FIRED UP

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(v.d. Merwe, 2024)

FIRED UP

The FiredUP museum project revitalises the heritage Egoli Gas Works Retort No. 2 into a dynamic cultural hub, blending history with immersive experiences to foster social cohesion, inclusivity, and community engagement in Johannesburg.

by
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u17013586

Submitted
in fulfillment of part of the requirements for the degree Master of Interior Architecture (Professional)
in the
Faculty of Engineering, Built Environment and Information Technology University of Pretoria

DPD 803

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Course Coordinator:
Janri Barker

Study Leader:
Janri Barker

PROJECT SUMMARY

Address:
1 Annet Road, Cottesloe Johannesburg, 2092

GPS:
26° 11′ 24.6″ S, 28° 1′ 10.8″ E

Programme:
The museum programme combines exhibition spaces, performance areas, trade zones, and social gathering spaces, all designed to foster cultural exchange and immersive experiences centered around fire and food themes.

Research field
The interdisciplinary investigation between service design, spatial design and business process design to create a framework for the pre-design phase to document user experience, programmatic processes, spatial qualities, and the relationship between them.

Client
Johannesburg Municipality and Egoli Gas Company

Theoretical premise:
The theoretical premise of the FiredUP project uses spatial syntax and narrative theory to transform traditional museum spaces, fostering social interaction and storytelling by impressively blending industrial heritage with flexible, community-focused environments.

Architectural approach:
The architectural approach integrates adaptive reuse and sustainable design, preserving the industrial character of Egoli Gas Works with brick structures and exposed steel, while introducing flexible social spaces and immersive elements that reflect fire's transformative energy and foster community engagement.

ABSTRACT

The FiredUP Museum Project seeks to transform the historic Egoli Gas Works in Johannesburg into a vibrant cultural and educational hub that celebrates the city's rich industrial heritage and dynamic contemporary culture. By centering its narrative around the themes of fire and food, the museum aims to engage a diverse audience, including students, artists, entrepreneurs, commuters and the general public, through immersive experiences that foster social cohesion ,inclusivity and cultural exchange.

By addressing the limitations of traditional museum formats and the challenges posed by underutilized buildings, the FiredUP Museum aspires to create a lively, inclusive space that enriches the urban fabric of Johannesburg, promotes social cohesion, and provides a lasting legacy for future generations. Ultimately, the project seeks to redefine the role of museums in the 21st century, moving beyond static exhibitions to become dynamic centers of community engagement, education, and cultural celebration.

The design approach integrates principles of narrative theory and space syntax to create intuitive pathways that connect visitors with various gathering spaces for learning, reflection, and social engagement. The layout emphasizes flexibility, accommodating a range of activities from exhibitions and performances to workshops and communal dining experiences, thereby reflecting the city's multifaceted identity and promoting inclusivity.

Central to the project is the adaptive reuse of the Egoli Gas Works, with a focus on preserving key architectural features such as brick facades and steel frames that honour the site's industrial legacy (Läuferts and Mavunganidze, 2009). By incorporating sustainable design practices, including the use of energy-efficient systems and locally sourced materials, the project aims to minimize environmental impact while creating a welcoming and functional space. Engagement with local stakeholders and clients ensures that the design reflects the needs and aspirations of the diverse user groups it aims to serve, fostering a sense of ownership and connection to the museum.

Additionally, the museum will serve as a platform for educational programming related to the coal-to-gas process, highlighting the historical context of energy production in Johannesburg and its implications for contemporary sustainability challenges. This educational component is complemented by a rich array of interactive installations, including skylights, fire pits, and sensory experiences that evoke feelings of mystery, excitement, and transformation, deepening the visitor's connection to the museum's themes.

Keywords: Social cohesion, Immersive experiences, Inclusivity, Adaptive reuse, Fire and Food

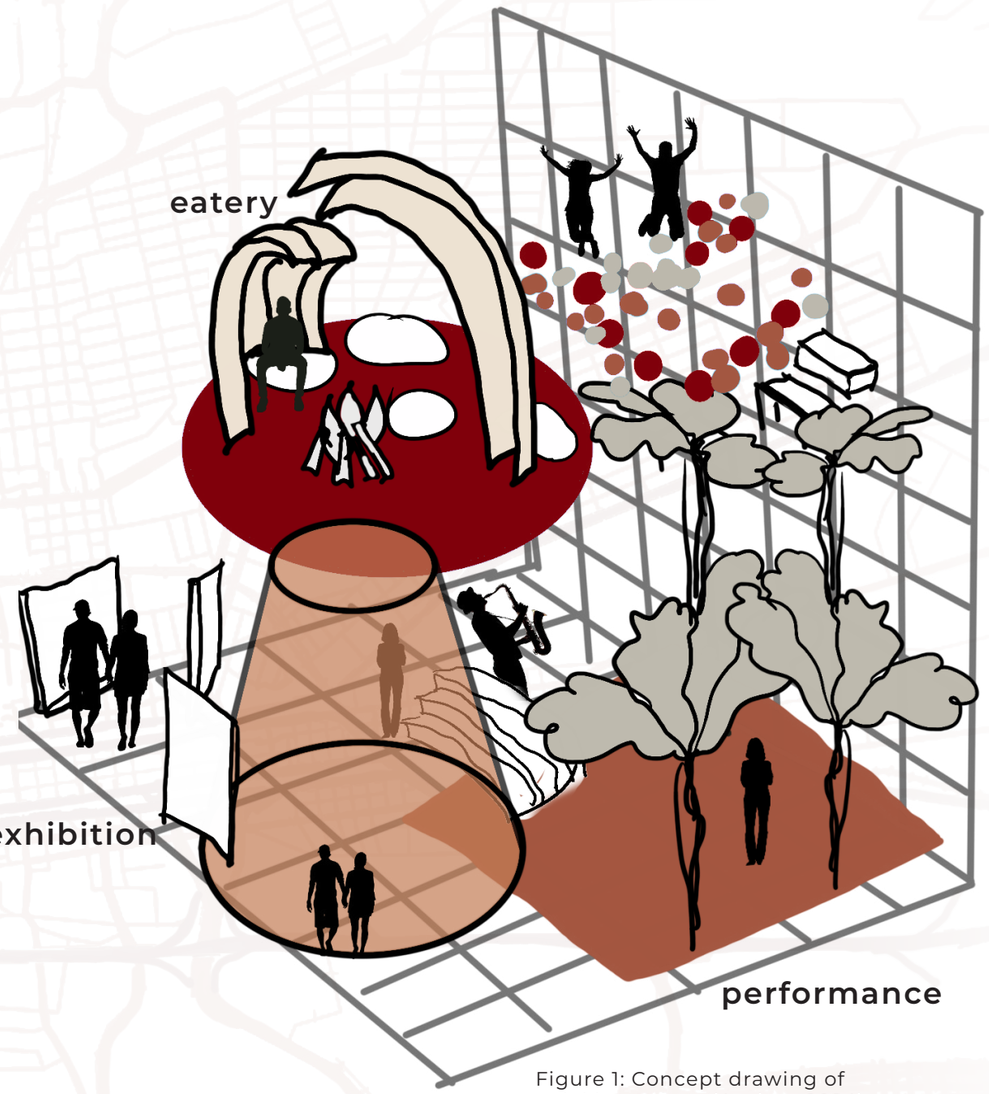

Figure 1: Concept drawing of spatial intentions (Author, 2024)

ACKNOWLEDGMENT

Words cannot fully express my gratitude for the incredible support system around me.

First, I want to extend my heartfelt thanks to Janri, who spent the entire year helping me navigate my chaotic thoughts. Your unwavering encouragement and belief in me have made a significant difference. I truly appreciate your directness and the enthusiasm you have for my project; it has been a guiding light.

To my parents and brother, thank you for your continuous support throughout my years in this degree. There are no words to convey how much your love, motivation, and steadfast presence mean to me. We are all earning this degree together! Thank you for reminding me that it's just a degree and that I am capable and strong enough to overcome any challenge. Your care, including making sure I'm well-fed, has been a blessing—you are the family everyone wishes for!

I also want to express my gratitude to my heavenly Father for showering me with blessings beyond my imagination, keeping me strong, and always providing love and guidance.

Lastly, a big thank you to my supportive classmates for sharing in the laughter and for finding joy in my jokes. Your camaraderie has made this journey even more enjoyable.

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PROJECT BRIEF

SITE

Johannesburg, Braamfontein

Johannesburg's **Cultural and Educational Scene**: As a vibrant center of culture, business, and education, Johannesburg merges its industrial roots with a lively arts scene. With diverse galleries, theatres, museums and educational institutions, the city draws a mix of students, creatives, and professionals.

Social Hubs: Community spaces, like art markets and performance venues, foster inclusivity and shared cultural experiences, bringing people together.

Dining and Culinary Diversity: Johannesburg's restaurant scene reflects its multiculturalism, with dining spots that act as social anchors, offering warmth, connection, and diverse culinary experiences for locals and visitors alike (City of Johannesburg, 2018).

The **FiredUP** project will transform the Egoli Gas Works into a vibrant cultural space that celebrates Johannesburg's rich heritage in culture, education, and the arts. By incorporating flexible community spaces through a layered programme for engagement and a restaurant that reflects the city's culinary diversity, the project aims to foster inclusivity and shared experiences, connecting diverse audiences with the cultural narrative of Johannesburg.

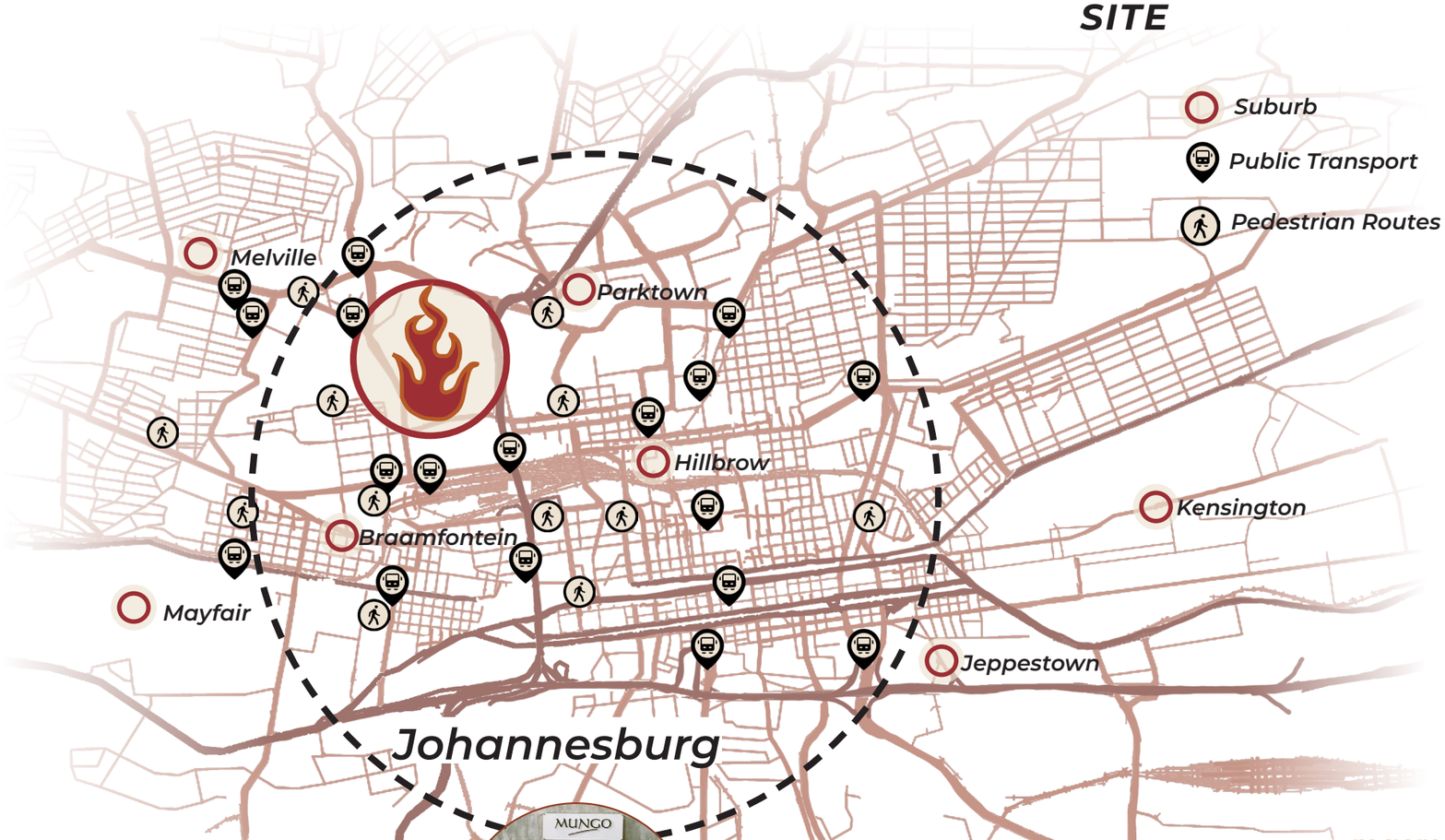


Figure 2: JHB macro site map (Author, 2024)

macro

culture

44 stanley

WITS

UJ

museums and theatres

neigbourhood goods - playground

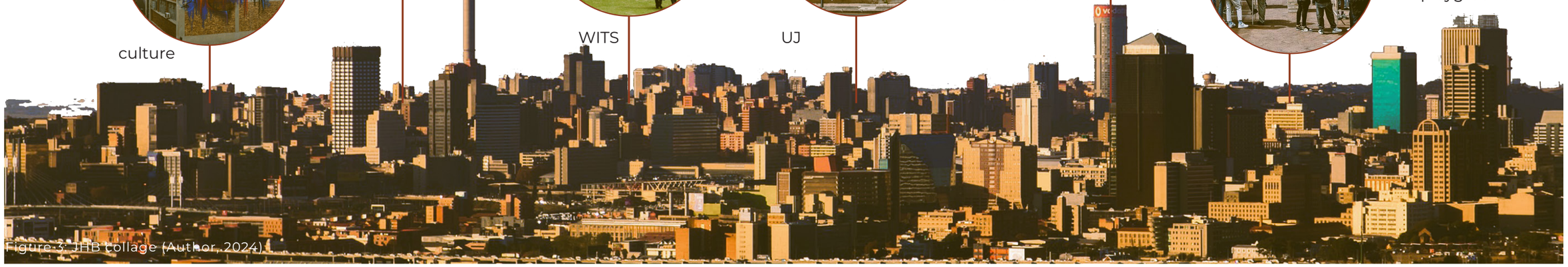
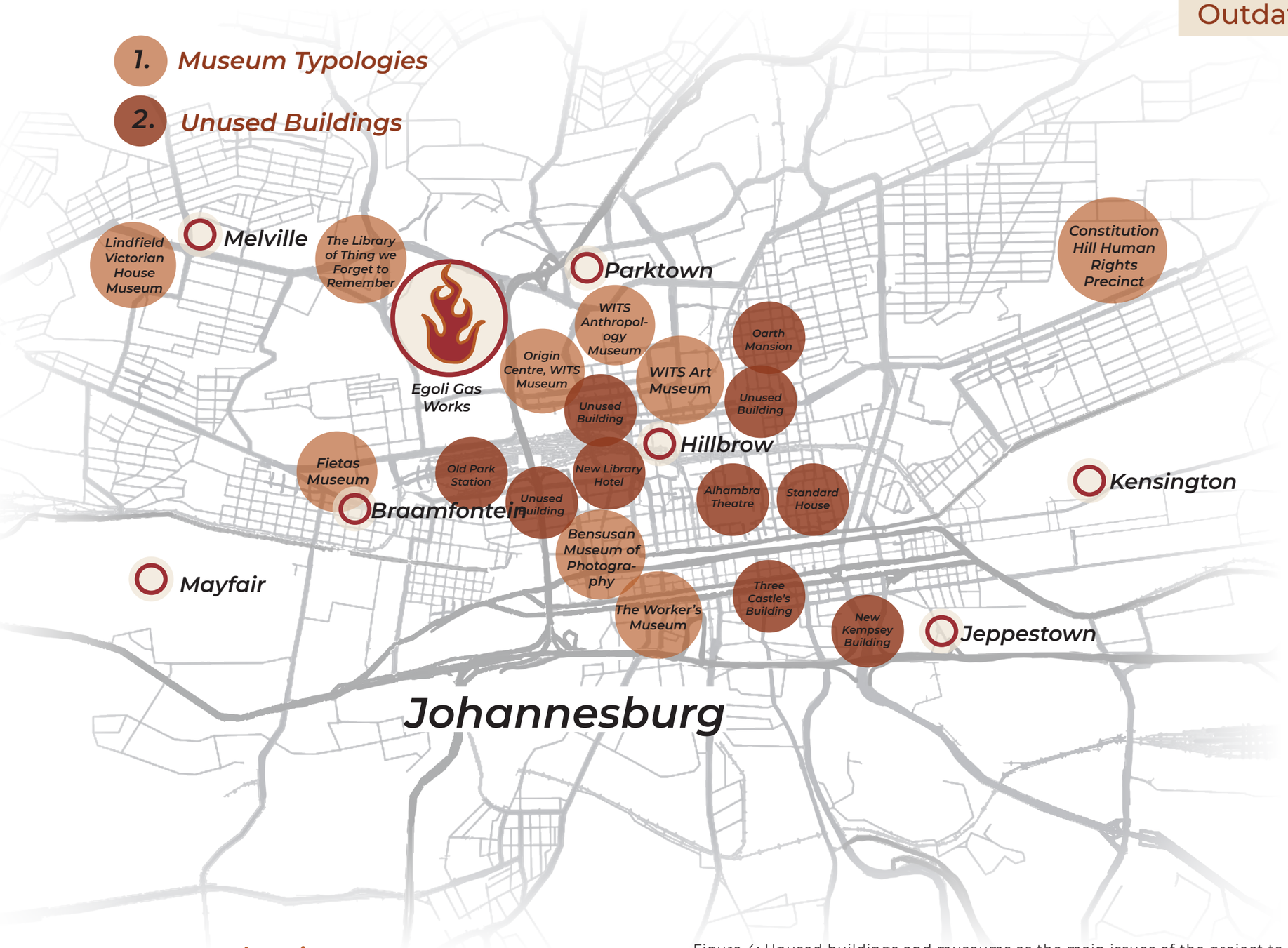


Figure 3: JHB collage (Author, 2024)

PROJECT BRIEF

ISSUES



macro - urban issues

Figure 4: Unused buildings and museums as the main issues of the project to be addressed (Author, 2024).

Outdated Museums / Unused Buildings

The underutilised buildings and outdated museum typologies are prominent issues within Johannesburg.

Outdated Experiences: Many museums are seen as outdated, offering one-dimensional experiences that fail to engage visitors meaningfully. This results in a disconnect between the institution and the community it serves.

Lack of Inclusivity: Existing cultural spaces often do not cater to diverse user groups, limiting access and engagement from various demographics.

Underutilization of Buildings: Unused buildings represent missed opportunities for community development and cultural engagement. These structures can fall into disrepair and become eyesores instead of vibrant community assets.

Failure to Adapt: Museums often struggle to evolve with changing societal needs (Hermann and Nemaorani, 2023), leading to a lack of relevance in contemporary contexts. Ayanada Ncobo (2018) stresses that museum displays mirror South Africa's political, economic, and cultural dynamics, underlining the importance of inclusivity and community engagement in exhibitions. There is a need for adaptive reuse of these spaces to meet modern requirements.

Limited Interaction with Surrounding Environment: Current museums frequently do not integrate well with their urban surroundings (Ncobo, 2018), isolating them from the community and limiting their potential as cultural hubs.

Addressing these issues through innovative design and programming can transform how museums engage with their audiences and utilize their spaces. the FiredUP project aspires to redefine the role of museums in the community, addressing the shortcomings of traditional institutions and creating a space that is relevant, engaging, and inclusive.

PROJECT BRIEF

AIMS & OBJECTIVES

Aim

To transform the heritage Egoli Gas Works into a vibrant cultural hub that honours its industrial legacy while creating an immersive, flexible, and socially cohesive space where people can connect, learn, hather, share and celebrate Johannesburg's evolving cultural narrative.

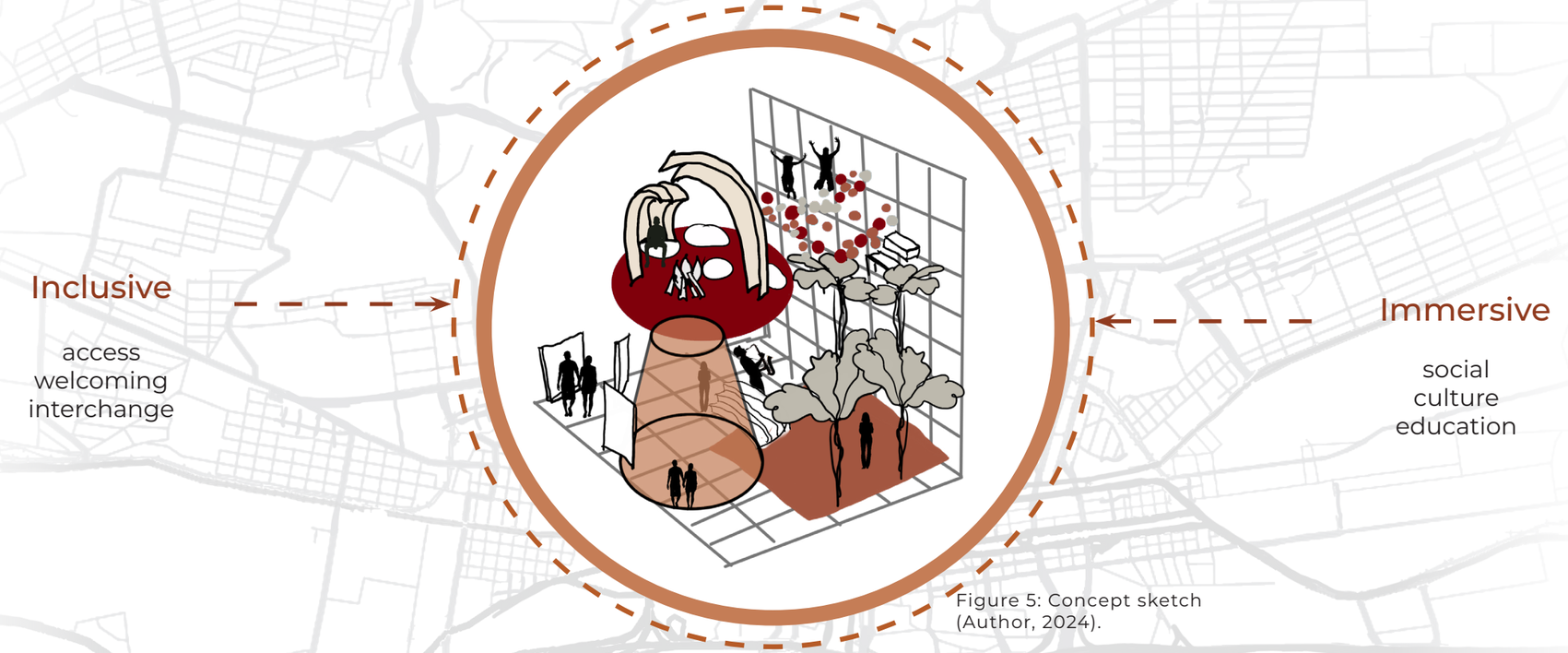


Figure 5: Concept sketch (Author, 2024).

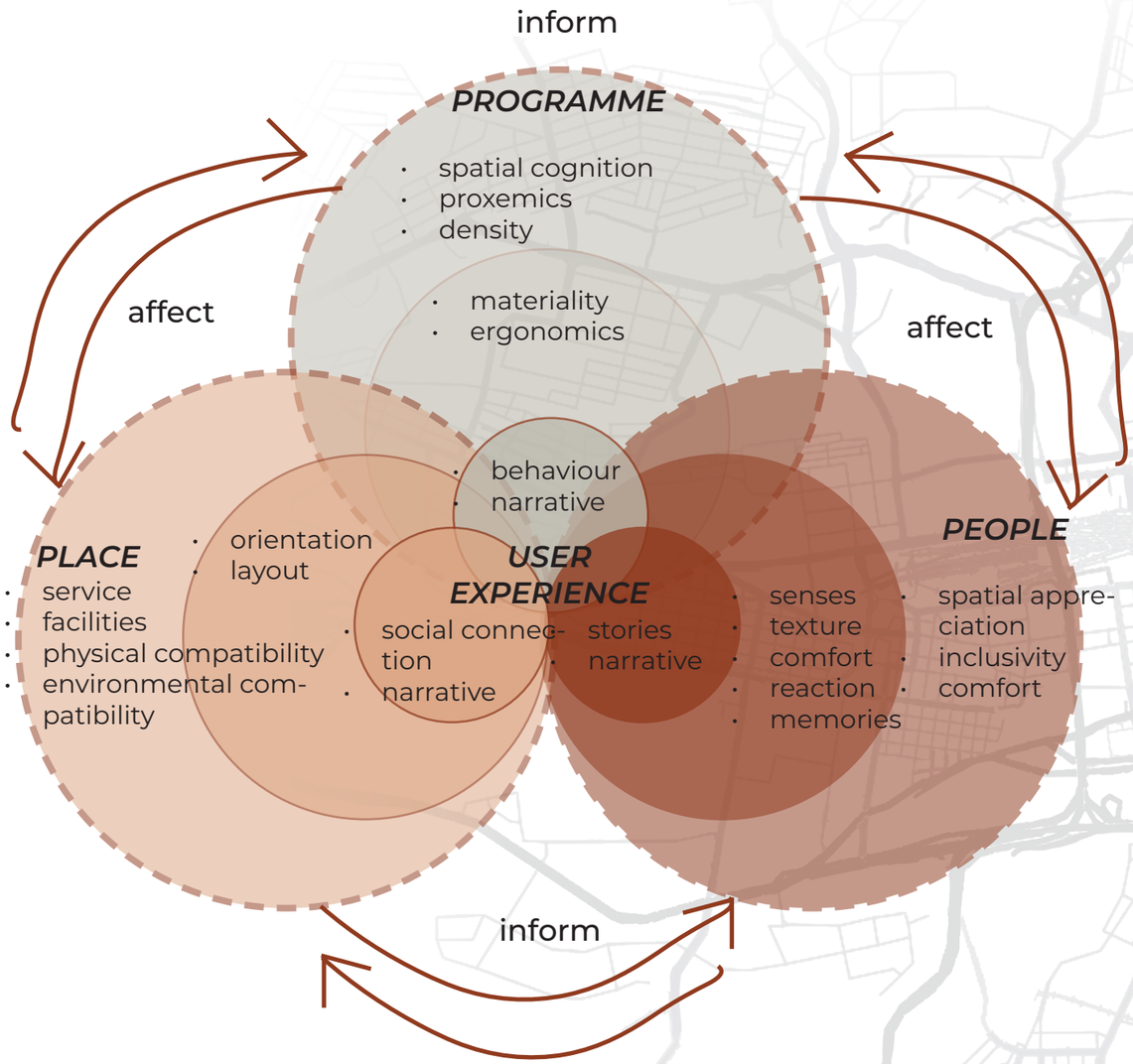
Objectives

1. **Enhance People-Place Connections:**
   Design intuitive pathways using space syntax and narrative theory to connect diverse users with areas through spatial arrangement and layout for gathering and learning, fostering community interaction and cultural exchange.
2. **Preserve and Celebrate Industrial Heritage:**
   Restore key architectural features of Retort No. 2, using materials like brick and steel to honour the building's historical significance while reflecting the fire theme of transformation and renewal.
3. **Create a Multi-Functional, Adaptive Space:**
   Design flexible performance and exhibition areas for various activities, ensuring amenities prioritize accessibility, comfort, and versatility.
4. **Incorporate Sustainable Design Practices:**
   Adopt adaptive reuse strategies to minimize environmental impact, integrate energy-efficient systems, and use local materials to create a comfortable, responsible space.
5. **Offer a Richly Layered, Immersive Experience:**
   Incorporate interactive elements like skylights and fire pits to evoke mystery and excitement, enhancing visitor engagement with the fire theme through thoughtful wayfinding and dynamic lighting.
6. **Promote Social Cohesion and Inclusion:**
   Ensure spaces are accessible and welcoming to all audiences, fostering cultural engagement and celebrating Johannesburg's history and identity.

Figure 6: Objectives general illustration (Author, 2024).

THEORY

PEOPLE, PLACE, PROGRAMME



The FiredUP Museum is designed to accommodate diverse user groups, including students, artists, entrepreneurs, and the general public. The layout features flexible spaces for gathering, learning, and sharing, including an eatery, lecture/workshop spaces, exhibition areas, and performance stages, ensuring that the museum serves as a vibrant hub for cultural exchange (Yamu, van Nes, and Garau, 2021). By prioritizing accessibility and inclusivity, the design fosters connections between people, place and programme, enriching the overall experience and encouraging frequent visits (De Rosa, 2022).

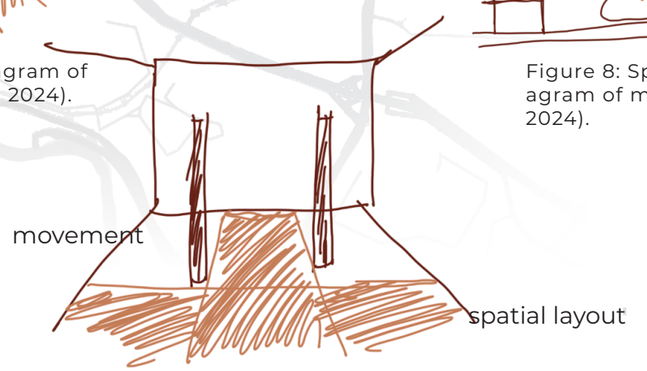
Narrative Theory & Space Syntax

Narrative theory underpins the design of the FiredUP Museum by emphasising storytelling as a key component of the visitor experience. The project aims to weave together narratives of fire, community, and industrial heritage, allowing visitors to engage with the site's history and cultural significance on a deeper level. Interactive exhibits, such as multimedia displays and guided storytelling sessions through a maze, will facilitate personal connections to the narratives presented, enhancing visitor engagement and understanding (Juliá Nehme et al., 2023).

The design employs space syntax principles to create intuitive pathways and connections between various areas of the museum (Karimi, 2018). By analysing spatial relationships and movement patterns, the layout encourages interaction and flow, ensuring that visitors can easily navigate the space and engage with exhibits, performances, and communal areas. This approach promotes social interaction and fosters a sense of belonging, making the museum a lively and welcoming environment for all.

Figure 7: Narrative theory diagram of spatial arrangement (Author, 2024).

Figure 8: Space Syntaaaax diagram of movement (Author, 2024).



CONTEXT
EGOLI GAS WORKS

Retort No. 2, a historically significant industrial structure, once served as a central element in gas production (Läuferts and Mavunganidze, 2009). FiredUP retains the architectural essence of this structure, preserving its robust walls and decayed materials while introducing new elements that enhance its functionality. The restoration process includes brickwork in the traditional English bond pattern, reflecting the building's original character, while deteriorated materials are carefully replaced to retain the structure's heritage integrity.

Steel plays a key role in evoking the site's industrial legacy. Exposed beams and steel detailing draw inspiration from old conveyor belts and mechanical systems, which once transported coal for gas production. These elements bridge the gap between the site's past and its renewed purpose, creating a visual and conceptual link between history and modernity. Brick and glass skylights are introduced to bring natural light into the structure, enhancing the visual experience and reducing energy use.

The building's robust structure allows for flexible programming that adapts to changing exhibitions, performances, and other uses. The layout is designed with open spaces that facilitate social gathering and engagement, embodying the museum's mission of social cohesion and inclusivity.

Figure 10: Context zoning of Egoli Gas, institutional and transport routes (Author, 2024).

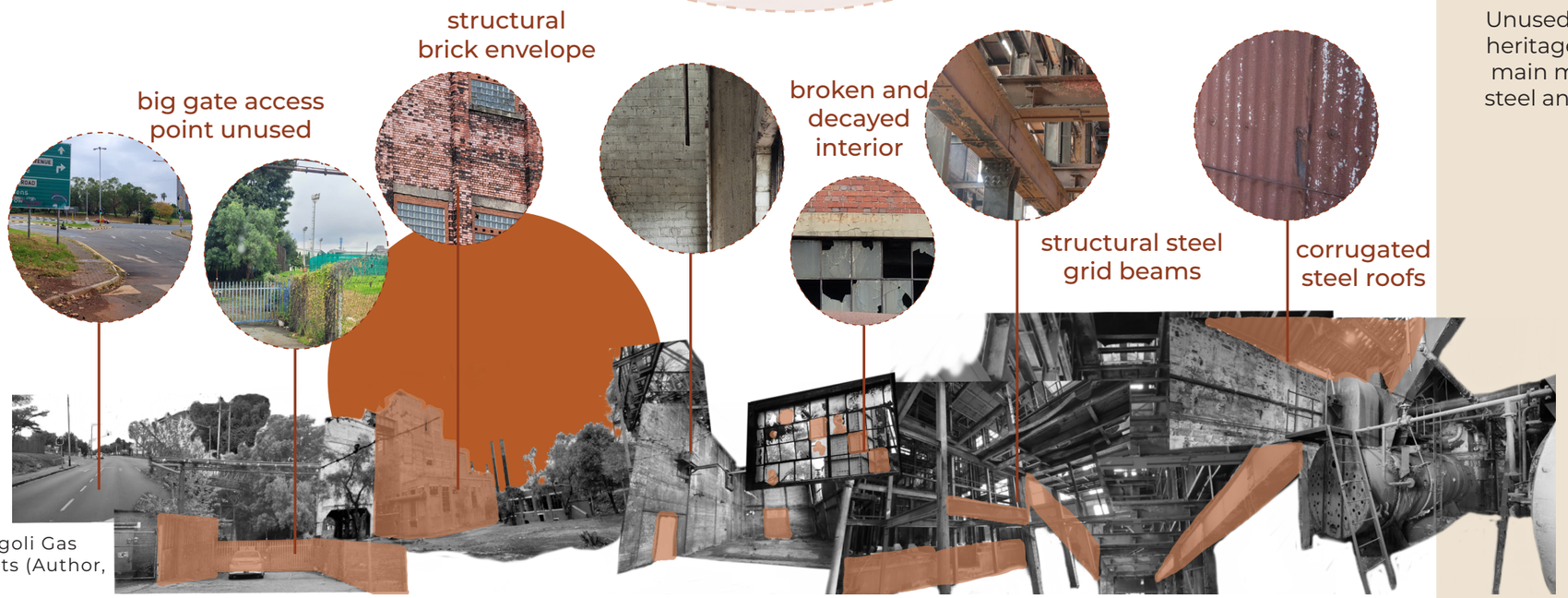


Figure 11: Existing programme of Egoli Gas with no users and decayed elements (Author, 2024).

Retort No. 2

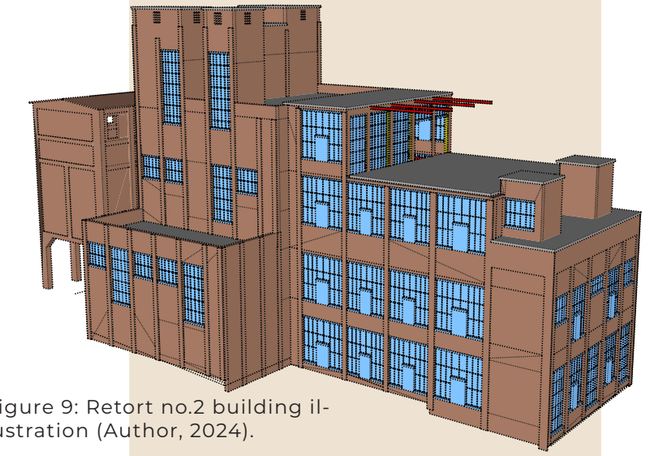


Figure 9: Retort no.2 building illustration (Author, 2024).

67 Year
Significance: Architectural
Historical
No Functional
No Social

Site Status

Unused and empty buildings, heritage structures, pollution, main materials are brick and steel and there are no current users.

CONTEXT
HERITAGE ANALYSIS

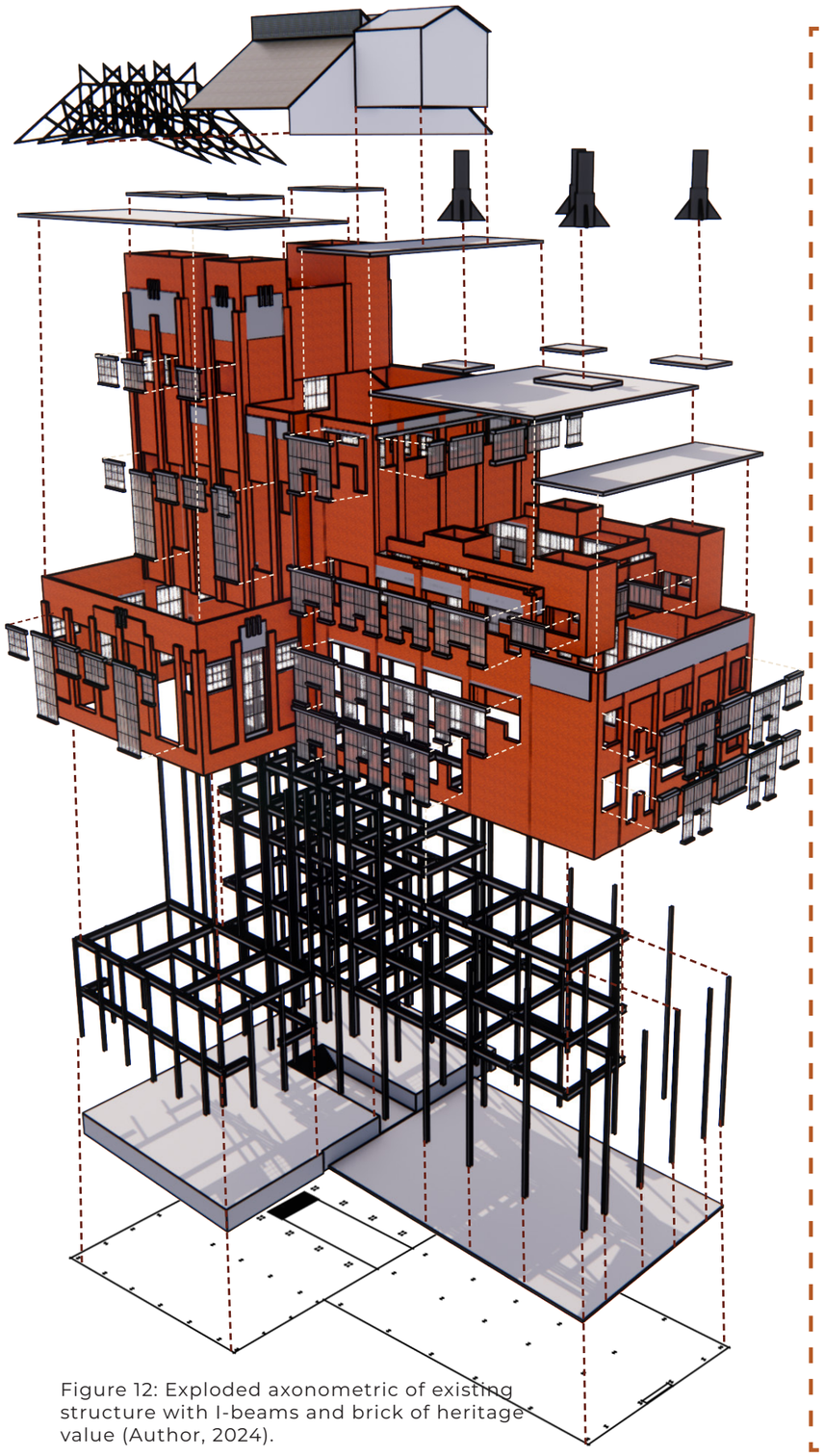


Figure 12: Exploded axonometric of existing structure with I-beams and brick of heritage value (Author, 2024).

Brick

The brick enevelope is of high heritage value. Brick courses are in a header and stretcher pattern- English bond. Some of the structure and elements corbel over each other creating unique shadow lines and prominent features.

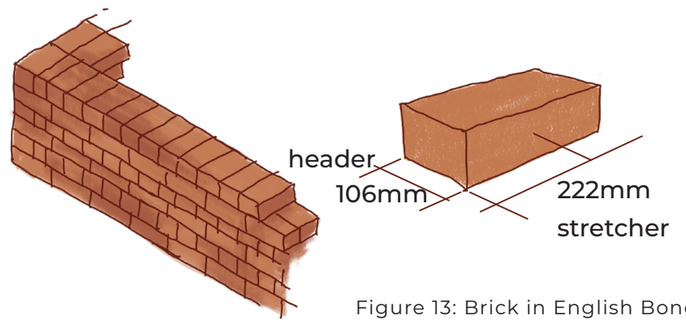


Figure 13: Brick in English Bond pattern (Author, 2024).

English Bond Clay
Red Face Brick

Structural Beams

Structural steel I-Beams are in a vertical and horizontal and upright grid . This provides a full structural framework for the interior to latch onto. Beams are of structural heritage value upholding the rest of the building.

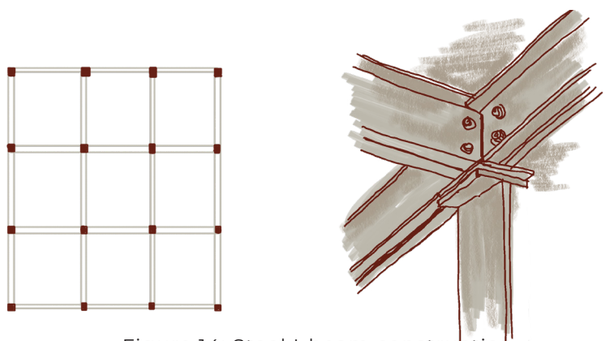


Figure 14: Steel I-beam construction, vertical and horizontal (Author, 2024).

STATEMENT OF SIGNIFICANCE

The building's structural integrity is reinforced by steel I-beams in a grid formation, enhancing its architectural value (Läuferts and Mavunganidze, 2009). Features like corbeled face brick walls and brick purlins contribute aesthetically to Johannesburg's iconic skyscraper style (Tsica, heritage consultants, 2011). Brick and steel are not only structural choices but also reflect the area's traditional material palette.

Figure 14: Egoli Gas photograph (v.d. Merwe, 2024).

The Johannesburg Gas Works stands as a city landmark with the potential to become a dynamic urban node, linking pathways and popular districts (Läuferts and Mavunganidze, 2009). Operational since 1928, it was the first step in a three-decade industrial expansion, symbolising South Africa's economic strength driven by industrialisation (Läuferts and Mavunganidze, 2009). Integrating the Gas Works into the public realm could redefine Johannesburg's private-to-public spaces, expanding the cultural architecture landscape and creating much-needed cultural, educational, and recreational opportunities for the city.

CONTEXT
STRATEGIES

Urban - Environment - Phytoremediation

Phytoremediation plants refer to the use of living plants to reduce, degrade or remove toxic residue from the soil (Favas. et al, 2014). Using green plants to decontaminate soil is a progressive and sustainable process, greatly reducing the need for heavy machinery or additional contaminants. Familiar plants such as alfalfa, sunflower, corn, date palms, certain mustards, even willow and poplar trees can be used to reclaim contaminated soil – a cheap, clean and sustainable process.

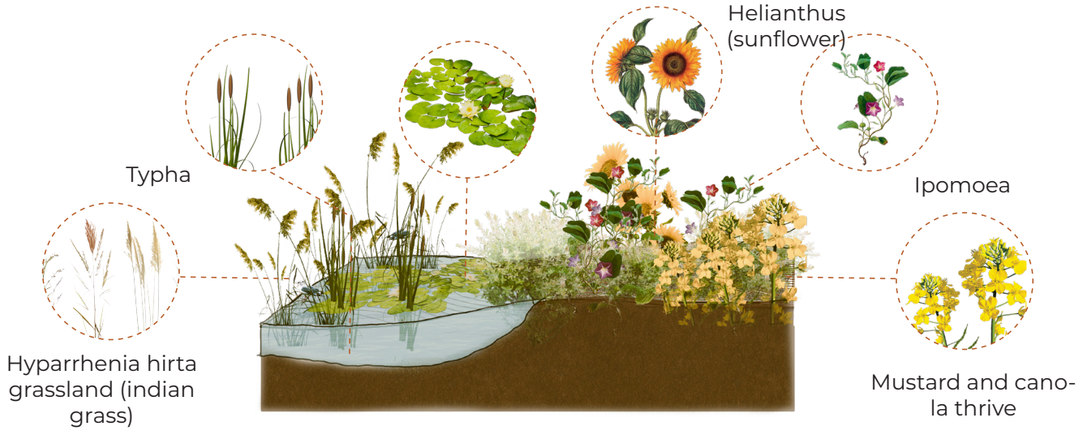


Figure 15: Phytoremediation solution for pollution (Author, 2024).

Heritage - Restoration - Conservation

Preserving Architectural Integrity: Historic elements, like brick facades, steel structures, and Retort No. 2, are carefully restored (Clarke and Kuipers, 2023), maintaining the site's industrial character through original materials and techniques.

Adaptive Reuse: Existing structures are repurposed for exhibitions, performances, and social spaces, respecting heritage while supporting sustainable, community-focused use.

Blending Old and New: Modern features like skylights, grassfield installation and ramps are integrated within the original structure, creating a balanced relationship that highlights both history and contemporary functionality.

Showcasing Craftsmanship: Industrial-era craftsmanship, seen in elements like corbel brickwork and exposed steel framing, is celebrated, preserving the site's aesthetic and historical integrity.

Educational Elements: Interpretive exhibits enhance visitor engagement, linking the site's industrial heritage with Johannesburg's broader history.

Through this balanced approach, the FiredUP Museum preserves the cultural significance of the Egoli Gas Works while revitalizing it as a space for community and cultural exchange.

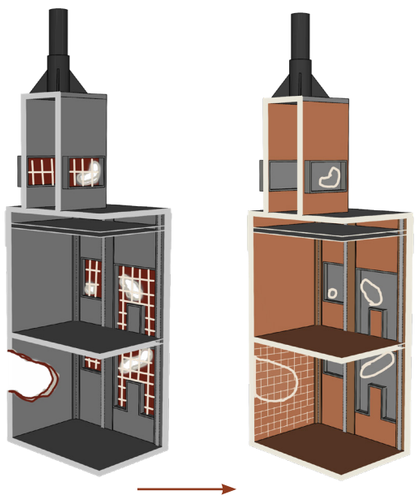


Figure 16: Restoration and conservation of heritage (Author, 2024).

Adaptive Reuse - Intervention - Installation

permanent

Intervention

The existing structure is transformed into an inseparable blend of old and new, with elements intertwined to create a lasting, permanent design solution (Fisher-Gewirtzman, 2016).

The construction concept includes skylights as a permanent intervention to improve daylighting and revitalise the building for long-term use. This feature enhances natural lighting within the space, creating an immersive, visually comfortable environment while preserving its industrial heritage. This permanent addition supports adaptive reuse, ensuring the building remains functional and engaging as it evolves.

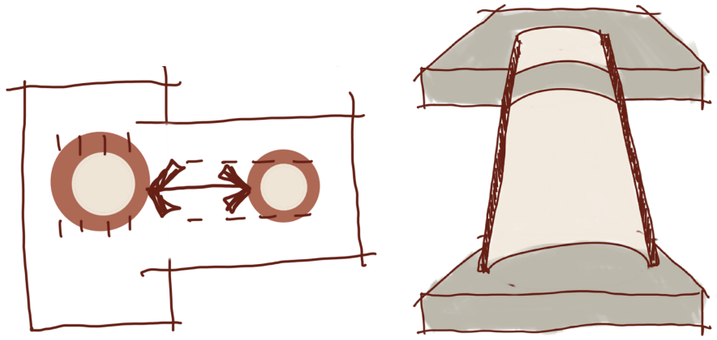


Figure 17: Adaptive reuse intervention strategy (Author, 2024).

Installation

The existing structure remains independent, with new design elements introduced within its original boundaries. While the new and old may inform each other, removing these additions would leave the building in its original state (Fisher-Gewirtzman, 2016).

The construction strategy is minimally invasive, allowing new features to be placed within existing boundaries. This ensures the building's authenticity remains intact, while the added elements bring flexibility, functionality, and immersive spaces that accommodate evolving user needs and activities.

temporary

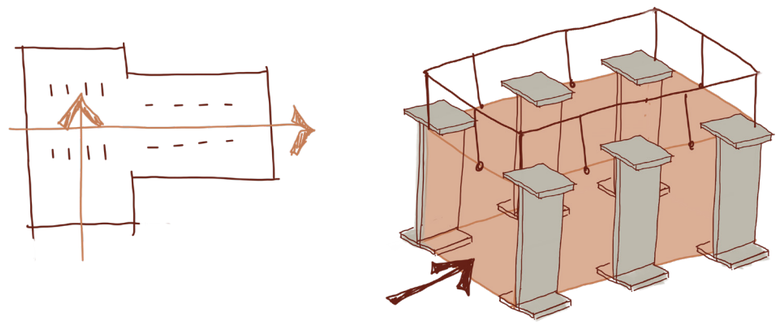


Figure 18: Adaptive reuse installation strategy(Author, 2024).

CONTEXT

GAS PROCESS

The FiredUP Museum honours Johannesburg's industrial heritage by showcasing the historic coal-to-gas process once pivotal to the city's energy needs.

- **Coal Storage:** Raw coal, delivered by rail or truck, is stored in large bunkers, setting the stage for gasification.

= Interactive exhibitions through drawing with ash left behind from fire (turn into charcoal), this highlights coal types and their industrial significance.

- **Gasification in Retorts:** Coal is heated in retorts, reaching 1,000°C in a low-oxygen environment to release gases like hydrogen and methane.

= Retort No. 2 provides an immersive view of this process through sensory heat through himalayen salt lamps and natural skylight display.

- **Condensation:** Gas is cooled, separating tar and ammonia as by-products.

= Exposed services and digital displays illustrate early waste management techniques.

- **Purification:** Impurities are removed via filters, yielding clean gas.

= Exhibits detail the chemical transformation through an immersive ramp experience the phases.

- **Gas Storage:** Purified gas is held in gas holders, iconic circular structures maintaining constant pressure.

= Circular guiding structures providing prominent big open spaces with and curved elements.

- **City Distribution:** Clean gas is pressurised and sent through underground pipes, powering Johannesburg's homes and industries, with digital maps illustrating this network.
- **By-Products:** Tar, ammonia, and coke were valuable by-products, repurposed to support sustainability and economy, with displays detailing their uses.
-

Through immersive exhibits, the FiredUP Museum educates visitors highlighting the ingenuity of historical energy systems and fostering an appreciation for sustainable resource use.

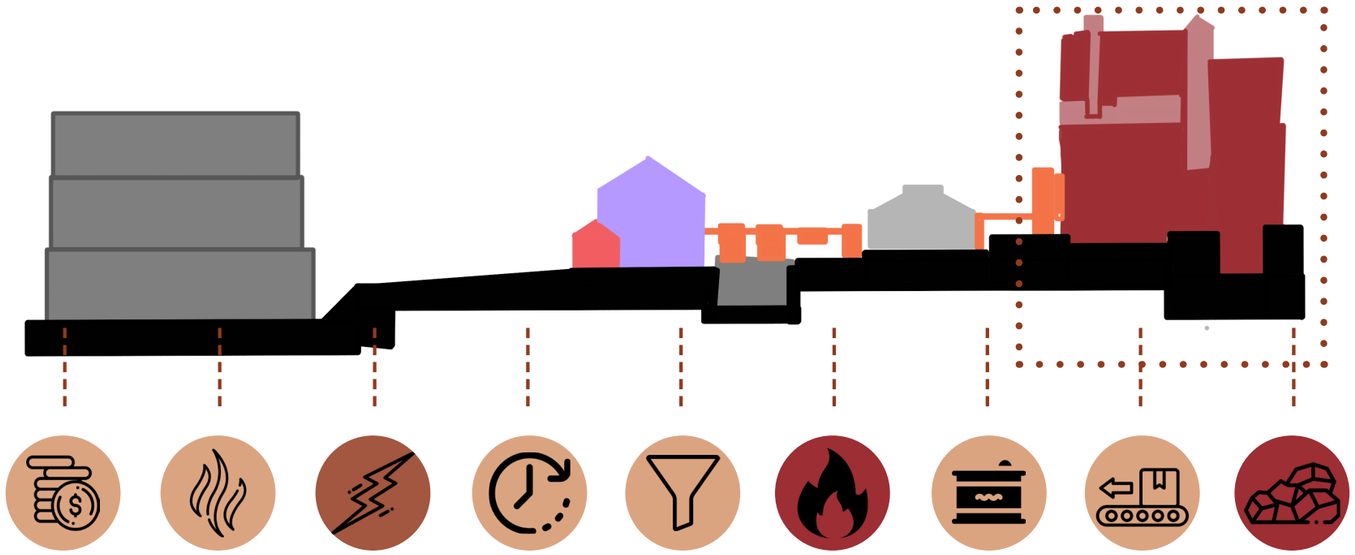


Figure 19: Coal to gas process section illustration(Author, 2024).

STAKEHOLDERS AND CLIENTS

The stakeholders that will be most affected is the educational institutions namely the university of johannesburg, the university of Witwatersrand, AFDA and the egoli gas pty. These stakeholders can form a collaborative team to manage and identify further needs for future development.

Potential investors might also qualify for tax rebates/ credits for environmental improvement costs.

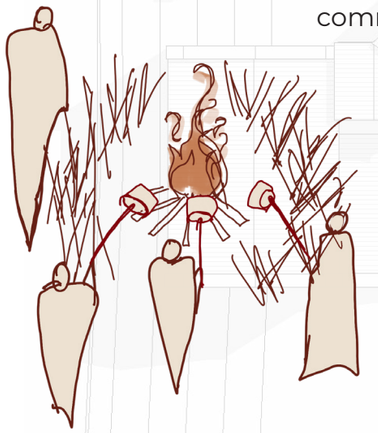
Figure 20: Stakeholders and Clients to be part of this museum project (Author, 2024).

CONCEPT

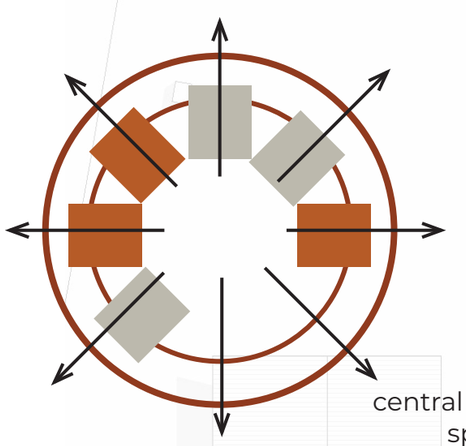
FIRE AND FOOD

Eating

communal eating spaces



Gatherings



central prominent spaces

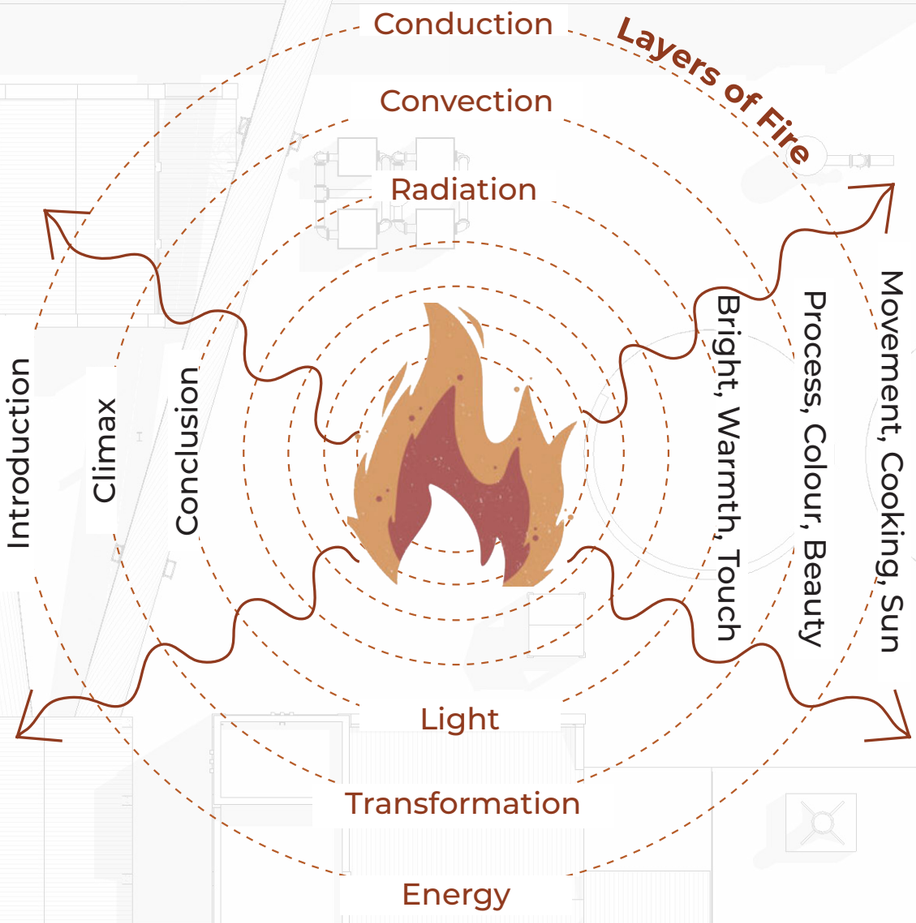
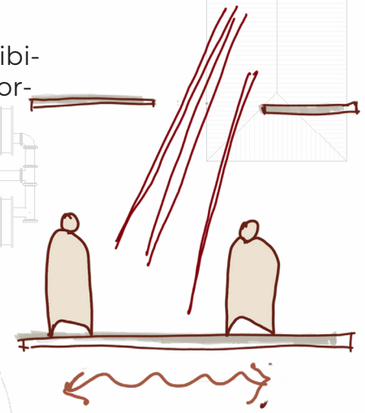


Figure 21: Concept diagram to show the narrative of fire and food concept. Illustrates the experiences through the fire representations (Author, 2024).

Sharing

interactive exhibitions and performance



Celebrating

moments of pause and natural movement

FiredUP is built around the concept of fire, representing not only the site's industrial legacy but also the universal themes of transformation, unity, and energy. This theme is woven into every aspect of the visitor experience, from the spatial layout to material choice and programming. The museum is designed to evoke feelings of exhilaration, mystery, and unpredictability, mirroring fire's essence through immersive experiences that engage the senses.

Key features include skylights, fire pits, a maze, and digital exhibitions, all of which work together to create an environment that captivates and energises visitors. Skylights provide a visual connection to natural elements, enhancing the experience with shifting natural light that complements fire's dynamic nature. Digital installations capture fire's unpredictable energy, inviting visitors to explore fire's role in life's cycles, from creation to transformation. These features align with the project's regenerative design principles, celebrating cyclic processes, community connection, and a holistic approach to culture.

The project incorporates communal spaces that encourage visitors to engage, share, and participate in collective experiences. By creating a space that blends education, leisure, and social interaction, FiredUP transforms the museum into an evolving social and cultural experience, continually adapting to the needs and interests of its users.

PROGRAMME

MUSEUM

Figure 22: Exhibition, performance and eatery illustrations that will occur in the museum programme (Author, 2024).

FiredUP's programme is designed to be accessible, flexible, and inclusive, providing spaces for education, cultural exchange, and community gathering. Inspired by Rem Koolhaas's concept of activating empty spaces with diverse uses, the museum includes performance spaces, exhibition zones, trade areas, and a restaurant, each serving as a focal point for social interaction. The layout draws on spatial syntax theory, emphasising areas for gathering, sharing, and celebration, with spaces that foster interaction between diverse user groups. The fire pits and restaurant areas encourage communal engagement, offering visitors a place to reflect, discuss, and participate in shared cultural experiences. Through these spaces, FiredUP creates opportunities for cultural exchange, allowing users to connect with the site's history while celebrating Johannesburg's contemporary culture.

USERS

Figure 23: Users that will use this museum (Author, 2024).

The users for the FiredUP project include students, artists, entrepreneurs, pedestrians, and the general public, all seeking dynamic cultural, educational, and recreational experiences that foster community engagement and social cohesion.

PROGRAMME

INFORMANTS

Historic Process

The historic process with its heritage influence the FiredUP Museum's design through spatial organisation, material selection, and immersive storytelling. By integrating the stages of gas production, from coal storage to city-wide distribution, the project honours this historical narrative and uses it as a **foundation** with the burning element of fire, for both aesthetic and functional choices.

conduction

energy transferred
through direct contact
= fire pit/sun

convection

energy transferred
through motion
= maze

radiation

energy transferred by
waves
= exhibitions/glass

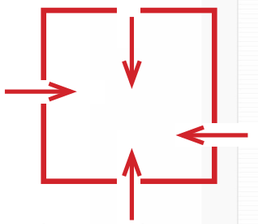
Existing materials

As previously mentioned that the material strategy continuous the fire theme concept with existing materials of brick, steel, wood and glass are used to fit with the JHB context and respect the heritage.

Figure 24: Site photos of existing materials (v.d. Merwe, 2024).

Ching Principles

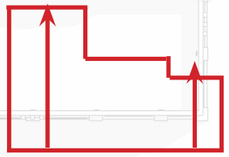
The design principles proposed by Francis D.K. Ching Ching, 2015), including form, space, and order, are integral to the FiredUP project. These principles guide the organization of spaces, ensuring that the museum's layout is both functional and aesthetically pleasing, while fostering a sense of harmony and balance. The careful arrangement of spaces will facilitate movement and interaction, creating a welcoming environment for visitors.



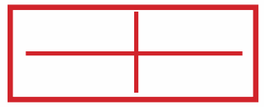
point creating central
focus areas (hierarchy)

spaces link by common
spaces (symmetry)

natural movement
and guiding elements
(axis)



using volume to or-
ganic patterns and
continuity (datum)



intervention through the
middle, respond to context
(transformation)

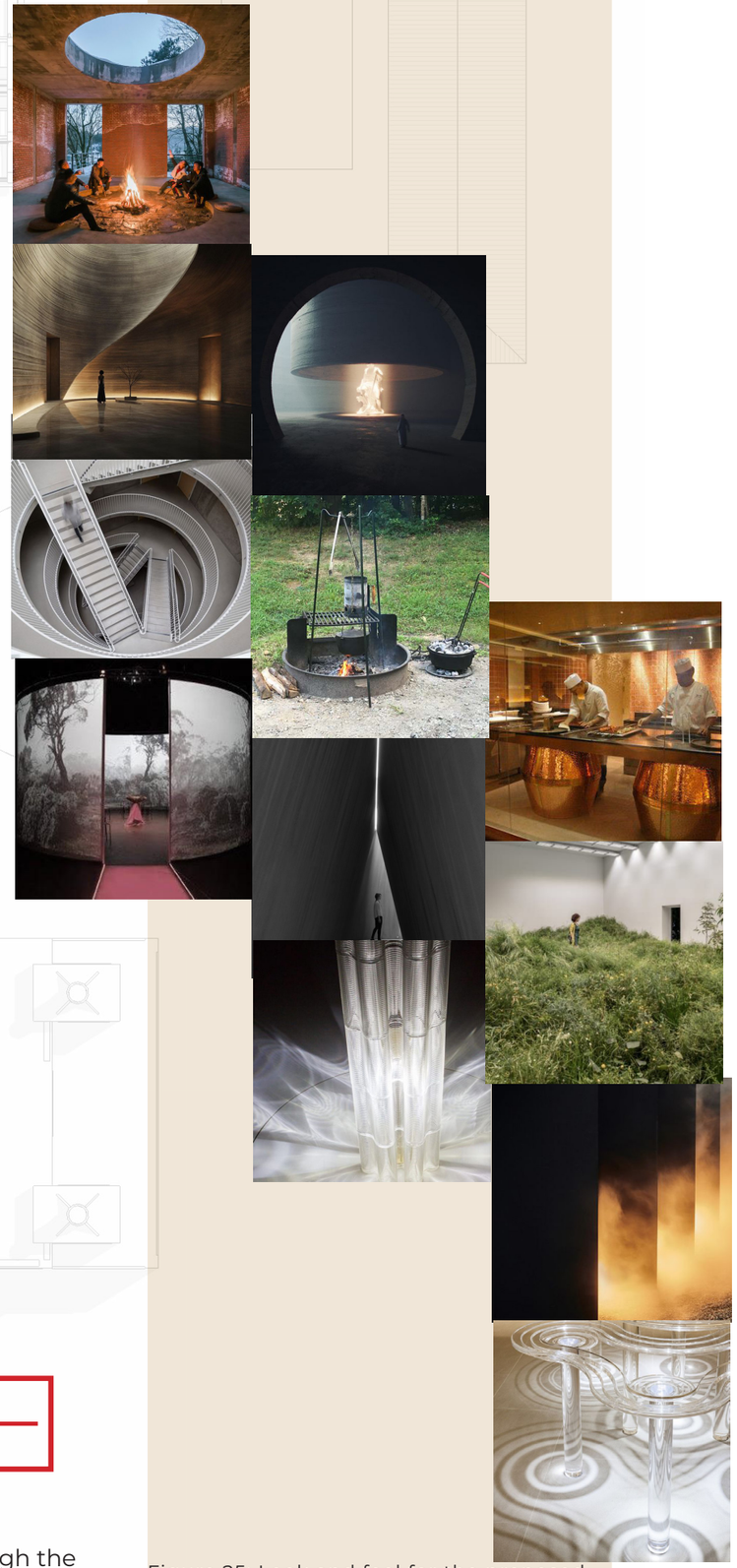


Figure 25: Look and feel for the proposed project (Author, 2024).

DESIGN DEVELOPMENT

GROUND FLOOR PLAN (APPLICATION)

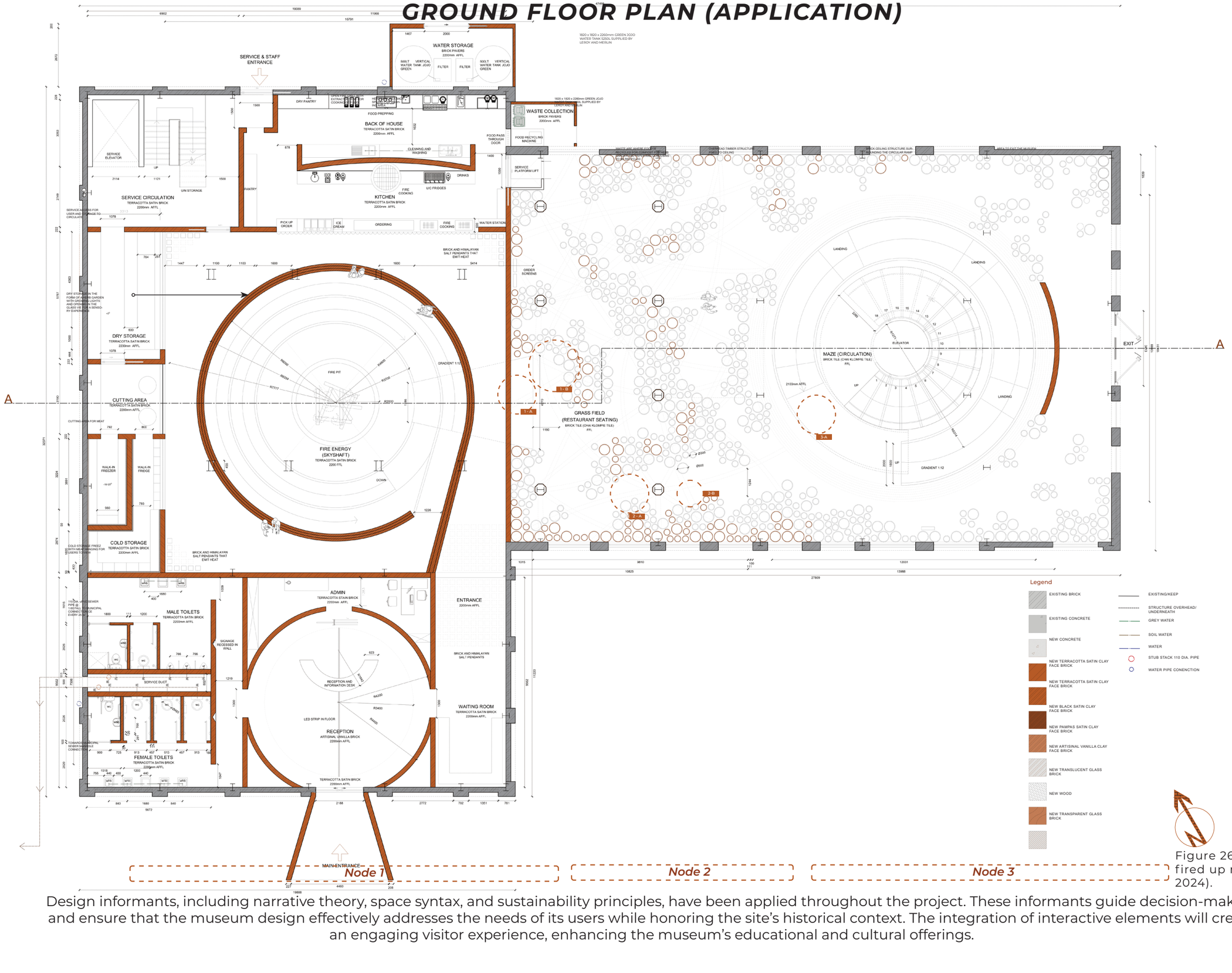


Figure 26: Technical plan for fired up museum(Author, 2024).

Design informants, including narrative theory, space syntax, and sustainability principles, have been applied throughout the project. These informants guide decision-making and ensure that the museum design effectively addresses the needs of its users while honoring the site's historical context. The integration of interactive elements will create an engaging visitor experience, enhancing the museum's educational and cultural offerings.

DESIGN DEVELOPMENT

ZONING / ITERATIONS / REQUIREMENTS

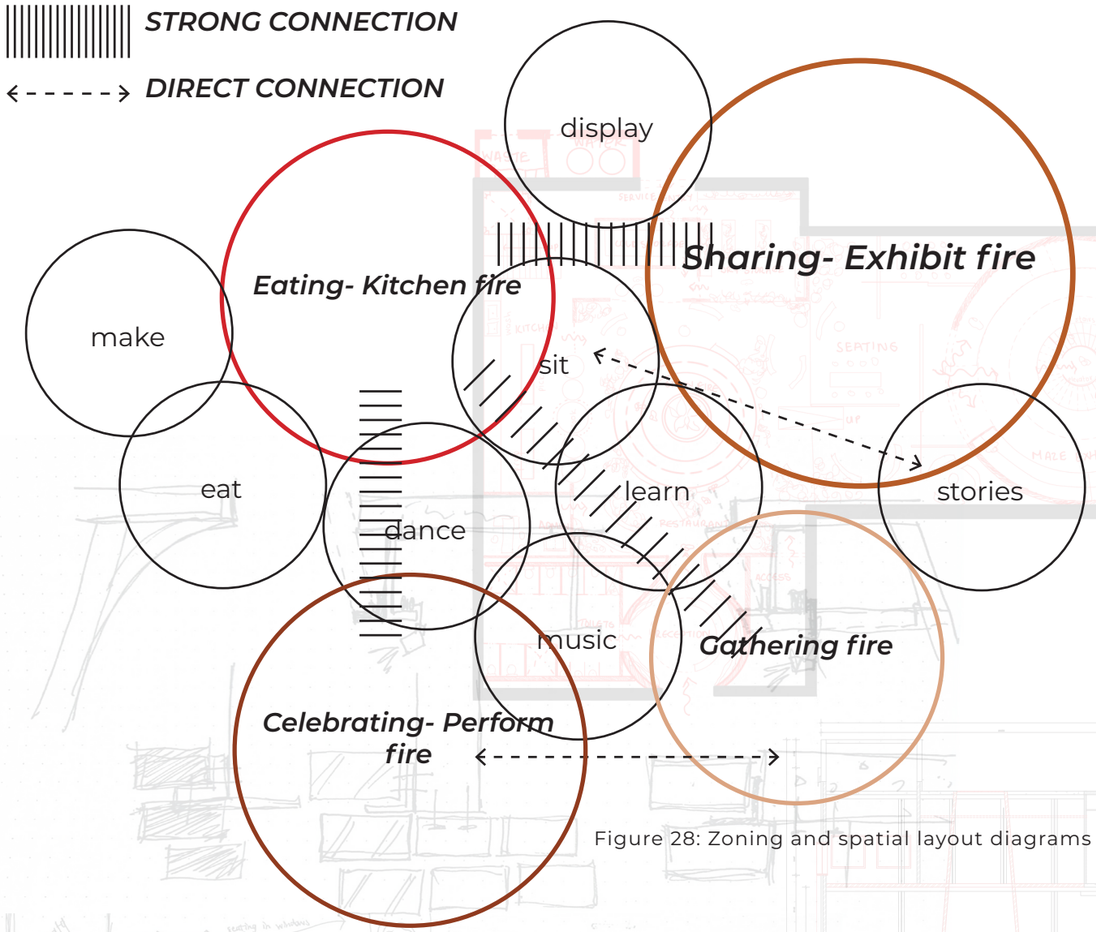


Figure 28: Zoning and spatial layout diagrams (Author, 2024).

The design employs circular spatial arrangements and movement patterns to naturally guide users through the space, creating fluid transitions that contrast with the rigid existing I-beam grid structure. By integrating circular spaces around the steel beams, the design enhances structural strength while allowing the horizontal and vertical beams to remain exposed, preserving a sense of the building's industrial past.

To ensure inclusive access, curved ramps and platform lifts are incorporated into the large volume, as the original structure lacks internal flooring. This approach enables easy navigation across multiple levels, making the museum accessible to all visitors. The expansive space also amplifies the exhibition and performance areas, with elements like the grass field for communal gatherings and a central skylight that unifies the entire experience.

Figure 29: Design and technical iterations of project (Author, 2024).

TECHNÉ

MATERIAL STRATEGY

The FiredUP Museum's material selection is integral to both its aesthetic and functional goals. The use of brick, steel, and glass maintains the industrial character of the site while aligning with the fire theme. These materials are deeply connected to the concept of energy and transformation, as each is produced through fire, reinforcing the museum's thematic narrative.

Corobrik bricks are used for their diverse colour range, symbolising fire's various aspects—destruction, transformation, and renewal. Different brick patterns enhance the spatial experience, guiding visitors through different parts of the museum.

Steel serves multiple purposes, from structural elements to detailing, reflecting the conveyors and mechanical systems that once moved coal through the gas works. Exposed steel beams and new steel-framed windows highlight the strength and endurance of the structure, maintaining the industrial aesthetic while celebrating the blend of old and new.

Wood is used as a lightweight, non-invasive material for interior insertions, treated with stains and monocoats to complement the heavier materials without overshadowing the building's heritage facades.

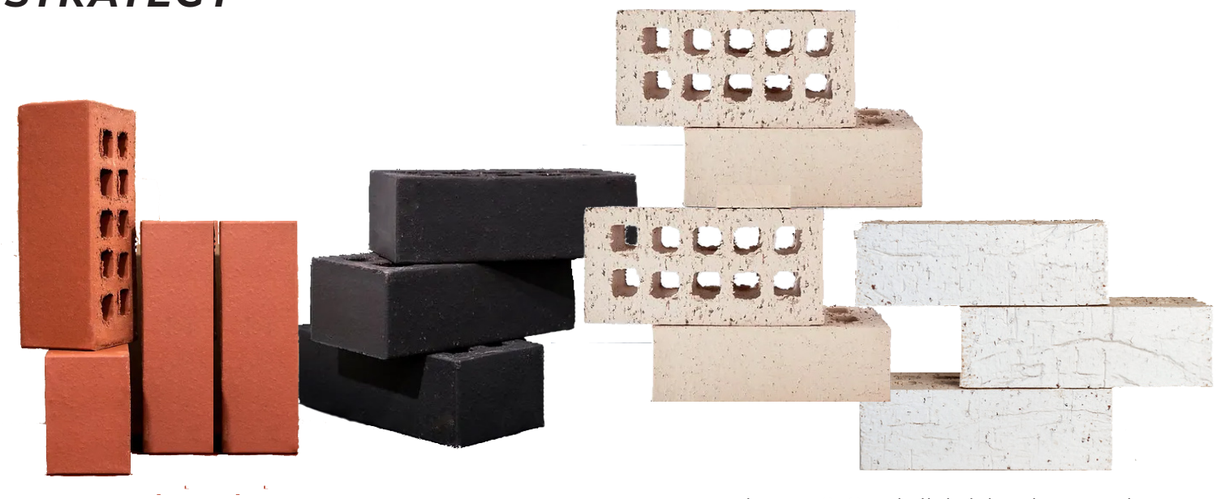


Figure 30: Corobrik brick colours and samples (Author, 2024).

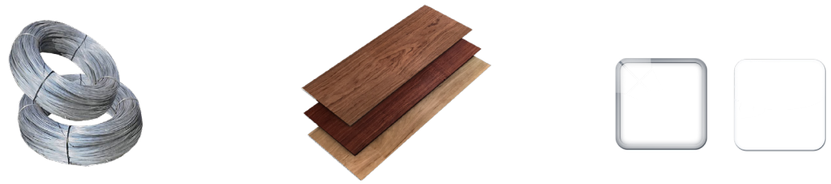


Figure 31: Material samples os steel, wood and glass (Author, 2024).

CONCEPT

The construction concept for the FiredUP Museum, focusing on the immersive ramp, skylight, and grassfield restaurant, aims to create a dynamic environment reflecting fire, community, and transformation. Through thoughtful integration of materials, lighting, and movement, the project engages visitors and fosters a sense of belonging, celebrating the industrial heritage of the Egoli Gas Works as a vibrant cultural hub.

1. Immersive Ramp
The gently sloped ramp, made of steel channels and tactile brick, encourages exploration with immersive displays about fire and gas processes. Ambient LED lighting along the ramp highlights its wood textured side panels. The design promotes leisurely movement, allowing visitors to interact with elements that emphasize fire's role in energy transformation.

2. Skylight
The high-performance glass skylight floods the interior with natural light, reinforcing the themes of energy and renewal. Warm materials and polished surfaces create a harmonious interaction with light, while strategically placed LED lighting enhances the ambiance.
Acting as a focal point, the skylight invites visitors to gather and reflect on their experiences.

3. Grassfield Restaurant
The restaurant connects the exhibition spaces, featuring birch plywood panels and timber dowel seating that blend the spaces like a landscape. Wood, directed lighting create a warm atmosphere. The layout encourages fluid movement between seating areas, with conceptual fire pits that foster social interaction around food.

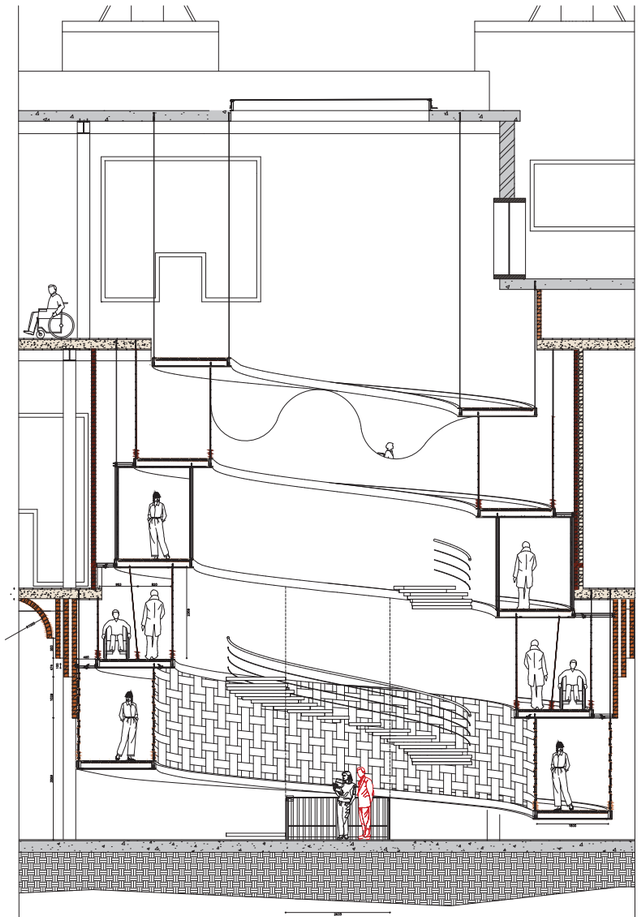


Figure 32: Technical ramp section to show the experiences of transformation of fire (Author, 2024).

TECHNÉ

DETAILING

The technical focus of the FiredUP museum design aligns with the fire theme through a carefully considered material strategy that incorporates brick, steel, wood, and glass, all elements associated with fire. This thematic connection is further reflected in the spatial experience, where the primary technical feature is the skylight. The skylight not only enhances natural daylighting within the museum but also amplifies the fire concept, evoking feelings of curiosity, enlightenment, joy, and mystery throughout the visitor experience. This space creates numerous opportunities for engaging with the multifaceted programme that surrounds the skylight, facilitating connections between users and the transformative energy and warmth inherent in fire.

The **design details** emphasise brick construction, featuring slanted and circular forms that echo the industrial heritage of the Egoli Gas Works. Lighting tracks are seamlessly integrated to provide an ambient experience both day and night, complementing the dynamic atmosphere of the museum. Additionally, LED lights in steel frames embedded in the perforated clay face brick walls guide visitors around the skylight, enhancing their journey through the space and enriching their interaction with the fire theme. This approach not only supports the museum's narrative but also reinforces its role as a vibrant cultural and educational hub within Johannesburg.

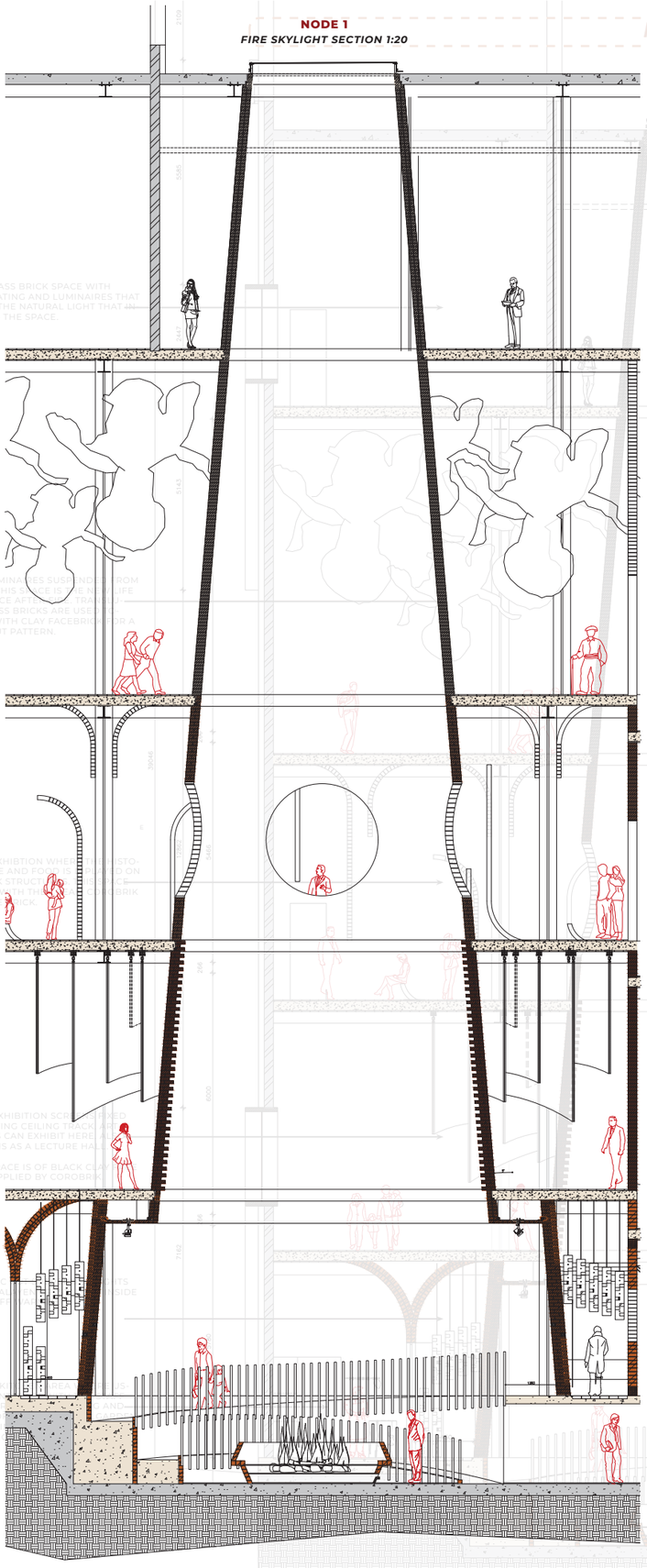
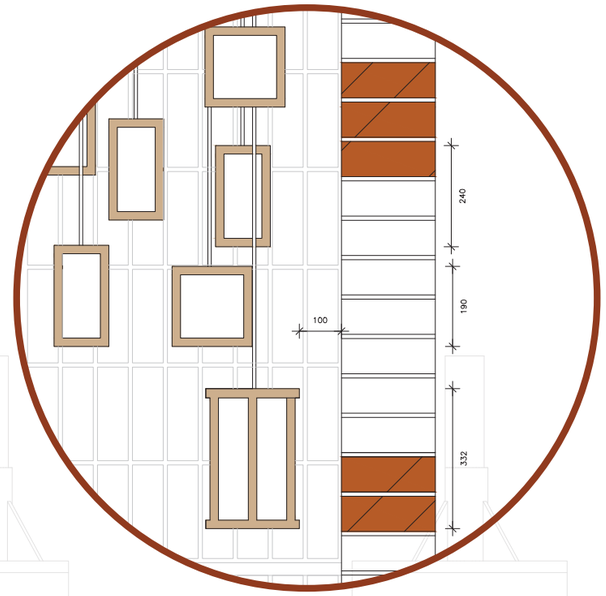


Figure 33: Technical skylight section to show the experience of energy of fire (Author, 2024).



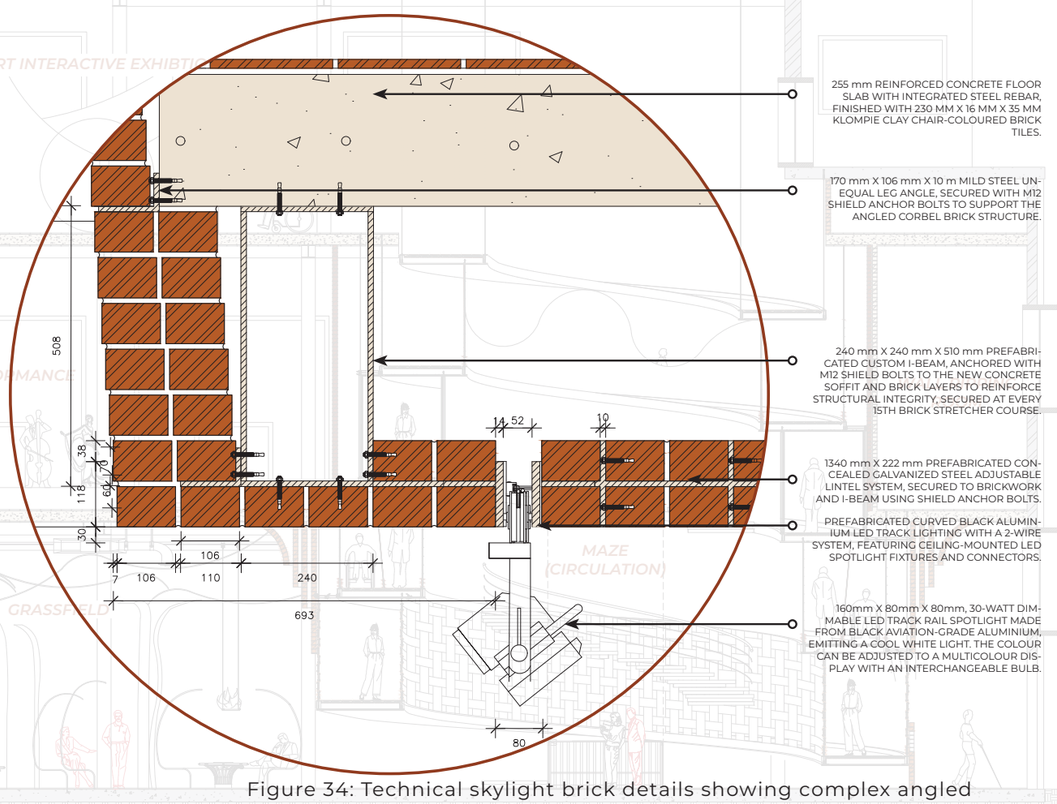
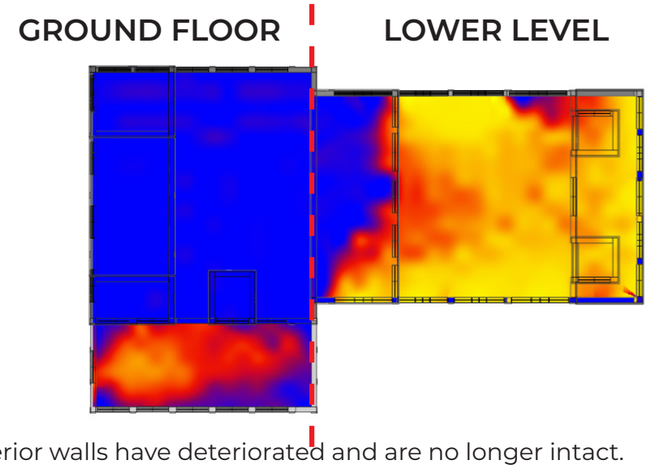


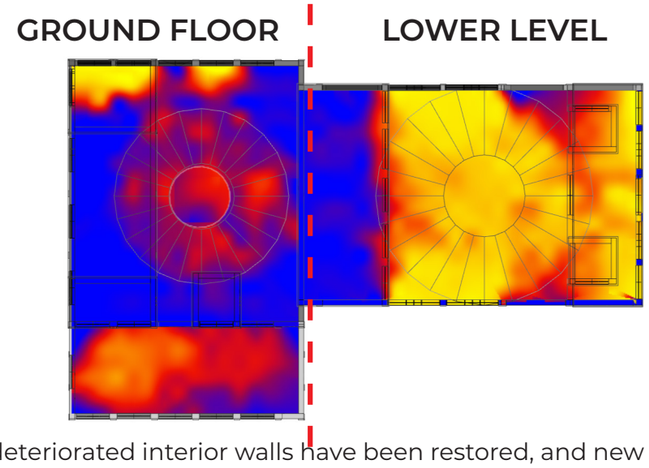
Figure 34: Technical skylight brick details showing complex angled structure with lighting fixtures(Author, 2024).

SECTION A-A
1:50

DAYLIGHTING



- interior walls have deteriorated and are no longer intact.
- left side of the structure lacks natural light due to the lack of windows.
- large windows are in place but are no longer functional.



- deteriorated interior walls have been restored, and new skylights enhance natural light throughout the building, including previously underlit areas.

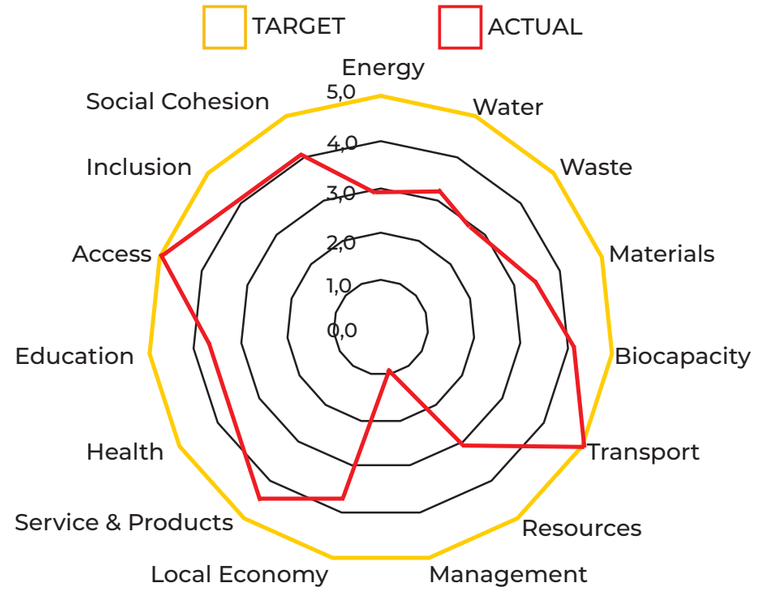


Figure 35: SBAT daylighting analysis (Author, 2024).

The final SBAT performance rating improves with the incorporation of renewable energy solutions such as solar systems, rainwater and greywater harvesting, biogas, and low-flow rate equipment. Natural lighting is optimised through skylights and large windows for ventilation and daylighting.

SERVICES

The services strategy for the FiredUP Museum is designed to enhance operational efficiency and user experience while promoting sustainability and aligning with the museum's fire and energy transformation theme. This strategy encompasses mechanical, electrical, plumbing, and technology systems.

1. Mechanical Systems
HVAC: A state-of-the-art HVAC system will ensure comfort, especially in food preparation and exhibition areas. Natural ventilation through skylights and operable windows will reduce reliance on mechanical cooling and heating.
Fire Safety: Comprehensive fire safety measures, including sprinklers and alarms, will be integrated to educate visitors about fire safety while preserving historical elements.
2. Electrical Systems
Lighting Design: A layered lighting strategy will use natural light from skylights and adjustable LED fixtures, with integrated lighting tracks and brick LED lights to enhance the museum's aesthetics.
Power Supply: An efficient electrical system will meet varied demands, incorporating renewable energy sources like solar panels to minimize the carbon footprint.
3. Plumbing Systems
Water Supply and Drainage: Efficient plumbing with low-flow fixtures will minimize water usage, while greywater recycling may be utilized for irrigation and non-potable applications.
Waste Management: Comprehensive waste management, including recycling and composting stations, will promote sustainable practices.
4. Technology and Communication Systems
Interactive Displays: Advanced technology, including digital installations, will engage visitors in the fire theme and the history of the Egoli Gas Works, supported by free Wi-Fi throughout the museum.
Visitor Management: Smart ticketing and visitor flow systems will enhance the entry experience and manage peak times effectively.
5. Accessibility and Inclusivity
Universal Design: Services will follow universal design principles, ensuring accessibility for all visitors, including compliant ramps and elevators.
Inclusive Amenities: Social spaces and amenities will cater to diverse community needs, fostering an inclusive environment.

CONCLUSION

RESPONSE

The FiredUP Museum Project aims to transform the historic Egoli Gas Works into a vibrant cultural and educational landmark in Johannesburg, interweaving the site's rich industrial heritage with contemporary themes of fire and food. This initiative acknowledges the past while reimagining the future of cultural spaces within the urban landscape.

By applying narrative theory and space syntax principles, the design creates intuitive pathways that foster meaningful connections among diverse user groups. Prioritizing accessibility and flexibility, the museum accommodates a variety of functions, from exhibitions and performances to educational workshops and communal dining. This multi-functional approach promotes social interaction and reflects Johannesburg's dynamic spirit.

Sustainability is central to the FiredUP project, utilizing adaptive reuse strategies that minimize environmental impact while preserving the historical integrity of the existing structure. The choice of materials, such as brick and steel, honors the site's industrial context and reinforces themes of transformation and renewal. Energy-efficient systems and responsible sourcing align with contemporary sustainability practices, positioning the museum as a model for future developments.

The educational component engages visitors with the coal-to-gas process, providing insights into the region's energy production and its current relevance. This focus fosters a deeper understanding of Johannesburg's industrial history while encouraging discourse on sustainability challenges.

In summary, the FiredUP Museum Project is set to redefine cultural institutions in the 21st century by moving beyond static exhibitions to create dynamic environments that promote community engagement, education, and cultural celebration. As a testament to Johannesburg's resilience and creativity, the FiredUP Museum will offer a space for reflection, interaction, and the celebration of the city's vibrant identity for generations to come.

REFLECT

The FiredUP Museum project revitalizes Johannesburg's industrial heritage by transforming Egoli Gas Works into an inclusive, dynamic space rooted in the theme of fire as a symbol of energy and transformation. Designed with immersive features like skylights, ramps, and flexible social spaces, the museum redefines traditional museum experiences, inviting diverse audiences for cultural exchange, education, and connection.

This adaptive reuse approach balances preservation and innovation, with material choices like brick, steel, and glass echoing the site's history while creating vibrant, modern spaces. The project demonstrates how heritage sites can foster community and social inclusion, honouring history while breathing new life into urban spaces. The project can be further developed to optimise and design the open spaces to give exposure to the entrepreneurs and strudents to exhibit within this space. This provides an ongoing initiative of a museum space where, over time, exhibits change and is relevant.

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ADDENDUM

HERITAGE MATRIX

HIA FOR PROJECT: EGOLI GAS WORKS

DESCRIPTION

FARM AND MAGISTRATE DISTRICT
1952 ANNET ROAD, COTTESLOE, BRAAMFONTEIN, JOHANNESBURG

CENTRAL CO-ORDINATE OF THE DEVELOPMENT
26° 11′ 24.6″ S, 28° 1′ 10.8″ E

TOPOGRAPHY MAP NUMBER
SOUTH PORTION OF RE/552, RE/53, 4, 5

INFRASTRUCTURE AND PROJECT ACTIVITIES

TYPE OF DEVELOPMENT
PUBLIC INTERIOR MIXED USED PROGRAMME

SIZE OF STUDY AREA
14 HECTARES

PROJECT COMPONENTS
FOLLOWING INTERVENTIONS AND UPGRADES AT EGOLI GAS WORKS:

INFRASTRUCTURE AND PROJECT ACTIVITIES

NHRA CATEGORY
BUILDINGS, STRUCTURES, PLACES, AND EQUIPMENT OF CULTURAL SIGNIFICANTS

PROTECTION STATUS
GENERAL PROTECTION- SECTION 34: STRUCTURES OLDER THAN 60 YEARS

INDUSTRIAL HERITAGE

VALUE

HIGH MEDIUM LOW/NONE

Industrial heritage style with relation to other jhb gas works site. Vertical piers and chimneys seen from afar.

ENVIRONMENTAL

No specified fauna or flora, but certain part are polluted

ARCHITECTURAL

Buildings are structurally sound till recently, but not anymore. The retorts are highly specialized vessels.

AESTHETIC

The scale and architectural style of the buildings have turned the site into an iconic and well renowned landmark in johannesburg.

SOCIAL

No interaction or process currently viable

MATERIALITY

Structural steel grids for support with red face brick envelope for gasworks

USERS

No users as the buildings are unused

CURRENT STATE

Condition: damaged
Who is using the space: unoccupied but managed by egoli gas
Maintenance: poor, fair, good
Fauna or flora: yes
Does public and visitors have access:mo
Current use: abandoned



(Author, 2024)

SIGNIFICANCE

STATEMENT

Significance of impact:

The buildings, besides being important in terms of their age, are also significant in terms of their prominence as part of the cityscape. They are a good example of industrial architecture in johannesburg of the late 1920s and early 1930s. Their preservation and their re-use would therefore be an example of how industrial buildings can and should be reused in johannesburg

GRADING

Grade ii:
Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region

IMPACT

Impact analysis of cultural heritage resources under threat of the proposed development, are based on the present understanding of the development.

As the exact development proposals are not available, it is impossible to state what the impact of this would be on the identified sites. Therefore it is taken as a worst case scenario and the impact is therefore seen to be medium.