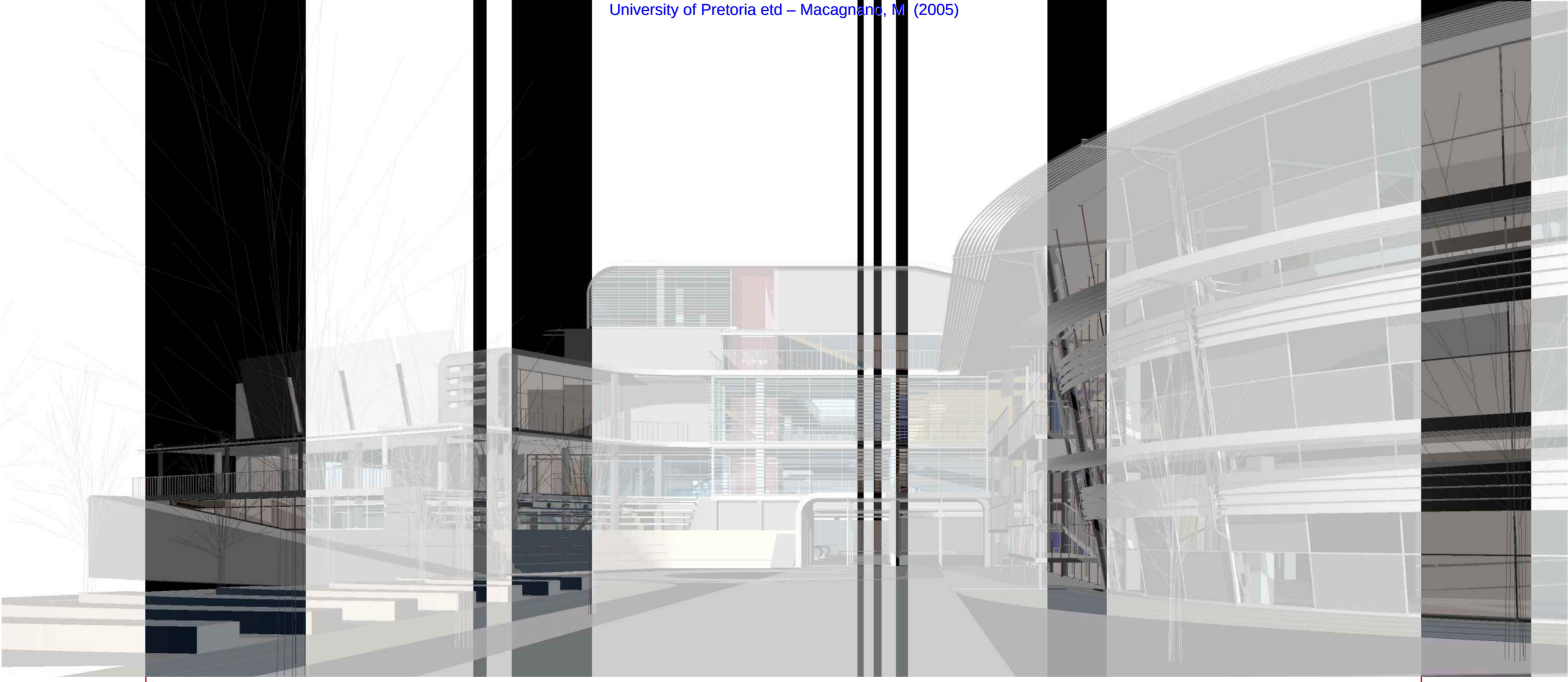

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A Centre for the Performing Arts
_catalyst for urban regeneration

Submitted in fulfillment of the requirements for the degree of Magister in Architecture (Professional)
in the Faculty of Engineering, the Built Environment and Information Technology.

Department of Architecture,
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1. Problem Statement

Inner city regeneration is a prime concern all over the world. What used to be the hub of activity and source of entertainment for the general public, is now being slowly forgotten and replaced with more localised suburban development. This is not to say that the inner city, particularly that of Pretoria, does not still have much to contribute. Thus municipal initiatives for revitalisation of such urban environments are not in short supply. It is in this effort that the city of Pretoria was objectively analysed through a range of spatial development frameworks and found to be increasingly disjointed. Many areas in and around the city have much to offer, and proper redevelopment of these areas could further catalyse a renewed interest in city activities and promote a legible and gratifying urban environment. The precinct of Salvokop is one such area.

Public transport concerned with and between cities is long overdue for improvement. With the introduction of new government initiatives to improve the transport infrastructure of the major metropolitan cities in this country, for example like the Gautrain Rapid Rail Link between Pretoria and Johannesburg, the cities are potentially now more accessible than ever. But with greater accessibility comes a need or an interest to take the trip. Salvokop itself is ideally situated to these major public transport nodes, making it available to not only the citizens of Pretoria but the greater region.

Salvokop has been designated the area for the construction of the nationally significant Freedom Park Heritage Site. But this tourist attraction cannot survive on its own, and requires the establishment of precinct that creates public interest to support it. Thus the once neglected Salvokop Precinct is the subject of heavy investment in order to cultivate its link with the Central Business District and establish development that encourages greater public involvement and economic sustainability.

This dissertation is concerned with documenting design considerations and substantiating the design decisions in the process of the building development. This is furthermore aided by analysing current contextual influence and sensitising the development to its eventual contextual impact on the Precinct.

The main intention of this project is to create a building of regional significance, which contributes towards inner city regeneration and helps establish the precinct as a location of economic, social and cultural vitality. On a more individual level, its facilities will serve to encourage youth development and cultural discovery. The Centre for Performing Arts thus makes itself available to the broad spectrum of society though a medium that all can relate to: music, dance and art.

Figure 1.02

Figure 1.01

Figure 1.04

Figure 1.03

Figure 1.06

Figure 1.05

Figure 1.07 Aerial Photograph showing relationship between Freedom Park, Salvokop Precinct and the Inner City

1.1 Design Brief

Salvokop is an area earmarked for major urban regeneration through the government sponsored project “Freedom Park”. Coupled with convenient proximity and access to inter-city and inner-city transport infrastructure - such as the Pretoria train station, future Gautrain development and R21 highway - as well as proposed improved vehicular access to and from the Central Business District of the city of Tshwane makes this a prime location for development and public interest.

South Africa is a country of diverse cultural backgrounds, thus for a project to be successful in this melting pot of traditions it needs to serve a general common interest. It is not presumptuous to observe that all these cultures past and present share a love performance and music as a means of expression record of personal culture. Thus it is this love that provides abroad appeal and incentive for public involvement and participation. It is therefore in the interests of the municipal authority to develop a centre that captures the imagination of the people, and serves its purpose as a catalyst for urban regeneration for the area.

Facilities forthe performing arts, as is proposed by this dissertation, are not in existence within the immediate area, yet the likes of which compliment the Freedom Park Development Framework. This project does not seek to replace or contest already available facilities in the greater area, such as the State Theatre, nor planned facilities yet to be constructed, as with the broad spectrum of functions that the Freedom Park seeks to accommodate. This project instead seeks to develop a meeting place between past, present and future. Freedom Park is representative of the joy of the present situation, a glorification of the struggle for political freedom after a period of hardship. The Centre for the Performing Arts strives to cultivate a freedom in spirit of its users, to instil optimism for the future through experience and achievement while providing a medium for cultural exploration and expression.

The Centre for the Perfroming Arts is intended to cater to all disciplines of performance in use in this country. The Centre is thus designed to accommodate perfromances of a traditional nature, indigenous to South Africa, from dance, choir, music concerts, even story telling to an audience of intimate scale. Yet, while the vernacular is provided a home, we must remeber that South Africa is still part of a Global village, and therefore these facilities should accommodate the more contemorary and classical examples of performance artas enjoyed the world over. It is also important to this project that a distinct and favourable relationship with the outdoors be achieved with a multitude of performance spaces arranged throughout the complex, sharing public foyer and congregation spaces to invite discussion and the sharing of ideas. In this way, an appreciation of all forms of expression and culture may be both directly and indirectly achieved.

The site chosen for this project is situated along the soon-to-be-constructed Ceremonial way (Cultural Spine), that bisects the Inner City. The plan for this ‘spine’ is to introduce a multitude of public spaces in order to increase public interest and involvement. The Centre for Performing Arts is thus designed to incorporate this public urban space into its own ‘fabric’, encouraging public participation and embracing the urban fabric of the City, allwoing it to permeate through its facades and generate a personal relationship not only with the city, but with its people as well.

This project targets the full spectrum of society, with opportunities for entertainment to paying audiences by day and night, vibrant day-time activity through incorporated retail initiatives, and transition housing for represented artisans. A platform is created for education and cultural discovery through provision of a museum and music archive, as well as opportunity for youth development and talent cultivation through facilities for musical instruction and recording studios.

Since the subject for this development (performance arts) is of such broad appeal, it is imperative that maximum accessibility is provided to persons of all demographics, disabilities and literacy levels. Intelligent building initiatives provide flexible and responsive physical environments to the masses and the individual, making a visit a satisfying experience to all who may enter its doors. Thus serving all facets of public interest this strategy allows for such a development to remain sustainably active and representative of its time for many years to come.

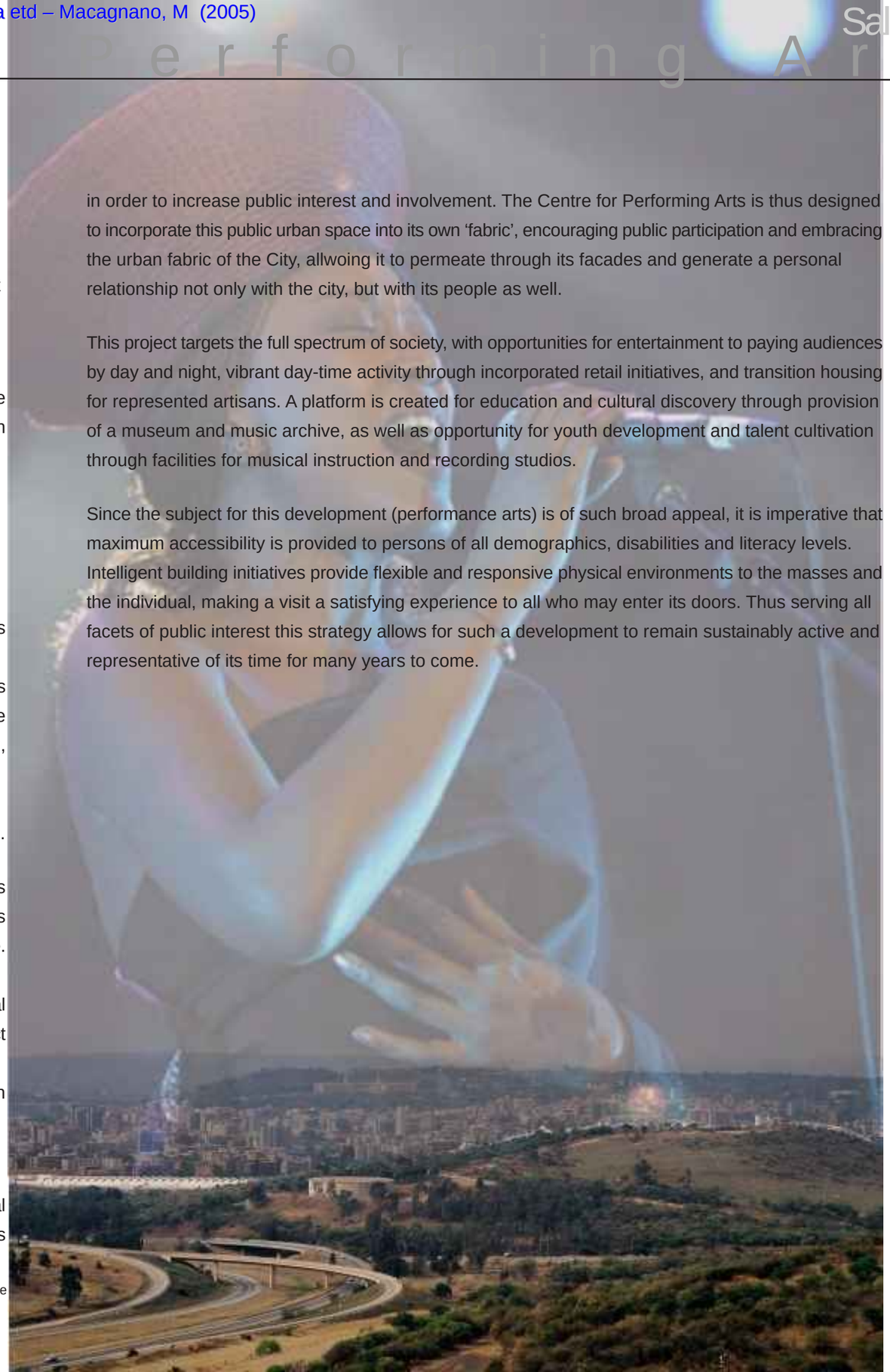


Figure 1.08 Western View of Salvokop Hill, Local Artist embedded in the landscape

1.2. Investigating the Client

As part of the Salvokop Development Framework, development is called for that inspires local economic opportunity, as well as stimulates public interest in the area. This government mandate is thus responded to by the decision to implement a publicly oriented building that celebrates this country's cultural heritage and provides a platform for youth development and education.

The Department of Arts and Culture is the main beneficiary for construction, in the hopes of bettering public image and constructing a high-profile development that is contributes to public well-being. Funding is deemed to be directed from the national treasury or directed from international governments though established partnerships. The land, which has been subdivided into many sites, is currently owned by Transnet who are willing to enter into agreements of sale.

Figure 1.09

The Department of Arts and Culture Strategic Plan aims to develop and preserve South African culture in order to ensure social cohesion and nation building. The Department's mission involves improving the economic opportunities for South African Arts and Culture nationally and globally through mutually beneficial partnerships, as well as ensuring development of archival and information resources of the nation to empower citizens through full and open access to these facilities. Relationships with International partners such as the South Africa Swedish partnership and Flemish partnership provides financial (at least R70 million over the last three years) and HRD resources to supplement the financial support for the Arts.

In order for this project to be successful in the long-term, it is imperative that backing is obtained from the government. This backing thus has some guarantee of delivery, especially when required for purposes of construction, maintenance, salaries and expansion costs.

Figure 1.10

Once constructed, it is the intention of the client that an advisory board/ steering committee with executive power be established for administrative purposes regarding the development – positions to be negotiated from project inception. These positions may be considered positions of prestige, nominated persons to convene at least once a month. This advisory board will have the power to attract and direct funding in the interests of the development, and the position of chairman to be rotated on a periodic basis. A sustained management force of employees paid and hired by the DAC will concern themselves with the day-to-day administration and management within the guidelines as decided by the advisory board.

Figure 1.11

NGO involvement is encouraged, and required by means of government policy towards such organisations – hence the establishment of such organisations as the Transnet Foundation, The Ford Foundation and so forth. Such funding may thus be put to use in the organisation of exhibitions, events and equipment for the facilities. All profits obtained from the success of such events may then be allocated towards a trust account and used in the improvement of the facility.

1.3. Normative Position

This portion of the dissertation seeks to familiarize the reader with the intentions of the author in terms of the ideological design approach and general design philosophy, with reference to the project under scrutiny.

Contemporary understanding of platonic theory constitutes a reduction of deign approach into a simplistic dualistic theory, with emphasis placed on the signified and signifier, and so forth. It is up for debate as to which is more relevant, and certainly the answer is entirely open to personal interpretation. It is incontestable that certainly one could not exist without the other – does a tree make a sound when it falls if there is no-one there to hear it. But it is the opinion of this author that, while these extremities are relevant when investigating the design process, it is not in the aid of encompassing the pertinent issues. If anything, it is a more pragmatic approach that warrants the best results. Without fully understanding and assimilating all information, associated problems and the desire for artistic freedom a project can never be complete.

The signified is intended to represent contemporary cultural and social services as a response to identified needs through a process of intense investigation and thorough substantiation. In this way, the signified is representative of those users the development – signifier – seeks to serve.

The role of the architect is changing. As one of the more time-honoured professions within the history of modern mankind, it is so often presumed to be inflexibly traditional in both the training and practice. It has been said that the world is catching up and that in this age of optimisation many are able to compete and contest the skills with less training and a smart computer program. It is difficult to argue with this point, but this is only true if the architect agrees to stand in the same place. Society is a constantly evolving entity. Trends change everyday, what's in today is out tomorrow. Human beings are, by nature, driven by a necessity to excel, to improve and to optimise. Ok, maybe not all of them but we wouldn't be where we are today if this did not ring true. The aim is thus to become indispensable and flexible to current trends and needs.

User participation is critical to ensuring that the development and management system implemented is optimal to provide an environment that serves all requirements this day and in the unforeseeable future. The evaluation of the design process needs to involve the input of three groups of people: Participant groups (users), Facilitators (professional team), and Managers (administrators during operation) (Kernohan, 1992: 30).

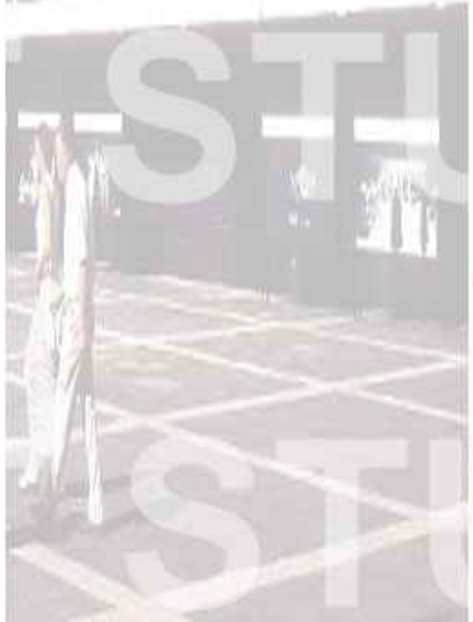
In this era of information technology, one is intrinsically connected to information at the press of a button. Chat rooms, the telephone, video-conferencing, sms-chatting and internet surfing have negated the relevance of physical spaces for meeting and socialising. Space is now an abstract concept, life is becoming more and more lived in virtual environments. These electronic environments (Horan, 2000: 5) are thus customisable and personally representative sense of place, offering the user a freedom not available in the 'real world'. This is not a negative concept, it is definitely here to stay and its relevance in contemporary society is growing. But as in platonic theory, one extreme cannot exist without the other. Abstract, virtual environments will always require tangible spaces in order to exist optimally. In fact, the public is intent on making the effort to remain in specific locations where they can be unsociable. Offices aren't required anymore, just a computer, but most employees choose to have an office and e-mail their neighbour.

The task of integrating technology into our day-to-day places should not be left strictly in the hands of network designers, but rather necessitates the informed, active intervention of numerous parties including users, designers, and technologists. The traditional built environment thus has a new 'context', of which we can't see or feel. But this context analysis and sensitivity is of utmost importance in order to ensure sustainability in response to the cultivation of this emerging culture. We need to create places that comprehensively integrate human and technological elements in a manner that both respects and stretches our traditional notions of place, in a way that links both electronic and physical networks, and through a process that engages a spectrum of participants (Horan, 2000: 22).

Design is thus the assimilation of a variety of fields and expertise. Personal relationships are forged between designer and client on a grassroots or 'bottoms-up' level, ensuring participation in the critical design formulation process. Furthermore design needs to be the product of an evolutionary approach, as some term an "emergent architecture" (Weinstock, 2000: 11). In this respect architecture cannot be deduced from its components, but only as something more than the sum of its parts. When design is concerned with the needs of many, the resources required to maintain the environmentally quality of public and private spaces increase exponentially. Social interaction is thus more complex and more intense, and needs to be catered for by spatial and infrastructural design that maximises qualitative and quantitative factors (Weinstock, 2000: 12).

PRECEDENT STUDIES 02

The formulation of a productive methodology for design is important. Through proper investigation past examples illustrate a culmination of processes seeking to identify the most economical and effective form in response to a design problem. But it is in this statement that the key to informed design lays, therefore proper investigation is a must. A precedent is only effective as a suitable basis for directed understanding once the investigator is able to pose to it the proper questions. Sheer documentation and illustration of similar projects in scope provide no greater understanding to the investigator. Without proper direction it is easy to describe what someone else has done to solve a problem, but the important questions of ‘how’ and ‘why’ remain importantly undiscovered. Furthermore it is not only in projects of similar scope that one may find the appropriate influence and understanding, but through the identification of comparable and suitable processes that relevant projects may be incorporated into the knowledge base of the researcher.



2.1. BBC Music Box

Foreign Office Architects
White City, London

"The design by Foreign Office Architects majors on openness with emphasis on public space. This will ensure that the Music Box not only becomes a centre of excellence for music making at the BBC but will also be an integral part of our commitment to involve the local community."
John Smith
BBC Director of Finance, Property and Business Affairs.

The Music Box, the new Music Centre scheduled to open in 2006, is soon to become home to the BBC Symphony Orchestra, the BBC Symphony Chorus, the BBC Concert Orchestra and the BBC Singers, bringing them together in one place for the first time.

The Music Box is part of the new Media Village, integrated within the BBC's redevelopment of White City, and is a key part in the BBC's policy to open its doors to the local community in West London. The White City development will also foster local regeneration in the area. The wider plan is to move all the BBC's performing groups into new or renovated buildings in the next four years.

The wider area is shared with the residents of the adjacent White City Estate and the BBC's Television Centre. The daily population of this large BBC campus is about 12,000 people. The Music Centre will sit at the centre of this campus, at the heart of the BBC in West London.

At present available images and descriptions of this building still represent the conceptual design stage of the development. The general concept of the building is strong and many conclusions may still be derived.

While details of the construction methods are sketchy at this stage, the form of the building speaks for itself. The general concept of the building is one whereby its floors and walls are one continuous element that emerge and flow out of the ground. Spaces therefore define each other by a mix-match of interior and exterior walls, intrinsically linking all the spaces both visually and structurally.

The building is tasked with responding to a large and highly utilized public open space within the city centre of London. Due to the high standard of public transport, vehicular emphasis and access is considered secondary, with emphasis on pedestrian access and congregation. The building is


Figure 2.01


Figure 2.02


Figure 2.03


Figure 2.04


Figure 2.05

therefore primarily tasked with responding to the generous public open space adjacent to, and interacting with its site. The Music box was thus designed to float above the public space in order not to institute or constrict public movement from outside to under the building. Access into the building is achievable on two levels, the transition between which doubles as public seating.

The building is divided into two major performing spaces, one of a larger capacity than the other. These spaces are joined by a common foyer area, maximizing public interface and social interaction. Circulation space is also thereby reduced.

The performance halls are uniquely designed with one entire wall made up of glazing. This wall faces the public space and provides a visual link between what is usually a closed off performance space and the outside. The glass wall provides natural day lighting into the interior from behind the audience so that the stage is front lit. The interior is however displaced vertically from the public space to the point that the interior is not visible from the outdoor public space.

Design Influences:

The BBC Music Box is inspirational one a few levels. Firstly it does not shy away from revealing its internal spaces from public view, utilizing its transparent facades to tease the passing public into experiencing its events. Secondly the manner to which it responds the outdoor public space and effectively involves it within its overall layout. It is difficult to discern where the public space ends and the music centre begins, in this way the public space is allowed to flow and continue to engage with the surrounding buildings that share the overall site and also form part of the Media Village.

What may be taken away from this design is therefore a new way of linking the interior of a public space and its relationship to the outdoor public spaces. While this form of response is not appropriate for the site at Salvokop, it is clear to see that the vitality of a development may be greatly increased by creating transparency in the building form and allowing passers by to immediately engage with and become intrigued with the goings-on within the building itself. Shared foyer spaces greatly enhance the quality of public spaces on the interior, and in a building where the nature of performances are greatly enhanced by post performance discussion; these spaces fulfill that purpose optimally. It stands to reason however that the static layout and orientation of stage and audience positions do reduce the flexibility of interior spaces and limit variety of performance.

2.2. Holland Performing Arts Centre / Orpheum Theatre

HDR Architects in collaboration with Polshek Partnership Architects (New York)
Omaha, U.S.A.

The Holland Performing Arts Centre has been designed with three priorities:

- A concert hall with excellent acoustics
- A centre that will draw people in to experience the arts
- A "building of distinction" that will last for generations

Performance and teaching spaces include a 2000-seat concert hall, a flexible 450-seat chamber music hall and a semi-enclosed outdoor performance and event garden. The multi-level lobby will accommodate a variety of uses including exhibitions, retail and a café and access to donors' lounge and green room. Back of house functions include dressing and rehearsal rooms, administrative offices, loading docks and the mechanical, electrical and storage facilities required to support all types and scales of performance.

In the words of the architects: building out to the street edges creates traditional sidewalks, which foster a more intimate pedestrian experience, in the manner of a typical urban block. The main body of the building is elevated above the ground plane, which reinforces the landscape by allowing it to flow continuously beneath it. A solid and a void punctuate this elevated volume, which is sheathed in zinc. The solid volume, housing the 2,000-seat concert hall, is clad in stone and capped by an illuminated glass lantern, which also fills the hall with natural light during the day. The void creates a terraced courtyard, which will serve as a third performance venue and an outdoor reception and event space.

A transparent street-level lobby and covered vehicular drop-off create a visual connection between the Mall and courtyard and function as a transitional space for ticketing, patron services, café and retail. A grand stair overlooking the internal courtyard leads to the upper level main lobby and provides access to both halls. In addition, it enhances the visitor experience in separating patrons from the visual and acoustic distractions of the street and providing a vantage point for views to the landscape.

The concert hall will accommodate 2000 seats in a classical shoebox configuration, seating 1000 at the orchestra level, 400 on the mezzanine and 600 in the upper balcony. Ample wood and plaster surfacing will promote an ambience of warmth and intimacy throughout. Three stage lifts carry a series of moveable platforms that accommodate various types of presentation from a solo performer to a large orchestra. The 450-seat chamber music hall can also be used as a banquet or rehearsal space.

Design Influences:
This building is yet another example of an interesting new way to respond to outdoor spaces. Since this building is still under construction it is not clear as to how successful it has been in its aims. This building typically sought to increase pedestrian accessibility by creating a strong perimeter, pushing its boundaries right up to the street. In this manner protection within its walls from passing motor cars may easily be sought and refuge provided in the central courtyard space that feeds into all wings of the development.

The concert hall space is of great interest with respect to the manner with which it tackles sound reflectivity and acoustical performance. The shell of the building remains obvious and is designed to primarily provide acoustical densities so that outside noise in obstructed from causing interference. Internal acoustics are aimed at solely musical and orchestral performances; therefore longer reverberation time is sought. This is thus provided by means of extensive volumetric measurements of the hall, as well as a series of aesthetically pleasing reflective panels suspended above the stage area. Thus volume is retained and even light permitted to enter by means of clerestory windows.

Figure 2.06 External relationship to pedestrian landscape

Figure 2.07


Figure 2.08 Suspended ceiling for acoustic purposes


Figure 2.09

Figure 2.10

2.3. South African State Theatre

Architects:
Pretoria, South Africa

The State Theatre is the existing complex of theatres and performance spaces that exists in closest proximity to the site of this dissertation project. The Building is arranged over four levels, with parking and services situated on basement levels. Contained within the complex:

- The Opera House is the largest of six theatres, seating 1,300 patrons on three levels including a balcony. It has an orchestra pit that can accommodate up to 60 musicians.
- Drama Theatre with continental style seating for 640 on one level.
- Two cabaret/revue venues, seat 120 independently in at separate tables in a nightclub setting.
- Arena, the complex's third largest theatre, can double as the main opera rehearsal hall. Fully equipped computerised lighting and sound control rooms form part of this highly sophisticated theatre.
- The complex also offers rehearsal studios and offices for rental.

The building, although it contains a variety of world-class venues, lacks a form of tangible relationship with the surrounding context. The building has, in true ‘monumentalist’ form, sought to provide a large scale building that belittles the pedestrian, incurring emotions of grandeur and importance. It does this very well it should be said. The nature and extent of the building is not well represented from the outside, and coupled with its lack of public interface results in a building that is only entered by those with specific purpose to view a performance somewhere inside of its frame. Criticism therefore is applied to its inclination to perform perfectly as a functional building, but poorly as a public and living building. It is the opinion of this dissertation that this inaccessibility of the ‘old-style’ and ‘traditional’ form theatres has contributed to dwindling attendance over the years and the inaccurate perception that there is little market for supplementary performance facilities within the city of Pretoria, and even Gauteng for that matter.


Figure 2.11 Proscenium Theatre, one of the many performance spaces contained


Figure 2.12 Traditional Concert Hall Layout, high in luxury and entertainment value


Figure 2.13 Monumental Nature of complex. Relationship with passers by non-existant


Figure 2.14 Although on an important corner, there is no public desire to expolre its facilities

2.4. Musiktheater Gelsenkirchen
Max von Hausen, Ortwin Rave, Werner Ruhnau
Gelsenkirchen, Germany

The Municipal Theatre in Gelsenkirchen opened in 1959 and is a good example of the post-war building boom in Europe. The opening of the theatre to the town – typical coal and steel place where the theatre is keen to demonstrate its prestige – is somewhat exhibitionist in nature and extends the entire width of its façade. For the first time in an auditorium of its scale, the stage (proscenium opening) was designed to be flexible and is of entirely the wagon type (11m diameter) with three large subsidiary stages. This is used to prepare multiple stages for a single production, so while one is grasping the attention of the audience, the next is being set-up for eventual rotation into public view.

The studio, originally planned for experimental productions, appears in stark contrast to the large house. Its attractive layout has termed it the intimate theatre and has ultimately estranged itself from its original role as experimental studio. This smaller theatre may be described as a multi-form space, whereby its flexible internal layout allows it to adopt one of two different stage layouts and performance experiences. The stage is able to move horizontally along a single plane, resulting in either a proscenium style stage or a surrounded stage with seating on all sides. By allowing the stage to be pushed up against the side, this puts the audience in a position to experience the production from a single vantage point – a typical confrontational layout between performer and audience. By shifting the stage to the middle, multiple vantage points are created resulting in the performance being surrounded, hopefully by a captivated audience.

Figure 2.20 Primary Glass Facade

Design Influences:
The manner with which it so boldly reveals its interior to the approaching public generates quite a statement upon approaching the Musik Theatre. The transparent façade thereby has the ability to relieve the publics focus away from the scale of the building – as it needs to be – and re-directs it to the interior, towards the events and extents of the building itself. The Musik theatre therefore becomes a building within which to explore, whereby the visitors destination may be sought and identified before entering the building rather than a solid and enourmous mystery that almost provokes becoming lost and disorientated within. While the scale of such a façade, or building for that matter, is not appropriate for this dissertation project the manner with which the building embraces and comes to terms with its scale is quite appropriate, by putting all on display and utilizing the public as its main contributor of aethetics and representation of life-blood.

In terms of stage design, it is the intimate theatre that provides mot influence. Flexible Performance spaces are typically one of two things: multi-purpose or multi-form. This theatre is best described as the latter. A single purpose expressed in a number of ways, this is a design direction that compliments best the desired performance spaces of this dissertation project. While still somewhat limited in flexibility, the simple and uncomplicated manner with which the space may be so drastically changed within static confines serves to influence personal design decisions greatly. By making the stage an animated object, the audience is therefore hardly ever allowed to experience the same space in the same way, thus allowing possibility to be engaged by the performers as never before.

Figure 2.15



Figure 2.16


Figure 2.18


Figure 2.17


Figure 2.19

2.5. Nagaoka Lyric Hall

Toyo Ito and Associates
Nagaoka, Japan

Consisting of facilities provided primarily for musical and theatrical performances, including a concert hall with 700 seats, a theatre with 450 seats and 10 studios of three different sizes, this complex is situated in an educational zone encircled by extensive flatlands. The building height was kept low and the entire complex was covered with a large, gently-sloped, three-dimensionally curved roof, maintaining visual continuity with the surrounding landscapes. In contrast to this, an oval shaped hall and rectangular shaped hall jut out above the structure to stand in sharp defiance to the landscape form. The area to the south was filled to create a grass slope leading up to the foyer. The foyer, the studios, an information lounge etc. are covered with a flat-slab roof structure. Inside a grove-like space was created through the use of randomly arranged columns and permeating light through the roof structure.

The grassy slope on the south was further exploited in the creation of fixed raked seating of concrete construction. This seating thus serves a dual role. Due to its accessible location form the parking area, a relaxing seating space is created for the loitering public, allowing a suitable vantage point from which to enjoy the rolling landscapes. It is also possible to utilize this space as a suitable outdoor performance space. The stage area follows the continuity of the curved line that defines the seating space and gently pushes its way into the curvilinear form of the complex. The stage thus remains covered by the continuous sloping roof.

The main concert hall, oval in shape is static in internal configuration. The stage is surrounded by seating on all sides by means of elevated seating platforms that continue around the space at the level of entrance.

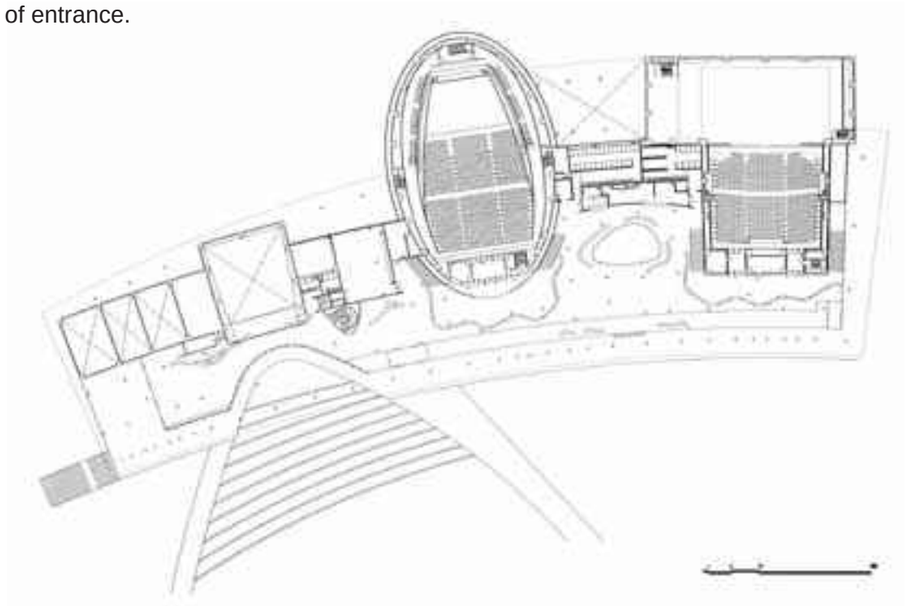


Figure 2.22 Above. Ground Floor Plan
Figure 2.21 Top. Site Plan of Lyric Hall

Design influences:
While the nature of this building is not unique for its time, there are many design decisions taken that serve to illustrate the appropriate relationship of the building to its surroundings. The subtlety and simplicity of its form projects elegance, unpretentiously revealing the linearity and simplicity of its public spaces against the protruding forms of its performance spaces. It is this conscious linearity that suitably represents the building's affiliation with music, a physical representation of a logical and continuous movement from start to finish, attributing memory to the listener/user during its progression.

The manner with which the complex involves the outdoor performance space is of particular interest. The outdoor space has gained sufficient meaning, not only as an integrated public space, but also as a potential expansion of performance space. While still somewhat reactionary in layout, this renewed importance and incorporation of space is very adept to a culture that has such a history of outdoor gathering and recreation, as could be described is the case in South Africa. It serves to reason that the integration of outdoor performance/recreational spaces in the layout and construction of performance buildings – which are typically assumed to be secluded from the elements – is an appropriate response to contemporary briefs of this nature and may serve to lend such facilities an increased vigour and vitality in the years to come.

Figure 2.23

Figure 2.24

Figure 2.25

Contextual Analysis 03

This context analysis concerns itself with identifying the influencing factors of both the physical and cultural landscape on a multi-scale level of execution. The site in question is measured on its regional, city-wide, and local significance in a bid to substatntiate the brief for this project.

The analysis on a local scale is two tiered in its approach, since the Salvokop Precinct is due for many changes in the coming years as is stipulated in the Salvokop Development Framework. It is within the proposed SDF that the Centre for the Perfroming Arts is to be developed, but this does not negate the importance of understanding the existing context, as it is upon this context that the foundations for future changes are based upon. This context analysis therefore seeks to develope the readers understanding regarding the future for the area as well as its related existing fabric.

3.1. Exploring the Context of South African Music

The story of South African music is one of dialogue with imported forms, and varying degrees of hybridisation over the years. From the earliest colonial days until the present time, South African music has created itself out of the mingling of local ideas and forms with those imported from outside the country, giving it all a special twist that carries with it the unmistakeable flavour of the country (www.music.org.za).

> isiginci asakh'umuzi - a guitar doesn't build a homestead, says the age-old Zulu prophecy, but in such circumstances - isiginci siyakha' ilizwe - a guitar builds a nation (www.afribeat.com).

> "Music is our strength, our mobilizer. Music makes our people very strong when they are together, it enables people to keep on struggling under terrible conditions ", said Don Ngubeni - director of Radio Freedom (www.afribeat.com).

African music is not so much an art and aesthetic as it is the essence and beauty of life – “dancing with sound, subtlety and fury, striding rhythmically through the ceremonial spirits of the African people, across the disparate landscapes and fragmented history” (www.afribeat.com: miscellaneous quotes). Music doesn’t merely represent the context, music is the context. The culturally variant yet integrative effect of musical percussion and rhythm, acts as one of the purest forms of expression while providing the truest representation of the emotions, the intensity and belief. Music provides its listeners with a feeling of identity, whereby they share a common interest with others, stimulating social interaction or providing comfort in solitude.

The music culture of this country is by no means just a record of expression, but serves as a chronological tool that serves to document the history of this country. For every shift in public perception, governmental policy, oppressive regimes and national triumphs, there has been an equally impressive musical development that presents contemporary listeners with the truest perception of society at any given time.

Sout Africa is as diverse in its forms of Performance Art as it is in its cultural heritage. Performance art ranges from forms of musical expression - from using the voice in singing to instrumental expression in the fabrication of melody -, to drama and theatre - story telling, theatrical performance, formal stage or under a tree -, and to dance and rythmical expressions using the human body, be it purely to the beat or for dramatic conveyance of a message. The scope of involvement is immense and the potential for cultural explorations cannot be denied. In the country that is South Africa, no greater tool than performance art is at our disposal in the effort to bridge the cultural divide and fully prosper from the opportunity that investigation of heritage and culture - past, present and future.

A History of South African Music

In the Dutch colonial era, from the 17th century on, indigenous tribes people and slaves imported from the east adapted Western musical instruments and ideas. The Khoi-, Khoi, for instance, developed the ramkie, a guitar with three or four strings and used it to blend Khoi and Western folk songs and dances in the colonial centre of Cape Town, which rapidly became a melting pot of cultural influences from all over the world (*www.iexplore.com/trip/safrica_culture*).

Western music was played by slave orchestras (the governor of the Cape, for instance, had his own slave orchestra in the 1670s), and travelling musicians of mixed-blood stock moved around the colony entertaining at dances and other functions, a tradition that continued into the era of British domination after 1806 (www.safrica.info).
In a style similar to that of British marching military bands, coloured bands of musicians began parading through the streets of Cape Town in the early 1820s, a tradition that was given added impetus by the travelling minstrel shows of the 1880s and has continued to the present day with the great carnival held in Cape Town every New Year (*www.iexplore.com/trip/safrica_culture*).

In the early years of the 20th century, the increasing urbanisation of black South Africans in mining centres such as the Witwatersrand led to the development of slumyards or ghettos where new forms of hybrid music began to arise. Marabi was the name given to a keyboard style (usually played on pedal organs, which were relatively cheap to acquire) that had something in common with American ragtime and the blues, played in ongoing cycles with roots deep in the African tradition. Such bands, which produced the first generation of professional black musicians in South Africa, achieved considerable popularity in the 1930s and 1940s.

The 1950’s saw the inception of South African jazz, with heroes such as Hugh Masekela taking centre stage. Masekela played his way through the vibrant Sophiatown scene and to Britain with King Kong, eventually finding himself as a success in New York in the early 1960s (*www.safrica.info).* Jazz continued to be played in South Africa during the years of severe repression, with groups such as The African Jazz Pioneers and singers such as keeping alive the mbaqanga-jazz tradition that had enlivened Sophiatown (*www.safrica.info).*

From the 1960s onward, more and more white rockers and pop groups appeared to appeal to white audiences in a segregated South Africa. As the 1970s drew to a close, however, the mood began to change, and the echoes of Britain's angry working-class punk movement began to reach South Africa. Springs, a poorer white area on the outskirts of Johannesburg, proved to be the breeding ground of a new generation of rockers - rockers as unimpressed by the commercial blandishments of the mainstream industry as they were disillusioned about South Africa's repressive white regime.

During the 1980s, the black townships were held icaptivated by what came to be called "bubblegum" - bright, light dance pop influenced by American disco as much as by the heritage of mbaqanga. In the 1990s, a new style of township music grabbed the attention and the hearts of South Africa's black youth. That music was kwaito, probably now the biggest force in the South African music scene.

Today, South Africa's kwaito stars are the commercial centrepiece of a diverse and ever-growing music industry, one too broad to be contained in one overview. They are rivalled in their selling capacity by the long-standing gospel industry, but also get some significant competition from hip-hoppers and rappers. Such influences are also pouring into the kwaito pot and keeping alive the South African tradition of making music that speaks to and with global trends while always remaining defiantly home-grown (*www.safrica.info).*

3.2. Inner-City Context Analysis - the City of Tshwane

- Brief description and urban design critique.

This urban context analysis serves to illustrate the nature of the great city of Pretoria and the implications and relationship towards the precinct of Salvokop, where this project is predominantly focused. The relationship between the Salvokop precinct and the inner-city precinct are deemed to serve as a model for inner-city regeneration.

Transport Systems

It may be said that Pretoria is characteristically spread very thin, with distances between various amenities and residential communities often enormous. These distances are thus impossible to traverse without the aid of vehicular transport, be it public transport or personal motorcar. It is the latter through which most of Tshwane's citizens find their way, with major roads streaking their way across the urban landscape and high vehicular traffic often causing more hindrances than public service.

Salvokop is situated at the South-West Gateway to the inner-city of Pretoria. The precinct also falls within the Mabopane-Centurian and Trans-African Development Corridors (N14 and N4). The site is effectively positioned at a confluence of several major access ways through the area. These access ways are both road based and mass public transport via rail. The Salvokop precinct intersects the proposed Gautrain project which isdestined for the area adjacent to the Pretoria Station.

Inner city public transport is predominantly road based, through the means of buses on a regular and scheduled route, and privately run taxi services, the most common of which are mini-van taxis that freelance the city urban landscape, depositing and picking up passengers indiscriminately to any location accessible by motor vehicle. The degree of flexibility of these taxi services – allowing personalized transport according to the needs of the paying passenger – is far more popular to the general population, even though the service is at times more expensive than municipal provided public transport services. Thus the local taxi rank is an important transport node that needs to be addressed for the convenience of commuters in the area.

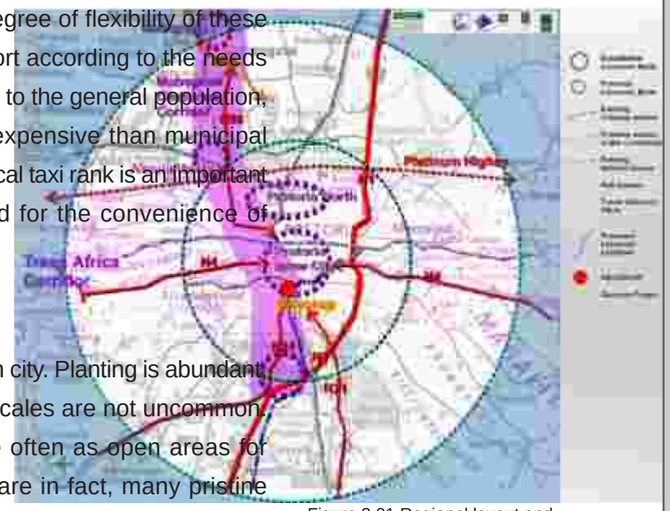


Figure 3.01 Regional layout and connectivity of the Pretoria Inner City

Green Spaces

The city of Pretoria is characteristically a green city. Planting is abundant, albeit mostly artificial. Green spaces on all scales are not uncommon. These green spaces in turn do serve quite often as open areas for public recreation and congregation. There are in fact, many pristine areas in and around the city; most noticeably the hill tops that dot the landscape (Salvokop included).

According to the Pretoria ISDF, a new initiative is in place to create a broad scale 'green belt' that offers a visible and predictable link between green spaces in and across the city along a defined axis. This green belt will be characterized by numerous green spaces located within reasonable distances of each other and of suitable proportions to accommodate the city population in search of recreation. This 'green belt' is planned to run through and incorporate the natural landscape of Salvokop as part of its green network.

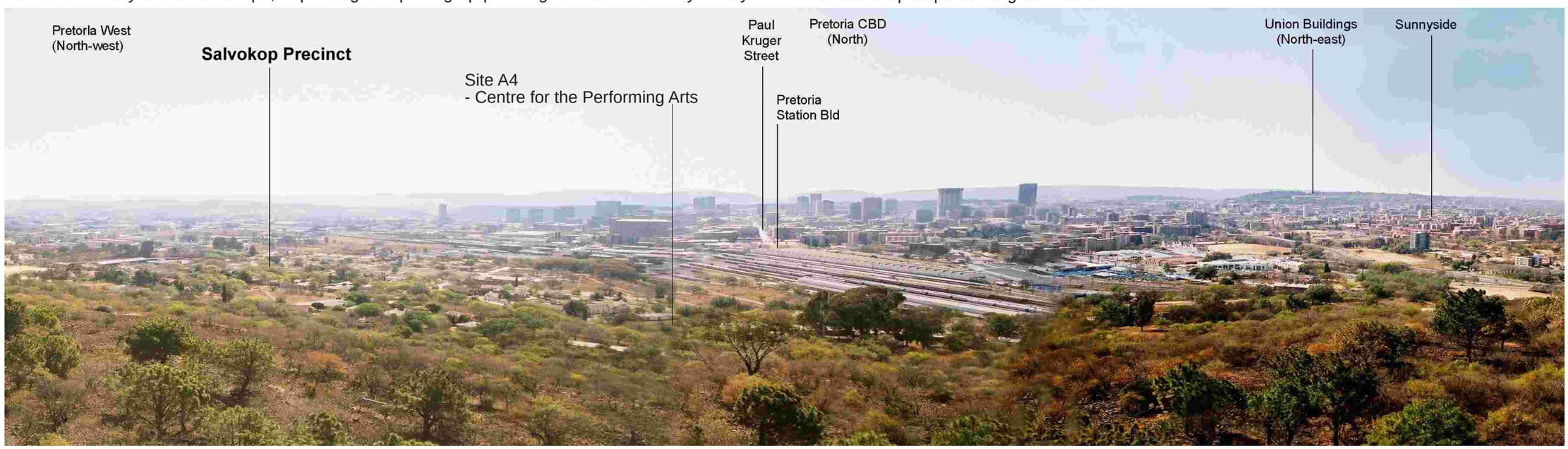


Figure 3.02 Areial view over Salvokop Hill indicating the close relationship between the precinct and the neighbouring CBD

Located within Salvokop, the fruits of the architectural design competition “Freedom Park” will be situated atop the hill. This ‘park’ is intended to exploit the natural landscape of the hilltop, aiding in its use as a public open space.

Public Amenities

The City of Pretoria is littered with institutions of public benefit. Police stations and medical centres are numerous – see provided graphics. Schools are also an abundant resource as well as the overabundance of venues for retail. The inner-city layout of Pretoria is fully equipped to cater for the needs of whoever might choose to live there. The city centre is however seen separate from the city suburbia that surround it for many kilometers. These suburban landscapes are self sufficient in the sense that all amenities are provided for and readily accessible to each quadrant of habitation.

The so-called public institutions and government/municipal facilities are those amenities that warrant travel over distances for the city population. The town hall, museums, government departments and union buildings and national zoological gardens are all placed within or just outside the extents of the city centre. This is due to the fact that these institutions were constructed before the mass expansion of people to the comfortable suburbs quite some distances away, when the emphasis of public activity was still concerned within the city centre. This is not to say that the museums etc. go unused though, the city centre still retains, if not exceeds, the ‘pre-expansion’ population density within.

While the public institutions mentioned previously do not go unused, there is significant drive from the powers that be to increase the waning public interest in such institutions. The idea has thus been constructed to develop a city wide ‘Cultural or Civic Spine’ that runs along two axes, intersecting at Church Square – a pivotal centre point within the urban structure of the city. Running east-west, the idea as stipulated bythe Inner-City Spatial Development Framework is to cultivate and increase activity along Church Street, to increase its significance as a carrier of people from the extents of suburbia back to the heart of the city. More importantly – to this thesis project in any case – is the north-south axis that originates with the national zoological gardens. This spine of activity is deemed to run down and through Church Square, bisecting the town hall and Transvaal museum along Paul Kruger Street and terminating at the freedom park development at the top of Salvokop hill. The reason for the extremity of this termination point within Salvokop is to breathe life into the community and encourage public participation and enthusiasm towards the Freedom Park development, which has national relevance and prestige as a beacon for the triumphant struggle of the present government over past adversities.

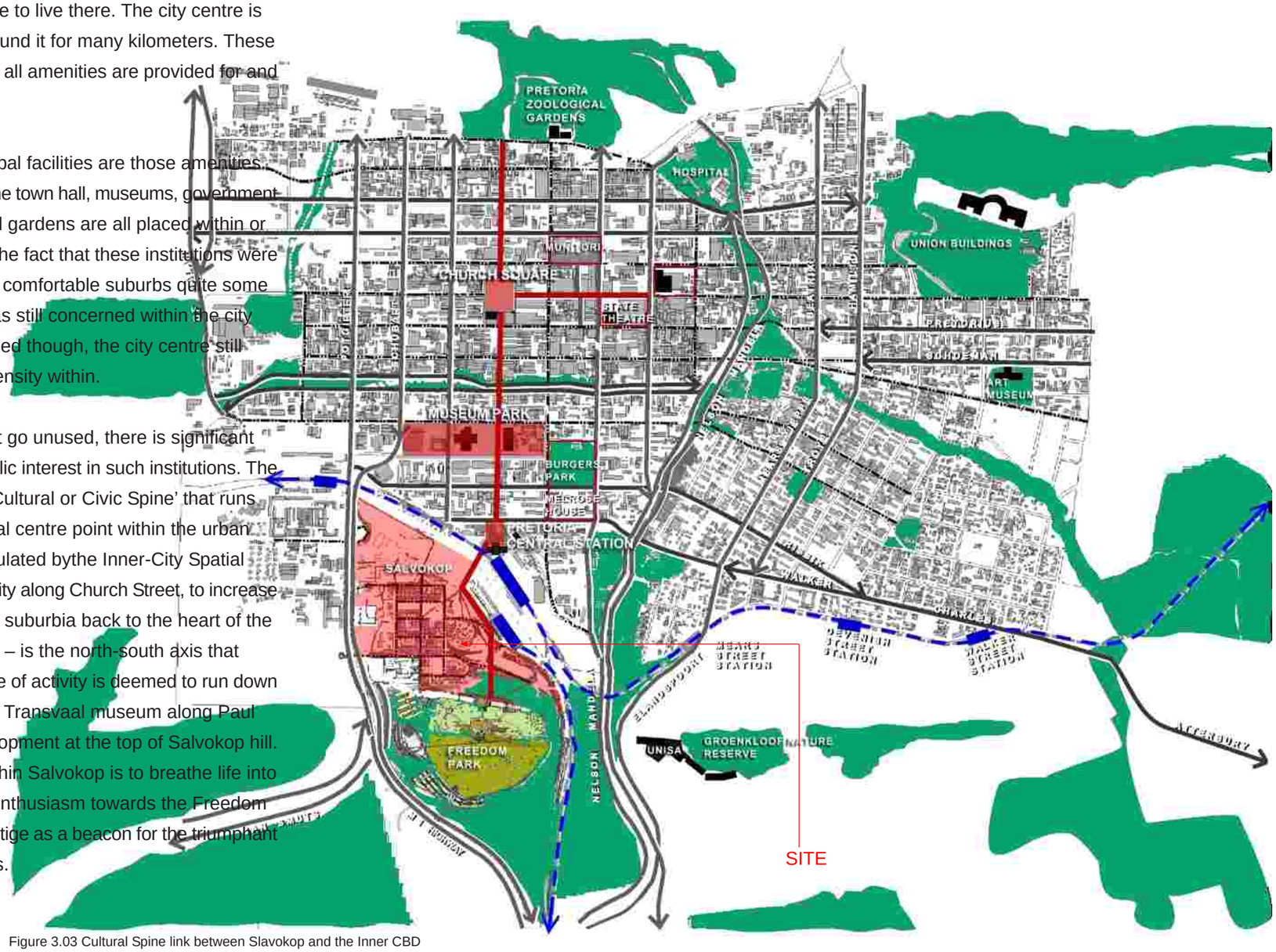


Figure 3.03 Cultural Spine link between Slavokop and the Inner CBD

3.2.1. Inner-City Planning Context

Current planning work, that impacts and relies on the Salvokop precinct, takes form in the following:

- The Pretoria Inner-City Integrated Spatial Development Framework (ISDF)
- The Apies River Urban Design Framework
- The Paul Kruger Street Upgrade Plans
- The Freedom Park Development Framework
- The Salvokop Development Framework

Findings from the Pretoria ISDF identify Salvokop as a specific functional area or precinct (22), in the Inner city. This finding further substantiates the precinct's responsibility to integrate itself with the inner city. Salvokop is further more desired to develop a strong residential core with a commercial and tourism focus due to its direct relationship with the nationally significant development of Freedom Park Heritage Site. The Apies River Urban Design Framework identifies the Paul Kruger Street Spine, the Pretoria Station Forecourt and Freedom Park Heritage Site as important contributing elements to the development of the Salvokop precinct. The effectiveness of integrating these elements within the Salvokop development framework will ultimately determine the ability of the area to sustain continued public interest and a vibrant resident community.

A broad scale vision for the development of the Salvokop Precinct and its immediate context can thus be described in the following goals:

- To create a unique development precinct that builds on the assets of the inner city and contributes to the progressive revitalization of the area.
- Focus on heritage tourism, festival retail, commercial, housing, and recreation activity to establish a new living cultural precinct for the inner city.
- To create a core of exemplary heritage and environmental conservation area that provides a tourism and educational attraction to the area supporting the location of the Freedom Park national legacy site.
- To creating a new civic and cultural spine (to be integrated with the Paul Kruger Street Spine) that links the central city system, Museum Park and Pretoria station through the redeveloped Salvokop village towards Freedom Park.

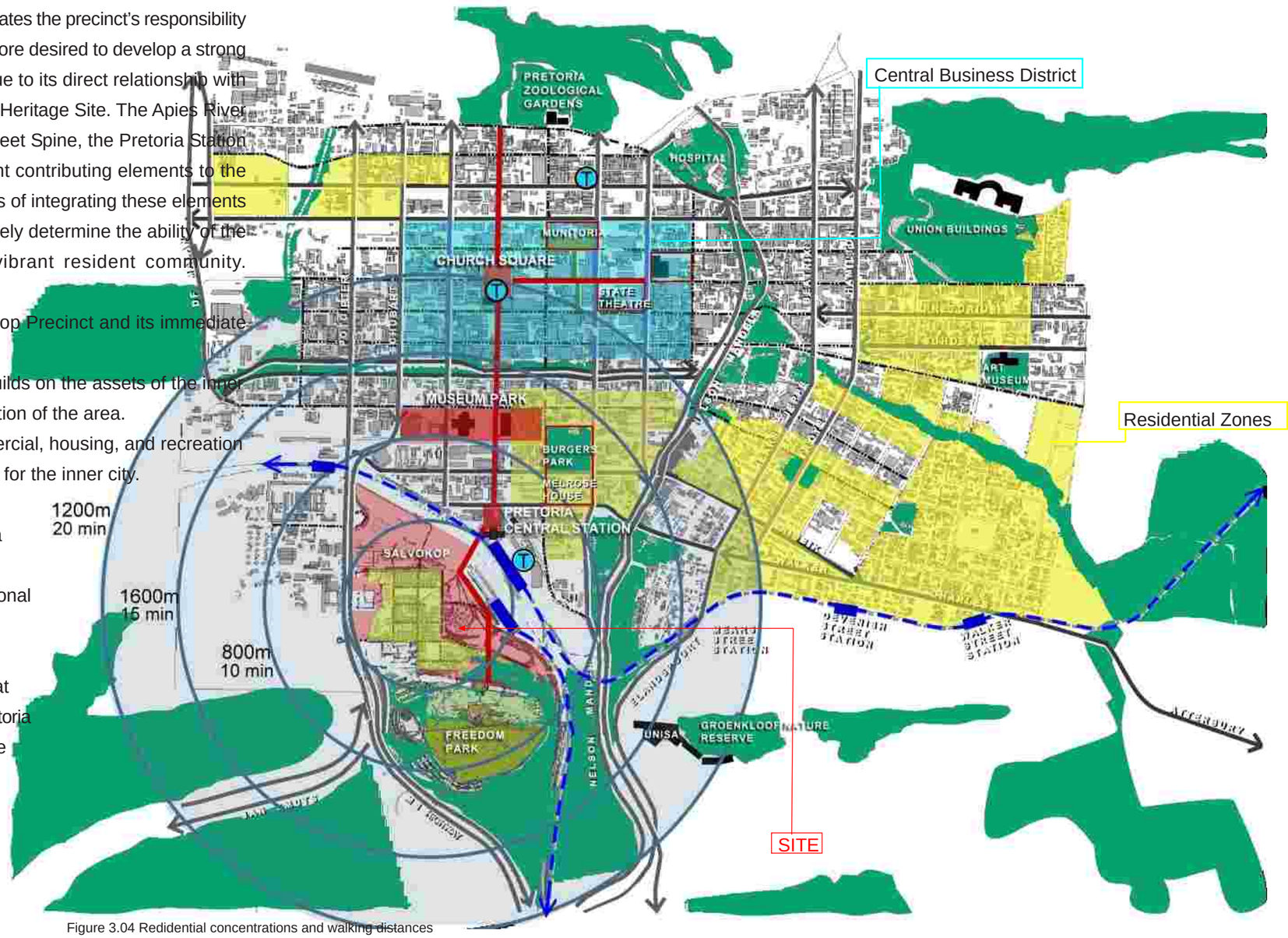


Figure 3.04 Redidential concentrations and walking distances

3.3. Salvokop Precinct Context Analysis

Salvokop is destined for future redevelopment according to a government interest in inner-city regeneration. Salvokop itself has a total area of approximately 49 hectares, 13,5 hectares (27,3%) of which is already occupied land, and a further 247,7 hectares (50,5%) available land for development. While aspects of future plans for development will be discussed, this chapter seeks to provide a comprehensive analysis about the status quo of the area known as Precinct 22 (Salvokop). Such an analysis in important since even the Salvokop Development Framework will take time to implement, and if the project as proposed by this dissertation is to succeed, it must be fully compliant with the requirements as set out by the context at every incremental level of development and growth.

Movement and Access

The Salvokop precinct is separated from the inner city of Pretoria rather decisively by the railway lines servicing the Pretoria Central Train Station. Up until this point, this restricted access to the Salvokop Residential Village from the West, via Potgieter Street – which in turn transfers motor cars to the south bound N14 highway. This important intersection between Potgieter Street and Skietpoort Street is currently the only vehicular connection with the outside world. All manner of vehicles traverse this roadway, including buses, garbage trucks, delivery vehicles and all visitors intending to experience Freedom Park. Skietpoort/Koch Street is the major artery of the neighbourhood, taking upon itself the characteristic of public roadway. The street network is a clearly defined balance of tarred 'domestic' scale roadways personal to the residents of Salvokop, and the structure of its 'public' roadway that encircles the main residential clusters and passing by the primary school at the south end of the of the precinct, only to return perpendicularly to its origin.

The scale of the landscape is at a very human scale, with pedestrian movement typifying the majority of human movement in the area. Not only does this pedestrian movement occur between residences, but also due to the important link to The Pretoria Central Station Forecourt (Bosman Street) via a pedestrian bridge traversing the railway lines. Current efforts to improve the area have been concerned primarily with renovation and lighting of a boulevard through the area along Skietpoort/Koch street, terminating at the existing entrance to Freedom Park. Improved footpaths and benches ironically line the major vehicular line of movement, while pedestrian movement continues to cut through the rigid street grid, through buildings and over vacant plots.

Public Open Spaces

Spaces for public congregation are abundant, mostly taking place in areas of high levels of pedestrian convergence. Such an area is the deposit point from the pedestrian bridge to Pretoria Central Train Station. This plot of land is currently mostly vacant, yet serves as the primary centre of activity to passers by and residents. Movement through this point is further supplemented due to the fact that the major taxi rank of the area lies at the opposite end of the bridge across the railway. It can be assumed therefore, that these spaces of congregation are only successful due to the suitability of access for pedestrians and proximities to local amenities. It should be noted at this point that these public spaces are not formalised and were adopted by their users out of convenience.

Figure 3.05 Aerial photograph of Salvokop as it exists today

Figure 3.06 Proposed layout for Salvokop with the institution of the Salvokop Development Framework. Site shown in red

Residential Component

Salvokop is the remnant of what used to be employee housing for Transnet workers in financial difficulty in the 1890's. These houses are still under ownership by Transnet who makes the buildings available to families and workers under lease agreement. Houses are each situated on an individual stand, with each characteristically fenced off and private. Current residential densities are measured at 3,2 Dwelling Units per hectare, translating in roughly 126 existing units. Density may thus be described as low, with a relatively small number of families taking up residence in relation to the overall area of the precinct. It is in this numerical fact that future spatial development seeks to prompt a change, with an increase in residential densities. Residents are a permanent fixture, although community presence during the day is mostly in the form of the youth and the elderly while capable workers earn a living elsewhere.

The SDF has investigated the methods of improving the residential situation of the Precinct. Two types of housing units are proposed namely up to 3 storey walk-ups and single storey row houses, all to a medium level of finish. All residents are to be provided with options for renovation or new accommodation (624 units). All accommodation will continue to be on a rental basis.

Commercial Component

Salvokop is a predominantly residential precinct. All locally operated commercial activity is based around the activity node of the pedestrian bridge in the form of informal vending and one small restaurant and Fast-food café. Outside public interest is non-existent and thus no commercial or retail ventures have been attempted.

Future initiatives seek to promote light industry and much commercial enterprise, both for local retail and attracting new businesses. Office development is a key new strategy for the area in key locations, as well as construction of a new hotel. All this hopes to provide a vibrant and sustain population basis for the area during all hours to promote an active and prosperous urban community.

Industrial component

Light industry and warehousing forms the transition between Salvokop and the inner-city. This industry is again the property and responsibility of Transnet for the servicing and maintenance of the rail works nearby. Access to this industry is not generally obtained through the Salvokop village, although this is possible. The industry has no direct influence on the area all except for employment opportunities for residents and a feature on the foreground on the city vista.

Figure 3.07 Current land-use of Salvokop Precinct

3.3.1. Salvokop Development Framework

According to the Salvokop Development Framework, redevelopment of the Salvokop Precinct needs to be targeted at achieving its role as:

- An economic node – adopting a mixed land-use approach with viable investment opportunities through creation of new development energy and destination attraction.
- A contained neighbourhood that sustains residential activities with a densification of residential layouts through providing a range of housing options.
- A cultural Heritage node that accommodates activities linked to Freedom Park and Tshwane tourism which effectively exhibits local culture and promotes tourist retail.
- A transit oriented node that considers the convenience of the tourist, businesses, residents and workers' transport needs.
- A natural and historical area that build on local assets and interlinked with Tshwane at a broader scale of influence, contributing to the national significance of the area aided through government development.

It is in these interests that future development needs to evolve, representing the interests of the local community, the broader metropolitan community and tourist as well as the represented municipal stakeholders.

The Salvokop Village is envisaged to become a pedestrian friendly mixed use Inner City Precinct while retaining a human scaled with a range of housing options and employment opportunities. In order to support the integration of the area into the Inner City and Freedom Park, the
Precincts' core development is key, basically concerning itself with the cultural, heritage and public space spine (Civic Spine) edged with commercial, cultural and heritage activity.

SALVOKOP DEVELOPMENT FRAMEWORK
VISION AT SITE SCALE
Fig.1.4.2.b
FORM RESPONSE DRAWING

Figure 3.08

The Development Framework is concerned with 3 key issues:

- a Movement and Access strategy (dealing with access to and movement within the re-development area),
- a Special Places Strategy (dealing with the elements of the site that develop and control its character and form as well as establishing Salvokop as a destination in its own right) and,
- a Functional Integration Strategy (dealing with the approach to the economic environment, approach to statutory land use, the land use options and the housing strategy).

Movement and Access

In order for Salvokop to serve its purpose as a regionally significant destination, as well as function integrally with the inner-city, it is imperative that improved access be afforded to the precinct. The SDF therefore proposes three main access points. Improved access for the current Skietpoort/Potgieter junction is required to accommodate for an increase in traffic levels. New access points are to provided via Dequar road, a bridge running perpendicularly to Potgieter street, and from Bosman street, whereby a bridge to traverse the railway lines is to be constructed. This new bridge will contribute to the continuation of the Paul Kruger Street (Civic Spine) upgrade. Guidelines for the three main access points are:

- Skietpoort Access:
  - Initial upgrade: 1 additional lane inwards (eastbound)
  - Further upgrades required to handle projected total traffic. Addition of right turn lanes on Potgieter (southern approach) & outwards on Skietpoort (west)
- Dequar Access:
  - Single lane approaches would be sufficient to handle projected portion of traffic
- Bosman Access:
  - Projected level of service warrants intersection upgrade changed to 2-way system.

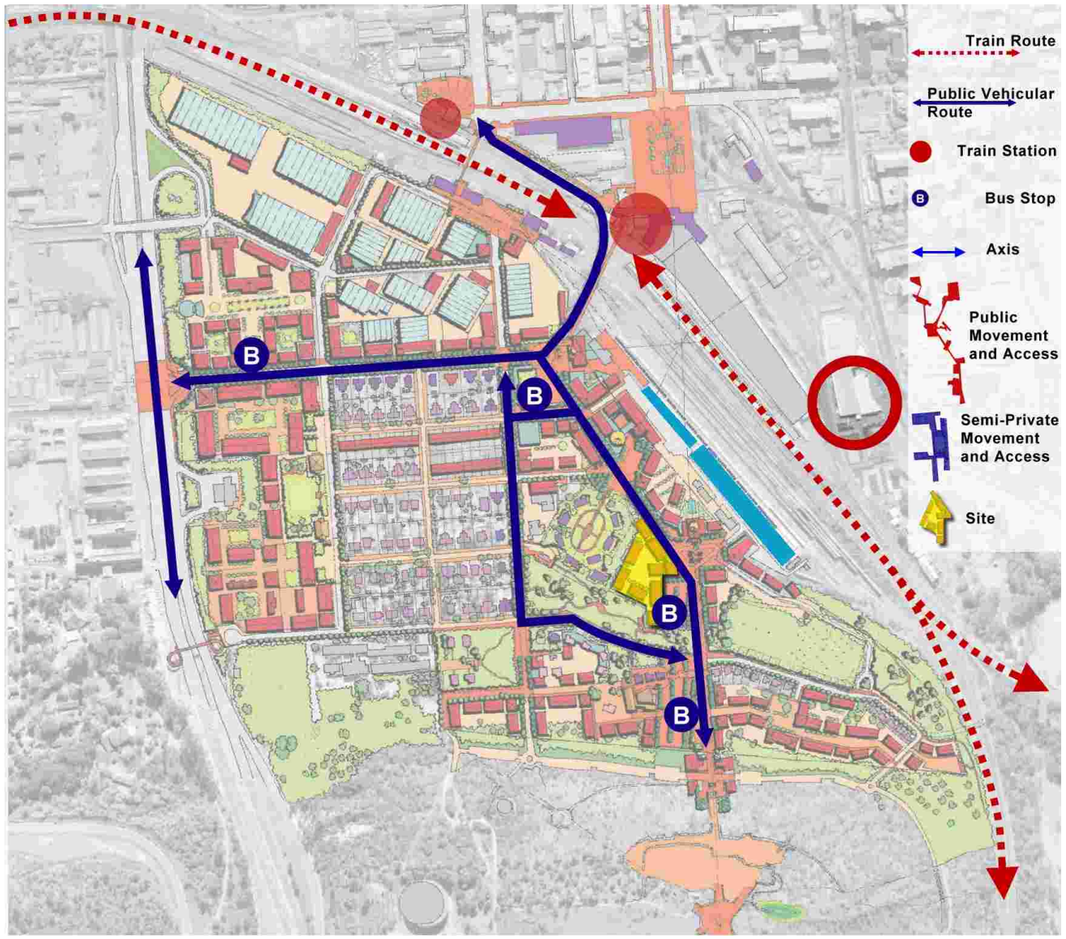
In terms of inclusive design for pedestrians, the proposed network structures the main pedestrian infrastructure for public movement within the precinct through the main linkages and the series of public spaces proposed. This major public pedestrian infrastructure, abutting the roads and linking through pedestrian priority public spaces, operates in the North-South direction along Koch Street and the Civic Spine. This activity spine will aid in connecting Freedom Park to the Central City area along improved pedestrian bridges across the rail yards to Pretoria and Bosman Street stations. A second level of pedestrian infrastructure is more focussed on the movement of the resident community within the housing and mixed use areas and is designed to be more intimate and focused on prioritising the pedestrian over the car.

The proposed structuring of public transport movement on the site reinforces the main pedestrian routing in order to equally serve the needs of public access to the area as well as providing access for the resident community to areas beyond walking distance. Current routes of public vehicular transport will be respected and adopted to maximum effect.

Special Places Strategy

This strategy is primarily concerned with ensuring the desired environment is created as well as the various ‘Special Place Elements’. The strategy is aimed at Creating a framework of Special Places on the site that create destinations in their own right on the site and that support the attractions of the Inner City and Freedom Park.

Figure 3.09 Public Transport Systems for the Salvokop Development Framework, site in yellow



The guiding principles for this strategy would be creation of a series of special places by:

- Capitalising on the current assets of the site to create special places particularly the Heritage Resources and pattern of past development and their linkage to the Inner City.
- Providing new opportunities for the creation of unique environments across the area that support re-development and the linkages to Freedom Park and the Inner City.
- Establishment of a biodiversity park in the area that promotes indigenous flora and prevents alien transfer.
- Creation of a range of hard and soft landscaped spaces of both intimate and public activity.
- Appropriate development of the grand Ceremonial Way terraced space as a gateway to freedom Park and catalyst for a multi-functional environment and commercial stimulation.

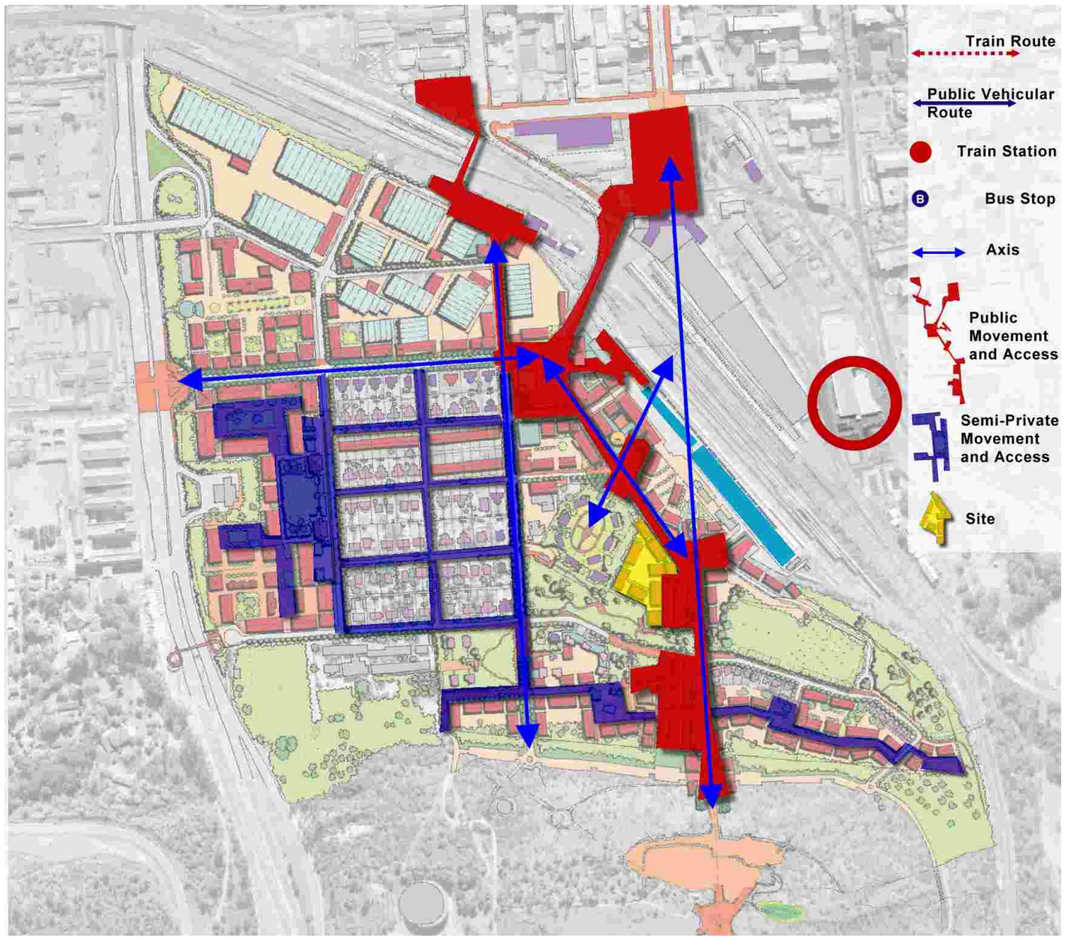
Functional Integration Strategy

The Functional Integration Strategy focuses on the recognition of the economic environment, the setting out of the identified statutory establishment of rights the two development options retained into the future, and the specific strategy for housing on the site. As such it attempts to give guidance to the formulation of the statutory rights application based on the strategy for land development, capacity for development of the site, the key land use options to pursue and an approach to securing affordable housing for the area. As well as a strategy for the engineering services required.

Guiding principles for this strategy, as defined by the SDF:

- Capitalise on the current assets of the site to create re-development opportunities
- The Heritage Resources and their use in support of the Freedom Park Project and their linkage to the Inner City heritage
- The proximate governmental and industrial development and Pretoria status as the centre for foreign embassies and trade missions
- Pretoria as a location for national departments (location of the DTI)
- The rail yards as a working environment and potential attraction
- Establish a residential community that has both a direct relationship to the areas past and to its future
- Creation of new development opportunities appropriate to market conditions

Figure3.10 Public movement patterns



3.3.2. Freedom Park Framework Analysis

Figure 3.11

Figure 3.12

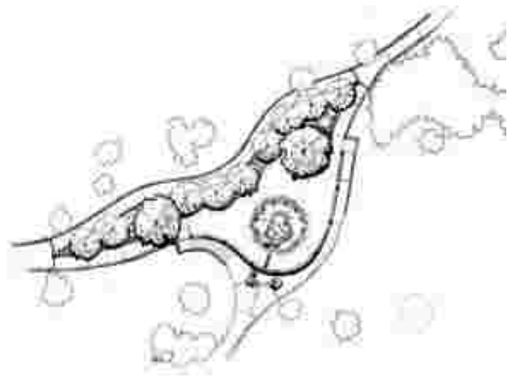


Figure 3.13

Figure 3.14 Current Freedom Park Access via Koch Street

(Freedom Park Trust, 2003: www.freedompark.co.za/index)
This is a place of historical wonderment, where all ignorance and hatred are crushed, where freedom symbolises a milestone in the South African evolution

The official Mission Statement of Freedom Park available on the internet website (www.freedompark.co.za) is stated simply:

To provide a pioneering and empowering heritage destination that challenges visitors to reflect upon our past, improve our present, and build on our future as a united nation.

Freedom Park is the first of many important catalysts for the precinct of Salvoikop. The position of the monument and memorial was specifically chosen for the area ue to its prominence both as a visual icon and as a historic location. Its juxtaposition on the skyline with the Voortrekker Monument - just kilometers away - emphasise the imporatnce of all facets of history and cultural influence that has guided this country to where it is today.

Freedom Park isimportant to the proposal for a Centre for Performing Arts in many ways. Firstly it sevres as the origin and/or termination of the important Ceremonial Way upon which most major development for the area is proposed. Secondly, the nature of its facilities effectively compliment the strategy for cultural and educational developement along the Ceremonial way axis.

Thus through a partnered relationship of mutual benefit between the facilities of Freedom Park and the Centre for Performing Arts, the opportunity for the creation of a vibrant area of broad appeal exists. While Freedom Park associates itself with past influence on the present and a wider sense of sentimentality, the centre for the Performing Arts offers the opportunity for new skills and interest in cultural exploration to free the spirit of artistic and cultural expression for propagation of the the broad community of this country into a future of possibility.

Phase I: Garden of Remembrance

Ring Road
Parking
Ablution Facilities
Information Kiosk
Terraces
Cave Tunnel
Contemplative Path
Isivivane (Completed)
Reflective Path
Sikhumbuto
Sculptures (artistic forms)
Children`s Garden
`Tiva`-lake

Phase II: Informational Areas

The Dream (museum)
Pan –African Archives
Audio-visual library

Phase III: Hospitality Areas

Amphitheatre
Moshate(presidential hospitality suite)

Commercial facilities

Figure 3.15

Figure 3.16

Figure 3.17

3.3.3. Impact of the Gautrain

The Gautrain Rapid Rail Link has the primary objective to provide a state-of-the-art rapid rail service between Pretoria, Johannesburg and the Johannesburg International Airport (corporate.gautrain.co.za). One of the key criteria of the project is to rejuvenate the city centres of Pretoria and Johannesburg and it is therefore a condition of the project to provide a station at the existing Pretoria Central Train Station. An important secondary objective of the Pretoria station is to provide an inter modal facility for passengers that use the existing South African Rail Commuter Corporation service operated by Metrorail to areas such as Atteridgeville, Mabopane, Shoshanguve, Mamelodi, and the proposed Pretoria Ring Rail service who wish to make use of the train. An additional station in Hatfield has also been approved.

Planned station land-uses include retail and commercial activities, as well as social and recreational facilities (corporate.gautrain.co.za). In order to maintain maximum comfort to surrounding environments, noise levels are limited to:

Period of Day (T)	$L_{Aeq,T}$ (dBA)	L_{Amax} (dBA)
06h00 – 22h00 (daytime/evening)	60	85
22h00 – 06h00 (night-time)	50	85

Due to the fact that the train will remain subsurface within acceptable distances of the Salvokop Precinct, much of the noise and vibration impact is negated. Structural noise is however still relevant, unfortunately lack of construction details available at present do nothing to provide an adequate assumption of possible impacts. It is assumed for purposes of this dissertation that the effects are within reasonable limit. (EIA Noise and Vibration Report Part 1, 2003: www.gautraineia.co.za)

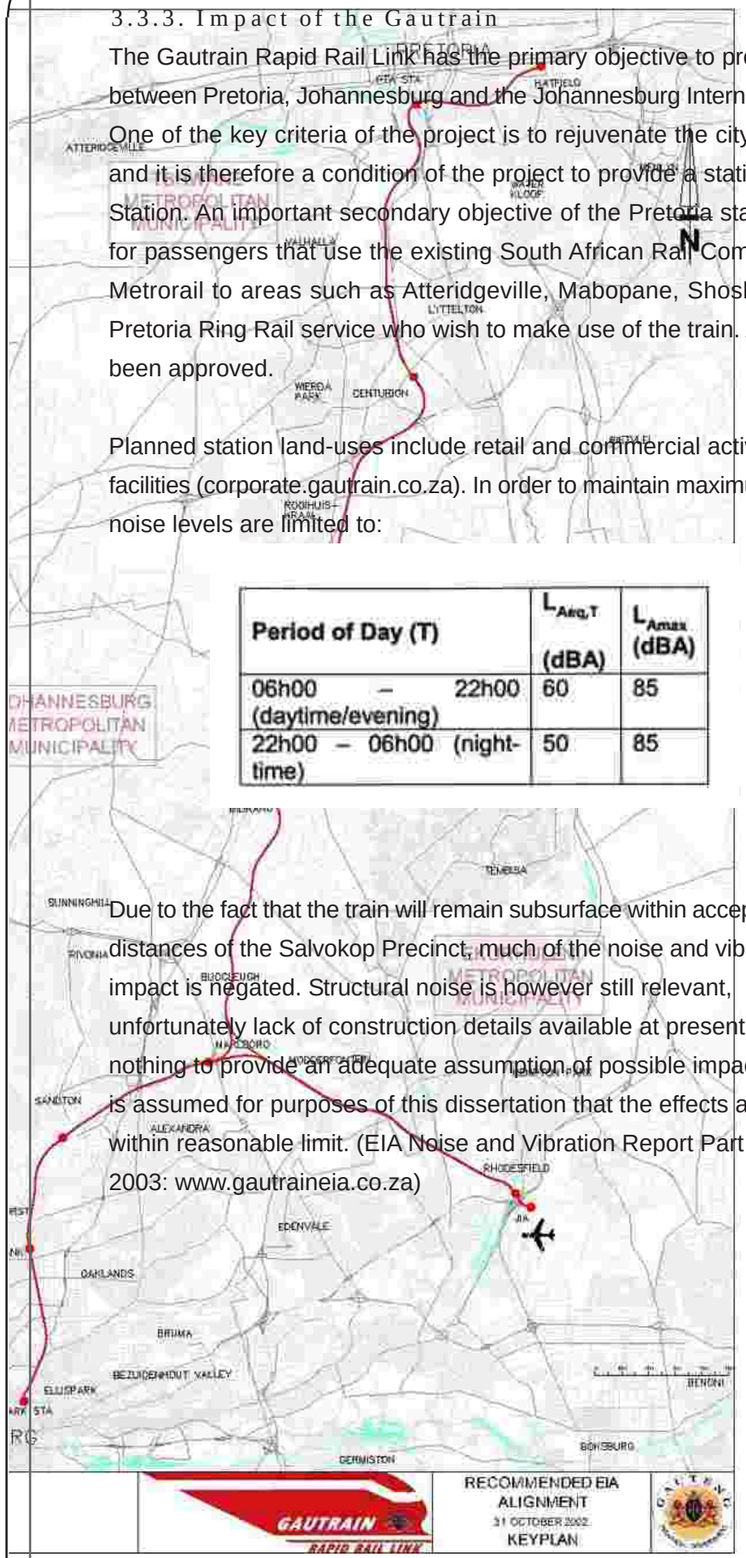
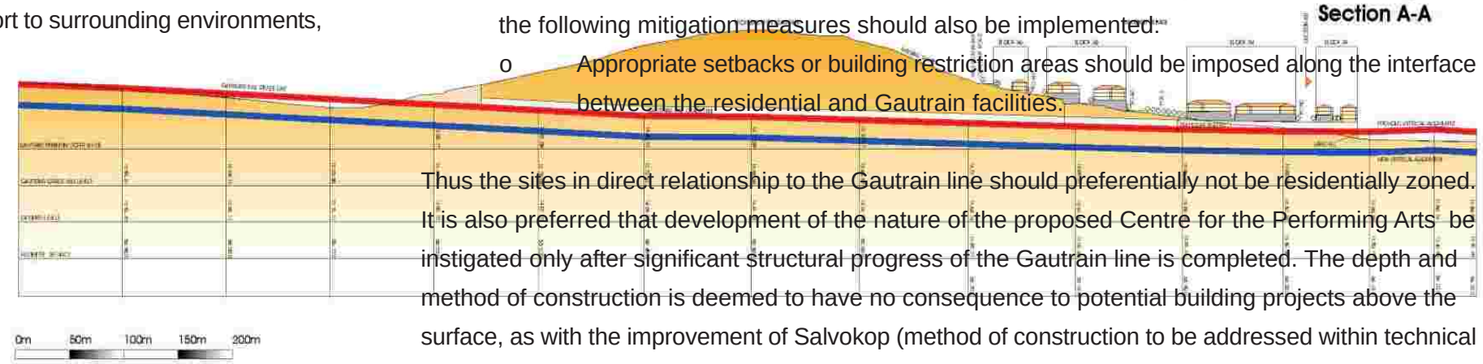


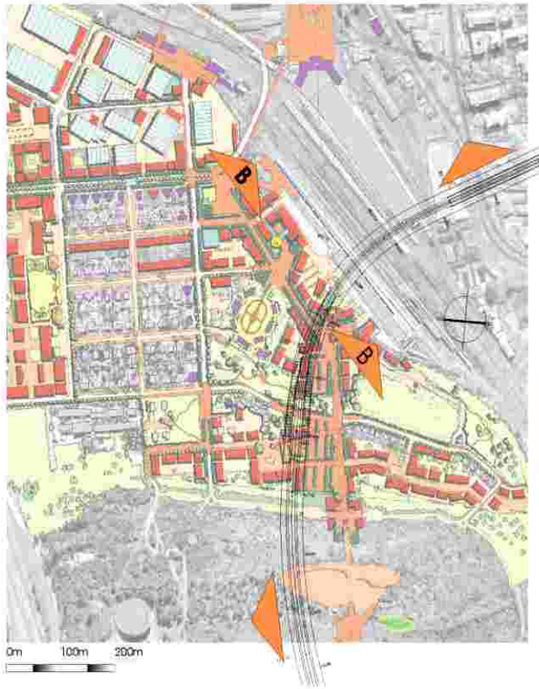
Figure 3.18 Regional Path of Gautrain

The impact of construction of the Salvokop tunnel on the natural vegetation and established trees in the Precinct was an issue of concern raised by the EMP committee. It was thereby decided that in order to minimise impact on the area, the slope above the existing dirt road should be properly fenced and safeguarded as a “no-go area” during construction.According to recommendations in the Land-Use and Town planning Aspects of the draft EIA report (Volume 3, Chapter 9: www.gautraineia.co.za):

- The historic buildings associated with Salvokop and the proposed Freedom Park development on the high-lying land will require appropriate screening measures to be incorporated so as to minimise visual impact and disturbances associated with the tunneling below Salvokop. The open cut section before the tunnel below Salvokop functionally divides the development area of Salvokop and access provisions for vehicular and pedestrian movement are required so as not to isolate the eastern component of the existing Salvokop area.
- Where the introduction of the Gautrain infrastructure abuts directly on residential properties, the following mitigation measures should also be implemented:
  - Appropriate setbacks or building restriction areas should be imposed along the interface between the residential and Gautrain facilities.



Thus the sites in direct relationship to the Gautrain line should preferentially not be residentially zoned. It is also preferred that development of the nature of the proposed Centre for the Performing Arts be instigated only after significant structural progress of the Gautrain line is completed. The depth and method of construction is deemed to have no consequence to potential building projects above the surface, as with the improvement of Salvokop (method of construction to be addressed within technical Investigation of this dissertation).



The development of the Gautrain Rapid Rail Link thus takes a giant leap in including Salvokop within the greater metropolitan and regional map. Due to the proximity of the proposed train stations, the success of such flagship developments as Freedom Park and even the proposed Centre for the Performing Arts is greatly increased as physical distances are negated though creation of ease of travel and access to the greater public. The immense expected interest in the public oriented facilities of Salvokop means that the area now is certified of regional significance and appeal.

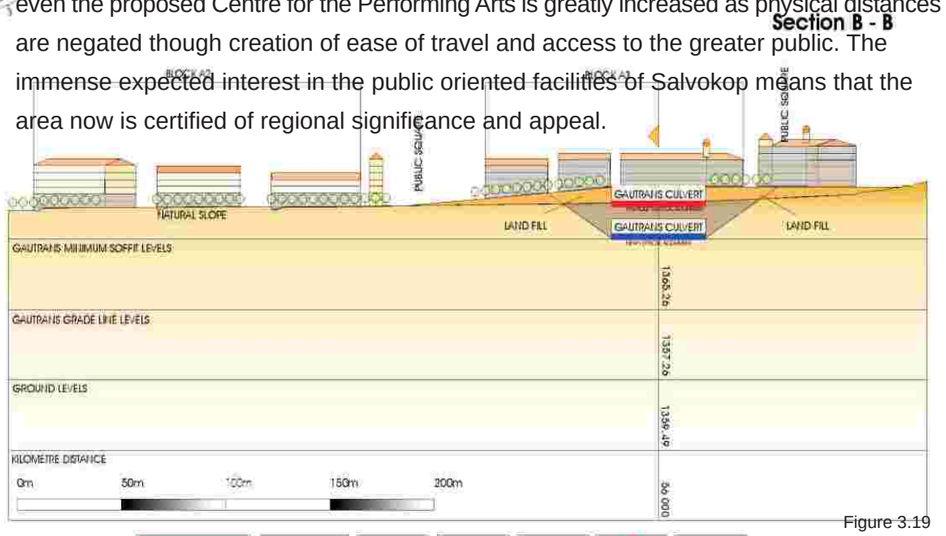
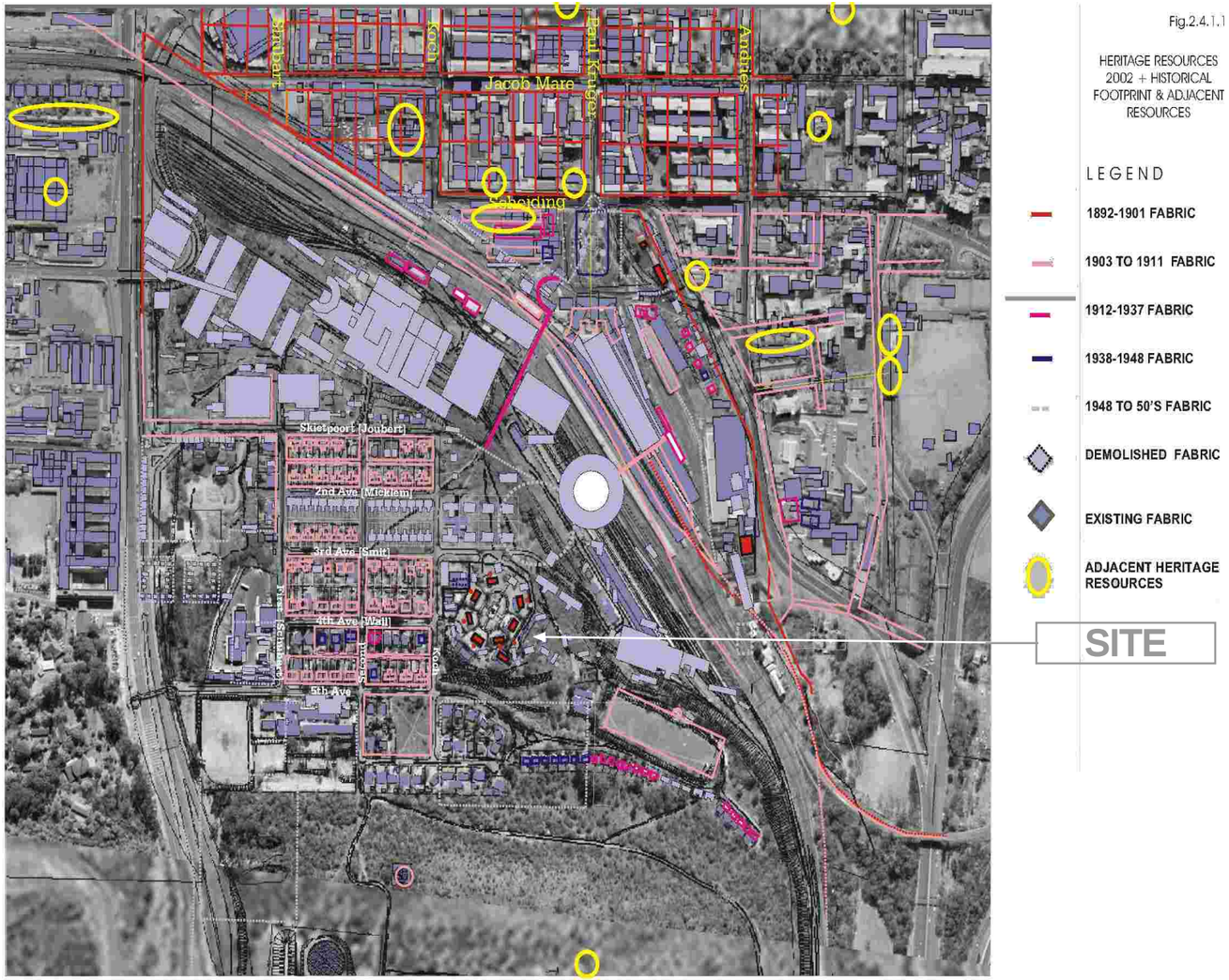


Figure 3.19

SALVOKOP DEVELOPMENT FRAMEWORK
GAUTRAIN IMPACT SECTIONS AA & BB



SALVOKOP DEVELOPMENT FRAMEWORK

HERITAGE : HISTORICAL FOOTPRINT & ADJACENT RESOURCES

Figure 3.20

Figure 3.21 NZASM Heritage Housing Complex

Figure 3.22

3.3.4. Historical Context of Salvokop

The Salvokop Precinct is one of the remnants of the apartheid era. The township was established in the early 1890's by the Nederlandse Zuis-Afrikaanse Spoorweg Maatskapy (Netherlands South African Railway Company) also known as NZASM, to provide low-rental housing to poor white railway-workers as an incentive to secure their service. The NZASM was established in 1887 to build the Pretoria-Delgoa Bay Line. The company was liquidated in later years and since then has been replaced by numerous administrations, currently it is under ownership by Transnet. After the democratisation of South Africa, the precinct changed significantly in terms of the social, economic and cultural composition of its residents. Occupation by black tenants of the dilapidated houses abandoned by whites in the early 1990's fulfilled present needs of those residents in need of shelter in close proximity to the workplace and nearby resources of the CBD (Setshedi, 2004: 14).

The history of Salvokop encompasses the history of six major railway administrations that helped to shape South African history:

- Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM), 1892-1900
- Imperial Military Railways (IMR), 1900-1902
- Central South African Railways (CSAR), 1902-1910
- South African Railways (SAR), 1910-1981
- South African Transport Services, 1981-1990
- Transnet and its subsidiaries, since 1990

As such Salvokop played a significant role in the industrial growth of the opening up of the northern regions of the country in the Colonial era and the subsequent Union and Republic. It is an important cultural landscape which serves to demonstrate the railway industry as a particular class of strategic industrial development, an architecture of particular historical importance in terms of social and aesthetic value, and a strong association with the labours and lives of a large section of the South African railway community over a period of more than a century (GAPP architects, 2003: 19).

3.3.4.1. Design Considerations

The presence of historically significant sites such as the NZASM court – proposed future Conservation Interpretation Centre for heritage information – means that a particular sensitivity is necessary, especially in situations of direct adjacent placement to such sites.

The words ‘sympathetic’ and ‘sensitive’ are terms of reference, referring to some form of connection being established between new architecture and an existing historical site, requiring a connection of particular quality.

According to the Washington Charter (1987) - The ICOMOS Charter for the Conservation of Historic Towns and Urban Areas - in order to be most effective, the conservation of historic towns and other historic urban areas should be an integral part of coherent policies of economic and social development and of urban and regional planning at every level. The ICOMOS charter of 1966, article 1 stipulates that the concept of an historic monument embraces not only the single architectural work but also the urban or rural setting in which is found the evidence of a particular civilisation, a significant development or an historic event (Strike, 1994: 3).

Further concepts to take into consideration according to the Washington Charter of 1987:

- New functions and activities should be compatible with the character of the historic town or urban area.
- Traffic inside an historic town or urban area must be controlled and parking areas must be planned so that they do not damage the historic fabric or its environment.
- When it is necessary to construct new buildings or adapt existing ones, the existing spatial layout should be respected, especially in terms of scale and lot size.
- The introduction of contemporary elements in harmony with the surroundings should not be discouraged since such features can contribute to the enrichment of an area.

Four concepts could be implemented in the aim to design to compliment a historical setting, as with the NZASM court in Salvokop. These concepts include: design through association, response to location, integrative design, and design by assimilation. Design through assimilation could be simply defined as establishing a direct symbolic and aesthetic association to an existing example of architecture, in essence adopting stylistic characteristics (Strike, 1994: 24). Response to locations is developed through an understanding of how the existing building relates to the area and then deciding what role the new architecture should take in order to strengthen this relationship (Strike, 1994: 38). Integrative design is concerned with design that operates within the actual fabric of the ‘monument’ – architecture that is generated from factors within the existing fabric (Strike, 1994: 64). Design by assimilation considers the process by which architecture is linked to a historic site by forming reference to a physical element of the existing historical fabric. This new architecture is therefore generated by assimilation of an existing element of the site (Strike, 1994: 95).

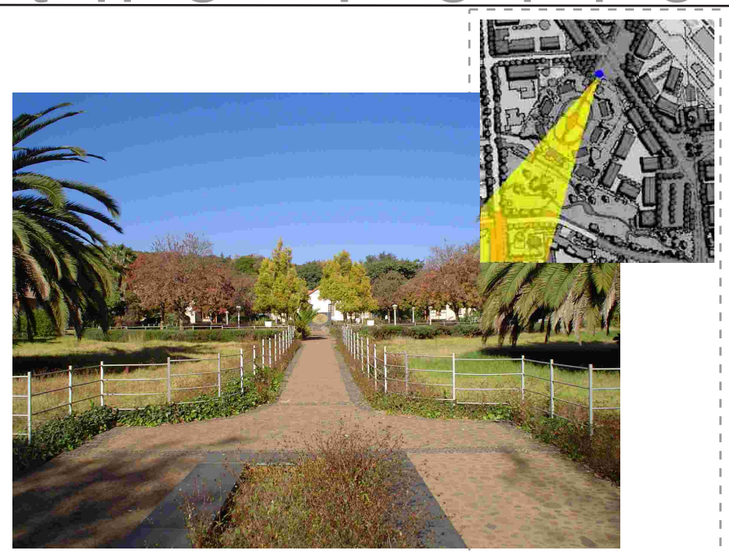


Figure 3.23 NZASM Axis looking south

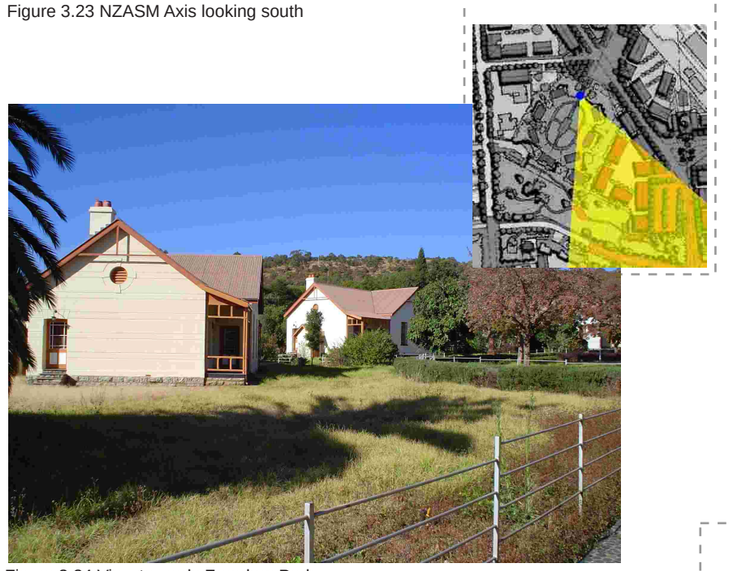


Figure 3.24 View towards Freedom Park

With specific reference to the design strategy of this dissertation project, emphasis is placed on a responsive approach, whereby relationships are strengthened within the location. Thus the development is planned to aid the monument’s importance as a key site in the area. Thus no aesthetic reference is to be made to the development but rather intentional design considerations to include its existing axial characteristics and sensitivity to available views and overshadowing during all times of the year. Implied height restrictions as suggested by the SDF are to be respected.

Figure 3.25 NZASM Axis looking east, towards site

3.3.5. Socio-Economic Context

Pretoria (Tshwane) is fairly unique in having relatively large skilled, white-collar workforce, predominantly due to the influence of government (as a very large employer in the city) and the strong base of tertiary educational and research institutions in the area. A recent estimate suggests that government bodies and public enterprises employ 36% of the total economically active population in Pretoria, compared to 18% for South Africa as a whole. Tshwane has also a substantial supply of unskilled and semi-skilled labour.

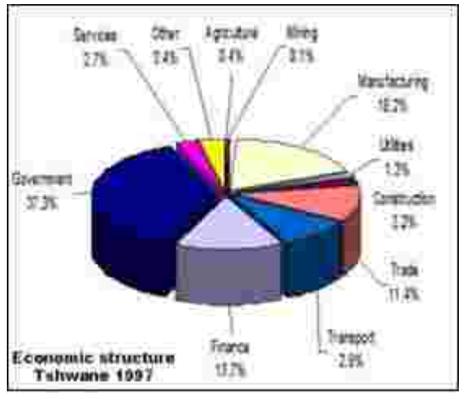


Figure3. 26 Economic structure of the city

Currently, the leading economic sectors in the City of Pretoria are the government sector (which forms part of the services sector and have specific implications for the development of the office market), followed by the manufacturing sector, financial and business services, trade and transport. The sectors that had the largest contribution to economic production in the province include the services sector (40.9% to the value of the services sector in Gauteng), 32.4% in the transport sector and 26.4% in the utilities sector. The economy of Tshwane registered an economic growth between 1996 and 2001 of about 4.4% per annum.

Evidence of a high population density among young people in urban areas such as the CBD indicates a broad need for convenient location to inner city centres in pursuit of employment opportunity., The Salvokop area is currently more accessible from the CBD than from its southern or eastern borders, which creates a more favourable environment for CBD-associated activities to filtrate into facilities provided on Salvokop. Whereas this trend will increase the integration of Salvokop with the CBD, it might also prevent larger and more prestigious investors to locate in the area. However, the potential to attract niche-focused retailers should not be underestimated, given the location of the site in terms of the main routes in Pretoria, its linkage to Freedom Park, as well as the potential to link overall development in Salvokop to a specific investor-attractive theme (similar to what is happening in Newtown, Johannesburg). These factors increase the attractiveness of the site in terms of investment potential and the need for development management. Examples are specialist retailers with the tourism industry as target market.

The Primary Market Area includes those areas from where the majority of customers (approximately 75%) will potentially be attracted to the site and include the Salvokop Village and the Pretoria CBD. The Secondary Market Area entail the area in close proximity to the site from where customers have a choice to frequently visit the business concerns on the site. It is the areas from which 40%-60% of the clientele will be drawn and encompass Sunnyside, Muckleneuk, Arcadia, Hatfield, Hillcrest, Colbyn, Groenkloof, Brooklyn and Pretoria West.

Miscellaneous Statistics for the City (Statistics South Africa, Census 2001)

Population density : 8216 – 17897 persons per km^2
Population Majority Group : Black African
People with disabilities : 0,04%
Dwelling type : formal
Rooms per household : 1,91 – 3,3

Household size : 2 persons per household (derived by average)
Access to services : 56,61 – 77,65% of households
Economically Active population : 1,83 – 2,93% (high)
Ages 20 years and above with no schooling : 0,85% (medium low)
Ages 5 to 24 not attending educational institutions : 4 – 4,5% (very high)

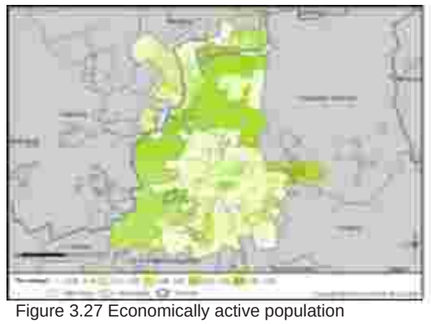


Figure 3.27 Economically active population

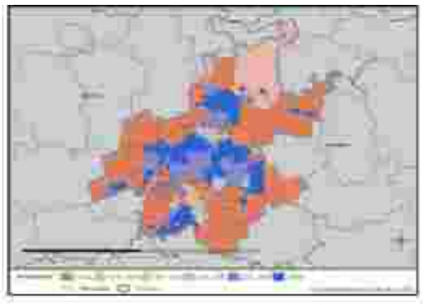


Figure 3.28 Average population for Gauteng


Figure 3.29 Persons not attending educational institutions


Figuire 3.30 Population density for Gauteng

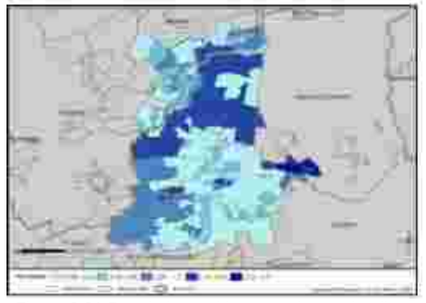


Figure 3.31 Population wqith no previous schooling

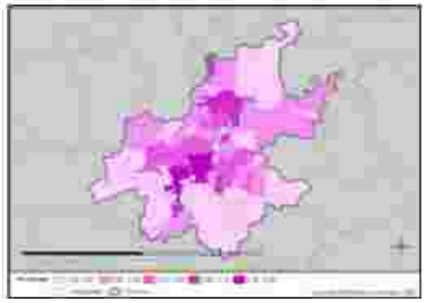


Figure 3.32 Population percentage with disabilities

3.4. Site Analysis

Up until this point, a clear relationship between Salvokop and the inner-city of Pretoria has been established, both in terms of physical locality and desired public contribution. Salvokop has thus been proven to be in a position of regional significance for future development, and that that the feasibility of this dissertation project is optimal for such a development. Thus it became necessary for a decision on an actual site location to be made, where such a development would be best suited within the Salvokop Precinct. The criteria established to decide upon the ideal location were as follows:

- Easily accessible at all phases of SDF implementation,
- Direct visual relationship with the freedom park development,
- Situated along a main public route and strong pedestrian exposure,
- Proximity to public transport systems, both inner city and inter-city,
- Position within commercial or multifunctional sector of SDF, without interference to private residential sector,
- Direct visual or geographical relationship to cultural spine extended from inner city.

Thus the decision was made to place the proposed development of the Centre for Performing Arts on the vacant site title “A4”, within Zone A of the SDF.

3.4.1. Administrative Issues

The current zoning reserve on the land is historic and the new provisions of the South African Transport Services Succession Act and current Land Use Planning legislation dose not give a clear indication of whether a re-zoning or full township establishment would be the better process to establish the statutory basis for re-development rights and the development control of the area. Site A4 is a new derivative within the previously South African Railway owned portion 406, zoned “South African Railway Special”.

As stipulated in the new SDF the site is currently zoned for commercial and/or business development. The SDF also recommends a two story height limit in order to maintain the integrity of the existing historic built fabric, thereby limiting overshadowing or imposing built forms that detract from the experience of the historic fabric. Since current efforts to reconfigure the cadastral landscape are still in progress, no clear indication of future density restrictions and floor area ratios are available. It is also assumed for all intents and purposes that no restrictive real rights exist over the site, as well as servitudes. Instead, constraints are determined from the SDF zoning restrictions and proposals, in order to ensure that the Centre for Performing Arts conforms and compliments the standard as agreed upon by the SDF committee. Instructions for land use within the stipulated zone thus call for developments such as: Light commercial, clean industry, wholesale and warehousing and support functions – provision of a segment of housing, retail and recreational facilities to ensure urbanity.

Figure 3.33

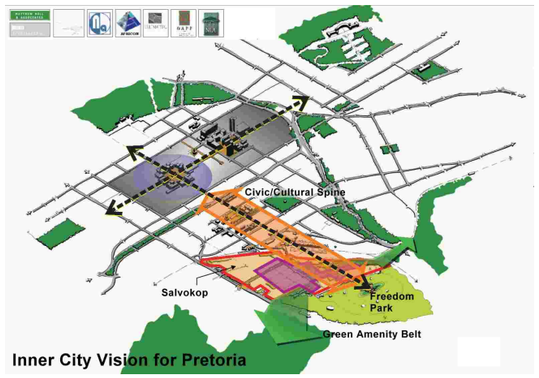


Figure 3.34 Inner City vision, cultural axis and green bellt

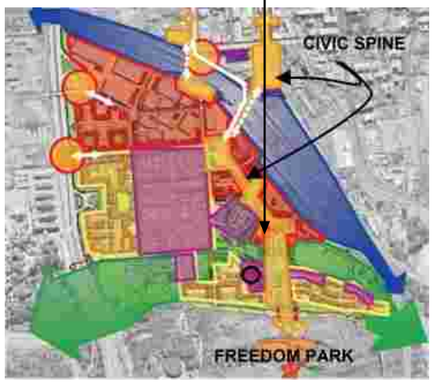


Figure 3.35 Development strategy for Salvokop

Centre for the Performing Arts

3.4.2. Physical Features and Geographical Analysis

Site A4 has an area of 10 635 m^2, and lies on the northern facing slope of the Salvokop hill, providing excellent aspect and views into the city. Gradient is slightly steep, with a slope of approximately 1: 36. Coupled with the slope are a number of steep cuts into the landscape forming small 'terraces', most probably artificially introduced some time ago during early construction.

At present there is one major pedestrian access route in effect along the eastern edge of the site. The layout of this walkway will eventually be assimilated into the Ceremonial Way of the SDF, preserving its importance as a pedestrian route for residents, and forming the eventual eastern perimeter of site A4.

The Area lies within the Timeball Hill Formation of the Pretoria Group of the Transvaal Sequence. The dominant rock types are partly ferrugenised quartzites with shales. Dominant soils are the Glenrosa Farm, Dumisa Family. These soils are typical of slightly steep locations in the area, offering limitations such as: Restricted soil depth and very stony topsoil (fig 2.1.22.).

Based on the present conditions no difficulties will be experienced in excavations. It is apparent from earlier investigations that higher water tables have been measured and found to be of suitable standard.

There are no significant engineering problems related to foundation conditions on the site.

Figure 3.36 Aerial view of site and context

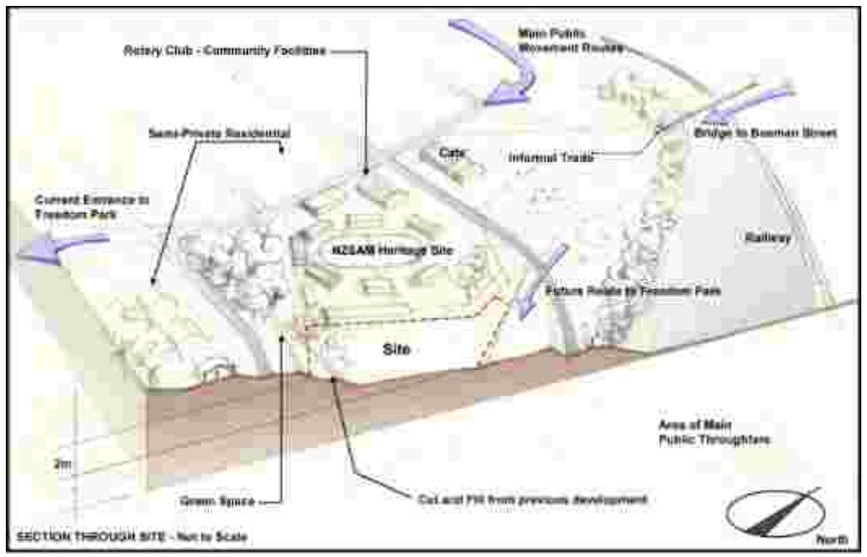


Figure 3.37 Section through site

Figure 3.38 Proposed cadastral layout, site in red

Figure 3.39 Form response drawing and prominant axes, site in yellow

3.4.3. Vegetation, Climate and Sun Angles

Vegetation within the site is placed within Zone 3 of the SDF vegetation survey, regarding the area as having a low to medium ecological value, due to the dominance of alien species, although appropriate development sensitivity is needed in certain circumstances. Sensitivity is needed in relation to existing vegetation patterns as well as the cultural landscape value of clusters of street trees (Jacarandas) in the area.

Precipitation in the area is recorded as having an annual average rainfall of 674mm.

Average Summer Rainfall: 522 with 48% cloud cover.

Average Winter Rainfall: 162 with 26% cloud cover.


Figure 3.40


Figure 3.41


Figure 3.42


Figure 3.43

Temperatures affecting the Salvokop precinct:

- Average Daily Maximum Temperature: 25ºC
- Average Daily Maximum Temperature: 12ºC
- Highest recorded: 36ºC
- Lowest recorded: 6ºC

Data from the website: Welcome to Pretoria (http://home.mweb.co.za/ge/gelden/pta/)

Vertical Sun Angles for Salvokop facing North at 12 mid-day:

Position: 25º44' South 28º11' East

Winter Solstice: 22 June - 44º

Summer Solstice: 22 December 87º

Average Summer Solar Radiation: 58, 7%

Average Winter Solar Radiation: 66, 2%

3.4.4. Physical Boundaries

The northern boundary is presently formed by an existing tarred road, 3rd Avenue, for access to existing rail works. Immediately opposite is a vacant site that serves as congregation space between the Bosman Street Bridge and the Salvokop Precinct. Future development will see this road eventually intersect the Ceremonial Way – as part of the Civic Spine - and provide access to and from the blue train station. As part of the concept to institute a series of formalised public open spaces, the area immediately to the north will thus become such a space, reinforcing the NZASM court axis.

An existing south-bound footpath forms the edge of the eastern boundary. 3rd Avenue sweeps south to form a gentle corner; however it is separated from the site by a cut into the natural topography. This cut is not traversable, forming an imposing barrier and effectively hiding the road from view, but aiding in an elevated and unobstructed view of the city. Running adjacent to the road for a distance is the existing footpath used by residents to reach the Bosman Steet Bridge. This footpath will eventually be assimilated into the important Ceremonial Way, providing main access to Freedom Park. This Ceremonial Way is assumed to become the major route through Salvokop - after infrastructural improvements are implemented to aid access to and from the inner city - by providing pedestrian walkways, bus stops and parking for visitors. Along the eastern boundary, as part of the 3rd avenue and Ceremonial Way intersection, will be a major public open space/square which will serve as an introduction to Salvokop from the Blue train station. The direct relationship with this space must be taken into consideration in the design process.

The southern boundary is characterised by much vegetation and steep slope. This is how it will remain, as part of the ISDF strategy to develop a Green Amenity Belt across the city of Tshwane. This green space is not to be disturbed, and will eventually gain repute as a public green space for recreation.

Figure 3.44 View to north

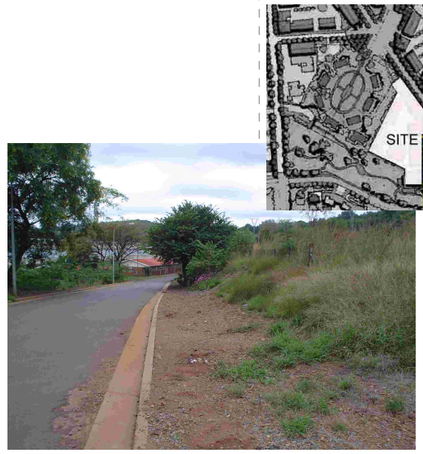


Figure 3.45 Western border, road to satellite train terminal

Figure 3.46 View to south, residential

The western boundary is defined by the heritage site NZASM court. This cluster of 8 residential units is regarded of utmost importance due to its historical value and heritage tourism potential. Bordered by a definitive perimeter fence, visual permeability is retained within the court, as well as the observable NZASM court axis, which urban planner seek to exploit. The houses are well maintained, 1 storey in height and inwardly oriented. It is for sensitivity to these houses that a height restriction is imposed on the adjacent site important to this dissertation.

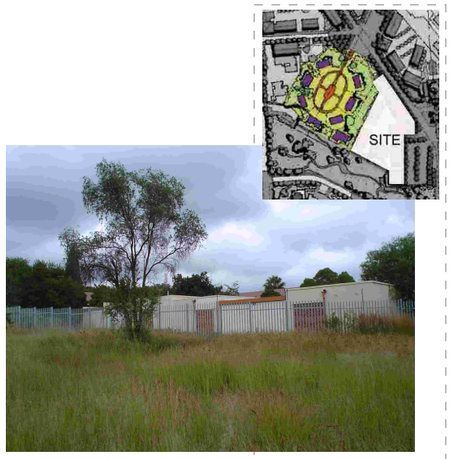


Figure 3.47 View towards NZASM Housing

3.4.4.1. Approaching the Site

Current approaches to the site, be it by foot or by car, immediately establish its position as a site of great potential for inner-city integration. The visual link with the city and the Paul Kruger Street Improvement are clear and obvious. Approach from within Salvokop via existing road systems does not make the location obvious, as the site sits tucked behind the NZASM court to the east. Approach via 3rd Avenue slowly reveals the site and the extent of its area, making it slowly obvious that the precinct does in fact extend far beyond what was originally visible. It is in fact this stretch of land that will become the major source of public activity in the future, as main access to Freedom Park and the Blue Train Station will be accommodated.

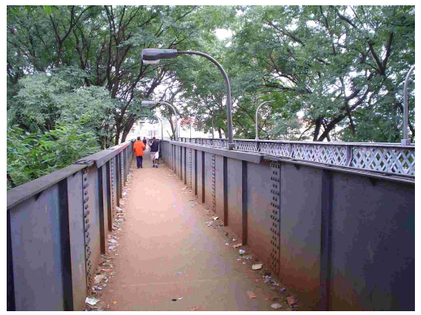


Figure 3.48 Approach from Central Station, pedestrian bridge

Approach from the north, via the Bosman Street Bridge, currently pedestrian but in the near future predominantly vehicular, places the site in direct physical view. The site lies on what will be the pivotal shift of axis that will reconnect the ceremonial way with the Civic/Cultural Spine axis of the Inner city, with visual connectivity re-established thereby. The road will be a two way layout with one carriage way in each direction. Extensive planting is planned to occur, with a line of trees to accompany the Ceremonial Way to the entrance of Freedom Park.


Figure 3.49 View towards site from north

Since the site shares access to a main public open space with the Blue Train Station, travellers will enter Salvokop with the first impression provided by the proposed development


Figure 3.50 location of public open space to north of site

of this dissertation. Pedestrian influence is greatly important as many residents will retain the route of movement to the train station, as well as disembarking passengers on a journey to experience the setting. The Public open space is further more defined by commercially focussed buildings, including potential offices of a height up to 6 storeys. A round about is most likely to be placed at the intersection to facilitate easy movement round the intersection which branches off into three directions. Parking is also expected to occur within the extents of the Ceremonial Way.


Figure 3.51 Koch Street, existing access to Freedom Park

Figure 3.52 Vision of position of Gautrain station

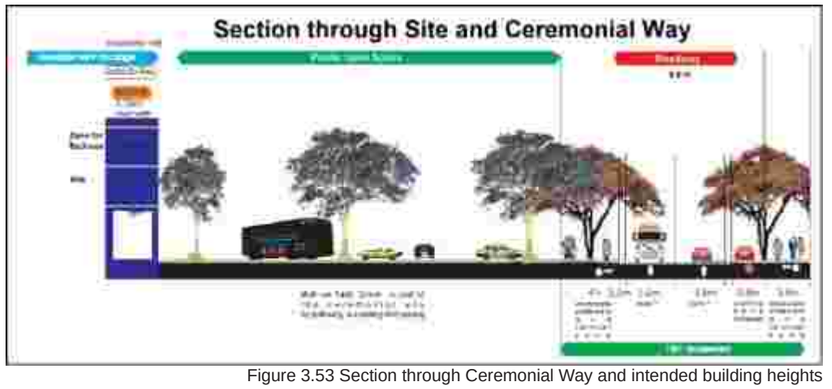


Figure 3.53 Section through Ceremonial Way and intended building heights

3.4.5. Relationship to Public Transport

The site will be situated on what is termed a Public Based Road System, which means a potential increase in road utilisation by visitors and definite public transport emphasis. Buses and taxis are the preferred means of road based public transport into Salvokop, with allocated bus stops already decided for the Precinct. A bus stop is situated conveniently adjacent to the site, allowing for direct conveyance of travellers into the site, should they wish to do so. Convenience for pedestrians travelling by train and future Gautrain is also sufficient, with walkable distances and comfortable infrastructure allowing for such pedestrian movement. Direct access is available to higher-paying passengers of the Blue Train, due to proximity of the station.

4. Issues of Sustainability

4.1. Social Issues

In the pursuit of producing a sustainable development this building concerns itself with not only appealing to the public sense of interest but also with aiding and enhancing the quality of life for locals in the immediate area. The suitability of this type of development has already been investigated; it further more aims to make a significant contribution to economic and social well-being of the community. It is proposed that the project will involve all design professions as a complete, collaborative effort. The proposed development will contain various areas of public access and use as well as the forging of new pedestrian routes.

4.1.1. Public Participation

For a project to succeed at this scale, public participation is integral. If this project is able to integrate the existing community into its operation as well as construction and implementation, it will succeed in affording itself sentimental value within the minds of the community and cementing its place in the community fabric of Salvokop. Much of the projects success depends on the community - of both Salvokop and the greater CBD - taking up an active role in the use of its facilities, since the facilities provide the means for personal education, development of musical skill and personal recreation. By thereby appealing to the community's sense of self development and drive for economic empowerment this facility can substantiate its existence and importance in the social landscape of the area.

The strategy for the building as a collection of its facilities results in a number of spaces that require specific climate control input at different times of the day. In the case of the office facilities, for example, these spaces shall be controlled on an individual level with the appropriate electronic assistance for this task. Thus for the most part, the building will simply provide the means for the users to determine the state of the environment in which they work.

4.1.2. Occupant Comfort

A high and highly specialised comfort is required in a building of this nature whereby large internal components have programmes such as auditoria and related performance and rehearsal, the likes of which require internal climates unattainable by passive techniques of construction. A HVAC system is therefore required to be introduced in order to accomplish the required thermal comfort levels during all seasons of the year. It is the intention of this design that the majority of public spaces within the interior be in the position to be maintained, with respect to thermal comfort as well as ventilation requirements, by passive systems. Generally speaking, the building envelope is engineered to be openable to a large degree so as not to obstruct the path of natural ventilation. Passive techniques to maintain these indoor public areas are unfortunately not foolproof. Therefore the HVAC system shall be extended to address and serve most areas, such as the foyer spaces, in cases whereby the state of outdoor conditions requires mechanical assistance of the internal microclimate.

Lighting is an important consideration in the all-hours use of the proposed development as this brief seeks to fulfil. Due to areas such as the exhibition spaces, rehearsal areas and indoor performance spaces, specific luminance levels are required at all times. Passive lighting alone cannot reach all of these areas, therefore lighting fixtures and their position are in somewhat responsive role to building conditions. These areas are therefore to receive the effects of heat gain through such lighting fixtures, and fall within the scope of internal areas to be in a position to receive mechanical cooling and ventilation assistance. Light penetration into auditoria and performance spaces must be diffused and controllable so as not to interfere with the proceedings and related projections. Night time lighting is planned to go far beyond requirements of health and safety so as to sufficiently promote evening events and establish uninhibited 24 hour use.

4.1.3. Accessible Environments

The main entrance has been positioned to make it immediately accessible from the public open spaces linked to the Ceremonial Way. The Centre is also directly accessible from parking located on basement level by means of lifts and stairs. The centre is designed to facilitate the free movement of persons with disabilities. By 'disabilities' it is meant any kind of debilitation that impedes the performance of a human being on a reasonable level without the benefit of external assistance. These disabilities therefore include:

- Paraplegic and quadriplegic people
- Blindness and partial blindness
- Deafness
- Mental disorders and incapacities

Each of these debilitations requires different approaches in design accommodations, but it should be understood that if the environment is appropriate, these disabilities may no longer be in a position to inhibit performance. Information technology and intelligent environments go a tremendous way in improving the standard of accessibility in buildings, allowing the individual user to manipulate the environment on a personal level. Therefore the environment no longer becomes accessible, but acts as an enabler for the individual to realise the potential within him/herself which has up until this been restricted.

A need to differentiate between public, personnel and performer access and circulation is required so as not to impede the activities of the Centre. Central and main access is available to all who desire to use it as already mentioned. Performers and staff are afforded opportunity to make use of private parking at basement level with direct access into the Centre within the Ancillary Spaces Zone. Service access is also required to be separate so as not cause disruption; the most appropriate location is directly accessible from the north via Ceremonial Way on the western perimeter of the building for deposit on basement level.

4.1.4. Health and Safety

The Centre for Performing Arts will form an important role in the matter of safety and security in the area with regards to a 24 hour street presence and issue of surveillance. The mixed-use nature of the building issues broad appeal at all times of the day and thus ensures its usage will extend into the night, guaranteeing public presence. Staff and authorised performers will be granted access at all times through the use of electronically monitored access control points. Access for the public with regards to the performance spaces will be monitored and controlled at the relevant lobby entrances to the spaces themselves, resulting in a general security presence at the main entrances. Entrances to the building are therefore restricted to the minimum, but of ample dimensions to cope with large quantities of people. The area is intended to be well lit at all times, keeping in mind comfort levels of the users and participants.

4.2. Economic Issues

4.2.1. Flagship Development and Marketability

In any project there are a number of pricipal elements in the forging of an approprite marketing strategy. there is the project iteself, in this case the flagship developement of the Centre for the Performing arts. there are three other elements: cost people and marketing. The ‘cost’ concerns all financial matters and provides the means with which to undertake the flagshiop development. ‘People’ covers all contacts and personal matters. It is in people whom the skill are embodied. ‘Marketing’ covers all aspects of strategy, sales and public relations, or in simpler terms, the means for matching demand to the flagship development and the area to be regenrated (Smyth, 1994: 47).

In order to determine an appropriate marketing position the project must then be considered on two tiers. Firstly it is necessary to address the flagship as an entity in itself. Secondly it is necessary to consider the surrounding investment and consumption that is to be attracted. Finally a combination is required in the pursuit of the overall policy aim of urban regenration. This combination makes its contribution towards the economic and social well-being of the area. Skill and resources will be primarily focussed on the development itself with the operational asumption that the investment and consumption will soon follow suit.

4.2.3. Repairs and Maintenance

Where accessibility is difficult, low maintenance materials have been designated for use in order to ensure that initial costs aren’t unnecessarily multiplied in the coming future. Materials of this nature are mainly in the form of concrete and masonry brickwork. An abundant use of glass predominates many of the facades, and for purposes of maintenance and cleaning this glass specially coated and, where the glass is covered by external louvers for sun protection, these louvres will be constructed in such a way to facilitate ease of access to glass surfaces. In cases of material selection, it is felt that a higher initial cost to compensate for future ease of maintenance is an appropriate option for this project. Ease of access for maintenance is of utmost importance in order to preserve the integrity of the building both on a structural level, and on a level of social perception.

4.2.3. Operational Costs

Operational costs are sought to be minimised through target usage of resources only where necessary. The nature of the Centre as a collection of its facilities is beneficial in the fact that its facilities may operate independent of each other. Thus energy expenditure may be economised.

The Centre is to be funded by the principal client in matters of Staff salary and maintenance issues, but a management system shall be implemented to involve the input and resources of constituent organisations of a non-governmental inclination. Through this involvement, special events may be organised in the aims of supplementary fund raising so as to ensure that improvements to the Centre may be instituted without economic shortfall.

4.3. Environmental Issues

4.3.1. Site

In the issue of the existing built context, it is imperative that the neighbouring buildings – especially the NZASM Heritage Housing Site – receive their full compliment of natural daylight without obstruction. Thus the height of the Centre is restricted in order not to create detrimental shading to the surrounding areas. Steps must also be taken to ensure that the Centre does not adversely affect the micro climate of the area through effects of wind-channelling and erosive water run-off. Most of the neighbouring buildings are yet to be designed and constructed, but all should seek to fall within the existing and proposed framework for the area.

The site at present is a natural landscape, of predominantly grassland characteristics. The development must not interfere with the existing ecosystem of its neighbouring green space – soon to be used as public green space. All trees are to be re-distributed within the site where their position conflicts with the proposed footprint of the Centre.

4.3.2. Waste

All sewerage will be distributed to the municipal connection, yet to be constructed in accordance with the Salvokop Redevelopment Framework. Municipal waste removal services shall be provided with the responsibility of removing regular waste – particularly the result of the integrated refreshment facilities and kitchen – where it is intended that it be recycled on a larger scale.

4.3.3. Water Use and Distribution

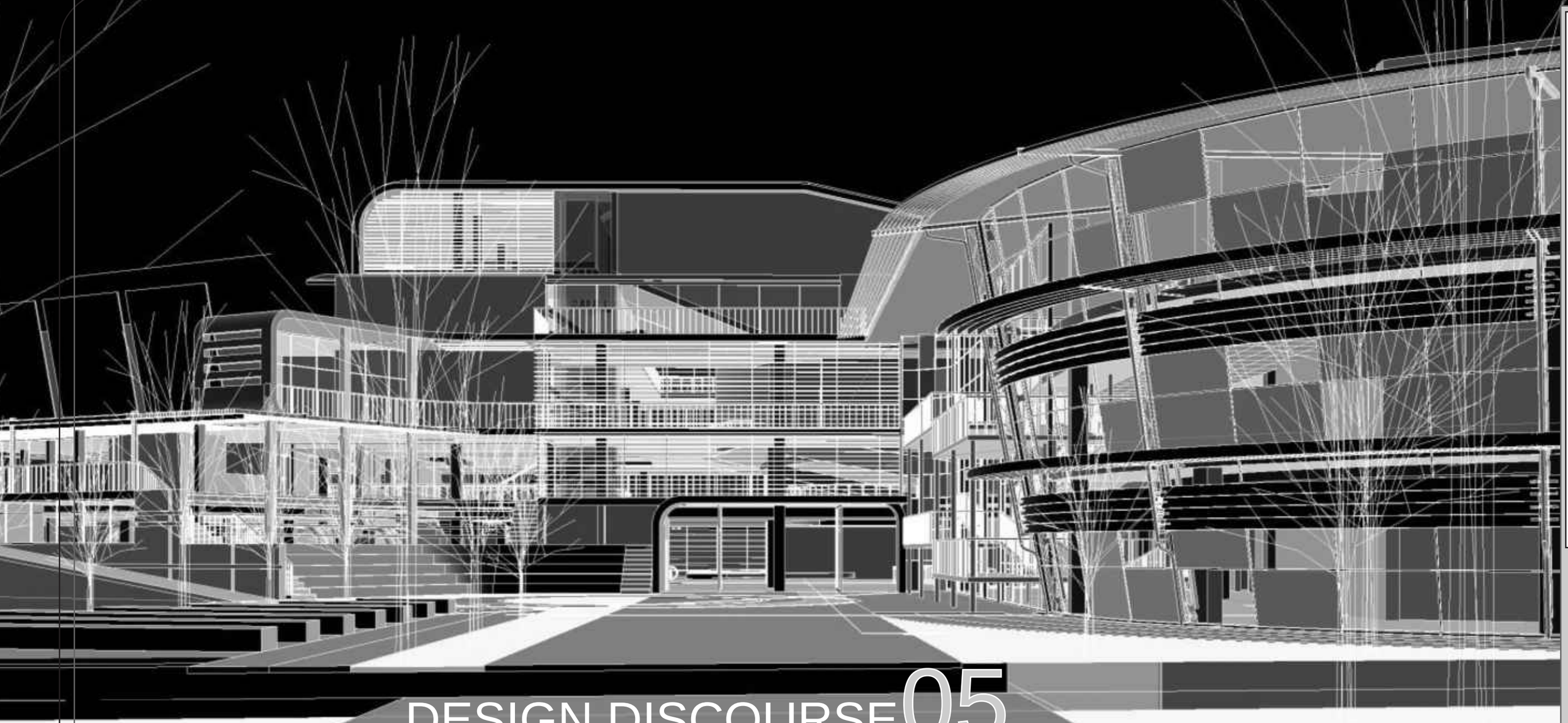
Water efficient devices are to be included in the specification of internal ablution facilities, as well as resourceful irrigation techniques practiced in the maintenance of the vegetative component of the outdoor spaces. Rainwater shall be stored where appropriate for future redistribution into these public soft-spaces.

All new planting shall be indigenous, minimising the water requirements and maintaining suitability to the climate of the region.

4.3.4. Energy

Energy expenditure is a primary concern in a building of this scale, both in the construction process and during operation. In order to keep energy the energy toll to a minimum, a balance in the selection of materials with respective low-embodied energy as well as materials of low maintenance requirements. Complex construction techniques, although unavoidable in many areas of the build, should be kept to minimum where possible. These construction techniques may further prove useful in the scope of skills development and local labour involvement. Locally available materials will gain preference in selection so as to minimise embodied energy in transport requirements.

The dominant expenditure of energy will be directed o maintenance of internal occupant comfort, e.g. the HVAC system and lighting. While energy expenditure with respect to these systems is inevitable, measures can be taken to significantly reduce the levels of energy expenditure. By monitoring each zone within the building and modifying the environmental circumstances accordingly, unnecessary expenditure of energy can be avoided. A Building Automated System is to be implemented, as this will calculate the relevant and suitable microclimate conditions as detected from internal sensors. By integrating mechanical and passive systems for ventilation and lighting, the mechanical systems can be in the position to be implemented in public spaces only when required on certain occasions.



DESIGN DISCOURSE 05

5.1. Design concept

It has already been determined that the area of Salvokop is due for some massive changes. The aim of this project is thus to introduce a regionally significant architectural intervention that serves not only the immediate community of Salvokop but also extends its influence to the greater municipal and provincial populace. In doing so, the development will serve its role as an appropriate catalyst in the inner city and Salvokop community regeneration as planned by the municipal authority.

Performance Art can be divided into three categories: Music, Dance and Drama. Each method of performance has different requirements in the provision of suitable spaces. The building therefore endeavours itself to accommodate the various performance methods completely, in doing so the building may become complete in its appeal to the masses. Diversity of performance and experience is sought, since nothing less should be expected of a community facility in the culturally diverse setting that is South Africa.

Integration of the urban fabric into the layout and public space of the building is key to pronouncing this facility wihtin the context of the Cultural Spine of the Inner City. The flowing relationship between internal and external spaces allows the facility to utilise the surrounding urban context as an extension of its area, blurring the boundary between the site and the Ceremonial Way, and ultimately creating an importantrelationship between the local community and the Centre for Performing Arts.

Through the process of informed design, it is thus the intention of this chapter to fully substantiate all design decisions taken within a logical and systematic methodology. Thus through preliminary investigations into contextual influences, artistic and architectural responses may be sufficiently executed, ultimately manifesting themselves into a suitable product in the form the proposed architectural intervention for Salvokop.

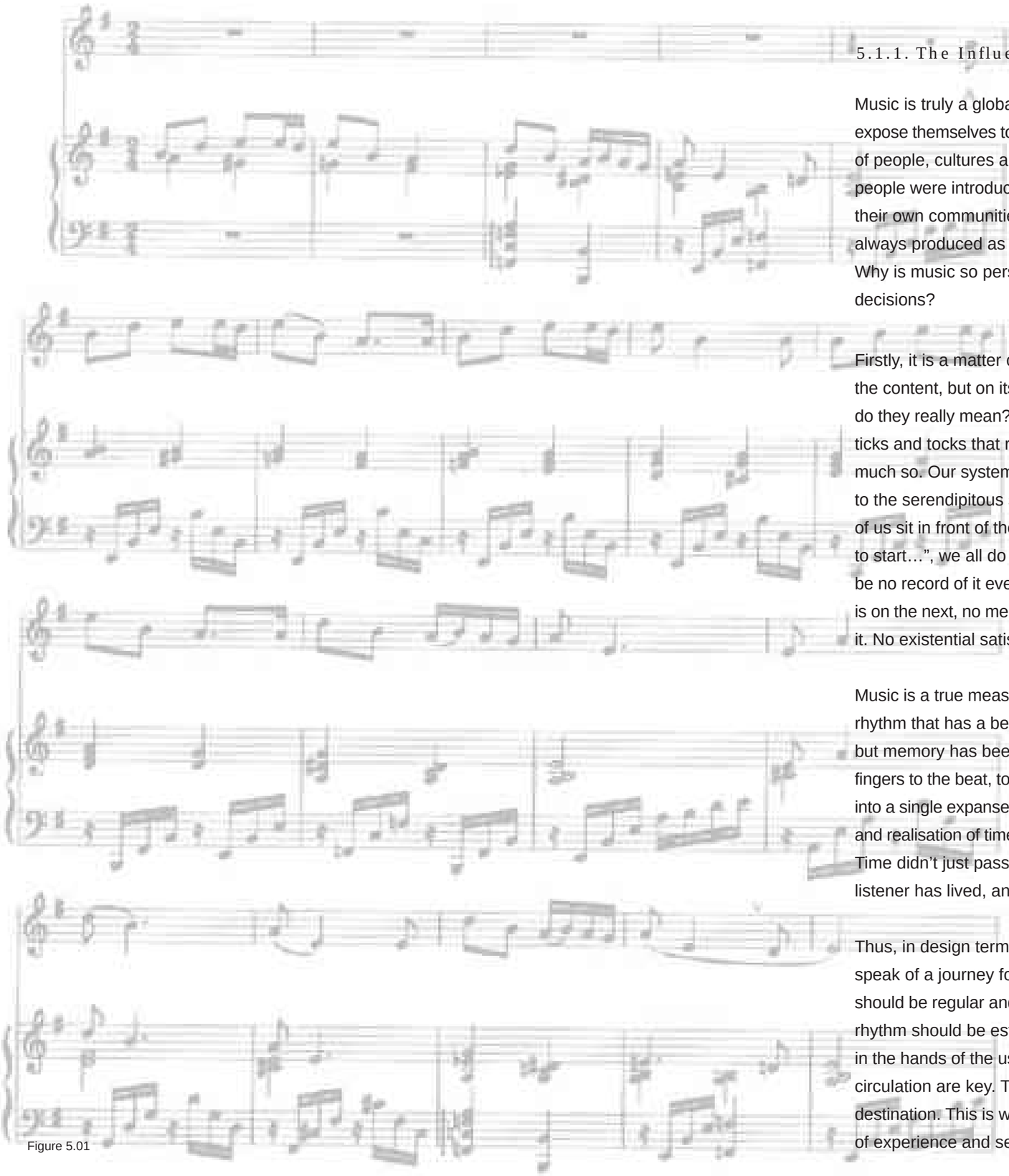


Figure 5.01

5.1.1. The Influence of Music and Performance

Music is truly a global language... a language that all understands, appreciates and finds time to expose themselves to whenever the situation allows. Music is therefore a powerful tool for the unification of people, cultures and a tangible method of exploring cultural diversity. Before cultures merged and people were introduced to other people across the continents, music was inevitably grown from within their own communities. As the single truest common feature in cultures around the globe, music has always produced as a form of cultural and emotional expression. The questions are therefore raised: Why is music so personally gratifying and globally important? How does this translate into design decisions?

Firstly, it is a matter of opinion that the significance of a song or performance is not solely based on the content, but on its importance as a tangible measurement of time. Seconds, minutes, hours. What do they really mean? Nothing is the answer. These are an imposed system of incremental and regular ticks and tocks that remain abstract to all who depend on them. And yes we depend on them, very much so. Our system depends on it, but time as we know means nothing. The events that correspond to the serendipitous synchronicity of the system invoke within us meaning and memory. How many of us sit in front of the television and think: “in one minute my favourite television programme is about to start…”, we all do is the answer. The minute itself is irrelevant, and once it has passed there will be no record of it ever existing, except as an abstract concept. In fact once that minute is up, our mind is on the next, no memory has been afforded to it. No proof that we were actually present to experience it. No existential satisfaction.

Music is a true measurement of time. It is comprised of a system of beats, a repetitive and predictable rhythm that has a beginning and an end. Not only has time passed during the performance of a song, but memory has been created. Even if a song is new to one’s ears, it doesn’t take long to tap one’s fingers to the beat, to anticipate the crescendo, to learn the words. Past, present and future are merged into a single expanse of “time”. Because memory has been created, a real and non-abstract recollection and realisation of time passed is afforded the listener. Self realisation and proof of existence is achieved. Time didn’t just pass as if it wasn’t there, it moves and pulls and pushes. For those few minutes, the listener has lived, and he/she has the memory of that time to prove it.

Thus, in design terms, music serves as a model inspiration. The internal and external space should speak of a journey for the user, one where time is made tangible and memory is given. The space should be regular and predictable, with crescendos effectively introduced and executed. A comfortable rhythm should be established, with a start and an end. Termination is important, since control is left in the hands of the user, and an end is always comfortably in sight. Spatially speaking, movement and circulation are key. The journey and associated memory through the building are as important as the destination. This is what gives architecture character, not the abundance of facilities but the possibility of experience and self realisation between them.

5.2. Baseline Criteria

5.2.1. Users and Participants

The Centre for Performance Arts is intended to cater for three aspects of potential user involvement:

- The public contingent who visits the centre as a paying audience and thus are treated to the performance as intended by its performers and planners.
- The casual public contingent that walks through its doors in hopes of exposure to the worlds of performance that the centre provides the means to explore, both passively and actively.
- The performers and those responsible for the various aspects of a performance. The centre must provide the means for those performers and aspiring performers to hone their skills, to excel in their desired art form and eventually share this gift with the greater community.

The Centre for the Performing Arts will thus seek to serve as a hive of cultural activity with appeal for the public during all hours of the day. By this it is meant that the interests of all cultures in this Country may be represented and have the opportunity to engage with the cultures of others. It is the aim of this project that the building envelope may merge these three degrees of public participation so that each may inform and contribute to the other, providing an enriching experience to all who may enter, beyond the expectations that one usually has upon entering a theatre space or traditional performance venue.

5.2.2. Pedestrian Influence

The Centre for Performing Arts has intended from an early stage to compliment the surrounding physical context to the best degree possible. Since there is no existing context in the form of buildings (yet to come) it is solely on the intended public use of the surrounding context that must inform such issues as the interface between the building and the street, the predominant facades, and issues of scale and orientation. The Ceremonial Way is intended to be the main route for public pedestrian and vehicular movement. This means that it may be expected that the main venues of interest will most likely be negotiated by foot due to close proximities. The intention for a large super-basement of parking for the area that will serve all institutions in Salvokop furthermore substantiates the argument for large pedestrian exposure.

It is important for this pedestrian relationship to the building edge to be exploited to its full potential. The layout of the public parking system on the eastern perimeter of the site effectively pushes a 30m barrier between the building and the main stream of pedestrian movement which is anticipated to occur along the road's edge. (The strip of land lying adjacent to the eastern border of the site is demarcated as public parking area, immediately accessible from the ceremonial way, and forms part of a larger strip intended to serve the freedom park heritage site. Within this generous strip there is space sufficient for approximately 78 car parking spaces.) Thus it is the proposal for the project to bring the main stream of public movement to the threshold of the building, using the public parking as a buffer between public vehicular movement and the pedestrians of the area. This means that essentially the stream of pedestrians would not need to be broken should parking spaces be sought from the road.

5.2.3. Diversity of Character

In order to promote the building as an innovative and unique element among the performance arts buildings already in existence in the Pretoria area, e.g. the State theatre, the building is in need of a variety if spaces that can accommodate themselves to the extremely diverse nature of the performance arts that this country has to offer, as already addressed this dissertation. It is therefore necessary that this building is representative of the diversity that characterises the city, the region, and even the country. In this way a designer may create an example of architecture which is not solely a "western" intervention, and one that portrays itself according to the already accepted international and European laws of theatre and concert design.

Spaces are intended to reflect the various natures of the performance arts and provide for them optimally. Performance arts are typified in three forms: Dance, Music and Drama. It is therefore imperative that these spaces are catered for, yet not treated in isolation. Spaces within the building should be able to adapt themselves to a variety of performances, within any of these three intended scopes.

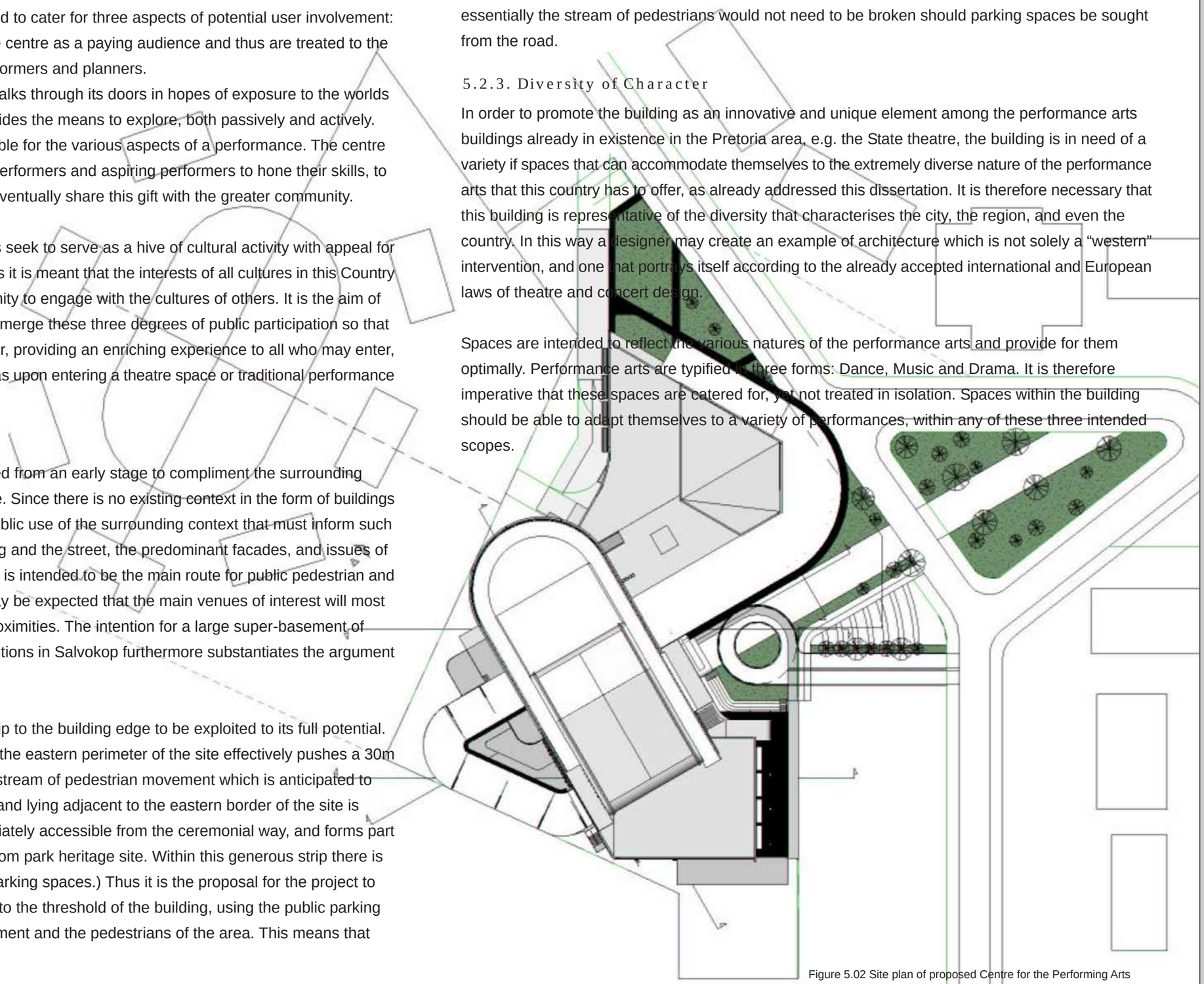


Figure 5.02 Site plan of proposed Centre for the Performing Arts

5.3. Accommodation Schedule

PERFORMANCE SPACES

Room	Facilities	Area	
PRIMARY PERFROMANCE SPACE Main performance space. To be used for concert, operatic and dance performances for an audience of 670 people	Stage Orchestra Pit Raked Seating (traditional layout) Gallery Separate performer access Control Room	0,5m^2/ person seated Stage: Total Area: Total Volume:	335m^2 200m^2 1024m^2 2400m^3

Room	Facilities	Area	
SECONDARY PERFORMANCE SPACE Secondary performance space. To be used for theatre, musicals and dance performances for an audience of 300 to 500 people. Expandable to almost twice its floor area.	Stage Open plan Seating Gallery Separate performer access Control Room Exhibition/Scenery Storage	Proscenium Stage Layout: Thrust Stage Layout: Open Stage Layout: Total footprint:	260m^2 260m^2 400m^2 400m^2

Room	Facilities	Area
EVENTS GALLERY Adaptable gallery space for intimate performances. Continental seating layout. Stage occupies full width of performance space. Capacity of 260 people	Raked seating (permanent) Stage (removable) Control Room Separate performer access	0,5m^2 per person seated 370m^2

Room	Facilities	Area
STUDIO THEATRE Flexible space that may be used as rehearsal space for performers or adapted to accommodate an audience for experimental performances.	Stage platforms Control room] Seating storage Separate performer access	215m^2

Room	Facilities	Area
OUTDOOR PERFORMANCE SPACE Outdoor stage area surrounded by fixed sloped seating. May be used in entirety or to smaller groups occupying a portion of the seating area.	Stage Seating Performer access Dressing rooms	450m^2

ANCILLARY SPACES

Room	Facilities	Area
CONTROL ROOM Point of control for performance related lighting and sound effects. Requires overlook of performance area without interference to audience.	Projection equipment Control panel Storage	20 - 25m^2

Room	Facilities	Area
DRESSING ROOM – PRINCIPAL ARTISTS 7 ROOMS Single room. Should be at stage level. At least one room per sex should have a piano or a performance practice room. Rooms should be planned to allow for visitors and dressers.	Cupboard space Make-up and grooming desk with mirror Full length mirror Bed Shower and WC Visitor area Rehearsal space with piano	13,6m^2

Room	Facilities	Area
DRESSING ROOM – MINOR PRINCIPALS / SOLOISTS MALE AND FEMALE 8 ROOMS OF 4 PEOPLE Rooms at stage level. Allocated according to the size of cast. Four cast members accommodated	Personal hanging cupboard space Closet and drawer for personal possessions Seating	17m^2

Room	Facilities	Area
DRESSING ROOM – CHORUS / BODY OF PERFORMANCE MALE AND FEMALE TWO ROOMS OF 16 PEOPLE Two large rooms per gender, each sub-divisible to create more intimate and secure dressing rooms for up to four people. Depends on size of performance.	Personal hanging cupboard space Closet and drawer for personal possessions Seating	42m^2

Room	Facilities	Area
DRESSING ROOM – CHILDREN MALE AND FEMALE 2 ROOMS OF 10 CHILDREN Must be separated from other performers with allowances for accompanying adults. A separate WC must be set aside for their exclusive use.	Personal hanging cupboard space Closet and drawer for personal possessions Seating Showers and WC	42m^2

Room	Facilities	Area
LOBBY Eliminates infiltration to and from stage from dressing room areas. Acts as Sound lock.	Sound proofing Dual threshold (two sets of acoustically insulative doors) Security checkpoint	Each Lobby: 15m^2

Room	Facilities	Area
MAKE UP Room for four performers at a time, with space for circulation around each during preparation.	Four swivel chairs – barber style Basins Multiple electrical outlets.	12m^2

Room	Facilities	Area
GREEN ROOM Common room, restroom and canteen for performers prior to performance. Situated near to dressing rooms.	Couches and lounge area Coffee dispenser Basin Kitchenette Television	15m^2

Room	Facilities	Area
INSTRUMENT STORE Space for larger instruments and scenery that can not be carried by performers to be stored near to orchestra pit or stage platform	Broad shelves Secure lockers Freight lift	100m^2

Room	Facilities	Area
ORCHESTRA ASSEMBLY AREA WITH LOBBY Space for additional storage of instruments, final point of orchestra assembly and preparation before entering the stage area. Requires benches and broad shelves for large musical instruments.	Broad shelves Benches	208m^2

Room	Facilities	Area
OFFICE OF STAGE-DOOR KEEPER Point of access control as first point of contact to ancillary space core from outside. Registration desk and associated office.	Desk Computer Registration counter	15m^2

REHEARSAL SPACES

Room	Facilities	Area
REHEARSAL SPACE – PRIMARY PERFORMANCE SPACE Proportioned to the same dimensions as the concert hall stage, positioned next to dressing rooms. May be used as additional dressing room space.	Chair storage Prop storage Performance platform Mirror wall Sound system	146m^2

Table 5.1 Accommodation Schedule

Room	Facilities	Area
REHEARSAL SPACE – SECONDARY PERFORMANCE SPACE Adjacent to studio theatre, within easy access. Proportioned to cater to needs of up to 15 performers.	Chair storage Prop storage Performance platform Mirror wall Sound system	60m²

Room	Facilities	Area
REHEARSAL SPACE – SOLOIST AND GROUP PERFORMERS Space for a large piano and additional performance members.	Chair storage Prop storage Performance platform Mirror wall Sound system	25 - 81m²

Room	Facilities	Area	
DANCE REHEARSAL AND STUDIOS Height of 4,5m. sprung floor and mirrors of 2,4m in height with practice barre. Open to natural lighting with option of light proof blinds.	Chair storage Prop storage Mirror wall and practice barre Sound system Locker room WC's and showers	Dance Studio 01 Dance Studio 02::	125m² 157m²

OFFICES

Room	Facilities	Area
BOARD ROOM Meeting room with appropriate sound insulation to accommodate important meetings of the steering committee as well as administrative meetings of a large number of people.	Central table, large Seating up to 10 people Audio visual equipment storage Deployable screen Shelving	52m²

Room	Facilities	Area
ADMINISTRATIVE DIRECTOR Standard office of generous proportions used for administrative work and for accommodating meetings with two to three people	Working desk Computer Seating for four Cabinet space	22m²

Room	Facilities	Area
ADMISTRATORS Standard office of generous proportions used for administrative work and for accommodating meetings with two to three people	Working desk Computer Seating for one Cabinet space	15 (single) to 25m² (shared)

PUBLIC SPACES

Room	Facilities	Area
FOYER SPACES Concert Hall – upper level Concert Hall – mezzanine Concert Hall – lower level Drama Theatre – upper level Drama Theatre – lower level Studio Theatre Events Gallery	Seating area Exhibition space Variable lighting Access control	2m² per person occupying 600 to 1200m²

Room	Facilities	Area
MULTIMEDIA ARCHIVE Chronological display of musical instruments. Information nodes and terminals for passive learning. Electronic database resource for active data retrieval. Space for sharing and exploration of culture and ideas.	Musical instrument display Information terminals Televisions Projection screens Discussion space Seating	500m²

Room	Facilities	Area	
PROJECTION SPACE Space for learning and exposure to culture though means of video, video conferencing and images. Space may be furthermore linked to outdoor public performance space to facilitate real-time performance collaborations though video link to various parts of the world.	Large display (front projection) Seating Blinds (exclusion of natural light) Access control Sound system Control room	Seating: Performance/Presentation: Total:	40m² 200m² 240m²

Room	Facilities	Area	
COFFEE BAR Comfortable seating and refreshments to provide a rest area for public to utilise when partaking in the facilities of the building.	Kitchenette Goods storage Bar Tables and chairs Balcony	Kitchenette: General Seating: Total:	25m² 580m2 605m²

5.4. Spatial Framework and Functional Relationships

Since the heart of the development is to provide the means for performers and audiences to interact and share spaces without inhibition and difficulty, the design of these spaces has been detailed before the building can take shape in total. In essence this is the nature of the progression of this design.

The main performing spaces are considered before all else in order to ensure that once finalised, the building succeeds on its most basic level, to provide a good show for audiences and optimum facilities for performers. The five main performing spaces that will be contained within the building may be described as: Principal Performance Space (concerts, orchestra, dance), Secondary performance space (drama, dance, cabaret), Events Gallery, Studio Theatre, Projection Room (Media Room), and Outdoor Performance Space. These spaces shall now be discussed.

5.4.1 The Principal Performance Space

Intentions: To be the main focus of the building for paying audiences of approximately 500 to 700 people. Thus this multi-purpose space will contain the greatest capacity for audiences, but should also be flexible to cater for performances that do not require extensive seating capacities. Due to significant differences in acoustical and visual requirements the forms of performance that will be accommodated within this space will be typically:

- Concert and other musical performances by bands, choirs and orchestras;
- Dance performances in the form of cultural performances, ballet and modern dance. These dances shall be in the position to receive musical accompaniment in the form of bands and orchestras.
- Opera

Requirements:

- Centrally positioned stage with sufficient floor area for up to 40 members of an orchestra of musical band (1,1m^2 per person minimum)
- Orchestral pit integrated into stage design, potential access to sub-stage storage
- Multiple level accesses for public from centralised foyer areas
- Separate access and exit for performers from dressing and rehearsal rooms
- Dedicated scenery storage with easy access
- Chair storage for loosely packed chair arrangement for certain performances.
- Interior volume of approximately 4m^3 per person as specified for optimal acoustical performance.
- Maximum distance to furthest seat: 30m, in order to retain visual relationship to stage and reduce sound attenuation over distance.

Design Decisions: Already stated was the intention to include a flexible seating layout to compensate for varying capacity requirements. Previous concert hall and theatre designs have exploited the idea of a movable ceiling that is capable of dropping down over the upper gallery seating thus improving the psychological effect for performers on stage by not confronting them with a half empty auditorium,

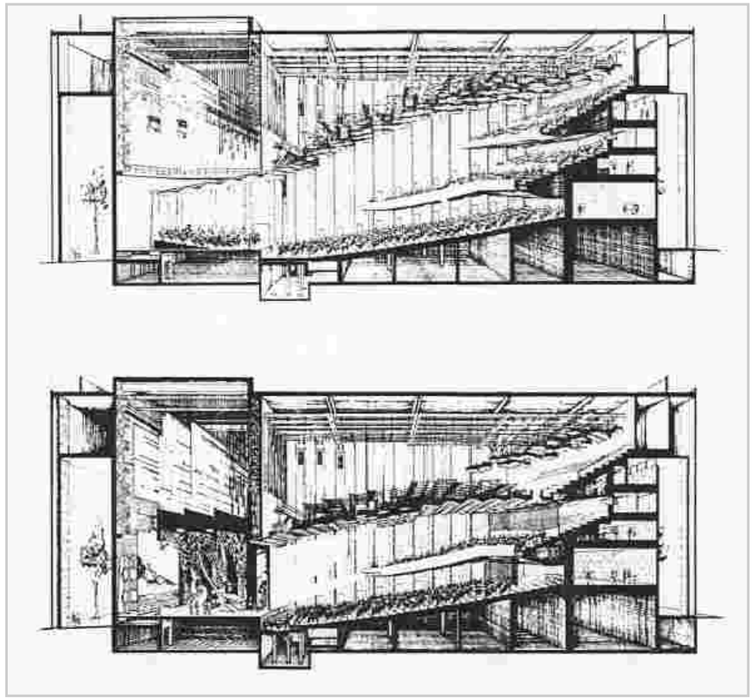


Figure 5.03 Section through auditorium of the Jesse H. James Hall in Texas. Inspiration drawn from descending ceiling for internal subdivision of space

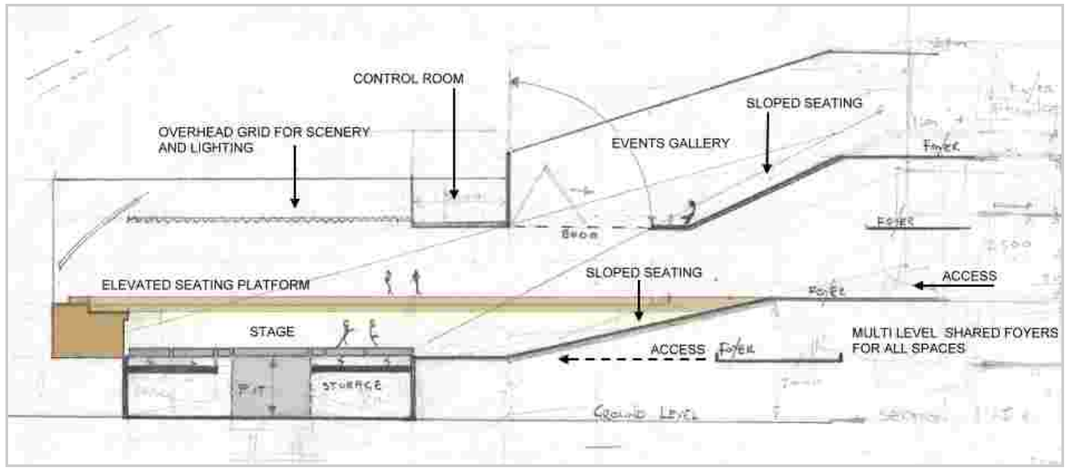


Figure 5.04 Concept sketch of intended layout for Principal Performance Space, illustration of central nature of stage and encirclement by various levels of audience seating

as well as altering the acoustical performance of the space. It is this design innovation that inspires a design which may be able to separate an elevated seating area from a main performing space. It stands to reason that it is unfortunate that the seating of the gallery be lost to public use through repositioning of the ceiling, thus it is the aim of this design to retain this space as a separate performing space when not in use by the concert hall as an extension of seating capacity (Events Gallery).

Most performing spaces in use around the world can be described as having a confrontational layout, i.e. a stage opposing an audience. This creates a definitive division and intangible barrier between audience and performers. Many designers have sought to blur this division by pushing the stage into the audience and by surrounding it on all/some sides with seating. The layout of the concert hall will reflect this principle by surrounding the stage with seating so that the audience may be engaged at all extents of the interior. What this achieves is a performance that may be experienced differently by each member of the audience depending on their seating position within the concert hall. Fixed seating behind negates the potential for a backdrop which requires a fixed point of perspective on the part of the audience. The stage itself is required to contain some form of flexible arrangement to accommodate the various forms of performers that could occur. Thus it is the concept of this design to construct the stage of vertically displaceable platforms that may be fixed at three preset heights: Floor level, Stage level, and Twice stage height. What this means is that the stage itself can be positioned to increase floor area by setting at floor level and thus accommodate for loosely packed chairs in place of the forestage, or elevate itself in certain areas to give prominent position to certain performers, e.g. the choir. A circular stage (of collective platforms) takes its origins from the African traditional layout of performance and dance spaces as a central feature with participants and observers situated around on all sides. The circular layout also does not give any particular importance to any direction of view, but instead engages each equally.

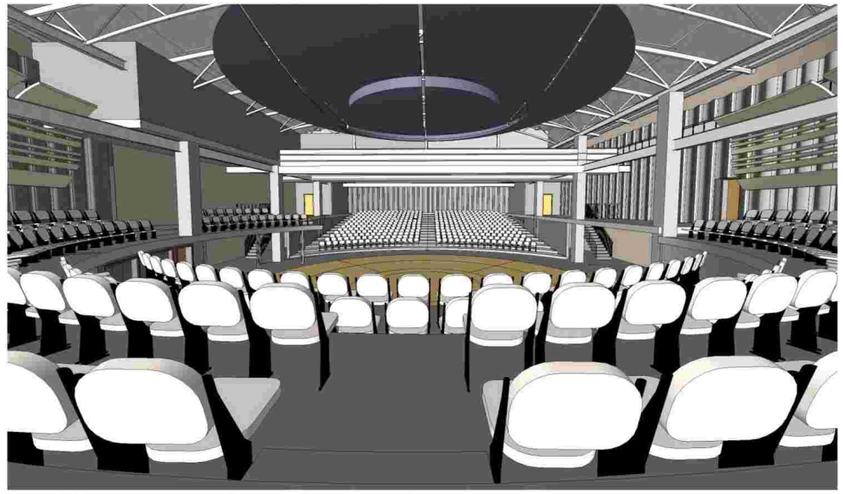


Figure 5.05 Internal layout of Principal Performance Space

Multiform Stage

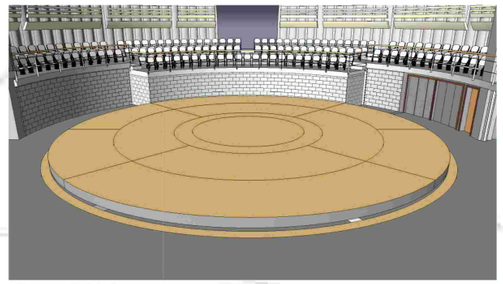


Figure 5.06 Stage components positioned inuniform level

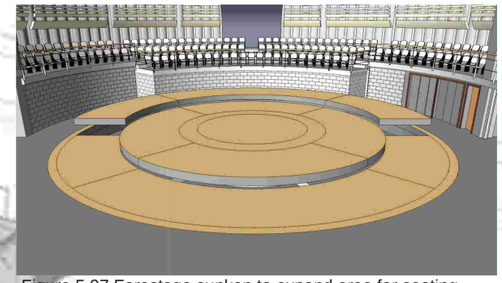


Figure 5.07 Forestage sunken to expand area for seating. Elevated at rear to accommodate performers, eg. choir

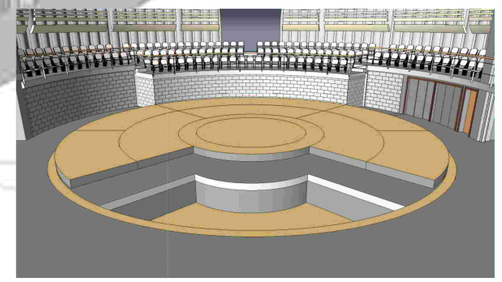


Figure 5.08 Orchestra pit sunken, stage arranged to engage audience

Figure 5.9

5.4.2. The Secondary Performance Space

Intentions: The direction of approach if this more intimate space is intended to host such performances that include drama and other speech related performances. While music and dance are to be accommodated for, orchestral influence will be limited and reserved for the Principal Performance Space. The Secondary Performance Space will be designed as a multi-form space that accommodates for a variety of theatre performances, according to the needs of the performers. The space will be designed to incorporate a false proscenium for performances requiring fixed scenery and backdrops, an adjustable forestage to create a thrust stage layout where importance of backdrops and scenery is reduced, and a central stage layout that may be surrounded on all sides by audience seating. The interior areas shall be sub divisible in order to create a variety of functions that can occur simultaneously.

Requirements:

- Modifiable stage with sufficient floor area for up to 20 members of a drama cast or ensemble
- Multiple level accesses for public from centralised foyer areas – base level and gallery
- Separate access and exit for performers from dressing and rehearsal rooms
- Dedicated scenery storage with easy access
- 'Stage House' structure/grid above stage in order to drop and raise scenery from stage during performances
- Seating capacity for 300 to 500 people
- Chair storage for loosely packed chair arrangement for certain performances
- Maximum distance to furthest seat: 20m, in order to ensure that audiences can observe facial expressions of actors, as well as prevent sound attenuation over distance

Design Decisions: a hexagonal form was chosen in order to exploit the convergent nature of perimeter based seating, all focussed towards the centre of its geometry. By placing a stage of variable dimensions in the centre, the hexagonal geometry may be partitioned at its centre line, providing adequate backdrop and stage area for proscenium and thrust stage performances. The space created to the rear may thus be retained as a makeshift storage area to supplement performances, or an exhibition space for local artisans. Seating in this area shall be of 'bleacher' construction so that it extends out of the wall when in use for performances, or folds up to become part of it when floor area is needed. Performer access to the stage must be unobstructed at all times and shall be obtained directly from dressing rooms, removed from public circulation. Scenery storage will be provided directly adjacent to the performance space with option to store and utilise scenery and props during performance via a suspended space frame grid above the stage area.

Proscenium Layout - Space divided into two usable public areas. Confrontational layout between performer and audience. This stage configuration gives preference to calculated audience views and interactions of performers and backdrop

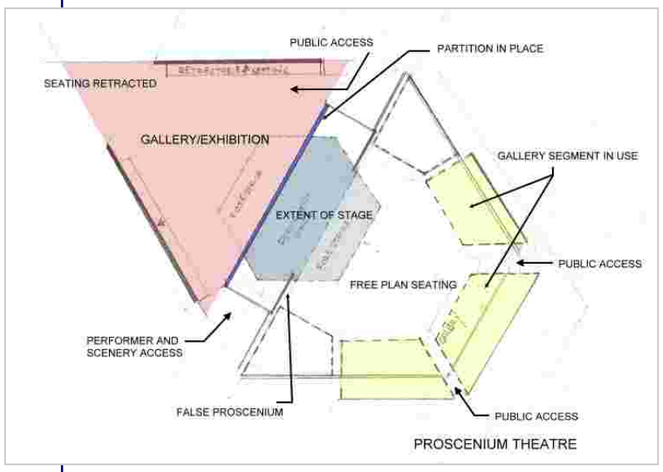


Figure 5.10

Thrust Stage Layout - Space divided into two usable public areas. 180 degree encirclement by audience. Backdrop not integrally important to performance

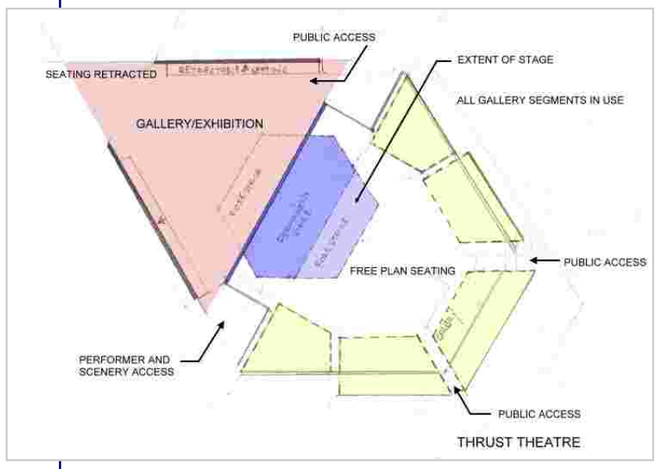


Figure 5.11

Open / Arena Stage Layout - 360 degree encirclement of stage results in a dynamic performace where preference is not given to any point of view

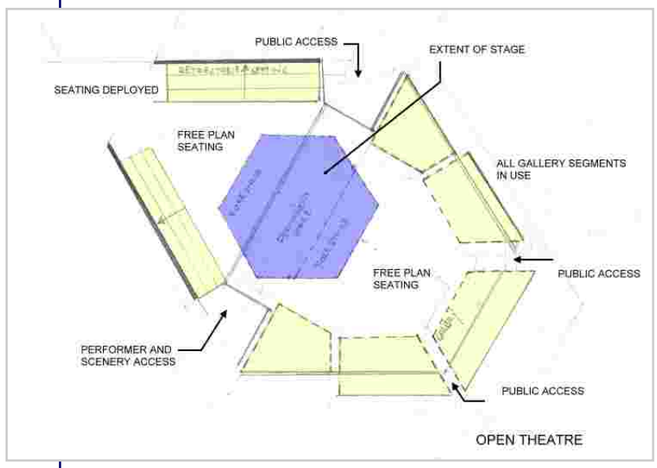


Figure 5.12

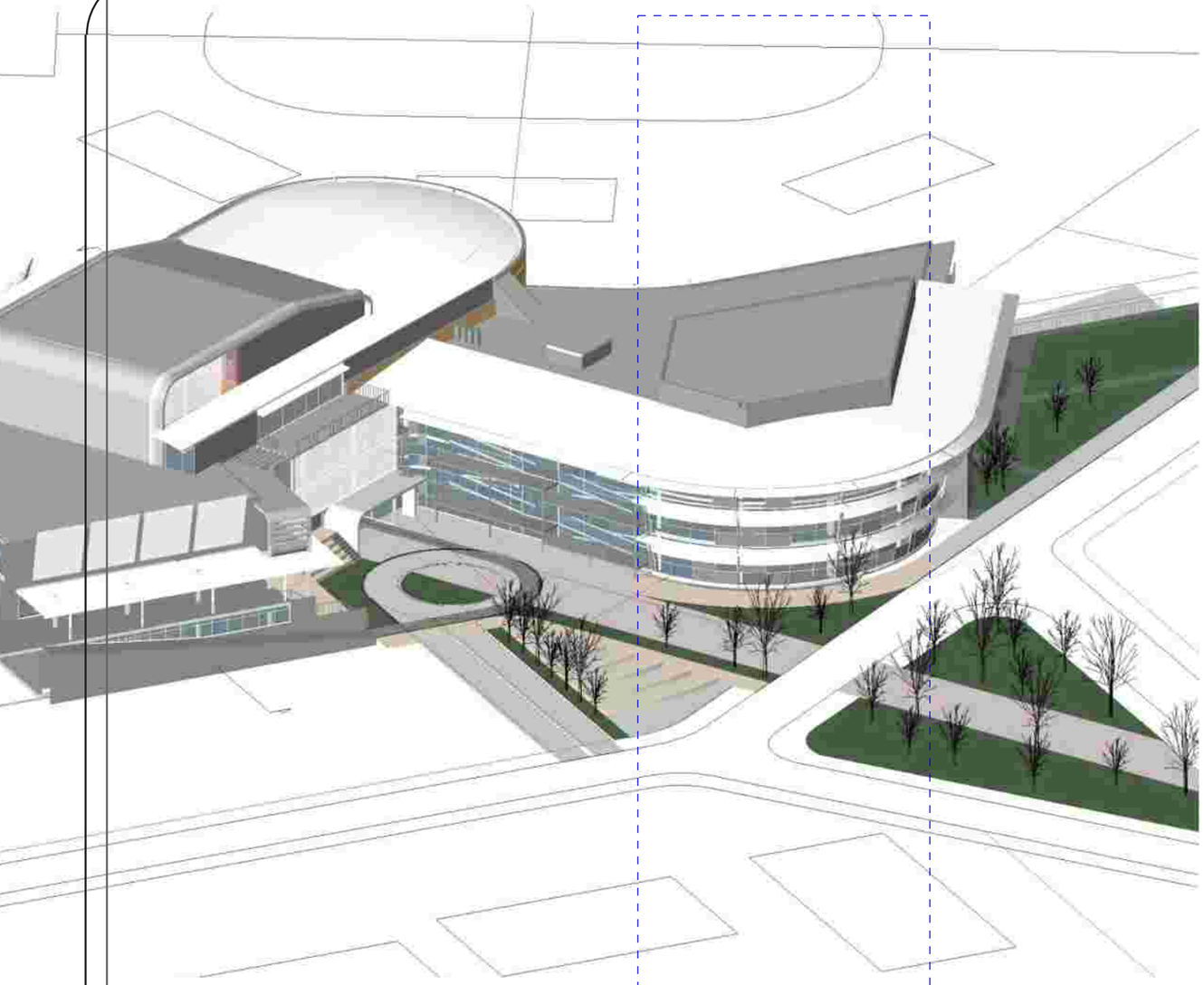


Figure 5.13

Seating on the base level for audiences will be defined by configurations of loosely packed chairs in order to exploit fully the variety of vantage points that the stage has to offer for audiences. Chairs shall be comfortable and interlocking, and may be positioned directly in front of the stage or surrounding it on all sides. Fixed seating will be positioned in the gallery level which will overlook the stage from an elevated position. The gallery shall be broken into segments, and of various heights above stage level. The gallery will provide 180 degree encirclement around the stage, occupation of each 'segment' will depend on the nature of the performance and appropriate sightlines.

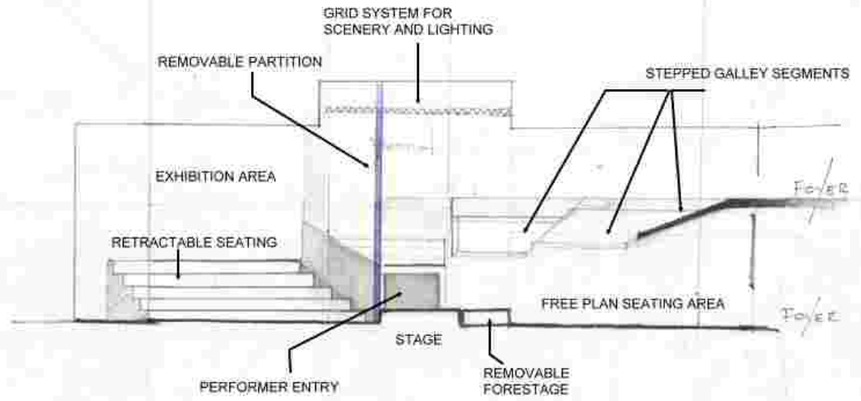


Figure 5.14 Sketch section of Secondary Performance Space

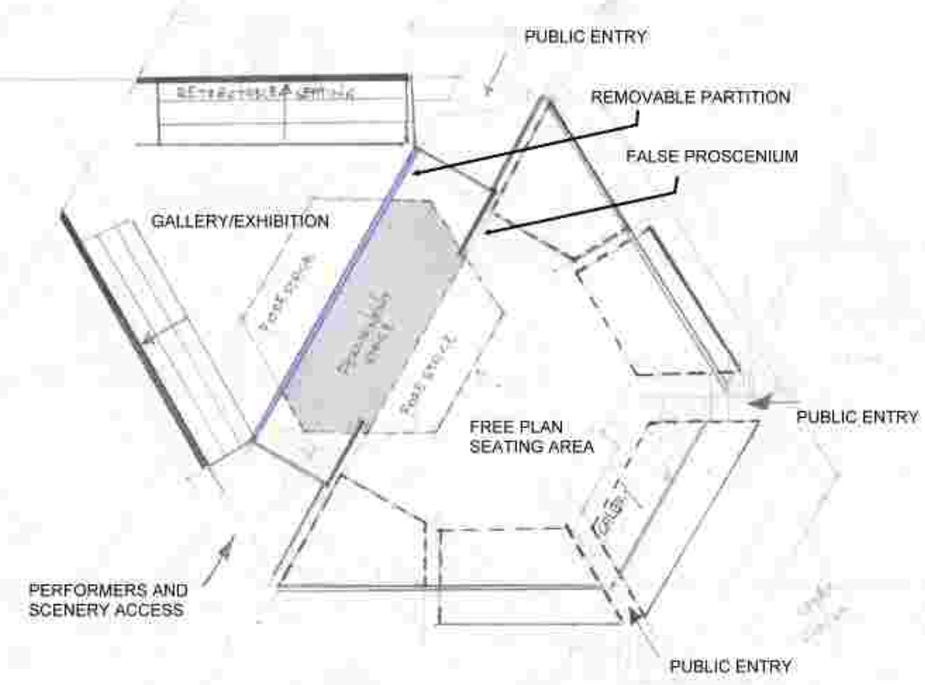


Figure 5.15 Sketch plan of Secondary Performance Space

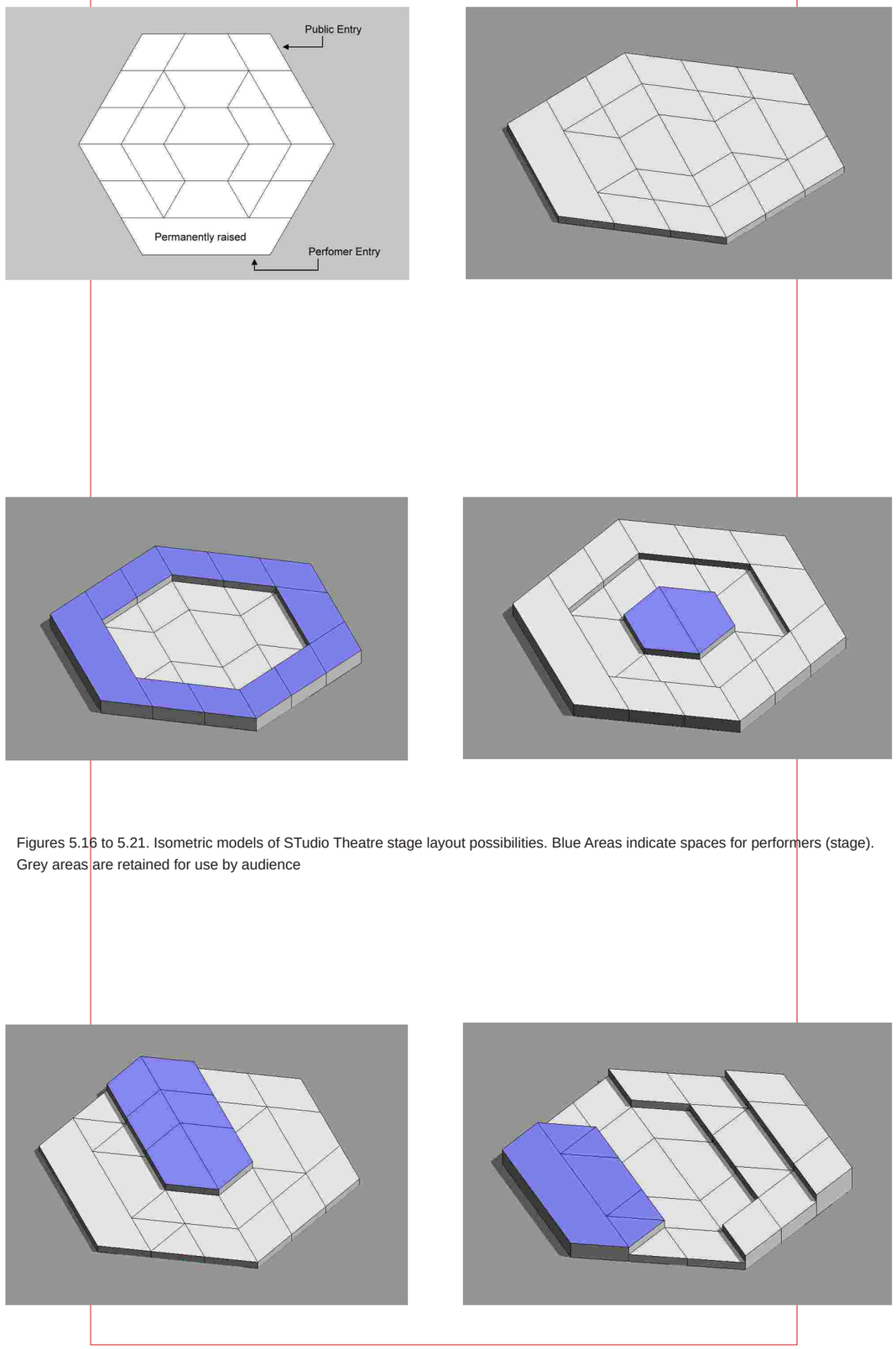
5.4.3. The Studio Theatre

Intentions: The studio theatre performance space is intended to have a dual role. The space will serve performers as well as artists under instruction as a rehearsal and learning space. Secondly it will be a space that can be converted to accommodate a small audience for intimate and experimental performances. The space will serve performers of music, dance and theatre. In order to cater for a variety of performances, the internal space must be completely flexible and allow for a variety of stage configurations.

Requirements:

- Flexible floor area, movable stage
- Single level access for public from centralised foyer area Separate access and exit for performers from dressing and rehearsal rooms
- Relationship to alternate rehearsal spaces
- Separate entry for audience and performers.
- Seating capacity for approximately 100 people
- Chair storage for loosely packed chair arrangement for certain performances
- Movable or modifiable stage
- Maximum distance to furthest seat: 20m, in order to ensure that audiences can observe facial expressions of actors, as well as prevent sound attenuation over distance

Design Decisions: inspired by design decisions taken in the Secondary Performance Space, a hexagonal form is again considered due to its symmetrical and easily divisible internal layout. By subdividing the internal floor area into regular and repetitive rhomboid and triangle geometries, the entire floor area therefore effectively becomes a potential stage. These divided geometries are then given the property of vertical displacement as in the case of the concert hall stage. Thus by raising certain platforms and lowering others a variety of configurations can be achieved. For example, a central hexagon may be raised as a stage to be surrounded by loosely packed seating, or the stage may be left to one of the sides while the seating is positioned opposite, all in equal orientation to the other. Scenery and props will be afforded access to create potential for exciting performances within. Lighting shall be distributed into groups of fixtures suspended above the entire floor area which may then be activated according to the appropriate stage configuration so as to cause no discomfort to the audience.



Figures 5.16 to 5.21. Isometric models of STudio Theatre stage layout possibilities. Blue Areas indicate spaces for performers (stage). Grey areas are retained for use by audience

5.4.4. The Events Gallery

Intentions: This space will have two functions: to provide gallery seating to paying audiences for performances within the main concert hall when a large audience capacity is required, and to act as a separate performing space by closing itself off from the main concert hall.

Requirements

- A recessed stage that separates the gallery space from the concert hall
- All sightlines from gallery area to concert hall stage below must be retained without obstruction
- Single-level access for public from centralised foyer areas
- Separate access and exit for performers from dressing and rehearsal rooms
- Interior volume of approximately $3m^2$ per person as specified for optimal acoustical performance.
- Maximum distance to furthest seat: 20m (from recessed stage), in order to ensure that audiences can observe facial expressions of actors, as well as prevent sound attenuation over distance
- When in use separately, noise from conjoined spaces must not interfere with the other during performances

Design Decisions: due to the elevated nature of this performance space – effectively above the Principal Performance Space – the main foyer space will be placed in conjunction with a centralised vertical circulation system consisting of lifts, escalators and stairs. Seating will be fixed and positioned according to a regular slope, ensuring that sightlines are optimum for which ever purpose the space is deemed to be used for. Space behind the stage/void area must be allocated for performers' access at stage level.

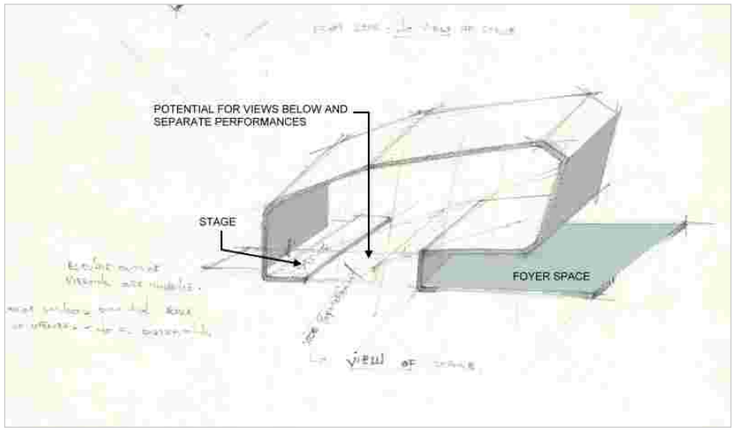


Figure 5.22 Oblique sketch of form for Events Gallery

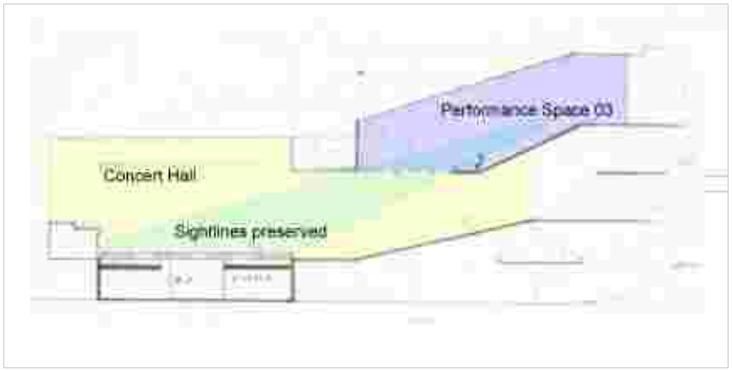


Figure 5.23 Section through Primary Performance SPace. Illustrates sightlines and spatial division of spaces. Means for separating spaces is intended to occur through a removable stage that rises to form ceiling reflector.

events gallery

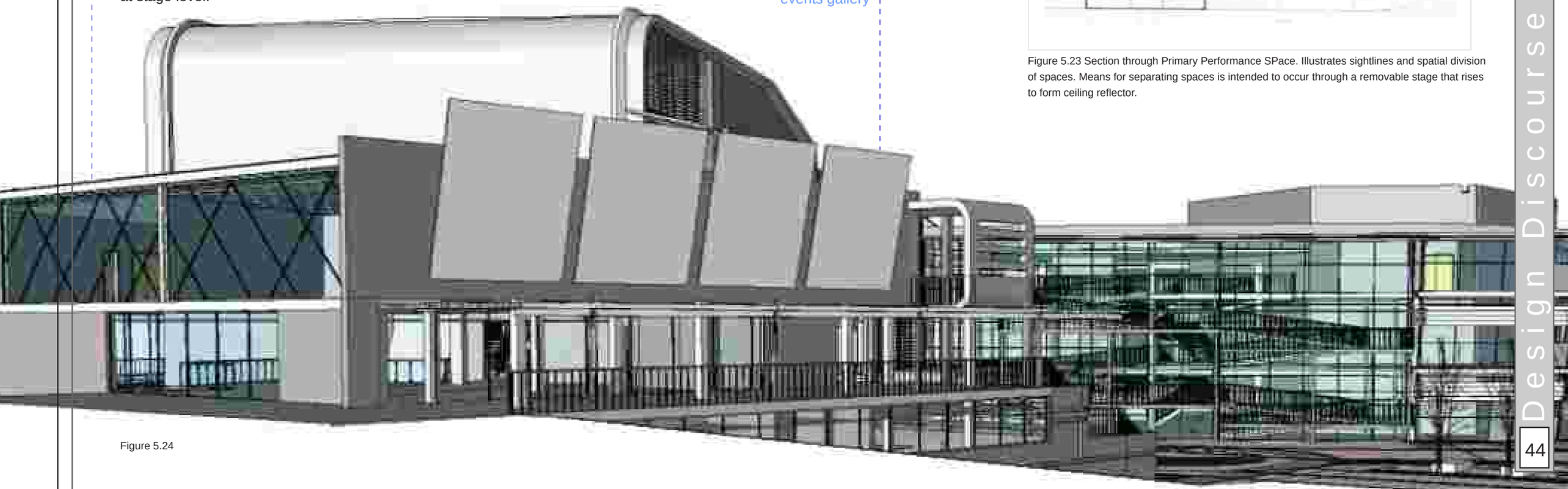


Figure 5.24

5.4.4. Dressing Rooms and Rehearsal Spaces:

Intentions: Performers should be afforded the utmost convenience in order to rehearse and prepare for performances. Therefore a direct relationship between these mentioned spaces and the stage is needed. Since the main spaces of the Concert hall, drama theatre and studio theatre all require the same level of facilities, it stands to reason that a ancillary spaces core be established that serve these areas effectively. The advantage of this shared core is that it may thus be designed to be separate from the routes of main public circulation, have a direct relationship to storage and the service deliveries for performances, and ultimately minimise the footprint of the ancillary spaces to leave more area for public utilisation. Thus all spaces may be served with minimal disruption caused by negation of extensive distances.

Requirements:

- Separate performer access and circulation independent of public circulation areas.
- Dressing rooms need to accommodate all performers in cases of simultaneous performances by various spaces
- Rehearsal spaces need to acoustically isolated from the main performance spaces but within proximity
- Rehearsal spaces must be able to be used as studio space for artists in everyday occasion.
- Dressing rooms need to accommodate space for group changing with locker space (8 rooms for 10 people each), as well as personalised dressing rooms for soloists and celebrity performers (6 in total) – see accommodation schedule for respective floor areas.
- Generous wardrobe space and tailor space as first point of contact for performers.
- Make up and green room as threshold for each main performance space
- Freight lift of generous proportions to transport scenery and materials from assemblage and storage on basement level to temporary storage for each performance space.
- Temporary storage should be highly accessible during performances with room to manoeuvre.
- Two lifts for 12 people to accommodate performer circulation between levels. To be supplemented with staircase.
- Stages should be directly accessible without interference to dressing and rehearsal room.
- Toilets, showers and restrooms must be positioned to coincide with overall layout of services in building to minimise drainage distances.

Design Decisions: Since the performance spaces have been treated in isolation up until this point, this ancillary-spaces core will take shape as the connective tissue that binds these events spaces into a coherent structure. Thus the suitability of this core to serve all spaces within the given site area requires a close interaction between all elements while maintaining a clear separation of the public and private spaces. These ancillary spaces will be multi-level, served by a central vertical circulation system comprised of two personnel lifts, a staircase and fire escape, and a freight lift to transport scenery and props from the basement level delivery area and scenery storage to stage level. The

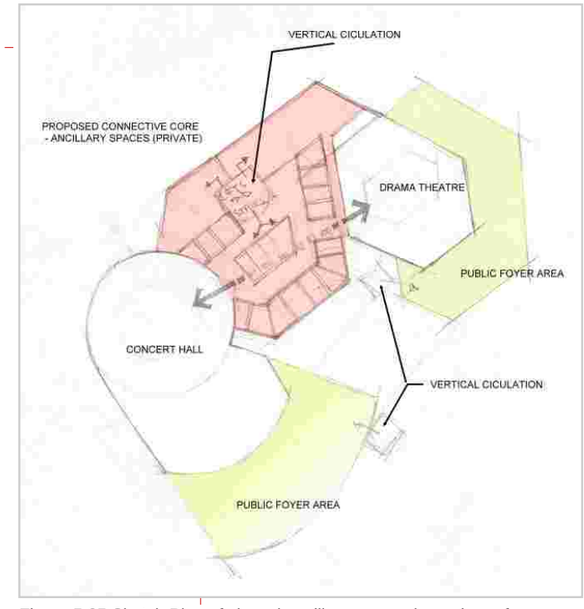


Figure 5.25 Sketch Plan of shared ancillary spaces by main performance spaces. Illustrates spearation of public and private areas.

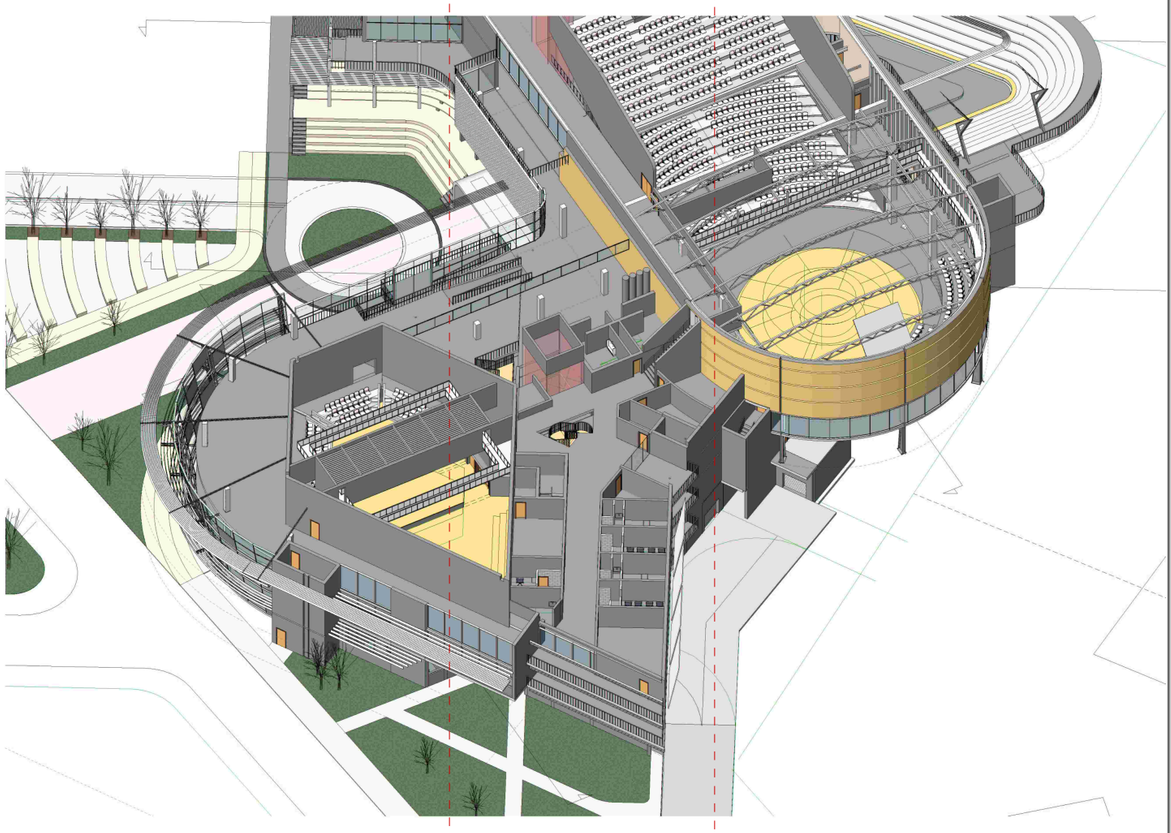


Figure 5.26 Isometric view of layout of ancillary spaces as common space between the principal performance spaces.

5.5. Overall Layout and Arrangement of Spaces

Intentions: The strategy for the overall development is for public, audiences and performers alike to utilise and experience the Centre at all times of the day, whether or not performances are in process. The simultaneous use of space will ensure a strong sense of vitality is maintained throughout the day, keeping the centre alive and full of possibility, therefore positively affecting the surrounding context of Salvokop. Due to the fact that the main internal performance spaces were treated separately in the initial design stage, the building is to be designed with the intention of linking these main elements with a connective tissue characterised by ancillary spaces and circulation systems for the public. The intention is that the building therefore achieves its character through the predominant inclusion of movement in its aesthetic. The main performance spaces will emerge from within this connective tissue in order to make the nature of the building apparent from the exterior, creating a rhythmic system of nodes within the building layout between which the users accommodate themselves.

Requirements and Baseline Criteria:

- Building must supply the means for goods and materials to be delivered directly to material storage via loading bay for re-distribution within the building
- Loading bay must accommodate for goods trucks and be large enough to facilitate turning of these vehicles
- Staff access must be separate from public access and provide means for staff and authorised performers to safely park
- Staff and performer parking must have direct access into ancillary spaces of building
- Main public entry must be within acceptable walking distances – no more than 40 meters - from public parking and have direct visual relationship to adjacent public open space
- Main public access must be prominent and easily accessible
- Access from parking should be on one continuous level and easily traversable by persons with disabilities
- Main public access to building must incorporate an undercover drop-off point (porte cochere) with adequate turning circle for cars
- Access within the site must accommodate emergency vehicles so that medical and safety emergencies within the building may be addressed swiftly and safely without obstruction and difficulty.
- People with disabilities, particularly wheelchairs should be able to access any point in the building without having to negotiate any steps
- Access to and from foyers should be clear and easily appreciated without major dependence on signposting

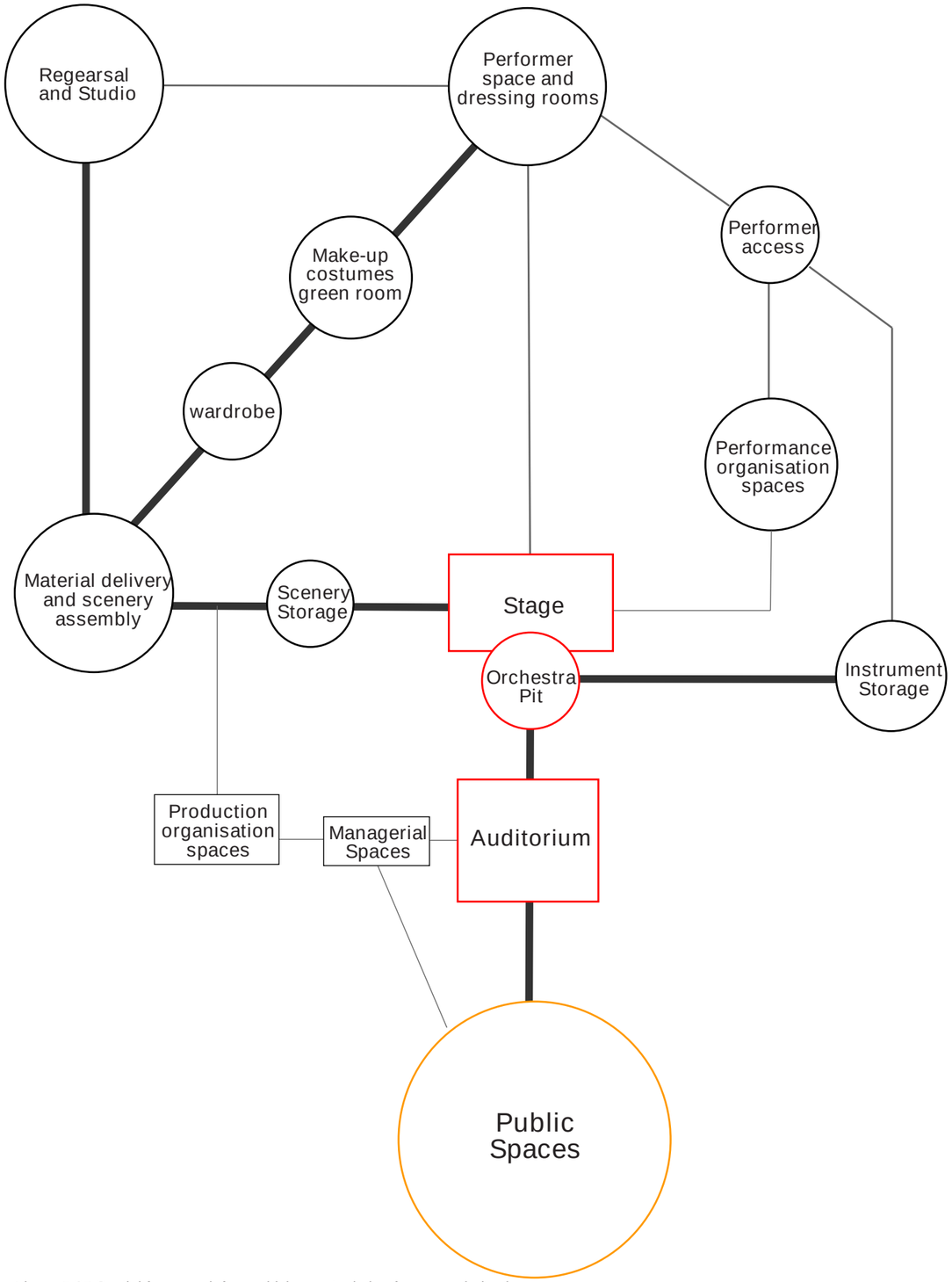


Figure 5.27 Spatial framework from which eventual plan form was derived

Design Decisions:

The strategy for the overall design is one of spatial and functional relationships, thus ultimately determining building form. It becomes clear at an early stage that the optimum locations within the site for service access and main public access are from the north and eastern perimeters respectively. The most significant reason for these choices is that these site edges are the only edges of the site that are bordered by a vehicular roadway – Ceremonial Way. It is important that service access is kept separate from public circulation and access in order not to create disruption and detract from the public experience. Service access from the north is most suitable since this is the lowest point within site extents and therefore reduces sloping distance required for vehicles to reach basement level for delivery and parking purposes. This service access will run parallel to the western border of the site. This access will include a manoeuvring area and loading zone with dimensions equivalent to recommended turning circles of 11,4m radius for goods vehicles. The western edge and façade is the least significant of all building facades since views of the building are restricted due to the neighbouring NZASM housing heritage site. The NZASM heritage site is designed to be introspective with central focus remaining the central circulation space and water feature – the point of intersection of the perpendicular NZASM axes.

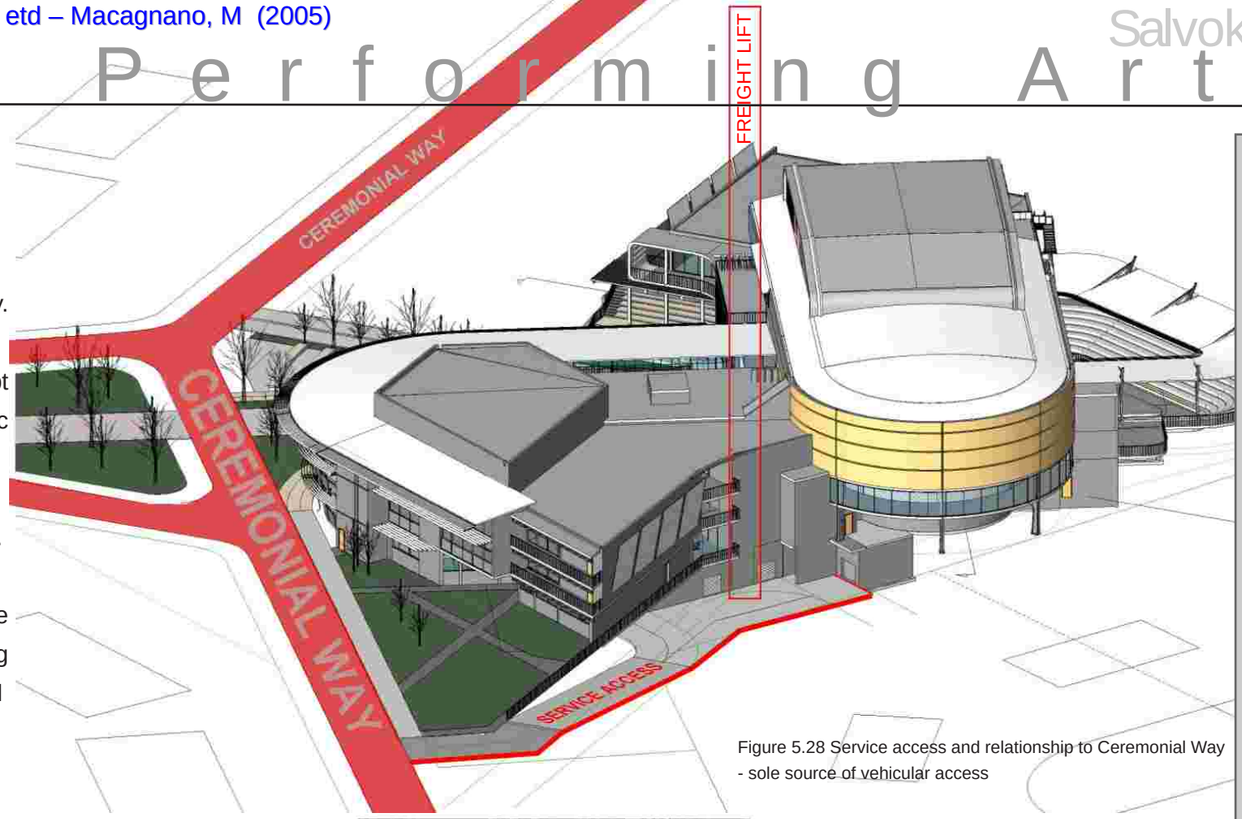


Figure 5.28 Service access and relationship to Ceremonial Way - sole source of vehicular access

First impression of the building should convey effectively the extents to which the public may participate. In this sense, the public may anticipate the extents and nature of the development. Thus a largely transparent façade to the east would reveal the main performance spaces on the interior as they emerge out and above the canopy of the 'connective tissue' that defines the public activity and circulation spaces. Dance studios and a public coffee bar facility will define a portion of the eastern façade, its edge running parallel to the ceremonial way up to Freedom Park. Thus at all times of the day and night, this section may serve as a beacon of activity with rehearsals and free expressions of movement defining the prominent corner that interacts directly with the approach to and from Freedom Park, as well as a scene of relaxation.

Figure 5.29 View towards main entrance from public open space

Reason for a multilevel building edge on the eastern façade is one of proportion and scale. Due to the fact that the Ceremonial Way, on its stretch southwards towards Freedom Park, is widened to over 30 meters to incorporate pedestrian movement and public parking. The scale of this open space may detract from the impact of building as a visual icon for the area. Thus an increased elevation height on this façade would transgress the buffer created by public parking on the building's eastern border and make it possible for the contents and activity of the building to become more apparent to passers-by and regulars in the area. Asserting the Building over the parking buffer is also supplemented by means of accommodating major pedestrian movement up and towards Freedom Park directly on the eastern edge of building footprint.

Emergency vehicle access and under-cover drop-off point shall be integrated as vehicular access from the eastern border which will be taken though the public parking strip on the east. This access will culminate in a turning circle of 9,5m radius whereby vehicles shall exit where they entered. This turning

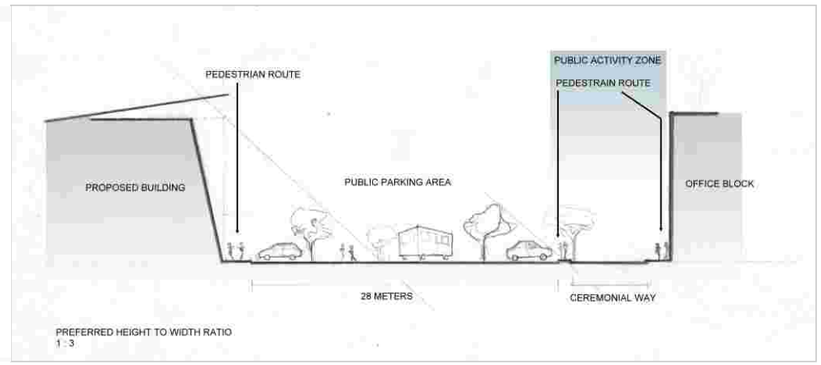


Figure 5.30 Section of height to wodth ratio of the Ceremonial Way and buildings positioned along it

circle is required to be of adequate dimension to support emergency vehicle turning circles. Access for vehicles within the site is required to be of a minimum distance of 15 meters from the intersection mentioned previously in order to minimise possible congestion of traffic.

This open space shall pronounce the main public access to the building and will also serve as a point of public congregation and outdoor interaction. This space shall also be visually linked to the public open space that serves the blue train station and the major ceremonial way intersection whereby final approach to Freedom Park is begun. Due to the intention to involve this outdoor space in performance events and public recreational activities, the Centre integrates curvilinear public seating into its structure. This eating, with stairs included, extends all the way to first floor level. In effect, this opens up and links the public activities of the Centre on first floor, to those on ground level.

In order to accommodate adequate scenery and material storage for the various performance spaces it is evident that a vertical separation of the main performance spaces is necessary. Thus multiple storage areas shall be positioned above each other linked by freight elevator originating from basement level. Each of these spaces shall directly feed the stage areas of the main performance spaces. This negates the need for internal lift systems within the performance spaces themselves to reach storage areas during performances. This vertical displacement of performing spaces shall be reflected in the ancillary spaces, such as dressing rooms and rehearsal spaces, which are planned over two levels and served by a central lift and staircase core. This multi-level ancillary space core will bridge the distance between the Principal and Secondary Performance Spaces, serving both equally. By elevating these two main performing spaces to first level, the ground floor is freed for public use, and ancillary spaces are thus taken directly out of the scope of public movement. Space below the Principal Performance Space will be left for public use and rehearsal, and designed to exploit the multi level nature of it's the Principal Performance Space's required foyer spaces. Thus a range of double and triple volumes shall be created, each level connected spatially by the revealed slope of the raked seating structure of the concert hall which gradually rises to extend over all foyer and mezzanine levels. Space underneath the Secondary Performance Space will be used to define the Studio Theatre space. The hexagonal shape will thus complement the Secondary Performance Space above, its walls therefore performing a load-bearing role. Thus foyer space for the Studio Theatre, Secondary Performance Space and its gallery shall be positioned one above the other and linked by a common staircase and lift system.

The Outdoor Performance Space is intended to serve as an extension of internal space. Public space on the interior shall be linked to the outside by linear and continuous seating positioned to encircle the outdoor stage. From the inside the outdoor performing space may therefore reveal itself. Position of Outdoor Performing Space is chosen to be the on the Southern Edge of the building. The stage itself shall be a product of the building form, its shape determined by the building edge. The building itself shall extend over the stage in order to provide cover for performers in situations of inclement weather. The seating shall be cut into the ground as a means to negotiate the slope towards the public green space on the south. In essence the Public Green Space on the south border effectively becomes an extension of audience space as downwards slope of the ground would allow for scores of people to be seated behind the formal seating as provided by the Centre for Performing Arts. Sound propagated from this point will also have little effect on nearby buildings and residences as it is required to travel extensive distances over the soft landscape of the Public Green Space. Noise from the adjacent Ceremonial Way and related traffic, which would be detrimental to performances, would therefore also be minimised since the outdoor performing space is effectively shielded from the road by the building for which envelopes it.

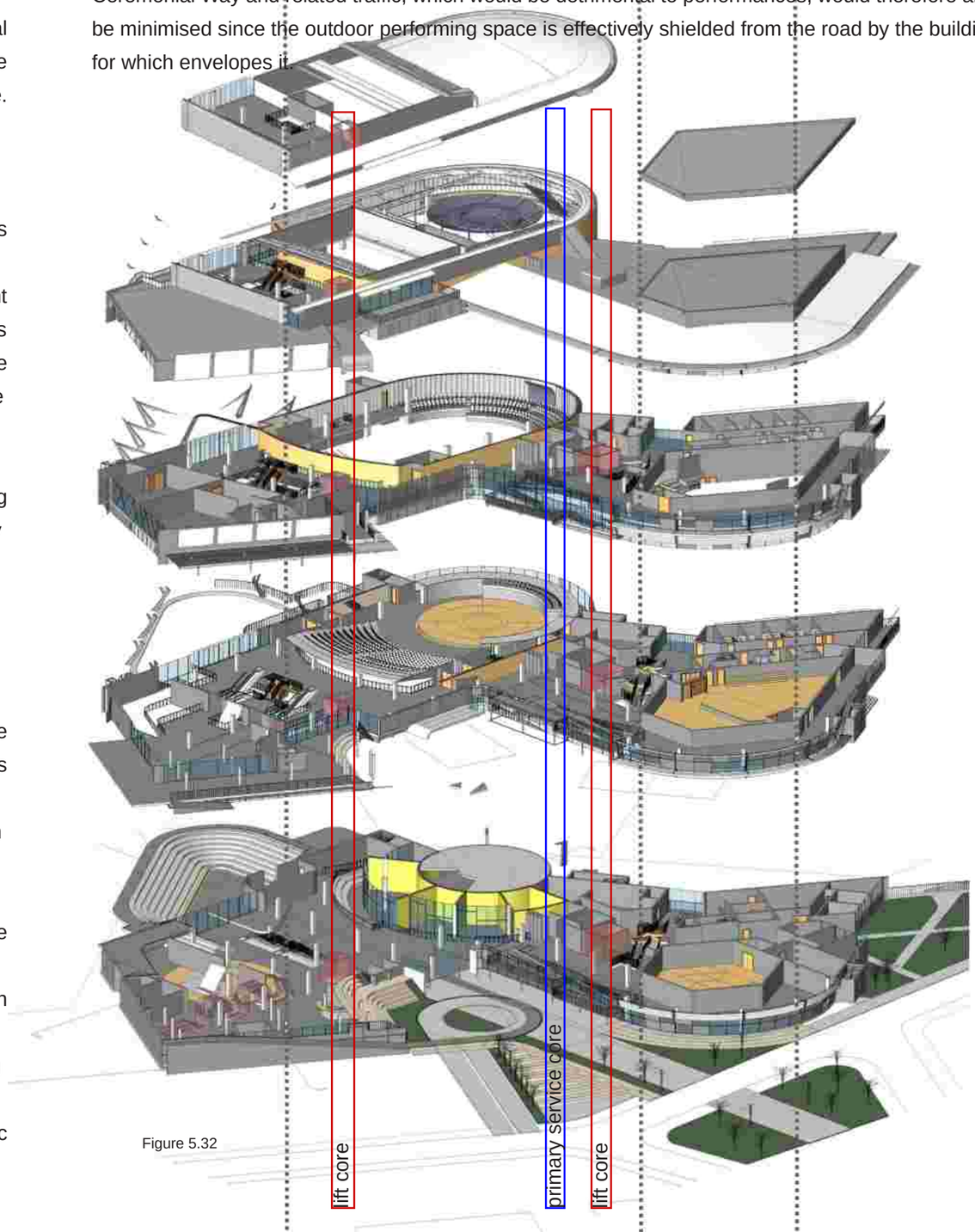
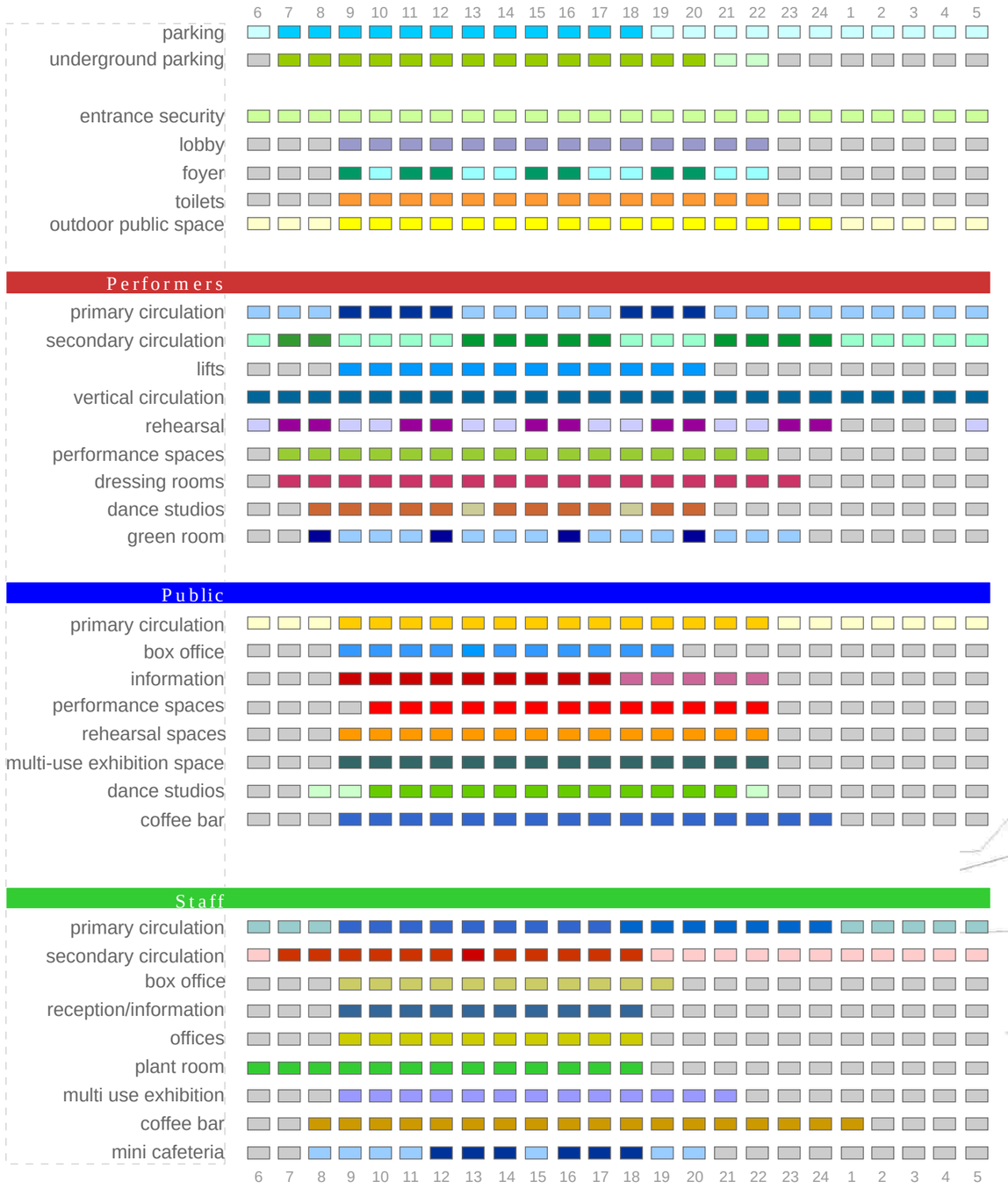


Figure 5.32

5.6. Movement Systems and Occupancy

Due to the fact that the building is in the position to be used during most hours of the day and night, periods of extensive usage may be plotted in anticipation of increased mechanical climate control, as well as a decisive tool in the management of public and performer movement systems. The relevent movement paths are presented graphically, illustrating the intended relationship between all contributing factions of the Centre, namely: performers, public and staff.



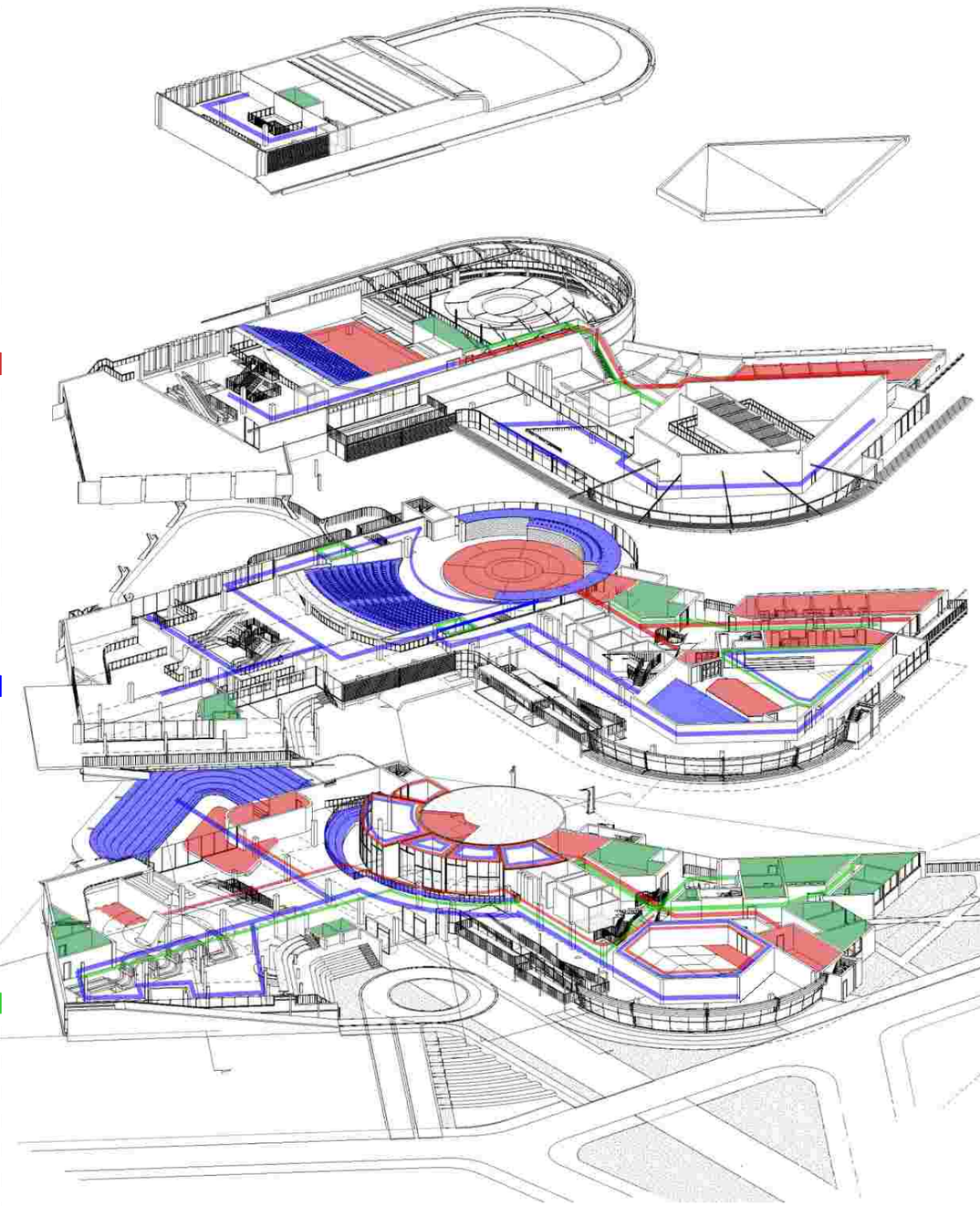


Figure 5.33 User movement patterns, illustrates the inter-relationships of occupants within structure

5.7. Aesthetic Considerations and Objectives

As stated already, it is the intention of this building to be representative of its context. It can be observed however that the context is in line for some drastic changes with the onset of the Salvokop Redevelopment Framework. Apart from the old Spoornet workers' housing that makes up the residential component of Salvokop, the only provided basis for aesthetic inspiration is the Initial Stage of Development for Freedom Park. A predominant use of stone and other locally available materials in the curvilinear design of its footpaths and seating areas can be observed, creating a scene of footpaths etched and carved into the form of the hill.

The intention of the Centre for Performing Arts to reveal its interior to the public that are enjoying its outdoor recreation spaces or simply passing by is fundamental to its aesthetic. It has already been mentioned that the building seeks to achieve its character through the predominant inclusion of human movement in its aesthetic, and thus the building shall be designed to contain a predominantly transparent and visually permeable façade where areas of public focus are concerned.

Due to the irrefutable scale that this building is required to be, its scale is quite substantially diminished against the backdrop of the hill, which itself is typified by a staggered approach leading to a final and continuous steep slope to its summit. The building is multi-levelled, with all levels revealed to the public through its transparent facades.

The building has been designed to portray movement and natural progression, In order to represent three-dimensionally and in concrete terms the concept of what performance and music seeks to achieve.

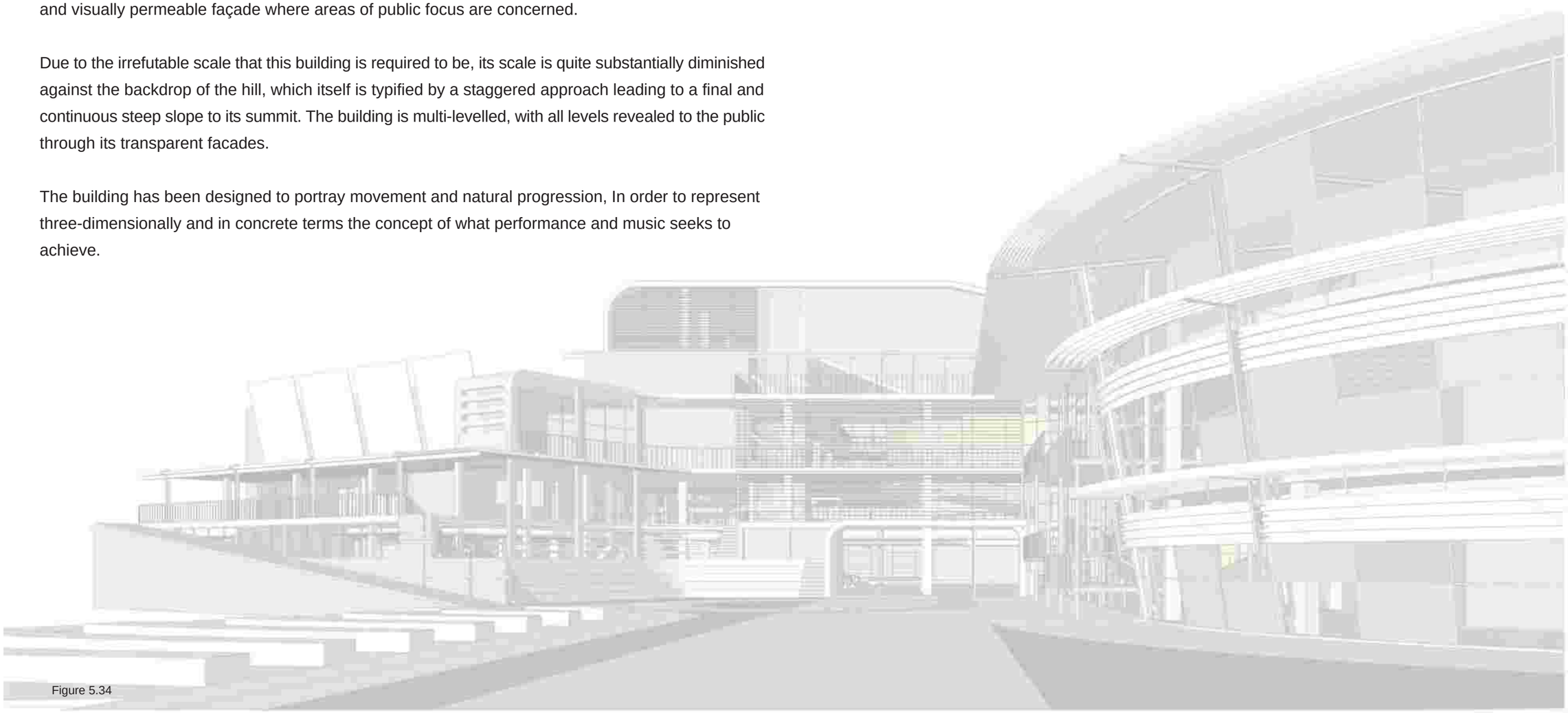


Figure 5.34

5.8. Revisions and Amendments to the Urban Design

The Centre for the Performing Arts has been designed to include the public open space planned for the Ceremonial Way as an extension of its own public space, and vice-versa. Thus adopted in the brief of this design exercise is to include the public open space of the Ceremonial Way, so that a cohesive progression of spaces may be achieved, further aiding the intention of Salvokop's urban designers to enhance the pedestrian landscape of the area. Thus treatment of the transition between the public space of Ceremonial Way and that of the Centre is of utmost importance. This is due to the fact that a busy street, as in the intended case for the Ceremonial Way, may provide an unaccommodating barrier to the natural progression of pedestrians between public spaces.

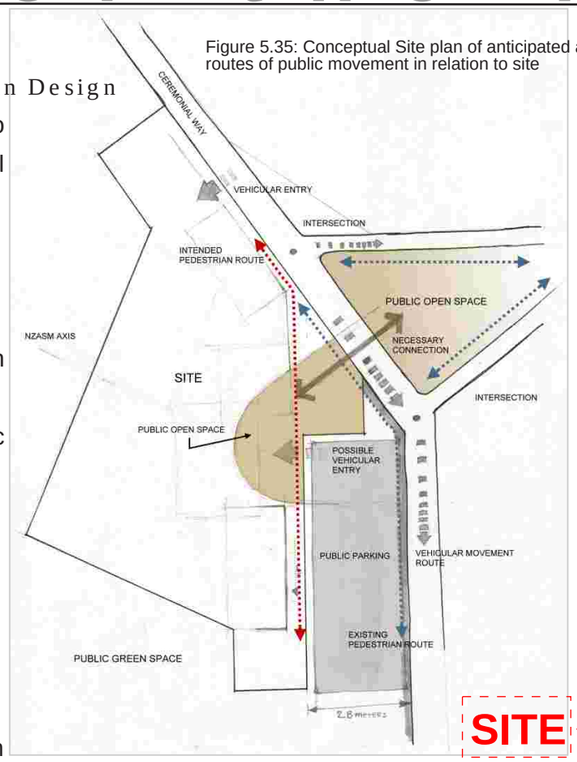


Figure 5.35: Conceptual Site plan of anticipated and preferred routes of public movement in relation to site

SITE

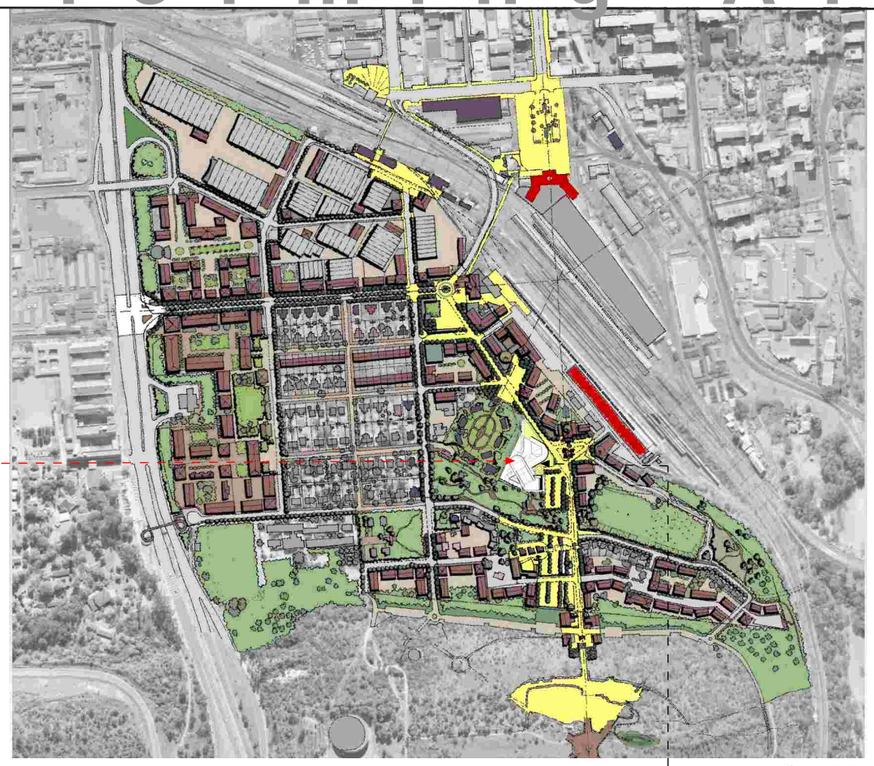


Figure 5.36

incorporation of urban fabric into site

The public open space of the Ceremonial Way can be described as an island of pedestrian activity. It has been originally designed to provide for pedestrians and locals a venue to be at peace, as well as a first impression and overflow space from the Blue Train Station on its eastern edge. This space is however surrounded by roads on all sides, and does not make it the most convenient of spaces to attract the crowds. On its own therefore its position lacks much merit, but as an integrated feature and extension of space from within the Centre for Performing Arts, its existence is far more substantiated. What is required from this space is therefore:

- Extensive and fixed public seating / street furniture
- Tree cover and other forms of shade
- Visual icon to exploit the visual links that demarcate it as an important node on the Ceremonial Way
- Accessibility on all levels – no irregular paving, wheelchair- friendly slopes, clearly demarcated steps
- Methods of slowing traffic to ensure safety for pedestrians
- Pedestrian crossings, priority placement

Modification to the urban design of the proposed Salvokop Development Framework is thus restricted to two areas: The parking strip which lies to the west of Ceremonial Way, and the public open space as previously discussed. The final layour of the public open space is thus simply designed - it is not the intention of the Centre for the Performing arts to dominate the landscape around, but simply interact and compliment it. The main pedestrian axis between the future Blue Train Station and the site is clearly defined by a paved surface, accommodating free movement of people between the spaces of interest. Shaded and soft landscaping (lawns) for the public open space of the Ceremonial Way contains a multitude of street furniture for an abundance of people to use and relax upon while watching the commuters and public alike pass before their eyes.

site perimeter 'blurred' to negate beginnings and ends,
only shared spaces exist

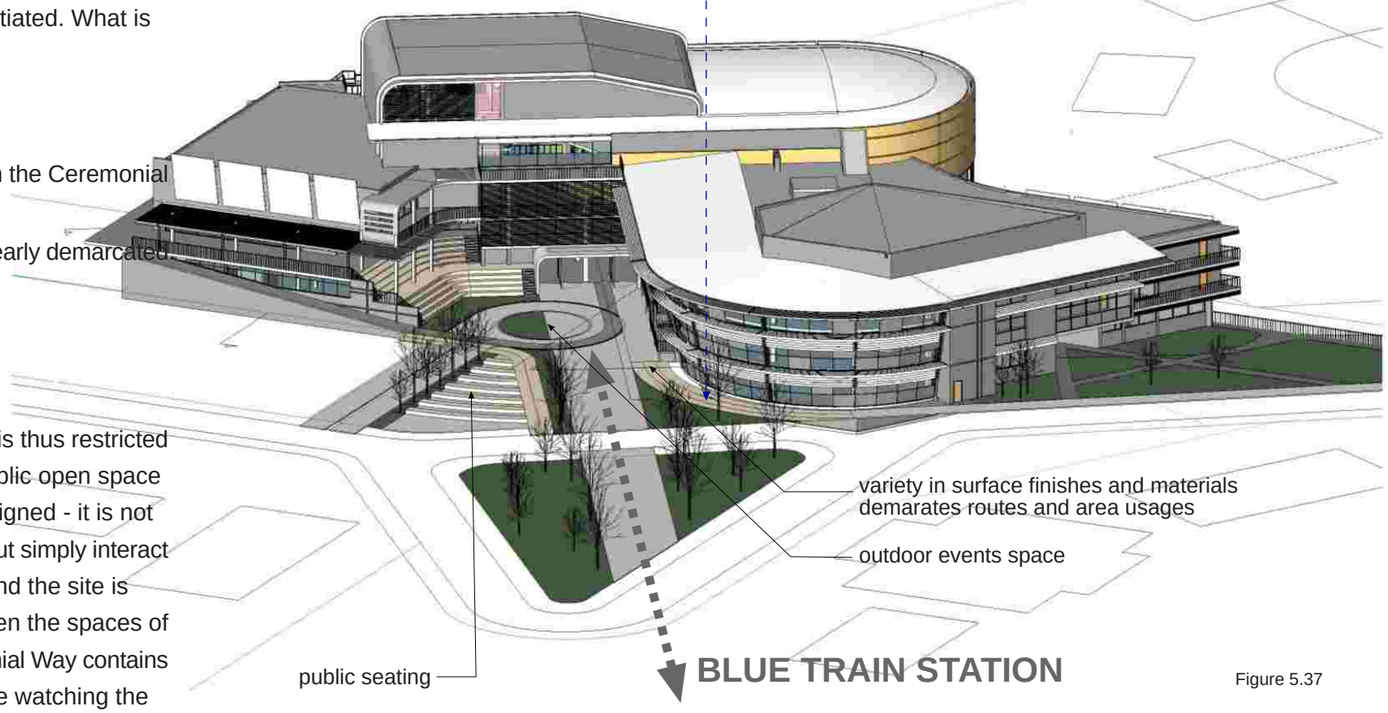


Figure 5.37

5.9. NZASM Heritage Housing Design Considerations

The NZASM Heritage Housing complex to the west of the site for the Centre for the Performing Arts, as has already been stated in the previous chapter, is ear-marked for preservation and conversion into a public information centre. The cluster can be physically defined as single story residential-built dwellings of varying orientation. The NZASM buildings are all inwardsly facing - relatively speaking according to the site -and are positioned around an almost elliptical pathway with a central water feature. The NZASM Hertiage Housing Complex is regarded with great importance by the Salvokop Development Framework, not only as a contributer to the framework in terms of heritage tourism, but also as a form-giver to the proposed urban design for the immediate area. The Complex's principal influence are its two prominent axes that are outlined dramatically by the layout of its central pathways. The principal axis runsdirectly through the main entrance to the complex on the north-east of the site, and proceeds in a south-westerly direction. It can be observed that the intersection of this axis and the axis of the Ceremonial Way has been chosen for positioning of a public open space. Although the secondary axis, running perpendicularly to the primary axis, is also deemed to be respected and responded to, the SDF does not provide a significant or obvious response to this. This secondary axis is of principal concern to the Centre for the Performing Arts, as the provided pictures illustrate.

It must be said that the role of this axis is somewhat terminated at the point where it coincides with the entrances of the relevant NZASM houses situated on the east and west extremities of the elliptical pathway. beyond this houses no pedestrian movement or need of such movement occurs, or has ever occurred. What is important with regards to this axis is the nature of movement of the public upon approaching the respective NZASM houses, as well as a necessity for higher ordering and respect between neighbouring sites. These factors make the relevance of this axis impossible to ignore.

With regards to the planning of the Centre, the secondary axis of the NZASM housing complex is directly lined up with the 'heart' of the building. Centrally located, this area of the building is the point of relationship between the two prominent geometries of the Primar and Secondary Perfromance spaces and their relevant foyer spaces. This axis therefore pronounces the point of cohesion between these public and performer spaces, giving significance to the position of the building on elevation where there is a shift in volumetric scale.

Scale is also of importance in the evaluation of the visual relationship between these sites to the passer-by. One the one hand the nZASM Heritage Housing complex is single story, on the other the Centre for Perfromance Arts is necessarily multi-storied in nature. A natural progression of scale and facade treatement is required if the NZASM buildings are not to be overpowered by the Centre. Thus the Centre has intentionally divided its vertical faces and external walls horizontally in order to soften the verticality of its facades. Teh Principal Performance Space has been designed to be of prominence from westerly views, but this too has been given horizontal emphasis rather than vertical. The volume could easily have extended continuously to ground level, but instead a recession in the form of an overhang supported on columns reduces the vertical scale of this volume. Since user perceptions from within the NZASM Heritage Housing complex are at quite an intimate scale due to the close proximitie of the houses to one another and the footpaths, this effectively retains the hopuses as principal focus of attention, and through the magic of perspective, the houses are retained at a comparable scale to the Centre in the background. None-the-less, a method for negotiating the transition between the NZASM complex and the Centre is requires, to serve both as buffer, and intermediary purveyor of scale. This buffer has been provide in the form of medium to high-rise trees, rising higher than the NZASM complex, yet lower than the Centre. It is between these trees that the Centre reveals itself in small increments, revealing its presence but not interfering in the internal workings of the NZASM Heritage Housing complex.

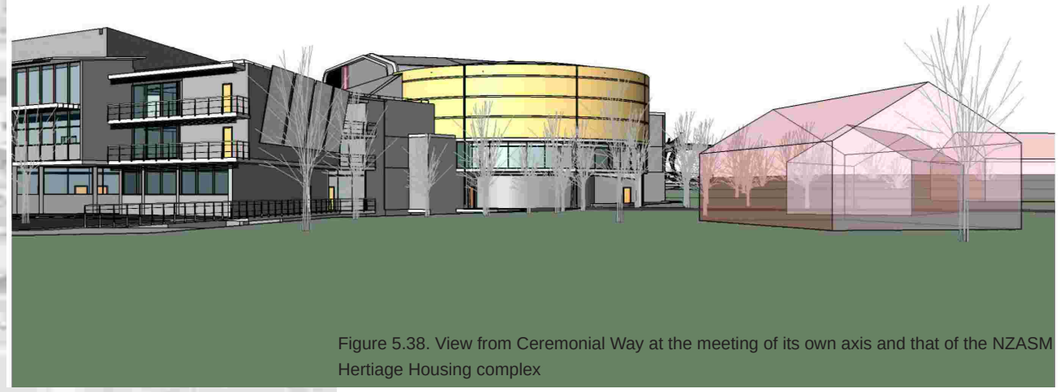


Figure 5.38. View from Ceremonial Way at the meeting of its own axis and that of the NZASM Hertiage Housing complex

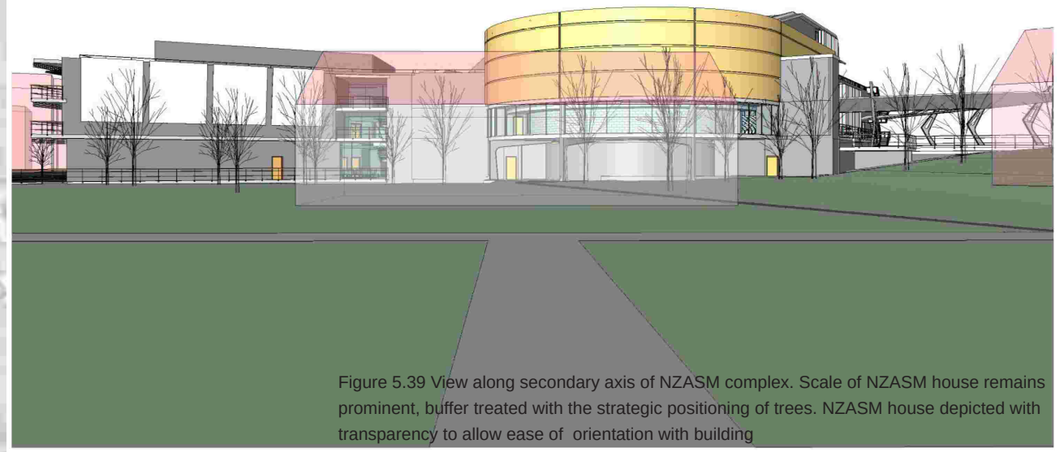


Figure 5.39 View along secondary axis of NZASM complex. Scale of NZASM house remains prominent, buffer treated with the strategic positioning of trees. NZASM house depicted with transparency to allow ease of orientation with building

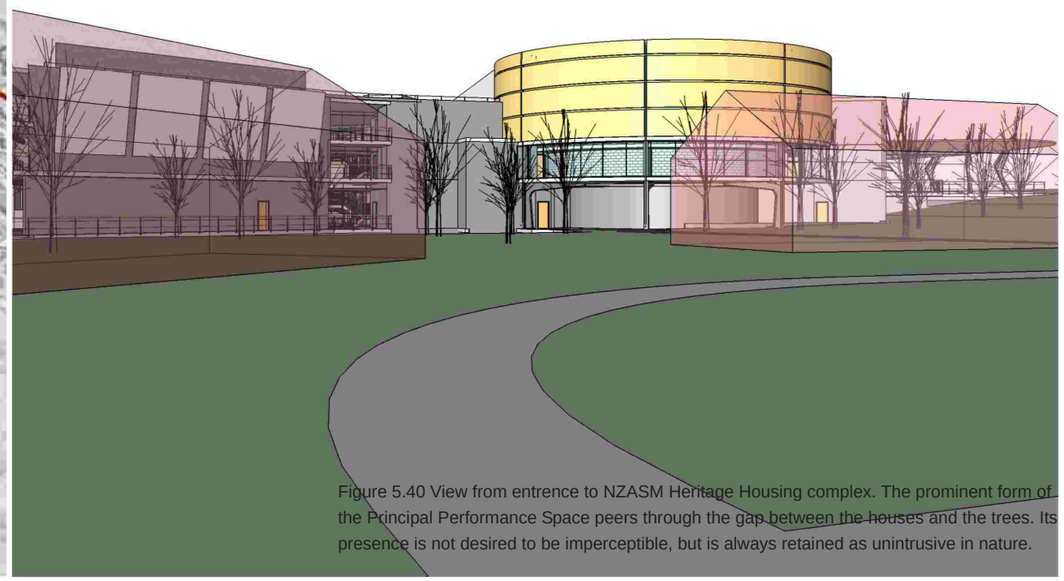


Figure 5.40 View from entrence to NZASM Heritage Housing complex. The prominent form of the Principal Performance Space peers through the gap between the houses and the trees. Its presence is not desired to be imperceptible, but is always retained as unintrusive in nature.

5.10. Development Management System

The Department of Arts and Culture is the main beneficiary for construction, in the hopes of bettering public image and constructing a high-profile development that is contributes to public well-being. Funding is deemed to be directed from the national treasury or directed from international governments though established partnerships. The land, which has been subdivided into many sites, is currently owned by Transnet who are willing to enter into agreements of sale.

The Department of Arts and Culture Strategic Plan aims to develop and preserve South African culture in order to ensure social cohesion and nation building. The Department's mission involves improving the economic opportunities for South African Arts and Culture nationally and globally through mutually beneficial partnerships, as well as ensuring development of archival and information resources of the nation to empower citizens through full and open access to these facilities. Relationships with International partners such as the South Africa Swedish partnership and Flemish partnership provides financial (at least R70 million over the last three years) and HRD resources to supplement the financial support for the Arts (www.dac.org.za)

In order for this project to be successful in the long-term, it is imperative that backing is obtained from the Government. This backing thus has some guarantee of delivery, especially when required for purposes of construction, maintenance, salaries and expansion costs.

Once constructed, it is the intention of the client that an advisory board/ steering committee with executive power be established for administrative purposes regarding the development – positions to be negotiated from project inception. These positions may be considered positions of prestige, nominated persons to convene at least once a month. This advisory board will have the power to attract and direct funding in the interests of the development, and the position of chairman to be rotated on a periodic basis. A sustained management force of employees paid and hired by the DAC will concern themselves with the day-to-day administration and management within the guidelines as decided by the advisory board.

NGO involvement is encouraged, and required by means of government policy towards such organisations – hence the establishment of such organisations as the Transnet Foundation, The Ford Foundation and so forth. Such funding may thus be put to use in the organisation of exhibitions, events and equipment for the facilities. All profits obtained from the success of such events may then be allocated towards a trust account and used in the improvement of the facility.

C e n t r e f o r t h e P e r f o r m i n g A r t s

TRANSITIONAL SCENERY STORAGE

ASSEMBLY SPACE
_sound lobby

wall opens through sliding doors

fully openable wall
_bifold doors

partition wall

permanent stage

removable forestage

SECONDARY PERFORMANCE S
_Drama and theatre produc
_max 30m distance to furth
for speech clarity
_Multiform space: Proscen
Arena stage

performer circulation space
_allows for entrance into stage from any point
_direct acces to dressing rooms
_hidden from view of audience

for upwards distribution
ir to target locations

external louvre system

public lifts

level seating area
_loosely packed chairs in various configuartions

PRINCIPAL PERFORMING SPACE
_capacity of up to 1000 people (including gallery)
_stage in the round, surrounded by audience

fixed raked seating
_14 degree slope

external louvre system
_fixed horizontal aluminium louvres
_three hinged panels for access for cleaning

outdoor viewing platform
_extension of foyer

public lifts
_2 lifts with capacity for 12 people

double volume

OUTDOOR PUBLIC SEAT
_risses up to transition with

FOYER

OUTDOOR COFFEE BAR
_view of the public space a
_shaded

double volume

double volume

CAFE / COFFEE BAR
_light refreshments

double volume

glazed cutain walling
_suspended from ceiling o
facilitate complete opening
_stackable against south w

TECHNICAL INVESTIGATION
TECHNICAL INVESTIGATION
TECHNICAL INVESTIGATION 06

7. Technical Investigation

7.1. Human Comfort and Climate Control

7.1.1. HVAC and Ventilation

The building will encompass a combination of cooling, heating and ventilation systems to achieve optimum indoor microclimate. Firstly, due to the contained and focused congregation of people and performer in performance spaces, these spaces are deemed to be serviced with dedicated air-conditioning systems. The system can be described as each auditorium having a separate Air Handling Units of constant volume with modulated temperature control system for ventilation (Bearg, 1993: 21). The heating, ventilating, and air-conditioning (HVAC) systems for Auditorium space is sized and zoned to accommodate varying internal loads, which are a function of audience sizes, performance lighting loads, and projection equipment (McQuiston, 1994: 14). Air handling units with increased cooling capacity are zoned separately, with separate zones for auditorium, lobby and projection spaces, as well as separate zone for stage area from audience seating. Air supply is to be ducted through wall vents with ducted ceiling return air vents in auditorium and lobby. Other spaces to have ducted ceiling supply with return through the air ceiling plenum. Transfer ducts are specified at all acoustically rated partitions.

Humidity levels for auditoria are required to stay constant at approximately 45 to 50 %, plus or minus 5 percent for design purposes. A humidity control based on relative dew-point is required, maintained by determining absolute humidity in the return air lines, outside conditions and the treatment plant (National Institute of Building Sciences, 2005: www.wbdg.org/).

Internal temperature is required to be maintained between 23 to 25 degrees Celsius, with an air change rate of 2,2 degrees Celsius per hour (AHRAE standard 55 – 66 recommendation) (Lawson, 1981: 205).

Fresh air intake form the outside is bought in at ground level. For reasons of acoustic insulation and accessibility, the central plant room is positioned at basement level. It is in this position that access for delivery of parts, maintenance and delivery is most convenient for vehicles of the stature of goods trucks. The AHU is to be elevated off the ground on bolted hollow section bracing structure. Contact between this structure and the concrete floor slab is to be transitioned by a flexible suspension system, consisting of steel coils wrapped in polyvinylchloride sheathing. This is to eliminate possibility of structural noise – noise conduction though the structure of the building – from interfering in the proceedings of all areas of the building. This central air handling unit is strategically position to be situated at the centre of the building. It is from this point whereby vertical piping could be directed to equally distance itself from key areas in need. Specifically speaking, air supply into the principal performance space is to be administered through and along the northern bounding wall, at ceiling level of the first floor. The events gallery will receive ducted supply through floor vents. Exhaust air in both shall be accommodated through the ceiling plenum. Exhaust air shall be centrally discharged through the roof above the ancillary space core.

Areas deemed to receive air-conditioned air are: the Principal and Secondary Performance Spaces, the Studio Theatre and rehearsal spaces on ground level, the dance studios on second floor level, the offices on grounds floor, and dressing rooms on both first and second levels. The rest of the areas, mostly public foyers and lobbies shall receive natural ventilation by exploiting prevailing wind conditions specific to the base of the Salvokop hill (predominantly south to north), as well as by creating pressure differentials in order to siphon air through open spaces. The problem with a building of this nature is that typically a high pressure system is created on the inside due to the number of bodies in occupancy as well as temperature differentials between outside and inside. Air conditioning usually ensures that there is more air coming into the building than going out (McQuiston, 1994: 50). This is optimal in cases of complete air conditioning, but this is not the strategy for this building. It just so happens therefore that opening all the doors is not enough to get ensure optimum interior ventilation and air-change rates. Due to the vertical nature of the building, many double volumes have been provided between levels to allow warm air to escape to higher levels whereby they may be mechanically extracted through the roof and louvres windows. This induced stack effect will contribute to lowering the atmospheric pressure on the interior and ensuring an optimum air exchange rate.

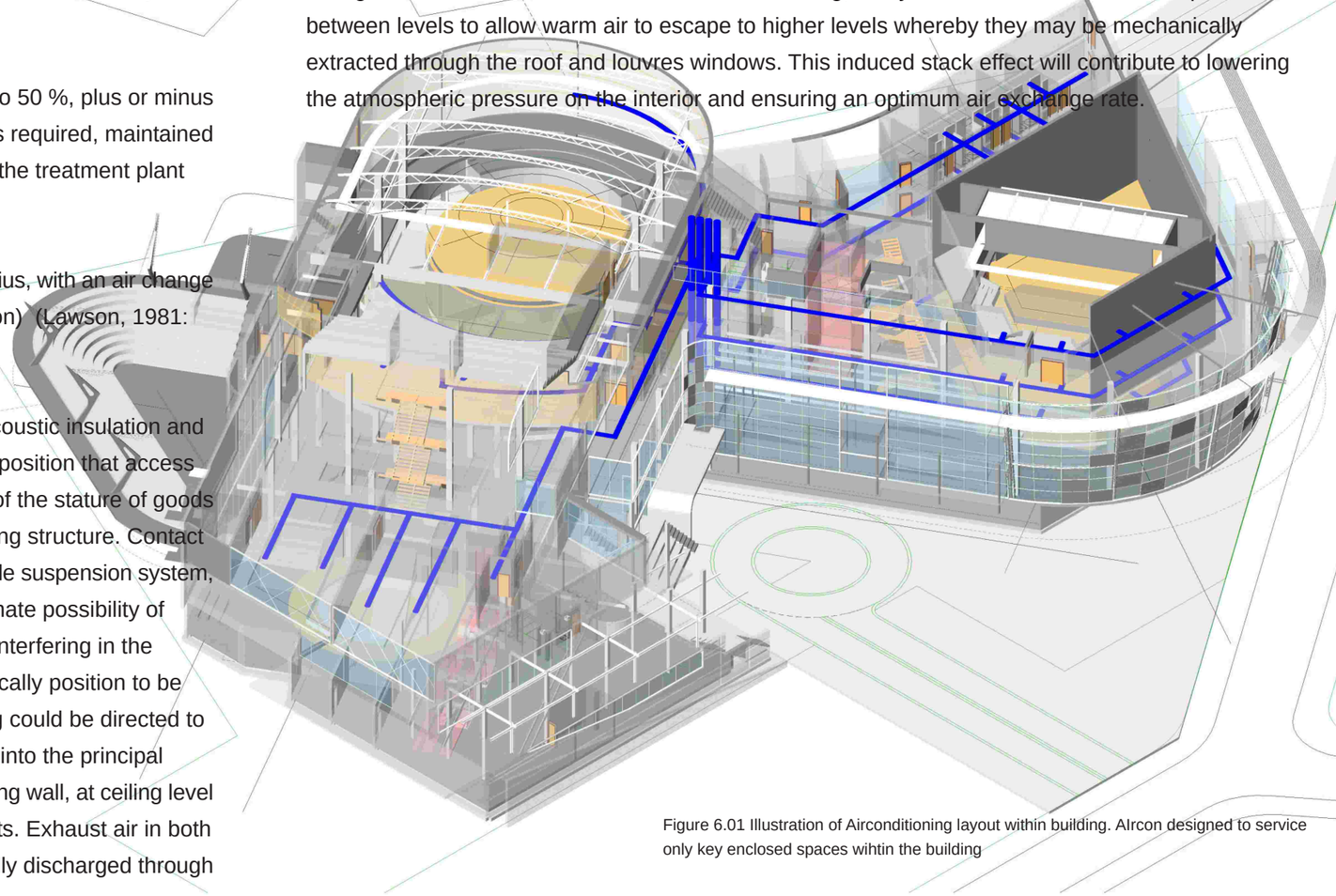


Figure 6.01 Illustration of Airconditioning layout within building. AIrcon designed to service only key enclosed spaces wihtin the building

7.1.2. Solar Gain and Incidence

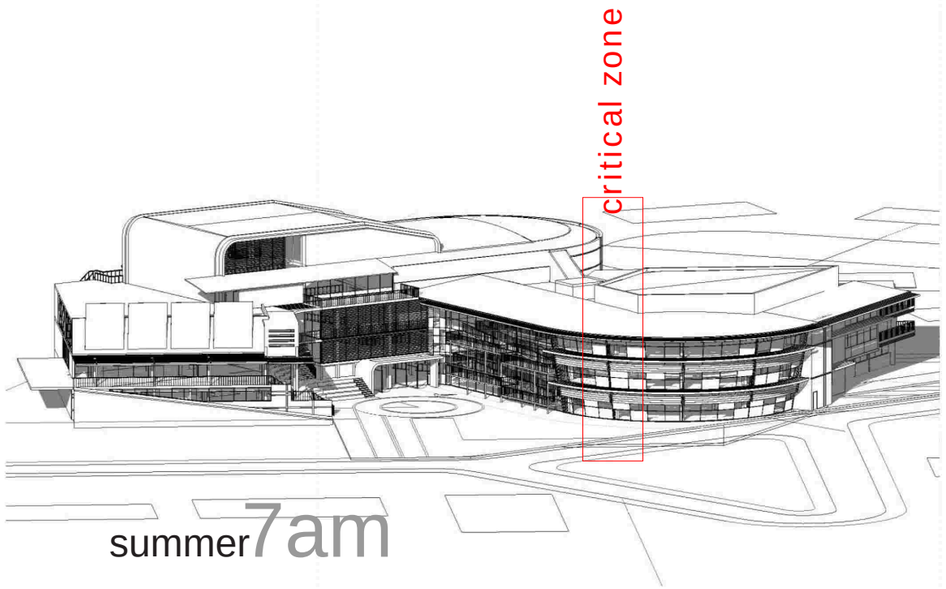
Solar gain is also an issue in matters of a building with prominent glass facades. The building itself, in a bid to connect the interior with its surroundings and reveal the full extents of itself to the passing public, has called for glass frontage on the north and eastern facing facades surrounding the public open space from which it derives its main entrance. Solar radiation in its raw form can be described as being short-wave in frequency. This direct radiation impacts upon a surface, and depending on the thermal mass and density of that material, is re-radiated after a time in the form of long wave radiation (Givoni, 1969: 208). When short wave radiation impacts upon glass some of it is reflected, some of it is absorbed into the mass of the glass and most of it travels through the glass in the form of long wave radiation (Givoni, 1969: 208).

Long wave radiation cannot escape back though the glass, resulting in the 'greenhouse effect' (Ruck, 1989:). It is thus imperative that, in the case of glass facades, the glass be kept shaded from direct radiation so as not to increase the temperature of the interior uncomfortably. Three techniques have been applied to adequately shade the glass during critical periods of the day: overhangs, horizontal and vertical placement of louvers where no overhang exists, and placement of reflective and insulative paneling.

Utilising the structure of the building in certain instances, more than adequate overhangs have been created to eliminate direct solar incidence, as in the case of the external balconies formed from the pedestrian ramps on the eastern façade of the building. Further louvers have been applied in a somewhat reactionary technique to shade the surface of the glass. The distinctive curved glass feature on the north eastern corner of the building has been applied with such louvers. Fixed vertical louvres run horizontally at the change in levels, providing good shade during all times of the day, even during midday in summer thanks to a generous overhang of the roof. Adjustable louvres are positioned one above the other at the same veritcal angle to the curtain wall, hiding glass louvres at a high level in the curtain panelling whereby natural ventilation is able to penetrate the building. Further more, as previously mentioned, this glass façade has been inclined to increase the angle of incidence during periods of occupancy within the building, therefore reducing solar gain and glare significantly. With this angle it can be seen that solar incidence in summer after approximately 8 am is greater than 60 degrees, reducing solar gain by 70 percent (Everitt, 1970: 221).

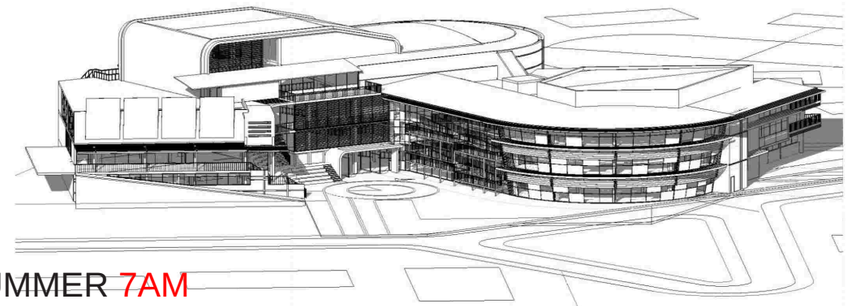
Solar gain is greatest when the angle of incidence is perpendicular to the surface of the glass panel (Button, 1993: 158). With the slope in the glass façade this can never happen. The greatest chance of solar gain is therefore at the earliest times in the day, when the sun is just rising and impacting the glass below the level of the louvers. By plotting the position of the sun during its seasonal movements, as well as taking into consideration the positioning of various medium to high rise structures surrounding the building, two key areas of critical exposure are identified. In these zones a ratio of 50: 30: 20 for reflective glass: insulative opaque panelling: clear glass is instituted. Beyond these zones the angle of incidence breaches 60 degrees (horizontal angle) and is negated in critical influence (Givoni, 1969: 220).

Critical Zone: Point of contact upon glazed surfaces where angle of incidence of direct solar radiation is nearest to perpendicular



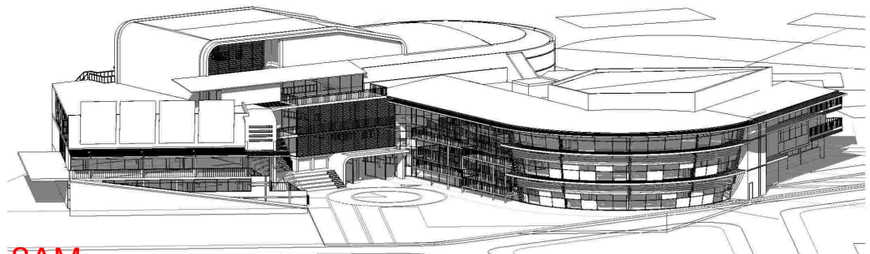
Figures 6.02 to 6.03. Crtical zones as determined by perpendicular angle of incidence of sunlight during early hours of day. Occupation does not occur till 9 am.

SUMMER SUN INCIDENCE - EFFECTIVENESS OF SHADING DEVICES



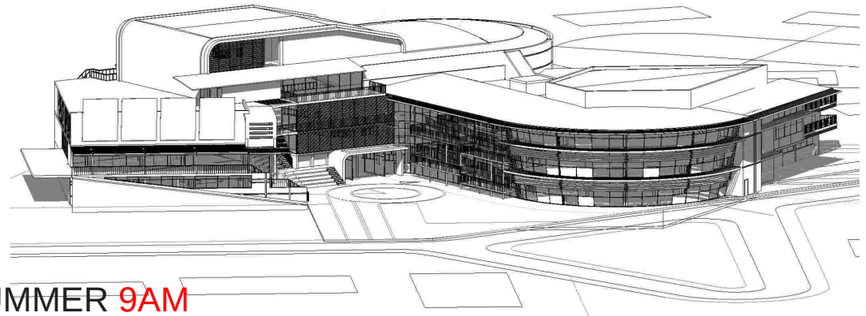
SUMMER 7AM

Period when sun is at its lowest and angle of incidence of light on glass is closest to perpendicular. It is observable that the only area of glass in position of discomfort is area of curved curtain wall previously described as zone of critical influence.



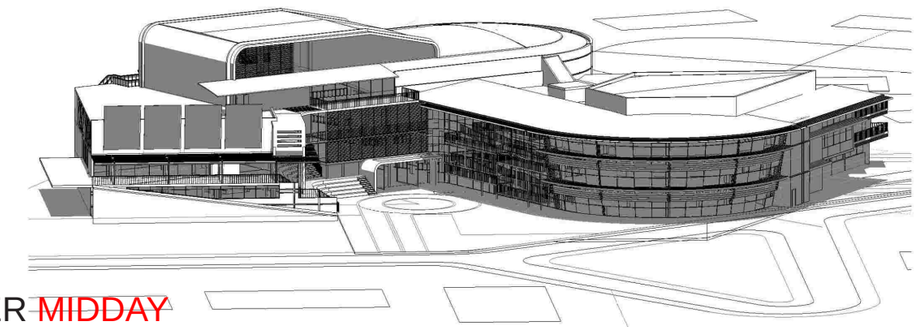
SUMMER 8AM

Interior predominantly shaded, light ingress of approximately 1,5 meters. More than two thirds of glazed surfaces under shading. Latent heat likely to dissipate before primary period of occupancy at 9 am.



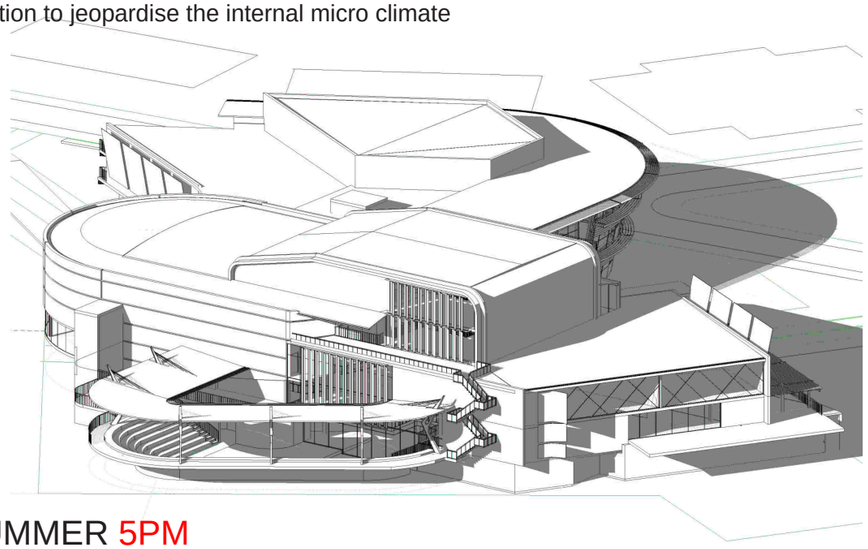
SUMMER 9AM

Period of primary occupancy by public. External glazing xompletely shaded and not in a position to jeopardise the internal micro climate



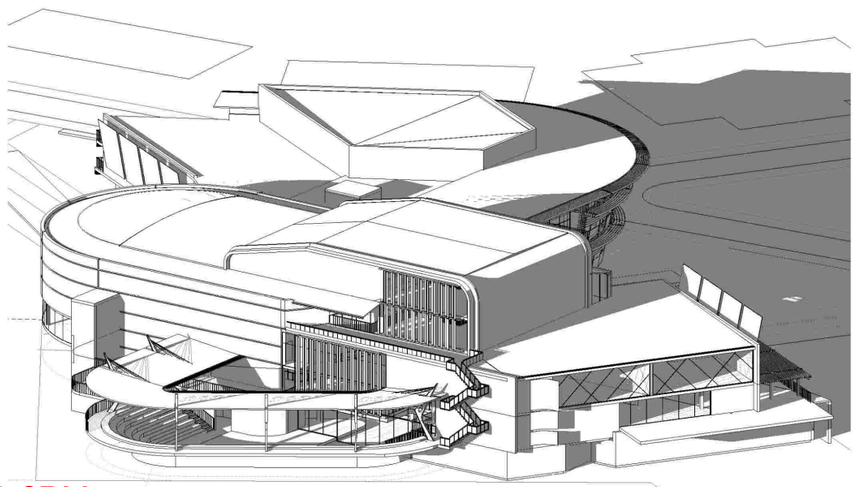
SUMMER MIDDAY

Time of greatest solar radiant intensity. All external glazing protected by overhangs and effectively shaded



SUMMER 5PM

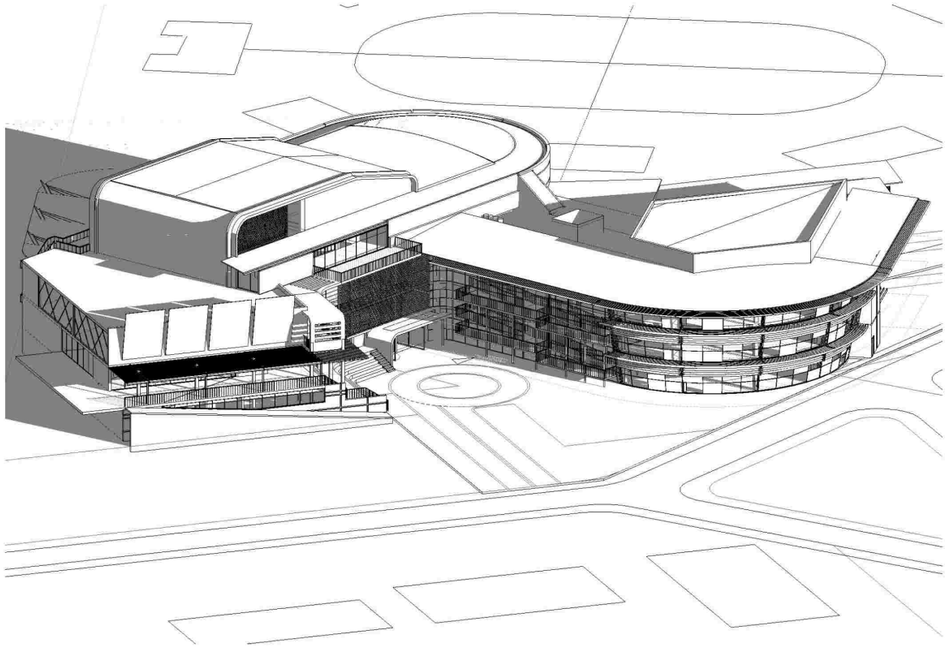
South facade of building under threat. Glazed areas are effectively protected by adjustable vertical louvres which are orientated to obstruct direct impact of solar rays onto surface of glass yet retain views south to Freedom Park from within building.



SUMMER 6PM

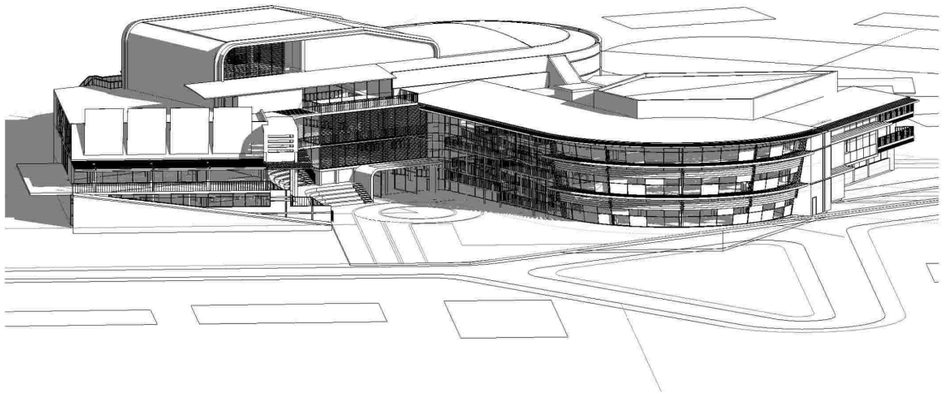
Period when sun is at its lowest with regards to i9mpact on bilding (position of Salvokop hill obstructs light from this point onwards). Glazed surfaces still shaded and internal glare minimised.

WINTER SUN INCIDENCE - EFFECTIVENESS OF SHADING DEVICES



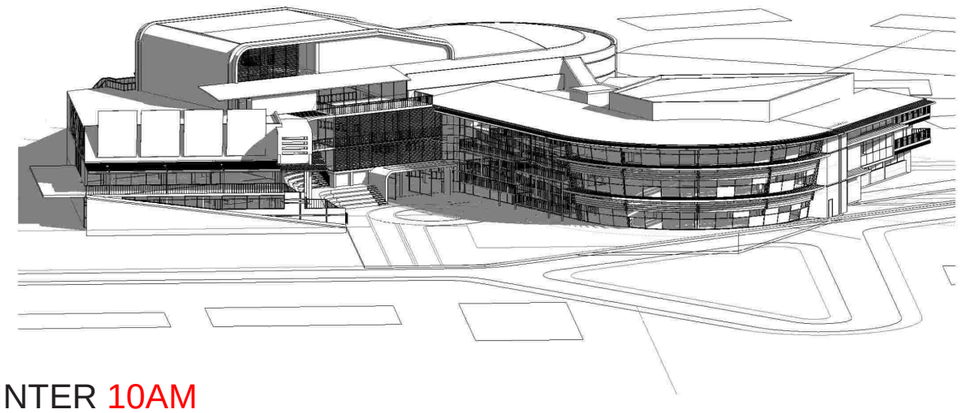
WINTER 8AM

point of maximum internal exposure. Two thirds of Glass on curtain wall facade under direct impact from sun.



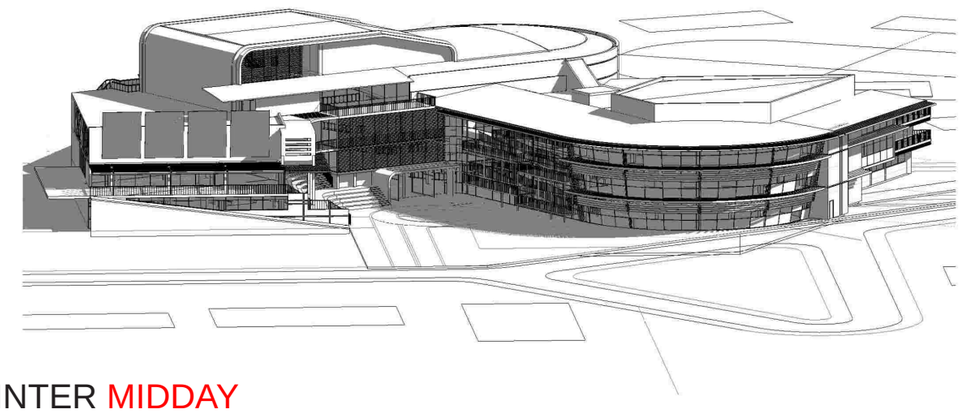
WINTER 9AM

Period of first occupation. Glass predominantly shaded. Internal ingress of light restricted to 1 meter. Aluminium opaque paneling absorbing radiant heat effectively due to positioning within critical zone of influence.



WINTER 10AM

Interior as well as external glass facades completely shaded by external louvres system and overhangs



WINTER MIDDAY

Glass facades remain shaded and free from heat absorption and transmittence into interior. Conditions for maintenance of an optimum microclimate without undue pressure on mechanical systems favourable.

6.2. Materials and Construction

The structure of the Centre is primarily a reinforced concrete structure, consisting of concrete columns positioned according to a regular grid, with floors of concrete floor slab construction. Masonry bricks with plastered finish are used in the construction of external walls where appropriate, as well as various internal partitions. External facades are typically treated with: off shutter concrete construction, glazed curtain walls, masonry brickwork (rendered). Roofing systems can be sumarised into two categories: low-sloping concrete roofs, and steel roofing stsytems. These roofing systems are applied where most appropriate, depending on thermal and acoustical requirements.

This chapter addresses each of the afore mentioned construction and material selections, focussing on reasons for choice and relevant technical information for construction and substantiation of design decisions.

6.2.1. Reinforced Concrete Structure and Flooring

As stated previously, the main structure consists of concrete columns and slabs. It may be noted that not all columns share the same structural load, due to certain instances where beams are required to traverse greater spans than others. None-the-less, for sake of continuity, all columns are of the same dimension, 450 x 475 mm. Where columns are subjected to greater loads, these columns will be provided with additional steel reinforcing for strength. By maintaining regular column dimensions, the same shuttering may be used for all columns during construction, hopefully providing the means to accellerate and simplify the building process, if even only slightly.

The choice of an in-situ reinforced concrete frame, an in situ concrete floor cast in with the frame and designed to provide lateral rigidity serves the task of the building most optimally, as this permits the omission of beams parallel to the floor span.

Flat slab construction is economical for this heavy and uniformly distributed loading, which with normal beam and slab construction would require very deep beams. because of the smaller overall thickness, the total floor to floor height is increased by comparison (Foster, 1975: 211). Where heavy concentrated loads are carried, such as in the case of the sloping Principal Perfromance Space seating floor slab, a diagonal beam beam floor is selected in order to disperse the load throughout all column memebers of the grid, thus avoiding high stress and resulting in a reduction of beam depth (Foster, 1975: 212), set at this stage at 460 mm.

The flat slab construction is commonly used when the slab is intended to act as a membrane supported on columns without beams, in this case it is most pertinent since a high level of lateral rigidity is required (Foster, 1975: 205). In its simplest form, this method of construction often proves to be more economical than than hollw black constrcution (Foster, 1975: 241). It provides maximum freedom in design on plan and section since it can be made to cover irregular shapes and varied in thickness depending on load or span. It is a heavy floor but also highly fire-resistant. SInce spans within the building structure are of roughly 6,5 m, two way spanning is used in which the reinforcing is designed to act in both directions, the proportion of load taken by each set of reinforcement is dependant on the ratio of long to short side of the floor panel.

Load paths are distributed through the use of reinforced concrete columns set to a regular grid, 6,5 x 7 m, as well as loadbearing masonry walls. these loadbearing walls are thus a permanent fixture and rigidify internal layouts. Where internal flexibility of space utilisation is required, loadbearing walls are not used and load paths are restricted to the columns structure, as in the case of the first floor coffee bar area and ground floor exhibition and archive space. load bearing wall on graound and first floor levels are 330mm in thickness in order to cope with compressive resistance requirements.

6.2.2. Curtain Walls

A curtain wall is any exterior wall that is attached to the building structure and which does not carry the floor or roof loads of the building. In common usage, curtain walls are often defined as thin, usually aluminium-framed walls containing in-fills of glass or metal panels (National Institute for Building Sciences, 2005: www.wbgd.org/).

The curtain wall system implemented in this design is that of a stick-built system. In this system of construction the curtain wall frame (mullions) and glazing panels are installed and connected together piece by piece. For this exterior glazing system, glass and infill are installed from the exterior of the curtain wall and are secured with glazing stops or pressure bar retainers, and require swing stage or scaffolding access to the exterior of the curtain wall for glass and infill repair or replacement. Typical infill panels for this building include vision glass insulating glass, metal panels (thin composite panels consisting of two thin aluminium sheets sandwiching a thin plastic interlayer), and other FRP (fiber-reinforced plastics).

Overall curtain wall thermal performance is a function of the glazing infill panel the frame as well as construction behind opaque areas. In the case of this build, mullion construction shall be of steel. It should be noted here that steel has a high thermal conductivity. It is common practice to incorporate thermal breaks of low conductivity materials, such as polyurethane and nylon, for improved thermal performance (Everett, 1970: 240). This system is designed to include "pressure bars", which are fastened to the outside of the mullions in order to retain the glass. This system includes gaskets that are placed between the pressure bar and mullions and to function as thermal breaks as well as waterproofing barriers.

6.2.2.1 Design of the Main Curtain Wall Feature

Whilst the curved glazed curtain wall on the north-eastern edge of the site has been designed as an aesthetic feauture, reasons for its construction have their roots in the performance of glazed surfaces under direct contact from solar radiation. It was important for the aesthetic of the design to retain a transparent faced at this point in order to reveal the interior of the building to passers-by on what is to become the primary pedestrian route. Thus a strategy design a glass facade with northern and eastern orientation was required so as not to incur uncomforatble solar heat gain from direct soalr radiation, as well as prevent uncomfortable glare and light relections to the public.

The most obvious design decision to observers is the tilted glass surface that embraces the curve in its entirety. The tilt is set at 10 degrees to the vertical and is supported internally by steel columns that extend the full height of the curtain wall. This simple tilt provides a number of benefits. Firstly, the tilt provides the glass facade with the benefit of never being subject to solar incidence at a perpendicular angle. It is when sun impacts glass at a perpendicular angle that the majority of solar heat transmittance is experienced, as the angle of incidence is increased, however, the amount of solar heat transmittance is reduced through an increase in solar heat reflectance. Furthermore, transmission becomes reduced to the point that it is classified as negligible when the angle of incidence reaches 60 degrees. In the matter of maintenance of internal microclimat in this temperate climate, it is essential that solar gain is kept to a minimum in summer months. It has been calculated therefore that in summer, the angle of incidence at nine o'clock in the morning, a time when the sun still breaches the external louvres shading devices, the angle of incidence is equivalent to 59 degrees. Therefore all solar gain that would have otherwise adversely affected the interior microclimate is significantly reduced.

The second benefit of the tilt is the reduction of external glare. External glare is caused through disuptive reflections of light from the sun. Due to the fact that the glass faced interacts with a busy intersection where cars are required to proceed with caution, disruptive and uncomfortable glare from the building would prove to be greatly problematic. The angle of construction therefore ensures that all light that impacts on the surface of the glass, no matter the angle, will never reflect beyond 2m from the footprint of the building and is therefore redirected away from direct line of sight.

The leaning support column of the curtain wall is loadbearing in nature and fixed to the ground by means of a 10mm base-plate and pivot joint. The column is kept in its 'leaning'position by means of bolted connections to the reinforced concrete floor slabs of the first and second levels.

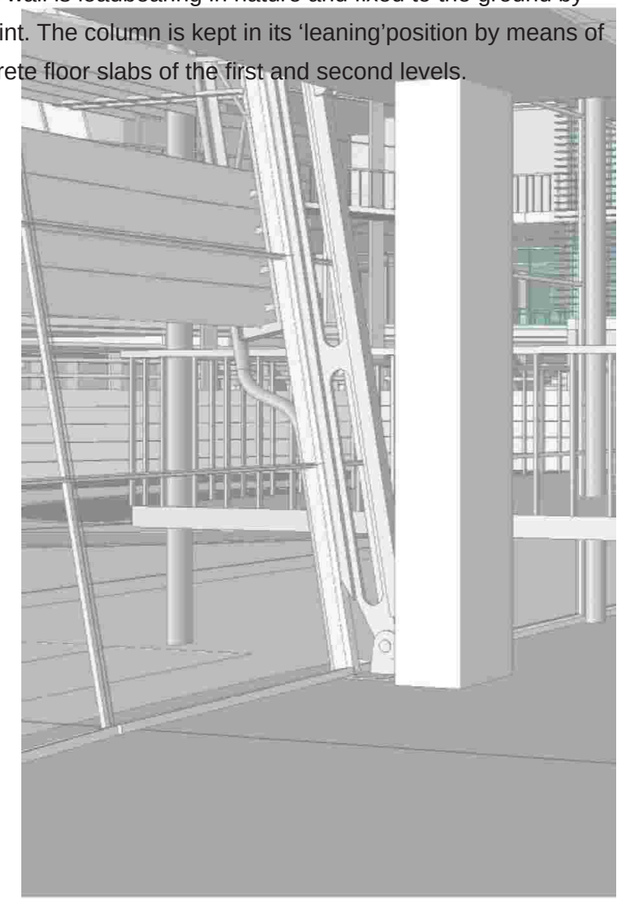


Figure 6.05

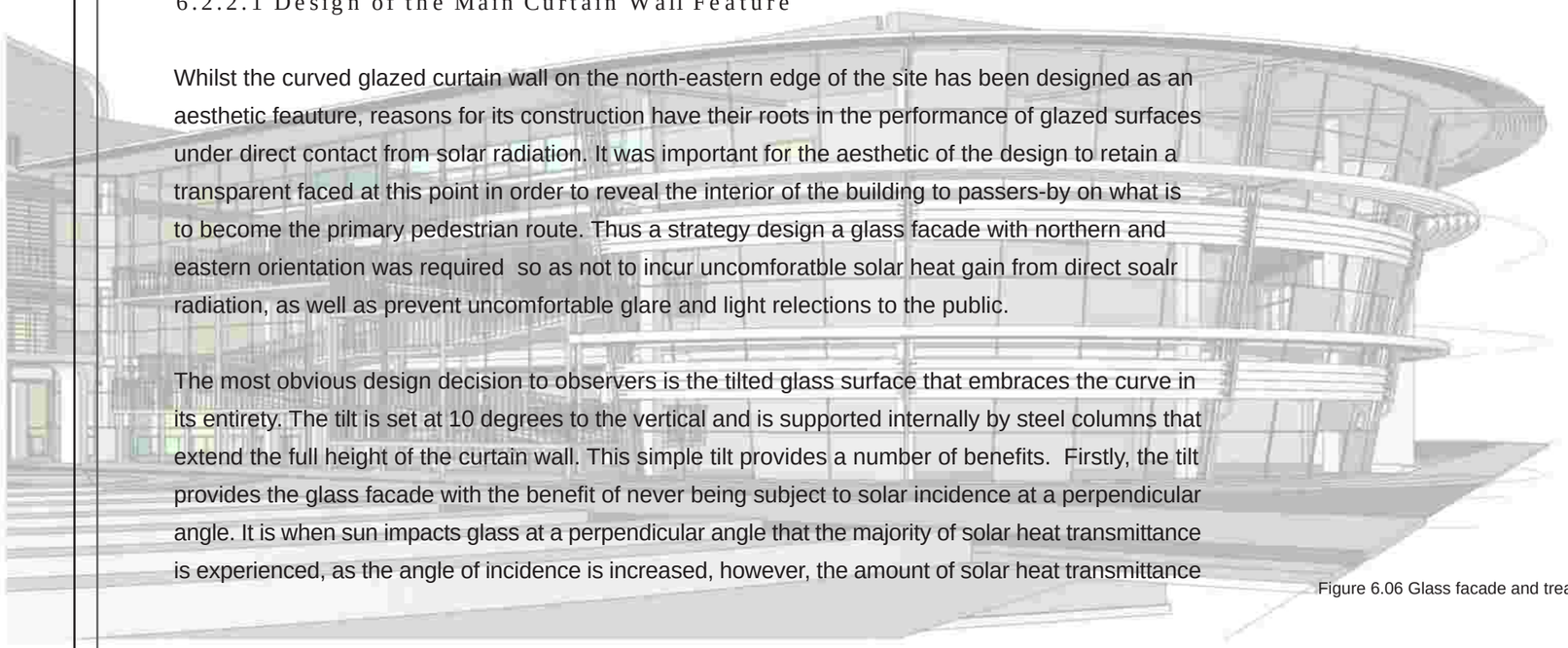


Figure 6.06 Glass facade and treatment

6.2.3. External Glazing

In recent years, windows have undergone a technological revolution. High-performance, energy-efficient window and glazing systems are now available that can dramatically cut energy consumption and pollution sources. These glazing systems have lower heat loss, less air leakage, and warmer window surfaces that improve comfort and minimize condensation (Buttton, 1993: 163). These high-performance windows are featured in the build in the form of double glazing, specialised transparent coatings, insulating gas sandwiched between panes, and improved frames. All of these features reduce heat transfer, thereby cutting the energy lost through windows (Button, 1993: 161).

In the task of designing this building, certain window and glazing options must be evaluated. The issues earmarked for consideration include:

- Heat gains and losses
- Visual requirements (privacy, glare, view)
- Shading and sun control
- Thermal comfort
- Ultraviolet control
- Acoustic control
- Colour effects
- Day lighting
- Energy requirements

U-value indicates the rate of heat flow due to conduction, convection, and radiation through a window as a result of a temperature difference between the inside and outside. U-factors usually range from a high of 1.3 (for a typical aluminium frame single glazed window) to a low of around 0.2 (for a multi-paned, high-performance window with low-emissivity coatings and insulated frames) (National Institute for Building Sciences, 2005: www.wbdg.org/env_fenestration).

Solar Heat Gain Coefficient indicates how much of the sun's energy striking the window is transmitted through the window as heat. As the SHGC increases, the solar gain potential through a given window increases. The SHGC is a ratio between 0 and 1. SHGC = 0 means none of the incident solar gain is transmitted through the window as heat and SHGC = 1 means all of the incident solar energy is transmitted through the window as heat. Typically, windows with low SHGC values are desirable in buildings with high air-conditioning loads while windows with high SHGC values are desirable in buildings where passive solar heating is needed (National Institute for Building Sciences, 2005: www.wbdg.org/env_fenestration). In the example of this building, whereby the interior climate carries significant air conditioning loads, windows are required to be specified with a low SHGC value of less than 0.40.

In general, high Glass Visible Transmittance is desired, to a value of approximately 70% minimum, especially for the required internal day lighting applications and requirements. Spectrally selective glass (high coolness index) has a relatively high visible transmittance and a relatively low SHGC (Button, 1993: 160). Low SHGC windows should generally always be considered for the east and west facing glazing as a means of controlling solar heat gain and increasing occupant comfort. In the case of the Centre, low SHGC windows are to be used on the east, north, and west facades. SHGC for the south-facing windows is not critical where solar incidence does not exist. The south-west glass façade (opening to the outdoor performance space) will require such specification due to its exposure to direct sunlight in the evening during summer months.

Direct solar radiation is categorised as “short wave radiation”, typically 0,4 to 2,5 microns (Givoni, 1969: 210). This short wave raditation is able to penetrate and transmit heat to the interior of building strucure through exernal glazing. This heat is then absorbed by interior structure and furniture to be re-radiated to the interior. Once this solar radiation passes through the transparent layer of glass, it is transformed into long wave radiation of about 10 microns (Givoni, 1969: 210). This long wave radiation is not able to pass through glass, and is retained on the interior whereby internal temperatures can be expected to rise accordingly. This principle is known as the ‘greenhouse effect’ and is particularly undesirable in the temperate climate of South Africa. This effect can be countered and obstructed with the strategic positioning of external shading devices which shade the glazed surfaces of the building from the direct impact of the sun’s rays. It should be noted that re-radiated heat from the louvres systems will impact on the interior, but typically ony 5 per cent of this heat is eventually transferred (Ruck, 1989: 133).

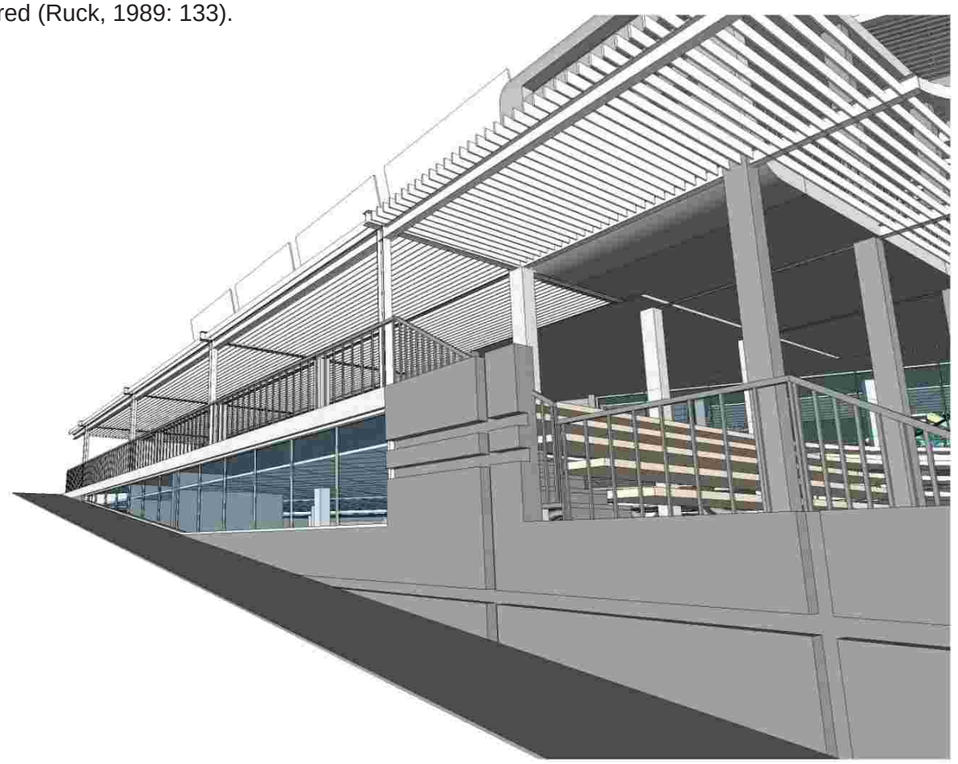


Figure 6.07 One of the forms of sloar shading devices utilised in the design of the Centre for the Performing Arts

6.2.4. Roofing Systems

Before specifying roofing construction materials and methods, the following considerations must be taken into account:

- system durability
- material availability
- maintenance intensity
- aesthetic considerations
- technical considerations
- cost
- implications of sustainable roof design

In the case for utilisation of a steel profile roof over the public foyer areas of the Centre, galvanized roof sheeting must be specified in order to obtain greater corrosion protection in the event of roof leakage. It is also recommended that screw-attachment be specified in favour of welding, due to the fact that generally screws provide a more reliable attachment (King, 1971: 394). A highly reflective surface will aid in alleviating solar heat gain on the interior, especially in the areas such as the foyer spaces where passive techniques of cooling and ventilation are sought to be applied. Rigid board insulation is to be used in these low-slope roof assemblies, and therefore this insulation has sufficient tensile resistance to support the roof membrane. This insulation will provide the roof with substantial thickness, under which a suspended ceiling is to be attached.

The second form of roof construction to be used in the Centre is that of a low-sloping concrete roof structure, flat slab construction. Falls are strategically mapped in order to facilitate effective water distribution to common discharge points. The slope is obtained by laying a low density cement-sand screed to a fall of 1: 40. The exterior surface is thus treated in order to make waterproof, provide thermal insulation and, where appropriate, provide a robust surface upon which to walk and install services. The surface of the roof is treated with a Modified Bitumen structure. Modified Bitumen membranes exhibit general toughness and resistance to abuse. This finish is composed of pre-fabricated polymer-modified asphalt sheets. Polymers are added to bitumen to enhance the various properties of the bitumen (National Inststute for Building Sciences, 2005: www.wbdg.org/env_roofing). The quality of Modified Bitumen products is highly dependent on the quality and compatibility of the bitumen and polymers, and the recipe used during the blending process. The modified bitumen is to be specified in the form of Atactic polypropylene (APP). APP polymer is blended with asphalt and fillers. The mixture is then factory-fabricated into rolls that are typically one meter wide. The prefabricated sheet, commonly referred to as a cap sheet, is then reinforced with fiberglass. The sheets are applied smooth and embedded with mineral granules of a suitable colour (Foster, 1974: 164). To avoid surface cracking, a field-applied coating (such as aluminium-pigmented asphalt), is specified. APP MB membranes are typically composed of a base sheet and an APP cap sheet. The cap sheet is heat-welded (torched-on) to the base sheet (National Inststute for Building Sciences, 2005: www.wbdg.org/env_roofing).

Figure 6.08 Example of roof treatment: Application of Bitumen to roof surface

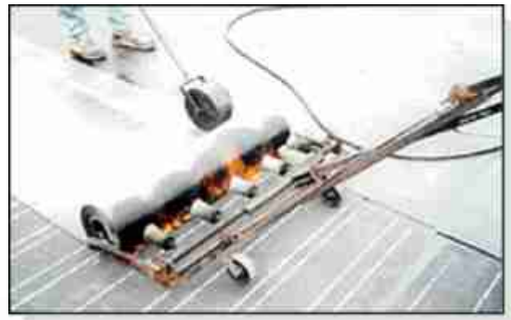


Figure 6.09 Example of roof treatment: Application of a modified bitumen cap sheet, torched on

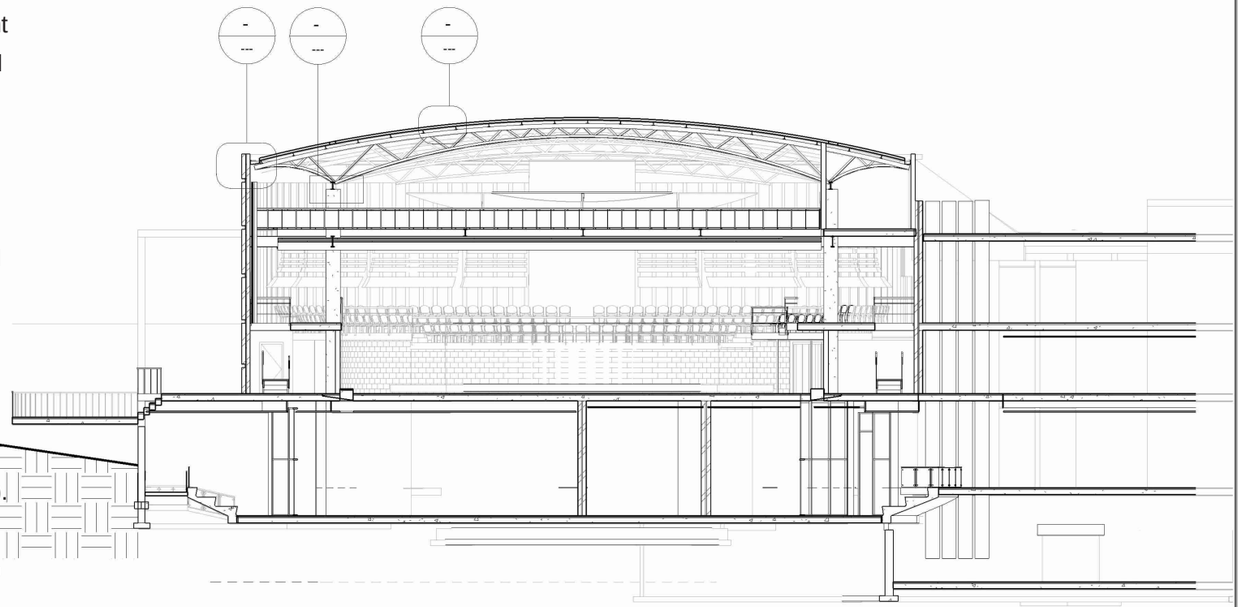


Figure 6.10 Section through Principal performance space
Illustartes simply the nature of roof construction, span of curved trusses and discharge point to box gutter for rainwater discharge

6.3. Acoustical Considerations

6.3.1. Noise Control

External vehicular noise is of most concern to this building. It is important that the quality of sound and performance be maintained in each of the performance spaces, outdoor spaces included. Transport noise, especially, is estimated to reach a level of approximately 75 to 80 dB during peak traffic periods (Ariba, 1971: 140). This is particularly relevant since the site is lying directly adjacent to the soon-to-be most utilised road in the area. It is not clear as to the frequency and consistency of this noise, but it is assumed that this noise shall not be regular and will fail to classify as ambient noise, which is not of a distracting and detrimental nature. Pedestrian noise is also of concern since the Centre for Performing Arts is designed to incorporate public spaces and activity. Pedestrian noise is estimated to reach levels of 65 to 70 dB (Ariba, 1971: 140).

Specific sound considerations are required for the various areas (Lawson, 1981: 71, 88, 170):

- The performance and rehearsal spaces for concerts, drama and dance recitals require an ambient noise level maximum of 30 dB.
- The exhibition space and multimedia archive is slightly more forgiving with a noise range restriction of 35 to 38 dB,
- Offices and dressing rooms restrict noise to a level of no higher than 50 dB.

In order to isolate the performance spaces from such external noise influences, the performance spaces have been literally enveloped by the more forgiving public spaces. The Secondary Performance Space, in which performance shall orientate itself towards performances of a more theatrical and dramatic inclination requires its internal environment to be silent except for the words of the actors. Clarity of speech is essential, and so the performing space does not have one perimeter wall placed within direct contact to external noise influence, except for that which may occur within the centre itself. An extended foyer space wraps itself around the performance space on three sides, while the fourth is bounded by the partition wall separating the ancillary spaces for performers from the performance space. Noise control utilising the structure of the building itself is thus integral in achieving optimum acoustical standards. By buffering the target areas for noise control with the service spaces and corridors and rooms of limited use, much acoustic insulation is given to the space on the other side of the wall as sound is presented with a dual layer of structural mass. Air is of course a weak conductor of sound, so it can be noted that cavity construction is means for superior insulation. It should also be noted at this point that the best insulator of sound is high mass material. The thicker the wall, the less sound and noise penetration. Rule of thumb states that a typical rendered 110mm masonry wall reduces noise by approximately 46 dB, whereas a 220mm thick wall has more success by reducing noise levels by 55dB (Lawrence, 1989: 120). Cavity walls are further implemented to increase noise insulation, after which the next step is to introduce acoustic insulation layers in the form of 50mm glass wool to achieve greater results.

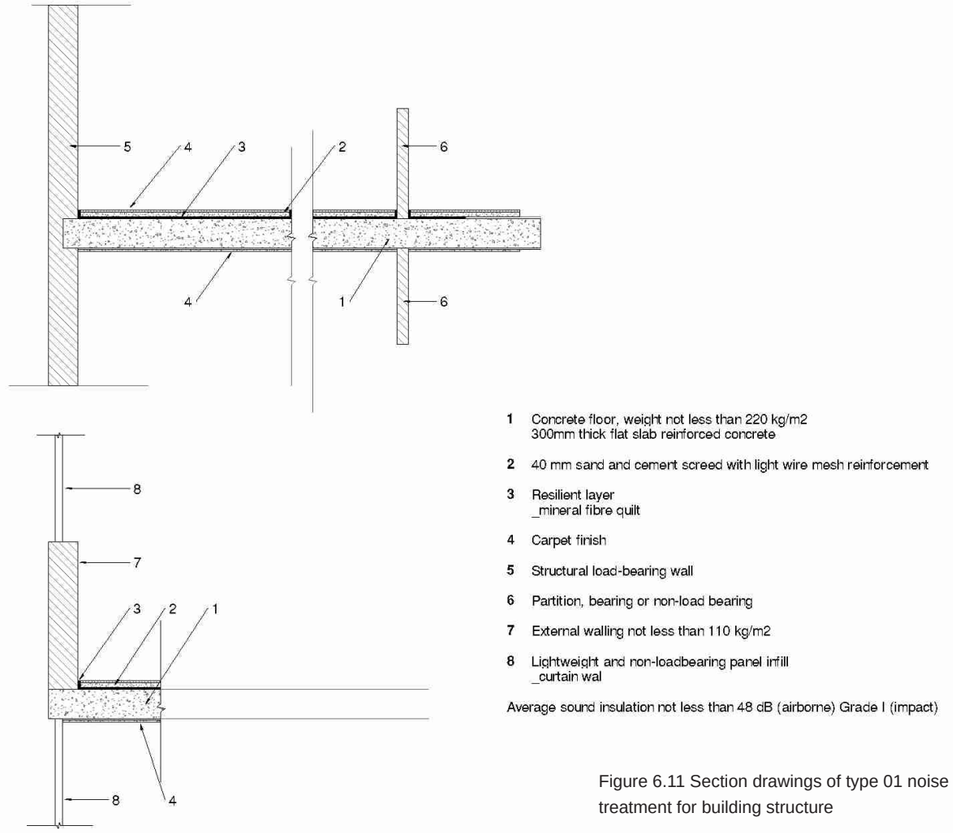


Figure 6.11 Section drawings of type 01 noise treatment for building structure

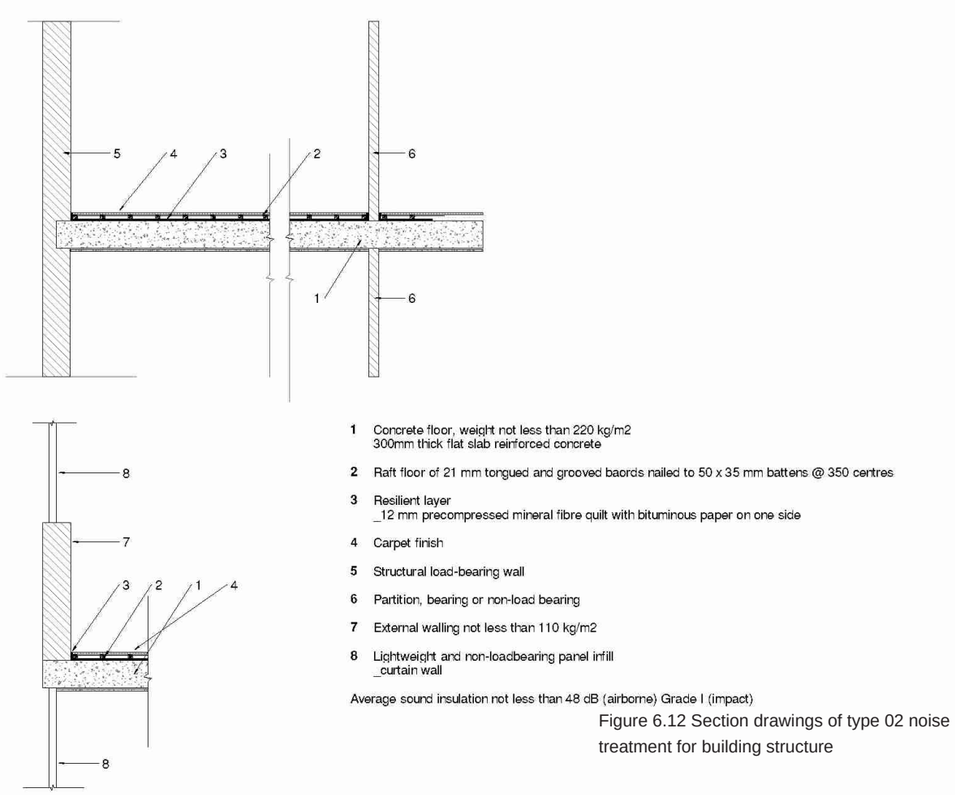


Figure 6.12 Section drawings of type 02 noise treatment for building structure

Reduction in sound through doors is also of concern. This is without doubt the weak link in what would otherwise be a sturdy and dense wall partition. Where walls of high mass provided excellent insulation, it may be noted that in these situations flanking noise ingress becomes concern. Separating walls typically have a sound reduction index of approximately 35 dB maximum, but sound has many routes that it can take before it becomes a problem (Lawrence, 1989: 122). Doors do have a habit of deforming over time, and a door is only good for insulation if it is able to achieve a perfect seal. In order to accommodate for the potential problem the sound lobbies for performance spaces are typified by double door configuration, creating a large cavity in the form of a transition space between foyer and performance space. This lobby creates a plenum that restricts sound and noise escaping or intruding into or from the auditoria. In order to achieve maximum results, auditorium doors shall be specified to be in the form of solid core 50mm hardwood veneer double doors 1868mm (w) by 2134mm (h). Doorframes will be a minimum 14 gauge metal frame construction. In thinking of safety and evacuation requirements, these public doors will be hardwared to contain panic release locksets with bush bars and levers constructed with concealed vertical bolts as security measure.

With regards to the ground floor rehearsal spaces, the question of sound insulation though glass is raised. This glass is positioned within aluminium mullion framework, due to the ability to achieve tight seals, integral for appropriate sound isolation. Laminated safety glass consisting of 5mm segments shall be used, positioned upon 10mm thick neoprene float strips to compensate for irregularities in the mullion construction. This glass has a sound reduction capacity of up to 33 dB (Ariba, 1971: 138).

6.3.3.1. Noise Implications of the Gautrain

Due to the nature of the Centre for the Performing Arts as a building that requires carefully maintained acoustical levels on the interior, specifically the perfromance spaces, the effects of a potentially disruptuive underground train system need to be considered. Adverse noise effects can be categorised as air-borne and structural noise. It is accepted that structural noise is essentially coupled with equally disruptive vibration.

According to the Noise and Vibration Report of the Gautrain Environmental Impact Assessment of 2002, measures are currently in existence with respect to the construction of such tunnels that would effectively negate the disruptive effects of this transport system on the internal environment of buildings above. “Following the success of high-speed trains in Japan and France in the 1980’s, many countries have improved their rail commuter services with new generation faster trains and upgraded operating service during the last two decades” (Gauteng Department of Transport EIA, 2002: 12 -1). Careful designs of modern systems with an emphasis on reducing wayside, station and coach interior noise levels have created systems with considerably less noise impact on the surrounding communities than the older generation trains.

There are numerous factors and sources that contribute to propagation of train related noise and vibrations. These factors are further complicated by variations in train type and operating conditions. The generation of noise depends largely on on the method of locomotive propulsion system, the related auxiliary equipment - such as compressors, motor generators, and brakes -, the interactions of wheels and rails, the noise radiated by vibrating structures, the speed and lenght of the train, and for high speed operations aerodynamic noise may also become significant (Gauteng Department of Transport EIA, 2002: 12-10). At present it may also be noted that there are noSouth African noise standards related to to railways and their operations, resulting in a trial and error scenario whereby the construction of this project will serve to highlight and devolope railway construction strategies for the future.

Due to the fact that the train is planned for subserface conveyance at a depth of between 10 to 12m, airborne noise is impossible. The approximate density of the soil as well as concrete and steel construction of the tunnel support system and structure result in a scenario whereby the acoustical mass of these obstructions effectively negates the propagation of direct sound waves. Potential air-borne noise does arise from the sections in the tunnel and those in cut-and-cover construction in the event of the position of a ventilation shaft (Gauteng Department of Transport EIA, 2002: 12-12). These ventilation shafts will be position externally to the Centre for Performing Arts, and are no more significant in noise intensity than the super-surface vehicular noise generated by the motorcars of the Ceremonial Way.

It is thus assumed that a foundation base of high density and mass is most convenient for the Centre for Performing Arts in order to provide significant acoustical insulation and structural stability. The bulk of design decisions and construction choices is however needed to occur in the fabrication of the tunnel and choice of train ion order to remain sensitive to the super-surcae structures in its vicinity. Recommendations according to the Crossrail Noise and Vibaration Report for the Channel Tunnel Rail Link (Crossrail, 2004: 4) are thus provided by this dissertation as measures for noise and vibration reduction:

- the introduction of ‘resilient’ track design to eliminate ground-borne noise
- noise limiting measures such as noise barriers
- continually welded rail to be used as much as possible to avoid noise of train wheels on joints
- ventilation systems and other services must be designed to avoid noise and vibration impacts
- smooth running trains must be specified

6.3.2. Performance Spaces: Auditorium Acoustics

Upon determining form for the main performance spaces, a rough initial estimate of audience capacity was required. It is from this estimate that an approximate volumetric assumption may be drawn, already providing certain dimensions and form to the space. Typically musical performances require a greater volume of space per person than for speech. Musical performance requires a volume of roughly 6 to 9 cubic metres per person, while theatrical performances require 3 to 4 cubic metres (Rettinger, 1968: 245). This is a contributing factor in the determination of reverberation times. It must be noted that different performances require different acoustic settings. Musical performances thrive on an imposed echo of limited proportions (approximately 1,14 seconds reverberation time), while speech is better understood and intelligible through an instantaneous audible reception (approximately 0,3 seconds reverberation time), and an echo in this setting would cause interference (Lawrence, 1981: 120). Thus two options are presupposed: one is to create completely flexible interior layout which could accommodate itself to either scenario; the other is to limit the main scope of the various performances to interior spaces that are more suitable to various and diverse spaces within the same building.

Since it is already stated in earlier chapters of this investigation that a large variety of performances are to be housed in this development, it is clear that each performance space will have to lend itself to any environmental setting as required from it. The Principal Performance Space is one such space. Since it is likely that speech as well as music shall be housed within its walls, the interior acoustic setting needs to be accommodating. In order to achieve appropriate reverberation times in performances of an acoustical nature, it is far better achieved through electronic augmentation than by any other process (Lawson, 1981: 185). Thus reverberation time may be systematically predetermined at the start of a performance, and electronically operated speaker systems embedded within the ceiling plenum discharge sound at a favourable rate and volume. It has been widely acknowledged that this form of musical augmentation far surpasses the ‘traditional’ theatre and concert hall principles of bouncing sound off walls and ceilings. The accuracy and quality of such electronic interventions guarantee a manageable acoustic environment (Rettinger, 1968: 356). This of course does not mean that planning and calculating absorptive and reflective capacities within these performance spaces must not be carefully and accurately performed. This does however require a change in attitude. For now it is the aim of this project to design a space within which little reverberation time exists, a setting that would otherwise be conducive to intelligible speech at a distance of 20 meters without augmentation (Lawson, 1981: 171). In this way the setting is primed to be receptive to all manner of electrical augmentation and induced reverberation of up to 1,2 seconds depending on the performance.

In the case of curved walls, acoustic design principles stipulate that the perpendicular angles of convergence of sound reflections should not be positioned above the audience at any point (Rettinger, 1968: 245), as they do not in this case. These walls are to be acoustically dampened to absorb all sound to inhibit the return of echo. Wall panels of a curvilinear nature distribute remaining sound vertically that has not yet been absorbed. Since the stage is in the round, a reflective curved suspended ceiling in

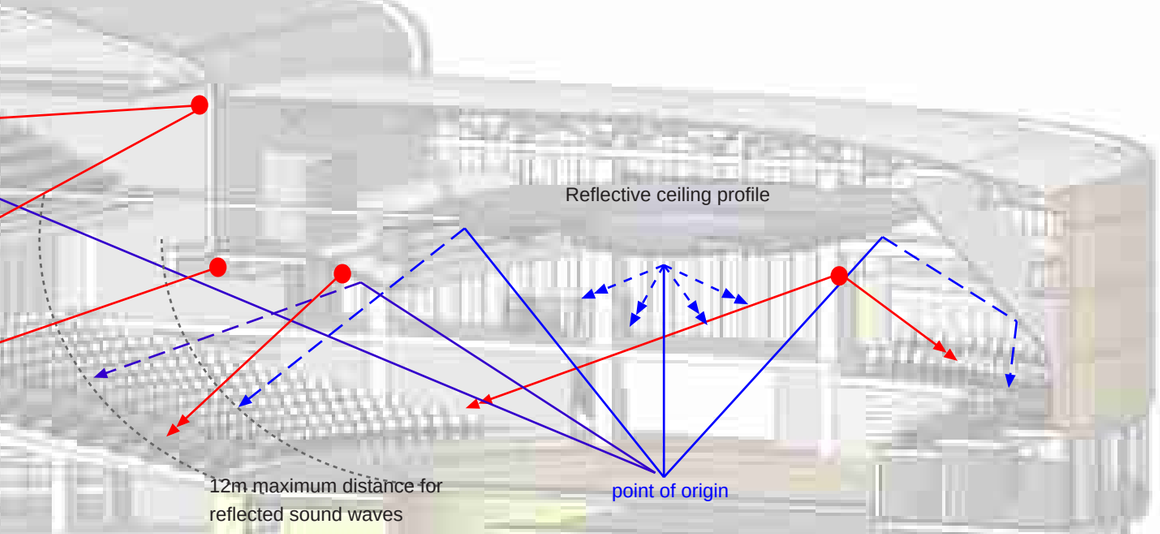


Figure 6.13 Schematic representation of patterns of travel of sound
Blue lines indicate natural paths of sound and reflected sound
Red lines indicate electronic augmentation and sources of transmittance

the shape of an inverted dome (convex) is hung above it. All sound coinciding with its surface is reflected in all directions towards the audience. This reflective ceiling shall be the only practicable reflective surface within acceptable limits of the stage. All other reflective surfaces will lend their properties not to the direct sound from the stage, but rather to that of the electronic augmentation in the form of diffuser panels. Diffuser panels are those that are angled at a minimum slope of 4 degrees to prevent stationary sound waves from forming in the pursuit of creating what is known as flutter echoes (Rettinger, 1968: 87). These diffuser panels encourage the lateral perception of sound to the audience member, especially in cases of a musical performance, but are retractable into the ceiling void. These diffusing panels should be sheets with low absorption and with a mass per unit area of about 5 kg/m^2. Diffusers of an area of 0,8m^2 to 3m^2 are recommended (rettinger, 1968:). These sheets shall be slightly curved and randomly orientated throughout the room.

Recommended noise criteria (NC) rating for auditoria of this nature ranges from NC-20 to NC-30 with recommended sound transmission class (STC) rating ranges from STC 40 to STC 50 (National Institute for Building Sciences, 2005: www.wbdg.org/). This translates into positioning of combination Type II vinyl wall covering and fabric covered acoustical wall panels. The stage area is to be surrounded in Type II vinyl wall covering, while Orchestra (audience) side walls are to be Type II vinyl wall coverings for 1/3 of the front and fabric covered acoustical panels for 2/3 of the back. The rear walls are to be fabric covered acoustical supawood panels bolted to the wall with a rubber spacer and air gap of 20mm.

The shape of the Secondary Performance Space is conducive to being appropriated in a variety of configurations. Hexagonal in nature, by instituting the planned central partition an interior ‘fan shape’ is formed. This fan shape is most sought after in the design of spaces in which intelligible speech is a requirement. While electronic augmentation is available in this space, the dimensions of this performance space have been designed to ensure that no seat is distanced at more than 20m from the source of sound. This is a distance requirement for the audible reception of speech in performances of a dramatic nature (Ham, 1972: 36). This sound shall be further more supplemented by reflective panelling suspended from the ceiling, always making sure that the reflected travelling distance of sound through the air does not exceed 12m, due to undesirable attenuation and inaudibility (Ham, 1972: 37).

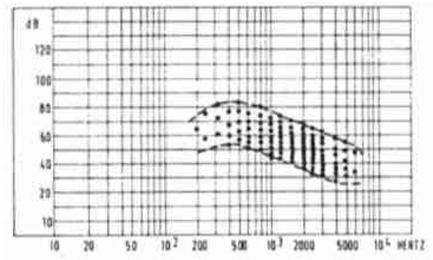


Table 6.03 Contribution to intelligibility from frequency nbands, each dot represents 0,01 contribution to the articulation index (Lawson, 1981: 173)

Principal Performance Space - Unoccupied

	125	250	500	1k	2k	4k	
Side walls, plasterboard and plywood, 13mm on studs (10mm gap)	0,29	0,10	0,05	0,04	0,07	0,09	
750m^2	217,5	75	37,5	30,0	52,5	67,5m^2	Sabin
Side walls, open jointed brickwork	0,07	0,38	0,21	0,15	0,25	0,31	
120 m^2	8,4	45,6	25,2	18,0	30,0	37,2 m^2	Sabin
Back wall, 50% micropore construction	0,12	0,67	0,48	0,52	0,66	0,64	
60 m^2	7,2	40,2	28,8	31,2	39,6	38,4 m^2	Sabin
Stage back drop, light, 300gm/m^2, straight, on wall	0,03	0,04	0,11	0,17	0,24	0,35	
80 m^2	2,4	3,2	8,8	13,6	19,2	28,0 m^2	Sabin
Floor, heavy carpet on foam	0,08	0,24	0,57	0,69	0,71	0,73	
600 m^2	48,0	144,0	342,0	414,0	426,0	438,0 m^2	Sabin
Stage flooring, wood floor	0,15	0,11	0,10	0,07	0,06	0,07	
176 m^2	26,4	19,4	17,6	12,3	10,5	12,3 m^2	Sabin
Ceiling, plywood over 10mm gap with cork tiling	0,28	0,22	0,17	0,09	0,10	0,11	
800 m^2	224,0	176,0	136,0	72,0	80,0	88,0 m^2	Sabin
Ceiling reflective profile, linoleum finish	0,02	0,03	0,03	0,03	0,03	0,05	
160 m^2	3,2	4,8	4,8	4,8	4,8	8,0 m^2	Sabin
Unoccupied upholstered seats Audience of 670	0,19	0,37	0,56	0,67	0,61	0,59	
S=670 m^2	127,3	247,9	375,2	448,9	408,7	395,3 m^2	Sabin
A = Sa	664,4	756,1	975,9	1044,8	1071,3	1112,7	
S total 5625,2m^2							
a- = Sa/S	1,11	2,13	2,28	2,43	2,73	2,94	
V = 5400m^3							
0,164V = 885,6m^3							
Sabine R_T	1,4	1,2	0,9	0,9	0,8	0,8	**reverberation time**

Principal Performance Space - Occupied

With audience of 670	0,39	0,57	0,80	0,94	0,92	0,87
S = 670m^2	261,3	381,9	536,0	629,8	616,4	582,9
A = Sa	798,4	890,1	1136,7	1225,7	1279,0	1300,3
Sabine R_T	1,1	1,0	0,8	0,7	0,7	0,7 **reverberation time**

Suitable for Speech and Drama without electronic augmentation,
Successful implementation of intended reverberation time to cater for a music hall with electronic augmentation and mechanical reverberation assistance as proposed by Centre for the Performing Arts

Table 6.04 Simplified version of reverberation calculation used to prove successul application of internal surcae finishes in order to achieve desired acoustical environment, one where reverberation time is kept minimal in order to accommodate effective use of electronic supplementation of performance sound

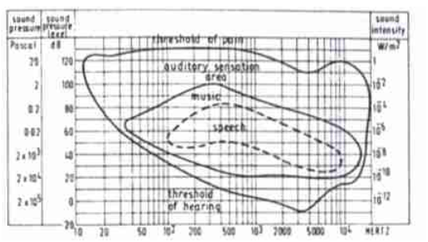


Table 6.01 Human auditory sensation area showing typical spectrums for human voice for music (Lawson, 1981: 173)

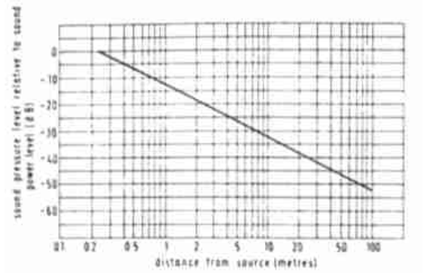
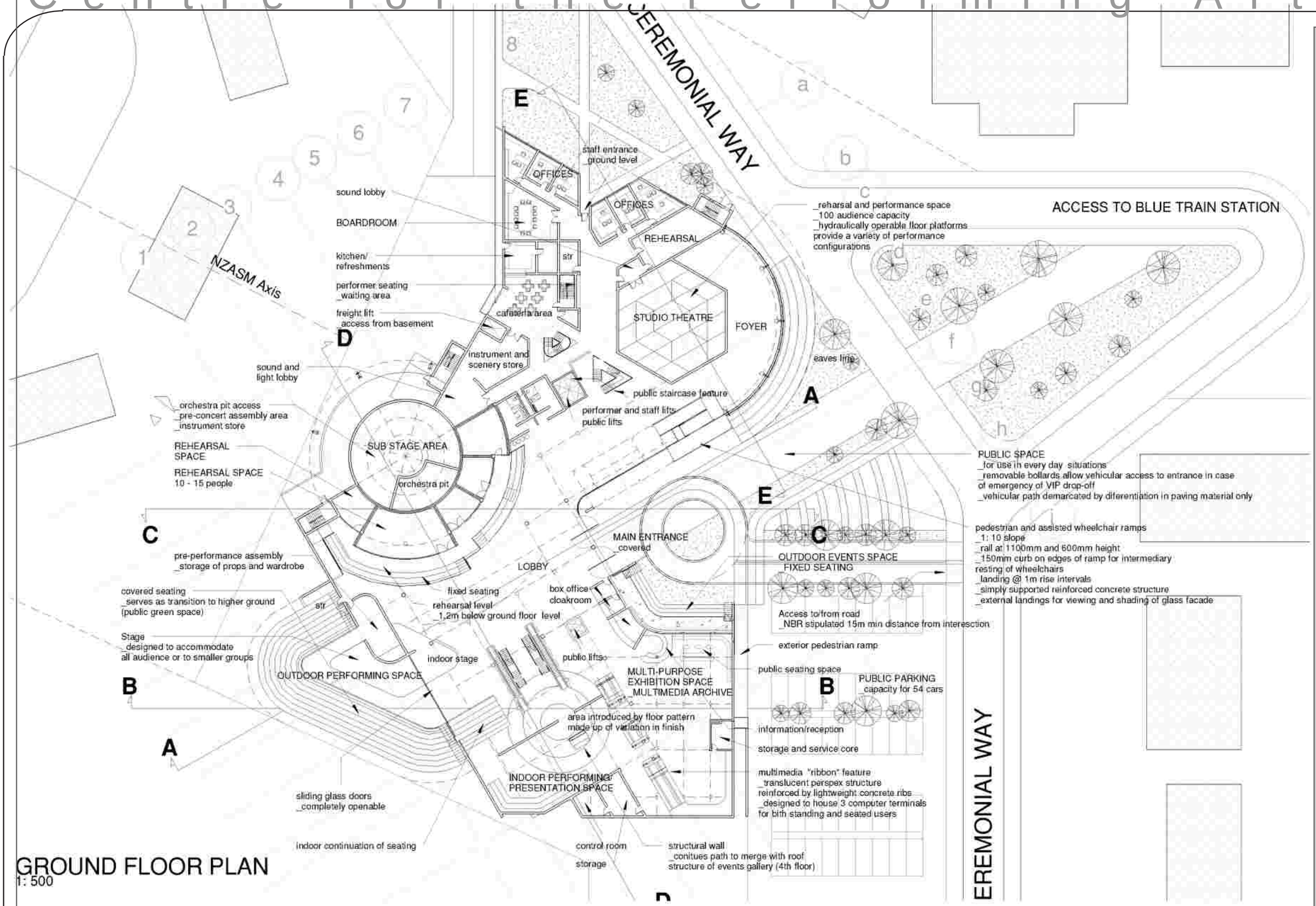


Table 6.02 Effect of distance on sound (open air condition). In a roomor hall average reductions range from 5dB to 3dB each time the distance is doubled (Lawson, 1981: 173)

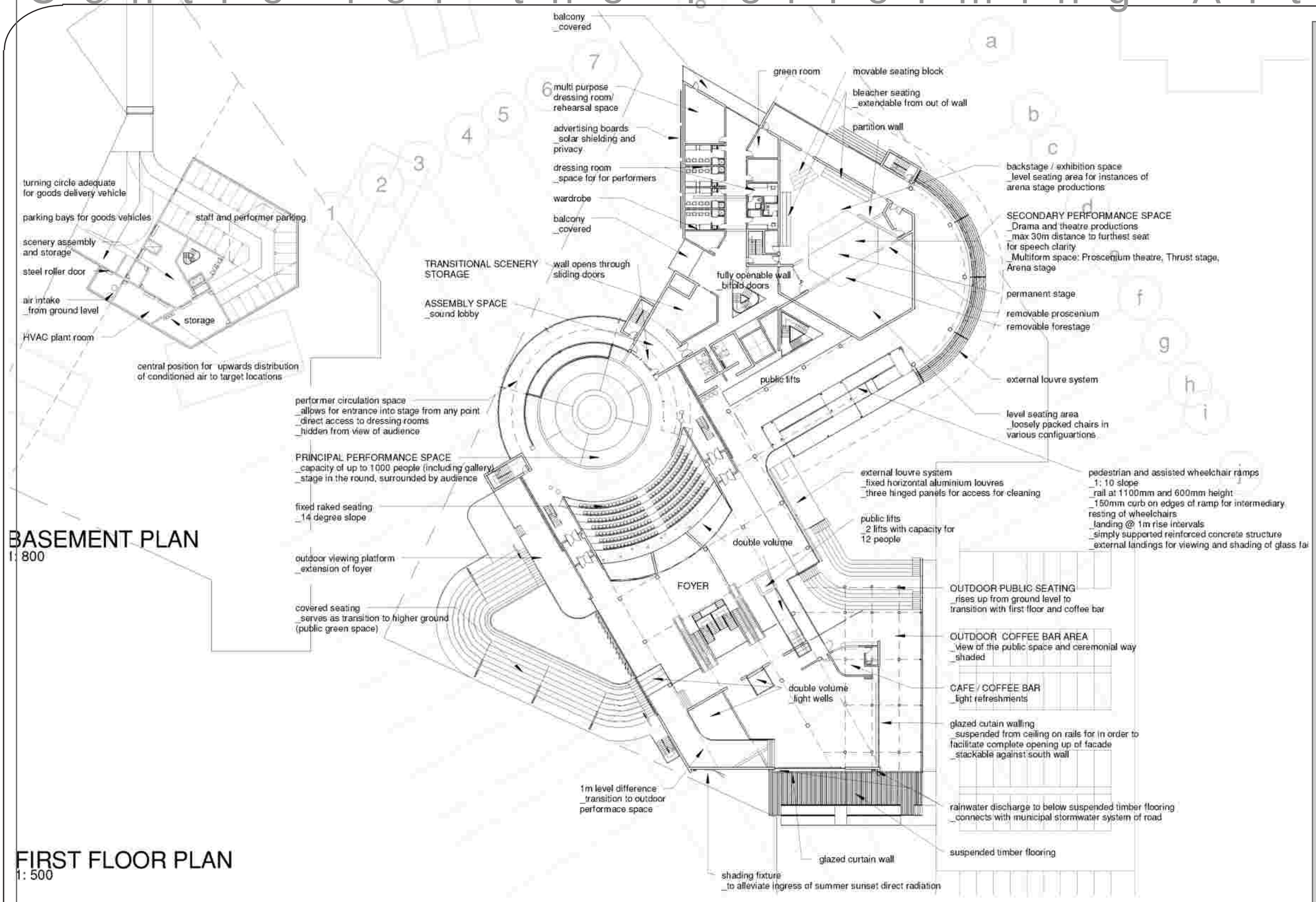
DRAWINGS AND ARCHITECTURAL FORM

07

Centre for the Performing Arts

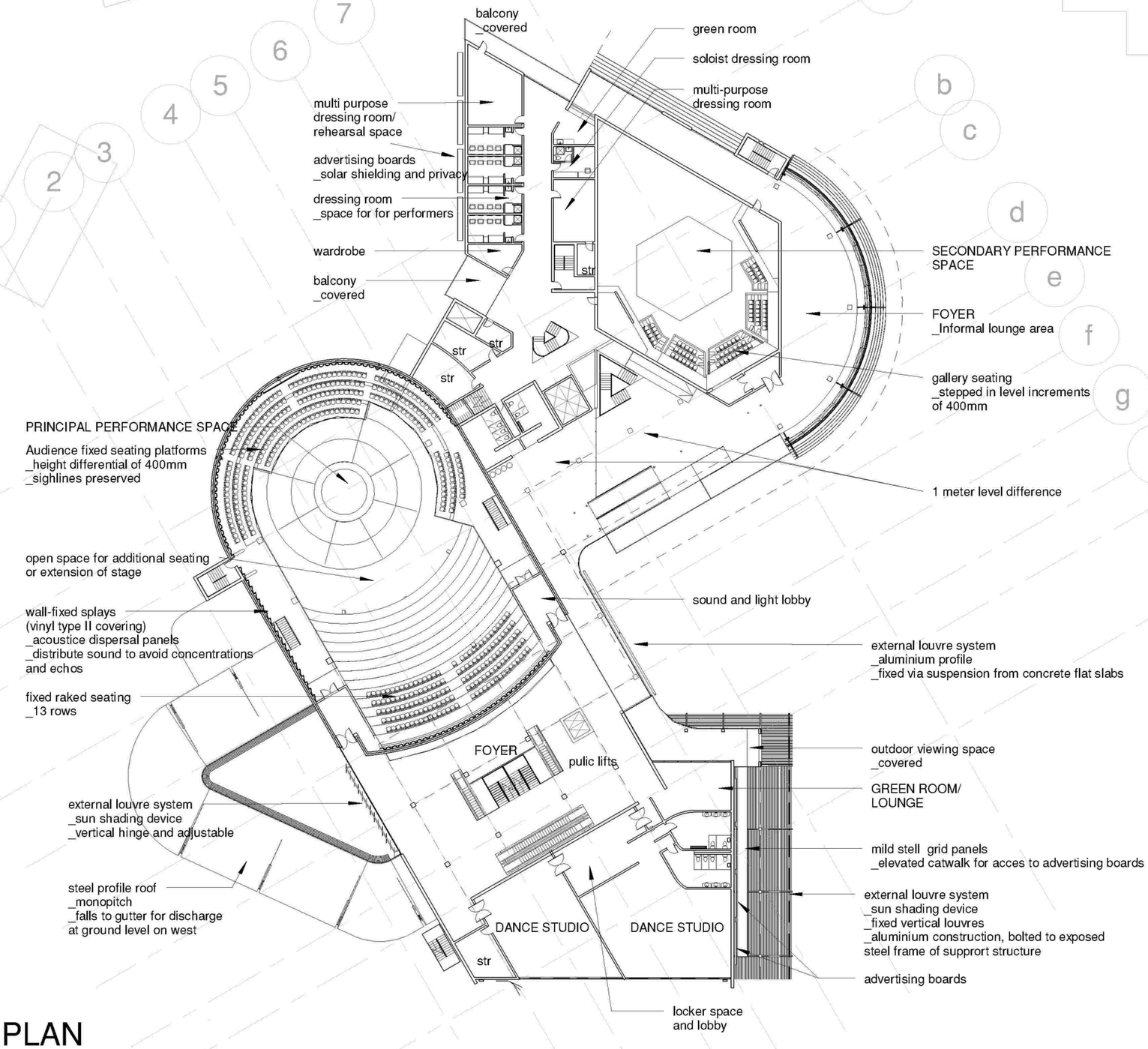


GROUND FLOOR PLAN
1: 500



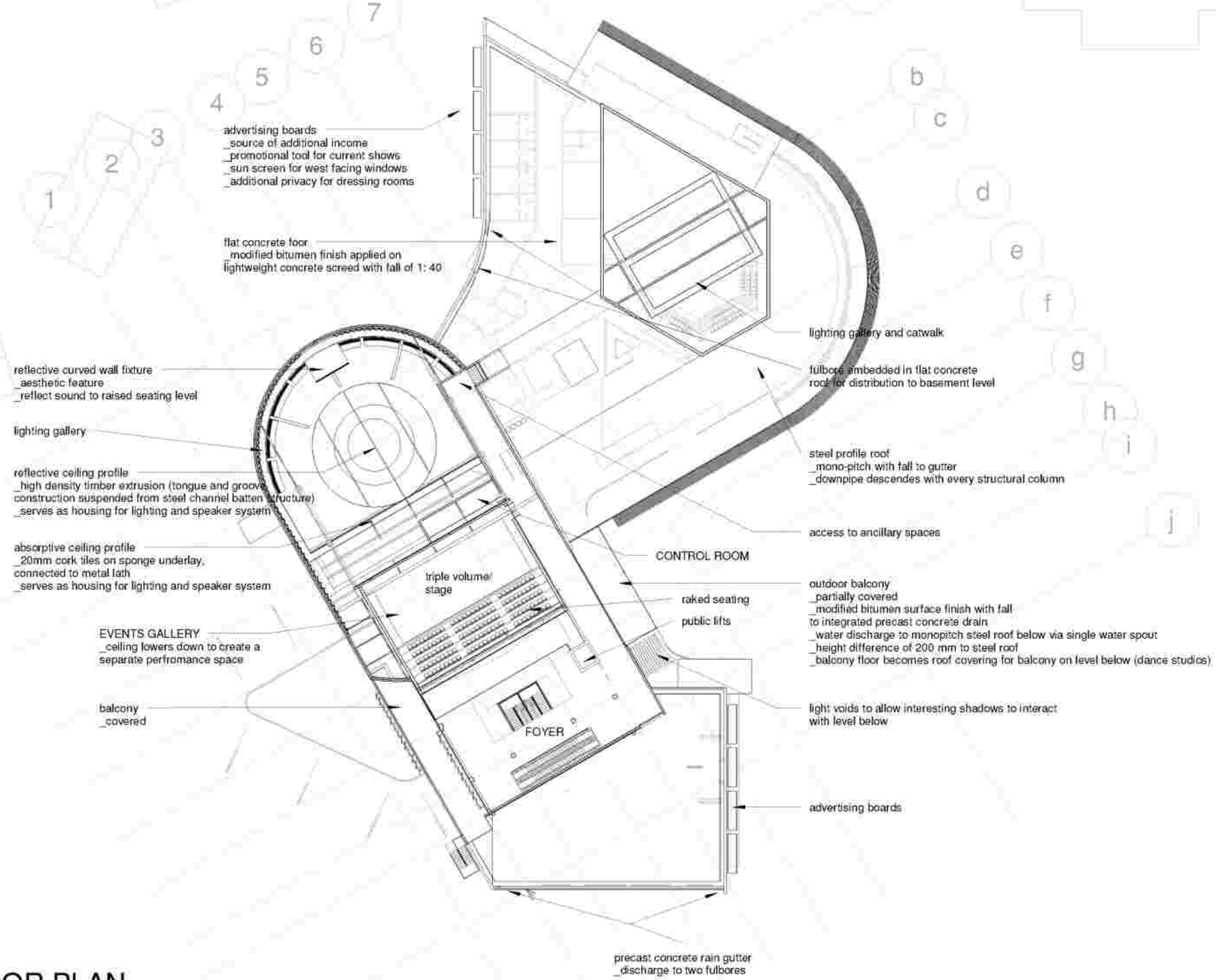
BASEMENT PLAN
1: 800

FIRST FLOOR PLAN
1: 500

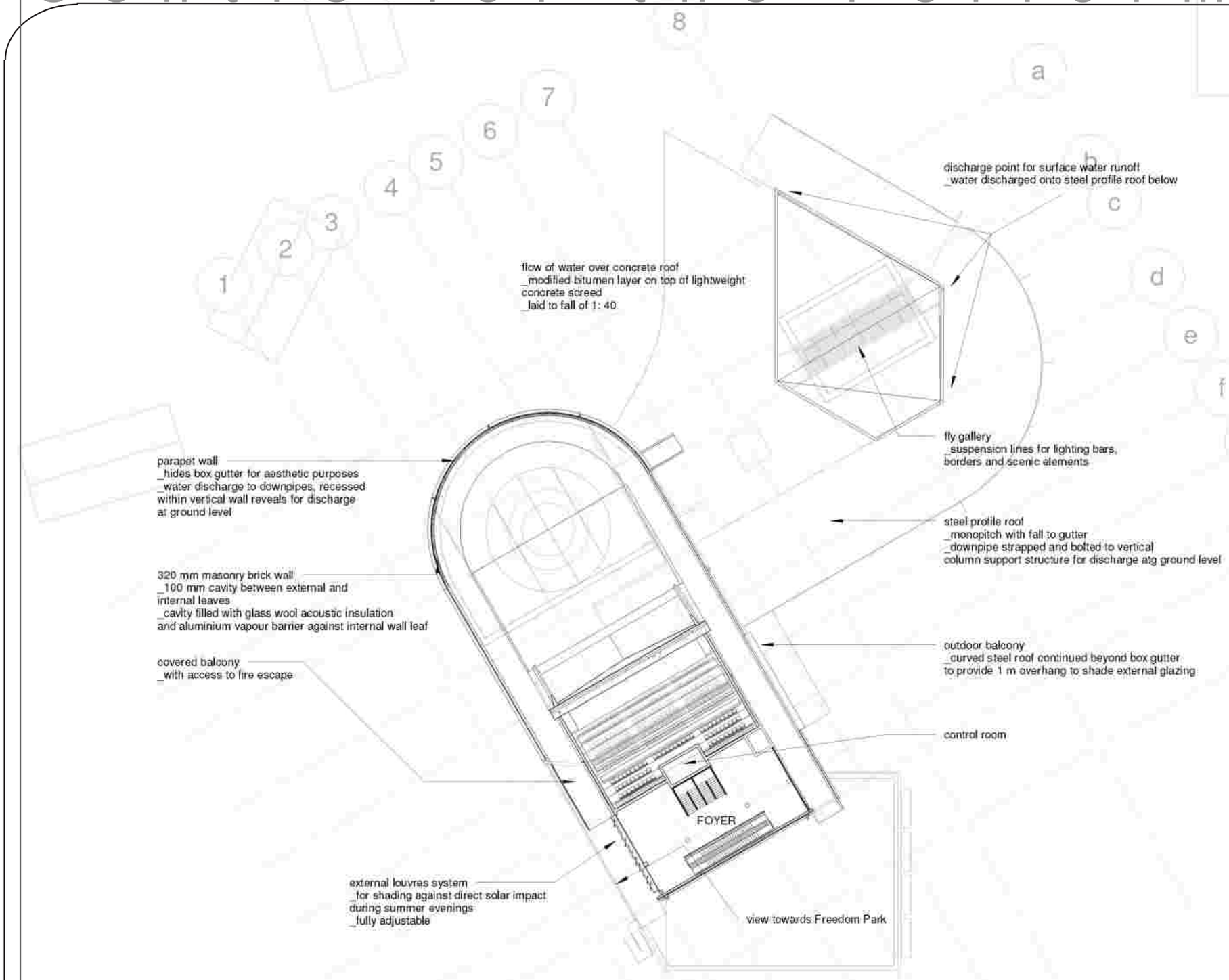


SECOND FLOOR PLAN
1: 500

Centre for the Performing Arts

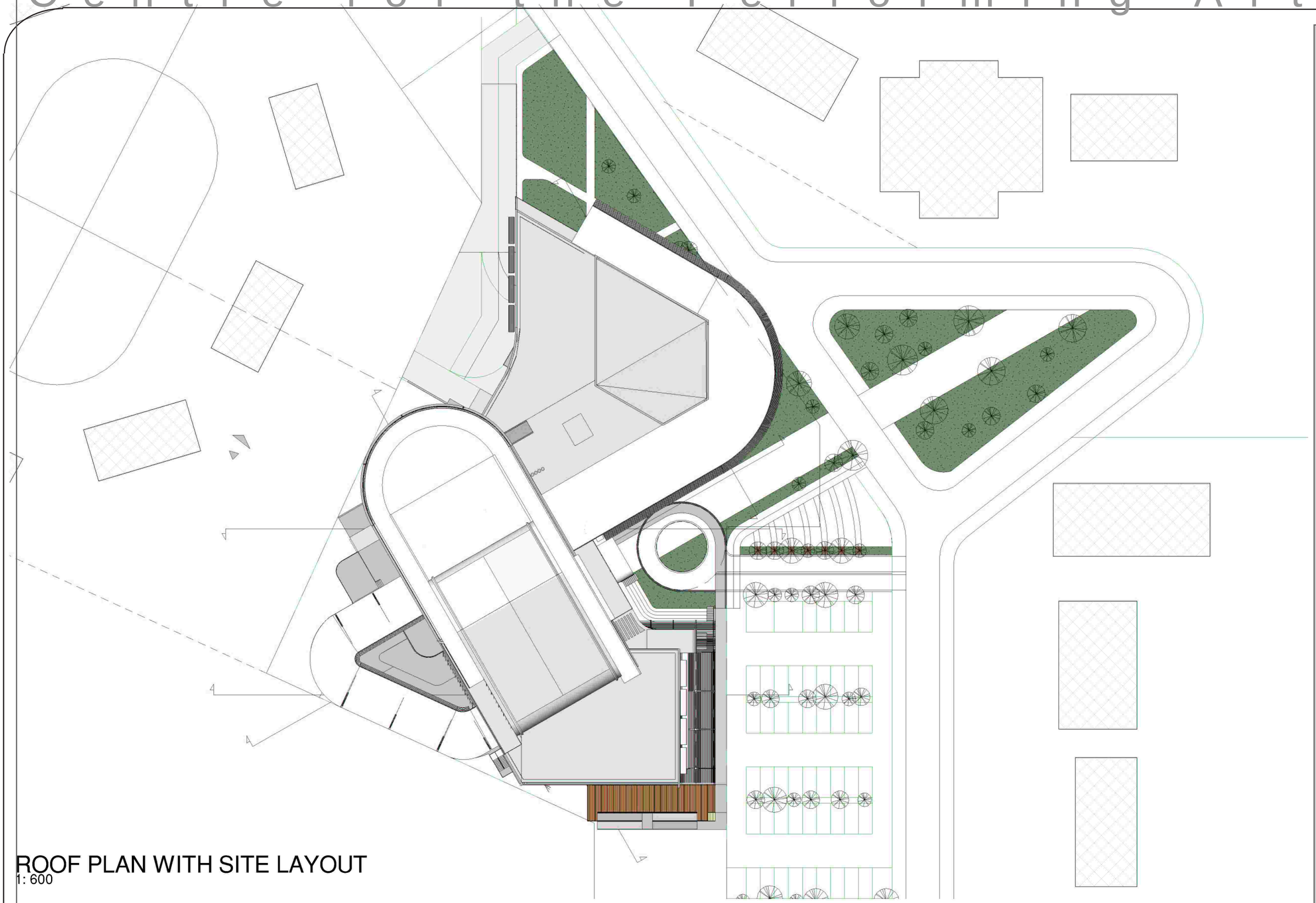


THIRD FLOOR PLAN
1: 500



FOURTH FLOOR PLAN
1: 500

Centre for the Performing Arts

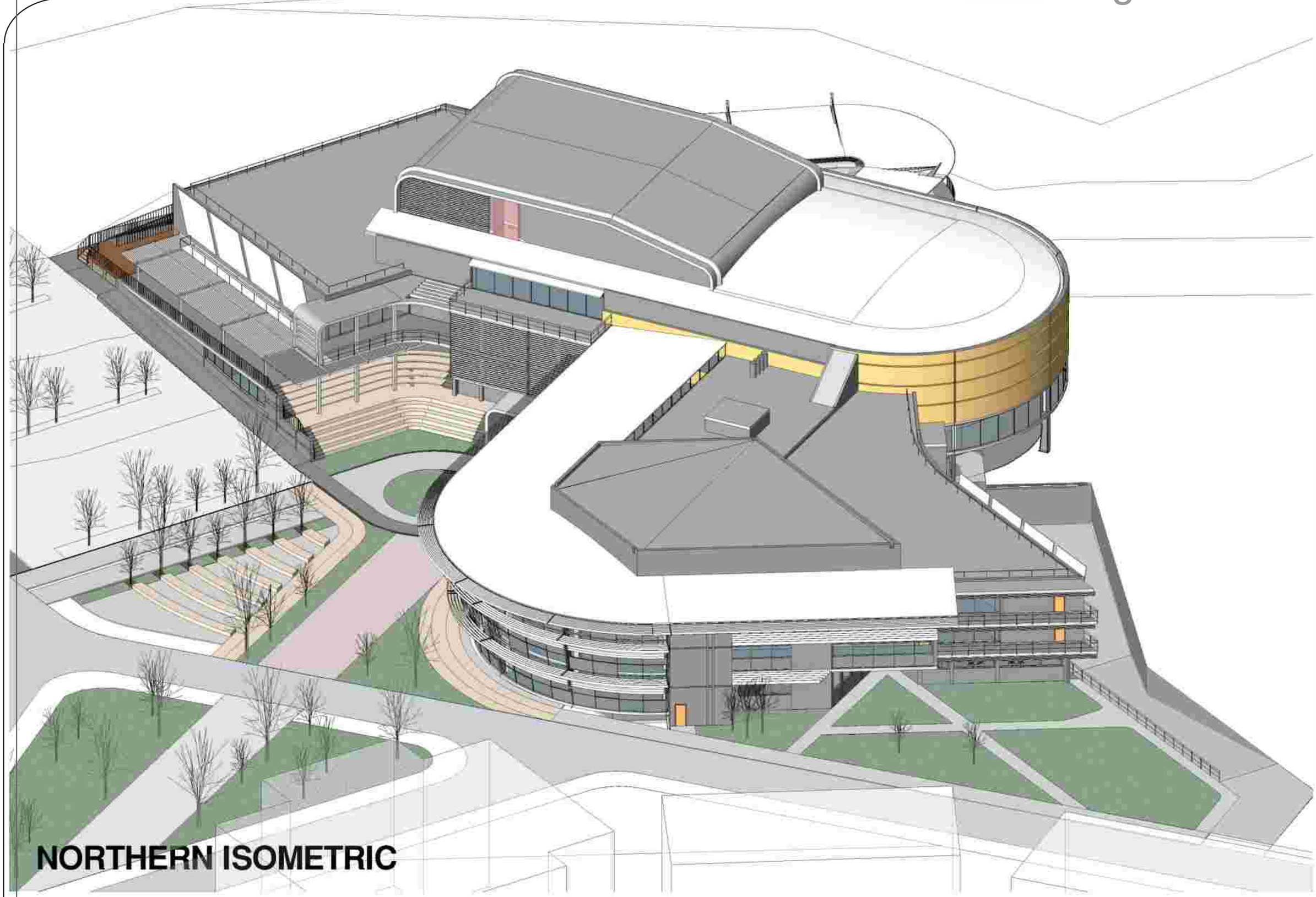


ROOF PLAN WITH SITE LAYOUT
1: 600

Centre for the Performing Arts

SOUTH EASTERN ISOMETRIC

Centre for the Performing Arts

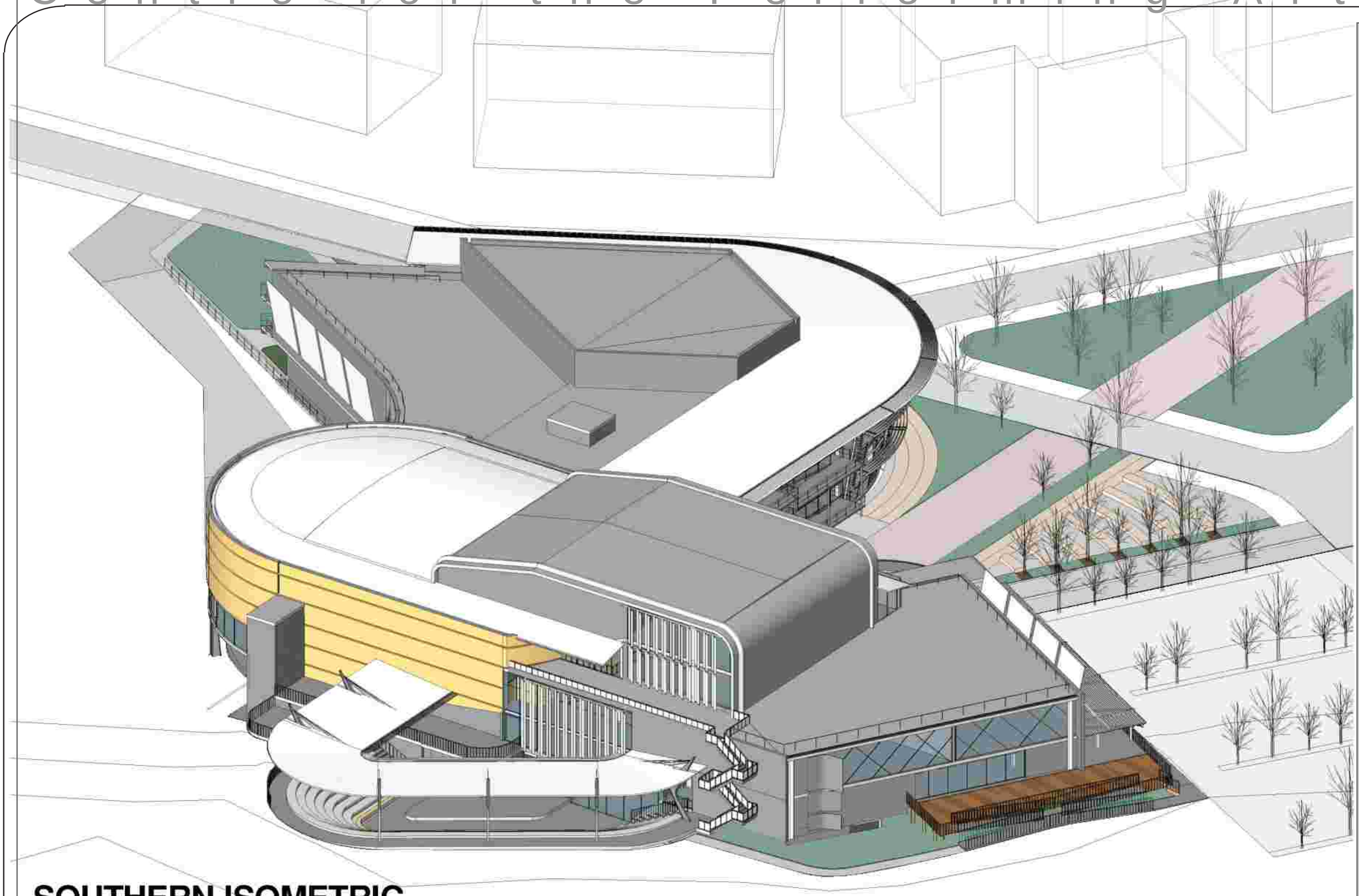


NORTHERN ISOMETRIC

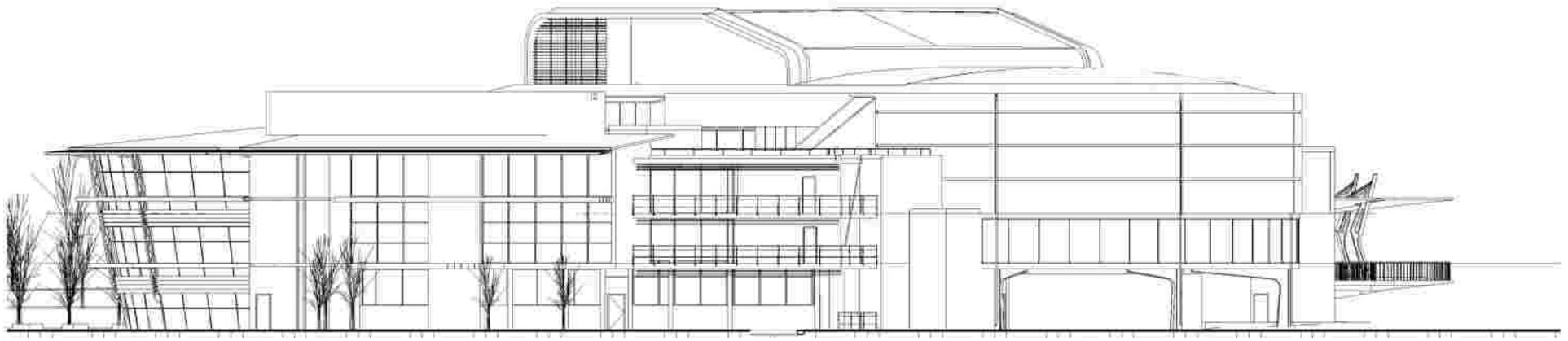
C e n t r e f o r t h e P e r f o r m i n g A r t s

WESTERN ISOMETRIC

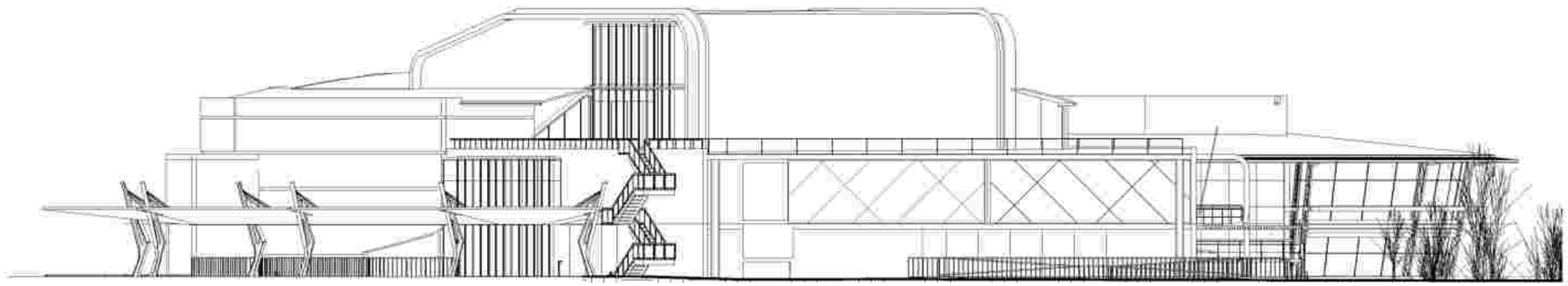
Centre for the Performing Arts



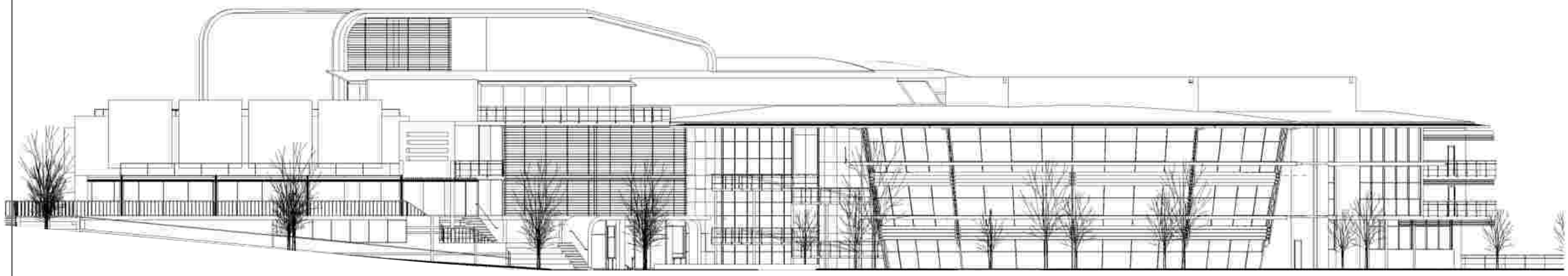
SOUTHERN ISOMETRIC



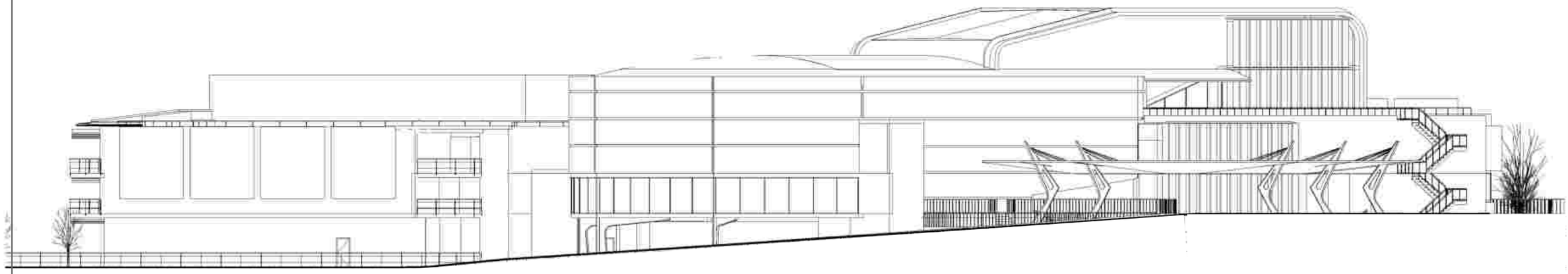
NORTH ELEVATION
1: 300



SOUTH ELEVATION
1: 300



EAST ELEVATION
1:300



WEST ELEVATION
1:300

Centre for the Performing Arts

curved steel sheet roofing
_steel sheets with lap joints @1200mm
_overlayed on top of 10mmm bubblefoil thermal insulation
_rigid 40 mm mineral fibre quilt provides structural solidity and acoustical insulation
_50mm air cavity with aluminium foil vapour barrier
_suspended heavy ceiling 20 mm plaster on metal lath (acoustical insulation)

parapet wall
_steel roof fall to box gutter
_discharge to 4 downpipes (80 mm galvanised steel)
_downpipes concealed within vertical wall reveals

wall reveal
_aesthetic feature

shaped parapet - in situ concrete
_modified bitumen surface finish (torched on)

weep holes for external discharge of water to steel profile roof below

EVENTS GALLERY

PRINCIPAL PERFORMANCE SPACE

OUTDOOR PERFORMANCE SPACE

LOBBY AND REHEARSAL SPACE

tilted curtain wall feature
_tilt at an angle of 10 degrees from the vertical

80 mm downpipe from steel profile roof
_discharge to precast concrete drain with fall to municpal sewer connection

diagonal support beams for displacement of load over column grid, alleviate excessive stress on single support column

inclined external glazed curtain wall suspended from reinforced concrete structure by menas of leaning column on pivot base joint.

fly gallery

FOYER

gallery level

FOYER

SECONDARY PERFORMANCE SPACE

DRESSING ROOMS

DRESSING ROOMS

FOYER

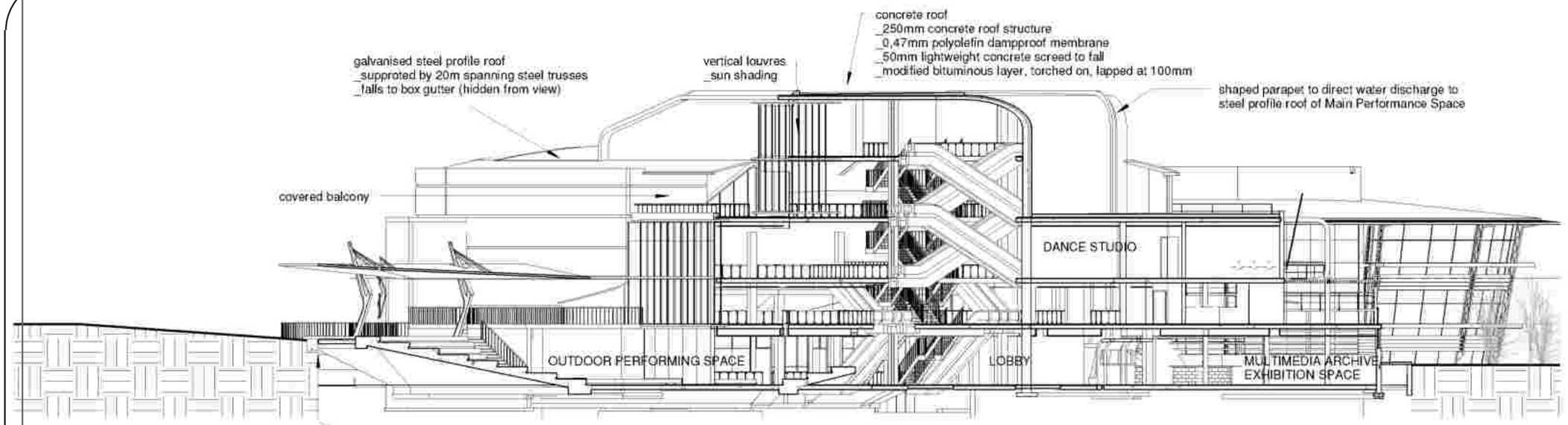
STUDIO THEATRE

OFFICES

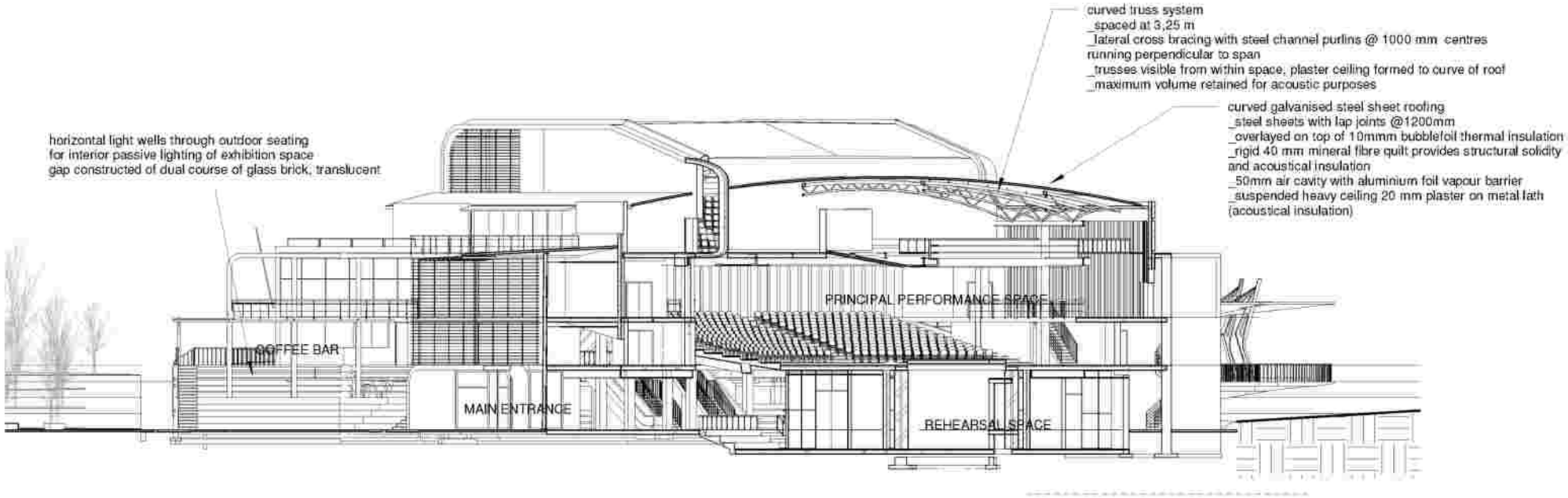
BASEMENT

Sections

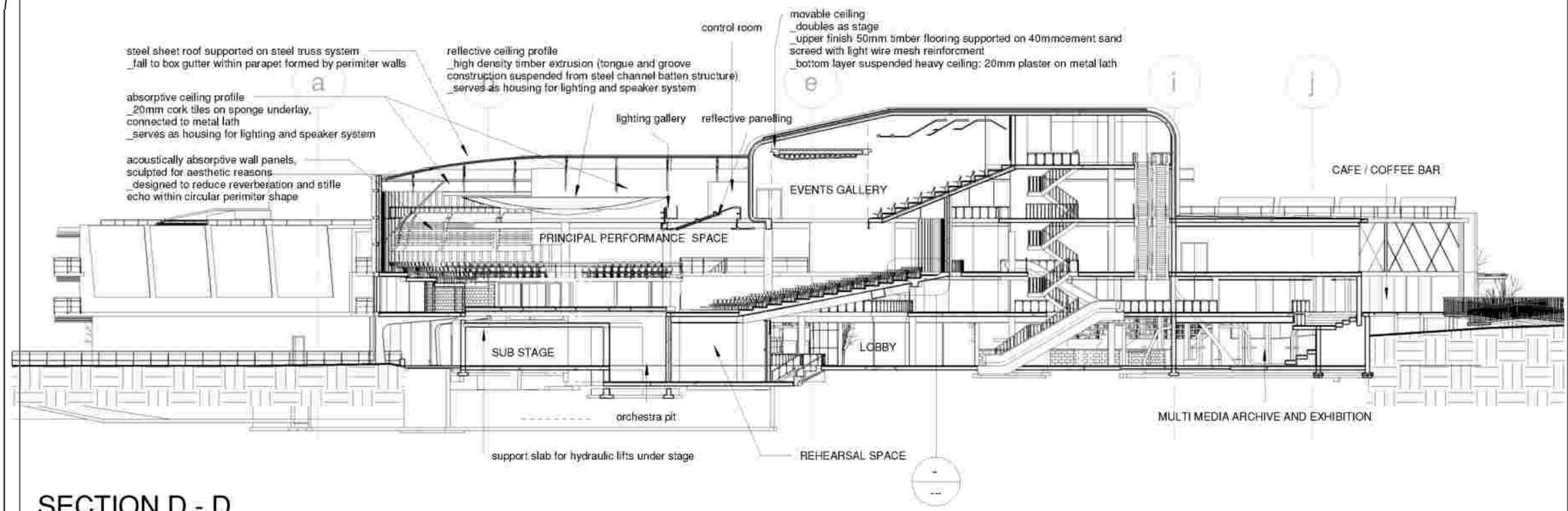
Drawings



SECTION B - B
1: 300

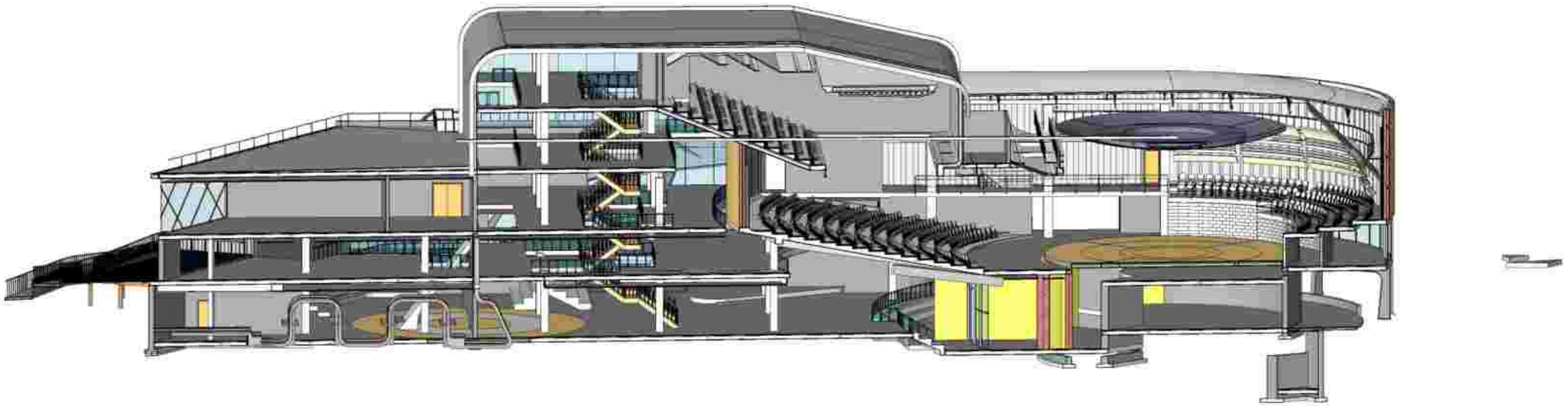


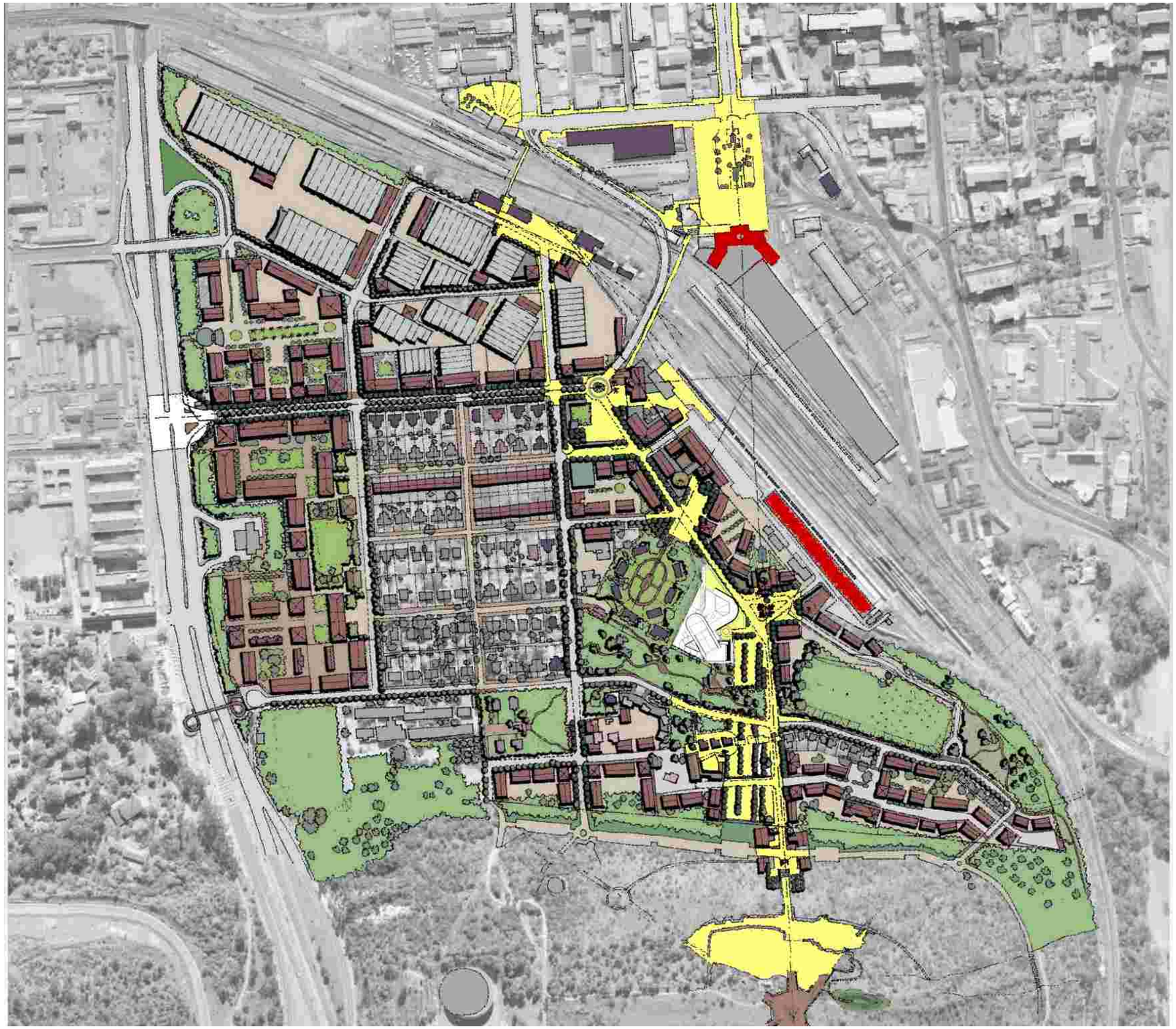
SECTION C - C
1: 300



SECTION D - D
1: 300

3D SECTION THROUGH PRINCIPAL PERFORMANCE SPACE
1: 300





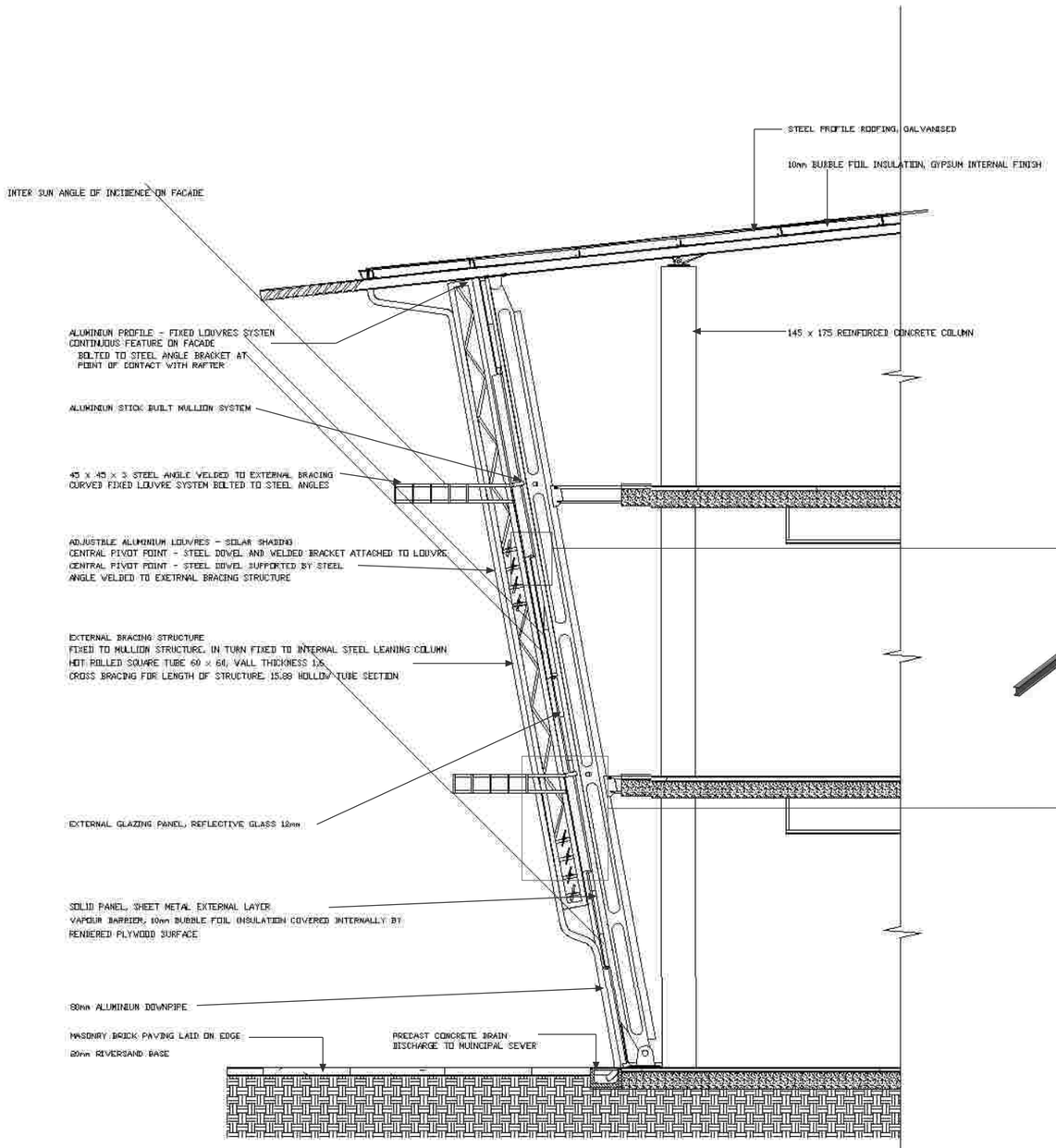
REVISED FORM RESPONSE DRAWING

This drawing seeks to provide the reader with an understanding with regards to the eventual layout of the Salvokop Precinct, including the Centre for the Performing Arts as proposed by this dissertation.

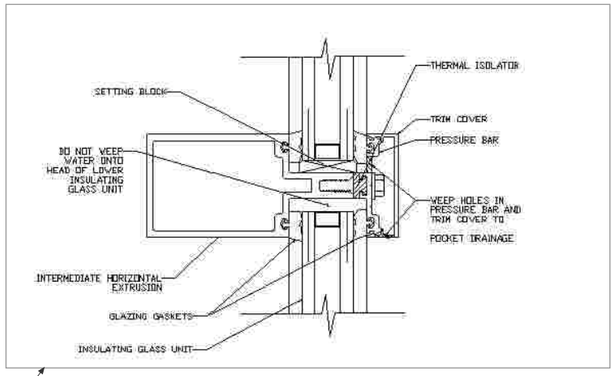
In yellow are demarcated the routes of greater public travel and influence, these spaces are primarily concerned with the route of the Ceremonial Way. These spaces include: vehicular roadways, pedestrian footpaths, and outdoor public open spaces.

It can be seen that the system of public open spaces that is common to the rest of the precinct is effectively incorporated into the layout of the Centre as part of a regular public activity nodal pattern for the area.

Demarcated in red are the train stations for the area. This illustrates the close proximity relationship of the Centre for the Performing Arts to the various areas of mass public congregation and deposition within the Salvokop Precinct (demarcated in yellow).

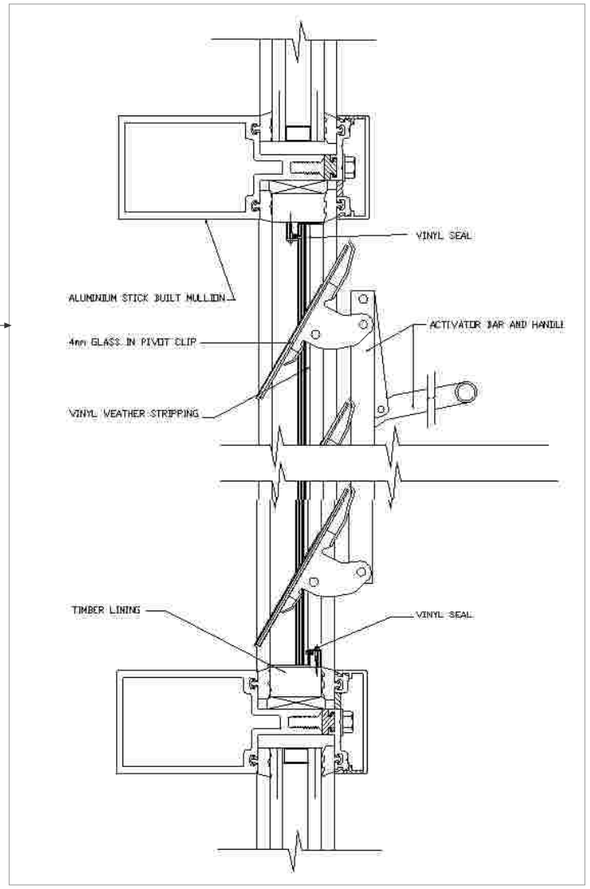


SECTION THROUGH CURTAIN WALL
_TAKEN FROM SECTION E - E



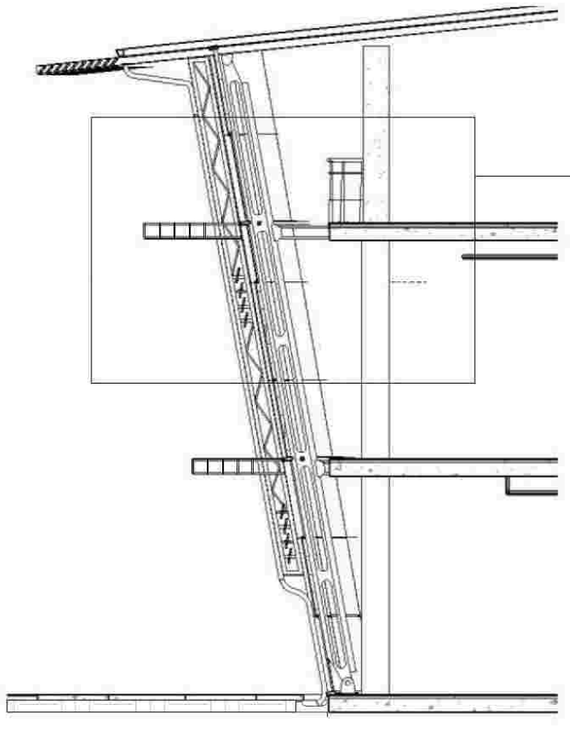
SECTION THROUGH TYPICAL
STICK-BUILT MULLION WITHIN CURTAIN WALL

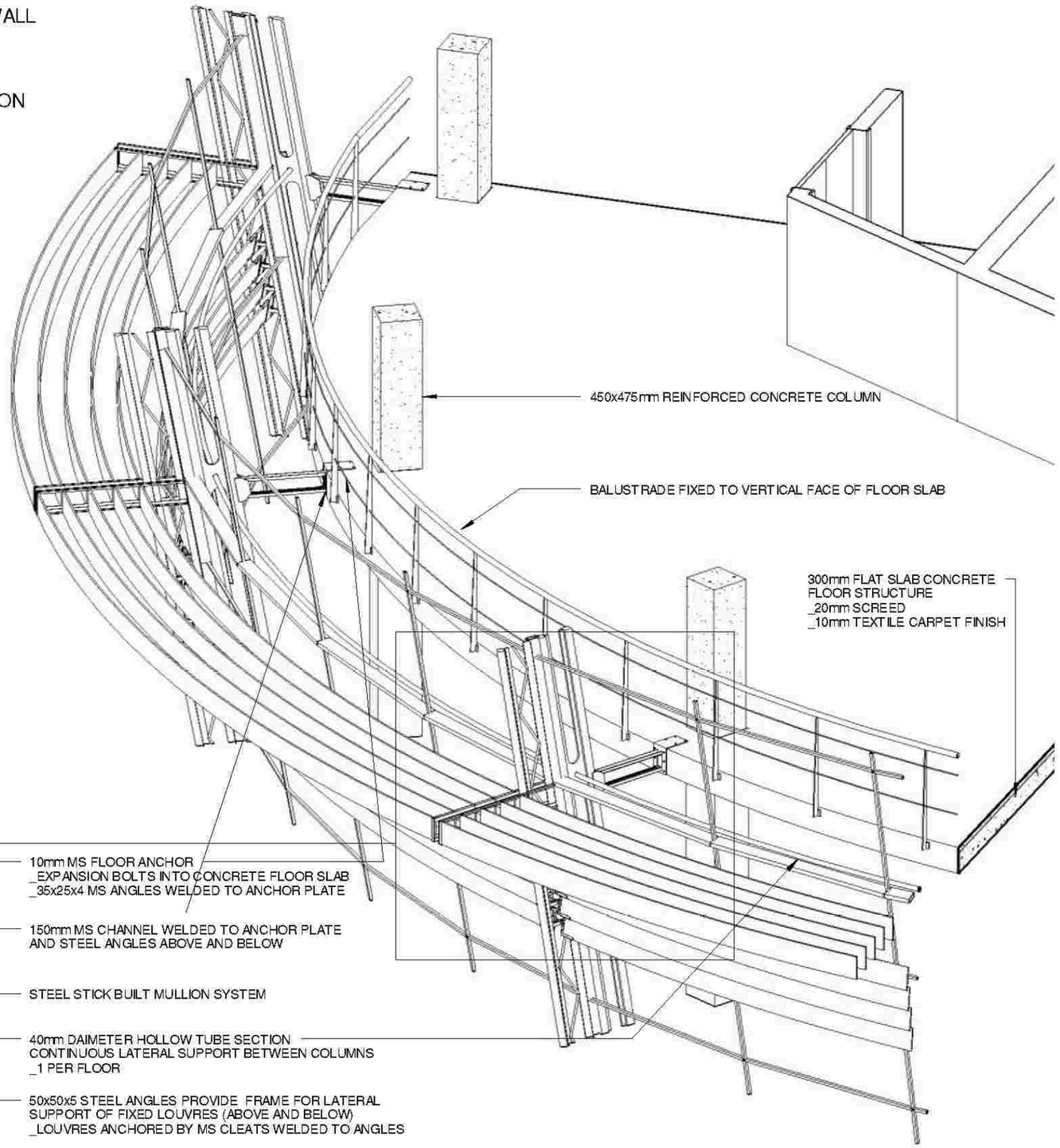
3D VIEW OF SUPPORT STRUCTURE

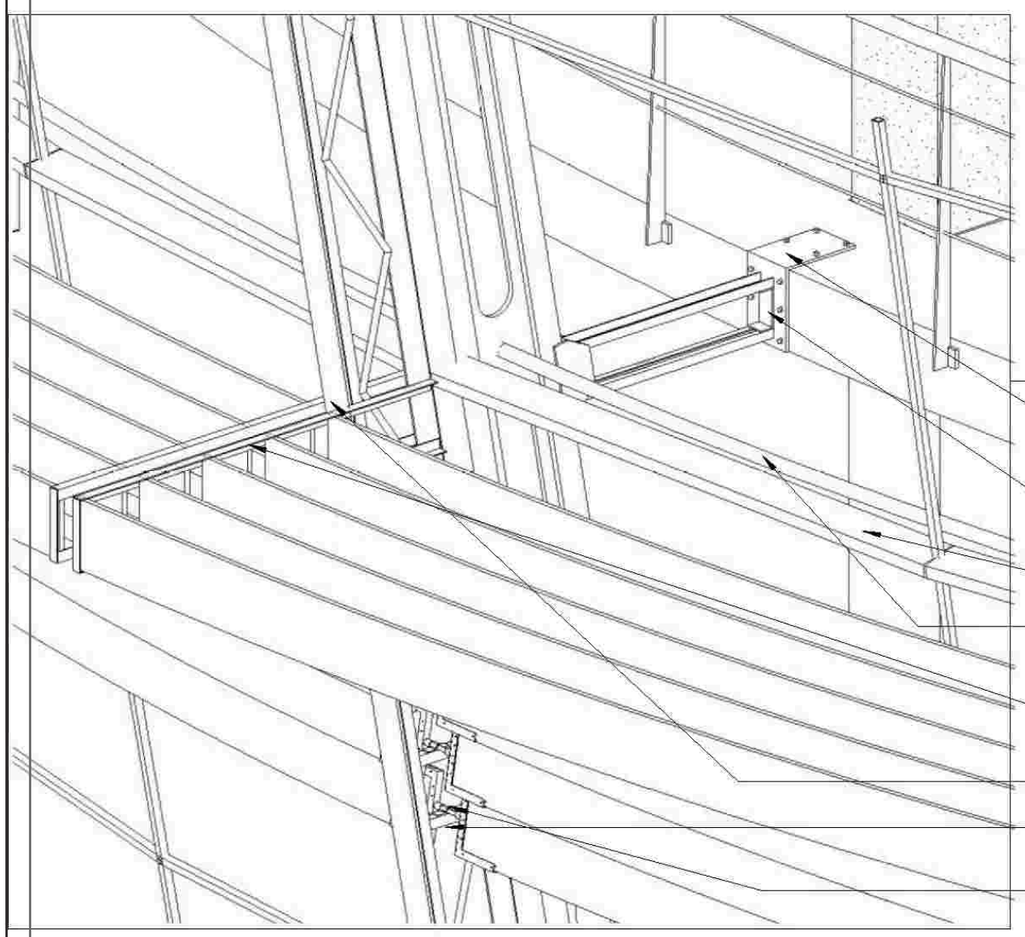


SECTION: EXTERNAL GLAZING LOUVRES

CURTAIN WALL FACADE DETAILING







10mm MS FLOOR ANCHOR
_EXPANSION BOLTS INTO CONCRETE FLOOR SLAB
_35x25x4 MS ANGLES WELDED TO ANCHOR PLATE

150mm MS CHANNEL WELDED TO ANCHOR PLATE
AND STEEL ANGLES ABOVE AND BELOW

STEEL STICK BUILT MULLION SYSTEM

40mm DAIMETER HOLLOW TUBE SECTION
CONTINUOUS LATERAL SUPPORT BETWEEN COLUMNS
_1 PER FLOOR

50x50x5 STEEL ANGLES PROVIDE FRAME FOR LATERAL
SUPPORT OF FIXED LOUVRES (ABOVE AND BELOW)
_LOUVRES ANCHORED BY MS CLEATS WELDED TO ANGLES

SPACE BETWEEN LOUVRE SUPPORT ANGLES USED TO ACCOMMODATE
80mm DOWNPIPE WHICH RUNS TO GROUND

20x20x4 MS CHANNEL BRACING
_FIXED WITH 8mm DIAMETER RIVETS TO ADJUSTABLE LOUVRES

18mm DIAMETER MS DOWEL SUPPORTED ON 45x45x4 ANGLES
WELDED TO EXTERNAL STEEL LATTICE SUPPORT STRUCTURE

3D SECTION OF CURTAIN WALL -
SECOND FLOOR 1: 50

ILLUSTRATES:
_CONNCETION TO REINFORCED CONCRETE STRUCTURE
_CURTAIN WALL SUPPORT SYSTEM

water discharge to parapet gutter
_downpipe run through wall to exterior surface
_descends within wall reveal for aesthetic purposes for eventual discharge at ground level

1 **2**

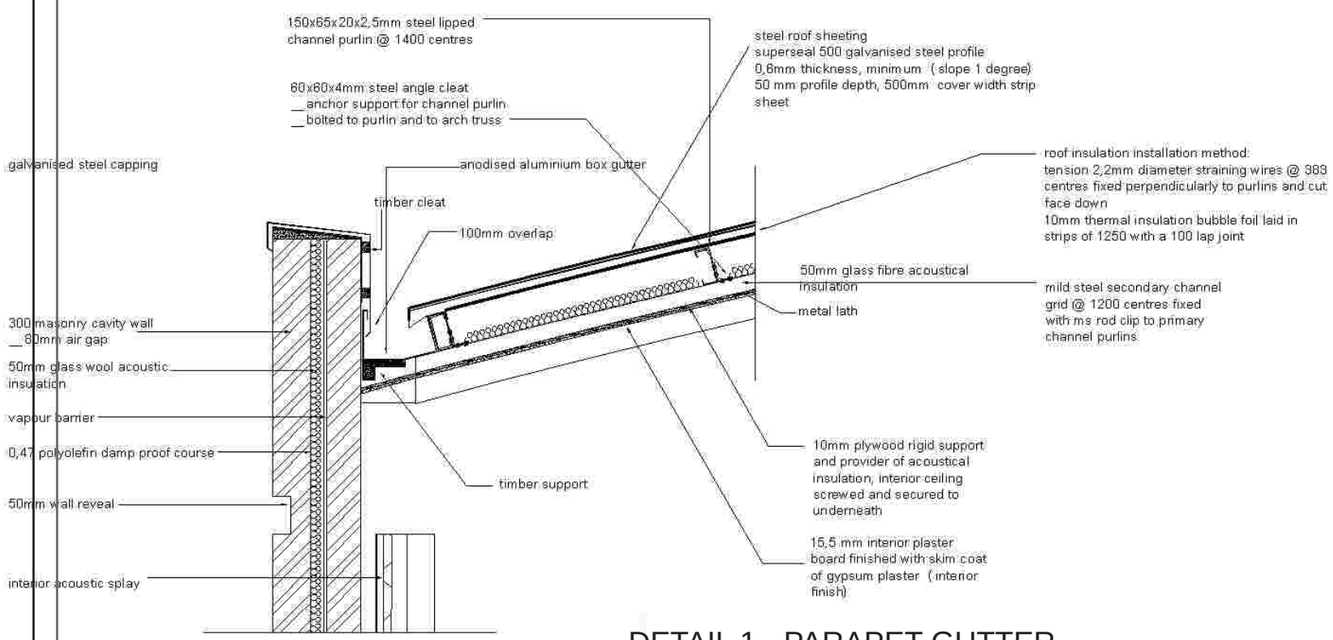
framed arch truss @ 3,25 m centres

lighting gallery

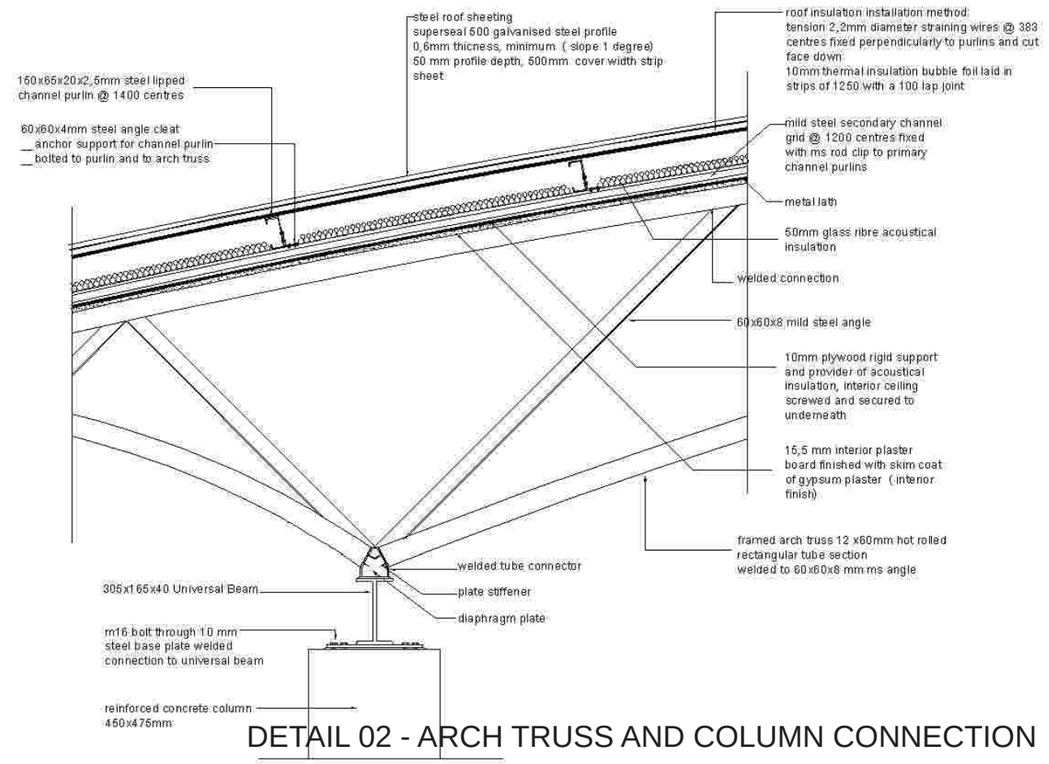
dual points of support for framed arch truss, clear span of 18m over audience seating area

PRINCIPAL PERFORMANCE SPACE

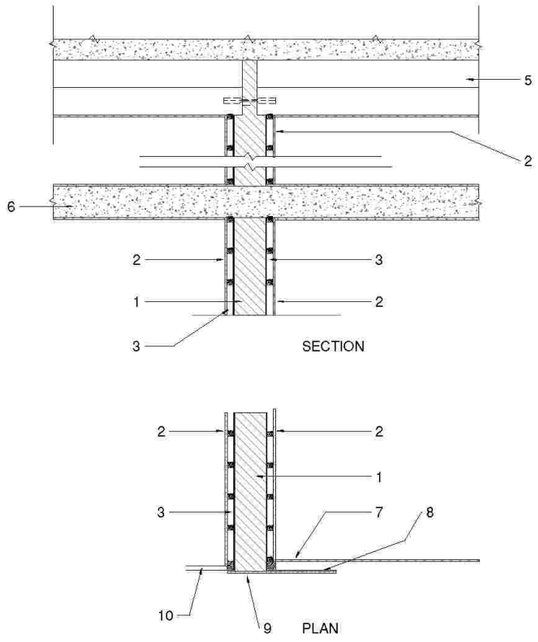
SECTION THROUGH CONCERT HALL ROOF (SECTION LINE RUNS NORTH-SOUTH)



DETAIL 1 - PARAPET GUTTER



DETAIL 02 - ARCH TRUSS AND COLUMN CONNECTION



1 Brick wall 300 mm nominal thickness, weloght not less than 415 kg/m2

2 Plaster board 12,7 mm joint filled and lined

3 Self supporting stud or framework

4 Carpet finish

5 Ceiling and/or roof joists

6 Concrete flat slab 300 mm, weight not less than 220 kg/m2

7 Plaster board sheet lining

8 Plywood sheeting

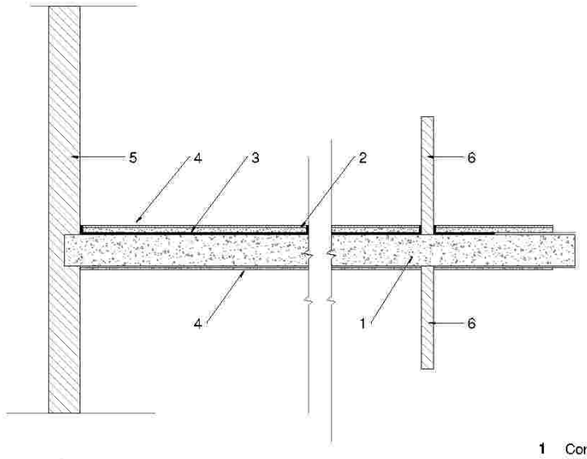
9 External rendering (plaster finish)

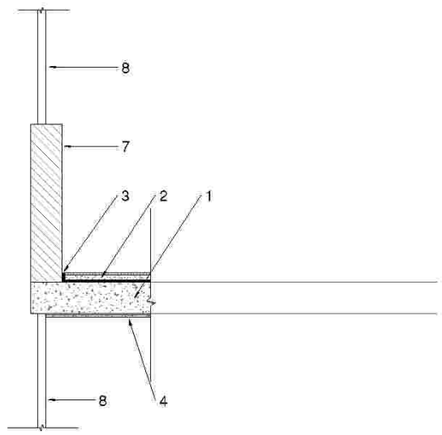
10 Lightweight and non-loadbearing panel infill _curtain wall

Average sound insulation not less than 43 dB (airborne)

Type 03 - plan and section
_rehearsal spaces

Floor and Wall Treatments:
some of the methods of noise control, both internaland external, through implementation of certain acoustical noise preventative treatments. These details provide a genral and simplified indication of some of the various methods used around the building. SInce not all areas operate the same, a singular strategy is not sufficient, thus providing a series of types for implemtation around the building where appropriate deems to satisfy all criteria.





1 Concrete floor, weight not less than 220 kg/m2
300mm thick flat slab reinforced concrete

2 40 mm sand and cement screed with light wire mesh reinforcement

3 Resilient layer
_mineral fibre quilt

4 Carpet finish

5 Structural load-bearing wall

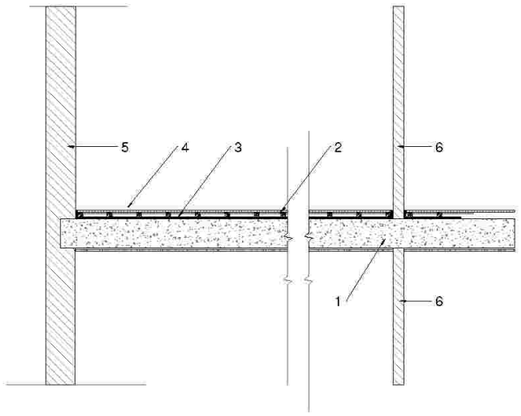
6 Partition, bearing or non-load bearing

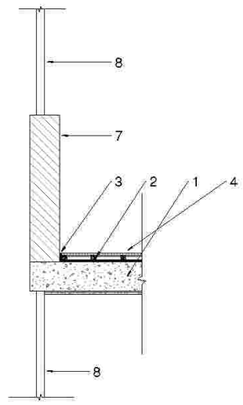
7 External walling not less than 110 kg/m2

8 Lightweight and non-loadbearing panel infill
_curtain wal

Average sound insulation not less than 48 dB (airborne) Grade I (impact)

Type 01 - sections
primary floor treatment for general public spaces and related foyers





1 Concrete floor, weight not less than 220 kg/m2
300mm thick flat slab reinforced concrete

2 Raft floor of 21 mm tongued and grooved baords nailed to 50 x 35 mm battens @ 350 centres

3 Resilient layer
_12 mm precompressed mineral fibre quilt with bituminous paper on one side

4 Carpet finish

5 Structural load-bearing wall

6 Partition, bearing or non-load bearing

7 External walling not less than 110 kg/m2

8 Lightweight and non-loadbearing panel infill
_curtain wall

Average sound insulation not less than 48 dB (airborne) Grade I (impact)

Type 02 - sections
_Floor treatment for secondary performance space and related foyer

Exploded View

Drawings

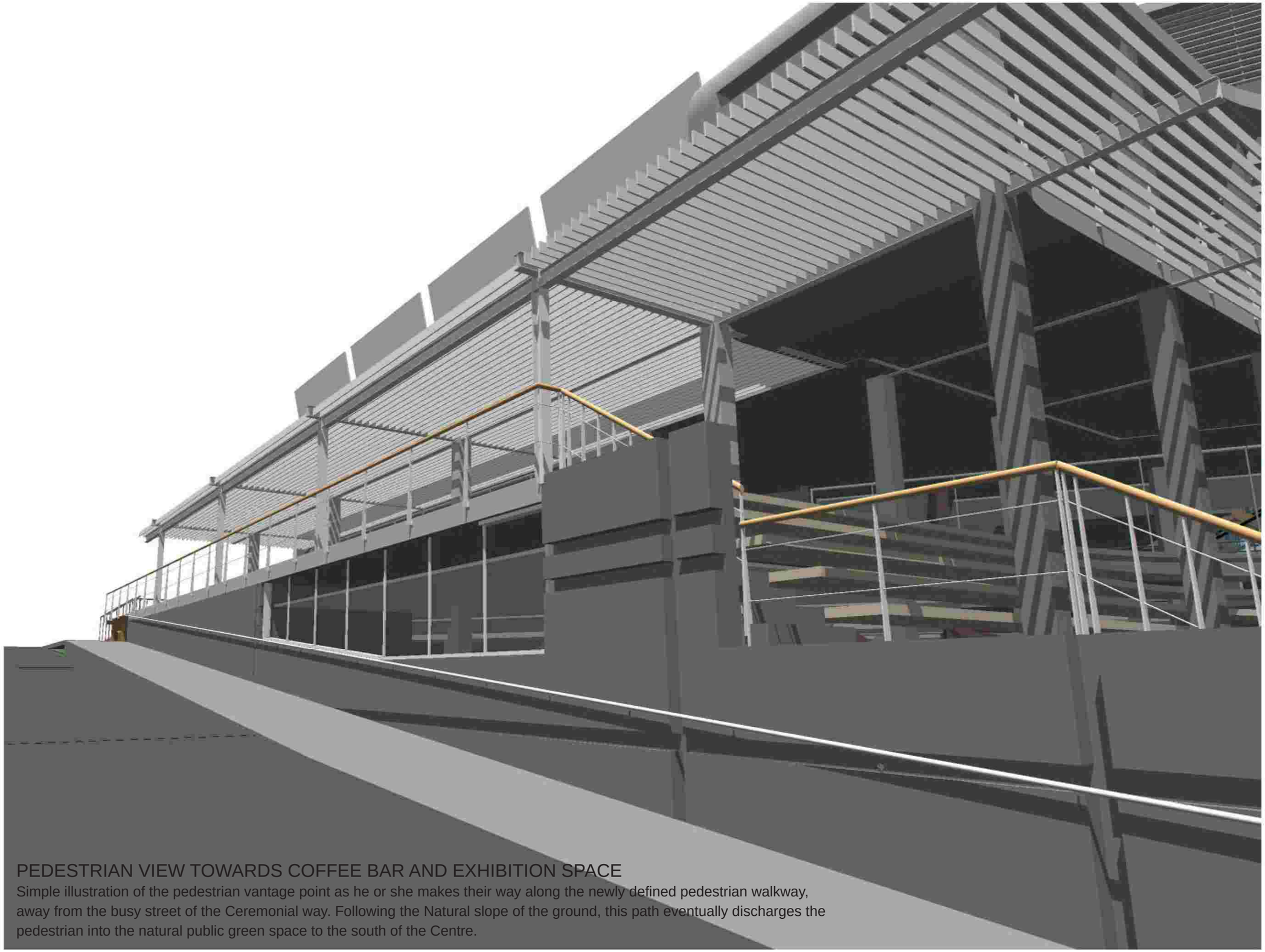
MAIN APPROACH FROM PUBLIC OPEN SPACE OF CEREMONIAL WAY

The building is arranged aound the public open space. This public open space has been designed to accommodate events and performances itself. Public seating is in abundance allowing a multitude of places to observe and enjoy outdoor events, or simply adequate place to relax or wait for the train. While the building has been designed to allow for external views to the interior, the building itself is geared to accommodate external viewing from the interior through its multi-level observation paltforms and balconies.

OUTDOOR PUBLIC OPEN SPACE

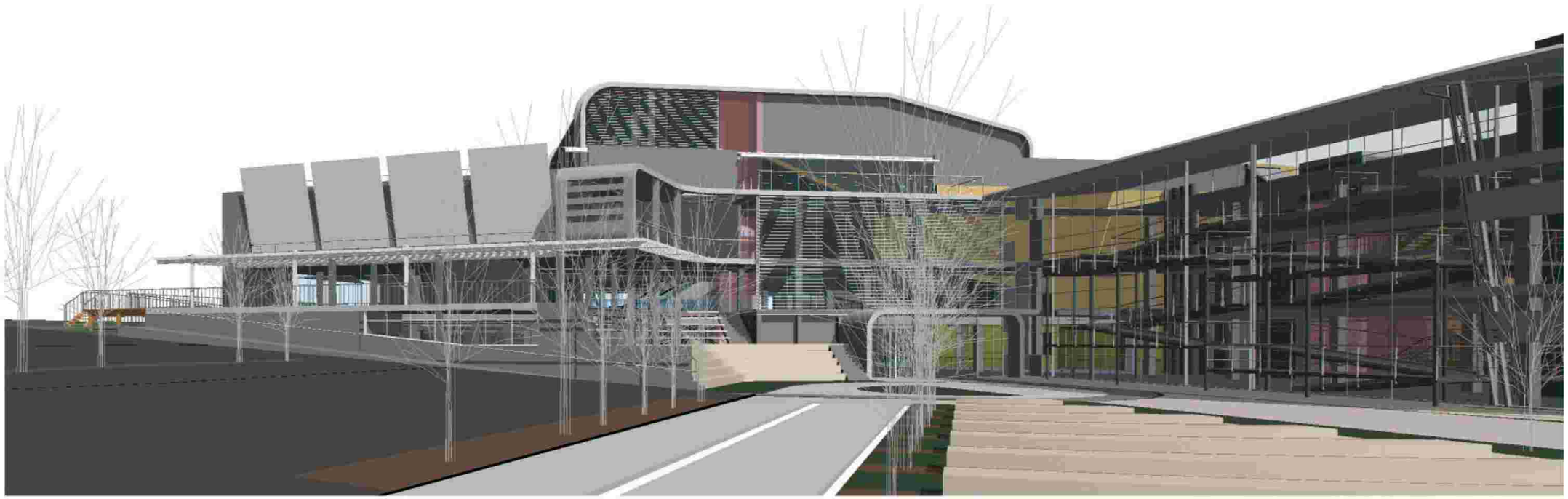
A view from a standing position within the events space / outdoor public open space around which the building surrounds itself. Through a difference in paving treatments and surface coverings, clearly defined routes and uses for the space are observable. Due to the fact that their presence is marked subtely in this way, the space may be used for a variety of purposes, e.g. recreation by th emasses, without hinderence on any casual day. A porte-cochere is provided if need be through the integration of paved turning circle. This turning circle has been designed to adequately cope with the turning needs of emergency vehicles.

Fixed public seating offers transition to the first floor level where a coffee bar is situated for those interested in watching life at this busy intersection unfold. Glass openings allow for light pentration into the interior.



PEDESTRIAN VIEW TOWARDS COFFEE BAR AND EXHIBITION SPACE

Simple illustration of the pedestrian vantage point as he or she makes their way along the newly defined pedestrian walkway, away from the busy street of the Ceremonial way. Following the Natural slope of the ground, this path eventually discharges the pedestrian into the natural public green space to the south of the Centre.



VIEW FROM CEREMONIAL WAY INTERSECTION

Vehicular access to within the site is not encouraged, the public open space would prosper far greater if cars were not a fixture within the space. Provision has been made for vehicular access never-the-less. This is necessary for close proximity drop-off during periods of inclement weather as well as functional disability. Visiting dignitaries are therefore also afforded the opportunity to stroll directly into cover from within their driven cars. This integrated turning circle is also important from the perspective of emergency vehicle access, since access otherwise for such vehicles is limited.

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