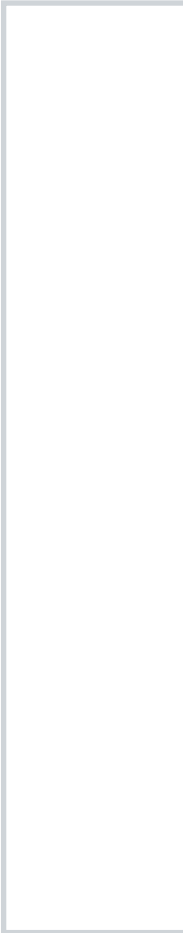




extension
conversion



Submitted in fulfilment of part of the requirements for the degree of Masters in Architecture (Professional) in the Faculty of Engineering, Built Environment and Information Technology, the University of Pretoria, South Africa, 2009.

Study Leader : Nicholas Clarke
Course Co-ordinator : Prof. Karel Bakker

by Maretha Perold_27459595

music²

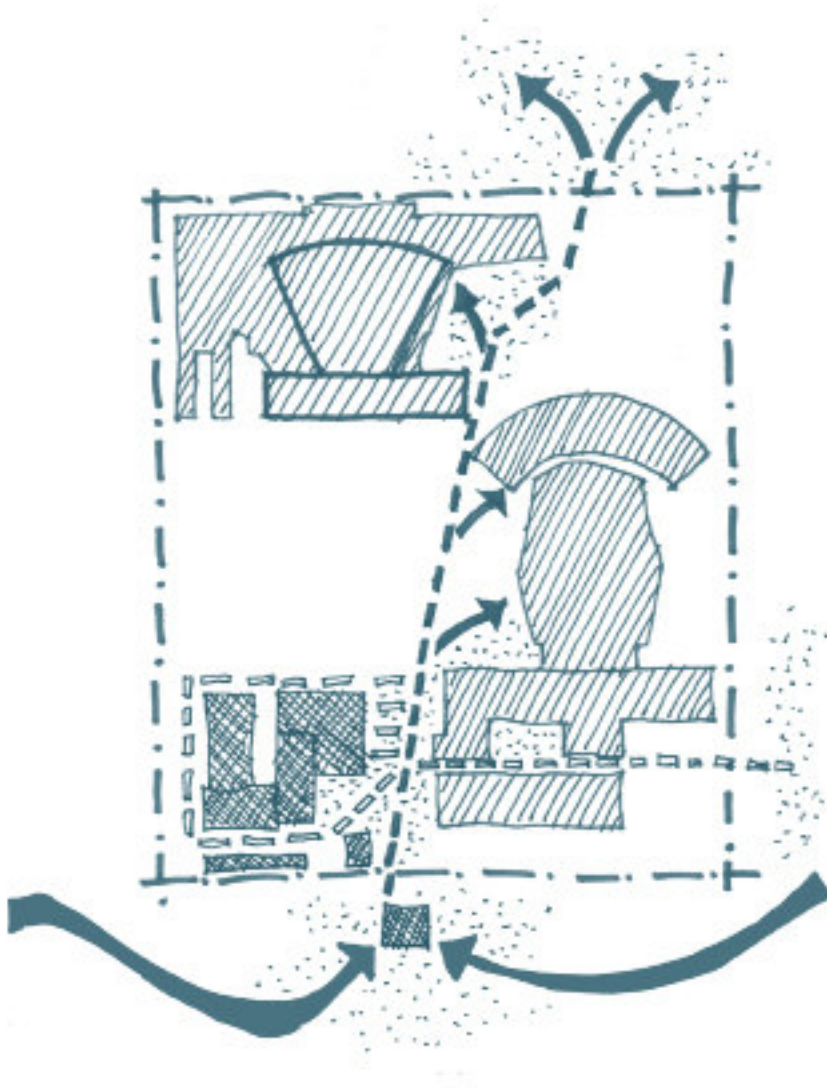
place of music
experience of music

established
intensified

extension & conversion of the department of music of the university of pretoria



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UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

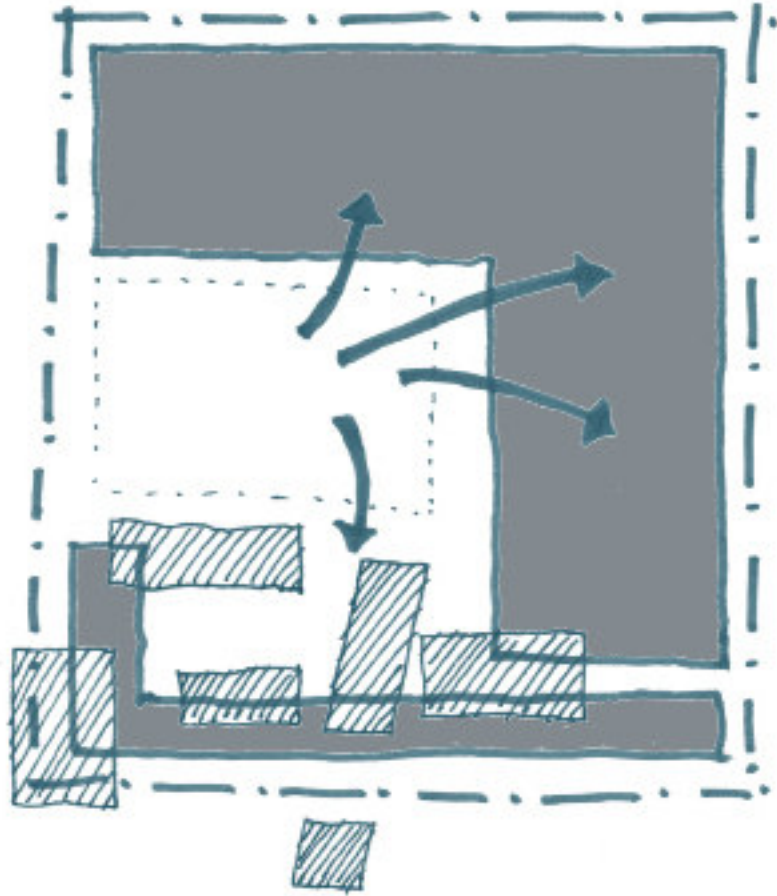


brief

additions to - integration of - UP music department

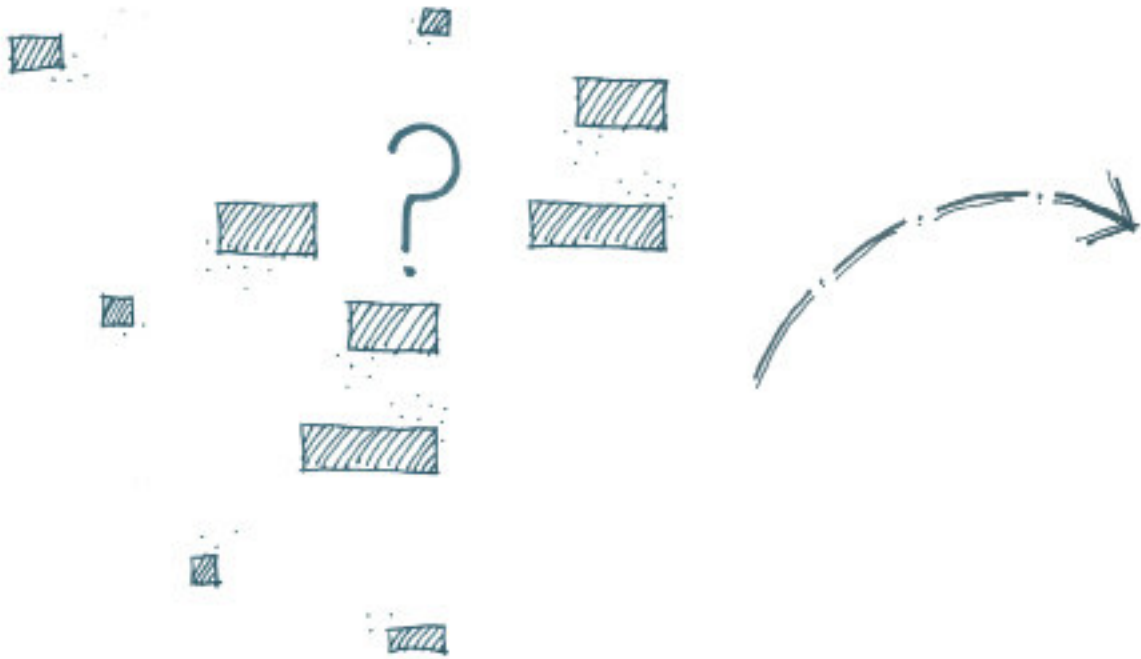


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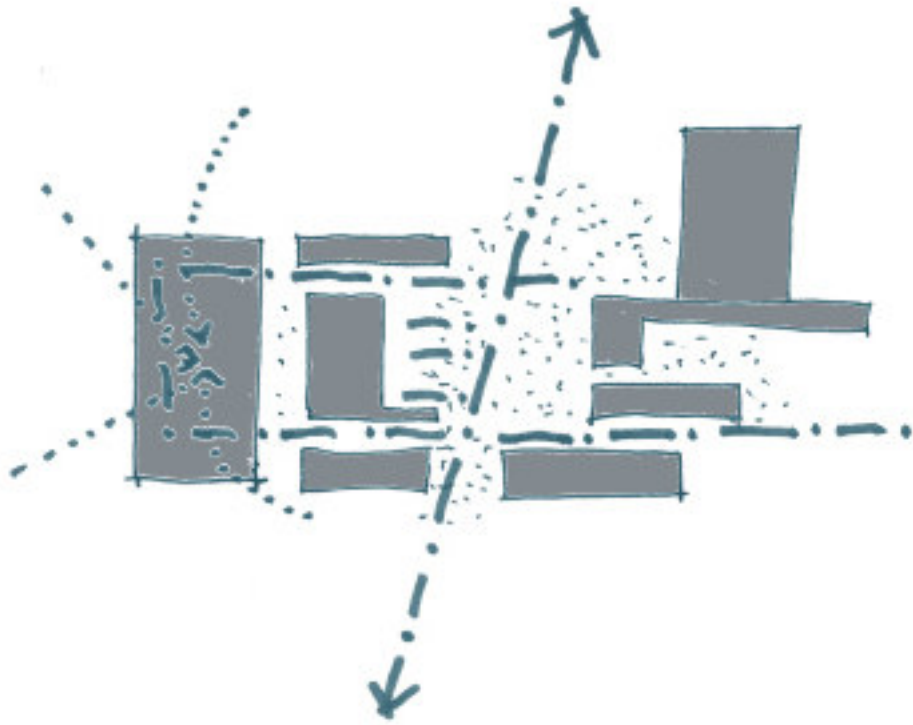
music2 - music established - music intensified

response



method

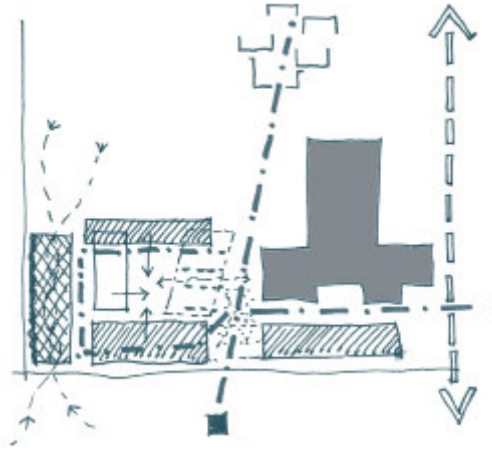
extension - conversion



contextually - functionally - socially

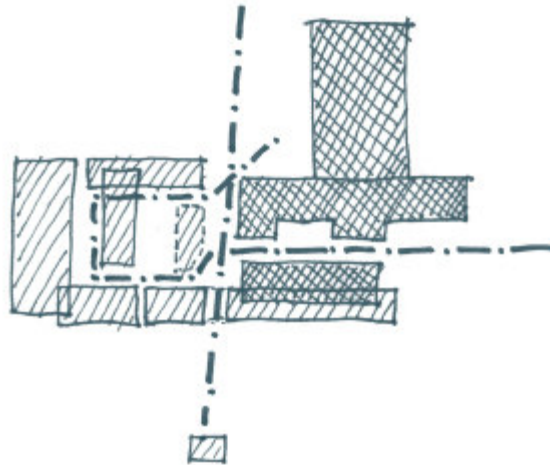
method

new building - new place
- precinct serving music -
linked to campus & public



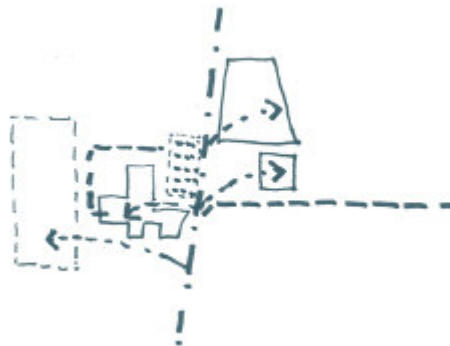
functional

all-inclusive program -
emphasising process of
music - preparation &
performance



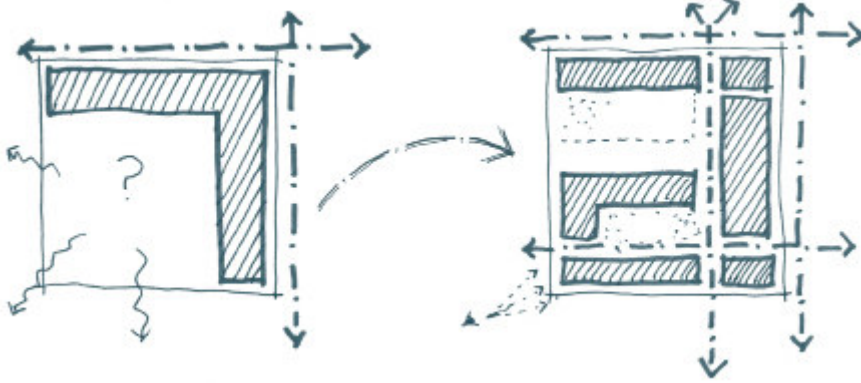
social

increased variety of
people & places -
definition of programmed
& social spaces

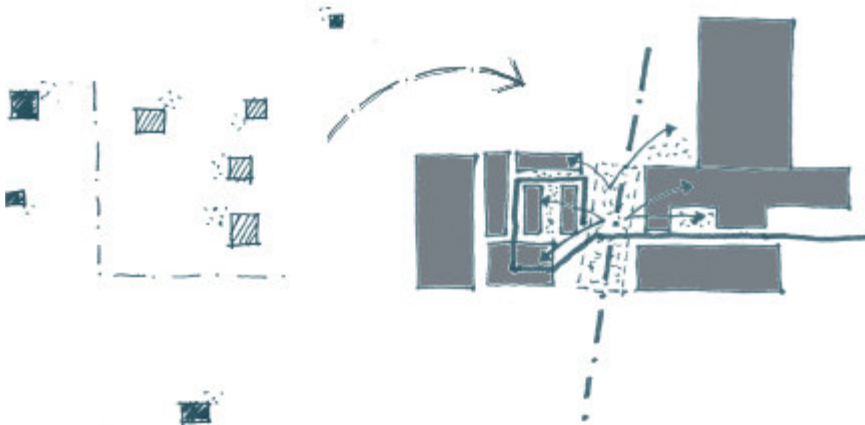


conversion

contextual

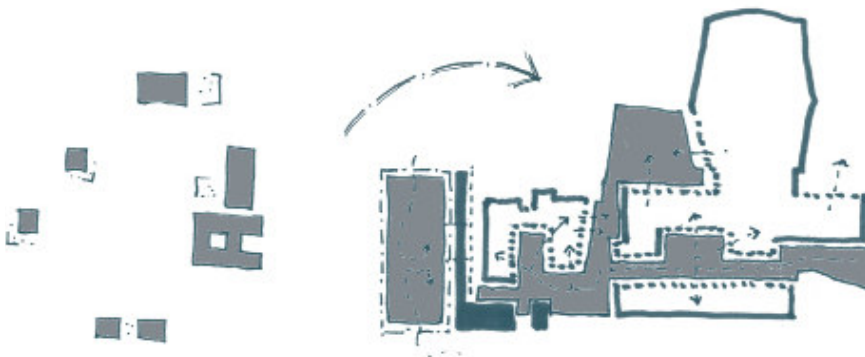


undefined lost spaces
- integrated responsive places



functional

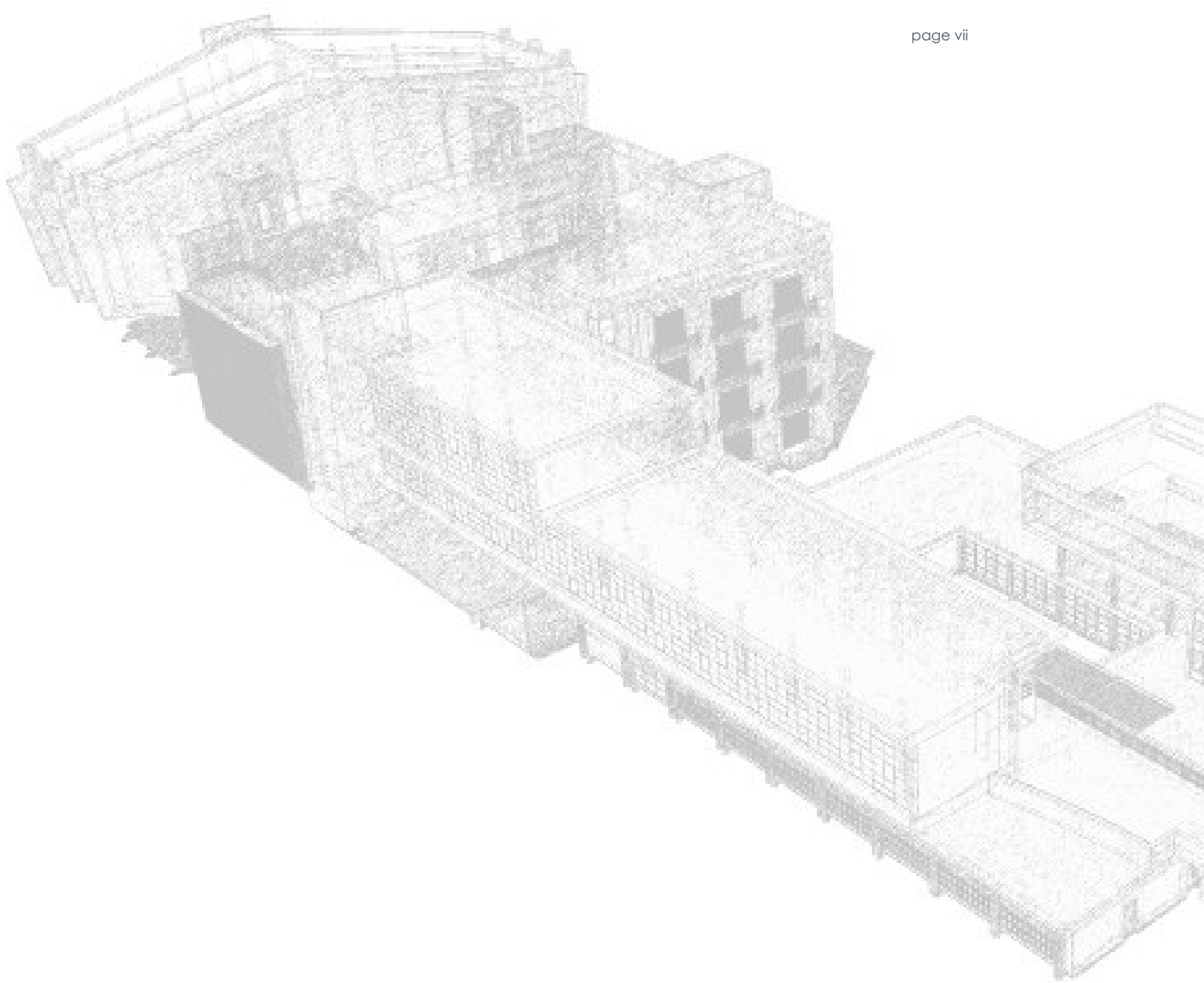
isolated monofunctional venues - integrated cross-programmed spaces



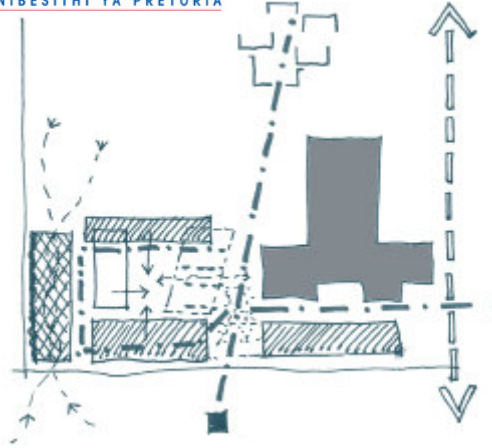
social

internal programmed & external undefined spaces
- system of programmed, transition & social spaces



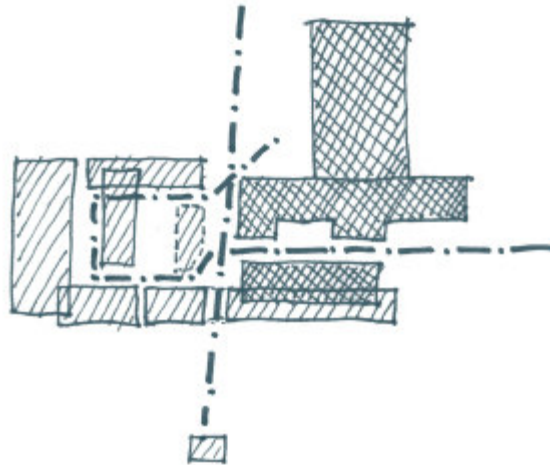


new building - new place
- precinct serving music -
linked to campus & public



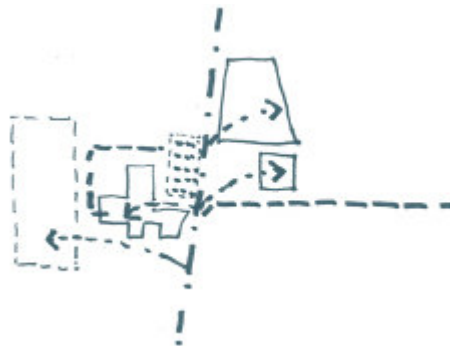
functional

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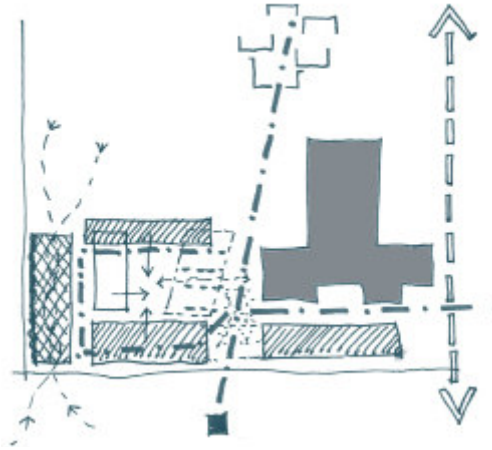


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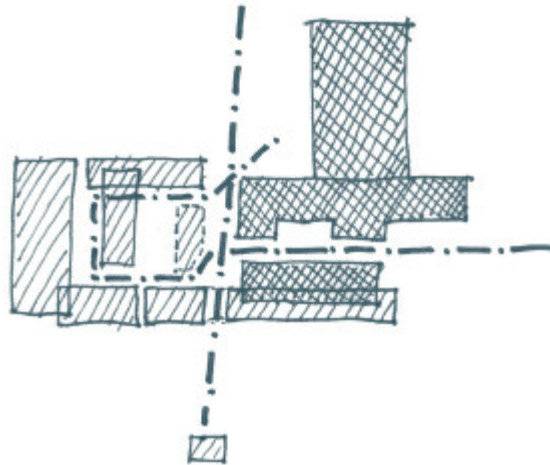


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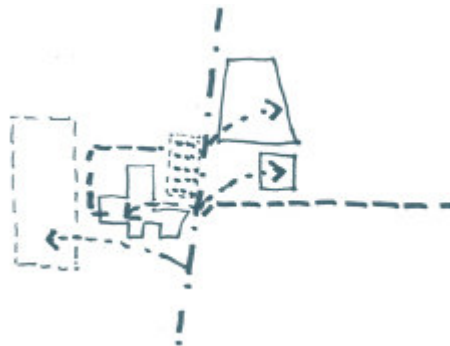
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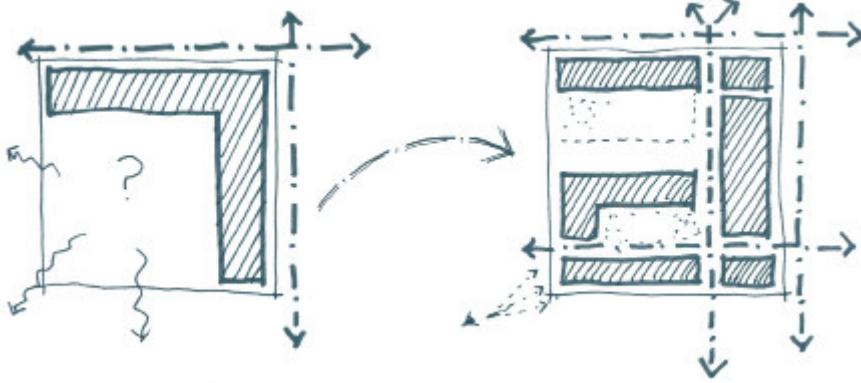
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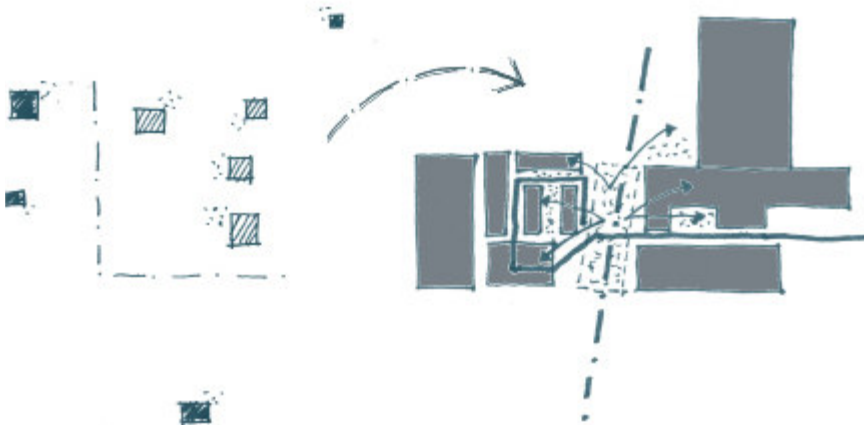


conversion

contextual

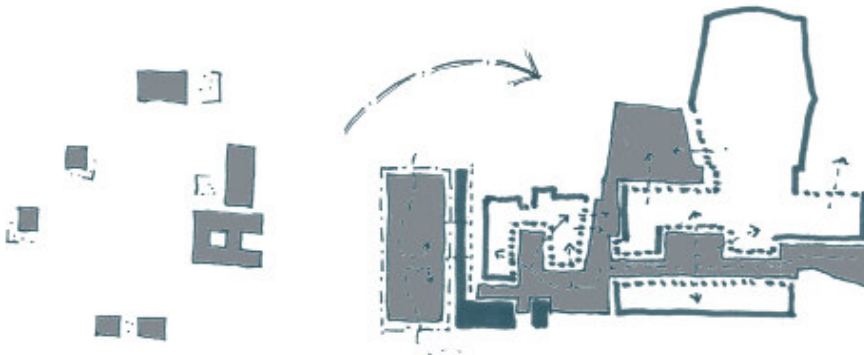


undefined lost spaces
- integrated responsive places



functional

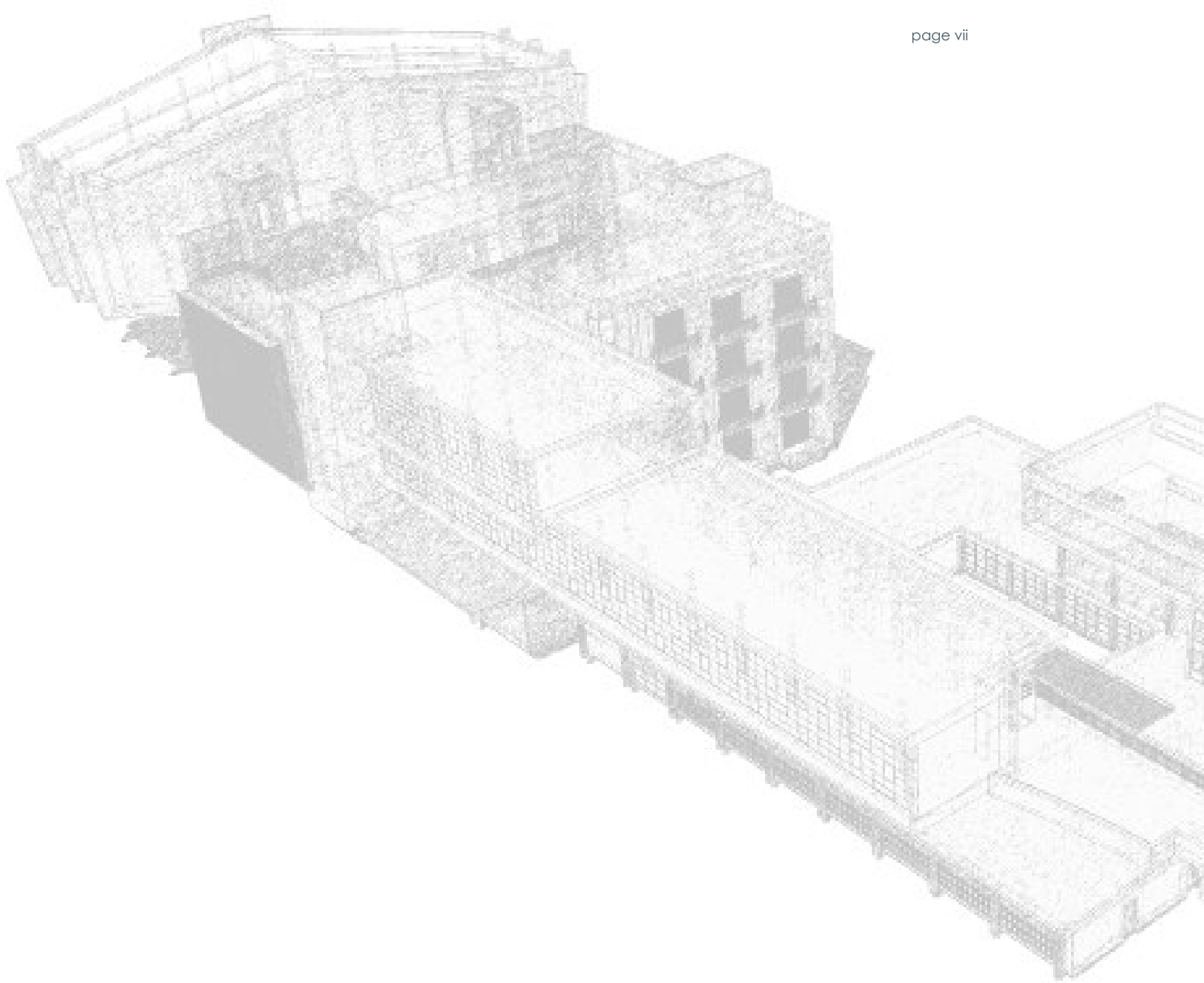
isolated monofunctional venues - integrated cross-programmed spaces

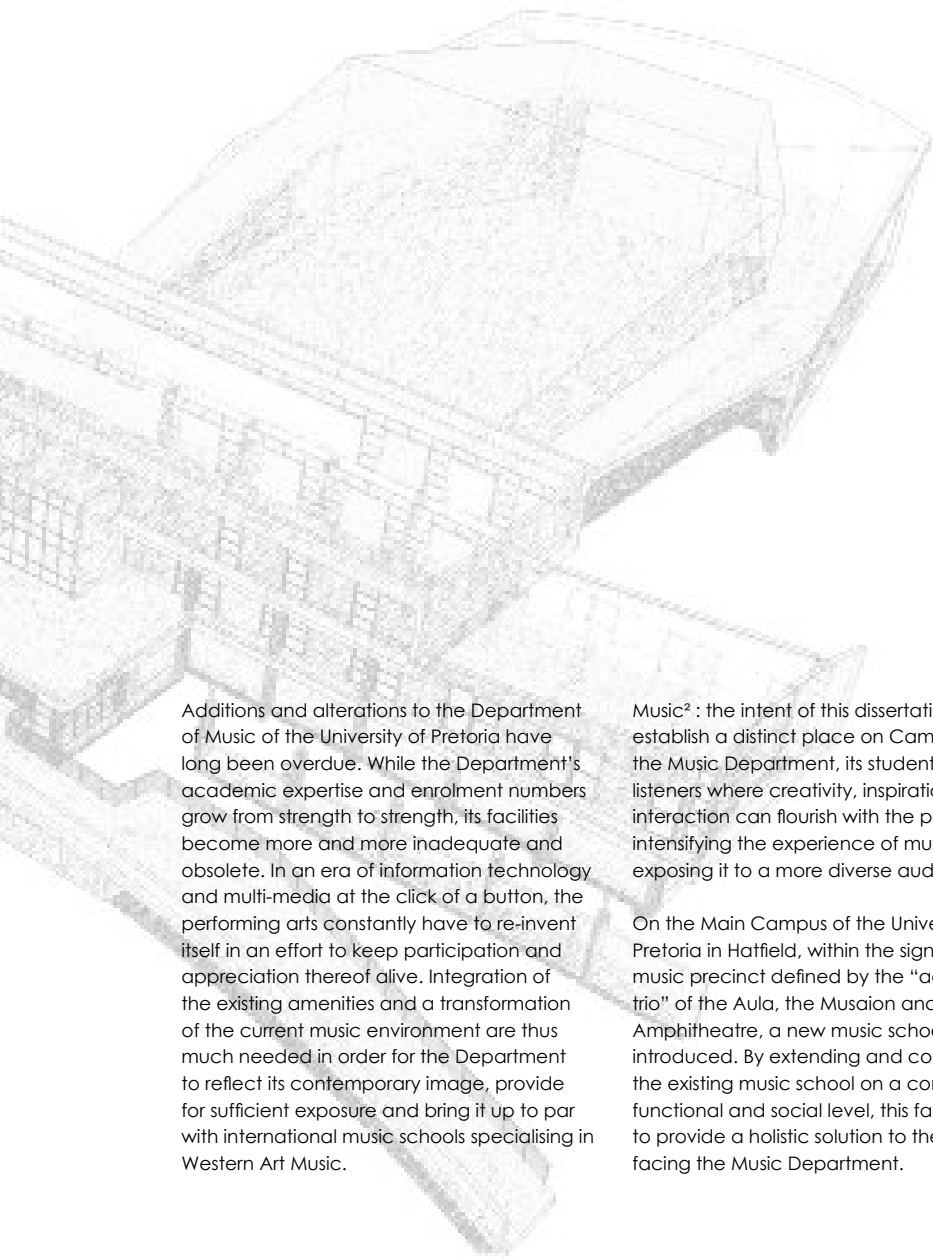


social

internal programmed & external undefined spaces
- system of programmed, transition & social spaces







Additions and alterations to the Department of Music of the University of Pretoria have long been overdue. While the Department's academic expertise and enrolment numbers grow from strength to strength, its facilities become more and more inadequate and obsolete. In an era of information technology and multi-media at the click of a button, the performing arts constantly have to re-invent itself in an effort to keep participation and appreciation thereof alive. Integration of the existing amenities and a transformation of the current music environment are thus much needed in order for the Department to reflect its contemporary image, provide for sufficient exposure and bring it up to par with international music schools specialising in Western Art Music.

Music²: the intent of this dissertation is to establish a distinct place on Campus for the Music Department, its students and its listeners where creativity, inspiration and interaction can flourish with the purpose of intensifying the experience of music and exposing it to a more diverse audience.

On the Main Campus of the University of Pretoria in Hatfield, within the significant music precinct defined by the "aesthetic trio" of the Aula, the Musaion and the Amphitheatre, a new music school will be introduced. By extending and converting the existing music school on a contextual, functional and social level, this facility aims to provide a holistic solution to the dilemmas facing the Music Department.

preface

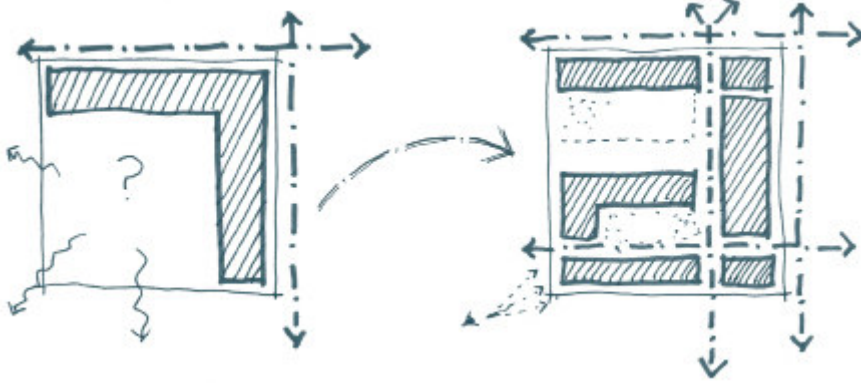
While defining the south west corner of the precinct, the school will also establish contextual links to the public realm and the rest of Campus in an effort to re-energise the area and provide the Music Department with varied coverage. A series of robust and flexible interaction and performance spaces will further aid in the social transformation of the music school environment. An extended and integrated program will concentrate skill and creativity in a legible manner within the precinct to the benefit of students, academics and audiences.

The new music school will be the first of various gradual adaptations envisaged to revitalise the Music Department and the art of music.

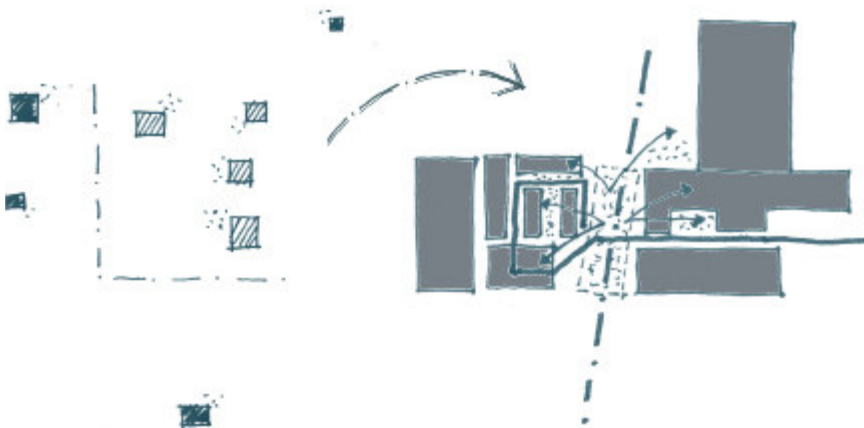


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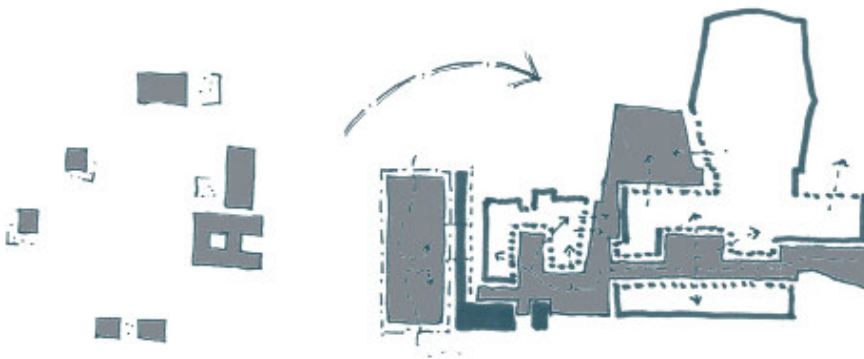


undefined lost spaces
- integrated responsive places



functional

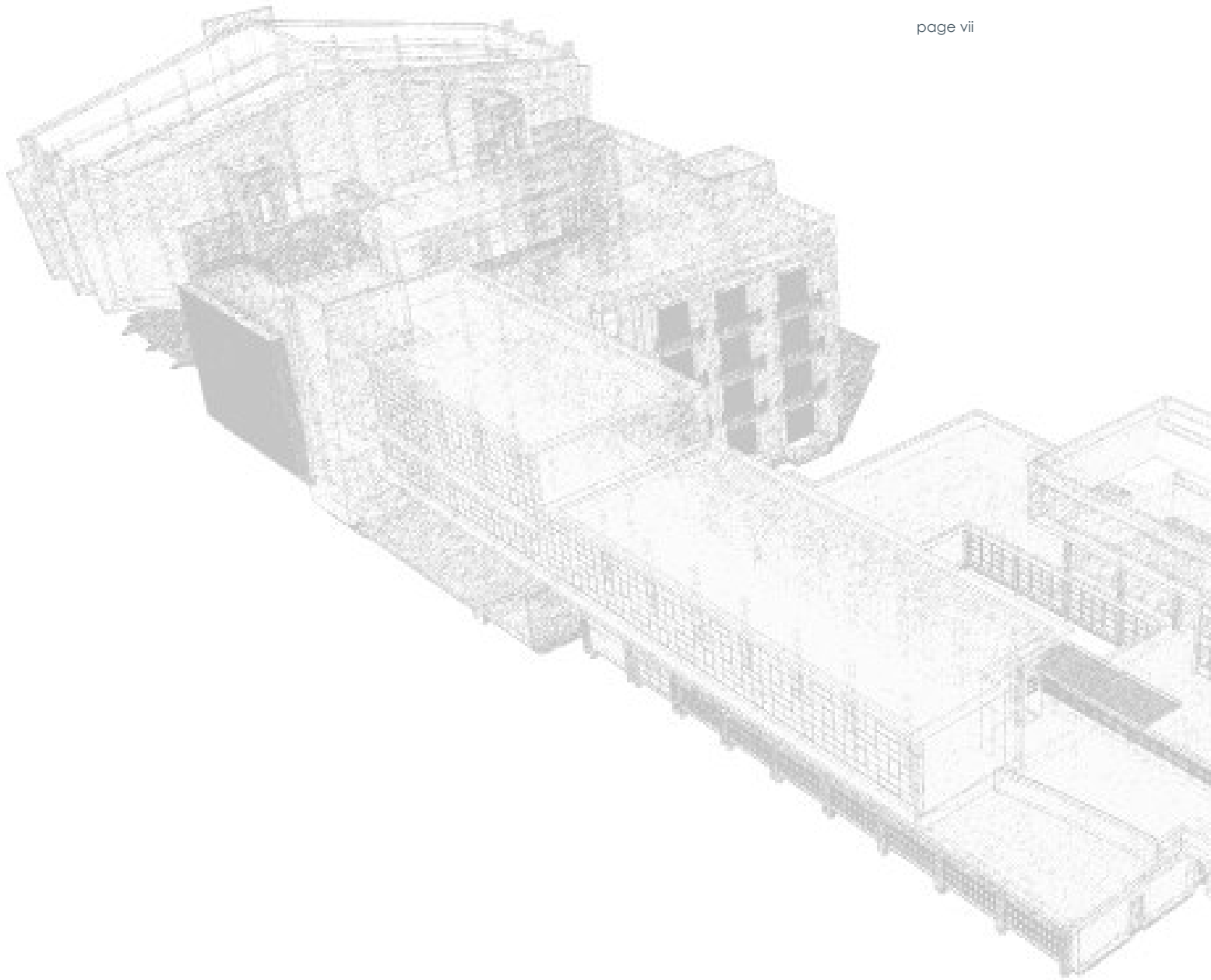
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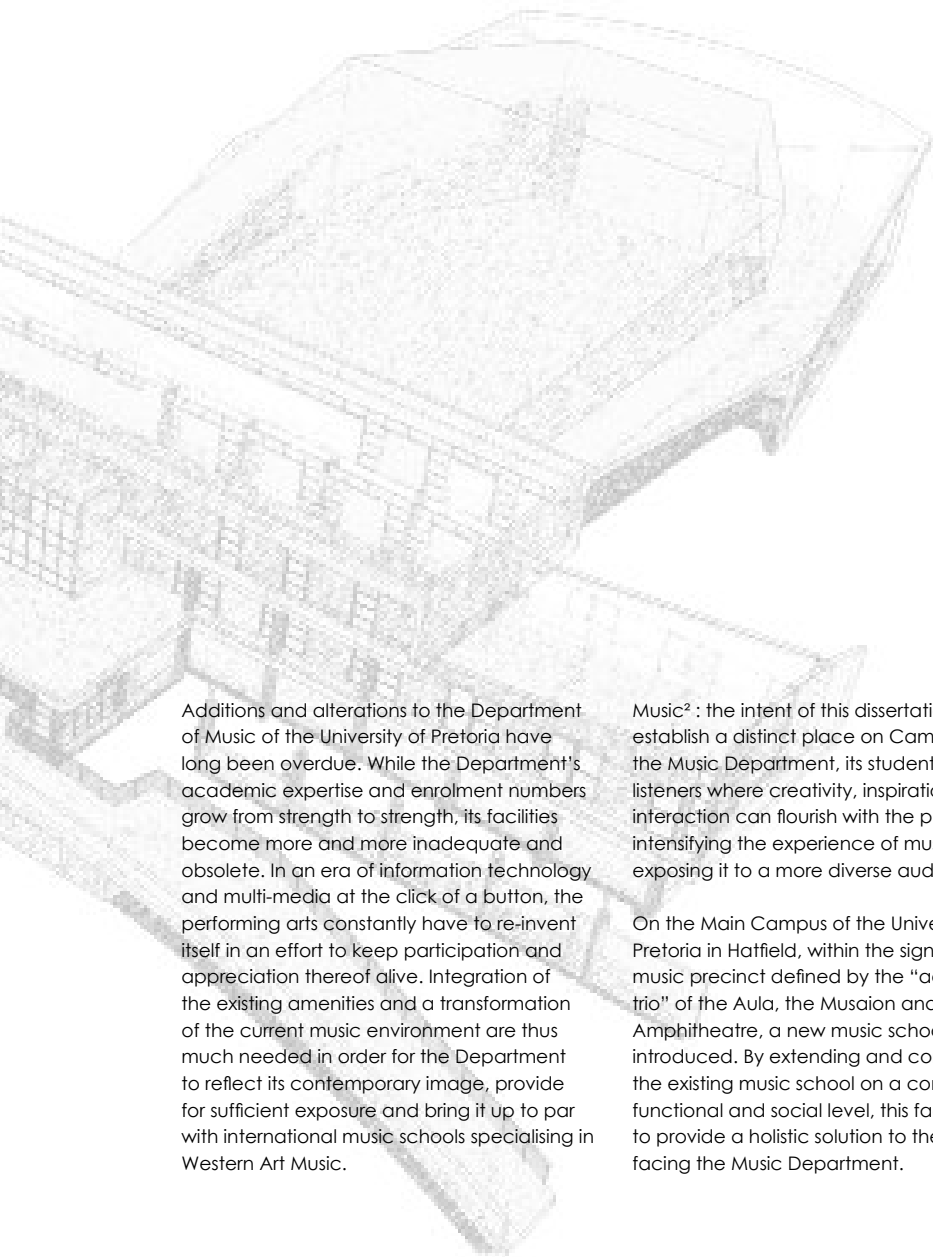


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[BOOKS]

- Adler, D. 1999. *Metric Handbook*. Oxford: Architectural Press.
- Alexander, C. 2001. *The Nature of Order – Book 1*. New York: Oxford University Press.
- Alexander, C. 2001. *The Nature of Order – Book 2*. New York: Oxford University Press.
- Bergh, J.S., Ferreira, O.J.O., Grobler, J.E.H., Pretorius, F. & Stals, N.A. ed. 1996. *Ad Destinatum III 1983 – 1992*. Pretoria: University of Pretoria Press.
- Bosman, D.B., Hiemstra, L.W. & Van der Merwe, I.W. ed. 1982. *Tweetalige Woordboek, Afrikaans – Engels*. Cape Town: Tafelberg Publishers.
- Broadbent, G. 1990. *Emerging Concepts in Urban Space Design*. New York: Van Nostrand Reinhold Company.
- Burns, C.J. & Kahn, A. 2005. *Site Matters: Design, Histories and Strategies*. New York: Routledge.
- Constantinopoulos, V. ed. 2000. *10 x 10*. New York: Phaidon Press Limited.
- Gehl, J. 1980. *Life Between Buildings – Using Public Space*. New York: Van Nostrand Reinhold Company.
- Gossel, P. & Leuthause, G. ed. 2005. *Architecture in the 20th Century, Volume 1 & 2*. Koln: Taschen.
- Hastings, J. ed. 2005. *10 x 10 _ 2*. London: Phaidon Press Limited.
- Holm, D. & Viljoen, R. 1996. *Primer for Energy Conscious Design*. Pretoria: Department of Minerals and Energy.
- Mathews, P.J. 2003. *Architecture*. Pretoria: Visual Books.
- Mathews, P.J. 2007. *Detail Housed*. Pretoria: Visual Books.
- Muir, H. & Drake, L. ed. 2005. *The Phaidon Atlas of Contemporary World Architecture – Travel Edition*. London: Phaidon Press Limited.
- Righini, P. 2000. *Thinking Architecturally – An Introduction to the Creation of Form and Place*. Cape Town: University of Cape Town Press.
- Ryker, L. 2007. *Off the Grid Homes – Case Studies for Sustainable Living*. Utah: Gibbs Smith, Publisher.
- Soanes, C. ed. 2002. *South African Pocket Oxford Dictionary*. Cape Town: University Press South Africa (Pty) Ltd.
- Spies, F.J. du T. & Heydenrych, O.H. ed. 1987. *Ad Destinatum II 1960 – 1982*. Cape Town: CTP Publishers.
- Trancik, R. 1986. *Finding Lost Space: Theories of Urban Design*. New York: Van Nostrand Reinhold Company.
- Van der Watt, F. ed. 2002. *Ad Destinatum IV 1993 – 2000*. Pretoria: UP Business Print Centre.
- Whyte, H.W. 1980. *The Social Life of Small Urban Spaces*. Washington D.C.: The Conservation Foundation.
- Quezado Deckker, Z. 2001. *Brazil Built: The Architecture of The Modern Movement in Brazil*. London: Spon Press.

[PERIODICALS]

- Bertolucci, C. 2003. *Frozen Music*. *Architectural Review*. May 2003, vol. 213, issue 1275, p.42-49.
- Fisher, R., Le Roux, H., Murray, N. & Sanders, P. 2003. *The Modern Movement Architecture of Four South African Cities*. *Docomomo*. March 2003, vol. 38, p.68-75.
- Fromm, D. & Elbasani, B. 2003. *Mixed Use College Gateways*. *Urban Land*. October 2003. p.93-95.
- Gehl, J., Kaefer, L.J. & Reigstad, S. 2006. *Close Encounters with Buildings*. *Urban Design International*. April 2006. Vol. 11, nr. 1, p.29-47.
- Robinson, L. 2007. *Twentieth Century Architectural Heritage at Risk*. *Architecture South Africa – Journal of the South African Institute of Architects*. March/April 2007. p.48.
- Slessor, C. 2003. *Urban Orchestration*. *Architectural Review*. May 2003, vol. 213, issue 1275, p.64-69.
- Strohm, P. 2006. *Making Space for Place*. *Urban Land*. August 2006. p.70-73.

[ARTICLES]

- Fisher, R.C. 1999. *The Native Heart: The Architecture of the University of Pretoria Campus*. In *Blank_ Architecture, Apartheid and After*. Edited by Judin, H. & Vladislavic, I. Rotterdam: NAI Publishers, 2E.
- Gerneke, G. 1998. *From Brazil to Pretoria*. In *Architecture of the Transvaal*. Edited by Fisher, R.C., Le Roux, S. & Maré, E. Pretoria: Unisa



[NOTES]

- Barker, A. 2004. Post-Modernism. Cape Town: Cape Technikon. [Unpublished Course Notes].
- De La Port, JP. 2007. Post-Modernism Theories. Pretoria: University of Pretoria. [Unpublished Course Notes].

[ACADEMIC DISSERTATIONS]

- Do Vale, B.A. 2007. Cognition – Composing a South African Identity. MArch (Prof) thesis. University of Pretoria.
- Ellmore, A.J. 2005. Path – A Passenger Cruise Terminal for Durban. MArch (Prof) thesis. University of Pretoria.
- Jooste, M. 2007. Can You See the Music? MTV Base Television Production Centre. MArch (Prof) thesis. University of Pretoria.
- Malan, S.F. 2008. Social Classroom. Symbol of Function Beyond Programme. MArch (Prof) thesis. University of Pretoria.

[REPORTS]

- The Australian ICOMOS Charter. (1979: Burra). 1999. The Burra Charter for the Conservation of Places of Cultural Significance. Australian ICOMOS members. Burra: Australia ICOMOS.
- Y & K Architects Project Proposal. (2008: Pretoria). 2008. Aanbouings aan UP Musiekbiblioteek en Musiekdepartement. Edited by Thomashof, K. Pretoria: Y & K Architects.

[INTERVIEWS]

- Hinch, J. de C. Interviewed on 13 February 2008
- Potgieter, D. Interviewed on 4 February 2008.

[WEBSITES]

- <http://www.academic.sun.ac.za/music/programmes.html> Department of Music and Konservatorium. (4 Mar. 2008).
- <http://www.academic.sun.ac.za/music/facilities.html> (4 Mar. 2008).
- <http://www.arts.USCS.edu/musiccentre/prelock.html> The UCSC Music Centre – Architect Statement. (4 Mar. 2008).
- <http://www.artsci.wustl.edu/music/facilities.html> (4 Mar. 2008).
- <http://www.finearts.uvic.ca/music/facilities/> (4 Mar. 2008).
- <http://www.lib.berkeley.edu/MUSI/update.html> UC Berkeley Music Library, Facilities and Access, Construction Update – Jean Gray Hargrove Music Library. (4 Mar. 2008).
- <http://www.music.berkeley.edu/friends.html> Facilities Expansion and Development, Department of Music, University of California, Berkeley (4 Mar. 2008).
- <http://www.music.wisc.edu/about/facilities> UW School of Music: Facilities and Resources. (4 Mar. 2008).
- <http://web.uct.ac.za/depts/sacm/kirby.html> SACM: The Kirby Collection. (4 Mar. 2008).
- <http://web.uct.ac.za/depts/sacm/organ.html> SACM: The Von Beckerath Organ. (4 Mar. 2008).
- <http://www.up.ac.za/deps/humanities/music.html> (4 Mar. 2008).
- <http://en.wikipedia.org/wiki/Music> Music – Wikipedia, the free encyclopedia. (4 Mar. 2008).
- <http://en.wikipedia.org/wiki/Silence> Silence – Wikipedia, the free encyclopedia. (4 Mar. 2008).
- <http://www.metropolismag.com> The Last of The Modernists. (18 Jul. 2009).
- <http://www.bookrags.com> Brutalist Architecture Summary. (24 Jul. 2009).
- <http://www.excitingbrazil.com> (24 Jul. 2009).
- <http://www.essentialarchitecture.com> The Carpenter Centre. (3 Aug. 2009).
- <http://www.helium.com> Understanding Brutalist Architecture. (3 Aug. 2009).



acknowledgements



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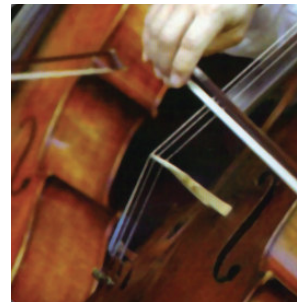
to pieter, my parents and my friends

you supported and encouraged me every step of the way

chapter 01

the brief

fig. 1.1 : Elements synonymous with the Department of Music and the process of music - preparation and performance.





The Department of Music was founded in 1923 by Prof. J.P. Malan. From the start problems with financial support and accommodation occurred that prohibited the expansion and growth of the Department which eventually led to the closing down of the school. In 1960 the necessity for the reinstatement of the music school arose. In the words of the former rector of the University, Prof. C.H. Rautenbach, at the establishment of a new Music Department: "we as South Africans want a place in the cosmic concert of civilized nations." Once again due to a lack of proper accommodation the operation of the Department was delayed for a year but eventually commenced in 1961. Today the Department of Music forms a thriving part of the University's Faculty of Humanities (Spies & Heydenrych, 1987:215).

The faculty's vision emphasizes its passion for the arts and the human sciences and the contribution these make to society. It is of utmost importance for the Faculty of Humanities, as well as for the Department of Music, to equip their students with the necessary skills and knowledge that will enable them to excel in their professional careers. Besides the local relevance encouraged in the education programs, the mission is also to ensure high-level students that are internationally competitive (<http://www.up.ac.za/deps/humanities/music.html> : 2008).

The Department of Music provides a comprehensive curriculum, uniting fields of study that, in Europe, would normally be divided between University and Conservatory. Areas such as practical music, music education, musicology and music technology are all included in the scope of the Department. Tuition in all the instruments of Western art music is offered, together with an increasing emphasis on the study and performance of indigenous African music, jazz and popular styles. The Department also offers a music therapy program, the only one of its kind on the continent. This program can

be completed at master's level and is professionally validated by the Health Professions Council of South Africa. Two undergraduate degree courses, BMus and BA (Music), are presented by the Department. Postgraduate courses in various fields of music can also be obtained from honours to doctorate level.

With a dedicated staff of approximately 20 full-time and 35 part-time music professionals and a student base of almost 270 students, the Department maintains a high standard of excellence. Enrolment figures from the past four years indicate a growing Department and emphasize the need to expand and improve current facilities.

The Department also continues a prominent public influence in the forms of the UP Symphony Orchestra, the UP Chorale and the Tuks Camerata. The orchestra, a 44-year old institution, is today the only large-scale orchestra in Pretoria that performs the symphonic repertoire on a regular basis. Besides this achievement, the orchestra also provides a platform for the Department's finest soloists in gaining experience of symphonic ensemble playing, engagement with some of the world's finest music, teamwork and discipline (<http://www.up.ac.za/deps/humanities/music.html> : 2008).

Despite the endless achievements of the Department, its potential is suppressed by the lack of adequate facilities for teaching, practising and performing music. Currently the facilities accommodating the various directions in the music curriculum are scattered across Campus, creating a segregated Department without a sense of cohesion and a stimulating cultural hub where students, lecturers and expertise can spontaneously interact and encourage creativity. Various venues on Main Campus are currently being utilised by the Department:

The Musaion and Music Building

General administration facilities, the library, practise studios and recital rooms are situated in the Music Building. The Musaion houses a recital hall, an organ and poorly revamped studios and equipment for the course in Music Technology.

Building 5 & 6 on South Campus

These facilities are utilised for lecture rooms for Music Education and Theory, orchestral organisation and a drum room for African Music.

The Old Club Hall

The UP Chorale mainly uses the hall for choir practises. Their administration offices are also accommodated here.

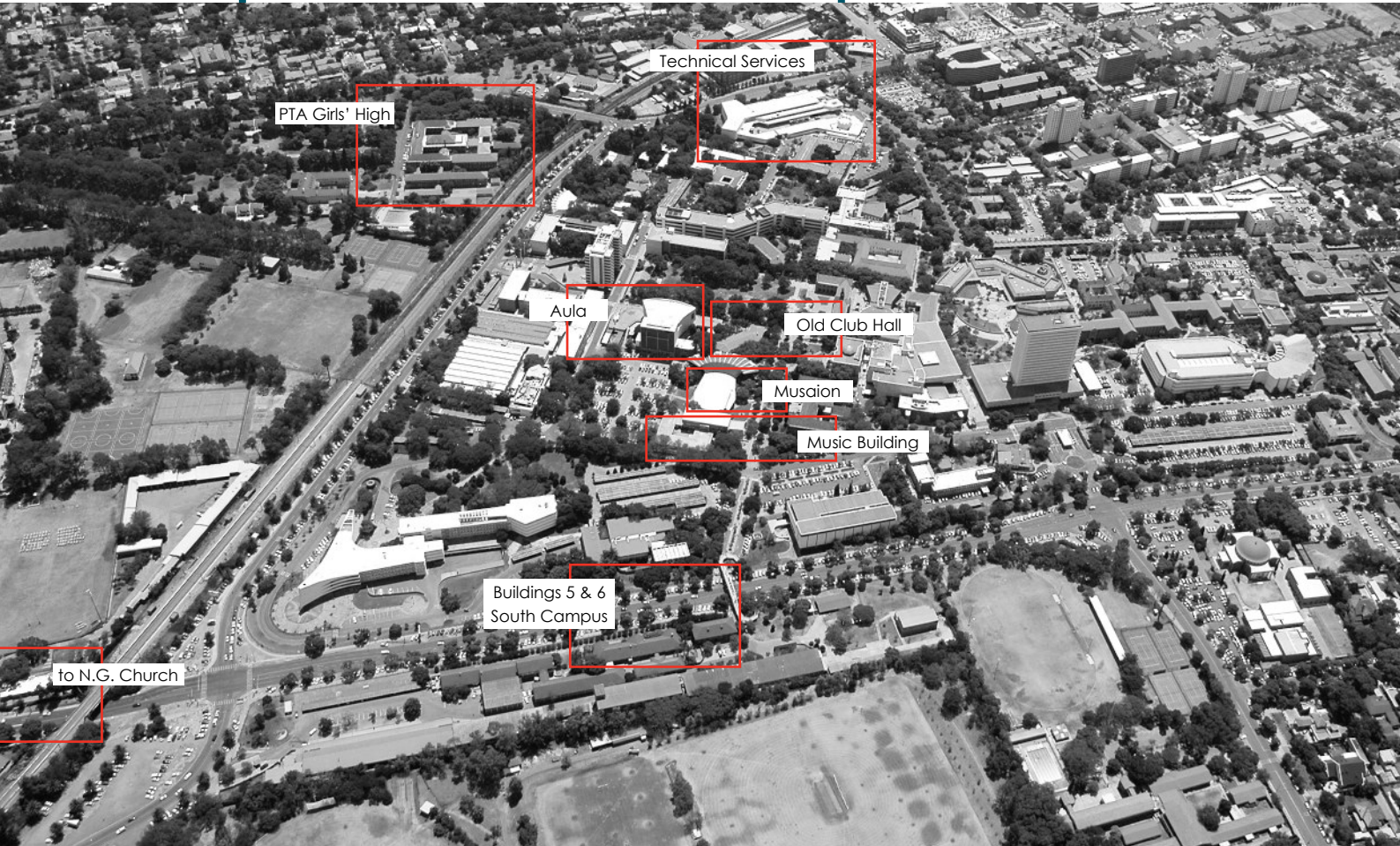
Technical Services Building

Offices and laboratories for the Music Therapy course are located in the building.

The Aula

This state of the art auditorium is available for large-scale public performances, but, like the Musaion, it is the general property of the University and under the management of the Department of Facilities and Services. Thus, both these venues have to be booked well in advance for use by the Department of Music. Instances when the venues are unobtainable, the Department has to make arrangements with schools, churches or community organisations in the area for the use of halls or organs for practises and recitals.

The intentions of both the University and the Music Department indicate a concern regarding the employment of their amenities by the primary users: the students and faculty. When analysing these two groups as clients it emphasizes the need to create stimulating, safe, accessible and vibrant environments where the dynamics of contemporary knowledge can be taught, experienced, practised and applied to society.



Two interviews, one with Dan Potgieter (Campus Planner – University of Pretoria) and the other with Prof. John Hinch (HoD – Department of Music, University of Pretoria), emphasized the problems experienced by the Music Department. An official problem statement, compiled by the University of Pretoria, Department of Library Services in February 2008 also gives a detailed account of their needs:

1. Access, Security & Integration

The general insufficient supply of parking on Campus is a predicament for the Department. Part-time lecturers struggle to find parking in the vicinity of their lecturing venues which makes transportation of equipment difficult. During performances in the Aula, open to attendance by the general public, visitors struggle for almost 45 – 60 minutes afterwards to vacate the Campus premises due to the security barrier at the main entrance and the poor infrastructure provided by the Ring Road on Campus. Pedestrian access to and from the Aula and the Musaion are not ideal for disabled visitors and these routes can often not accommodate the crowds in attendance.

2. Standards of Existing Facilities

The current facilities utilised by the Department are certainly not in comparison to international standards or even that of the University's South African counterparts like the Stellenbosch University or the University of Cape Town. The Department strives to utilise the expertise of foreign artists and academics, but often seminars and courses involving these guests have to be accommodated in alternative, private venues at unnecessary costs. The facilities in use on a day-to-day basis also seem obsolete. Practise rooms have little or no air-conditioning, poor lighting, inadequate acoustic properties and the interiors are mostly deteriorated, causing the facilities to be uninspirational spaces. The various venues also prevent proper interaction between students and lecturers.

3. New Facilities Required

The primary problem for the Department is the lack of their own auditorium and a sufficient library. Currently the Department is sharing the Musaion with the rest of Campus. The Musaion and the Aula is the property of the University and is being used almost daily for University functions. The Department of Music therefore has to plan their year well in advance to be able to make use of the Musaion for their practical training and performances. Any additional functions or recitals throughout the year can hardly ever be accommodated in the Musaion on shorter notice, which leaves the Department struggling to find adequate venues for their course requirements. Although the Musaion has recently been fitted with the studios and equipment required for the course Music Technology, it is still subject to extensive planning for students to do their required practical work in the field of Music Technology. Another problem is that the general usage of the Musaion prevents the Department from having ideally fitted, secure recital space where equipment is readily available and safe from damage or theft.

The music library on the second floor of the Music Building is simply too small to accommodate all the students and the amount of material the Department has in its possession. Estimation is that the library will need to be enlarged by three times its current size in order for it to accommodate the needs of the Department. Proper sound booths, more shelving and storage space and seminar rooms are some of the immediate requirements.

In general, the Department requires the upgrading of existing facilities and the establishment of new facilities that will align them with their counterparts, as well as provide an image that will portray the Department's contemporary dynamics.



fig. 1.2 : An aerial photograph of part of Hatfield Campus and the surrounding urban fabric. Current venues in service of the Department of Music are indicated to illustrate the segregation of the Department and its facilities.

1.3.

main research questions

1.4.

assumptions

1.5.

delimitations

The following research questions aim to provide the necessary direction for the project in order to establish appropriate design parameters.

1. Where within the assumed boundaries of the music precinct should the new music school be introduced to best serve as a contextual, functional and social extension of the existing?

2. What links and relationships need to be established between the new and existing music schools in order to maintain a distinct character for each while simultaneously creating a combined facility functioning as one?

3. What elements, spaces or functions can be incorporated into the design to attract a diversity of users and audiences that will assist in revitalising the music precinct?

4. What will be an appropriate shared language between the new and existing facilities that relate to each other yet indicate a contemporary conversion of a former architectural era?

The following assumptions were made prior to the commencement of the design process in order to set some guidelines as to how the transformation of the music school and precinct can be implemented.

1. University Road access to Campus will move from the existing position at the Department of Engineering to the new location at the end of Senaats Road.

2. The four storey parking arcade proposed for the parking area at the back of the Aula will not realise. Instead, an underground parking garage across the Ring Road from the Music Building, with access from the new University Road entrance into Senaats Road and from the Ring Road at the crossing with Tukkies Avenue, will rather be constructed. At ground level plans will go ahead to establish a new student green space.

3. The Aula and Musaeon will continue to be upgraded and improved to remain state of the art auditoria, attracting a variety of performing arts and their audiences.

The following delimitations are determined by the scope of the project. The delimitations indicate the areas of the project that will be focused on in the detailed design process and the areas that will merely develop according to prescribed guidelines.

1. The focus of the project will fall on the design of the new facility for the Department of Music and not on revamping the existing ones. The new facility will be designed in accordance with contemporary requirements and fitment of acoustic spaces. These layouts, materials and systems will serve as precedent for the upgrading of the existing music facilities.

2. Opportunities for future expansion of the music precinct will be suggested in an urban framework; however, details and designs of these extensions will not be included in the design resolution of the new music school.



the proposed intervention

In order to establish a distinct place for music on Campus where this performing art can be fully practised, enjoyed, experienced, performed and exposed, a strategy of extending and converting the existing environment has been devised.

Contextually the new music school will be located on the parking area to the west of the Music Building as a direct extension of the existing facility. Furthermore will the building define the south edge of the precinct and create a communal functional and social space in the centre of the precinct in service of the music facilities on its north, south and east edges. This will give new significance to the current underutilised south-west corner of the precinct which use to be alive and bustling with energy in previous decades when it was home to the recreational hub of the University – the sports fields. The monumental, organic design of the two new lecture theatres/auditoria on the west end of the building will create an iconic corner in celebration of the performing art of music at the new University Road entrance to the campus.

Two axes will form the main circulation spines through the new building, extending into the context beyond and linking the music school and precinct with the rest of Campus in a legible manner. These routes aim to draw energy from the main energy sources surrounding the precinct: Tukkies Avenue on the east side, the new student green and the public access point on the south and the restaurants on the north-east corner of the precinct.

The north-south axis will be mainly public orientated – a performance route along which chance performance venues, information stops, entrance points and spill-out spaces for the formal performance venues will be situated. The east-west axis will be orientated towards the direct users of the music school. This preparation spine will link the new and existing music schools and facilities pertinent to the preparation of music will branch off this spine.

On a social level the current situation will be converted from an isolated, internal orientated and enclosed milieu to an open community of diverse users. Flexible, multi-purpose spaces, transitions and interactive edges will provide users with choice and various communication options. By extending the program of the music school beyond the requirements of the brief with the integration of restaurants, foyers and exhibition spaces, it is inevitable that an increased variety of people will utilise the precinct and thus provide the Music Department with better exposure.

The extension and conversion of the music school will probably be the most obvious from a functional perspective. The once segregated Department – with venues scattered across Campus and the surrounding public realm - will now be concentrated in one facility that adheres to the spatial and functional requirements of the school. The program of the new building will include multi-media and research centre, service areas, a practise studio block, two lecture theatres with acoustic properties suitable for chamber and individual performances and a variety of social spaces at ground level. The existing music building will be converted into an administration facility, with exhibition spaces and a re-vamped foyer area to the Musaion auditorium. The social spaces at ground level will form a continuous network with those of the new building.

chapter 02

the context

"The campus of the University of Pretoria is probably the prettiest and most impressive in the country." (unreferenced article, University of Pretoria Archives, 2008). Situated within the vibrant urban area of Hatfield in Pretoria, the campus has managed to retain its sense of serenity and natural beauty. Main Campus presents a harmonious collection of buildings from traditional times as well as the more modern, contemporary eras. These sculptural structures sit within a landscape glued together by tranquil green gardens and pedestrian walkways. Vehicular traffic is restricted to a few routes, e.g. The Ring Road that runs along the campus perimeter, connecting parking areas and access points with the surrounding urban fabric.

The development of these vehicular routes has lead to the division of the campus

into smaller precincts, some with distinct character. The current music precinct is one such area on Campus defined physically by circulation routes, but also defined in terms of historic and cultural significance due to its architectural legacy and contributions to the arts.

It was once noted in an article in the *Skakelblad* that of all the buildings on Campus, "the Aula stands out as the queen". With the introduction of the Aula on the university grounds, a new standard of excellence in architecture and facilities were set. It was also the beginning of a unique precinct for music on Main Campus and the cultural hub of the former Transvaal. Once the "aesthetic trio" was completed, the University of Pretoria was equipped with the Aula (hosting operas, ballets, symphonic

orchestras and plays), the Musaion (equipped for chamber music) and the Amphitheatre (back-to-back with the Musaion and able to host a variety of performances and functions). Indeed "a trio in service of the arts".

For the purpose of this dissertation, the development and cultural significance of the music precinct will form the key aspect of the contextual analysis for it is within this sensitive precinct that the new music school will be introduced. The music precinct includes the area on Campus situated between Tukkies Avenue, Libri Avenue and the 90 degree bent of the Ring Road. It includes the Aula, Rautenbach Hall, former Student Centre, the Old Club Hall, La Pat, Café Burgundy's, the Amphitheatre, Musaion, the Music Building and the parking area behind the Aula.



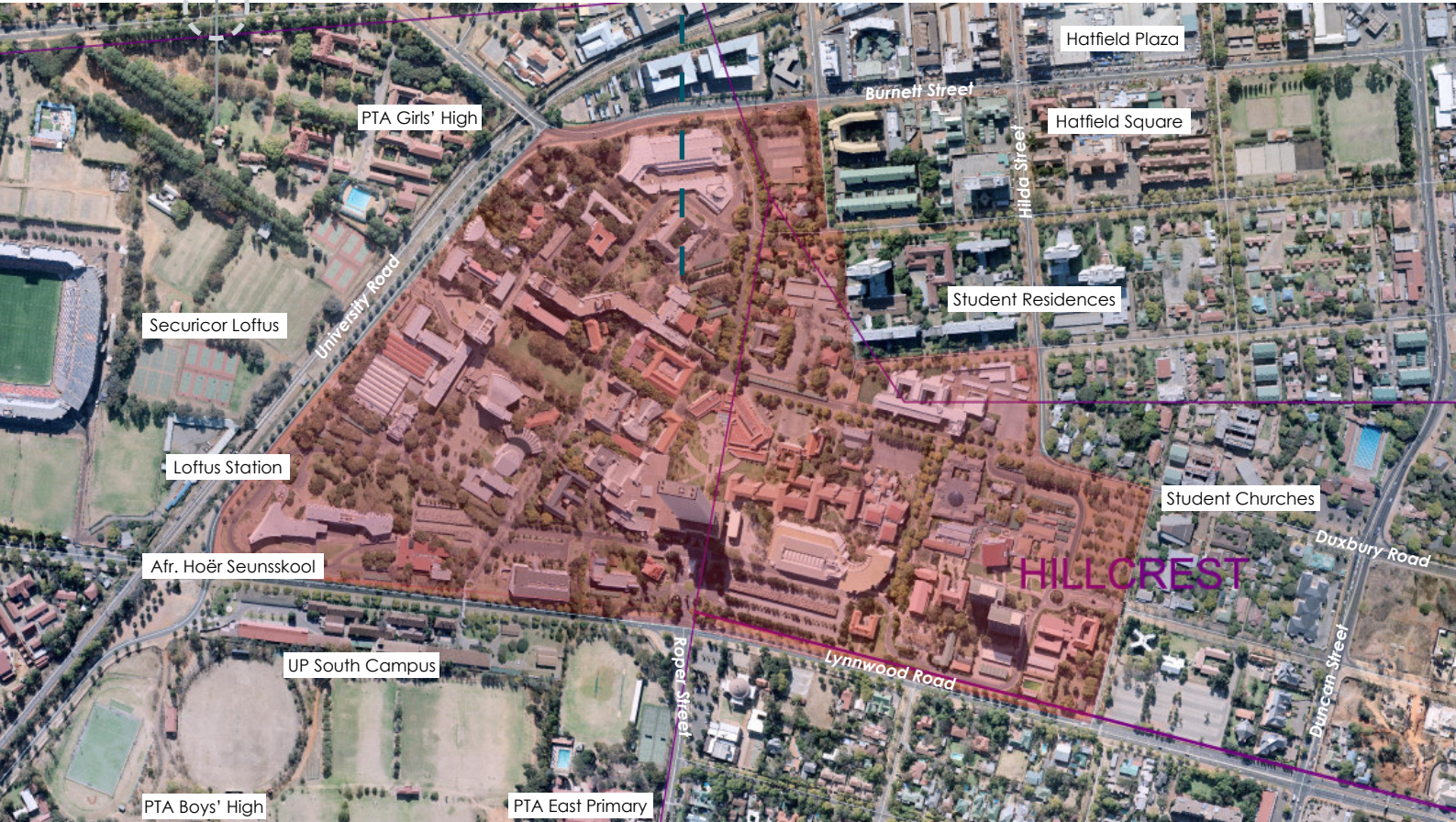
fig. 2.1 : Main Campus of the University of Pretoria situated within the urban environment of Hatfield.

The area surrounding the campus is diverse and contains an international / political precinct (Arcadia) to the north, various academic and recreational facilities to the west (Muckleneuk & Sunnyside), dense residential areas to the south (Brooklyn) and the mixed-use student precincts of Hatfield and Hillcrest to the east.

This university precinct is visually the most impressive man-made campus in South Africa, with a rich cultural and historical heritage. It is also the largest residential university in the country.

Once seamlessly integrated with the surrounding public realm, the campus nowadays forms a secure academic precinct within the dense, mixed-use urban fabric.

Main Campus of the University of Pretoria south africa



2.1.

development of the campus

In 1907 Jan Smuts decreed that a Pretoria campus, separate from the Transvaal University College in Johannesburg, be established for the arts faculties. From there other faculties developed that eventually lead to the establishment of the University of Pretoria.

The campus in Hatfield expanded around the first buildings, the Old Arts and the Old Chemistry building, with the addition of more facilities to accommodate the more diverse curriculum. Planning soon became a priority and in 1940 the University appointed Gerhard Moerdyk as architect for the design of a long-term development strategy. His framework proposed the creation of a central green area along an east-west axis, linking the University's signature building, the Old Arts, with what was at that stage the University's main entrance in University Road, Elandsport. In 1954 the architect Brian Sandrock was commissioned to design a new long-term strategy and some of the much needed facilities on Campus. With Sandrock, a fresh architectural language also arrived at the University: New Brutalism. Daring engineering and monumental functionalism defined his buildings although the planning was often uninspired and the spatial qualities ignored (Fisher, 1999:e2).

By 1960 Main Campus still fitted comfortably between the borders of University Road, Lynnwood Road, Roper Street and Burnett Street. The development report of 1965 projected that the Campus would expand in an eastern direction, consolidating the academic campus, the residences and the sports grounds at the experimental farm. This would result in a campus comprising of

a western and eastern part, connecting at the new central entrance at the crossing between Lynnwood Road and Roper Street. As Campus developed in a more eastern direction it was inevitable that the central area of Campus also shifted: from the central green area in front of the Old Arts Building to the area of the Roper Street entrance. Resultantly the more specialised, applied sciences and lecture facilities were also located around the new core of Campus to maintain the 400m radius that students could easily walk in ten minutes between classes.

With the closing of Roper Street for vehicular traffic and the move of the main entrance to the Lynnwood-Roper crossing, the central green area was left to be built up with buildings to create a more human scale and a peaceful courtyard for student socialising. The relocation of the Heart of Campus lead to the creation of a significant historic museum precinct at the end of the former central green area, including the Old Arts, the Old Merensky Library and the Old Chemistry Building. The declaration of the Old Arts Building as national heritage in 1968 and the proposal by the Building Committee in 1979 to renovate the building into a museum and cultural centre further supported the idea of the historic precinct. Over the years, the Old Arts developed into a symbol of tradition of the University. The two symmetrically placed buildings to the side of it, the Old Club Hall and the Old College, strengthen the prestige of the building's location on the courtyard and lawn on Campus.

In 1965 the vehicular road in front of the building became a pedestrianised avenue – Tukkies Avenue - connecting the north and

south parts of Campus. A fountain was introduced to link the old and new on Campus. The modern sculpture from which the water spurts signifies the progression from the traditional to the modern structures, like the Aula, surrounding the courtyard. This project caused the former Heart of Campus to become a more peaceful environment, indicative of an exclusive academic atmosphere.

The 1960's were also a period of drastic expansion of the Campus. Prior to then buildings on Campus were representative of the conventional, horizontal profile, a trend that was gradually replaced with more contemporary multi-storey structures. The first examples of the new modern architecture were the Aula and the Music Complex.

In 1980 parking facilities on Campus became a necessity. It was hard to believe that only 20 years earlier, parking areas on Campus did not exist and Campus was still an accessible precinct as part of the contiguous public realm. Cars used to park in the few designated spots on the side of the roads in front of faculty buildings. But larger enrolment numbers forced the campus to become a more pedestrian orientated environment and so it became necessary to adjust the vehicular traffic pattern on Campus accordingly. Secure and limited parking provision necessitated the need for control and soon the campus became a restricted environment with access control via parking discs. As times and social circumstances changed, so did the security of the University. In order to maintain the atmosphere of the Campus, various strategies of control had to be implemented.



fig. 2.2 : Diagrams summarising the development of the campus relevant to the Music Precinct.

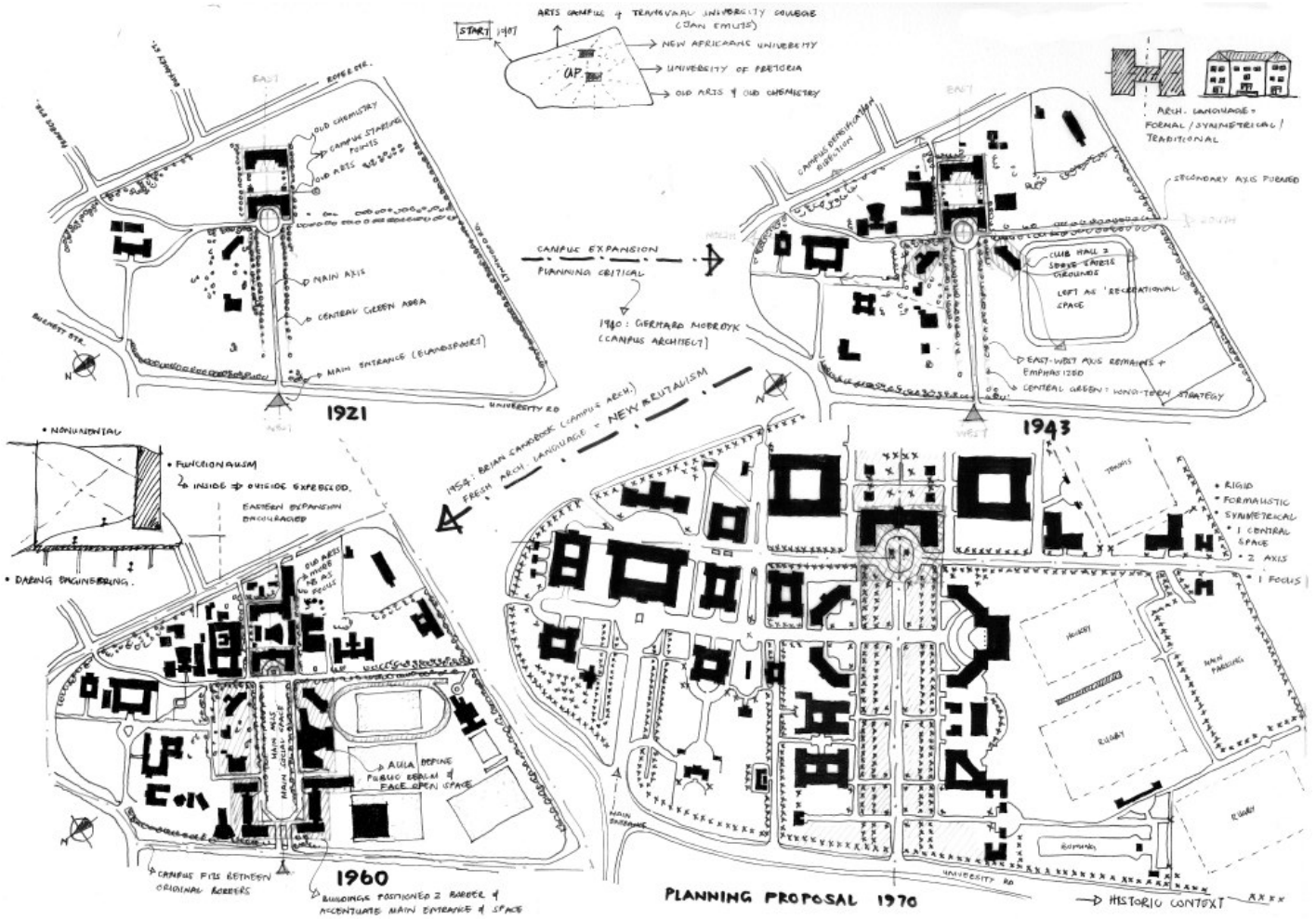




fig. 2.3



fig. 2.4



fig. 2.6

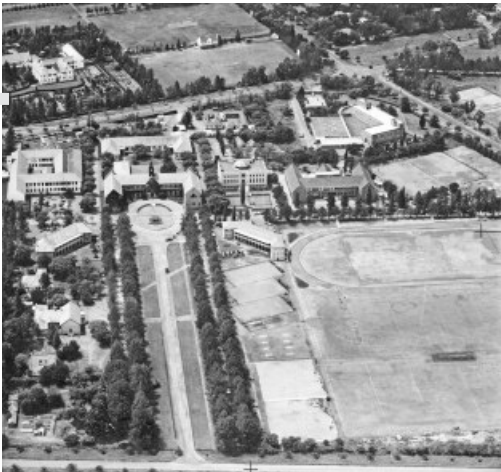


fig. 2.5



fig. 2.7

main campus - a glance at the past



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fig. 2.8



fig. 2.9

fig. 2.3 : Traditional donkey races on the sports fields on Spring Day.

fig. 2.4 : Traditional "Boeresport" activities on Spring Day.

fig. 2.5 - 2.7 : 1950 Aerial photographs of the Heart of Campus, the central green area in front of the Old Arts with the Old Club Hall and sports fields to the south.

fig. 2.8 & 2.10 : 1960 Aerial photographs of the "aesthetic trio" on Campus. The scale of the buildings reflects their public role and modern monumental style. The recreational precinct on Campus was transformed into a cultural hub, serving the arts community of the University, the Transvaal and South Africa alike.

fig. 2.9 : The Old Club Hall surrounded by recreational spaces like the sports fields and the Aula Green.

fig. 2.10



2.2.

development of the precinct

In 1951 the idea of a cultural centre for the University's students was on the agenda. Two ideas merged: the practical lack of a student centre and the idealistic endeavour for a cultural centre. And so the Aula emerged. It took 20 months to complete the building, the biggest and most beautiful of its kind in the country.

The Aula and the student centre complex were built between 1956 and 1958 due to a need for students to have a congregation space as well as the need for an auditorium where large-scale productions could be delivered in Pretoria. As Dr. H van der M Scholtz said at the opening of the Aula: "It is not only the University that needs a properly equipped auditorium. The capital of Transvaal also needs one".

With the pressing need at hand, architect Karel Jooste (under the guidance of the office of Phillip R. Nel) produced a design for the Aula complex. It was a monumental modernist building, almost the first in the country just after Stauch's Meatboard Building, and a prestigious cultural centre that remained the major venue in the city until the State Theatre was completed in the early 1980's (Fisher, 1999:e2). Jooste designed the auditorium, seating 1021 people in luxurious theatre chairs and a stage large enough for the décor pieces and sets required for operas, plays and ballets and a sunken space for an orchestra of approximately 60 members. During the years since the completion of the trio, the Aula and the more intimate Musaion caused a renaissance in Pretoria's cultural circles. Before the arrival of the Aula performing arts had to be delivered in mediocre venues and performances could only last for a maximum of three evenings due to inadequate stage facilities and halls

that were uninteresting and uninviting to the audiences. Once the Aula was there to top the par, more new venues for cultural performances were established. Above them all the impeccable quality of the Aula and Musaion stood tall and they soon became the resident theatres of internationally acclaimed artist Mimi Coertze, TRUK and COSA (Chamber Orchestra of South Africa). Orchestral concerts by highly professional musicians were presented throughout the year, attracting academics, students and the general public. The collaboration between artists, musicians and the University and the positive way in which they contributed to the growth and development of the music culture in South Africa, established the University as a "centre of excellence in the arts" (Bergh, Ferreira, Grobler, Pretorius & Stals, 1996:106).

For the students of the University the theatre complex held a unique position as no other South African University possessed such modern facilities. At the opening of the Aula the Chancellor noted that the Aula and student centre complex were indeed built in the proper location: the Heart of Campus. He further mentioned that the campus is a symbol of the spirit and quality of a nation's youth and that these buildings exemplify that spirit and quality culturally.

The re-institution of the Department of Music in 1960 presented an urgent need for new facilities to house the Department. At the end of 1959 architect Brian Sandrock was commissioned to design the facilities. The complex consisted of three parts: a three-storey structure covering practise rooms, studios, lecture rooms, offices and a library; an open-air amphitheatre and an intimate auditorium, the Musaion. The entire complex

was constructed on the site of the former athletics track, south of the Old Club Hall and the renowned Aula complex.

Soon after completion the need for more space for the Department arose. A new square, single storey practise room facility with soundproof rooms and an internal courtyard were added onto the south façade of the existing Music Building. In 1996 a few more additions were made to the Music Building at the hand of architect Samuel Pauw. The completion of the Music Building in 1960 gave the green light to start the extensive music educational program at the University of Pretoria. Everything was in place: acclaimed personnel and all the possible required facilities. At the start of the 1961 academic year, the Department of Music welcomed its first enrolled students.

The Amphitheatre also provided a venue for students' mass meetings, concerts and other congregations.

Over the past 50 years the trio has served the University, the public and the arts well. Cultural evenings are still being planned throughout the year and art lovers still look forward in anticipation to the grand formal performances of excellence that have become synonymous with the University and the trio (Bergh, Ferreira, Grobler, Pretorius & Stals, 1996:112). However, some of the facilities surrounding the three venues have ceased to be the vibrant hubs of student and public interaction that they used to be. In line with the University's proud tradition of contributing to and building out the arts, it is thus necessary to re-evaluate the facilities and streamline them with a new era of diversity in arts and music (Van der Watt, 2002:84).



fig. 2.11 : The Music Precinct within the context of Main Campus. The precinct is defined by pedestrian routes - Tukkie Avenue and Libri Avenue - and the vehicular route, the Ring Road.

The precinct is highly accessible with Tukkie Avenue to its east terminating in a main pedestrian entrance at Lynnwood Road with an overhead link to the south campus.

Public vehicular access is mainly via the University Road and Lynnwood Road entrances and various parking areas are available within close proximity of the precinct.

With the new Heart of Campus located to the east of the Music Precinct the entire orientation of the campus shifted more to the north-east, leaving the south-west corner of Campus with few attractions for students and visitors. The unclutteredness of the south-west corner does however emphasize the monumental architecture of the area – objects within a green landscape.

Music Precinct on Main Campus **hatfield**



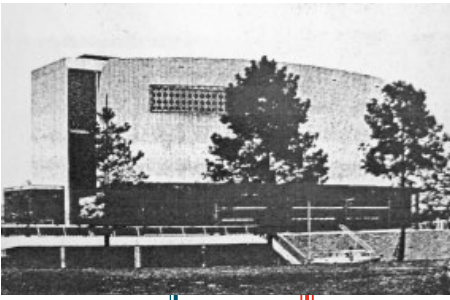


fig. 2.12

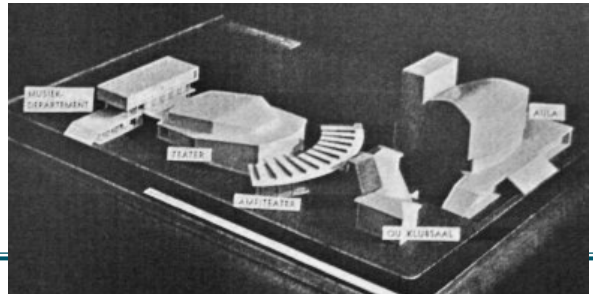


fig. 2.13

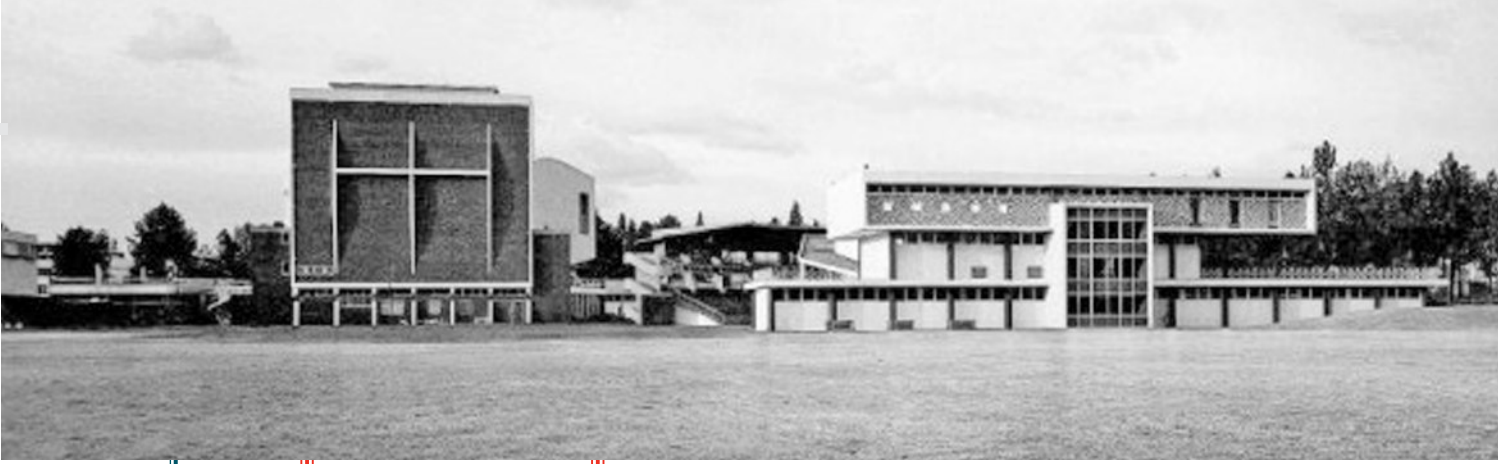
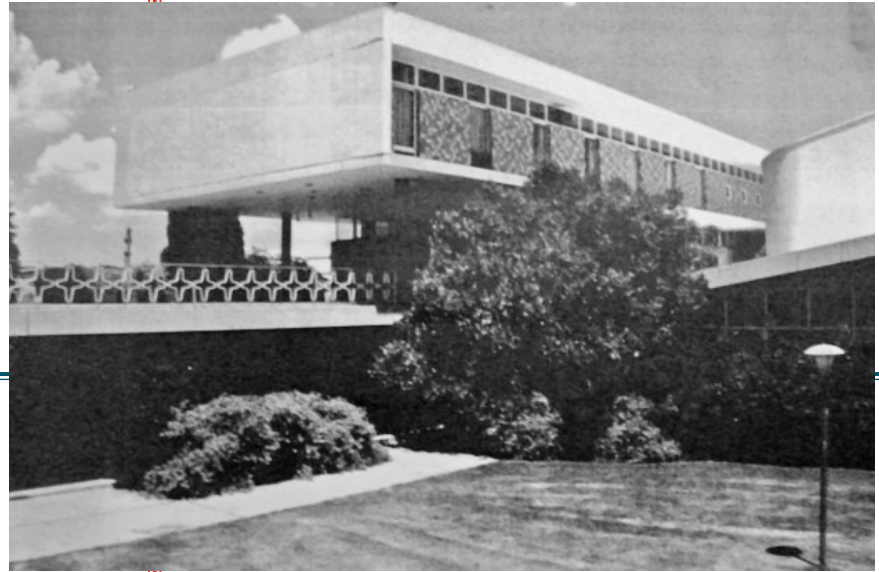


fig. 2.14

fig. 2.15



music precinct-a retrospective view



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fig. 2.16

fig. 2.12, 2.18 & 2.19 : The Aula - monumental modernism at its most beautiful. The Aula was the pride of the University and a public building at a public scale.

fig. 2.13 : Model of the buildings of the Music Precinct.

fig. 2.14 : The Aula, Amphitheatre & Music Building as seen from the south. The modern design and structural dare were completely new phenomena on the campus on completion in 1960.

fig. 2.15 : The Music Building in its original form. The intricate details of the building correspond with the level of detailing of the Aula.

fig. 2.16 : The Music Building, Musaion and Amphitheatre under construction in 1959.

fig. 2.17 : The Aula under construction in 1951. The design of the auditorium, like the Musaion, is based on the principle of "form follows function" and the spaces are designed from the inside towards the outside.



fig. 2.17

fig. 2.18



fig. 2.19



2.3.

analysis of the
site

location

The site is located on the south edge of the music precinct on the existing parking area. It is defined by the back of the Music Building to the east, the tree-lined Ring Road to the south and west and the balance of the parking area to the north.

Vehicular entrance points to the site / existing parking are on the south and west edges from the Ring Road. Pedestrian access and circulation are less defined and pedestrians mainly enter the site from Tukkies Avenue

edges

entrance points

through the Music Building or from the restaurants to the north. Very little pedestrian circulation occurs across the site from the restaurants towards the Administration building and vice versa.

The climatic data of the site corresponds with that of the city: pleasant weather conditions occur throughout the year due to the rainfall pattern. Pretoria is a summer rainfall region and the late afternoon thunderstorms tend to cool down the warm, sunny summer days.

circulation routes

The average monthly rainfall varies from 110-130mm during the months of December and January and 3-7mm during June and July. The temperatures of the area remain relatively moderate throughout the year. An average maximum of 27,5°C and an average minimum of 12°C have been recorded over the past thirty years. Winter average maximum temperatures can rise to about 21°C (<http://www.wheathersa.co.za> : 2009).

The stage tower of the Aula casts a large shadow on the parking area to its south in the afternoons. Due to the location of the site on the south edge of the precinct, it falls outside this shadowed area and can make optimal use of the average 8-10 hours of quality sunshine each day.

Although the site is an open area free from any built structures, it is well shaded and protected by lush trees. These trees are mostly indigenous and well established and for the purpose of the project, some of these trees will have to be removed and relocated to create a green buffer between the site and the remainder of the parking area. The avenue of "Fever Trees" along the Ring Road is however of sentimental value to the campus and its users and will therefore need to be preserved.

The diagrammatic site sections on the left indicate the site's geography and surrounding built fabric. The site slopes down from Tukkies Avenue to the west where it levels out. From the north to the south the site slopes towards the centre. The most drastic level differences are on average 1,390m and can easily be accommodated with ramps to allow continuity of circulation at ground level.

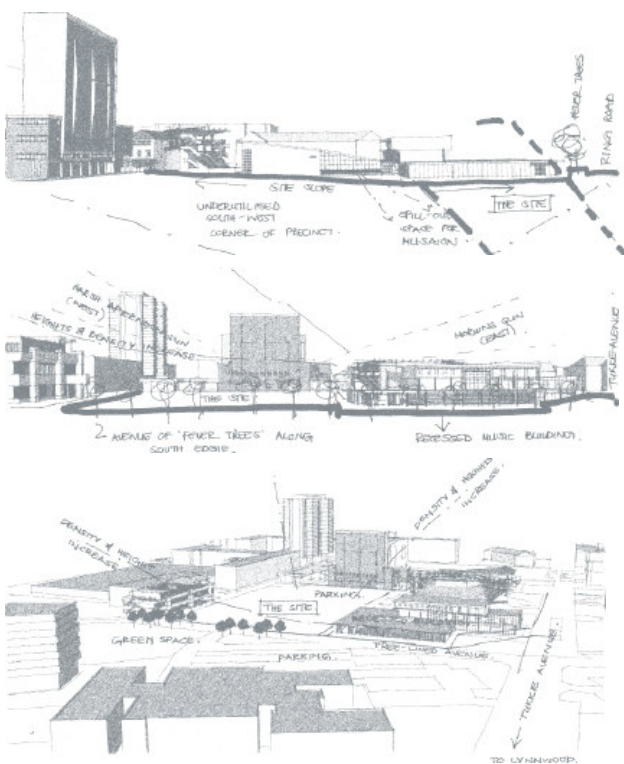


fig. 2.20 : Diagrammatic site sections indicating the geography of the site.



fig. 2.21 : Aerial photo of the site with diagram indicating pertinent contextual aspects.

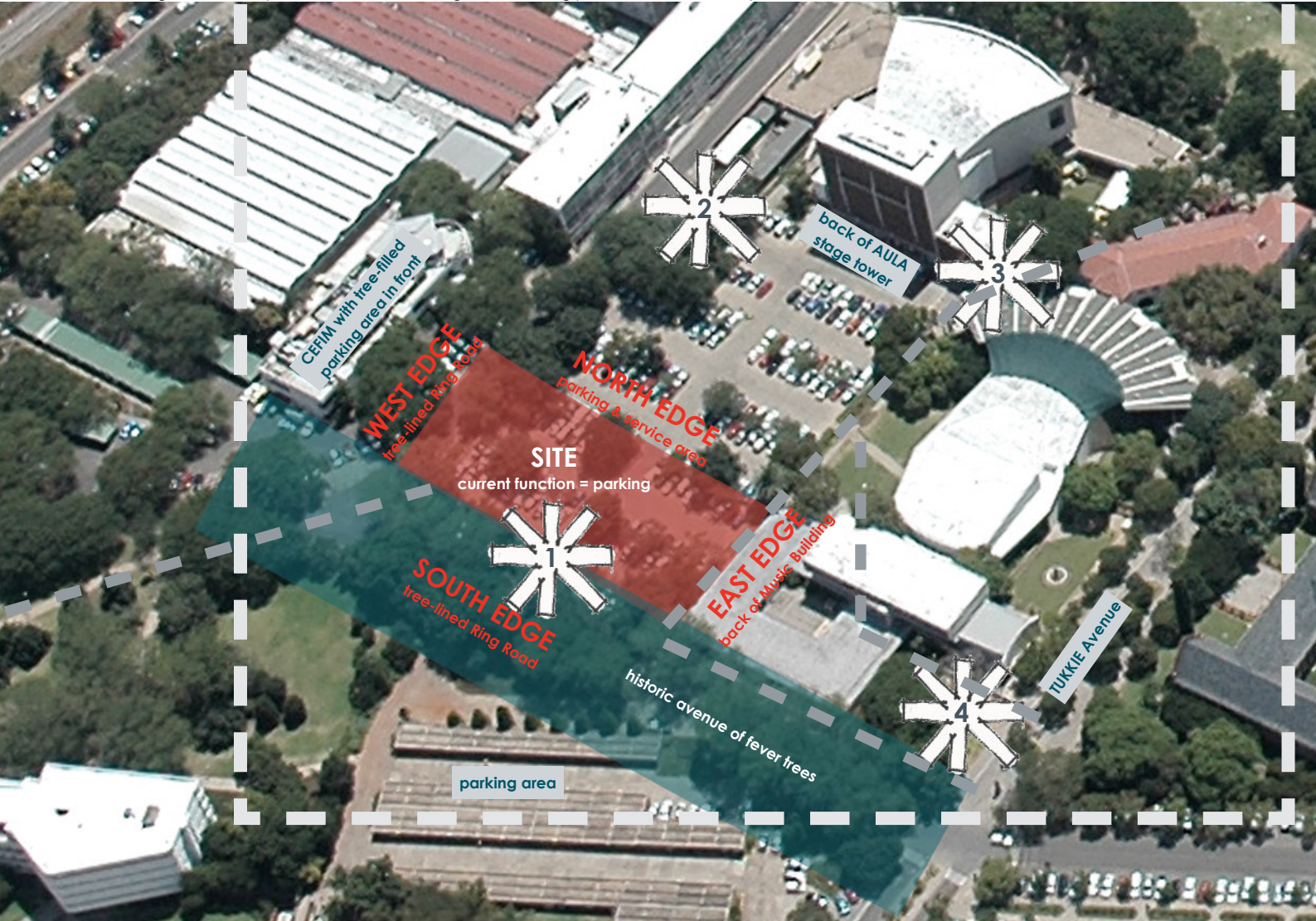




fig. 2.22



fig. 2.23



fig. 2.24



fig. 2.26

fig. 2.25



fig. 2.22 : Current view of the site as a parking area.

fig. 2.23 : View from the site towards the stage tower of the Aula.

fig. 2.24 : The back of the Music Building creates the east edge of the site.

fig. 2.25 : View to the south-west corner of the site with the parking area entrance from the Ring Road on the foreground.

fig. 2.26 : View from the Aula's terrace down the Ring Road towards the site.

fig. 2.27 : The tree-filled site from the parking area opposite the Music Building.

fig. 2.28 : The west side of the Musaion - currently the only spill-out space for the auditorium and also the service entry side.

fig. 2.29 : The avenue of Fever Trees that forms the south edge of the site.

fig. 2.30 : The pedestrian route at the back of the Music Building. This is the primary route for the public between the parking area and the performance spaces of the precinct.

fig. 2.31 : The main entrance and through-route to the site is via the Music Building.

fig. 2.32 : The walkway along the south edge of the Music Building.





fig. 2.27



fig. 2.29



fig. 2.31



fig. 2.28



fig. 2.30



fig. 2.32

the site - a photo montage



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functional zones

energy concentrations & flow

Fig. 2.33 : Diagram indicating the functional zones of the precinct:

- social / interaction
- public / performance
- service
- academic / preparation
- administrative

The orientation of the main buildings is all along a north-south axis, with the Aula's terminating in the service tower at the back of the auditorium. The Musaion has spill-out spaces towards the east and west, but these spaces do not extend past the edges of the Music Building and therefore do not draw significant energy from Tukkies Avenue. The space on the west side functions as a spill-out space for the Musaion during performances. During the day, this area is a lingering and relaxation space for a few students.

The social hubs of the precinct are the three restaurants on the north edge: La Pat, Café Burgundy's and Steers. Energy is concentrated at these venues which act as destination spaces. Thus none of the energy filters through to the south-west corner of the precinct except for users that move through the precinct on their way to the south edge of Campus.

The energy associated with the pedestrian routes, Tukkies and Libri Avenues, is beamed off from the south-west side by the spatial layout of the buildings of the precinct. The vehicular nature of the Ring Road on the south and west edges further prevents a vibrant, interactive atmosphere along these edges.

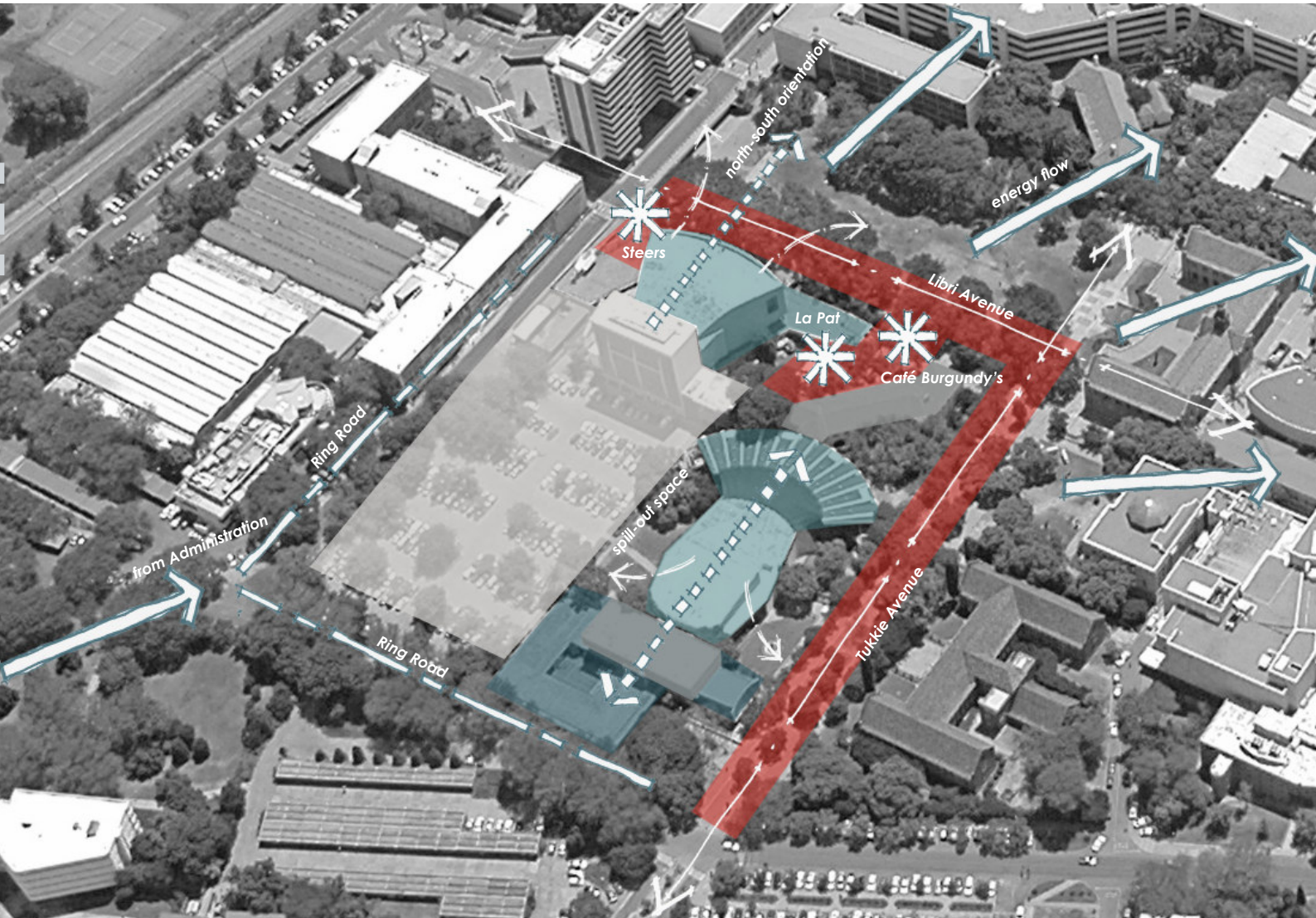
With the life of Campus situated towards the north-east and no social draw card to the south-west, it is inevitable that the life of the precinct terminates at the northern edge.

The site west of the Musaion that currently functions as an area for much needed parking, is actually underutilised in the light of its historic significance. Therefore a conversion of this area will be appropriate in order to restore its former vibrancy.



orientations

boundaries



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positive & negative open spaces

pedestrian movement

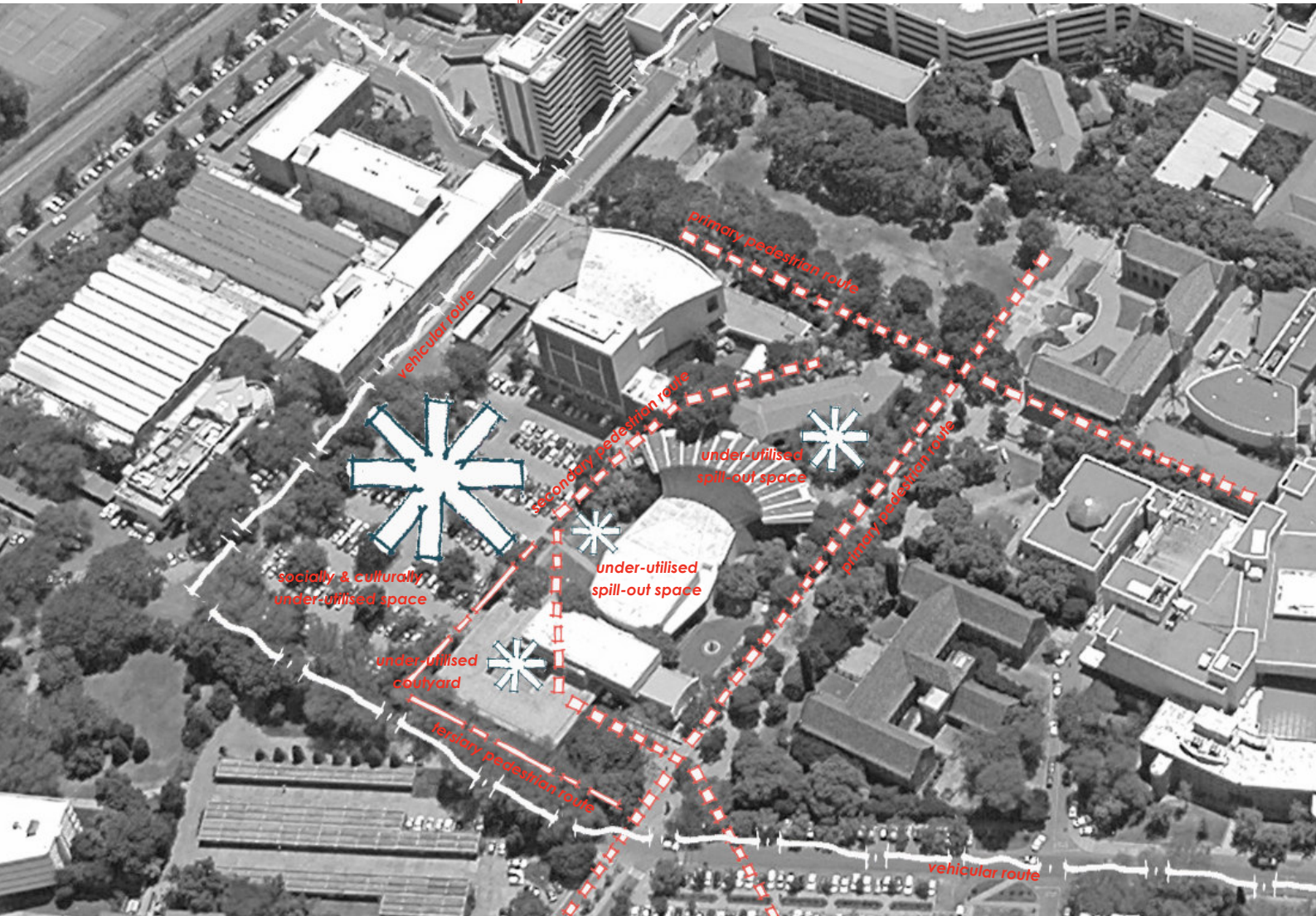
fig. 2.34 : Diagram indicating the primary routes across and around the precinct. These routes are pedestrian walkways - those along Tukkies and Libri Avenues are organised and structured, while the route through the Music Building is a more spontaneous circulation pattern and mostly used by students and faculty of the Music Department. The route along the perimeter of the Music Building is a secondary pedestrian path. The Ring Road acts as a vehicular vein along the south and west edges of the precinct, linking the main two entrances serving the area, the one at Lynnwood Road and at University Road, to the parking area behind the Aula.

Various dead spaces developed throughout the precinct due to poor spatial layout and scale of the buildings. The area that has lost most of its energy over the years is the current parking area. This space used to be the sports fields, the heart of recreational activities on Campus. The central courtyard of the Music Building is also completely underutilised due to its sterile nature and the fact that none of the spaces of the building bleeds out to the courtyard. It is surrounded by internally orientated, private practise rooms. The space on the west side of the Musaion is the most favourite outdoor space of the precinct, but it is only used by music students in between practises and classes and the glare from the Musaion's west wall affects the space negatively in summer. The space at the back of the Old Club Hall is also underutilised, cold and hard, edged by large-scaled structures.



vehicular accessibility

social & historical significance



future site possibilities

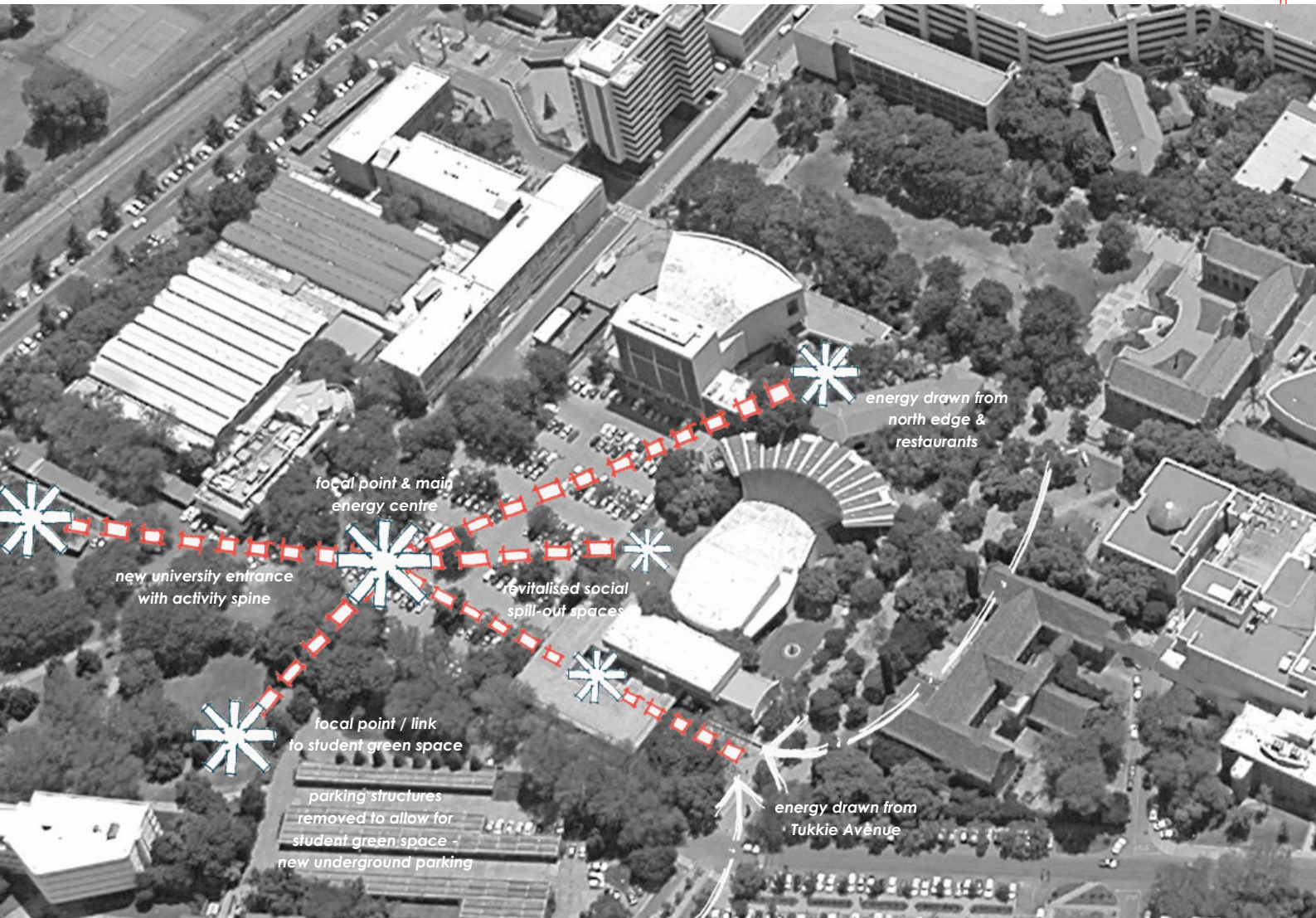
contextual links



fig. 2.35 : Diagram indicating the future possibilities for the precinct and the site. A series of new gathering spaces can be defined and some existing spaces can be revived in order to form a coherent system of energy flow across the site. The proposal to move the University Road entrance from the Engineering building to Senaats Road, with the new Gautrain station across the road, will bring more activity to the precinct from the south-west corner. Public or semi-public facilities along Senaats Road towards the precinct can create a main social avenue with a focal point on the south-west corner of the site. Energy from Tukkies Avenue and the restaurants on the north edge can then be channeled through to the south-west side. The central courtyard of the Music Building can become a revitalised, intimate courtyard along the route from Tukkies Avenue, exposing the process of preparation of music within the building and the new extended music school. The area on the west of the Musaion can be converted into an intermediate meeting space between members of the Music Department, the public and other students of Campus coming from the north. By introducing a focal point across the Ring Road at the open green space, a link between the site and the student green can be established and be used in future as an extension route for further expansion of the Music Precinct. An underground parking area might be the solution to the parking problem and bring the public into close proximity of the music school, its activities and performance venues.

precinct revitalisation

parking solutions



2.4.

architectural language

analysis of the
style, technology & materials

fig. 2.36 : The architectural legacy of Brian Sandrock defines the impressive aesthetics of Main Campus. From left to right: Engineering 1, Administration building, the Music Complex and Humanities building.

The buildings of the music precinct were the first of many across Campus bearing the Brian Sandrock trademark. Sandrock's designs were influenced by the contemporary architectural languages of the time and the new innovative materials available, mostly reinforced concrete. Monumental Modernism, New Brutalism and the Brazilian Modern Style provided the language for these buildings and can be observed in the designs of the Administration building, Building Sciences, Human Sciences, Engineering 1 and Merensky Library buildings to name but a few. In the context of the new music school, the Aula was the first Monumental Modern sculpture that arose.

The impressive building was designed at a public scale with an entrance along the 27m long concrete steps of the wide terrace, leading to the spacious foyer with entrances to all the parts of the building.

The fan-shaped auditorium with 1071 luxurious theatre chairs looks onto a large stage, capable of hosting exquisite performances of plays, ballets, film festivals and orchestral concerts. A front stage is also provided, covering the 60 member sunken orchestral pit and bringing the performances right to the audience. The ancillary services include the stage tower for storage and manoeuvring of sets and spacious cloakrooms. The Aula is an honest building, built according to sound, tried and trusted architectural values. Its

design is truly modern, not contemporary, adhering to the "form follows function" injunction and yet showing great structural daring, with the precarious balancing of large masses on small, slender pilotis (Fisher, 1999:e4). Designed from the inside out, the form is determined by the internal needs which are showcased on the outside by the structural muscle of the building, clearly identifying its functional spaces into which brilliant qualities such as acoustics, indirect and direct lighting and air conditioning are introduced. "It has weathered both the elements and the vagaries of architectural taste well; its worst enemy has been the University itself with insensitive demolitions and additions." (Fisher, 1999:e4).

The Rautenbach Hall and the Student Centre were designed together with the Aula, completing the new cultural and student facilities needed on Campus. "The huge mass of the Aula hovers over the Rautenbach Hall below, an effect emphasized by the transparency of large sliding doors on the western and eastern walls." (Fisher, 1999:e4). The concrete in the foyer is *beton brut*, and its use in the main foyer was novel and adventurous for its time. Finishes and structure are articulated as distinct, with the waved ceilings floating between exposed concrete ribs. Stairs are cut free from the supporting floors to emphasise their independence. In the student hall the architect, Karel Jooste, took his greatest liberties – the sculptured

free-form cut-out concrete screen, the concrete lectern, the wedge-shaped ancillary screen to the dais. The sliding doors are part of the repertoire which distinguished the Pretoria School – an innovative exploitation of ordinary off-the-shelf industrial materials. In a remote corner is the most offbeat device, Georgian wire glass set directly into the jagged edge of a random-rubble wall." (Fisher, 1999:e4)

The Rautenbach Hall and student centre used to be the core of student life with a cafeteria seating 200 people, an exhibition space, recreational hall, student representatives' offices, personnel rooms, toilets and built-in terraces.

The Club Hall was designed by Gerhard Moerdyk in 1929, thus its deviation from the modern style of the rest of the precinct's buildings. It was funded by TUKS Sport who desperately desired a students' social centre. The design is a copy of the appearance of the College House, directly opposite the Club Hall from the central green area. The symmetry of the two buildings emphasized the entrance layout plan of the University as well as the prestige of the Old Arts building located at the end of the open area. Initially only the first floor was constructed due to financial constraints, but in 1936 the second floor was added on recommendation of the architect to prevent further structural damage to the building.





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fig. 2.37



fig. 2.38



fig. 2.39

The facility was the social venue of TUKS Sport and the first home of the Building Department. It also contained a reading room and accommodation for students, a hall for social gatherings, students' representative offices, cloak rooms and a tea room which was established in 1931. The traditional architecture and social connotations of the Old Club Hall create an interesting and authentic touch to the precinct as a whole. With the construction of the modern Aula and Music Complex, public spaces have been created in between the buildings, some vibrant and positive, some more negative.

The Amphitheatre with 1799 fixed and 709 loose seats was designed by Brain Sandrock as part of the Music Complex in 1963. The footprint of the venue originated from the former curve of the athletics track and some of the track steps still remain on the east side of the Amphitheatre. In the years that followed a roof structure was added to make the venue more sheltered and thus more versatile for hosting a wider variety of events. The stage has been designed back-to-back with the stage of the Musaion, sharing ancillary services. The architectural language of both the Amphitheatre and the Musaion is purely modern and, like the Aula, portrays the function of the building externally. Large concrete fins support the hovering organic balcony and roof of the Amphitheatre and the concrete steps/seats are also articulated

to create the impression of hovering volumes. The Musaion's formal-organic shape is anchored by the geometric three-storey Music Building. Free-standing, flanking walls define the side entrances to the auditorium with large curtains walls creating a transitional circulation zone between the inside of the auditorium and its surrounding external spaces. The auditorium is renowned for its excellent acoustic qualities and intimate atmosphere, ideal for smaller performances like chamber music concerts. The shell construction of the auditorium, similar to that of the Aula, enables both auditoria to have large internal open spaces, free from any structure. The structure remains on the perimeter of the auditoria, hidden in-between a double layered skin that assists with the climate and acoustic control in the auditorial spaces. The envelope around the auditoria is free from windows or unnecessary openings to maintain an internally orientated, artificially controlled and sound acoustic environment. Links, relationships and views to the external surroundings are restricted to entrances and gathering spaces. Here the light glass infill between the pilotis or free-standing walls creates a pleasant juxtaposition to the solid, hovering, organic and sculptural components.

Despite the simplistic structural design and detailing of the Music Building, it still conforms to Monumental Modernism, reflecting a strong Brazilian Modern Style influence as

well. Square, cross-shaped columns on a 4,205m grid provide structural stability to the ground and first floors while the second floor is contained in a shell-like, concrete box. The volume extends past the first floor structure to create the illusion of a floating box. The low floor-to-ceiling heights of all three levels emphasise the horizontality of the building, further expressed in the narrow ribbon windows placed directly below the structural slabs as a sort of shadow-line between structure and infill. Although the window sizes remain relatively constant throughout the building, their composition and placement differ to express the level of privacy of the internal spaces externally: ground floor windows and doors establish a more public atmosphere and indicate entrances and a relationship with the central courtyard while the first floor ribbon windows with intermediate vertical sections from floor to ceiling indicate the semi-private nature of the offices at this level. The second floor houses the library and here the ribbon windows indicate the quiet, internal nature of the private library.

The infill of brick and glass are used at will to articulate the facades of the building and the composition as a whole. Detail such as the glazed tiles in shades of blue and white, the blue painted concrete columns and the balustrade design repeat the same square, cross-shaped pattern and tie all the elements of the building together.





fig. 2.40



fig. 2.41

fig. 2.42



fig. 2.43

These contextual photographs illustrate elements of the Modern styles that influenced the architecture of Brian Sandrock and provided the music precinct with such a distinct character.

fig. 2.37 - 2.39 : The Amphitheatre with its hovering steps, sculptural balconies, concrete ribbon stairs and the large concrete fins that support the structure.

fig. 2.40, 2.42 - 2.43 : The Musaion has a formal organic shape anchored by the Music Building with its floating concrete box at the top. The glass curtain walls and flanking walls indicate the circulation areas and the glazed tiles on the facade are reminiscent of the Brazilian influence.

fig. 2.41, 2.44 - 2.45 : The mass of the Aula seems to hover above the thin pilotis which enables the facade infill to be non-structural. Glass doors and windows are used here to indicate the entrance areas, distinguish solid from light and create inside-outside relationships with nature. The wide steps to the foyer emphasize the public scale of the building.



fig. 2.44



fig. 2.45





red brick, stucco & rough-hewn stone

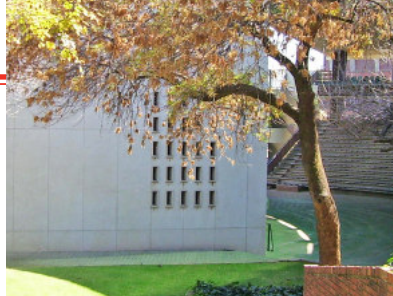


concrete pavers

breeze blocks & brise soleil



off-shutter reinforced concrete



brick pavers



pigmented plaster

glass curtain walls, louvres & glazed tiles

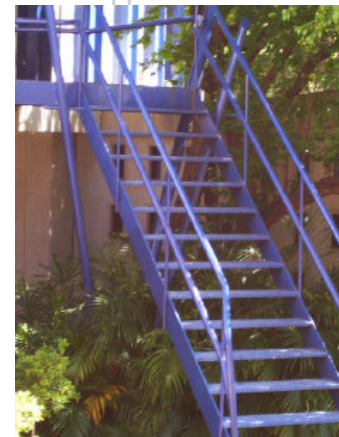


patterned pre-cast concrete elements / sand-blasted concrete



exposed aggregate concrete

steel



Strengths

1. The site is located within the established Music Precinct with an already rich cultural heritage. The new intervention can thus contribute further to the "centre of excellence in the arts" created by the existing facilities.
2. Sufficient open, underutilised space exists within the precinct, specifically to the west of the Music Building, to expand the Music Department as one, combined facility.
3. The site is in close proximity to existing, main circulation spines of the campus and energy can easily be drawn from these activity spines into the quiet, south-west corner of the precinct.
4. The site is already accessible from various pedestrian and vehicular routes and an extension of these routes can link the precinct effectively to the surrounding context to further enhance accessibility and legibility of the precinct.

Weaknesses

1. The existing buildings in the precinct are either orientated away from the site or their edges facing the site are relatively solid. This might prohibit optimal integration of the site and the new building with the existing built fabric.
2. Various underutilised spaces exist intertwined amongst the buildings in the precinct. Due to the spatial layout of the existing buildings these spaces might not all be resolved and revitalised with the insertion of a single new building in the south-west corner of the precinct.
3. Due to the orientation of the existing buildings a service area is required on the west edge. This will prevent the central area of the precinct to be converted into a large green space to the benefit of all the surrounding buildings and as a communal space tying the precinct together. Especially the site's relationship with the Aula will be compromised by this compulsory service space.

4. Energy from the circulation routes to the north and east of the precinct is almost completely obstructed from the south and west edges by the spatial organisation of the existing buildings. Without a drastic intervention, the site will remain an under-utilised service area.

Opportunities

1. Expansion of the Department of Music can occur within the precinct, incorporating currently weak connection points, routes and spaces in an effort to create a new integrated facility with a mutually beneficial connection to the existing amenities.
2. The Music Department and its students can become active participants in the live of Campus with diverse energy from the areas surrounding the precinct filtering through it and exposing the Department and the performing art of music to various audiences.
3. The new entrance to the University at the end of Senaats Road will be welcomed by an iconic focal point – reflecting the contemporary image and dynamics of the University and the Department of Music.
4. The existing facilities of the precinct will be provided with a legible access and circulation system aimed at streamlining public involvement and participation in the arts.

Threats

1. The existing buildings in the precinct and specifically the Music Building are of great cultural, social, historic and architectural significance. Care need to be taken with the new music school as to not distract from this significance. Instead, the new intervention will have to enhance and revitalise the existing fabric.
2. The phasing of the project will be important to allow for practising and performing of music to continue while the new building is in progress.

SWOT
analysis



chapter 3

the design approach

In a reply to the brief by the Department of Music, a response was generated to establish a place on Campus where the experience of music can be intensified and celebrated. A methodology of extension and conversion of the existing milieu was formulated to ensure that the new intervention relates to the existing on a physical, social and functional level. In order to guide the process of extending and converting the existing environment, an appropriate design approach had to be adopted. The theory of gradual mutual adaptation by Christopher Alexander provided a suitable and sensitive perspective for approaching the project.

Alexander's theory developed as a reaction to the failures of Modernism in an effort to

rectify societies and make them more whole. This implies that our environments need to be filled with more life, recognise the needs of the users as defined by our basic human nature and appreciation of the things that are truly beautiful. The quest to shape settings in which people feel safe, have alternatives and the autonomy to interact instinctively has been the objective of the theory of gradual mutual adaptation.

Besides the passion for the users of environments and their needs, other aspects are being highlighted within the theory as being critical design informants not to be neglected in contemporary space-making. Contextually responsive designs, stripped of commercially driven and stylistic intentions,

together with sound sustainable principles, are probably the most appropriate strategy for the resolution of the design challenges of our day and age. This approach does not only take into consideration the socio-economic, physical, historical or cultural issues of an environment, but also has the intention of minimizing the long-term negative effects of the built environment on nature.

The aim of the theoretical discourse is thus to delineate this theory as a fitting approach to the introduction of a new music school in order to ensure a design solution that makes the environment of the Department of Music whole, both for its users and the context of the precinct.



"I believe we are on the threshold of a new era, when the relation between architecture and the physical sciences may be reversed – when the proper understanding of the deep questions of space, as they are embodied in architecture – will play a revolutionary role in the way we see the world ... and will perhaps play the role for the world view of the 21st and 22nd centuries, that physics has played in shaping the world view of the 19th and 20th."

- Christopher Alexander, Berkeley, 1983

fig. 3.1 : Vast reductive spaces of the 20th century - created by a mechanistic world view.



3.1.

perspectives of the design approach

The design approach for the new music school is based on three perspectives that provide direction for the project in order to create an environment that is orientated towards the needs of its users. The creation of spaces in which people feel comfortable and have choices is pertinent for the revitalisation of the music precinct and the much needed exposure of the Department.

space a perspective based on science

This perspective discards any other, unscientific approaches such as fashion, ideology, history or politics. It is based on scientific reasoning, especially with regards to our perception of space. One of the transformations required is that we rethink the nature of space. It should be perceived as an entity which, like all organic and inorganic matter, has some degree of life in it. Space can therefore be more or less alive according to its structure and arrangement. This perception of space will influence the way we think about buildings, spaces and planning. With this approach in mind, based on how matter naturally arranges itself coherently and spontaneously within space, deviations from the restrictive ideas of modern planning can occur. Instead of grids, zones, roads and buildings being imposed onto human activity based on a preconceived design on paper, environments will have the opportunity to orchestrate their own identities and spatial organisations according to the needs of their occupants.

nature a perspective based on beauty & grace

In the current view of the world, we are still captivated by the power of Cartesian reductionism, the metaphor of the machine. It utterly dominates our power over nature, the power to take apart and reassemble nature at vast scales for our own purposes. We should however be looking towards nature for the kind of order necessary to create freedom, wholeness, harmony and life.

Nature and the order that exists in it also suggest that for buildings to be really alive, it needs to be deeply and robustly functional. For in nature there is essentially nothing that can be identified as pure ornament without function. Conversely, there is no system in nature that is functional without being beautiful in an ornamental sense.

With nature as our respectable teacher we will come to understand the idea of holism – instead of reductionism – which is inevitably integrated in designs that reveal feeling, spirit and true beauty.

human a perspective based on intuition

Alexander's theory proposes a vision of a human-centred universe, a view of order in which the soul, or human feeling, plays the central role (Alexander, 2001:6).

A new language is to be provided for the construction of and transition into a novel kind of society, rooted in the nature of human beings. The ability to provide for the needs of human nature requires once again a proper understanding of space:

"Geometry of the physical world, its space, has the most profound impact possible on human beings. Its impact on the most important of human qualities, our inner freedom or our sense of life each person has." (Alexander, 2001:30)

Equipped with a clear picture of the importance of space on our everyday lives, we can start to make space in our environments, space that fulfil the common needs and desires apparent in all human beings.



fig. 3.2



space



nature



humans

"The really good building. The really good space. Places that reach an archetypal level of human experience, reaching across centuries, across continents, across cultures, across technology, across building materials and climates. They connect us all. They connect us to our feelings. They are results of the practical task of making beauty."

- Vision of a Living World, Christopher Alexander



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3.2.

matrices of the design approach

order

A prominent initiative in Alexander's theory is the idea of order. He refers to a specific kind of order evident in nature as oppose to the different kind of order of modern society. In both order manifests, however, it is the nature of order that distinguishes our natural world from our man-made world. Society is currently ruled by a mechanical order. "The order is always prescribed – and even invented – in relation to the way the things work as a mechanism." (Alexander, 2001:15).

It is precisely this nature of order, he argues, that lies at the root of the architectural problem. The order we perceive in nature is the order we should strive for. It is similar to the order you find in a Mozart symphony: a harmonious coherence which fills us and touches us. Coherence of parts to a whole, an authenticity and transparency that captures and moves the human soul, which arouses feelings of the sublime. For anything, both in nature or man-made, to be filled with life, order is required. It suggests a set of well-defined, logically arranged structures present in all life, from micro-organisms to mountain ranges to good houses and vibrant communities (Alexander, 2001:15). Once we understand the qualities of this order, we can ask precise questions about what must be done to create more life in the world – whether in a room, a door knob, a neighbourhood or a vast region.

"All systems in the world gain their life, in some fashion, from the cooperation and interaction of the living centres they contain, always in a bootstrap configuration which allows one centre to be topped up by another, so that each one ignites a spark in the one it helps, and the mutual helping creates life in the whole." (Alexander, 2001:176)

wholeness

When comparing traditional environments, for example a tiny Gothic church or an ancient Zen Temple, with the works of modern architecture, one realises that the traditional settings have something in common: they are beautiful, ordered and harmonious. They strike to the heart and are utterly real. The modern structures, however, are not quite so real. What distinguishes the more traditional structures from the modern as being more real?

The answer lies in their quality of wholeness. This quality is directly related to the characteristics, strengths and coherency of the centres comprising the whole. Something that is whole and real accepts itself, it is true to its own nature, it has no pretensions and it is direct and simple. When all the forces which emerge from a system are in balance, the system is fully whole and utterly real. For an environment to be whole, it must fulfil five conditions:

- all the deepest society-wide psychological needs must be taken into account
- human feelings, climate, engineering, social problems, ecology, transportation and economics must all be integrated
- each person needs access to a shared pool of experiences
- all acts of building must contribute to wholeness of the environment
- the environment must be created by the people who live in it

centres

The concepts of order and wholeness are constructed around the idea of centres. Coherent centres and their interrelations with one another define the whole and the nature of order that exists within it. Each centre is crucial, for the existence and life of one centre can intensify or decrease the life of another and inevitably that of the whole. The life of a structure and its environment depends on the density and intensity of the centres which it consists of. Inspired primarily by his discoveries from *Notes on the Synthesis of Form*, Alexander has formulated fifteen properties for the transformation of centres. In essence these are fifteen ways to probe centres in an effort to bring them to life and strengthen them through a coherent and expandable connection to other centres (De la Port, 2008:5). The more these properties are present in the centres, the more the systems which contain them will tend to be alive. Properties such as levels of scale, boundary definition, alternating repetition, positive space, good shape, local symmetries, contrast, echo and voids have all been incorporated in the design of the music school to some extent.

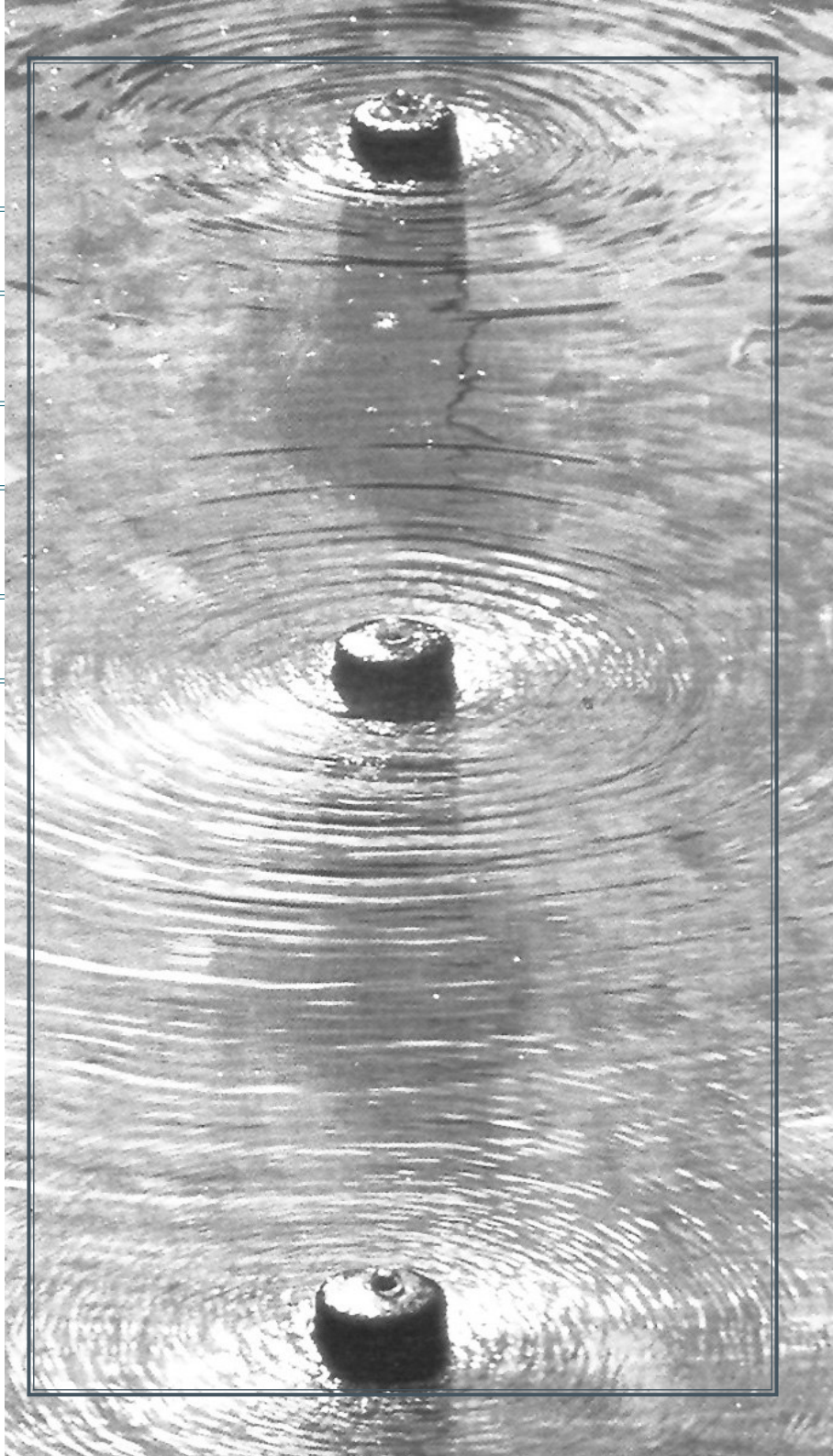


fig. 3.3

order

wholeness

centres



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3.3.

application of the design approach



In the context of the project the selected approach will be applied to the design of the new music school as well as to the revitalisation of the precinct. The process of gradual mutual adaptation prescribed for the precinct and the existing music building implies a subtle, sensitive conversion of the current environment to a more defined, concentrated network in service of music.

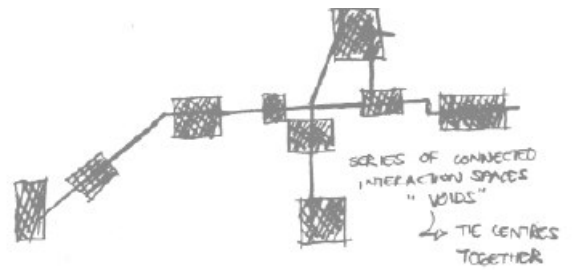
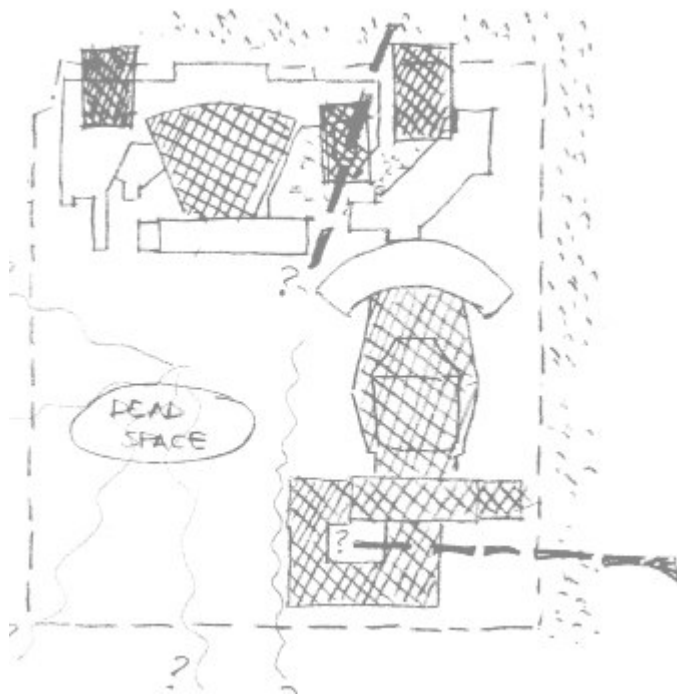
The new music school will act as a new centre to be introduced within a precinct already containing centres. Some of these centres are not very strong, not functioning to their full potential and thus the aim of the new centre and spatial framework is to enhance the existing centres as well. The new

building will consist of a series of smaller functional centres, each with its own identity and characteristics, yet functioning as a whole. Order within the new building and its connection with the existing fabric will be inspired by the process of music. This process consists mainly of the preparation and performance of music. The spatial, social and functional organisation of the intervention will be ordered along these two aspects of music. Due to differences in the processes, the spatial and formal characteristic of the preparation and performance axes will also differ.

In an effort to bring wholeness to the precinct and the Music Department, a strategy has

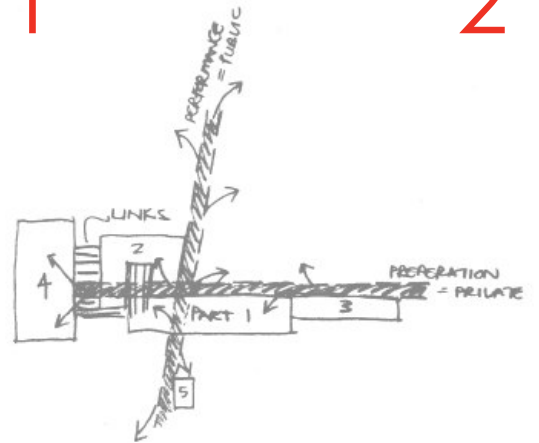
been devised to attract more life to the area that will bring about wholeness on a social level. The integrated and extended program of the new building will achieve functional wholeness. Contextually, wholeness will be created by the links and relationships established between the centres within the precinct as well as the integration of the precinct with the surrounding Campus and public realm. Finally a shared language will need to be formulated to tie the new building in with the existing built fabric of the precinct. This shared language aims to create wholeness between the new and existing with regards to aesthetics, materials, technology, form, spatial organisation and proportions.





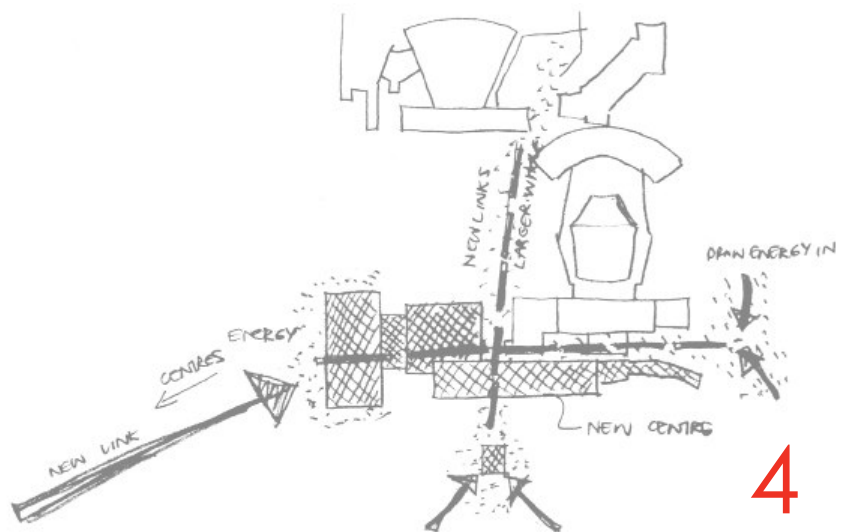
1

2



3

fig. 3.4 : Design sketches indicating :
 1: the existing strong centres of the precinct - a centre within the campus - a centre within the suburb of Hatfield etc.
 2: a series of interconnected social spaces - the voids - linking the centres
 3: a new centre is introduced - consisting of smaller connected centres along two contextual axes linking with surrounding whole
 4: the new centre is strong within itself - also strenghtening the surrounding centres and the whole



4



chapter 04

the design influence

Apart from the brief, response, methodology and approach, various other influences contributed towards the final design of the new music school. These influences primarily relate to the architectural heritage of the existing buildings in the precinct. The Aula, Amphitheatre, Musaion and Music Building reflect a distinct modern character that was the trend of the time in Pretoria during the 1950's and 1960's. Although these stylistic trends overlap in many ways such as period, materials, formal response, scale, contextual

relationships and functional approach, there are certain characteristics unique to each.

In an effort to convert the existing language of the precinct to a more contemporary perspective, it is necessary to fully understand the original design influences of the precinct. In this chapter the three languages evident in the design of the precinct buildings will be analysed: Brazilian-inspired Pretoria Regionalism, Monumental Modernism and New Brutalism.

fig. 4.1 : "The Pretoria Wachthuis owes much to the Brazilian Influence - the use of an arcade paved in marble mosaic murals that are linked by a sweeping double stairway to the upper level, the introduction of brise soleil on the facade and elegant steelhelical stairs in the double volumes of the ground level shops" (Jooste, 2007:85).



pretoria regionalism

brazilian-influenced

4.1.

"From Brazil to Pretoria – The Second Wave of the Modern Movement"

In the early 1940's the Brazilian mutation of the Modern Movement architecture started to gain a spirited following in the Transvaal. In 1943, to be exact, the Museum of Modern Art in New York staged the "Brazil Builds" exhibition. The exhibition portrayed an interpretation of the Brazilian Second Wave which proved to be more empathetic to both the privileged and the public than the austere International Style (Gerneke, 1998:197).

Elements such as continuous urban space at ground level, pedestrian ramps, brise soleil, free forms, sculpture, enormous murals and roof gardens of tropical flora reflected a regionalist intent which have been completely ignored in the International Style. Another impressive aspect of the exhibition was the dexterous handling by engineers and architects of audacious structures and innovative forms in reinforced concrete (Gerneke, 1998:203).

The same year as the exhibition, the Pretoria School of Architecture at the University of Pretoria was founded. The book "Brazil Builds" became to the post-war students of the Pretoria School what "Vers une Architecture" had been to the Modern generation in Johannesburg (Fisher, 1999:e2). In the following decades, the 1950's and 1960's, the influence of the Brazil Second Wave left an enduring mark on the architecture of Pretoria and also spread to other cities across the country. The particular affinity for the style in Pretoria lead to the Highveld becoming a "Little Brazil" as termed by Chipkin in 1993,

derived from Nikolaus Pevsner's (1953) observation that Johannesburg was "a 'Little Brazil' within the Commonwealth" (Fisher, 1999:e2).

According to Gus Gerneke's article in *The Architecture of the Transvaal* similarities in climatic conditions between South Africa and South America motivated the profound following of the Brazilian Movement in Pretoria. The impracticality of International Style trends such as flat roofs (difficult to waterproof in Transvaal thunderstorms) and large windows (inappropriate without overhangs in the harsh Highveld sun) left architects in search of more appropriate solutions. The regionalist touch of the Brazilian Movement provided suitable alternatives. Other reasons for the susceptibility of the Pretoria University graduates to the Brazilian influence are explained by Gerneke (1998:215):

"...Afrikaners, on gaining political power, espoused the avant-garde to proclaim their achievements. This is most evident in ecclesiastical buildings; while English churches were generally safely traditional even in the fifties, Afrikaans congregations championed daring buildings, often with crude results... Most likely the young Pretoria architects simply rejected the traditionalists – they were primed for a fresh approach by their admiration of Le Corbusier, Gropius, Mies van der Rohe and other Modern masters and, later, the Brazilians. What is more, the Transvaal Group had broken fallow land a decade earlier, creating a seedbed for

new design, which later led to a Transvaal mutation of the Modern Movement via an affinity with the bold Brazilian school."

Norman Eaton, one of the pioneering Pretoria architects of the 1940's and 1950's, and Hellmut Stauch, another notable Bauhaus-trained Pretoria architect, were the first to reflect the transatlantic influence in their work.

Eaton's Ministry of Transport Building in Pretoria (1944) was the first in South Africa in the Modern idiom and the first building directly influenced by the Brazilian architecture. The building was strongly representative of the Rio de Janeiro Ministry of Health and Education building: "the juxtaposition of the wings, the facades with fins on a grid and adjustable brise soleil and the sculptured lift towers – typical floor, library, waiting room, auditorium" (Gerneke, 1998:212-213). Dry "movable" partitioning was also introduced to provide flexible office space, a first for South Africa.

Stauch's Meat Board Building in Pretoria soon followed in 1950 in the same Modern idiom and with the same Brazilian influence, and one of high architectural standard at that. Once again the Rio de Janeiro Ministry of Health and Education inspired the design: "pilotis, dry "movable" partitioning, fins on a grid, adjustable brise soleil, a similar roofscape and the separately articulated auditorium (in this case a boardroom)" (Gerneke, 1998:216).

fig. 4.2 : The Netherlands Bank was designed in 1953 by Norman Eaton. The building was a summary of the Brazilian notions used in the Ministry of Transport building: vertical hardwood louvres on the west facade and a roof garden, inspired by the acclaimed Brazilian landscape architect Roberto Burle Marx. Eaton took great care in his projects to have the exterior spaces compliment the building.



fig. 4.3



Netherlands Bank
1953
Norman Eaton

fig. 4.4



Polley's Arcade
Norman Eaton

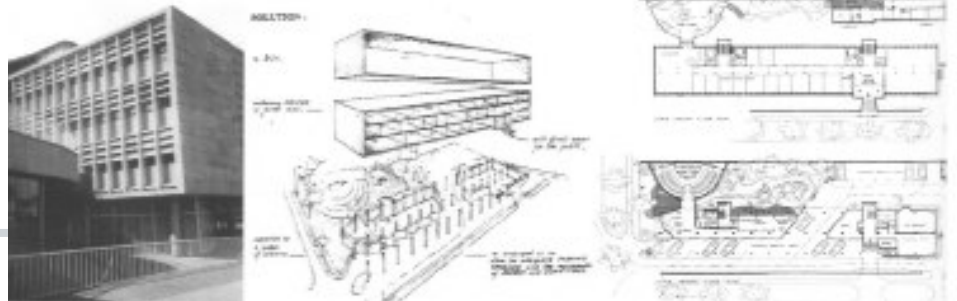
fig. 4.5



Little Theatre
1940
Norman Eaton

Meatboard
Building
1950
Hellmut Stauch

fig. 4.6



Pretoria Technical
College
1967
Eaton & Louw

fig. 4.7



Transvaal
Provincial
Administration
Building
1962
Meiring & Naude,
Moerdyk &
Watson

fig. 4.8



a new monumentality

monumental modernism

4.2.

The Brazilian influence was soon felt on the Main Campus of the University of Pretoria. Graduates of the architecture school like Karel Jooste, Gus Gerneke, Anton du Toit and Wynand Smit became tutors at the school together with other noteworthy architects such as Norman Eaton, Hellmut Stauch and Gordon McIntosh – all influenced by the Brazilian Second Wave. The campus soon reflected elements of the Brazilian influence with the use of pilotis, flaunting brise soleil and glazed tiles.

Aspects like the shortage of sheet-iron during the war years encouraged architects to experiment with roofs of formed concrete. Although this tested the skills of engineers and builders to the limit by creating daring concrete inventions, it developed confidence in the use of the material. Ribbon stairs and hyperbolic, folded or saddle-curved canopies and roofs were some of the new concrete elements included in the designs. The first free-standing ribbon stair in South Africa was tacked to the outside of the Aula. Unfortunately it has since been demolished. Apart from its renowned staircase, the Aula was also the first Monumental Modernist building on the campus and could well have been the first in South Africa if it was not for Stauch's Meat Board Building also classified as such (Fisher, 1999:e2).

Simultaneously to the post-war dilemma, an international quest for a New Monumentality occurred as a "re-conquest of the monumental expression" (Gerneke, 1998:220). Confidence in the Modern "form follows function" idiom was waning and the argument was that Modernism, based on functionalism, "can express little except utilitarian ideas" (Gerneke, 1998:220).



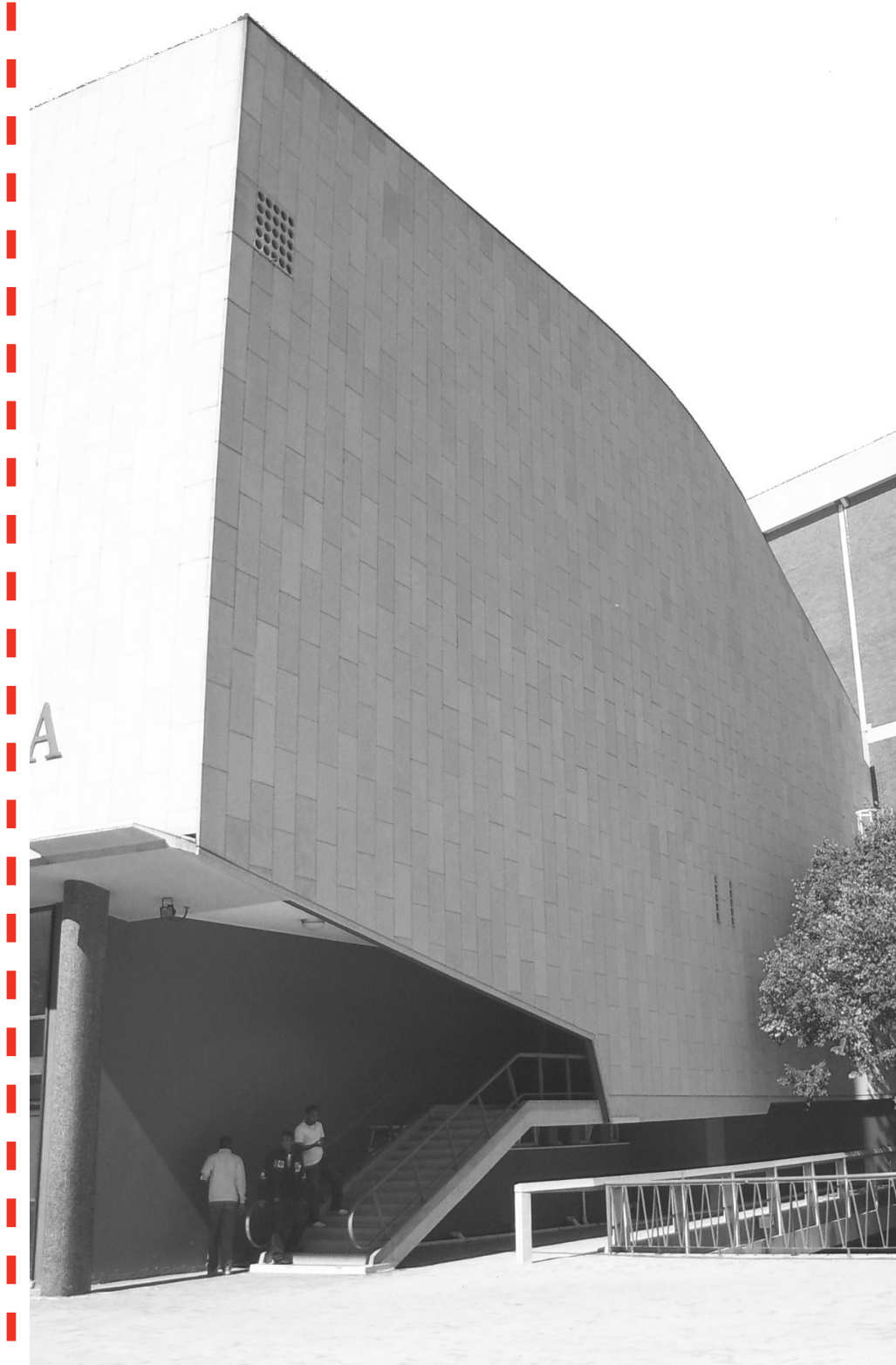


fig. 4.9 & 4.10 : The Aula is probably the most impressive example of Monumental Modernism in Pretoria. It was designed in 1958 by Karel Jooste.

By the 1950's views contrary to the doctrine of Modernism were increasingly being aired: "Modern architecture is torn by remorse and doubt because it is still wavering on the point of renouncing Functionalism and yet has no other conviction to replace this god of its youth" (Boyd, 1956:85). Disparate influences were gaining strength and in the light of this Le Corbusier's post-war projects erupted in the international press triggering the New Brutalism (Gerneke, 1998:219).

The Brutalist architectural style thus spawned from the Modern Movement and flourished from the 1950's to 1970's. The work of Le Corbusier largely inspired the early style, in particular his *Unité d'Habitation* (1952) and the *Secretariat Building* in Chandigarh, India in 1953. The term Brutalist architecture also originates from the French "béton brut" or "raw concrete" that describes Le Corbusier's choice of material. In 1954 the English architects, Alison and Peter Smithson, coined the term. However, it only gained strength when the British architectural critic, Reyner Banham, used it in the title of his 1954 book: *The New Brutalism*. The style has since been refined and experienced historic appreciation and resurgences well into the 21st century.

Brutalist buildings usually consist of striking, repetitive, angular geometries and often

reveal textures of the wooden shuttering used to shape the material which is normally rough, unadorned poured concrete – although this is not a pre-requisite for the style. Brutalist buildings may achieve its quality through a rough, blocky appearance and the expression of its structural elements, forms and services on the exterior façades. Other Brutalist materials include brick, glass, steel, rough-hewn stone and gabions. Another common theme of Brutalist buildings is the exposure of the building's functions – ranging from its structure and services to its human use. The Boston City Hall of 1952 and the Centre National de la Danse of 1972 in Lyon indicate strikingly different and projected portions on the facades, reflecting the spacial nature of rooms behind the walls.

The first upsurge of New Brutalism occurred in the 1960's when inexpensive construction methods were sought after to re-build war-ravaged communities. The late 1960's were also the era of expansions to various university campuses in North America and Canada and New Brutalism soon established itself at the American and Canadian universities. The first New Brutalist campus building was Paul Rudolph's Yale Art and Architecture Building in 1958.

"While the Smithsons and Paul Rudolph visited South Africa and left their mark on its

architecture, New Brutalism arrived at the University of Pretoria through Brian Sandrock" (Fisher, 1999:e2). Sandrock had been active on the campus since 1956 with additions to existing buildings. He would eventually dominate the campus with his fascination with the plasticity of concrete and a confidence about its engineering. Both of these were explored on Campus even when it was not a functional requirement. "His buildings are daringly engineered: the concrete façade of the Administration building is suspended on rubber hangers, the floors of the Engineering tower are suspended from central service towers on cables, the New Humanities building rises off an enormous concrete bridge podium" (Fisher, 1999:e2).

Even though most of Sandrock's designs express functionality on a monumental scale, the Musaion and Music Building adopted more contextually sensitive scales and proportions – probably indicative of the intimate nature of the school and the auditorium.

The buildings of Brian Sandrock might be designated to the New Brutalist language, however, they also reflect a strong Brazilian-influenced Pretoria Regionalist influence such as the glazed tiles of the Music Building and the *brise soleil* on the north façade of the Administration building.



fig. 4.11 : Modern Art Museum, Rio de Janeiro

fig. 4.12 : Exposed concrete aggregate as finish to intersecting rectangles.



fig. 4.13 : "Bruterin"

fig. 4.15 : Centre National de la Danse of 1972 in Lyon



fig. 4.14 : Le Corbusier's Unité d'Habitation in Marseilles



fig. 4.16 : Waterloo Mathematics Building



fig. 4.17 : Resurgence of Brutalism in a contemporary era



new brutalism across the globe

chapter 05

the precedent studies

The significance of the architectural languages evident in the music precinct necessitated a detailed analysis of the buildings within the context: the Aula, Rautenbach Hall, Musaion and Music Building. Their architectural legacy inspired a further investigation of Campus buildings in general and the languages such as Pretoria Regionalism, Monumental Modernism and New Brutalism which inspired their design as well as many other buildings across the city of Pretoria.

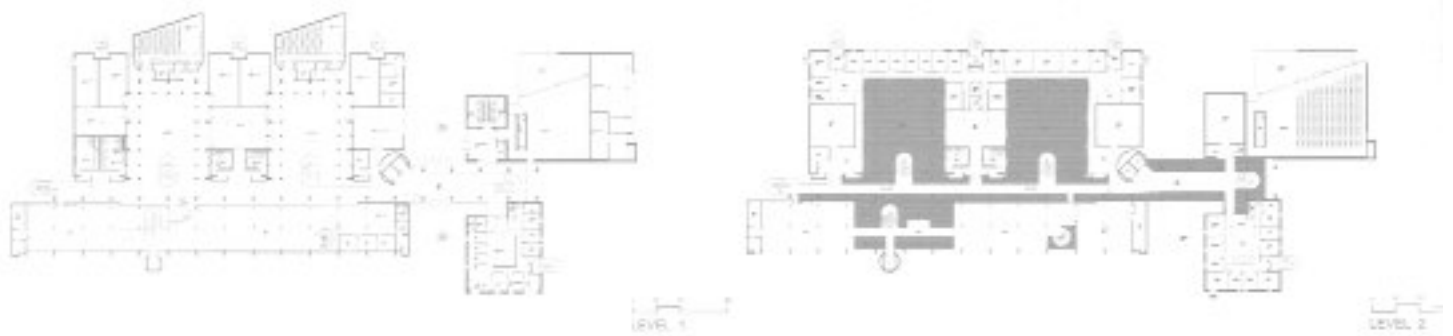
A collaboration of these influences inspired the design of the new music school in terms of contextual response, form, spatial organisation, structure and technology, materials, façade treatments and circulation.

The following buildings analysed in this chapter do however not conform particularly to these architectural styles, yet, their design and approach to certain building elements assisted in formulating a conversion of the Modern influence to a contemporary one.

fig. 5.1 : Artist's impression - Faculty of Law Building, University of Pretoria, Hatfield Campus



fig. 5.2 (below) : Thumbnail drawings of the Law Building in support of the study.
fig. 5.3 - 5.5 (opposite page) : Photographs of the Law Building showing the double volume entrance, the vertical circulation towers and the transparency of the glazed south facade to the Oliver Tambo Law Library.



5.1.

law building

Main Campus, University of Pretoria
KrugerRoos Architects, 2006



fig. 5.3

fig. 5.4



fig. 5.5



notes

*double-volume walkway / interaction space
to courtyard
floating screen to define human scale*

*glazed south facade - relationship to 'fever'
tree-lined avenue*

entrance extends into Tukkies Avenue

facades express internal functional spaces

*formal grouping of similar functions
central atria connect separate functions*

*circulation expressed as sculptural towers
auditoria as 'free-standing' formal organic
entity*

building defines south edge of precinct

*library - public - light - clarity of information
contrast to
acoustic spaces - private - solid*

*continuity of flow at ground floor
network of circulation & interaction spaces*

The new facilities for the Faculty of Law are the result of an architectural competition initiated by the client, the University of Pretoria. At the heart of the building is a circulatory spine, expressed as a multi-storey walkway or gallery under a light steel canopy seemingly detaching itself from the main structure. Trees screen the fully glazed Oliver Tambo Law Library, which claims most of the south façade. To the east the library is flanked by the entrance – aligned with an existing avenue – and an administrative block dressed in deliberate white walls that are carefully punctured, a pattern expressing similar functions elsewhere. Wings housing office and seminar spaces are formally grouped around two courtyards open to the walkway. Circulation towers – suggestive of their function – and auditoria protrude from the main body of the complex.

As an urban intervention the building resolves the previously frayed edge on the north-eastern periphery of the University's Main Campus. Purposefully but sensitively wedged into its context, the building embodies some of the higher ideals associated with the legal fraternity – gravitas and transparency – by contrasting visually weighted solids to lighter steel components and glazing. The innovative use of natural light throughout the building appropriately strengthens this concept.

The design competently addresses pragmatic concerns through a legible, rational structure and with spatial clarity, best expressed through the interconnecting walkway. This element eloquently integrates light, rhythm and natural ventilation throughout the building. The designers, mindful of Pretoria's moderate climate, have skillfully managed the comfort of traversing external and internal spaces.

(www.artefacts.com: September 2009)



fig. 5.7

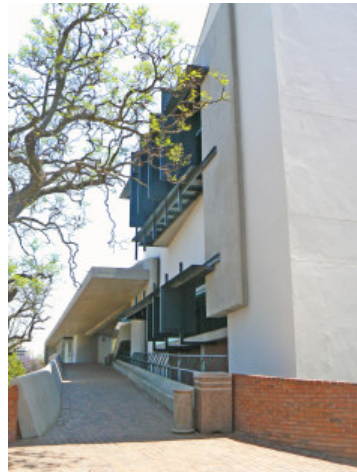


fig. 5.8



fig. 5.9



fig. 5.6

fig. 5.6 - 5.12 :
Elements, form , scale and materials of the new Centenary Building on Main Campus reflect a conversion of the Modern Style architecture of Campus to a more contemporary language.

5.2. centenary building

Main Campus, University of Pretoria
EarthWorld Architects & Interiors (Braam de Villiers), 2008

notes



fig. 5.10

conversion of the modern language

sensitivity & respect towards existing fabric

continuing of existing grids / edge lines

The Centenary Building on the Main Campus of the University of Pretoria was officially opened on 17 June 2009. It is the first lecture hall complex on the campus since the Chancellors of 1959. The building houses six lecture halls of 300 seats each and fully fitted with state of the art audio-visual equipment. The lecture halls are mostly used for undergraduate lectures and examinations.

The architecture of the building reflects various aspects of a converted Modern language, synonymous with the Campus and the city of Pretoria. The building blends well with the neighbouring Law Building by continuing the street front and lines.

ramp - transitional foyer - internal spaces

circulation route as interactive / seating space

fig. 5.11

As in the previous examples, a ramp was introduced to gently draw visitors and users in from the Ring Road to the foyer space above. The ramp simultaneously serves as a circulation route and gathering space with concrete seats provided as an integrated part of the ramp's edge. Due to the ramp with its hovering concrete canopy above and the communal foyer as a transition space, the entrance is well defined which leaves the physical entrances from the foyer to the specific areas within the building to be somewhat downplayed.

*extended external walkways
foyer as place of choice
uncelebrated physical entrances*



fig. 5.12

*concrete fins / pilotis on a grid
continuity at ground floor*

articulation & formal expression of spaces

True to the Modern idiom the building sits on pilotis on a fixed grid. This allows for a continuity of the urban space at ground level. The building's internal spaces are articulated and some are expressed externally as a wrapped concrete skin with glass infill. The formal organic volumes of the lecture halls to the back of the building also reiterate the Monumental Modern language. Although the practical requirements of the six auditoria necessitated a form driven design, a multi-dimensional result was achieved.

similar material palette as existing / surrounding buildings

iconic corner - human scale towards entrances

Even the selection of materials resonate materials used elsewhere on Campus. The texture of the red brick and off-shutter concrete creates a pleasant contrast to the smooth, stark white, plastered volumes at the back. Despite the scale of the volumes, the street façade to the Ring Road maintains a human scale in spite of the public nature of the building.



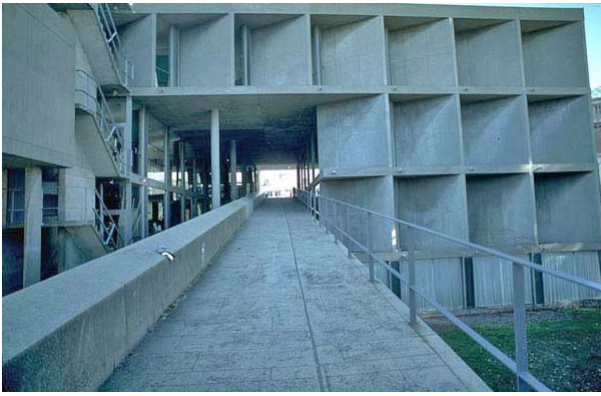


fig. 5.14



fig. 5.15

The Carpenter Centre is classified as a brutalist building and truthfully adheres to the elements of the language: extended external walkways leading to concealed entrances, intersecting geometric forms, expressed services and circulation, finish in beton brut, continuity of flow on ground level and large spaces on concrete fins, to name but a few.

fig. 5.13 - 5.19 :



fig. 5.13



fig. 5.16

5.3.

carpenter centre

Harvard University, Massachusetts, USA

Le Corbusier & Guillermo Julian de la Fuente, 1963

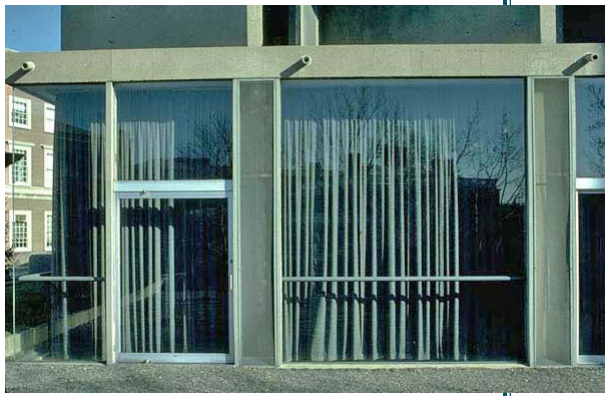


fig. 5.17



fig. 5.18



fig. 5.19

notes

The Carpenter Centre for the Visual Arts at Harvard University in Cambridge, Massachusetts is the only building actually built by Le Corbusier in the United States and one of only two in the Americas (the other is the Curutchet House in La Plata, Argentina). Le Corbusier designed the centre in collaboration with the Chilean architect, Guillermo Jullian de la Fuente at his 35 rue de Sévres studio. The on-site preparation of the construction drawings was commissioned to the office of José Luis Sert, then dean of the Harvard Graduate School of Design. He had formerly worked in Le Corbusier's atelier and had been instrumental in winning him the commission.

The Carpenter Centre houses the Department of Visual and Environmental Studies of the University, as well as the Harvard Film Archive, the largest collection of 35mm films in New England. It screens a large quantity of independent, international and silent films.

The design concept of the building was inspired by a direct response to the initial circulation problem. A continuous ramp was introduced to link the building with the two street edges. The ramp functions as a central circulation spine through the building with the main exhibition spaces leading off it. The two vertical circulation towers also communicate their function.

Pilotis on a fixed grid support the two identical, organic, public exhibition spaces that hover above the urban space at ground level, as well as the levels above. The composition of the building is that of intersecting formal geometries with the exception of the exhibition spaces. This contributes to an articulated roovescape of flat concrete roofs.

Facades are also articulated by the use of integrated sun control measures such as the diagonal concrete fins with perpendicular glass infill on the east side. The internal spaces and their various privacy levels are also expressed externally on the facades.

building axes along existing pedestrian routes

ramp to link building with Tukkie Avenue

*ramp extends as circulation through building
functional spaces branch off central spine*

structural support - columns on grid

*continuity of urban space underneath
building*

functional blocks as intersecting rectangles

flat concrete roofs at different levels

brise soleil / setbacks to north & west facades

internal spatial expression on facades

chapter 06

the design development

In *The Phenomenon of Life*, the first book in the four volumes, *The Nature of Order*, Alexander explains the unlimitedness of wholes. Wholes are unbounded, because centres 'help' one another to define larger wholes. He found it impossible to draw boundaries around wholes.

For this precise reason, it is impossible to try and bring more life to the music precinct without affecting the larger environment of the campus and the public realm beyond. In the process of gradual mutual adaptation, the insertion of a new facility to accommodate the needs of the Department of Music is only one step in an effort to

establish more life and wholeness in the precinct and on Campus.

An urban strategy will need to be devised in order to accommodate the existing centres, the newly introduced centre and the possible future centres. Related principles of urban acupuncture will assist in catalysing spontaneous growth and place-making.

With an urban framework in place, the design of the new music school can develop according to principles of social, contextual and functional extension and conversion that will assist with an appropriate and relevant design.

fig. 6.1 : 3D representations of the proposed urban strategy.

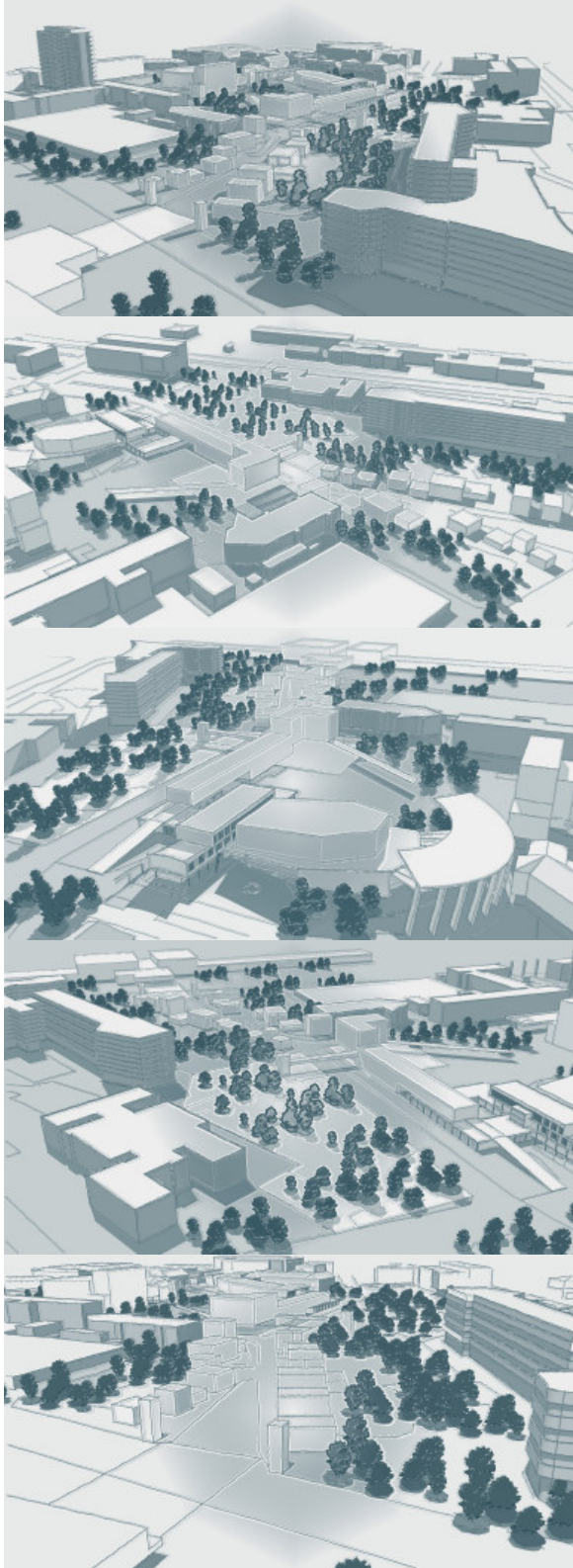
activity
spine

transport
node

temporary
residential

academic
focal point

recreational
space



6.1.

development of an urban strategy

The music precinct on Campus can be the ideal scenario to initiate a process that will increase the life of the campus and ignites more social activity. With the proposed urban strategy in mind, characteristics of *great good places*, as defined by Ray Oldenburg, can also become characteristics associated with the environment of the music precinct and surrounds. According to Oldenburg there are certain prerequisites for successful urban environments. These qualities will provide an additional layer to the design of the new music centre in an effort to transform the existing context into a lively, free and spontaneous environment.

The first prerequisite is interaction. Human beings' need to communicate or not is

probably the primary requirement for our social fulfilment. The proposed urban strategy provides for this human need in various ways, be it formal structured interaction between a symphonic orchestra and an audience, informal meetings between students in a coffee shop or chance interactions between two people coincidentally running into each other on their way across a courtyard.

The ability to commute is another aspect conducive of a great urban place. The transport node proposed as part of the urban strategy will provide the opportunity for users to easily enter and exit the area via various transport systems, and they will have the ability to choose the one most suitable for them.

With the hustle and bustle of our daily lives constantly increasing, is it pertinent that our environments offer us spaces where we can spend quality time. The aim of the urban strategy is thus to provide options for people where they can spend the type of quality time they desire: stretched out on the lawn in the late afternoon sun, enjoying a glass of good wine to the sound of a jazzy tune or running along a tree-lined avenue in the brisk morning breeze.

In essence the vision of the project is to provide convenience and choice at every level for all the diverse users of the precinct, for these are the aspects that distinguish ordinary spaces from vigorous, human-orientated places.

fig. 6.2 : Diagram indicating the strong centres in close proximity of the precinct and there relationships to each other and the precinct. These centres are sources of people and interactions and can assist in revitalising the music precinct:

1. Vibrant, pedestrianised Tukkies and Libri Avenues.
2. The social hubs of the precinct - Cafe Burgundy's, La Pat and Steers.
3. Public and University performance venues - the Aula and the Musaeon.
5. A primary vehicular route and boundary of the campus - University Road. The existing Loftus Station across the road will be integrated into the proposed Gautrain Station.



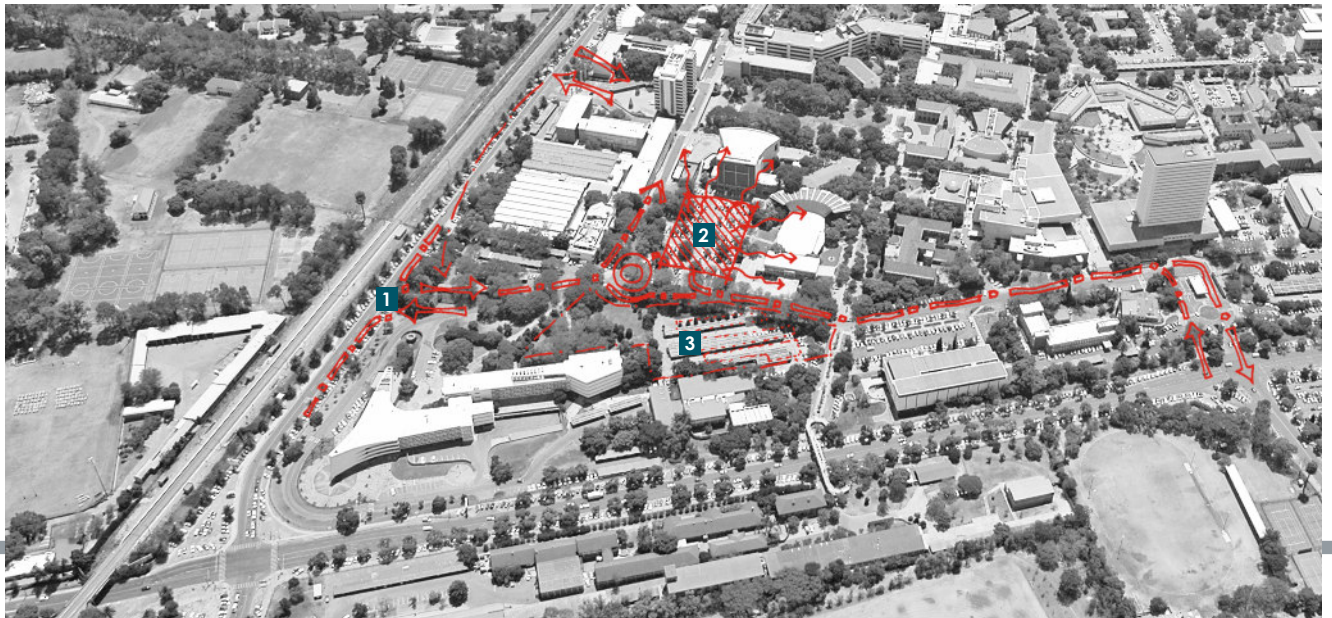
urban vision - great good places

"Today the role of music in a global context is no longer something outside itself, a reality or the truth. Instead music has become a medium that mediates. In other words music in global culture functions as an interactive social context, a conduit for other forms of interactions."

(Slessor, 2003:65)

fig. 6.3 : Diagram indicating the future proposals by the University for the development of the music precinct and its surroundings:

1. Move the University Road entrance to a new location across from the proposed Gautrain Station to the bend in Senaats Road.
 2. Traffic from the south and west entrances will be concentrated primarily in the four-storey parking garage proposed for the open area behind the Aula.
 3. The undercover parking to the north of Visual Arts will be demolished, making way for a new open student green space.
- These interventions could have both positive and negative consequences for the music precinct.



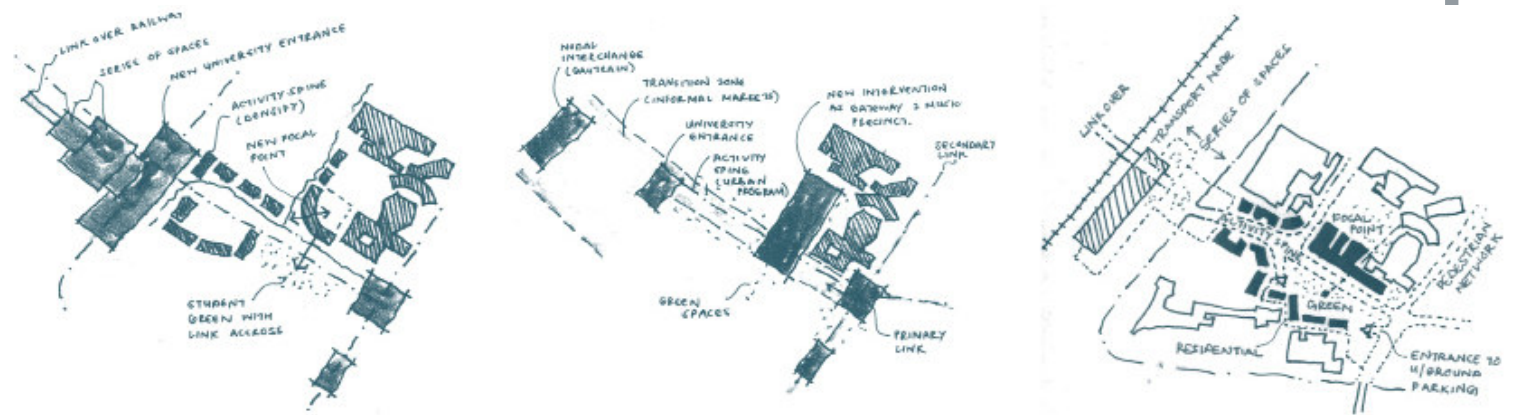
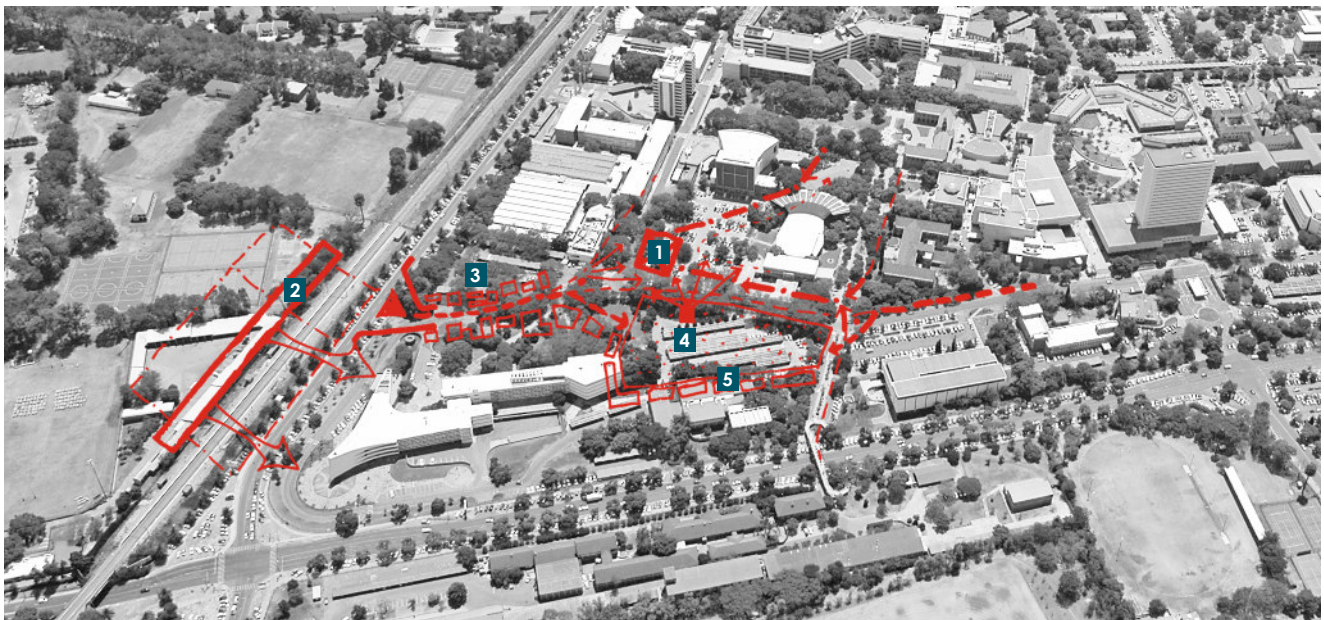
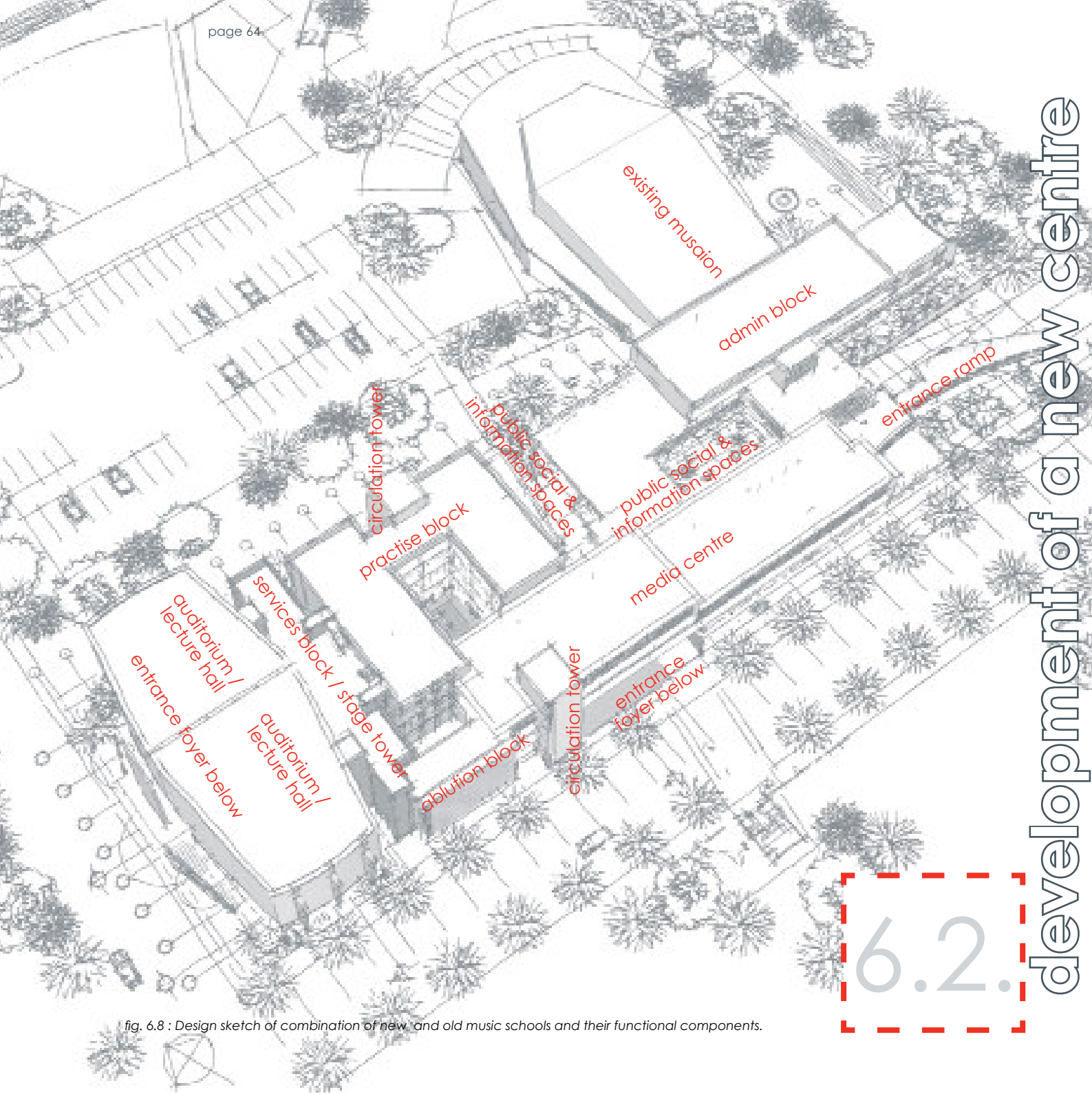


fig. 6.4, 6.5 & 6.6 : Diagrams indicating a new urban strategy for the area - one that is aimed at revitalising the music precinct together with its surrounding context. The strategy can also be applied to other precincts on Campus to improve the urbanity of the institutional environment.

fig. 6.7 : Diagram indicating the interventions of the proposed urban strategy. The interventions are to be developed over time according to the changing needs of the users of the environment and the demands of the University. These interventions represent strong centres that extend their energy to the spaces in between.

1. New music facility for the Department of Music, being the focal point and gateway to the precinct on the south-west corner of the precinct. The facility should also link with the north and east edges to tap from the existing energy sources.
2. A transport interchange with informal market place.
3. An activity spine with an extended urban program: jazz café, multimedia shop, music instruments & repair shop, bookshop, office space, art galleries etc.
4. An underground parking area with a student green space at ground level and a link to the new music centre to allow for future expansion of the Music Department.
5. Research and night school facilities around a central green space.





6.2.

development of a new centre

fig. 6.8 : Design sketch of combination of new and old music schools and their functional components.

6.2.1.

The context analysis proved the portion of the existing parking area directly to the west of the Music Building to be the most suitable area for the new music school. This will allow the existing grid of the Music Building to be extended in order to give the new music school similar proportions. By extending the grid together with the current music educational facilities, a more defined south and west edge to the precinct can be created. The music precinct will then be defined by facilities in service of the Music Department right around its edges, leaving a central void area to serve as green space and services area to the buildings of the precinct. With the new music school remaining within the boundaries of the precinct, the avenue of fever trees along the south edge can also be preserved with a subtle pedestrian link across the Ring Road to the new student green space and underground parking area. With the establishment of two axes as the foundation of the design, the current voids – supposedly social pockets – can also be integrated with the new development and be revitalised at the same time. These spaces include the entrance area and central courtyard to the Music Building and the current spill-out space to the Musaion on its west side.

The two main axes of the intervention are the north-south and east-west axes. The north-south axis links the new student green space and underground parking to the social hub of performance venues and restaurants on the north side of the precinct, running through the new combined music school on the edge between old and new, thus being the 'social glue' of audiences and performers that bring the two buildings together. Due to the public nature of this axis it will become the performance axis of the intervention. This will imply that all the public-related functions and spaces of the intervention be situated

along this route: vehicular public access to the precinct via the underground parking, main access point into the music facilities, chance performance spaces, information and administration facilities, direct access to the formal performance venues like the Musaion, the Amphitheatre and the Aula as well as to the restaurants on the north edge.

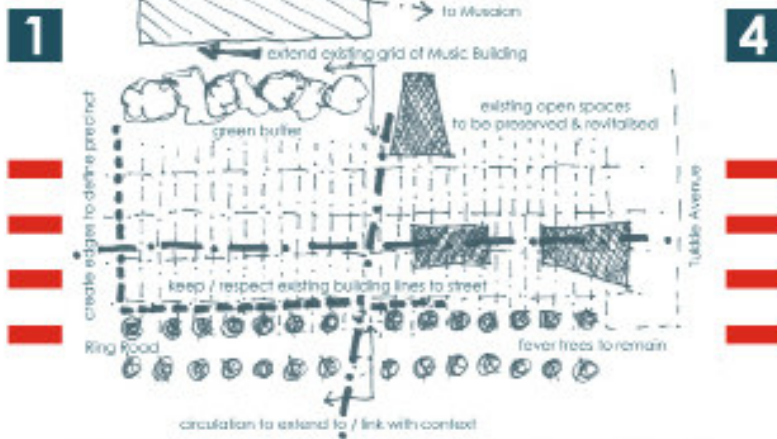
The east-west axis connects Tukkies Avenue, a major Campus circulation spine, with the new University Road entrance. Because this axis originates in Tukkies Avenue and then continues to connect all the existing as well as the new Music Department facilities, it will be primarily a more private axis, a preparation axis. All the facilities required for the preparation of music will branch off this axis in an orderly, legible manner: administration, research, practise and rehearsal (primary performance).

The axis will also provide an indirect connection with the social spaces of the intervention. This axis will further be divided at its origin into a link at ground level through the existing Music Building to the new music school and a link over the existing practise room wing towards all the additional facilities of the new music school.

These contextual design generators thus assist in the making of the following design decisions:

1. two main links / circulation routes through the intervention
2. the main entrance to the combined music school at the intersection of public and private
3. an iconic corner as edge to the building and the precinct at the west end of the intervention
4. two secondary entrance points: one from Tukkies Avenue over the existing building and the other on the west side directly to the auditoria

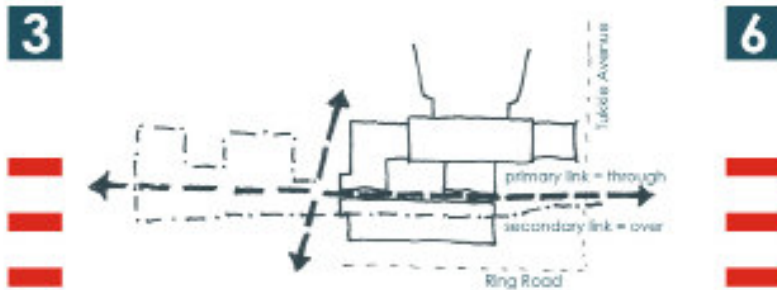
fig. 6.9 (opposite page) : Diagrams indicating the contextual design generators of the project.



1 preserved, revitalised, established



2 axes, origins, endpoints



3 multi-levelled links, routes



4 preparation axis & spaces



5 performance axis & spaces



6 summary

6.2.2. spaces, forms & scale

The form giving part of the process started with a series of negative spaces. The existing voids around the Music Building were analysed and some proved to have the ability to be revitalised and integrated into the 'social network' of the scheme. These spaces formed the basis to which additional voids were added to complete the network.

The diagrams on the opposite page indicate the spaces required for the project as well as the relationships they need to have with the surrounding built fabric and each other. Once the spaces and their links were established, an outline for the social network at ground level could be generated. Each space in the network was then assigned a function in order for the network to fulfil both the social and spatial needs of the intervention. The function of each space refers to the main idea for that space, although together the social network serves as the communal, interaction, circulation and transition part of the intervention – the outside space that compliment the internal functions and spaces of the building, the glue that keeps the functional parts together and creates a transition between the most private areas of the music school and the rest of the campus. These spaces were designed to be robust and versatile – able to adapt to the needs of the users.

Once the voids were established, the built forms of the building could be decided. Two main ideas inspired the forms of the building components:

1. a series of intersecting rectangles
2. a solid geometric core anchoring a formal organic volume

The idea of intersecting rectangles forming a core to anchor a hovering formal organic volume was inspired by the language of the context and is evident in the designs of both the Aula and the Musaion. Similar to the voids, each rectangle were assigned a certain function which in turn determined the properties and edge treatments of that particular rectangle. The preparation spaces need to be more private, enclosed and rigid whereas the performance spaces could allow for a public audience, thus being more open and flexible.

The formal organic volume created the iconic corner on the west end of the site and hosts the highlight of the preparation axis – a venue for performance and rehearsal on a more intimate level than provided by the Aula and Musaion.

In section the same ideas apply: intersecting rectangles and a hovering formal organic volume. The existing Music Building, its facades and detail influenced the development of the heights and scale of the new music school. In order to respect the Music Building and its delicate facades a rectangle with similar proportions was introduced above the practise room wing.

From there the volumes were gradually increased in order to obtain a height on the west end of the site that would correspond with the scale of the Aula and the Engineering buildings on the west edge of the precinct. In an effort to maintain continuity of the social network at ground level, various volumes were lifted onto columns to free the ground plane.

generating form

fig. 6.10 :
Diagrams indicating the generation
of the form of the building.

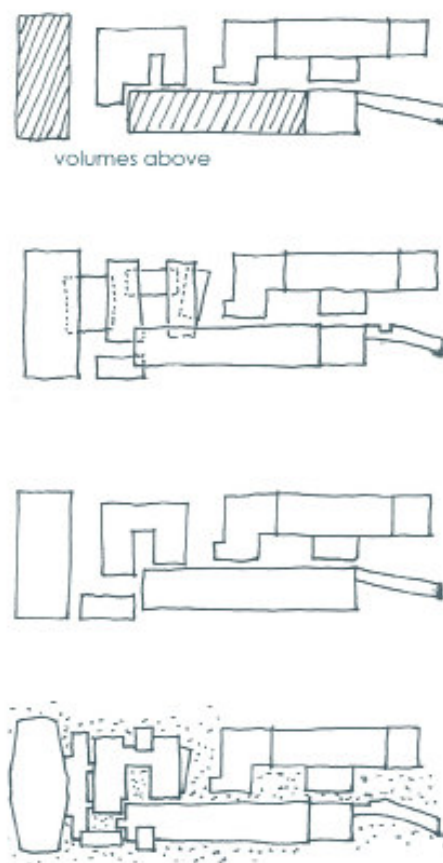
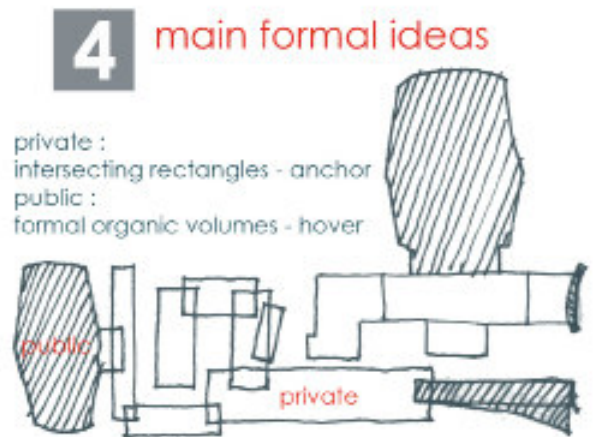
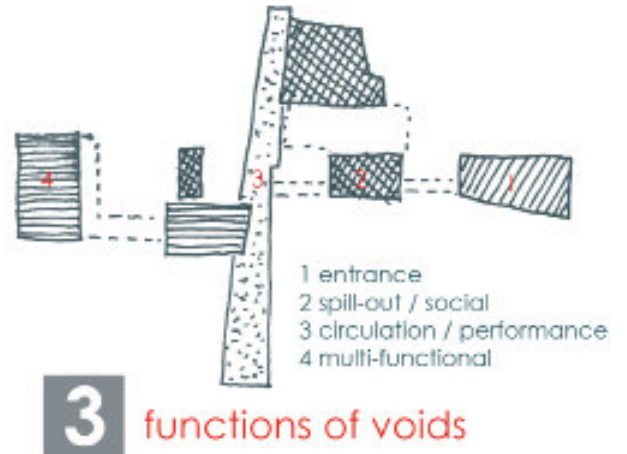
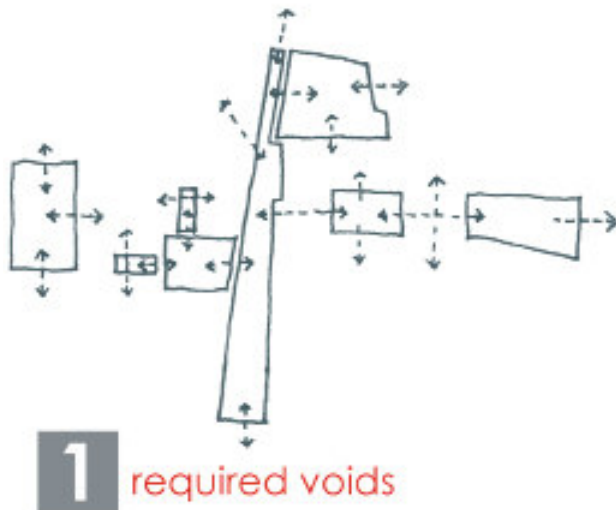


fig. 6.11 : Diagrams indicating the generation of the social spaces of the building at ground level.



6.2.3.

design generators
functionaccommodation
schedule

ground floor

Existing Music Building Practice Room Wing (south)

- 1x staff room & kitchenette
- 7x offices for part-time lecturers
- 2x flexible conference rooms
- 1x consultation room
- 1x waiting area
- storage
- ablution

- 1x copy room
- 1x reception
- ablution

New Music School

- media centre (individual & group research facilities; copy area; books, magazines and digital collections, audio-visual booths)
- 1x media centre admin office
- 11x individual practise studios
- 4x group studios
- 2x flexible rehearsal / backstage studios
- ablution

Existing Music Building Practice Room Wing (north)

- 1x information centre
- 1x restaurant
- 1x kitchen with storage
- 1x exhibition space
- 1x lounge & foyer
- 1x cocktail bar
- ablution
- refuse areas

New Music School

- 1x multi-purpose entrance deck
- 1x foyer
- 2x atria
- 1x drum studio
- 1x percussion studio
- 2x flexible music education studios
- 1x seminar room
- 3x flexible performance studios
- storage
- plant room
- 2x ablution
- 2x kitchen facilities
- multi-purpose foyer with information desk

first floor

Existing Music Building

- 13x offices for lecturers
- 1x seminar room

second floor

Existing Music Building

- 16x offices for lecturers
- 1x board room

New Music School

- research lounge (audio-visual booths and computer facilities)
- 1x media centre archives
- 11x individual practise studios
- 4x group studios
- 2x flexible rehearsal/ backstage studios
- ablution
- storage
- 2x artists' cloakrooms
- machine room
- 1x entrance foyer to auditoria
- 2x auditoria / lecture halls

third floor

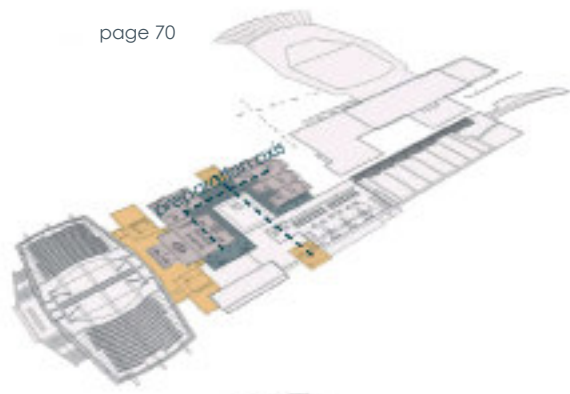
- 1x music technology lab
- 2x post-production studios
- 4x recording studios
- 2x seminar rooms
- 4x organ studios
- plant rooms

In tune with the Brutalist language, the different functions of the building were also grouped together and expressed externally through the facades of each functional block. As mentioned earlier, the axes formed the basis for the circulation strategy as well as for the functional grouping.

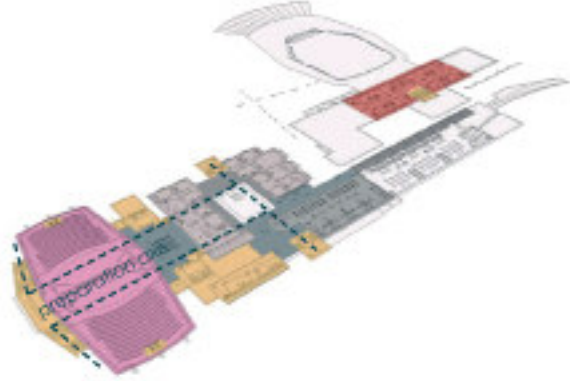
The preparation axis from east to west connects the more private spaces required for the preparation of music which includes: administration and offices, media centre, practise facilities and two lecture halls with acoustic properties suitable for small-scale music performances.

The performance axis runs from south to north and connects the public spaces of the intervention which includes: public access to underground parking, entrance foyer to music school, administration and offices, information centre, flexible group studios (also part of practise block) able to open up towards the public walkway as performance venues and the spill-out space, restaurant and foyer to the Musaion.

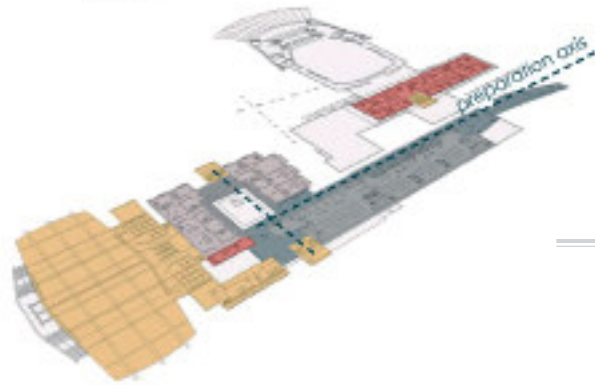
Vertically the functions of the building progress from public at ground level to private at the higher levels.



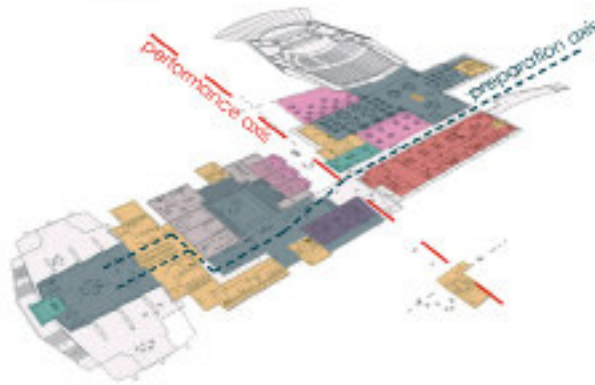
third floor



second floor



first floor



ground floor

key issues

functional zones
performance vs. preparation

solid vs. void

grouping of similar functions

express internal functions externally

fig. 6.12 :
Functional zones of the intervention along the axes of preparation and performance.

legend

- administration
- social
- services
- research
- practice
- information
- performance

6.2.4.

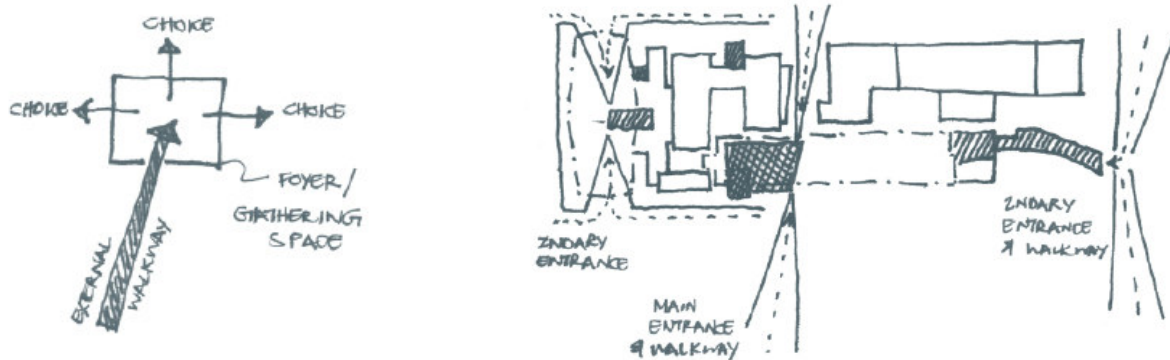


fig. 6.13 : Diagrammatic sketches of the entrance strategy to the building.

The main goal for the circulation strategy was to have a legible system with choice of access to all the areas of the intervention. Entrances and vertical circulation cores had to be visible and easily accessible. The way that entrances are treated in Brutalist architecture further inspired the creation of entrance points:

First the primary entrance point was selected to be at the intersection of the two axes. Two secondary entrances were selected to be at the end points of the preparation axis – thus at Tukkies Avenue on the east and at the auditoria on the west. Each entrance point is provided with an external walkway to emphasize the entrance, followed by a foyer / gathering space from where subtle entrances to the various functional parts lead. In other words, the physical entrances are not celebrated individually, but rather the walkway leading to a transitional area of choice (fig. 6.13).

The second important factor regarding the circulation was to have as much continuity of circulation at ground level to emphasize the buildings relationship with the surrounding natural and social context. Penetrable edges through which the users can filter from one space to another enhances the inside-outside relationships of the spaces and assist in creating the social network. In order to

provide a sufficient flow and as little circulation barriers as possible at ground level, volumes were raised onto columns to free the space below.

For the entrance to the new music school at Tukkies Avenue a ramp was selected as the extended walkway that gradually draws the users in. The new ramp to the first level media centre complements the existing ramp down from Tukkies Avenue to the Music Building and it also enables easy access for disabled users. The ramp continues to become an interactive walkway, linking the first level media centre with the courtyard space and walkway at ground level.

For the west entrance a large foyer defined by glass infill, beneath the hovering auditoria, was selected as transition between the internal orientated auditorial spaces and the natural surroundings. A grand free-standing concrete staircase was introduced into the space as connection to the auditoria above. The size of the staircase emphasizes the more public and performance function of the auditoria / lecture halls. The external staircases were introduced as an emergency route to the auditoria and, as a more solid element, it also assist in defining the west edge of the building.

The vertical circulation towers on the south

and north façades are highlighted as sculptural light shafts that provide access to all the levels of the building. The tower on the south side sits within the foyer space at the main entrance and is thus easily accessible to public users. The tower on the north façade is primarily for the use of the music students and staff. An additional courtyard space was introduced as a further transition between the public foyer at the main entrance and the more private circulation tower for the practise block on the north. The two towers are constructed from *LiTraCon*, a concrete material with glass particles as aggregate. The towers will thus be filled with filtering natural light during the day while at night they will become beacons in the landscape with the internal lighting causing a subtle glow on the outside.

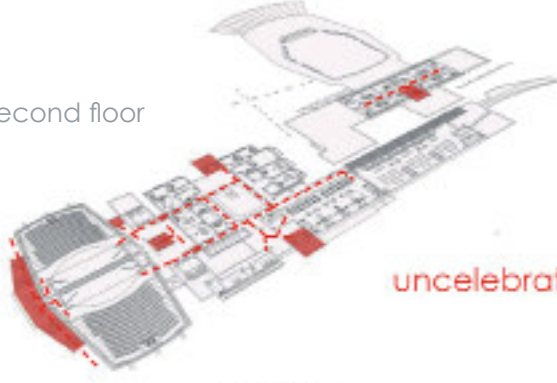
Two lifts are introduced in the building that provide, together with the ramp from Tukkies Avenue, sufficient disabled access to all the parts and levels of the building. The two lifts are positioned on the north façade, one within the circulation tower to the practise block and the other adjacent to the auditorium, accessed via the foyer. The lift to the auditoria also functions as a service lift for the transportation of equipment and instruments to the practise rooms and auditoria.

third floor



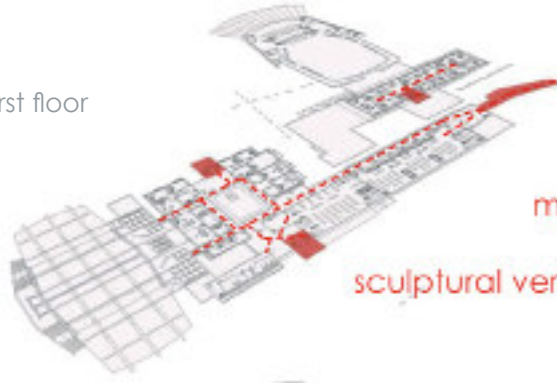
- double volume walkways
- extended external walkways

second floor



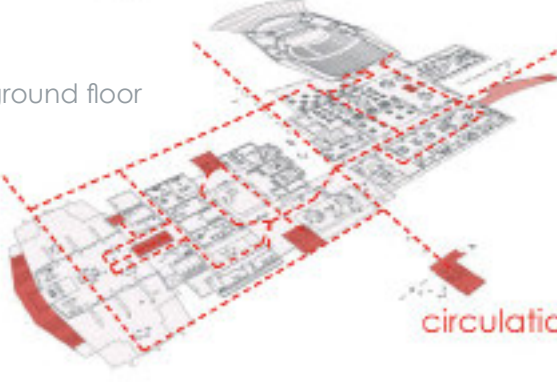
- entrance ramps
- transitional foyers
- uncelebrated physical entrances

first floor



- multi-leveled interaction
- sculptural vertical circulation towers

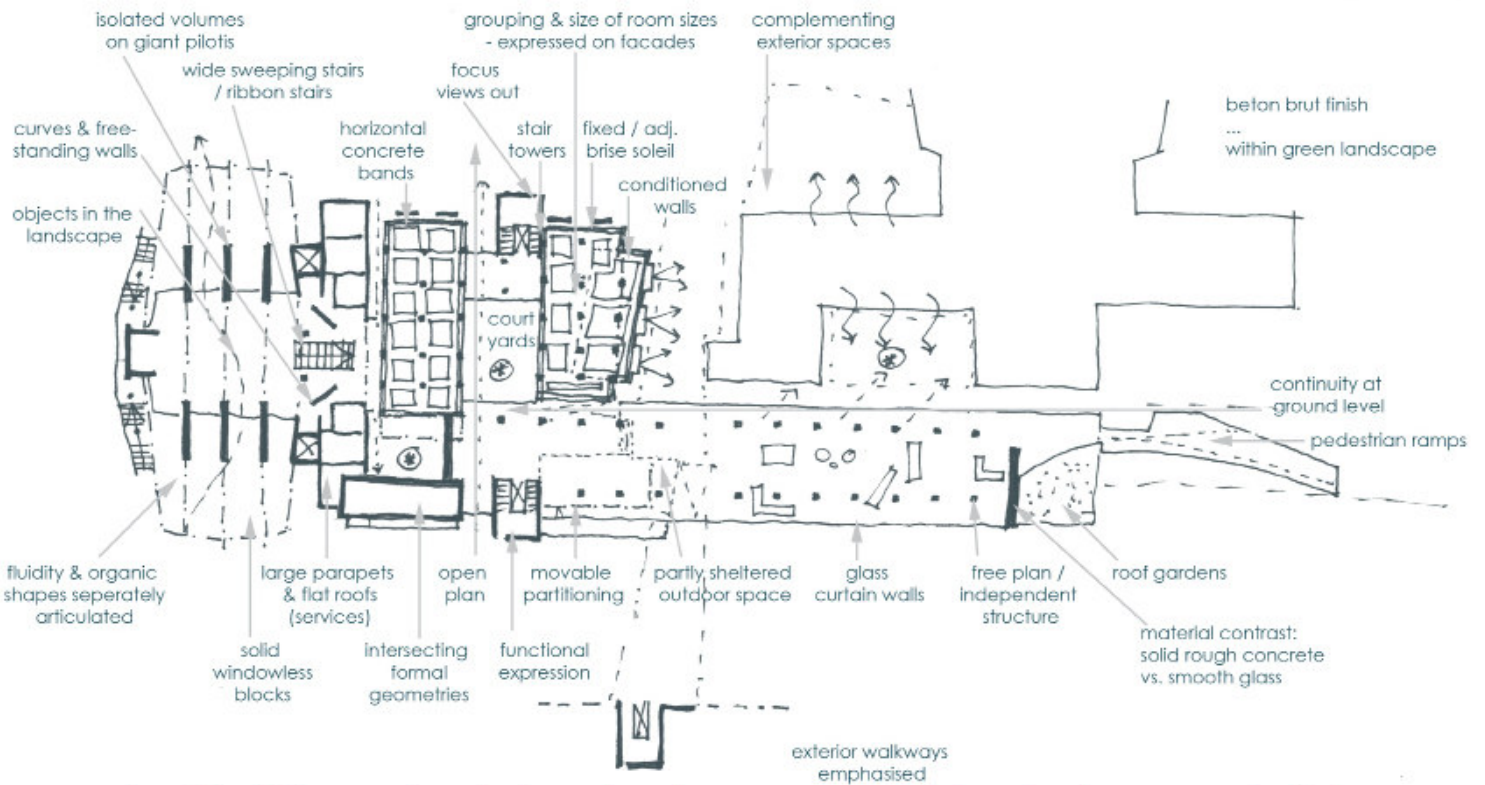
ground floor



- continuity of flow
- circulation = interaction spaces

fig. 6.14 :
The circulation through the
intervention at each level.

6.2.5.



brazilian-influenced pretoria regionalism - monumental modernism - new brutalism

fig. 6.15 : Early sketch of the possible implementation of Brutalist influences on the design of the new music school.

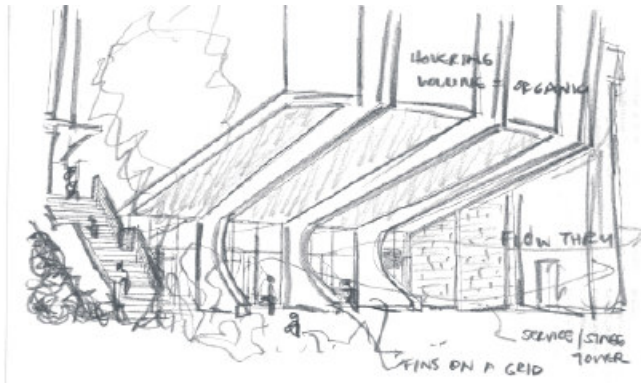


fig. 6.16 : Sketch of auditoria entrance.



fig. 6.19 : Sketch of Music Building courtyard with walkway above.

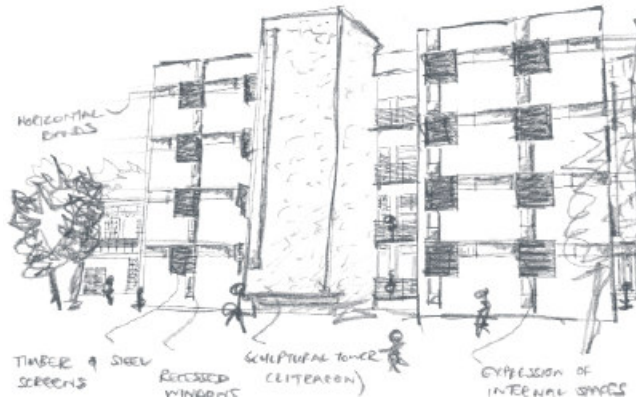


fig. 6.17 : Sketch of practise block with sun control.

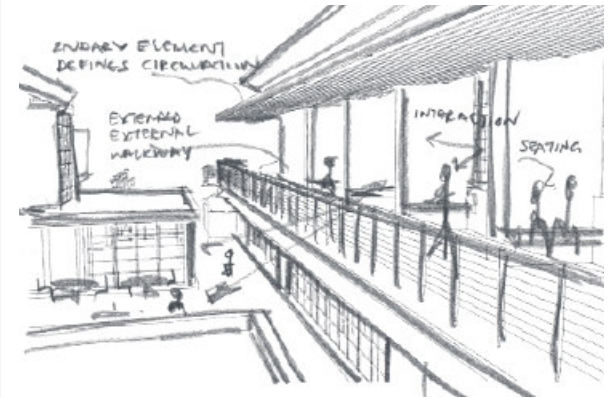


fig. 6.20 : Sketch of extended external walkway.

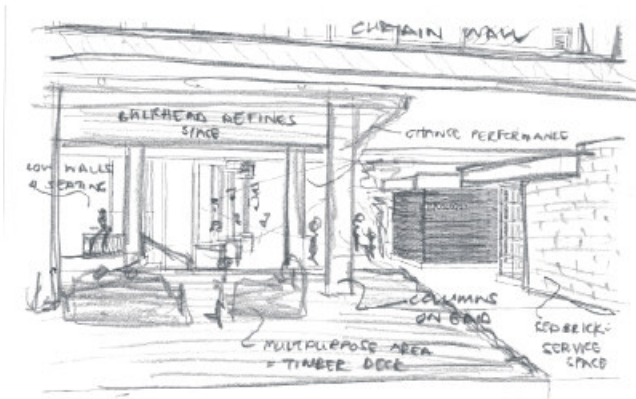


fig. 6.18 : Sketch of main entrance foyer.



fig. 6.21 : Sketch of preparation axis east entrance.

6.3.

views of the building

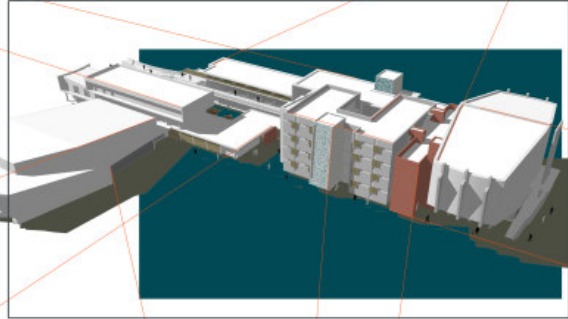


fig. 6.22 : axonometric view from the north-west

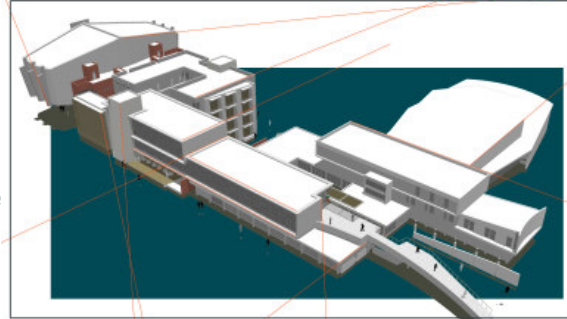


fig. 6.23 : axonometric view from the south-east



fig. 6.24 : view from the south-east along the ring road



fig. 6.25 : view of the main entrance along the performance axis



fig. 6.26 : view of the media centre's south facade

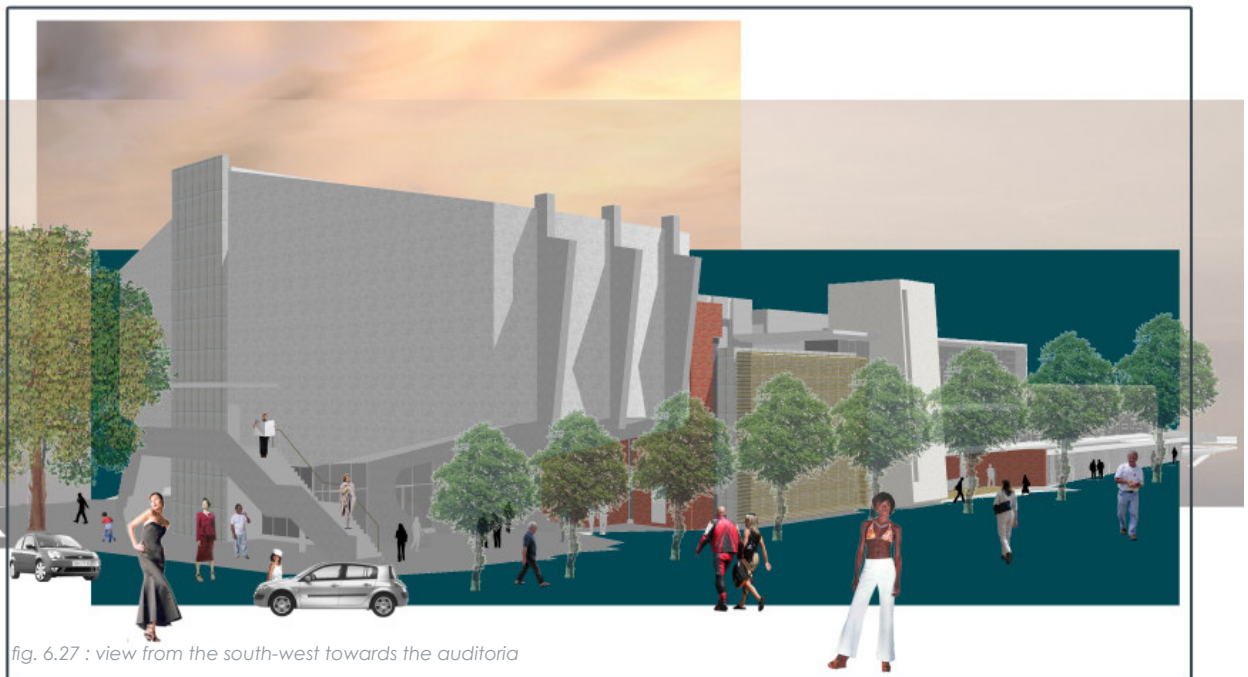


fig. 6.27 : view from the south-west towards the auditoria

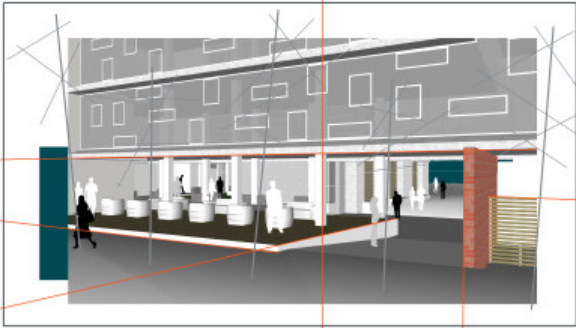


fig. 6.28 : view of the entrance foyer as gathering space

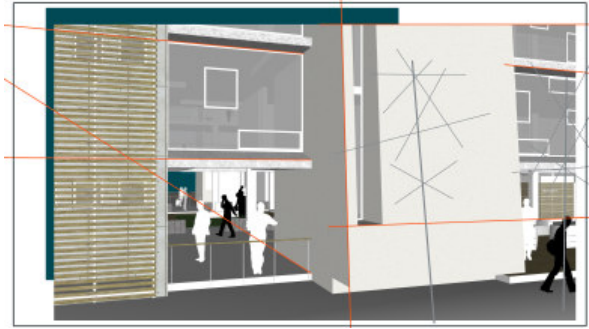


fig. 6.29 : view into the foyer space from the south edge

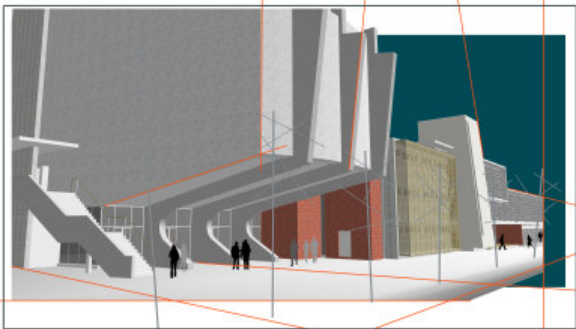


fig. 6.30 : view from the south-west towards the auditoria

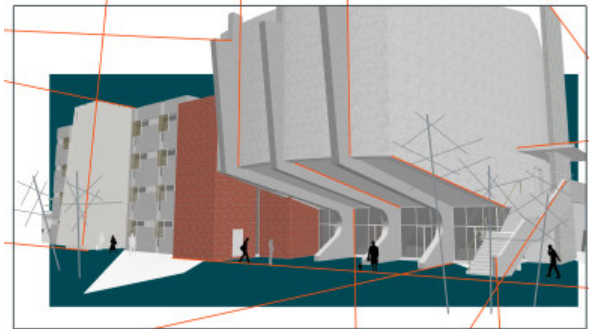


fig. 6.31 : view from the north-west towards the auditoria

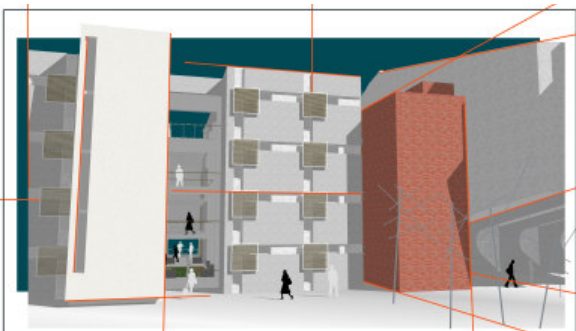


fig. 6.32 : view from the north towards the practise block



fig. 6.33 : view towards the performance studios



fig. 6.34 : view from the north down the performance axis

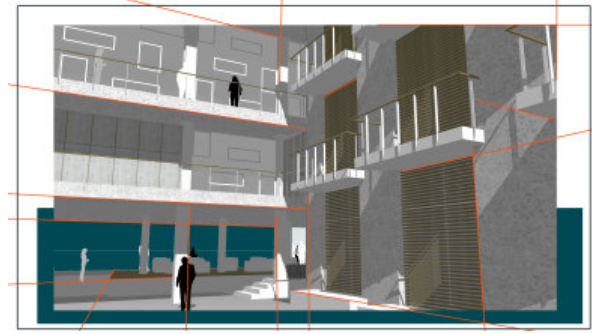


fig. 6.35 : view towards the performance studios & walkway



fig. 6.36 : view from the north-west towards the auditoria



fig. 6.37 : view of the existing courtyard along the preparation axis



fig. 6.38 : view from the information box towards the entrance



fig. 6.39 : view of the entrance to the media centre

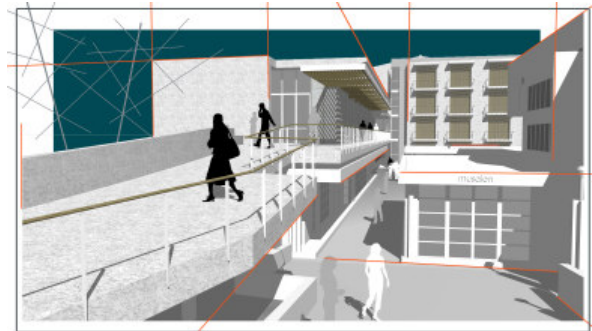


fig. 6.40 : view of the ramps from Tukkies Avenue on the east side



fig. 6.41 : view of the north facade of the media centre

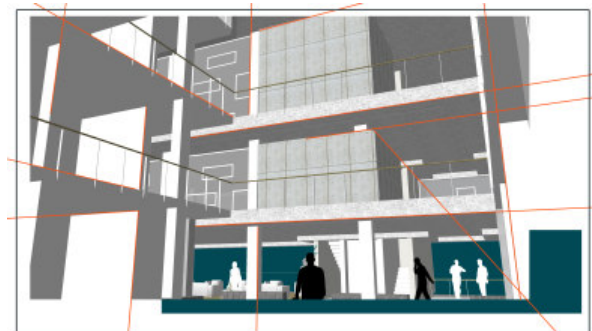


fig. 6.42 : view from the courtyard towards the media centre



fig. 6.43 : view of the north facade of the new music school

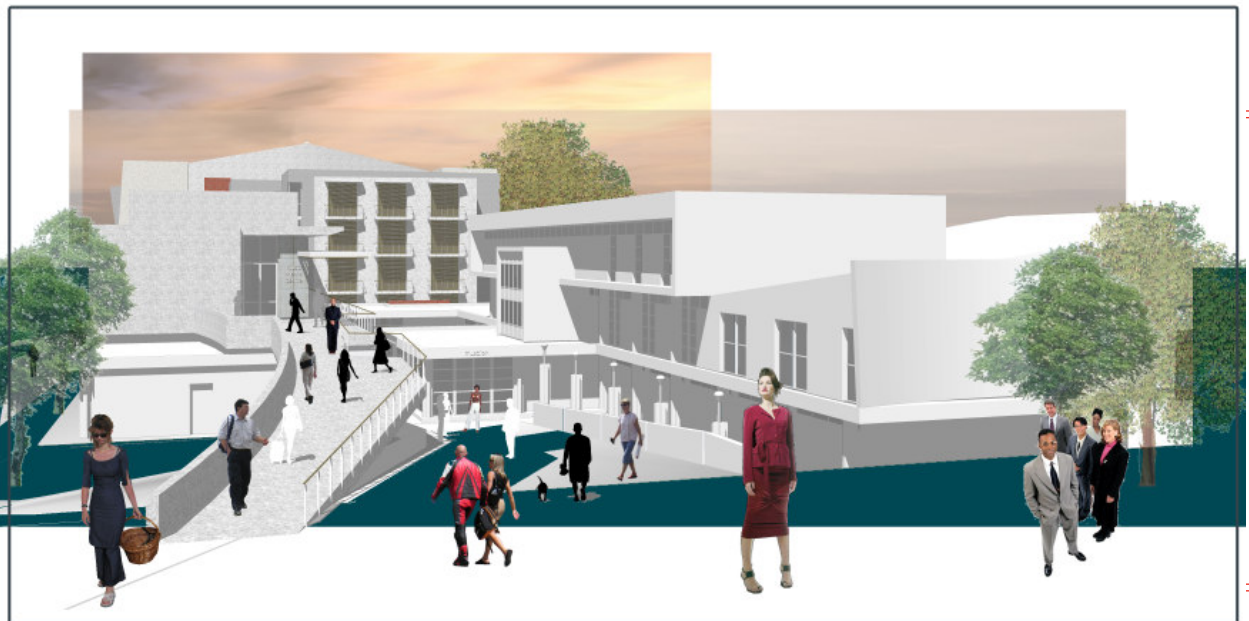


fig. 6.44 : view from Tukkies Avenue towards the east facade of the new music school

chapter 7

the technical resolution

The technological resolution of the building is an effort to further clarify the design intentions and indicate in detail the converted architectural languages of the precinct. The scope of the technology of the building will cover three major aspects: the first is the structural systems incorporated in the design and the skins or envelopes to the spaces, the second is the materiality of the

intervention in relation to the existing materials used in the precinct buildings and the third aspect is the environmental systems employed in the new music school. These systems are categorised as natural systems, artificial systems and hybrid systems. The acoustic requirements and fitment of the studios will also be explained as part of the technological resolution of the building.

fig. 7.1 : 3D impression of the structural development of the building.

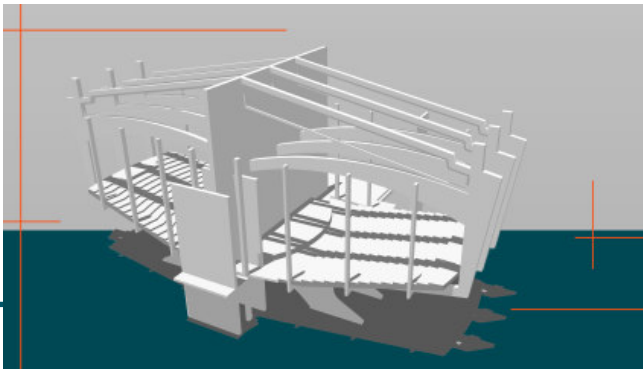
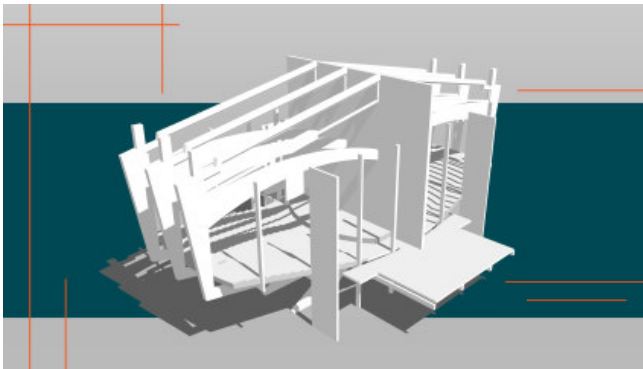
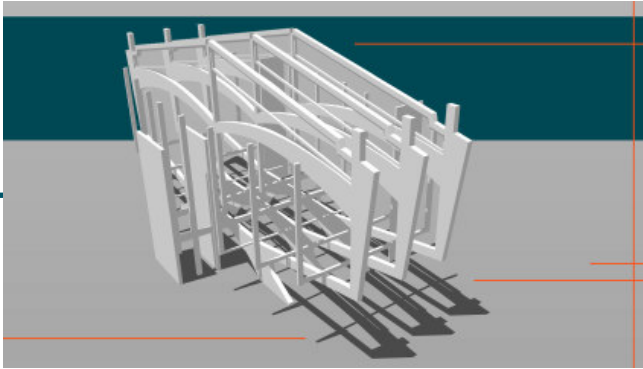


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7.1.

structural & technological
systems

7.1.1

lecture halls
auditoria

- shell construction
- cast in-situ reinforced concrete

Main Support

- 3x 460mm thick rc fins, 5165mm wide, @ 4205mm c/c
- internal span between supports = 12 350mm
- cantilever = 11 000mm
- depth of beams = 850 - 1025mm
- width of columns = 1165-1950mm
- depth of overhead arched beam = 1000 - 2000mm

Roof Support

- overhead arched beam (part of concrete fins)
- steel girder truss depth = 2050mm

Roof Slab

- rc 1-way slab, 255mm thick
- integrated downstand beam depth = 460mm

Floor to Auditoria

- cast in-situ rc stepped slab 255mm thick
- stage = 185mm thick rc slab with 340mm upstand beams

Secondary Support

- 230x500 rc columns and beams @ max. 4940mm c/c

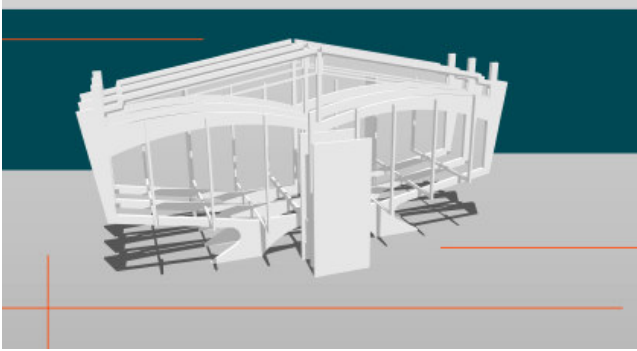
External Skin

- tripple layer, 550mm thick, consisting of:
- 230mm thick external brick skin
- 205mm sound insulation cavity
- 115mm internal brick skin
- additional sound insulation = 50mm mineral wool blanket = 8mm perforated commercial plywood panels

Freestanding Walls

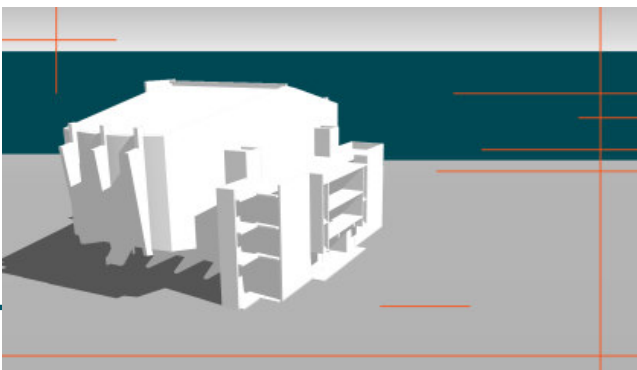
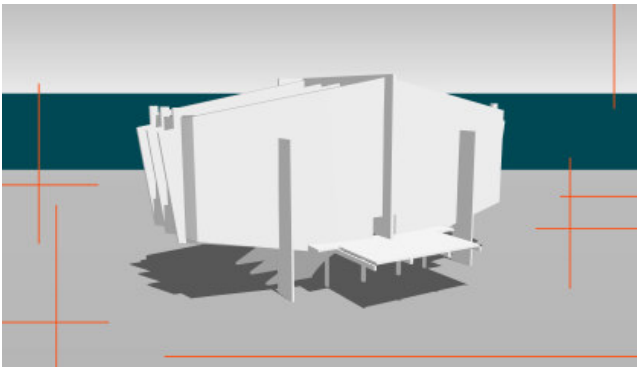
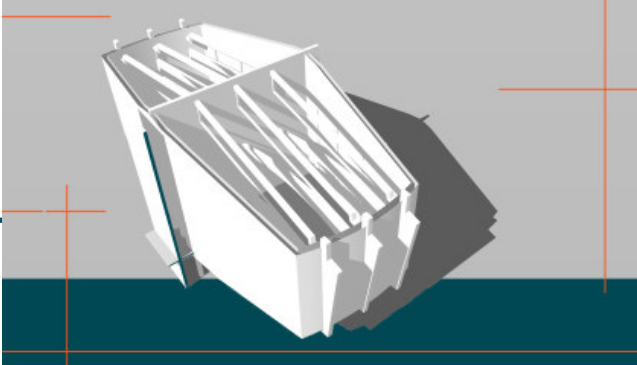
- 330mm thick rc walls read as freestanding planes, act as support to main structure & define entrances & spaces





7.1.2

services block & circulation



Services Block

Main Support

- solid load-bearing brick structure
- 230mm thick brick walls
- external brick skin to be red face brick

Floor Slabs

- cast in-situ rc slabs, 255mm thick

Roof

- cast in-situ rc slab, 255mm thick
- 460mm downstand beam on perimeter
- 230mm thick brick parapet, 1315mm high

Circulation Towers

Main Support

- 230mm thick LiTraCon load-bearing blocks

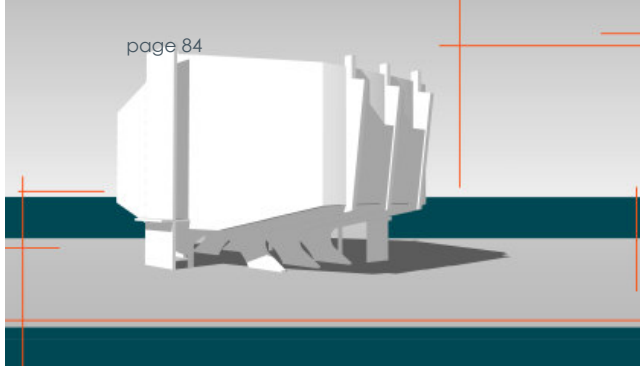
Floor Slabs / Landings

- cast in-situ rc slabs, 170mm thick

Roof

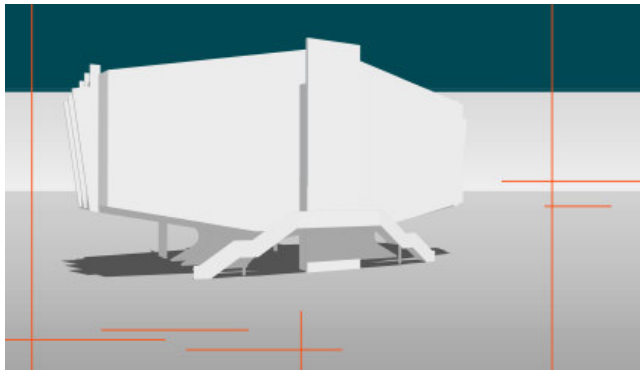
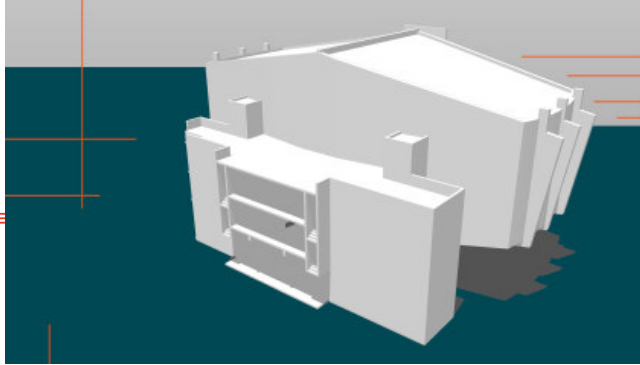
- cast in-situ rc slab, 255mm thick
- 230mm upstand beam on perimeter





7.1.3

ablution block core facilities



Main Support

- solid load-bearing brick structure
- 230mm thick brick walls

Floor Slabs

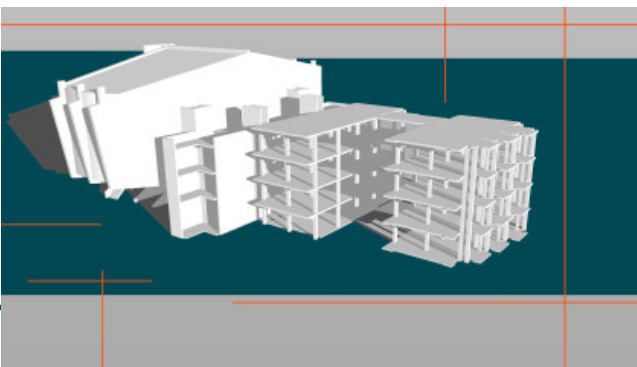
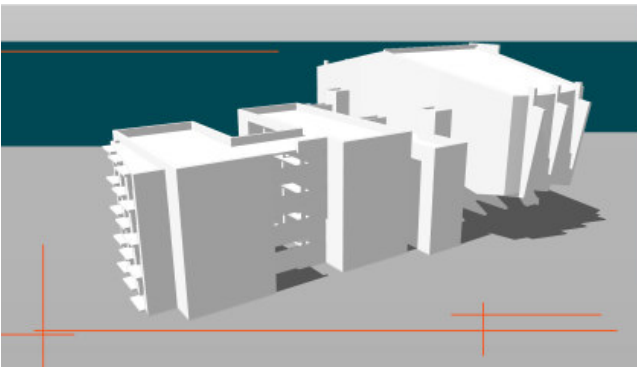
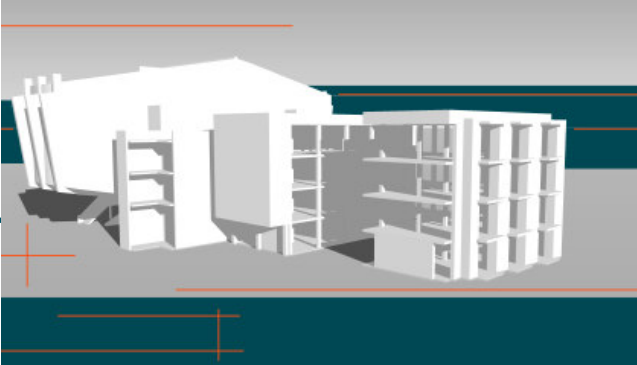
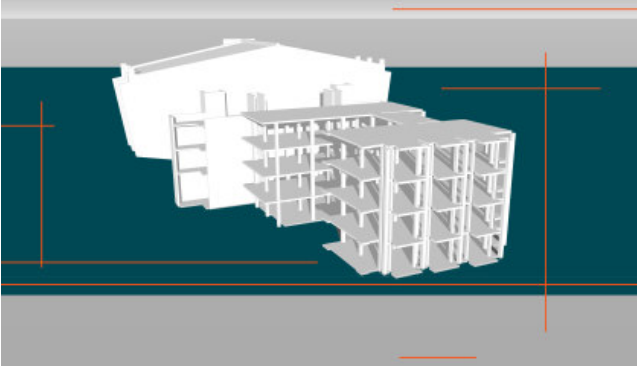
- cast in-situ rc slabs, 255mm thick, 1-way span

Roof

- cast in-situ rc slab, 255mm thick
- 460mm upstand beam on perimeter & at openings



7.1.4

practise block
studio spaces**Main Support**

- rc columns on a grid of 4205mm x 4940mm max.
- 340 x 340mm columns or 340 x 440mm columns (with rwp included)

Floor Slabs

- cast in-situ 1 way rc slabs, 255mm thick
- integrated downstand beams, 255mm deep

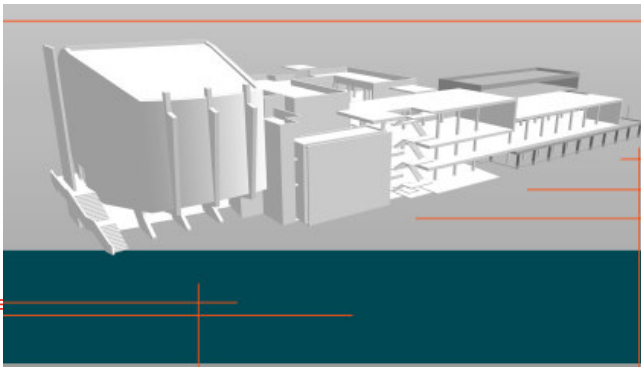
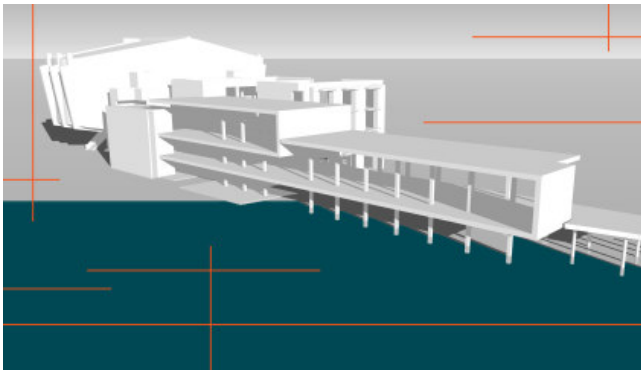
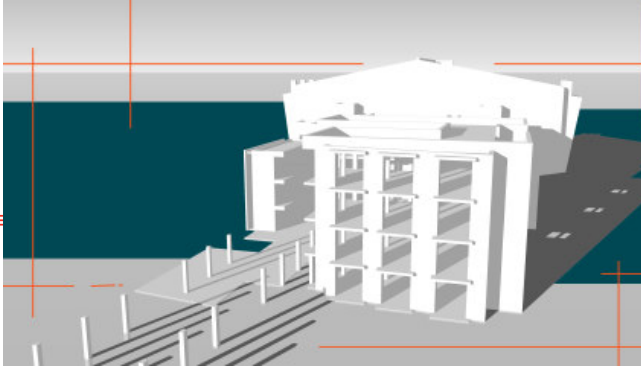
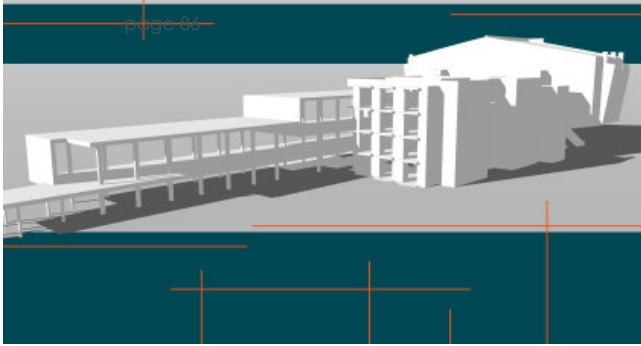
Roof

- cast in-situ rc slab, 255mm thick
- 900mm upstand beam on perimeter to create deep parapet

External Skin

- tripple layer, 355mm thick, consisting of:
 - 115mm external brick skin
 - 100mm sound insulation cavity
 - 115mm internal brick skin
- additional sound insulation
 - = 50mm mineral wool blanket
 - = 8mm perforated commercial plywood panels





7.1.5

media centre & research lounge

Main Support

- rc columns on a grid of 4205mm x 7840mm
- 340 x 340mm columns or 340 x 440mm columns (with rwp included)

Floor Slabs

- cast in-situ rc slabs, 255mm thick, 1-way span
- 255mm downstand beams (510mm total slab thickness)
- chamfered edges, 700mm wide
- cantilever (south) = 2500mm
- cantilever (north) = 2000mm

Roofs

- cast in-situ rc slabs, 255mm thick, 1-way span
- 255mm upstand beams (510mm total slab thickness)
- chamfered edges, 700mm wide

Infill

- glass & aluminium curtain wall / windows
- brickwork



7.2.

materiality &
composition

The selection of building materials and finishes are primarily inspired by the materials of the context. However, in some instances these modern elements have been converted by the use of a similar but more contemporary material. The general material palette of the building is neutral colours, textures and a contrast between light, smooth materials and solid, rough materials. Red brick, synonymous with Pretoria Regionalism and used extensively across Campus, was the choice of material for the services areas. The 'stage tower' and free-standing walls to the refuse areas are red brick and create a pleasant contrast to the rest of the functional blocks' neutral colour scheme.

The adjacent collage of material samples illustrate the existing materials of the context (analysed in Chapter 2) as well as the more contemporary materials used in the new music school. Reinforced cast in-situ concrete is used comprehensively in the creation of the structural elements where the finish remain off-shutter concrete. In some areas the concrete structure extends from a series of columns to a solid wall. In this case the concrete is treated in numerous ways to distinguish the elements and to ensure that the surface finish maintains an acceptable appearance, for the béton brut finish does not weather so well over the years. Variations to the off-shutter concrete appearance are sandblasted concrete (exposed aggregate), stucco plaster / daubing, patterned pre-cast concrete panels, white pigmented plaster to create a dry shake finish and the LiTraCon concrete blocks.

As previously explained, LiTraCon is a light-transmitting concrete due to the large amount of very small glass fibres and particles

within the concrete mixture. It thus has the same compression properties as conventional concrete, but with the ability to appear lighter and less solid. The inclusion of the glass fibres and particles do however add a level of complexity to the composition of the concrete and therefore the LiTraCon blocks are pre-manufactured in customised sizes. On site construction with the blocks are similar to building with bricks and a normal cement mixture is used to 'glue' the blocks together.

Due to the fact that large amounts of concrete are used in the construction of the building, more sustainable alternatives were investigated. A material called Syndecrete proved to have been the most suitable option. Syndecrete is regarded as a "sustainable concrete" (Ryker, 2007:88) made with a combination of discarded recycled glass chips, computer products and vinyl records as the aggregate. It has exactly the same properties as conventional concrete and can be used for in-situ applications.

Apart from concrete various other materials are included in the composition of the building. Materials such as the red face brick, glass, timber decks and screens, light-grey pigmented power floated floors, laminated timber floors, wedge-shaped concrete tiles, suspended ceilings in gypsum plasterboard, stainless steel balustrades with timber handrails and natural stone tiles are materials included in the specifications.

When viewed in relation to the existing buildings of the precinct the proposed intervention will read more contemporary, yet relating in every sense of the architectural character to its contextual counterparts.





red face brick



page 88



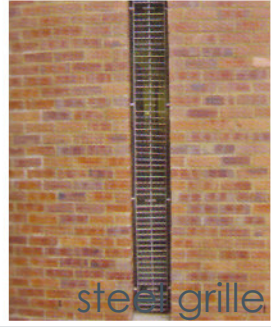
wedge-shaped concrete tiles



timber screens



stippled plaster

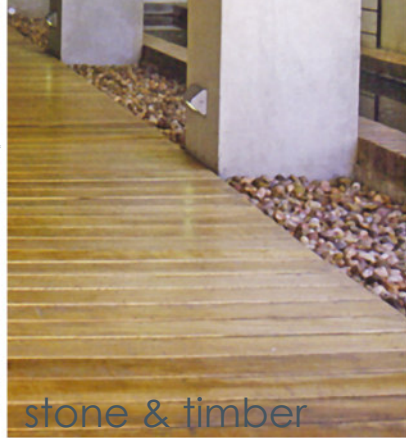


steel grille



ventilation doors

fig. 7.2
collage of
materials &
details used in
the new music
school



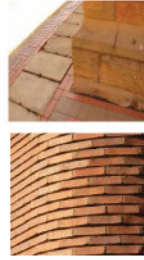
stone & timber



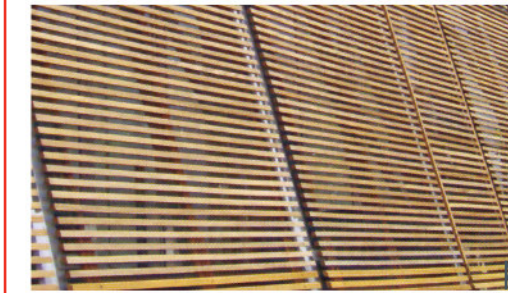
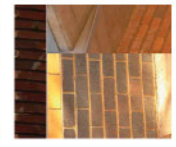
off-shutter concrete



stucco



pre-cast concrete panels



concrete stairs



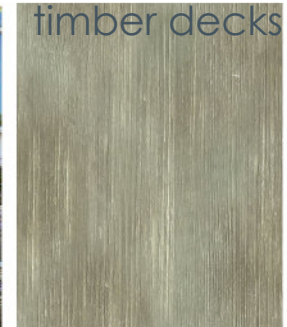
power float floors



white pigmented plaster



glass curtain walls



timber decks



7.3.

environmental
systems

7.3.1.1

natural systems
sun study & shading devices

The contextual design generators enabled the building to have a primary east-west orientation with a secondary north-south orientation. Due to the large volumes of the intervention to the north and west, most areas are bathed in their shadows and thus protected from the harsh Highveld summer sun in the afternoons. Additional sun control measures were however required, especially on the north facades. When analysing each elevation of the building individually, a clear understanding is formed regarding the sun's influence on the internal spaces and the resultant shading devices.

The east and west elevations are reduced in length due to the rectangular shape of the building along the south edge of the precinct. On the east elevation openings are kept to a minimum and those introduced are protected by roof overhangs, canopies, balconies and horizontal timber screens.

Problems associated with western sun are eliminated on the west elevation by the internal orientation of the auditoria. The volume accommodating the auditoria / lecture halls is a framed structure with 'conditioned walls' wrapped around it. This implies that the internal auditorial spaces are artificially controlled and acoustically sound. Minimum to zero punctures are thus required for this double-layered envelope. The emergency access points however occur on the west façade in this envelope. These openings have been turned in a north-south direction, recessed into the auditorial volume and have been provided with a free-standing wall on the exterior for further

protection. In the foyer space below the lecture halls, the west elevation is also sheltered by the free-standing wall and the emergency staircase that acts as a canopy to the glass facades of the foyer. Soft landscaping elements on the exterior of the foyer space further protect and cool the space.

The south façade has been blessed with the beautiful avenue of evergreen 'fever trees' along the Ring Road. This landscaping element, together with the southern orientation allowed for the desired design of the media centre: a light, seemingly hovering rectangle wrapped in a concrete ribbon with glass infill edges providing clarity, transparency and relationships between the interior and exterior. On the south edge a glass curtain wall from floor to ceiling provides unhindered views of the green landscape and draws the tranquillity of nature into the media centre space.

Service and circulation spaces were allocated to the rest of the south façade between the media centre and the foyer to the lecture halls. Balconies to the foyer space surrounding the circulation tower have been punctured into the south façade to create focal views and relationships with the natural elements. The ablution block on the south façade is also punctured with openings on this side. These openings and the services from the ablution block have however been enclosed with a steel and timber screen for aesthetic purposes.

The north façade of the media centre

required more care with regards to sun control. With the introduction of the external walkway with additional timber screen over, the façade of the media centre was pushed back. This created the first part of the sun control system. The second measure is the jagged interaction edge. Structural ducts and glass infill are orientated diagonally to reduce the filtration of direct sunlight into the study spaces. The nooks created by the jagged edge provide social spaces with integrated seating along the external walkway, making the space more versatile than a mere circulation route.

The remainder of the north façade is allocated to the practise block. Here the private, acoustic internal spaces required few small openings. Windows were introduced to the north and south facades of the block as slender rectangular strips, running vertically and horizontally in an I-shaped form. The narrow windows are recessed into the double-layered wall with the recesses extending vertically and horizontally to create contemporary concrete bands across the facade. The rigid, solid appearance of the façade was softened by the introduction of square-shaped, light timber louvers on a steel frame. The timber slats run horizontally and serve as fixed shading devices to portions of the windows.

In general, the shading devices of the building were designed as integrated components of the façade treatments. The articulation of spatial volumes however remains a major aspect of the sun control to the building.





fig. 7.3 : East elevation - January morning

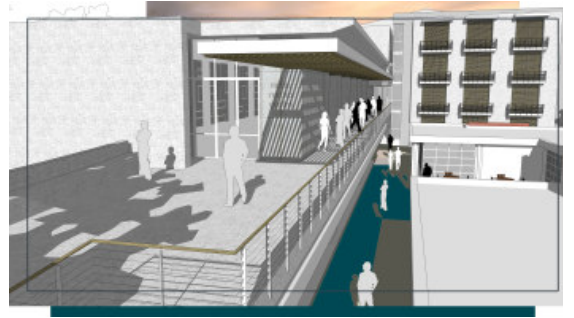


fig. 7.4 : East elevation - June morning

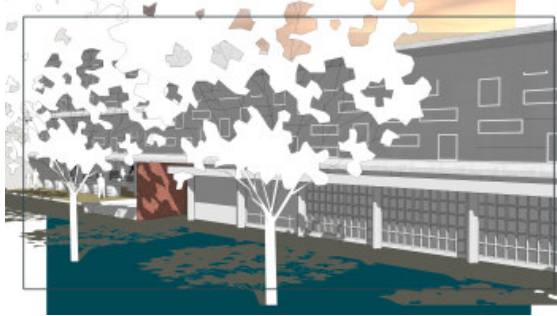


fig. 7.5 : South elevation - January morning

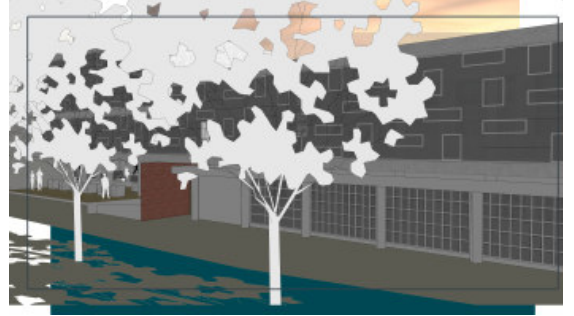


fig. 7.6 : South elevation - June morning



fig. 7.7 : West elevation - January afternoon



fig. 7.8 : West elevation - June afternoon



fig. 7.9 : North elevation - January afternoon



fig. 7.10 : North elevation - June afternoon

sun study & shading devices



7.3.1.2

natural systems

rainwater harvesting & stormwater

Due to a global restricted natural supply of fresh water, the proposed building is adapted to make use of precipitation that is stored in a 252,22m³ tank situated beneath the ablution block. All the roof areas are designed to collect storm water. Hard surfaces around the building are provided with storm water catch pits while other surfaces are permeable to allow for ground penetration.

Rainwater pipes of 110mm dia. are located in the structural columns of the building and connect the full-bore outlets at roof level with the underground storm water network consisting of 160mm dia. pipes that discharge the water into the storage tank.

The tank is supplied with a fully submersible pump and filtration system, driven by solar energy. After passing through the filter, the storm water is used to supply all water closets and refuse areas. Surplus water can be used for irrigation of the greenery around the building.

An overflow is provided to the municipal storm water system to prevent flooding of the tank during heavy thunderstorms.

The water supply to the ablution block is also connected to the municipal source in order to supplement daily demands.

Rainwater Calculations

Roof areas:

Auditoria:	552m ²
Services block:	184m ²
Ablution block:	45m ²
Practise block:	398m ²
Circulation towers:	42m ²
Research lounge:	270m ²
Media centre:	319m ²
Total catchment area:	1810m²

Tank size:	252,22m ³
Tank storage capacity:	252 220l

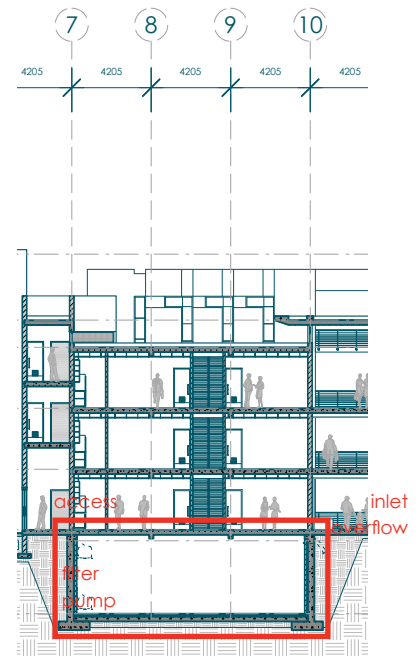
Capacity design population +/- 300 persons/
day
wc usage = 300x3x8 l x 20(week days)
= 144 000 l / month

Precipitation:

Max monthly (January) 136mm
= 0.136x1810 = 246 160 l x 0.85
(15% evaporation) = 209 236 l
Min monthly (July) 3mm
= 0.003x1810 = 5 430 l x 0.85
(15% evaporation) = 4 615 l

Thus at maximum rainfall there is an excess
of 65 236 l.
At minimum rainfall there is a shortage
of 139 385 l.

fig. 7.11 :
Section of storm water
storage tank below ablution block.



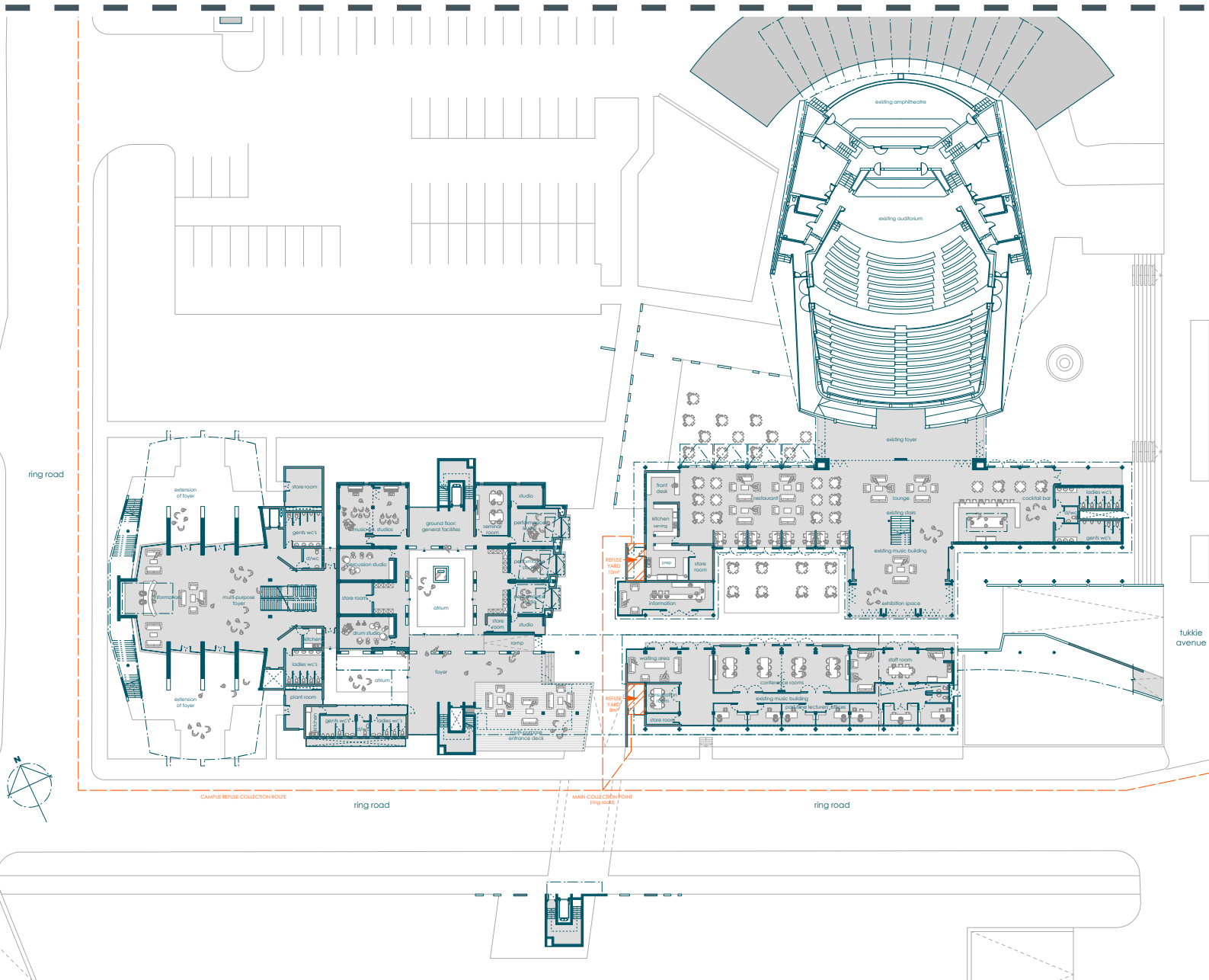
7.3.2.1

artificial systems
refuse

Due to the educational nature of the building, the production of refuse is moderate and thus the two refuse areas provided will suffice for the needs of the intervention. The back kitchen to the restaurant has direct access to a refuse area for easy discard of refuse produced by the restaurant. The second refuse yard is situated on the south-west corner of the existing Music Building and serves as a general waste area for the intervention. Throughout the building waste bins are provided which are to be cleaned on a daily basis. The refuse is then stored in the general refuse yard next to the Ring Road south for easy collection by the Campus waste services twice weekly. Both refuse areas are fitted with a floor trap and tap and secured by a timber screen and matching gate. The areas are also screened from the performance walkway by high walls in red face brick, expressing the service function of the spaces.



fig. 7.13 : Ground floor plan indicating the refuse removal strategy.



7.3.2.2

artificial systems fire protection

fig. 7.14 : Ground floor plan indicating the fire protection strategy.

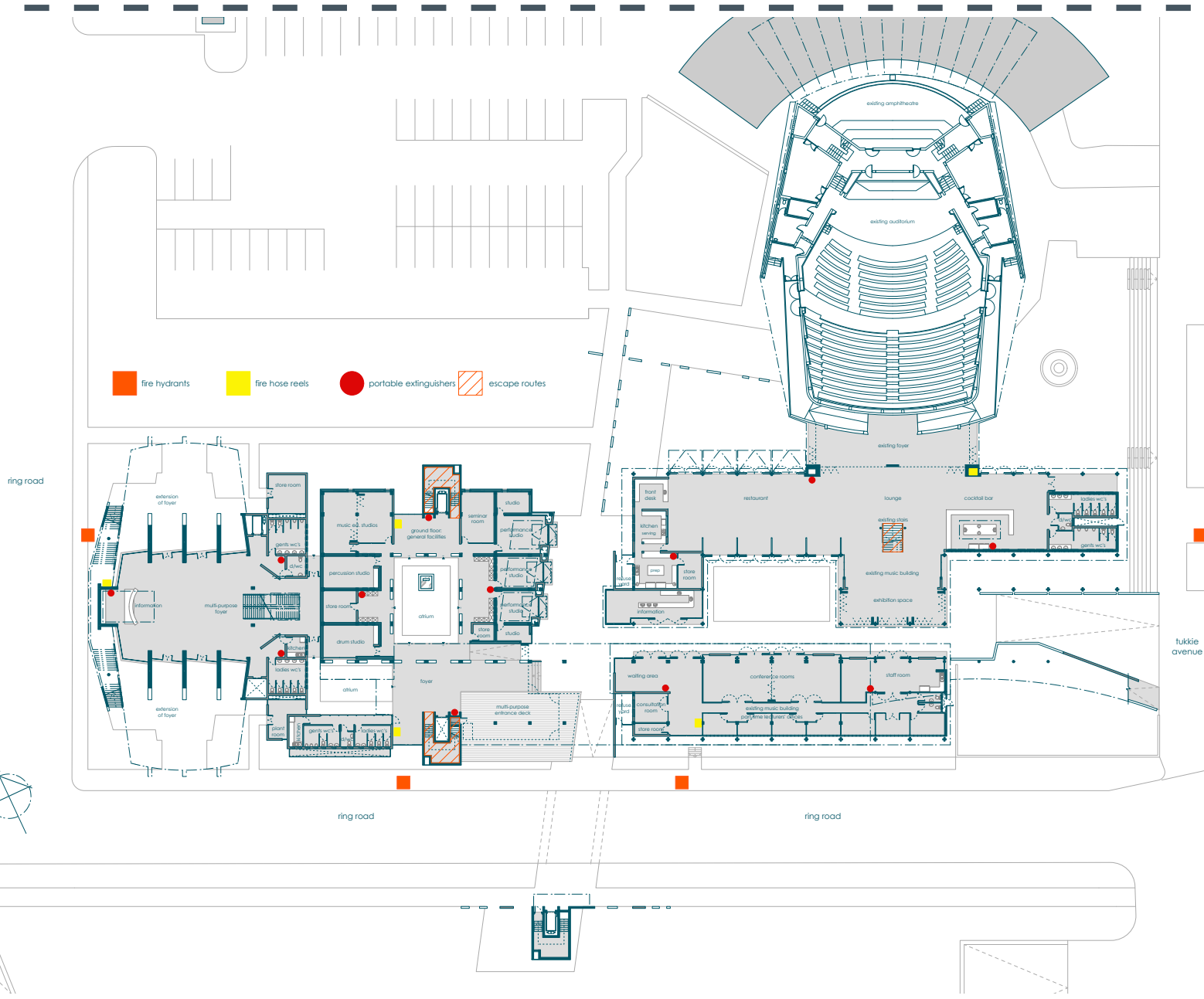
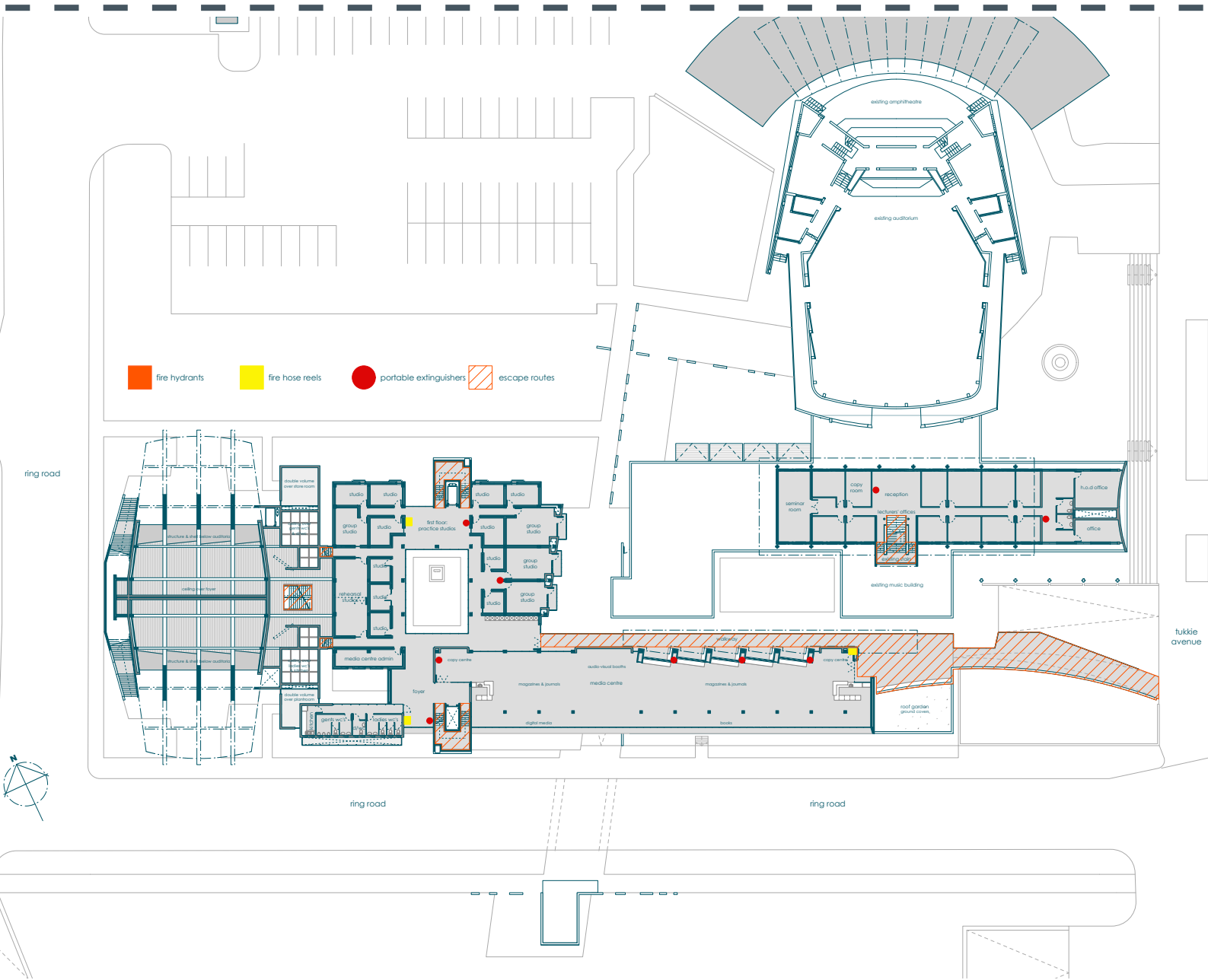


fig. 7.15 : First floor plan indicating the fire protection strategy.



Fire protection forms part of the artificial systems of the building and are in compliance with SANS 0400 Part T.

The proposed building is a non-smoking area except for the external balcony areas where smoking will be permitted. Waste bins with sand-filled ashtrays on top will be provided on the balconies.

Safety distances to adjacent buildings (except for Music Building and Musaion) are as follows:

- East side: 49,443m
- South side: 67,444m
- West side: 27,433m
- North side: 57,313m

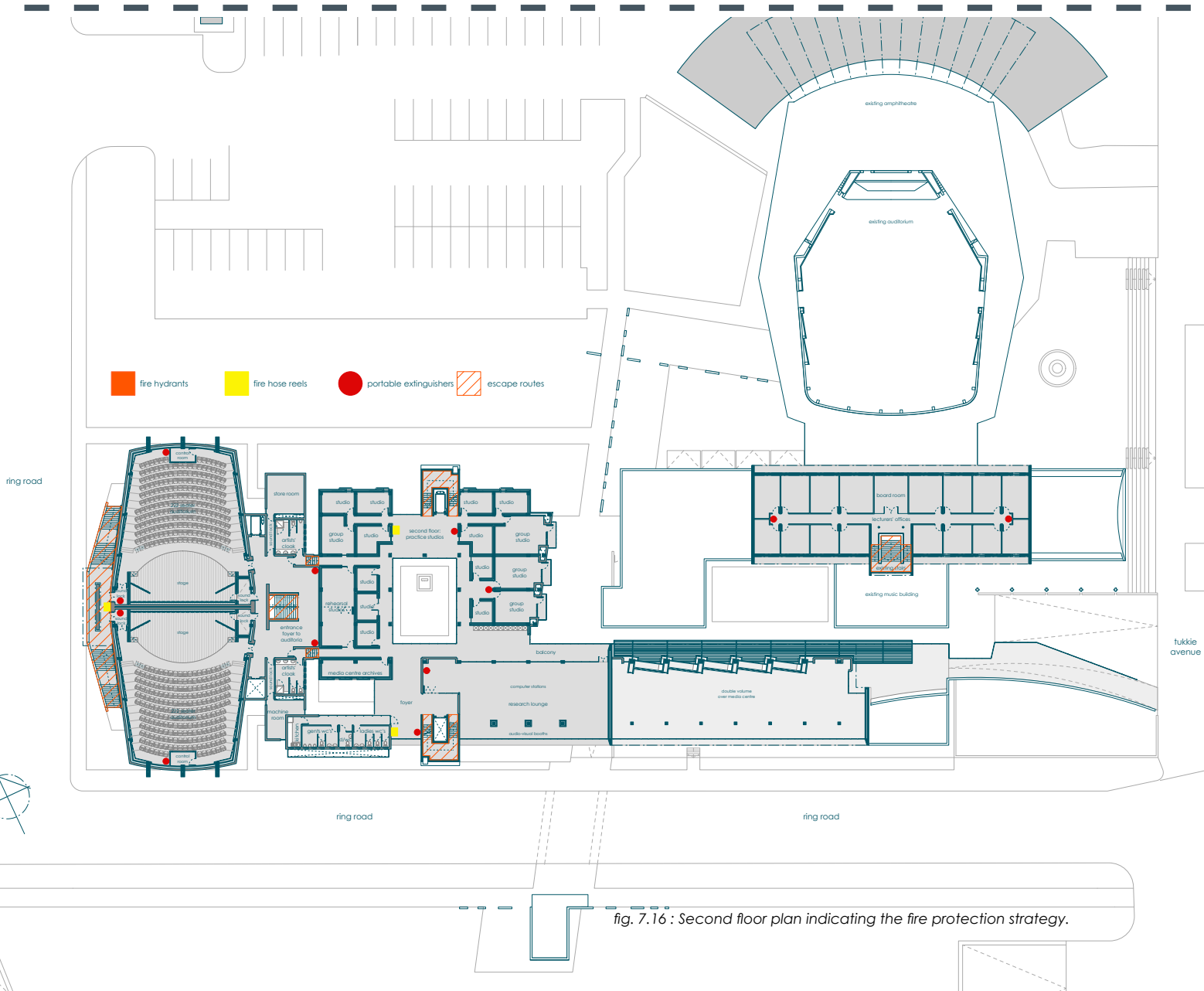


fig. 7.16 : Second floor plan indicating the fire protection strategy.

Structural members will have a fire-rating of 120 minutes and all structural steel will be treated with minimum 38mm Pearlite spray on plaster to comply with Part TT7.

Lighting to emergency routes will be 0.3 – 0.5 lux.

The building is provided with an alarm system that can be manually operated in case of emergency. Automatic smoke detector alarms are also fitted throughout the intervention.

All areas and emergency routes are fitted with safety signage and evacuation diagrams are located in strategic areas throughout the building.

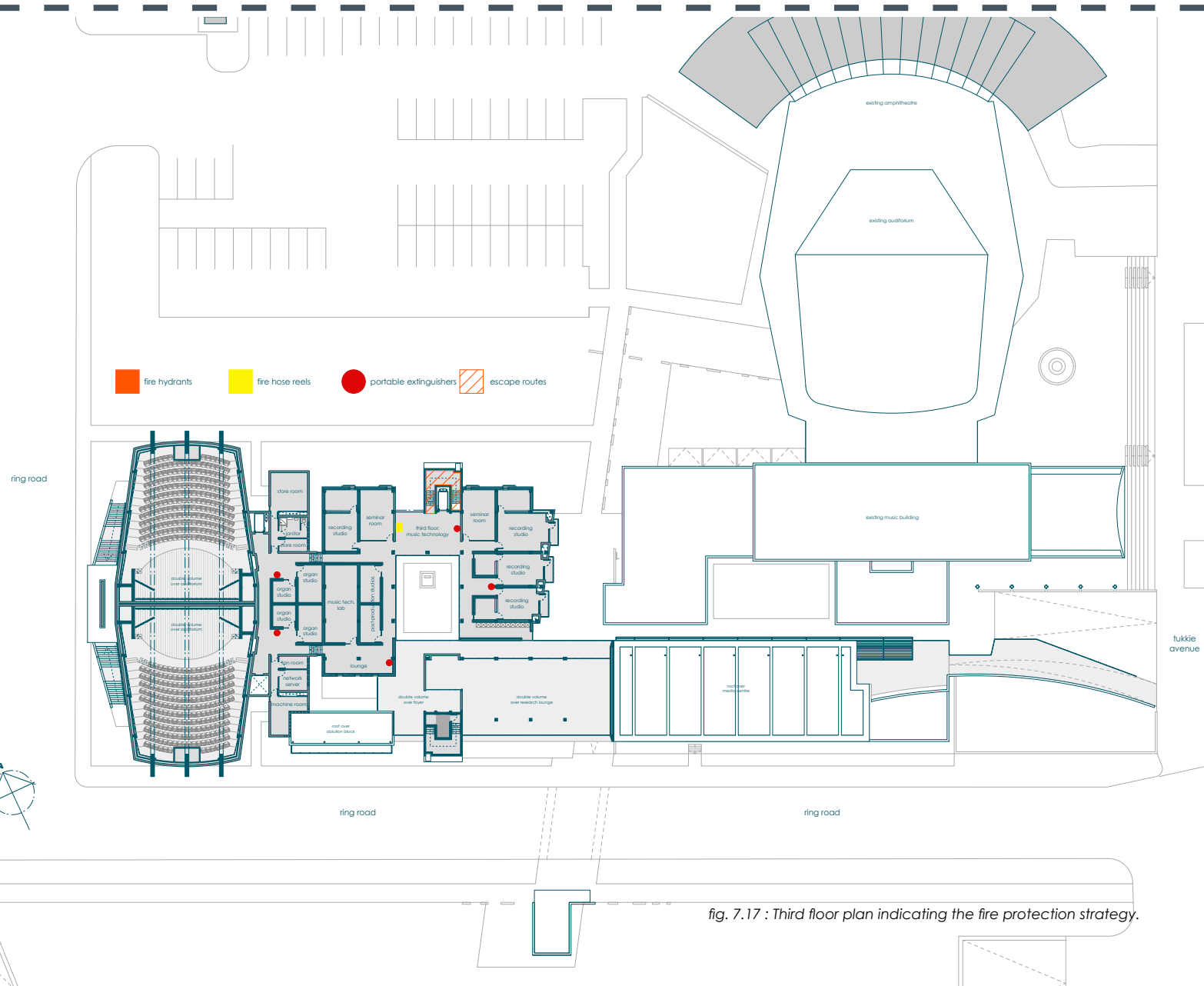


fig. 7.17 : Third floor plan indicating the fire protection strategy.



7.3.2.3

artificial systems drainage

fig. 7.18 : Ground floor plan indicating the drainage layout.

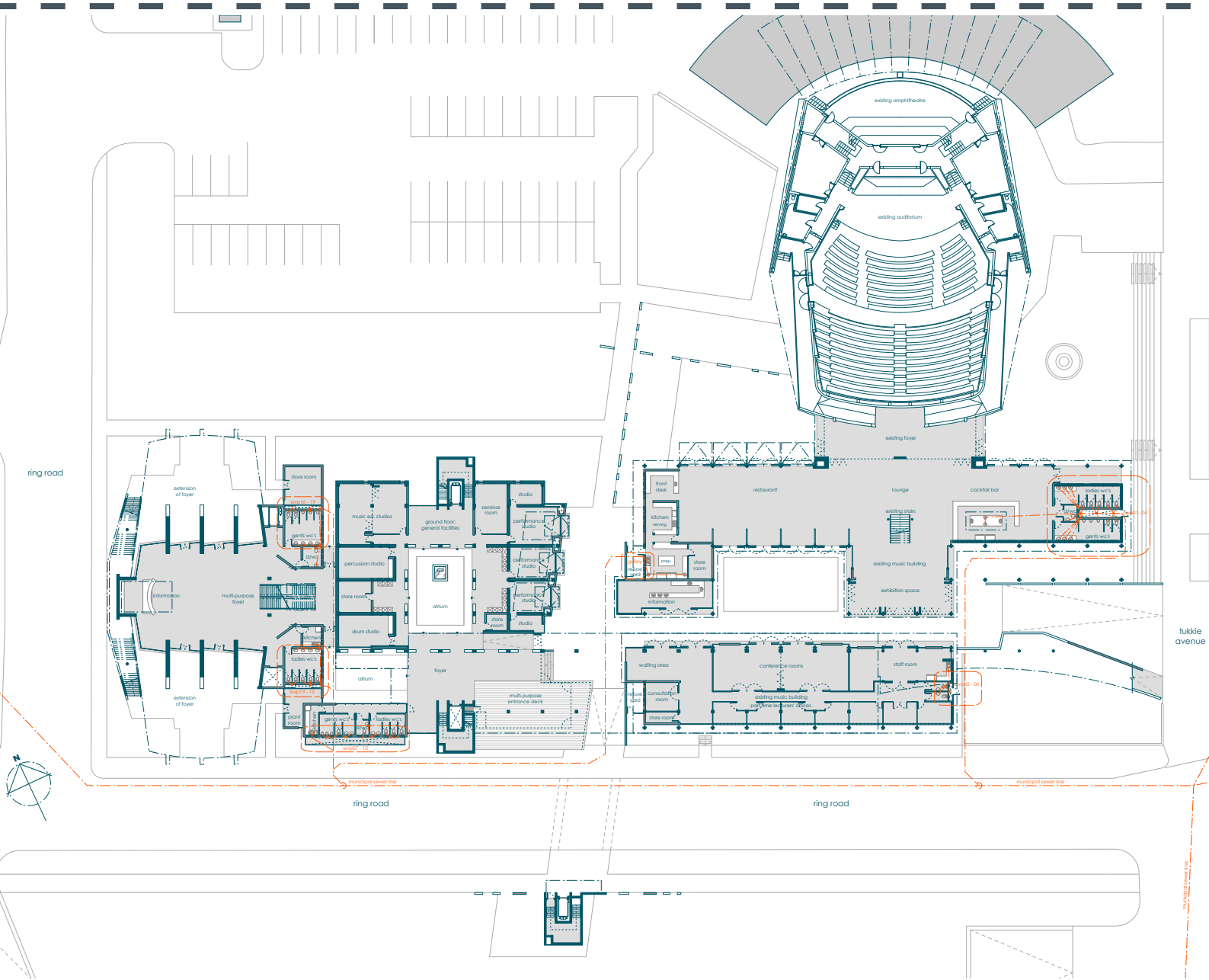
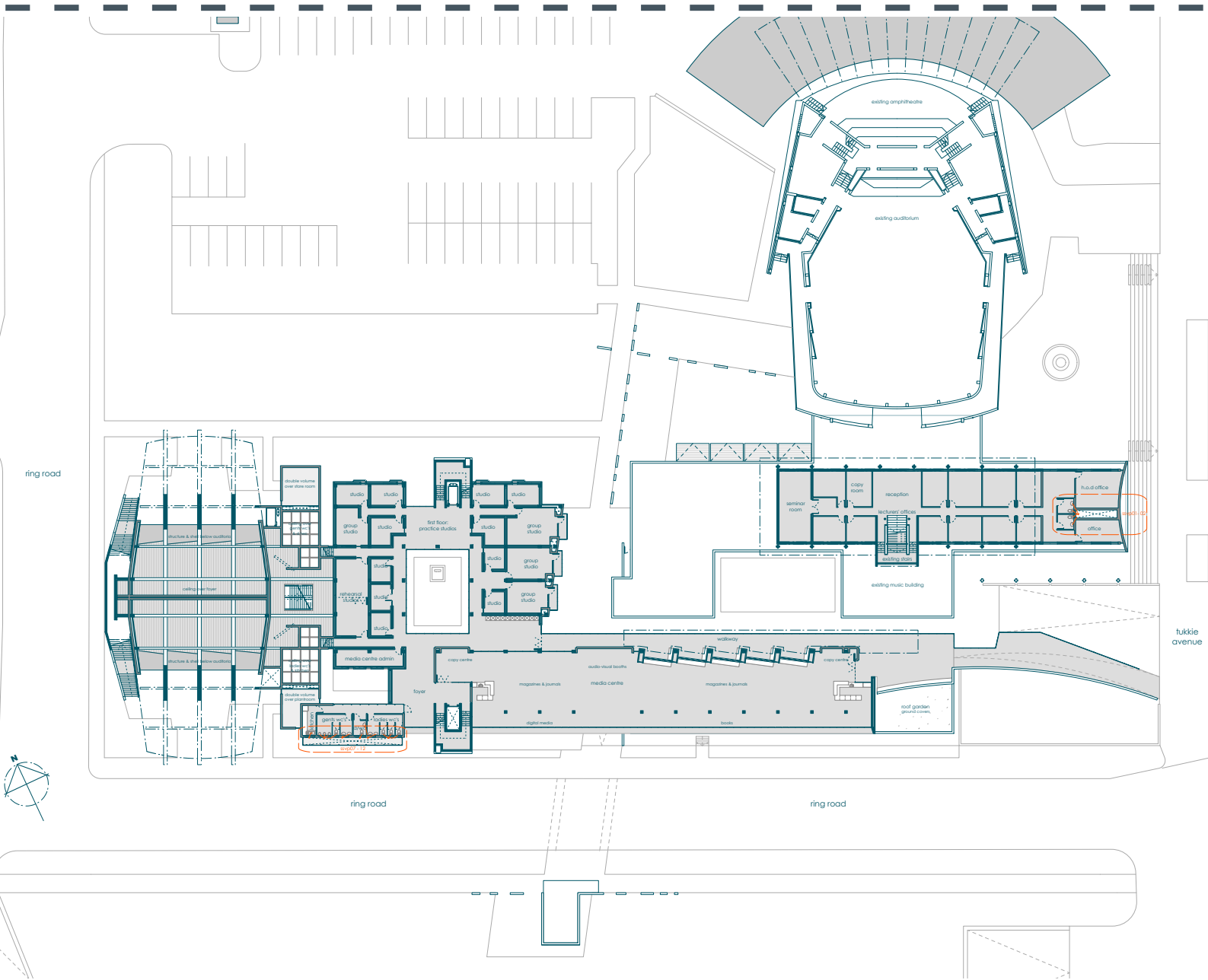


fig. 7.19 : First floor plan indicating the drainage layout.



By grouping similar functions together, the service cores of the building remain concentrated and easily accessible. Drainage areas are placed on top of each other at each level which requires only five

drainage stacks throughout the new and old music facilities combined. Each of these areas is provided with an accessible service duct for pipe work and ventilation to prevent any visible drainage pipes on the facades.

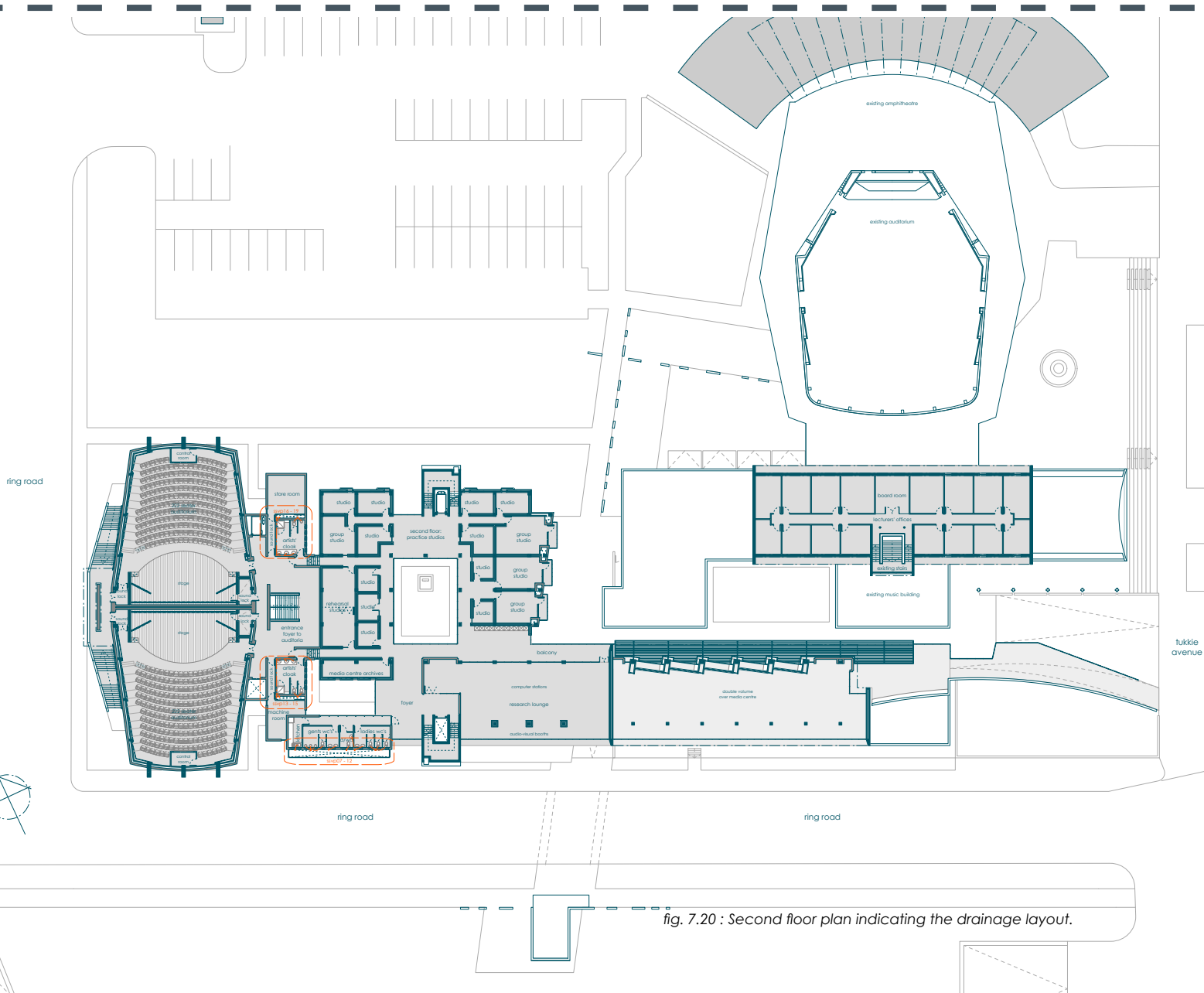


fig. 7.20 : Second floor plan indicating the drainage layout.

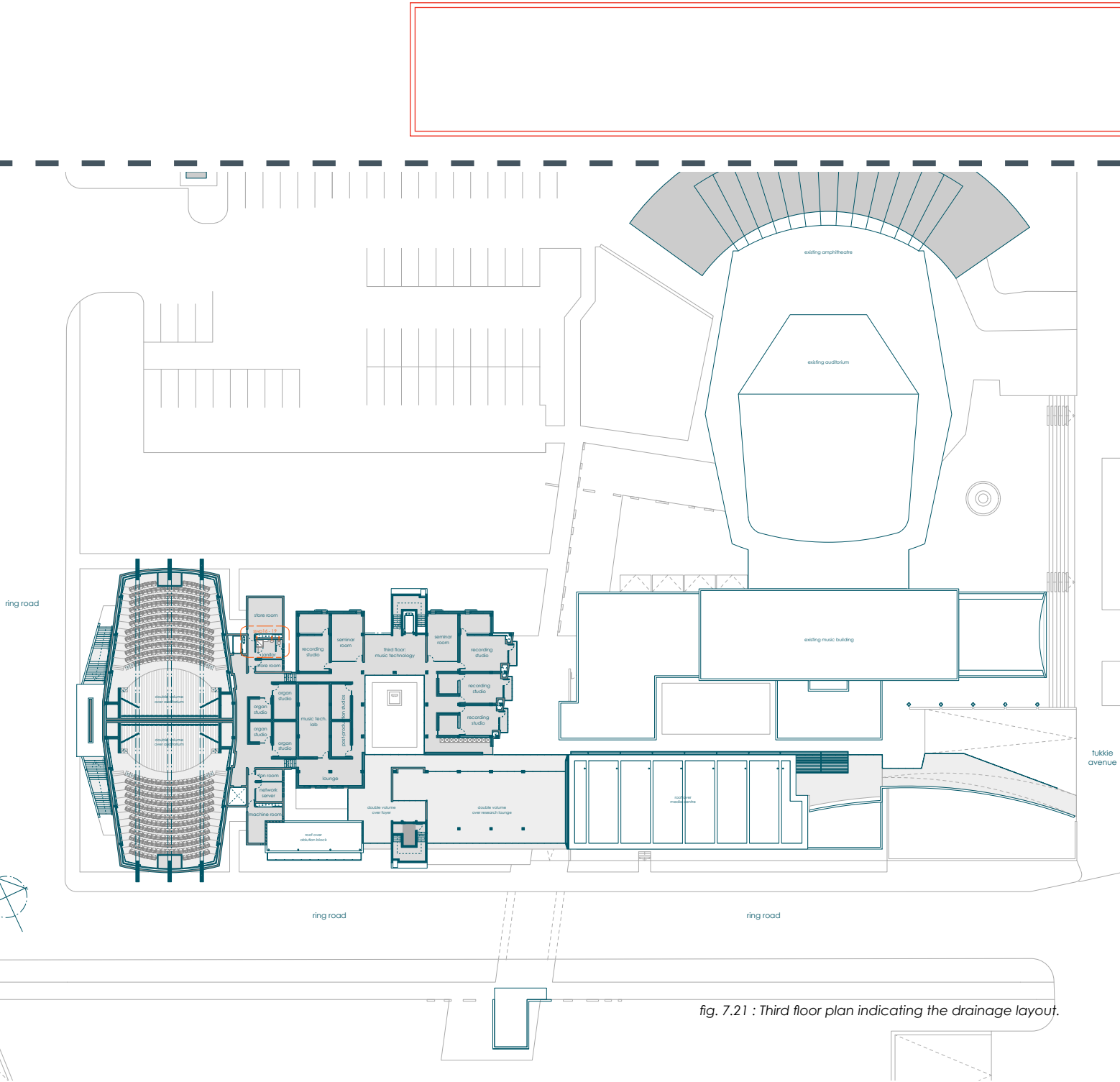


fig. 7.21 : Third floor plan indicating the drainage layout.

7.3.3.1

hybrid systems

photovoltaic photosynthesis

The term "hybrid systems" refers to systems that employ natural conditions to supply artificial conditions. Photovoltaic panels and air-conditioning systems are the main hybrid systems implemented in the building and will be discussed in this part of the chapter.

The chosen photovoltaic system is a Dual Axis Photovoltaic-Grid Intertie. This system consists of an array of panels (990x1610mm, 170kW generating capacity each) that is manually set to one of two settings. The first is flat on the roof of the practise block at 3° as a summer setting and the second is at 48,94% normal to the rays of the winter sun. The panels are mounted on the flat concrete roof at 1500mm c/c to allow sufficient space for manoeuvring and maintenance of the panels. This arrangement allows for approximately 70 panels. According to Lori Ryker, author of the book *Off the Grid Homes*, 18 solar panels are sufficient to supply for the electricity demands of a medium size house

and a 100 panels are equivalent to the electricity demand of 5,5 medium sized houses.

With this dual system, two options for the storage of solar energy are available:

1. battery bank
2. the municipal grid

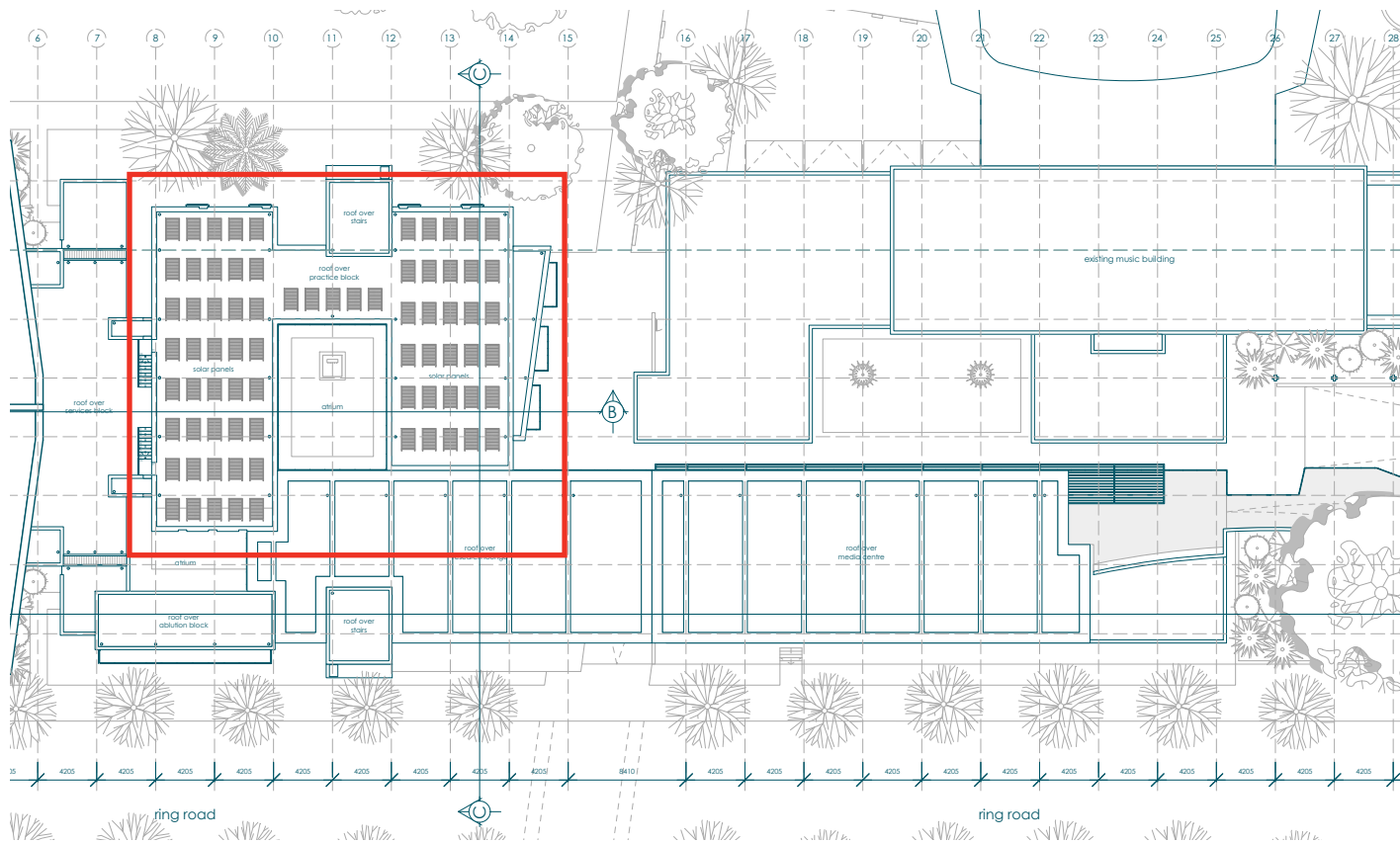
The use of a battery bank was considered for the project, but due to its limited lifespan and high maintenance costs it was decided to rather use the municipal grid as storage device. Energy converted by the solar panels will thus be placed back into the grid and the energy required for the functioning of the building will only be provided in the conventional way by the grid (Ryker, 2007:55).

The energy generated by the photovoltaic system will be applied to drive the pump system of the storm water storage tank as well as for the central plant air-conditioning system of the building.

fig. 7.22 :
Diagram of Dual Axis
Photovoltaic Grid Intertie.



fig. 7.23 : Roof plan indicating the position of the 70 solar panels on the roof of the practice block.



7.3.3.2

hybrid systems air-conditioning

A central plant air-conditioning system is incorporated in the building to maintain temperature, ventilation and humidity requirements in the internal, public spaces like the lecture halls, media centre and research lounge. The central plant system consists of three main components:

1. The refrigeration cycle or chiller

Due to the size and weight of the chiller, it is located at ground floor level on the south side of the services block. Concrete plinths are provided to spread the weight of the equipment and a floor trap is also included to drain any access water that might be generated by the equipment. The plant room has a sufficient height of 4,385m and direct access is available to the vertical duct on the north wall of the plant room. Two vertical grids are provided along the total height of the three-story services block to supply sufficient ventilation for the optimum operation of the plant.

2. The air-handling plant

This component is situated directly above the chiller plant room and the area has similar access and ventilation properties as the chiller plant room.

3. The cooling tower

This component is situated on the roof of the services block, in the south-west corner above the plant rooms. Here, unrestricted flow of air can easily cool down the warm water in the cooling tower. The parapet on the perimeter of the services block has been

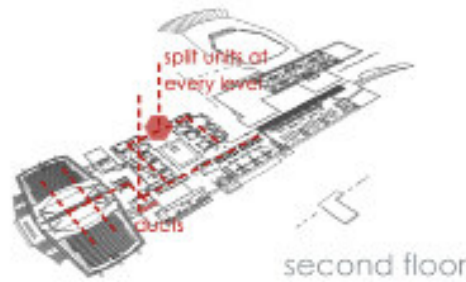
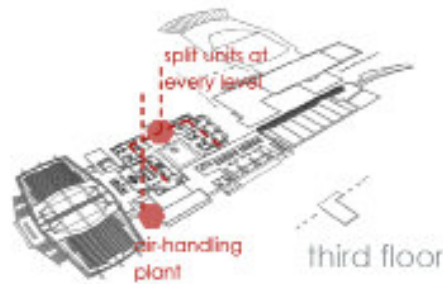
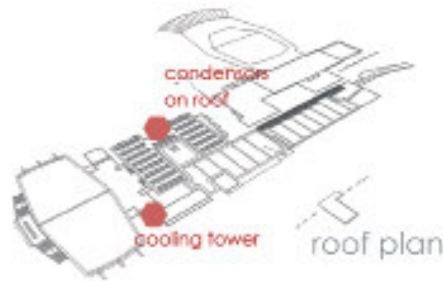
increased to 1,5m to hide the cooling tower and other service related components from the appearance of the building.

The central plant system serves the two lecture halls via ducts that surface beneath each theatre chair as well as along the ceiling's perimeter. The system is only in use when the lecture halls are occupied. In the research lounge and media centre the air handling ducts run along the soffit of the slab above the suspended ceiling and penetrate the ceiling in strategic areas to ensure an even distribution of air throughout the spaces. Both the research lounge and media centre are provided with openable windows on both the north and south facades to allow for natural cross-ventilation. The air-conditioning system is thus a last resort for temperature and ventilation control in extreme weather conditions.

The practise block's studios are also provided with air-conditioning but in this case a split type air conditioning system is used. The reason for this is that the practise block consists of numerous separate studios, each with individual users. With a split system, the user of each studio can regulate the temperature of that space according to the individual's needs.

The condensers and compressors of the split units are located on the roof of the practise block and the space at the back of the lift shaft is used as vertical duct to connect the split components of the air-conditioning units.





central plant system ■

auditoria
media centre
research lounge

refrigeration cycle / chiller ■
ground floor plant room

air-handling plant ■
second & third floors

cooling tower ■
roof level behind parapet

plant location vertically aligned ■

split-type air-conditioning system ■

practise rooms
studios

individual control ■

condensors & compressors ■
roof level of practise block

fig. 7.24 :
Diagram indicating the location
of the air-conditioning plant.

7.4.

acoustic requirements
studio design

It is pertinent that the studios of the practise block have the desired acoustic properties for practise and the recording of an optimum quality product. Intrusive external noise, the spread of noise between studios and structure-borne sound transmissions should therefore be kept to a minimum. This can best be achieved by creating a solid structure around the studios.

The wall construction of the studios consists of a 330mm brick cavity wall with a 100mm mineral wool sound insulation cavity. This prevents the majority of external noise entering the spaces and vice versa. Fixed to the internal face of the cavity walls are 50mm mineral wool blankets with black fabric covering; 125x50x25x2,5 cold-formed top hat sections are fixed to the cavity wall but isolated from the structure with neoprene seals to prevent the occurrence of structural noise. 8x2500x2000 perforated commercial plywood panels are fixed to the top hat sections with a gap of 75mm between the plywood and the mineral wool blankets. The perforated panels allow sound to enter the

panels and dissipate between the plywood and the mineral wool blankets, giving the studios the desired sound absorption qualities. The glass facades to the performance and group studios on the east side of the practise block consist of a double glazing system angled at 97° to prevent the occurrence of standing waves. Double glazing is a good insulator against external noise. The cavity between the glass panes is filled with copper sulphite in order to absorb any moisture within the cavity.

All the practise studios are provided with acoustic ceilings consisting of 8mm thick, egg-grate profiled plywood panels at 97° to prevent the occurrence of standing waves. These ceiling panels are fixed to a steel grid and suspended from the concrete floor slab above. 100mm mineral wool sound absorption blankets are placed on top of the panels.

Acoustic doors are fitted to the studios and are sealed with 25mm neoprene seals between the door and doorjamb.



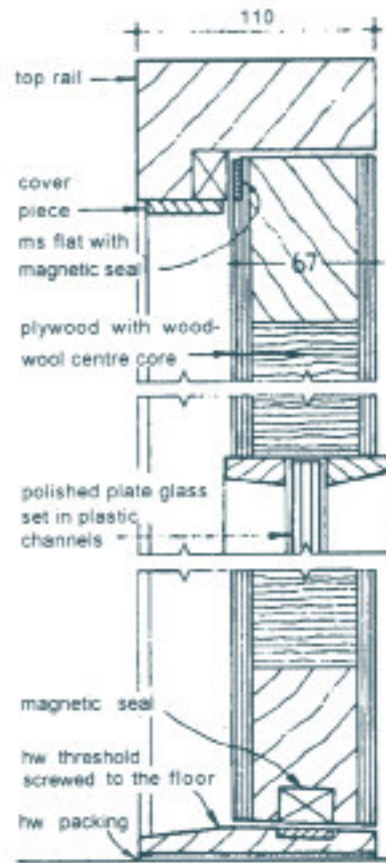
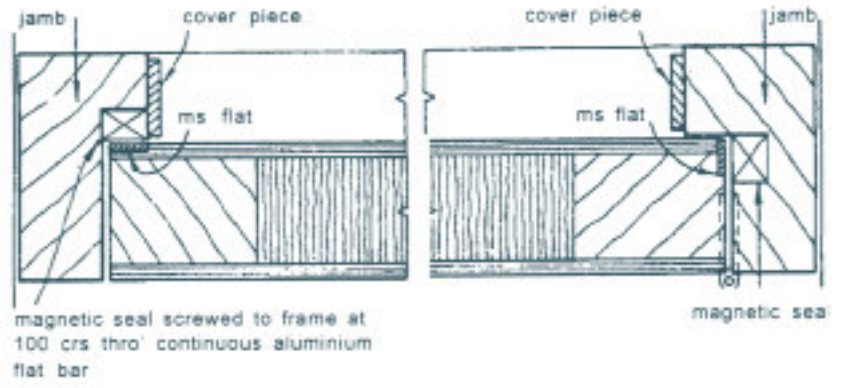
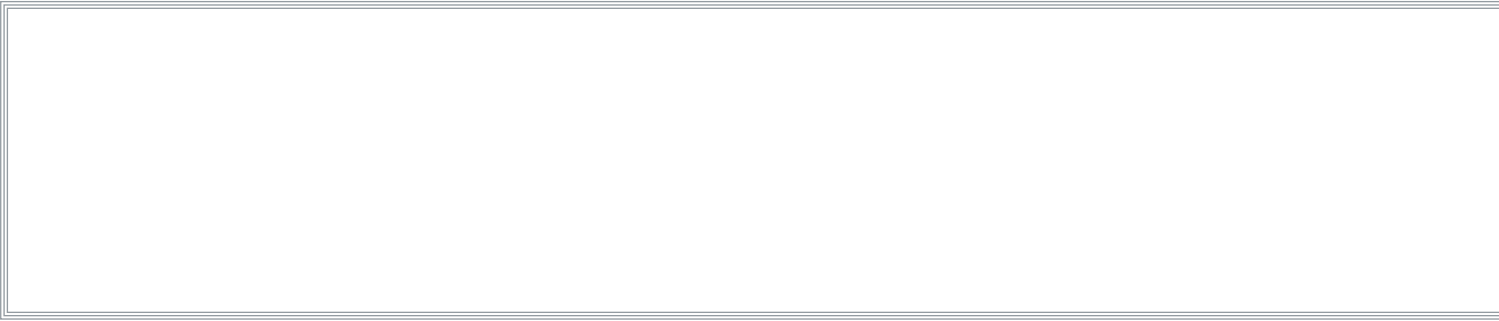


fig. 7.25 :
Plan and section details of an acoustic door.



chapter 8

the drawings





8.1 site plan
8.2 plans
8.3 elevations
8.4 sections
8.5 presentation

fig. 8.1 : 3D drawings of the proposed intervention.



HEAVY MACHINERY
LABORATORIES

CEFIM

ring road

existing parking area

green buffer

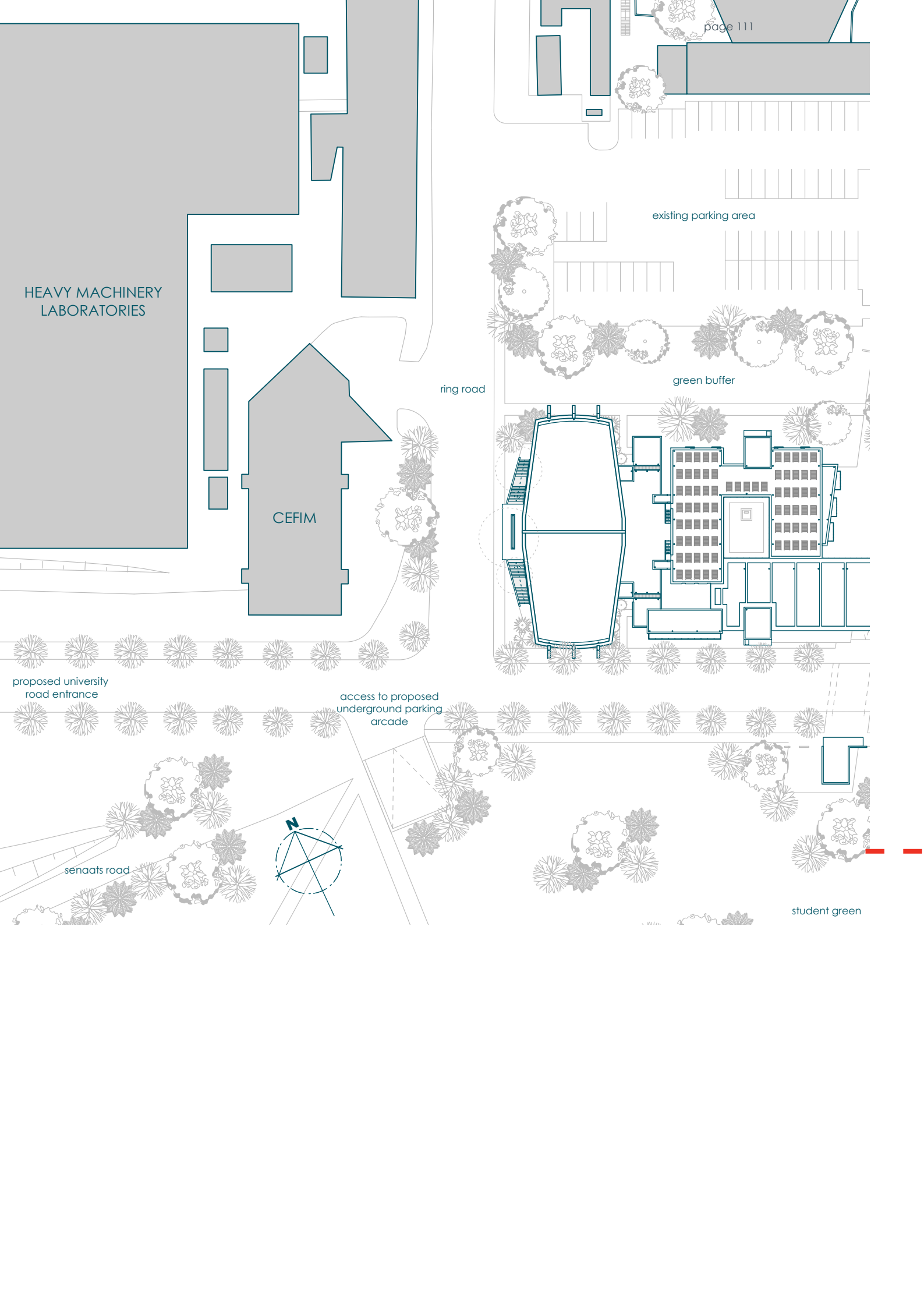
access to proposed
underground parking
arcade

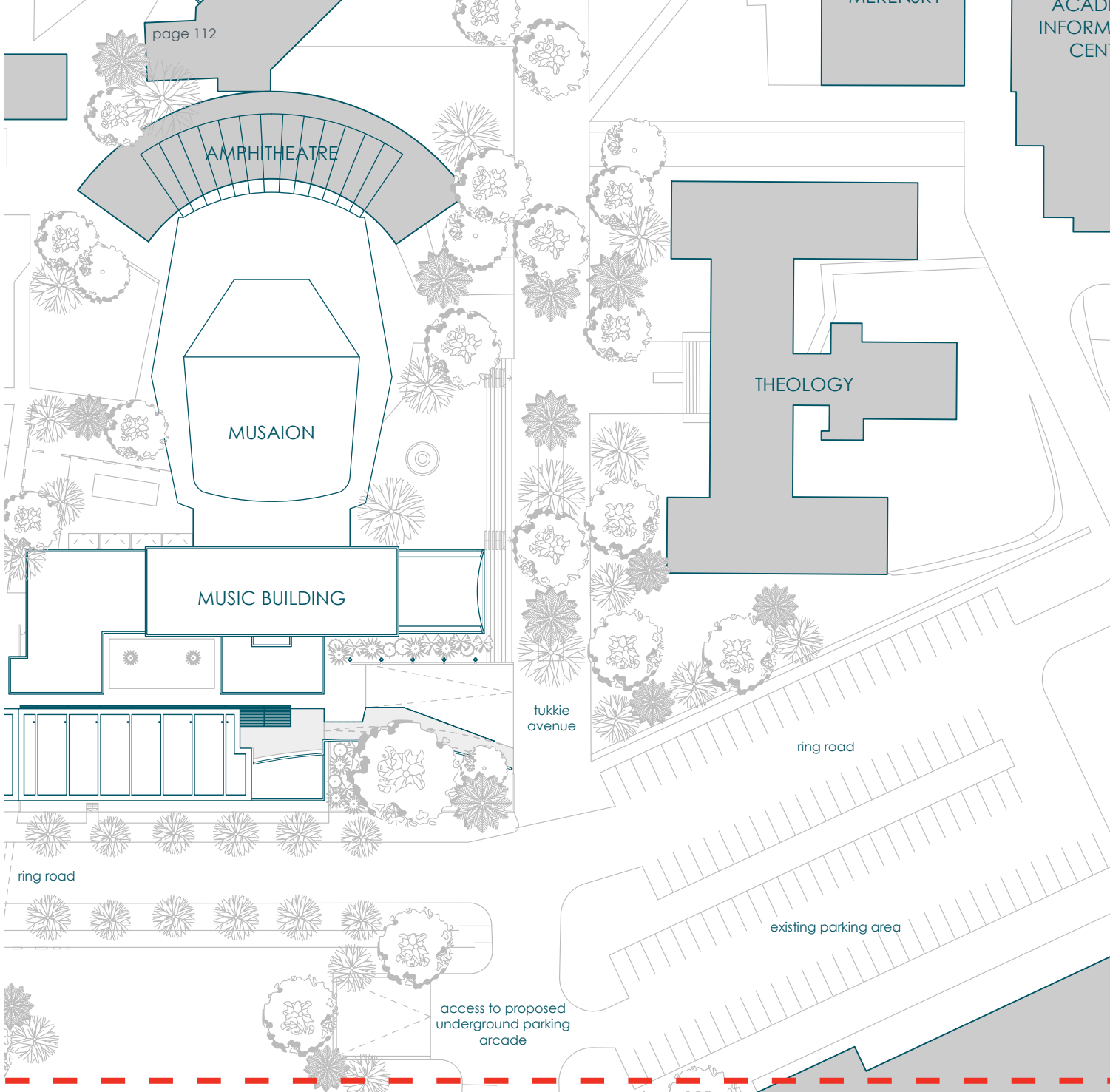
proposed university
road entrance

senaats road

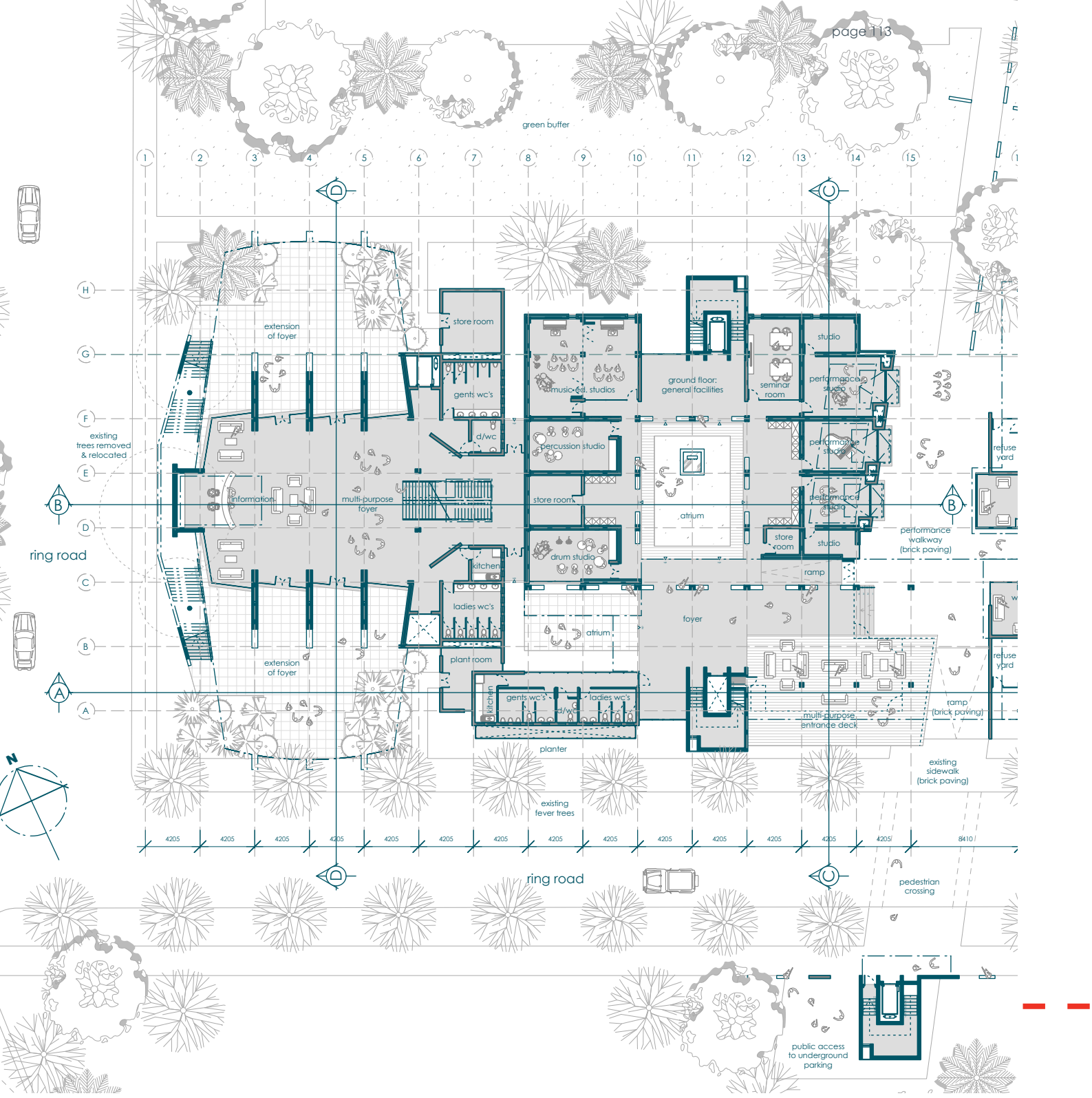


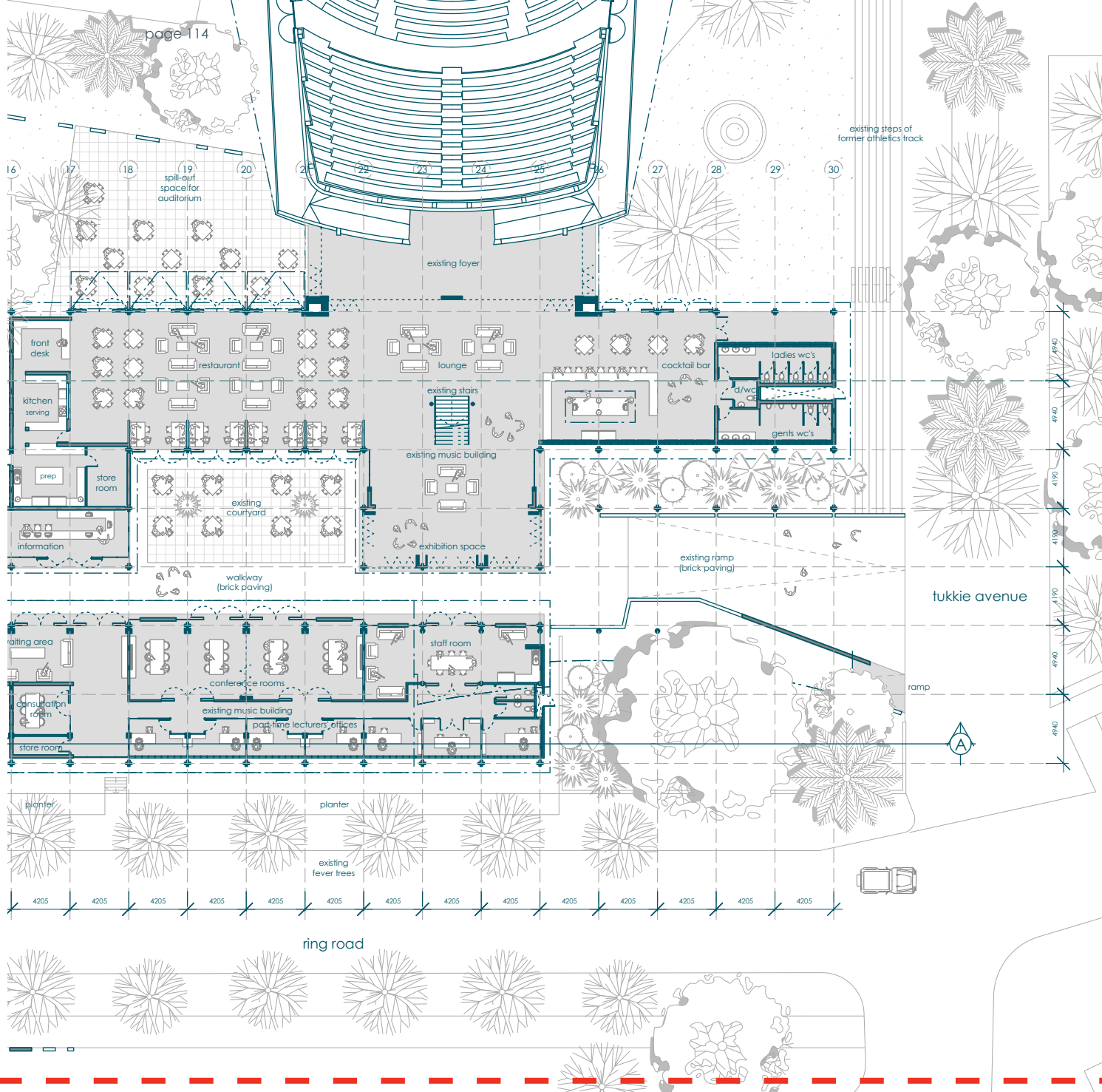
student green



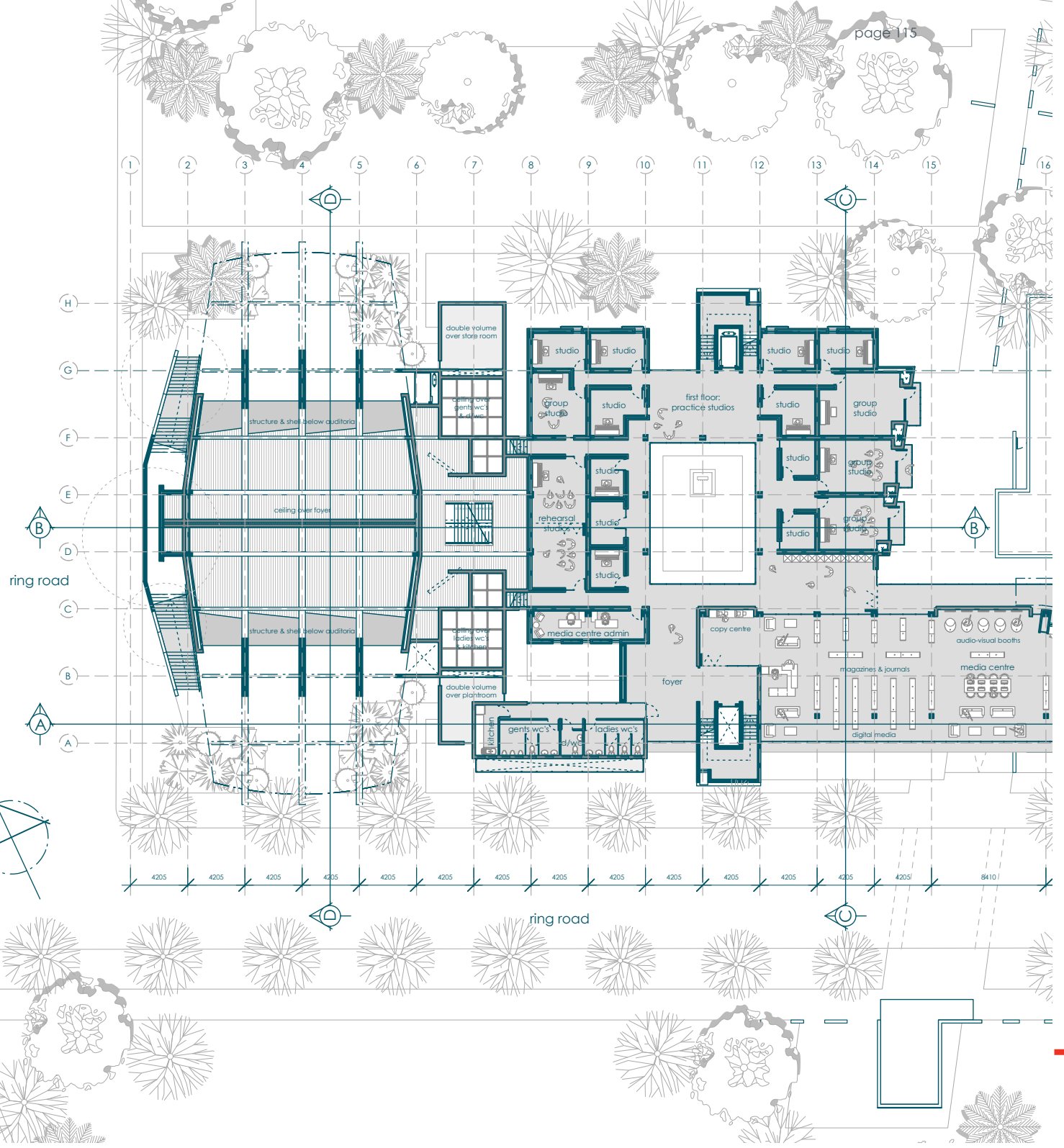


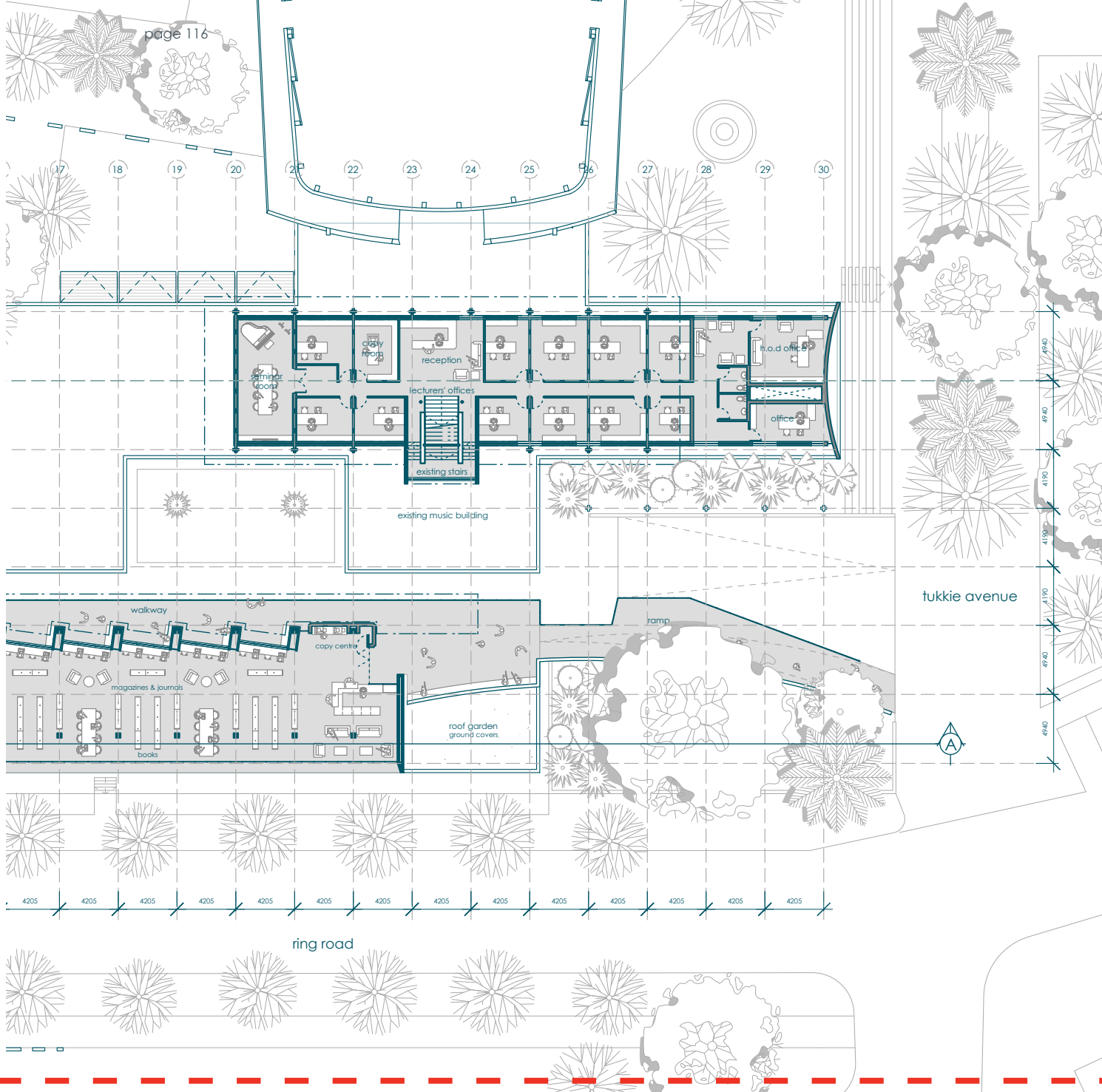
1 : 750 site plan



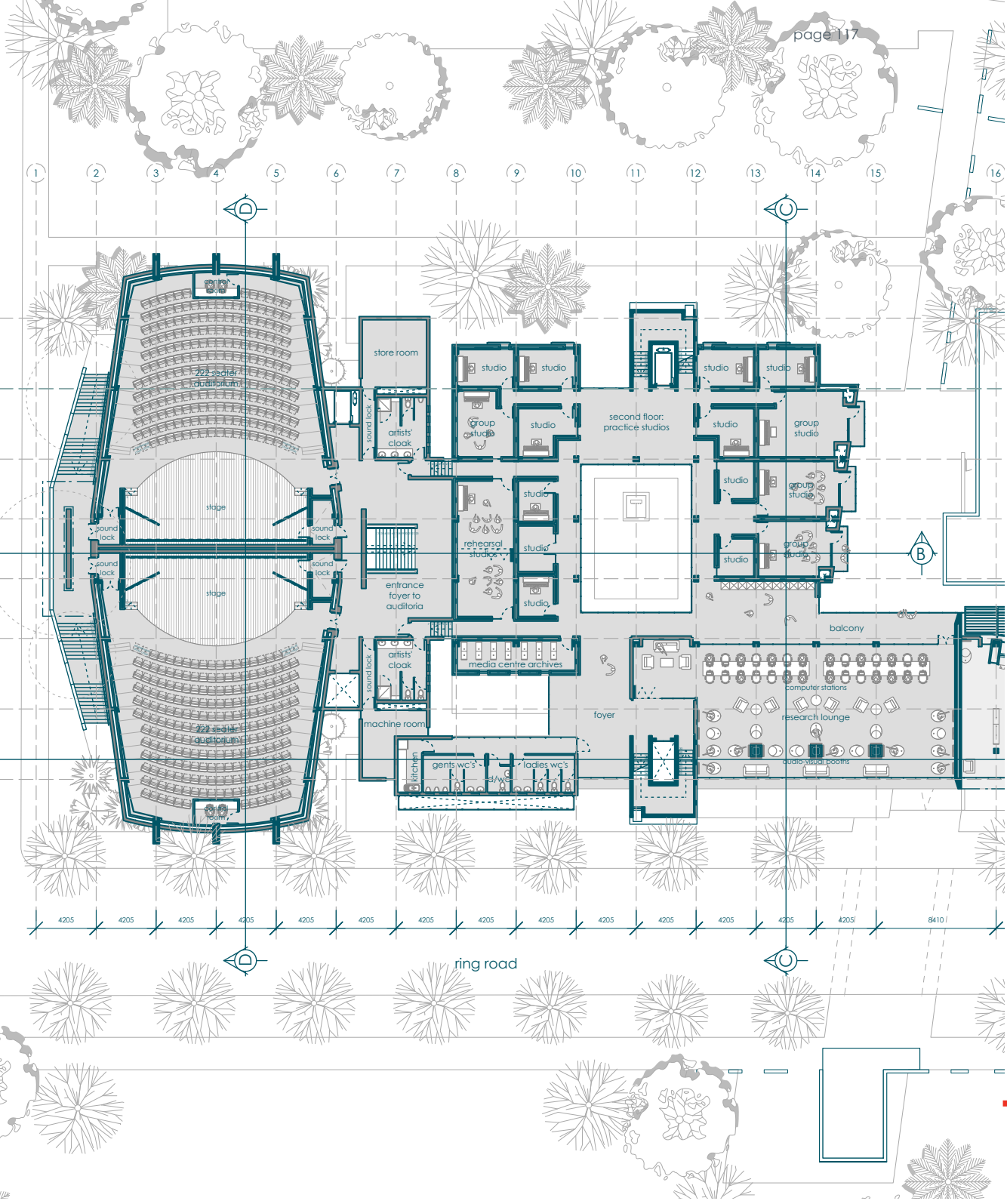


1 : 400 ground floor plan





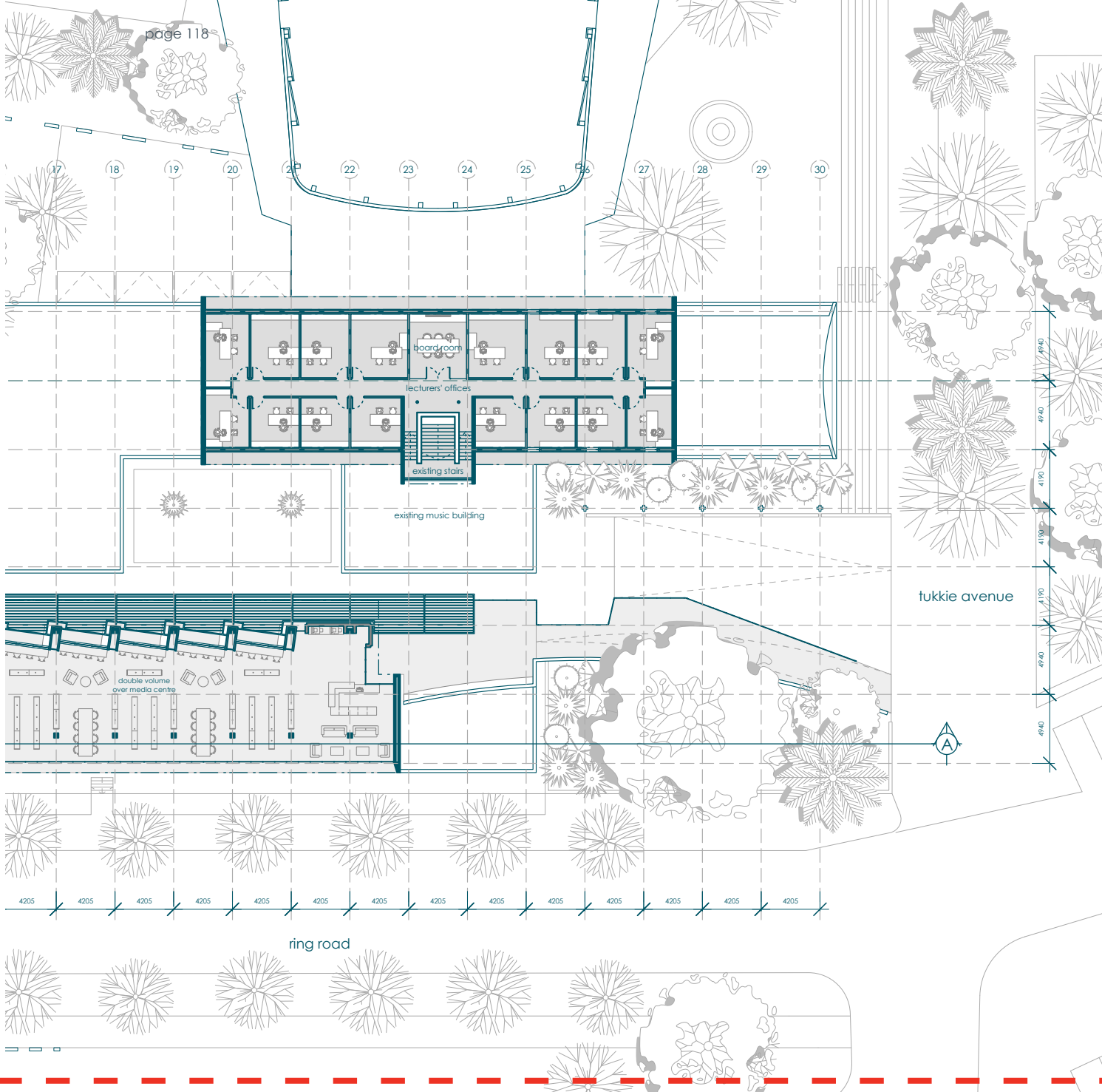
1 : 400 first floor plan



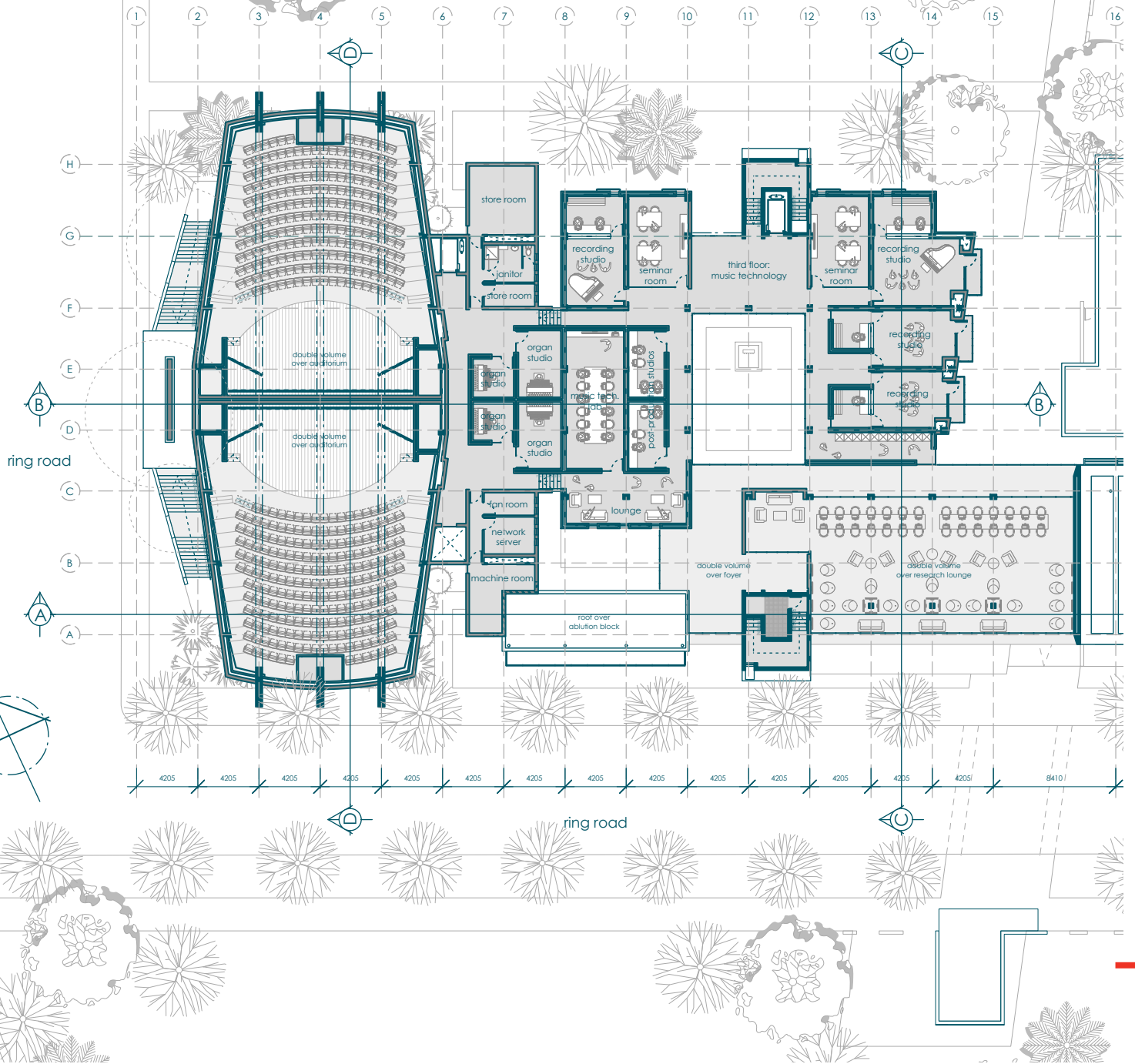
ring road

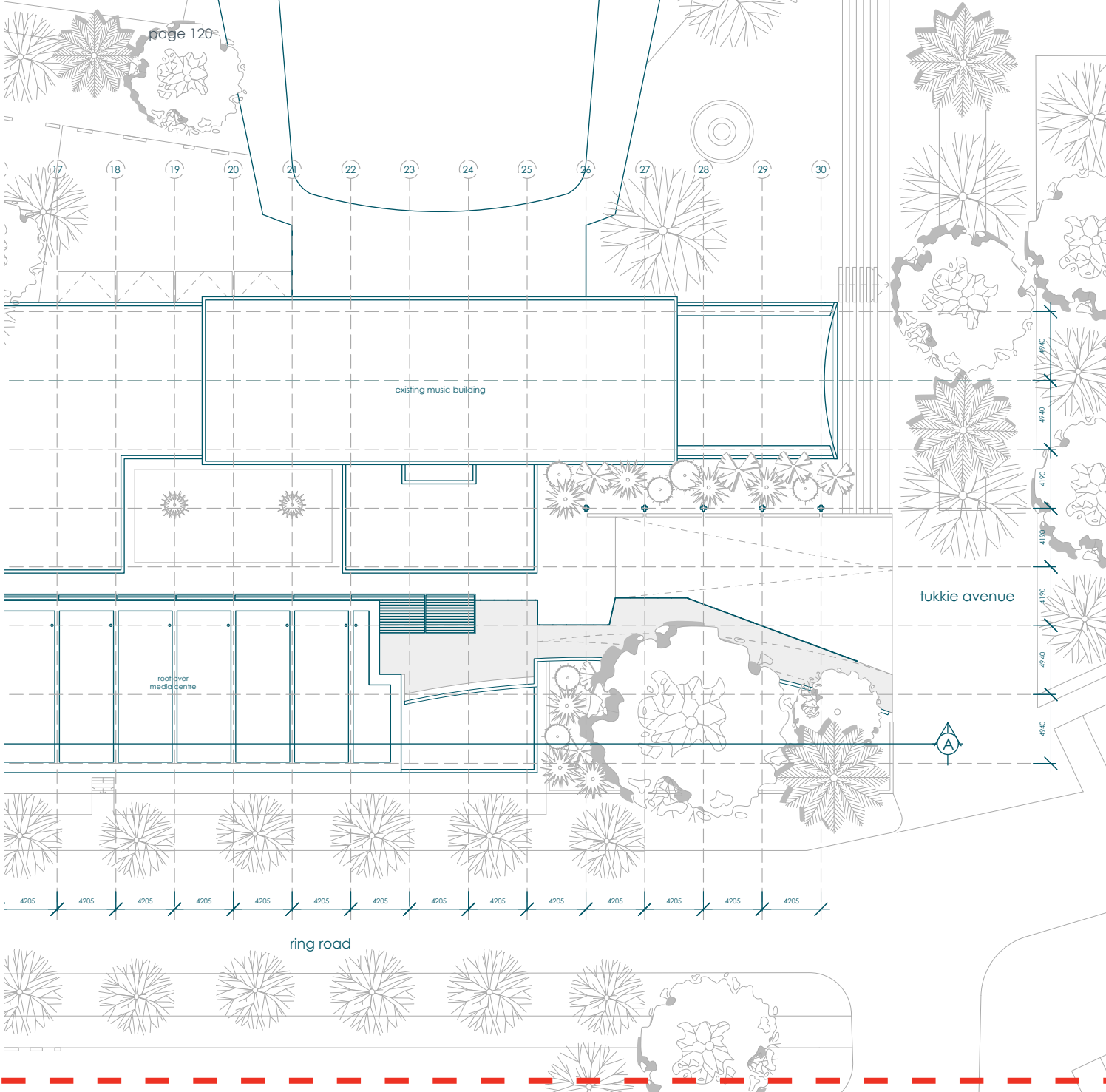
ring road





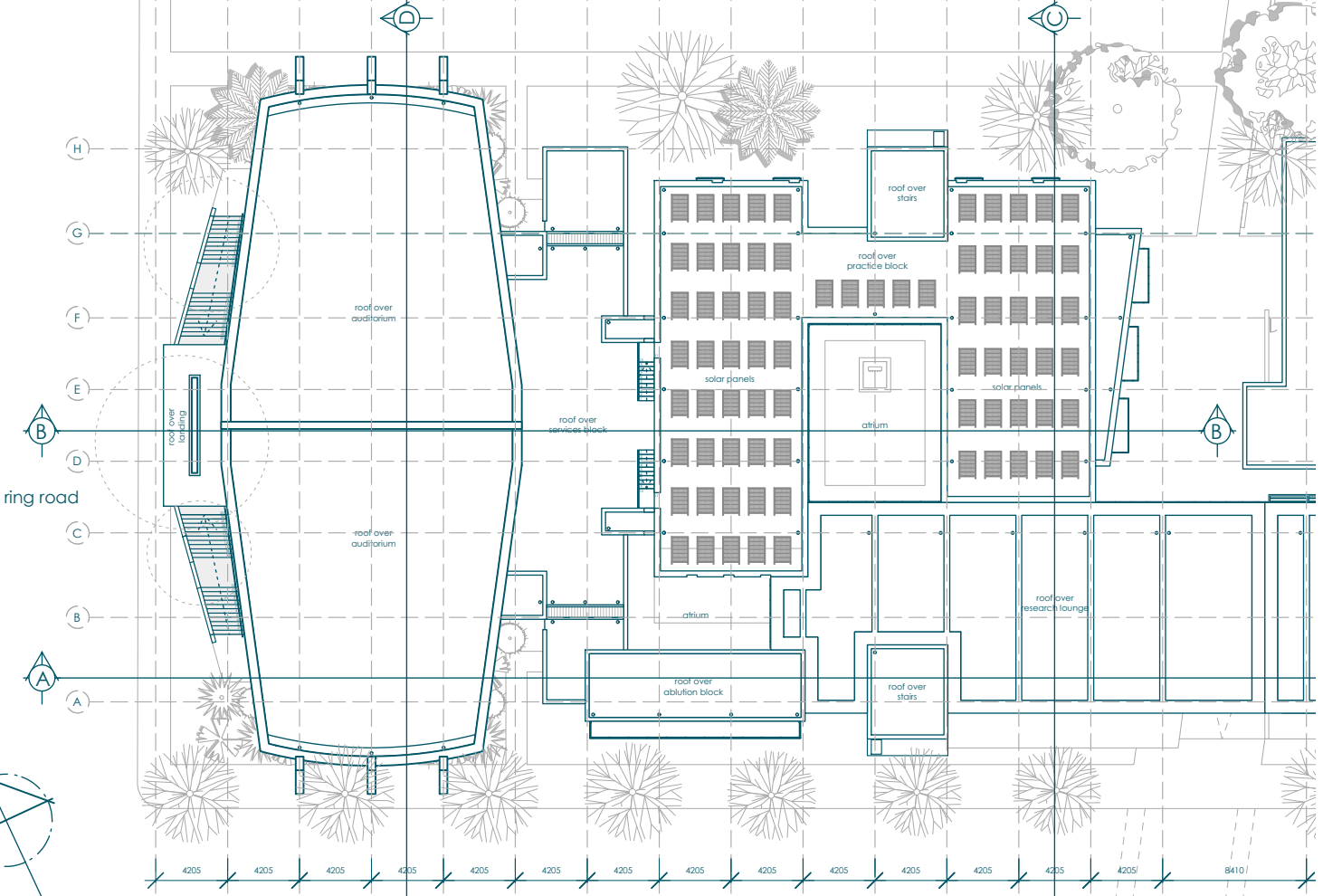
1 : 400 second floor plan





1 : 400 third floor plan

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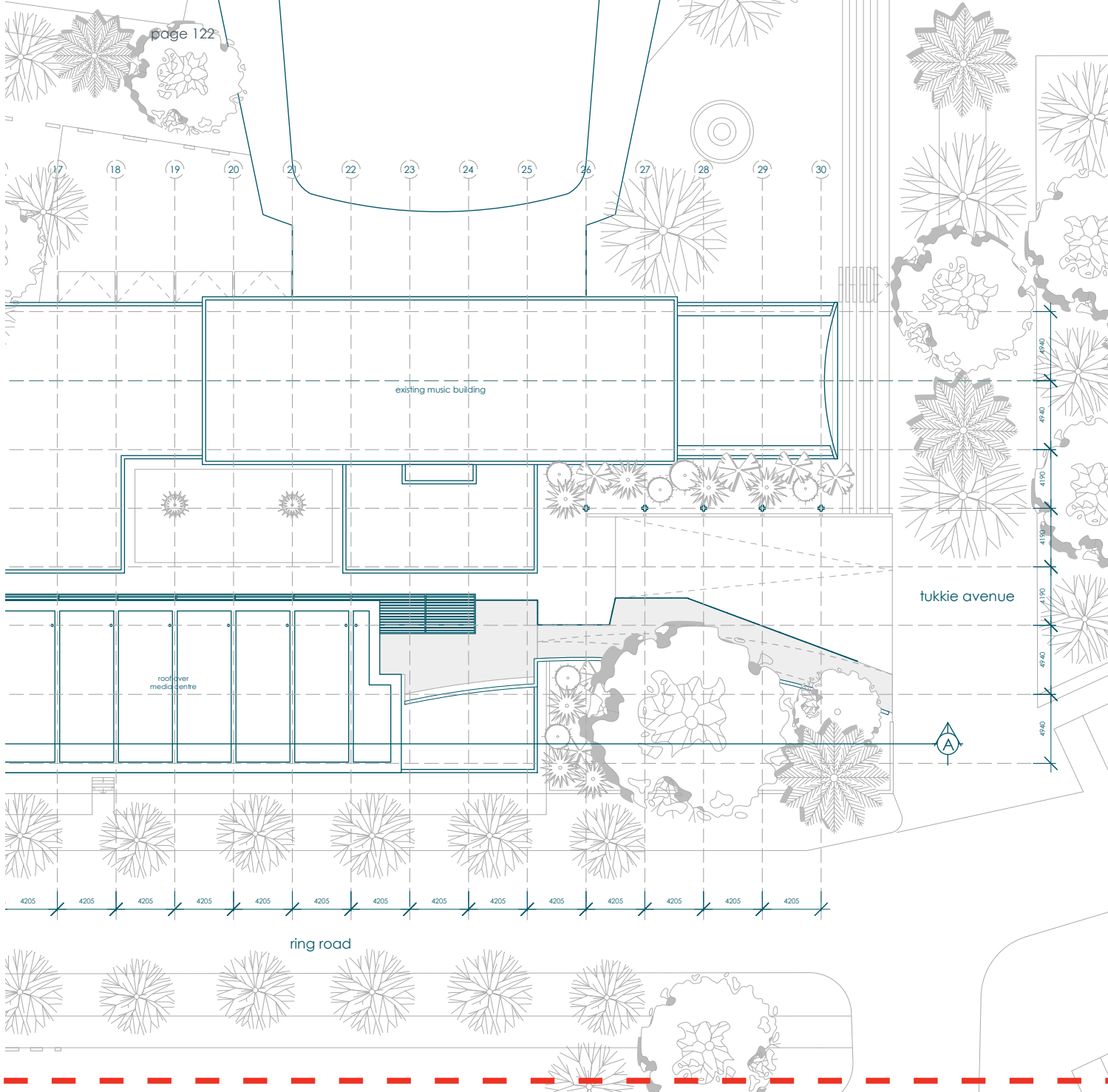


ring road

ring road

roof over public access to underground parking





1 : 400 roof plan



perspective





1 : 400

south elevation

& perspective

1 : 400

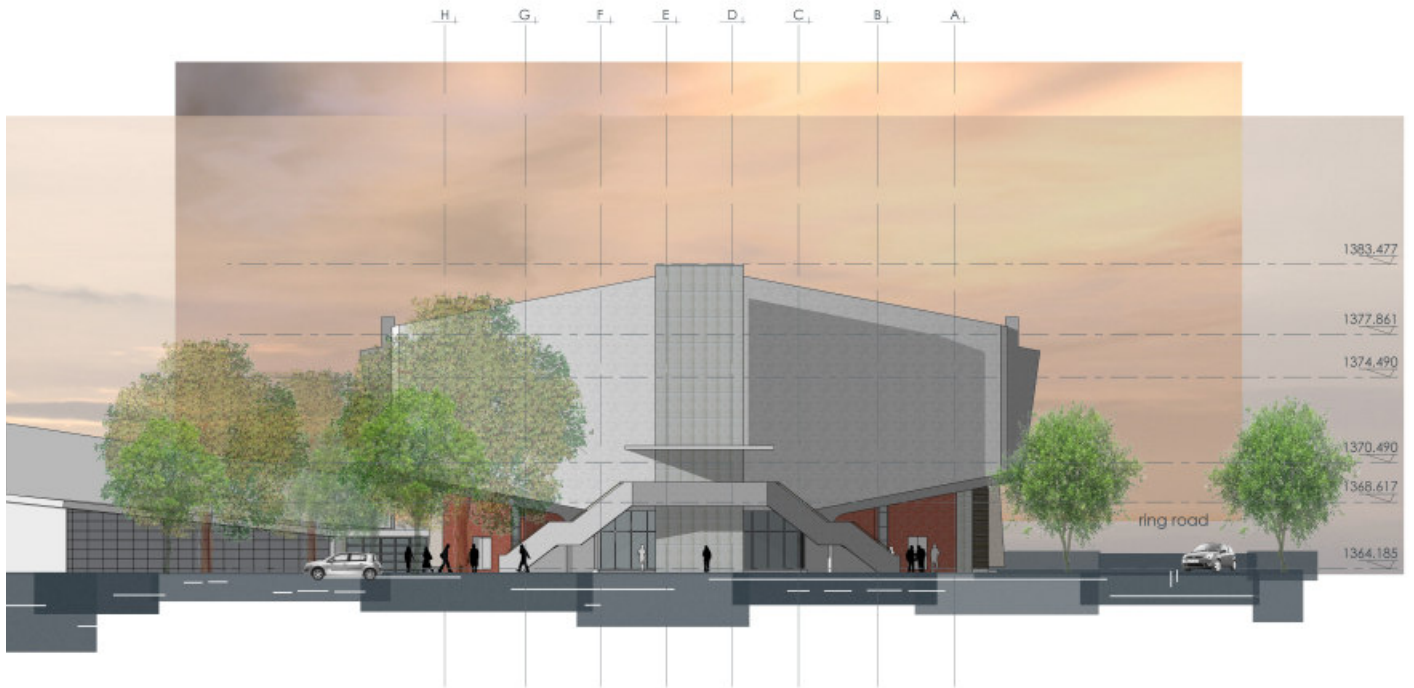
west elevation

& perspective





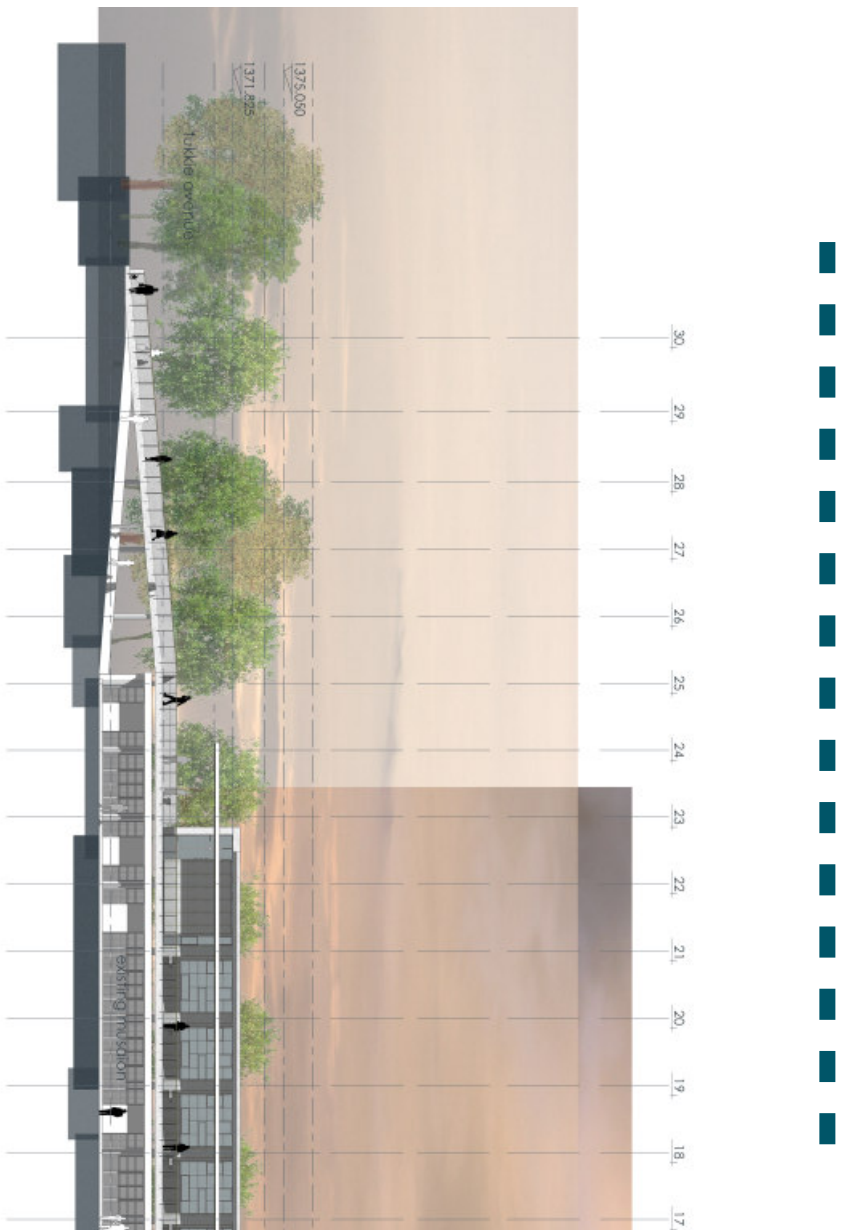
perspective



1 : 400

north elevation

& perspective





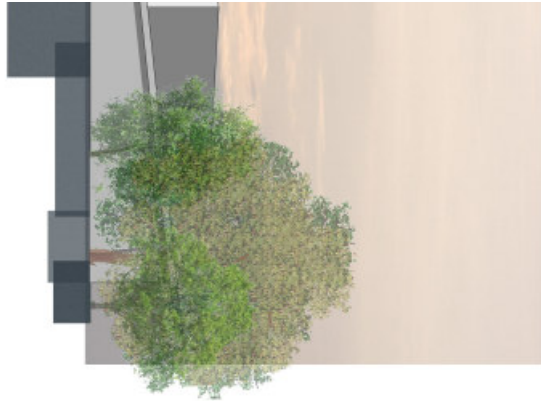
perspective





perspective

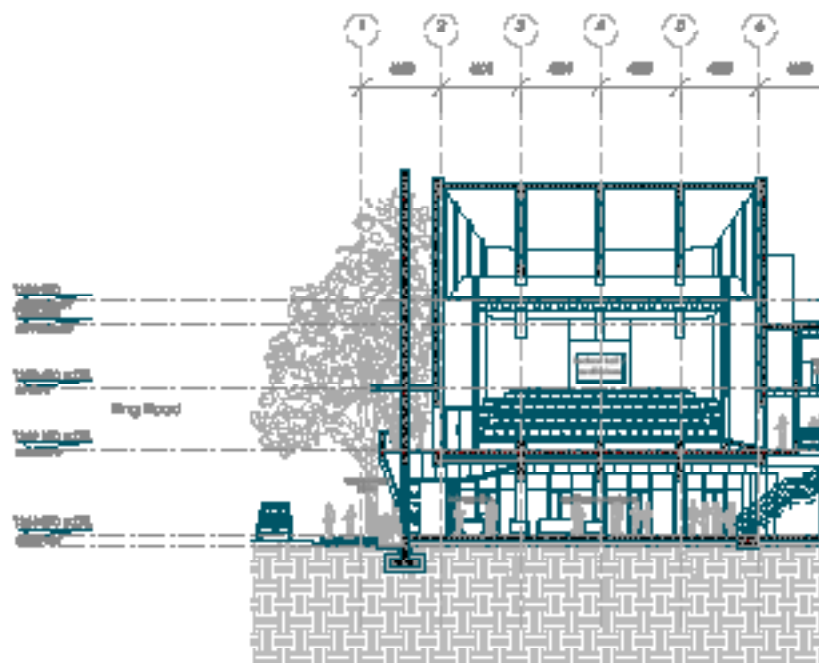
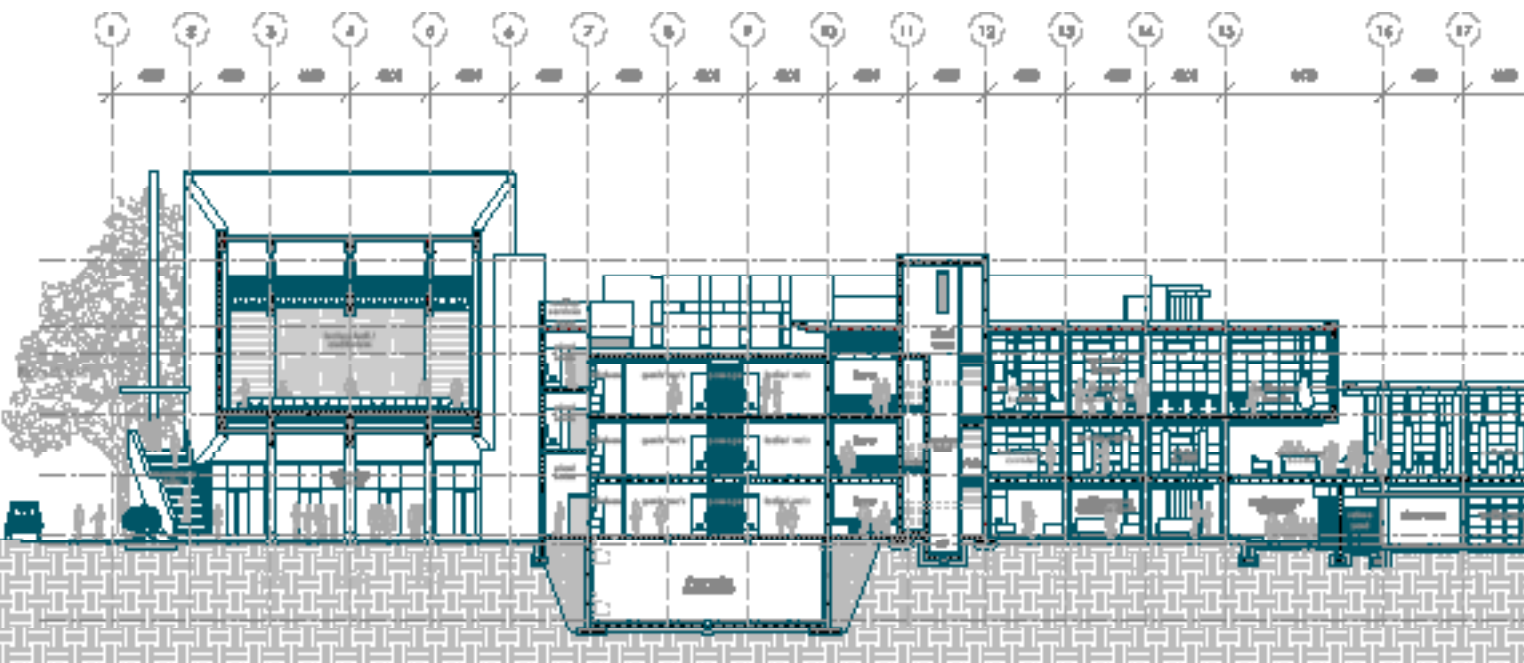


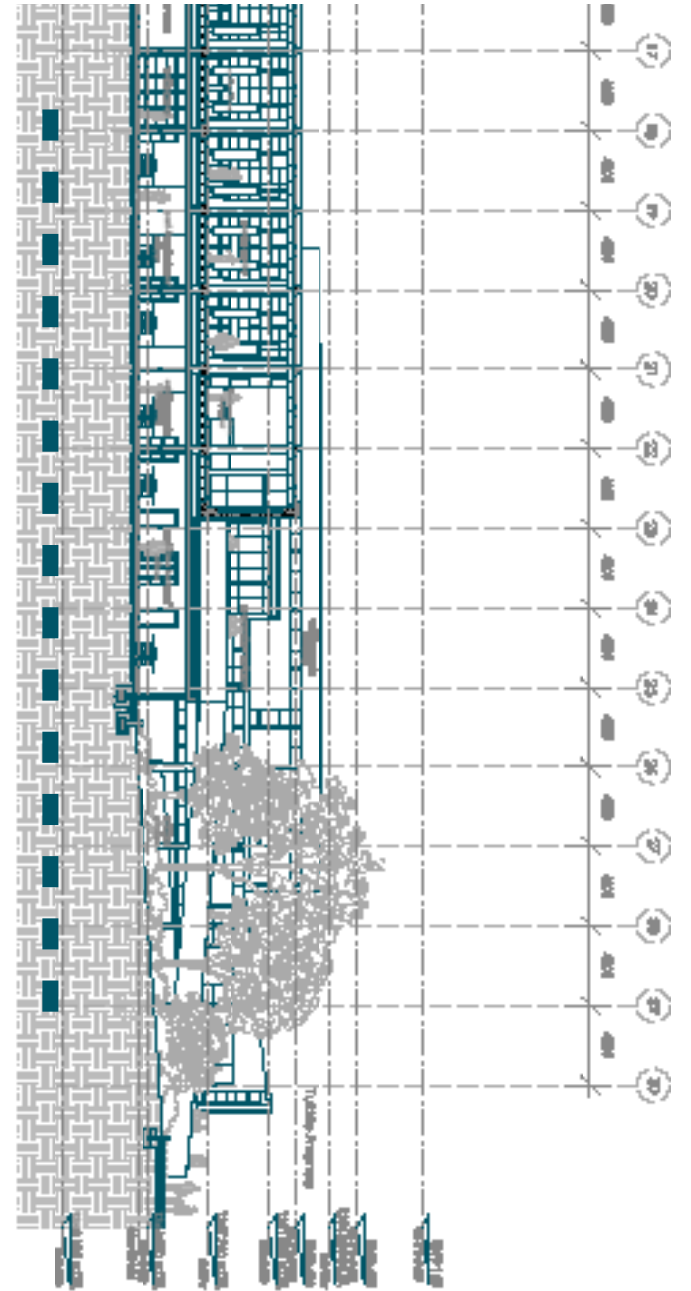
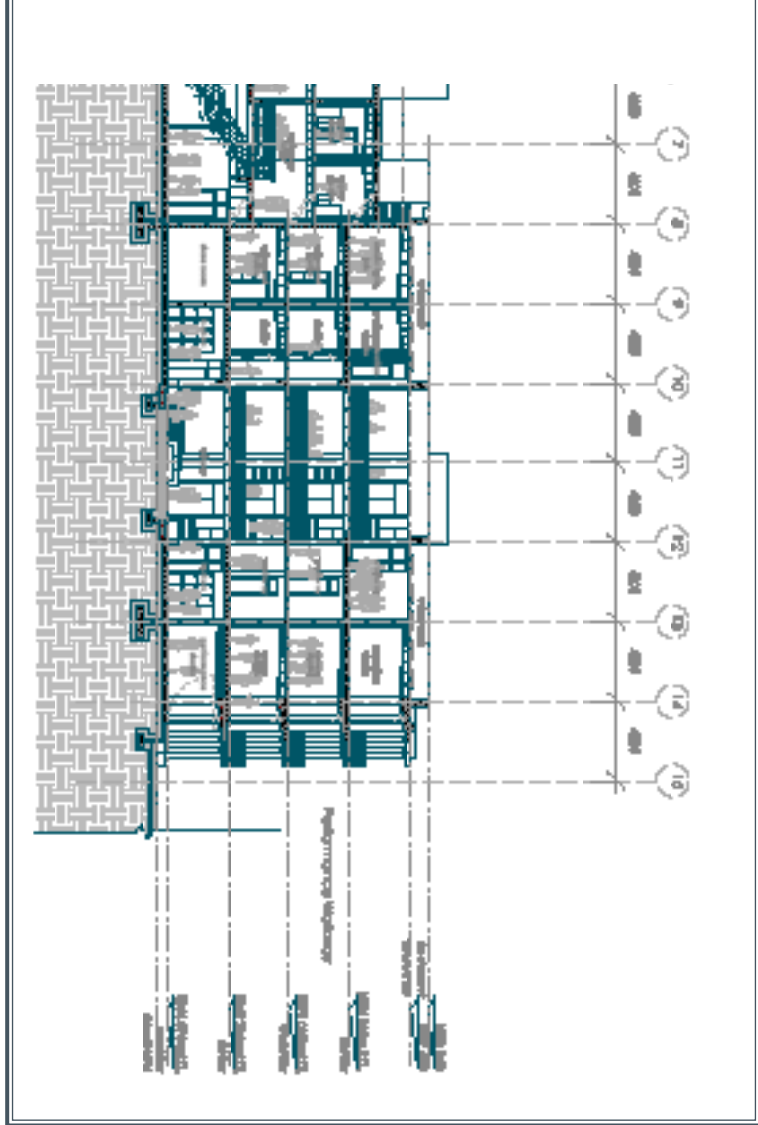


1 : 400

east elevation

& perspective

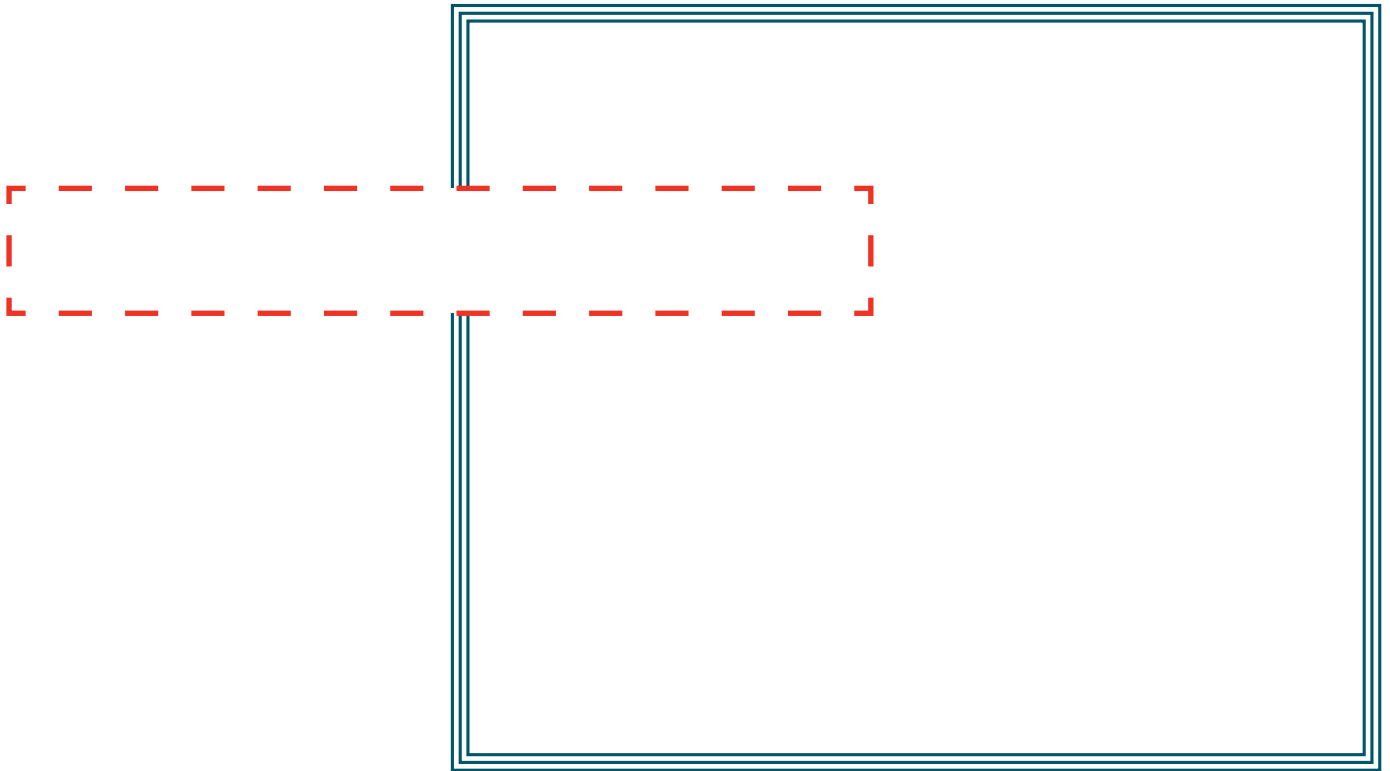




1 : 400 section A-A & B-B



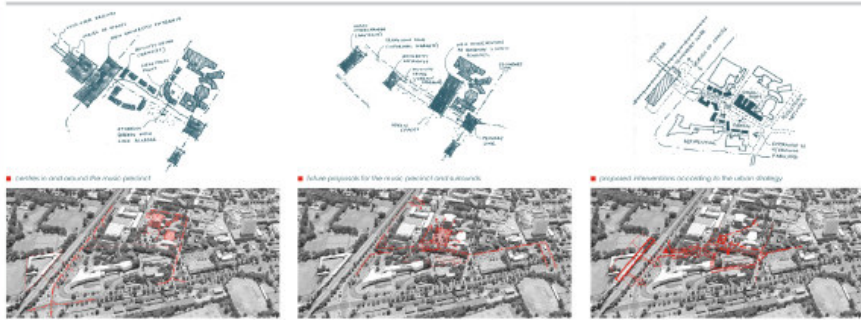
FINAL presentation





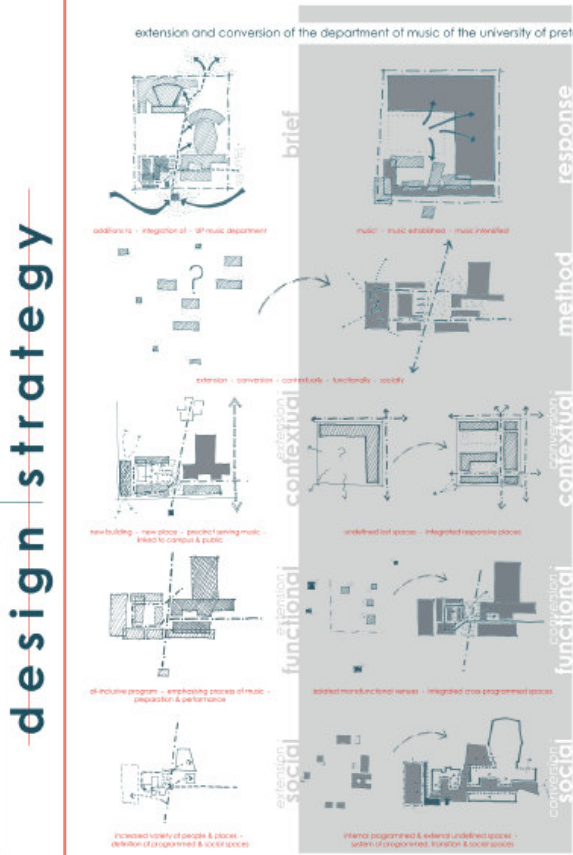
Locality Plan Music Precinct on Main Campus, University of Pretoria

urban strategy



MUSIC²

place of music
experience of music



design strategy



THE PRECINCT 1960's



KEY ISSUES

- The Auld Green is the former heart of Campus
- The site is the former soccer/football Hub of Campus - the sports fields
- The precinct buildings' architectural language announced the arrival of New Brutalism on Campus
- The precinct, especially the Auld, was designed with a public function
- The precinct established UP as a "centre of excellence in the arts"
- The precinct buildings are known as the "aesthetically fit" on Campus

SWOT ANALYSIS

Strengths

1. The existing building is a substantial historic project with an already established heritage, that is well known and can be used as a focal point for the "aesthetically fit" on Campus.
2. The existing building is a substantial historic project with an already established heritage, that is well known and can be used as a focal point for the "aesthetically fit" on Campus.
3. The site is a former sports hub, which provides a unique opportunity to create a public space with a strong sense of community and a focus on the arts.
4. The site is a former sports hub, which provides a unique opportunity to create a public space with a strong sense of community and a focus on the arts.

Weaknesses

1. The existing building is a substantial historic project with an already established heritage, that is well known and can be used as a focal point for the "aesthetically fit" on Campus.
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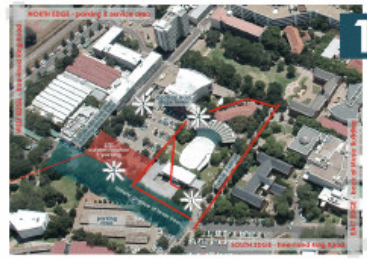
Opportunities

1. The existing building is a substantial historic project with an already established heritage, that is well known and can be used as a focal point for the "aesthetically fit" on Campus.
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Threats

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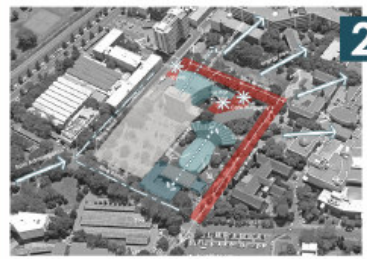
CONTEXT analysis



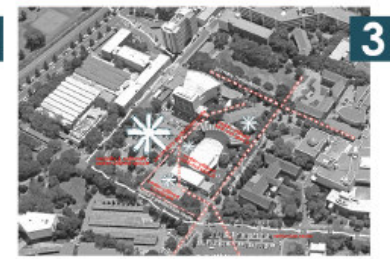
1

THE SITE - A PHOTO MONTAGE 2009

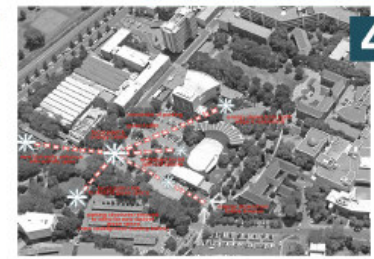
- location
- edges
- entrance points
- circulation routes
- functional zones
- energy hubs & flow
- orientations
- boundaries
- open spaces
- pedestrian routes
- vehicular routes
- site significance
- future possibilities
- contextual links
- precinct revitalisation
- parking solutions



2



3



4

GEOGRAPHY OF THE SITE

diagrammatic view of the site from the south-east

diagrammatic view of the site from the south

diagrammatic view of the site from the west

brazilian-influenced
pretoria regionalism

a human modernism
monumental modernism

a human modernism
new brutalism



law building

Main Campus, University of Pretoria
Krugetoos Architects, 2006

double-volume walkway / interaction space to courtyard
floating screen to define human scale
glazed south facade - relationship to "fever" tree-lined avenue
entrance extends into Tukkile Avenue
facades express internal functional spaces
formal grouping of similar functions
central atria connect separate functions
circulation expressed as sculptural lowers
auditoria as "free-standing" formal organic entity
building defines south edge of precinct
library - public - light - clarity of information
contrast to
acoustic spaces - private - solid
continuity of flow of ground floor
network of circulation & interaction spaces



centenary building

Main Campus, University of Pretoria
EarthWorld Architects & Interiors (Braam de Villiers), 2008

conversion of the modern language
sensitivity & respect towards existing fabric
continuing of existing grids / edge lines
ramp - transitional layer - internal spaces
circulation route as interactive / seating space
extended external walkways
foyer as place of choice
uncelebrated physical entrances
concrete fins / pilots on a grid
continuity of ground floor
articulation & formal expression of spaces
similar material palette as existing / surrounding buildings
iconic corner - human scale towards entrances



precedents

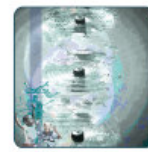
carpenter centre

Harvard University, Massachusetts, USA
Le Corbusier & Guillermo Juan de la Fuente, 1963

building axes along existing pedestrian routes
ramp to link building with Tukkile Avenue
ramp extends as circulation through building
functional spaces branch off central spine
structural support - columns on grid
continuity of urban space underneath building
functional blocks as intersecting rectangles
flat concrete roofs at different levels
brise soleil / setbacks to north & west facades
internal spatial expression on facades
unclebrated physical entrances
iconic corner - human scale towards entrances
articulation & formal expression of spaces
ramp - transitional layer - internal spaces



design theory



space
a perspective
based on
science



nature
a perspective
based on
beauty & grace



human
a perspective
based on
intuition

DESIGN
influences

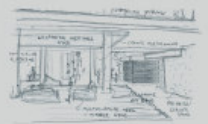
THE NATURE OF ORDER

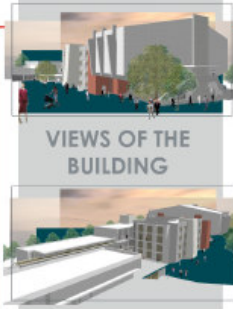
Christopher Alexander

centres
order
wholeness

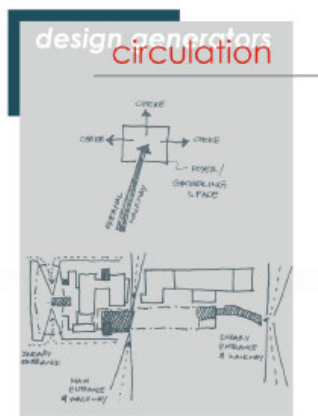
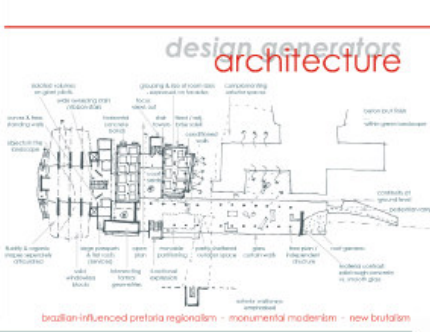
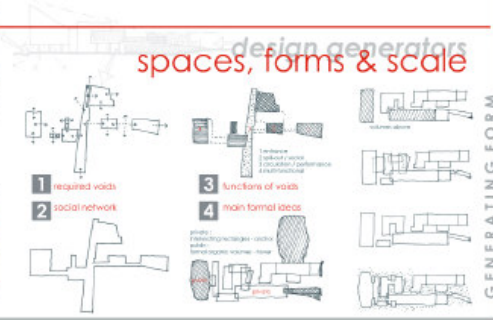
perspectives

matrices



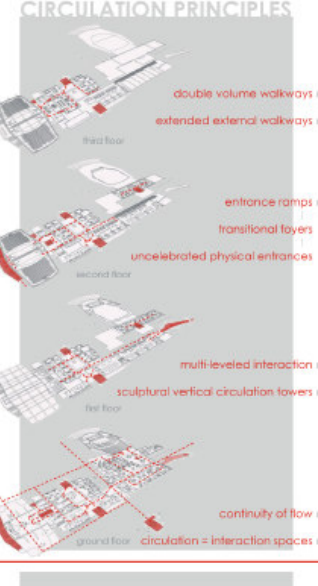
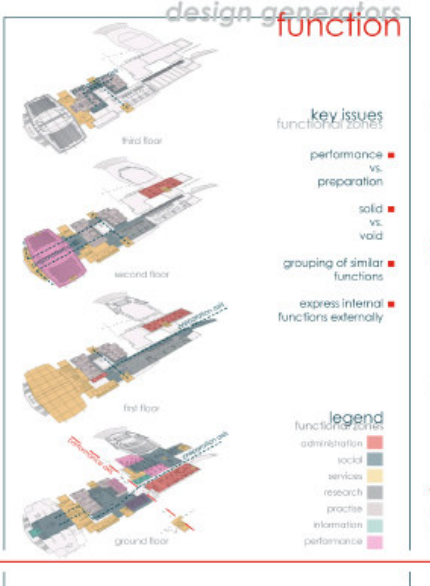
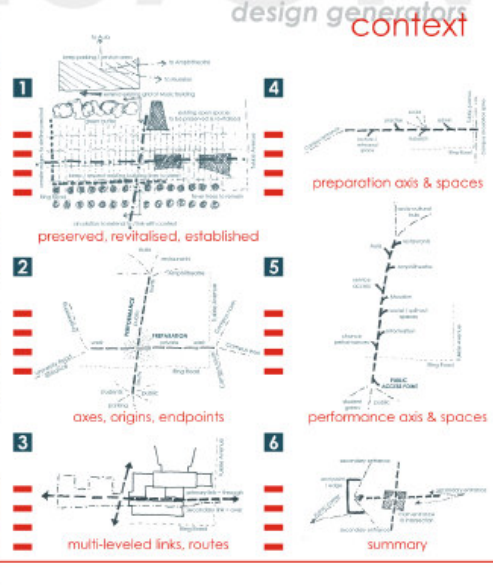
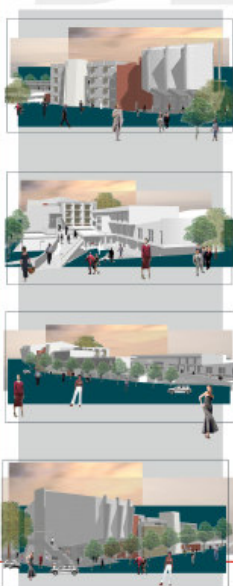


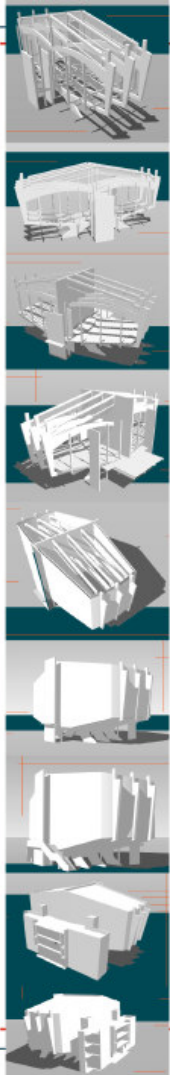
VIEWES OF THE BUILDING



DESIGN development

DESIGN





lecture halls auditoria

- shell construction
- cast in situ reinforced concrete
- Main Support**
 - 3x 400mm thick rc slab, 5165mm wide, @ 4005mm c/c
 - internal span between supports = 12,350mm
 - cantilever = 11,000mm
 - depth of beams = 850 - 1025mm
 - width of columns = 1165-1750mm
 - depth of overhead cradled beam = 1000 - 2000mm
- Roof Support**
 - overhead cradled beam (part of concrete fins)
 - steel girder truss depth = 2050mm
- Roof Slab**
 - rc 1-way slab, 255mm thick
 - integrated downward beam depth = 460mm
- Floor to Auditoria**
 - cast in situ rc stepped slab, 255mm thick
 - slage = 185mm thick rc slabs with 340mm upstand beams
- Secondary Support**
 - 230x500 rc columns and beams @ max. 4940mm c/c

- External Skin**
 - tripple layer, 350mm thick, consisting of:
 - 115mm external brick skin
 - 100mm sound insulation cavity
 - 115mm internal brick skin
 - additional sound insulation
 - 50mm mineral wool blanket
 - 8mm perforated commercial plywood panels

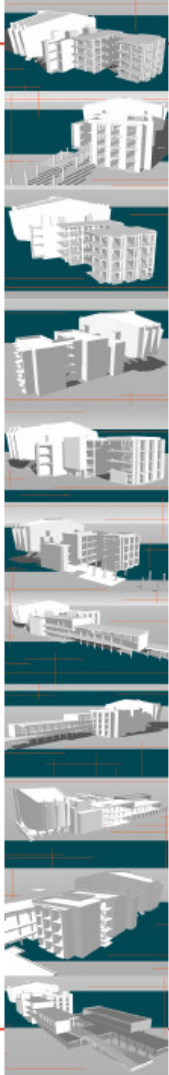
- Free-standing Walls**
 - 330mm thick rc walls lead as free-standing plates, act as support to main structure & define entrances & spaces

service block stage tower

- Main Support**
 - solid load-bearing brick structure
 - 230mm thick brick walls
 - external brick skin to be red face brick
- Floor Slabs**
 - cast in situ rc slabs, 255mm thick
- Roof**
 - cast in situ rc slab, 255mm thick
 - 460mm downward beam on perimeter
 - 230mm thick brick parapet, 1315mm high

circulation stairs & ramps

- Main Support**
 - 230mm thick UltraCon load-bearing blocks
- Floor Slabs / Landings**
 - cast in situ rc slabs, 170mm thick
- Roof**
 - cast in situ rc slab, 255mm thick
 - 230mm upstand beam on perimeter



practise block studio spaces

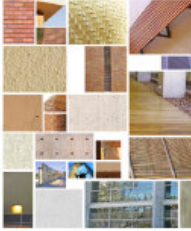
- Main Support**
 - rc columns on a grid of 4205mm x 4740mm max, 340 x 340mm columns or 340 x 440mm columns (with rwp included)
- Floor Slabs**
 - cast in situ 1-way rc slabs, 255mm thick
 - integrated downward beams, 255mm deep
- Roof**
 - cast in situ rc slab, 255mm thick
 - 900mm upstand beam on perimeter to create deep parapet
- External Skin**
 - tripple layer, 350mm thick, consisting of:
 - 115mm external brick skin
 - 100mm sound insulation cavity
 - 115mm internal brick skin
 - additional sound insulation
 - 50mm mineral wool blanket
 - 8mm perforated commercial plywood panels

ablation block core facilities

- Main Support**
 - solid load-bearing brick structure
 - 230mm thick brick walls
- Floor Slabs**
 - cast in situ rc slabs, 255mm thick, 1-way span
- Roof**
 - cast in situ rc slab, 255mm thick
 - 460mm upstand beam on perimeter & of openings

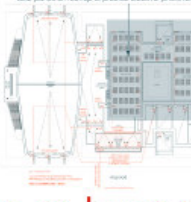
media centre & research lounge

- Main Support**
 - rc columns on a grid of 4205mm x 2640mm
 - 340 x 340mm columns or 340 x 440mm columns (with rwp included)
- Floor Slabs**
 - cast in situ rc slabs, 255mm thick, 1-way span
 - 255mm downward beams (1010mm total slab thickness)
 - chamfered edges, 700mm wide
 - cantilever (north) = 2300mm
 - cantilever (south) = 2000mm
- Roofs**
 - cast in situ rc slabs, 255mm thick, 1-way span
 - 255mm upstand beams (1010mm total slab thickness)
 - chamfered edges, 700mm wide
- Wall**
 - glass & aluminium curtain wall / windows
 - brickwork



materiality

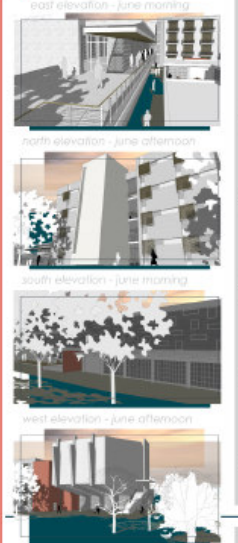
- Roof steel:** 250200
- Auditorium:** 250200
- Service block:** 16000
- Abatement block:** 4000
- Practise block:** 20000
- Circulation tower:** 4000
- Research lounge:** 20000
- Media centre:** 31000
- Facilities block area:** 18100
- Roof slab:** 250200
- Roof storage capacity:** 250 225
- Capacity design capability:** 250 225
- At 30% penetration:**



natural systems



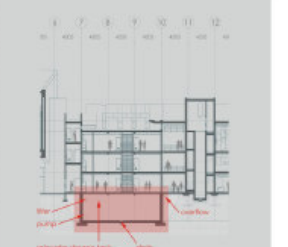
sun study



TECH

resolution

ENVIRONMENTAL SYSTEMS



hybrid system photovoltaic photosynthesis

