

binary response
film centre 001011 for the gasworks precinct

produced by Phia Groenewald

*Submitted as part of the requirements for the
degree of Magister in Architecture (Professional) in
the Faculty of Engineering, Built Environment and
Information Technology.
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Braamfontein, Johannesburg is being significantly overhauled. The community can soon reclaim the Egoli Gasworks, where that site will be declared as a brown field site seeking development opportunity and integration with its adjacent surroundings.

The treatise explores the opportunities created by the reclaimed lost space of the Gasworks Precinct. The culturally significant industrial heritage of the site serves as starting point for the decision-making.

Facilities and communities in direct adjacency to the site guide decision making regarding the function of new edifices in the precinct. The assessed surrounding characters solicited functions geared for a media and film orientated precinct.

The Gauteng Film Office, in conjunction with Gauteng premier Mbhazima Shilowa and the MEC for finance and economic affairs, Jabu Moleketi, recently hosted a two-day film indaba at the Johannesburg council chambers in Braamfontein aimed at exploring avenues for making the film industry lucrative to both local and international filmmakers. The indaba addressed the challenges facing Gauteng and South Africa's film industry, such as encouraging and promoting local filmmakers and actors, upgrading the skills of filmmakers, and marketing South African films so they appeal to an international audience.

(Johannesburg News Agency: www.joburg.org.za;))

A film centre, comprising of a museum and cinema is the chosen function for the design dissertation. The centre serves as a medium to draw people into the precinct and as a middling to communicate to the public. Both the museum and cinema serve as mediums to promote the South-African film industry locally and internationally.

Consequently, the treatise design is a binary response to the influences posed by the cultural significant site of urban-industrial character, and that of an ever-changing world of digital film and video technologies.

The investigation for the new architecture for the Film Centre explores the territories of film in the digital age, and its relevance in the making of place. Assessed existing patterns in the architectural landscape form the base of the design regarding form, scale and visual appropriateness.

Binary = dual/ twofold

=using the two number 0 and 1 in computer programming (binary code)

Refer to digital age of new media technologies

Response = reaction/retort

Refer to reaction on context and retort buildings



Look at it this way:

The game of architecture is an intricate play with rules that you may break or accept. These rules, like so many knots that cannot be untied, have the erotic significance of bondage: the more numerous and sophisticated the restraints, the greater the pleasure.

ropes and rules

The most excessive passion
always involves a set of rules.
Why not enjoy them?

An Advertisement on architecture, Bernard Tschumi, 1977 (Damiani, G. 2003. p 31)

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To my family: thank you for making all this possible, I love you so...

binary response
film centre 001011 for the gasworks precinct

produced by Phia Groenewald



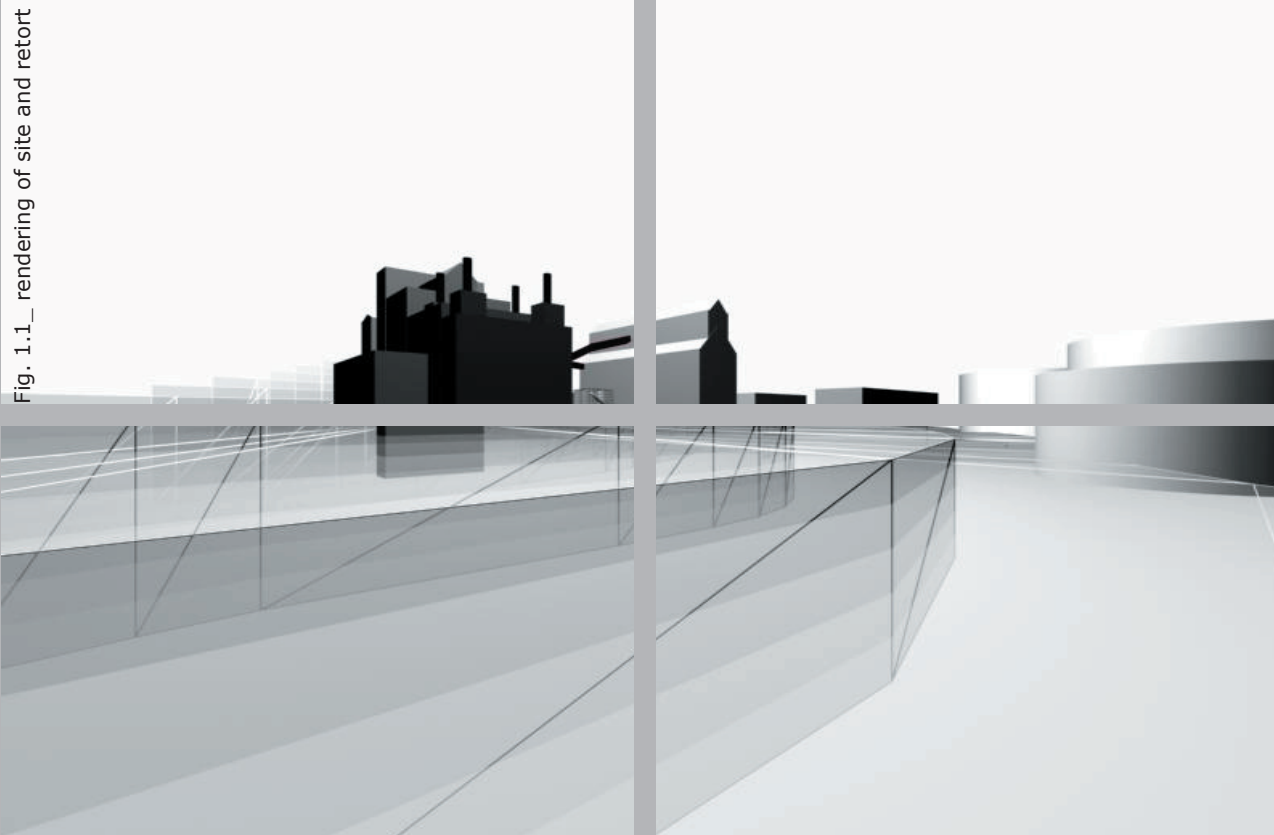


Fig. 1.1.1_ rendering of site and retort

[01][01] LOCATION OF GASWORKS PRECINCT

The chosen Site for the design discourse is the Egoli Gasworks site in Johannesburg. The site is in the suburbs of the Braamfontein Werf and Cotlesloo, partly industrial zoned and partly municipal owned. Owl Street to the North, the University to the East, Annett Street to the West and the University sports grounds to the South border the site in.

image information:
background_rendering
of retort building

[01][02] PROBLEM BACKGROUND AND SITE MOTIVATION

Johannesburg is a victim of the 1990's capital flight to the northern suburbs. In the past 3 years however the city has witnessed a reversal in the downward trend of inner-city decline.

Today the city is putting substantial resources into turning around the troubled central district (CBD). The crime rates are down thanks to intensive policing, occupancy rates are up and investments are increasing as confidence improves.

In September 2002, it was declared by JDA that Braamfontein was set for a major revamp, aimed at renewing its role as a centre of business and entertainment in Johannesburg.

Apart from development schemes to the east of Wits University, the west of Braamfontein is also witnessing major revamps. The Braamfontein Werf west of the university campus was recently transformed into exclusive loft apartments, with a waiting list of 3 years. People are sold on the concept of urban lifestyle, it is evident that the need for city living is making its comeback. (Johannesburg Spatial Development Framework)

The Egoli Gasworks site west of the university is opening up for development opportunities in 2006, when Egoli-Gas's main gas supply will come from Mozambique via a converted gas line through Secunda. In future only one Gas tower on site will be used as a reservoir, and the rest

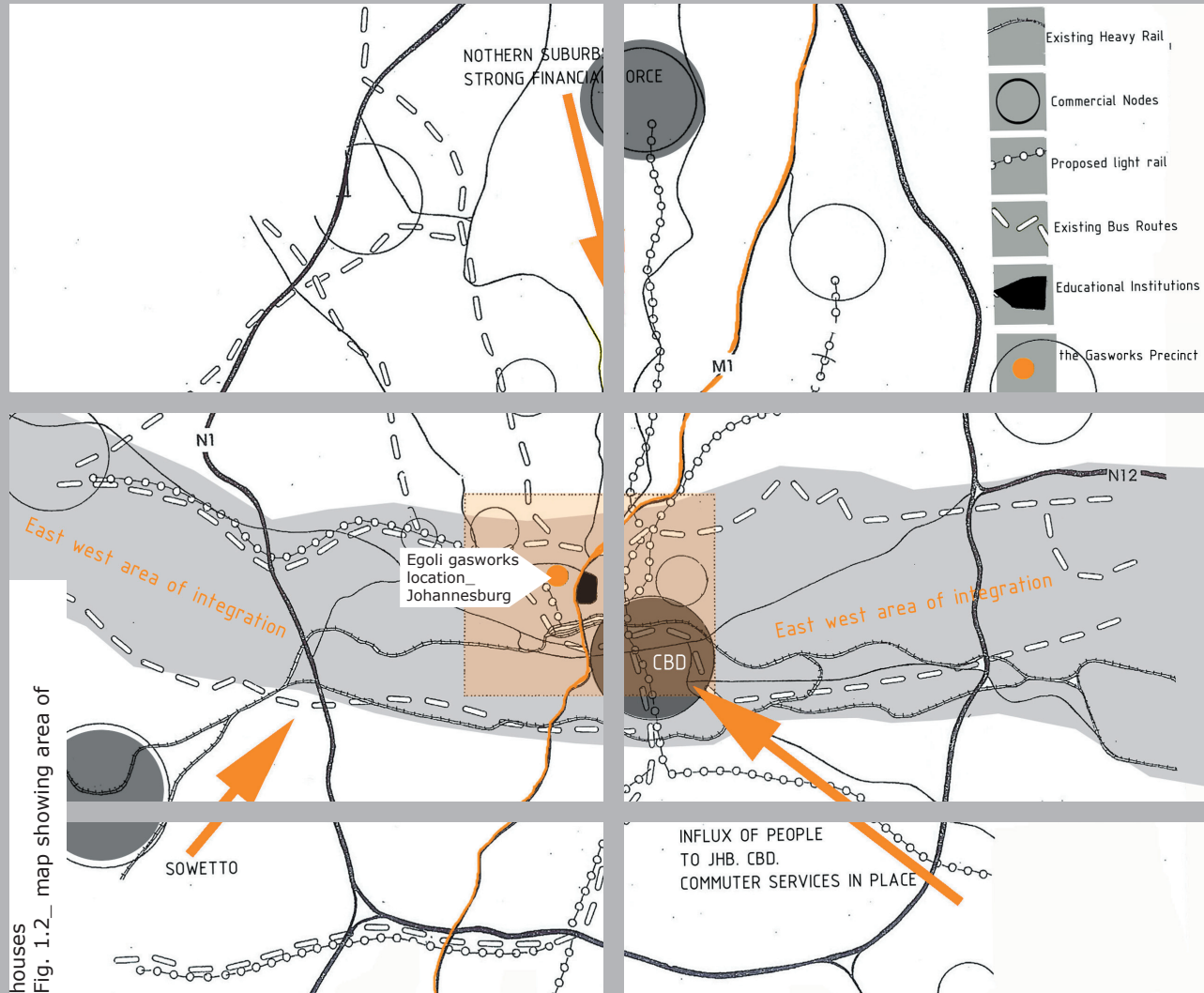
will be declared as redundant.

With this in mind, the majority of the site will lie derelict and it will be classified as contaminated brown-field site. The site will be an isolated land parcel due to its underdeveloped nature, not sufficiently integrated with its denser surroundings.

Apart from the sites excellent situation and access within the CBD, the site offers a contextual character that is uniquely industrial. This inimitability heralds the opportunity for redevelopment, generating a dynamic urban environment, with a definite sense of place

The Need for redevelopment and densification of the site is influenced by the following:

- The public interest in Multi-functional Urban developments
- Johannesburg Spatial Development Framework's vision to integrate individual sites within the east-west corridor of Johannesburg
- Both Atlas Bakery film studios and AFDA film school in immediate adjacency to the Gasworks are seeking ground to expand.
- The Gasworks is an underdeveloped land parcel. Redevelopment of the Gasworks will mend the gap in the urban fabric, reclaiming lost space. The site will no longer function as an isolated site after densification and integration with its immediate surroundings.



[01][03] CITY CONTEXT

Two major corridors have been identified in Johannesburg: the east-west corridor and the north-south corridor. The Gasworks site falls within the east-west corridor.

According to Johannesburg's Spatial Development Framework, the development of corridors has been identified as one of the necessary instruments to restructure the city.

Corridors are linear tracts of land containing a variety of transportation modes, especially public transport, and a variety of intense and dense land uses. Corridors therefore contribute to economies of urbanization; to more efficient service provision; and to better public transport. People living near corridors can access a wide range of opportunities distributed along the corridor.

The east-west corridor runs roughly midway across the city from the eastern boundary to the western boundary. This corridor contains the mining belt which has been traditionally perceived as a barrier to the integration of the northern and southern parts of the city. The corridor accommodates an existing railway line with a number of stations. There are good east-west road linkages but few north-south roads. Many of the existing industrial, commercial, retail and residential areas adjoining this corridor are not operating at optimal levels. The challenge is to harness the opportunities in this area and turn it into a vibrant mixed-use urban environment with a thriving economy. (Johannesburg Spatial Development Framework)

image information:
background_rendering
of retort building

- upper income
- upper to middel income
- middel income
- low income

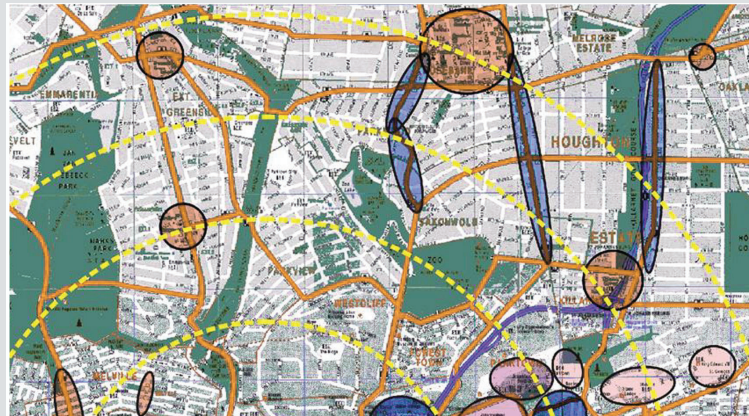
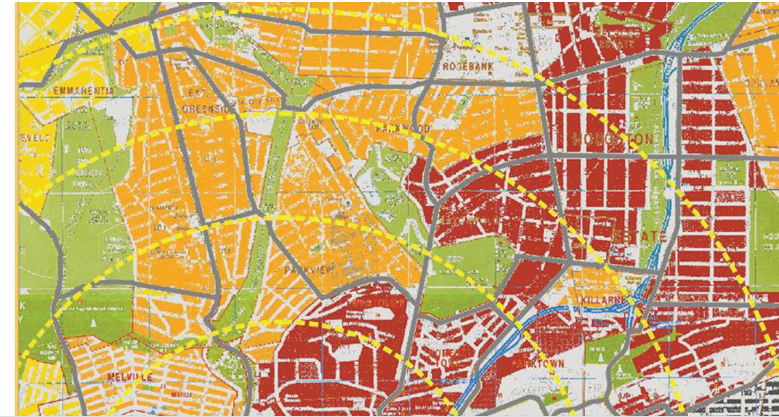
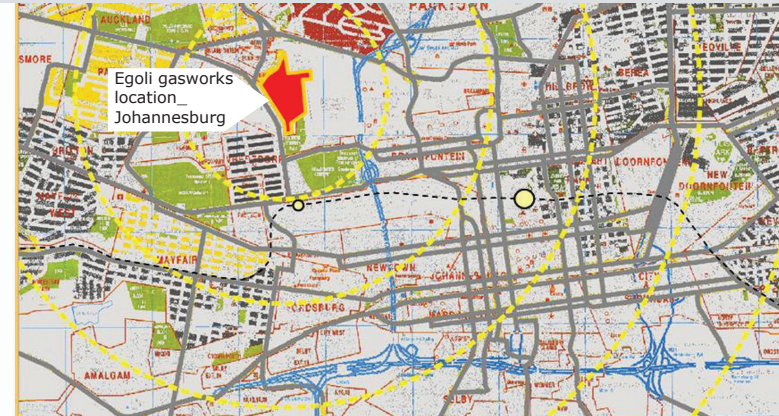


Fig. 1.3_ map showing activity nooks



integration and activity nooks



- institutional nodes
- office nodes
- mixed use nodes
- green open space
- mining and industrial belt
- one circle indicate 4km distance

[01][04] REGIONAL CONTEXT
[01][04][01] ACCESS AND ACTIVITY
NODES

Although the site exists as an isolated land parcel, it is easily accessible and nestled between nodes of high activity. The site is located within walking distance of major access roads (Annette Road, Owl Street and Frost Street, Empire Road) as well as the rail link 11 km to the south.

Furthermore the site is in close physical affiliation to education, commercial and residential facilities, which heralds an increased opportunity for investment and redevelopment.

[01][04][02] RESIDENTIAL STRUCTURE

The Gasworks location is of such that new developments can both serve the wealthy northern suburbs as well as the lower income groups around the CBD.

The most dominant financial force comes from the northern suburbs of the city. Since the gasworks site is physically situated on the edge of the inner city, the development has the potential to make use of people commuting to the CBD from the north.

The new development has the potential to become a true “new-urban” environment, by accommodating diverse income groups’ through a residential component. This may include housing for students, young upcoming professionals and business people making use of the CBD.

The general population density surrounding the Gasworks site is medium to high, with high population density areas within commuter distance of the site. The most prominent high-density area to consider is Johannesburg CBD.



Fig. 1.4_ map showing residential

image information:
background_rendering
of retort building

structure



[01][04][03] LOST SPACE

The site is an isolated land parcel, not sufficiently integrated with its surroundings.

Physical entities contributing to the site's isolation are the Braamfontein Spruit, the University on the east and fast moving traffic along through roads such as Empire Road and Annette Street. The underdeveloped nature of the site further contributes to its isolation, since it exists in contrast to its adjacent denser surroundings.

It is currently the only piece of industrial ground within an area with educational, commercial and residential land-uses. The nearest industrial property is the railway to the south about 2 km away. The site heralds an opportunity to create a special place of identity by capturing the site's industrial history.





[01][05] SITE CONTEXT

[01][05][01] TOPOGRAPHY

Topographically the site is situated between two ridges forming a gateway. The topography creates interesting vistas to and from the site and the visual impact of the redevelopment need to be considered through the design investigation.

[01][05][02] HYDROLOGY

The Braamfontein Spruit flows northwards linking up with the open space of Parkview Golf course, Craighall Park and then Riverclub Golf Course. The potential arise to link these green areas by creating a continuous green corridor of open space.

Fig. 1.5_ aerial

image information:
background_rendering
of retort building

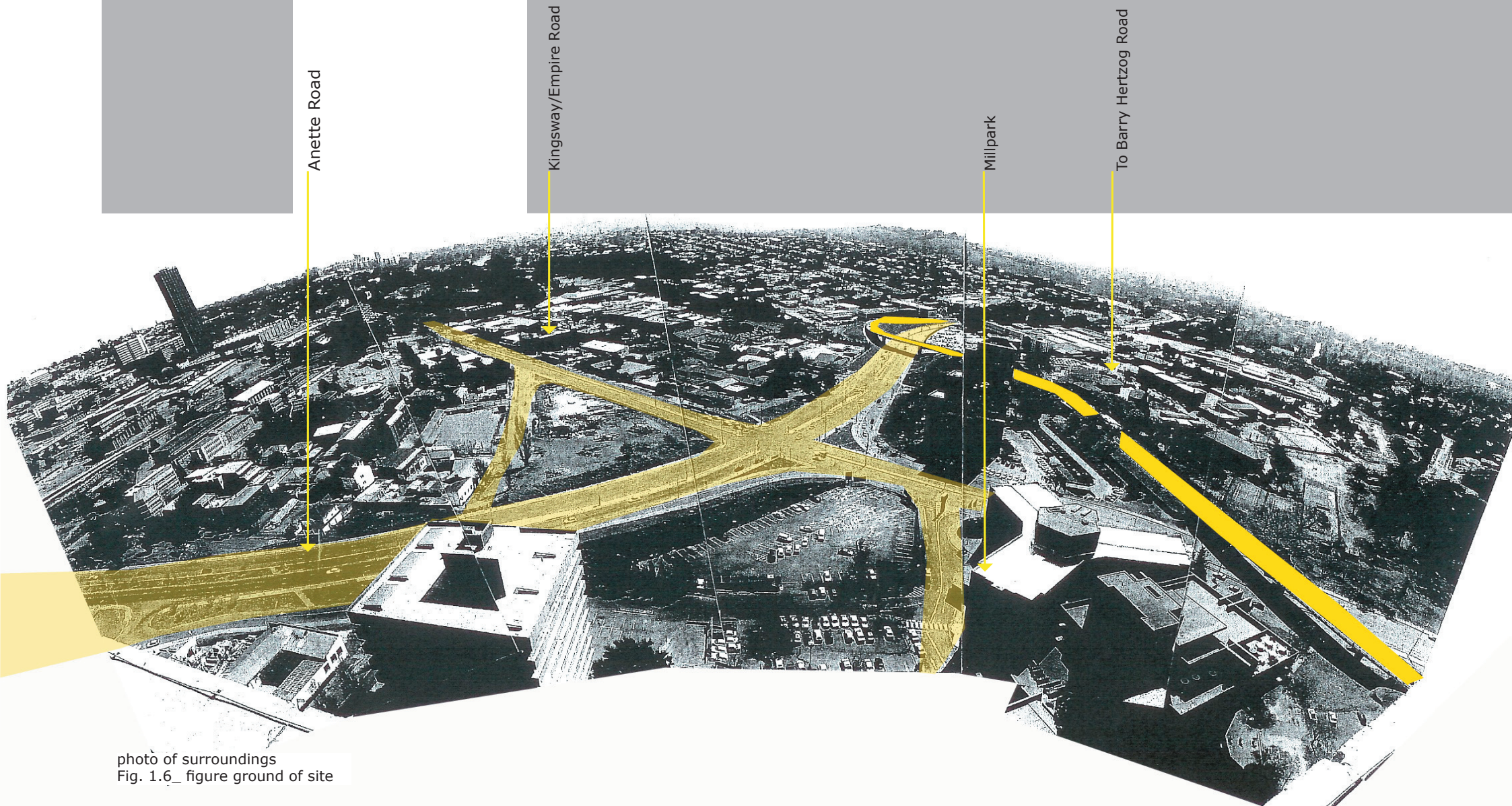
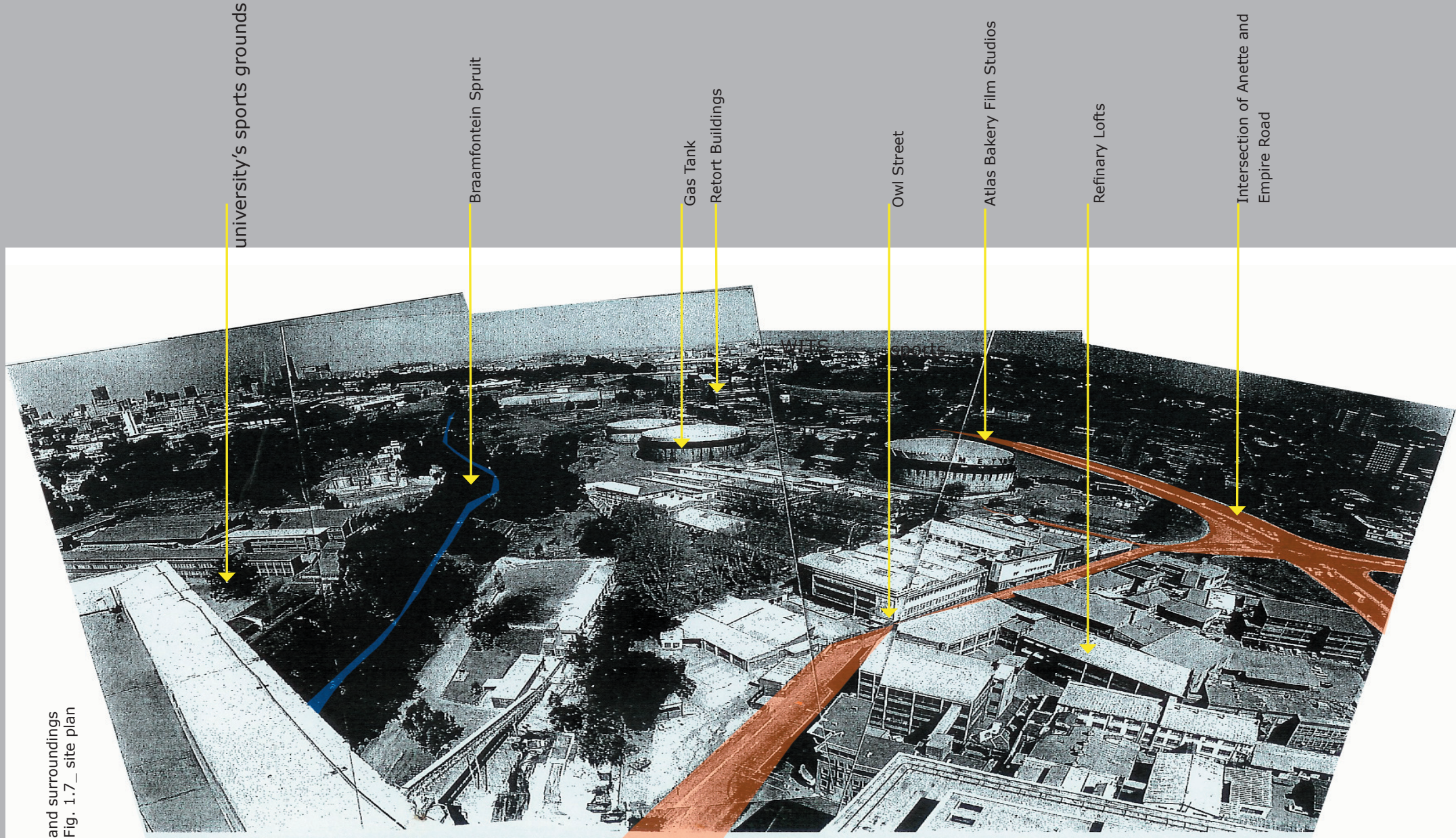


photo of surroundings
Fig. 1.6_ figure ground of site



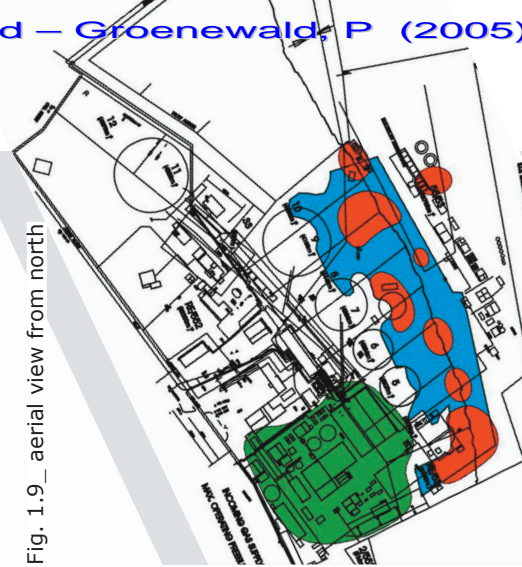
and surroundings
Fig. 1.7 _ site plan

image information:
background_rendering
of retort building

Fig. 1.8_ aerial view from north taken
from Millpark



Fig. 1.9_ aerial view from north



contaminated area
approximate area of known pollutants
general area of borehole tests

[01][05][03] CLIMATE

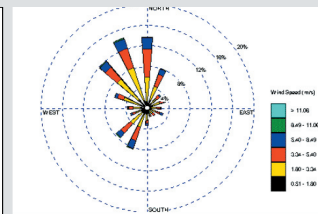
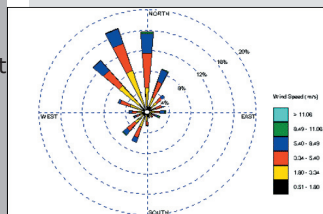
Precipitation averages ranges from 600-800 mm per annum

Some extreme Temperatures and Rainfall Values for Johannesburg are as follows:

Month	Highest Max Temp	Lowest Min Temp	Highest 24 Hour Rainfall	Highest Monthly Rainfall
January	35.4	7.2	188	338
February	33.5	6	56	191
March	31.9	2.1	92	219
April	29.3	0.5	50	130
May	26.4	-2.5	70	80
June	23.1	-8.2	31	59
July	24.4	-5.1	17	22
August	26.2	-3.1	21	47
September	31.1	3.3	62	175
October	32.2	0.2	110	198
November	32.9	1.5	65	230
December	32.4	3.5	102	181
Year	35.4	-8.2	188	1019

South African weather services
www.weathersa.co.za

The prevailing wind direction is generally from the North and North West. August and September show significant wind flocculation. The wind roses included give a better understanding about wind-direction and wind speeds during these months.



[01][05][04] DEVELOPMENT CONSTRAINTS GAS PIPES

An underground gas pipe network covers most of the northern part of the site. Redevelopment options must be cautious to these gas lines, since they will remain operational, providing Johannesburg with gas.

SERVITUDE OF TURBINE COMPLEX

The turbine complex is a back-up diesel generator complex, currently used by the Egoli Gasworks. This complex may function as a backup generator for the new development. A servitude or buffered area is provided around the complex to minimize associated health and safety constraint posed by such a complex.

ENVIRONMENTAL CONTAMINATION

One of the mayor constraints of the site is soil-contamination. The eastern section of the site is contaminated with waste materials accumulated over a period of 60 years. Pollutants include; polyaromatic Hydrocarbons or PAHs, Benz(a)anthrance, arsenic, tar residues, sulphates, ammonia, chloride, manganese and lead.

The waste materials are overlying the concrete culvert that transfers the Braamfontein Spruit and storm water through the site. At present, the culvert demonstrates seepage from overlying waste and there is evidence of corrosion as well as the contamination of the Braamfontein Spruit. Contamination has even reached the deeper aquifer system. The permanent aquifer is ca. 15m below the existing ground surface. There is, however, no evidence that contamination is leaving the site other

[01][06] HISTORICAL CONTEXT**[01][06][01] HISTORY**

The Gasworks site is part of the Farm Braamfontien 127. The suburb of Cottesloe was proclaimed in 1905. The Braamfontien Spruit originally started from the Braamfontien cemetery northwards, fed by natural springs. Storm water drains were installed upstream in a single culvert on the Sturrock Park/ Gas boundary.

The old Gas Works in President Street shut down 23 December 1928 and was moved to the new site in 1928-1929. In the 1930's the culvert continued to Owl Street.

Today the site is only used for storage facilities. The gas is no longer self produced on site, but brought directly from Sasol.

The site offers a rich context of industrial heritage. The heritage manifest in both the built environment and that of the bio-physical environment.

The site includes a collection of red brick industrial buildings with interesting and rare steel functional attachments. The industrial characters of these buildings are enhanced by freestanding steel structures like hoists, chimneys, conveyer belt and walkways.

A historic and conservation assessment was undertaken by Mr. D van den Heever (Director at GAPP Architects and Urban designers, specialist in Conservation and Restoration in architecture. According to him the retort houses (built amid 1939-40) can be classified as a typical example of an industrial building dating from the World War 2 era. The Gas cylinders (containers) were pre-manufactured in England; the earliest in 1936.

than via the seepage of the culvert. There is no data to confirm that seepage from the site is not penetrating the aquifer. It may be possible to intercept the aquifer prior to leaving the site boundaries if necessary

Contamination in the valley of the Braamfontein Spruit is leading to the following forms of water contamination:

- surface water
- piped/culvert water
- ground water and aquifers

image information:
background_rendering
of retort building

taken from Millpark



Fig. 1.10_ gas pipe constraints and turbine hall servitude



The industrial heritage is also imprinted on the bio-physical environment. Ruins of old gas containers, foundations and concrete purification platforms form sculptural land-art embedded in the site. The contaminated soil adds to the site's industrial history, with borehole test point and tar filled storage tanks playing as mayor contributors.

Diverse open spaces around and in-between buildings contribute to opportunities for adaptive re-use and densification of the site.

[01][06][02] EXISTING BUILDINGS

The Gas-tanks and the Retort Houses significantly contribute to the identity and legibility of the Gasworks' site surroundings.



Fig. 1.11_ contaminated area
Fig. 1.12_ north elevation of retort



house #1
Fig. 1.13_ east elevation of retort

image information:
background_rendering
of retort building



Fig. 1.14_ south-east view of retort

house #1





houses

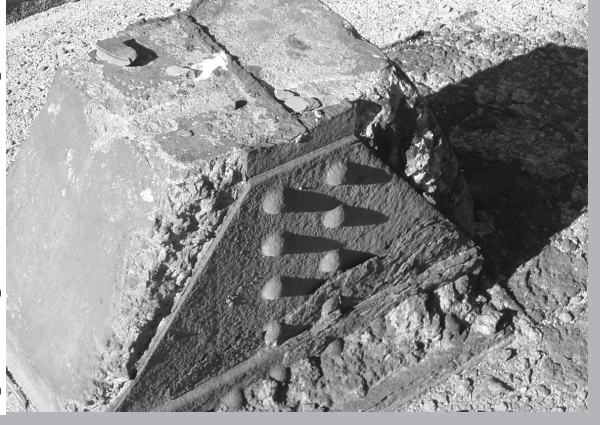
Fig. 1.15_ south view of retort house #2



Fig. 1.16_ interior of retort house #2



Fig. 1.17_ interior of retort house #1
Fig. 1.18_ gas tank and existing dams





The urban design framework is a culmination of personal ideas, ideas inspired by urban design theory and guidelines introduced by Gapp Architects and Urban designers.

[02][01] STAKEHOLDERS

[02][01][01] CLIENT

The Identified Client is a shared venture between Egoli Gas and Lifestyle Lofts (Pty) Ltd. Lifestyle Lofts is a dynamic design and development company that has proved its vision and talent on projects such as the Refinery. A turnkey group comprising of architects, designers and builders have pioneered loft living in Johannesburg and inspired developments around the country. Egoli Gas will supply the site for further development.

[02][01][02] INVESTORS

Possible Investors identified are the following:

- Investec
- Nedbank
- Blue IQ for the expansion of the AFDA film campus and the Film Center
- Industrial Development Corporation
- (IDC opened a film and media division in 2001 that focuses on the promotion of the South-African film/media industry.

[02][01][03] USERS

The Precinct will attract a diverse and sophisticated market of users and will financially support surrounding communities by creating employment and education.

Users of the precinct will include:

- People involved in media, film and creative arts
- Film directors, editor and actors and film producers
- Advertising companies
- Architects and designers
- Artists
- Students of AFDA, Wits Tech and university and RAU University (Recreational, retail and campus facilities)
- Professionals interested in an alternative urban life-style. Young married couples (loft living)
- Business people using the inner city (Boutique Hotel)
- A sophisticated market of Leisure seekers
- Community members of areas such as Vrededorp, Fordsburg and the CBD will be employed and trained.
- Individuals interested in film education and entertainment.

image information:
background_site

[02][02] VISION FOR THE PRECINCT AS SPECIFIED BY THE CLIENT

"The vision is to create an urban environment that is a unique, dynamic and interactive precinct that will link up to existing and ongoing projects in the surrounding Milpark and Auckland Park and Braamfontein areas.

Functions within the urban environment should be geared towards media and creative personalities. The conversion of the existing buildings and all architectural additions should not undermine the integrity of the existing structures. The hope is to create a strong social dynamic throughout the site, an atmosphere of creative sharing and a feeling of security, tranquility and health. The complex should reflect an eclectic mix of ideas, held together by a common thread to attract a more diverse and sophisticated market." **(Ricci Pollock, Lifestyle Lofts)**

A. van Eyke said the following regarding place:

"Whatever space and time mean, place and occasion mean more...Space has no room, time not a moment for man...Make of each door a welcoming and give a face to each window. Make of each place, a bunch of places of each house and each city..." "A place has its roots in its history; it is anchored in time and in a precise spot on the earth. A place has its dome, its sky and perhaps even its star. By building we fix special relationships between earth, sky and time."(VON MEISSE, 1960, 132)

[02][03] GENERAL BRIEFING SPECIFICATIONS FOR THE PRECINCT AS SPECIFIED BY THE CLIENT

On an urban scale the brief asks for the utilization of all existing building and structures and taking into consideration environmental, structural and safety factors in order to create an urban precinct of diversity and identity.

The following functions will be included into the development of the Gasworks precinct.

[02][03][01] ACCOMMODATION FACILITIES

A Boutique Hotel incorporating 25-30 rooms ranging in scale from 60-120 m², to be situated in existing buildings will cater for film and business executives making use of facilities in and around the site.

Lofts will be created in the existing and new buildings on site.

[02][03][02] COMMERCIAL FACILITIES

Commercial activity will include offices, film studios, and AFDA campus expansion and art and design studios. Commercial facilities will mainly focus around the film industry, catering for set-designers, editors and all other executives of a film crew.

Existing and new office buildings to comprise of +/- 5000 m² will be geared towards media related industries.

Two of the gas tanks are to be decommissioned by 2006. One tank will to be converted into a full film studio, the other into an underwater film studio.

The AFDA film school will need to expand in the next 3 to 4 years. They will require +/- 4000 m² of land.

[02][03][03] ENTERTAINMENT FACILITIES

Retail, restaurants and recreation facilities, along with a film museum and cinemas will mainly occur around the entertainment hub. The purpose of the entertainment hub is to draw people into the precinct creating a vibrant environment.

Retail will include specialty shops concentrating on the fashion, craft and art and industry stores.

Recreation may include a trim park with a 1 km running circuit and with various workout points.

The cinemas will be interlinked with the film museum, functioning as independent cinemas hosting local and African talent.

image information:
background_site

[02][04] URBAN DESIGN THEORIES
[02][04][01] CREATING A RESPONSIVE ENVIRONMENT

The vision for the urban framework is to create an urban environment that is responsive to time and time' needs, as well as to the site's historical context.

Respond: verb. Say or do something in reply or as a reaction
Responsive: adj. responding readily and positively

Generate: verb. Cause to arise or come about.
Generative: adj. Relating to or capable of production or reproduction.

Oxford Dictionary of English, 1999

The urban design takes a responsive approach to the existing context in order to generate a special place. Bentley's idea of Responsive environments is applied to the framework design through the creation of a place that responds to the needs of its users. A meaningful place is created integrating the new framework with its existing environment and surroundings.

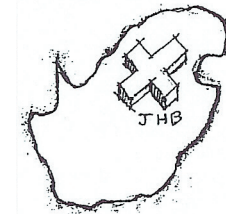
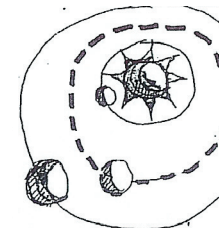
A maximum amount of choice is provided by introducing concepts of permeability, variety, legibility robustness, visual appropriateness, and richness.

- The creation of a permeable environment linked to its surroundings allows users to access the site providing them with choice in experience, and a variety of uses.
- Legibility of the urban environment is achieved by creating physical linkages to the surroundings, allowing people to orientate themselves. Historical features such as the Retort buildings and the Gas tanks add to the legibility of the precinct.
- An environment of 'Robustness' is achieved by introducing a multi-faceted, multi-functional environment capable to adapt over time.
- By preserving all historical structures, specially the retort buildings and the gas tanks and by adding structures that enhance these cultural significant edifices a visual appropriateness is achieved, where the design speaks for it self in terms of identity. Appropriateness will help to make people aware of the choices offered.
- The urban framework encourages 'Richness' providing a combination of different design elements to form a sensible whole. A design

that increase sense-experience, visual or non-visual, respect and use appropriate materials. New buildings should enhance and not copy the existing structures.

[02][04][02] GLOCALISATION

New media technologies seem to globalize the world and cause a decline in local identities. Glocalisation used as a substance of architecture and urban design can address both global and local needs, generating social and economic prosperity.



from global to local

Glocalisation is a concept conceived by a Japanese economist in the late 1980s to emphasize that globalization of products or services is more likely to succeed when the products or services are adapted specifically to each locality or culture they are marketed in.

The concept therefore points out for the co-existence of both universalizing and particularizing tendencies. In this way, glocalisation could be seen as representing interconnected processes of globalization and localizations or even as a local reaction to globalization. In urban development, the concept is becoming increasingly important as a means for enhancing inter-city relations, fostering cooperation between local and global actors in urban development and particularly alleviation of urban poverty.

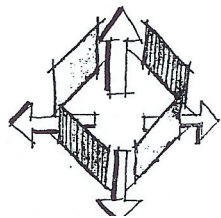
<http://dept.kent.edu/geography/intro/Urban>

[02][04][03] PLACE THEORY

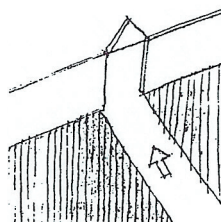
Human needs are satisfied in terms of cultural, historical and natural contexts; integrate old, new, and initiate social interaction.

[02][04][04] NEW URBANISM

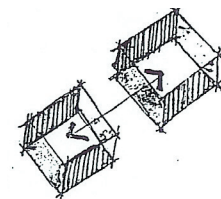
permeability



legibility



integration



compaction

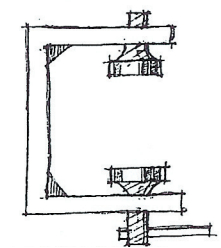
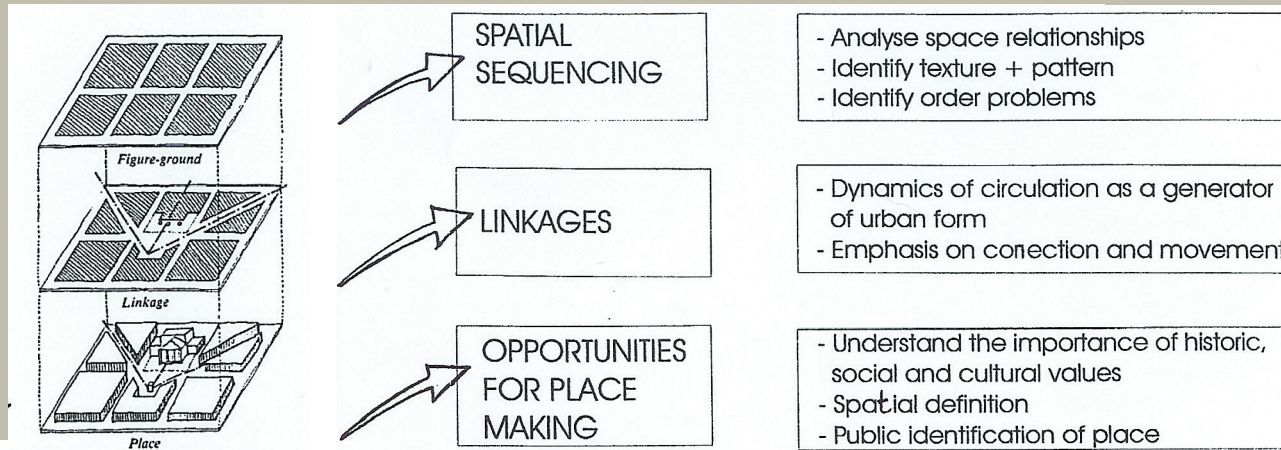


Fig. 2.1_ components of responsive design

Fig. 2.2_ glocalisation

Fig. 2.3_ Place theory



New Urbanism is a post-modern planning movement that is geared towards the creation of livable sustainable communities. The principles of New Urbanism are applied to the entire

precinct. The charter for New Urbanism advocates the restructuring of public policy and development practices to support the following principles:

The Neighborhood or precinct should be diverse in use and population and the community should be designed for the pedestrian transit as well as the car. The urban place should be framed by architecture and landscape design that celebrate local history, climate, ecology, and building practice.

The charter for New Urbanism asserts the following principles to guide development practice, urban planning and design:

WALKABILITY

- Most things within a 10-minute walk of home and work
- Pedestrian friendly street design (buildings close to street; porches, windows & doors; tree-lined streets; on street parking; hidden parking lots; garages in rear lane; narrow, slow speed streets)
- Pedestrian streets free of cars in special cases

CONNECTIVITY

- Interconnected street grid network disperses traffic & eases walking
- A hierarchy of narrow streets, boulevards, and alleys
- High quality pedestrian network and public realm makes walking pleasurable

MIXED-USE & DIVERSITY

- A mix of shops, offices, apartments, and homes on site. Mixed-use within neighborhoods, within blocks, and within buildings
- Diversity of people - of ages, classes, cultures, and races

MIXED HOUSING

- A range of types, sizes and prices in closer proximity

QUALITY ARCHITECTURE & URBAN DESIGN

- Emphasis on beauty, aesthetics, human comfort, and creating a sense of place; Special placement of civic uses and sites within community. Human scale architecture & beautiful surroundings nourish the human spirit

TRADITIONAL NEIGHBORHOOD STRUCTURE

- Discernable center and edge
- Public space at center
- Importance of quality public realm; public open space designed as civic art
- Contains a range of uses and densities within 10-minute walk
- Transect planning: Highest densities at town center; progressively less dense towards the edge. The transect is an analytical system that conceptualizes mutually reinforcing elements, creating a series of specific natural habitats and/or urban lifestyle settings. The Transect integrates environmental methodology for habitat assessment with zoning methodology for community design. The professional boundary between the natural and man-made disappears, enabling environmentalists to assess the design of the human habitat and the urbanists to support the viability of nature. This urban-to-rural transect hierarchy has appropriate building and street types for each area along the continuum.

INCREASED DENSITY

- More buildings, residences, shops, and services closer together for ease of walking, to enable a more efficient use of services and resources, and to create a more convenient, enjoyable place to live.
- New Urbanism design principles are applied at the full range of densities from small towns, to large cities

SMART TRANSPORTATION

- A network of high-quality trains connecting cities, towns, and neighborhoods together
- Pedestrian-friendly design that encourages a

image information:
background_site

*greater use of bicycles, rollerblades, scooters,
and walking as daily transportation*

SUSTAINABILITY

- *Minimal environmental impact of development and its operations*
- *Eco-friendly technologies, respect for ecology and value of natural systems*
- *Energy efficiency*
- *Less use of finite fuels*
- *More local production*
- *More walking, less driving*

QUALITY OF LIFE

- *Taken together these add up to a high quality of life well worth living, and create places that enrich, uplift, and inspire the human spirit.
(<http://www.newurbanism.org/pages/416429/index.htm>)*

[02][05] BASELINE CRITERIA FOR THE PRECINCT DEVELOPMENT

CONSERVATION REGARDING THE GASWORKS PRECINCT

[03][05][01] WHY CONSERVE?

Conservation means all the processes of looking after a place so as to retain its cultural significance. (ICOMOS, Burra Charter, 1999: Article 1)

Indicators of a culturally significant place are the following:

- Reflection of the true value: That is, whether the resource remains in the condition of its creation and reflects all its significant history.
- Integrity: That is, whether the site is fragmented, how much is missing, what are the recent additions.
- Context: That is, whether the context and the environment correspond to the original or other periods of significance, and whether you enhance or diminish the significance.
- Identity: That is, whether the local population identify themselves with the site, and whose identity the site reflects.
- Use and function: That is, the traditional pattern of use that have characterized the site. (ICOMOS, The Declaration of San Antonio, 1996)

WHY CONSERVE THE GASWORKS?

The Gasworks' buildings possess all indicators of a culturally significant place.

The reasons for conservation of this industrial site and its buildings are as follows:

- The Gasworks is a significant landmark for its adjacent surroundings, making the environment more legible. It gives a certain identity to Braamfontein.
- Most of the Buildings remain in the condition of their creation; only a few additional buildings were later added.
- The site and environment correspond to the context of the early 20th century.
- The Gasworks contribute to the industrial heritage of Johannesburg. It reinforces Johannesburg's identity as a past-industrial capital.
- The two main factories (Retort Houses) are declared as national monuments.
- The site still exists in its traditional pattern of use, with functions of buildings and structures all intact.

"Places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences. They are historical records that are important as tangible expressions of ... identity and experience. Places of cultural significance reflect the diversity of our communities, telling us about whom we are and the past that has formed us They are irreplaceable and precious. These places of cultural significance must be conserved for present and future generations. The Burra Charter advocates a cautious approach to change: do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained. (ICOMOS, Burra Charter. 1999: Pream.)

[02][05][02] CONSERVATION GUIDELINES FOR THE PRECINCT

According to Gapp Architects and Urban Designers, conservation and development principles must include the following:

- Structures earmarked for demolition should have no intrinsic conservation value. However, records should be established before demolition
- Minimal restoration is required as most structures are in a sound condition Corroded steel elements will need restoration
- New infill structures are to be carefully integrated with the old. Although the advantage being that the old is based on design principles and forms currently being used by many contemporary architects
- The entire site rates high in terms of conservation worthiness, due to its potential as an industrial archaeological treasure trove
- The South African Heritage Resources Agency (SAHRA) should be consulted early in the process to evaluate conservation guidelines.

image information:
background_site

The Gasworks precinct design guidelines will be geared towards adaptive re-use; conservative disassembly and re-using of salvage materials.

“Like ecological succession, adaptive reuse deals with directional change, a gentle and unpredictable temporal shift in the whole basis of the building’s structure and function: the succession of the built environment. Adaptive reuse “slows nutrient loss” while contributing to the diversity, complexity, and continuity of a particular place. Genuine places worthy of our affections are created through the process of adaptation.” (Stewart Brand, 1994, 30)

The Burra Charter of 1999 suggests these guidelines for adaptive re-use: (The last column is an understanding of how the article is applicable to the Film Centre in the Gasworks.)

Article	Adaptation	Application to the Gasworks site
Article 21	<i>Adaptation</i> must be limited to that which is essential to a use for the <i>place</i> determined in accordance with Articles 6 and 7.	
21.1	<i>Adaptation</i> is acceptable only where the adaptation has minimal impact on the <i>cultural significance of the place</i> .	
21.2	<i>Adaptation</i> should involve minimal change to significant fabric, achieved only after considering alternatives.	
Article 6	Burra Charter Process	
6.1	The <i>cultural significance</i> of a <i>place</i> and other issues affecting its future are best understood by a sequence of collecting and analyzing. Understanding cultural significance comes first, then development of policy and finally management of the place in accordance with the policy.	
6.2	The policy for managing a <i>place</i> must be based on an understanding of its <i>cultural significance</i> .	<p><i>“Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.</i></p> <p><i>The term cultural significance is synonymous with heritage significance and cultural heritage value. Cultural significance may change as a result of the continuing history of the place. Understanding of cultural significance may change as a result of new information.”</i></p>
6.3	Policy development should also include consideration of other factors affecting the future of a <i>place</i> such as the owner’s needs, resources, external constraints and its physical condition.	
Article 7	Use	
7.1	Where the <i>use</i> of a <i>place</i> is of <i>cultural significance</i> it should be retained.	
7.2	<p><i>A place</i> should have a <i>compatible use</i>.</p> <p>The policy should identify a use or combination of uses or constraints on uses that retain the cultural significance of the place. New use of a place should involve minimal change, to significant fabric and use; should respect associations and meanings; and where appropriate should provide for continuation of practices which contribute to the cultural significance of the place.</p>	By adapting the Retort Buildings into Loft apartments will cause a decline in the cultural significance of the place. The identity of the buildings will be lost, since the space will be divided into smaller parts. A studio space will be a suitable option, since the interior “cathedral like” volumes are be retained.

To ensure that architects don't undermine the historic fabric when they insert new systems into existing buildings, architects must confer with the **New Orleans Charter for Joint Preservation of Historic Structures and Artefacts (1992)**

The Charter acknowledges the conflicts that often arise between the needs of a building and the content it houses, and rejects strategies that support one at the expense of the other.

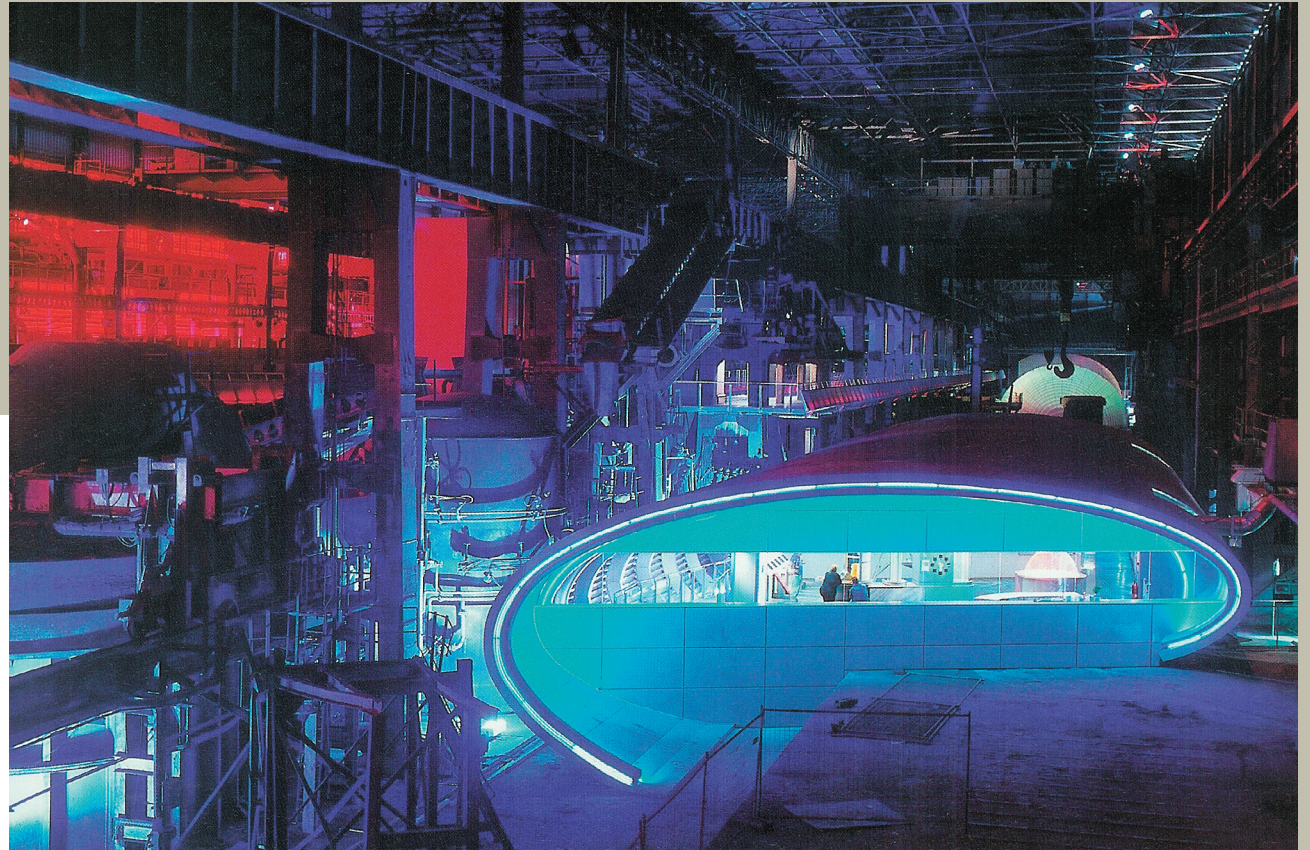
ARCHITECTURAL RECORD 02/04

Wilkinson Eyre Architects's reuse of a steelworks in Rotterdam, South Yorkshire, England is a typical example of how additions and adaptations can retain the extraordinary atmosphere of the old industrial building. By placing containers within the structure, the open volumes of the old building is preserved.

Fig. 2.4_ Exterior of Magna Steelworks by Wilkinson and Eyre Architects



Fig. 2.5_ Interior of Magna steelworks adapted into a science museum



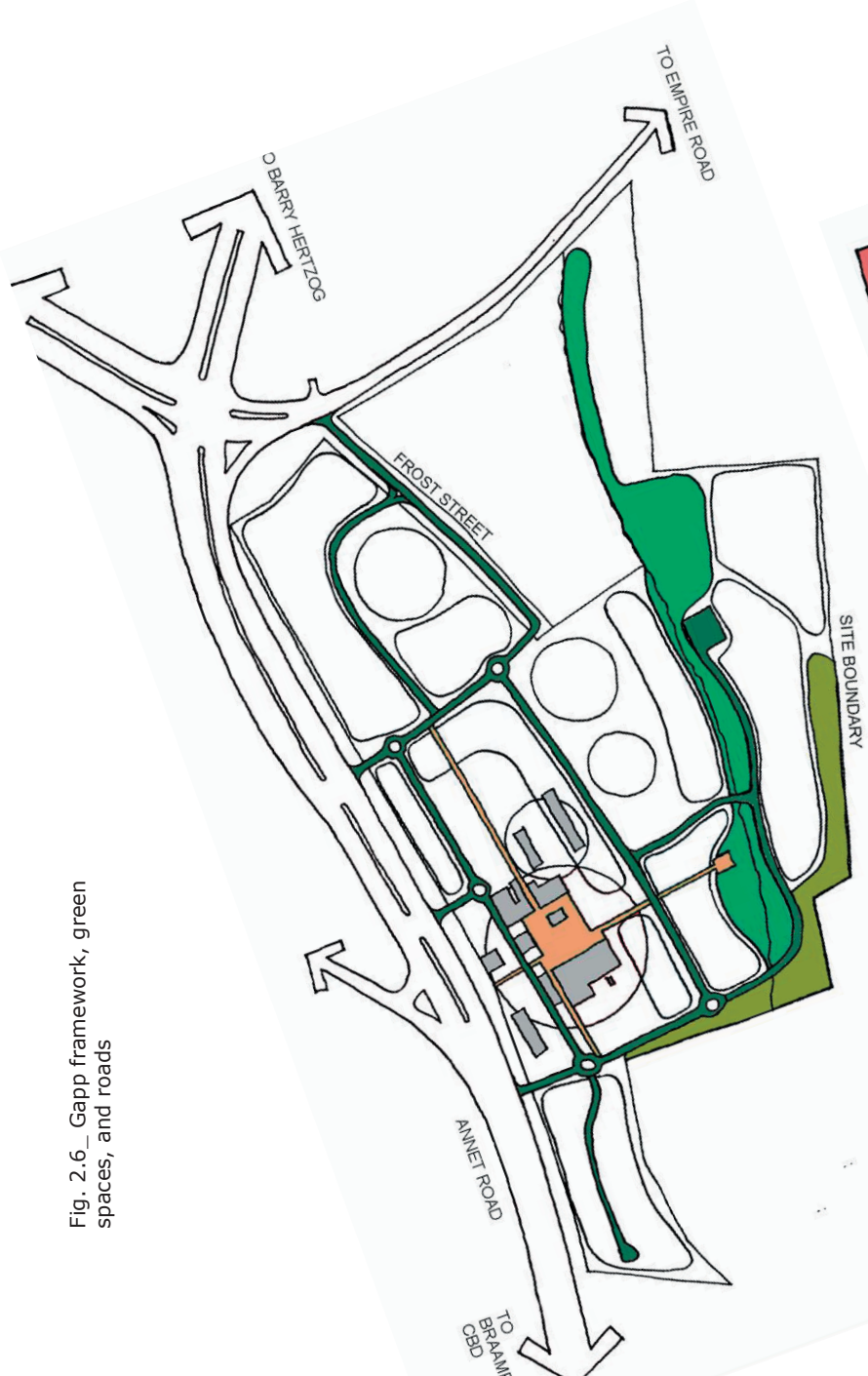


Fig. 2.6_ Gapp framework, green spaces, and roads

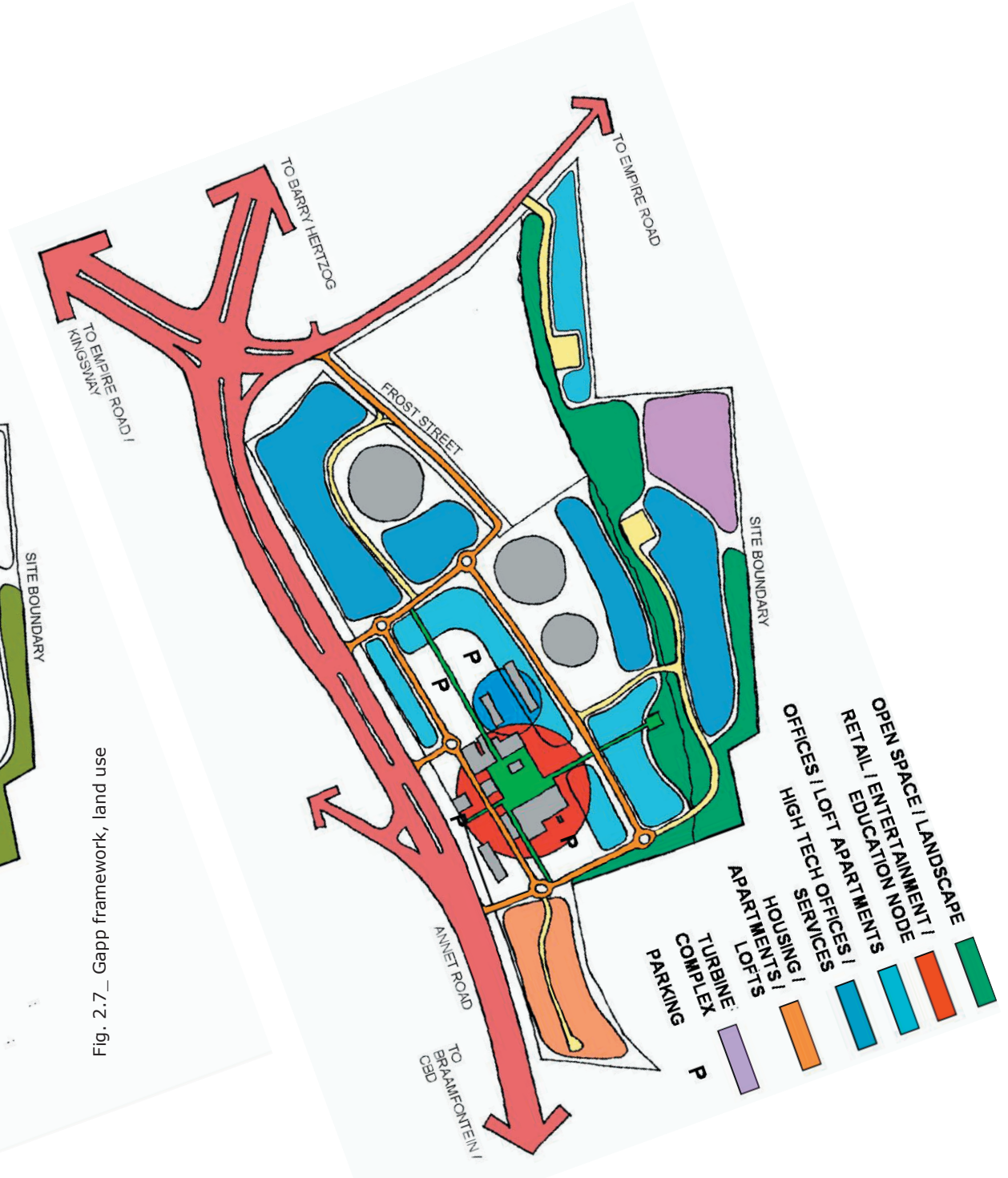


Fig. 2.7_ Gapp framework, land use

[02][06] THE GAPP FRAMEWORK

Gapp Architects and Urban Designers propose a multi-use and diverse activity node, where people work, live and play for the Gasworks site redevelopment. The development will be built in phases starting with the entertainment Hub around the Retort Buildings.

[02][06][01] CONCLUSIONS REGARDING URBAN DEVELOPMENT & DESIGN FRAMEWORK AS DRAWN UP BY GAPP

- The Site is well located in terms of access. It is in an area of transition close to a variety of income groups, educational institutions, the SABC complex, print and publishing media offices and creative industries.
- There appears to be a demand for a variety of uses
- There are no major constraints to the development of the site
- The site's important historic buildings can be incorporated into the development, creating a unique character and special place.
- The site can accommodate between 75 000m² - 110 000m² of mixed use development, with the upper level being dependent on the removal of the gas storage tanks
- A vision has been prepared for the site which could create a specific character to attract a wide variety of tenants and users. Gapp's vision for the desired character of the site compares to that of the Koppersmuhle in Germany, the Foundry in Cape Town and Covent Garden in London.

image information:
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Fig. 2.8_ Gapp framework, facilities

• Option 1 with Gas Tanks

PRECINCT	RETAIL	OFFICES	HI TECH SERVICE	RESIDENTIAL	TOTAL
1				10920	10920
2	10000	4000		2215	16215
3		8000		3260	11260
4		4000	10260		14260
5		1000	3000		4000
6		5000		1480	6480
7		1000	4840		5840
8		8400			8400
TOTAL	10000	31400	18100	17875	77375

• Option 2 without Gas Tanks

PRECINCT	RETAIL	OFFICES	HI TECH SERVICE	RESIDENTIAL	TOTAL
1				10920	10920
2	10000	4000		2215	16215
3		13280		3260	16540
4		20260		10000	30260
5		6400	2000		8400
6		5000		1480	6480
7		1000	4840		5840
8		8400			8400
TOTAL	10000	58340	6840	27875	103055

[02][06][02] THE FOLLOWING FACILITIES ARE INCLUDED IN THE GAPP FRAMEWORK

Retail facilities will include a convenience store for surrounding offices and residential markets. Design emporiums, entertainment, pubs, restaurants and a major chain of 10-15000 m2 -housing a Woolworths or Spar will also be included

Offices will be for small and medium enterprises, with uses associated with the SABC, Wits and RAU. Professional and Loft offices will focus on the creative arts and entertainment sector.

Education and training facilities will be private collages, education linking up with Wits and RAU, computer training facilities and network centers.

Hi-tech services will comprise of the computer, film and creative art industries.

Accommodation will concentrate on apartments, loft apartments and student residences.

The utilization of gas for street lighting, heating, air conditioning and cooking are encouraged

The desired character for the precinct as envisaged by Gapp is the following:

Fig. 2.10_ Victoria Junction Hotel and the Foundry: Cape Town



Fig. 2.9_ Victoria Junction Hotel and the Foundry: Cape Town



Fig. 2.11_ Victoria Junction Hotel and the Foundry: Cape Town

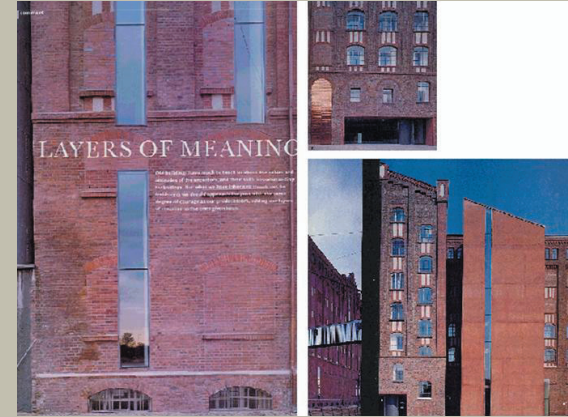


Fig. 2.15_ The Kuppersmule, an industrial relic in Duisburg harbour area, has been inventively transformed to house a major collection of German art

Fig. 2.13_ Covent Garden: London

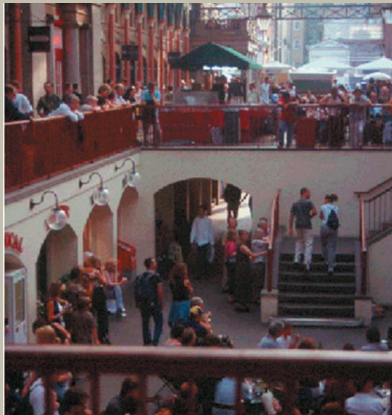


Fig. 2.12_ Covent Garden: London



Fig. 2.14_ Covent Garden: London



[02][07] RESPONSE TO URBAN DESIGN FRAMEWORK INTRODUCED BY GAPP

CRITIQUE ON GAPP FRAMEWORK

Only option B will be examined since most of the important structures contributing to the sites industrial heritage are retained.

- The Gas tanks are not sufficiently integrated with the rest of the framework. It may be because Gapp does not encourage architectural re-use of these structures.
- Although Gapp's framework encourages the use of a north-south green corridor around the

Braamfontein Spruit, linking up with surrounding areas, there is a lack in East-West linkage. A possible solution can be to extend the green corridor west into the university grounds, drawing students into the site.

- Parking areas are placed within important sight lines. This will be visually intrusive to the surroundings. This may be re-evaluated by placing parking within internal courtyards of buildings. This may even contribute to less permeable edges along internal streets, creating a more enclosed feeling.
- Gapp's framework discourages the re-use of any buildings to the north on the site. The re-use of these buildings are suggested, since they will further contribute to the site's industrial heritage.

By using the existing buildings as special structuring elements more interesting spaces between buildings are achieved.

Fig. 2.16_ aerial photograph gasworks precinct and surroundings



Fig. 2.17_ existing buildings on site



Fig. 2.18_ assessment of hard and soft spaces



[02][08] FRAMEWORK DEVELOPMENT

Hard and soft spaces

Linkage

Green corridor

Integrate all buildings into framework
Respect retrofits buildings and Gas tanks. Specially the tanks since they contribute to the overall legibility of the surroundings

Fig. 2.19_ assessment of linkage



Fig. 2.20_ assessment of land use



Fig. 2.21_ development of land use

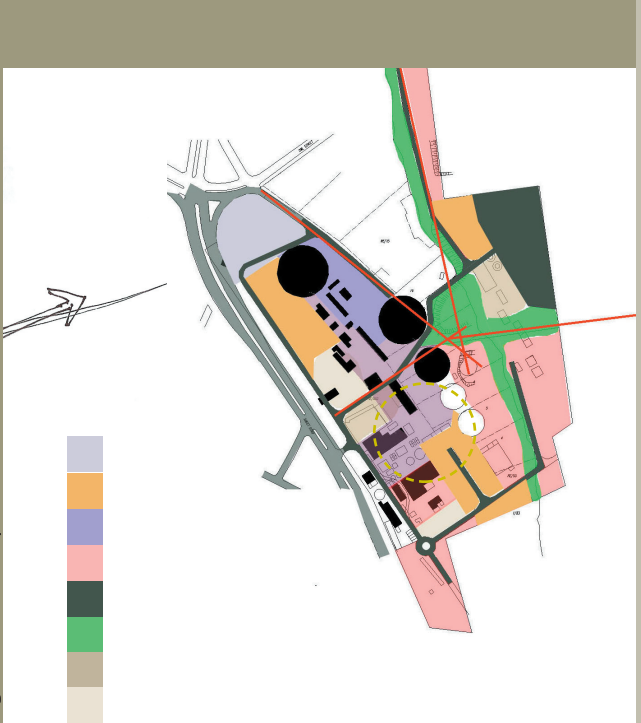


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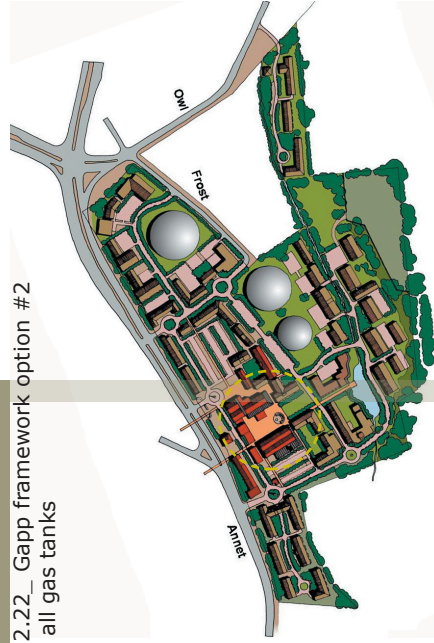


Fig. 2.22_ Gapp framework option #2 with all gas tanks

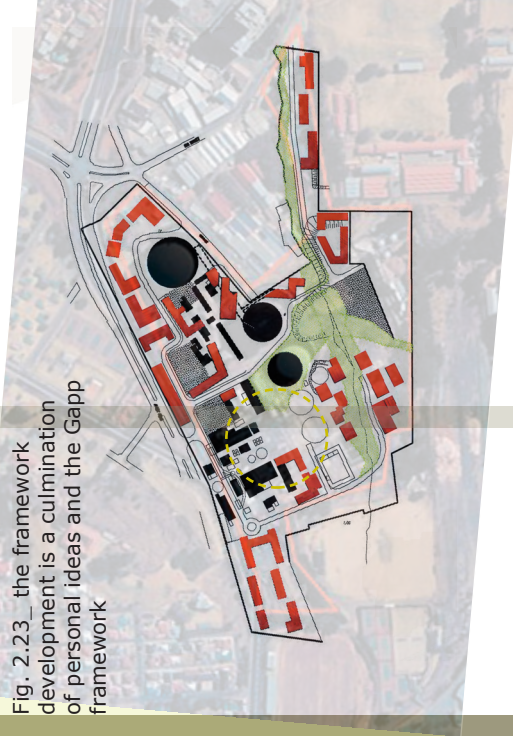


Fig. 2.23_ the framework development is a culmination of personal ideas and the Gapp framework

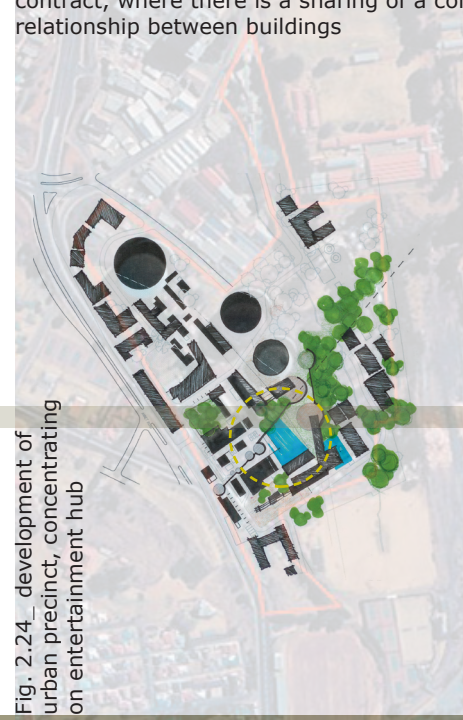


Fig. 2.24_ development of urban precinct, concentrating on entertainment hub

The Braamfontein Spruit has the potential to form a green corridor extending as far as Craighall. The site suffers east-west linkage. This is overcome by linking the entertainment hub directly with a pedestrian path with WITS and creating a proposed link with the new hotel school, WITS Technicon and Vrededorp.

The idea is for all links to converge into the entertainment hub of the site, from where activities will be dispersed. An activity spine is created along a linear path running north-south and an east west spine linking the university with the west. Retail, hi-tech services and entertainment facilities will be introduced along these activity spines, where commercial facilities form barriers between these spines and predominant residential areas. These will create a degree of privacy for these facilities. The site show potential for infill, where the order,

scale, pattern and form of the existing context must be respected

Hard elements to be considered for preservation include all buildings on site, as well as the historical landscape features such as retention dams, ruins of the old tanks and the Braamfontein Spruit.

On the site linear datums organize random patterns of elements, this is seen where buildings are placed at random intervals. Linear paths are present throughout the sites content.

The scale of new buildings and infill must make spaces around retort buildings more humane. Clustered spatial organization is emphasized through the design by placing edifice face to face, this edge to edge contract, where there is a sharing of a common trait relationship between buildings

Fig. 2.25_ model showing movement on site



Fig. 2.26_ model showing spatial sequencing

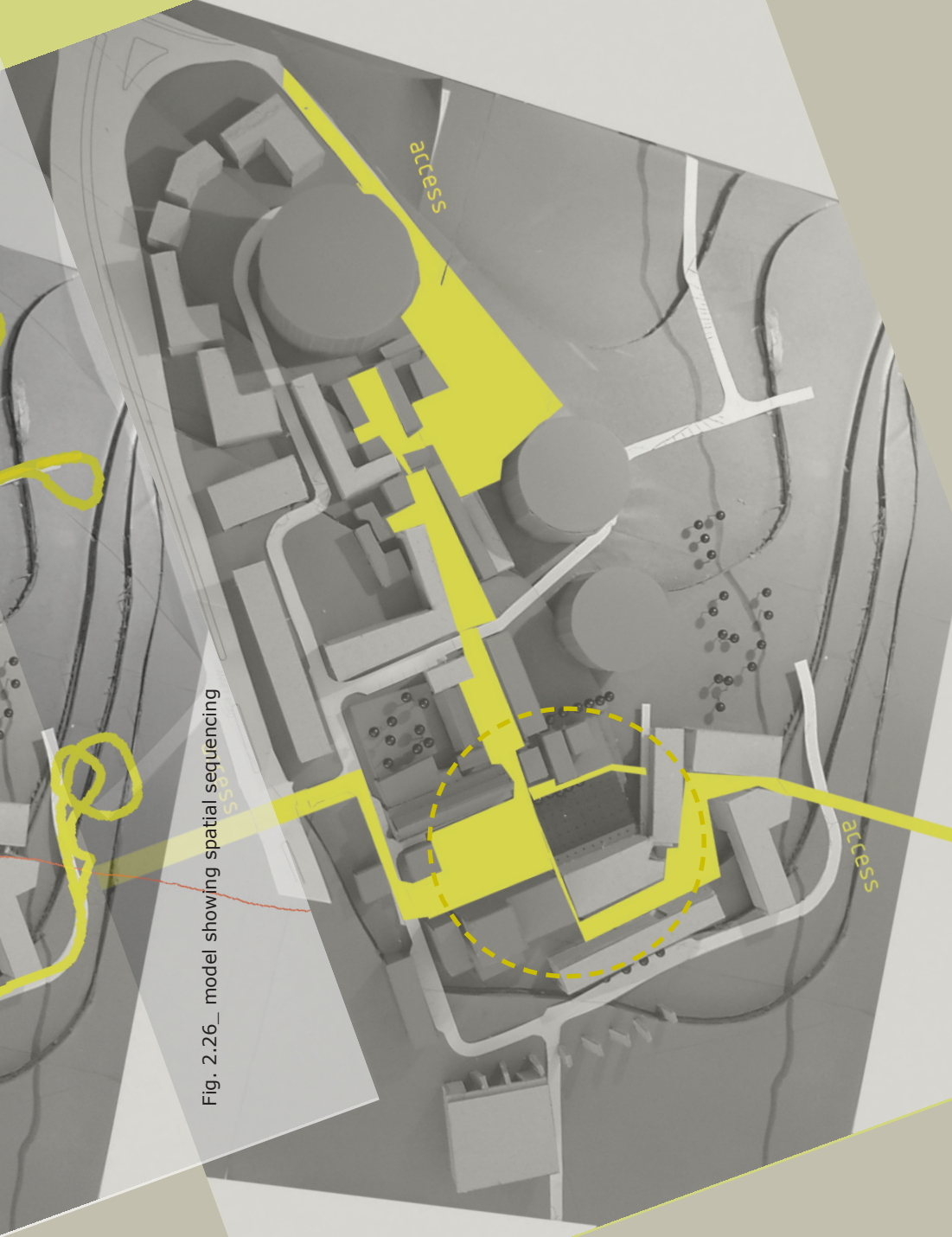


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Fig. 2.27_ urban framework vision

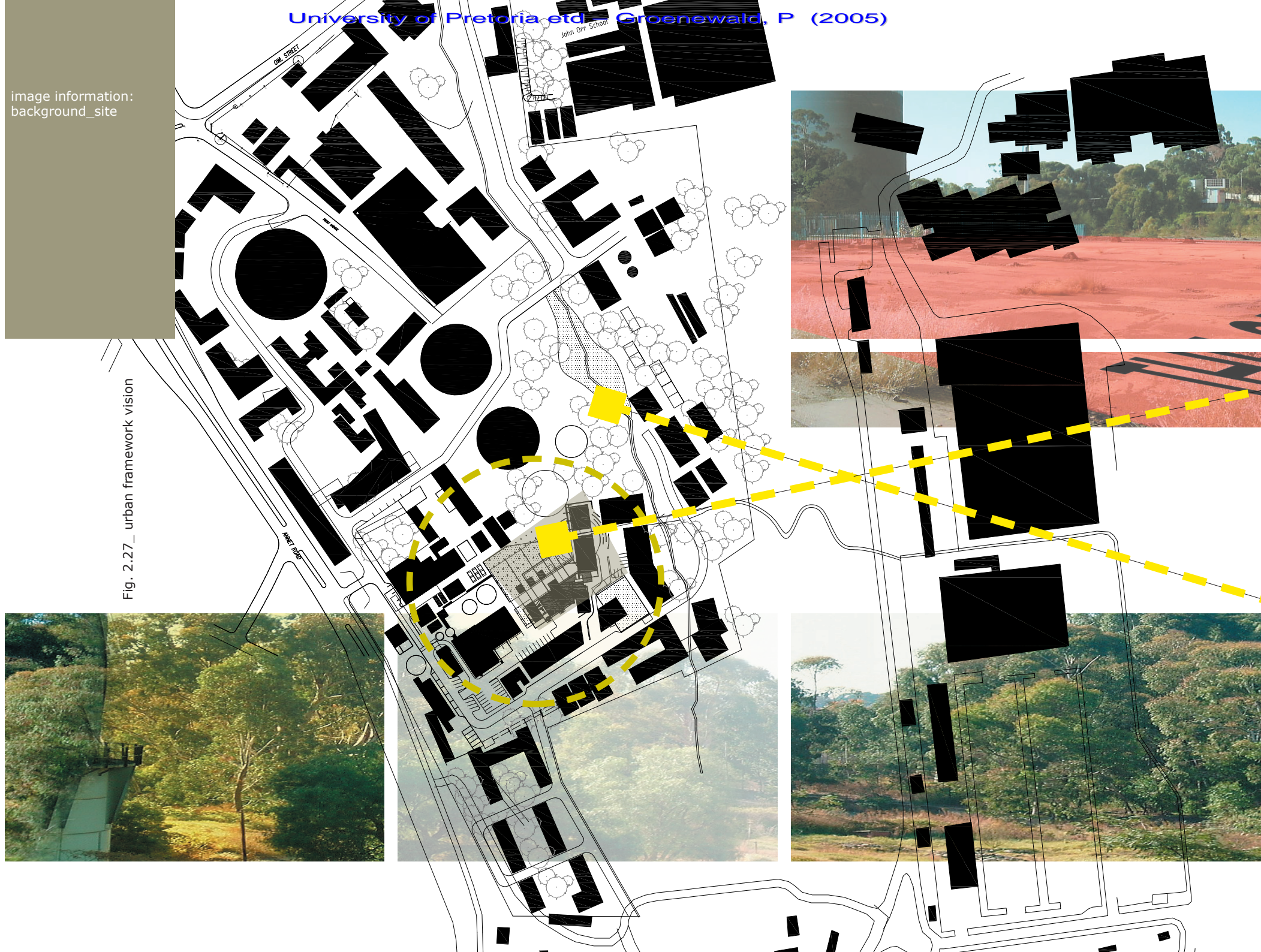




Fig. 2.30_ a concrete footing on the purification platform



Fig. 2.28_ the site, situated on an old purification platform

[02][09] SITE LOCATION WITHIN THE PRECINCT

The site for the film centre falls within the entertainment hub of the precinct. It is situated on an old concrete purification platform east of the retort buildings. The site offers spectacular views to the retort buildings and the Braamfontein Spruit. A new building has the potential to enclose the open space around the historical retort houses

and offers opportunities to link the site visually with the Spruit and the University. Since the chosen site is in direct adjacency to the retort houses, a responsive design approach is challenged in order to create a new edifice.

Fig. 2.29_ view to the East, toward Braamfontein Spruit



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Fig. 2.31. functions around
film centre

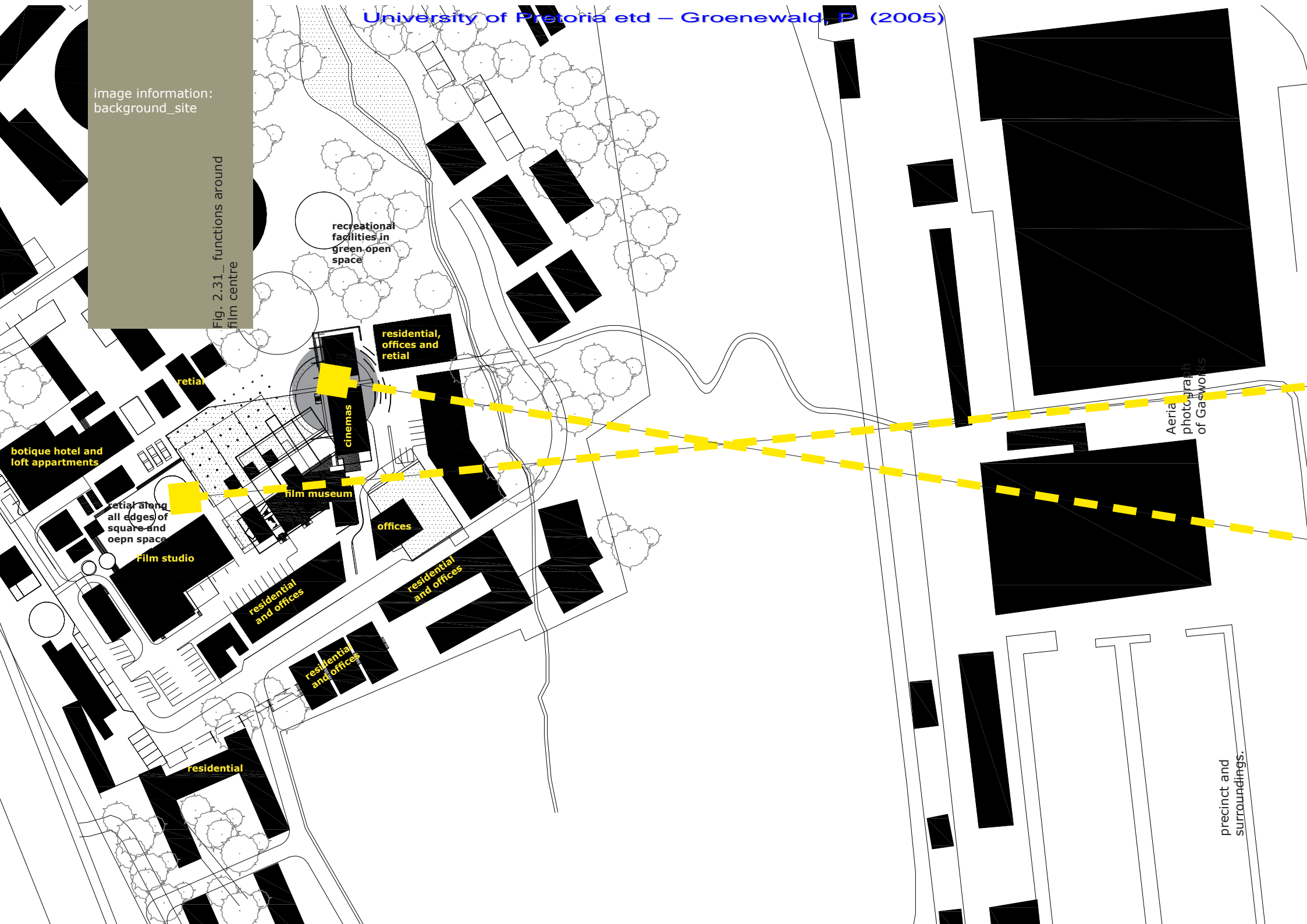


Fig. 2.32_ view from site to retort building



Fig. 2.33_ gas tank remain under cinemas





[03][01] MOTIVATION FOR DESIGN FUNCTION

[03][01][01] BACKGROUND

One of the key players in debates about restructuring our fragmented local film industry, the Film and Allied Workers' (FAWO) Distribution Committee chairman, Seipati Bulane-Hopa, describes the need for cinema in our society in these words:

"Cinema ... serves as a vehicle for people to articulate their different social affiliations and define their respective historic cultures, traditions, social and political experiences. If cinema is only used to entertain and not to educate, then the chances of transforming our society are slim" (Blignaut & Botha, 1992, p.88).

And in the words of Lawrence Dworkin, the necessity of a local cinema is described as follows:

"As we move towards a democratic dispensation we must ensure that our cinema is able to cross over all historically created divisions as a profound, entertaining and liberating medium of mass communication (Blignaut & Botha, 1992, p.90).

One can argue that film is an important part of the cultural domain in any country, but particularly so in South Africa where social change depends on the quality of communication in the society."

Initially only the design for an independent cinema complex was included into the brief. After reading the words of Seipati Bulane-Hopa and Lawrence Dworkin it became apparent that the design of an independent cinema might draw people into the precinct to entertain, but the edifice might not fully contribute in reconstructing our society, socially and culturally. Therefore the discourse contains the design of an educational film centre comprising of a cinema and museum.

"If architecture is both concept and experience, space and use, structure and superficial image (non-hierarchical) than architecture should cease to separate these categories and should merge them into unprecedented combinations of programmes and spaces. 'Cross programming', 'transprogramming,' 'disprogramming'

The prototypical programme for the film centre must reflect both the historical contexts of the site as well as the new immanence of digital and electronic imagery in daily life. The proposal is composed of 5 parts, a cinema, a museum, a mediating space serving as a café and library, administration and accommodation.

image information:
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www.planetdv.net

[03][01][02] CHARACTER AND RELATIONSHIP BETWEEN COMPONENTS

As a centre for entertainment and education the film center must be an expression of a new era in South-African film making. The center will promote local talent; serve as a research and interactive centre to encourage creative film making skills and market South African films so they appeal to an international audience. At the same time the centre will act as an educational and entertainment facility where locals can retreat to.

The area in which the centre is located does show degrees of soil and groundwater contamination. It is therefore a major requirement that the development is designed in such a way to eliminate the negative impacts of soil contamination.

The relationship, scale, aesthetics and architectural character of the new edifices and that of the existing industrial buildings are critical. All new buildings to be designed should regard the significance of the industrial context of the site. It is also important to regard that the complex is located in South-Africa and not in Hollywood; this will contribute to a uniquely local approach further promoting our South-African film industry.

The entertainment hub is an area that is predominantly pedestrian, only service vehicles will be allowed on portions of the site.

The materials used and the manner in which the building relate to the surrounding industrial buildings should be carefully considered in the design. There must be no confusion whatsoever about what is new and what is existing.

[03][01][03] GENERAL DESIGN ISSUES

The following general requirements must be taken into account in the design:

- All buildings and spaces are to comply with the National Building Regulations
- All buildings and spaces needs to be designed to minimize maintenance costs
- All buildings and spaces needs to be designed for disabled
- All buildings need to respond to the industrial context of the site
- The design must take climatic conditions into consideration

[03][02] DETAILED REQUIREMENTS AND SCHEDULE OF ACCOMMODATION

[03][02][01] MUSEUM

DESCRIPTION

The role and purpose of the museum is to entertain, educate and form an introduction to the cinema spaces. Attention is not focused around forming elite museum spaces that can only be observed, but the exhibit becomes an interactive tool to its users. Film makers can use it as promotion and research; the public use it as entertainment, research and education.

The museums role is to promote and present historical and future trends and executions in local film making. The museum will be people centered and visitors will make use of new technologies, interacting with the exhibits.

Operating Workshop facilities comprising of public video rooms and film studios will be contained within the exhibit to further enhance and present real world projects up front.

Temporary and permanent display spaces' boundaries will be blurred and a mechanism will be introduced to enable the user to move trough and from one exhibit to another in no time.

Since film is about the narrative it is important to express this throughout the design by engaging the user on a narrative path to discovery.

GENERAL DESIGN REQUIREMENTS

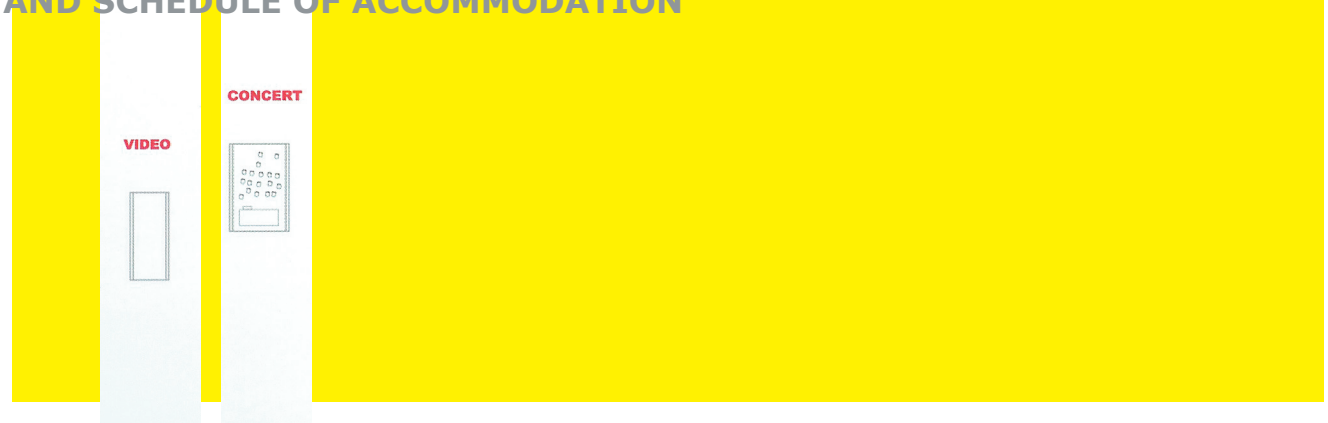
Museum fatigue should be addressed in the design:

This can be achieved in three ways:

- The appearance and feel of the different rooms should vary
- Provision of escape hatches
- Designing the museum in such a way that it is possible to only experience a part of the exhibit today and come back to do the rest the following day.

THEMES

- History of South-African and African film industry and making exhibit
- Future technologies in film and media design exhibit
- South-African and African contemporary film exhibit
- Video art and advertising exhibit



SCHEDULE OF ACCOMMODATION

Accommodation list for new film centre							
function	sub-function	dimensions		Area	number	Total net area	Notes
		x	y	xy			
museum							
visitors							
services	entrance hall	5	6	30	1	30	
	info desk	5	4	20	1	20	
	meeting rooms			50	2	100	
	cloakrooms			10	1	10	
	lavatories			25	2	50	
displays	permanent exhibit			100		100	
	temporary exhibit			400		400	
education	media resource storing			20	1	20	
	lecture facilities, Av/film			50	4	200	
	theatres						
	workshops conservation)			50	1	50	
storage	interim secure storage			20	1	20	
	collections (public)			50	1	50	
administration	records			30	1	30	
	loading bays			100	1	100	
	security staff			20	1	20	
	offices			45	1	45	
	print/ drawing room/ editing room			15	1	15	
total area						1260	
						1512	take 20% circulation into consideration

[03][02][02] CAFÉ AND BOOKSHOP
DESCRIPTION

The café and bookshop will be regarded as one space, also housing archives and internet facilities. The role of the café/ bookshop is to form a mediating space of retreat where the exhibits can be observed and extra information gained.

GENERAL DESIGN REQUIREMENTS

- It is important to keep in mind that the café and bookshop create an important link to the outside, the exhibition and the cinemas.
- Security should be addressed
- The café and bookshop must operate separately from the museum to trade after hours.

SCHEDULE OF ACCOMMODATION

Accommodation list for new film centre							
function	sub-function	dimensions		Area xy	number	Total net area	Notes
		x	y				
restaurant and bookshop							
cafe	for 60 people	60	1.1	66		66	1.7-1.9 m ² per seat
	kitchen					33	50 % of cafe area/
	storage (food/liquor/china)					17	50% of kitchen/ 0.5 m ² per seat
	lounge & bar					27	40% of cafe area
	lavatories			10	2	10	
bookshop/library	internet facility	6	6	36	1	36	
	magazines with express coffee bar			36	1	36	
	shelving					200	
	archive/library				1	100	
total area						525	
						630	take 20% circulation into consideration





[03][02][03] CINEMAS

DESCRIPTION

The cinemas main purpose is to attract people to the precinct. The cinemas will host shows of local and African talents. The auditoriums need to be transformable in order to host larger and smaller performances.

GENERAL DESIGN REQUIREMENTS

- Attention needs to be paid to mechanical ventilation systems and acoustics within the auditoriums.
- The auditoriums must link up with restaurant or café for the hosting of local film premiers.
- Lobbies need to accommodate large crowds at premier performances.
- The cinemas must be directly linked to the outside, encouraging the concept of an urban cinema.

CUISINES CUISINES CUISINES



**[03][02][04] RESTAURANT
GENERAL DESIGN REQUIREMENTS**

A fusion-food restaurant with a unique South-African character is introduced. The restaurant must be able to cater for cinema premier evenings, catering for large crowds.

**[03][02][05] COMMERCIAL ACTIVITIES
DESCRIPTION**

Commercial facilities will concentrate around the promotion and marketing companies of the film industry. This may include offices of IDA's media and film division. Furthermore it will include administration facilities for the museum and cinema as well as production and film set design offices.

GENERAL DESIGN REQUIREMENTS

- Adequate sun control needs to be considered to create office environments that are environmentally sustainable.
- Circulation need to be planned to promote social interaction and maximization of usable floor space.
- Volumes needs to be adequately planned to make reuse possible in future. This may include providing higher ceilings to accommodate mezzanine levels and dry-walling systems.

SCHEDULE OF ACCOMMODATION

Accommodation list for new film centre

function	sub-function	dimensions		Area xy	number	Total net area	Notes
		x	y				
restaurant							
restaurant	dining area for 60 people	60	1.7	102		102	1.7-1.9 m ² per seat
	kitchen					61,2	60 % of dining room/1 m ² per seat
	storage (food/liquor/china)					30,6	50% of kitchen/0.5 m ² per seat
	lounge & bar					66	1.1-1.4 m ² per seat
	lavatories			10	2	20	
total area						188	
						225.6	take 20% circulation into consideration

SCHEDULE OF ACCOMMODATION

Accommodation list for new film centre							
function	sub-function	dimensions		Area	number	Total net area	Notes
		x	y				
offices and shops							
IDC (Media and film division)	marketing						
	promotion and co-ordination					200	
	management			20	4	80	
editing and set design offices						500	
						234	circulation and services=30%
Total area						4091 m2	

[03][03] SPECIFIC PROBLEMS TO BE INVESTIGATED

- Since the design deals with that of a cinema and museum, natural ventilation will not always be possible. Mechanical ventilation systems needs to be implemented and designed that is environmentally sound
- Acoustic properties within cinemas and throughout the exhibitions are of importance. Different acoustic material properties need to be investigated.
- Materials and detailing of new buildings must enhance that of the existing industrial buildings.
- Problems arise where old and new are directly connected. The way of detail articulation and material choice of new additions will have a profound effect on the preservation of the existing.
- Degrees of privacy need to be investigated since the centre will be predominantly public. It is important though to create spaces of intimacy and retreat.
- The re-use of salvage materials will contribute to the industrial context. High-Tech might be contracted against withered materials.
- Problems with museums in general are as follows:

- The user is merely an observer and usually is unable to interact with exhibits physically.
- One usually visits a museum once or twice. The question arises how to create a museum space that attracts visitors again and again?
- In conventional art museums the user is forced to walk through everything to be able to view, say one piece of significance.
- Museums do not sufficiently interact with the direct outside urban environment. Connections to the outside usually occur in courtyard spaces. Visitors are unable to retreat when they want, where they want.

All the above are problem areas identified through research investigation and personal experience.

Sub-problems that arise when questioning the following are as follows:

- Digital technology might make interaction possible, but it can be a costly medium.
- To attract visitors frequently it might be better not create a museum that feels like a museum space. The inclusion of the café within the exhibition spaces might trigger curiosity. The museum must become an interactive information and entertainment centre.
- Problems of security might arise when opening the center up into the urban-scape.

[04] [01] Sir Norman Foster...for a responsive design approach towards its surroundings

Fig. 4.1 Maison Carrée



**Project: Carré d'Art
Nîmes_France
1984-1993**

The urban context of Nîmes was a powerful influence for the design of this media centre. The site for the new building faces the Maison Carrée, a perfectly preserved Roman temple. The challenge for Foster was to relate the new to the old and at the same time create a building that represents its own age with integrity. It was important for Foster that the Carré d'Art refers and not defer to the exquisite temple.

The Maison's portico was used as a reference point - generous, urban and public.

The façade of the new building facing the Maison Carrée matches the proportions of the temple, its glass skin framed by concrete columns echoing the play of horizontal and vertical divisions.

In keeping with the scale of the surroundings half of the building is placed under ground, while the top floors tower over the apparent cornice of the Roman temple.

The building addresses the urban setting and the Roman temple. Foster considered the entire plaza around the Maison Carrée as part of his brief, trading the cars that is parked there for the new urban cafés and repaving the space in the local limestone tracing the Roman forum which surrounded the Roman temple once. Like the Maison Carrée, Foster's building stands on a stepped limestone plinth, behind a generous portico.

The geometry of both the landscaping and the building follows the Roman grid to recreate tree-lined streets

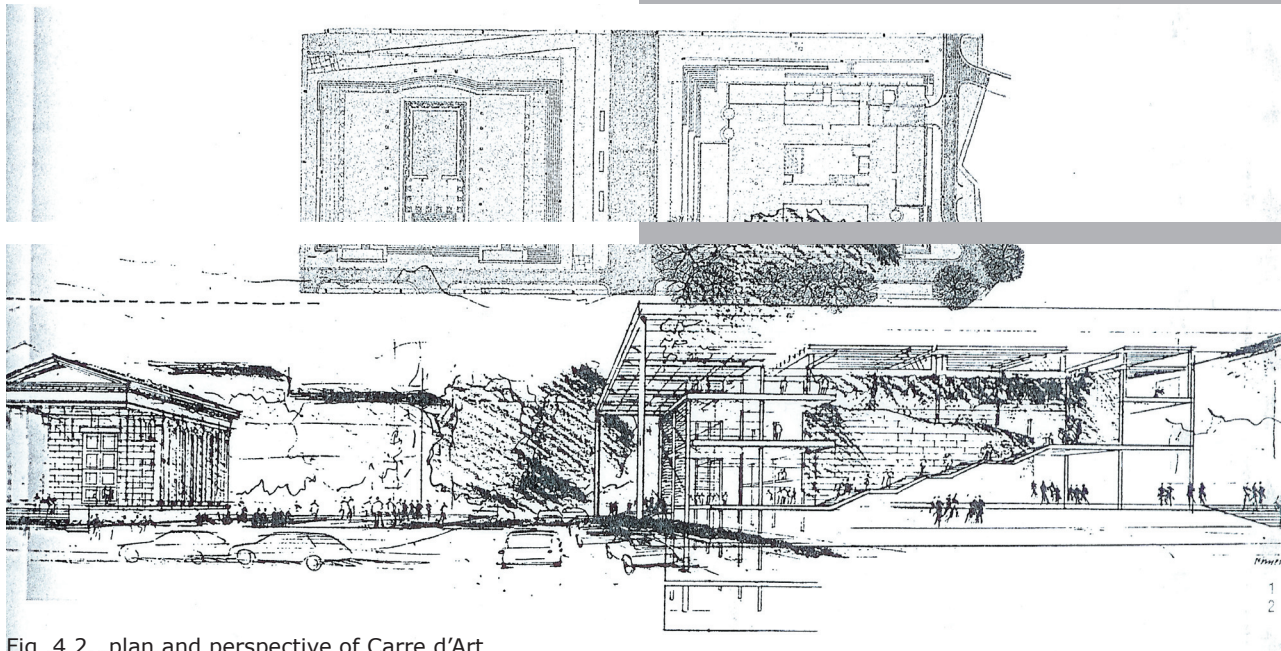


Fig. 4.2_ plan and perspective of Carré d'Art

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Fig. 4.3_ sketch illustrating position of Carré d'Art

3

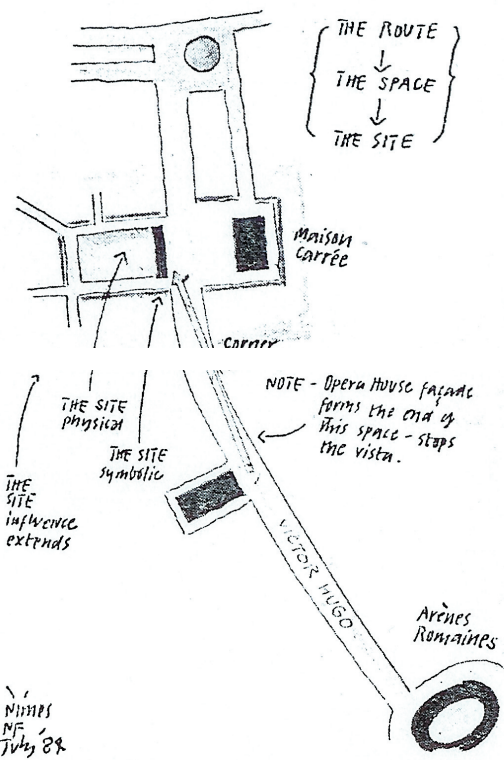


Fig. 4.4_ view of Carré d'Art from Maison Carrée

along the building's long edges. This exercise in urban landscaping not only encourages the dialogue between the Carrée d'Art and its historical neighbour, but has created a new public forum and a new outdoor cafe life, which has reinvigorated the centre of Nîmes.

The building entrance is located on a corner, in a play of solids and voids which matches the proportions of the side elevation if the Maison Carrée. Diagonal movement towards the corner entry is also encouraged by the plan, it is a subtle reflection of the diagonal avenues at the front and back corners of the site.

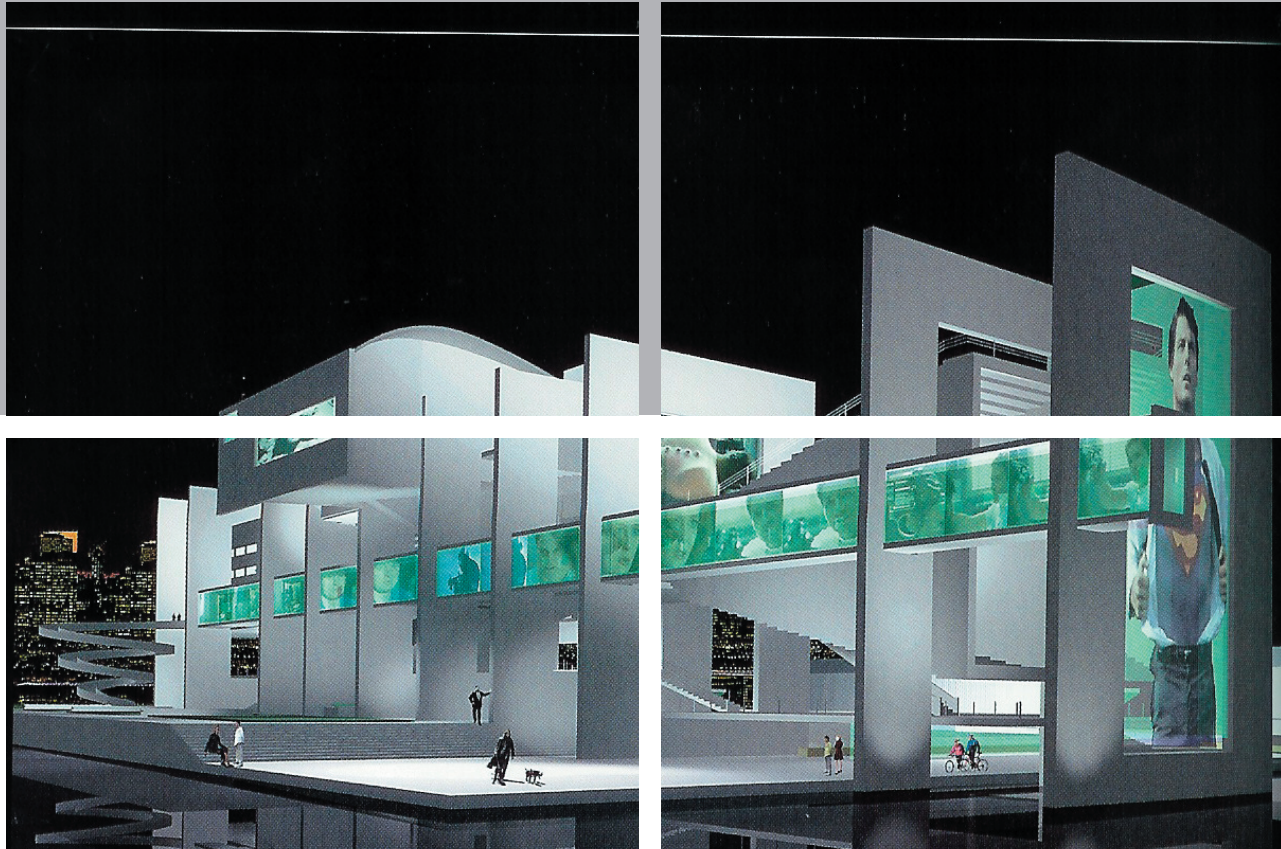


Fig. 4.5_ the CINE experimental film centre (Hariri & Hariri)

[04] [02] Hariri & Hariri.....for their innovation and concepts in museum

spaces

Project: The CINE Experimental Film Centre

Brooklyn-New York

The film centre is a vision for a 2020 building.

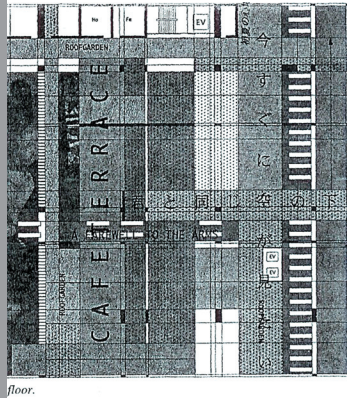
The concrete frame building is set on a pier on the Brooklyn Bridge in New York. It contains a film school, three theaters, a video arcade, cyber café and a film track gallery (a long tube accessed by a spiral ramp).

Hariri and Hariri envisage this 21st century museum as an entertainment centre rather than an art temple.

"A new museum" they write "would be an innovative space responding to the new mediums and definitions of art. This is a museum that is vertical, not horizontal. It is a museum as an 'interface' available to all artists. Here the concept of museum has become 'inside out', the boundaries between its content and container blurred and the threshold between 'private and public,' art and architecture' re-examined." (Pol Oxygen. Issue 4. 2003. Pg 52)

The digital blocks of transparent wall material (still to be developed) they envisage will soak up, transmit and broadcast digital imagery at the same time as they compose a buildings structure.

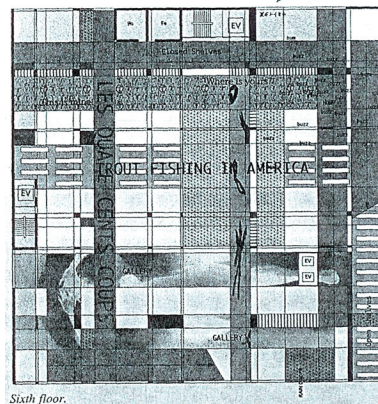
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floor.



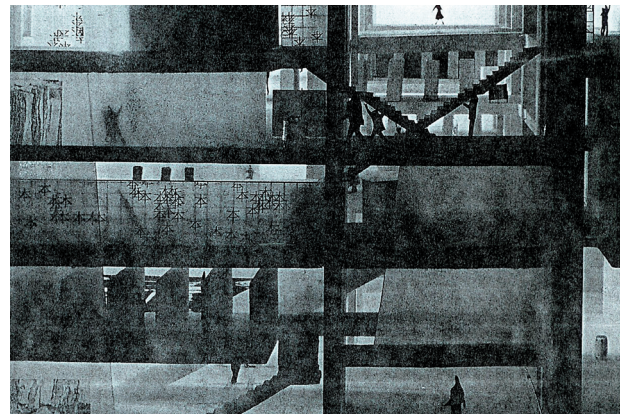
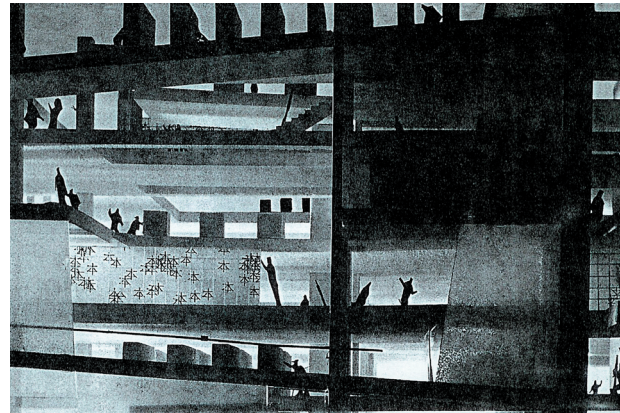
Seventh floor.



Sixth floor.

Fig. 4.6_ shuffling of program

Fig. 4.7_ computer generated perspective of interior showing layering of program



[04] [03] Nobuaki Furuya + Hisako Sugiura.....

..for rethinking programme
Project: Competition entry for Sendai Mediatheque
Sendai-Japan

This proposal was for a cultural complex containing a library, an audio-visual library and an exhibition space, designed with a total area of 20,000 square meters. Instead of separating the facility into three sections or layers according to individual functions, the proposal attempted to make them interplay together by shuffling the different functions. This resulted in the building becoming a "Forest of Media," encouraging visitors to encounter with unexpected persons or sources as they take a stroll inside.

"All the functions here are spatially shuffled. They are not divided into levels, zones or sections. The visitors will be able to catch a glimpse of the sending-in of an exhibition, the making process of an installation, the restoration of a work, a meeting for the next project, etc... The actual spatial organization will be chaotic, but by inputting all the information about space and activities into the computer, total facility management becomes possible." (Nobuaki Furuya)

The team's entry evolved around the following ideas:

A Forest Where a People and Information Interplay
Nobuaki Furuya

"We are always carrying along various kinds of things, such as a pocket-book, a notebook, magazines, leaflets of many kinds, an invitation card to a party, a letter from a friend, etc. While moving around, you take them out wherever you feel doing so.

Since the walkman came out, you don't have to listen to music in front of an audio stereo set anymore while riding a subway or crossing a street, music runs into your head without any relation to the world around you. You are now free from the restriction of when, where, and what you do. The combination of time, space and behaviour has become

completely free.

A Library has hitherto had one entrance and all of its functions are centralized inside. So it is also with museums, once you enter, there is solely a succession of exhibition spaces. You cannot enter the space and sample a few works of art while reading the book you've just borrowed, likewise you cannot slip out on the way and do something else.

You may feel like seeing this and that today and coming back the following day to see the rest of an exhibition. With a magnetic card check at each entrance, the exhibition can be set up in parts at different locations.

Here books, compact disks and video tapes are placed randomly on open shelves. As a visitor you can pick up a book and bring it anywhere you like - such as a lounge with a nice view, a gallery, a cafeteria, a performance space, or even outside under a row of trees. And when you finish reading it, you can return it to any bookshelf if you let its barcode read into a computer terminal nearby: This way books are always moving around as the users bring and return them. When you want to read a particular book, you can check it through the closest terminal, and it will tell you immediately which shelf the book is on.

When you find a book you want, your attention may be caught by a book of a completely different subject next to it. This may open you to a new, unknown world which was brought incidentally by another visitor. And through the opening left by the book taken, you might witness an interesting, enjoyable workshop going on.

You might find a copy of **+The naked lunch +** in the library+ which a friend talked about

It'd be nice to read a book + under the trees + on the terrace +with a person you never met before

The urban landscape we experience every day is also like that. Various peal with diverse purposes pass by one another at a different pace. This mediatheque is designed to incite the visitors to interplay_ with one another. They will compose and organize their own space, time and action by themselves. And there, someone who was until

now a complete stranger might pass by.

This architecture is a "Forest of Media" where people, things, time, space, landscapes, information etc, freely interplay: with one another. Once you enter through a slit in the building, the unexpected will wait for you. Even without any particular, purpose, one can spend time as he pleases. The visitors who stroll in the forest of media will become themselves the disc patchers who trigger the interaction with' each other.

In an age of media technology when one can easily take out or send out any information from home, what will be the meaning of going all the way to the site? The fact that one encounters information incidentally, unexpectedly and without purpose is to bring out contrariwise a new significant value.

The opportunities of encounters and interactions this mediatheque offers, while continually changing, are becoming entangled. Taking a stroll in this sort of "information market," with all your senses wide awake, is like window-shopping in an unknown world.

There will actually be various kinds of "places": with a high ceiling, narrow, like a deep valley, where a bright light stream,: in, where the wind blows across, which gets wet in the rain, where the floor is sloping, where the footsteps echo, where you can hear distant sounds, cold, dark...Those variously characterized spaces will generate their own activities as a stage. They are not neutral boxes.

Visitors as well as artists can occupy the space as they like. And they can take any position they please. The varied spaces of the mediatheque can be modulated by numerous filters. You can combine filters of many kinds such as paper screens, lattices, glass, panels performed in complete darkness cutting off the exterior light, or a sound-installation exploiting outdoor sounds may be installed in a translucent box with numerous holes in it.

Someone, for example, wants to find a place to play a musical instrument. He will connect a portable terminal to an "information outlet." He will come to know at once where and what kind of place is available. In the year

2000 A.D. when this mediatheque will open, the wireless terminal will be available. An artist who is planning an exhibition will also search out the space he/she desires through the data-base in the computer. He/she will, of course, simulate the exhibition plan in the three dimensional virtual reality. It is needless to say that he/she will have access to the mcdiatheque from his/her atelier.

Here you can acquire information as well as dispatch your own information. Many kinds of performances and presentations, although unrelated to each other, are occurring simultaneously. In this "Forest of Media" they will become interactive because of their accidental adjacency. The audience (who can here be creators as well) will edit their "own program" by weaving those events together.

The curator will be able to more actively plan a collaborative work. Furthermore, this facility may possess its TV. channel to dispatch its own activities day by day. The mediatheque will then become literally the citizen's communication-media."
 (Japan Architect, 1995-3,145)

[04] [04] **TSCHUMI.....for the
creation of a illusioned envelope
Project: Glass Video Gallery
Groningen,
The Nederlands,
1990**

Commissioned by the city of Groningen the project was to be a temporary structure for music and video festivals, the project is now a permanent work owned by the Groningen Museum.

Due to a tight budget the gallery's composition consist of a rectangle and glass envelopes. The project questions the permanence of architecture in that it is constantly challenged by immaterial representations of abstract systems in the form of television and electronic images.

Tschumi played around the following idea: *'Was the video gallery to be a static and enclosed box, like the architectural type created by cinema: an extended living room with exterior advertising billboards and neon light; or a new 'type' that brought what was previously a living room, bar and lounge event out into the street?'* (Damiani, G. 2003. p 78)

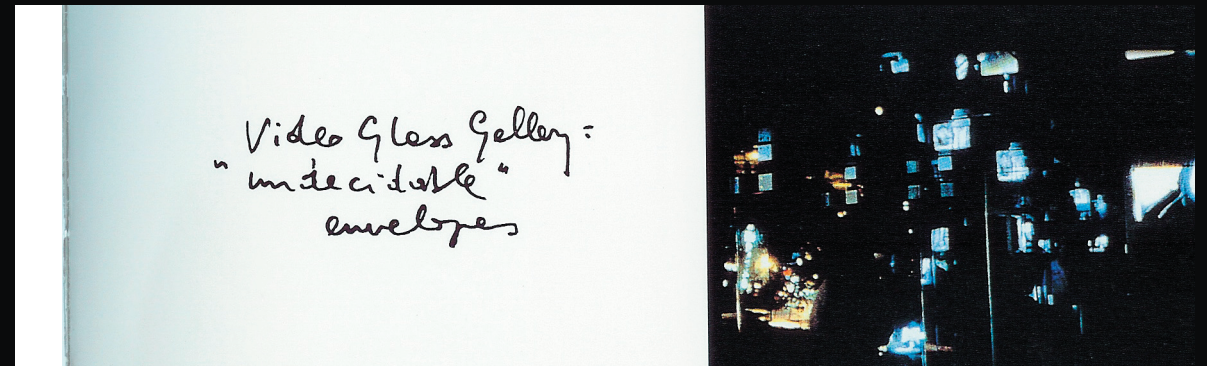
The video gallery is the first work of Tschumi that dealt with the concept of envelope. Tschumi states that the project is about the movement of the body as it travels through the exhibition space and about the enclosure, which is made entirely out of glass.

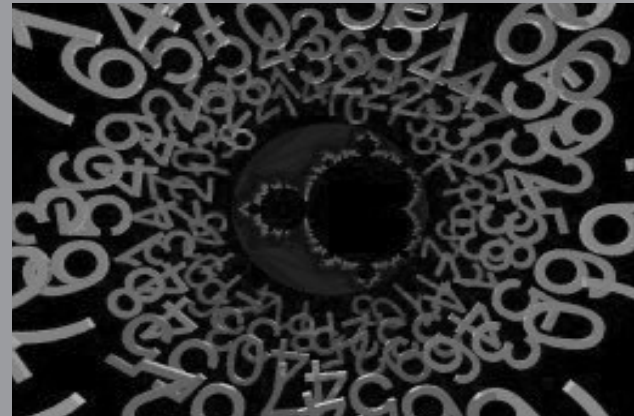
Tschumi's video gallery give priority to the image, the monitors inside provides unstable facades of reflections. Juxtaposed real and the virtual imagery pose questions of whether the glass envelope is an actual structure of an

Fig. 4.8_ Video gallery glass envelope



Fig. 4.9_ Endless reflections at night





[05][01] INTENSION

The treatise responds to, examines and explores the relationship between past patterns and that of new continual patterns influenced by a digital age of information technology.

The new patterns are a response to historical influences and derive their form from the continual needs of our society. For the dissertation the physical properties of historical edifices have a strong influence on the way new architecture is shaped. This will again shape the historical context. Digital technology ,film, and their influences on new architecture is explored.

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the movement

[05][01][01] MEMORY

"A memory is anything that happens and doesn't seem to unhappen." (DE BONO,1990:29)

KIYOSKI SEY TAKEYAMA states that: "the city is woven from 'memories'. Architecture is an incubator of time. The technologies that have allowed human life to prosper in the past were methods of time preservation. Books have preserved time for thought. Photographs, recordings, film, videos, have preserved time in various ways by light and sound. In a similar way, works of architecture have materialized the programme of each age, thus representing time in many different ways. Architecture is a "memory factory." (DE VALLEE, 1996: 81)

"A landscape is a memory surface. The contours of the surface offer an accumulated memory trace of the water that has fallen upon it. The rainfall forms little rivulets which combine into streams and then into rivers. Once the pattern of drainage has been formed then it tends to become ever more permanent since the rain is collected into the drainage channels and tends to make them deeper. It is the rainfall that is doing the sculpting and yet it is the response of the surface to the rainfall that is organizing how the rainfall will do its sculpting.

With a landscape the physical properties of the surface will have a strong effect on the way the rainfall affects the surface. The nature or pattern of the surface will determine what sort of river (pattern) is formed. Outcrops of rock will determine which way the river goes." (DE BONO,1990:29)

The Oxford dictionary define pattern as interpreted intelligible forms of sequences, discernable in the way in which something happens or is done.

Our cities are made out of an arrangement of patterns, regularly found in their comparable objects. Thus in a city sense patterns can be seen as interpreted information gathered by the needs, requirements and responses of its people. This is then arranged in regular sequences that operate as the whole.

Patterns in our urban cities manifest in two forms: the physical manifestations and those of the ever changing. Physical patterns are all that can be sensually experienced; e.g. roads, buildings and other infrastructure. The ever changing patterns can be classified as continual patterns that change frequently with small interruptions. Continual patterns include social issues, people's thoughts and general lifestyle patterns.

The city and its physical patterns have a direct influence on people's reactions, influencing them on their continual choices and ideas. Once again we create new physical patterns and again react on them.

"A particular way of looking at things may have developed gradually. An idea that was very useful at one time may no longer be so useful today and yet the current idea has developed directly from that old and outmoded idea." (DE BONO, 1990:10)

[05][01][02] ARCHITECTURE OF THE INFORMATION AGE

New Media and the information technologies have profoundly altered how we perceive and conceptualize our environment. We find ourselves in a world that is fast moving, dynamic and transformable

Jean Nouvel suggest that architects must try to take into account the free flow of images, miniaturisation, automation, speed, the conquest of space, and the emerging symptoms of a new popular culture. (DE VALLEE, 1996:189)

Architect Pieter Weibel (1992) believes that the information technology context in which we now live has placed the works of the architect in a different dimension.

"What we are seeing now is a transition from systems that are closed, complete and defined decisions to systems that open, incomplete and non-defined. From a world of necessity to a world of variables manipulated by the observer, from a single perspective to the multiple perspective, from hegemony to pluralism, from text to context, from locality to non locality, from totality to particular, from objectivity to the relativity of the observer, from autonomy to co-variation..." (WEIBEL, 1992, www.aec.at)

"It follows that an architecture in this age of media and electronics stands in need of a profound immersion in our present-day contexts, a return to experimental visions and to the cause of things, a reconsideration-which is, in essence and in form, precisely what an architectural proposal is – of its mechanisms of comprehension and of working method." (WEIBEL, 1992, www.aec.at)



image information:
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www.filmsite.org

TAKEYAMA's essay on the Future of the city (**Architecture of the Future**) enlightens the following about the incompleteness and dynamics of our contemporary world. "One of the features of 'incomplete form' is its interaction with other forms, like the electron exchanging ions. Another is its capacity for architectural expression which reflects our consciousness. To define the "present", we can only describe it in an incomplete way. The invention of communication technologies have broken down the information into bits and pieces. Conversely, we could say that society, by adopting fragmentary information, has made it possible for communication technologies to progress rapidly. We no longer dream of a self sufficient utopia with a common treasury of information. We must seek our own place in the midst of the flood of incomplete, fragmentary, broken bits and pieces of information. In present and in future, we can see the world only in terms of a continual discontinuity of incomplete events. The incompleteness of information and the incompleteness of human existence embody a present, where various 'times' coexist...The media, which are the products of human intervention, have changes our consciousness and given

us a new vision of the world. As long as architecture is a representation of our consciousness of space, the architecture that represents the "present" can not avoid being incomplete. For only in an incomplete form can the future become complete." (Constantinopoulos,V. 2000, p 81)

[05][01][03] IMAGE

The city lives in us...

Time passes,

We move from one city to another,

From one country to another,

We change languages,

We change habits,

We change options,

We change clothes,

We change everything.

Everything changes. And fast.

Images above all

(From the thesis of Wim Wenders)

Fig. 5.1_ Radiohead concert tour in progress, a transition driven by success and celebrity



The Oxford dictionary define image as the following *IMAGE is a representation of the external form of a person or a thing in art; a visible impression obtained by a camera, telescope, or other device, or displayed on a video screen; an optical appearance produced by light from an object reflected in a mirror or refracted through a lens, a mental representation and the general representation that a person, organization or product presents to the public. Image can also be the metaphor for a person or a thing closely resembling another (imitate-following a model). In mathematics image is a point or set formed by mapping from another point of set.*

For this dissertation image is the 'epitome' of the hierarchal historical context in order to derive a new meaning for the precinct. Image is the visual perception of the retort buildings, the gas tanks and the site's context, depicting its external form. Image is that what can be captured of the site through the lens of the camera. A new image is created by the layering of existing imagery; by mapping it, adding and subtracting points, lines, volumes and planes.

A new image is created by reconstructing and adding to the context, creating a richer image giving meaning to the precinct, generating a place of memory. Images throughout the project are created where light travels through transparent layers, creating depth, introducing negative and positive backgrounds/foregrounds. Multiple images are refracted through the lenses of the eye, creating pluralistic similes.

We also see spectators watching (them) in intercut sequences. They are, it would seem, looking at what we see. There is at least, as in all montage sequences of this sort, the implication of a spectacle shared by filmed spectator and spectator of film...The implication of shared spectacle is therefore subverted, and one is made conscious of this disjunction.

ANNETTE MICHELSON, 'THE MAN WITH THE MOVIE CAMERA,
FROM MAGICIAN TO EPISTEMOLOGIST'

ARTFORM MARCH 1972



[05][01][04] FILM AND DIGITAL VIDEO

"A century of cinema has passed, and it has, so the torch has passed from Lunière to Méliès, from realism to illusion." (MATT HANSON, 2003:9)

The new century shows an exceptional time of transformation due to digital media technologies. Opportunities for transition and transgression are created in works of architecture, art, and cinema. Cinema's time for transition tries to blend the younger digital arts with 100 years of the moving image, where in essence of celluloid is replaced by the strata of digital inflicted moving images.

The way forward for cinema could rarely be glimpse in the past. Digitization of cinema enabled it to become a medium where elements are fused, altered and blurred; enabling the creation of anything that can be imagined.

"We call movies 'film', but the celluloid is drying up"
(WILLIAM GIBSON, 1999:10)

"Digital film making enables the filmmaker to cast light into the dark corners of their minds, giving us a clearer look at their more personal visions. In these corners, waiting to be discovered, are the ideas that just weren't possible or practical before the CCD (charge couple device) came along. And while a certain film maker is moving towards an accelerated cinema-a new type of cinema integrally affected by digital technologies-others, particularly establishing directors, are using the opportunity that this new equipment gives them to reinvigorate their own work and move in unexpected directions. They are tackling subjects that are more relevant to DV production or animation, either because of intimacy, aesthetics, environment, or scale. For some directors, digital cinema's breaking down of technical barriers creates a sense of freedom, so they are able to concentrate on working with their

Fig. 5.2_ the end of celluloid

Fig. 5.3_ Time code, 4 simultaneously aired features



Fig. 5.6_ Metal Gear Solid 2-Sons of Liberty

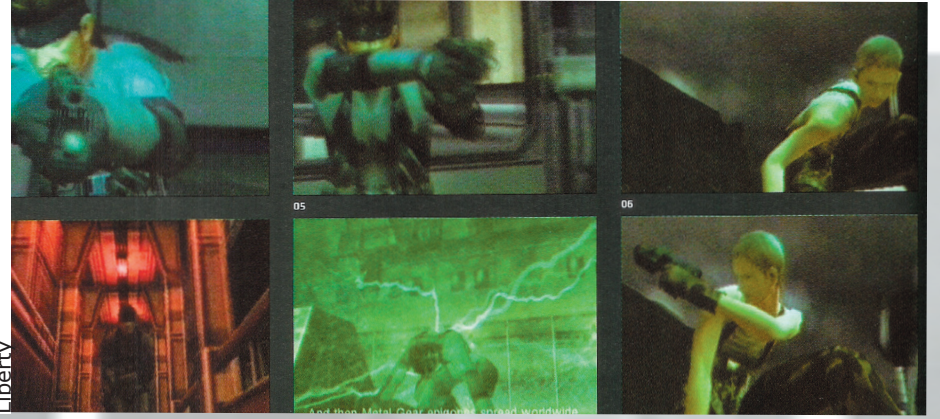
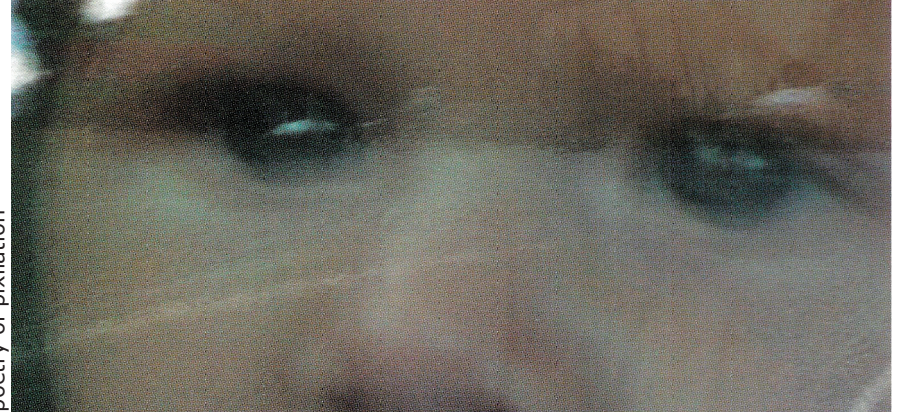


Fig. 5.5_ Enter the Matrix



Fig. 5.4_ No Maps for these territories: road movie as digitalised terrain, in poetry of pixilation



actors. For others, the freedom lies how they can play with images and ideas once the action has been "filmed". (MATT HANSON, 2003:69)

Digital video (DV) allows horror movies to feel more convincing, without art direction and mediation, almost like reality TV. For documentaries DV has allowed the document of subcultures, and experiences that were previously too fleeting, intimate and all-encompassing. Documentaries are able to express the truth in the everyday like expressed in the film, **No Maps for These Territories** by **Mark Neale** (2000). Small hidden cameras were strategically placed in a taxi that depict one individual's life. Neale was able to take away the filming process and record a character surreptitiously.

For films like *The Lord of the Rings*, *Gladiator*, and fantasies virtual reality technologies have ostensibly revived the spectacular.

Digital movies such as *TIMECODE*, directed by MIKE FIGGIS (2000), a drama shot in real-time over 93 minutes is the epitome of DV. The movie is presented without any edits with a screen split into 4 quadrants. **'The film was an attempt to show that we can do editing in a different way, through montage rather than cutting'**; says Figgis. In the film the audience do the cutting, selecting what they want to edit by themselves. The individual has a sense of control over the story, a quality we usually associate with computer gaming.

In essence digital video purely extends the established filmmaker and its audience's palette. "Digital video allows us to the promise of truth in the image like never before, it conceals and reveals artifice at one and the same time, and holds the promise of myriad ways of seeing...The end of the celluloid is about the end of a frame with definite boundaries." (MATT HANSON, 2003:165)

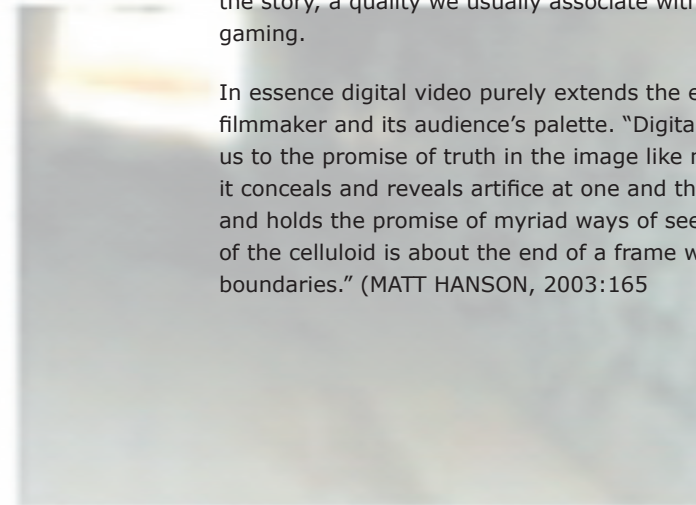
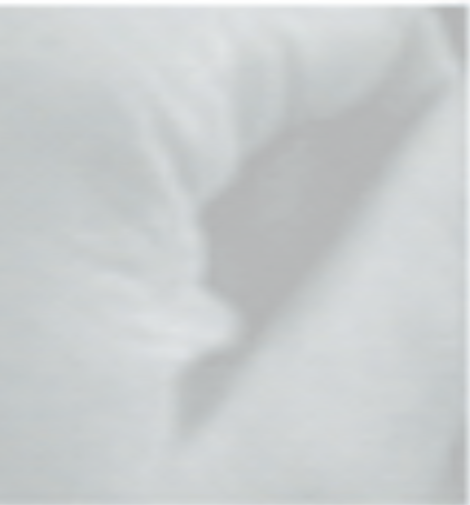


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www.filmsite.org

[05][01][05] TIME AND SPACE/SPACE-TIME

Architecture is caught up in a web of four dimensions, where the first-third dimension is that of *space* consisting of length, width and depth the other is *time* implying sequence and continuity. When time and space is considered in relation to one another, it suggests the rational concept of *place*.

"...Space seized by imagination cannot remain indifferent space to the measuring and thought of the surveyor. It is to be experienced. And it is to be experienced, not in its positiveness, but in all the bias of imagination." (G. BACHELARD, *ELEMENTS OF ARCHITECTURE*, 1998:135.)

Rapoport et. al. see space as; "the three dimensional extension of the world around us, the intervals, distances and relationships between people and people, people and things, and things and things". The Oxford Dictionary define space as a continuous area or expanse which is free or unoccupied and the dimensions of height, depth, and width within which all things exist and move. Plato introduced the space as "the mother and receptacle of all created and visible and in any way sensible thing".

Time is certainly the most significant entity we are involved in, time is the generator of new ideas and evolutionary processes.

The oxford dictionary defines time as the indefinite continued progress of existence and events in the past, present, and future which is regarded as a whole. Time is an integral ingredient in both architecture and film.

Stormer and Alstop Architects advocate that architecture is the product of space that gives meaning in one place, as well as dignity. Newton has stated that "space and time are quantities in themselves rather than the mere relations between objects."

People live in time as well as in space. Our environment is seen as the origination of time, reflecting and influencing behavior in time.

Fig. 5.7_ moving image



Rapoport et al. further discusses people's attitudes to time. They claim that "*people live in time as well as space – the environment is also being seen as the organization of time, reflecting and influencing behavior in time*". They claim further that time structuring also influences how time is valued and, hence, how finely it is subdivided into units. Cultural differences play an important role in division of the time. The human as the creator of the culture gives value to the tempos and rhythms. This article also discussed that tempos and rhythms distinguish among groups and individuals that may have different temporal "*signatures*" and they may also be congruent or incongruent with each other

In architecture space-time is captured through movement of people. People observe different perspectives of places, adding to a sequential space-time evolution. Past time is captured through conservation of historical artefact and architecture.

The re-use of architectural edifices adds to the concept of time, where the adjustment takes place over time. Time becomes the generator where spaces and places are being altered. The re-use of buildings further adds to the identity of a place since space-time is preserved. The way of construction, materials and form of buildings depict themes in time.

In film time is used to illustrate the narrative, information can either be transferred in real-time or deconstructive time. (as in the Film Memento). Although some films may distort, abstract and fragment space and time, the narrative journey of images of perceived time and space are always present in the viewers mind.

Film give tiny pieces in time, it gives a piece of architectural space in relation with its time context. Film gives us the ability to experience space in a certain time.

In architecture space can either be solid or void a container or the spaces in between the containers. Actions in and around architecture usually take place in both these negative and positive spaces. With film on the

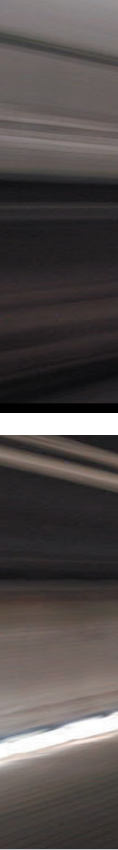
other hand, activities mostly take place in the negative space and the individual is seen as the positive space. This is more so where computer generated special effects are added at a later stage.

Time and space are relative and one can claim that space is simply a possible series of material objects forming a negative or positive space and time is a possible series of real events. The reality we perceive is thus only one of many combinations of space and time.

Unlike Architecture, film can only represent space. Film space is not three dimensional; it is made up of two dimensional fragmentations. The two dimensional objects on the set create a negative space in which activities of acting can take place.

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www.filmsite.org

Fig. 5.8_speed



**[05][01][06] CONCLUSION**

The film centre's architecture arise out of two approaches taken; the one is the historical contexts evoking new architectural form and order; the other is the digital world of information technology and the moving image which have repercussions on our perception of real physical space.

Both the historical and digital (including film in the digital age) age's context are interactive within the contemporary spaces of the new edifice.

Static, permanent systems associated with this historical context of the early 20th century are explored in terms of form, scale and order.

Dynamic systems associated with the digital age generate an architecture that is transformable, transparent, layered allowing co-variation and multiple perspectives to be perceived by the observer.

When considering time in context with continuity, one arrives at the concept of place, place refers to continuity in that it acts as a referent to past happenings within space, creating a memory surface. The project shows the layering of the previously mentioned four dimensions. The temporal dimension is captured through use of the historical context as point of reference. New generative layers of space and time are composed by a responding to the context the site and the digital age alike.



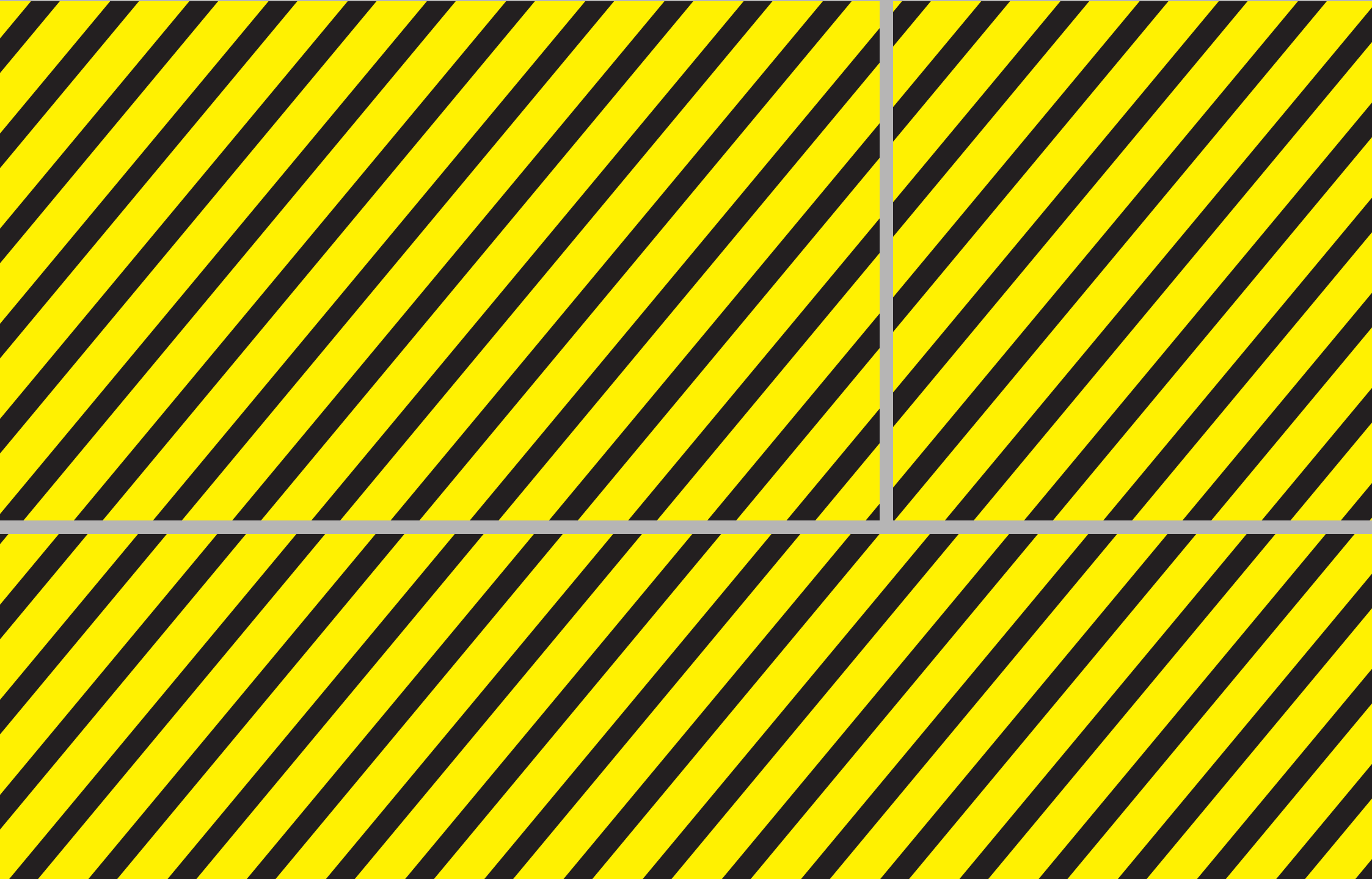


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[06][02] DESIGN DEVELOPMENT

Fig. 6.2_ perspectives of proposal 1, indicating free form

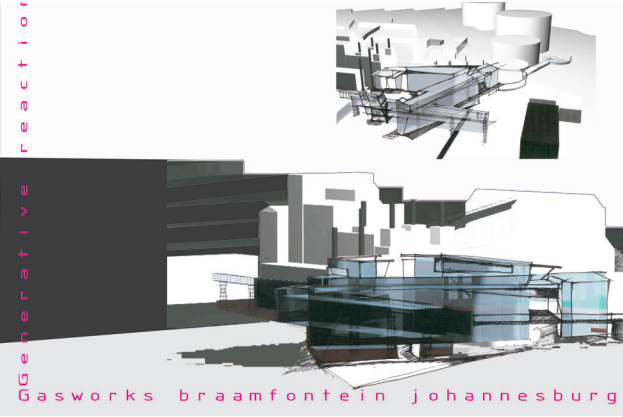


Fig. 6.1_ section showing placement of cinema in gas tank remain

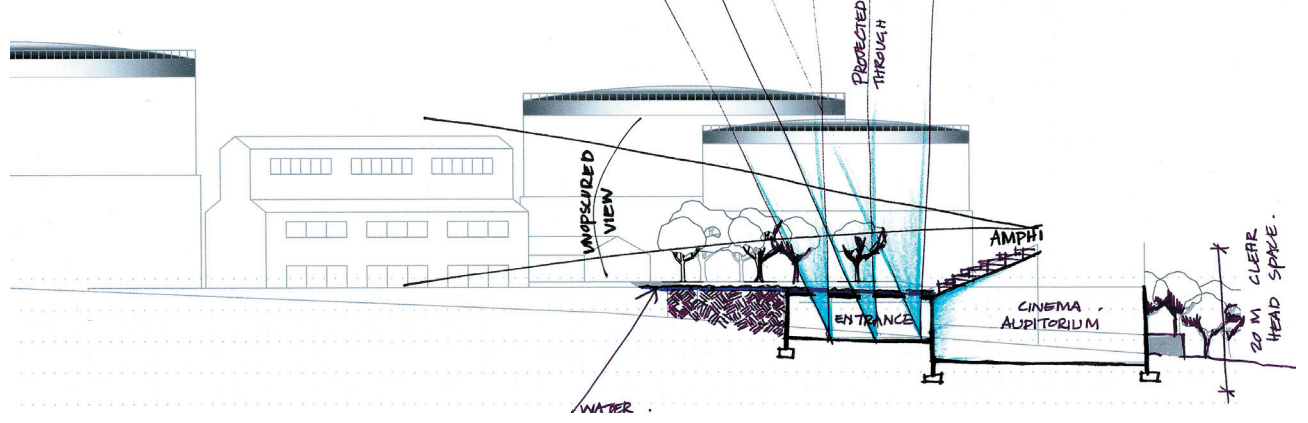
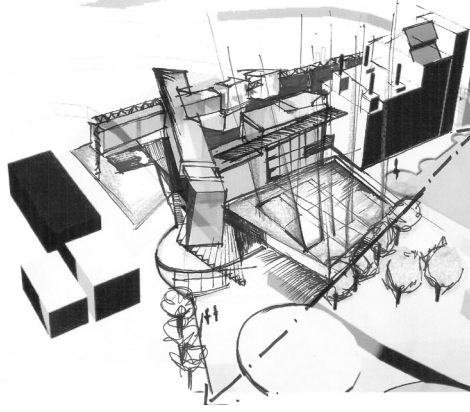


Fig. 6.3_ aerial perspective indicating light projections from water feature



[06][02][01] PROPOSAL 001

The brief explored the function of a cinema complex and film studios. The concept explored form as a generator for design. It was soon realised that free form as if resisting gravity did not fit the context of the site or enhanced the form of existing buildings. Proposal 1 investigated the concept of placing the cinema spaces within remain of a gas tank. Light projections came from within the cinema entrance creating a play of light projected through the water. It was later decided to rather connect the cinema auditoriums directly with the urban landscape, and not hiding them under the ground. Besides the re-used gas ruin, other ruins around the building were treated as marked hard landscaped circles showing the layering of the historical context.

Fig. 6.4_ aerial computer rendering showing placement of building

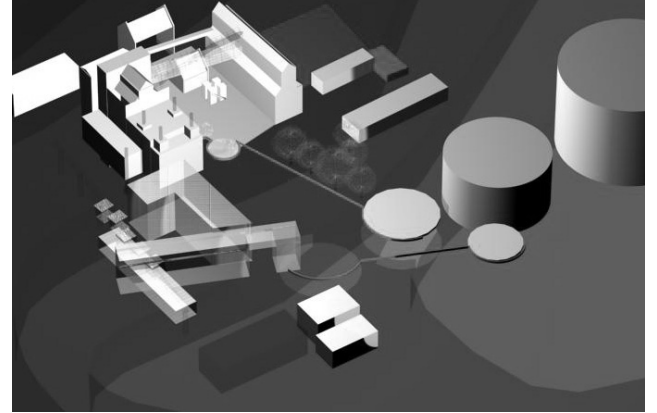


Fig. 6.5_ plan development

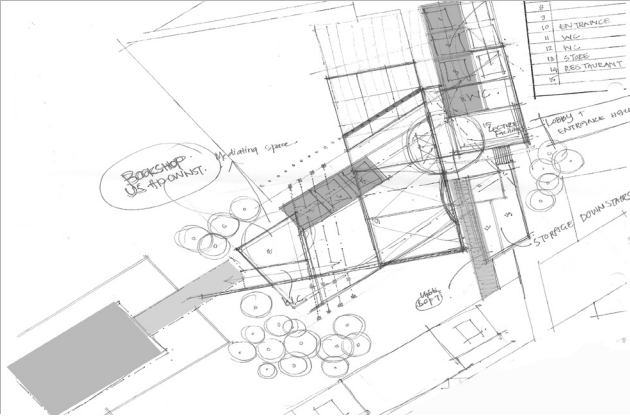
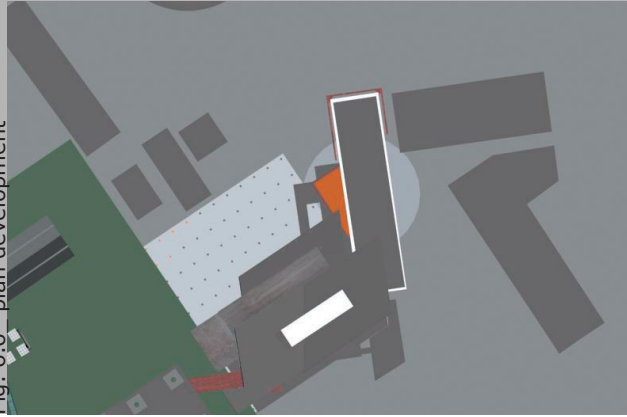


Fig. 6.6 plan development

**[06][02][02] PROPOSAL 002**

After a investigation of proposal 001, it was decided to replace the film studios(which will not communicate with the urban landscape) with a interactive film museum. The reason, the buildings design had to accommodate the public, and a museum will be better suited, since the building is placed in the entertainment hub. This proposal shows the re-use of the existing concrete footings on the old purification platform. The grids of the concrete footings are superimposed onto the site. The design proposal respects this grid by extending it into the museum building. The use of gas tank ruins as landscaping feature remained a feature.

Fig. 6.7_ rendering showing re-use of concrete footings in water-feature

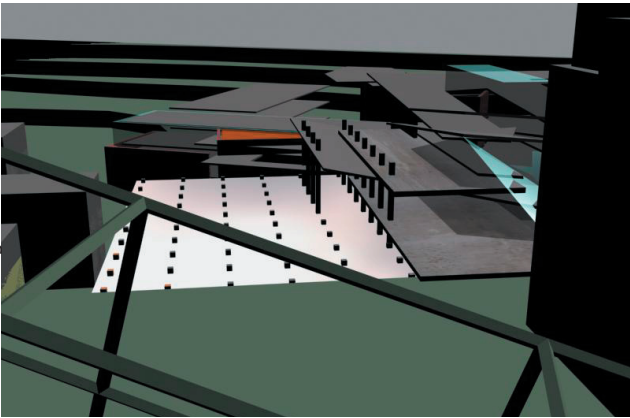


Fig. 6.8_ rendering indicating view from North-East

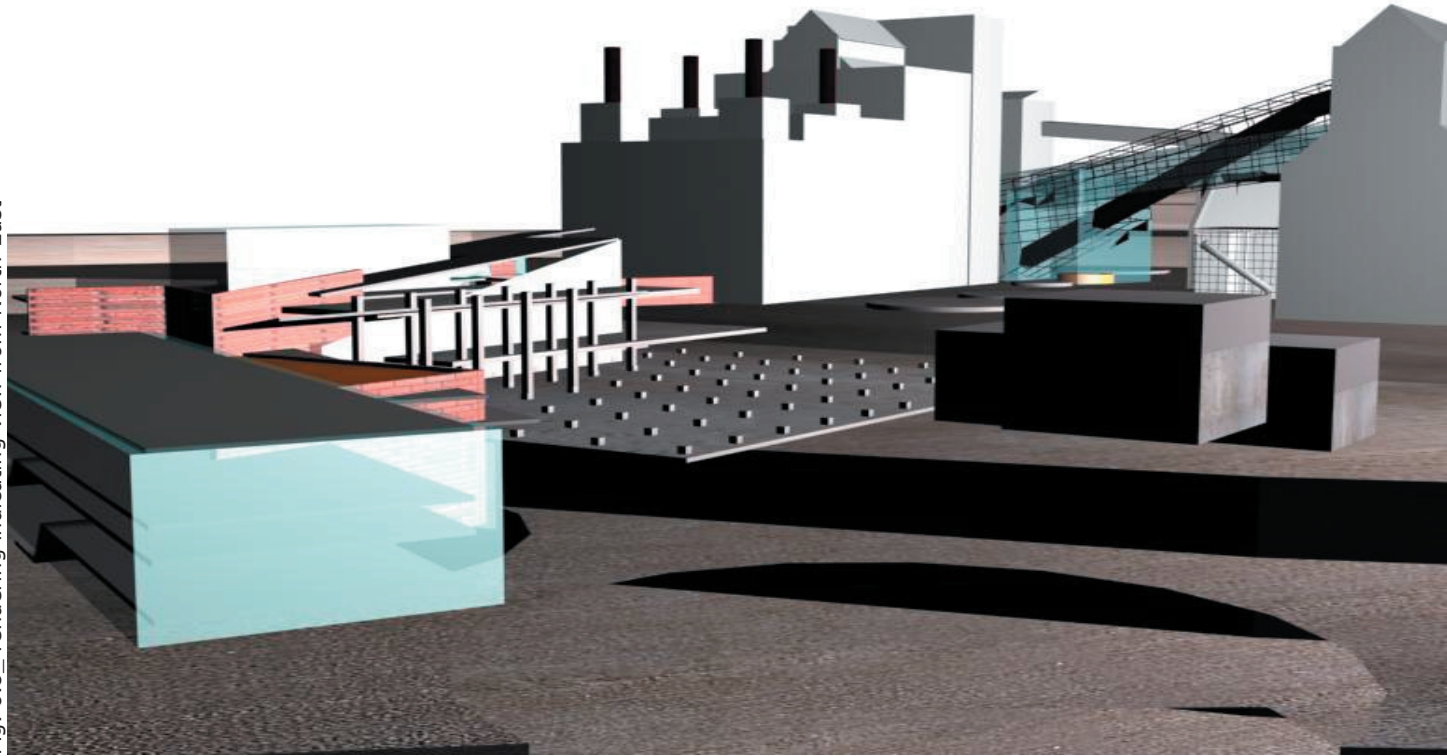


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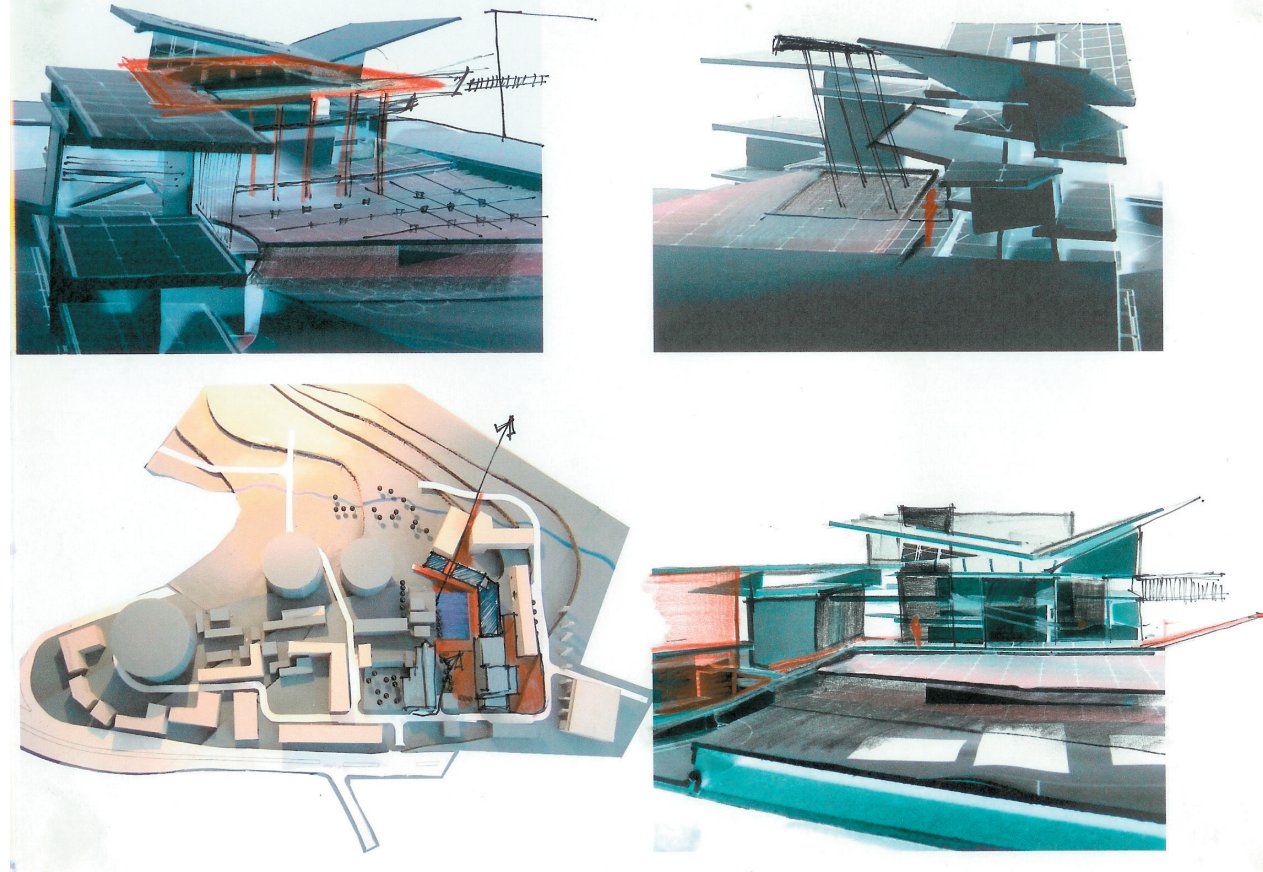


Fig. 6.9_ model development

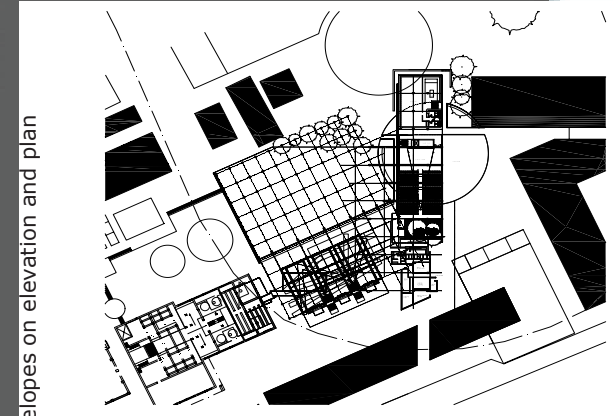


Fig. 6.10_ development of museum envelopes on elevation and plan

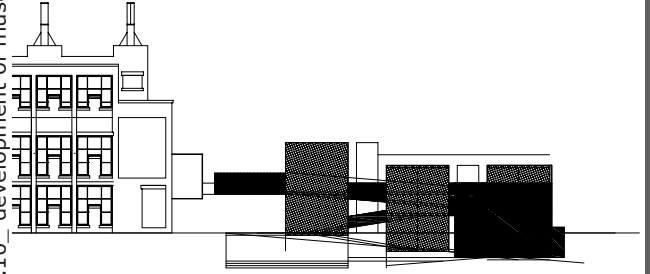
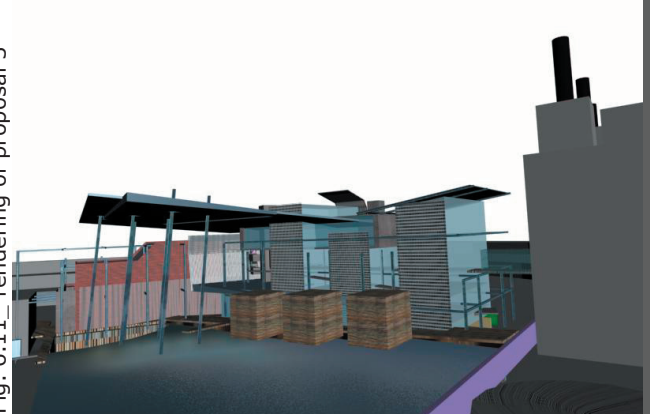


Fig. 6.11_ rendering of proposal 3



[06][02][03] PROPOSAL 003-004

Proposal 3 explored the idea of manipulating programme to create spaces of retreat and interaction throughout the design. The museum building was divided into three separate boxes with ramps interconnecting the spaces. Most of this proposal was brought forward into the final proposal, but the angled umbrella roof was replaced with a more elegant structure.



Fig. 6.12... rendered view of film centre from the North

[06][03] RESOLUTION/PROPOSAL 004

[06][03][01] PLAN DEVELOPMENT



Fig. 6.14_ the use if grids on site



Fig. 6.13_ site with surrounding grids superimposed

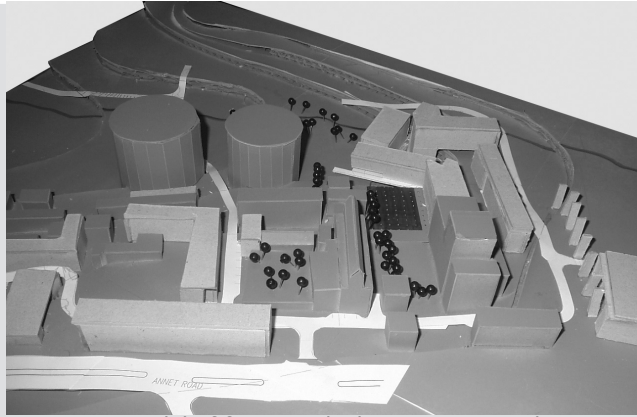


Fig. 6.15_ model of framework showing view to the east

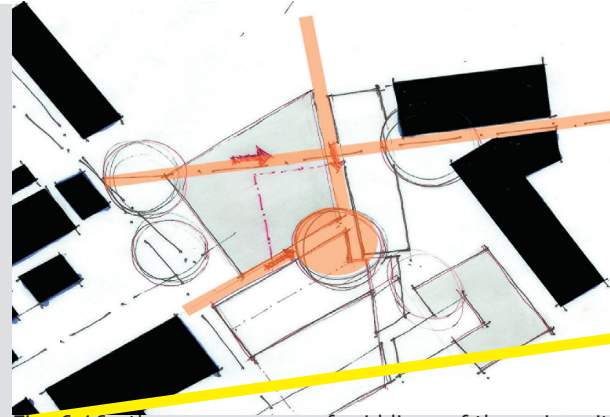


Fig. 6.16_ the convergence of grid lines of the university and gasworks create an axis for activity. It was decided to place the building entrance where the two wings coincide. Bubble diagram of ground floor program. Response to bubble diagram.

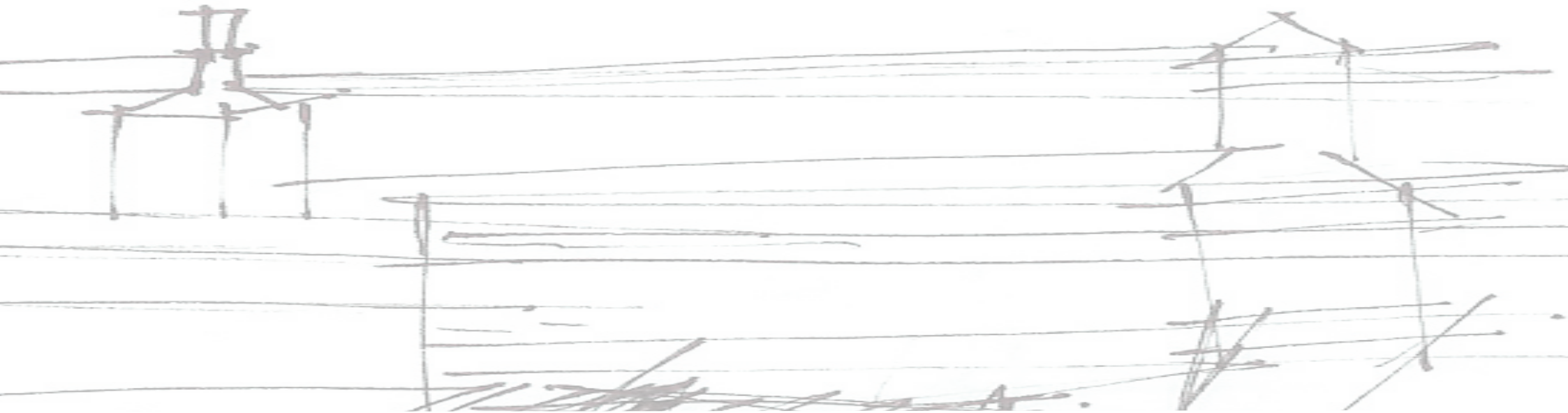


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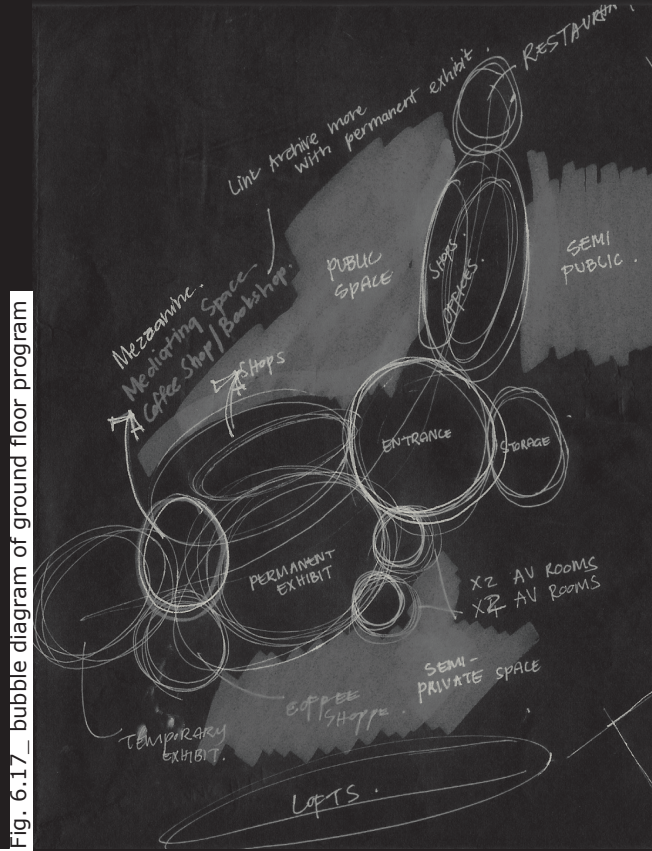


Fig. 6.17_ bubble diagram of ground floor program

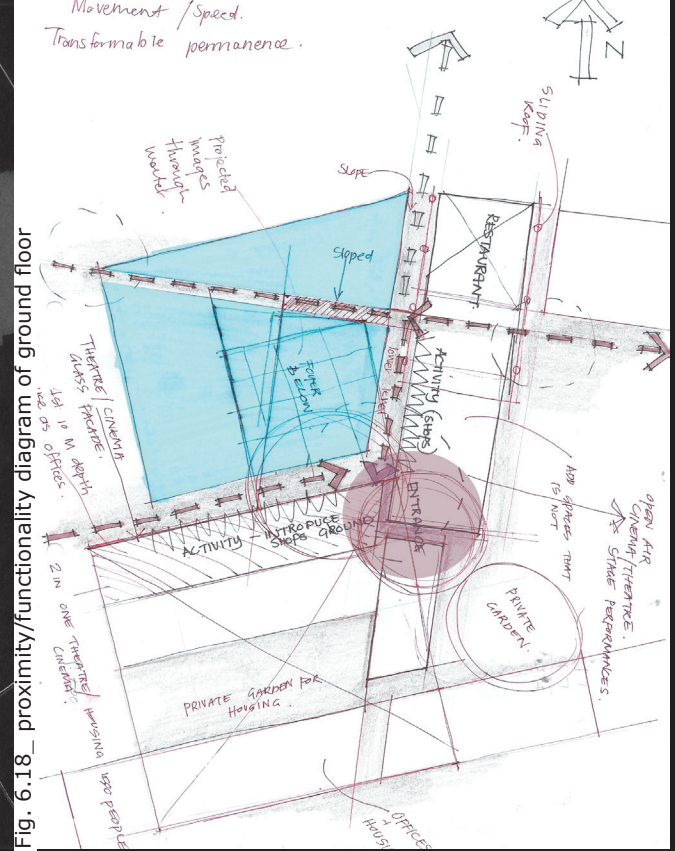


Fig. 6.18_ proximity/functionality diagram of ground floor

[06][03][02] MASSING / PROGRAMME

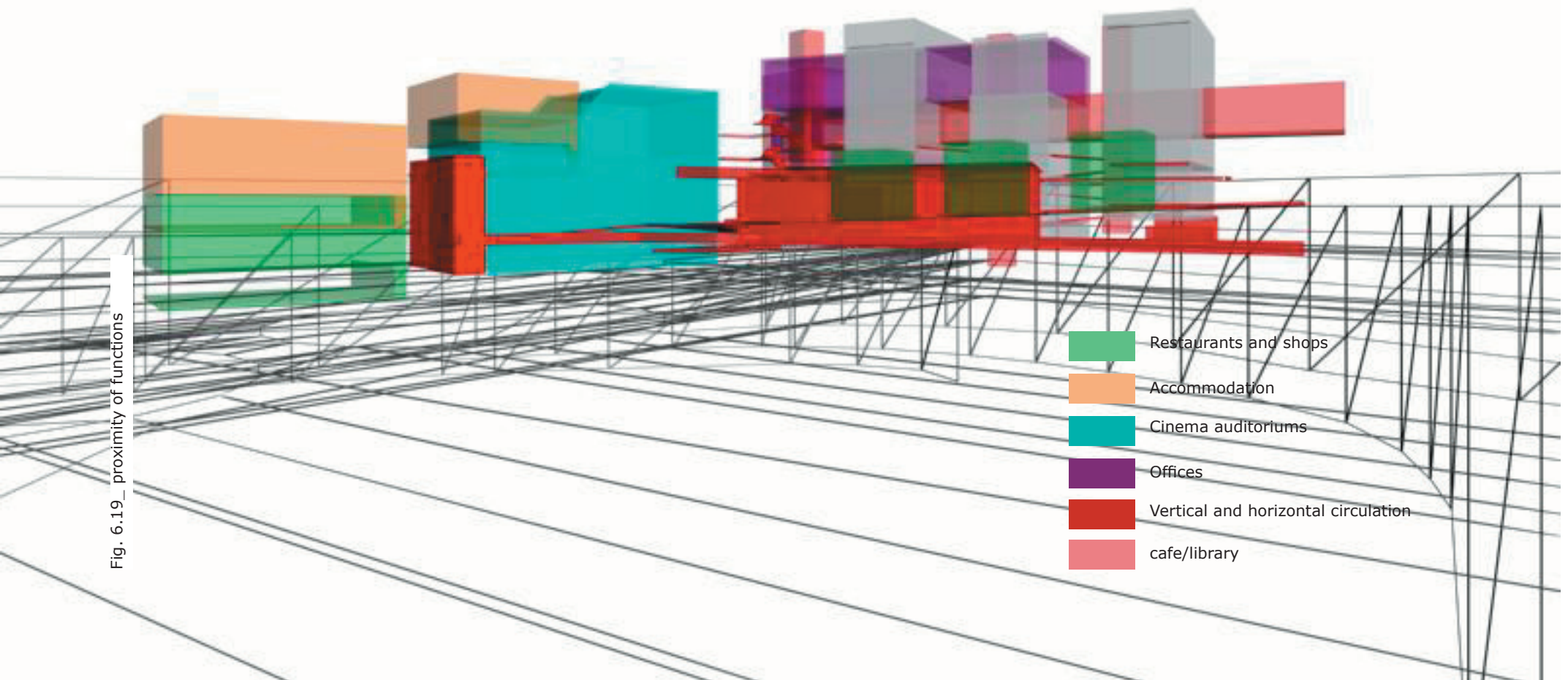


Fig. 6.19_ proximity of functions

Fig. 6.23_ assessment of order rhythm of retort house #1

**[06][03][03] THE MAKING OF FORM**

"Form making is the core act of architecture... architectural form making should be an imaginative, inhibited investigation in three dimensions. Ultimately architecture is not just a social art." (Beck & Cooper, 10 essays, 10x10)

The architecture of the film centre tries to capture the realities of the digital age and film (moving image) in everything but its form. Formalistic architecture of 'gravity resistance', 'form as sculpture in the landscape' and 'the form-making of cyberspace' takes a back step to the influences posed by the historical edifices of the site.

The design takes a structural approach towards the making of form. Assessed basic underlying structures of the ordered 'framework' of the context instil the innovation of a complex layered design image.

The Buildings form react to the following ordering systems on site; axis, symmetry, hierarchy, rhythm, datum, and Modernism' abstraction where the architecture is stripped of all decoration.

The building's mass, form and order is derived from the clustered spatial organization of structures on site, placing envelopes face-to-face and edge-to-edge. Linear spatial organization around the retort houses is preserved by aligning the new museum wing of the film centre with retort house #1. The cinema wing is kept parallel with the university's grid adding to the linear sequencing of the gas tanks and gas tank remains. The cinema wing enables the formation of a barrier enclosure for the public space.

The hierarchy of pure scale and size of the retort buildings is preserved by lowering the film centre, creating basement spaces. The film centre's height is reduced by lowering the building 2m below the square (between 2 retort houses) onto the coordinated grid purification platform. Difference in level and the introduction of a water feature on the edge of the square both provide a definite threshold between the new development and the original retort houses.

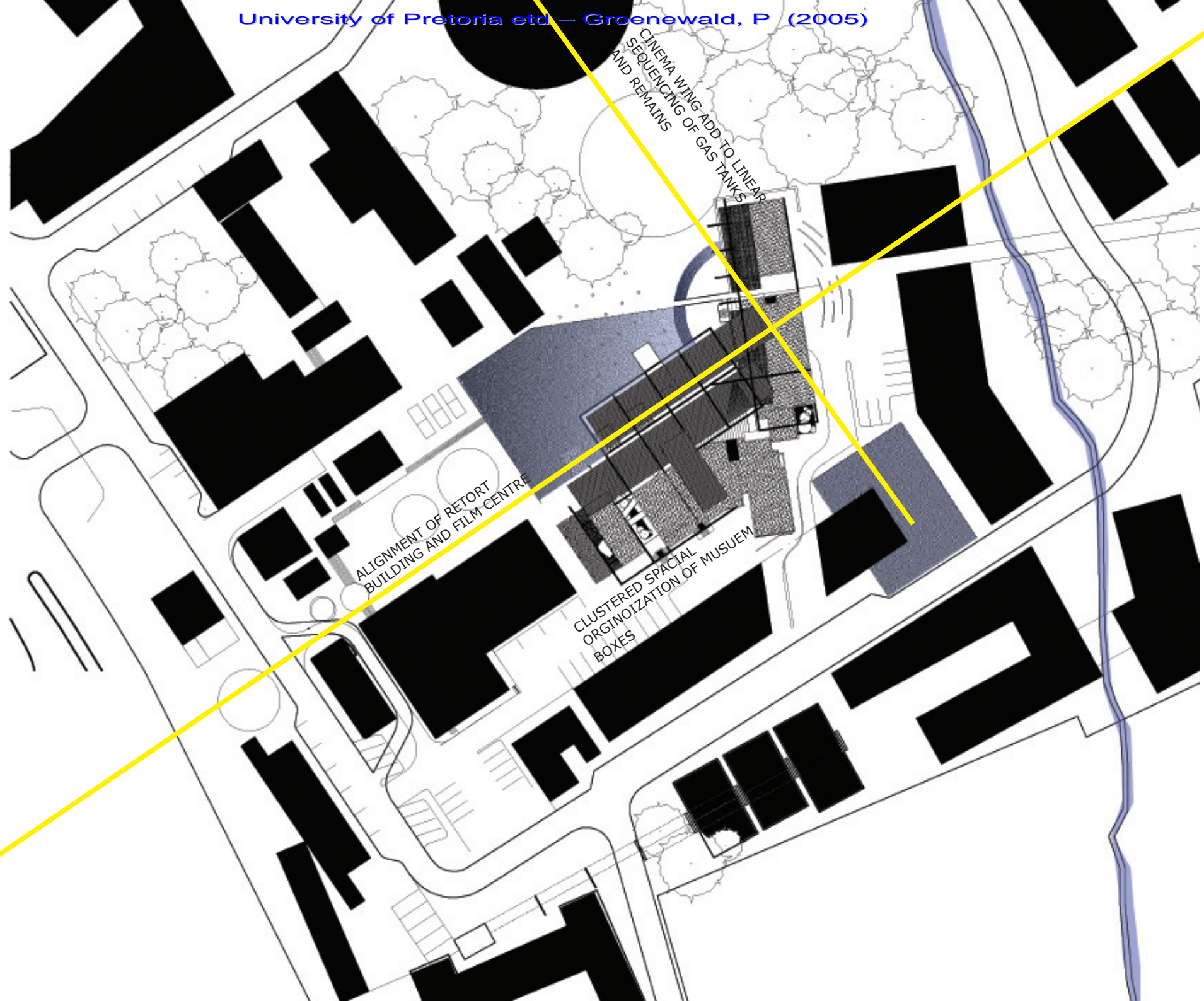
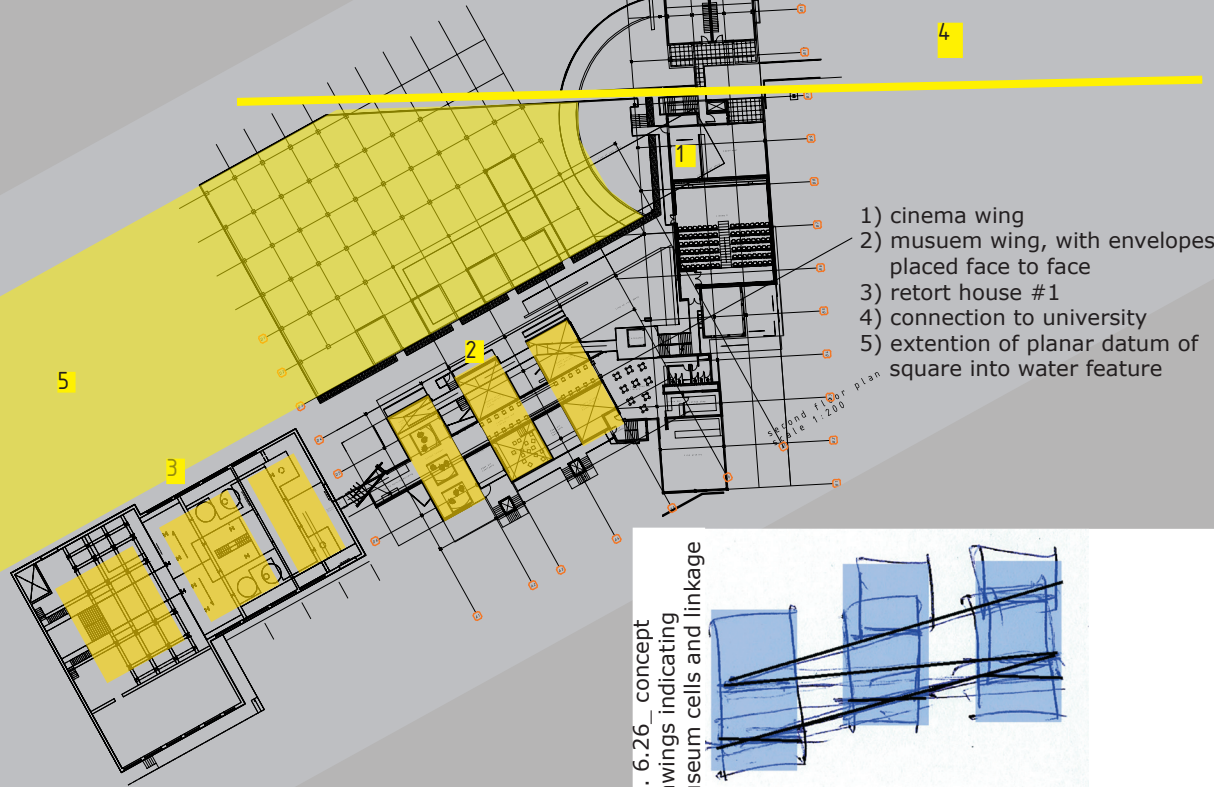


Fig. 6.24_ plan indicating position of film centre

Fig. 6.25_ response to retort house #1's void and solid spaces



Placement of the building addresses the need of creating a human enclosed space. The cinema wing of the film centre is offset as far as possible from the open space between the retort buildings in order to preserve the visual line of site to these buildings

Elongated lift shafts of the film centre enhance and further accentuate the verticality of installations on site e.g. furnace chimneys.

Through an assessment it became apparent that the retort building #1 consists of three definite contained spaces, each with its own unique volume. A network of steel girders and columns define these spaces through the creation of perforated barriers intersecting and defining these volumes.

Museum envelopes were inspired by inverting the three volumes (voids) of the retort building. The solid barriers of the retort building are represented by void courtyard spaces connecting the 'solid' museum cells. Here solid becomes a void, causing the positive and negative of the retort building to be transposed.

By breaking the museum space up into three different envelopes, the envelopes have an ameliorative effect on the retort building. This museum wing acts as a perforated façade linking the cinema building with the retort building. These cells anticipate a certain progression to the retort building when observing it from east to west. If different envelopes were not created by treating the façade as one cell, the building would have ended bluntly against the retort building, obliterating its significance as historical edifice.

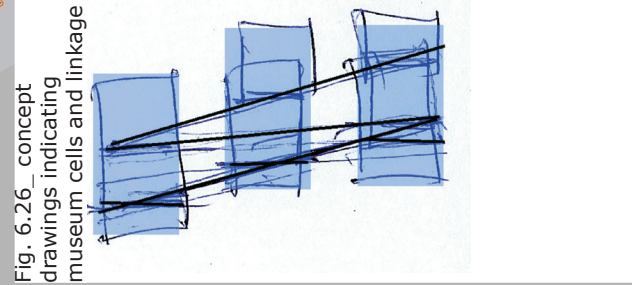


Fig. 6.26_ concept drawings indicating museum cells and linkage

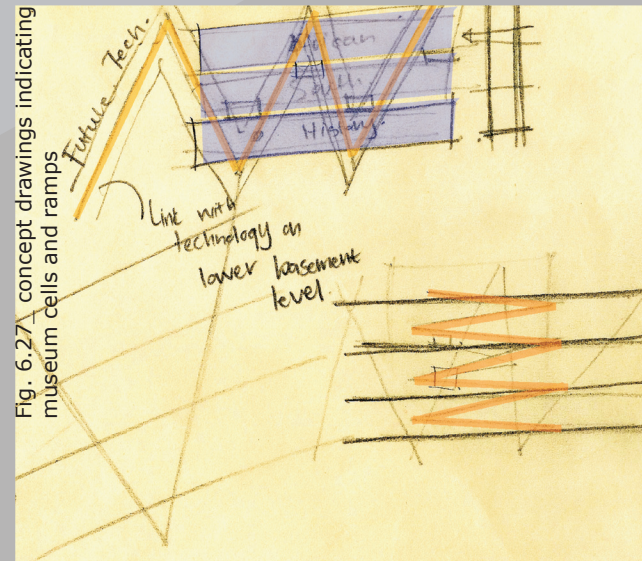
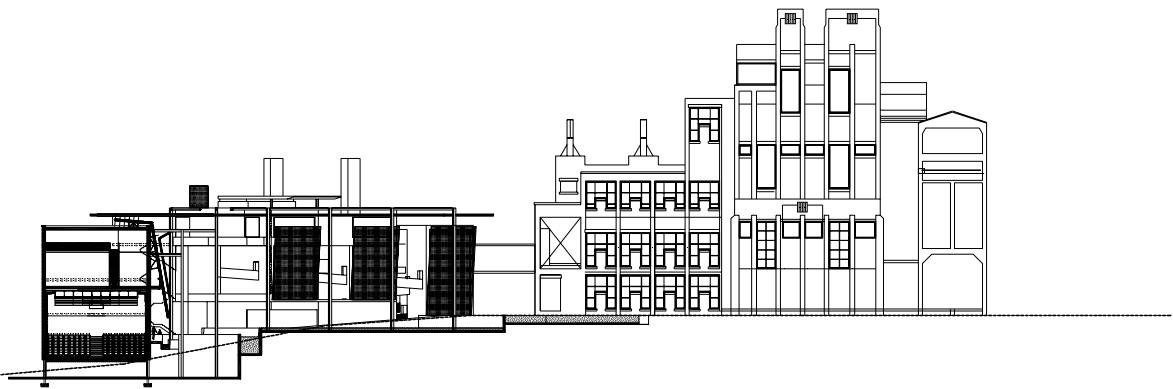


Fig. 6.27_ concept drawings indicating museum cells and ramps

Fig. 6.28_ section-elevation showing level difference and water feature



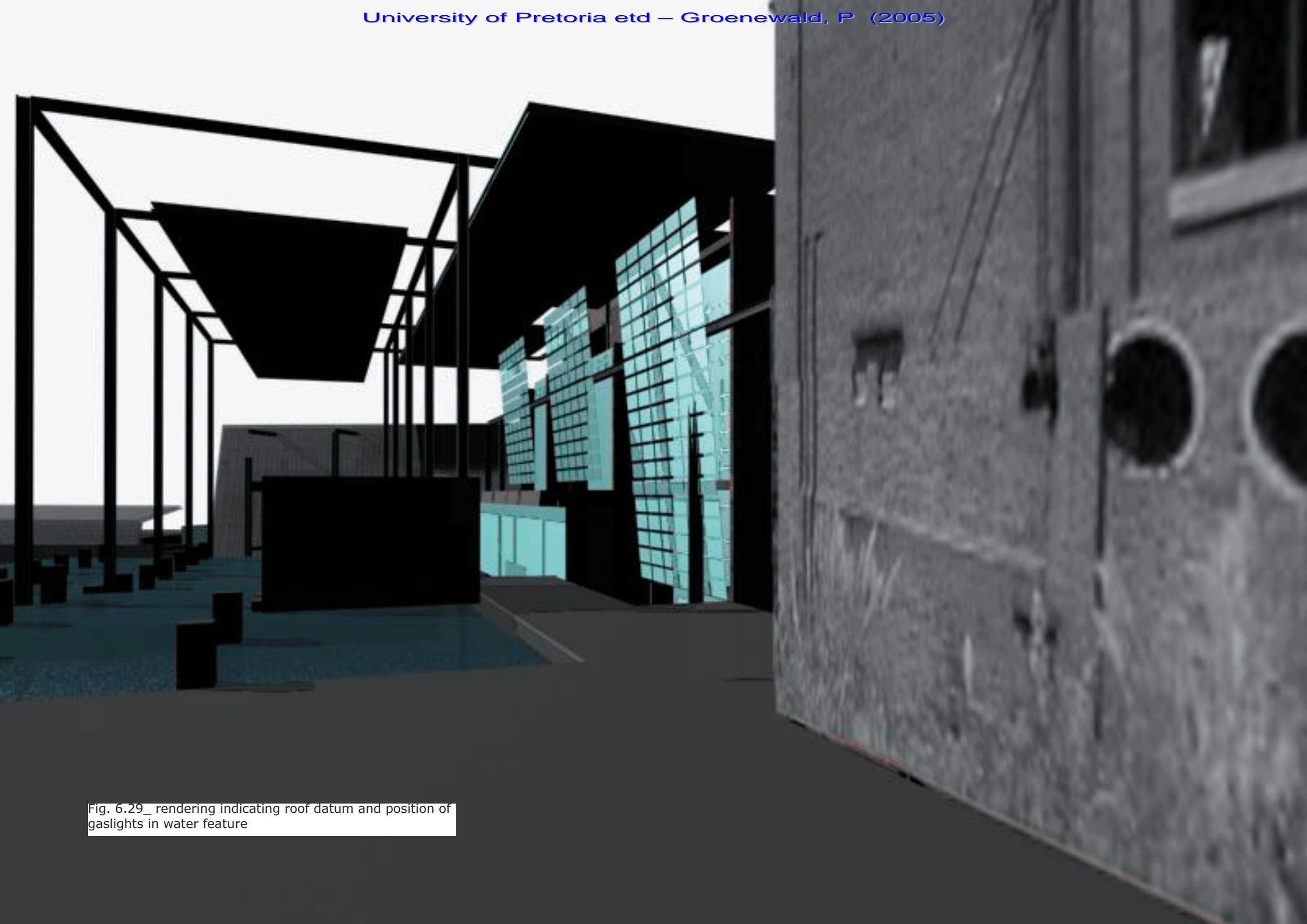


Fig. 6.29_ rendering indicating roof datum and position of gaslights in water feature

The water feature is an extension of the planer datum of the square between the two retort buildings. Both the umbrella roof and the water feature form planer datums, binding the film centre's clustered and linear forms together. The roof also serves as an element to define the urban space, making it more humane and enclosed. Structural steel column and beam 'scaffolding systems' tie all elements and envelopes of the building together, and the façade is read as a universal whole.

Heritage imprinted on the landscape is preserved by emphasising gas tank remain in the design of the water feature. The spill over of the water feature echoes the form of the ruin, where water disappear over the rim of the circle. Concrete footings on the purification platform are converted into new gas-lamps within the water feature. The use of gas further echoes the site's history as a Gasworks.

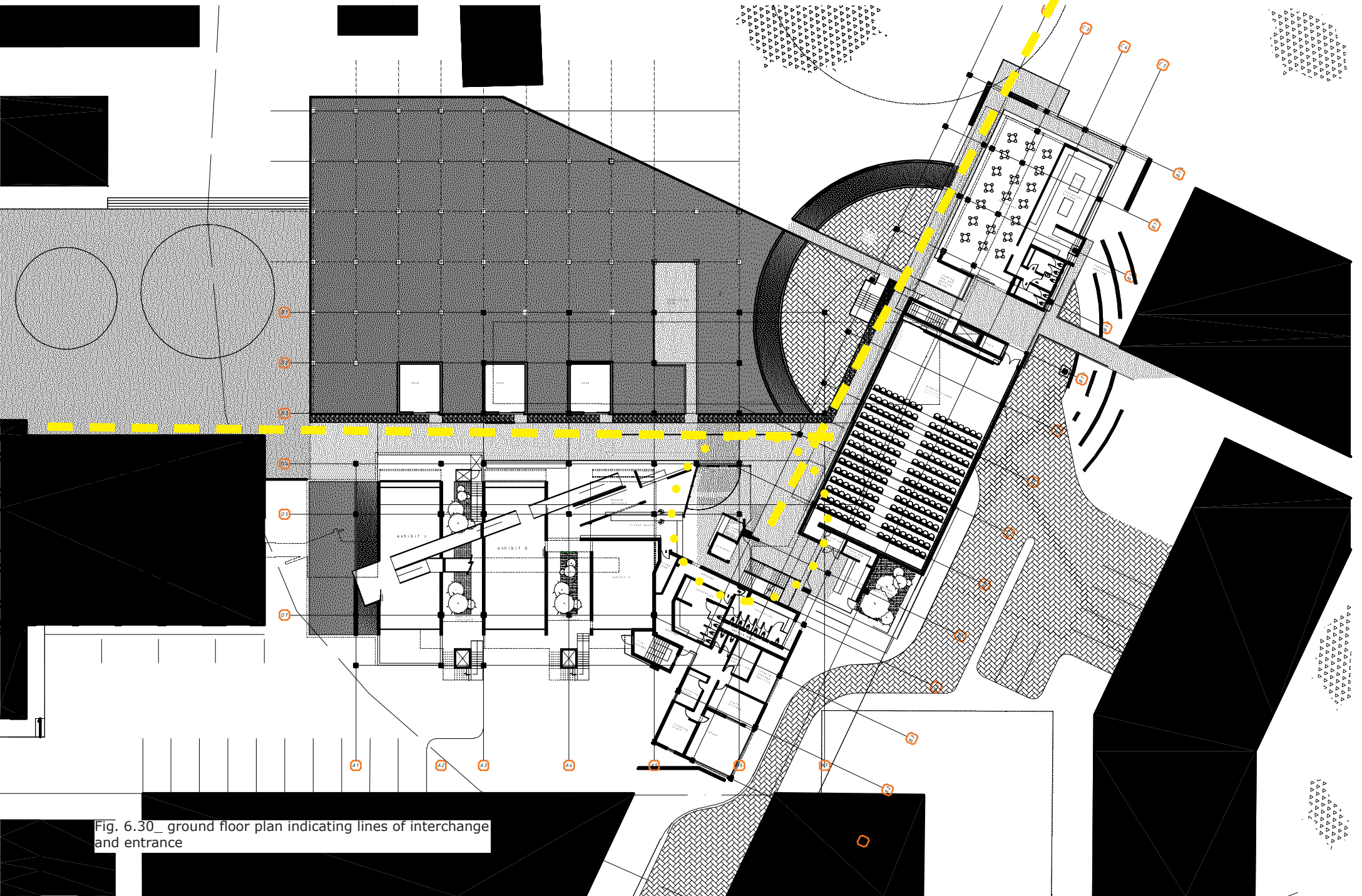


Fig. 6.30_ ground floor plan indicating lines of interchange and entrance

[06][03][04] LINES OF INTERCHANGE

"Some places are intended for our movement and exchange, others encourage withdrawal and isolation. The place always suggests an action or a pause, even if only mental. Its forms are associated with the events which it accommodates or which it has once accommodated, and with other similar places and events."
(VON MEISSE, 1990, p 135)

The urban lines of exchange from the new Film Centre are two intersecting linear walkways; one running parallel with retort house #1 and the other (when extended) connection to WITS university to the east. The energy of activity is created where these lines of urban exchange intersect creating the entrance of the film centre. The entrance serves as a communal entrance for both the museum and cinema wings acting as a gathering space. And observation deck is added within the water feature to accommodate bigger crowds. Strategically placed retail facilities along these linear path, draw people to the building entrance. No balustrades are provided along the west and southern boundaries of the water feature. A drainage pipe enchased in a concrete box gutter covered with grating and pebbles is provided 510 mm below and all along the edge of walkways. This allows unobstructed views to the water and creates the formation of interactive recreational seating space.

Adapted re-used concrete footings spaced on an existing grid coordinate system are converted into gas lamps that protrude from the water feature. These light features add a certain rhythm, encouraging movement along the walkway spines.

Vehicular movement is kept to a minimum within the entertainment hub, suggesting a predominant pedestrian area. An access point is provided for delivery and services for the area south of the film centre with a road penetrating one of the gas tank remains under the cinema wing.

To the south of the film centre a green space is included for the exclusive use of apartments south of the museum. This space acts as a barrier linking public with private interfaces.



Fig. 6.31_ abstract lines

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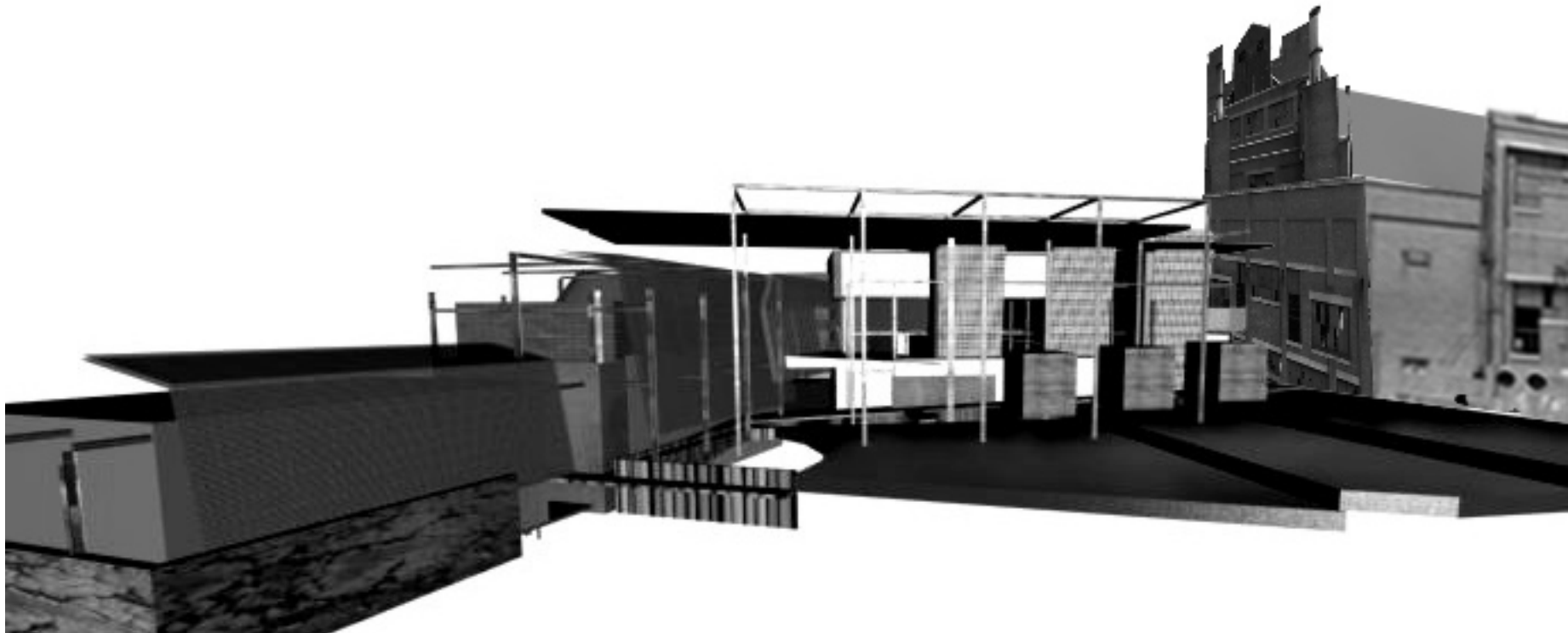
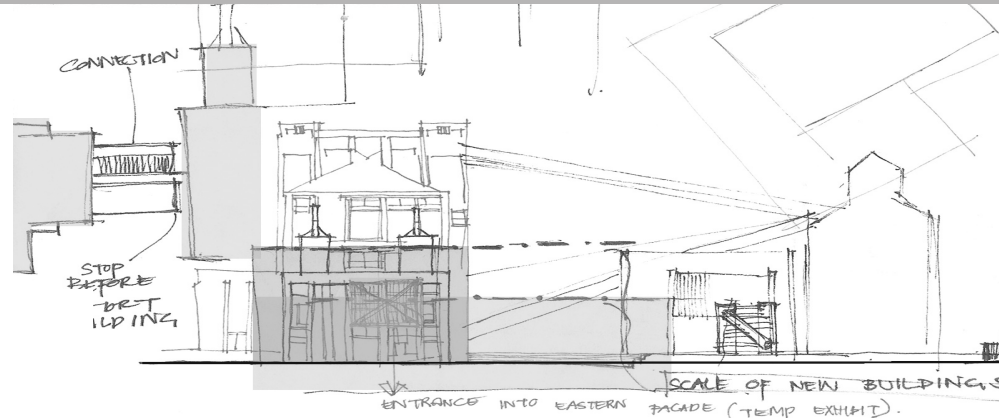


Fig. 6.32_ rendered view from the north

Fig. 6.33_ assessment of link between
retort house and museum



Objectives of identity and interaction of spaces are achieved by connecting the building directly with the urban landscape. The building is dually read, from outside in and from inside out. The inside and outside are reflected and exchanged in the eye of the observer.

- Void spaces between museums envelop address museum fatigue by providing spaces of interaction, retreat and contemplation on ground level. The cinema kiosk is also provided with an escape hatch to the outside landscape.
- screens turn the building façade inside out by projecting images of the interior events onto the outside walls.
- The premier cinema is provided with an opening, connecting it with the urban landscape. The performance inside the cinema becomes visually accessible to users passing by.

The idea of a public space is overwhelmed by the idea of visual 'accessibility' and physical accessibility. Urban space flows everywhere within the building. It penetrates the voids/courtyards between the museum boxes, it penetrates the entrance hall of the building and cuts through the cinema wing connecting the building to the university. The building becomes an event interacting with its surroundings. It does not





Fig. 6.34_ rendering of link between retort house #1 and museum



Fig. 6.35_ rendering of interior of link showing screen lounges and café/library



only providing a defined closed sequence of functional spaces but spaces of human interaction. Boundaries between inside and outside are blurred and the building offers spaces of contemplation, communication, catering for a multitude of perceptions.

All spaces open up onto the urban landscape, suggesting vistas to the old buildings and tanks. Covered ramps connecting events and exhibitions provide visual access to the historical landscape from different perspectives. The lightweight transparent glass walkways, of 'temporary' construction are installed in such a way that it suggests the idea of being additions added to the solid, permanent masses of the building at a later stage. This again links up with the symbolic meaning of a narrative path sculpted by the mind, finally tying all happenings or elements together.

A gabion 'boundary' wall placed around the restaurant act as a container or envelope for the space, defining its boundaries, providing a shelter against harsh western sun. Openings within the wall still make vistas available into the natural landscape towards the Braamfontein Spruit, and recreation facilities around the gas tanks.

It was felt that both the buildings; the film centre and the retort house (film studio) needed to augment one another on a public level. It is decided to convert the retort building into a film studio, enabling the preservation of the buildings cathedral like volumes. A link to the exiting retort building is proposed from the film centre on the second floor by adding a gallery space overlooking the converted retort building. Here the process of filmmaking

becomes a reality. Within the museum this space links up with the café and media library adding to the educational experience.

The link to the converted retort house needed to respect the eastern façade of this building. This is overcome by removing only one window within the façade and replacing it with a door. The proportion of the window is kept intact, and a concrete wall protrusion added to define the threshold between the old and the new.

The café and interactive library/archive situated on the second floor in direct vertical adjacency to the museum entrance. This make after hour operation possible by providing access directly from the communal entrance to the café. Spatially the café/library consists of a linear passageway intersecting all museum exhibition cells, visually linking with library/café with the exhibitions using glass. Line of exchange occurs between both user of café/library and users of museum as well as exhibition itself. During evenings, the exhibitions still can be observed without physically entering the museum.

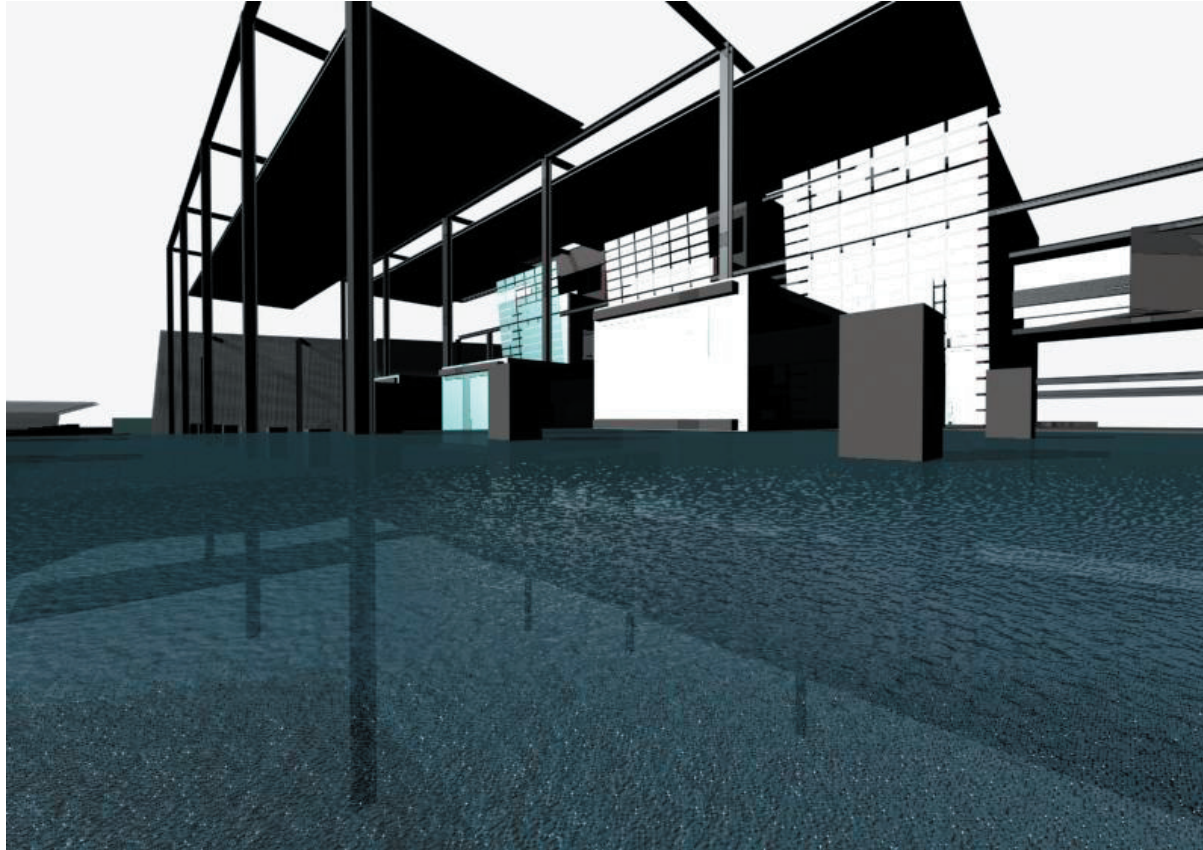


Fig. 6.36_ rendering showing museum spaces as precursory event to cinema

[06][03][05] TRANSFORMATION

F.D.K Ching describes transformation as "***the principle that an architectural concept, structure or organization can be altered through a series of discreet manipulations and permutations in response to a specific context or set of conditions without a loss of identity or context.***" (CHING, 1996, p 321)

The museum acts as precursory event of the film centre. It forms the basis to the anticipating event occurring in the cinema spaces. It is a link to the existing context with a hybrid of physical and symbolic layers acting as influences.

The museum spaces are enclosed black boxes, like the architectural type created by cinema. Apart from being formalistically inspired by the retort house these museum cells have a hybrid of symbolic meanings.

Solid museum exhibition cells and in-between courtyard spaces represent void and solid spaces in cinematography (negative and positive spaces). From the urban landscape activities can be observed between these cells, just like a film set taking place in its 'negative space'. The cells also represent film clips, bound together by a narrative script. The ramps of the museum form the narrative path linking the exhibit together. Columns-tie void and solid spaces together like a scaffolding system

Screens of sandblasted glass emerging from the museum boxes bring a new type of transformation to these static museum envelopes. These digitalized screens (projected images onto sandblasted glass panels) not only serve as elements against glare, but also turn the building inside out. The projections reflect the ever changing museum interior and people in conversation.

The images projected on the screens together with the void courtyard spaces with images of the human body in motion form a network of representations depicting foregrounds, backgrounds and visa versa

The display of light, material layering and movement of real people tend to dissolve the materiality of the building's form through a subtle combination of reflections, refractions, dilutions and moving colours.

The essence of the void spaces between the museum-exhibition cells are as follows:

I'm in a neon-soaked Miami. Tonight the light hangs in the air; everything feels hot and humid and diffuse. A light breeze whips in from the ocean. A good night to have some fun. Cruising down the seafront in a shimmering black SUV, I notice an empty drugstore. An opportunity. I hop out, flexing my fingers around a trigger and, in an instant, I'm holding up the guy behind the counter. He cowers, handing over the dollars. Alarms sound, I dive into the car, slamming the accelerator. It's only taken a few seconds and I'm being pursued by a surfeit of cop cars. I quickly lose two, ramming them into the canal. Gotta ditch the car for something more suitable. I head for heavy traffic. Hitting the highway, I hit pause; time for a breather and to lift off the Olympus Eye-trek goggles. Return to reality from the ever-more immersive hardware and software entertainment world.

(Hanson. M.2003, p 115)

Through this the appearance of built permanence is increasingly challenged by the immaterial representation of these abstract systems in the form of projections, electronic images and movement. This perpetual change reminds us that architecture once generated a static image of permanence; today it reveals architecture of transformation.

The western façade of the cinema wing is treated accordingly; layers of 'transparent' s/s steel mesh screens are added to create unity of the façade's clustered forms by providing a backdrop for the square. Environmentally the screens act as passive climate control systems, providing shade along this western edge. These screens are supplied with a misting system (fine water sprayed into the air) to be used during summer months. the screens also create a 'enclosed' walkway making the space friendly for human interaction. Transformation of the facade occurs due to the play of filtered light during day and night time. During the day light and sun rays are filtered through the screens, creating interesting pattern along the blank concrete walls of the western façade. In nighttime a display of light is projected upwards from up-lighters in the walkway, dissolving the clustered form and bringing the screens to the foreground.

The film centre only is 'symbolically transformable, but has the capacity to submit to evolutionary processes of architectural re-use.

Steward Brand the author of **HOW BUILDINGS LEARN: WHAT HAPPENS AFTER THEY ARE BUILT (NEWYORK, VIKING, 1994)** define adaptable structures as structures with modest scale, simple form, low density and height, generous interior and exterior open space, separable parts and durable 'patchable' construction.

Since the building consists of cellular form, its spaces can be shaped and scaled according to occupancy loads and uses. The building offers flexibility with spaces sharing open courtyards. It suggests a structure with spacious rooms which are not constrained by its particular function. The building is not limited to 'hard' separations and compartmentalization.



Fig. 7.1_ rendering of museum structure

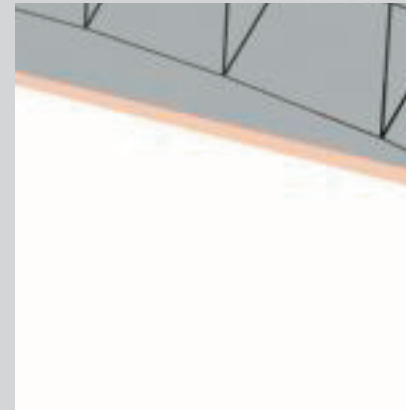


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of museum structure



[07] [01] MATERIAL STRATEGY

Material choice was strongly influenced by the site, film and building programme.

The context of the site asks for trueness to materials highlighting the site's industrial past. Film as a theme suggests ideas of transparency and layering, whereas programme influenced material choice through climate control, usability and maintenance.

Throughout the project the composite nature of materials are revealed. Very few materials are treated, painted and service elements are mostly exposed; e.g. Service ducting linking the museum spaces become a feature.

Materials used in the Film Centre echo that of the Retort Buildings. Old edifices are enhanced through the use of opposing new materials juxtaposed against existing materials, thus minimises confusion between old and new.

[07] [01] [01] SALVAGED MATERIALS

Re-used salvaged steel members in the Retort buildings are used as structural material in the Film-centre. These members are cast in concrete to ensure a uniform end product. All exposed steel will be new material as specified by the structural engineer.

[07] [01] [02] METAL

Galvanized steel sections are used as main load bearing members and the fastening thereof is limited to bolting. M10 bolts with washers and nuts will be used, unless otherwise specified.

Aluminium sections are used for its material lightness, especially where loads on structures must be minimized. It is important to note that neoprene gaskets must be used between different metal sections. E.g. where aluminium is connected to galvanized mild steel.

All structural steel elements must comply with engineer specifications.

[07] [01] [03] OTHER MATERIALS

Other materials specified include concrete panelling, in situ cast concrete, red brickwork to match the colour of the existing buildings on site, glass and stainless steel wire mesh.

Concrete panelling (cladding) is specified for its adaptability to become a ventilated façade. The cladding system is an easy way to achieve the aesthetics of an exposed concrete wall without the tedious process to get material perfection.

Brickwork echoes the context of the retort buildings and S/S wire mesh and glass gives the project different layers of transparency, exposing parts and hiding others.



Fig. 7.2_ interior of Retort house, indicating re-use of salvaged materials



Fig. 7.3_ rendering of link

image information:
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of museum structure

[07] [02] ENVIRONMENTAL ISSUES

In the case of the film centre the zero energy band's use is extended by the use of insulating materials, sun screening, glazing, natural ventilation and ventilated facades. When daylight provides adequate lighting, the air is fresh enough, and the temperature is comfortable, no further energy expenditure is required.

[07] [02] [01] SUN CONTROL STRATEGY (GLAZING AND SHADING DEVICES)

Solar heat gain is substantially reduced by orienting the building so that there is a minimum of glass on the east and west facades. As in the case of the Administration wing, glass facades are treated by using M55 double glazed glass.

Solar heat gain and glare within museum spaces and all north facing windows is either controlled by outside vertical screens of sandblasted glass, heat absorbing glass or by the tilting of glass panels. Any method of reducing solar heat gain will also alleviate glare since approximately half of the total radiant energy from the sun is in the wavelength region of visible light.

Heat absorbing glass absorb over 70 per cent of the incident radiation so that transmission to the inside of a building is about 20 per cent when the angle of incidence is small and even less when it is large. The effectiveness of heat absorbing glass may be increased by using it as the outer pane of a double glazed window so that absorbed energy can be more readily dissipated to the outside air than to the room air.

"Solar heat gain through a north facing window can be significantly reduced also by tilting the glass as shown in Figure 7.1. The energy falling on the window in this configuration is the same as would occur if the window were vertical and had a 1.4-foot projecting shade along the lintel. The tilted glass reflects 45 per cent of the radiation when the incident angle is 78 degrees, compared with 23 per cent when the glass is vertical. This difference in reflectivity decreases as the season progresses toward the winter solstice, and in winter the tilted and vertical windows transmit essentially the same amount of solar energy."(STEPHENSON, 1962,41)

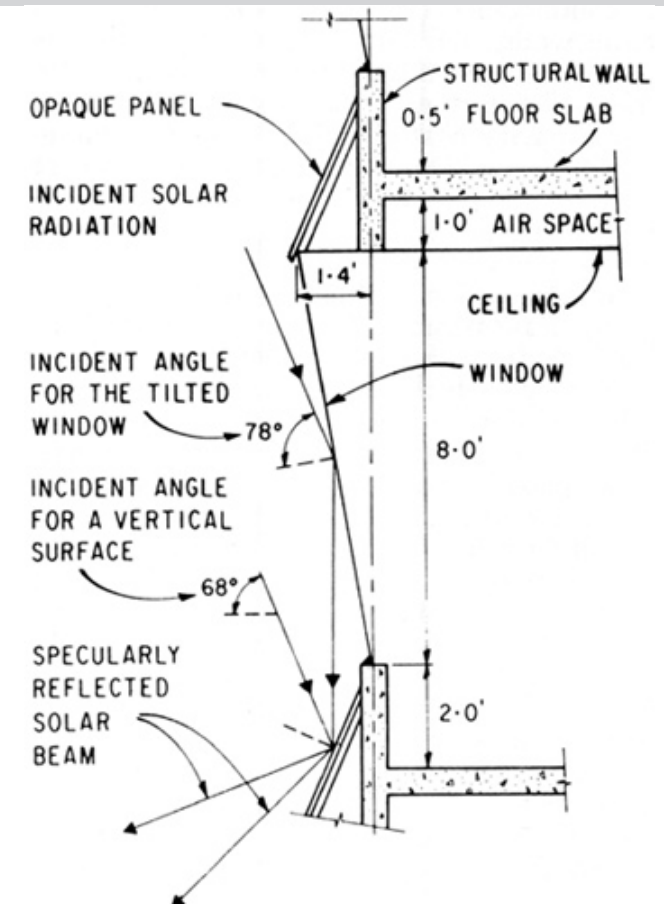


Fig. 7.4_ tilted glazing

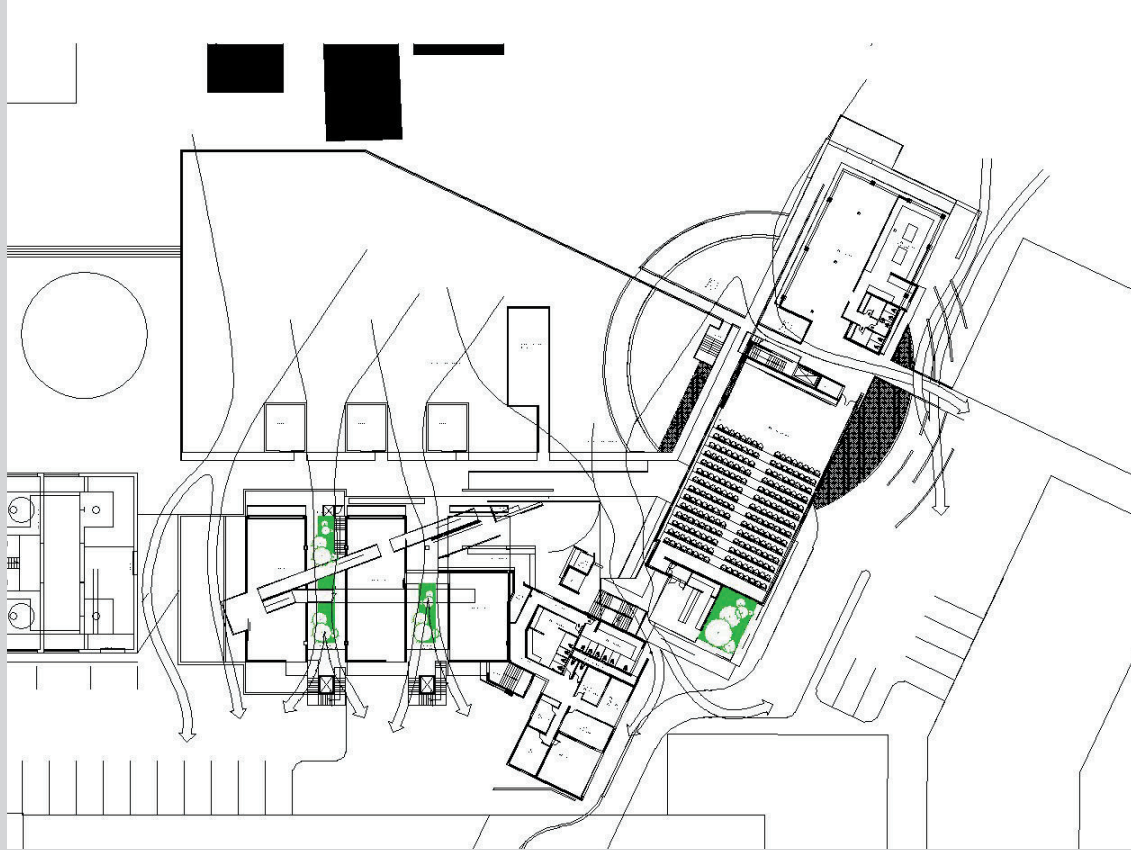


Fig. 7.5_ ventilation strategy on plan

[07] [02] [02] NATURAL VENTILATION STRATEGY

Maximum wind-induced ventilation is created by siting the ridge of a building perpendicular to the summer winds (from the north to north-west) and by keeping the footprint narrow perpendicular to the wind direction. The building's north-south orientation makes it possible for wind to penetrate the void courtyards spaces between the museum boxes and window openings in the office and residential facilities.

The residential block to the south (as introduced in the urban design framework) of the Film centre will act as a windbreak against cold winter winds from the south.

On the western cinema auditorium façade natural ventilation and misters are used to cool the edge of the building during the summer months. The Misters installed on the vertical screens of the façade will act as natural air-conditioners using harvested rainwater.

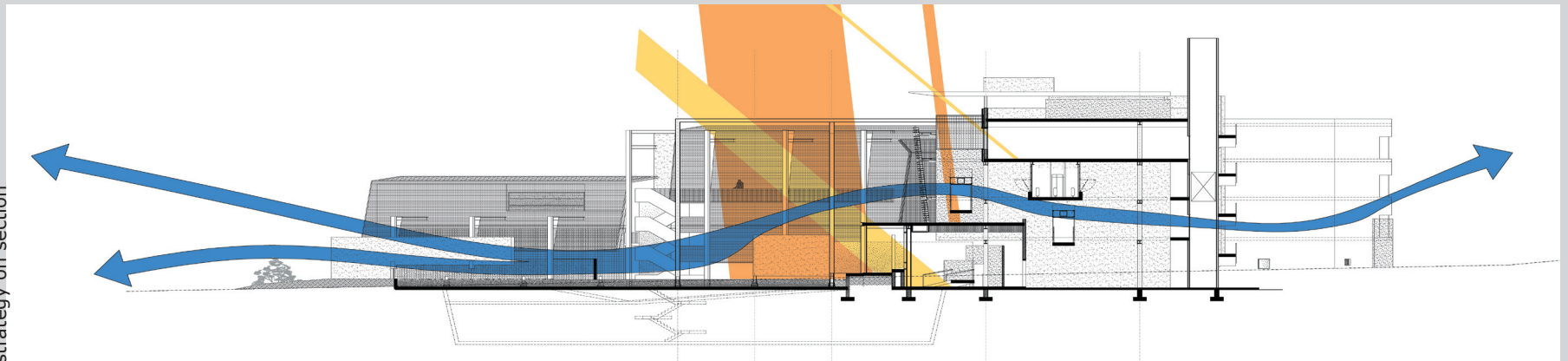
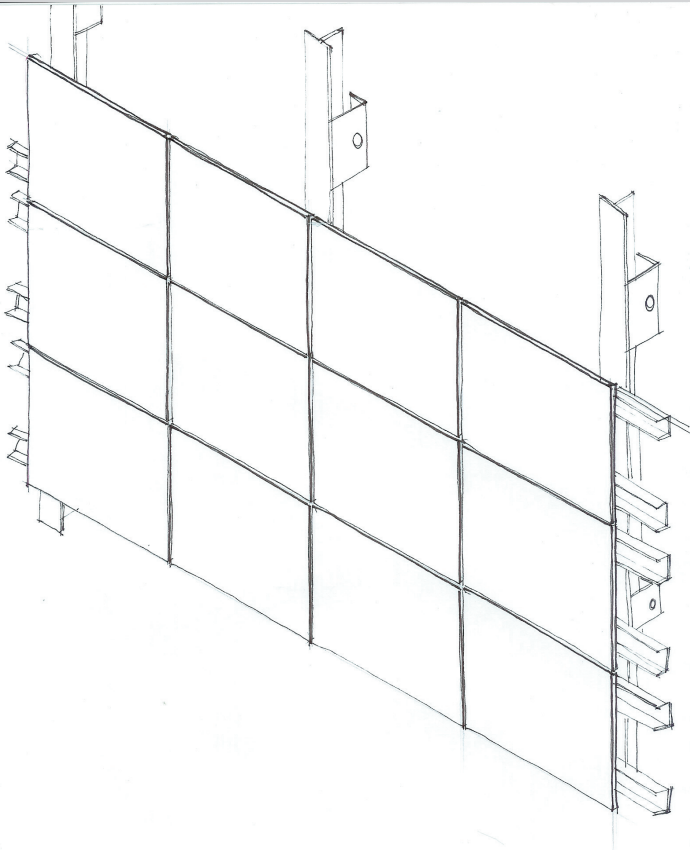


Fig. 7.6_ ventilation and sun control strategy on section

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[07] [02] [03] VENTILATED FACADES

Ventilated walls are introduced in the cinema/restaurant wing as well as at the administration offices, since these areas are exposed to direct east and west heat gain during summer. Ventilated walls is a covering system of pre-cast concrete cladding that makes it possible to lay pre-cast panelling while at the same time increase the thermal performances of the covered surface. The ventilated walls limit heat loss in winter and heat entry in summer and thus use the thermal inertia of materials appropriately and the reflection of incident sunrays.

Fig. 7.7 _ ventilated facade

[07] [02] [04] MECHANICAL VENTILATION STRATEGY

Mechanical ventilation systems will be introduced in the museum spaces, offices and auditoria. The museum need such a system due to internal heat generation from lighting and electronic equipment, the auditoria due to the high concentration of people and the offices due to the length of occupancy during work hours. The design asks for a flexible, adaptable system with strict specifications for the exclusion of mechanical noise. The decision came down to the use of a centralized chilled water fan coil system, with a constant air volume and varying temperatures.

The architectural requirements for this system are the following:

- A chiller room/air-conditioning plant consisting of separate self contained units located in the mechanical equipment room
- 500 mm (height) ducting in ceiling spaces for all conditioned rooms. Air- conditioning ducts run from each of the air- conditioning unit to the various conditioned spaces. (See detail of suspended ducting)

The design resolution is a chiller room, ventilated at 2 sides, placed under the premier cinema, suspended ducting along all ramps connecting the museum spaces and ceiling ducts of 500 mm in all conditioned spaces. A future allocated space is provided for to the south of the premier cinema entrance (basement delivery area) if more chiller rooms are required.

Furthermore the air supply in cinema auditoriums and AV rooms will be of uniform volume at a low velocity, since air interference with projector light may prevent un-even burning and hence changes in light intensity during projections.

The need to address mechanical noise generated by chiller rooms is further dealt with in the Acoustics section of this document.

Fig. 7.8_ connection of structural elements

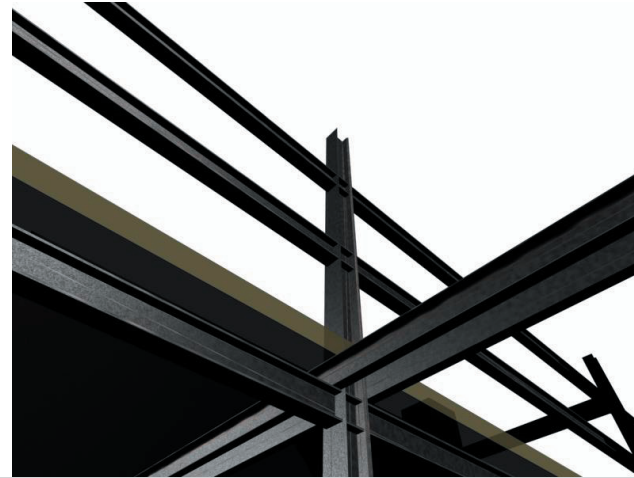
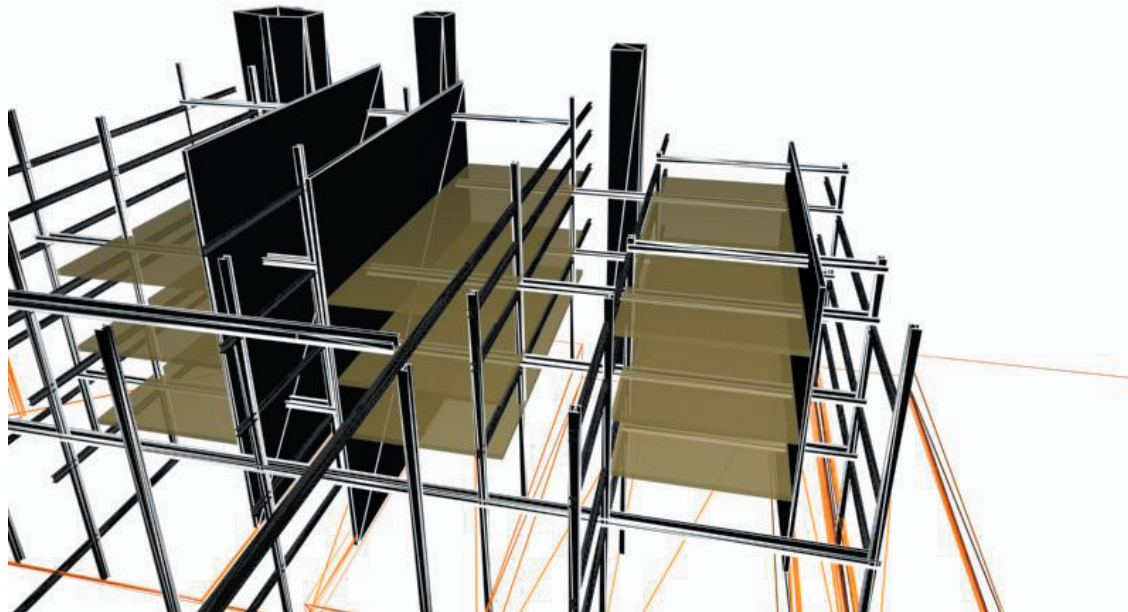


Fig. 7.9_ museum structure



[07] [03] STRUCTURAL SYSTEMS

The structural system involves two primary structural materials; steel and concrete.

In the museum the steel structure forms a double span beam system with c-channels running east-west and I-beams running North-south.

All wall elements function as bracing elements for the steel structure, where the steel transfer compression loads to the ground. Reinforcement in concrete slabs resists tension loads that are present because of material deflection due to gravity.

The concrete floors and wall elements of the cinemas make use of pre-stressed (pre-tensioned) reinforcement to enable lesser material thicknesses.

All concrete slabs and steel member thickness should be according to engineer specifications.

The suspended/umbrella roofs over the water feature is made up of a system of lipped channel purlins and z- extruded branding covered with coated steel and polycarbonate sheeting. This horizontal structure is in turn suspended and kept rigid with a composed I-section steel beam running east-west and treated against downwards wind forces with 19 mm stainless steel cables with turnbuckles. The sheeting used is part galvanised sheeting and part polycarbonate sheeting in places where sun infiltration is required.

[07] [04] SECURITY AND SAFETY
 [07] [04] [01] SECURITY

A dual entrance to the building serving the museum, cinema, and café/library, overcome security issues normally associated with many access points. This however posed problems, since operation of the cinema and café continues after trading hours of the museum. A glass pivot jamb door is introduced at the ground floor entrance, blocking the entrance to the museum during evening performances. The door is composed of a two 10 mm tempered glass skins fixed to galvanised c-channel posts. Two of the cavities are filled with old celluloid, indicating the past history of film, whereas the other transparent panels give glimpses to the museum through the transparent panes.

Where ramps intercept museum boxes, sliding glass panels are provided, operating from an automated computer system. These doors secure the museum exhibitions from intrusion during night time.

Accommodation facilities placed in direct adjacency to the film centre create a 24 hour surveillance of the public spaces around the public square.

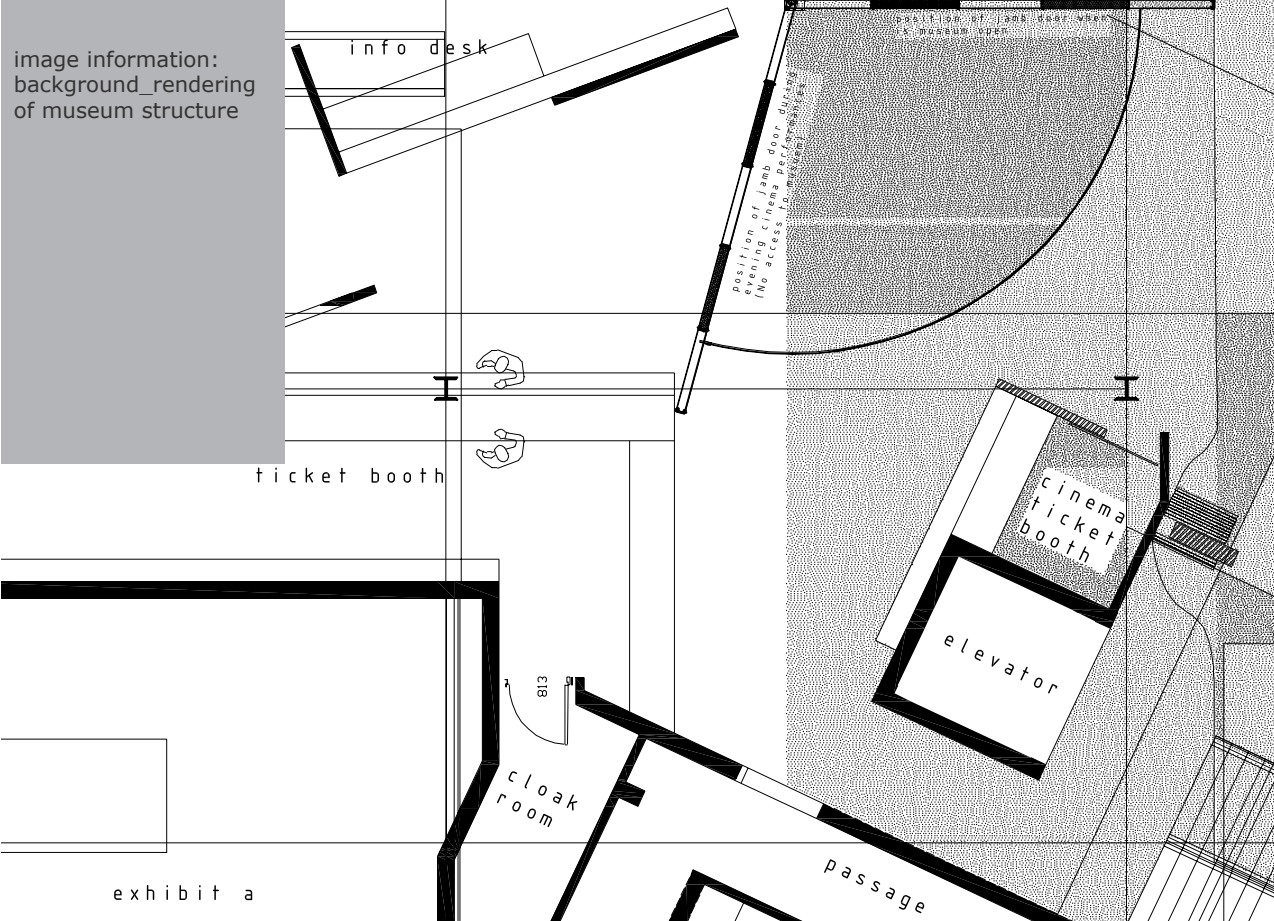


Fig. 7.10_ entrance hall serving the museum, café and cinema

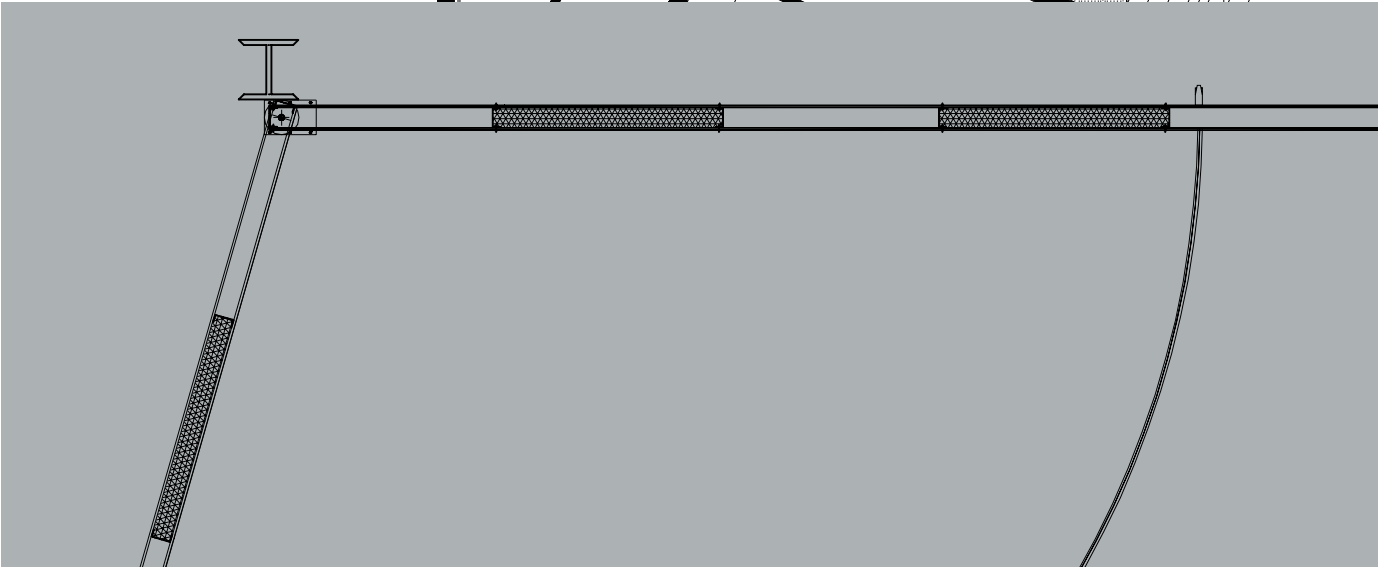


Fig. 7.11_ security jamb door

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 of museum structure

[07] [04] [02] SAFETY ALONG WATER FEATURE-NO BALUSTRADE

The elimination of a balustrade along the water edge create opportunity for innovation regarding safety. A 600 mm strip of grating and pebbles is provided at a level of 510 mm below the walkway line of interchange. The grated strip also serves as a gutter for overflow in cases of extreme precipitation.

[07] [04] [03] SITE CONTAMINATION TREATMENT

Since it will take a good part of 50 years to cure and rehabilitate this contaminated soil through a wetland system, a more practical approach was followed. All top soil around the Retort Buildings will be replaced. A geo-textile layer placed between new top soil and contaminated soil will function as a buffer against underlying contamination. The use of suspended walkways is also introduced in places.

The Braamfontein Spruit will be reinstated on a sealed surface above the contaminated material. Furthermore it is suggested to use piles along the Braamfontein Spruit were contamination is severe. All surface parking must be of hard permeable surfaces; hard due to underlying contamination and permeable, to prevent erosion.

Fig. 7.12_ sketch illustrating edge of walkway connecting with water feature

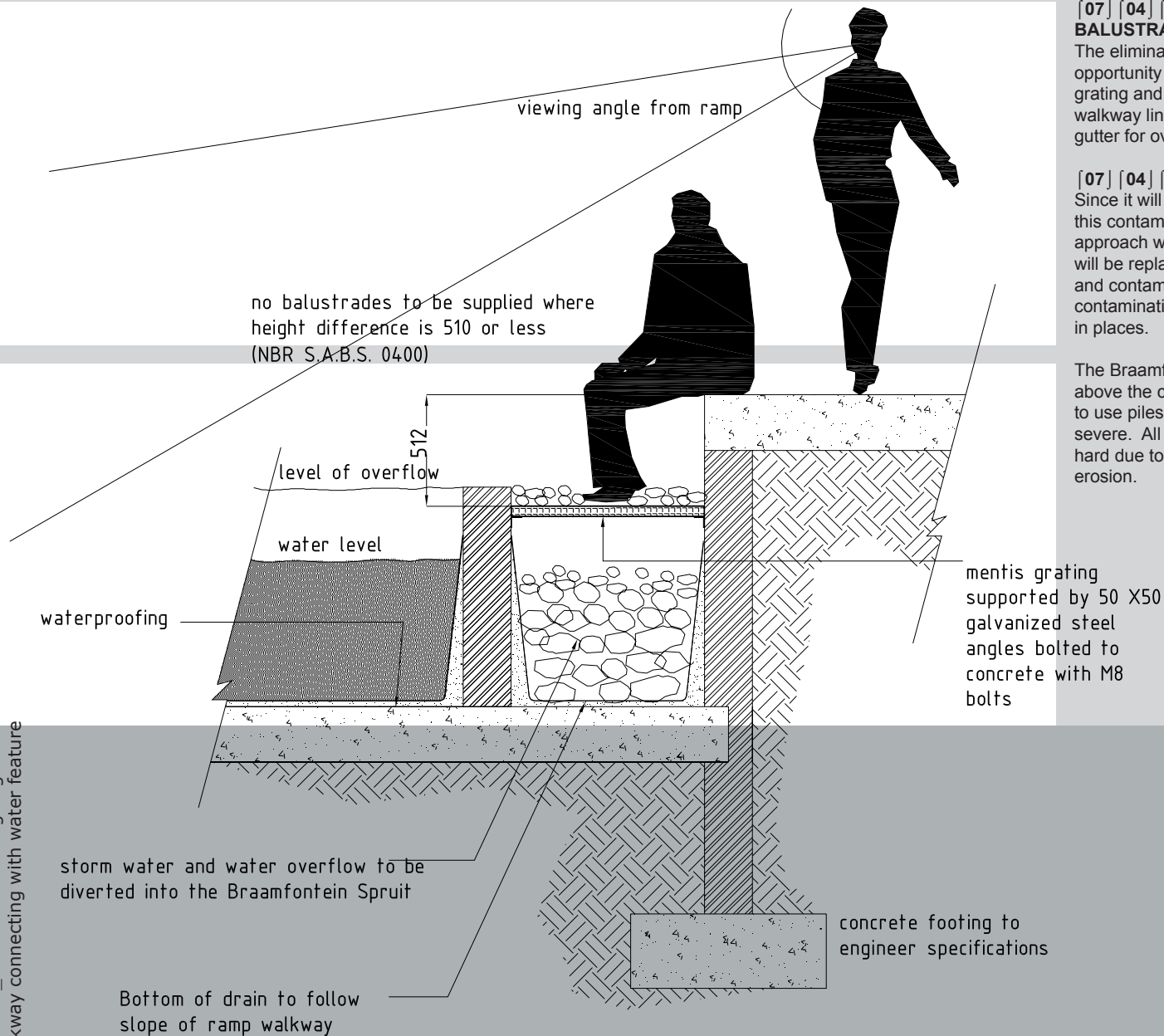


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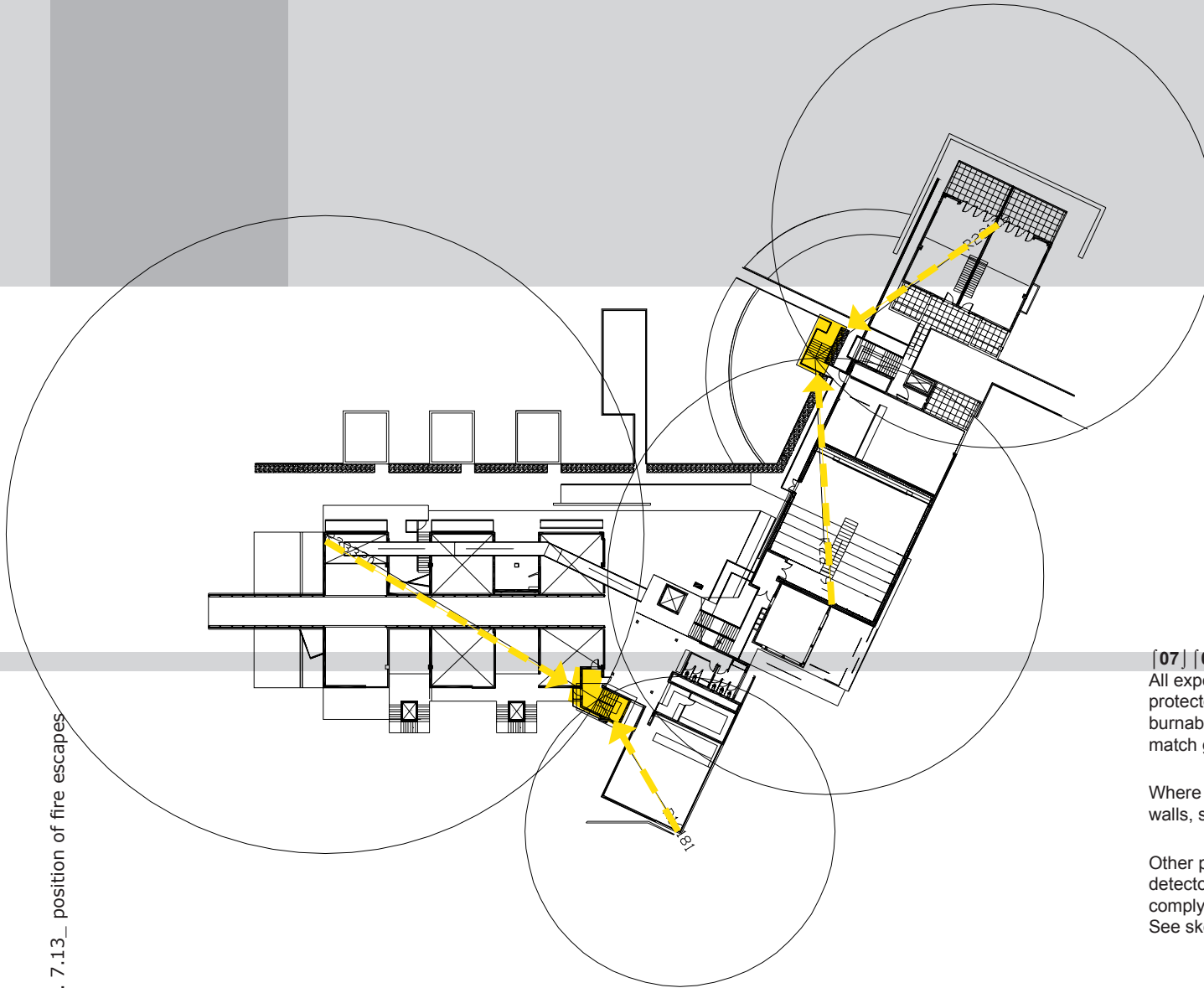


Fig. 7.13_ position of fire escapes

[07] [04] [04] **FIRE MANAGEMENT**

All exposed structural steel in and outside the building are protected by Fire Barrier Intumescent paint and a top coat of non-burnable acrylic paint added to give a finished matt silver colour to match galvanizing and natural anodized aluminium.

Where steel load bearing elements connect with concrete and brick walls, steel will be in-situ cast in concrete.

Other provisions against fire will be sprinkler systems, fire-detectors and alarms, fire extinguishers and fire escapes all to comply with SABS 0400.

See sketch for fire escape layout and distances.

[07] [05] ACOUSTICS

Cinema acoustics include absorption of 'people generate sound' within the auditorium space, reverberation treatment of sound through reflection, and insulation against outside and mechanical noise generated by the air-conditioning plant.

Museum acoustics focus mostly on absorption of noise generated by people visiting the centre and noise generated by overhead air-conditioning ducts.

In the cinema auditoria absorbing materials are placed along all walls and floors, and reflective materials against the ceilings for the best sound effect.

The glass window introduced as an indoor-outdoor connecting feature in the premier cinema is treated accordingly to prevent insulation loss. Instead of using a single layer of glass, better insulation against outside noise is achieved through a cavity glass wall. The air in the cavity (cavity size specified by acoustical engineer) acts as a sound insulator. Furthermore by introducing openings at the top and bottom of the outside glass panel, the glass wall acts as a ventilated façade, forcing hot air to escape at the top opening.

A louver blind system is introduced in the inside to avoid disturbance during daylight performances. The interior skin of the cavity blind will be of a perforated material functioning as a sound absorber.

Absorbing materials in the cinema spaces are of perforated 32 mm plywood, with an absorbing fabric covered glass fibre backing. A cavity is introduced between the glass-fibre and structural wall to improve the cladding's absorbing capabilities. Struts are kept to a minimum.

Acoustisorb will be used as a sound insulator against the ceiling of the air-conditioning plant room to minimize mechanical noise in the cinemas. This material is also introduced against the sharing wall of Apartment 3 and Cinema 2.

Acoustisorb (250 mm thick) is lightweight compressible insulation material manufactured from thermally bonded polyester. The product is made up of flame-resistant grade polyurethane foam in combination with a dense sound barrier layer supported by a non-tear scrim. The surface has a coating of flame-retardant glass-cloth which prevents dust and dirt from entering the foam.

Reflective sound panels in the auditoria are of sandblasted glass suspended from the ceiling by spider fasteners. The glass ceiling also serves as a service duct for light fittings and speakers.

Auditoriums are provided with double door systems, creating entrance lobbies to the cinemas, this insulates auditoriums from outside noise.

[07] [06] RE-USE

[07] [07] [01] WATER RE-USE

The film centre has large roof catchments and impermeable adjacent surfaces which make the design ideal for rainwater harvesting. Rainwater from roofs and hard-scaping will supply surrounding landscapes, water closets and urinals and misters on the western façade of the cinema with grey water.

Harvested water is retained in the main water body on site for further distribution. Water then flow to twin suction filters in the basement (at the loading bay), the filters are supplied with non-return valves. Silt and compounds are discharged to the drain and the filtered water to a second closed retention dam located south-east of the film centre. From there water is dispersed to various grey water-use facilities.

In high rainfall seasons water will overflow into a gutter provided along the main water body and will be discharged into the Braamfontein Spruit.

Other than the various grey water use facilities, the main water body (first retention dam) will also be in demand of harvested rainwater. The water feature will suffer significant water loss due to evaporation because of sun, wind and the water feature's large coverage.

Through a calculation it became apparent that the Film Centre can supply a significant amount of harvested rainwater to the water-feature per annum.

The area of roofs and hard spaces of the film centre is 2302 m²
 The total volume of water to fill the water feature is 980 kilo liter
 An assumption is made that the water feature has an average of 4 mm loss of water level per day
 Δ If the total area of the water feature is 803 m² than a loss of 3,2 m³ is evident per day
 Δ a total loss of 1168 m³ occur per annum

The average precipitation per annum for Johannesburg is assumed @ 700 mm
 Δ 2302 m² x 0,7 m
 = 1611,4 m³
 Δ 1611,4 kl of water can be harvested by the Film centre per annum
 Δ the film centre are able to supply up to 73% of the water loss due to evaporation
 This amount may differ since this is a rough estimate.

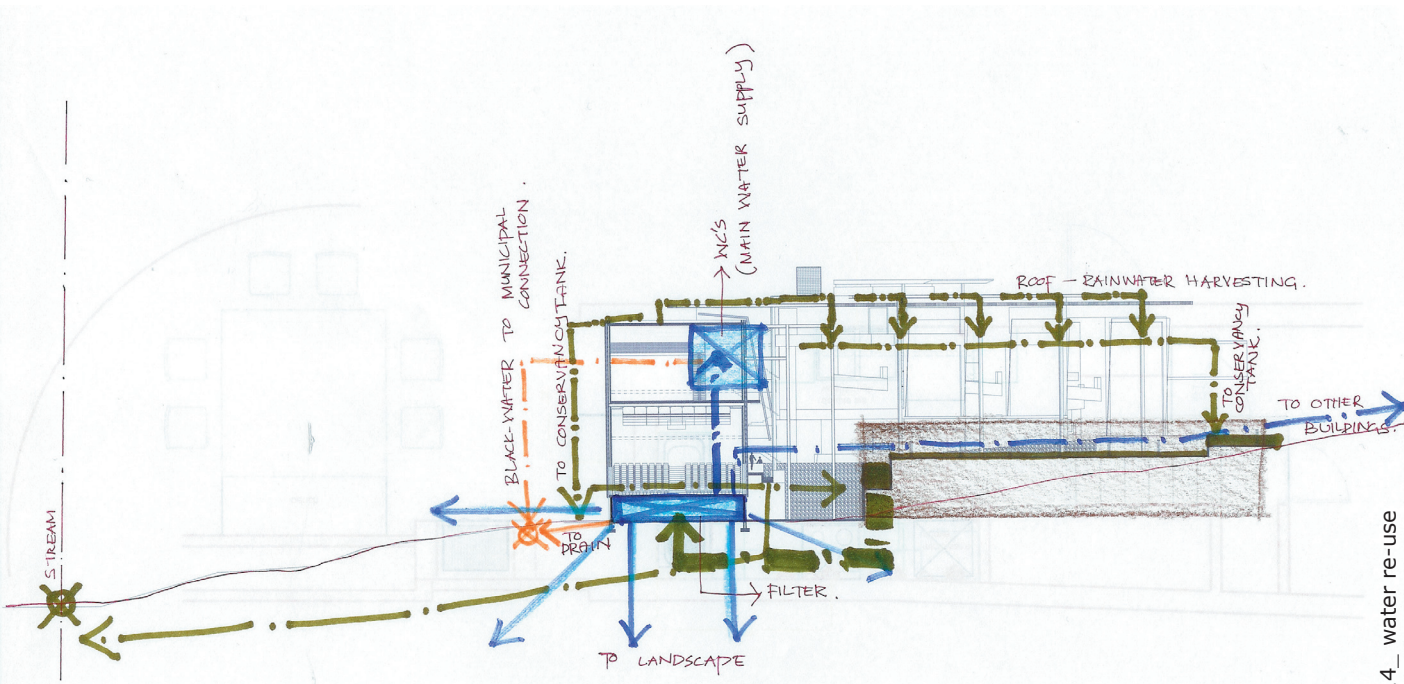


Fig. 7.14_ water re-use

Fig. 7.15_ re-used concrete footing

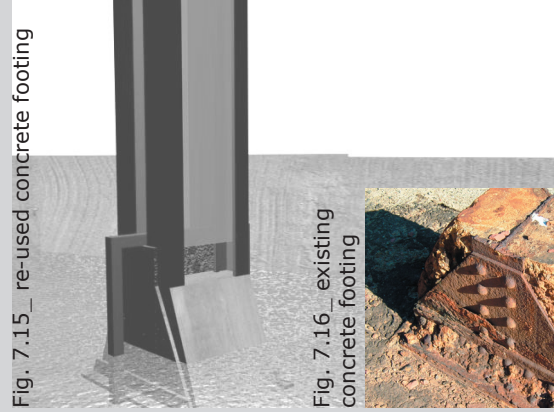


Fig. 7.16_ existing concrete footing



[07] [06] [02] **USE OF EXISTING CONCRETE FOOTINGS**

Concrete footings situated on the old purification platform are re-used as gas lights. Gas will be supplied from a converted gas line coming from the gas tank reservoirs on site. Gas will be supplied to these lights via a gas conduit line connecting different footings in the water. (See detail)

Fig. 7.17_ connection to retrofit house



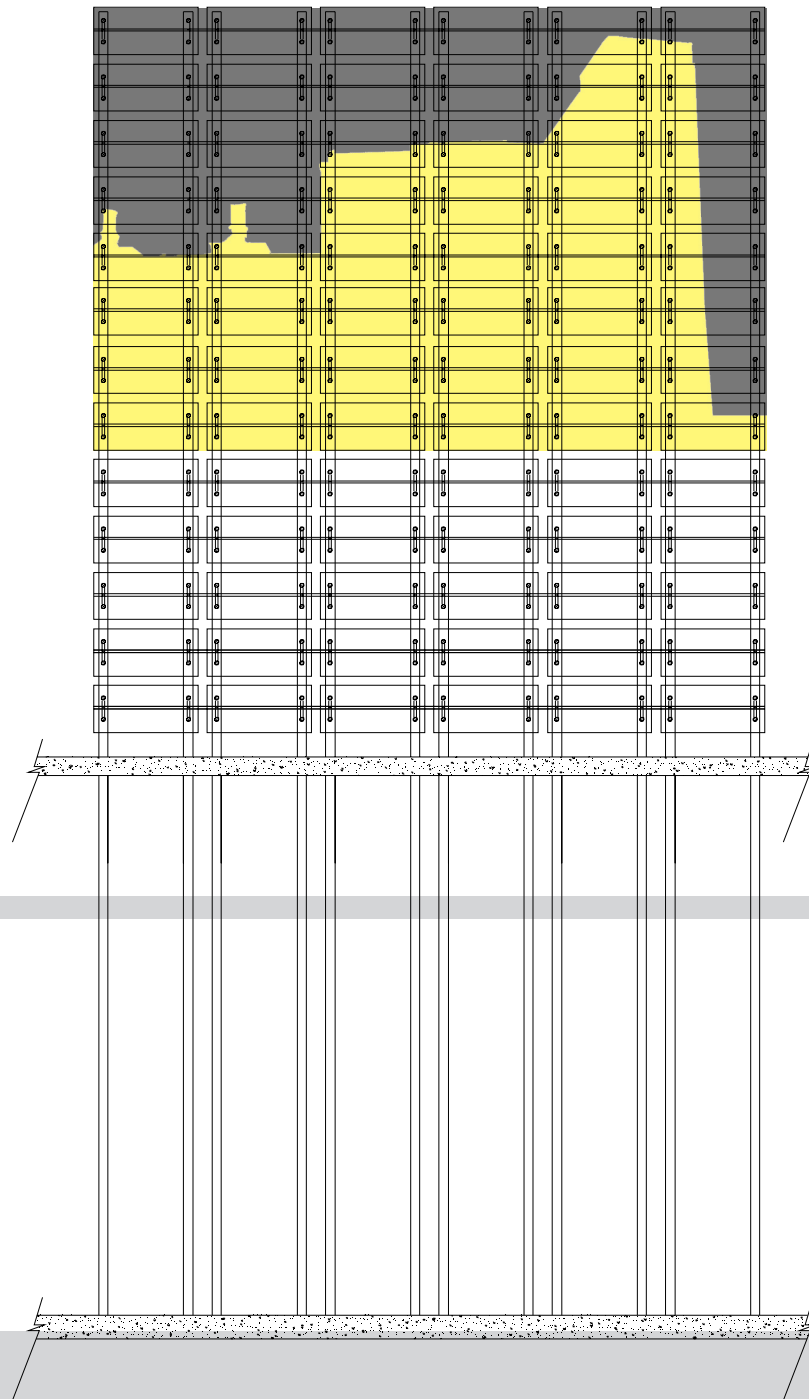


Fig. 7.18_ projection on sandblasted screen

[07] [07] TRANSFORMATION

[07] [07] [01] NIGHT AND DAY TRANSFORMATION

Both the western façade screens and the sandblasted screens of the museum cells transform during day and night.

THE MUSEUM PROJECTION SCREENS

1200 x 600 Sandblasted glass panels are held in place with S/S spider fasteners (supplied by specialist) which are consecutively fixed to 100 diameter galvanised tubing. These panels serve as a background for the display of projected images. Projections are cast from projection boxes located against columns in the water feature.

Projectors are situated in weather resistant boxes. Projectors can be serviced from safety ladders and suspended ramps connecting different projector positions.

The umbrella roof makes it possible to cast images onto the screens during the day, blocking direct sun out from above. The projected images will be a display of the interactive museum spaces in real time, where movement is recorded within the museum, sent to a computer and displayed on the outside. At night time digital videos and films will be projected onto the top part of the composed sandblasted screens. The projected image area will be 6620 in height x 5090 in length, giving a dramatic display of light.

WESTERN FAÇADE STEEL MESH SCREENS

Light fittings installed in the walkway along the western cinema façade generate a display of light and shadow at night time when projected upwards through the S/S wire mesh screens. During the day the movement of the sun cast shadows on these screens giving the façade depth and a sense of transformation.

[07] [07] [02] EVENT

The adaptation of the purification platform into a water feature posed design constraints, in that the top part of the concrete footings could not be converted into water lights due to the depth of submersion of these footings. This however became an opportunity for event. The exiting concrete footings are re-designed to be used as fastening posts for suspended decks (viewing platforms) within the water feature. This enables the square between the retort houses to expand or contract when decks are either assembled or dismantled.

Fig. 7.19_ section indicating projector position

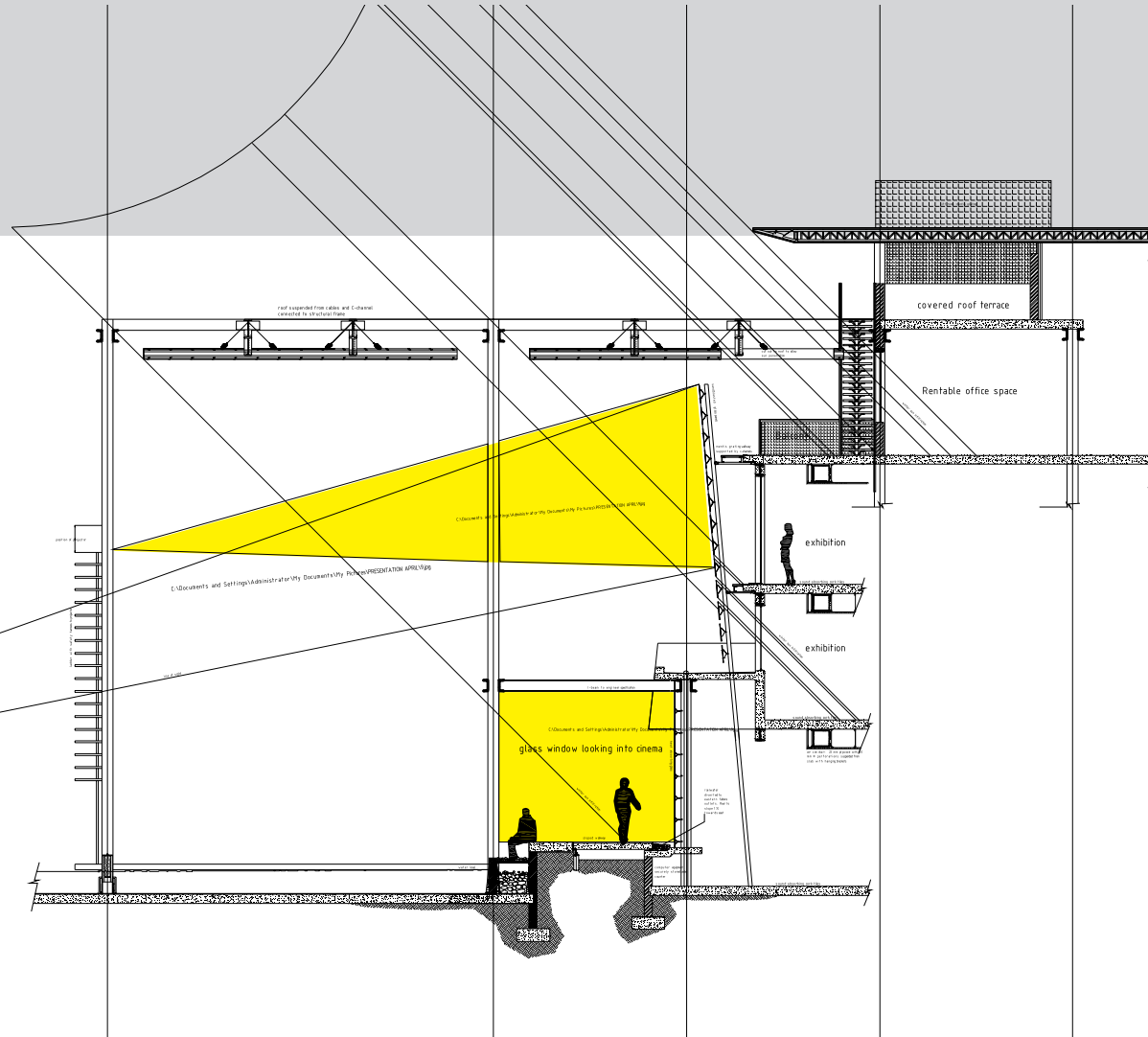


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[07] [08] CONNECTIONS

The Walkways along the museum façade is offset from the museum glass façade to lessen the maintenance of clean pebble strip is introduced along the north façade that serves as a barrier and an element for water discharge. This channel filled with pebbles is sloped with an angle of 1% towards a outlet to the east.

The ramps intersecting museum exhibitions required various technical inquiries, since they connect different museum envelopes. Firstly museum ramps are provided with drain outlets to prevent rainwater from entering the museum exhibit. A recess of minimum 50 mm is proposed where ramps of downwards slope connect with museum entrances. These recesses are supplied with 40 mm grating leveling the ramp surface as well as two 100 diameter drainage outlets supported by a galvanized chain. Two angles of 50x 50 mm are provided to fix the grating to the ramp. The lowest positioned angle is fitted in such a way to allow a 5 mm protrusion above the floor level of the entrance. These protrusions serve as a trigger for the automated door systems.

Air-conditioning and electrical ducting connecting to various museum exhibitions are placed along all ramps at a height above the finished floor level of the ramp. These ducting elements become 'feature' elements revealing the composite nature of the building; they also serve as coverings over the ramps protecting users from rain. The ducts are suspended in interior spaces from the finished floor slabs with S/S cables. Ducts exterior (courtyard) ramps are suspended from I-beams by the external frames of the ducts, instead of cable.

An integral part of the design involves the balustrade design for ramps connecting museum spaces. The balustrades had to be made of transparent material, exposing the movement of people contrasting with the solid museum cells. The resolution was tempered glass balustrades supplied with anodized aluminum handrails and posts.

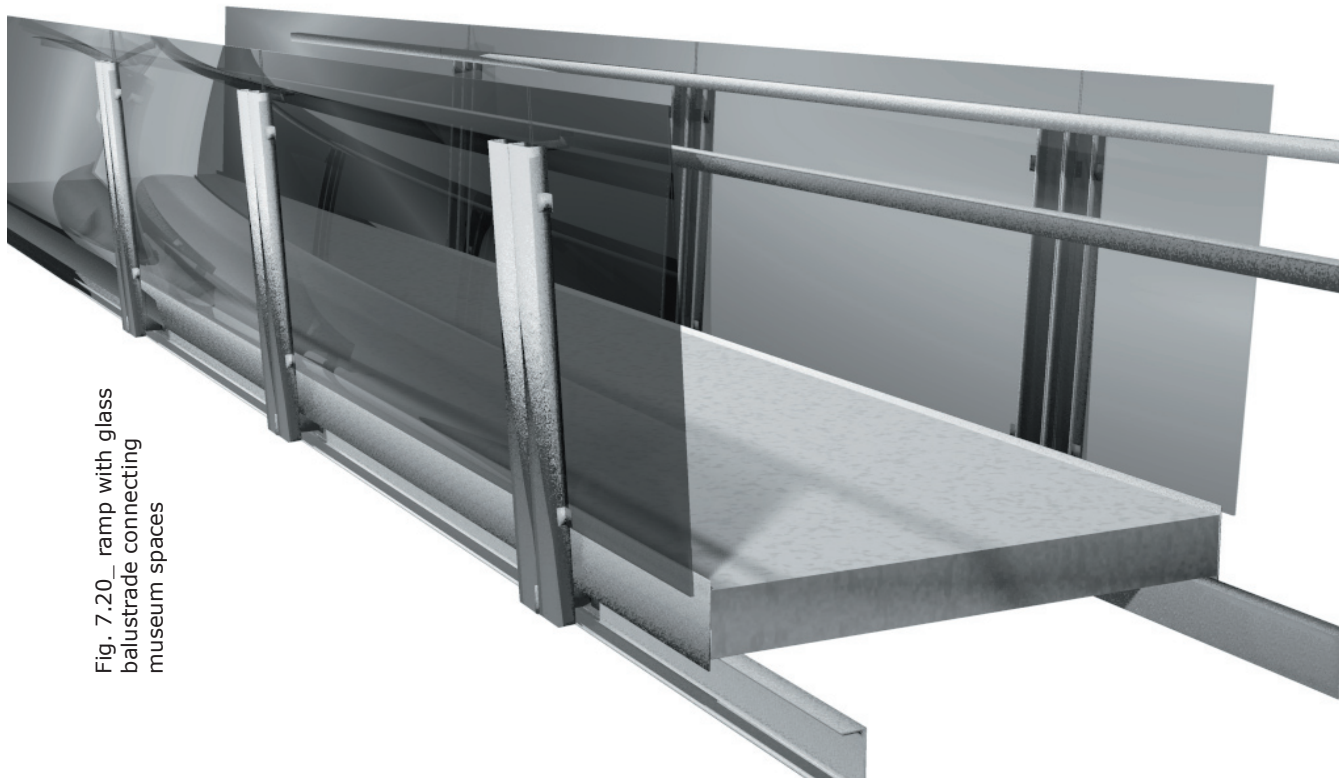


Fig. 7.20_ ramp with glass balustrade connecting museum spaces



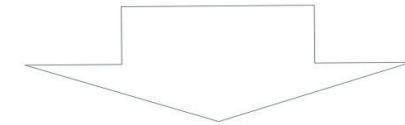
The primary responsibility of the designer is to design a building that is sustainable, and that is protective of the natural and culturally significant resources on the site. The challenge of the project is to generate a design that respond to the scale, form, time, space, order, and pattern of the existing context and preserve, enhance and make sustainable use of the bio-physical environment it is contained in.

The Burra Charter and the South-African Resources Act guide heritage as baseline criteria in the design development.

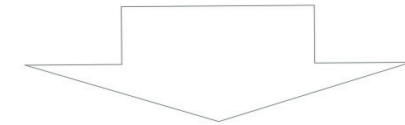
The Sustainable Building Assessment Tool (SBAT) will assist in decision-making regarding the sustainability of the building. The SBAT measures the performance of a building in relation to a number of social, environmental and economic issues.

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www.waveline.org

Heritage



Respond



Generate



New edifice
Enhance context

[09][01] HERITAGE AS BASELINE CRITERIA

[09][01][01] INDUSTRIAL HERITAGE

“Our heritage celebrates our achievements and contributes to redressing past inequities. It educates, it deepens our understanding of society and encourages us to empathize with the experience of others. It facilitates healing and material and symbolic restitution and it promotes new and previously neglected research into our rich oral traditions and customs.” (National Heritage Resources Act, 1999)

“The Industrial Revolution profoundly modified landscapes and life styles.

Industrial operations resulted in great achievements and grandiose constructions, testifying to the creative genius of humankind.”

“Guardians of the past, they testify to the ordeals and exploits of those who worked in them. Industrial sites are important milestones in the history of humanity, marking humankind’s dual power of destruction and creation that engenders both nuisances and progress. They embody the hope of a better life, and the ever-greater power over matter.” (UNESCO, industrial heritage)

The vision is to create a special place of cultural significance that will draw on the sites industrial heritage. The aim is to embrace and enhance the existing structures and its context. The generation of new edifices and that of adaptive re-used structures must respond to the existing.

[09][01][02] ADAPTIVE RE-USE

Refer to Urban design framework.

[09][01][03] NEW WORK

Preserved existing structures will not only create a special place it will also have a significant influence on the generation of new edifices. New buildings must respond to heritage through manifestations of form, material properties, mass, positions of functions and urban plan form. This should be further explored in the design development.

The Extract form the Burra Charter 1999 below will guide the generation and design of the proposed Film Centre.

Article 22	New work	Application to the Gasworks site
22.1	New work such as additions to the place may be acceptable where it does not distort or obscure the cultural significance of the place, or detract from its interpretation and appreciation. New work may be sympathetic if its siting, bulk, form, scale, character, color, texture and material are similar to the existing fabric, but imitation should be avoided.	New work should compliment and enhance old edifices. This may be achieved through contrasting materials and articulation of details. The existing scale, form, space, order, materials and colors will be respected.
22.2	New work should be readily identifiable as such.	New work should not be direct copies of the existing.

Fig. 8.2_ view to retort building from site, indicating design requirements

**[09][01][04] ORDER**

The design for the new film centre must be a response to the ordering principles on site. This include axis, symmetry, hierarchy, rhythm, datum and transformation. The following statement by Ching should be considered throughout the design

Order without diversity can result in monotony or boredom; diversity without order produce chaos. A sense of unity with variety is the ideal. (Ching, F.D.K. 1996, 320)

[09][01][05] SCALE AND FORM

The following should be considered regarding the scale of new edifices

- The scale of new additions should respond and enhance the existing scale of the retort buildings, buildings should respect the scale by not towering above existing structures.
- Spaces around the retort buildings should be altered to relate to humans. Additions of landscaping features and new buildings should be placed in such a way to form enclosed humane spaces
- New buildings should be set back from retort buildings to preserve views to these buildings.
- The Grid and additive form of buildings and landscape features around the retort buildings should be considered in the design.
- The clustered special organization and the sharing of common trait/relationships between

existing buildings must be maintained throughout the design to enhance the existing context.

- Again the design must respect the form of the historical buildings. Form should be assessed according to Solid and void spaces, envelopes, mass, density and interface.

Fig. 9.2

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[09][02] SBAT AS BASELINE CRITERIA

[09][02][01] SOCAIL ISSUES [09][02][01][01] OCCUPANT COMFORT

Personal comfort is the most important user need to be satisfied. The following criteria are applicable for the design of the film centre, comprising of cinemas, a museum, offices, retail and residential facilities.

NATURAL VENTILATION

In favorable climates, natural ventilation can be used as an alternative to air conditioning plants, saving 10% - 30% of total energy consumption.

“Natural ventilation systems rely on pressure differences to move fresh air through buildings. Pressure differences can be caused by wind or the buoyancy effect created by temperature differences or differences in humidity. In either case, the amount of ventilation will depend critically on the size and placement of openings in the building. Gravity ventilation provides natural airflow in the absence of wind by making use of the difference in density between indoor and outdoor air.” (Nikken Sekkei, 2000, 32) An atrium is a good example of gravity ventilation.

The use of natural ventilation will be encouraged in as many areas as possible. Every space must be provided with an opening of at least 10 % of the floor area of that space.

In cases where natural ventilation is impossible (cinema auditoriums and AV rooms), mechanical ventilation systems should be provided. It is important to note in

cinema auditoriums that when projector light sources are carbon arcs or xenon arcs which give off ozone, ventilation must be provided a uniform volume of air at a low velocity to prevent uneven burning and hence changes in light intensity during projections.” (Tutt and Adler, 1998, 199)

Design recommendations for natural ventilation
The specific approach and design of natural ventilation systems will be based on the Film centre and the local climate. However, the amount of ventilation depends critically on the careful design of internal spaces, and the size and placement of openings in the building.

- Maximize wind-induced ventilation by siting the ridge of a building perpendicular to the summer winds.
- Buildings should be sited where summer wind obstructions are minimal. A windbreak of evergreen trees may also be useful to mitigate cold winter winds that tend to come predominantly from the south.
- Naturally ventilated buildings should be narrow. It is difficult to distribute fresh air to all portions of a very wide building using natural ventilation. The maximum width that one could expect to ventilate naturally is estimated at 13, 7 m.
- The effect of natural ventilation may be enhanced through the use of water. Water running over screens and sprayed onto hard surfaces can act as natural air conditioners
- Occupants should be able to regulate ventilation by opening and closing windows.
- Allow for adequate internal airflow. In addition to the primary consideration of airflow in and out of the building, airflow between the rooms of the building is important. When possible, interior doors should be designed to be open to encourage whole-building ventilation. If privacy is required, ventilation can be provided through high louvers or transoms.

ACOUSTICS

Auditorium acoustic conditions depends upon auditorium shape, acoustic absorption characteristics of the surface and qualities of reverberation resulting from them.

The following criteria should be considered regarding acoustics:

- Sound reflecting materials should be placed against all ceilings of cinema auditoriums. Whereas absorbing materials should be used against walls and floors.
- Mechanical noise due to overhead air-conditioning ducts should be minimized.
- All floors and ceilings in museum must be of absorbing materials, lowering noise levels caused by people generated sound.

VIEWS AND VIEWING CONDITIONS**Views:**

The design of a new film centre has to respond to the existing context of the site. Since the Gasworks site is a culturally significant landmark, views from and to existing buildings, landscapes and structures need to be preserved.

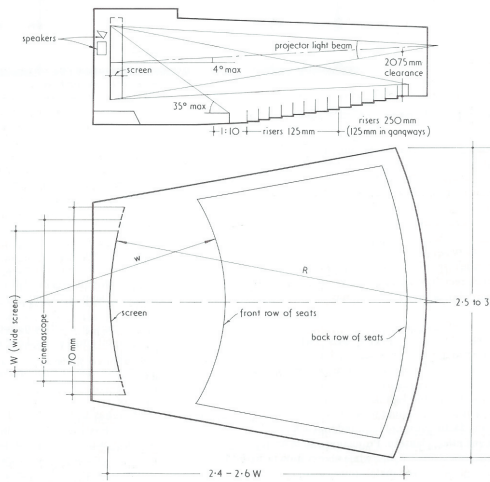
Viewing conditions:

The size and position of the cinema screens must relate to the size and shape of the auditorium and the type of film used. The following table is a breakdown of approximate screen sizes relating to film type.

Film type	Projection	Applications	Light source/ screen size	Aspect ratio
16mm Silent type- perforations along both edges. Type with > Qund- perforations along one edge only leave room for either photographic or magnetic sound record	Either relatively light and readily portable, or heavy-duty for permanent installations	For educational, scientific, advertising, entertainment and TV purposes	Incandescent source permits screens up to 3 m x 2.2 m. Xenon or carbon arc. screens up to 6 m x 2.4 m. Power of source limited by amount of heat dissipated	1:1.135 (not readily changed)
35mm	Portable with incandescent light source, or heavy duty for permanent installations	'Standard' type for commercial cinemas; also for high quality lecture halls and TV	Incandescent-7 m x 5 m screen. Xenon or carbon arc. screen size proportional to power of light source; if very high, water cooled film gates provided	1:1,375

image information:
background_acoustic_
www.waveline.org

Fig. 8.3_ auditorium shape and offset from screen



40 degrees. An object can therefore only be comfortably viewed as a whole from a distance of about double the objects diagonal. (Tutt & Adler, 1998, 289) Showcases as usually viewed from close up.

Distance from screens:

Sightlines from the rearmost two or three seats should be drawn on a larger scale to check that the bottom of the screen is visible to all seats. At most the heads of the people in front should not obscure more than 12, 5 % of the total height of the screen.

When the screen is high, the front seats must be set back to preserve a sightline of 30 degrees to the top of the screen. (Tutt & Adler, 1998, 196)

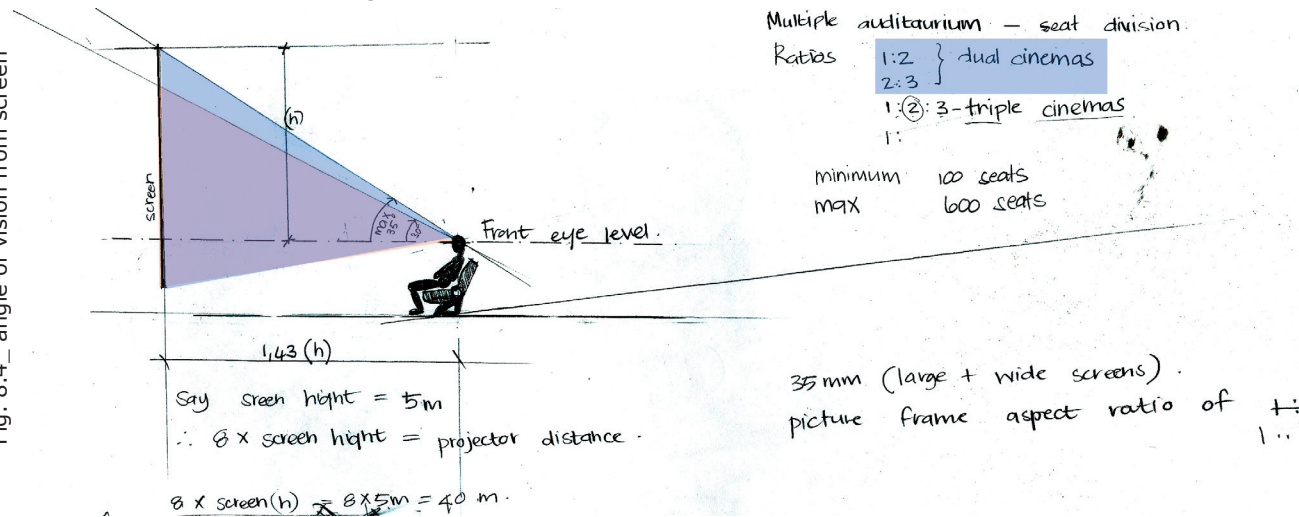
In the instance where the screen is high, the viewer distance from the screen can be calculated by multiplying the screen height by a factor of 1, 43.

The projector distance can be calculated by multiplying the screen height by a factor of 8.

Viewing in exhibition spaces:

The normal vision without moving the head is a cone of

Fig. 8.4_ angle of vision from screen



[09][02][01][02] INCLUSIVE ENVIRONMENTS

The urban design framework should accommodate various kinds of users.

Redevelopment will make the site an inclusive environment catering for a diverse community, serving student of the various educational institutions, communities of Melville, Millpark, Auckland Park, Vrededorp and the CBD.

The following criteria should be considered.

- The retail, recreation and commercial facilities will be open to the public sector, and buildings will be designed to make all facilities accessible and secure.
- Public environments should be self contained, providing services such as banking and childcare
- All levels of public space should be made assessable to disabled persons, lift and ramps should be provided and must comply with SABS 0400.
- The change from public to private needs to be articulated to make the precinct more legible and secure. This may be achieved through the use of landscaping and façade articulation.

[09][02][01][03] PARTICIPATION AND CONTROL

Environmental control such as indoor climate, aesthetic qualities, ambience should be adaptable to user needs in retail, office and residential environments. Spaces must be able to transform into places of personalization.

User involvement in the museum area will involve the following.

- The users must be able to access and visit parts of the exhibit conveniently as it suite them. Users must be able to visit parts of the exhibit today and come back for the rest tomorrow.
- Users must be able to interact with the exhibitions. The idea is not to create elite museum spaces that can only be observed. The user must be able to comment and participate with a network of ideas that will be digitally accessible.
- Spaces must contribute to human interaction. Entrance lobbies, exhibits, restaurant seating, seating along paths, lift and stairways all are areas of potential interaction. (Refer to precedent study)

[09][02][01][04] EDUCATION HEALTH AND SAFETY

Education and awareness in South-African film is the main aim of the museum. Access to internet facilities, structural courses in film making, books and film and media technologies all form an integral part of the design for the film centre.

The museum should function as a place where directors and film experts can learn from new technologies, where the community becomes educated about film making and where users can participate in the film making process through comments and their visions for upcoming events.

The following design aspects should be employed to provide safe and secure environments.

- Fire regulations should comply with SABS 0400
- Spaces will be designed to have 24hour



surveillance. Residences and offices must be placed strategically to overlook public spaces.

- The design should minimize unpredictable, unsecured alleyways. Visual linkages will contribute to a more secure environment.
- Adequate lighting should be provided along circulation routes and stairways. Dark spaces should be eliminated throughout the public square and along building facades.
- Places should be specifically allocated for smokers, complying with all smoking regulations.
- Since the site is a contaminated brown-field site, extensive attention should be paid to the decontamination process throughout the construction phase.

When it comes to potential redevelopment of the site, major problems associated with contamination are identifiable:

- For areas of residential development, exposure to contaminated soil can be hazardous to children exposed to it.
- Certain compounds may restrict re-vegetation of the site. This could have a consequent affect on the aesthetic appeal of the area
- Sulphates and salts may attack building materials, site services and cause corrosion of concrete foundations.

A method of decontamination may involve the following. Rather than excavating and replacing all the soil, topsoil should be replaced and buffered from the underlying contaminated soil with a damp proof course. Some areas can be treated with suspended timber floors that will buffer humans from contamination.

[09][02][01] ENVIRONMENTAL ISSUES**[09][02][01][01] WATER**

Johannesburg has abundant rainwater (... per year) which can be harvested and used as grey water of all kinds, thus saving valuable water resources.

"Wastewater can be used by toilet flushing or plant watering after preliminary treatment. Rainwater and pre-treated wastewater should be directed to a permeable ground surface to replenish urban groundwater. Residual pollutants in the pre-treated wastewater will be bio-degraded in the soil without further treatment, providing nutrients for plants." (Nikken Sekkei, 2000, 32)

The following should be considered:

- Rainwater should be harvested and stored in conservancy tanks for later use. Conservancy tanks should become aesthetic water features within the landscape.
- Surface discharge can be reduced by using pervious or absorbent surfaces that prevent erosion. Hard landscaping should be minimised and previous surfaces must be specified for car parking and paths.
- water needs to be channelled to the conservancy tanks, where impervious materials are used (roofs)
- Planting with low water requirement should be encouraged (indigenous species)
- The design should make use of efficient water devices like dual flush toilets, and aerated shower heads.

Fig. 8.5_ warning sign indicating site contamination

Fig. 9.3

The table below gives international standards which have been recommended by international organizations

Type of vegetation	Water supply required	
Private gardens	Maximum average	350 kilo litres/hectare/day 225 kilo litres/hectare/day
Private gardens without grass	Average	170 kilo litres/hectare/day
Public parks	Average	60-140 kilo litres/hectare/day

[09][02][01][02] ENERGY

- The design should respond to the site's micro-climate.
- Buildings should be faced north for maximum sun infiltration.
- Shading devices should be designed to control sun angels during summer months.
- Building footprints should not be very deep. If this is not possible the buildings should take in light and ventilation at two sides.
- Natural lighting requires light paths that will carry the light to the heart of the building. Elements such as light shelves, top lights and light ducts are effective for carrying light into building interiors. (Nikken Sekkei, 2000, 32)
- Reduce the use of mechanical ventilation through the use of passive environmental control.
- A walkable urban environment should be encouraged, with facilities within walking distance.
- Gas should be used as a major energy source in the development. Lighting, cooking, streetlamps and urban lighting should all also make use of gas.



PASSIVE ENVIRONMENTAL CONTROL

Making Maximum Use of the Zero Energy Band

The range in which neither heating nor cooling are required is called the 'zero energy band', because no energy is consumed at all. Heating or cooling only becomes necessary when the room temperature starts to move beyond this temperature range. The same principle applies to lighting and ventilation. Indoor conditions can be maintained within these bands for a considerable portion of the year without consuming energy (figure). Insulation, sun screening and natural energy can be used to extend the use of the zero energy band for as long as possible. When daylight provides adequate lighting, the air is fresh enough, and the temperature is comfortable, no further energy expenditure is required. However, occupants and managers must find and establish the most suitable zero energy bands and avoid needless energy consumption within the band.

The width of the zero energy band is never uniform. In a room with a high ceiling it is quite adequate to maintain good conditions in an inhabited zone up to a height of around 1.8m from the floor, without trying to do so in the entire volume of the room. A wider zero energy band can be employed in unoccupied and ambient spaces than in occupied and personal spaces. (Nikken Sekkei, 2000, 33)

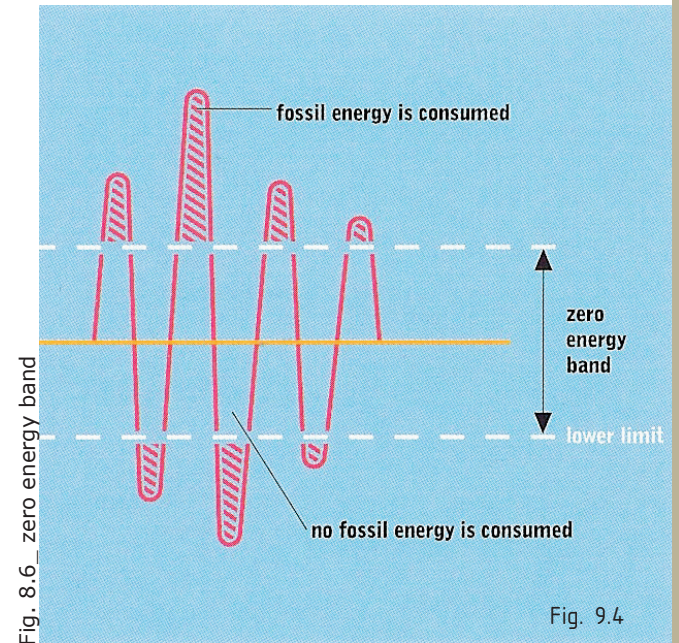


Fig. 8.6 zero energy band

Fig. 9.4

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[09][02][01][03] MATERIALS, COMPONENTS AND RE-USE

The Gasworks site is a contaminated Brownfield site with development potential. The new development should recognize the site's industrial past; giving it back to the community.

For a site to be completely healed it must once again become viable to the community. And it should expose or at least recognize its industrial past. The process is a culturally significant act, reconsidering the site's new use. (Dirt-metroloposis mag.)

The discourse focus on architectural reuse this includes:

- adaptive reuse,
- conservative disassembly,
- Reusing salvaged materials.

The following criteria are applicable regarding architectural re-use and waste management:

- Materials and detailing of new buildings must enhance that of the existing industrial buildings.
- Problems will arise where old and new are directly connected. The way of detail articulation and material choice of new additions will have a profound effect on the preservation of the existing.
- Old industrial buildings should be adapted to cater for new functions.
- Less energy will be used since demolitions of buildings are kept to a minimum.
- Re-using of salvaged materials should be encouraged in all new additions. The re-use of

salvage materials will contribute to the industrial context. High-Tec might be contracted against withered materials.

- When large quantities of existing materials, components and buildings are re-used less new materials and components are required for future construction. This may include: steel girders, columns, concrete pile foundations, industrial lifts and conveyer belts, and machinery used in the gas refinery processes.
- The use of materials such as natural wood and stone, in place of those that consume large amounts of energy in their manufacture, is effective in reducing the environmental impact.
- Locally produced natural materials should be used wherever possible to avoid using excessive energy in their transportation.
- If the materials from a demolished building can be properly divided and collected separately, it becomes possible to recycle them. When separation of materials starts at the design stage, the potential for recycling buildings is enhanced, the design should provide for easy disassembly rather than destructive demolition wherever possible. (Nikken Sekkei, 2000, 34)

Materials are an important consideration for green buildings throughout their lifecycle. Optimum material choices must be made with consideration of the construction, use and eventual disposal of the building. (Nikken Sekkei, 2000, 34)

The following criteria are applicable for material choice.

- Use materials in their raw state.
- Choose materials with long term benefits of either low maintenance (raw concrete) or materials that can benefit the community by providing job opportunities (woven tapestries by local crafts people.)
- Choose materials according to the site's micro-climate and the buildings function (e.g. Materials with acoustic and thermal properties in the case of cinema design)
- Use salvage materials and building rubble as fill material.

[09][03][01] ECONOMIC ISSUES**[09][03][01][01] LOCAL ECONOMY**

The use of Local contractors, local building material and local manufactured components all contribute to a stronger local economy by sustaining the surrounding community. The use of local crafts people should be encouraged since it will provide a identity to the palce. The urban redevelopment of the Gasworks should support local enterprises of art, culture and media. The film center will promote the South-African film industry locally and internationally.

[09][03][01][02] ADAPTABILITY AND FLEXIBILITY

Since the development encourages re-use, it automatically makes the development more financially viable.

New additions will be designed so that the Vertical dimension of spaces will encourage more versatile adaptation of use in future.

"...flexibility is ensured by generous floor-to-floor heights, double floors and equipment space above the false ceiling and on the roof and balconies." (Nikken Sekkei, 2000, 33)

Internal partitions will make spaces more transformable, both during operation of current and future use. People like change and flexibility of their environments to suit their needs.

In order for a building to accommodate change, it must have a functional value as well as a commodity value.

Buildings that offer an open arrangement of spaces and a flexible structural framework have the best potential for reuse. Building types organized with respect to their cellular structure allows for more flexibility in their future reuse

Circulation and service spaces must be planed not to restrict re-use. The most versatile option will be viable.

[09][03][01][03] ONGOING COSTS

The following criteria are applicable:

- Specification and material specification for low maintenance and or low cost maintenance is of high priority.
- Measures will be taken to limit requirement for cleaning. Hard wearing solid flooring (limited or no carpeting) specified. Windows must be designed to be easily accessible for cleaning.
- Measures should be taken to limit the requirement and costs of security. This should include mixed use development where buildings and spaces are overlooked by occupied neighboring buildings.
- A partnership will exist between tenants and occupants, treating the urban environment as a common property. A monthly fee will be charged for maintenance of the urban environment.



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