THE INNOVATION HUB URBAN DESIGN FRAMEWORK

REVISION TO THE URBAN DESIGN DEVELOPMENT FRAMEWORK

of the

INNOVATION HUB

for

THE INNOVATION HUB®

Innovation Catalyst for Gauteng City Region

A subsidiary of the Gauteng Growth and Development Agency

This revision to The Innovation Hub Urban Design Development Framework, is to be read in conjunction with the 2003, Urban Design Development Framework for The Innovation Hub

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1_Status quo:

1.1_Introduction to the Project:

The Innovation Hub is of the ten projects identified by the Gauteng Provincial Government through their Trade and Economic Strategy (1997) and the only project in the Technology Sector. The overall goal is to grow the knowledge-intensive new economy business sector of Gauteng in a globally competitive way.

The site covers some 60 hectares and is located on the east-west axis between the CSIR and The University of Pretoria. The area set out for development is approximately 31 hectares along the western border of the N1 Freeway and is set predominantly to the north and west of the 'koppie' which dominates the area. Some 30 hectares is to be retained as public open space.

1.2_The vision:

- To create a unique space, within a unique environment where entrepreneurs will meet, network and prosper
- To facilitate exchange and optimize synergy with UP / CSIR
- Enhance innovative capacity
- Support and nurture technology-led and innovative business development
- Encourage start-up and incubation led business
- Provide world-class infrastructure
- Create an environment which attracts world-class business leaders, research and education institutes, and venture capital
- Provide a facility which represents and symbolizes the robustness of our larger entrepreneurial society

1.3_Introduction to the Urban Design Framework:

The Innovation Hub offers an unrivalled opportunity to attempt and introduce new principles of city planning and the creation of quality urban space, different and even opposite from those taught in everything from schools of architecture and planning to the much favoured segregated township establishments so readily applied by the previous government. It offers the opportunity to rectify the planning inadequacies which ignore the very place of social exchange.

The real vitality of an urban space lies in its rigorous definition, in the architectural, variety within this rigid structure, the focus on creating teeming street life and constructing places around the people that use them.

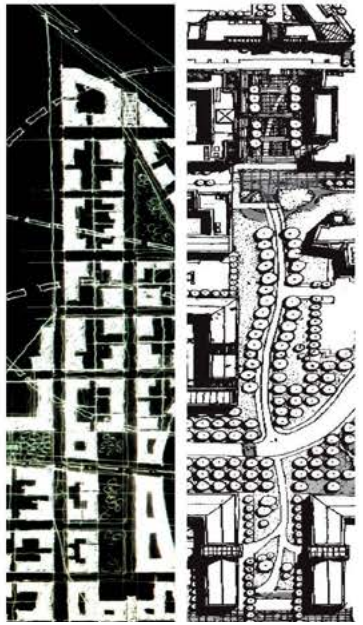
1.4_Aims of the Urban Design Framework:

The Urban Framework is based on the aims and visions of the project champions as set out in the Outline Brief prepared by Arup Stairway (November 2001)

- Create a coherent, holistic vision, with easily understood principles which can guide the development cooperation when confronted with a broad range of problems from investor requirements to site specific issues
- Provide a clearly defined urban model, which allows no grey areas of uncertainty, a model which leaves no question mark on the roles and responsibilities of all role players
- Establish a clear understanding of what the public environment looks like and how that can be translated into a sense of identity
- To create an environment that is both safe and secure for tenants and visitors alike. Urban form plays a vital role in providing a safe and secure public realm in that buildings are used to define public and private realms
- To explore development flexibility: ensuring a structure that can respond to changing markets and requirements.
- To maximise the social exchange of all users through urban form
- To create an environment that promotes ease of movement for both vehicular and pedestrian traffic
- Provide codes and regulations which guide the framework within which developers can expand their own vision
- The framework identifies lead projects and phasing methods to ensure a holistic approach through the lifespan of the development

1.5_Update and Revision to the Urban Design Framework:

- To evaluate clustering instead of phasing, relating to change in user/tenant: smaller sections of the development to be independently developed
- To accommodate the change in requirements of end-users: smaller enterprises are being replaced with larger, research & technology-based institutions
- Assess infrastructural relevance to accommodate changes of end-user
- To propose the possibility of a 40 000m² increase in the gross bulk.



2) Site location plan

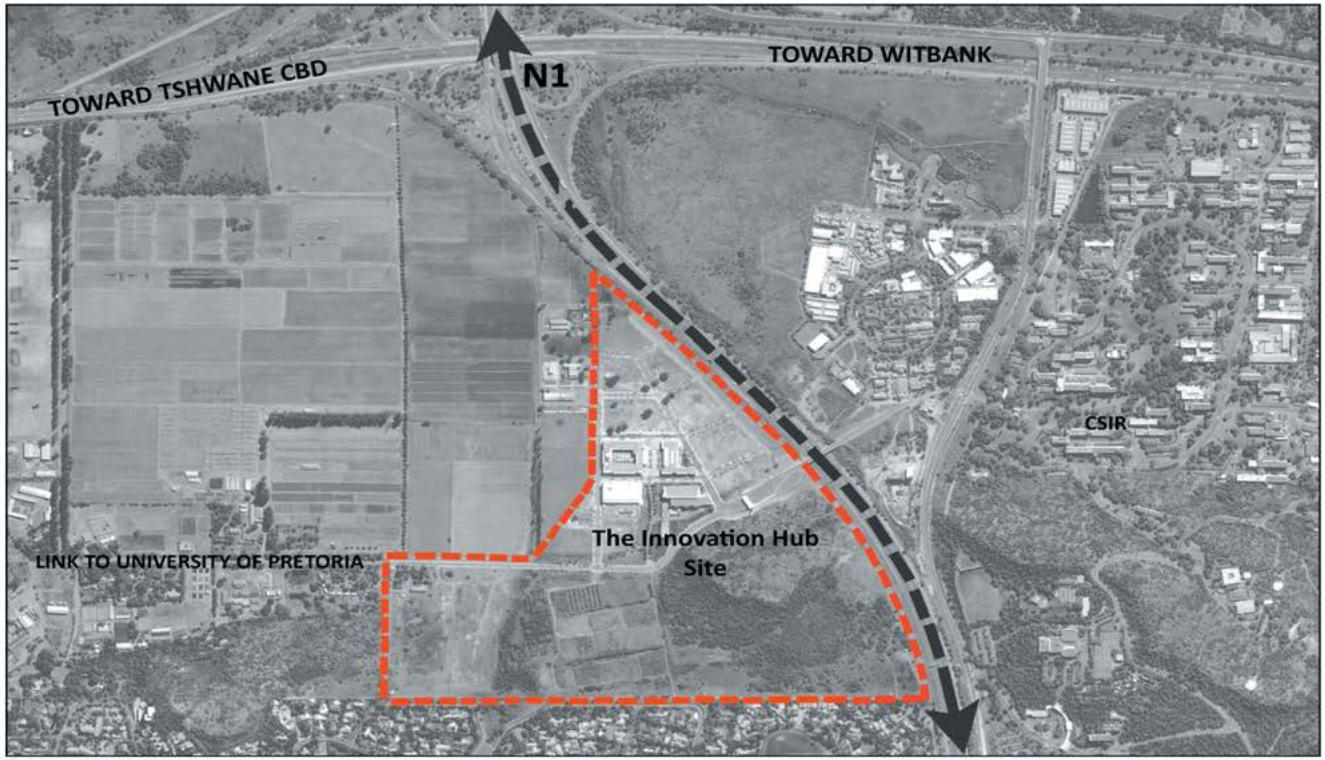


Fig 1: Site location map_2009/10

3) Considerations within the framework:

3.1 Urban Design Matrix
3.2 Land parcel robustness
3.3 Street network
3.4 Access and legibility
3.5 Definition of communal space
3.6 Edge definition and legibility

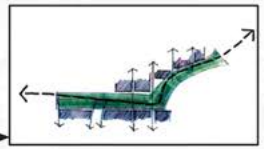
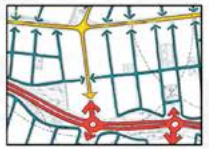
3_Considerations within the framework:
3.1 *URBAN DESIGN MATRIX*

3.2_LAND PARCEL ROBUSTNESS
Choice of usage ensuring richness of environment

- Robustness in Urban Form
- Flexibility of use within Urban Form
- Ease of movement
- Accommodate a variety of end-users

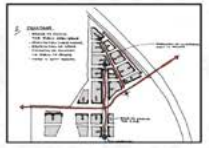

3.3_STREET NETWORK
A structured movement system to improve orientation and readability of the environment

- Ease of movement
- Hierarchy of streets
- Permeability

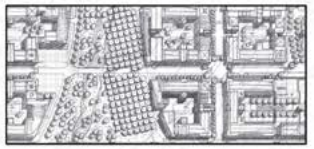
3.4_ACCESS AND LEGIBILITY
Well defined access points to improve overall readability of the environment

- Landmarks
- Entrance definition
- Orientation

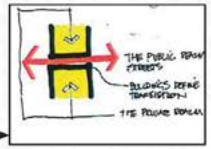
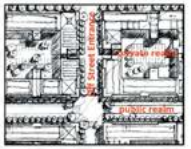
3.5_DEFINITION OF COMMUNAL SPACE
Defined communal spaces as focal points for exchange and the shaping of a strong green network

- Defined public open space
- Pedestrian prioritisation
- Village greens
- Edges

3.6_EDGE DEFINITION AND LEGIBILITY
Well defined edges, landmarks and axis' to improve user-orientation

- Public and Private-realm definition
- Street / Building interface
- Encroachment and set-back lines
- Tenant identity
- Landmark corners

3_Considerations within the framework:

3.2_Land parel robustness:

The quality of robustness refers to the flexibility of a place for a variety of purposes. The user of a robust environment plays a crucial role in moulding rich, urban places.

ROBUSTNESS IN URBAN FORM

Urban pattern which provides the most flexible use, facilitates ease of movement due to the variety of routes in the network of streets system.

- The network of streets is legible and easily understood.
- The network becomes a network of public open space
- The network provides/maximises accessibility
- The grid pattern allows for a variety of landparcel sizes which offers a variety of opportunities for investors.

LAND PARCEL CONSOLIDATION

The Urban framework for the Innovation Hub is adjusted to accommodate a greater flexibility for the end-user:
The land parcels in the southern district are consolidated into three large land-parcels, that could accommodate either:

- Institutions that require larger footprints, or
- institutions that require smaller land-parcels, through the process of sub-division

The consolidation of land parcels reduces infrastructural requirements at the setting out of the Souther District.

c o n c e p t

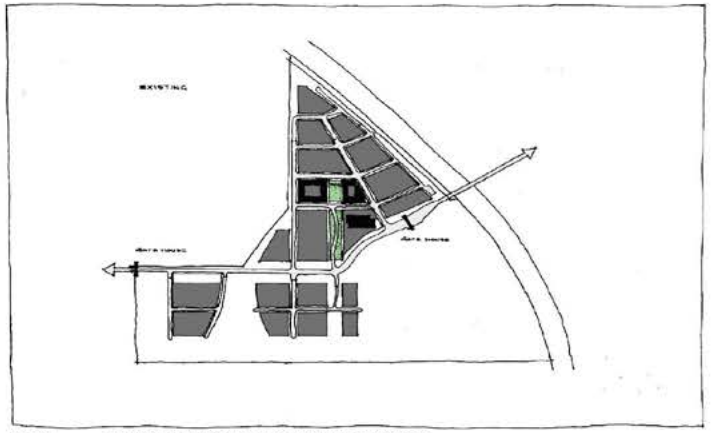


Fig 2: Existing land parcel arrangement_2009/03

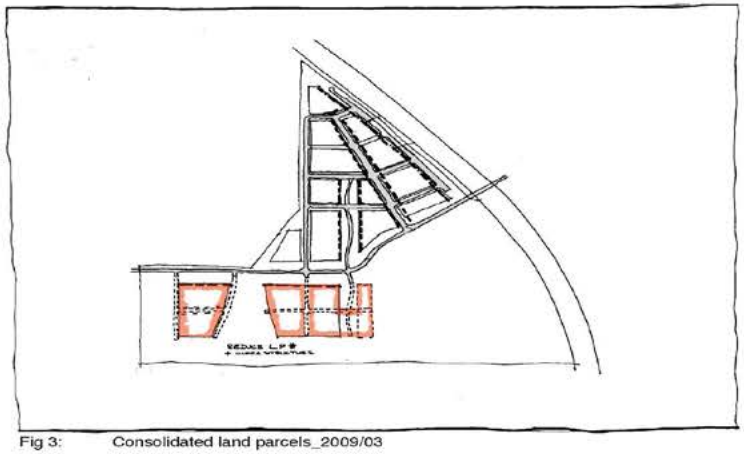


Fig 3: Consolidated land parcels_2009/03

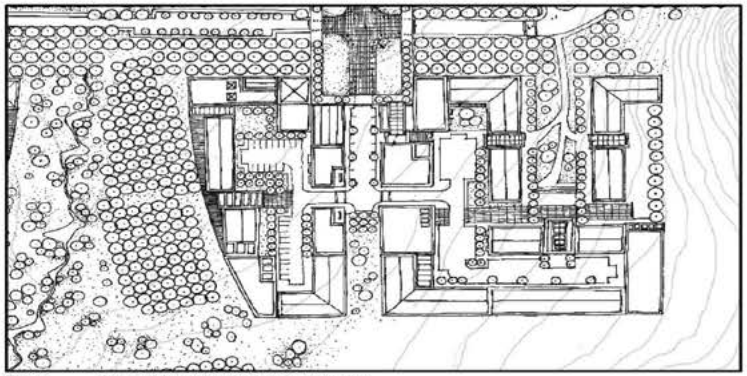


Fig 4: Consolidated land parcels_2009/03

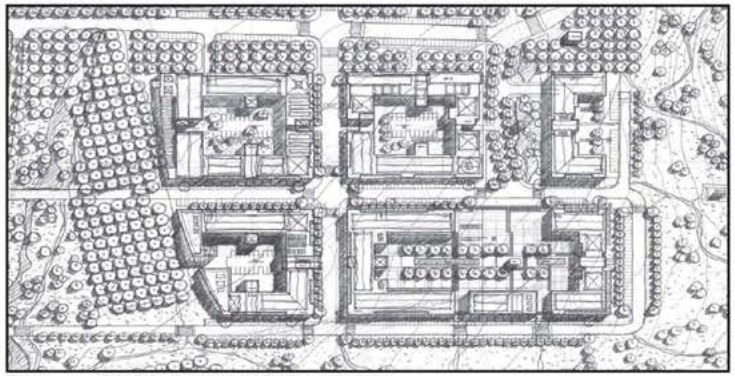


Fig 5: Possible, future sub-division_2003/08

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3_Considerations within the framework:

3.2_Land parel robustness:

- Land parcel arrangement influenced by a change in tenant requirements.
- Consolidation of land parcels 15, 16, 21 and 22 (previous arrangement), into larger land parcel 16.
- Consolidation of land parcels 17 and 20 (previous arrangement), into larger land parcel 17.
- Consolidation of land parcels 18 and 19 (previous arrangement), into larger land parcel 18.
- Increase in land parcel sizes allows for the Innovation Hub to accommodate larger footprints and research based requirements.

Fig 6: Land parcel robustness_2009/03

KEY: LAND PARCEL ROBUSTNESS

	DEVELOPED LAND PARCELS: PHASE 1 COMPLETE
	CONSOLIDATED LAND PARCELS
	ERF BOUNDARY LINES
	LAND PARCEL BOUNDARY
	PREVIOUS LAND PARCEL BOUNDARIES_NOW CONSOLIDATED

Area Schedule		
Land Parcel	LP area	Allowable Bulk
1	6224.90	4990.35
2	6519.40	5177.7
3	4879.40	4125.67
4	10254.30	8206.19
5	8055.50	6295.18
6	6357.60	5295.82
7	4153.20	4837.52
8	10122.40	8126.36
9	6560.40	5151.6
10	10418.20	7745.82
11	5611.84	6181.76
12	6470.10	4758.18
13	6560.40	5151.6
16	24545.28	17904.24
17	14164.83	10035.19
18	19273.09	13990.10
TOTAL	160173.84	120988.75

Table 1: Allowable bulk 2009/03

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3_Considerations within the framework:

3.3_Street network:

A Network of Streets gives order and structure to a city or precinct. The object is not only to facilitate communication, but also to help people know where they are in their precinct in relation to the larger community, and to the larger region.

SYNERGY WITH THE REGION

Exchange and interaction, facilitated by regional connections and legible landmarks is vital to the success of The Innovation Hub Development.

To achieve maximum integration on a regional scale connect:

- University Pretoria area to CSIR
- Ensure that this new east/west connector is fed by as many street connections as possible.
- Freeway access directly onto the site would ensure development sustainability. This process would be driven by traffic engineers.

The Local Network of Streets

- The network of streets re-enacts the street system found in well functioning cities
- Facilitates case of movement
- Provide for a variety of road users – pedestrians, vehicles, cyclists and heavy trucks
- The grid a tool to create a hierarchy of streets
- Provides a tool for phasing. A microcosm of the complete development can be achieved within a grid pattern.

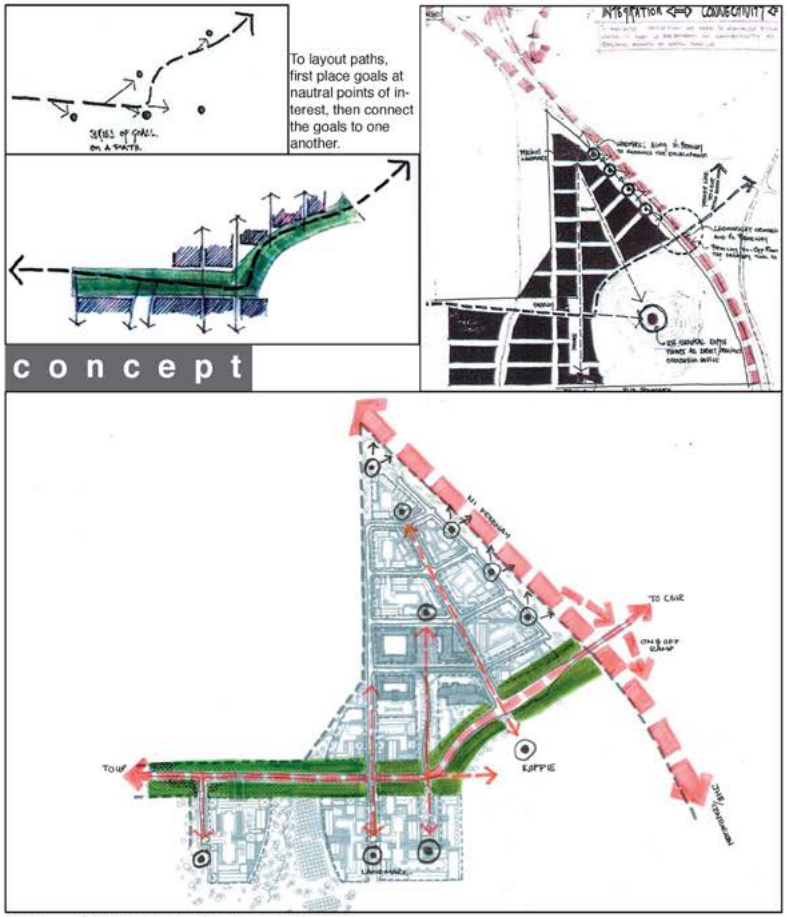


Fig 7: Concept sketches: Street network_2003/08

3_Considerations within the framework:

3.3_Street network:

- Principles of an integrated street network are still relevant and adhered to.
- Land parcel consolidation makes for reduced street access requirements to Land Parcels 16, 17 and 18 - reduced infrastructural expenditure.
- Southern section of Sydney Brenner drive (snake road) + intersection omitted: now an exclusively pedestrian path.
- Roads connecting LP16, 17 and 18, to the Main, East-West, connector: to extend far enough in order to allow for subdivision.

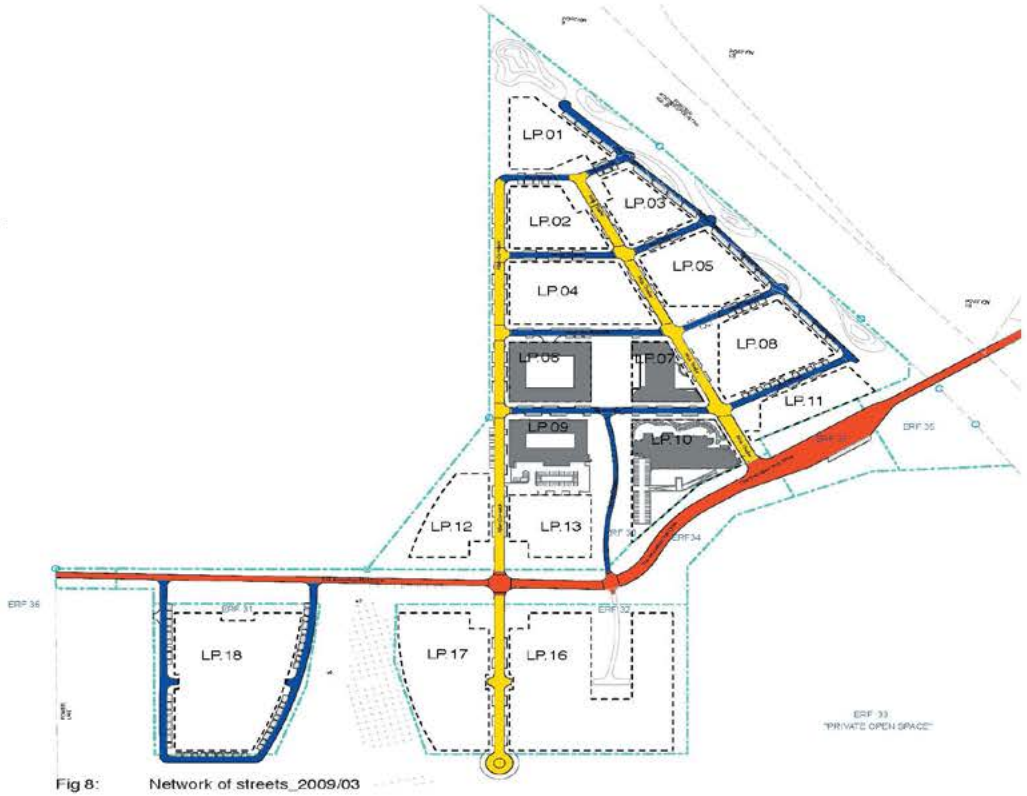


Fig 8: Network of streets_2009/03

KEY: STREET NETWORK

	PRIMARY CONNECTOR
	SECONDARY CONNECTOR
	TERTIARY CONNECTOR
	PEDESTRIAN ROUTE
	LAND PARCEL BOUNDARY LINES
	ERF BOUNDARY LINES

3_Considerations within the framework:

3.4_Access and legibility:

The most successful environments in cities are those that have the best global integration, and a strong interaction with surrounding communities.

LANDMARKS

The size of the Innovation Hub site, together with its relative in-accessibility makes physical and visual connections from the outside as well as from within the development important.

The use of Landmarks/Towers would facilitate orientation from within the development as well as from the outside.

Landmark towers to be positioned along the freeway to announce the development. The towers not only announce the development but provide distinction to the development to ensure that it is not misinterpreted as another Office Park Development.

Inside the development a variety of landmarks are proposed to ensure orientation.

The only natural landmark is the koppie to the south-east which should be further emphasised by placing a man made beacon ontop of it.

The network of streets is aligned towards the koppie as primary orientation device.

PATH, DESTNATION AND ENTRANCE

The site is shaped by the koppie and the connector street which links the University of Pretoria with the CSIR.

These two elements also prevent the development from having a unified spatial identity, as they devide the site.

To ensure a sense of place, a sense of arrival and enforce a sense of identity, the development is given a large entrance foyer by way of a forest.

The forest becomes the link and threshold to the development.

To enforce the concept of boundaries and thresholds in the precinct, mark the major entry points with gateways or landmark buildings.

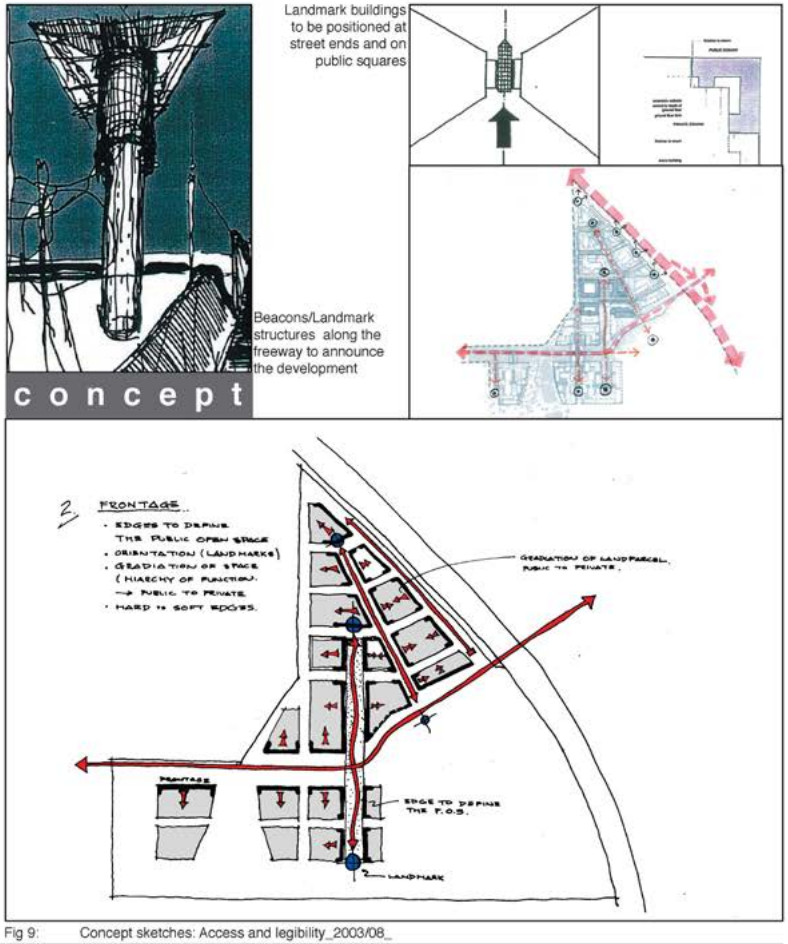


Fig 9: Concept sketches: Access and legibility_2003/08_

3_Considerations within the framework:

3.4_Access and legibility:

- Access into buildings to occur off street, not from within courtyard.
- Main entrances into buildings to be situated along the most prominent road/connector or communal space which borders the relevant land parcel.
- Vehicular entrances off of least prominent road/ connector (i.e. tertiary or secondary connectors).
- Hatch indicative of a defined edge condition which relates toward the most prominent communal spaces and streets.
- Full perimeter blocks are not a requirement as per previous UDF.

Fig 10: Access and legibility_2009/03

KEY: ACCESS AND LEGIBILITY

	USER / VISITORS ENTRANCE
	DEFINED EDGES
	VEHICULAR ENTRY
	USER / VISITORS ENTRANCE
	LAND PARCEL BOUNDARY LINES
	ERF BOUNDARY LINES

3_Considerations within the framework:

3.5_Definition of communal space:

Public open space concern people as whole. They are places with no copyright. People share them, benefit from them, they are the interface of human engagement.

DEFINING PUBLIC SPACE

Public open spaces are those outside the defined private realm. Public open space not only refers to the grid of streets, but also to the precinct squares, parks and natural landscape surrounding the development.

Good public space – squares and streets – has one important underlying characteristic, they have definition, they have boundaries usually buildings or walls of some sort or another, that clearly communicate where the edge of the street or square are, that set the public pace apart, that keep the eyes in the space, that make it a place.

THE GRID OF STREETS

The grid of streets becomes the link for all public open space.
Provides the link between public squares and parks.
The grid is not monofuctional or exclusive but for all users.
No segregation of use, used by all – pedestrians, cyclist and vehicles.
The street becomes the network of exchange.

PEDESTRIAN PRIORITISATION

Too often in our cities the street becomes the exclusive domain of the car. Urban environments do not allow for a mixture of uses due to the dominance the car enjoys. All urban users should be allowed equal access to, and use of the street system.

To encourage pedestrian use streets must be easy for them to cross:

- Provide safe crossing points
- Make crossings a visually prominent as possible
- Minimise street widths at crossing
- All crossings should cater for handicapped people
- Introduce elements which reduce vehicle speed at crossing points.

LARGE PARKS

Large parks happen on the edge of the local districts and accommodate recreational facilities for example hiking paths and cycle tracks.
Contained within these open spaces will be the larger infrastructural requirements, for example stormwater.
The larger green areas are the border to the development and play an important role to define the development. They not only provide for recreation but also become an element of identity.
The 'koppie' provides the ideal natural escape for tenants and surrounding land users. Access to the 'koppie' should be provided, with walks and paths which invite broader use.
The forest which projects through the precinct becomes the gateway to the development.

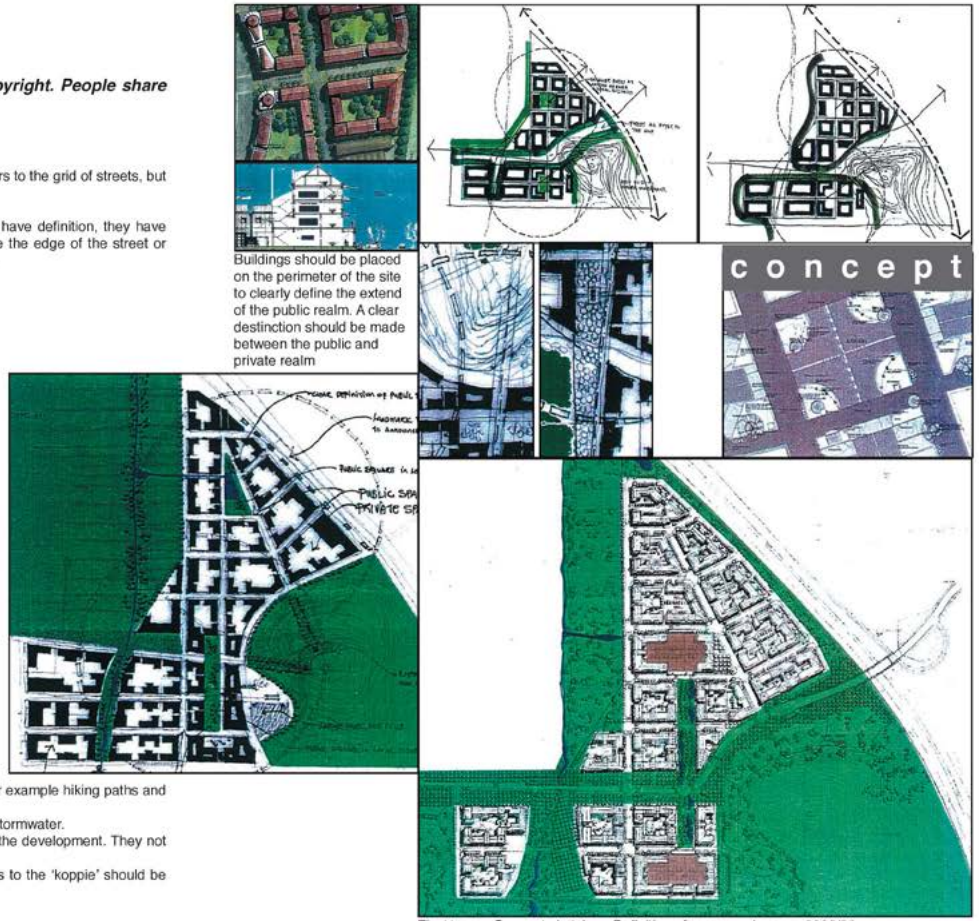


Fig 11: Concept sketches: Definition of communal space_2003/08

3_Considerations within the framework:

3.5_Definition of communal space:

- Green foyer to stretch along primary/main connector.
- Edge definition, as per 2.3, to be used in order to define all shared and communal spaces, for example:
  - snake road shared space
  - green foyer along main connector
  - shared street spaces.
- green, naturally vegetated veld and 'koppie' to act as green buffer zone between the development and it's surroundings.

Fig 12: Definition of communal space_2009/03

Fig 13: Green Threshold into the site_2003/08

KEY: DEFINITION OF COMMUNAL SPACE

	NATURAL SURROUNDING VEGETATION
	GREEN THRESHOLD INTO DEVELOPMENT
	CENTRAL, GREEN FOYER SPACE
	DEFINED EDGES
	LAND PARCEL BOUNDARY LINES
	ERF BOUNDARY LINES

3_Considerations within the framework:

3.6_Edge definition and legibility:

A work of architecture to be civic, must be places with some kind of tradition so that it can represent that tradition to us. But at the same time it must represent the continuing vitality of that tradition.

How do we make buildings that are memory and invention at the same time.

THE BUILDING

Building Functions

The buildings vary in scale and function, relating to their location with a land parcel and the larger local district. Many are multifunctional reflecting the desire on the part of the Developer to create a functioning mixed-use town.

Higher mixed use will be positioned around places of highest interest to the pedestrian.

Corporate developers and larger building typologies will be placed on the edge of the development, either facing the freeway or to the south of the development facing.

Building Typologies

Buildings adhere to the perimeter block concept. The objective being to use the architecture to define the edges of the public domain.

In order to permit the prime outer faces to be active and pedestrian friendly services to the building will happen from within the courtyards.

The use of perimeter blocks ensures continuity of the street walls, besides creating a more cohesive public face.

Build to lines, encroachment lines and setbacks

The intent of build-to lines is to achieve visual continuity of the street facades and those around public squares.

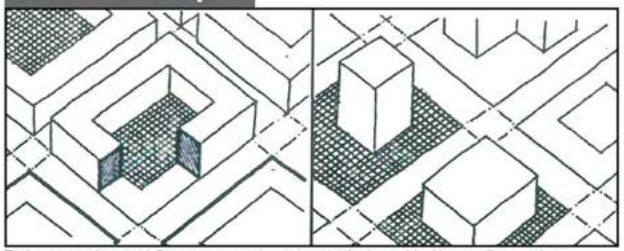
No less than 50% of the buildings street-facing façade must therefore lie on this line.

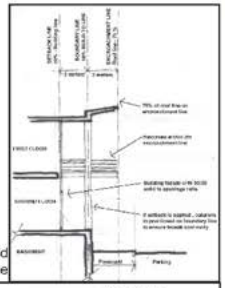
A 2 meter setback line is provided on all land parcels.
- No more than 50% of the street facing façade may be constructed on this line.
- If the setback is applied, the visual continuity of the façade must be ensured by the use of columns.

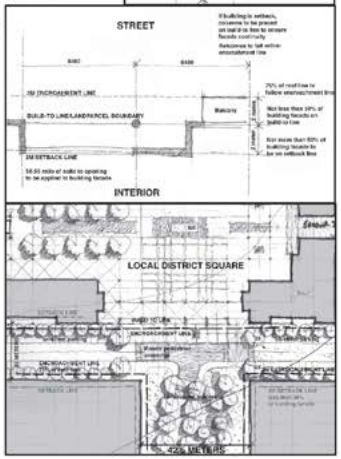
A 2 meter encroachment line is provided on all land parcels.
- Balconies and entrance canopies are not allowed to encroach the 2meter line
- The encroachment is a 75% roof-build-to-line. No less than 75% of the roof must be constructed to the encroachment line.

Defining the public and private realms

concept


Perimeter typology to define open space in contrast to the inward-looking pavilion typology


Setback and encroachment line



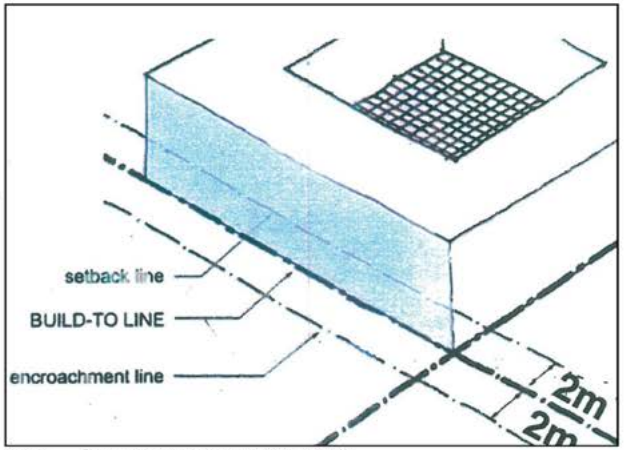


Fig 14: Concept sketches: Edge definition_2003/08

3_Considerations within the framework:

3.6_Edge definition and legibility:

- Freestanding landmarks positioned within the green buffer zones and veld surrounding the development: freestanding landmarks to act as termination points along the secondary connector routes.
- Integrated landmarks to be positioned as indicated and to serve the purpose of generating visual connections between points of interest.
- Landmark assist in the means of human orientation.
- Definition of edges vital.
- Although a landmark could be interpreted as tenant signage, landmark may not be advertising related.

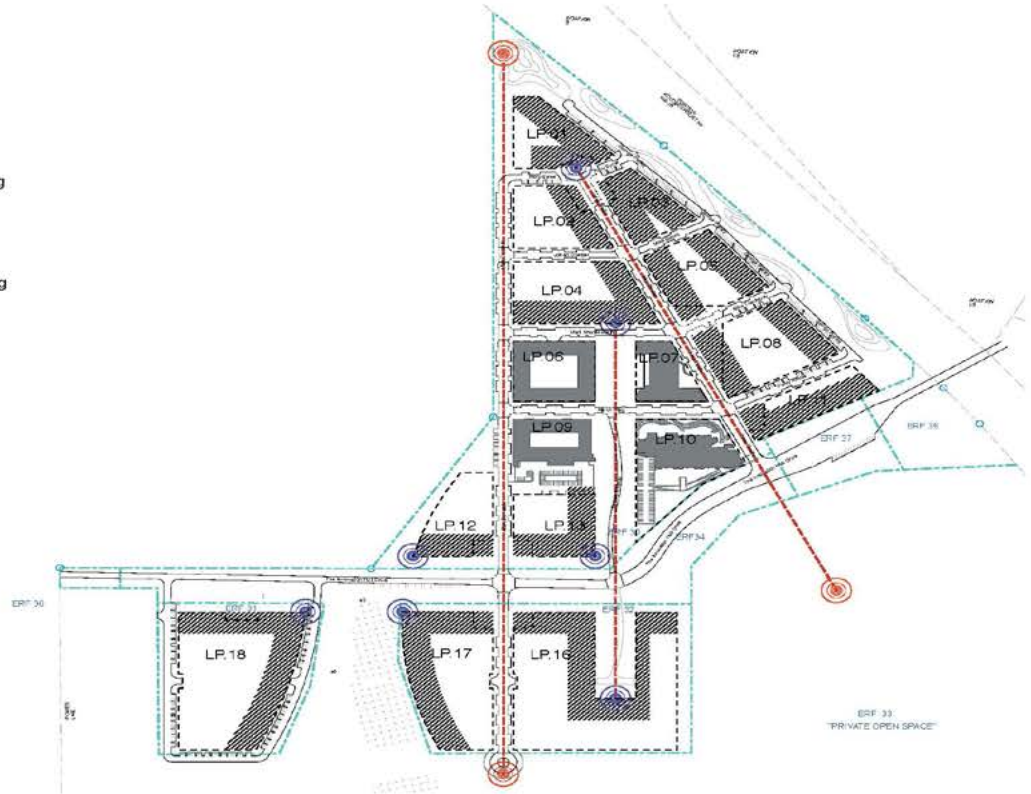


Fig 15: Edge Definition and legibility_2009/03

KEY: EDGE DEFINITION AND LEGIBILITY

	DEFINED EDGES
	LANDMARK: NATURAL OR LANDSCAPE INTERVENTION
	LANDMARK: ARCHITECTURALLY INCORPORATED
	MAIN AXIS'
	LAND PARCEL BOUNDARY LINES
	ERF BOUNDARY LINES

4) Layers of implementation:

4.1 Cluster identification
4.2 Cluster foyer identification
4.3 Redefined communal space network
4.4 Edge definition
4.5 Tenant identity and legibility
4.6 Coverage and building placement zones
4.7 Parking and access
4.8 Bulk allocation and phasing
4.9 Land-use allocation
4.10 Architectural guidelines

4_Layers of implementation:

4.1_Cluster identification:

- Related companies / institutions are grouped together.
- Sharing of facilities promoted within cluster.

Fig 16: Cluster identification_2009/04

KEY: CLUSTERS

	ENERGY CLUSTER
	ICT CLUSTER
	RESEARCH / MANUFACTURING CLUSTER
	BIO-TECH CLUSTER
	TRANSPORT

4_Layers of implementation:

4.2_Cluster-foyer identification:

- Relating directly to the cluster-concept, a series of nodes have been identified across the site.
- Each node forms a central point to a specific cluster.
- These nodes are to be promoted as either activity centres or village greens.
- Routes in-between nodal points to be promoted as activity spines.
- Activity nodes and spines to inform land-use allocation.
- Each node to be developed as a foyer to the relevant cluster.
- Sharing of facilities are therefore promoted across clusters, which in turn enriches the concept of the activity spines connecting the clusters.

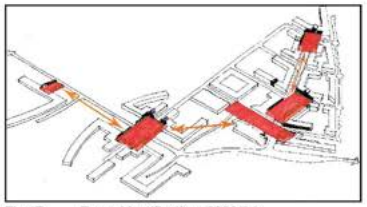


Fig 17: Foyer identification_2009/04

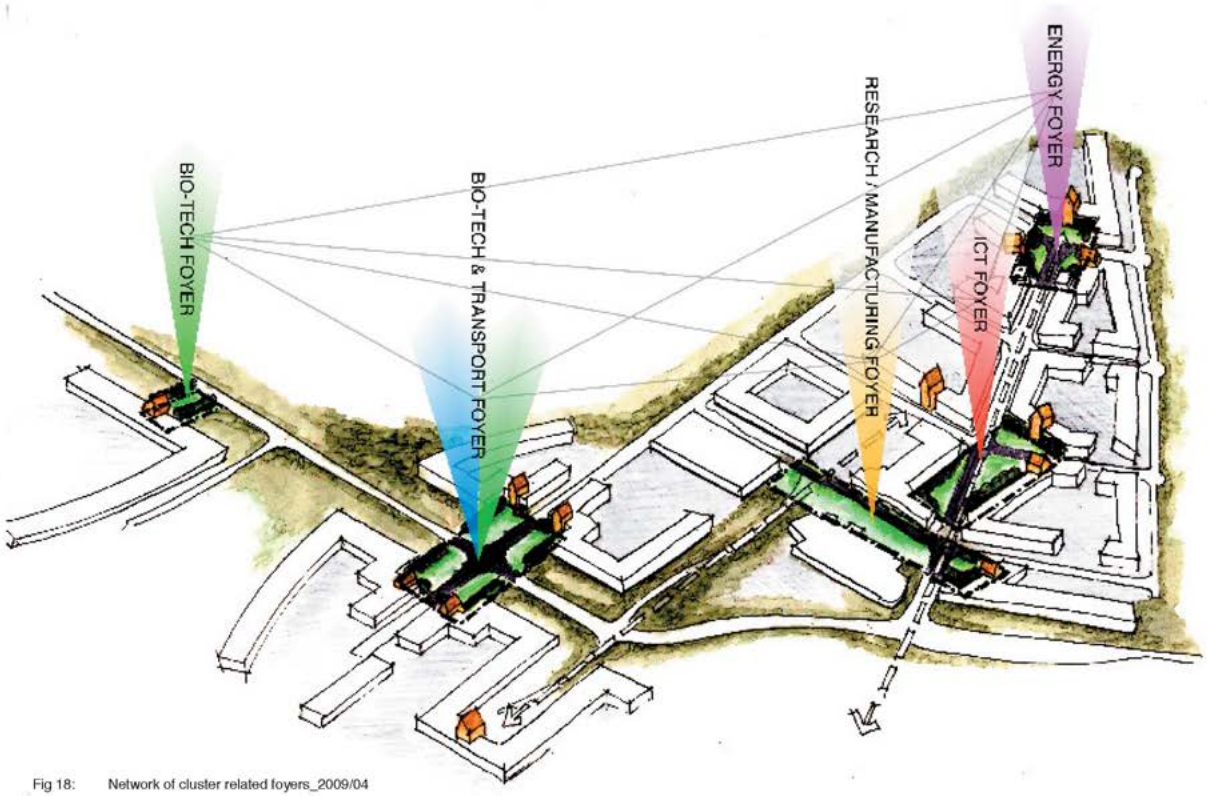


Fig 18: Network of cluster related foyers_2009/04

4_Layers of implementation:

4.3_Redefined communal space network:

- Cluster-foyers enhancing the communal space network across the site.
- The network of foyers enhancing the green structure within the development

Fig 19: Redefined communal space network_2009/04

4_Layers of implementation:

4.4_Edge definition:

- Well defined edges along communal spaces and roads for an enhanced sense of place.
- Foyer concept strengthened through well defined;
  - built edges,
  - soft landscaping, and
  - hard landscaping, within foyers.

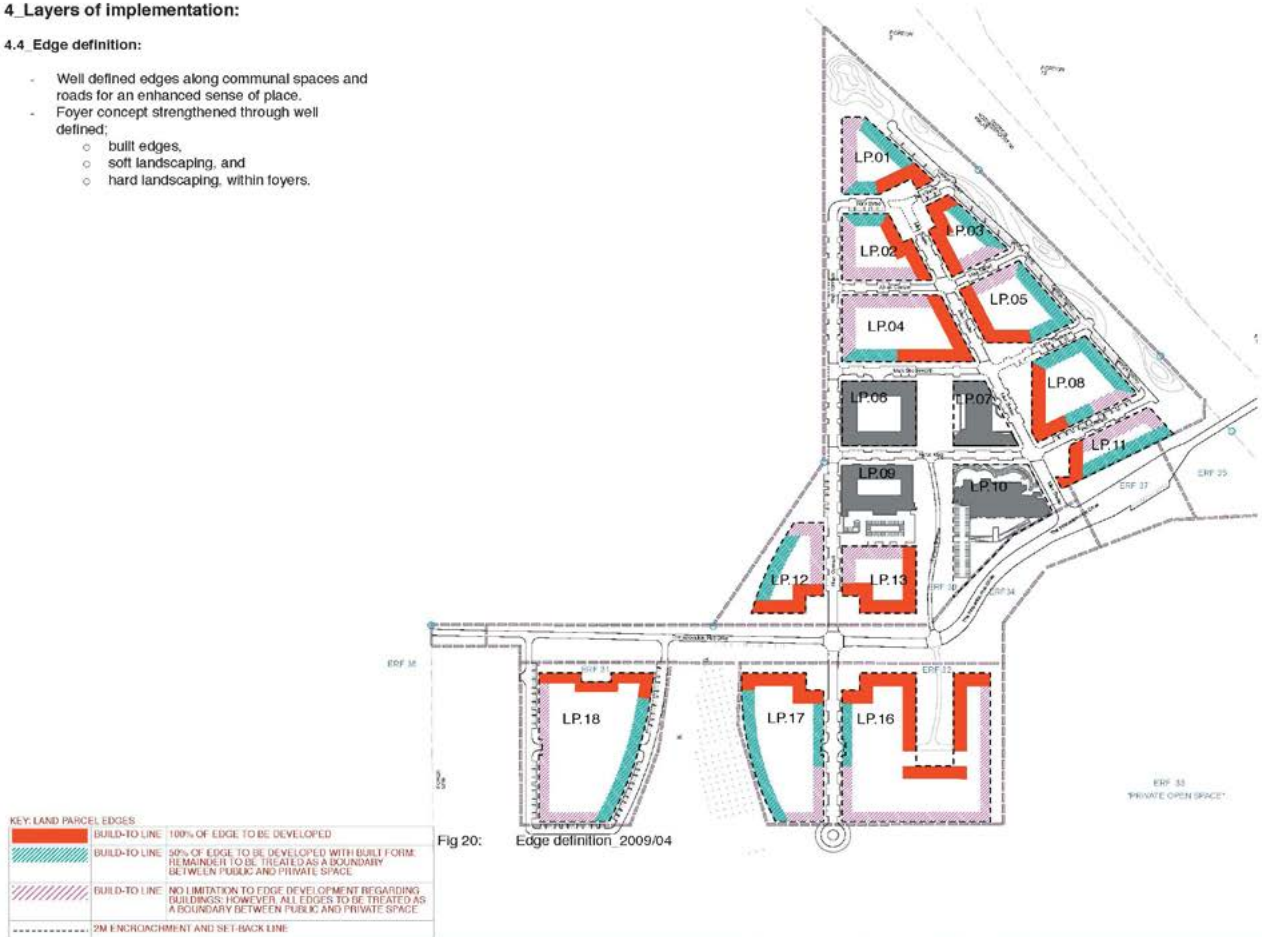


Fig 20: Edge definition_2009/04

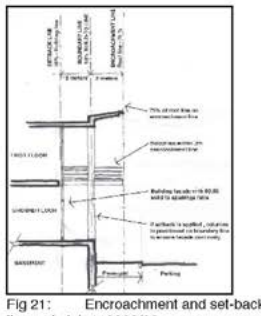


Fig 21: Encroachment and set-back lines: sketch 1_2003/08

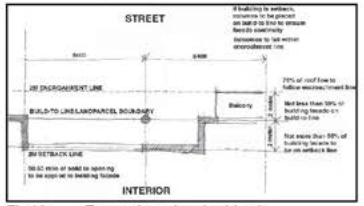


Fig 22: Encroachment and set-back lines: sketch 2_2003/08

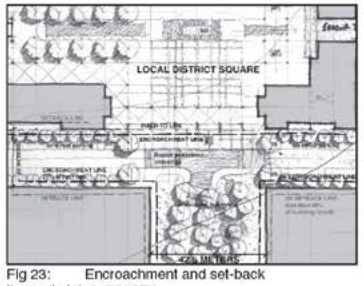


Fig 23: Encroachment and set-back lines: sketch 3_2003/08

4_Layers of implementation:

4.5_Tenant identity and legibility:

- Legibility of the site enhanced through:
  - Framed landmarks, both architectural and those that form part of the natural landscaped.
  - Well-defined visual axis'.
  - Architecturally incorporated beacons: to define entry into foyer spaces, and also as a tool to frame certain vistas.
  - Cluster identity: Each cluster to have its own identity. This is achieved through:
    - Wayfinding principles (signage, iconography, etc.)
    - Street furniture.

KEY: IDENTITY AND BUILDING APPLICATION

	CLUSTER OR TENANT RELATED IDENTITY
	CLUSTER OR TENANT RELATED IDENTITY
	CLUSTER OR TENANT RELATED IDENTITY
	CLUSTER OR TENANT RELATED IDENTITY
	CLUSTER OR TENANT RELATED IDENTITY
	LANDMARK: ARCHITECTURALLY INCORPORATED
	LANDMARK: NATURAL, OR LANDSCAPE INTERVENTION

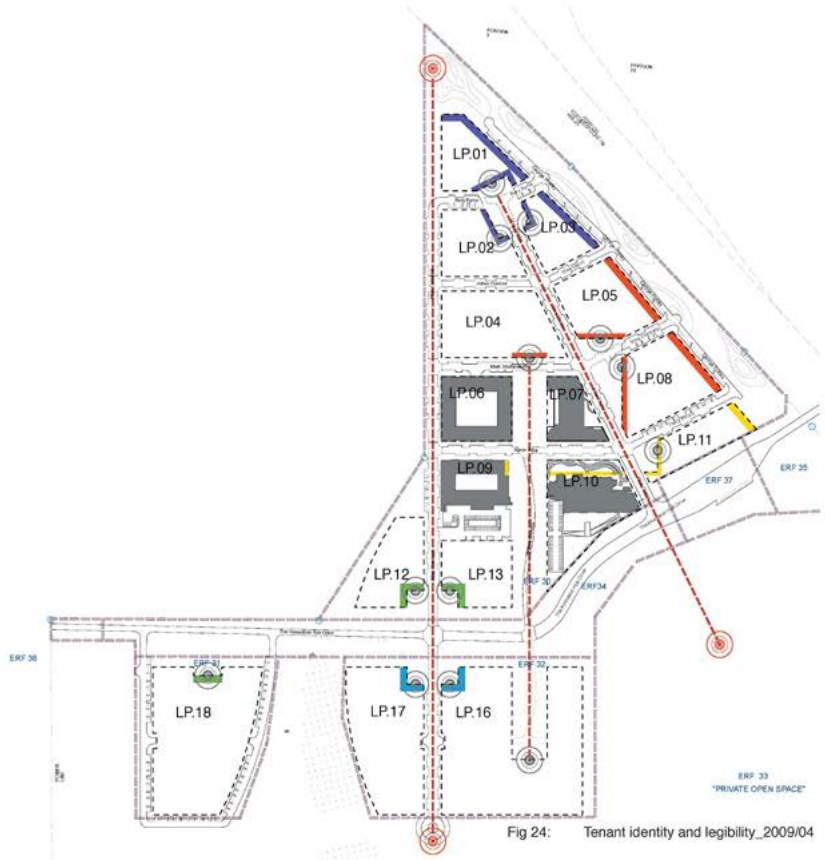


Fig 24: Tenant identity and legibility_2009/04

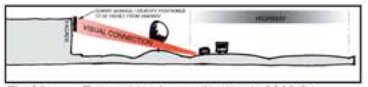


Fig 25: Tenant identity application 1_2009/04

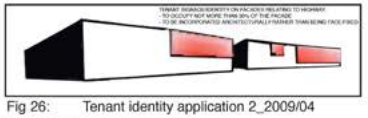


Fig 26: Tenant identity application 2_2009/04

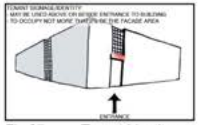
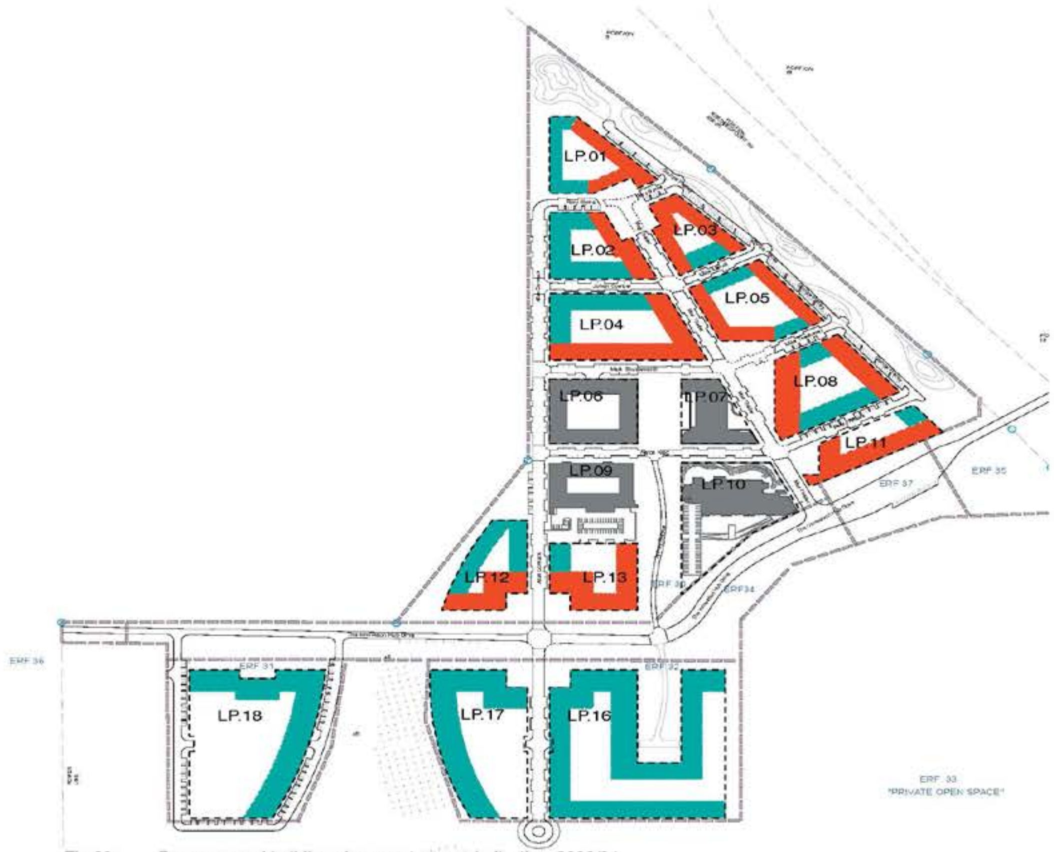


Fig 27: Tenant identity application 3_2009/04

4_Layers of implementation:

4.6_Coverage and building placement zones_ indicative:

- Perimeter buildings, not pavilion style buildings:
  - Full perimeter not required:
    See: 3.8_Bulk allocation



KEY: COVERAGE AND BUILDING APPLICATION: INDICATIVE

Key	
(teal)	PROPOSED TWO STOREY EDGES
(red)	POSSIBLE THREE STOREY EDGES

Fig 28: Coverage and building placement zones: indicative_2009/04

Area Schedule					
Land Parcel	LP area	Allowable Bulk	Allowable Height in Storeys	Allowable Coverage (%)	Allowable Footprint
1	6226.90	4991.66	3.0	40%	2659.36
2	6519.40	5177.7	3.0	40%	2607.76
3	4579.40	4125.57	3.0	40%	1951.76
4	10254.30	8209.19	3.0	40%	4101.72
5	8055.50	6265.16	3.0	40%	3222.2
6	6357.60	5095.60	3.0	40%	2543.04
7	4150.00	4607.52	3.0	40%	1660.00
8	10120.40	8125.34	3.0	40%	4048.16
9	6560.40	5151.6	3.0	40%	2624.16
10	10416.20	7749.60	3.0	40%	4166.48
11	5611.84	6141.76	3.0	40%	2244.736
12	6420.10	4750.16	3.0	40%	2568.04
13	6560.40	5151.4	3.0	40%	2624.16
16	24545.28	17904.24	2.0	40%	9818.112
17	14164.61	10335.19	3.0	40%	5665.863
18	19273.09	13960.10	2.0	40%	7709.236
TOTAL	150173.84	120848.78		40%	[illegible]

Table 2: Allowable coverage_2009/03

4_Layers of implementation:

4.7_Parking and access:

- See table for requirements

Fig 29: Parking and access_2009/04

KEY: PARKING AND ACCESS

	STREET PARKING
	COURTYARD PARKING
	VEHICULAR ACCESS INTO COURTYARD

Land Parcel	LP area	Allowable Bulk	Allowable Height in Storeys	Allowable Coverage (%)	Allowable Footprint	Parking 5/100m²	Courtyard Bays 70% max coverage	Street Bays	footprint basements	super basements	total bays per LP
1	6224.90	4993.85	3.0	40%	2489.96	225		31		207	238
2	6519.40	5177.7	3.0	40%	2607.76	233		36		217	253
3	4879.40	4125.67	3.0	40%	1951.76	186		41		163	204
4	10254.30	8209.19	3.0	40%	4101.72	369		37		342	379
5	8055.50	6265.18	3.0	40%	3222.2	282		42		269	311
6	6357.60	8295.82	3.0	40%	2543.04	373	0	25	274		299
7	4158.20	4637.52	3.0	40%	1663.28	209	0	14	151		165
8	10122.40	8120.36	3.0	40%	4048.96	366		43		337	380
9	6560.40	5151.6	3.0	40%	2624.16	232	89	12	423		524
10	10416.20	7749.82	3.0	40%	4166.48	349	50	7	44		101
11	5611.84	6141.76	3.0	40%	2244.736	276		32		187	219
12	6470.10	4758.18	3.0	40%	2588.04	214		21		216	237
13	6560.40	5151.6	3.0	40%	2624.16	232		6		219	225
16	24545.28	17904.24	2.0	40%	9818.112	806	344	10	327		681
17	14164.83	10335.19	2.0	40%	5665.932	465		10		472	482
18	19273.09	13960.10	2.0	40%	7709.236	628		111		642	753
TOTAL	150173.84	120966.78		40%	60069.536	5444	483	478	1219	3271	5451

completed landparcels

Table 3: Parking requirements_2009/03

Note: according to the above calculations, a ratio of 5 parking bays per 100m² is achieved.

The above calculations take into account the following:
- 70% courtyard coverage
- Increased street parking,
- A lettable area of 90% per building
- Basements that relate to building footprints for land-parcel 16 (no super-basements).

4_Layers of implementation:

4.8_Bulk allocation and phasing:

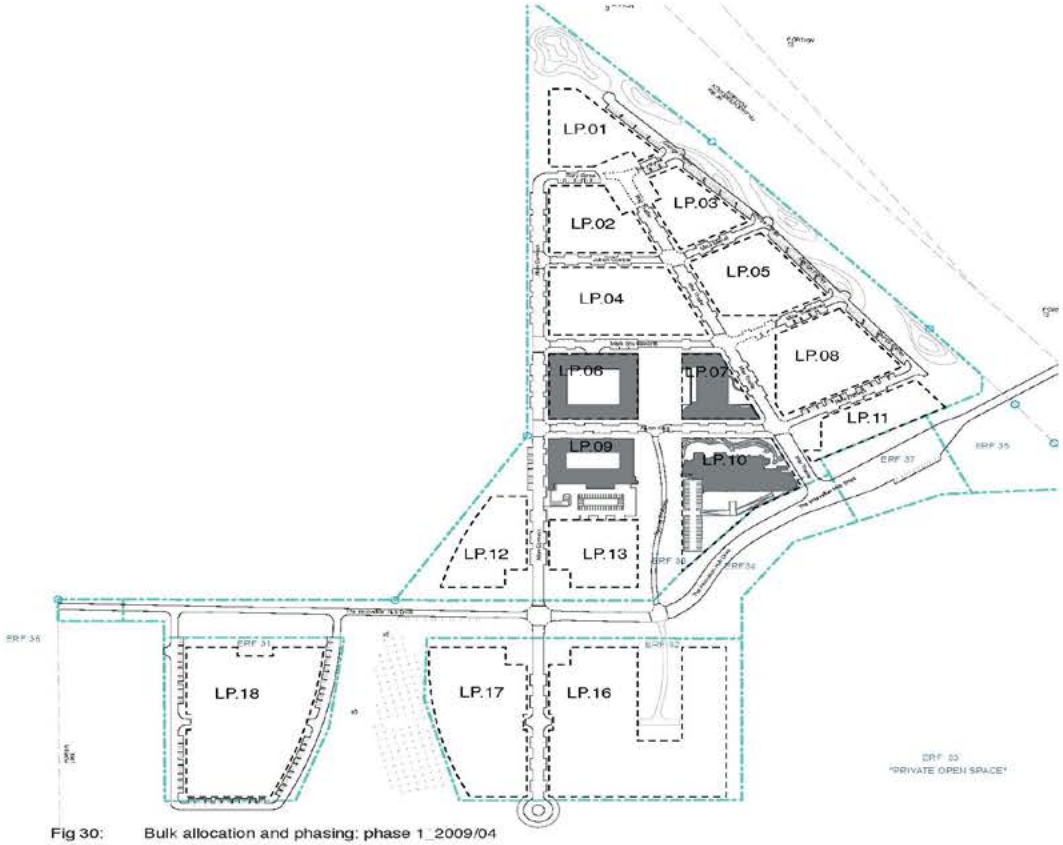


Fig 30: Bulk allocation and phasing: phase 1_2009/04

KEY: PHASING

PRIOR 2009 - COMPLETE | LP'S 06, 07, 09, & 10

4_Layers of implementation:

4.8_Bulk allocation and phasing:

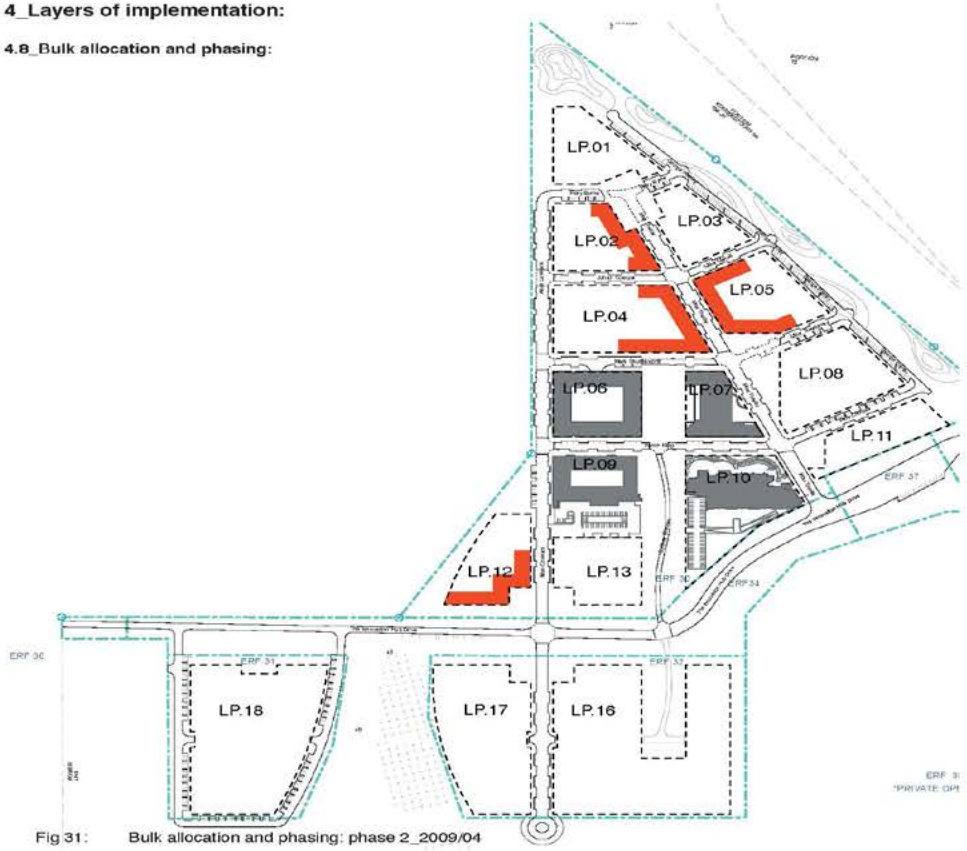


Fig 31: Bulk allocation and phasing: phase 2_2009/04

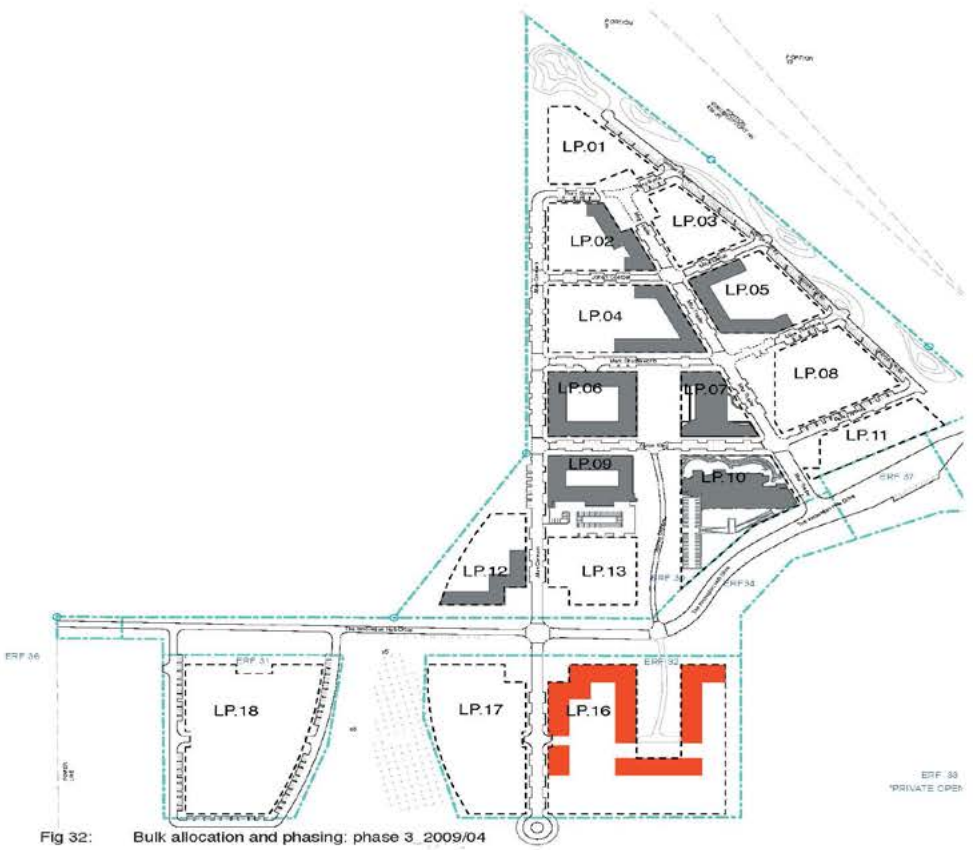


Fig 32: Bulk allocation and phasing: phase 3_2009/04

KEY: PHASING

	PRIOR 2009 - COMPLETE	
	YEAR 2010	LPS 02, 04, 05, & 12

KEY: PHASING

	PRIOR 2010 - COMMENCED	
	YEAR 2011	LPS 16

4_Layers of implementation:

4.8_Bulk allocation and phasing:

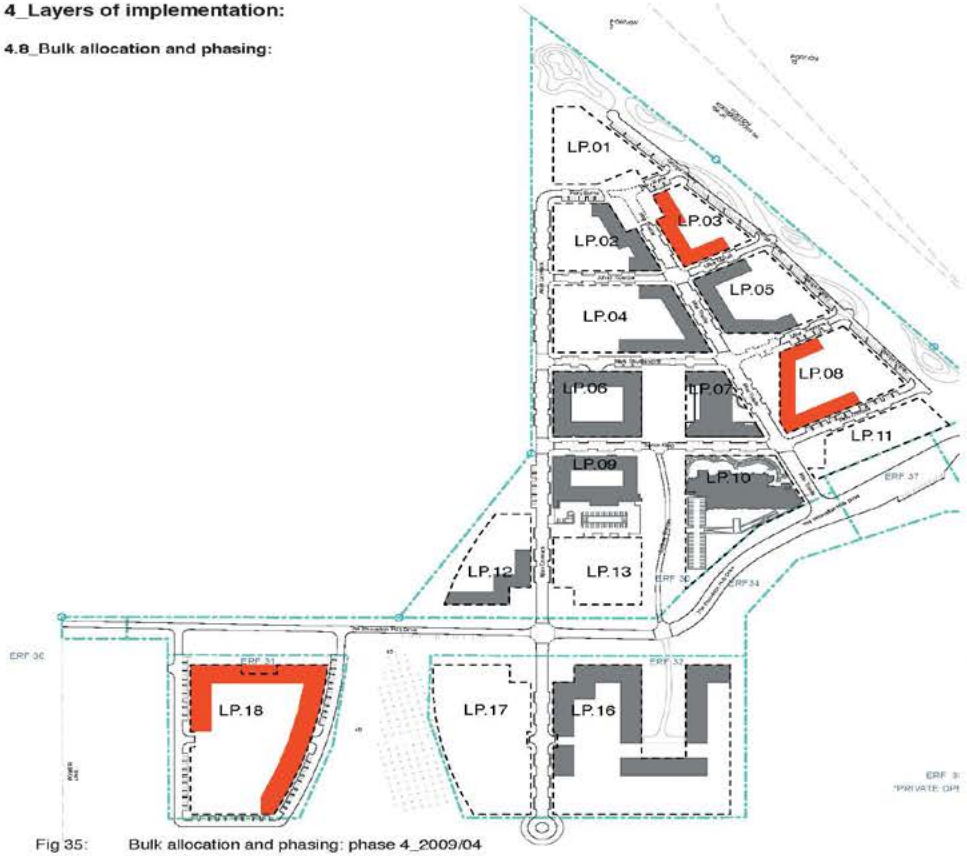


Fig 35: Bulk allocation and phasing: phase 4_2009/04

KEY: PHASING

	PRIOR 2011 - COMMENCED	
	YEAR 2012	LP'S 03, 08, & 16

4_Layers of implementation:

4.8_Bulk allocation and phasing:

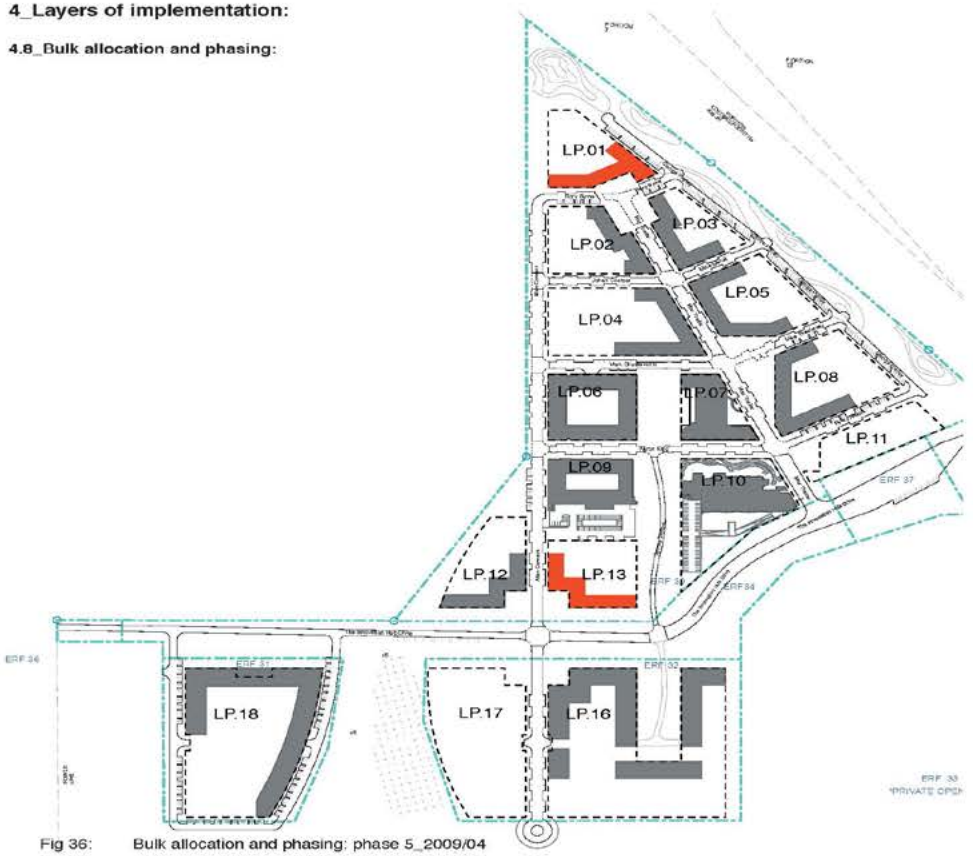


Fig 36: Bulk allocation and phasing: phase 5_2009/04

KEY: PHASING

	PRIOR 2012 - COMMENCED	
	YEAR 2013	LP'S 13 & 01

4_Layers of implementation:

4.8_Bulk allocation and phasing:

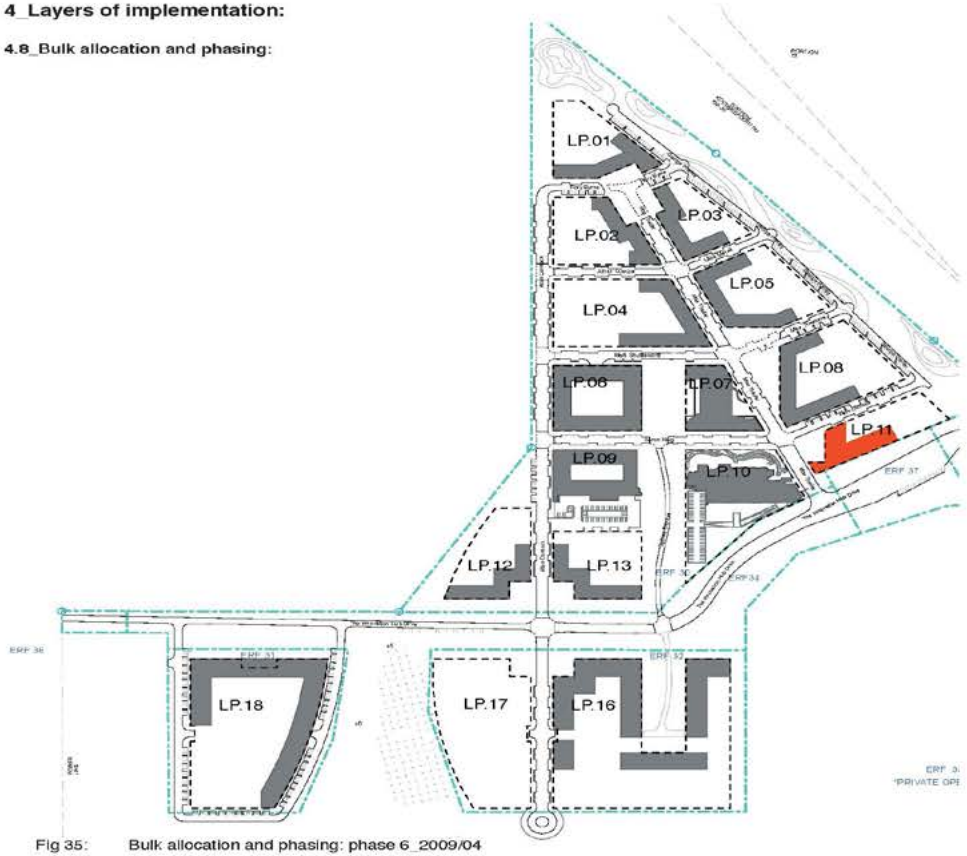


Fig 35: Bulk allocation and phasing: phase 6_2009/04

KEY: PHASING

	PRIOR 2013 - COMMENCED	
	YEAR 2014	LPS 11

4_Layers of implementation:

4.8_Bulk allocation and phasing:

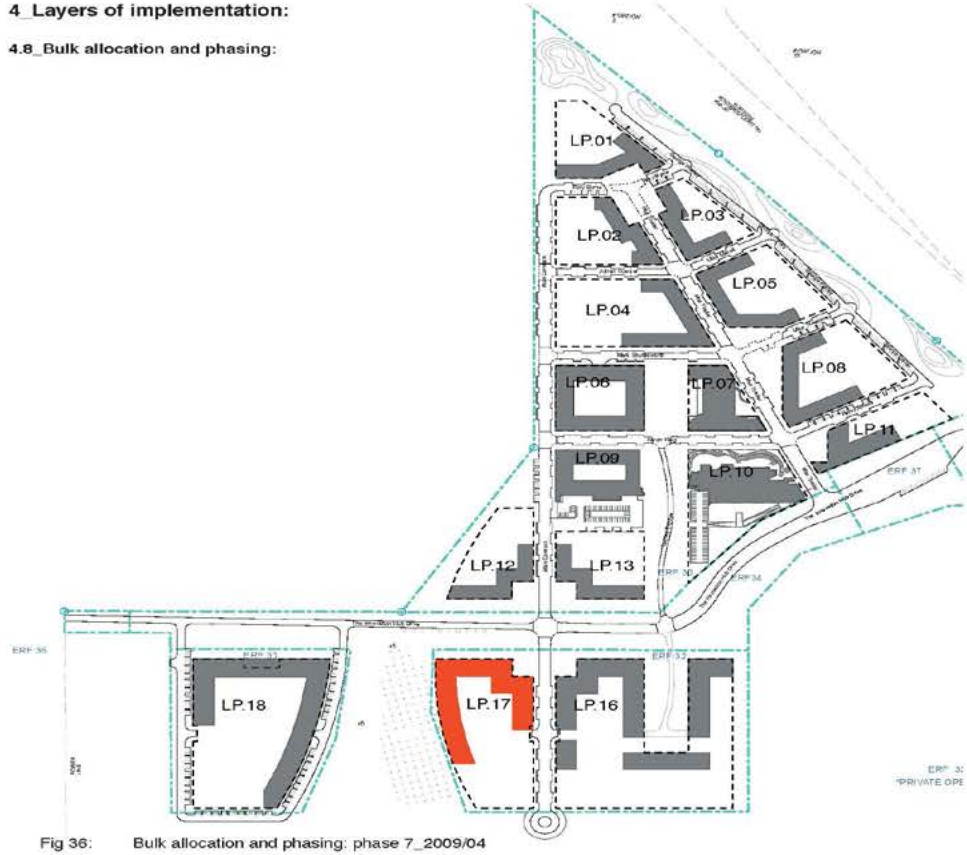


Fig 36: Bulk allocation and phasing: phase 7_2009/04

KEY: PHASING

	PRIOR 2014 - COMMENCED	
	YEAR 2015	LPS 17

4_Layers of implementation:

4.8_Bulk allocation and phasing:

Fig 37: Bulk allocation 2015: all stages commenced_2009/04

4_Layers of implementation:

4.8_Bulk allocation and phasing:

- Phasing of possible, additional bulk to be confirmed

Fig 38: Possible, additional future bulk: 2009_05

4_Layers of implementation:

4.9_Land-use allocation:

- Land-use allocation influenced by foyer and cluster concept.
- Land-uses promoted along appropriate building edges.
- Foyer spaces promoted as 'activity nodes':
  - Places of refreshment: all places of refreshment to be regarded as shared facilities and must relate directly to street or foyer space.
  - Shops: all shops to be share facilities and relate directly to street of foyer.
  - Exhibition spaces (where incorporated): relating to communal, foyer space.
  - All entrances into land parcels to occur from foyer spaces.
- Activity spines in-between foyers promoted for shared facilities:
  - Shops.
  - Incubator spaces: visible connection with road = exposure.
  - Childcare facilities.
- Functions that require less exposure and more privacy to be positioned along less active edges.

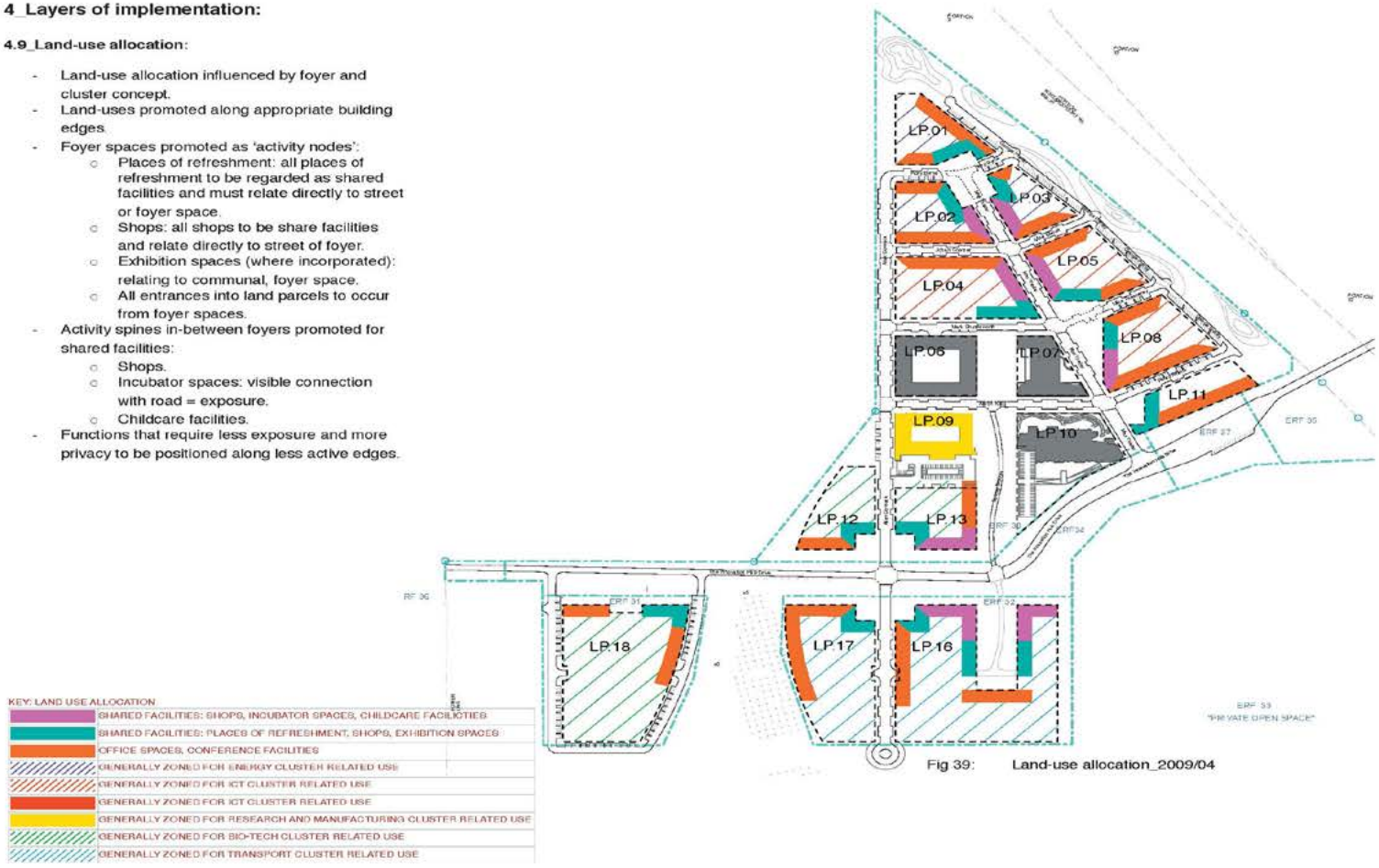


Fig 39: Land-use allocation_2009/04

A work of architecture to be civic, must be places with some kind of tradition so that it can represent that tradition to us. But at the same time it must represent the continuing vitality of that tradition.

How do we make buildings that are memory and invention at the same time.

Building Depth

Prefered building depths are based on a 8.4 meter grid which translates to a 16.8 meter depth.

The intention in urban design terms to providing building depth maximums is to increase the size of the private courtyard spaces.

Building Courtyards

Extension within the courtyard or private domain are permitted, provided they fall within the following limits.

- Depth of extensions may not exceed depth of ground floor.
- If an extension has openings facing across a boundary then a setback of 7,5 meter is prescribed.
- If an extension occurs on the boundary adjacent to a future building, the finishing of the façade must return the depth of the extension along the shared boundary.

Freeway edge

Along the N1 Freeway the build-to lines are set at 10 meters.
This would allow future tenants to create more formal landscapes infront of their building entrances, in accordance with the landscape code.
The 2 meter setback and encroachment line regulation still applies for these landparcels. (8m/12m)

2 meter high berms are provided along freeway boundary.

Building along the freeway have to provide beacons or landmark structures to announce the development. These landmarks should be integrated into the buildings.

Landmark towers or beacons will be positioned along the freeway to act as entrance gateways, both for the Innovation Hub and the City of Tshwane.

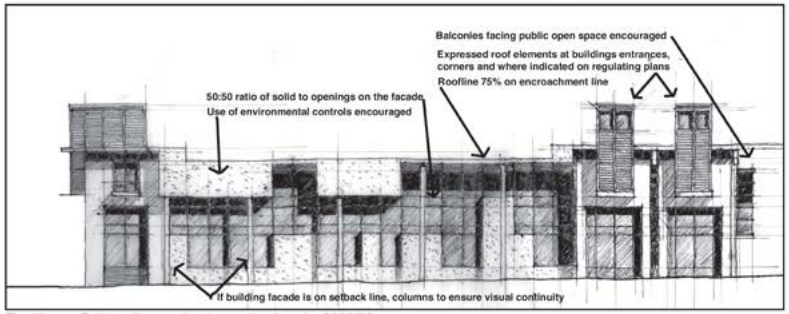


Fig 40: Build-to line application on the facade_2008/03

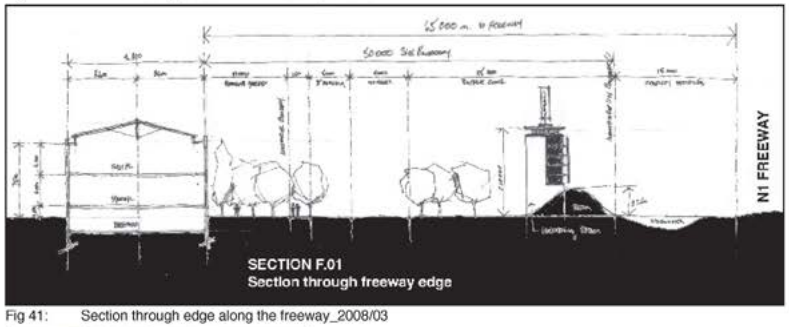


Fig 41: Section through edge along the freeway_2008/03

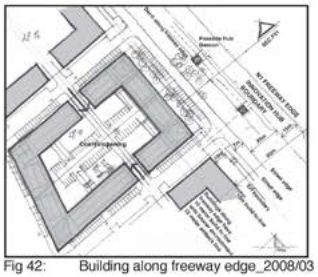
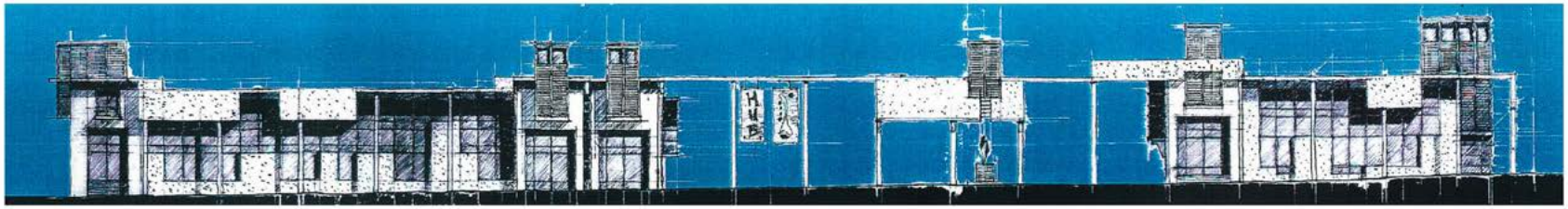


Fig 42: Building along freeway edge_2008/03



Building Robustness

Traditionally buildings in urban environments changed use whilst the public realm stayed constant and coherent. The combination and flexibility can be crated without discouraging investment or delaying in the public realm.

The fine grained grid proposed as well as the finer grained building typologies around the public squares give many options to phase and to mange the construction access.

The object is to promote the creation of robustness in building design. To developed buildings that respond to a current brief without compromising future potential.

- Structural flexibility is required, to accommodate varing space needs and loading.
- 'Hard Zones" (cores and services) must be located in plan so as not to restrict alternative uses of 'soft (functional) uses,
- Shallow plans must be built to maximise the use of natural lighting.
- Privacy between ground floor uses and public/pavement areas to be achieved through level changes.

Active Building Edges

Ground floor areas adjoining public spaces must be occupied by "active" rather than passive.

Main entrances to buildings to be off the public open space or street adge.

On-street parking to be provided for visitors

Balconies facing the public open space are required, as a means to achieve active street edges.

Building Facades

A façade contributes to urban amenity to the extent that it provides opportunities for interaction between public and private realms.

Facades must be made up of a number of individual elements which will enhance qualities of robustness and life, and assist with generating a separate identity for the building.

At the same time the façade must respect its location as component of the larger urban fabric, adding to the continuity of the street edge and cohesiveness of the whole.

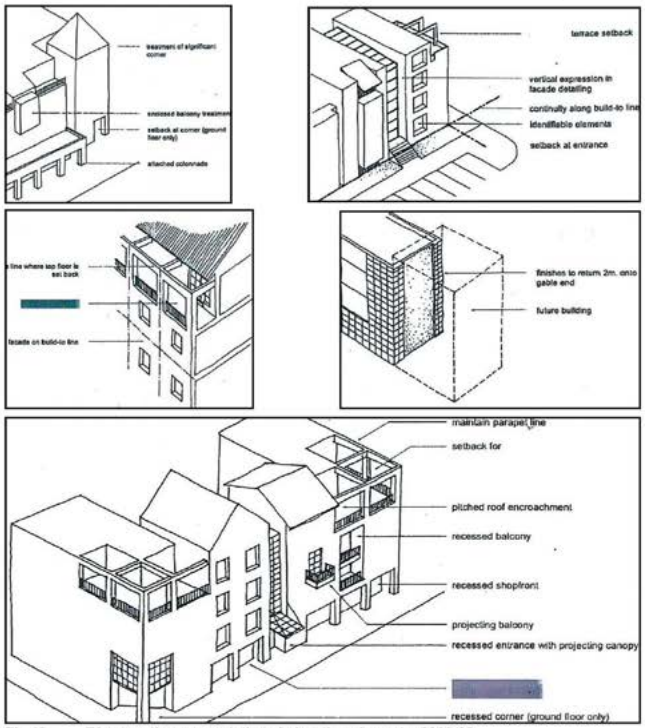


Fig 43: Diagramatic representation of elevation elements_2008/03

BUILDING DESIGN FACADES

To achieve well balanced compositions in which all elements are individually recognisable, and the whole acknowledges its position and role in the urban context.

	MATERIAL	CONFIGURATION	TECHNIQUE
FACADES	No specification to be material on the outer façade is made. Emphasis is made on the use of natural materials Paint colour to be predominantly shades of white with earth-colour highlights permitted. All other colours subject to approval	Facades facing streets to have an approx. 50:50 solid to opening rration. Not less than 50% of the building faced to be on build-to-line Setbacks and encroachments limit of 2 meter. Along freeway edge the build-to-line is set at 10 meters. Vertical expresson required in façade detailing Visually solid building bases are required In case of setback the façade facing street to be made continuous by use of columns Gable walls at boundaries must project a minimum of 0.5 meter above pitched roof Vertical controlling dimension will be shown on detail Land Parcel sheets and are to be used as minimum standard.	Wall and façade design to demonstrate high energy efficiency. Where a future building will be attached to the façade, the materials and finish must be returned onto the gable end for a minimum of 2.0 meter, and the balance of the wall must be finished in visually acceptable manner.
WINDOWS	Materials used not specified Mirror glass is not permitted	Facades facing streets to have an approx. 50:50 solid to opening ration. No continuous strip windows – individually identifiable elements required. Curtain walling only permitted with vertical proportion.	The percentage of openings may be increased on the top floor, where a limited horizontal strip glazing may be permitted subject to assessment panel approval
SHOPFRONT	Material used not specified Mirror glass is not permitted.	No continuous strip windows – individually identifiable elements required.	
ROOFS	Pitched – or flat roofs to be finished with material appropriate to the architectural character of the facades of the building. The dominant feature throughout is the roof line/ overhang 75% of the roof line to follow encroachment line Flat roofs to be trafficable	No specific roof configuration or type specified. Overhangs to encroachment line need not be solid. Can be pergola or other shading type structure. Sculptural roof elements permitted to enhance entrances or at landmarks situations ad identified in Urban Framework. Subject to assessment panel approval.	Where the roof is set back form a terrace, the normal eaves lin must be maintained using beams or pergolas as appropriate.
BALCONIES	As appropriate to design of the façade	Maximum projection to comply with encroachment lines for buildings. Must be a least 2.5 meter from adjoining building site boundary. May be closed, open, projecting or recessed – subject to limits of setback and encroachment lines, and required continuity of façade along build-to-lines.	The sue of balconies on street-facing facades is encouraged.
CANOPIES & COLONNAD	As appropriate to location and façade design. Retractable canopy systems permitted.	Encouraged for ground floor retail frontage. Maximum canopy projection to full width of pavement. Colonnades to be attached and to extend full width of pavement. Maximum height to underside of first floor slab.	Canopies may be cantilevered or supported by column structure – subject to assessment panel approval.

Table 4: Architectural codes_2003/08

A work of architecture to be civic, must be places with some kind of tradition so that it can represent that tradition to us. But at the same time it must represent the continuing vitality of that tradition.

How do we make buildings that are memory and invention at the same time.

AIMS OF THE ARCHITECTURAL GUILDELINES

The architecture has to forms part of a greater urban vision, but be reflective of the innovation that is the point of departure for the whole development.

The previous section of Rational 06 has focused on the urban guidelines, that provide regulations provide sufficient structure to the development as a whole as they regulate the larger scale massing of the various land parcels.

The continuity and unity of the Innovation Hub development is thus ensured and guarded by the urban codes, unlike traditional office park developments where the regulatory aspects focus on the architectural expression and have an ill defined urban framework.

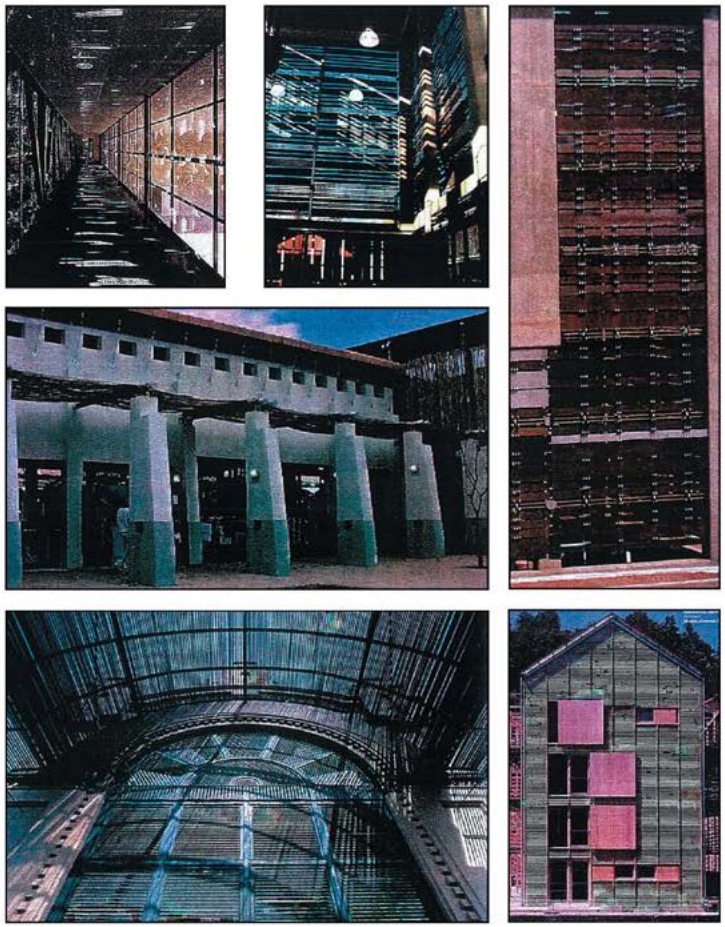
The aim of this section on architectural coding is to provide individual architects freedom to express themselves, within the boundaries of the urban stipulation. No specific reference for example has been made to stylistic approach or material finishes to roofs or walls etc.

Although architects are invited to address the various briefs without stylistic constraints, stylistic copies of for example Tuscan villages and neo-georgian re-interpretation will not be appreciated.
The emphasis is on the contemporary, sensitivity to our environment, and symbolism in the build form with clear associated references.

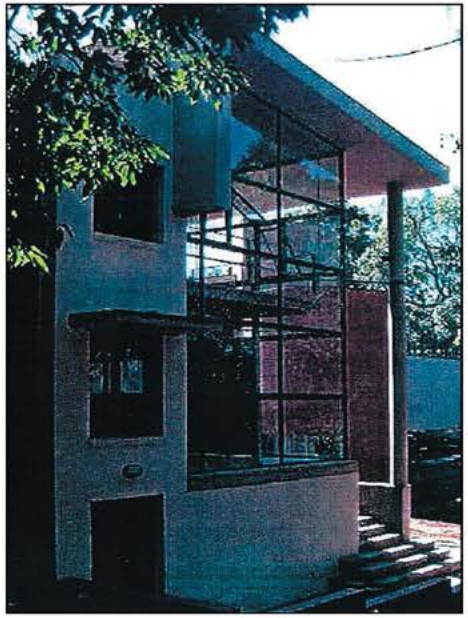
Included are some architectural concept that act can act as a point of departure for the sign of buildings and reflect some of the ideas aired by the Hub Stakeholders:

- Integrated built environments, buildings that invite end-user participation, are contextually integrated, have associated references, are formally legible, these are the environments that belong to the people they shelter.
- An architecture which provides access therefore opportunity is the basic generator of social upliftment
- A building that benefits the rich heritage of the site
- The building is a collection of smaller functions
- The reduced size of building blocks relates to the surrounding building scale
- Active building edges promote interaction with the surrounding streets
- Public spaces in the buildings is a natural extension of the urban public context.
- An African grandeur, dignity and great scale result from the building of grand voids, not European grand solids, not grand form but grand space, a grandeur to be physically experienced, not seen from a distance
- Light verandah roofs, collecting below, opening to the sky above with screened light, moving patterns enliven surfaces
- Climatic controls ensure environmental performance, and bring cultural and historical references to the architecture.

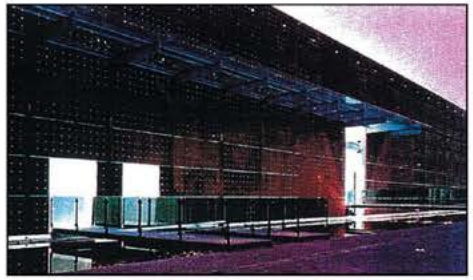
The images and brief description in the following pages should be viewed as indicative rather than prescriptive of the architectural expression. Images used in this section to describe various architectural elements are under the following headings: Environmental Controls: Façade Treatment; Roof Scape Materials: Entrances; Landmarks; Courtyards; Landmarks; Canopies/Arcades.

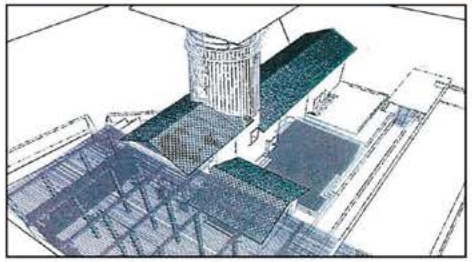


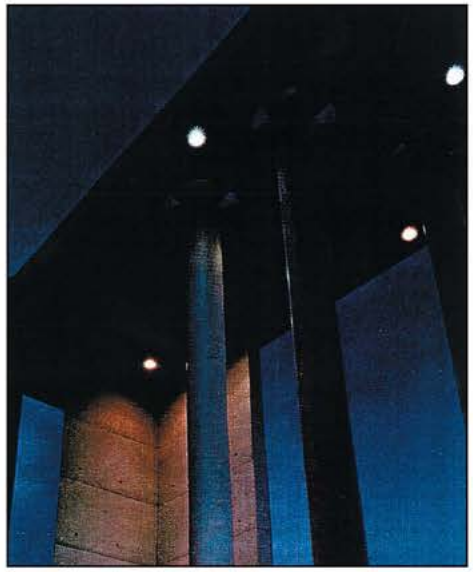
Facade Treatment



Roof Space







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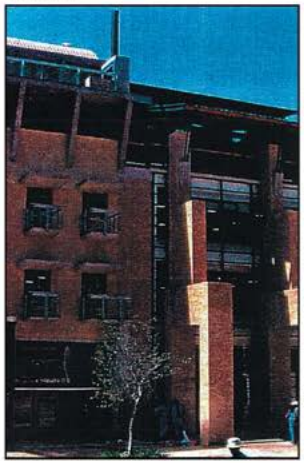
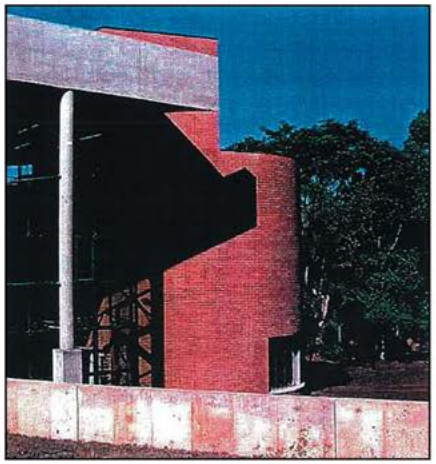
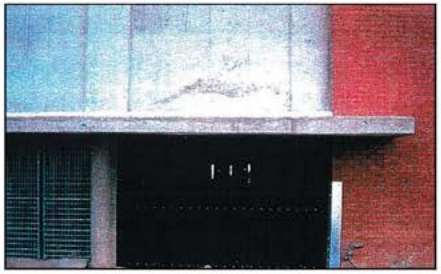
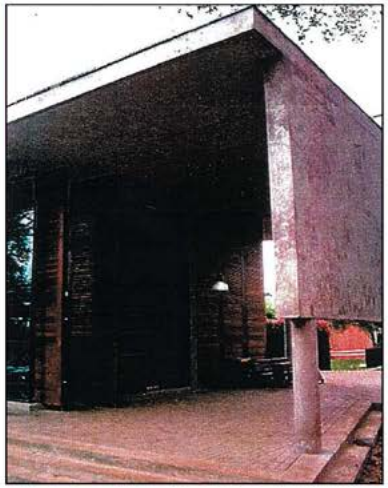
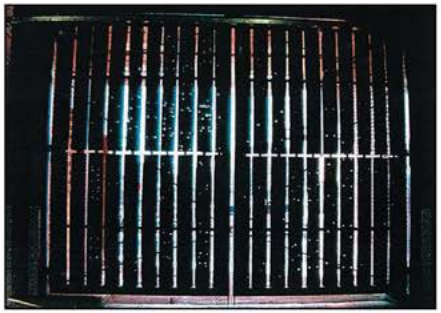
Material

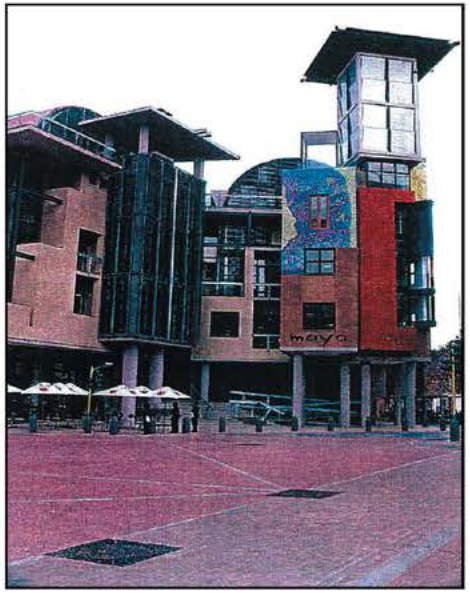


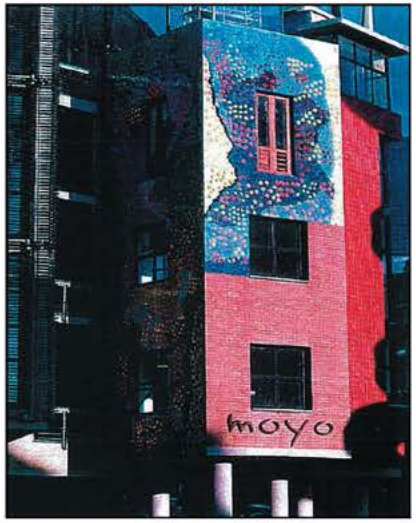
Entrances

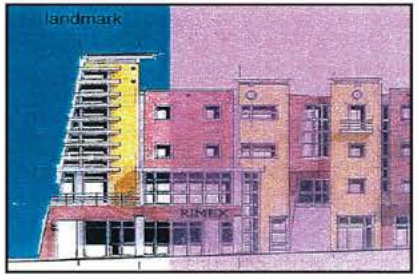


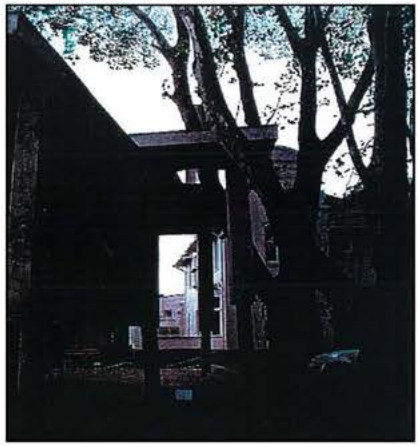
Landmarks

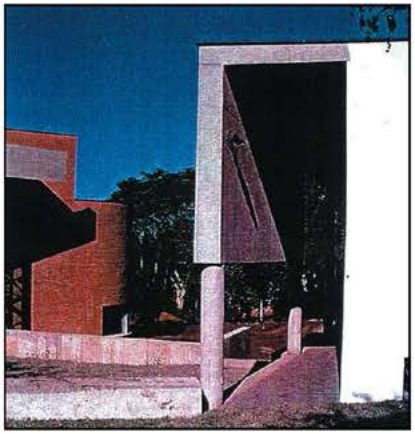






Courtyards





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5) Scenario B: Possible, future addition to bulk

5.1 Bulk allocation and adjusted parking requirements

5_Possible future scenario:

5.1_Possible, future addition of 40 000m² to gross bulk:

- See table for adjusted parking requirments.

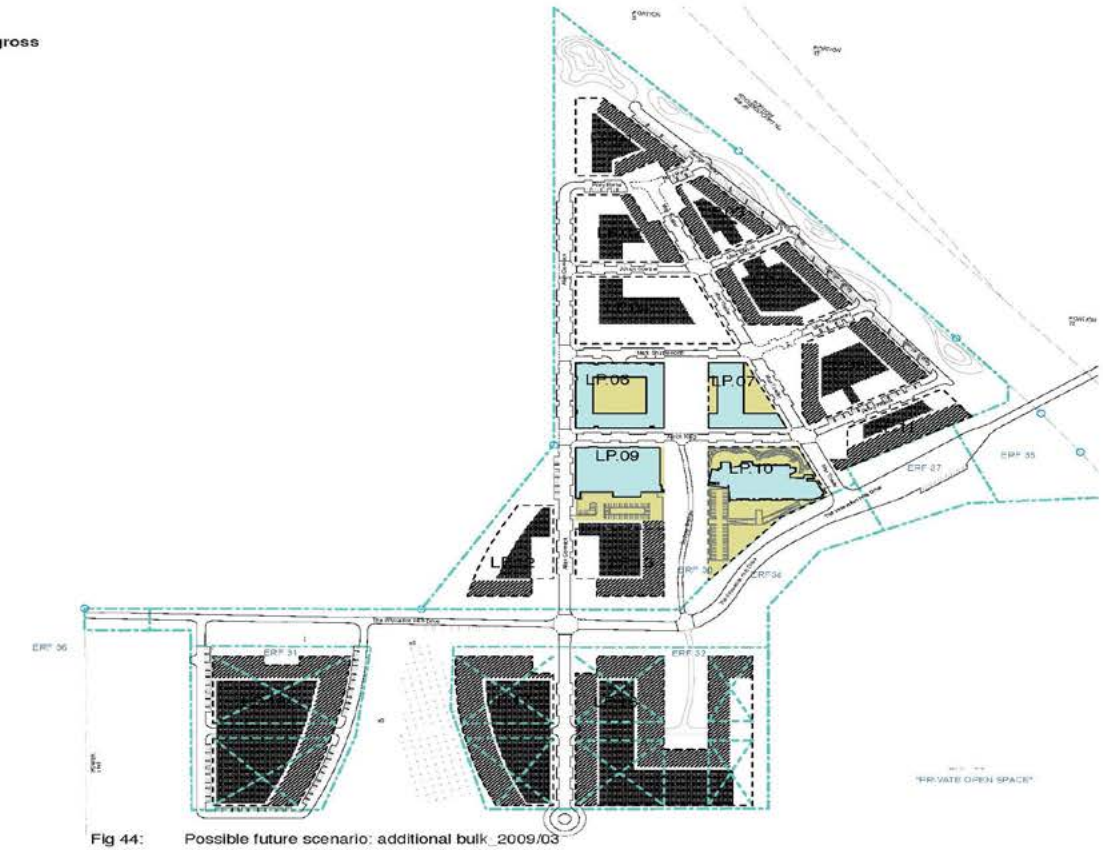


Fig 44: Possible future scenario: additional bulk_2009/03

KEY: POSSIBLE FUTURE SCENARIO OF INCREASED BULK
PROPOSED ADDITIONAL BULK
COURTYARD PARKING
COMPLETED LAND PARCELS_PHASE 1

Land Parcel	LP area	Allowable Bulk	Proposed addition to bulk	Proposed possible future bulk	Allowable Height in Storeys	Allowable Coverage (%)	Allowable Footprint	Parking 5/100m²	Courtyard Bays 70% max coverage	Street Bays	footprint basements	super basements	total bays per LP
1	6224.90	4993.85	3000	7993.85	3.0	40%	2489.96	360		31		207	238
2	6519.40	5177.7	3000	8177.7	3.0	40%	2607.76	368		36		217	253
3	4879.40	4125.67	3000	7125.67	3.0	40%	1951.76	321		41		163	204
4	10254.30	8209.19		8209.19	3.0	40%	4101.72	369		37		342	379
5	8055.50	6265.18	4000	10265.18	3.0	40%	3222.2	462		42		269	311
6	6357.60	8295.82		8295.82	3.0	40%	2543.04	373	0	25	274		299
7	4158.20	4637.52		4637.52	3.0	40%	1663.28	209	0	14	151		165
8	10122.40	8129.36	4000	12129.36	3.0	40%	4048.96	546		43		337	380
9	6580.40	5151.6		5151.6	3.0	40%	2624.16	232	89	12	423		524
10	10416.20	7749.82		7749.82	3.0	40%	4166.48	349	50	7	44		101
11	5611.84	6141.76	3000	9141.76	3.0	40%	2244.736	411		32		187	219
12	6470.10	4758.18	3000	7758.18	3.0	40%	2588.04	345		21		216	237
13	6580.40	5151.6	3500	8651.6	3.0	40%	2624.16	389		6		219	225
16	24545.28	17904.24	4500	22404.24	2.0	40%	9818.112	1008	344	10	327		681
17	14184.83	10335.19	4500	14835.19	2.0	40%	5665.932	668		10		472	482
18	19273.09	13960.10	4500	18460.1	2.0	40%	7709.236	831		111		642	753
TOTAL	150173.84	120986.78	40000	160986.78		40%	60069.536	7244	483	478	1219	3271	5451

completed landparcels

Table 5: Adjusted bulk and parking requirements_2009/03

Note: the requirement for bays have increased due a possible, future increase in bulk. However, the amount of parking cannot be adjusted without the inclusion of the lesser favoured multi-storey parking basements.

6) Cluster foyers:

6.1 Energy foyer
6.2 ICT foyer
6.3 Research and manufacture foyer
6.4 Bio-tech / Transport foyer

6_Cluster foyers:

Primary considerations for foyer spaces:

- Existing (completed land parcels).
- Visual axis'.
- Edge conditions.
- Landmark entrances.
- Beacons/entry into foyer.
- Cluster identity.
- Raised road surface within foyer.
- Street furniture.
- Material quality.
- Connections between nodes of activity.

6.1_Energy foyer:

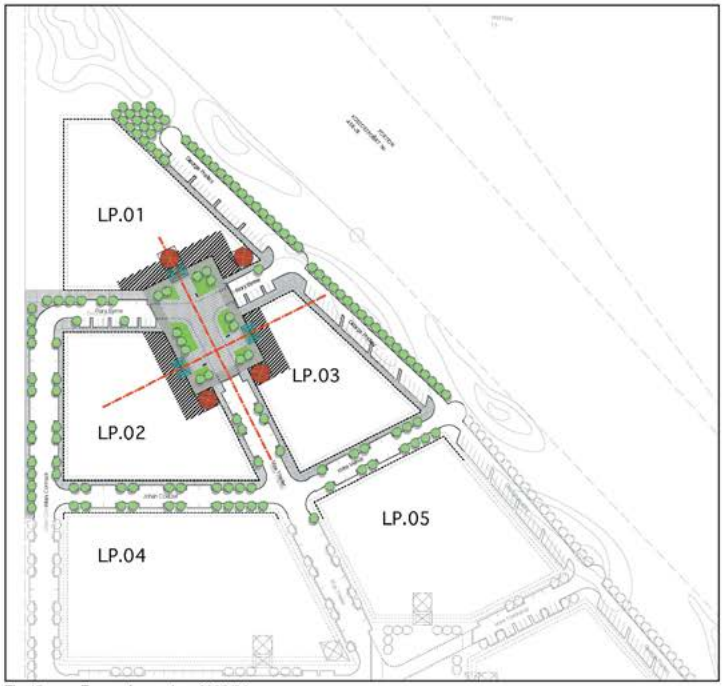


Fig 45: Energy foyer plan_2009/04

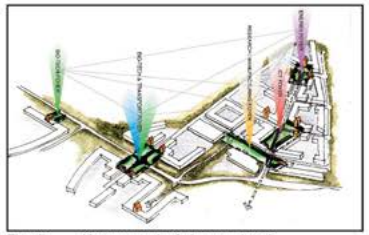


Fig 47: Key: network of cluster related foyer spaces_2009/04

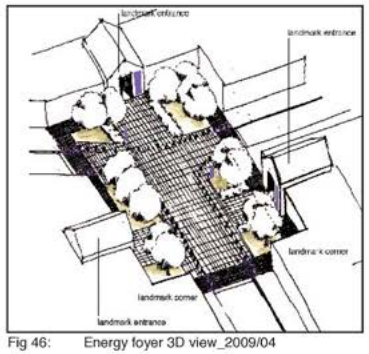


Fig 46: Energy foyer 3D view_2009/04

6_Cluster foyers:

Primary considerations for foyer spaces:

- Existing (completed land parcels).
- Visual axis'.
- Edge conditions.
- Landmark entrances.
- Beacons/entry into foyer.
- Cluster identity.
- Raised road surface within foyer.
- Street furniture.
- Material quality.
- Connections between nodes of activity.

6.2_ICT foyer:

- This cluster currently already contains one foyer space at the most northern point of Sydney Brenner drive, inbetween landparcels 06 and 07.
- An additional foyer space is introduced to successfully connect all the land parcels within the cluster to a point of orientation.

Fig 48: ICT foyer plan_2009/04

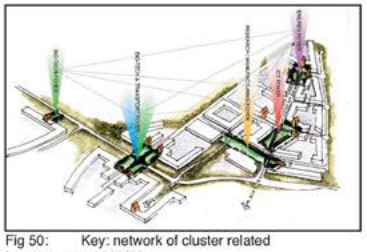


Fig 50: Key: network of cluster related foyer spaces_2009/04

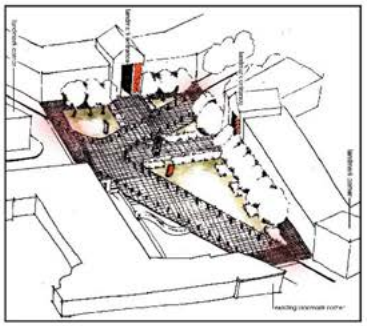


Fig 49: ICT foyer 3D view_2009/04

6_Cluster foyers:

Primary considerations for foyer spaces:

- Existing (completed land parcels).
- Visual axis'.
- Edge conditions.
- Landmark entrances.
- Beacons/entry into foyer.
- Cluster identity.
- Raised road surface within foyer.
- Street furniture.
- Material quality.
- Connections between nodes of activity.

6.3_Research and manufacturing foyer:

- Two of the three land parcels within this cluster have been completed.
- Land parcels are aligned and therefore a spine of landscaping is used to visually connect the land parcels forming this cluster.
- A formal foyer space is situated along the most active route which also connects to the ICT and Energy clusters.
- The spine of landscaping along Aaron Klug road, which visually connects the land parcels in the cluster, is derived from the already existing landscaping surrounding land parcel 10.

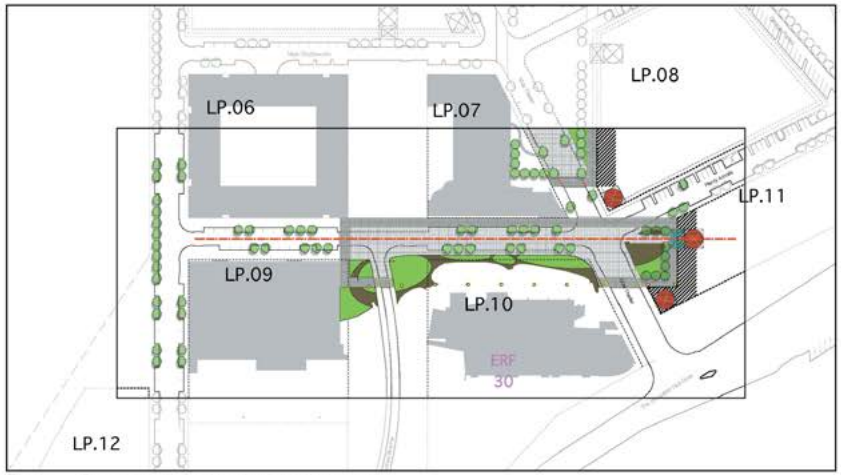


Fig 51: Research and manufacturing foyer plan_2009/04

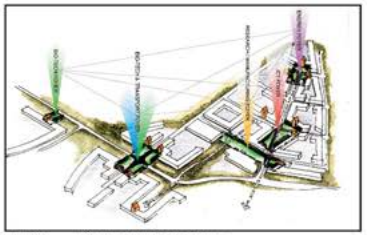


Fig 53: Key: network of cluster related foyer spaces_2009/04

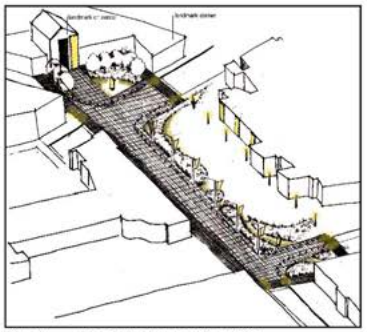


Fig 52: Research and manufacturing foyer 3D view_2009/04

6_Cluster foyers:

Primary considerations for foyer spaces:

- Existing (completed land parcels).
- Visual axis'.
- Edge conditions.
- Landmark entrances.
- Beacons/entry into foyer.
- Cluster identity.
- Raised road surface within foyer.
- Street furniture.
- Material quality.
- Connections between nodes of activity.

6.4_Bio-tech and Transport foyers:

- Land parcels from both clusters are grouped around a single, large foyer:
- The foyer is defined by built-form but also forms a break in the 'forest threshold' into the development. The foyer is expressed as a formal space contrasting with the surrounding forest of trees.

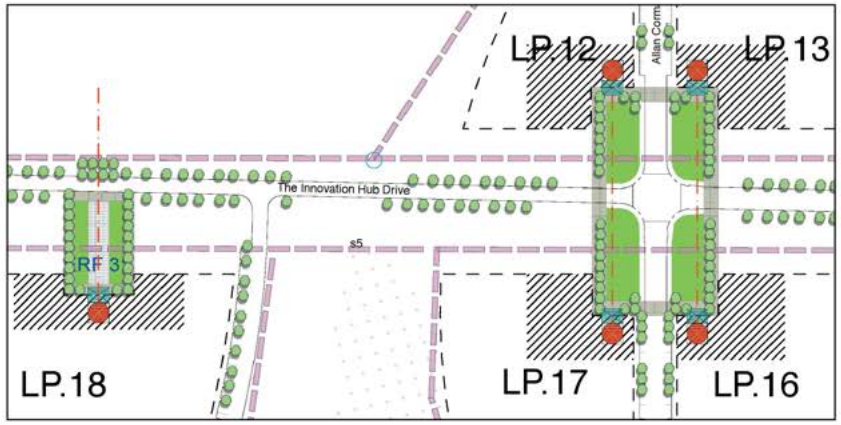


Fig 54: Bio-tech and transport foyer plan_2009/04

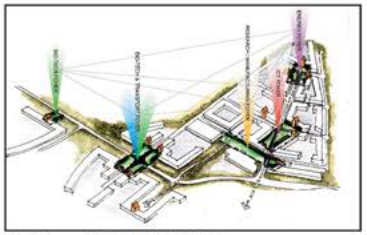


Fig 56: Key: network of cluster related foyer spaces_2009/04

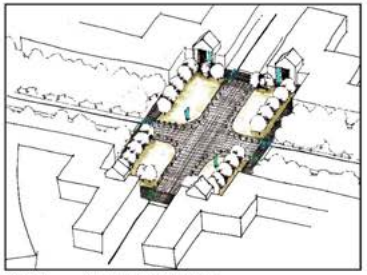


Fig 55: Bio-tech and transport foyer 3D view_2009/04

7) Vision for 2015:

7.1 Putting it all together

7.2 Vision for The Innovation Hub

7_Vision for 2015
7.1_Putting it all together:

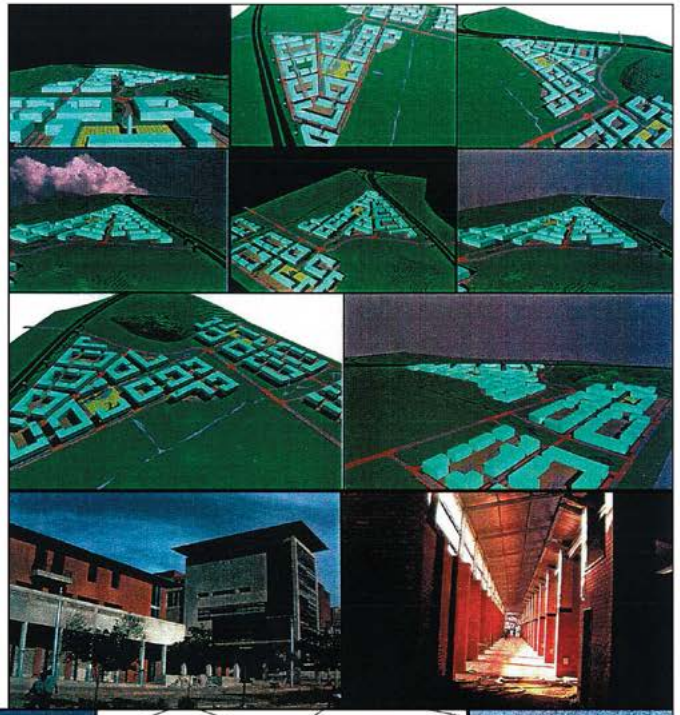
.....to meet the basic need of all stakeholders.....

Everything we implement should be robust enough to accommodate future needs.

PUTTING IT ALL TOGETHER

The urban form proposed in this development proposal tries to achieve:

- An interconnected system of streets
- Greater proximity of a variety of uses
- Daily needs with walking distance
- Sharing of infrastructure across a longer daily period
- Supportive of an integrated public transport system
- A central focus: local main streets and public squares.
- Density increase from the edge to the centre
- Buildings which are part of and face onto the public realm
- Clear distinction between public and private space
- Large open space at the periphery
- The public realm is the focus of activity
- On street parking has been provided to support street life.
- Exchange of people by focusing on the quality of public open space system
- A phasing framework which aims always creates a microcosm of the complete development
- An architectural language which reflects the integrated, holistic view, we have of our society.



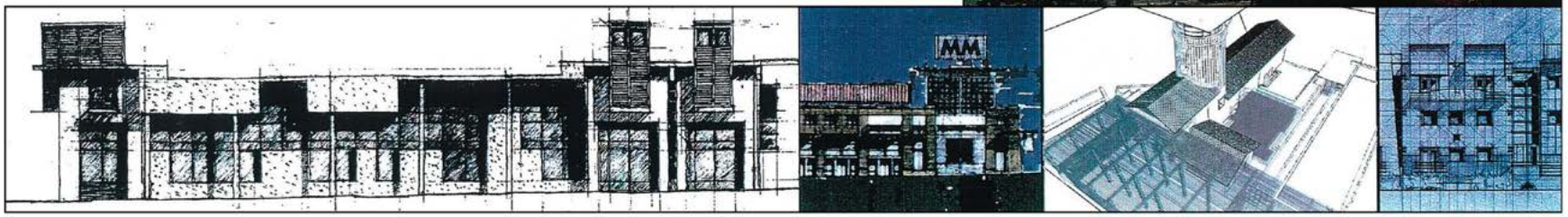


Fig 57: Vision drawing:3D_2009/05