4.7 Supporting Functions

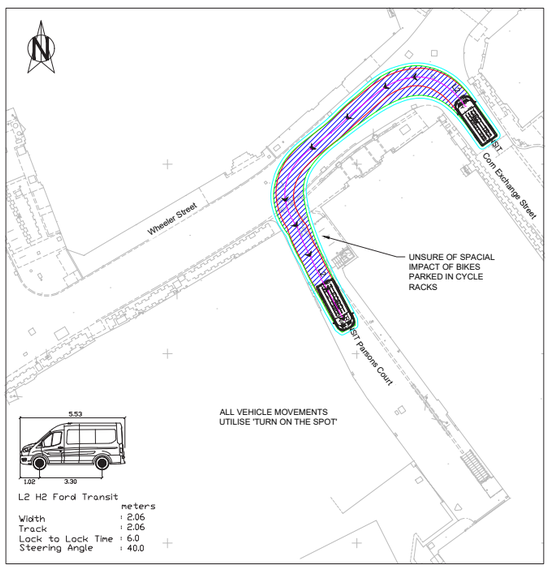
Servicing, deliveries & blue badge

Parson's Court Access

Parson's Court forms a key part of the servicing strategy for the Corn Exchange. The space can only be accessed via Wheeler Street, and due to the constricted nature of this access point the largest vehicle that can be accommodated is a Transit type van.

Tracking for such a vehicle is shown below.

With the proposed use of Parson's Court changing as previously described in this document, it will be key that servicing continues to occur outside of show timings.



VEHICLE TRACKING PARSONS COURT - FORWARD MANOEUVRE - L2 H2 FORD TRANSIT

General Vehicle Access

Access to the Corn Exchange will be controlled through the proposed introduction of two Traffic Regulatory Orders.

Please refer to the Market Square and Public Realm Design and Access Statement for further details.

Access for large vehicles

The designs allow large vehicles to access the Corn Exchange, Cambridge Arts Theatre and Guildhall in the same manner as present day.

The proposed designs for Peas Hill can accommodate up to three articulated vehicles and the space for tour buses will remain on Corn Exchange Street.

With a reduction in general traffic, which is proposed to be restricted between the hours of 10am - 4pm, the vehicles required to service the cultural venues will have more space to manoeuvre and, with improved enforcement, less chance of being blocked by parked vehicles.

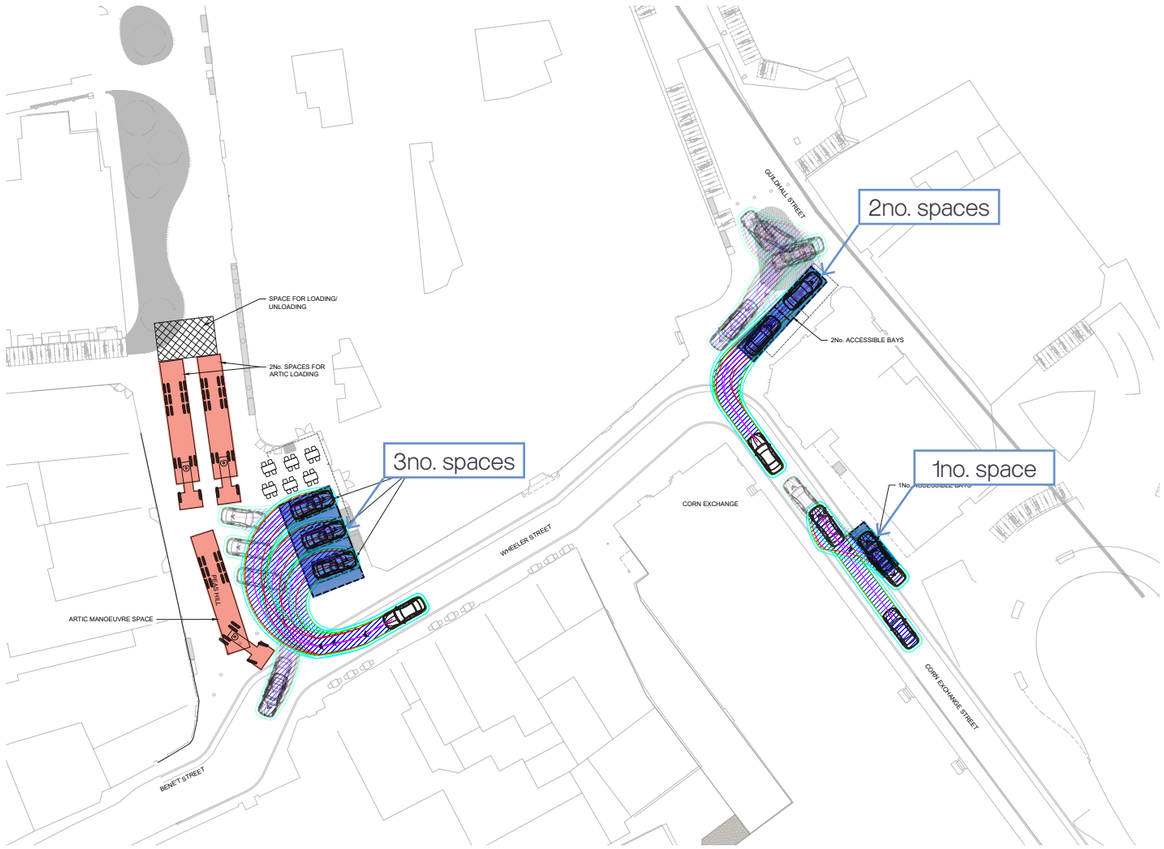
There will be a small piece of additional administration involved. As vehicles will be entering a TRO area the venues will need to do one of two things;

- if the same vehicle is regularly used then the vehicle registration can be 'white listed'
- should different vehicles be used, most likely scenario, then vehicle registrations will need to be logged and shared with County Highways team on a regular basis in order to avoid fines being levied.

Taxis

To improve accessibility to the Civic Quarter and the Cultural venues in this area of the City Centre it is important that access for taxis is maintained. It is therefore proposed that as part of the TRO's taxis will be able to apply for an exemption.

This will allow taxi's to continue to drop visitors off in this area.



Articulated Lorry Access and Blue Badge Parking

Articulated lorries

Blue Badge Parking Spaces

Existing Blue Badge Parking

Corn Exchange St, Wheeler St, Peas Hill and Guildhall St.

Five designated Blue-Badge bays for all Blue-Badge Holders are provided (three on Peas Hill, two on Guildhall Street).

In addition to designated bays, all Blue-Badge holders can park within the area for up to three hours, including on single or double yellow lines where no loading restrictions are in place or loading access is not obstructed.

Proposed Blue Badge Parking

Quantum

Our proposals will increase the current provision to six by introducing an additional blue badge space on Corn Exchange Street, please see plan diagram above.

As these bays will be located within the TRO zone, Blue Badge holders will be required to register with the County Council, details of these arrangements will be developed with the TRO, separate to this planning application.

4.8 Character Areas - Corn Exchange Street Summary

Movement corridor

Corn Exchange Street will continue to be a key movement corridor through the Civic Quarter. If the proposed traffic restriction orders (TROs) are implemented (separate to this application) there will be an overall reduction in private car usage along this street making it more user friendly for both pedestrians and cyclists.

1. Blue badge parking

Provision for one new blue badge parking space increasing the general capacity within the Civic Quarter from five to six.

2. Lay-by

Existing lay-by to be retained and bollarded for use by the Corn Exchange for tour buses.

3. Cycle parking

Accommodates additional short stay cycle parking bays adjacent to the blue badge parking bay.

4. Cycle movement

Retained contraflow for cyclists travelling east along Bene't Street, Wheeler Street and south along Corn Exchange Street.

5. Resurfacing

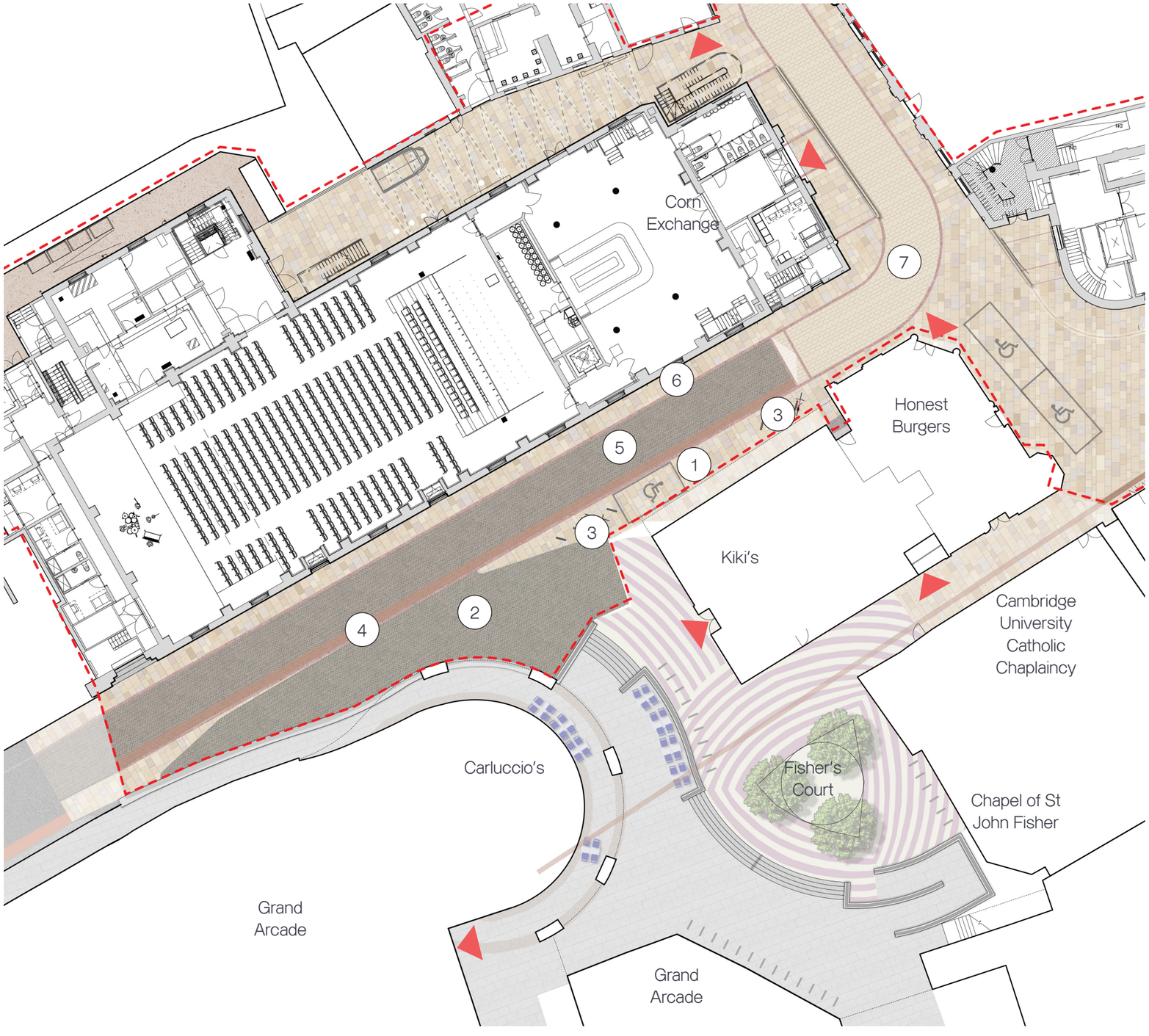
General re-surfacing to elevate the quality of the street.

6. Footways

Improved widened pavement, new balustrade and retaining edge to the eastern side of the Corn Exchange. Pedestrians will be encouraged to travel on the western side of the street where there is a continuous footway to Downing Street.

7. Raised table

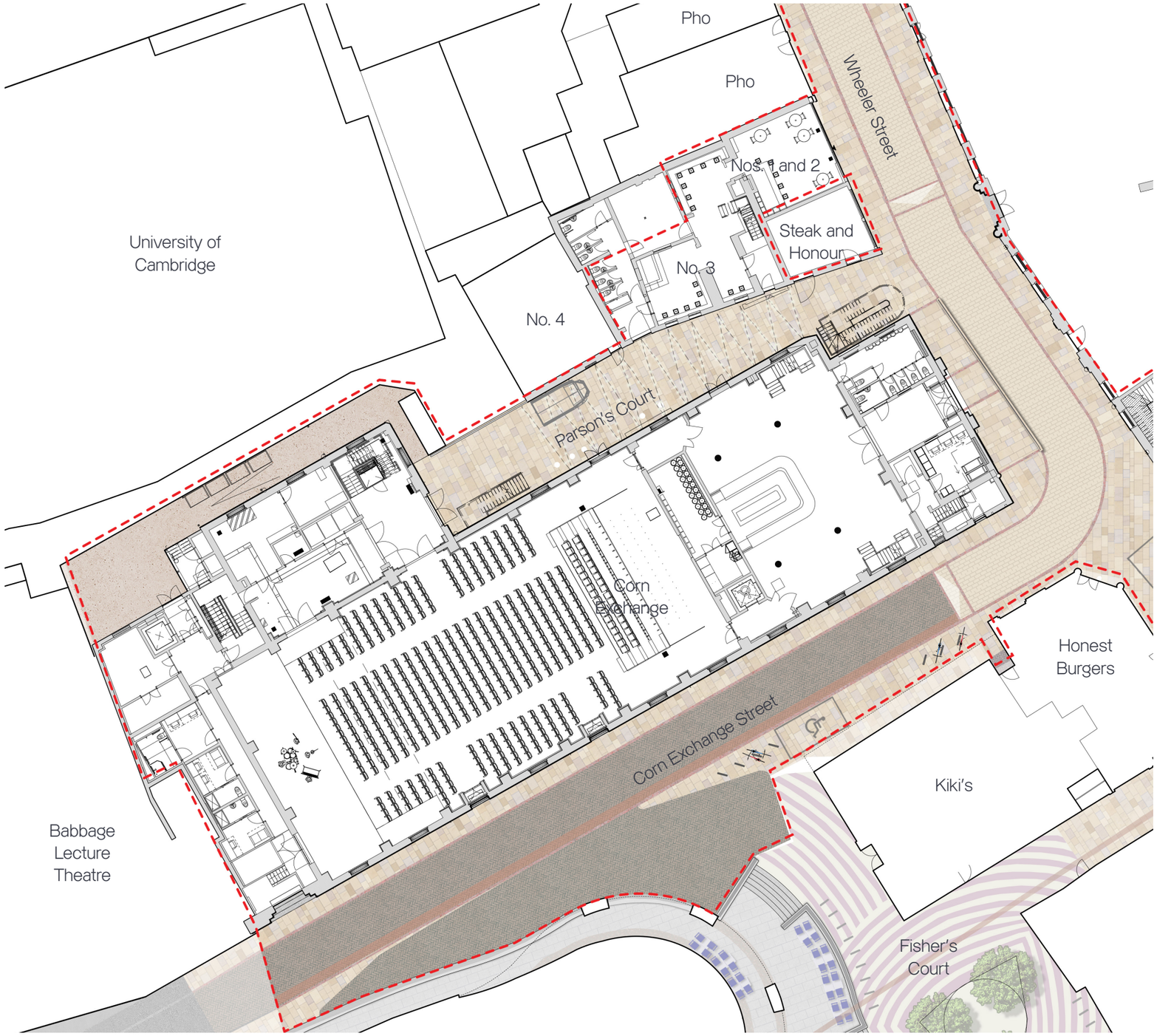
New raised table providing level access between Guildhall Street and the Corn Exchange.



4.8 Character Areas - Parson's Court Summary

Parson's Court will become a place to gather and socialise for people visiting the Corn Exchange, enhancing the venue's offer further. Materials will be high quality to reflect the significance of the surrounding buildings and the court's heritage.

Parson's Court will be a high quality spill out space for people visiting the Corn Exchange. It will form part of the route towards a new secondary accessible entrance into the main building as well as to number 3 Parson's Court where new cafe, bar and toilet facilities will be provided. The spill out space will be used during the beginning, end and intervals of performances and there will be space avaialble as well as a entrance to the Box Office with access by vehicles to the University buildings being available outside these times.



5.0

Heritage

5.1 Heritage

Heritage Significance and impact of Proposed Works

The following is a summary of the Heritage Statement produced by Turleys, as Heritage experts they have produced an assessment of the sites heritage significance and the impact of the proposed works. For full details please refer to the Heritage Statement.

Impact of Proposed Works on Heritage Significance

The Corn Exchange is a Grade II listed building, with No. 3 Parson's Court (and No. 2 Wheeler Street) also separately Grade II listed. The Corn Exchange and No.3 Parson's Court, together with the wider area and streets/buildings are within the Historic Core part of the Cambridge Central Conservation Area.

The layers of development illustrate the evolution of the area from a medieval commercial quarter, through C18 domestic infill, to a C19 civic and cultural focus. The resulting townscape, defined by enclosure, varied rooflines, and the interplay of historic and civic architecture, encapsulates the historic trajectory of Cambridge's urban core and underpins the area's special architectural and historic interest.

The interior of the Corn Exchange has been significantly altered in its conversion to a concert hall. As a result, many of the fittings are from the 1980s. The main aspects contributing to the architectural significance are the impression and spatial qualities of the original space, together with the exposed ironwork work, glazed lantern roof over and the exposed fair-faced polychromatic brickwork of the walls.

As a Grade II listed building, No. 3 Parson's Court is of high heritage significance. This was built in the late-Georgian period and was originally a house(s), but now exists as ancillary office accommodation. It is of high architectural interest for its exterior details and arrangement, which stems mostly from its simple, balanced proportions and sash windows.

The proposed works have been carefully considered throughout the detailed design process, including through various rounds of engagement/pre-application meetings with LPA officers and Historic England (and Design Review Panel), seeking to minimise as far as possible, impacts arising to the heritage significance of the listed building. There is however a balance to be struck between maintaining (preserving) its significance and ensuring that the building continues to operate for its optimum viable use as an events venue, which meets current and expected future requirements of the building.

External Works - Proposed Extension

The proposed extension to the south end of the Corn Exchange is required to provide additional internal accommodation, as part of necessary upgrades the back of house facilities/space. This is a vital aspect of the proposals in ensuring that the Corn Exchange can continue to attract artists/performers as part of its ongoing use as a cultural events space.

The proposed extension is designed with a carefully considered set back, which ensures that it sits behind the historic roof pitch over the south porch which borders the Corn Exchange Street carriageway. This designed set back avoids any direct impact or loss of historic fabric or form and helps to ensure that it is minimally visible in ground level views for pedestrians and road users travelling along Corn Exchange Street.

The extension is carefully designed with acontemporary aesthetic and use of materials, comprising warm toned metal cladding, detailed with motifs inspired by the Venetian Gothic patterns of historic polychromatic brickwork. This approach was discussed in detail during the pre-application process and this final design realised following positive feedback from LPA Officers and Historic England. The proposed design approach for this extension will ensure that the overall aesthetic and arrangement, with louvred plant screen over, will read subserviently to the architectural significance of the historic porch structure and Corn Exchange.

External Works - Roof Works

Whilst the principal roof structure is a very important component of the building's heritage significance, particularly in terms of its overall form, the existing zinc roof covering is understood to have been introduced as part of the 1980s conversion works. The replacement of this nonoriginal roof covering with a more efficient and better insulated material and the addition of PVs will therefore have a very limited impact on the building's heritage significance, but a significant impact on its thermal performance and sustainability credentials.

External Works - Side Extension

To the side extension within Parson's Court, it is proposed to carefully remove the existing slate covering to the north and west roof pitches and demolish the existing roof structure. This will facilitate the creation of an enlarged plant area to this less sensitive part of the building. To the Parson's Court side, the existing northern roof pitch will be rebuilt in a similar manner, but with an increased/steeper pitch to screen the necessary double stacked plant area in views along Parson's Court. This new roof pitch will include discreet louvres for air intake, but otherwise will be finished in the previously removed slates to maintain a similar overall visual appearance, character and aesthetic of this part of the building.

This aspect of the proposals is considered to have a very limited impact on the building's heritage significance, with the potential impact further minimised by the retention and re-use of existing historic slates. This aspect of the proposal was discussed in detail as part of the pre-application process and both the LPA officers and Historic England supported this approach.

Internal Works - First Floor

The main internal changes relate to the rationalisation and upgrading of the existing entrance foyer/lobby and bars area. These works largely relate to later fabric introduced as part of the 1980s conversion works. The opening up of the two side bar areas, through the removal of the later partitions and storage areas, in combination with a replacement mezzanine deck and centralised bar, will create a more visually interesting and enhanced arrival space. Indeed, the opening up of the bars will once again reveal more of the internal fair-faced polychromatic brickwork, which is such a characteristic aesthetic of the building. This is a considerable heritage benefit for understanding and better appreciating the architectural quality and historic fabric of the building.

Proposals for new secondary glazing will be sympathetic to existing windows (and fabric) and for the most part will replace existing poor quality secondary glazing. This new glazing has been designed to have as minimal physical impact as possible and to ensure that the secondary glazing could be removed in the future with no lasting or adverseimpact to existing historic fabric. All existing historic windows will be retained and are unaffected by the proposed works. The iinternal changes to the Corn Exchange, whilst comprising significant interventions cumulatively, will have no unacceptable or adverse impact in built heritage terms.

General Works - Parson's Court

It is proposed to re-purpose No.3 Parson's Court & No.2 Wheeler Street as a bar/drinking establishment at ground floor level, with VIP/members lounge areas at first and second floor levels.

The works would sit in tandem with the proposed 'stopping up' of Parson's Court, which will help transform the unsightly and negative service area-character. Thus, making this area more attractive, in and of itself, in combination with activating this area as a complementary space for the enjoyment of users/ visitors to the Corn Exchange. This will clearly benefit the setting of both the Corn Exchange and No. 3 Parson's Court, as Grade II listed buildings. Indeed, the dwell time in these spaces will allow for a greater visual appreciation and understanding of the architectural quality and character of these buildings.

Heritage Value and Public Benefits

Overall, it is considered that the proposed works to the Grade II listed Corn Exchange and separately Grade II listed No. 3 Parson's Court are sympathetic, carefully considered and will maintain (preserve) the architectural and historic interest of these buildings as designated heritage assets. The proposals are led by the desire to improve the day-today operation of the Corn Exchange, and provide complementary uses within No. 3, in a manner which is appropriate to their conservation as designated heritage assets. The proposals will therefore ensure their enhanced operation and cumulative active and long-term sustainable use as an important event space for Cambridge into the future.

6.0

Sustainability

6.1 Sustainability
The Vision

Sustainability Vision

Max Fordham have been commissioned by the Cambridge City Council to produce a sustainability strategy and vision for the planning and listed building consent for refurbishment and extension of the Corn Exchange.

The Sustainability Vision, Figure.1, demonstrates the overarching sustainability approach for the Corn Exchange:

- Water smart: reduce the buildings overall potable water usage through water efficient fittings
- Biodiversity Net Gain: achieve a 20% BNG through external planting in Parsons Court
- Resource Efficient: minimise the embodied carbon impact of the refurbishment and extension
- Socially Connected: improve accessibility and enhance the user experience through improved environmental conditions and access arrangements
- Net Zero Carbon: reduce the buildings overall energy consumption through fabric upgrades and efficient MEP solutions

These sustainability targets have been integrated into the design of the Corn Exchange and their response to national and local planning requirements has been outlined in Section 2.0: Response to Sustainability Planning Policies.

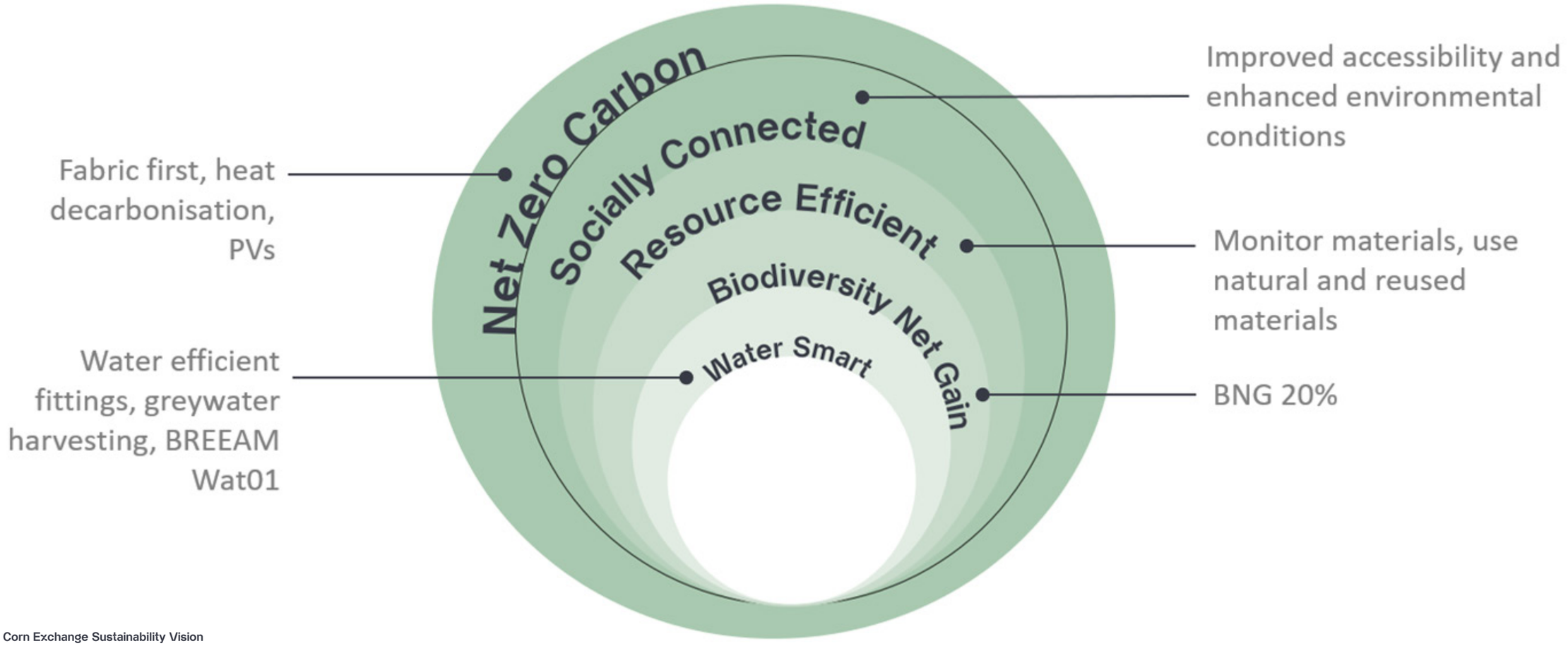


Figure Corn Exchange Sustainability Vision

6.1 Sustainability

Response to Sustainability Planning Policies

Energy

In response to:

Cambridge Local Plan 2018:

- Policy 29: Renewable and low carbon energy generation

Greater Cambridge Sustainable Design and Construction Supplementary Planning Document 2020:

- 4.5 Smart technologies

The project has investigated Net Zero Carbon as measured using the Net Zero Carbon Building Standard and found that it is not possible to meet these requirements due to the constraints of the fabric and building, and the high energy use intensity of the building function. Therefore, the approach taken has been to make as meaningful reduction in operational energy as is technically and feasibly possible, while considering energy consumption from the whole building.

Fabric Upgrades

The project has very limited opportunities for fabric upgrades due to the listed status and historic fabric, both internally and externally, however opportunities have been identified where possible and are listed below.

The energy efficiency of the Corn Exchange can be improved through a series of fabric upgrades that are designed to improve heat loss and air tightness. These fabric upgrades have been integrated into the design and a summary of the proposals are listed below:

- Windows:

o Auditorium windows to have new secondary glazing

o Historic office to have new secondary glazing

o Back of house windows to have a mix of new secondary glazing or replacement new windows

- Doors:

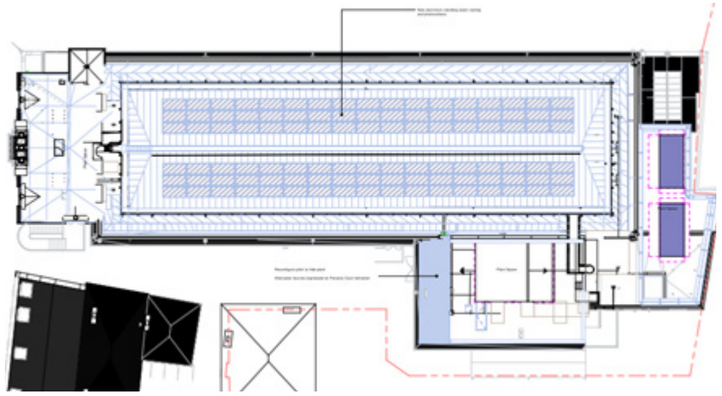
o Doors in the entrance lobby, foyer and main auditorium to be replaced to replicate the existing doors

o Doors in the back of house and bar areas to be repaired or replaced

- Floor:

o Main auditorium to be insulated with UFH (U-value of 0.51 W/m2.K)

o Main auditorium removeable stage to have u-value of 0.60 W/m2.K



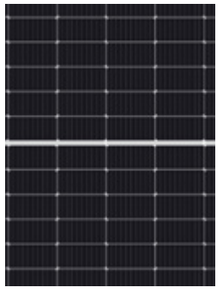


Figure Proposed photovoltaic arrangement

o Foyer to be insulated no UFH, u-value of 0.39 W/m2.K

o Back of house piano store to have insulation to the void below the raised deck, u-value of 0.16 W/m2.K

o Back of house dressing rooms to have insulation laid on top of the slab, u-value of 0.16 W/m2.K

o Basement floor slab to be insulated, u-value of 0.33 W/m2.K

- Main auditorium roof – Pitched roof

o The following aims to reduce mass while achieve a high level of thermal performance.

o Targeted U-value to 0.15 W/m2.K for this part of the roof while improving clerestory glazing. A U-value of 0.15 W/m2.K will require 240mm of insulation at 0.032W/m.K fitted between I-joists.

- Main auditorium roof – plenum

o The whole plenum will be within the thermal envelope.

o U value of 0.18 W/m2. K should be achievable with 150mm of PIR (0.022W/m.K) fitted between timber structure (assumed fraction 12.5%) and 50% of acoustic insulation between battens

Efficient systems

The heating and cooling demand of the building will be met utilising high efficiency Air Source heat Pumps (ASHPs). These units will make use of the PV array to offset the energy required from the grid.

As the heating and cooling to the auditorium space would typically be provided through the ventilation systems a strategy to provide underfloor heating to this space as part of the refurbishment has been developed such that during periods of low occupancy for, rehearsals, show set up and for background heating out of hours the air handling equipment does not have to run.

The ventilation systems will all be provided with heat recovery modules to allow both heating and cooling depending on the demand at the time, to be recovered and keep overall energy demand as low as possible. The units will feature integral bypass to allow free cooling to be utilised whenever possible.

Due to the nature of the use of the Corn Exchange its energy demands will have large peaks during shows/events and much lower background demands placed on the services when outside of showtimes. Due to the limited nature of the available plant space and a desire to keep the ASHP's running in cooling only mode when active, to maximise their efficiency (as the predominant load). The domestic hot water strategy is utilising high efficiency point of use electric water heaters and semi storage units local to the sanitary facilities and the green rooms which greatly reduces the standing loss associated with long recirculation loops which would otherwise be the case for this building

The existing lighting installations will be replaced throughout, and high efficiency LED fittings will be utilised for both house and performance lighting (save for any very specific effect lighting). Any non- managed spaces will be provided with absence detection to allow users to interface with the lighting in the conventional way but should a room be unoccupied for a defined period of time then the lighting will switch off automatically. Preventing lights being left on for extended periods in the back of house areas. The current proposal is a system comprising off 206 new PV panels providing 486 sqm array area to the East and West pitches of the upper roof.

The panels proposed are Solar watt H2.0 Pure 35mm panels with black appearance. As the following image. The panels have dimensions of 1708mm x 1134mm having a depth of 35mm.

This array is expected to generate 56,240 kWh/year and provide an annual CO2 reduction of 9,995 kgCO2e. According to the energy modelling undertaken this could contribute to a 16% annual reduction in the energy consumption of the building, depending on the final energy consumption of

6.1 Sustainability

Response to Sustainability Planning Policies

the building.

The energy generation of using the existing PV panels from the Guildhall on the Corn Exchange and/or Parsons Court will be investigated at Stage 4 when the number and location of these panels is known.

Renewable Energy/Energy Reduction Strategies

As part of the energy strategy, the integration of photovoltaics (PVs) as a source of renewable energy has been investigated for the Corn Exchange. It has been proposed that both sides of the main hall roof are utilised for PVs in order to maximise energy generation.

The east side of the main roof is a protected historic view from Corn Exchange Street and should therefore contain one single array of PVs as to disturb the view as little as possible.

A strategy to utilise part of the existing array from the Cambridge Guildhall has been investigated with the original installer and it would be possible to repurpose the array on the Main Roof or Parsons court. This will be developed further as part of the detailed design stage and as part of the circular economy and reuse strategy for the Corn Exchange and Civic Quarter projects.

This array is expected to generate 56,240 kWh/year and provide an annual CO2 reduction of 9,995 kgCO2e. According to the energy modelling undertaken this could contribute to a 16% annual reduction in the energy consumption of the building, depending on the final energy consumption of the building.

The energy generation of using the existing PV panels from the Guildhall on the Corn Exchange and/or Parsons Court will be investigated at Stage 4 when the number and location of these panels is known.

CIBSE TM54: Operational Energy Modelling

A preliminary operational energy study has been undertaken to estimate the likely whole building in-use energy consumption of the redeveloped Corn Exchange. As well as providing an operational energy estimate, the scope of the study is to identify potential energy saving measures in the design and assess the expected performance against industry benchmarks.

CIBSE Technical Memorandum 54 (TM54) describes a methodology for estimating a building's operational performance and this has been used to make the operational energy estimate. The results of this study can be used to inform energy-saving strategies, agreed between the client, design team and contractor for the design of the refurbishment, and operational strategies of the building.

This interim estimate is being provided in Stage 3 to feed into the Design and Access Statement. This is relatively early in the design process to model many elements of the energy consumption, and consequently, many of the inputs are yet to be determined or finalised. This should be considered a preliminary estimate, and, as such, with a number of uncertainties that will come through to the results. As the design proceeds and more detail is defined, the calculation and estimate can be updated, and the uncertainty will reduce.

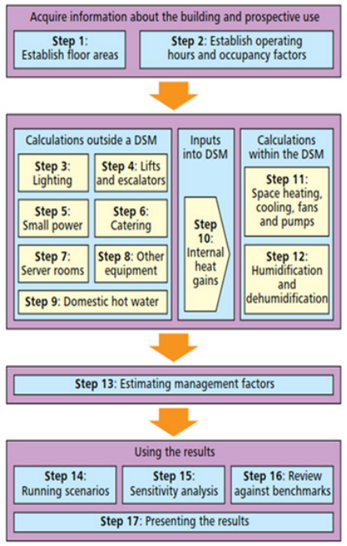


Figure : CIBSE TM54 Methodology

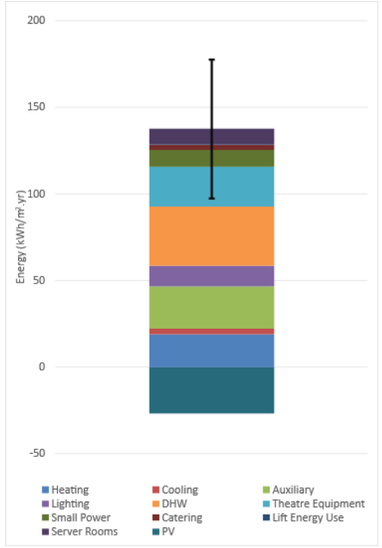


Figure : Operational energy estimate broken down by end-use and including current uncertainty

Methodology

The TM54 calculation has been informed by engagement with the client and users of the buildings through operational energy workshops and questionnaires. These are to understand general usage patterns and occupancy in the building, and more specifically understand the specialist theatre equipment. The information gleaned through this engagement has been used to inform steady-state spreadsheet calculations and a CIBSE AM11 compliant dynamic simulation model. A subsequent estimate of overall operational energy consumption, along with analysis of potential variance, has been produced.

Summary of inputs

Operating hours, no. of occupants, and usage patterns of the building model have been formed based on feedback from the operational energy questionnaire and during the workshops. A typical event calendar, providing the number of events per year of a given type, has been provided by the operator. Together these have been used to develop a typical calendar and timetable of space use.

The expected number of meals served to the performers per show has been estimated based on feedback from the workshops and questionnaire. The catering energy consumption estimate has then been based on a kWh per meal igure as given in CIBSE TM50.

The proposed PV energy generated is included in the energy consumption breakdown.

Results

The table below presents the predicted energy consumption. The same results are presented graphically further below, including an indication of the current uncertainty.

The major energy consumers stand out as heating, auxiliary energy (that associated with fans and pumps), domestic hot water consumption and the theatre equipment. The error bars represent the uncertainty in the calculation at this stage, with the eventual value likely to fall somewhere within this range.

Energy End Use	Estimated Energy Consumption kWh/m² (GIA)
Heating	19.1
Cooling	3.1
Auxiliary	24.5
Lighting	11.8
DHW	34.1
Theatre Equipment	23.0
Small Power	9.8
Catering	2.9
Lift Energy Use	0.2
Server Rooms	9.1
PV (-)	-26.9
Total Energy	137.6

Figure: Predicted energy consumption

Energy modelling conclusions

This DRAFT Stage 3 TM54 estimate incorporates the latest design information available, and there is a good degree of confidence in many of the calculation inputs. It is expected that further information will become available to refine this current estimate as the design progresses.

More detailed, component-based HVAC simulation of the auditorium system will be undertaken during the next iteration of modelling to refine and optimise the MEP controls.

6.1 Sustainability

Embodied Energy & Circular Economy

2.2 Embodied Carbon

In response to:

Cambridge Local Plan 2018:

- Policy 28: Carbon reduction, community energy networks, sustainable design and construction, and water use

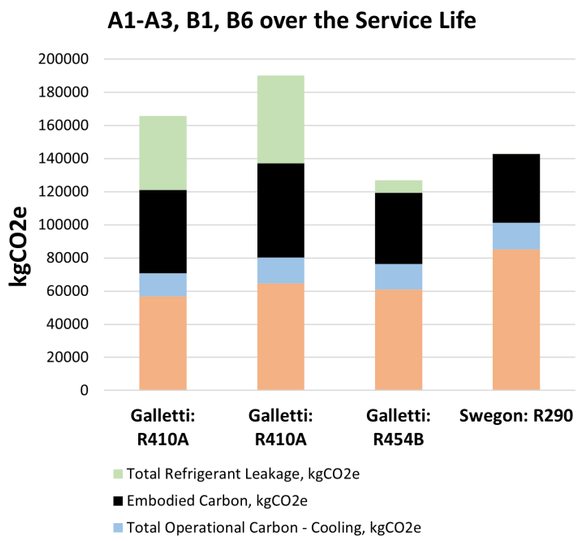
Greater Cambridge Sustainable Design and Construction Supplementary Planning Document 2020

- 4.6 Responsible sourcing of building materials and embodied carbon

The project has made efforts to reduce the embodied carbon of the building. Two embodied carbon optioneering studies have been carried out, focused on the areas likely to have the most significant embodied carbon impact with the aim to identify the lowest wholelife carbon design strategy.

As there is limited architectural and structural work being undertaken within the scheme, it was deemed most beneficial to focus on optioneering the MEP strategies within the proposal, specifically the choice of air source heat pump (ASHP) and the domestic hot water (DHW) strategy.

The ASHP study has considered different manufacturer data to determine if the whole life carbon impact of the system would be greater if multiple units were installed, with the option of not running all at one time, and with the option of running all when a peak load is needed, vs installing one unit that will run at capacity consistently. This has also considered the upfront carbon of the unit, as well as the carbon associated with the refrigerant leakage. Results below:



The study shows that when considering life cycle stages: A1-A3, B1, and B6, over the service life of the ASHPs (assumed to be 15 years), the Galetti (R454B) is the lowest whole life carbon. At the time of this Stage 3 Design and Access Statement, this heat pump is considered to be the heat source for the proposal. Not only does this heat pump support the carbon reduction aspirations of the project, but it also aligns with the acoustic and space constraints of the site and therefore fulfils other project brief criteria.

Domestic Hot Water

The domestic hot water (DHW) strategy has been considered qualitatively from a materials efficiency perspective. This has compared a centralised low temperature hot water (LTHW) and DHW system, with a centralised LTHW system and distributed point of use DHW units. It has been considered that a decentralised DHW system is optimum. This includes point of use DHW units, and is the most competitive option with regards to carbon reduction for the scheme.

The reasoning is that the DHW usage for the building will peak during show times and then have limited use for the longer periods in between. If a centralised system is used for both heating and hot water, there will be more distribution pipework and continuous loss due to the layout of the building and the distributed nature of the sanitary accommodation. Additionally, because the DHW use will be in accordance to show times, and for much of the year, cooling will be the predominant load, this would require a separate heat pump of the required scale to do DHW only. Alternatively, a larger unit would need to switch between cooling and heating, creating a material and operational inefficiency. This, in addition to other project constraints, such as with the space limitations of the roof, has led to the centralised system for LTHW, with distributed point of use DHW being incorporated into the design.

2.3 Circular Economy

Circular economy (CE) is an economic model that seeks to enable high value reuse of construction resources. It aims to keeps materials within the construction loop, rather than downgrading materials into recycling before their full potential has been expended. In a Circular Economy model, materials are retained in use for as long as possible and then re-used or recycled, leaving a minimum residual waste.

As a result of following this model, the environmental impact and carbon emissions from sourcing raw materials and manufacturing of new products are minimised.

Reuse Schedule

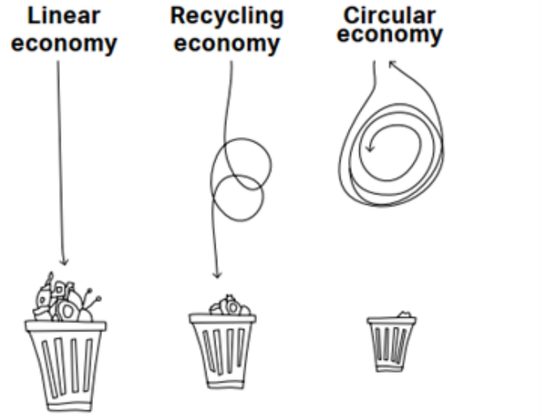
Max Fordham undertook a site walk on 4th July 2025 to identify opportunities for reuse throughout the Corn Exchange. A reuse schedule was created to identify and outline end of life options for each material category identified. It is the responsibility of the Architect and the Contractor to investigate the incorporation of high value items for reuse within the project or off-site.

High value items identified for reuse within the project:

- Flooring in the Main Hall
- Bar equipment
- Theatre seat and structure

Areas to be investigated in Stage 4 for reuse:

- Lighting
- Theatre equipment
- Accessible lift



Circular Economy Principles



Existing Main Hall flooring and Bar equipment identified for reuse

6.1 Sustainability
Waste & Water

2.4 Waste

In response to:

Cambridge Local Plan 2018:

- Policy 28: Site Waste Management:

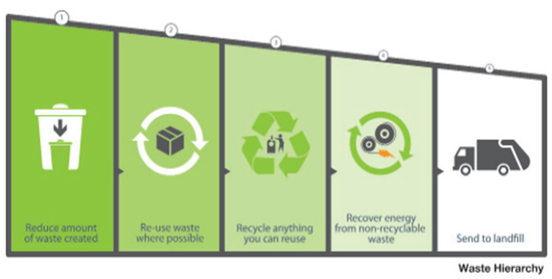
Greater Cambridge Sustainable Design and Construction Supplementary Planning Document 2020

- 3.11 Construction waste & recycling and waste facilities

A hierarchical waste management strategy of "Prevent, Reduce, Reuse, and Recycle" will been employed during the design, construction and operation of the development.

During the design phase, this means striving for material efficiency and eliminating excessive material usage through minimising new construction and where possible re-using materials on-site. See Sections 2.2 and 2.3 for design optioneering carried out by Max Fordham to reduce embodied and operational carbon impact associated with the MEP design of the Corn Exchange.

A site visit and reuse schedule has also been created to inform the reuse of existing material and integrate them into the design. This includes furnishings and fittings such as theatre, office and catering equipment, lighting fixtures, flooring and doors. See 2.3: Reuse Schedule.



Waste Hierarchy

Waste Hierarchy

Construction Waste

The management, disposal and recycling of waste generated during the construction phase will be managed by the Contractor who will put in place a Site Waste Management Plan. The contractor will be required to meet the following requirements:

- The Contractor will be required to set waste targets (diversion and absolute generation) and to report their waste
- At least 99% of non-hazardous waste should be diverted from landfill

Operational Waste

In order to utilise Parsons Court as an external amenity, existing bins are to be relocated behind Parsons Court and within the Corn Exchange. This will provide direct access from the back of house to the bins and aim to eliminate the antisocial behaviour associated with the space at night. Waste streams will continue to be separated, isolating recyclable waste from general waste.

2.5 Water

In response to:

Cambridge Local Plan 2018:

- Policy 28: Water Management:
- Policy 31: Integrated water management and the water cycle
- Policy 32: Flood risk

Greater Cambridge Sustainable Design and Construction Supplementary Planning Document 2020

- 3.3 Water efficiency
- 3.7 Sustainable drainage systems (SuDS) and flood risk

Water

Cambridge is a water scarcity area due to increasingly low and sporadic rainfall and increasing demand from an expanding population. Following the water hierarchy to reduce water consumption and recycle water where possible is a key project objective.

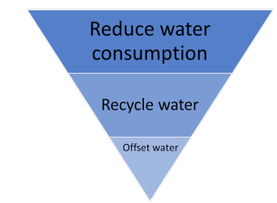
The Corn Exchange's current water usage baseline is approximately 7000m3/year. Parsons Court's current water usage baseline is 430 m3/year. The refurbishment of the Corn Exchange and Parsons Court aims to intensify the use of the building, leading to an increase in potable water demand. The refurbishment is therefore aiming to reduce the potable water usage as much as possible but is not aiming to achieve water neutrality. To reduce potable water usage the following measures have been integrated into the design:

- Fit water efficiency fittings in line with BREEAM Wat01 5/5 credits to reduce water consumption (if thought not technically achievable, 4 Wat 01 credits)
- Options for recycling water have been explored although space limitations prohibit the integration of large rainwater harvesting tanks. The use of condensate recycling is being investigated to understand its viability, although space limitations and proximity to FCUs is providing challenging. This will continue to be investigated at Stage 4.

Component	Performance levels (quoted numbers are minimum performance required to achieve the targeted level)		
	4 Credits	5 Credits	Unit
WC (effective flush)	3.5	3	Litres
Wash hand basin tap	3.5	3	litres/min
Shower	4	3	litres/min
Bath	120	100	Litres
Communal kitchen sink	5	5	litres/min
Domestic washing machine	35	30	litres/use
Domestic dishwasher	11	10	litres/cycle
Rainwater Harvesting	50	75%	% of buildings flushing demand

BREEAM Wat01 Performance Levels

Please refer to Conisbee's Flood Risk Assessment and Sustainable Urban Drainage Strategy (SuDS) for information on surface water management.



Water Hierarchy



Higher than average temperatures in UK

Lowest average rainfall in UK

Thriving east report, Anglian Water

6.1 Sustainability
Adaption to climate change

2.6 Adaptation to Climate Change

In response to:

Cambridge Local Plan 2018:

– Policy 28: Adaptation to Climate Change:

Greater Cambridge Sustainable Design and Construction Supplementary Planning Document 2020

– 3.4 Climate change adaptation

Adaption to Climate Change

The refurbishment of the Corn Exchange aims to improve the current environmental conditions whilst reducing the energy intensity of the building and enable usage into the future.

The addition of cooling will reduce the internal temperatures and humidity during performances, creating a more comfortable environment for users and performers into a warming client. See 2.1: Energy for a detailed breakdown of the TM54 energy modelling carried out, which included the energy impact of cooling.

Although the intensity of the building is designed to be increased, the impact of this on potable water usage will be offset through the integration of water efficient fittings. See 2.5: Water for details on water efficient sanitaryware and the current investigations into water recycling to be continued into Stage 4.

2.7 Biodiversity

In response to:

Greater Cambridge Sustainable Design and Construction Supplementary Planning Document 2020

– 3.5 Biodiversity

A BNG assessment of the whole Cambridge Civic Quarter, including the Corn Exchange and Parson's Court, has been undertaken by MKA Ecology with the aspiration to meet a Biodiversity Net Gain (BNG) of 20%.

The development is exempt from undertaking a Biodiversity Net Gain assessment as the total area of habitats to be impacted is below the 'de minimis' exemption, of 25m2 of onsite habitat. However, the

project aims to achieve a 'measurable' net gain in biodiversity from the baseline conditions. To provide an objective assessment of the potential value of the proposed biodiversity enhancements, the Defra Statutory Biodiversity Metric (Defra, 2023) is applied. The measures, a proxy for biodiversity that use habitat types and their areas, are compared before (the existing condition) and after the completion of the proposed development.

The use of the Statutory Defra Biodiversity Metric to calculate measures of biodiversity for the existing and proposed habitats confirm that the proposed development is likely to lead to a net gain of 0.30 habitat units, which is a significant positive uplift in biodiversity. If the baseline was as high as 0.25 habitat units, the proposed development would still exceed Cambridge City Council aspiration of all developments delivering a 20% net gain in biodiversity.

Please refer to MK Ecology's Biodiversity Net Gain Plan and Preliminary Ecological Appraisal for further information.

2.8 Health and Wellbeing

In response to:

Greater Cambridge Sustainable Design and Construction Supplementary Planning Document 2020

– 4.2 Health and wellbeing

User Experience

A key objective of the refurbishment of the Corn Exchange is to improve the user experience and offering. This includes enhancing the accessibility, providing better flow and direction around the bar and to and from people's seats, refurbishing backstage facilities for performers and staff, and enhancing the environmental conditions and comfort levels provided.

Measures integrated into the design to address the above include:

– Widening staircases for wheelchair access and installing new accessible lifts

– Unifying and centralising the bar, enabling users to filter to their seat at either side

– Providing an accessible dressing room and adjoining accessible WC and shower

– Increasing and improving the in-house catering facilities for traveling performers

– Installing MVHR and cooling to increase ventilation and provide improved comfort levels

– Renovation of Parson's Court will also discourage antisocial behaviour currently associated with the area, whilst providing new external amenity space

Noise

Suitable noise levels are important for health and wellbeing, as well as being crucial in a critical listening environment. The auditorium will be mechanically ventilated and noise ingress is considered to be suitably controlled, particularly with the upgraded glazing. The mechanical ventilation is designed so as to provide a suitable environment for listening to rock/pop music or speech events and is, therefore, well below the levels where it would be considered to have an impact on health and wellbeing.

With regards to plant noise emission from mechanical services, this has been designed to be equal to the pre-existing background noise levels at the nearest noise-sensitive receptors. Mitigation to achieve this includes, in-duct attenuation to the air handling units (AHUs) and an acoustically louvred enclosure around the ASHPs to achieve the noise targets.

Please refer to the Noise Impact Assessment for further details

2.9 Transport

In response to:

Greater Cambridge Sustainable Design and Construction Supplementary Planning Document 2020

– 2.3 Transport, movement and accessibility

During busy shows, many users are required to queue up outside the Corn Exchange as people filter to their seats. Improving the safety of these users along Corn Exchange Street and Wheeler Street has been improved through the design by:

– Improving the internal flow and direction of users through the box office, foyer and bar area

– Restricting access to the end of Corn Exchange Street and Wheeler Street at certain times to minimise traffic outside the Corn Exchange and increase accessibility and safety to users entering the building.

Improvements to visitors approaching the site by bike have been enhanced through greater provision of cycle parking throughout the civic quarter project outside of this planning application.

7.0

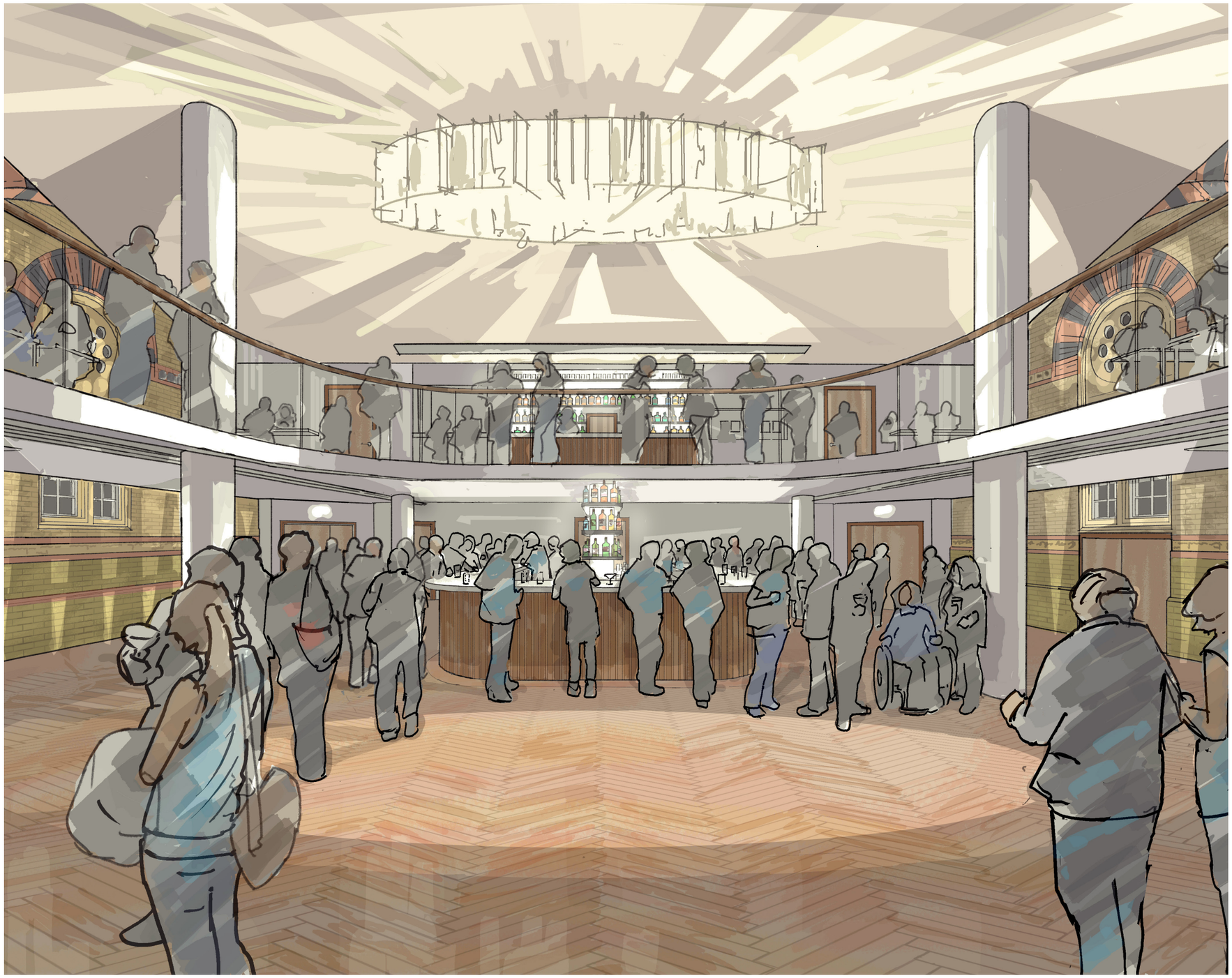
Conclusions

7.1 Conclusions

The proposed designs have been informed by a comprehensive pre-application process and significant and wide ranging stakeholder engagement. While a wide range of comments have been received, the plans have sought to respond positively to the key themes raised. As set out within the Planning Statement, the planned works are found to comply with the Development Plan.

The Corn Exchange is a key components of the Civic Quarter project and will deliver the following key benefits;

- The reinvigoration of a thriving, sustainable, accessible, welcoming cultural venue, one fit for the world class city of Cambridge.
- A venue that attracts a high-quality, wide range of performers and contributes to the cultural quarter, along with Cambridge Arts Theatre and the Guildhall.
- A Cultural Quarter that supports a wide range of other businesses in the area, from food and beverage to hotels.
- A Corn Exchange that is accessible to all, with new lifts, better wayfinding and improved wheelchair seating positions.
- The proposed works will protect a valuable and much loved Listed heritage asset, exposing more of the original Corn Exchange and removing insensitive later additions.
- The upgraded Corn Exchange will contribute greater revenue to Cambridge City Council and therefore help protects Council budgets and frontline services.
- The creation of a new social space in Parson's Court.
- A sustainable future Corn Exchange, with the works reducing carbon and energy consumption by a predicted 61-79%.



CARTWRIGHT PICKARD

cartwrightpickard.com

cartwrightpickard

@CartPickArch

London Studio
1 Canal Side Studios
8–14 St Pancras Way
London NW1 0QG
T 020 7554 3830

Manchester Studio
Unit 310, Ducie House
Ducie Street
Manchester M1 2JW
T 0161 914 7444

Leeds Studio
Studio 4, Cross York Street Studios
Cross York Street
Leeds LS2 7BL
T 0113 360 9444