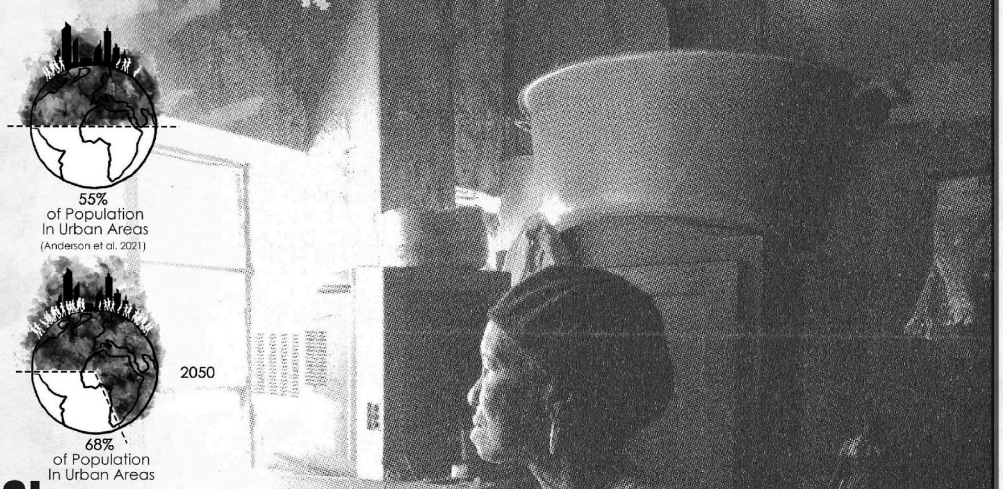
URBAN MIGRATION

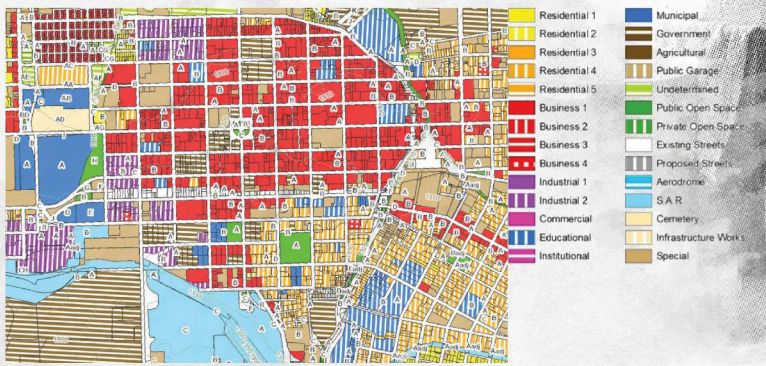
Rural **Push / Pull** to Urban Living

Safety & Security	Job Opportunities
Poor Rural Infrastructure	Wealth Prosepcts
Political Instability	Tertiary Education
Poverty	Industrial Innovation
Expropriation	Socializing
Resource Scarcity	Recreational amenities
Little Services (Hospitals, Schools, Recreation)	Family Reunification
	Perceived Freedom (Tribal / Community Authority)

World Economic Forum (2017) / Cooper et al. (2024)

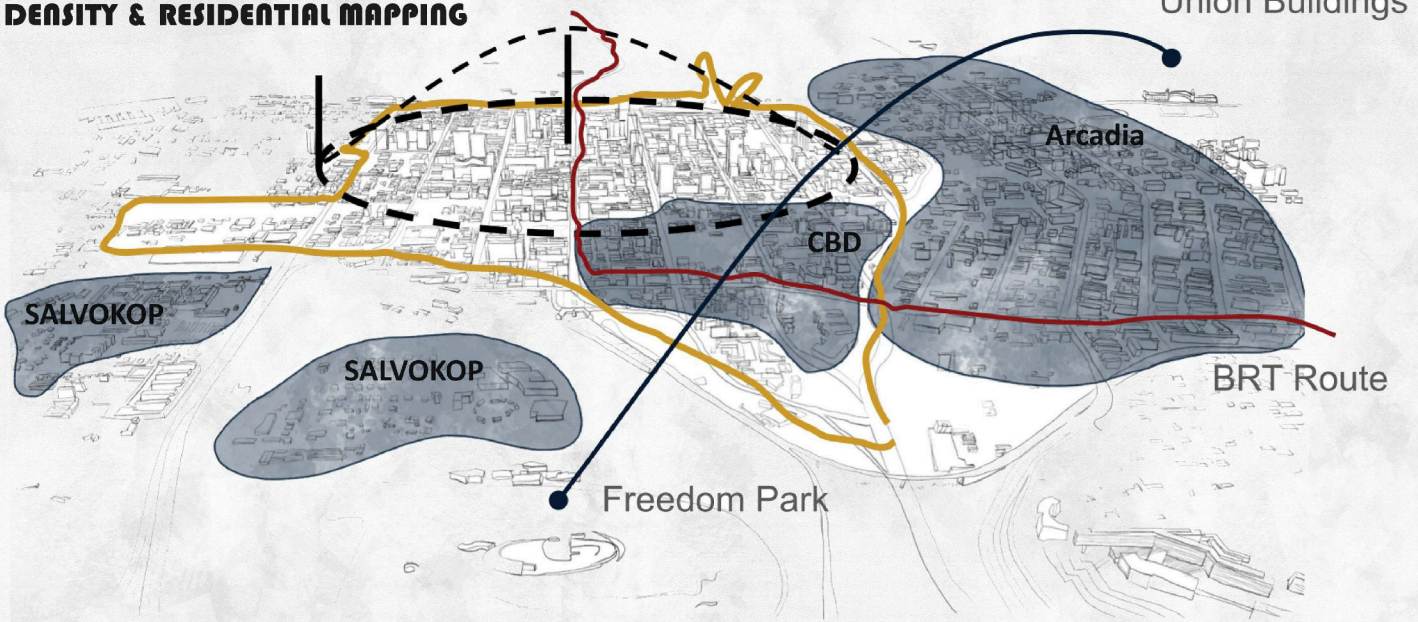


OFFICE VS RESIDENTIAL



PRETORIA CBD

DENSITY & RESIDENTIAL MAPPING



RESULT OF OFFICE & ADMINISTRATION EXODUS

NATURE OF CRIME

COMMON ROBBERY

TOP 30 stations

6th position - 15.5% Increase

RSA Position	Prov Position	Station	District	Province	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	Count Diff	(%) Change
1	1	Cape Town Central	City of Cape Town District	Western Cape	954	991	931	1 143	1 179	1 070	1 184	393	775	1 196	421	54,3%
2	1	Durban Central	eThekwini District	KwaZulu-Natal	445	429	533	542	624	671	741	571	777	1 130	353	45,4%
3	1	JMB Central	Johannesburg District	Gauteng	1 272	1 681	1 322	1 283	1 309	1 285	1 107	671	869	1 011	142	16,3%
4	2	Brooklyn	Tshwane District	Gauteng	103	130	141	163	184	310	396	289	377	592	215	57,0%
5	3	Hillbrow	Johannesburg District	Gauteng	511	673	815	846	833	873	908	493	484	579	95	19,6%
6	4	Pretoria Central	Tshwane District	Gauteng	1 047	1 038	937	951	955	925	818	486	498	575	77	15,5%

THEFT OUT OF OR FROM MOTOR VEHICLE

TOP 30 stations

5th position - 8.7% Increase

RSA Position	Prov Position	Station	District	Province	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	Count Diff	(%) Change
1	1	Cape Town Central	City of Cape Town District	Western Cape	3 617	3 441	3 509	3 770	3 956	3 710	3 750	1 528	1 943	2 459	516	26,6%
2	2	Stellenbosch	Cape Winelands District	Western Cape	1 852	1 819	2 747	2 253	1 840	1 305	1 267	520	969	1 337	368	38,0%
3	1	Durban Central	eThekwini District	KwaZulu-Natal	1 247	1 171	1 223	1 451	1 613	1 344	1 510	842	969	1 160	191	19,7%
4	1	Sunnyside	Tshwane District	Gauteng	1 626	1 943	1 614	1 606	1 780	1 914	1 492	918	1 021	963	-58	-5,7%
5	2	Pretoria Central	Tshwane District	Gauteng	1 509	1 617	1 376	1 361	1 258	1 395	1 129	692	866	941	75	8,7%

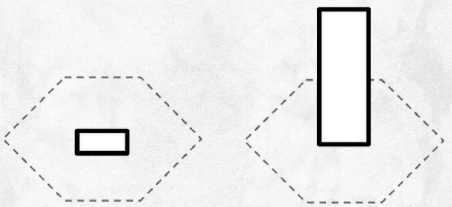
SHOPLIFTING

TOP 30 stations

6th position - 663.8% Increase

RSA Position	Prov Position	Station	District	Province	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	Count Diff	(%) Change
1	1	Park Road	Mangaung District	Free State	994	988	1 031	983	827	778	836	736	668	585	-83	-12,4%
2	1	Cape Town Central	City of Cape Town District	Western Cape	1 264	1 306	1 188	1 287	1 061	766	568	420	347	536	189	54,5%
3	1	Phoenix	eThekwini District	KwaZulu-Natal	413	451	427	386	360	367	376	291	422	484	62	14,7%
4	2	Durban Central	eThekwini District	KwaZulu-Natal	1 694	1 589	1 426	1 309	1 129	1 024	778	515	331	661	330	99,7%
5	1	Polokwane	Capricorn District	Limpopo	815	764	722	699	575	664	600	433	438	460	22	5,0%
6	1	Pretoria Central	Tshwane District	Gauteng	50	34	68	55	114	108	56	54	58	443	385	663,8%

PRETORIA CBD BUILDING STOCK



R855k
Single Story
Building

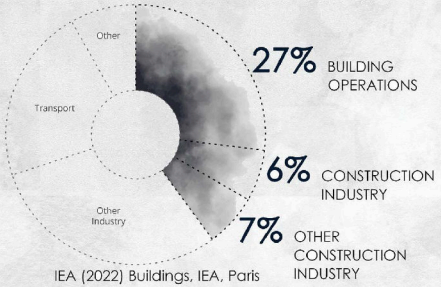
R67 million
8 Story Building

1475 Total ERF
143 Vacant ERF
10% Vacant ERF

SUSTAINABLE DEVELOPMENT

CONSTRUCTION

Global Emissions Per Sector



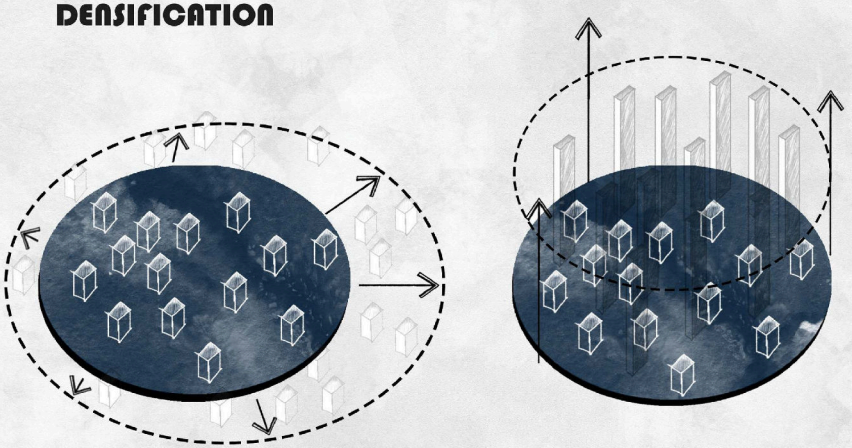
IEA (2022) Buildings, IEA, Paris

CONCRETE
11%
Global CO_2 Emissions

STEEL/ALUMINUM
12%
Global CO_2 Emissions

Global ABC (2018)

DENSIFICATION



Horizontal Densification

- Habitat Fragmentation
- Water / Air Pollution
- Increased Infrastructure Cost
- Increased Transport Time
- Social Homogeneity

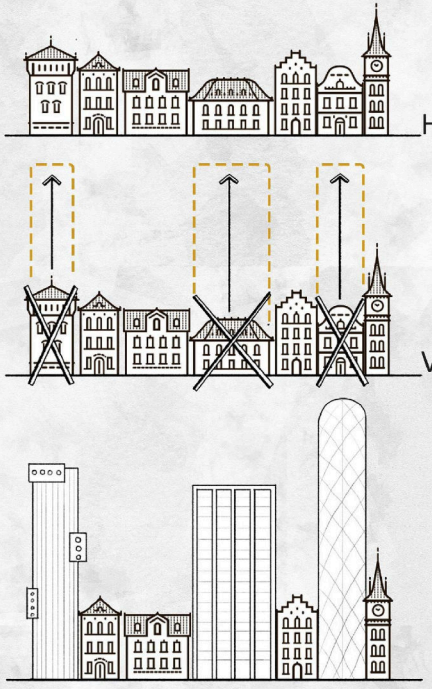
Ewing 1997; Squires 2002

Vertical Densification

- Economic Intergration
- Effective Land-use
- Localised Infrastructure Repair
- Reduced Transport Systems
- Social Cohesion

Ewing 1997; Squires 2002

HERITAGE PRESERVATION



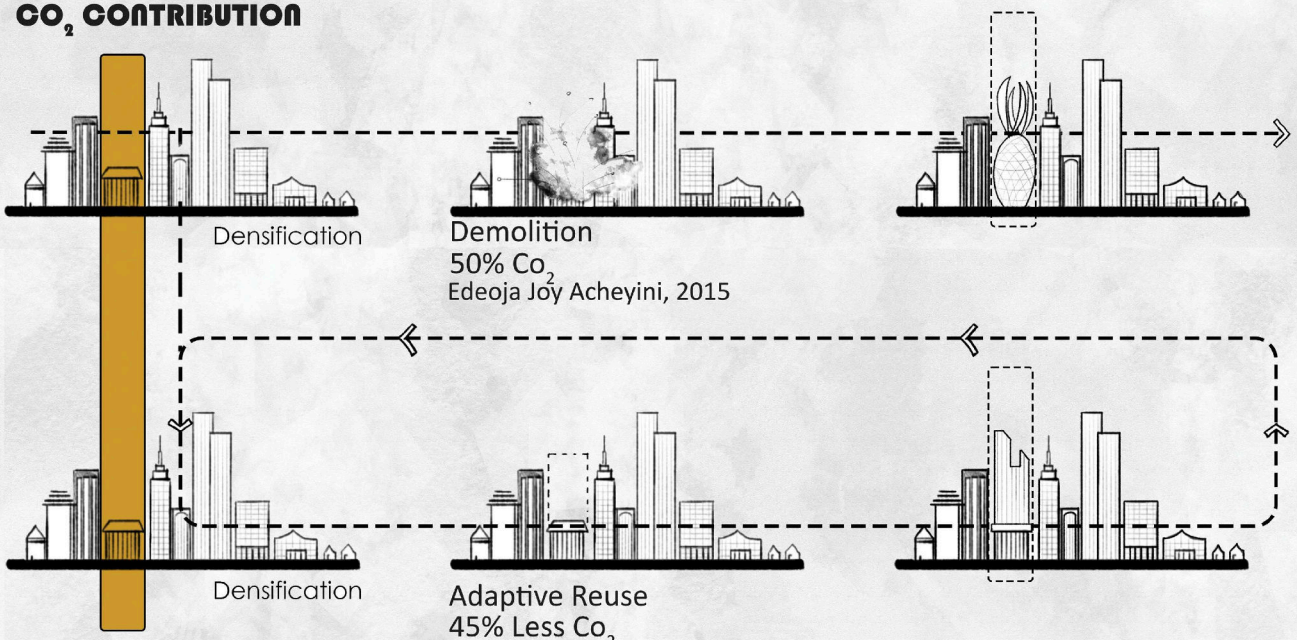
Historical Urban Fabric

Verical Extensions

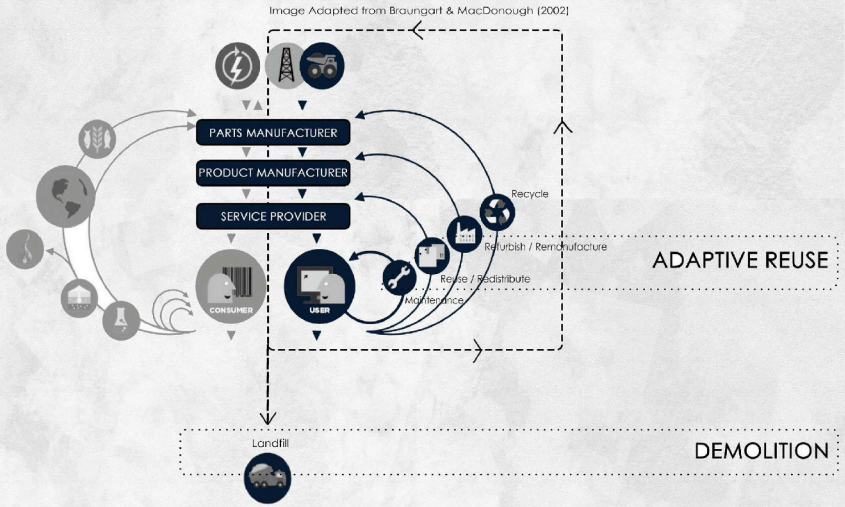
Lost Heritage

DEMOLITION & NEW BUILD vs ADAPTIVE REUSE

CO_2 CONTRIBUTION

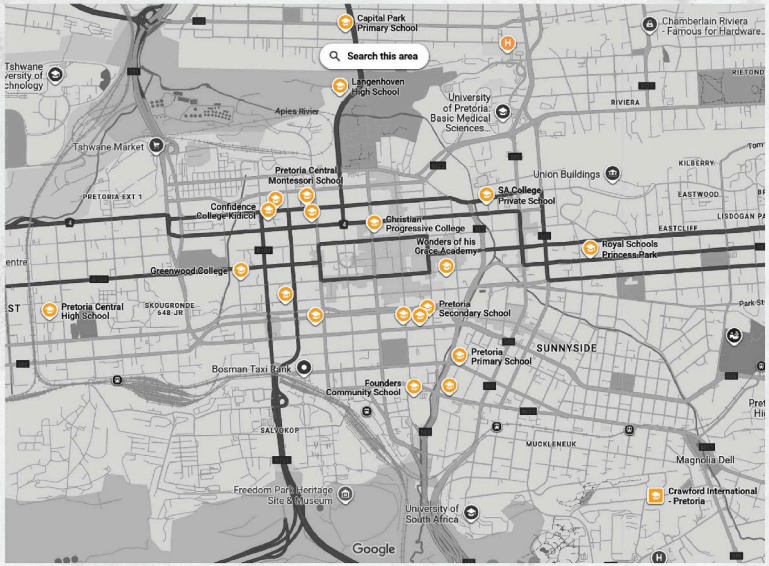


CIRCULAR ECONOMY OF BUILDING STOCK



PRETORIA'S URBAN LIVING FOR CHILDREN

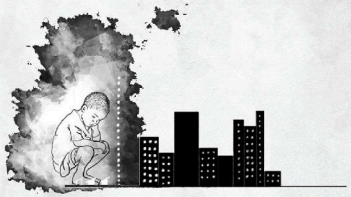
EVIDENCE OF INNER-CITY CHILDREN



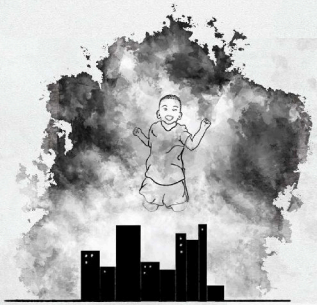
20 INNER CITY SCHOOLS

LIMITS OF INNER-CITY LIVING

(Ahmad, Aibinu, Thaheem, 2017:1701)*



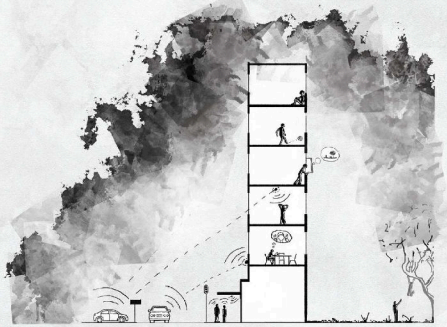
Limited Spatial Access



Limited Spontanious Play

Limited Equity

MULTI-STORY LIVING



+3RD FLOOR = DELAYED DEVELOPMENT:
Troubles Dressing | Helping | Appropriate Urination | Compromise Spontaneous Play | Behaviour Problems
(Ahmad, Aibinu, Thaheem, 2017:1701).

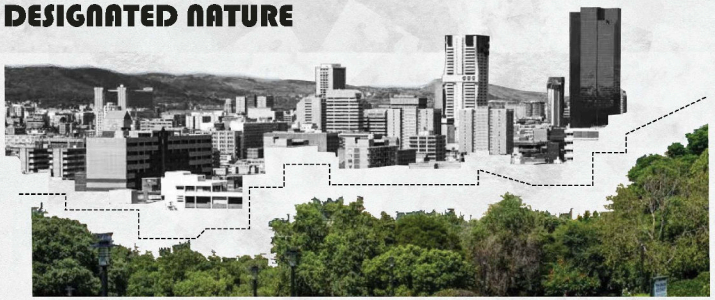
GROUND FLOOR + : DELAYED DEVELOPMENT
Sleep Disturbance | Hearing Loss |
Difficulty Differentiating Sounds | Reading Problems
Impaired Cognitive Function
(Bodin, et al., 2009; Bluhm et al., 2017).

PRETORIA'S URBAN LIVING FOR ADULTS

NO PUBLIC COMMUNITY

COMMUNITY ON AN EDGE

DESIGNATED NATURE



PUBLIC ACCESS MAPPING

Accessible Public Space

Closed off Public Space

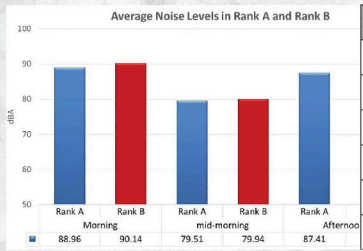
Green Nodes

NOISE IN THE CITY

"Some of these kids have never experienced what quiet sounds like

Luke Lamprecht Fight with Insight

NOISE OF TAXI RANKS



NOISE BENCHMARKS

dB (A)	Sensitivity
55–<60	Risky
60–<65	Moderately risk
65–<70	Highly risk
70–<75	Dangerous
75–<80	Highly dangerous
>80	Extremely dangerous

NOISE ON NANA SITA STR

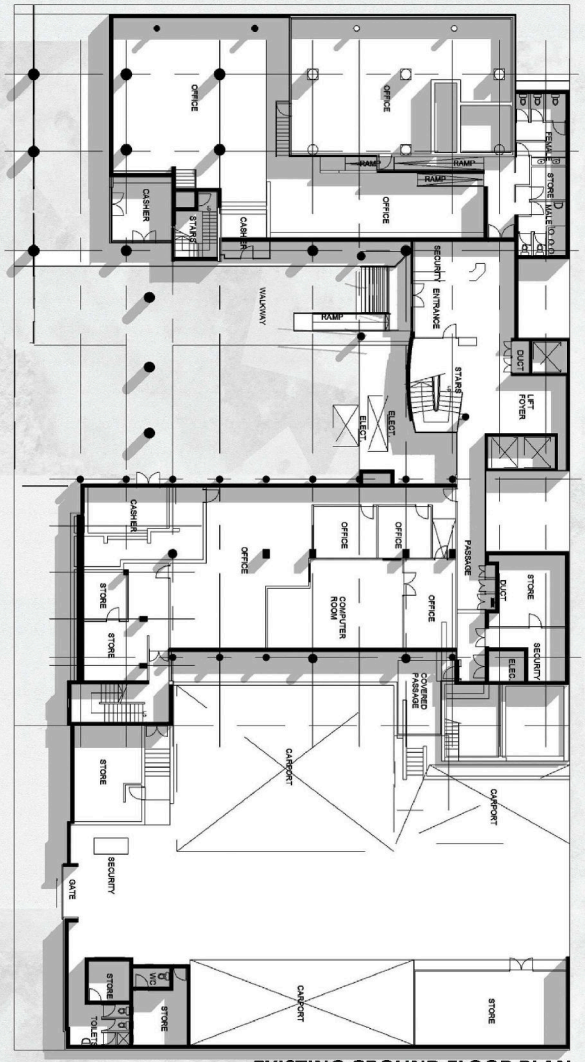
ressure at relevant frequencies at the 3rd floor Facade.

Average	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4kHz
62	54.1	64.6	62.0	66.1	58.6	66.6

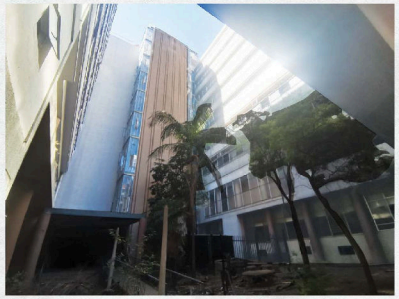
INTERNAL NOISE ALLOWANCE SANS

Table 3: South African SANS 10103: 2008 – Noise Thresholds sets standards for internal noise levels.

Types of Occupancy or Activity	Design Equivalent Continuous Rating Level for Ambient Noise dBA	Maxim Equivalent Continuous Rating Level for Ambient Noise dBA
General Office Areas	35	45
Private Offices	35	40
Living Rooms	35	45
Kitchens	35	55
Bedrooms	30	40

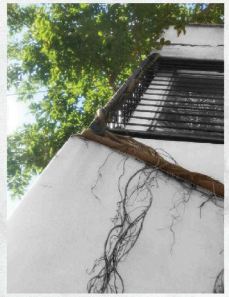


EXISTING GROUND FLOOR PLAN

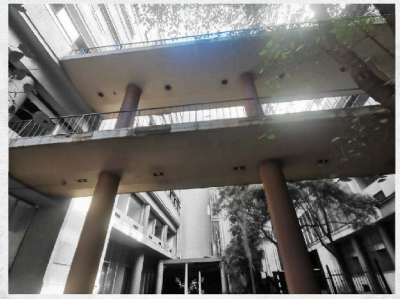


Atrium

Ramp Entrance



Building Wilding



Bridge Threshold

REVIT MODEL

Architect:
Strauss Brink

Designed:
1956

Built:
1959

Past Program:
Peri-Urban Areas Health Board

Style:
International

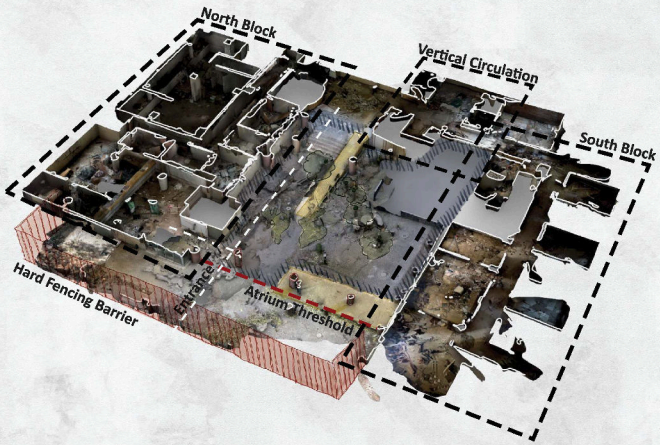
Design Driver
"Secluded and peaceful courtyards would provide spaces where one's spirit may be re-invigorated"
Strauss Brink early 1960s

INITAL DESIGN

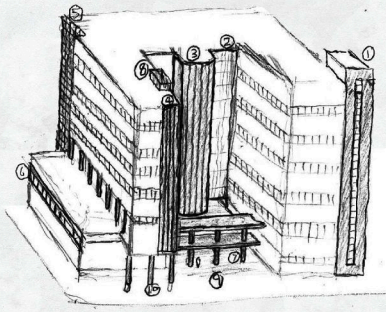
Building Proposal

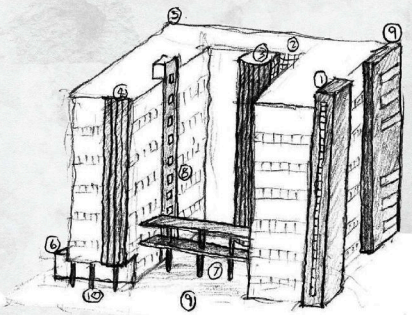
Built Project

GROUND FLOOR CONDITION

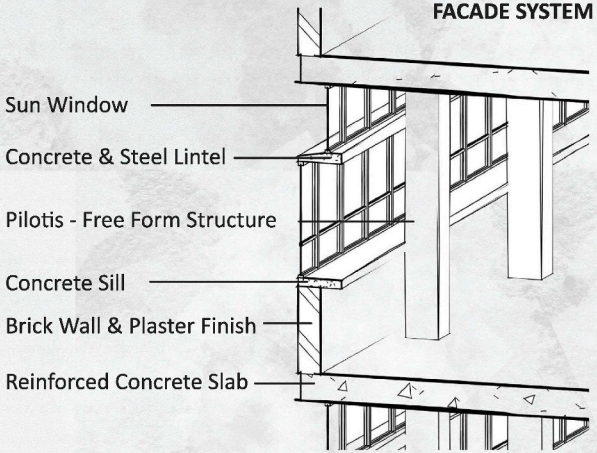


1. Southern Elongated Window
2. Elongated Western Facade
3. Western Staircase
4. Elongated Western Wall
5. Detailed Northern Screen
6. North Street Edge
7. Courtyard
8. Southern Staircase
9. Entrance Bridge
10. Western Colonnade

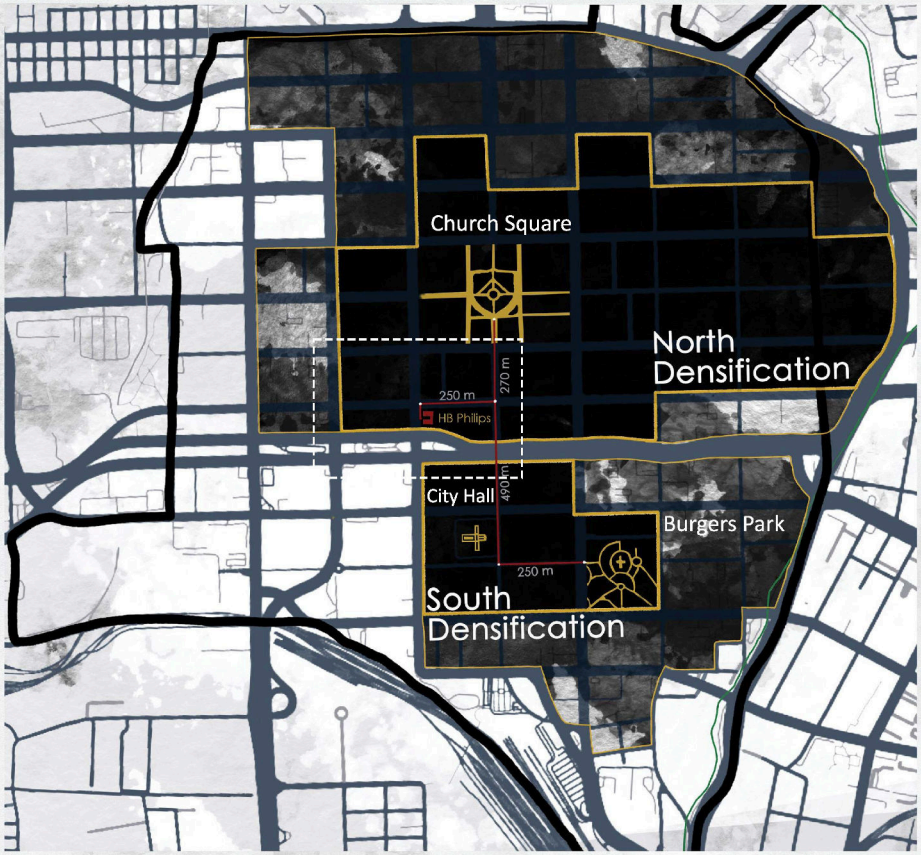




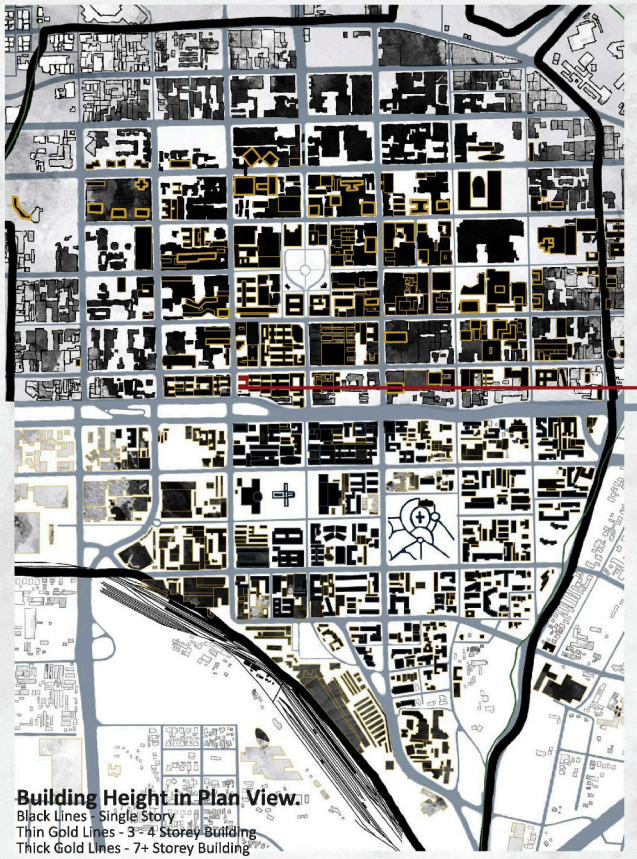
FACADE SYSTEM



PRETORIA CBD LANDMARKS



DENSITY MAP



NEIGHBOURHOOD MAP

Access to Site
Nana Sita Str
Major Taxi Stop & Parking
Bus Rapid Transport (BRT) Junction

Public Access

Blocked Public Access in HB Philips Building -
Limited Public Access into City Blocks -
Public Access Node on Nana Sita Str -

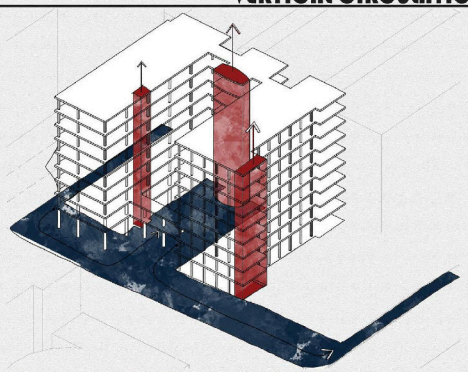
Ecology

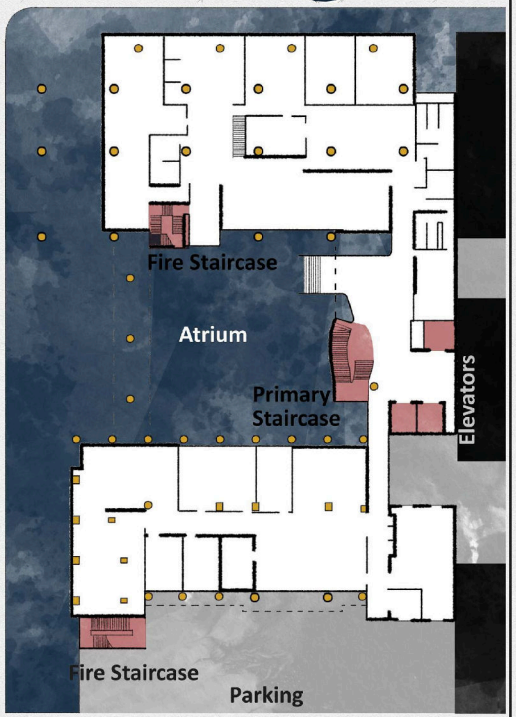
Extensive Ecology Around HB Philips Building -
Green Node Extending from Nana Sita Str -

Zoning

Over-Zoning of Business & Goverment -
Residential Block Introduced into CBD North -

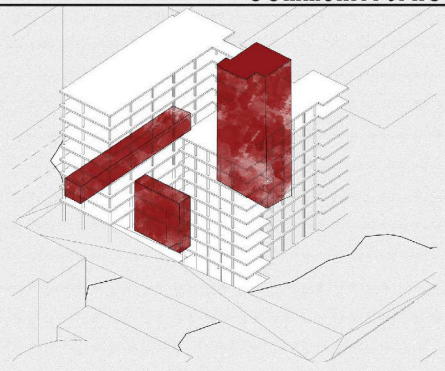
VERTICAL CIRCULATION

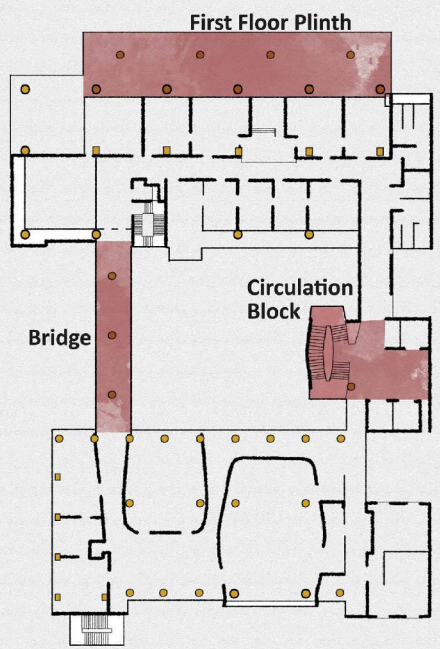




GROUND FLOOR PLAN

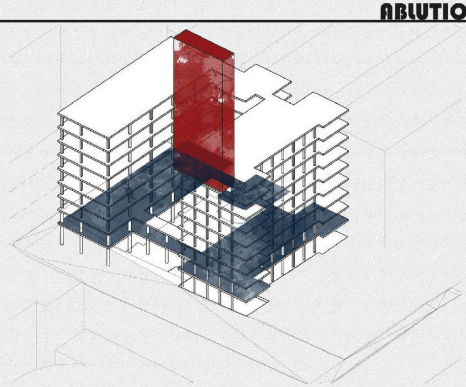
COMMUNITY SPACES

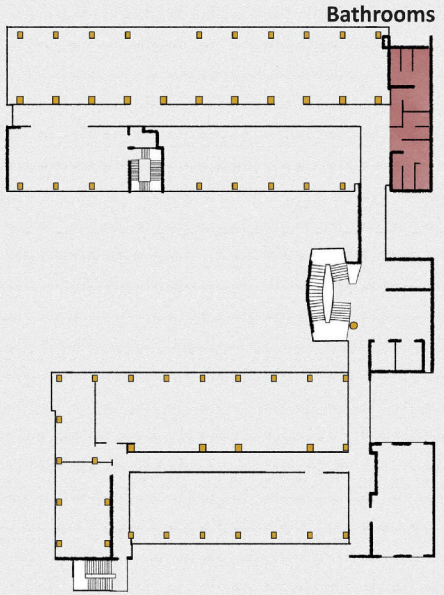




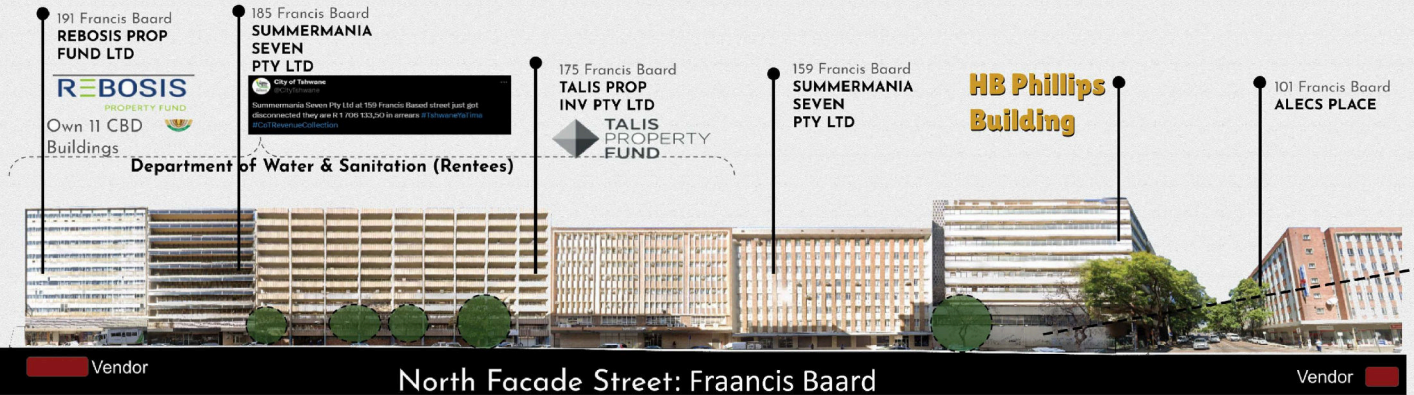
FIRST FLOOR PLAN

ABLUTIONS

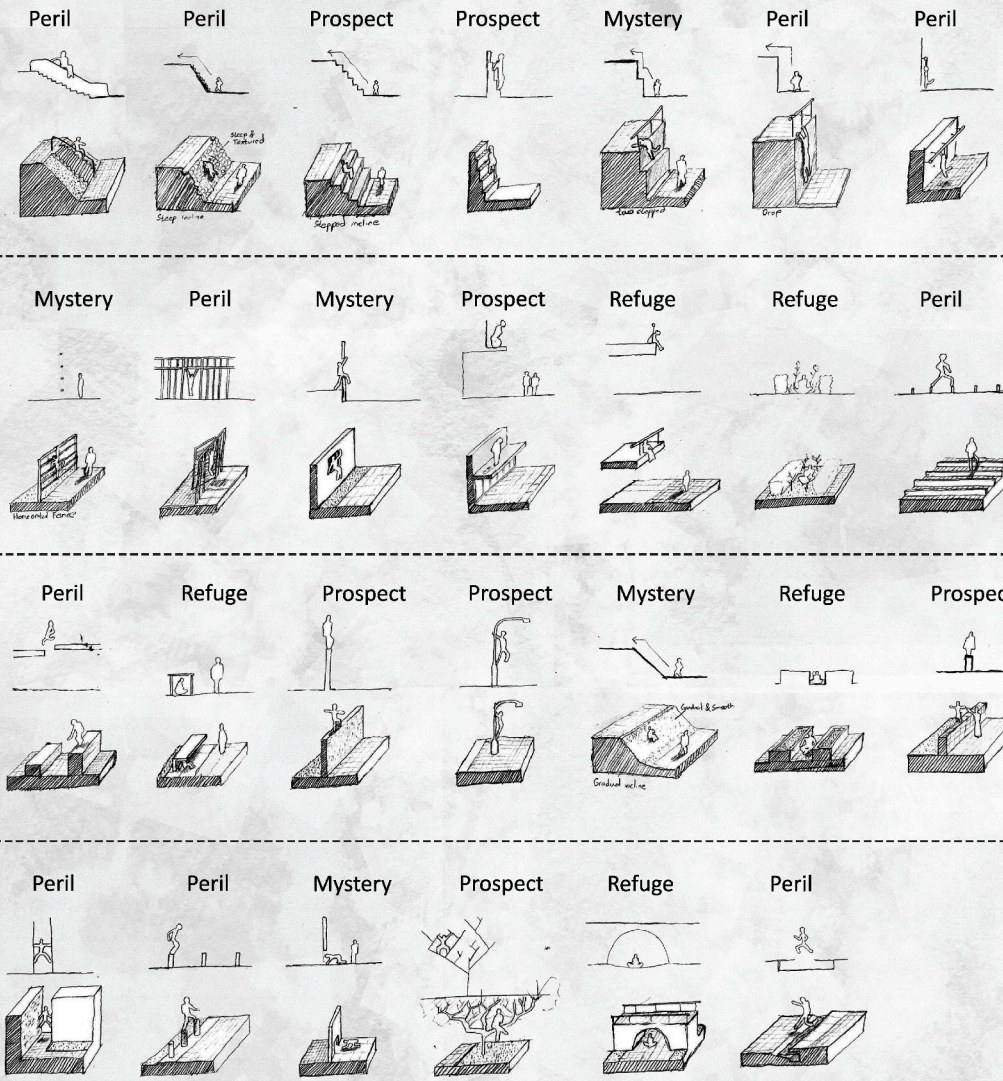


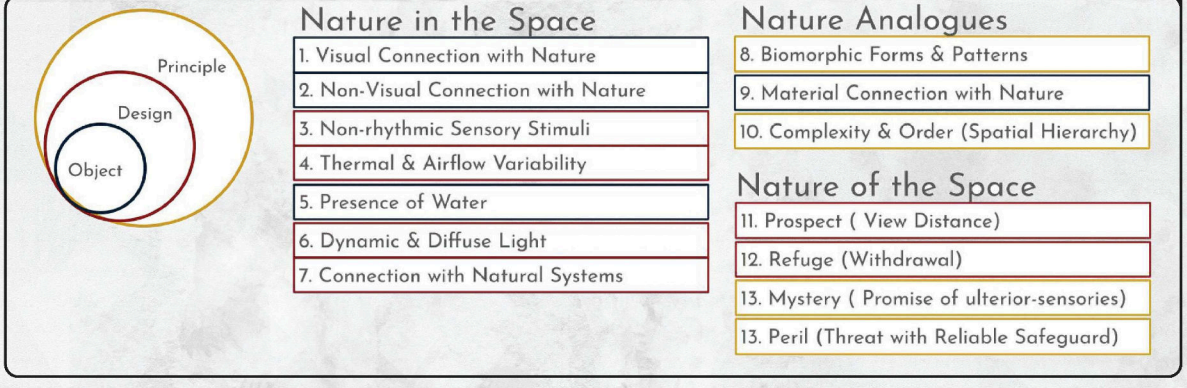


TYPICAL FLOOR PLAN



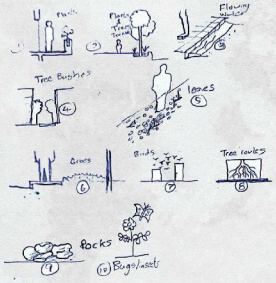
PLAYFULL ARCHITECTURE: PROSPECT, REFUGE, MYSTERY, & PERIL



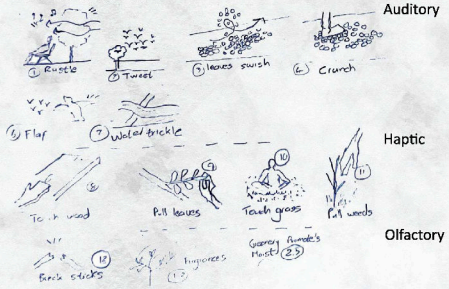


NATURE IN THE SPACE

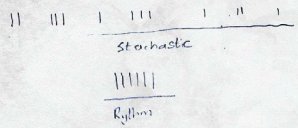
1 VISUAL CONNECTION WITH NATURE



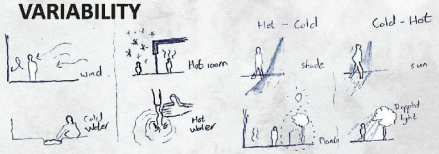
2 NON-VISUAL CONNECTION WITH NATURE



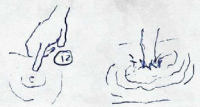
3 NON-RYTHMIC SENSORY STIMULI



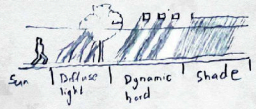
4 THERMAL & AIRFLOW VARIABILITY



5 PRESENCE OF WATER



6 DYNAMIC & DIFFUSE LIGHT



NATURE ANALOGUES

7 CONNECTION WITH NATURAL SYSTEMS

Seasons, life & Death, Hot & Cold

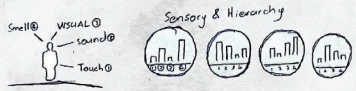
8 BIOMORPHIC FORMS & PATTERNS

Texture, Pattern, Contour, Numerical

9 MATERIAL CONNECTION WITH NATURE

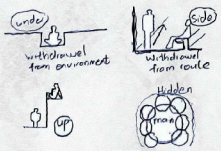
Sense of Place, Local Ecology, Local Geology (GESTALT)

10 COMPLEXITY & ORDER

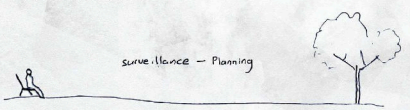


NATURE OF THE SPACE

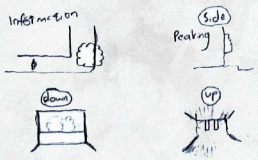
12 REFUGE

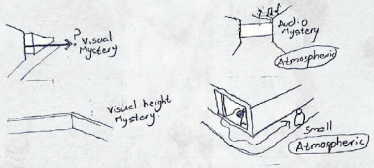


11 PROSPECT



13 MYSTERY

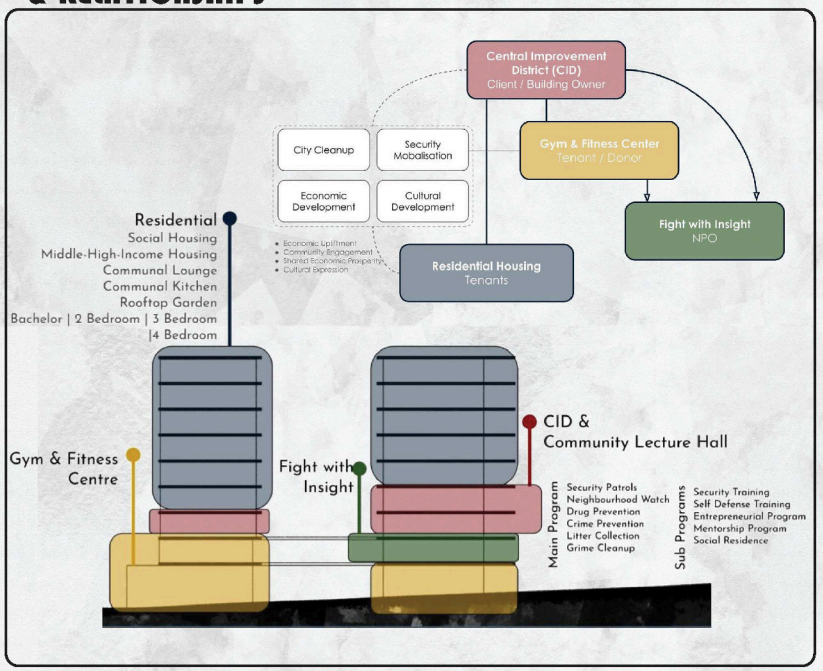




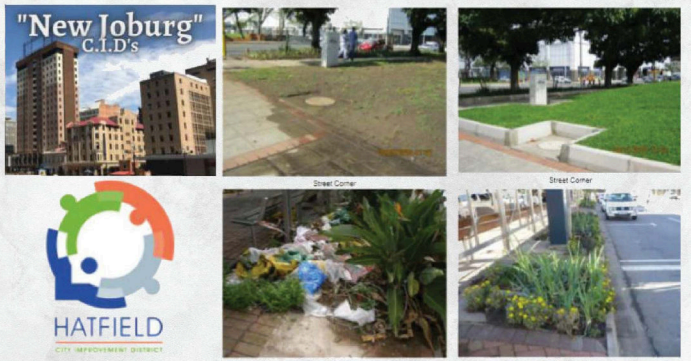
41% of Tshwane Residents say **Crime has gotten worse.** | **70%** of Tshwane Residents **feel Unsafe** Walking at night |
50% of Tshwane Residents are **unsatisfied with Government Security Services** | **49%** of Tshwane Residents believe you need to **be careful with most people** in their neighbourhood

Data Source: GCRO QoL 6 (2020/21)

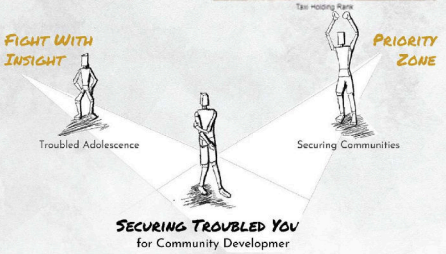
PROGRAM PLACING & RELATIONSHIPS



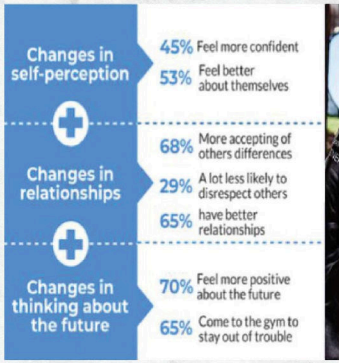
CENTRAL IMPROVEMENT DISTRICT (CID)



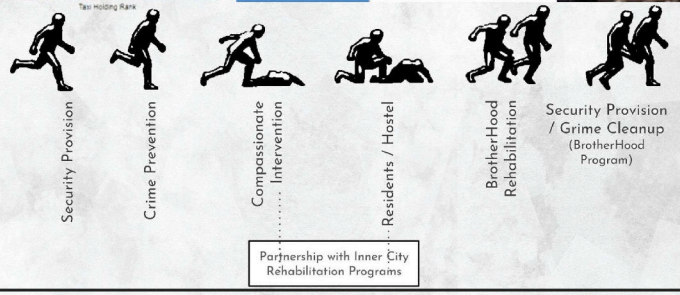
HATFIELD
CITY IMPROVEMENT DISTRICT



FIGHT WITH INSIGHT



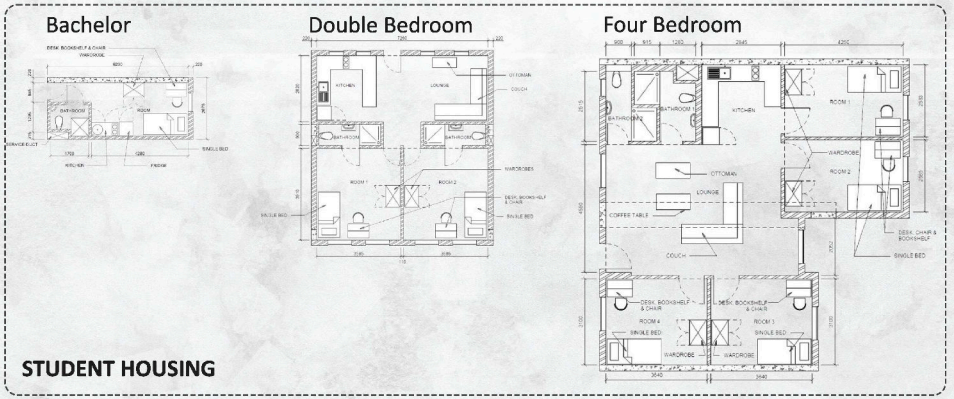
FITNESS CENTER



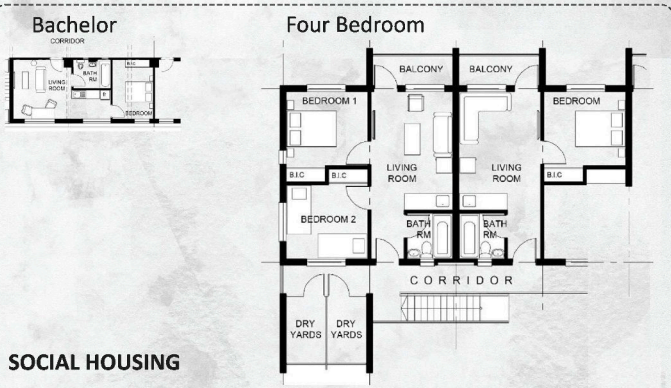
RESIDENTIAL / SOCIAL HOUSING

- Studio unit (single occupancy) – 11.2%
- Studio unit (double occupancy) – 2.4%
- Two-bedroom unit without lounge (two persons residing) – 27.3%
- Two-bedroom unit without lounge (four persons residing) – 6.3%
- Two-bedroom unit with lounge (two persons residing) – 18.0%
- Two-bedroom unit with lounge (four persons residing) – 5.4%
- Three-bedroom unit (three persons residing) – 9.8%
- Three-bedroom unit (five persons residing) – 5.4%
- Four-bedroom unit (four persons residing) – 14.1%

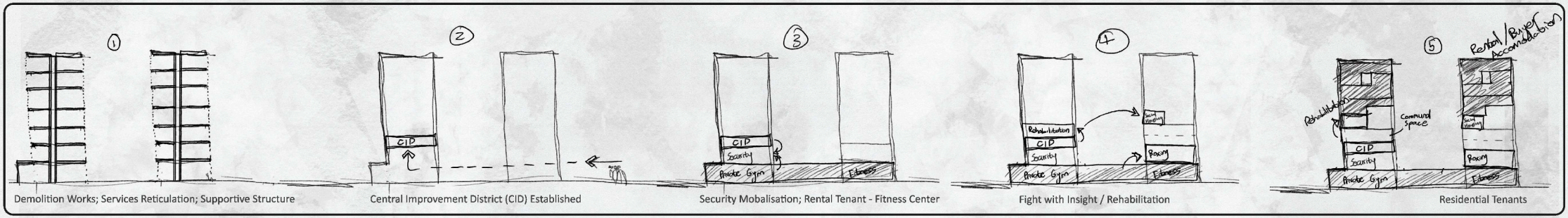
STUDENT HOUSING



SOCIAL HOUSING



PROGRAM NARRATIVE



Demolition Works; Services Reticulation; Supportive Structure

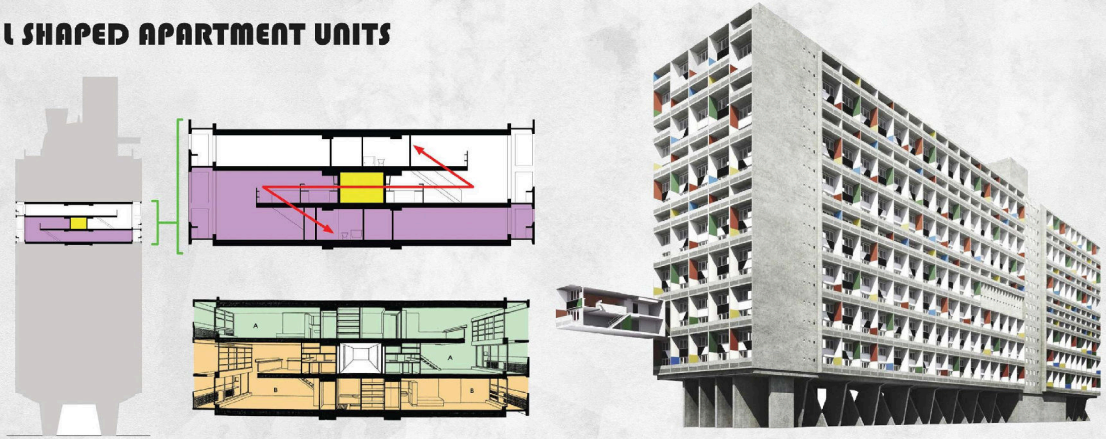
Central Improvement District (CID) Established

Security Mobalisation; Rental Tenant - Fitness Center

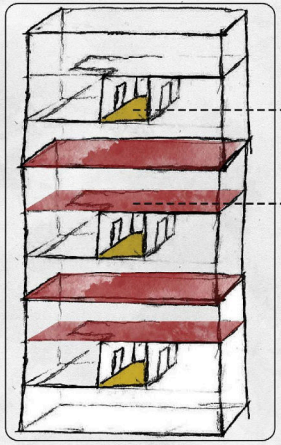
Fight with Insight / Rehabilitation

Residential Tenants

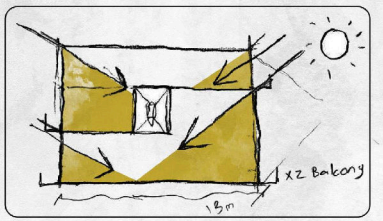
L SHAPED APARTMENT UNITS



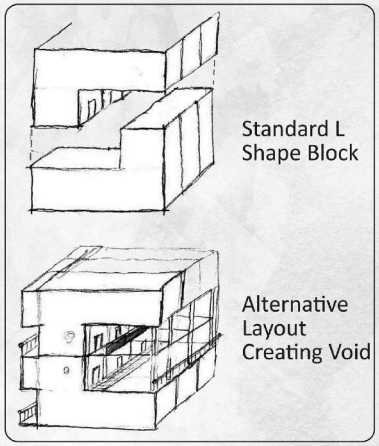
UNITE D'HABITATION. LE CORBUSIER.
MARSEILLES, FRANCE



INCREASED RENTABLE AREA, REDUCED CIRCULATION

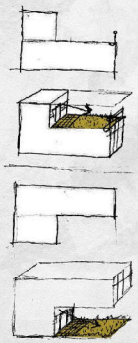


IMPROVED LIGHTING PER FLOOR HEIGHT

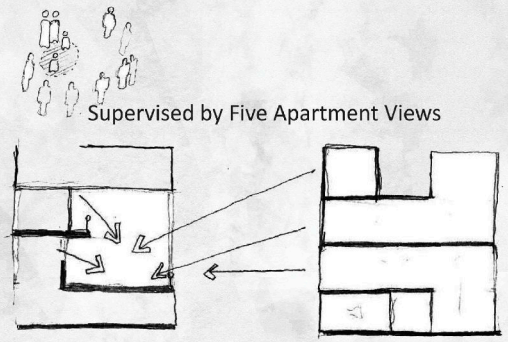


SECTIONAL L SHAPE CONFIGURATION

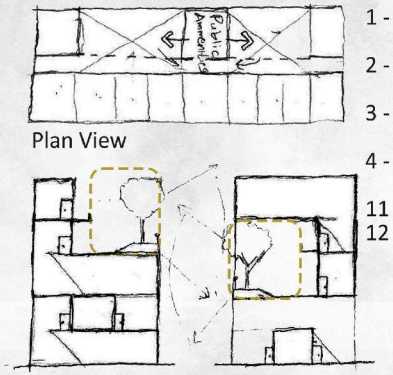
APARTMENT CONFIGURATION



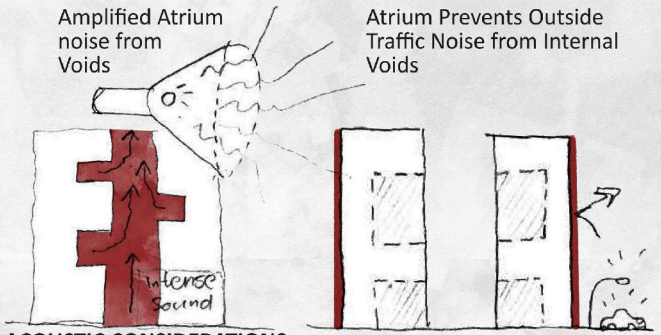
OUTSIDE SUPERVISION



VOID CREATED BY SUPERVISION

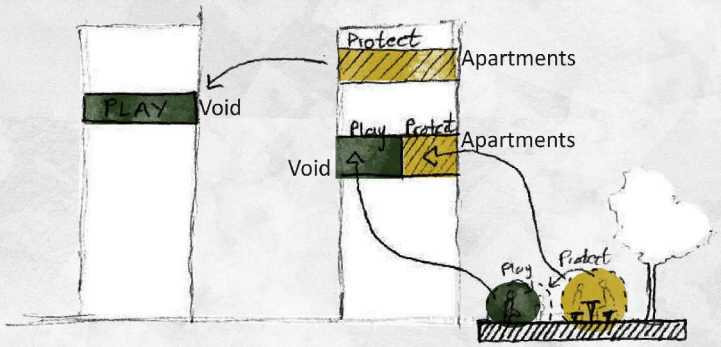


VOIDS INFILLED WITH BIOPHILIC PRINCIPLES

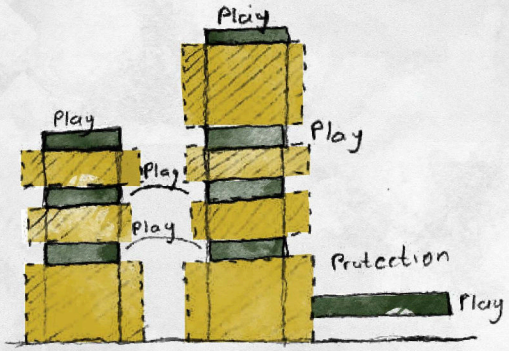


ACOUSTIC CONSIDERATIONS

PLAY & PROTECT - APARTMENT LAYOUTS AND VOIDS

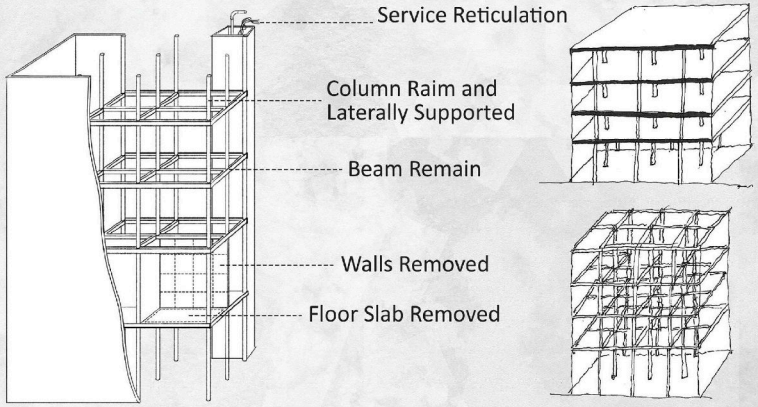


SUPERVISED PLAY AREA'S ASCEND INTO THE BUILDING



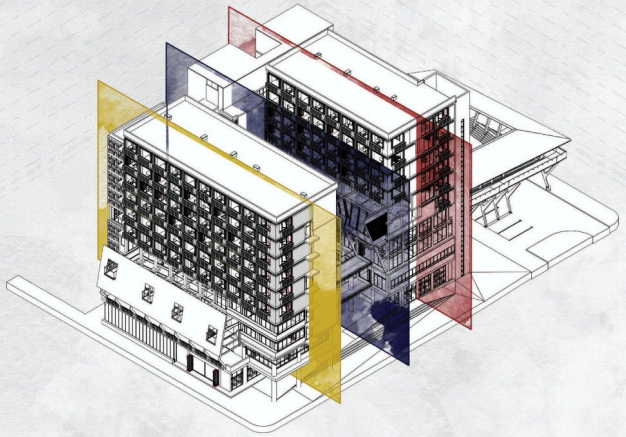
MULTIPLE AREAS OF PLAY AND SUPERVISED PROTECTION ACCROSS NORTH AND SOUTH BLOCK

VOID DECONSTRUCTION



BUILDING SKELETONISED

Section 1
1:50



4 Reference Axo

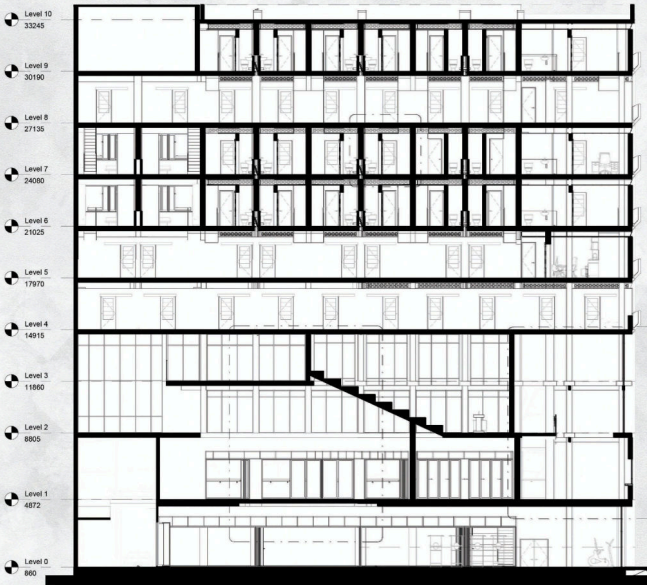
1 Section 2
1 : 100

Section 2
1:100

2 Section 3
1 : 100

Section 3
1:100

3 Section 4
1 : 100



Section 4.
1:100

NORTH ELEVATIONS 1:100

NORTH ELEVATIONS 1:100

Existing Plan
1 - 200

Ground Floor Plan
1 - 100

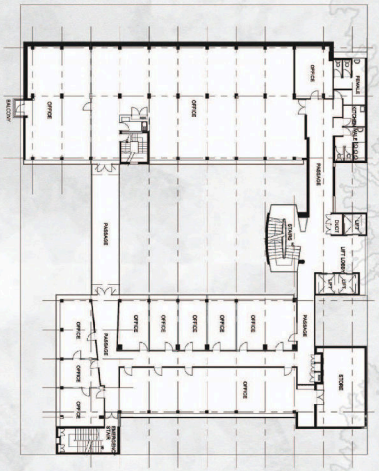
Section 1

0.5 Ground Floor Plan
1 - 100

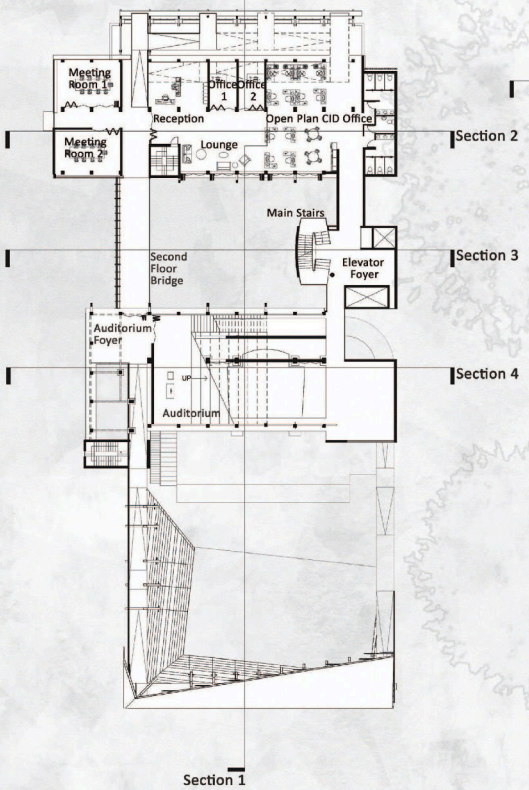
Existing First Floor Plan
1 - 200

First Floor Plan
1 - 100

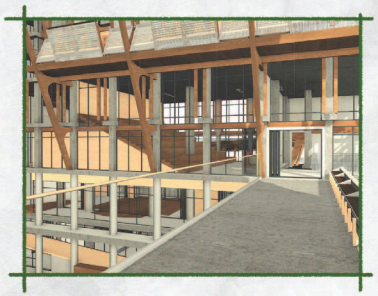
Existing Typical Floor Plan
1 - 200

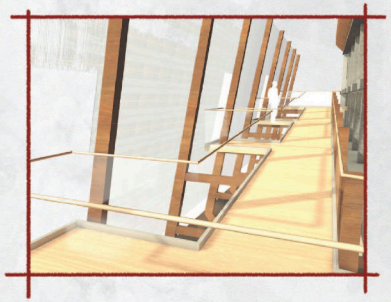


Second Floor Plan
1 - 200

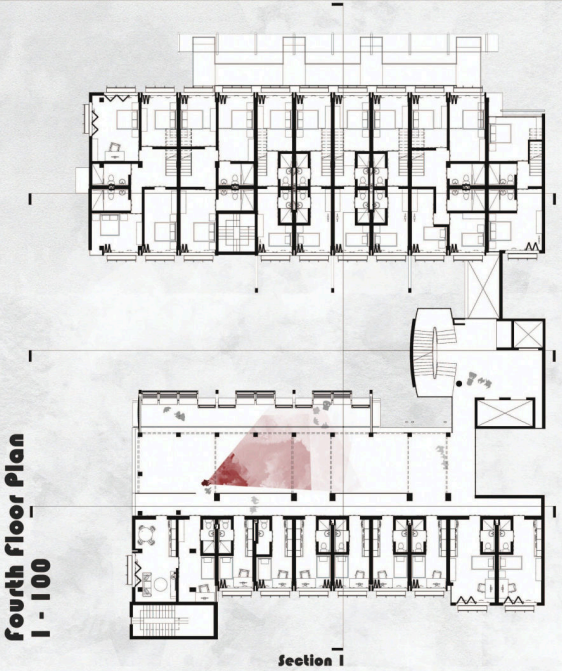


Third Floor Plan
1 - 100

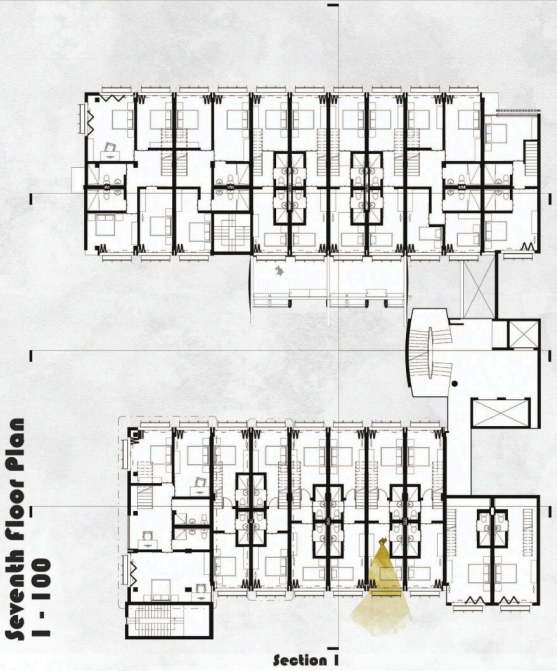




Fourth Floor Plan
1 - 100

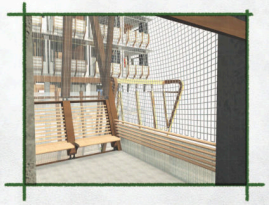


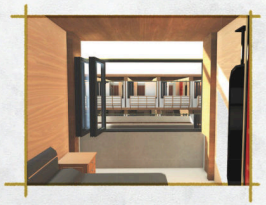
Seventh Floor Plan
1 - 100



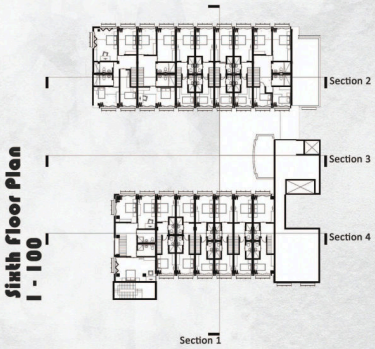
Eighth Floor Plan
1 - 100

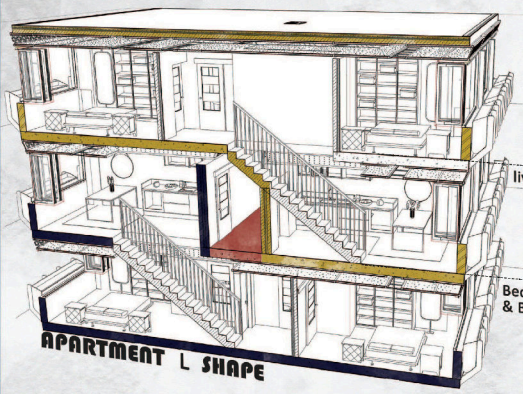
Sixth Floor Plan
1 - 100



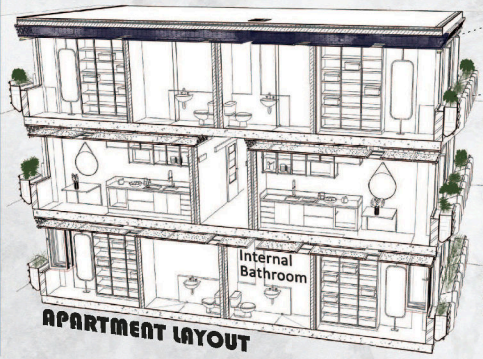


Sixth Floor Plan
1 - 100

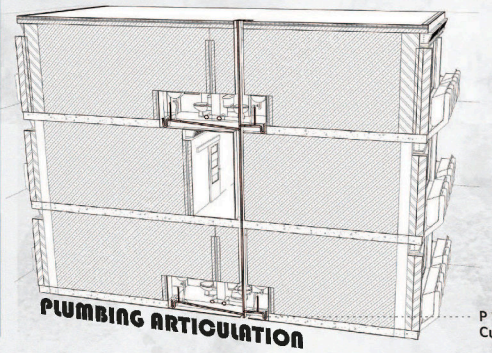




APARTMENT L SHAPE

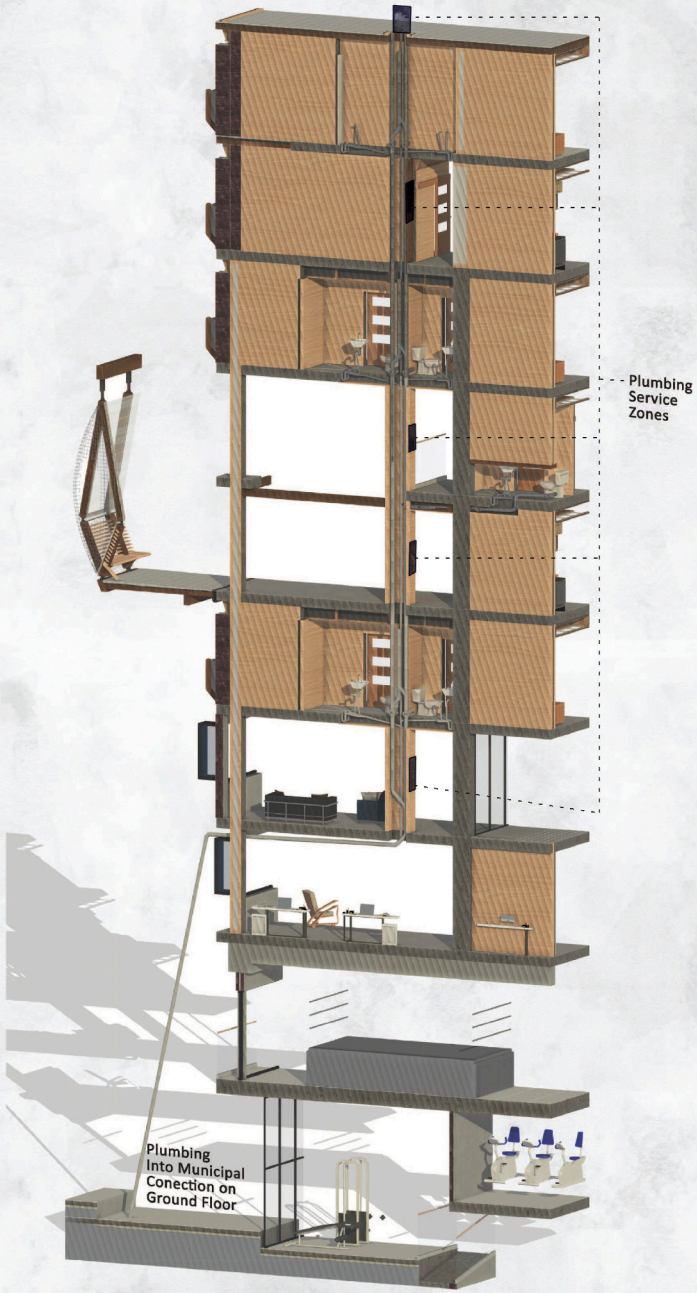


APARTMENT LAYOUT

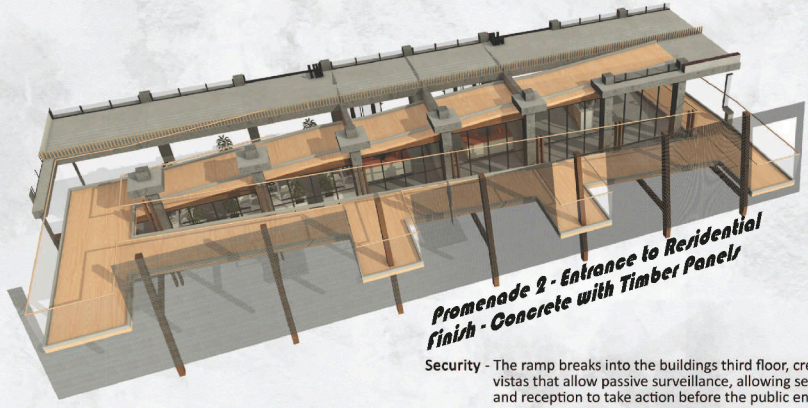


PLUMBING ARTICULATION

APARTMENT LAYOUT



PLUMBING

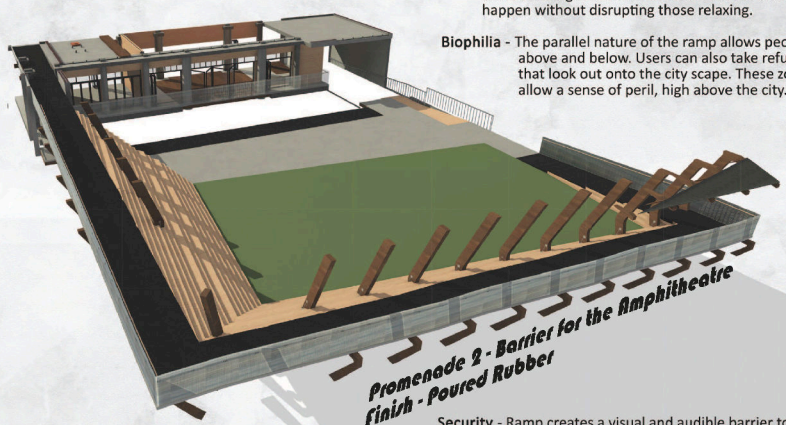


Promenade 2 - Entrance to Residential
Finish - Concrete with Timber Panels

Security - The ramp breaks into the buildings third floor, creating vistas that allow passive surveillance, allowing security and reception to take action before the public enter.

Play - The ramp invites playful activity on the main circulation route while creating zones for residents to relax. This allows play to happen without disrupting those relaxing.

Biophilia - The parallel nature of the ramp allows people prospecting above and below. Users can also take refuge in the zones that look out onto the city scape. These zones also allow a sense of peril, high above the city.



Promenade 2 - Barrier for the Amphitheatre
Finish - Poured Rubber

Security - Ramp creates a visual and audible barrier to the street keeping users safe from disturbing noise, and creating a place of safety and serenity.

Play - The ramp. to seating, to grass floor creates opportunity for jumping over many steps onto a soft surface. The ramp is made of rubber to promote running, jumping and further play

Biophilia - The grass allows for interaction with nature, and ramp creates a great refuge from the business of the city.

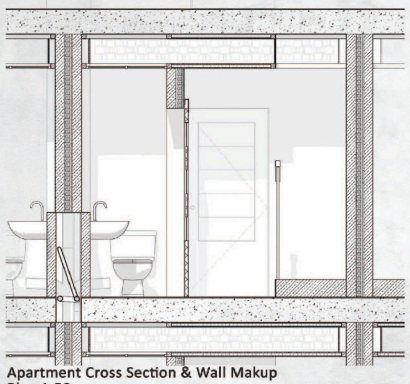
Promenade 1 - Ground Floor
Finish - CLT

Security - Passive surveillance through soft barrier (Collonade)

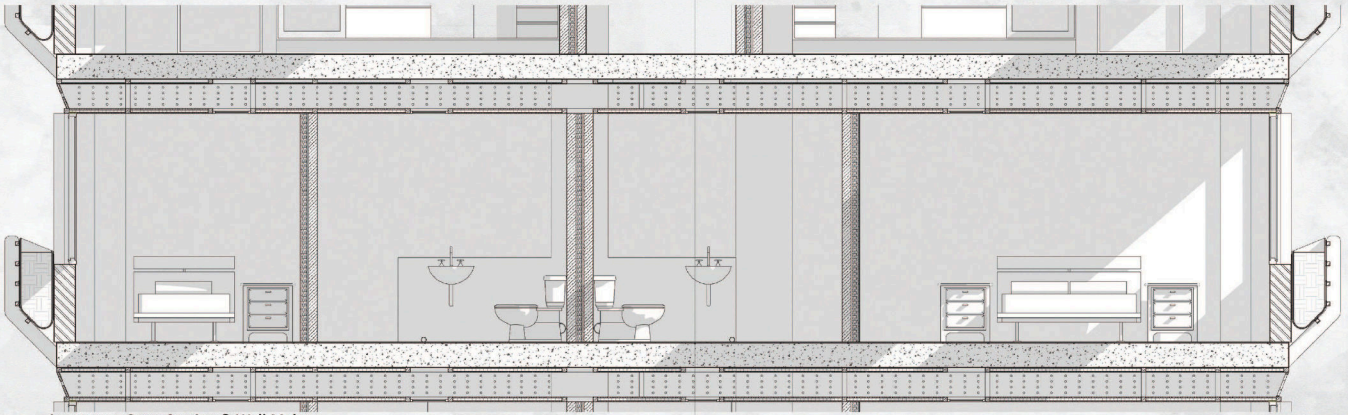
Play - Ramp creates climbable surface, inspiring users to lift up onto the cut floor slab or hide under the ramp

Biophilia - The broken floor slabs disturbs rythm, creating complex rythm. The soft curve inspired mystery and slowly raising up the ramp allows prospecting along the atrium

PROMENADE

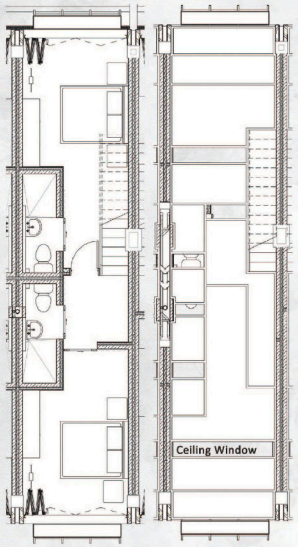


Apartment Cross Section & Wall Makup
Plan 1:50



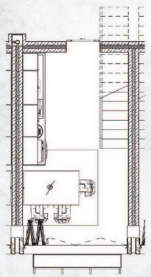
Apartment Cross Section & Wall Makup
Plan 1:50

2 Bedroom Apartment



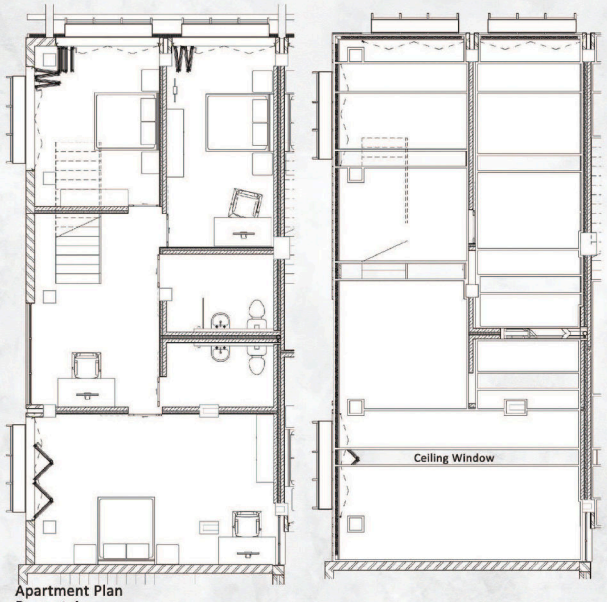
Apartment Plan
Downstairs
bedroom & WC
Plan 1:50

Apartment Ceiling Plan
Plan 1:50

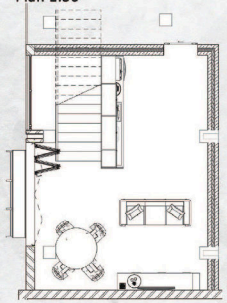


Apartment Plan
Upstairs Kitchen and Lounge
Plan 1:50

3 Bedroom Apartment



Apartment Plan
Downstairs
bedroom & WC
Plan 1:50



Apartment Plan
Upstairs Kitchen and Lounge
Plan 1:50

Ratio of Apartments

Research Led Ratio

- Studio unit (single occupancy) – 11.2%
- Studio unit (double occupancy) – 2.4%
- Two-bedroom unit without lounge (two persons residing) – 27.3%
- Two-bedroom unit without lounge (four persons residing) – 6.3%
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- Three-bedroom unit (three persons residing) – 9.8%
- Three-bedroom unit (five persons residing) – 5.4%
- Four-bedroom unit (four persons residing) – 14.1%

HB Philips Residential

Apartments

	4th Floor South	4th Floor North	6th Floor South	6th Floor North	7th Floor	3th Floor South	3th Floor North	TOTAL	HB Philips%	Goal
Small Single	6	-	-	4	-	-	-	10	29%	11.2
Big Single	1	-	-	2	-	-	-	3	9%	2.4
Two Bedroom	-	6	6	6	6	6	6	36	74%	57
Three Bedroom	-	1	1	-	1	1	1	5	14%	15.3
Four Bedroom	-	2	0	1	-	-	2	5	14%	14.1
Total	7	7	7	7	7	7	9	59		100

Research: The Balance Between Satisfying Residence needs and Private Developers

Ruan Caroto 2017

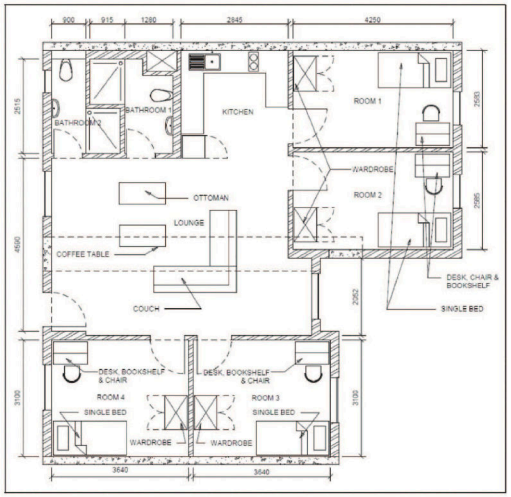
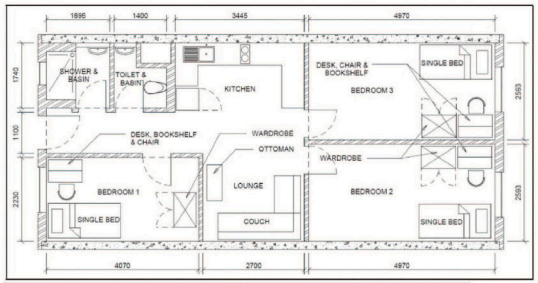
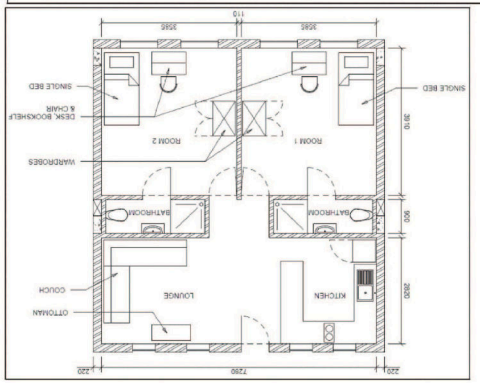


Figure 4-54: Plan view of four-bedroom unit (four persons)





Preferred Apartment Layouts

2 Bedroom Apartment with Shared Kitchen & Lounge
3 Bedroom Apartment with Shared Kitchen and Lounge
4 Bedroom Aparment with Shared Kitchen and Lounge

Prefered Furniture Material:
Timber

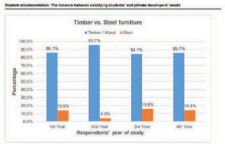


Figure 4-16: Preferred furniture material (academic year split)

Figure 4-17: Preferred furniture material (overall sample)

Prefered Apartment Typology

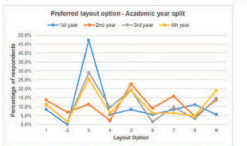


Figure 4-28: Preferred layout option (academic year split)

Overall, the ranking of the most preferred to the least preferred options was as follows:

1. Option 3: Two-bedroom without lounge, two persons – 27.3%
2. Option 5: Two-bedroom with lounge, two persons – 18.0%
3. Option 9: Four-bedroom unit, four persons – 14.1%
4. Option 1: Studio unit, one person – 11.2%
5. Option 7: Three-bedroom unit, three persons – 9.8%
6. Option 4: Two-bedroom without lounge, four persons – 6.3%
7. Option 6: Two-bedroom with lounge – 5.4%
8. Option 8: Three-bedroom, five persons – 5.4%
9. Option 2: Studio unit, two persons – 2.4%

Figure 4.29 shows a graphical illustration of the preferred layout options.

Mode of Transport

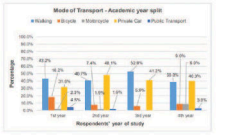


Figure 4-20: Mode of transport (academic year split)

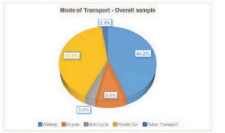
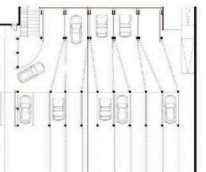
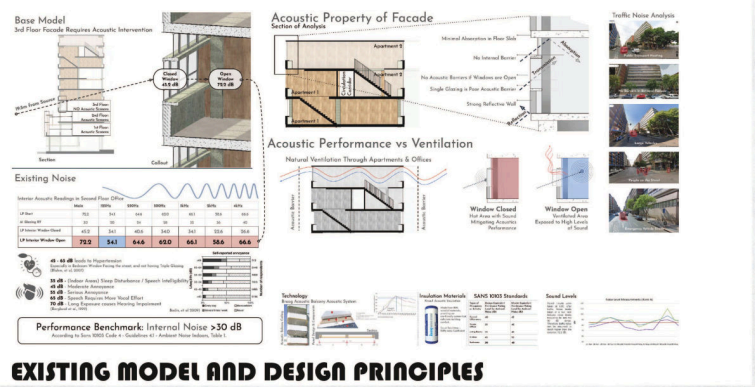


Figure 4-21: Mode of transport (overall sample)

Parking

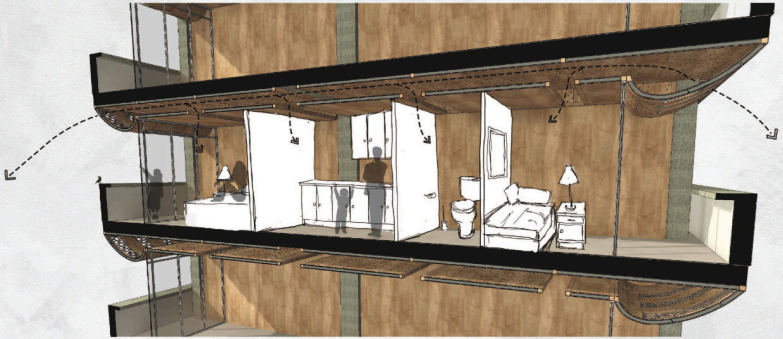
40% of People Require Parking.
Therefore parking ratio is 0.4 bays per bed to satisfy demand.
Total Apartments = 35
Required Parking = 14
Total Parking = 18



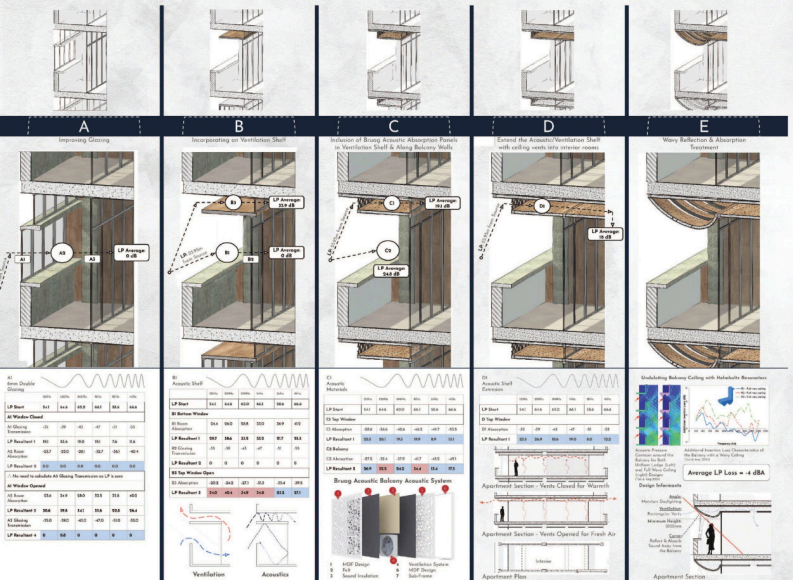


EXISTING MODEL AND DESIGN PRINCIPLES

FINAL ACOUSTIC DESIGN



ACOUSTIC CEILING ITERATION AND DEVELOPMENT



Traffic Noise:
74 dBA

Facade System:
-56 dBA

3rd Flr Ambient Noise:
18 dBA

High Traffic Noise:
90 dBA

Facade System:
-56 dBA

3rd Flr Ambient Noise:
34 dBA

Atrium Noise:
78 dBA
(Ochiabuto et al, 2020)

Facade System:
-56 dBA

3rd Flr Ambient Noise:
22 dBA

Amphitheatre Noise
55 dBA
(Ochiabuto et al, 2020)

Facade System:
-56 dBA

3rd Flr Ambient Noise:
0 dBA

300 mm Acoustic Ceiling Makup:
Ventilation Screen - 22mm Plywood screen to be CNC cut to design specification with opening no less than 50mm and fixed to bruag panel frames with SHS3530 timber screws. Plywood screen to be treated with UV protection like ARMOURFLEX, or similar.

Bruag Panel makup - 22mm internal plywood CNC cut to design specification; felt board; 50mm Knauf sound insulation; 22mdf MDF CNC cut to design.

Bruag Panel Fixing - Bruag Acoustic Panels fixed to underside of concrete floor slab and wall with PC-SF1 fastmount female using M3x50mm nail-in anchors, and anchored with PC-SM1AC male fixedto the inside of the Bruag panel.

350 x 960mm Custom made clay pot braced between truss system and existing wall. Clay pot rests against 10x80mm rubber strips, like a Rothoblaas Granulo Stripe's, or similar, which are screwed into the existing wall with M6x60mm nail-in anchors; and 10 x 80mm rubber strips nailed with SHS3540 Head Screws into Pine battens.

38 x 38mm Pine battens notched jointed into the planter truss @ 213mm intervals and fixed with SHS3540 pan head screws through a 10 x 80mm rubber strip, like a Rothoblaas Granulo Stripe, or similar.

44 x 150mm Pine planter truss, oiled with UV protection like ARMOURFLEX, or similar, fixed to a U shaped galvanised steel support with LBSH550 torx screws, which is fixed to the edge of floor slab floor slab with M6x60mm nail-in anchors.

100 x 215 x 22mm Galvanised steel Lock C Concealed Hook Timber-to-Concrete Connector fixed with LBSH550 torx screws to timber truss and LOCK STOP, lock-jointed to a plate and fixed with SKS8100 torx screws and sleeve anchor to the existing reinforced concrete column.

200 x 360mm Eucalyptus GLT beam, oiled with UV protection, like ARMOURFLEX, or similar, and tounge and groove jointed to GLT truss, and fixed with diagonal VGZH6220 pan head hardwood screws through GLT truss.

100 x 339mm Custom galvanised steel piston to hinge bracket, trench jointed to top GLT beam and fixed with VGZH6180 pan head hardwood screws. Hinge-side is fixed to I-joist with SHS3530 pan head screws.

200x100mm I-joist oiled with UV protection like ARMOURFLEX, or similar, fixed with VGZH6180 pan head screws to hing-to-hinge brace plate.

9mm Ø Tendon rope net weaved with 100mm spacings, and fixed around a galvanised steel rope hook, which is fixed with SHS3530 pan head screws to I-joist.

25mm Clear multiwall polycarbonate sheeting, like Multilite, or similar, slotted into an aluminium bracket and fixed to the I-joist with SHS3530 pan head screws.

22 x 120mm Pine backrest, oiled with UV protection like ARMOURFLEX, or similar, slotted between adjacent I-joists and fixed with SHS3530 pan head screws into I-joist.

66 x 602mm Pine CLT seat, oiled with UV protection like ARMOURFLEX, or similar, tounge and groove knotched between adjacent I-joists, and fixed with SHS3530 pan head screws into I-joists.

22mm Custom manufactured plywood support fixed with SHS3530 pan head screws into I-joist.

40 x 140 x 235mm AIS1304 stainless steel hinge-to-hinge brace plate fixed with pan head screw like Rothoblaas HBS Plate Evo, or similar, to GLT beam.

300 x 160mm Eucalyptus timber beam, oiled with UV protection like ARMOURFLEX, or similar, and fitted into the GLT truss and fixed with diagonal VGZH6220 hardwood pan head screws, through the the CLT slab.

Aluminium flashing fixed with AIS1304 wood screws and a WBAZ stainles steel washer with seal into GLT beam.

CLT Floor Slab Makeup:
- 20mm wet poured Styrene-butadiene rubber to a fall of 1:50
- 40mm crushed stone vibration dampening infill
- DPM waterproofing layer to wrap over GLT beam and CLT slab
- 110mm Pine CLT slab layered with 44, 22, and 44 mm lamelae layup. CLT slab fixed with pan head screw like Rothoblaas HBS Plate Evo, or similar, to GLT truss system.

26 x 93mm galvanised steel, heel proof, trench drain, set upon a galvanised steel S profile edge trim, fixed with AIS1304 wood screws and WBAZ stainless steel washer with seal, to the CLT Slab, and adjacent S profile edge trim fixed with SKS8100 with sleeve anchor to the existing concrete slab.

300 x 160mm Eucalyptus timber beam, oiled with UV protection like ARMOURFLEX, or similar, and fitted into the GLT truss and fixed with diagonal VGZH6220 hardwood pan head screws, or similar, through the the CLT slab.

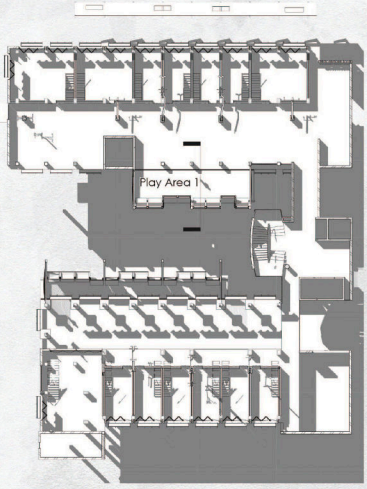
Galvanised steel flashing laid under S profile edge trim alongside CLT floor slab edge and existing concrete floor slab edge. Fixed to the CLT slab with an AIS1304 wood screws and WBAZ stainless steel washer with seal, and fixed to the concrete floor slab with M6x60mm nail-in anchors with WBAZ stainless steel washer with seal. Both flashing edges to end with a drop profile facing the inside of the gutter.

90 x 125mm Aluminium gutter fixed to existing concrete slab with M6x60mm nail-in anchors and resting on the GLT truss @ a fall of 3mm per meter.

288 x 304 Eucalyptus GLT truss, made of 38x76 battens, treated with UV protection oil like Wood Armour, or similar. GLT truss components finger joined with high-performing polyurethane (PUR) adhesive, like LOCTITE PUR, or similar. Truss to be lowered onto a galvanised steel S50 Highly Resistant Post Base and fixed to the existing first floor slab with SKS10100 Torx screws. The truss is fixed under the third, fourth, fifth and seventh floor slabs, against the existing reinforced column with a Rothoblaas LOCK C fixed with LBSH550 torx screws to the truss and SKS8100 torx screws to the existing reinforced concrete column.

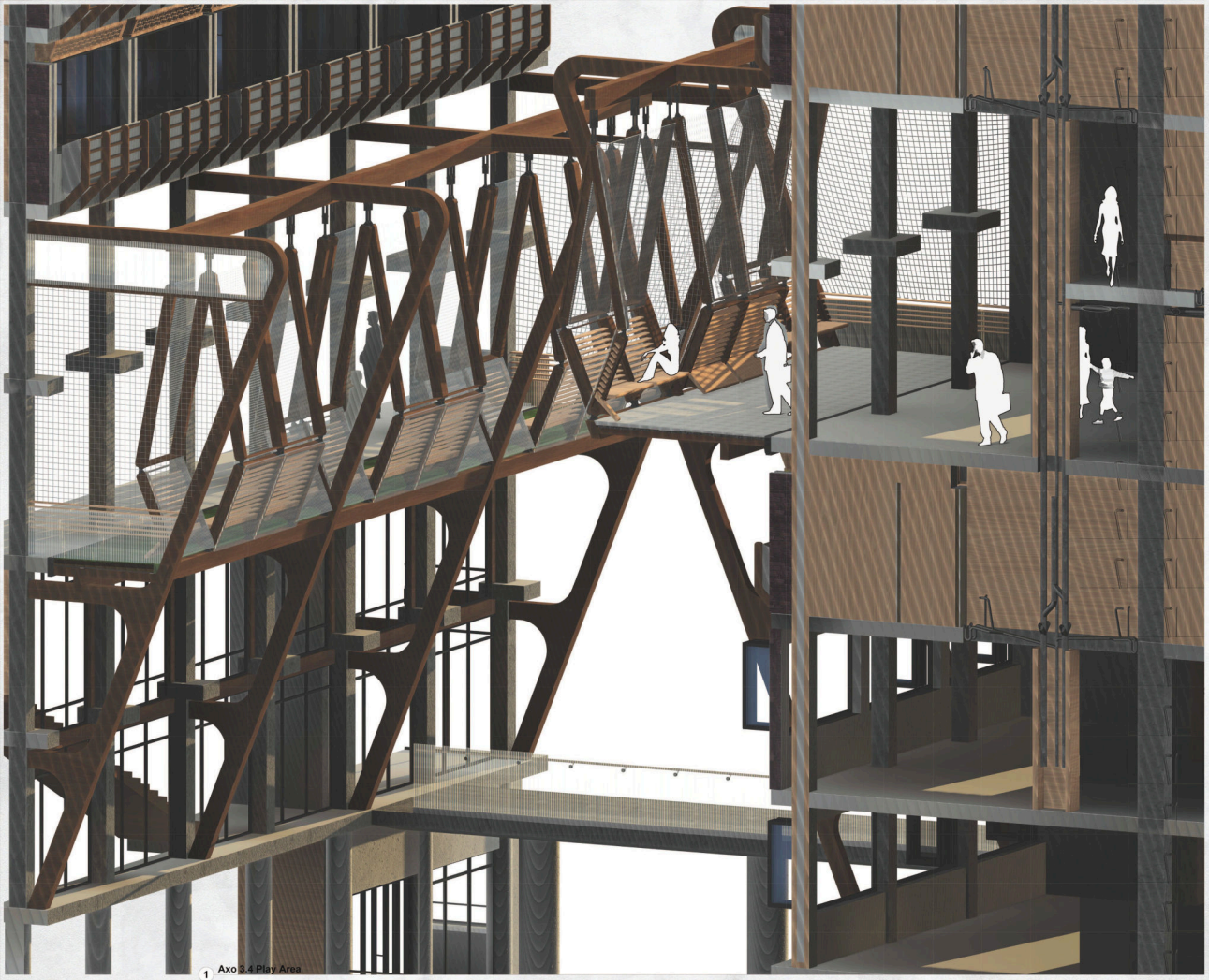
100 x 215 x 22 Galvanised steel Lock C Concealed Hook Timber-to-Concrete Connector fixed with LBSH550 torx screws to timber truss and LOCK STOP lock-jointed to a plate fixed with SKS8100 torx screws and sleeve anchor to the existing brick wall.

120 x 120 x 144 Hot dip zinc plated carbon steel S50 Highly-Resistant Post Base fixed to first floor concrete slab with M6x60mm nail-in anchor, supporting GLT truss with a trench joint

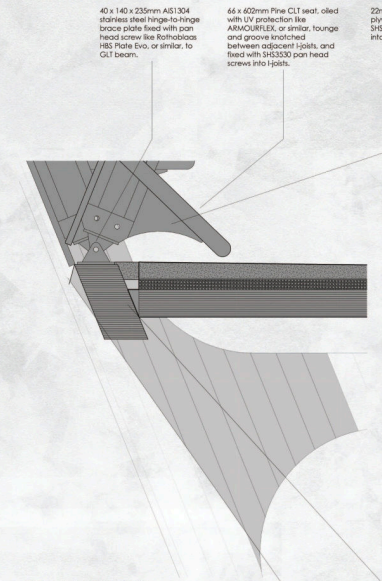


2 **Level 5**
1 : 200

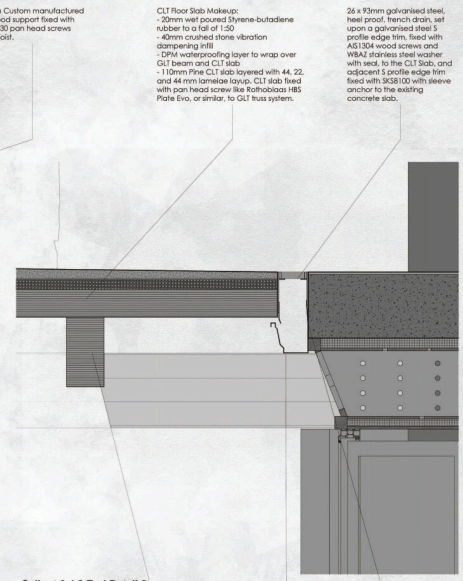
1 **Callout 3.4 Play Area 2**
1 : 20



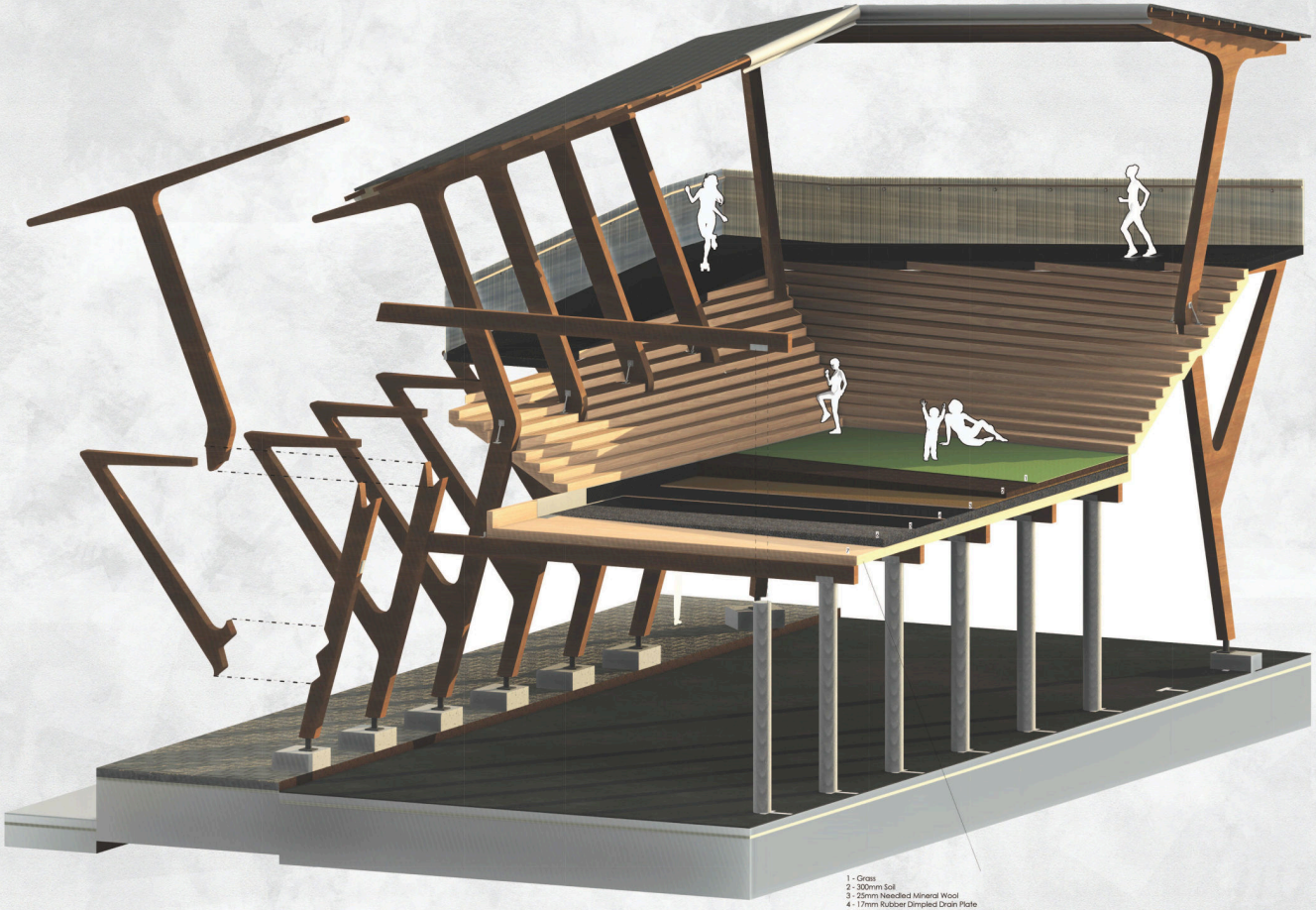
1 Axo 3.4 Play Area



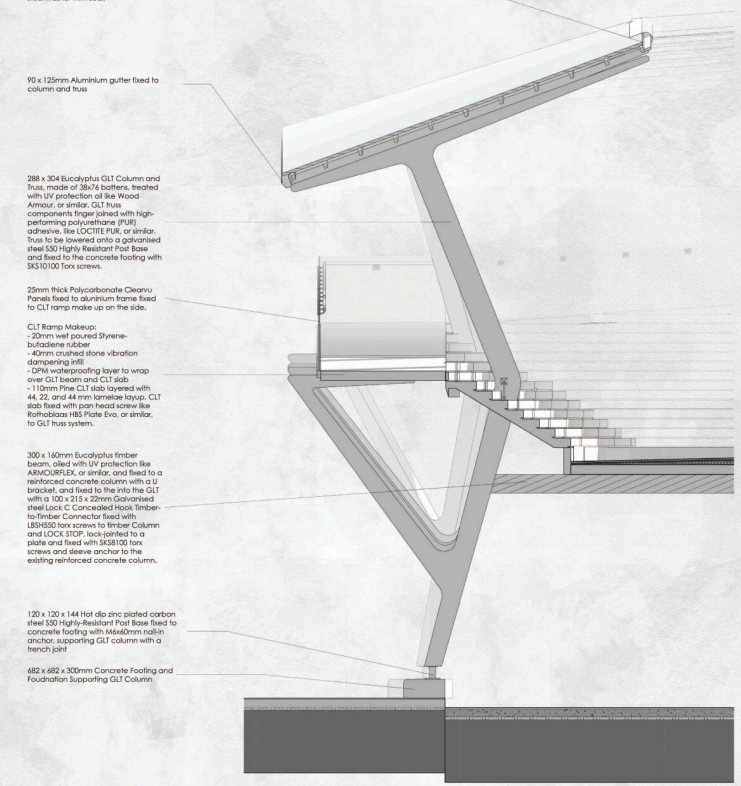
2 Callout 3.4.1 End Detail 1
1 : 5



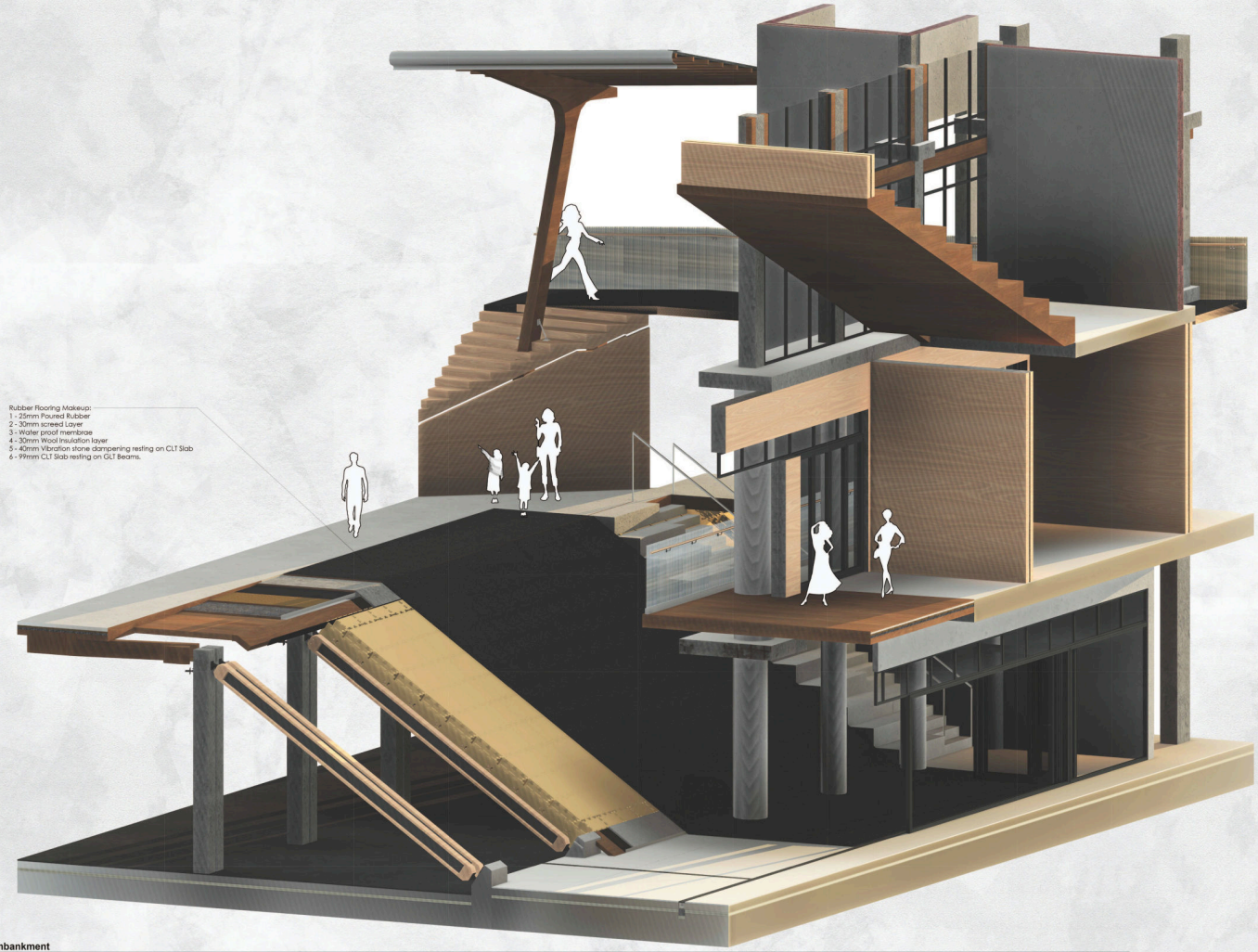
3 Callout 3.4.2 End Detail 2
1 : 5



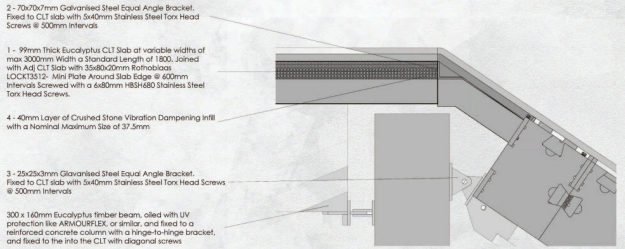
1 - Grass
2 - 300mm Soil
3 - 25mm Needled Mineral Wool
4 - 17mm Rubber Dimpled Drain Plate
5 - Water proofing membrane laid on crushed stone
6 - 10mm Crushed Stone vibration dampening infill at a fall of 1:50
7 - 154 mm Eucalyptus GLT slab treated with CCA H3 treated for water protection, resting on GLT beams and fixed with diagonal screws



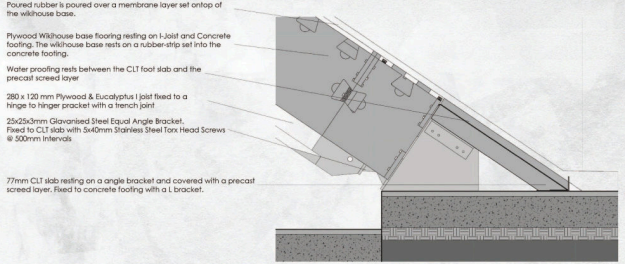
2 Callout 3.2.Amphitheatre
1 : 20



2 **Axo 3.1 Embankment**



1 **Callout 3.1.Embankment.bot**
1 : 5



3 **Callout 3.1.Embankment.Bottom**
1 : 5