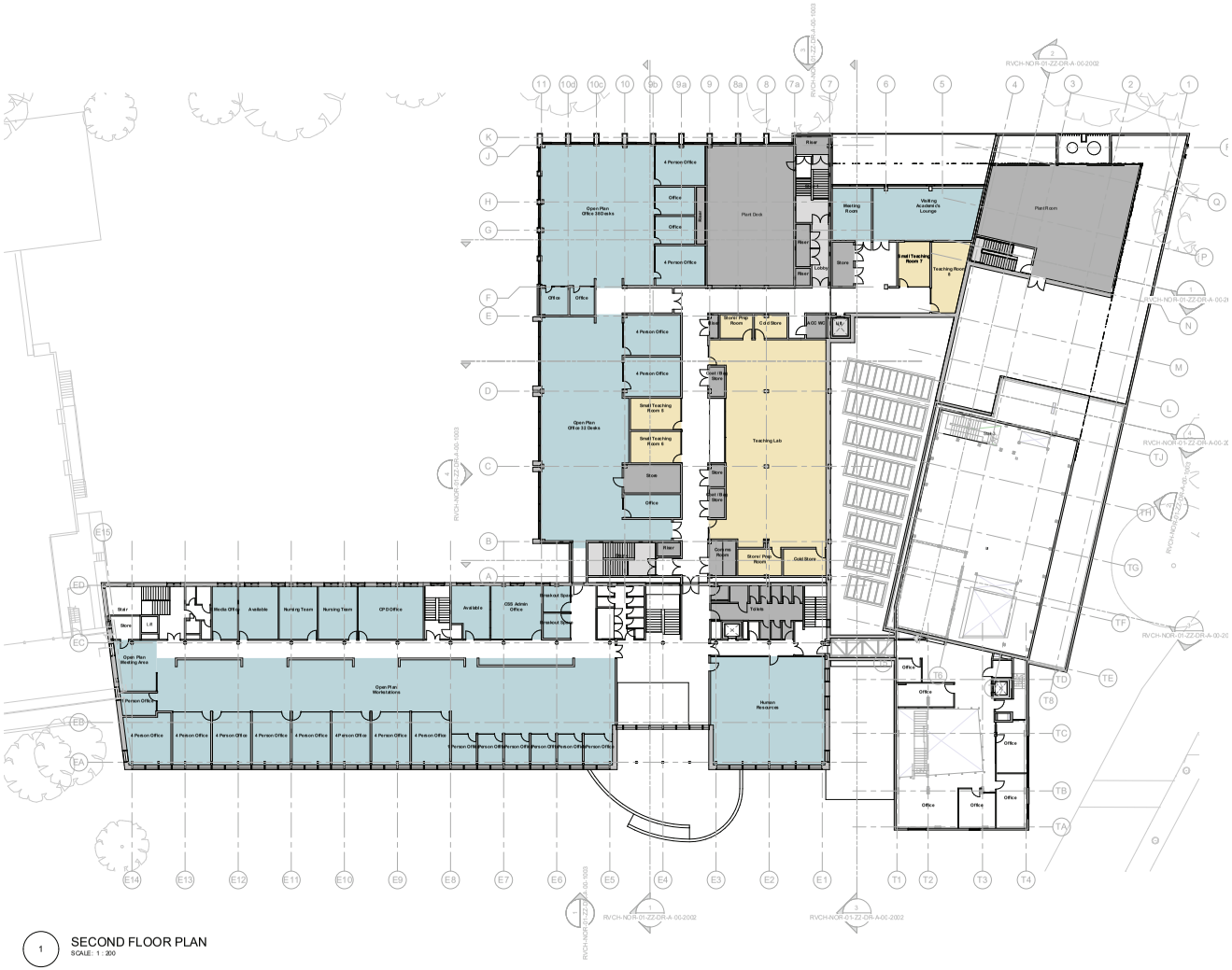
Again opening into the double height atrium space the first floor comprises additional social learning space which opens into a new library study area to the north. The upper level of the large lecture theatre, breakout areas and research laboratories with write up space adjacent and overlooking the 'street'. There is also SME labs to the first floor which sit directly off the main circulation space within site of both entrances and adjacent to the College research space.

The existing floor plate of the Eclipse building will be converted from open plan social learning space to cellular and open plan office accommodation for teaching and research staff. This takes advantage of the shallow plan allowing all offices to be naturally ventilated and lit whilst freeing the deeper new build floor plate to take a more flexible and fluid social learning space.

CEEED Building:

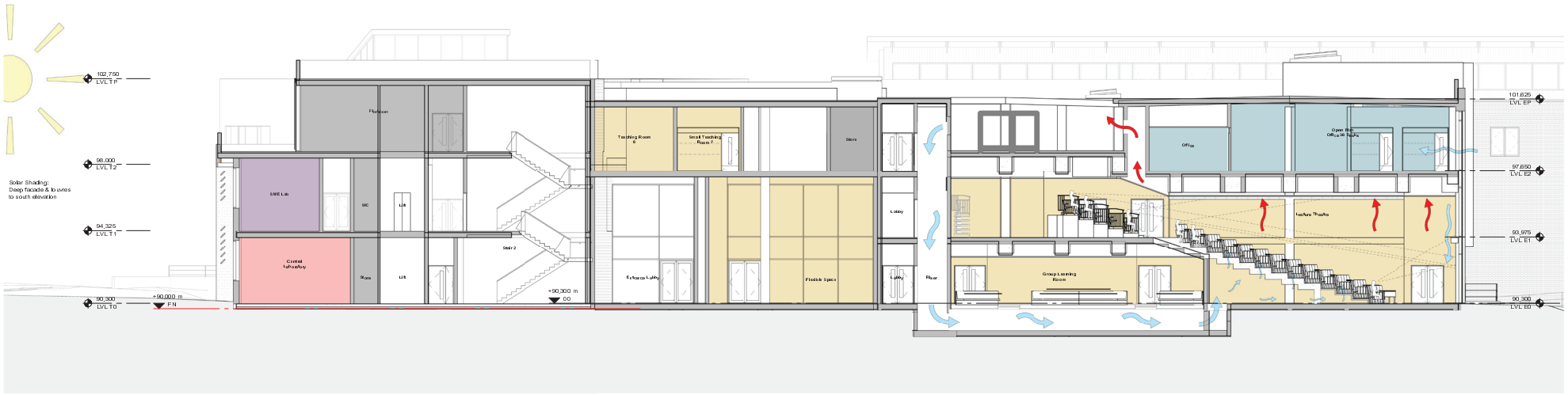
The upper level of CEEED provides further laboratory research space in addition to breakout and office accommodation.





SECOND FLOOR:

The upper floor rises above the 2 storey high atrium space and becomes more private and therefore quieter in nature. The accommodation extends again from the existing Eclipse building at the north running east and south bridging across the east facing entrance, reducing its' scale whilst offering key views to the spaces located there. This accommodation comprises of open plan office space facing to the north courtyard, teaching laboratories facing into the roof of the atrium below and a dedicated visitor lounge and flexible hot desking space for visiting lecturers and guests directly above the east facing entrance set back from the primary façade and aligned with the plantroom screen adjacent. The plantroom sits back from the leading edge of the main façade thereby reducing the height visually and continues round from the east elevation to the south elevation connecting with the existing plant screen on TaRC. This plant will service the laboratories below with further hidden rooftop plant servicing the lecture theatre to the north. All plant is fully hidden from view.



1 DIAGRAMATIC SECTION AA
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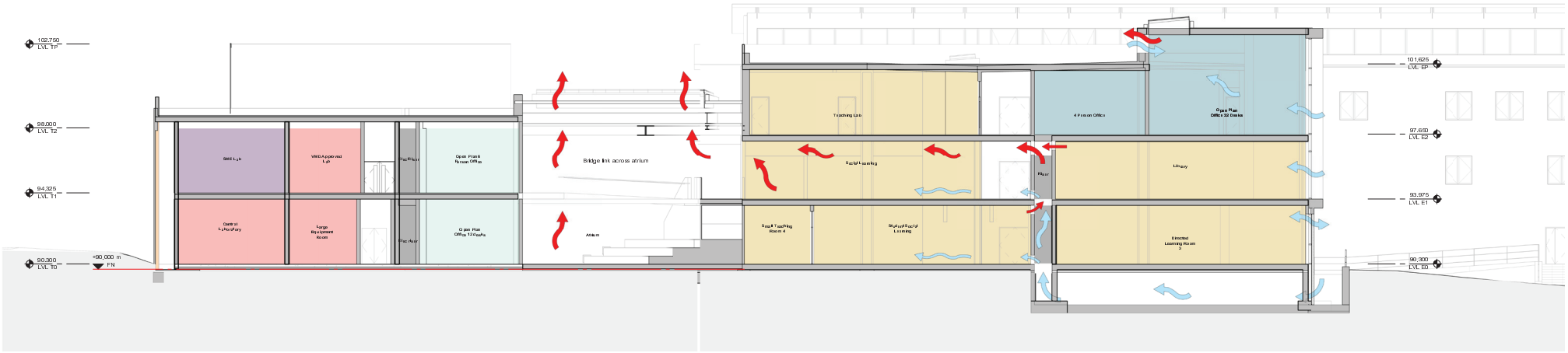
2 SECTION AA2 Copy 2
SCALE: 1 : 100


102.750
LVL T3
98.000
LVL T2
94.325
LVL T1
90.300
LVL T0
+90.000 m
FN
Bridge link across atrium
Atrium
Teaching Lab
4 Person Office
Open Plan
Office 32 Desks
Social Learning
Library
Directed
Learning Room
101.625
LVL E3
97.650
LVL E2
93.975
LVL E1
90.300
LVL E0

INTERNAL SPACE AND BUILDING SECTIONS

The sectional approach for the building is generated by the existing floor levels of both Eclipse and TaRC; being consistent at ground floor level, with a level variance at first floor level which is dealt with across a bridge linking the two new build elements, whilst ensuring the (what are effectively new build extensions to TaRC and Eclipse) levels are maintained where they connect to the existing buildings directly.

The floor to floor levels provide sufficient structural and service zones for this new deep-plan building, whilst also permitting the integration of large volume spaces of the lecture theatre and group learning space, translating straightforwardly within the elevational treatment accordingly.

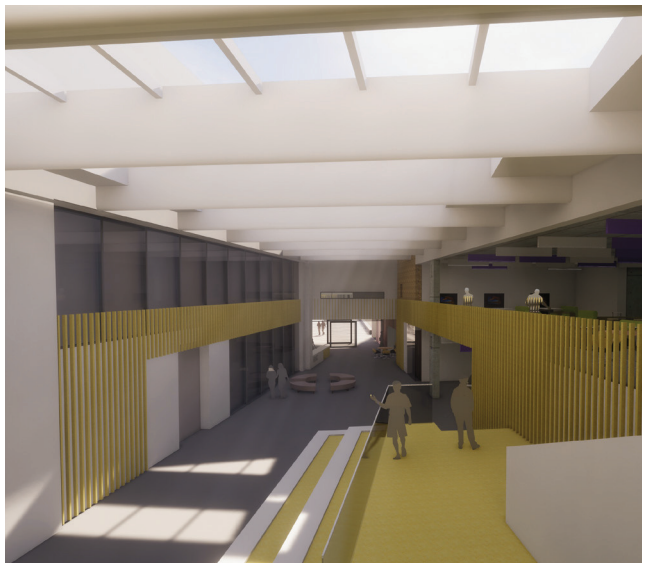
The circulation spines, service strategy and underlying repetitive structure all provide an effective discipline to the wide variety of cross sections which can be seen in the proposals. These cross-sections illustrate the distribution of, and hierarchy of space within the building; from private, semi-private to semi-open and open plan spaces which address the volume of the atrium and provide vibrancy and transparency within this space.

INTERNAL ENVIRONMENT

The sectional design is extremely important in a simple dignified building, facilitating very interesting relationships between not just the projects' internal spaces, but also in relation to their relationships with the external environment. For example, the atrium space illustrated in the plan, will enjoy lovely visual and practical connections to the exterior through large glazed walls at the east and west ends, with views outward to the adjacent mature trees to the east, and an enhanced landsaped plaza to the west.

The large teaching spaces on the perimeter of the new building are designed to be both practical; permitting close off to the outside environment via blinds, or each have the ability to benefit from the unique views of their landscaped setting.

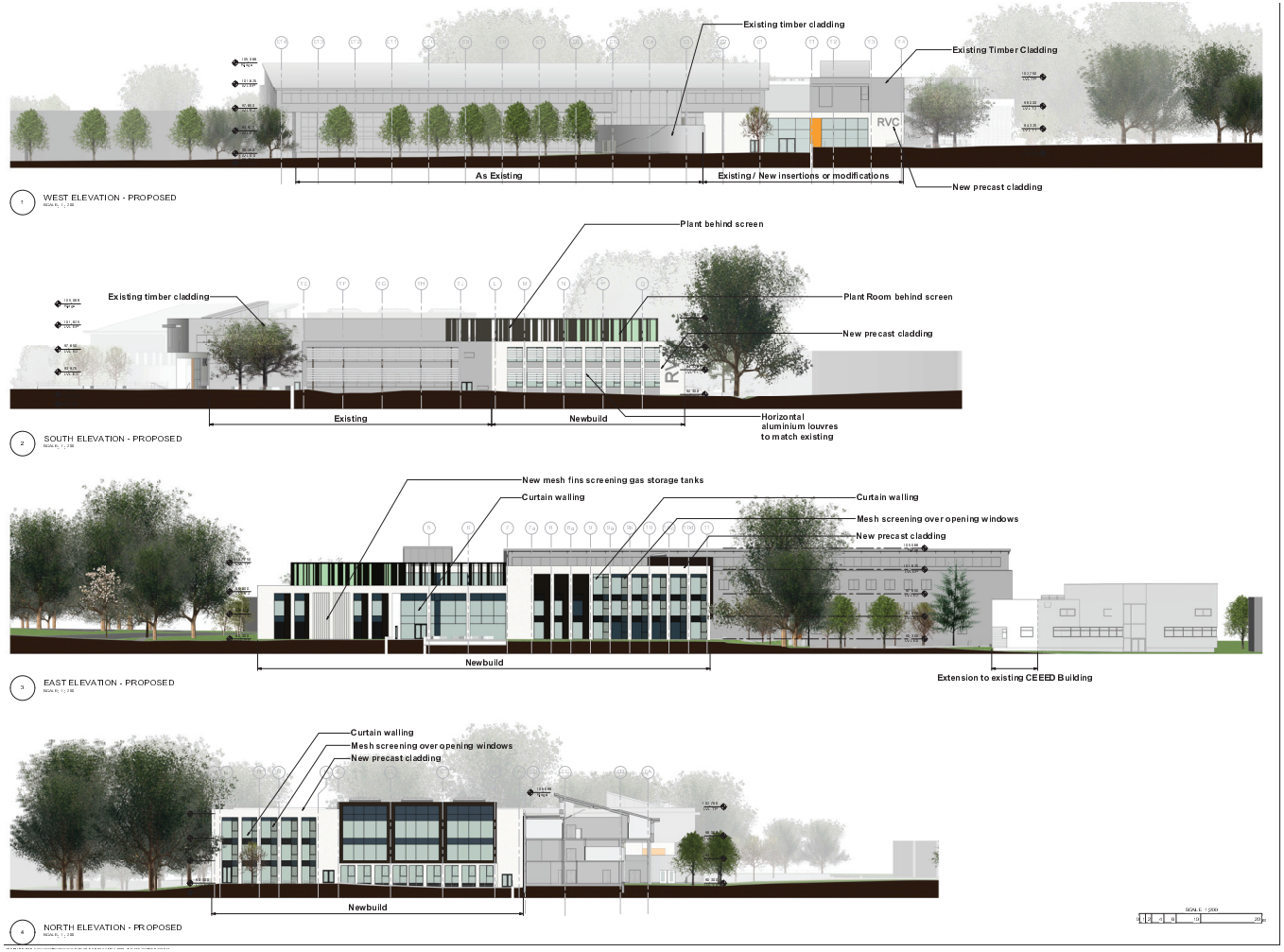
The perimeter of the upper levels also benefit from their aspect within the campus, with views out via the full height glazing within the spaces. Top floor accommodation also benefits from natural light via rooflights where possible.



External Appearance and Material Palette:

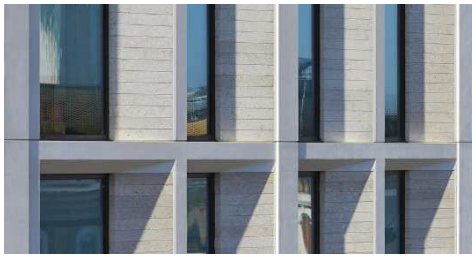
Whilst the new buildings on the campus are of a high quality and offer a continuity of material it was apparent that there was no real hierarchy between Eclipse, TaRC and the Restaurant/ Conference building. It was therefore essential that the new build element be clearly defined in terms of approach, threshold, massing, links to the wider campus and material choice. Key challenges were designing a single building by stitching together two very different modern building types. This was particularly challenging around the formation of a front door which was of a scale and gravitas befitting of the new combined whilst working around existing cantilevered soffits and bridge links between TaRC and Eclipse.

NORR opted to use a limited palette of materials- white pre-cast concrete to match TaRC, bronze aluminum panels and louvres to match the student accommodation and limited use of timber cladding to rooftop plant screen and where the concourse/ atrium bleeds out into the landscape. The timber cladding is then continued through the atrium space to form a warm and welcoming interior whilst meeting acoustic requirements.



The primary façade is formed in white pre-cast and arranged as a colonnade skin with repeated bays which are broken at entrance. Windows, vents, louvres and spandrel panels are arranged within each bay. The height varies at key points, rising at right of east entrance then dropping again at the north elevation stepping down to frame bronze aluminium library and office 'bay windows' overlooking the courtyard and rising again to meet the Eclipse building. A pre-cast frame extends across the TaRC frontage directly under the existing cantilever, reconfiguring entrance to frame within a new goal post arrangement at the opening of the main atrium space.

Externally landscape materials continue those already in place within the central campus surfaces. This is covered in more detail within the Landscape Report.



NEXT STAGE

The next stage of the project is the preparation of the Technical Design in accordance with Design Responsibility Matrix and Project Strategies to include all architectural, structural and building services information, and specifications, in accordance with Design Programme. Specialist Subcontractor input will be identified to allow progressment during the early site stage.

Concurrently the Design Team require to prepare a series of enabling works packages to allow these to be procured and implemented ahead of the main construction works.

3.0 TECHNICAL DESIGN DEVELOPMENT

1.0 Introduction

This report presents the outline civil and structural designs (RIBA Stage 3) for the proposed development at the Royal Veterinary Colleges Hawkshead campus. The proposed development consists of a new building to provide teaching and lecture rooms as well as laboratories and academic staff offices. A two store atrium will be created where the new building adjoins two existing buildings. As part of the works, alterations to a number of existing buildings will also need to be made as well as major works to existing services crossing under the proposed site.

This report should be read in conjunction with the appended drawings and reports prepared by other members of the design team.

2.0 Existing Site and Ground Conditions

2.1 Location

The proposed building is located on the Royal Veterinary Colleges, Hawkshead Campus, Hawkshead Lane, North Mymms, Hertfordshire.

2.2 Existing Site

The site of the proposed building is located centrally within the college campus. The site is bounded to the east by the Eclipse building which is three storeys in height and which was constructed in the mid 1990's. To the south is the three storey TaRC building constructed around 2011. To the east is the Clinical block which is predominantly single storey and probably dates from around the 1960's. Refer to figure 1 opposite.

The proposed building will be positioned over an area currently used as a car park as well as a grassed area to the east of the TaRC Building and over the Clinical block which is to be demolished.

Existing ground levels fall from the east to west and from south to north. The fall is around 1.3m from the highest to the lowest point which is at the north east corner of the proposed building.

2.3 Ground Conditions

A site investigation was been carried out by Geotechnical and Environmental Associates Ltd. in June 2018 and the findings are contained within their report dated August 2018. Reference should be made to this document for detailed information on the ground conditions as well as their findings and recommendations. Seven trial pits and three boreholes were excavated during the investigation works and these indicated that the ground conditions beneath the site were variable. However they generally comprise of fill over brown clay over sands and gravels to depths of between 3.7m to around 6.0m. These overlay clay with chalk which is inter layered with bands of sands and gravels. Chalk was encounter in two of the boreholes at a depth of around 13.5m and proven to a depth of 20m.

In the other borehole, chalk was not encountered although the borehole only extended to a depth of around 17m. The strata encountered are representative of the strata found during previous site investigations carried out in other areas of the college campus. Ground water was encountered in the granular material at depths of one of the boreholes at a depth of around 1.7m (87.6m OD) and 3.9m (85.1m OD) a standpipe has been installed to monitor levels. The need for measures for dealing with ground water during the construction phase in any deep excavations and any waterproofing of the building will need to be assessed during the detailed design stage (Stage 4) once levels of the building / structure have been established.

With regard to contamination, the findings indicate the site does not have a potentially contaminative history. However traces of hydrocarbons and asbestos were found during the investigation works, albeit at relatively low concentrations. These are thought to be localised issues. For further information regarding contamination reference should be made to the site investigation report. It should be noted that the site investigation works and contamination testing only coved the open areas of the site. The proposed building along with associated landscaping will sit over the foot print of the current Clinical block which is to be demolished. Further testing will be required in this area once this block has been demolished. The site sits above a Source Protection zone and as such, the bottom of any piled foundations would need to stop above the chalk strata unless agreed otherwise with the Environment Agency. A preliminary Unexploded Ordnance (UXO) assessment was been carried out for the site which classified it as being medium risk. It is recommended that a more detailed assessment is carried out. If the findings of this are similar , then consideration may need to be given to specialist supervision during excavation works and magnetometer scanning during any piling works.

2.4 Site constraints / enabling works

There are a number of existing services crossing under the proposed site. These include a medium pressure gas main, fibre optic communications cables, and drainage runs. An attenuation tank and grey water tank serving the TaRC building are sited under the foot print of the proposed building in the current car park – refer to the appended site constraints drawing for further details. These services as well as the attenuation tank will need to be moved as part of the proposed works and alternative routes / locations found for them. This will not be a straight forward exercise as the existing buildings that they serve need to stay in operation while the proposed works are carried.

Enabling works are to be carried out ahead of the constructing of the new building. It is understood that these may include installation of the new attenuation tank, a new staircase and alterations to the toilets in the Eclipse building. A programme for these works along with relevant designs will need to be worked up during the next design stage.

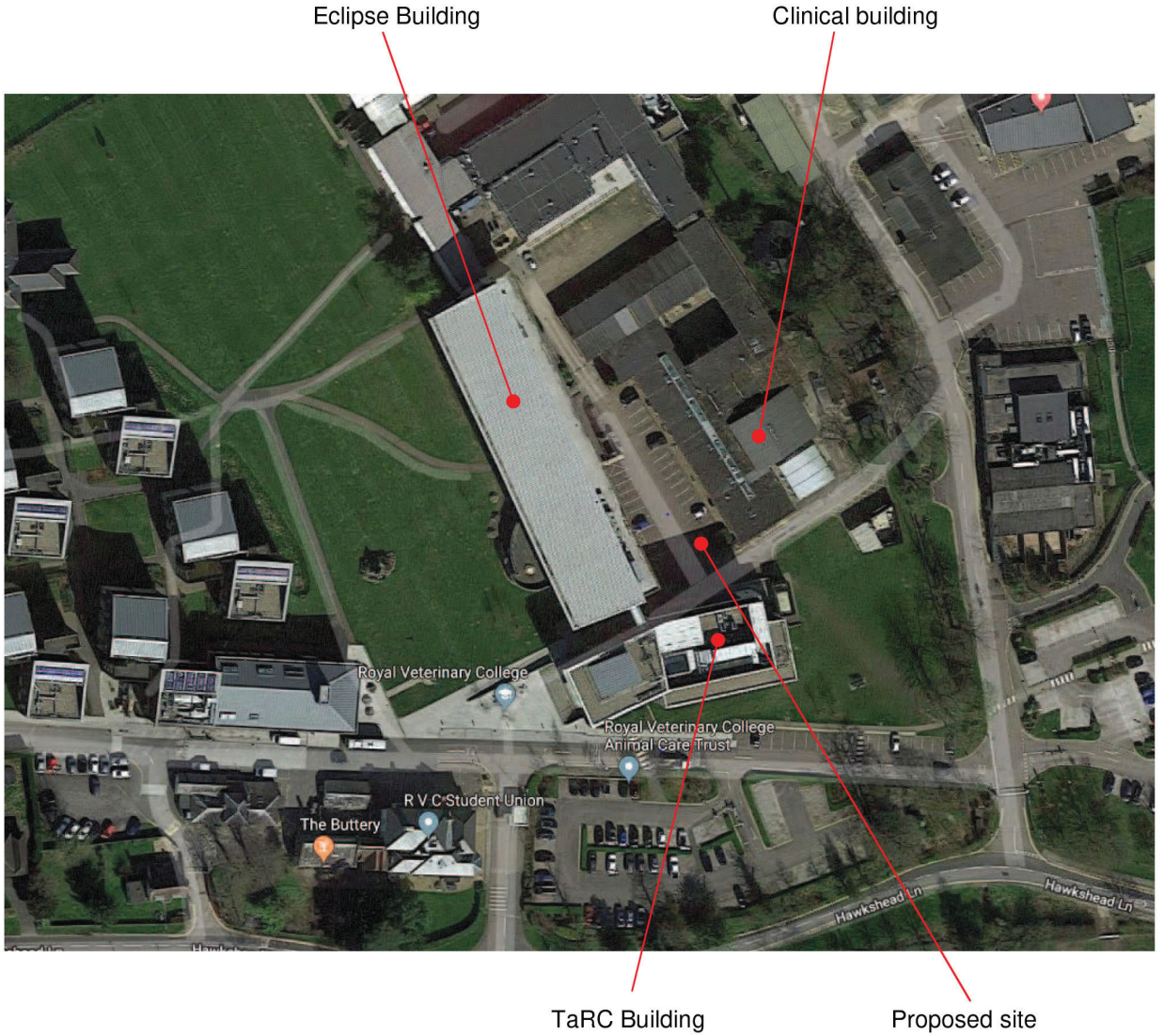


Figure 1 - Location of site within the campus

3.0 Structural proposals

3.1 Super structure

Given the proposed architectural layouts and the relatively large spans required over the lecture theatre and entrance area, a framed solution is to be adopted. It has been decided to proceed with primarily a concrete framed solution consisting of flat slabs supported on concrete columns and walls. There are a number of reasons for the choice of a concrete frame which are as follows:

• It continues the aesthetic of the existing Eclipse and TaRC buildings.

• The soffits of the slabs can be exposed and the thermal mass of the slabs used as part of the M&E Engineers ventilation / cooling strategy for the building.

• Flat soffits will aid service distribution

• It will provide a robust monolithic frame which will be simpler to detail as opposed to a steel

frame say.

• More readily deal with services openings and penetrations.

• Provides inherent sound and fire protection.

• Provides a flexible structure if layout or use changes in future

• Less lead in time than a steel frame.

• Simplified fixing and support of the proposed pre-cast concrete cladding system – cast in fixing

system can be used.

Column grids which are generally dictated by room layouts vary across the building with the maximum being approximately 9.5m x 8.5m. This leads to the slabs having large spans which will required slabs up to 350mm deep. A live load of 5 kN / m2 on all of the floors has been assumed at present which will deal with all of the proposed usages. The exception will be the plant areas where 7.5 kN / m2 has been used. Within the main lecture theatre deep reinforced concrete beams will be required to span 16m to support the second floor slab. These beams will also act as transfer beams in certain locations supporting columns carrying the roof. The proposed size of these beams is 700mm wide by 1200mm deep. Due to the difference in ground levels across the site, ground floor slabs will consist of either suspended cast insitu rc slabs or precast concrete hollow core slabs with a concrete topping supported on stub walls. The roof over the main body of the atrium is to be constructed from proprietary glazing units and it is proposed that these are supported using steel beams spanning between the north section of the proposed building and the existing TaRC building. It is proposed that the new flat roof to the west of the atrium be constructed from steel beams, spanning between the existing Eclipse and Tarc buildings with light gauge steel purlins to support the roof decking. Connection details to the existing buildings will need to be worked out during the next design phase.

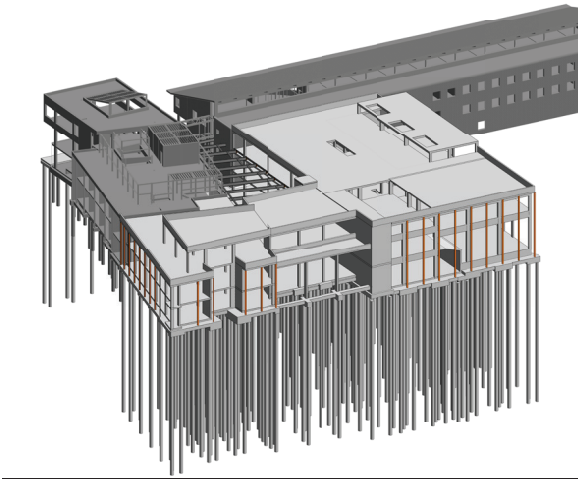
A new staircase to access the first floor of the Eclipse building is proposed to the west of the building in the area of the current entrance which may form part of the enabling works. This will need to be inserted under the existing over hanging second floor and external columns supporting it and the roof. This is to be constructed a steel framed structure for ease of construction. This will also be used to support the new flat roof between the Eclipse and TaRC building.

The pre-cast concrete vertical cladding elements that project from the face the building as well as other cladding elements will require structural steelwork supports and additional / secondary steelwork fixed back to the main frame or existing buildings. The detailing of these elements will need to be carefully co-ordinate with the cladding suppliers / installers.

Fixed seating is required in the main lecture theatre. The stepped tiers required for the seating will need to be constructed from special pre-cast concrete elements supported on a steel framework. Within the Group Learning room, the tiered seating is to be constructed in timber and the design of this will need to be worked up in detail during the next design phase.

3.2 Sub-Structure / Foundations

Given the column spacings, loading requirements and the use of a concrete frame, column loads will be quite large and as such piled foundations will need to be used.. As previously noted the site is located over a source protection zone and as such the length of the piles will be limited by the depth of the chalk strata. Therefore a larger diameter pile will be required to achieve the required load capacity over that which would normally be used. It is proposed that 600mm diameter piles are used. The piles will support either reinforced concrete pile caps or ground beams which in turn will support the supper structure. A number of below ground ventilation ducts as well as a lowered slab to the Group learning room will require the foundations to be at a greater depth in the areas where they are located and will result in some excavation being required. Below ground retaining walls will also be required as part of the foundation works in these areas.



4.0 Civils

4.1 Introduction

This section of the report sets out some of the general principles that will be followed in the drainage design. The level of detail presented here is consistent with that known about the operation of the existing drainage.

4.2 Investigations / existing drainage

Information about the operation of the existing site drainage has been obtained from the site topographic survey undertaken by Cube Surveys at the end of February 2018 (Ref: CUB-RBSRVC- 001/002) and CCTV Survey drawings and report undertaken by Laser Surveys Ltd from June 2018 (Ref: G 9018/1). The site CCTV survey identified existing foul and surface water sewers and inspection manholes within the area of the proposed site. This drainage is exclusively associated with the current buildings and the use of existing rainwater harvesting and attenuation tanks currently serving the existing TaRC building. Furthermore, the surveys indicate a ditch to the east of the proposed building. This ditch collects surface water from the existing adjacent buildings / site and discharges to the north into the Mimmshall Brook. There are parts of the existing drainage system serving the retained buildings that are located underneath the proposed building which will need to be kept live during the construction phase and be diverted as required. This will need to be coordinated with the rest of the design team. Reference should be made to Conisbee drawing 170344-X-00-DR-C-C1200 & 1201 in the appendix for details of the existing drainage on the site and runs that need to diverted or made redundant etc.

Conisbee are responsible for below ground drainage design and will work in collaboration with the rest of the design team to co-ordinate drainage from above (soil and rain water) to ensure they are in suitable locations to connect to the below ground drainage.

4.3 Surface Water Drainage

According to the Environment Agency maps the site is located within Flood Zone 1. This indicates that there is less than a 0.1% annual probability of the site flooding from rivers or sea during a typical year. However, Environment Agency maps indicate the existing buildings could be affected by the risk of flooding from surface water. The proposed finished ground floor level will therefore need to match the level of the existing TaRC building to avoid being at risk. The proposed drainage system and the introduction of SUDS features such as attenuation tanks will help to reduce the existing surface water runoff and reducing the risk of flooding.

From a previous site investigation carried out by GEA (February 2009 – Report No: J08280) soak away test undertaken found a very low soak away rate within the area. Therefore, infiltration methods have been dismissed.

In accordance with Welwyn Hatfield Borough Council and Hertfordshire County Council regulations, any new developments drainage system should not increase the surface water runoff from the existing site. The proposed development results in a reduction of impermeable area.

Therefore the post development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development, which is in accordance with BREEAM requirements. If BREEAM approval is to be obtained, there is a requirement that the peak rate of run-off from the site is to be no greater than it was pre-development for all the events up to the 1 in 100 year plus 40% climate change storm events. This requirement is more onerous than Welwyn Hatfield Borough Councils requirements.

The LLFA local authority will insist on implementing planning conditions that seek to reduce surface water flows to 'Greenfield' rates and implement more SuDS than proposed, notwithstanding that there is a reduction of total impermeable area as a result of the proposed site. This will need to be clarified during the planning consultation.

Based on the existing site impermeable area of 4730m2, we have calculated the total existing 1 in 1 year storm runoff rate to be 11.7l/s. The proposed discharge rates will be restricted to this value for all storms up to and including the 1 in 100 year storm event plus 40% for climate change.

The incorporation of SUDs utilizing underground tanks and porous pavements will be used for the surface water strategy for the development. Based on the site greenfield Qbar rate of 2.7 l/s and the additional 9l/s for the existing TArc building. The proposed building area of 3100m2 and the existing building area of 700m2. Therefore the proposed attenuation will have a total volume of 147.5 @ 11.7l/s

Refer to Conisbee drawing 170344-X-00-DR-C-1000 for further details of the attenuation tank locations and proposed drainage.

4.4 Foul Water Drainage

It is proposed to connect the new foul water drainage from the proposed building into the existing on site drainage system. The foul water flows generated from the new scheme are considered low (approx < 10.0 l/s) and therefore we do not anticipate capacity issues with Thames Water, albeit this will need to be confirmed.

4.5 Constraints and Coordination

Some investigation works may be required to ascertain details of the construction of the Eclipse building where the proposed atrium roof and staircase interface with it. The requirement for these works will become apparent once the design of these interfaces is worked up during the next stage.

The site services plan indicates that there is a huge number of services located within the proposed main atrium area. In addition there are also additional services that are proposed in this area. All these services need careful coordination with the drainage proposals. Further coordination is required during the next stage of design. Other constraints that have come to light include the trees with TPOs that run along the ditch, which have resulted in the need to reposition the attenuation tank into the new landscaped quad area.

In order to facilitate the installation of the new delivery bay, it will be necessary to culvert the ditch at this location to facilitate crossing it. These works will require approval by the Local Lead Flood Authority. The culvert will need to be significantly large in order to match the profile of the ditch and not to reduce capacity of it. Care will also need to be taken regarding trees that will be affected by these works. There are a number of pipes that discharge into the ditch and those in the area of the proposed culvert will need to be investigated and may require works to divert them.

5.0 Further investigations

Some investigation works may be required to ascertain details of the construction of the Eclipse building where the proposed atrium roof and staircase interface with it. The requirement for these works will become apparent once the design of these interfaces is worked up during the next stage.

Additional contamination testing will be required in the area of the existing Clinical block when it is demolished.

6.0 Next stage

Once the Stage 3 design has been approved and there is certainty over the layouts and design etc. the detailed design phase (Stage 4) will be carried out. Checks on the existing Eclipse and TaRC buildings need to be made to ascertain if they are capable of supporting the additional loads from the atrium roof and support details for the roof worked out.

Phasing of the works and services diversions etc. will need to be worked out in detail and a strategy of how this can be achieved prepared. As part of this , the scope and designs for the enabling works will also need to be prepared.

Conisbee have collated a Stage 3 Report which is included within the Appendix.

MEP Design -

The MEP stage 3 design is an enhancement of the engineering strategies established at stage 2 with emphasis on the ventilation, cooling, heating, above ground drainage and electrical distribution strategies.

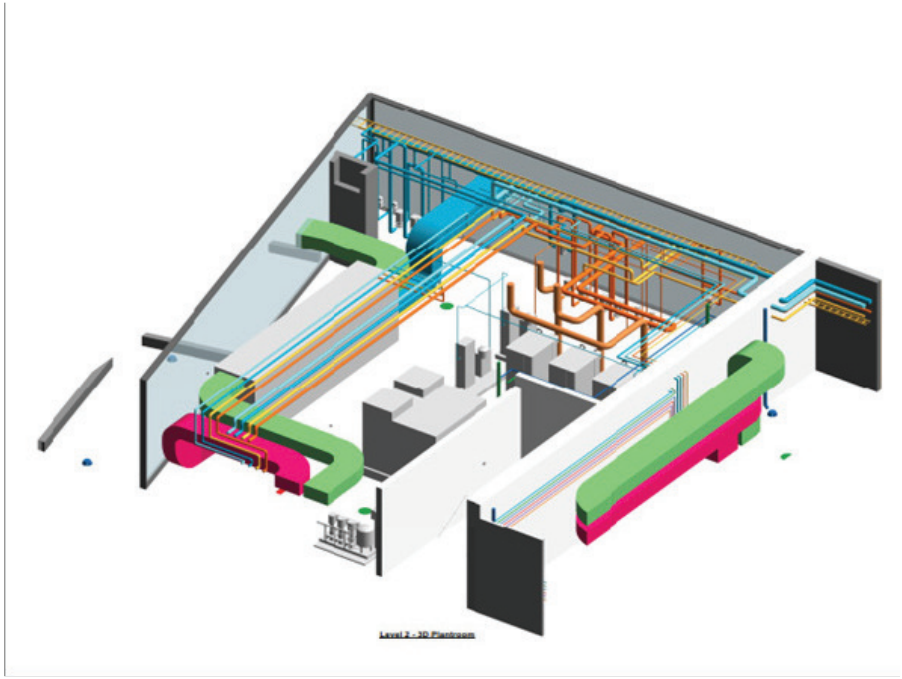
The team have given further consideration to the scope of works required to establish the utility supplies required for the new building with particular emphasis on the electrical and gas supplies.

The existing substation A on site will be upgraded as outlined previously in the stage 2 report however at stage 3 further consideration has been given to emergency standby generation options that can be explored for the upgraded substation A.

The existing medium pressure mains on site will have to be diverted as identified at stage 2 and continued efforts have been made during the stage 3 design to establish how this will be achieved however it is an ongoing exercise.

The ventilation and cooling strategy has been further developed taking account of building orientation, thermal comfort, user control, energy efficiency as well as noise control. The thermal model created at stage 2 has been revised accordingly to determine requirements for mechanical systems and renewables (which is subject to the planning requirements).

The current services strategies for the building have been coordinated with both the architectural and structural teams to establish service risers, ventilation shafts, distribution routes as well as incorporate plant requirements.



AECOM have collated a Stage 3 Report which incorporates the relevant MEP drawings. This is included within the Appendix.

Landscape Design

The landscape design has been developed by Turkington Martin following completion of the Stage 2 Report. The prime purpose was to support the detail planning application and in the first instance, the design approach concentrated on the integration of the displaced parking. However, the scope then extended beyond the car park and immediate building environs. This was in response from comments made by the Hertfordshire Design Review Panel, to help connect the new facilities back into the wider campus, to help develop an overall sense of place at Hawkshead and increase the usable amenity space for the students, in line with the wider master-plan.

A Landscape Strategy was prepared, which explained the external environment of the existing Hawkshead Campus; identified the opportunities and illustrated an overall strategy, which was supported by a number of strategies, sections and other visual material. The Landscape Strategy has formed the basis of the Stage 3 Report.

The Report captured a number of key objectives, which are included here for convenience.

•Reinforce the east west connections across the campus and through the building to improve access and legibility,

•Increase the usable amount of outdoor social space as part of a series of connected routes and spaces,

•Retain, protect and enhance the existing mature tree belt and swale to improve the amenity and nature conservation value,

•Enhance the entrance space at the campus to improve the sense of arrival,

•Carefully integrate the varied threshold levels within the landscape to ensure accessible routes and access for all,

•Develop the short-term parking area as a flexible courtyard that can be used by students when not in use,

•Develop a restrained palette of materials, furniture and planting that builds on the existing recent external works to ensure continuity across the campus,

•Introduce wild flower meadows, native tree planting and alternative mowing regimes in conjunction with the ecologist to improve the bio-diversity across the campus.

Whilst the landscape has been co-ordinated with the architecture and engineering to ensure an integrated solution as much as possible for the planning submission, there remains a number of areas where further co-ordination is required between disciplines;

- Final design of levels to link space between TaRc and restaurant following receipt of further survey information.
- Integration of fire path to west of Eclipse Building.
- Integration of steps, wall and new façade to west elevation of TaRC.
- Final co-ordination and confirmation with arboricultural consultant works in close proximity to the RPAs.
- Final co-ordination of service access to the east, including swept paths, screen walls, access of drainage swale, edge protection and existing trees.
- Development of planting plans and management regimes with consultant ecologist.
- Final co-ordination of levels, access requirements and retained thresholds to the east elevation of TaRC.
- Confirmation of the removal of outbuildings and other features to improve setting and amenity value of eastern tree belt.
- Final co-ordination of levels and access details at CEEED connection.
- Final co-ordination of car park access and alignment re existing swale and root protection areas.
- Integration of cycle parking.

Turkington Martin have collated a Stage 3 Report which is included within the Appendix.

Fire Strategy

With the finalisation of the brief and proposed occupants for each of the spaces, this allowed the requirements of the Technical Standards to be developed fully in relation to fire escape provision;

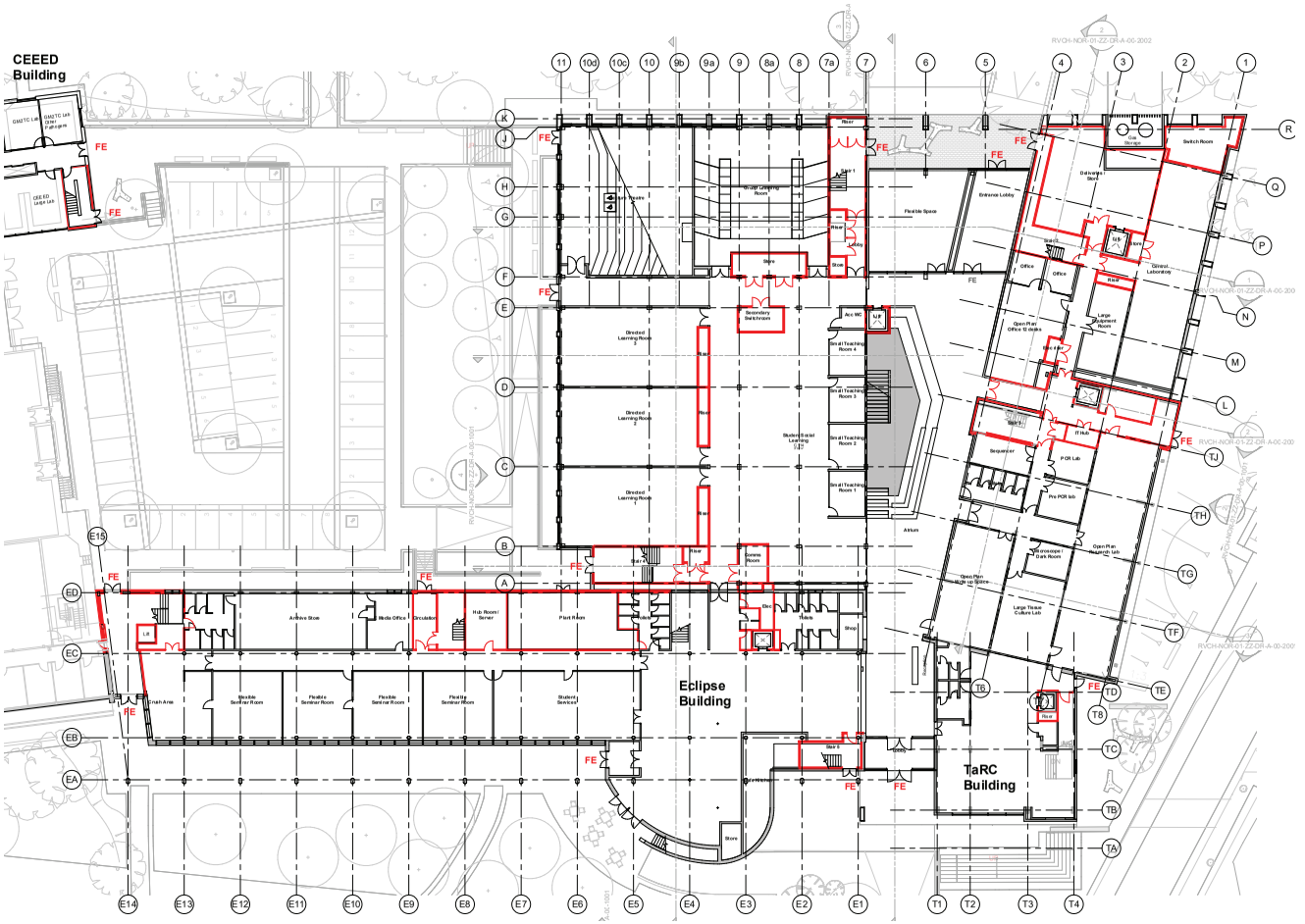
- escape widths and fire stair widths, based on occupancy figures,
- the frozen design takes account of fire escape distances from all spaces

Lawrence Webster Forrest Ltd. (LWF) have carried out a further study of the proposals to verify the proposals.

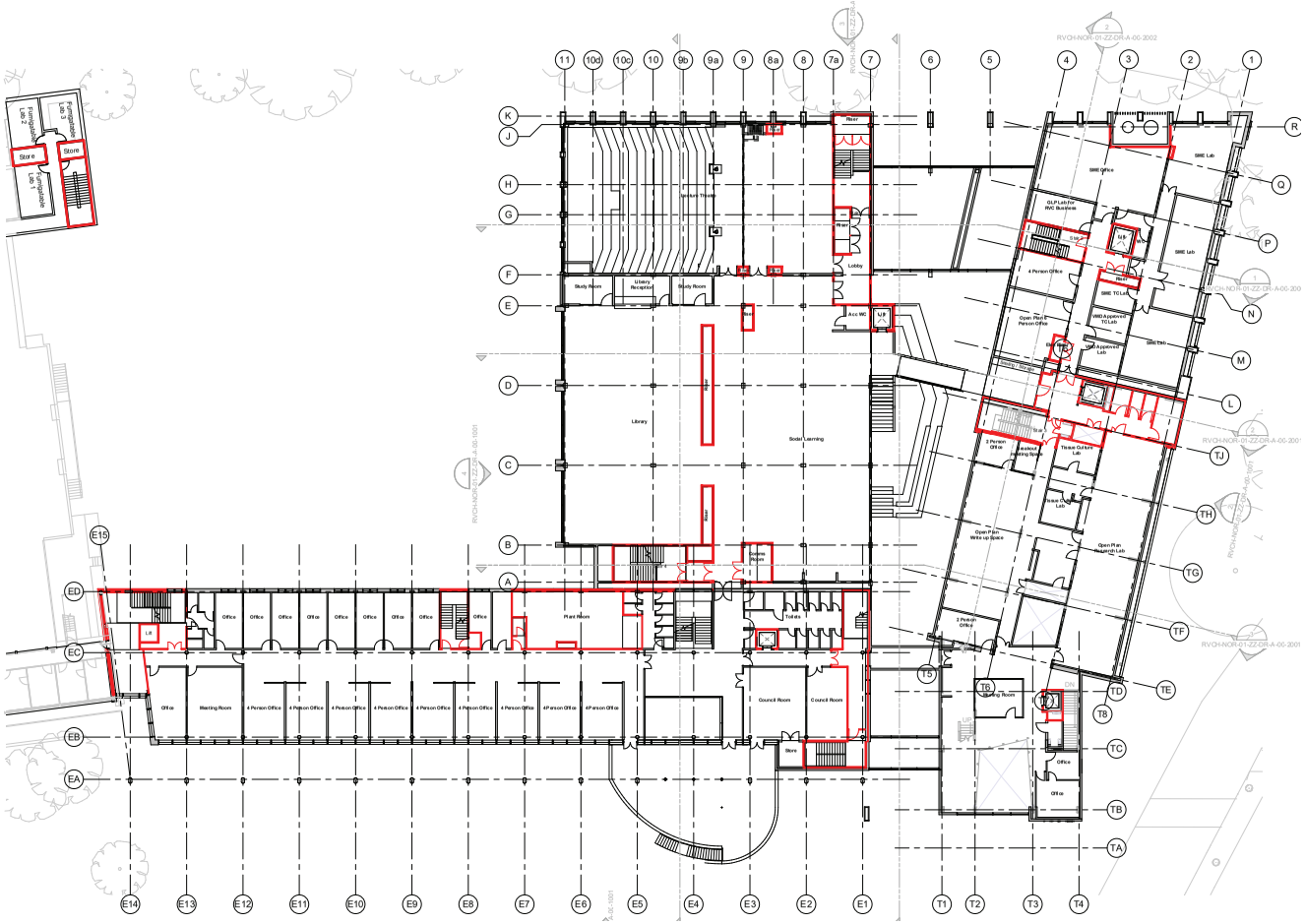
RVC have liaised directly with the Fire Authority to verify fire tender access requirements during the construction phase. The Fire Authority have confirmed that the proposed phasing solution is acceptable provided minor upgrade works to surface treatment outside Eclipse are carried out as part of the enabling phase.

The Fire Authority will be consulted on the proposed building during Stage 4 to ensure support of proposals is established.

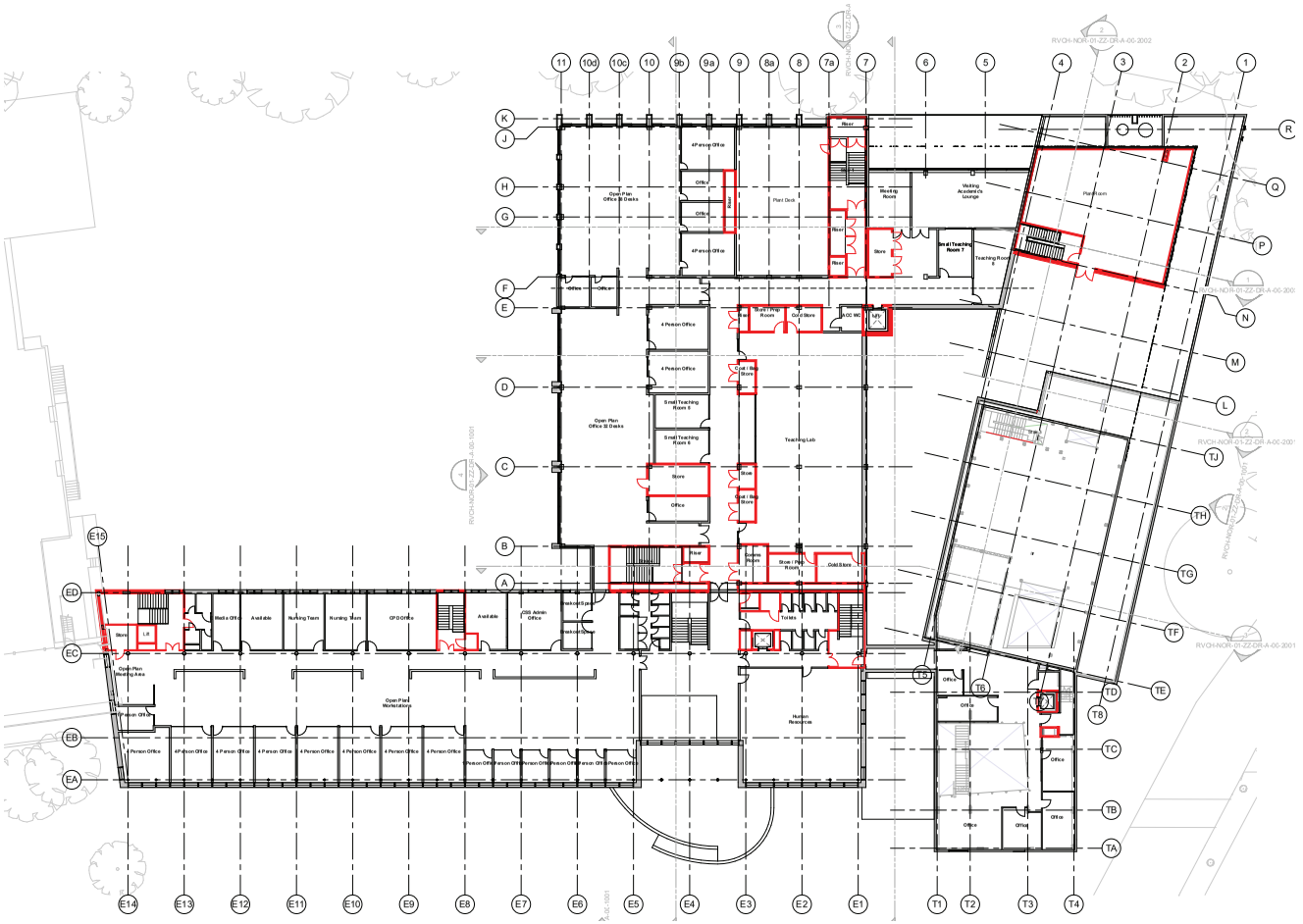
LWF have collated a Stage 3 Report which is included within the Appendix.



Ground Floor



First Floor



Second Floor

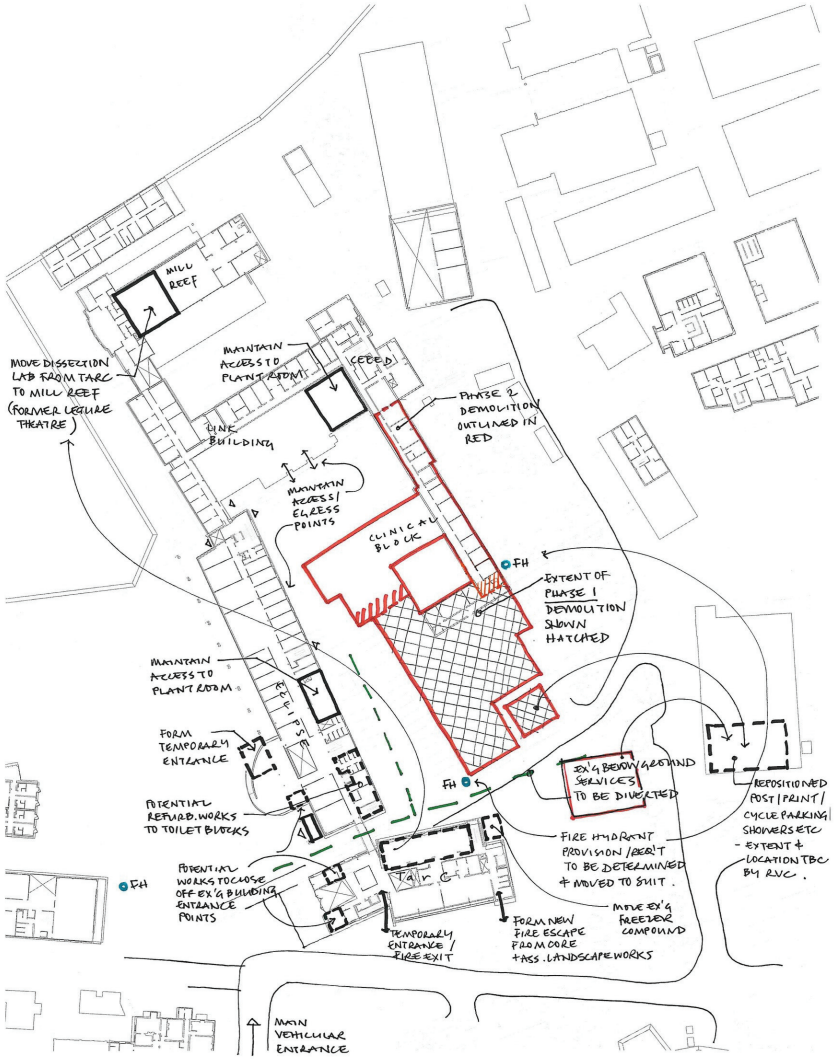
CONSTRUCTION / PHASING / SITE DEVELOPMENT STRATEGY

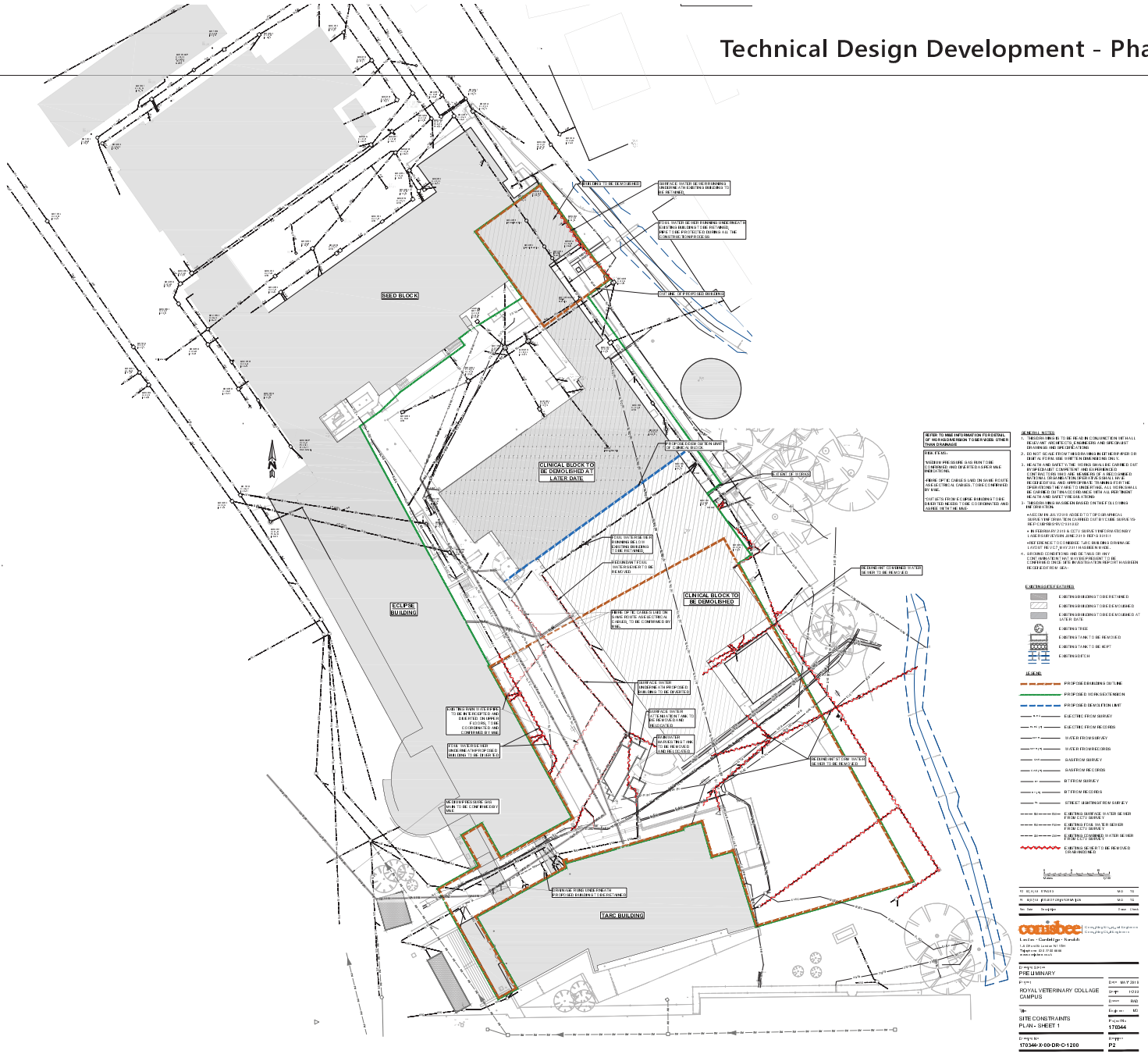
The extent of demolition has been reviewed fully by the team and RVC from finalisation of the decant strategy and due consideration and programming of the required enabling works to disable / re-route existing services within the proposed Phase 1 demolition zone and site of the proposed building.

The diagram opposite outlines the initial enabling exercise with the site constraints plan opposite which outlines the existing drainage and services works. RVC have prepared a decant strategy, programmed out the works, and the Design Team will commence collation of the package of information following completion of the Stage 3 works.

The largest construction aspect of the enabling works package is the relocation of the current dissection lab to the location of the lecture theatre within the Mill Reef Building.

RVC have programmed out the works to complete within suitable timeframe ahead of the main works commencement during the summer of 2019.



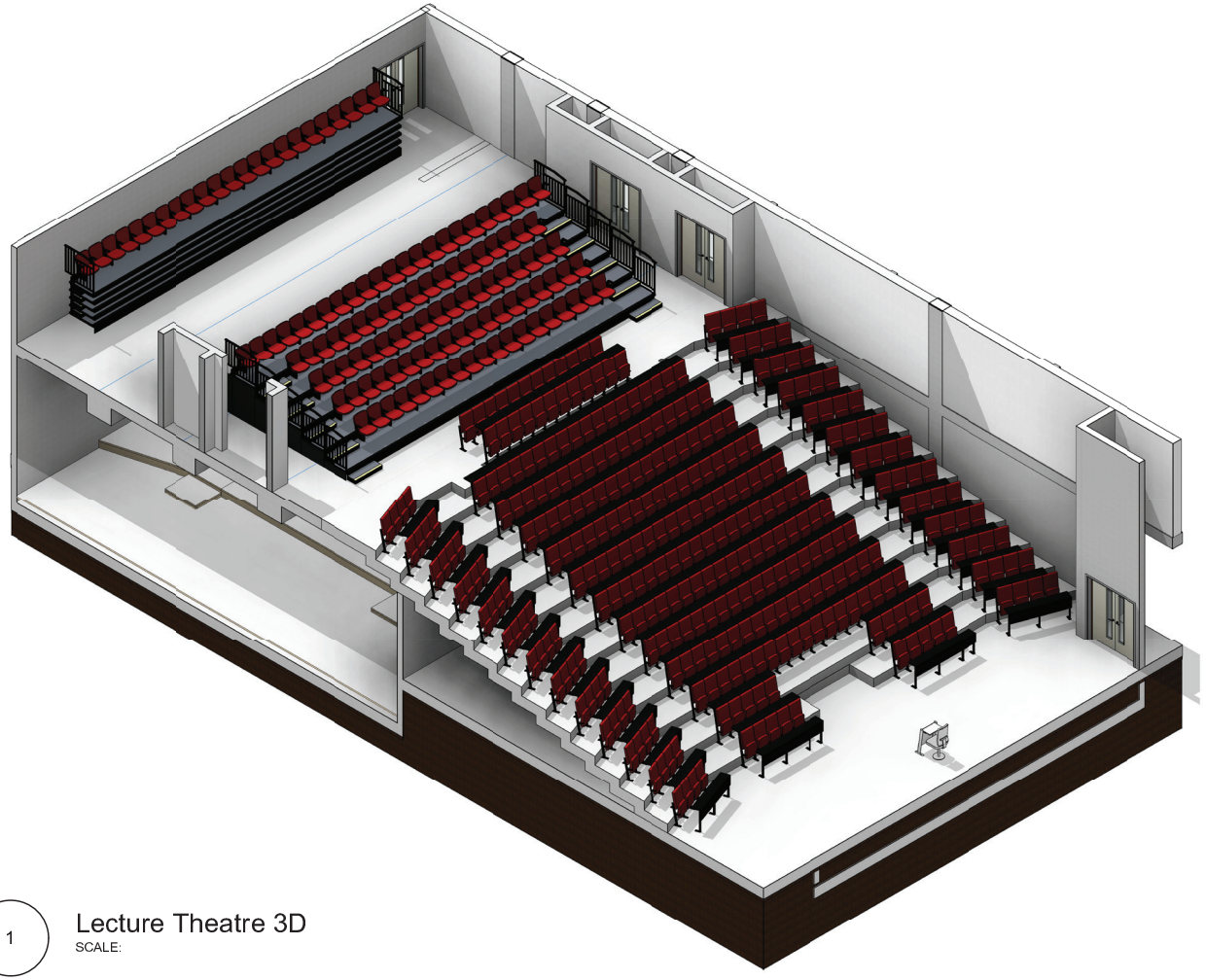

SEED BLOCK
CLINICAL BLOCK TO BE DEMOLISHED AT LATER DATE
CLINICAL BLOCK TO BE DEMOLISHED
ECLIPSE BUILDING
TARC BUILDING
GENERAL NOTES
EXISTING SITE FEATURES
LEGEND
PRELIMINARY
ROYAL VETERINARY COLLAGE CAMPUS
SITE CONSTRAINTS PLAN - SHEET 1
170544
170346-X-00-DR-C-1200
P2

Lecture Theatre

Confirmed cohort of 320 within a fixed lecture theatre setting, with flexibility at the first floor level to extend this by 100 seats via a subdividable partition.

Alternative arrangements for the first floor lecture theatre space are to be reviewed in further detail, whilst ensuring fire escape route are maintained through the space.

Principles have been established with regards to structural and mechanical ventilation strategies.



1 Lecture Theatre 3D
SCALE:

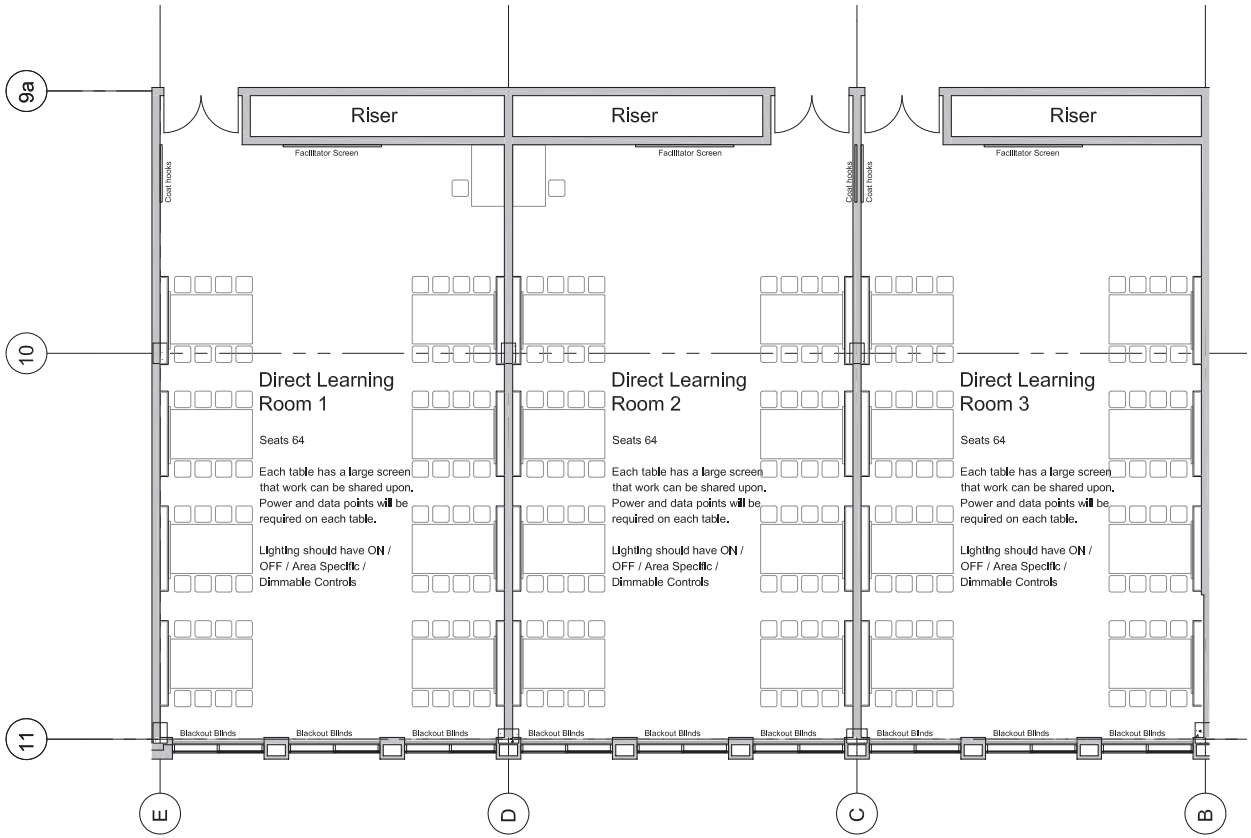
Direct Learning Rooms

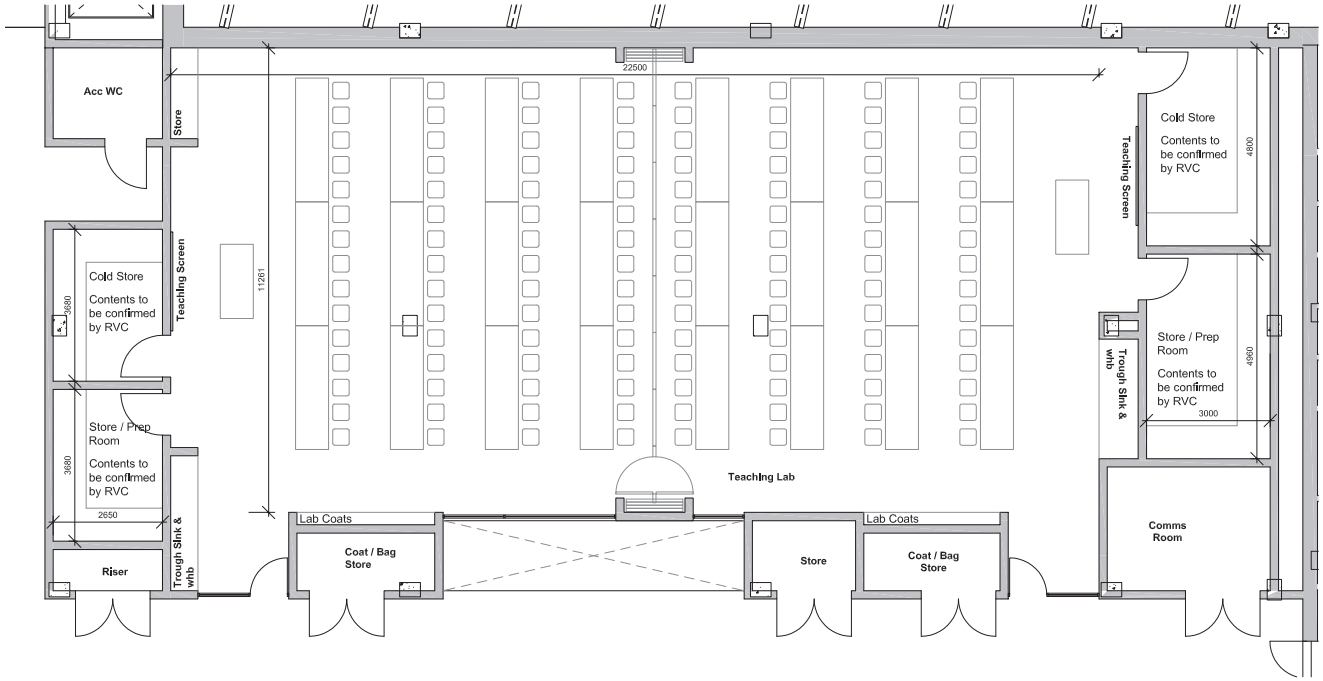
Agreed cohort of 180 across these spaces;

3 new DL rooms that can accommodate >/=160 (3x circa 60), split into 3 similar sized spaces as G60 and G70.

Current options for the layouts are shown opposite.

For reference, the existing G60 and G70 are similar in area to the 3 no new DL room option (a little narrower but longer). G60 and G70 accommodate 30/60 student, once flexible partitions are incorporated within the space.





Lab can operate either individually, or as two smaller teaching labs. Now cold store and prep room at each end of the teaching lab to enable creation of two independent teaching resources.

NOTE:

Contents and layout of the cold store and prep rooms to be discussed.

If these are deemed to be oversized, additional space will be given back to the teaching lab.

Teaching Laboratory

Agreed cohort of 120.

Opposite is the current arrangement, which is a subdivisible room, allowing 2 groups of 60 to be taught. Associated support accommodation is provided to each space, as well as entry points and coat/bag storage.

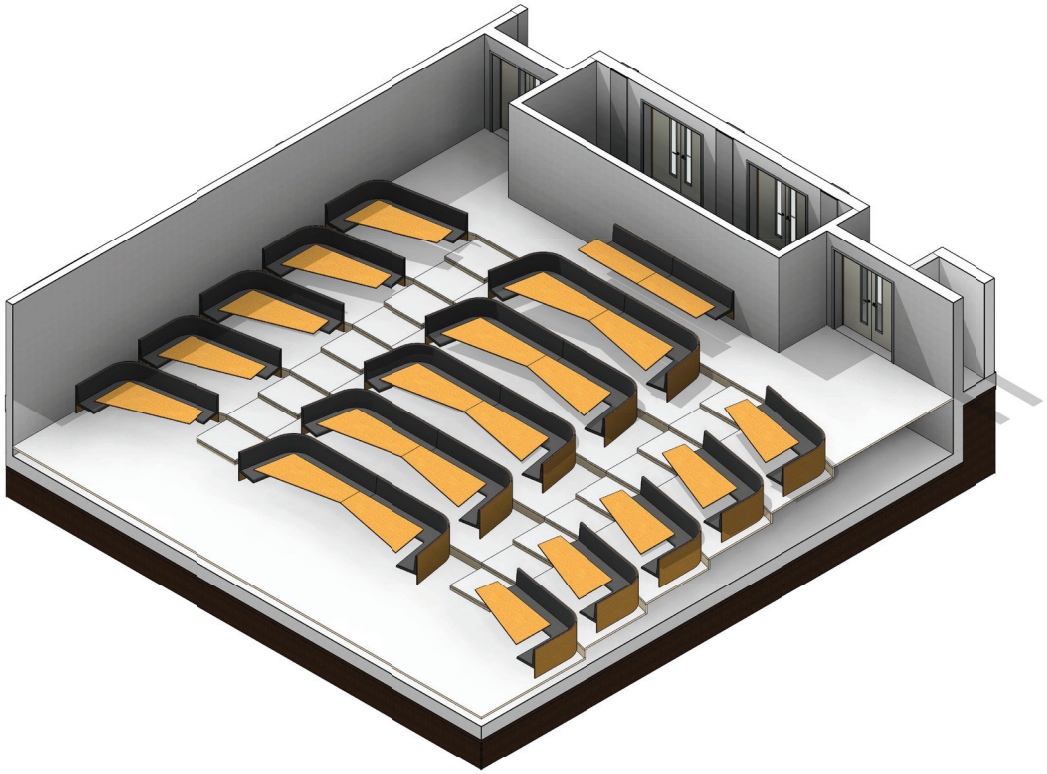
We work with the following key criteria;

- Island benches per Camden teaching lab are preferred.
- Requirement for piped natural gas tbc by RVC.
- Perimeter storage of microscopes required.
- Cold storage.
- Prep room adjacent.
- Consideration to be given to numbers entering and exiting the space.
- Coat and bag storage essential. Additional storage for lab coats for all users.
- Hand wash troughs required appropriately positioned.
- Lockable shelved storage for consumables.
- Clinical waste route and goods lift.
- Ensure good acoustics within teaching lab to deal with student numbers.
- Capable of operating at containment level 2.

Group Learning Room

Previously designed to accommodate 120 students, we were asked to see if we could rework the plans to seat 150 students to open up the group learning room for use by larger groups. In order to do this we have widened the room and repositioned the store that previously sat between the main lecture theatre and the group learning room. This provides the required number of seats while also making the store more usable, despite its reduction in size.

The group learning room now tucks in beneath the fixed seating of the main lecture theatre, however, we can still provide a suitable head height and feel that the pitched ceiling can be designed out in such a way as to make a feature of it, giving a more sculptural form to the room.



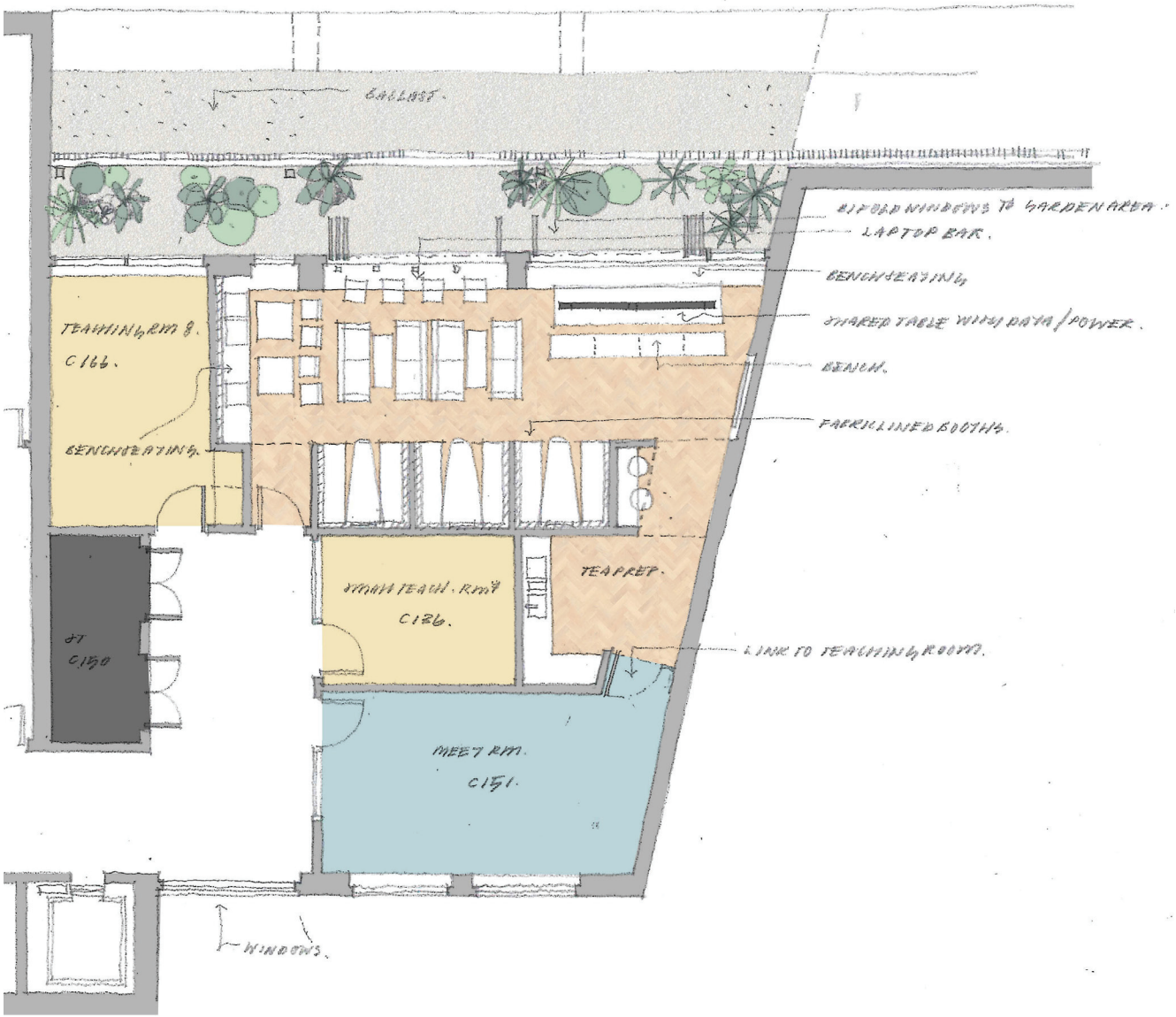
Visiting Academic Lounge

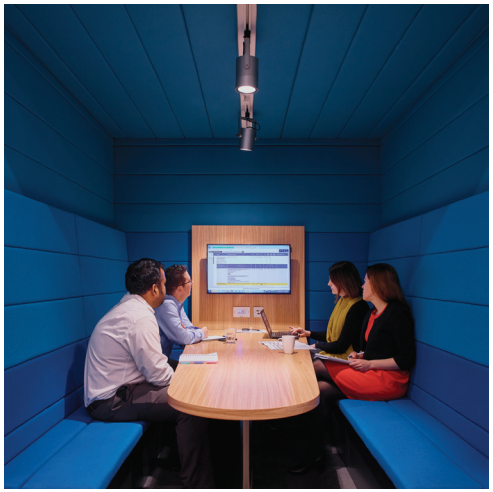
This area is in development currently with RVC. We have incorporated a sketch layout with this submission to give a flavour of how we see this could develop.

In providing variety and flexibility can provide opportunity for the space to be used for a number of functions by a variety of users, from visiting academics / lecturers, to staff in general. We are indicating both 'hot desk' type spaces, informal meeting spaces, and soft seating areas. A large tea prep or staff kitchen area can serve this space, allowing staff to utilise the area, away from their office space. It can also double up in providing direct access to a large meeting room on this level.

The main space overlooks a small garden space, thus creating a different ambience to the main office areas.

Images attached offer suggestion / food for thought for this area.





Life Cycle Assessment of Embodied Carbon

An analysis of the embodied carbon impacts of the proposed design of the new building for the Royal Veterinary College was carried out by Aecom during the early part of Stage 3. The analysis shows that the embodied impact of the initial design is broadly in line with buildings of a similar height, the key determining factor in these calculations. The analysis at this stage is based only on the main structural components, as these have the largest impact on embodied impacts. A number of options are available to decrease the embodied impacts and therefore deliver an outcome below the benchmark levels.

A series of recommendations are included within the document, which the Design Team have considered during Stage 4. The implementation of these recommendations within the design is reliant upon their feasibility to be implemented and the impact, if any, they have on the integrity of the design. The recommendations therefore act as a demonstration as to what can be achieved if the embodied carbon impacts of building elements are considered at appropriate stages in design and action is taken to implement the reductions.

•Include as high a proportion of cement replacement (GGBS) in the concrete whilst maintaining the required performance, - Significant improvements can be made to the carbon impact through the use of GGBS to replace in part cement in concrete. Whilst there is a longer curing time associated with the use of cement replacements, their use should be seriously considered to counteract the embodied carbon associated with cement.

Conisbee response - Cement replacements , either GGBS or PFA will be specified as being require in the concrete specification. The percentage specified will be as high as possible but will be dictated by strength , durability and aesthetic requirements.

•Optimise the design of steel reinforcing in stage 3, - Furthermore limiting the quantity of steel found within these concrete structures is also recommended, and structural engineers should be encouraged to not 'over-reinforce' concrete structures, whilst maintaining an appropriate level of safety. The biggest improvement will clearly come if this is applied in conjunction with the GGBS cement replacement due to the majority of the RVC structure being formed of reinforced concrete.

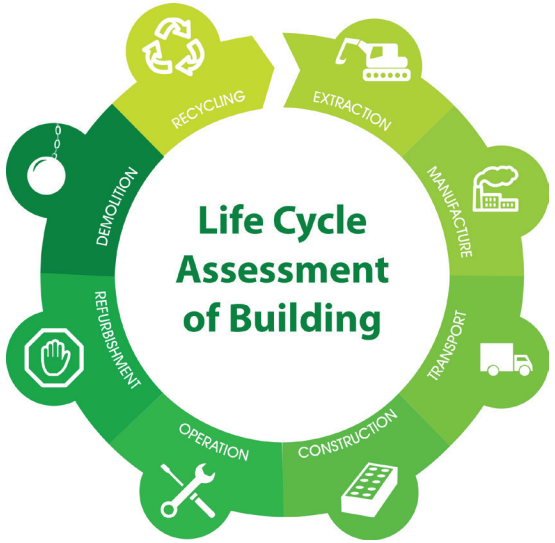
Conisbee response - The design of concrete elements will be carried out with a view to optimising the use of steel reinforcement.

•Consider the use of a timber solution for the roof structure, and

Design Team response - The use of timber for the construction of the roofs is not suitable for this building for a number of reasons including the configuration of the roofs, long span requirements and dimensional constraints.

•Adopt the use of timber instead of steel studs for the internal partitions. - Smaller, but still significant reductions in the embodied energy within the internal finishes can be made through the use of timber over steel for the fixtures including the stud framing of the internal wall partitions.

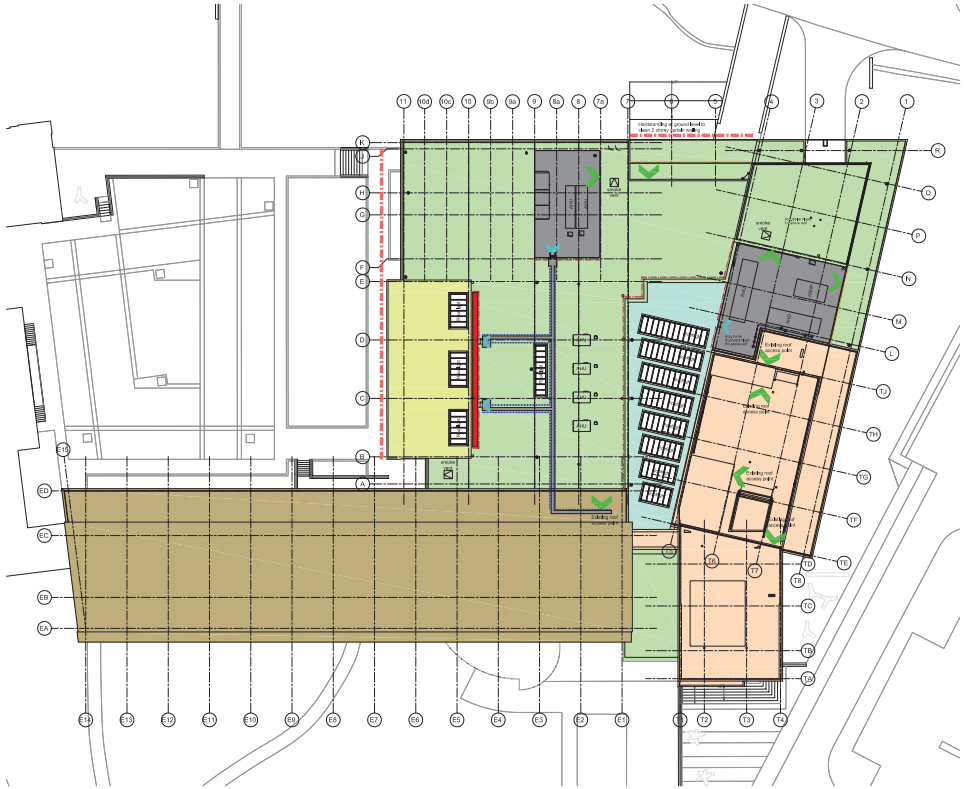
Design Team response - Partitions constructed from steel studs will be lighter than those using timber studs. Given the long spans required for the concrete floor slabs, there is benefit from the partitions being lightweight and therefore the economy made in the amount of steel reinforcement and concrete required in lieu of internal partition framing. Also the steel studs could be more easily recycled at the end of their design life.

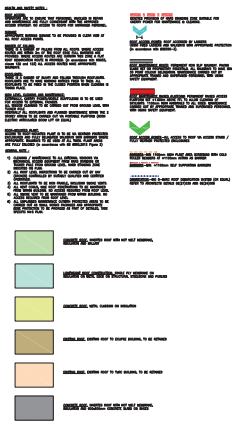


Sustainable Design

The following summarises the key components of the design in relation to Sustainable Design;

- Natural Ventilation (where feasible)
- Estimated: 3% reduction in regulated CO2 emissions.
- Fabric & Building Services Improvements
- U-values in exceedance of building regulations requirement
- Solar shading incorporated into the architecture
- LED lighting throughout with lighting controls
- High efficiency chiller
- High efficiency heat recovery on all mechanical ventilation
- Estimated: 8% reduction in regulated CO2 emissions.
- Low Zero Carbon Technologies
- Air Source Heat Pump
- Estimated: 8% reduction in regulated CO2 emissions





Access and Maintenance

The access and maintenance strategy has been developed in line with the design development. Roof access is provided via stairs generally.

The roof consists of 2 main levels; one at second floor level and one at roof level over second floor accommodation. The proposed structural solution to the building is mainly concrete slab at roof level, with a lightweight steel framed zones over the 2 storey atrium space.

Rooflights are provided to allow light and ventilation to deep plan areas; each of which can be cleaned from the adjacent roof level.

Plant is situated at roof level, both external mounted kit, as well as internal plant room space.

External glazing can be cleaned by tucker pole from ground level around the proposed building, with the Academic's Lounge being cleaned from within.It is proposed that internal double height spaces will be maintained via cherry picker.

A goods lift serving all parts of the building is accessible directly from the external service yard to the SE corner of the proposed building.

ROYAL VETERINARY COLLEGE – HAWKSHEAD REDEVELOPMENT

OUTLINE ARCHITECTURAL SPECIFICATION

STAGE 3 SUBMISSION

NORR

ROYAL VETERINARY COLLEGE – HAWKSHEAD REDEVELOPMENT

Introduction

The design of the new facility generally utilises the following guidance specification for architectural elements. All materials and works shall be supplied and installed to good industry practice.

Statutory Regulations

All materials and works will comply with all relevant statutory regulations current at the time of construction. In particular all materials and works will comply with the Building Regulations 2010 and any amendments current at the time of application for building warrant.

Where manufacturers are referenced this is to be assumed as or equal or approved.

Performance Specification

Energy Strategy: For Part L Strategy refer to AECOM Report

Air Tightness: Based on the modelling for the building the completed development is to achieve a maximum allowable air permeability value of 3m3/hr/m2 @ 50Pa.

Thermal Insulation: the maximum u-values are as follows:

Walls	0.20W/m2K
Roof	0.18W/m2K
Floor	0.22W/m2K
Windows	1.6W/m2K
Roof Lights	1.9W/m2K
Steel Doors	2.2W/m2K

Superstructure: Concrete frame with concrete floor slabs. Refer Structural Engineer's design.

Upper Floor: Concrete slabs construction. Refer Structural Engineer.

Roof: Concrete construction to teaching block areas, with steel frame to double height space over thoroughfare. Refer Structural Engineer.

Wall Construction: The external design of the school is unique to the site using a suite of materials to enhance and improve the overall aesthetic and scale of the buildings

Concrete Single Skin Rainscreen Cladding / SFS Cavity Wall:
External wall to be 80mm thick single skin, acid etched concrete panels with min 50mm clear cavity partially filled with phenolic rigid board insulation thick enough to achieve required u-values on waterproof airseal membrane to external face on 10mm Cement Particle Board tied to 150mm SFS (additional structural support as advised by Structural Engineer), with Vapour Barrier (all joints lapped and taped), and 15mm Severe Duty Plasterboard internally. Pattresses to be installed where required to support internal fixtures. Cavity barriers @ centres required by Building Regulations.

Roof Construction: Generally the main roofs to the new school will be Concrete Flat Roofs. Drainage from the Main Block will be via gravity drainage and internal downpipes. All down pipes will be connected directly to the below ground drainage system and incorporate a rodding eye at the foot of each down pipe Straight roof verge and parapet edges will be formed in concrete copes to match cladding. The design rate of rainfall from roof areas for gutter and down pipe design will be in accordance with the British Standard requirements for building category, return period and storm duration appropriate to each building location.

Concrete Roof - Flat Roof: (Main Teaching Block, Plant room, Offices):
Concrete slab laid to 1.5 degree falls to rainwater outlets covered with Proprietary Hot Melt waterproofing including protection layer with insulation with a geotextile layer on top held in place with 20-40mm stone ballast. 50mm thick concrete pavers on supports for plant areas and access routes.

Steel Frame Roof - Flat Roof: (Main Thoroughfare):
Single Ply Membrane on rigid phenolic insulation to required u-values on vapour barrier on Liner tray on purlins on steel frame.

Pitched Roof: (Over Offices):
Metal sheet on plywood on framing on phenolic board insulation, on concrete slab laid to fall to rainwater outlets

External Deck Area:
Inverted sedam type deck area over West Entrance to support planting.

Rooflights: Double glazed, thermally broken PPC aluminium units. Kerb up-stands to be concrete with insulation over. Roof-lights to be partially openable as required by M+E for ventilation to internal office spaces. Windows to comply with the appropriate current British Standards for manufacture and assembly; weather tightness; wind loads; and operation and strength characteristics. Double glazed units will be British Standard kite marked and incorporate safety glass where required by Building Regulation standards. Glass thickness and specification will be selected to optimise thermal performance; solar gain reduction on selected elevations; and acoustic performance standards. The complete window component assembly will have an overall U-value to achieve the building envelope energy conservation target required by Building Regulation standards. Composite cladding, with associated flashings etc. to side walls of Linear Roof-lights to u-value as required for external walls.

Roof Access: See Access and Maintenance Strategy drawing for details.

Soffits: To external covered space; Single Skin, acid etched concrete soffit panels to match external cladding, fixed back to concrete slab. Phenolic rigid board insulation thick enough to achieve required u-values on waterproof airseal membrane on inner face of soffit. Cavity barriers @ centres required to comply with Building Regulations. Also areas of Aluminium Plank soffit, on frame fixed back to structure. Phenolic rigid board insulation thick enough to achieve required u-values on waterproof airseal membrane on inner face of soffit. Cavity barriers @ centres required to comply with Building Regulations.

Curtain Walling: Curtain Walling to achieve a u-value and air seal as noted within this document.

System comprises:

- Double glazed insulating units to BS 5713, with toughened glass to all external panes and laminated glass to all internal panes.
- Glass thickness to be designed by the curtain walling fabricator to reflect: - Wind loads to BS 6399-2, Barrier loads (where the curtain walling system acts as a guard rail).
- Glass type and cavity width/fill to be designed to provide an overall average u-value for the curtain walling system. Glass type to be selected to eliminate the risk of thermal fracture.
- Solar control glass as required and demonstrated by thermal model.
- Solar shading (Brise Soleil) to South facing windows as per existing TaRC Building.
- Elements of curtain walling to incorporate prefabricated aluminium mesh panels fixed to curtain walling frame.
- Top/side hung opening lights to be incorporated as required. EPDM bands to be glazed in to the perimeter of all curtain wall panels.
- In addition to the specification contained under Aluminium Windows above the complete curtain walling

component assembly will have an overall U-value to achieve the building envelope energy conservation target required by Building Regulation standards and the curtain walling system will be compliant with the latest edition of the Centre for Window and Cladding Technology (CWCT) standard for curtain walling.

External Doors: **To Curtain Walling;** Doors to match glazing system – Doors to match glazing system – Aluminium doorsets PPC coated or equal with toughened / laminated double-glazing as required. Main entrance doors require to have a minimum clear effective opening width of 900mm. Doors / Door sets to be fully weather sealed and have flush door thresholds with a maximum weathering upstand of 25mm. Installation to include for all ironmongery including locks (including electromagnetic) and internal emergency release mechanism as required.

External Doors: **Generally:** Proprietary solid or louvered panel PPC alum doorsets to be used. Doors to be fully weather sealed and provided with flush door thresholds with a maximum weathering upstand of 15mm. Doors require to have a minimum clear effective opening width of 900mm. Doors / Doorsets to be fully weather sealed and have flush door thresholds with a maximum weathering upstand of 15mm. Installation to include for all ironmongery including locks (including electromagnetic) and internal emergency release mechanism as required.
Louvered doors to plant areas to be installed with fly mesh screens behind louvres.

Ironmongery: External doors will be fitted with standardised ironmongery set packs. To be satin stainless steel and supplied by the door system manufacturer / fabricator. All components are to be classed for severe duty usage particularly lock cases and latches. Door handles will be selected for ease of use by disabled persons and will generally comprise lever action handles and d-section pull handles. Overhead door closers will generally be used in favour of floor spring closers and overhead door closers will be selected for robustness and variability of force settings.

Stairs: Pre-Cast Concrete stairs to Structural Engineer's specification and to Contractor's Design. For stair finishes, refer finishes section.

Balustrades: **Fire Escape Stairs;** Steel balustrade fitted onto stair units and bolted in place in accordance with Building Regulations and BS 6180.
Feature Stairs; Plasterboard balustrades all in accordance with BS 6180, 6262. Circular handrails to BS8300. All balustrades and infills to comply with 100mm sphere rule.
Walkway and voids; Acid-etched laminated structural safety glass to Contractor's design, toughened and heat soaked, in proprietary stainless steel shoe, all in accordance with BS 6180, 6262. Acid-etched finish to both sides of balustrade.

Internal Walls: Proprietary metal stud internal wall system to all internal partition walls with one/two layers of impact resistant boarding and glass mineral wool insulation to achieve stated sound reduction levels and durability as required. Joints and junctions taped and filled to achieve smooth seamless finish. Partitions to receive paint finish. Partitions to be specified to take account of Structural, Fire and Acoustic requirements.

Proprietary Glazed Partitioning; internal screens to be fire rated as applicable. Fire rated to BS 476-22. Sound

insulation of complete screen system as recommended by Acoustician. Screen system to be PPC aluminium frame incorporating door where required. Glazing to be laminated safety glass with manifestations.

Int. Doors: **to rooms / teaching spaces / offices**
Solid laminated timber core doors faced with high pressure bonded laminate complete with hardwood lippings to all four edges, suitable for painting, smoke seals and intumescent strips as required, fire certification markings; hardwood/softwood doorset frames and facings for painting. Door leafs typically to be 926mm door leaf size to provide a clear opening width exclusive of door handles of 850mm. Vision panels to be clear glazed vision panels as required to BS 8300 and fire rating of door. Door installation to include (per leaf) 3no. washered steel hinges, lever handles, latch, cylinder dead lock with thumb-turn to inside, overhead door closer and 2no. "Fire Door Keep Shut" signs if required. All ironmongery to be satin anodised aluminium. Doors and glazed openings will be formed using non-acoustically tested constructions.

to corridors; Fire rated solid laminated timber core doors faced with high pressure bonded laminate complete with hardwood lippings to all four edges, suitable for painting, full height fire rated clear laminated vision panels, beading system as recommended by fire Test Certificate, smoke seals and intumescent strips as required; fire certification markings; and hardwood/softwood doorset frames and facings for painting. Doors and glazed openings will be formed using non-acoustically tested constructions. Door leafs to be 926mm door leaf size to provide a clear opening width exclusive of door handles of 850mm. Vision panels to be clear glazed vision panels as required to BS 8300 and fire rating of door. Glazing extent to be maximum allowable by manufacturer /Fire Test Certificate.
Doorsets to be fitted with (per leaf) 3no. washered steel hinges, 1no. set of bolt through Pull Handles, 1no. push plates, 2no. "Fire Door Keep Shut Signs", 1no. overhead door closers, 1no. kickplate. All ironmongery to be satin anodised aluminium.

Movable acoustic wall system: To provide Rw sound performance, as required to meet the recommendations of the Acoustician. Fire Proprietary installation of panels consisting of double skin construction with a robust internal metal frame and exposed aluminium edge profiles to provide a lipping. Panels to be faced with high pressure bonded laminate. Installation to include for all seals, tracking and movement mechanisms, locking devices and all other required components.

Ironmongery: Internal doors will be fitted with standardised ironmongery set packs. Finish to be satin stainless steel. All components are to be classed for severe duty usage, particularly lock cases and latches. Door handles will be selected for ease of use by disabled persons and will generally comprise lever action handles and d-section pull handles. Overhead door closers will generally be used in favour of floor spring closers and overhead door closers

will selected for robustness and variability of force settings.

Ceilings:

Cellular spaces; 600x600 module white demountable suspended mineral fibre tiled ceiling with concealed grid and proprietary edge trim. Support structure to be as recommended by Ceiling Manufacturer.

Circulation ceiling; Proprietary plasterboard ceiling system with 12.5mm wallboard, taped and filled joints and drywall sealer/primer finish ready for decoration, complete with integrated service fittings, proprietary edge trim.

Toilets / changing areas; Proprietary plasterboard ceiling System with 12.5mm Gyproc moisture resistant wallboard, taped and filled joints and drywall sealer/primer finish ready for decoration, complete with integrated service fittings, proprietary edge trim.

Hygiene Areas; 600mm x 600mm demountable hygiene ceiling 100% RH resistant, washable tiles in an exposed grid system complete with integrated service fittings, proprietary edge trim. Support structure to be as recommended by Ceiling Manufacturer.

Feature ceilings A: Proprietary linear solid wood ceiling system with appropriate FR coating fixed to a concealed grid.

Feature ceilings B: Proprietary plasterboard ceiling System with 12.5mm decorative wallboard, taped and filled joints and drywall sealer/primer finish ready for decoration, complete with integrated service fittings, proprietary trim.

Feature ceilings C: Proprietary Acoustic Ceiling Rafts as required to provide acoustic absorption.

Floor Finishes:

Sheet Vinyl floor coverings / dry area; Vinyl sheet with a thickness of 2.5mm – or equal approved. Joints to be net fit seam and sheet laid on approved epoxy DPM (if RH of screed is too high and approved by screed and flooring installers) and water based smoothing / levelling compound.

Sheet Vinyl floor coverings / Wet Areas; Non slip heavy ` duty vinyl sheet providing slip resistance to R10 achieving >36 on the TRRL Pendulum 4S (wet) test with a thickness of 2.0mm. Joints to be hot seam welded and sheet laid on approved epoxy DPM (if RH of screed is too high and approved by screed and flooring installers) and water based smoothing / levelling compound. Flooring installation to toilets, laundry areas and cleaner's stores to be complete with coving to walls 150mm high with capping strip and cove former.

Carpeting Generally; Heavy duty tufted cut pile carpet with recycled PVC backing complete with proprietary contrasting aluminium nosing with rubber insert and edge trims. Joints to be as per manufacturer's recommendations and sheet laid on approved epoxy DPM (if RH of screed is too high and approved by screed and

flooring installers) and water based smoothing / levelling compound as required.

Feature Areas: Large format Ceramic tiles to Main Thoroughfare.

Entrance lobbies; Primary recessed barrier matting at all entrances with secondary barrier matting beyond. All matting complete with proprietary spacer strips and ramping strips to exposed edges. Joints to be as per manufacturer's recommendations and sheet laid on approved epoxy DPM (if RH of screed is too high and approved by screed and flooring installers) and water based smoothing / levelling compound as required.

Plant spaces and external stores; High performance floor paint compliant with current VOC level regulations and suitable for internal and external use.

Internal Stairs: Generally pre-cast concrete stairs with nosings/edging as required and complete with balustrade and circular handrail to BS8300. All balustrades and infills to comply with 100mm sphere rule.

External walling forming balustrade to 1400mm high with hardwood timber handrails & balustrade infills to comply with 100mm sphere rule.

Wall Finishes:

All paints used to be compliant for VOC levels.

Walls generally; All office, corridor and general walls to be finished with 3no. coats vinyl matt with colour from Manufacturers Standard Range.

Acoustic wall panels; as required by Acoustician.

Wall Linings: Timber Linings wall / ceiling linings to be FR birch ply with a suitable sealer.

Walls to toilet areas and other damp areas including shower area low walls; Ceramic Tiles module.

Non-tiled walls; all non-tiled walls to be finished with 3no. coats MR paint or equal with colour from Manufacturers Standard Range.

Walls to kitchen areas; All Walls to be finished in 2.5mm thick Whiterock or equal. Installation to be applied / joints sealed with Altro PVC Flexi Joints. Installation to include for all perimeter sealing. Bonded directly to 12.5mm WBP Plywood backing in accordance with manufactures recommendations.

Plasterboard casings and enclosures to builderswork, ducts; Moisture resistant boards to all toilets, showers and kitchen areas.

Woodwork:

Internal architraves, door frames, linings, trims, sills, architraves and stops; To be prepared and primed in accordance with paint manufacturers' recommendations and finished with one coat undercoat and 2no. coats satin finish varnish or equal with colour from Manufacturers Standard Range.

Skirtings and Miscellaneous Trims; To be prepared and primed in accordance with paint manufacturer's

recommendations and finished with one coat undercoat and 2no. coats satin finish varnish or equal with colour from Manufacturers Standard Range.

Sanitary Installation:

Cleaners Sink; Birch with grate, overflow, brackets and legs. Exposed wall mounted pipework and taps.

Disabled Toilets; Doc M Standard pack comprising high rise back to wall WC, spacer box, exposed cistern, flushpipe and front cistern lever assembly, plastic seat, Domex screws, handrinse basin with lever operated thermostatic mixer, plastic strainer waste, plastic bottle trap, concealed hangers, 4 x 60cm grab rails, 45cm grab rail, back rest rail and cushion support, hinged arm support and semi-recessed toilet roll holder. To be compliant with the current version of BS 8300 and to be complete with all required handrails and grab bars.

Staff Toilets; Full width half height vanity unit with upstand, back to the wall WC, concealed cistern, flushpipe and front cistern lever assembly, plastic seat, Domex screws, semi countertop sink with 2no. lever operated aerated taps, overflow, chainstay and plug and complete with plastic strainer waste and plastic bottle trap, mirror over sink. Installation to be complete with toilet roll holder, soap dispenser and paper towel holder.

General toilets; IPS Cubicles and doors; High Density Solid Grade laminate (SGL) with decorative face each side. All edges radiused and polished. Full height IPS system to WCs, half height vanity unit with upstand, back to the wall WC, concealed cistern, flushpipe and front cistern lever assembly, plastic seat, Domex screws, semi countertop sink with 2no. lever operated aerated taps, overflow, chainstay and plug and complete with plastic strainer waste and plastic bottle trap, mirror over sink. Installation to be complete with toilet roll holders, soap dispensers and paper towel holder.

Above ground waste pipework; All above ground drainage to be concealed with moisture resistant MDF pipe boxes.

Signage: Proprietary way-finding / directory systems / decorative Graphics

FF+E: Specification to meet the requirements of the brief by specialist supplier.