4.3 LYRIC THEATRE

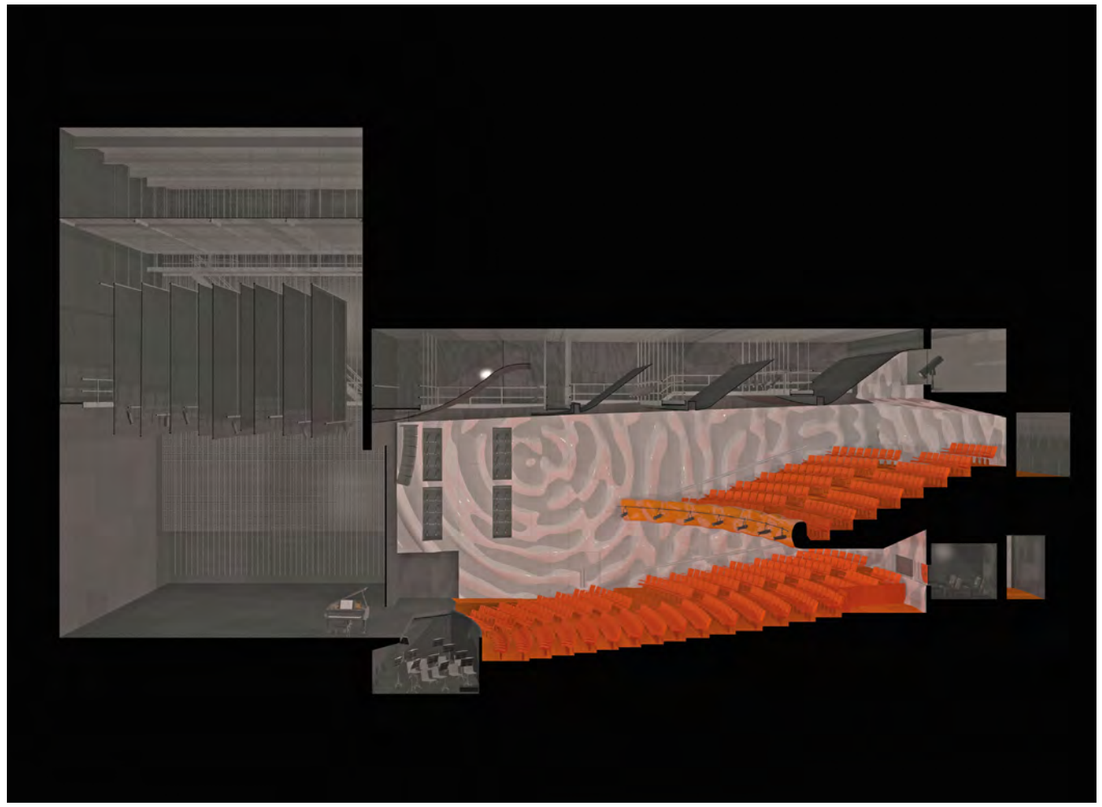
ACOUSTIC DESIGN

The primary acoustic design parameters for the lyric theatre are based upon its use as an intimate venue for spoken theatre. This implies a volume per seat of 5-7m³, a reverberation time of 0.9-1.1 seconds, a speech transmission index of > 0.55 at 80% of the seats, speech clarity of > +1dB and a loudness criteria of > 0dB. These values also prove ideal for dance presentations with pre-recorded accompaniment and amplified concerts.

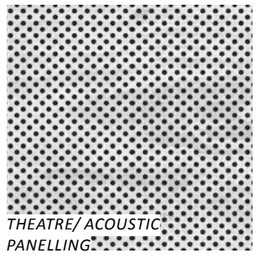
In order to review the performance of the lyric theatre, Marshall Day Acoustics have undertaken a computer analysis of a 3d model of the theatre supplied by ARM Architecture. This analysis has confirmed that the proposed theatre falls within the parameters described above.

The computer analysis also highlighted two areas of concern regarding the form of the ceiling and its impact on the distribution reflected sound in the auditorium and the treatment to the front edge of the balcony and the potential for unwanted reflected sound. In order to address the concerns regarding the ceiling form a series of curved ceiling panels that evenly distribute reflected sound have been introduced. This will result in a more even acoustic quality throughout the auditorium.

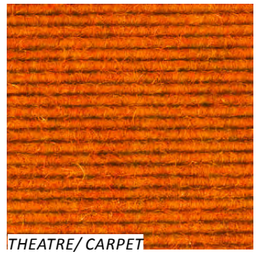
The front edge of the balcony has been altered to diffuse, absorb and reflect the sound energy so as to avoid the potential for image shift for patrons at the front of the lower stalls.



THEATRE/ WALLS



THEATRE/ ACOUSTIC PANELLING



THEATRE/ CARPET

THEATRE/ STAGE FLOOR

MATERIALS

The design for the theatre interior draws on the concept of water eroding the limestone block, as well as linking back to the origins of the name ‘Joondalup’. The ripple pattern on the theatre walls is formed of milled MDF, a process similar to that used on the Melbourne Recital Centre interior. The theatre floor and seating tie to the bright orange used on the stair.

4.4 BLACK BOX STUDIO

The black box studio is a flexible space that will be used for a wide range of activities including drama, dance, music performances, physical theatre, cabaret, exhibitions, lectures, community and educational events, rehearsals and dinners. As such the black box studio is designed with an emphasis on flexibility of set up and operation.

Flexible seating configurations allow for a variety of seating modes to service the creative and seating needs of the user groups. The performance space can be entered from all corners via corridors that encompass the space while a gallery level allows performers and patrons to enter from the upper level.

The main access point to the black box studio is via a series of large sliding doors which open on the main foyer. An adjacent set of doors within the foyer may be closed in order to provide a dedicated black box foyer when required. The sliding doors connecting the black box and the dedicated foyer are wide enough to allow the two areas to be combined into one large interconnected performance space when required.

To the south of the black box studio a large sliding door provides direct access to the adjacent art gallery, allowing for large functions, exhibitions or related performances.

SEATING

The black box studio has 200 seats on a retractable seating system installed at the western end of the room. When retracted the seating provides an open area of approximately 240sqm. The retractable seating is augmented by rostra and loose chairs which will allow the space to have seating in end-stage, thrust-stage, theatre-in-the-round and casual modes as well as flat floor mode with all seats retracted and/or removed.

STAGE

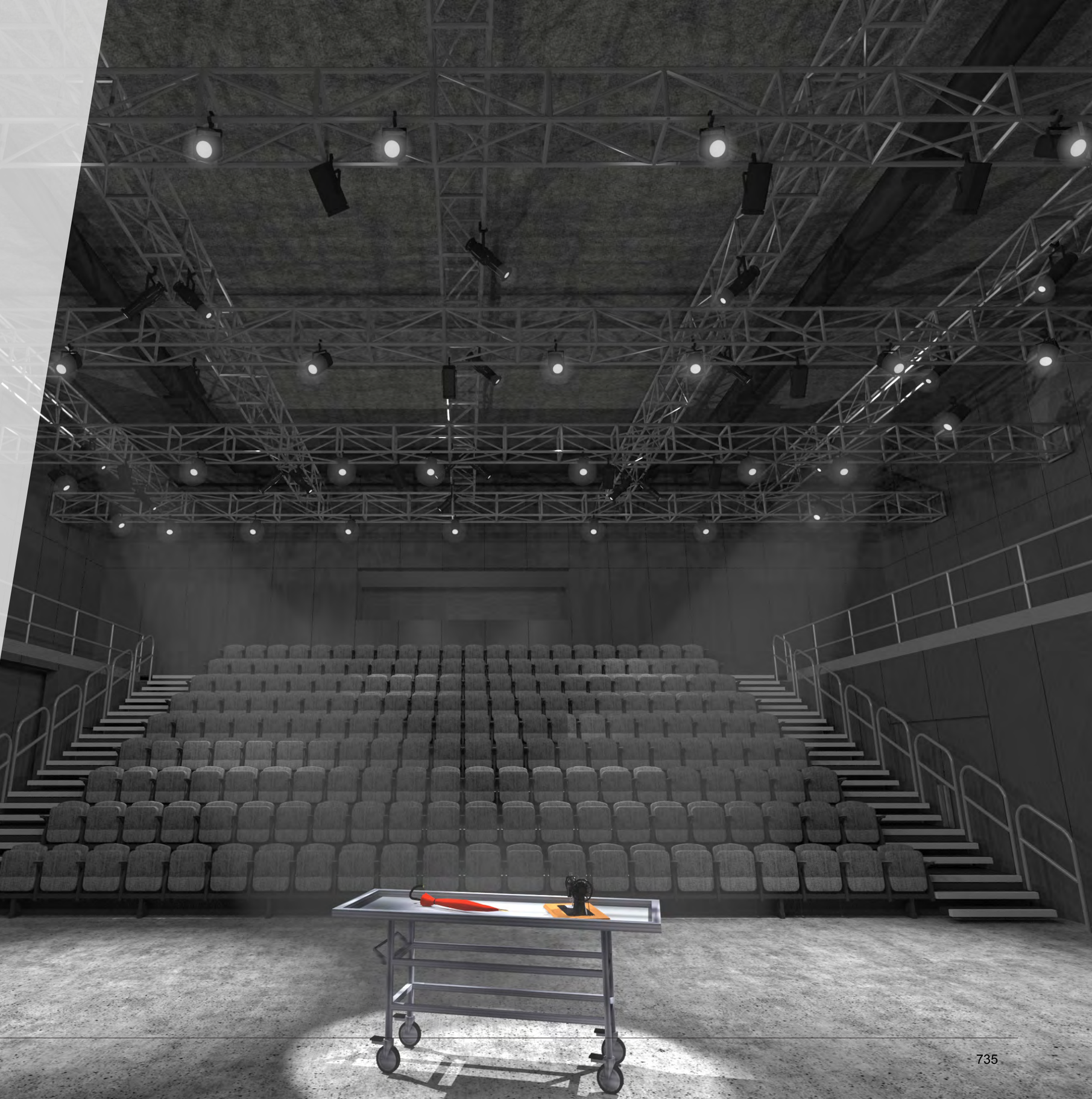
The stage level is a flat floor space that can be reconfigured as noted above. Performers and technicians can access all corners of the stage via corridors linking them to dressing, loading, and other back-of-house areas.

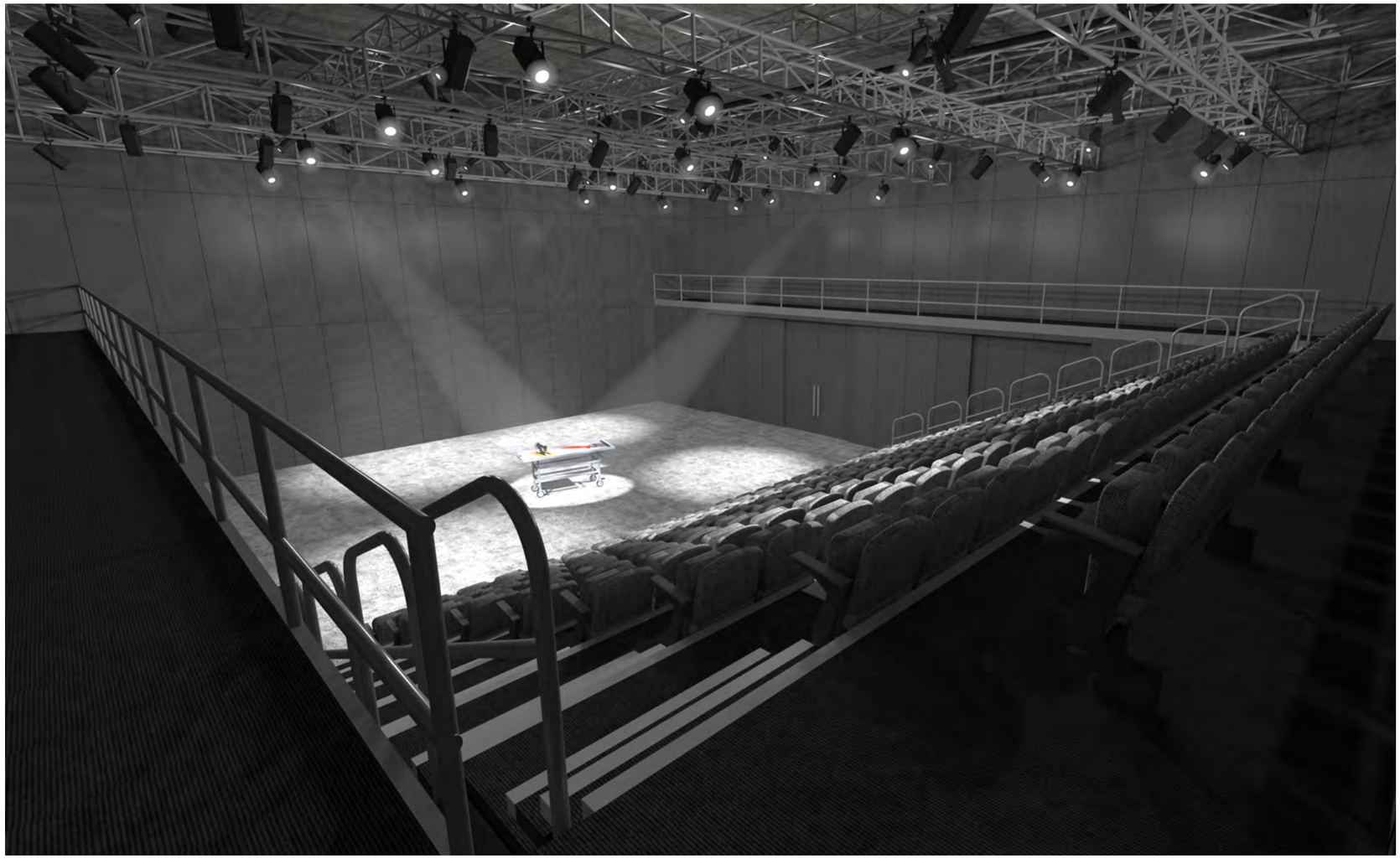
CONTROL ROOM

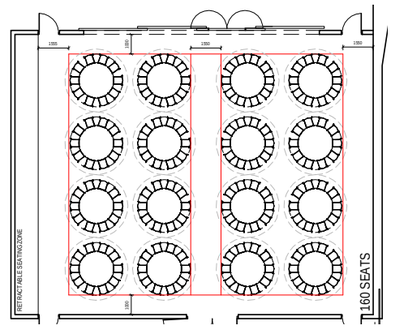
A soundproofed control room is provided at the gallery level. The room may be used as a projection room if required. Rigging positions for lighting, sound and audio-visual equipment are located over the studio. More detailed design will determine if these are accessed via a lowered rig or by EWP.

ACOUSTICS

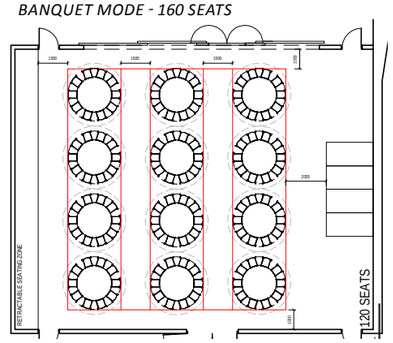
In order to allow concurrent performances, the black box studio is acoustically isolated from the adjacent lyric theatre. The large operable doors opening into the studio are acoustically treated in order to minimise sound transfer between the studio and the surrounding public areas.



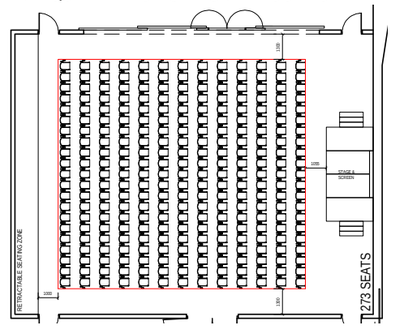




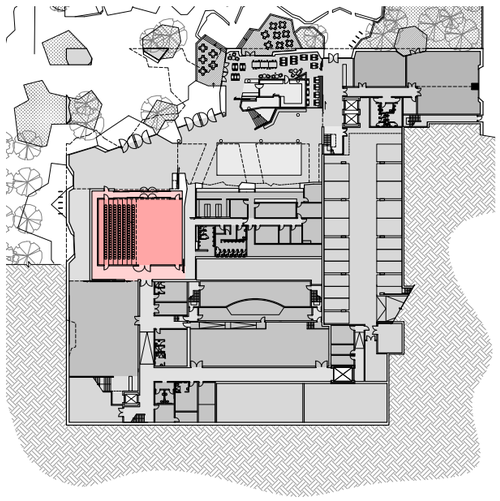
BANQUET MODE - 160 SEATS



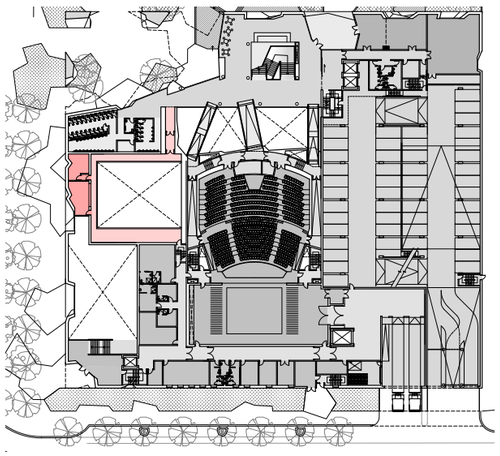
BANQUET WITH STAGE MODE - 120 SEATS



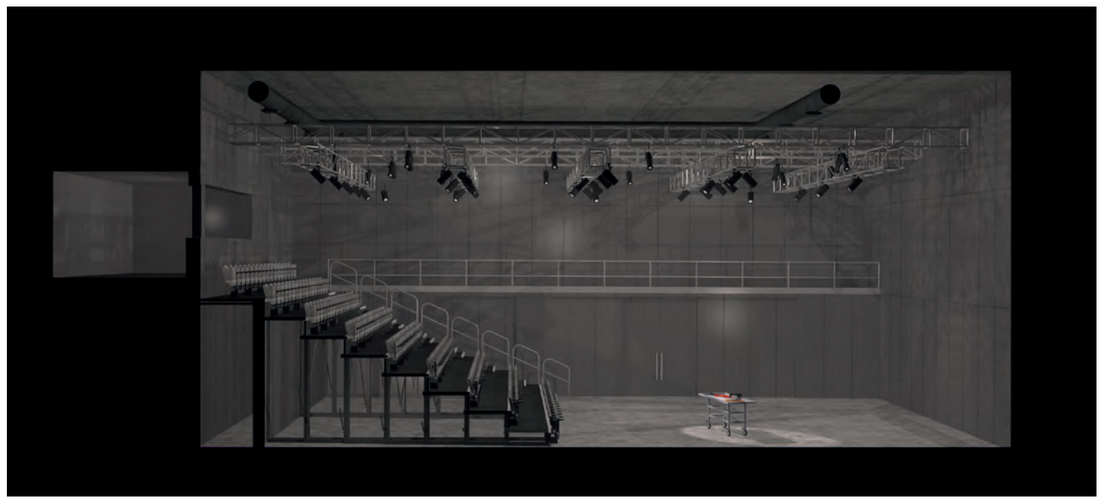
LECTURE MODE - 273 SEATS



BLACK BOX/ GROUND LEVEL



BLACK BOX/ LEVEL 1



4.5 ART GALLERY

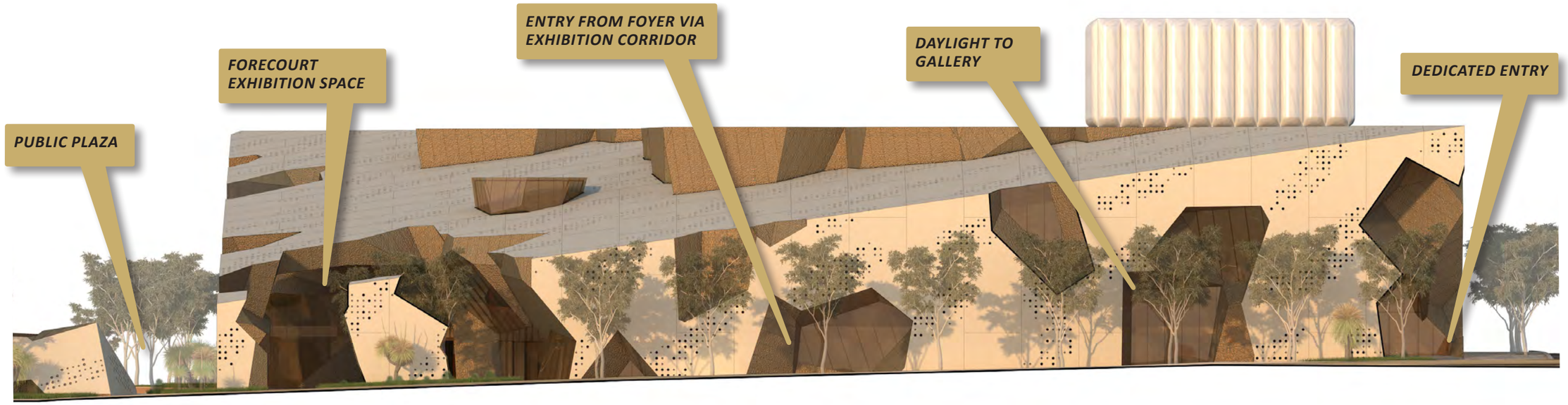
The art gallery is a 400sqm space, self-contained and accessed via a highly prominent entry at street level to the corner of Grand Boulevard and Teakle Court. The gallery has been relocated from the upper levels at the competition phase to the ground level. This relocation has allowed the gallery to have direct access to the main foyer via a generous corridor/exhibition space.

In addition the gallery now has direct access to the black box studio adjacent. This allows the spaces to be combined into one large function space when required. A series of sliding doors allow the gallery to be isolated from the main foyer, whilst maintaining access to the ground level toilets during events of this nature. The layout also allows for exhibitions to be displayed within the foyer and within the public forecourt if required.

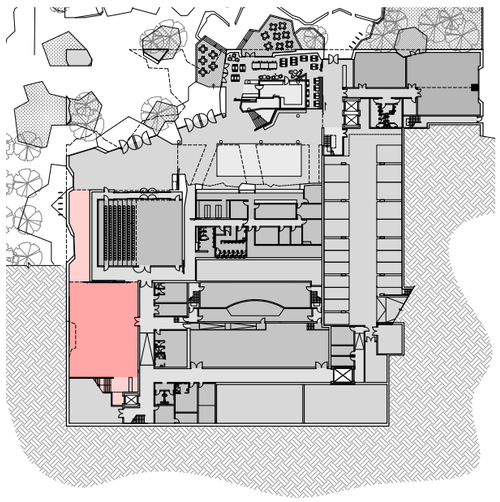
In addition to the added flexibility, the new location of the art gallery provides street level activation and passive surveillance for pedestrians via large glazed areas which also ensure daylight access within the gallery.

The gallery services have been considered to enable temperature and lighting control. This will allow a wide range of high quality touring exhibitions to be accommodated within the gallery, providing unique opportunities for the JPACF patrons. Humidity control is a potential value-add which would allow for premium exhibitions that are currently only able to be hosted at AGWA, the Lawrence Wilson or John Curtin Galleries.

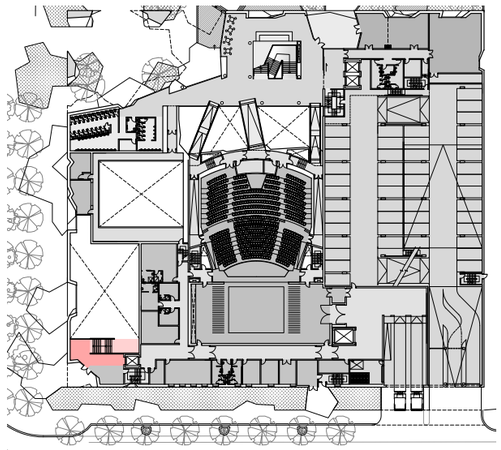
The art gallery has curatorial space immediately adjacent to the gallery. Both the gallery and the curatorial spaces are provided with a designated mechanical system delivering curatorial quality temperature control. Loading to the art gallery is provided via an oversized service corridor and services lift from the main loading dock.



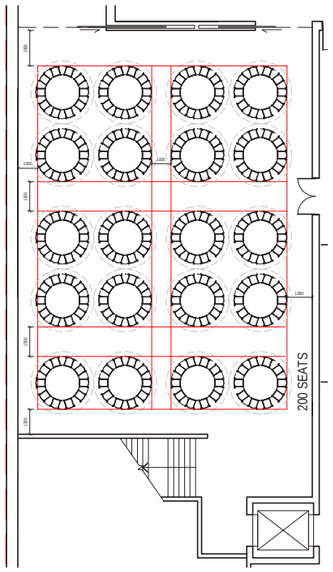
GRAND BOULEVARD ELEVATION



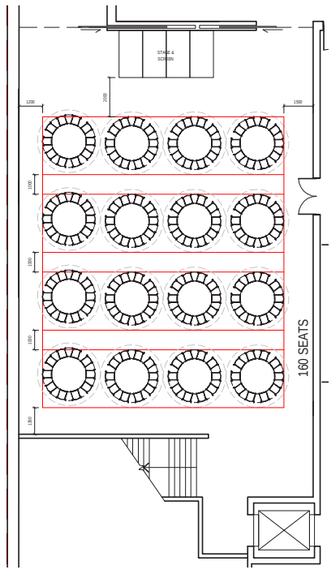
GALLERY/ GROUND LEVEL



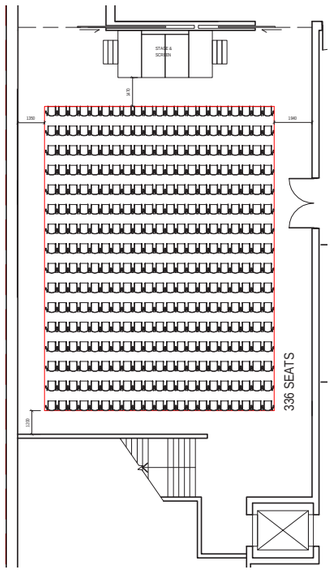
GALLERY/ LEVEL 1



BANQUET MODE - 200 SEATS



BANQUET WITH STAGE MODE - 160 SEATS



LECTURE MODE - 336 SEATS

4.6 COMMUNITY STUDIOS

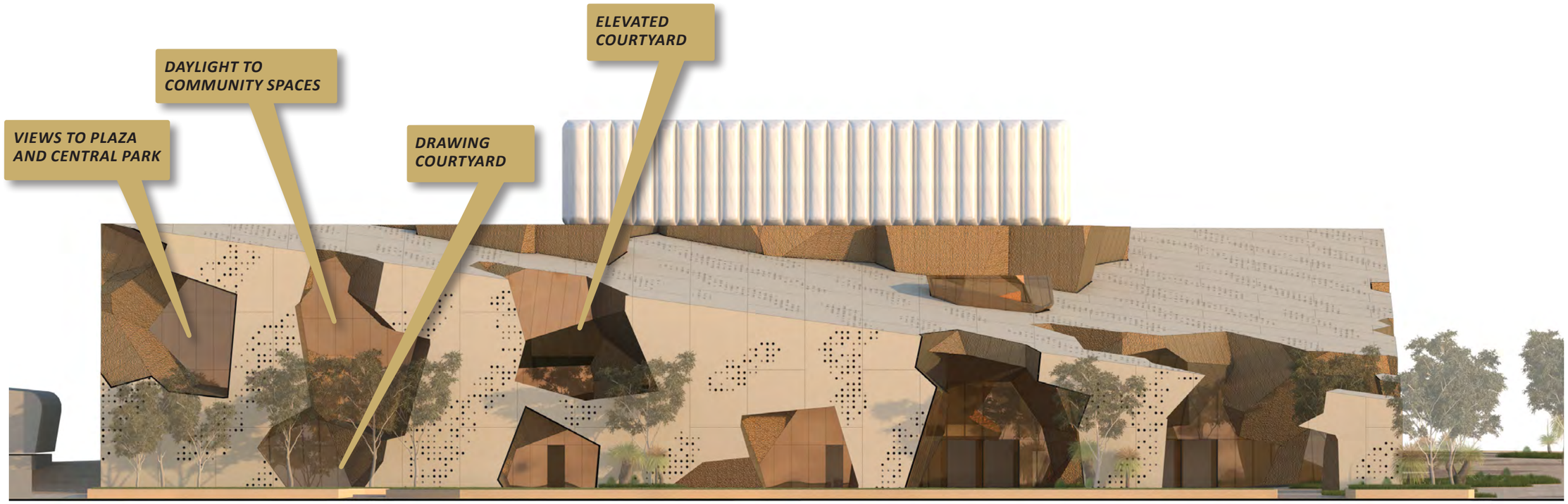
The JPACF incorporates a community arts hub adjacent to Central Park and the main plaza. The community studios include a mixture of performance and visual art studios, practice rooms and meetings rooms together with a flexible conference facility. The hub is 1680sqm GFA across three levels and shares common lifts and toilets with the various foyers of the main auditorium.

A variety of room sizes are provided, and larger rooms on ground and Level 1 are able to be partitioned via operable walls. This arrangement maximises the flexibility of the various rooms and allows for multiple simultaneous uses.

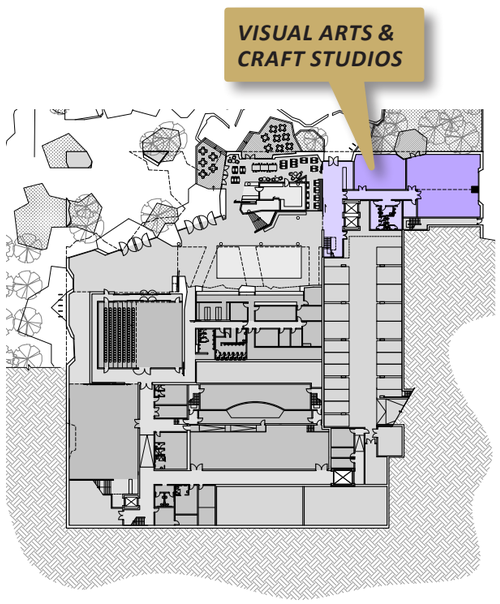
The community facilities have a dedicated entry at ground level with vertical access provided via an open stair and the main foyer lifts. Sliding partitions allow the stair and lifts to be accessed when the main foyer and theatres are closed. Ground level includes visual arts and crafts studios, and an administration / front desk area adjacent to the entry. A deck area provides an external area for use by the visual arts studios. Large north-facing windows provide excellent access to daylighting.

Level 1 facilities include conference and function rooms, a warming kitchen and storage areas. The function rooms are located against the facade to ensure access to daylighting and to allow views over the plaza, Central Park and Jinan Gardens to the north. In addition the western-most room has direct access to the courtyard space adjacent to the lift lobby. This allows this room to operate as a VIP venue during performances, or as an independent venue for events such as weddings.

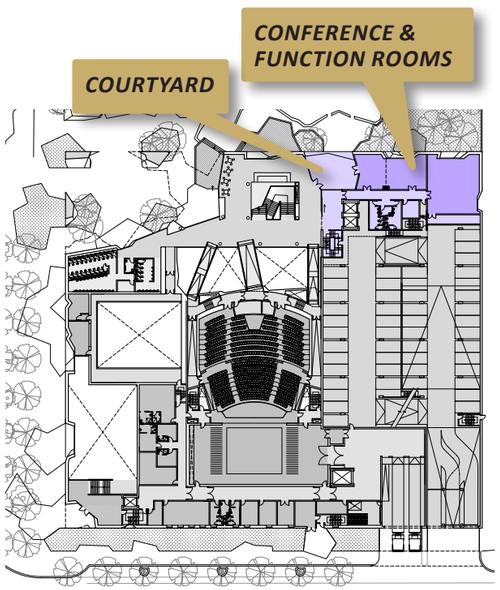
Level 2 facilities consist of a dance studio, music practice rooms and a recording studio, with supporting storage areas. Access to the balcony overlooking the Level 1 courtyard space is provided in the lobby adjacent to the main lifts. The dance studios and practice rooms are acoustically treated to ensure that sound transfer between public areas and the community studio is minimised. A floating floor to the dance studios is provided to ensure sound transfer between levels is avoided. The dance studios have large windows to provide daylight access.



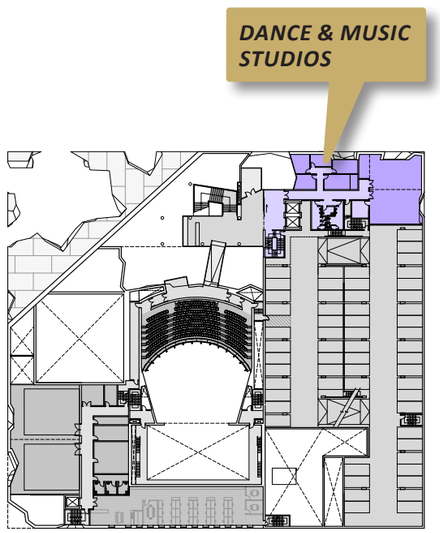
PUBLIC PLAZA ELEVATION



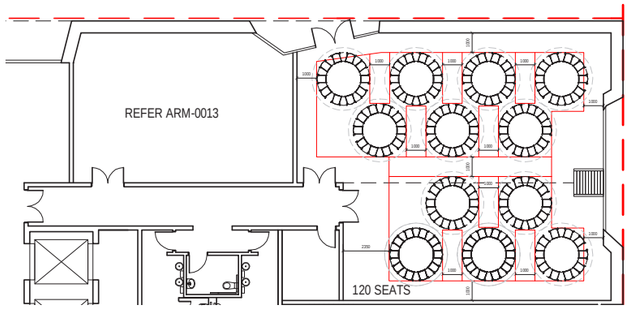
COMMUNITY/ GROUND LEVEL



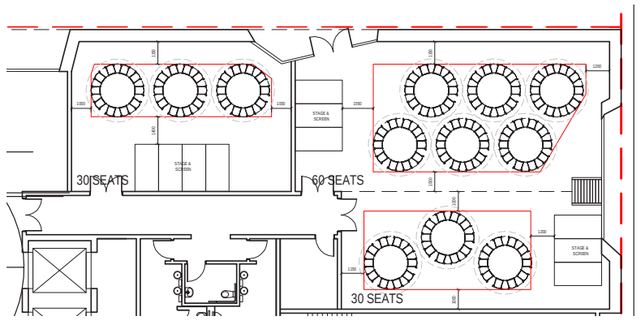
COMMUNITY/ LEVEL 1



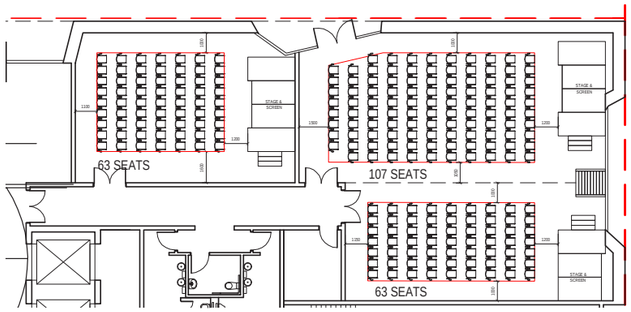
COMMUNITY/ LEVEL 2



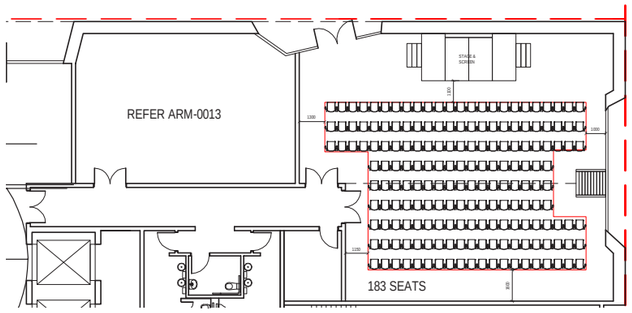
GROUND LEVEL - BANQUET MODE



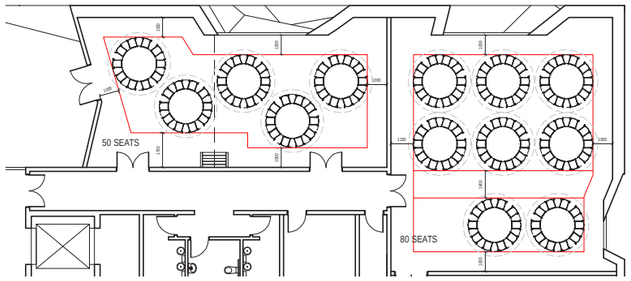
GROUND LEVEL - BANQUET AND STAGE MODE



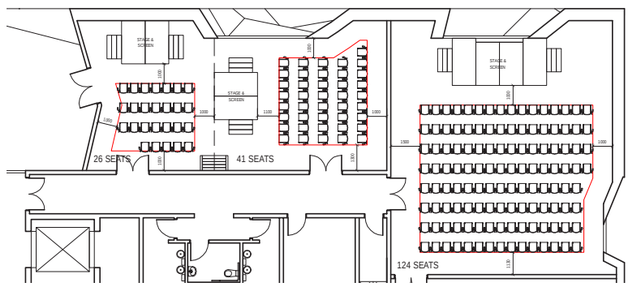
GROUND LEVEL - LECTURE MODE



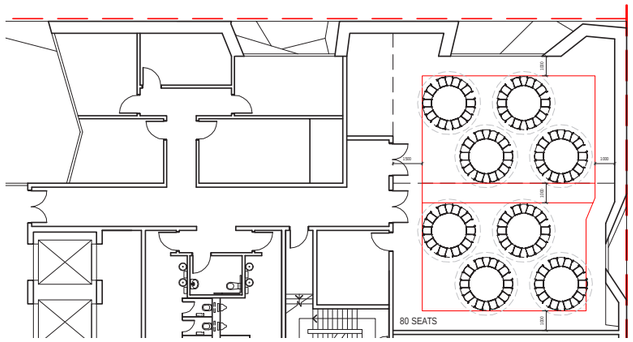
GROUND LEVEL - LECTURE MODE



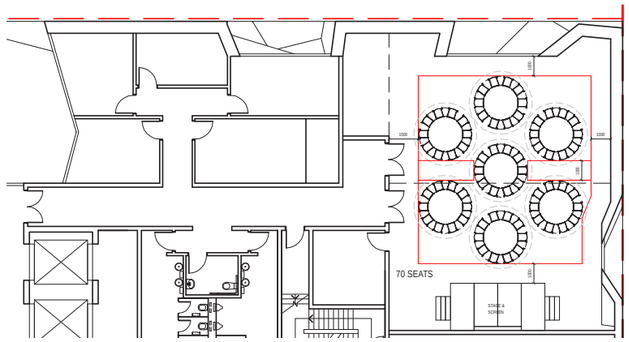
CONFERENCE LEVEL - BANQUET MODE



CONFERENCE LEVEL - LECTURE MODE



DANCE LEVEL - BANQUET MODE



DANCE LEVEL - BANQUET AND STAGE MODE

4.7 BACK OF HOUSE FACILITIES

The back of house (BOH) areas provide all the required amenities to ensure the operational success of the facility. Well-designed, functional spaces are safer to operate, lower operating costs, and serve as an asset to technicians, performers, and theatre management.

BOH circulation is wider than typical circulation paths to allow for multiple overlapping activities that include moving scenery, costumes and performers. All major levels of the BOH are accessible to people with disabilities, starting at the exterior of the stage door and extending all the way through to the stage, dressing rooms, and technical areas.

STAGE DOOR

The stage door is the "back door" of the theatre through which performers and technical staff will come and go on a daily basis. It also functions as a hirer and visitor receiving area. the stage door is the security and control point where user groups and performing company personnel can “sign on and sign off” and it is the point where access to the BOH areas can be restricted, particularly when the theatre is hired by schools or children’s groups.

GREEN ROOM

The green room is a multi-purpose space for performers to gather when not on stage and will also be used for various other functions including backstage meeting space, warm-up areas, and as a holding room when large groups of performers arrive at the stage door.

DRESSING ROOMS

Dressing rooms are performer support rooms for changing into costumes and applying stage make-up. Eight dressing rooms provide for a cast of 64, sized from 2-person rooms to 20-person. Each room includes makeup benches, mirrors, makeup lights, and above-bench power points. Smaller rooms are provided with higher-end finishes for use as "star" dressing rooms. In addition, the musicians’ room functions as a dressing, green room, warm up space, and instrument case store for the musicians and is located at the ground level near the orchestra pit.

REHEARSAL ROOMS

The two rehearsal rooms are multi-function, large volume spaces suitable for a number of purposes including rehearsal and performance class rooms. It is also common for these spaces to occasionally be used as function spaces. Located on Level 2, the rooms have good access to daylight while allowing for privacy when required.

Each of the two rehearsal rooms are sized to allow for stage footprint to be marked on the floor during rehearsal, with additional space outside of this footprint to set up stage management tables and prop setting.

4.7 BACK OF HOUSE FACILITIES

TECHNICAL ROOMS

A general-purpose open plan office is provided for resident production and technical staff. The technical offices are in the backstage area and have flexible workstations or benches for several people to work as required. Other technical spaces include crew locker room, stage manager office, rack rooms, dimmer rooms and store rooms.

WORKSHOP

The workshop is for repair and maintenance of stage equipment. Work will include wiring and soldering, as well as mechanical work on stage machinery components. Unlike venues such as the MTC Theatre, the JPACF will not have an in-house production company, so does not require space for the building of entire sets.

WARDROBE

The wardrobe is a well-lit, air-conditioned workroom for maintaining and repairing costumes used in performance. It provides services for sewing and ironing equipment and large washing machines and clothes dryers. A separate fume extraction system for toxic sprays and hair products is provided.

LOADING

In general theatres are giant empty rooms that constantly have people, equipment, and scenery moving in and out of them on a daily basis. The loading dock is a key element to facilitate this movement. When it operates poorly it causes major inconvenience for everyone involved including council operators and the users of the theatres. It also creates unnecessary operational costs as it is likely that major presenters may avoid the theatre (less revenue), and larger technical staffs will be required to load and unload trucks (additional costs).

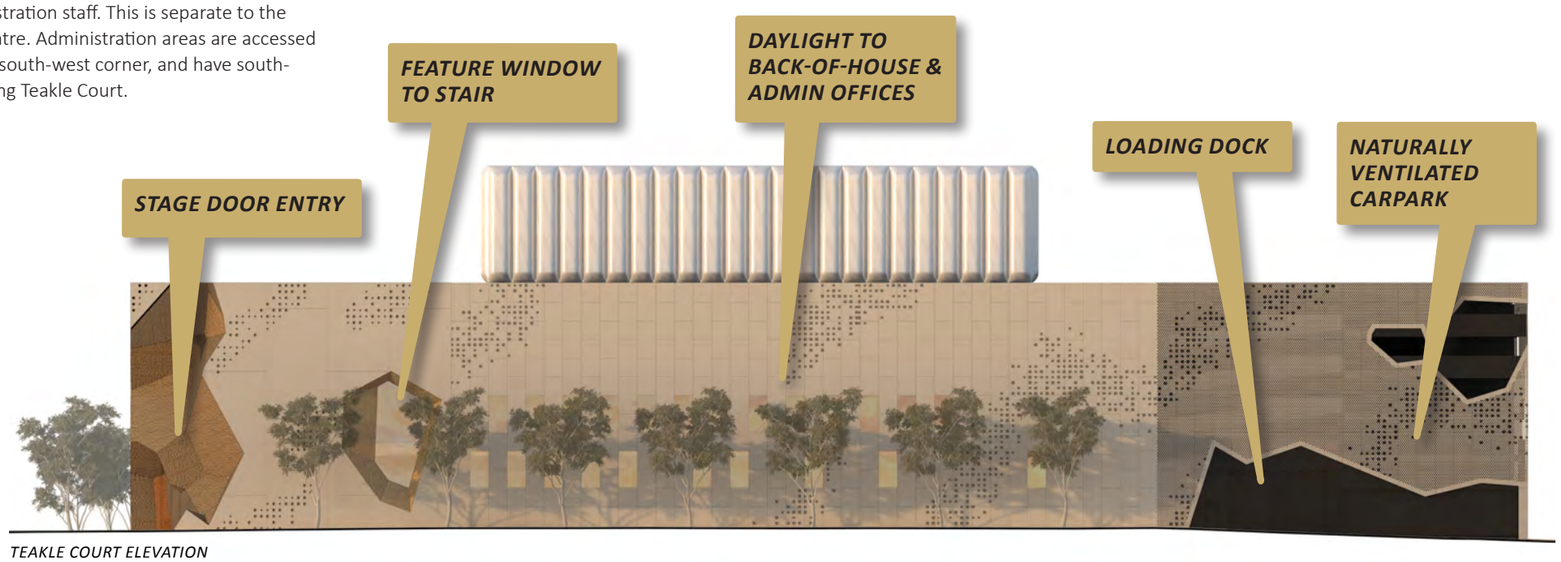
The loading dock has unobstructed access for two semitrailers and articulated vehicles up to 19.5m long to manoeuvre from the street to the loading dock for loading and unloading on a regular basis and at all hours.

RUBBISH

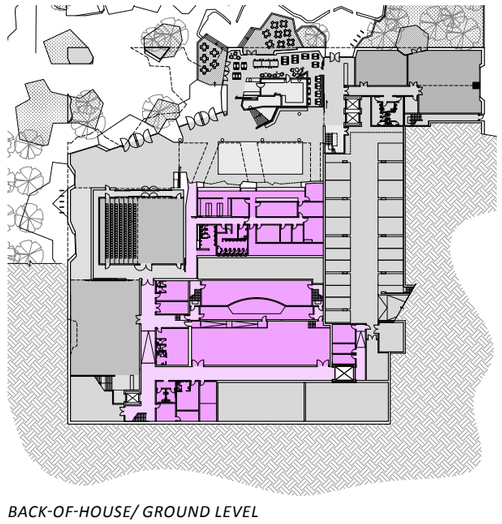
A bin room is provided adjacent to the loading dock, allowing bins to be stored and collected separately from the scene loading.

ADMINISTRATION OFFICE

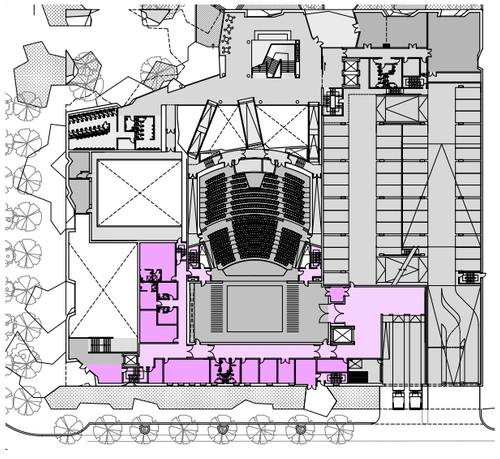
An open-plan office area is provided on Level 2 for operations, management and administration staff. This is separate to the technical crew of the theatre. Administration areas are accessed via the stage door on the south-west corner, and have south-facing windows overlooking Teakle Court.



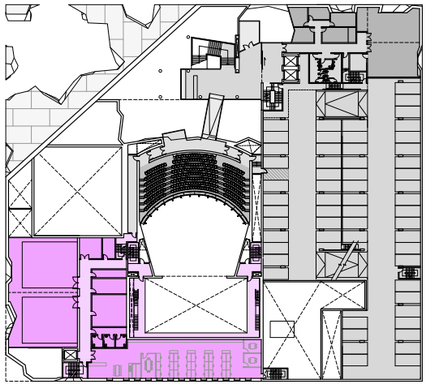
TEAKLE COURT ELEVATION



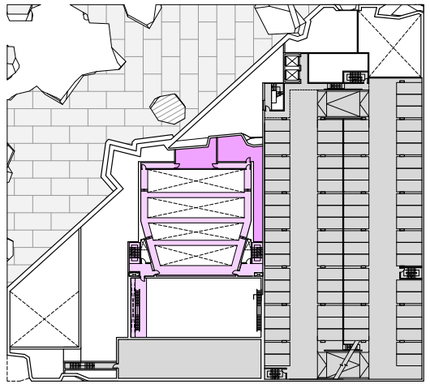
BACK-OF-HOUSE/ GROUND LEVEL



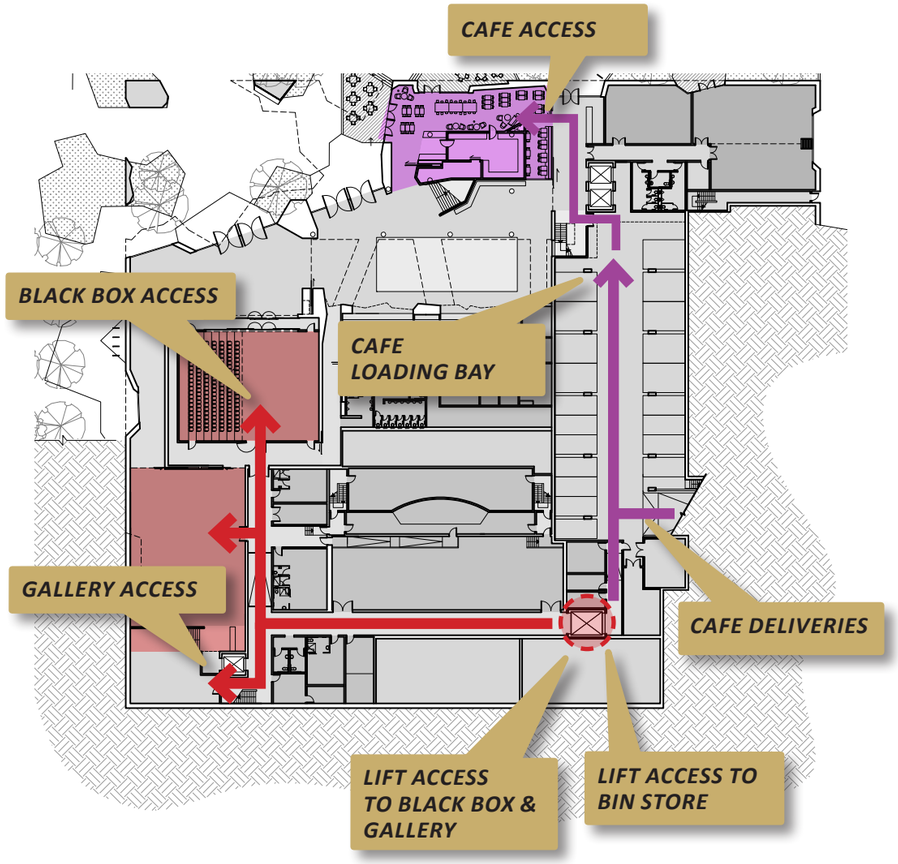
BACK-OF-HOUSE/ LEVEL 1



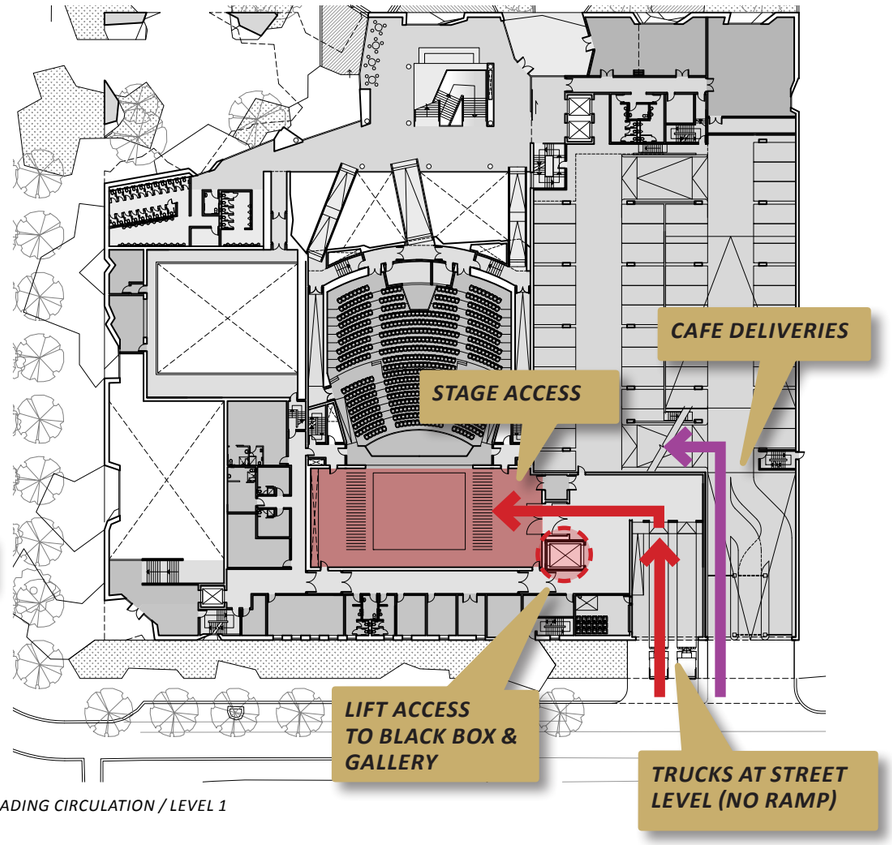
BACK-OF-HOUSE/ LEVEL 2



BACK-OF-HOUSE/ LEVEL 3



LOADING CIRCULATION / GROUND LEVEL



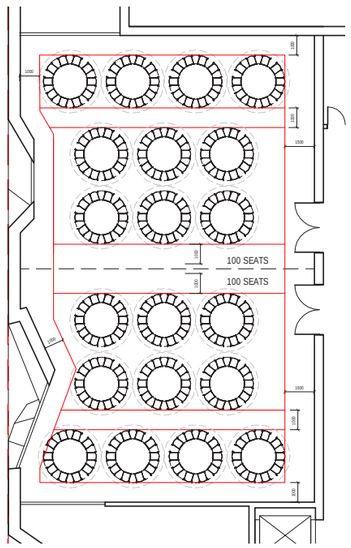
LOADING CIRCULATION / LEVEL 1

MATERIALS

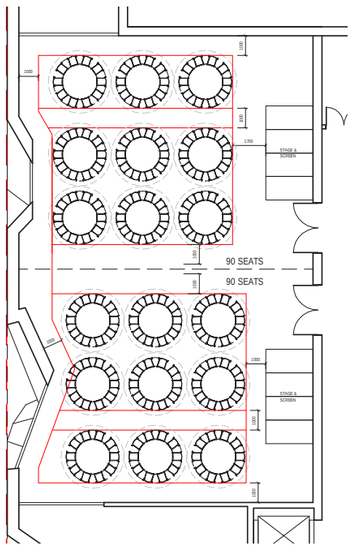
BOH finishes are kept neat, minimal and utilitarian. Most BOH spaces have particular functional requirements for materials. Control room finishes should have a non-reflective and dark value, and surfaces and cabinets should have a matte, dark, neutral or black colour, so as to minimise visibility to the audience.

Dressing-room materials should generally be of a neutral colour to not distort reflected light (for make-up). Surfaces should be durable and easily cleaned.

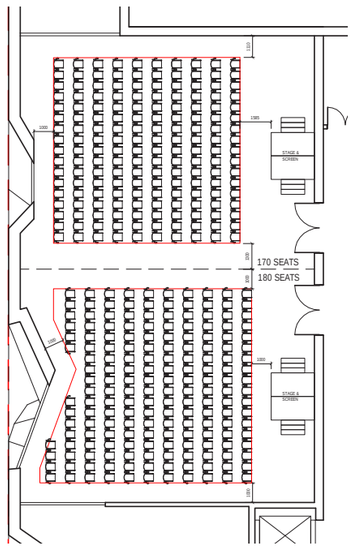
Rehearsal room floor finish is often hardwood tongue and groove or parquetry finish, with light coloured plasterboard walls, and an open ceiling with pipe grid.



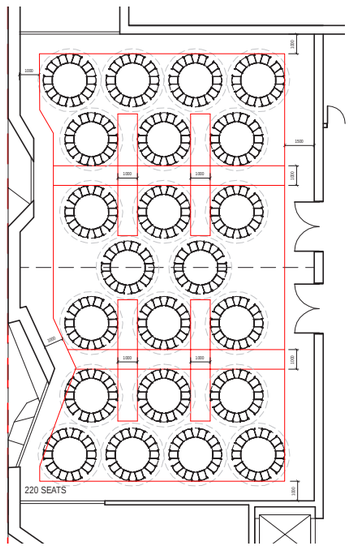
REHEARSAL SPACES - BANQUET MODE



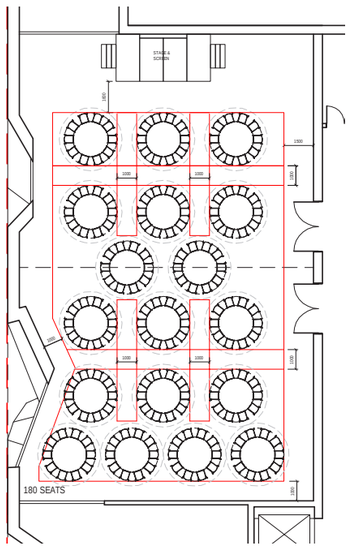
REHEARSAL SPACES - BANQUET MODE WITH STAGE



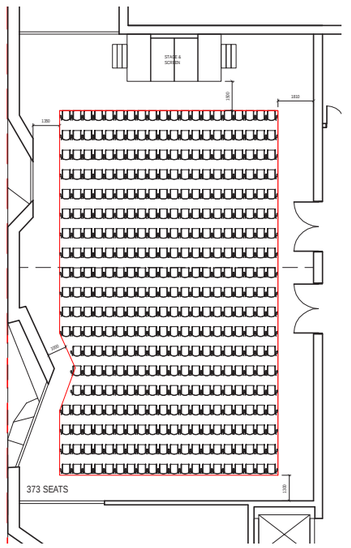
REHEARSAL SPACES - LECTURE MODE



REHEARSAL SPACES COMBINED BANQUET MODE



REHEARSAL SPACES COMBINED BANQUET WITH STAGE MODE



REHEARSAL SPACES COMBINED LECTURE MODE

4.8 FACADE & MATERIALS

Material selection for the exteriors has followed from the concept design of the project – the eroded, solid form. The palette of external materials is deliberately kept simple to achieve the design intent. Materials are chosen based on the following criteria:

- Ability for lighting integration
- Durable finishes for the Perth environment
- Low maintenance, cleanable surfaces
- Detailing and integration of services
- Cost

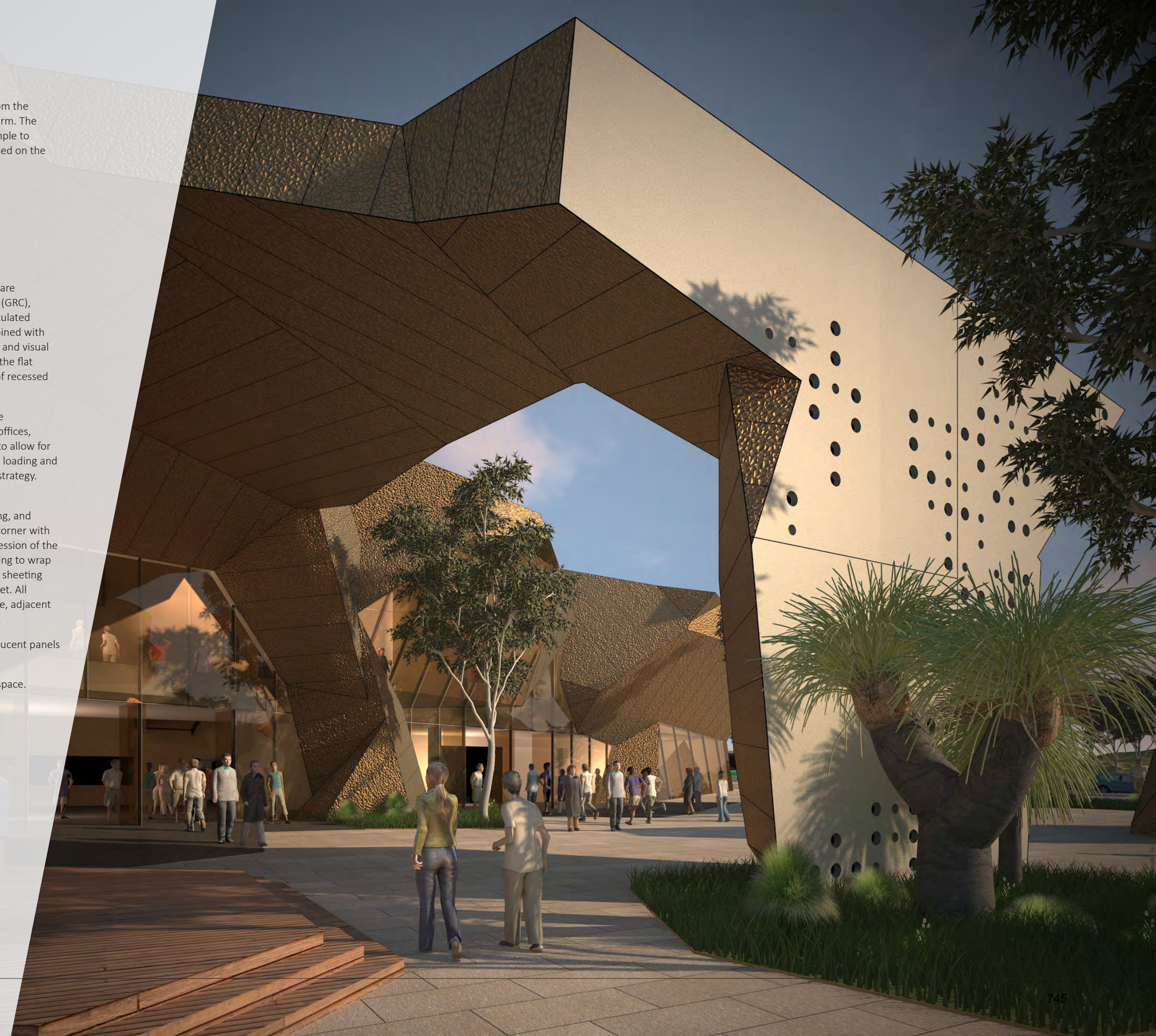
Facades
The north and west facades, along the main roads, are proposed to be panels of glass-reinforced concrete (GRC), either as vertical sheer façade panels, or more articulated and textured internal reveals. The reveals are combined with sections of glazing and entry points to provide light and visual connection inside and out. Around the main entry, the flat panels have integrated lighting, provided in zones of recessed ‘pits’.

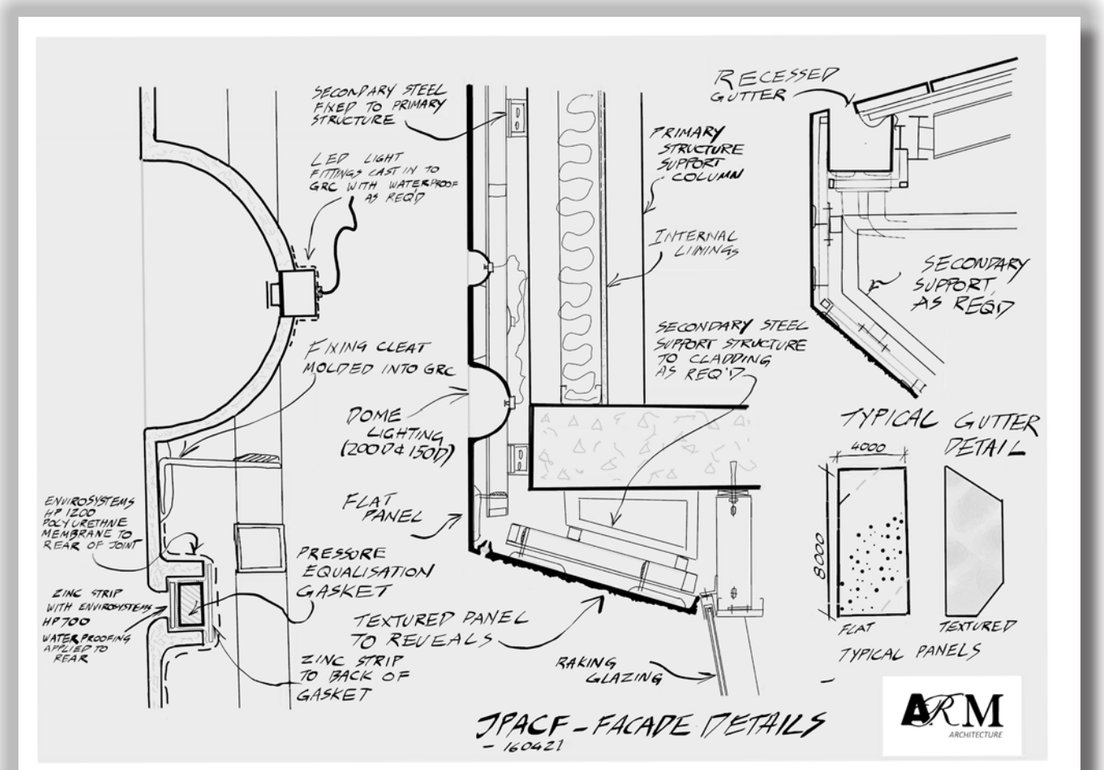
To the southern and eastern facades, the panels are combination of precast concrete, glazing to admin offices, and perforated metal panelling for the car parking to allow for natural ventilation, as well as visual activation. BOH loading and car parking entry are all integrated into the design strategy.

Roof
The roof is a combination of traditional roof sheeting, and perforated precast panelling to the north western corner with a rain-screen water-proofing. This creates the impression of the overall solid mass, with the facade material appearing to wrap up over on to the roof. The areas of traditional roof sheeting aren’t visible from pedestrian level or from the street. All mechanical services are located in this 'hidden' zone, adjacent to the carpark.

The flytower to the south is clad with back-lit translucent panels to act as an illuminated beacon from a distance.

A large glass skylight hovers over the central foyer space.





EXAMPLE OF MOULDED GRC

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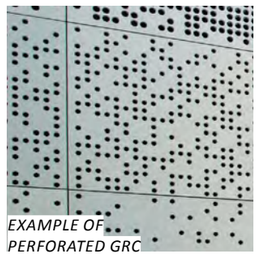

EXAMPLE OF PERFORATED GRC

TIMBER DECKING

FLYTOWER CLADDING

4.9 CARPARK

The carpark provides approximately 374 car bays, with vehicle access from Teakle Court. The car park is in a half-split-level format which links in with the main building at every level, via stairs and lifts. The bottom level of the carpark is dedicated parking for staff, and ACROD bays. This level also includes a short-term loading bay with direct access to the cafe and bar, allowing these vehicles to be kept separate from the theatre loading path.

The carpark shares the main lift core and can be accessed by pedestrians from Central Park or Teakle Court while the rest of the facility is closed. The carpark is naturally ventilated. This will require a ventilation easement to be agreed with the Department of Education (TAFE) but delivers a substantial cost saving.

The top level of the carpark is open, assisting with natural ventilation. Although integrated within the JPACF envelope, the carpark is structurally and acoustically separated from the main building. On the top level, catenary lighting is provided in a pattern that reflects the rocky shape of the building. There is the potential for shade-sail cover to be added if required.

4.10 PLANT

Plant has been strategically located within the building to provide the required services whilst minimising acoustic impact on the theatre and surrounding buildings. It is typically positioned to the south and east of the main theatre on ground, Level 1 and the roof, with supplementary services for localised areas being located in adjacent areas.

Rainwater harvesting storage, fire tanks and associated pump and hydraulic plant are located south of the main theatre at lower-ground and upper-ground level. Structurally these elements are preferred on ground due to significant loadings and the southern location provides access to the fire pump room from Teakle Court for DFES. At Level 1 to the south of the theatre, the switch rooms (both HV and LV) have been located to provide direct access from Teakle Court for Western Power. The roof to the south and east of the theatre provides an open air environment for air handling units (AHUs) chiller plant, smoke exhaust and hot water heating.

Throughout the building, risers have been integrated within the architecture to allow the efficient distribution of mechanical, hydraulic and electrical services.

4.11 ESD INITIATIVES

The regulatory requirements for energy efficiency for the JPACF are stated in Section J of the Building Code of Australia. These codes provide the basis for the minimum standards for the JPACF. In addition to meeting these minimum requirements the project proposes to instigate a range of Environmentally Sustainable Design (ESD) initiatives.

These include natural ventilation to the above-ground carpark; the utilisation of rainwater harvesting for sanitary facilities; the use of WELS-rated fixtures to minimise total water consumption; the reuse of water used in the testing of the fire system; the use of low emission paints, carpets, sealants and wood products; the use of motion controlled energy efficient light fittings; water-sensitive landscape design; and the careful control of heat gain and glare via the design of the facade elements in order to ensure that glazing areas are shaded for the majority of the year.

In addition to these items, other initiatives that could be investigated as part of the next phase of the project include the use of a photovoltaic array to power building base electrical loads; consideration of adaptive comfort conditions to reduce energy by aligning air conditioning set points with occupant clothing levels; the use of energy efficient lighting equipment within the theatre; and the use of night purging and natural ventilation within front-of-house areas in order to reduce energy consumption.