1 INTRODUCTION

- This project has been initiated by the Architecture Department of the ETHEKWINI Municipality to develop housing typologies for the delivery of new projects and existing settlement upgrade projects in the ETHEKWINI Municipal Region.
- The study is to integrate town planning, urban design and architecture components.
- The intention is to identify practices which optimise both the quality and sustainability of resultant living environments.

2 BACKGROUND

- Despite the delivery of almost 2 million housing units by government since 1994, the dominant housing typology continues to be detached, single family homes on larger freehold plots.
- The increasing pressure on urban land, demands for optimising existing service infrastructure and the negative socio-economic implications of developing on the urban periphery have necessitated a review of the location and desired densities of housing settlements.
- It has become necessary that the supply of housing be more receptive to the redevelopment of sites located within already serviced and developed areas as well as the upgrading of existing settlements.
- A study and development of affordable housing typologies applicable to prevailing local conditions (typography, climate, technologies and finance) will assist in meeting the urban housing challenge with greater authority, efficiency and understanding.
3 PROJECT OBJECTIVES

- TO INFORM THE OPTIMISATION OF QUALITY AND SUSTAINABILITY IN THE DESIGN AND ONGOING DELIVERY OF SUBSIDY HOUSING
- TO DETERMINE OPTIMAL HOUSING TYPOLOGIES FOR APPLICATION IN INFORMAL SETTLEMENT UPGRADING AND GREENFIELD PROJECTS WITHIN THE URBAN AREA OF ETHEKWINI

4 DEFINING HOUSING TYPOLOGY

- HOUSING TYPOLOGY ENCOMPASSES ATTRIBUTES OF FUNCTION AND CONFIGURATION CHARACTERISTICS OF PUBLIC AND PRIVATE BUILDINGS AND THE SPACES AROUND THESE BUILDINGS THROUGH CONSTRUCTION
- TYPOLOGY MUST CONSIDER ASPECTS OF TOWN PLANNING AND URBAN DESIGN AS WELL AS THE DETAIL OF MULTI-UNITS OR RESIDENTIAL CLUSTERS
- TYPOLOGY HAS A TIME DIMENSION AND THEREFORE MUST CONSIDER FLEXIBILITY, ADAPTABILITY AND TRANSFORMATION OVER TIME
- IN ETHEKWINI THE CONSIDERATION OF TYPOLOGY IN RELATION TO TOPOGRAPHY IS CRITICAL AS MANY INFORMAL SETTLEMENTS ARE FOUNDED ON STEEP AND UNSTABLE LAND. STEEP SLOPES IMPOSE HIGHER BUILDING AND INFRASTRUCTURE COSTS AND CREATE DIFFICULTIES OF ACCESS REQUIRING GREATER CARE IN THE DESIGN AND LAYOUT OF HOUSES
PROJECT STRUCTURE

1 PRECEDENTS AND LITERATURE OVERVIEW
2 PILOT PROJECT OVERVIEW
3 BUILDING THE PRINCIPLES
4 MATRIX OF TYPOLOGIES
5 DESIGN CONSIDERATIONS
PROJECT STRUCTURE

1 PRECEDENTS AND BIBLIOGRAPHY
   ▪ KEY ISSUES TO INFORM THE BRIEF
   ▪ BIBLIOGRAPHY AND SYNOPSIS OF RELEVANT LITERATURE
   ▪ REVIEW OF CASE STUDIES
   ▪ FINDINGS TO OFFSET NEGATIVE TRENDS

2 PILOT PROJECT OVERVIEW
   ▪ AREA / INFRASTRUCTURE AUDIT
   ▪ SITE ANALYSIS
   ▪ READINESS FOR DEVELOPMENT AND IMPLICATIONS FOR TYPOLOGY SELECTION

3 BUILDING THE PRINCIPLES
   ▪ GUIDING PRINCIPLES FOR HOUSE DESIGN AND URBAN LAYOUTS

4 MATRIX OF TYPOLOGIES
   ▪ SUMMARY OF HOUSING TYPOLOGIES
   ▪ FINAL HOUSING TYPOLOGY DESIGNS
   ▪ COSTINGS

5 DESIGN CONSIDERATIONS
   ▪ DENSITY AND TOPOGRAPHICAL CONSIDERATIONS
   ▪ MATERIALS AND MINIMUM QUALITY LEVEL CONSIDERATIONS
   ▪ SERVICING AND SUSTAINABILITY CONSIDERATIONS
BUILDING THE PRINCIPLES
CONTENTS

1  BASIC HOUSE AND LAYOUT DESIGN PRINCIPLES
   IN WHICH BROAD PRINCIPLES ARE IDENTIFIED TO GUIDE THE DEVELOPMENT OF NEW LOW INCOME HOUSING TYPOLOGIES AND HOW THEY ARE TO BE CONFIGURED IN NEW URBAN LAYOUTS.

2  APPLYING THE PRINCIPLES
   IN WHICH THE PRINCIPLES ARE APPLIED TO GENERATE AN OUTLINE HOUSING TYPOLOGY MATRIX.
IN ORDER TO GUIDE THE GENERATION OF A MATRIX OF HOUSING TOPOLOGIES SUITABLE FOR LOW INCOME HOUSING DEVELOPMENT, A SET OF GUIDING PRINCIPLES REGARDING BOTH THE HOUSES AND HOW THEY CAN BE ARRANGED TOGETHER AS URBAN LAYOUTS IS REQUIRED.

THE AIM IS TO ESTABLISH A FINITE SET OF HOUSE AND LAYOUT FORMS THAT ARE APPLICABLE TO LOW INCOME HOUSING PROJECTS.

IT IS IMPORTANT THAT THE PITFALLS ENCOUNTERED IN THE PAST WHEREBY THE SAME HOUSE DESIGN WAS UTILISED OVER AND OVER AGAIN IN UNVARYING LAYOUTS RESULTING IN THE BLANDNESS WITH WHICH LOW INCOME HOUSING PROJECTS ARE TYPICALLY ASSOCIATED, ARE AVOIDED. THE TYPOLOGIES PRESENTED IN THIS CHAPTER ARE THEREFORE NOT INTENDED TO BE USED AS FINAL DESIGNS BUT RATHER A SET OF PRINCIPLES THAT CAN GUIDE AND ACCOMMODATE A RANGE OF ARCHITECTURAL INTERPRETATIONS.

IT IS THEREFORE CRITICAL THAT THE PRINCIPLES ARE ROBUST ENOUGH TO ENSURE THAT THE BASIC FORMS ARE PRACTICAL AND REALISTIC, BUT FLEXIBLE ENOUGH TO ALLOW FOR A WIDE RANGE OF ARCHITECTURAL RESPONSES TO EACH TYPOLOGY.
GOALS IN ESTABLISHING THE HOUSE AND LAYOUT DESIGN PRINCIPLES

- FORMALISATION OF THE INFORMAL
- IN-SITU UPGRADING (LEAST RELOCATION OF CURRENT RESIDENTS IN THE PILOT PROJECT SITES)
- FEASIBLE SERVICE PROVISION
- LEGAL COMPLIANCE
- INCREASED DENSITIES (UTILISATION OF ALL SLOPES)
- EMULATION OF EXISTING INFORMAL HOUSING TYPOLOGIES (ROW-OF-ROOMS, COURTYARDS ETC)
- MINIMUM CRITERIA TO QUALIFY FOR HOUSING SUBSIDY
14 GUIDING PRINCIPLES

1. LEGAL COMPLIANCE WITH BUILDING REGULATIONS
2. MINIMUM HOUSE SIZE (40m²)
3. NARROW STREET FRONTAGE
4. POSITIONING THE HOUSE CLOSE TO THE STREET
5. SHORT SERVICE RUNS FROM STREET TO BUILDING
6. PRIVATELY EXPANDABLE INCREMENTALLY
7. REPLICABLE AND COMBINABLE DESIGN
8. INCREASED DENSITIES
9. ROOM DIMENSIONS BASED ON BASIC FURNITURE LAYOUTS
10. CLEAR THRESHOLDS BETWEEN PUBLIC AND PRIVATE SPACE
11. VARIATION OF STREET FACADES
12. MINIMAL HEIGHT OF STREET BOUNDARY WALLS
13. STAND DIMENSIONS TO ALLOW FOR INCREMENTAL SUBDIVISION
14. VARYING THE ROAD WIDTHS
THE GUIDING PRINCIPLES EXPLAINED

1. LEGAL COMPLIANCE WITH BUILDING REGULATIONS

2. MINIMUM HOUSE SIZE (40m²)

3. NARROW STREET FRONTAGE

4. POSITIONING THE HOUSE CLOSE TO THE STREET

5. SHORT SERVICE RUNS FROM STREET TO BUILDING

6. PRIVATELY EXPANDABLE INCREMENTALLY

7. REPLICABLE AND COMBINABLE DESIGN

8. INCREASED DENSITIES

9. ROOM DIMENSIONS BASED ON BASIC FURNITURE LAYOUTS

10. CLEAR THRESHOLDS BETWEEN PUBLIC AND PRIVATE SPACE

11. VARIATION OF STREET FACADES

12. MINIMAL HEIGHT OF STREET BOUNDARY WALLS

13. STAND DIMENSIONS TO ALLOW FOR INCREMENTAL SUBDIVISION

14. VARYING THE ROAD WIDTHS
SOUTH AFRICAN BUILDING STANDARDS/ NATIONAL BUILDING REGULATIONS

ALL HOUSING TYPOLoGIES TO COMPLY WITH THE FOLLOWING SABS REGULATIONS

- SABS 0400 NBR - MINIMUM ROOM AREAS & DIMENSIONS – PART C
- SABS 0400 NBR - PUBLIC SAFETY – PART D
- SABS 0400 NBR - DIMENSIONS OF WALLS – PART K
- SABS 0400 NBR - STAIRWAYS – PART M
- SABS 0400 NBR - LIGHTING & VENTILATION – PART O
KZN DEPT OF HOUSING BREAKDOWN OF COST PER UNIT

THE NEW QUANTUM OF THE NATIONAL HOUSING SUBSIDY FOR OWNERSHIP HOUSING IS BROKEN DOWN AS FOLLOWS:

- R56,000 BASIC SUBSIDY FOR TOP STRUCTURE
- R8,400 EXTRA 15% ON R56,000 FOR ADVERSE GEOTECHNICAL/TOPOGRAPHIC CONDITIONS + GOOD LOCATION
- R22,000 PROVINCIAL TOP-UP FOR INTERNAL INFRASTRUCTURE SERVICES
- R20,000 MUNICIPAL INFRASTRUCTURE GRANT / BULKS
- R3,500 LAND PRICE SUBSIDY

TOTAL R109,900

AT THE TIME OF PROJECT PREPARATION 40m² WAS THE MINIMUM HOUSE SIZE PERMITTED THAT COULD QUALIFY FOR A HOUSING SUBSIDY
THE GUIDING PRINCIPLES EXPLAINED

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2. MINIMUM HOUSE SIZE (40m²)
3. NARROW STREET FRONTPAGE
4. POSITIONING THE HOUSE CLOSE TO THE STREET
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6. PRIVATELY EXPANDABLE INCREMENTALLY
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9. ROOM DIMENSIONS BASED ON BASIC FURNITURE LAYOUTS
10. CLEAR THRESHOLDS BETWEEN PUBLIC AND PRIVATE SPACE
11. VARIATION OF STREET FACADES
12. MINIMAL HEIGHT OF STREET BOUNDARY WALLS
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14. VARYING THE ROAD WIDTHS
THE ADVANTAGES OF PLACING HOUSES CLOSE TO THE STREET

**COSTS**

**NON STREET RELATED UNITS**

**STREET RELATED UNITS**

**INFRASTRUCTURE**

The cost of servicing each site is proportionately higher by virtue of the additional lengths of service required from the boundary of the site to the unit. Servicing costs are reduced by plugging unit connections directly into street services.

**STREET LIGHTING**

Separate light poles are required to light street space, thus increasing the cost of street lighting. Street lighting costs can be reduced by attaching lighting components to units adjacent to the street space.

**GARDENS**

Relatively higher costs are required to maintain front gardens in order to enhance the appearance of the street scene. Few or no maintenance costs are required along the street in order to enhance the street scene.
THE ADVANTAGES OF PLACING HOUSES CLOSE TO THE STREET

COMMUNITY INTEGRATION

NON STREET RELATED UNITS

STREET RELATED UNITS

SOCIAL INTERACTION

THE UNIT HAS LITTLE OR NO CONTACT WITH THE STREET AND SOCIAL INTERACTION WITH OTHER RESIDENTS IN THE STREET IS DISCOURAGED

THE SYMBIOSIS OF THE UNIT AND THE STREET ENCOURAGES SOCIAL INTERACTION AND ALLOWS THE STREET TO BECOME A FOCUS FOR COMMUNITY LIFE. STOEPS INCREASE THE LEVEL OF SOCIAL INTERACTION

RESIDENT CONTROL

LACK OF CONTACT BETWEEN THE UNIT AND THE STREET MAKES RESIDENT CONTROL OF THE PUBLIC ENVIRONMENT AS AN INTEGRAL PART OF THEIR LIVING AREA DIFFICULT

THE PROXIMITY OF THE UNITS TO THE STREET ENCOURAGES ATTITUDES OF PROPRIETY TO FORM ON THE PART OF RESIDENTS TOWARDS THEIR PUBLIC ENVIRONMENT

DEFENSIBILITY

SURVEILLANCE OF STREET SPACE FROM THE UNIT IS IMPOSSIBLE. STREET LIFE IS DISCOURAGED OWING TO THREAT, CRIME AND LACK OF PERSONAL SECURITY

THE NATURAL SURVEILLANCE RESULTING FROM THE UNITS PROXIMITY TO THE STREET ENCOURAGES THE GROWTH OF STREET LIFE AND GIVES RESIDENTS A SENSE OF DEFENSIBILITY
THE ADVANTAGES OF PLACING HOUSES CLOSE TO THE STREET

**QUALITY OF STREET SPACE**

**NON STREET RELATED UNITS**

**STREET RELATED UNITS**

**SPATIAL QUALITY**

Street space is poorly defined resulting in little or no spatial human scale is compromised and the street loses a sense of ‘place’.

**PEDESTRIAN QUALITY**

Emphasis of street space as a movement channel compromises the pedestrian experience and reduces pedestrian safety, especially for children.

**VEHICULAR IMPACT**

Front gardens become parking areas and parking out of the public view is difficult. The car becomes a very dominant element in the street scene.

The 3-dimensional urban qualities of the street are optimised. The street takes on a sense of ‘place’ rather than merely being a vehicular move channel.

The quality of the pedestrian experience is enhanced with de-emphasis of the movement channel. Pedestrian safety is increased at the same time.

Cars can more easily be accommodated along side or at the front of each unit. The dominace of the car in the street scene is thus reduced.
THE GUIDING PRINCIPLES EXPLAINED

1. LEGAL COMPLIANCE WITH BUILDING REGULATIONS
2. MINIMUM HOUSE SIZE (40m²)
3. NARROW STREET FRONTAGE
4. POSITIONING THE HOUSE CLOSE TO THE STREET
5. SHORT SERVICE RUNS FROM STREET TO BUILDING
6. PRIVATELY EXPANDABLE INCREMENTALLY
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9. ROOM DIMENSIONS BASED ON BASIC FURNITURE LAYOUTS
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11. VARIATION OF STREET FACADES
12. MINIMAL HEIGHT OF STREET BOUNDARY WALLS
13. STAND DIMENSIONS TO ALLOW FOR INCREMENTAL SUBDIVISION
14. VARYING THE ROAD WIDTHS
POSITION HOUSES TO ACCOMMODATE FUTURE ADDITIONS – DETACHED UNITS
POSITION HOUSES TO ACCOMMODATE FUTURE ADDITIONS – SEMI DETACHED UNITS
POSITION HOUSES TO ACCOMMODATE FUTURE ADDITIONS – ROW HOUSING

GROUND FLOOR PLAN

FIRST FLOOR PLAN
THE NEXT SECTION FURTHER REFINES THE PRINCIPAL OF DESIGNING THE UNIT AND POSITIONING IT ON SITE IN SUCH A WAY THAT IT CAN BE EXPANDED OVER TIME. THIS APPROACH IS REFERRED TO AS INCREMENTAL HOUSING EXPANSION.

THE IDEA IS TO PROVIDE AN ESSENTIAL CORE THAT NEED NOT BE DEMOLISHED AND REBUILT WHEN FURTHER EXPANSION IS REQUIRED.

CAREFUL CONSIDERATION OF SITE POSITIONING OF THE CORE AND ALTERNATIVE REASONS AS TO WHY AN OWNER WOULD WANT TO EXPAND NEEDS TO BE UNDERSTOOD. FOR EXAMPLE NOT ALL OWNERS WILL WANT TO EXPAND TO ACCOMMODATE IMMEDIATE FAMILY. FLEXIBILITY NEED TO BE BUILT INTO THE DESIGN TO ALLOW FOR EXTERNAL ENTRANCES TO ROOMS THAT MAY BE USED FOR RENT OR AS SMALL BUSINESSES.

ISSUES OF PRIVACY, NATURAL VENTILATION AND LIGHT NEED TO BE DESIGNED IN RIGHT FROM THE START. PLANNING FOR EXPANSION HOWEVER SHOULD NOT JUST BE LIMITED TO THE UNIT ITSELF BUT ALSO TAKE INTO ACCOUNT THE URBAN LAYOUT IN THE LONG TERM AND THE RELATIONSHIP UNITS WILL HAVE TO ONE ANOTHER AND THE STREET.

SOME EXAMPLES ARE GIVEN BELOW THAT DEMONSTRATE THE PRINCIPAL OF INCREMENTAL EXPANSION.
Core Detached Type 1

- Core: 28.0 m²
- 1 Bedroom: 40.5 m²
- 2 Bedroom: 50.0 m²
Core Detached Type 1

- Core: 28.0 m²
- 1 Bedroom: 40.5 m²
- 2 Bedroom: 50.0 m²
- 3 Bedroom: 59.5 m²

Dimensions:
- Length: 14m
- Width: 11m

Floor Plan:
- B1, B2, B3
- WC
- CORE
Core Detached Type 2

- Core
  - 28.0 m²
Core Detached Type 2

- Core: 28.0 m²
- 1 Bedroom: 40.5 m²
Core House Type 1

- Core: 28.0 m²
- 1 Bedroom: 40.5 m²

Dimensions:
- 13.5m
- 10.7m
Core House Type 2

Core 28.0 m²
Core House Type 2

- Core: 28.0 m²
- 1 Bedroom: 40.5 m²

Dimensions:
- Length: 18.3m
- Width: 6.5m

Plans:
- Core
- Toilet (WC)
- B1
Core House Type 2

Core: 28.0 m²
1 Bedroom: 40.5 m²
2 Bedroom: 50.0 m²
Core House Type 2

- Core: 28.0 m²
- 1 Bedroom: 40.5 m²
- 2 Bedroom: 50.0 m²
- 3 Bedroom: 59.5 m²

Dimensions:
- 18.3m x 6.5m

Floor Plan:
- B3
- B2
- B1
- WC
- CORE
Core House Type 3

12.8m x 9.8m

Core

CORE

wc

28.0 m²
Core House Type 3

1 Bedroom

Core 28.0 m²
1 Bedroom 40.5 m²
Courtyard House Type 1

Core 29.0 m²
Courtyard House Type 1

Core 29.0 m²
2 Bedroom 44.7 m²

2 Bedroom

Core

29.0 m²

44.7 m²
Courtyard House Type 1

- Core: 29.0 m²
- 2 Bedroom: 44.7 m²
- 3 Bedroom: 60.0 m²
Courtyard House Type 2

Core 29.0 m²
Courtyard House Type 2

Core 29.0 m²

1 Bedroom 37.3 m²

29.0 m²

21m

5.4m

1 Bedroom

37.3 m²
Courtyard House Type 2

Core 29.0 m²
1 Bedroom 37.3 m²
2 Bedroom 45.6 m²
L - Shape House

Living Room  35.0 m²
L - Shape House

Living Room 35.0 m²
1 Bedroom 48.5 m²
L-Shape House

Living Room 35.0 m²
1 Bedroom 48.5 m²
2 Bedroom 62.1 m²
L - Shape House

Living Room: 35.0 m²
1 Bedroom: 48.5 m²
2 Bedroom: 62.1 m²
3 Bedroom: 75.5 m²
Core House Type 2
Core House Type 2
Core House Type 2
Core House Type 2
Core House Type 2
Core House Type 2
Core House Type 2
THE GUIDING PRINCIPLES EXPLAINED

1. LEGAL COMPLIANCE WITH BUILDING REGULATIONS
2. MINIMUM HOUSE SIZE (40m²)
3. NARROW STREET FRONTAGE
4. POSITIONING THE HOUSE CLOSE TO THE STREET
5. SHORT SERVICE RUNS FROM STREET TO BUILDING
6. PRIVATELY EXPANDABLE INCREMENTSALLY
7. REPLICABLE AND COMBINABLE DESIGN
8. INCREASED DENSITIES
9. ROOM DIMENSIONS BASED ON BASIC FURNITURE LAYOUTS
10. CLEAR THRESHOLDS BETWEEN PUBLIC AND PRIVATE SPACE
11. VARIATION OF STREET FACADES
12. MINIMAL HEIGHT OF STREET BOUNDARY WALLS
13. STAND DIMENSIONS TO ALLOW FOR INCREMENTAL SUBDIVISION
14. VARYING THE ROAD WIDTHS
TO INTRODUCE VARIETY AND ADAPTABILITY, AS WELL AS TO SAVE TIME AND MONEY, IT IS PROPOSED THAT HOUSE DESIGNS SHOULD BE USABLE IN A VARIETY OF COMBINATIONS WITHOUT THE NEED FOR EXTENSIVE REDESIGN. IN THIS CASE UNITS CAN BE REPEATED OR COMBINED AS DETACHED UNITS, SEMI-DETACHED OR ROW HOUSING AND CAN ALSO BE USED IN DOUBLE OR MULTIPLE STOREY APPLICATIONS. TOGETHER WITH LAYOUT APPLICATIONS TO COMPACT THE URBAN FORM THIS PRINCIPLE IS INTENDED TO SIGNIFICANTLY INCREASE DENSITIES IN LOW INCOME AREAS.
THE GUIDING PRINCIPLES EXPLAINED

1. LEGAL COMPLIANCE WITH BUILDING REGULATIONS
2. MINIMUM HOUSE SIZE (40m²)
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13. STAND DIMENSIONS TO ALLOW FOR INCREMENTAL SUBDIVISION
14. VARYING THE ROAD WIDTHS
BEDROOMS

Main bedroom = 7m²

2\textsuperscript{nd} bedroom = 9m²

3\textsuperscript{rd} bedroom = 6m²
ROOM DIMENSIONS BASED ON BASIC FURNITURE LAYOUTS

LIVING ROOMS

Living and kitchen : 12m²

Living, dining and kitchen : 15m²

BATHROOMS

Bathrooms : 1.2m²

3m²
THE GUIDING PRINCIPLES EXPLAINED

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12. MINIMAL HEIGHT OF STREET BOUNDARY WALLS
13. STAND DIMENSIONS TO ALLOW FOR INCREMENTAL SUBDIVISION
14. VARYING THE ROAD WIDTHS
RESTRICT BOUNDARY WALL HEIGHTS AND CREATE PRIVACY THRESHOLDS
VARIATIONS IN STREET FACADES
1. LEGAL COMPLIANCE WITH BUILDING REGULATIONS
2. MINIMUM HOUSE SIZE (40m²)
3. NARROW STREET FRONTAGE
4. POSITIONING THE HOUSE CLOSE TO THE STREET
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14. VARYING THE ROAD WIDTHS
PRINCIPLES OF SITE SUBDIVISION IN INCREMENTS

FREESTANDING SINGLE STOREY

SEMI-DETACHED SINGLE STOREY

SEMI-DETACHED DOUBLE STOREY
THE GUIDING PRINCIPLES EXPLAINED

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2. MINIMUM HOUSE SIZE (40m²)
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13. STAND DIMENSIONS TO ALLOW FOR INCREMENTAL SUBDIVISION
14. VARYING THE ROAD WIDTHS
ROAD RESERVE VARIATIONS

4 M ROAD RESERVE
Cyclist and pedestrian lane 4000

8 M ROAD RESERVE
4 m traffic lanes 4000

10 M ROAD RESERVE
3000 4 m traffic lanes 3000
2000 1000 4000 1000 2000

13 M ROAD RESERVE
3250 5.5 m traffic lanes 4250
2000 1250 2750 2750 1250 3000

16 M ROAD RESERVE
6 m traffic lanes 5500
4500 2000 2500 3000 3000 2500 3000

18 M ROAD RESERVE
9 m traffic lanes 5000
4000 2000 2000 4500 4500 2000 3000

Note: Parking between trees
ROAD RESERVE VARIATIONS

FROM THIS: .............................................................. .............................................................. .............................................................. TO THIS!
ROAD RESERVE VARIATIONS
APPLYING THE PRINCIPLES TO GENERATE A BASIC HOUSING TYPOLOGY MATRIX
THE TYPOLOGY MATRIX IS DEVELOPED FROM THREE BASIC HOUSE FORMS, NAMELY:

- NARROW FRONTAGE
- MEDIUM FRONTAGE; AND
- WIDE FRONTAGE

THESE THREE BASIC FORMS ARE USED TO GENERATE THE FULL TEMPLATE OF TYPOLOGIES IN THAT THEY ARE REPLICABLE AND COMBINABLE:

- EACH FRONTAGE TYPE CAN BE DEVELOPED AS DETACHED UNITS, COMBINED AS SEMI-DETACHED UNITS OR IN ROWS.
- EACH OF THE ABOVE COMBINATIONS CAN BE DEVELOPED AS SINGLE OR DOUBLE-STOREY / DUPLEX UNITS
- EACH TYPOLOGY CAN BE ARRANGED LINEARLY ALONG STREETS, IN CLUSTERS OR IN COURTYARDS.

THE UNDERLYING LOGIC OF THIS METHODOLOGY TO GENERATE A WIDE RANGE OF HOUSE TYPOLOGIES IS IMPORTANT TO UNDERSTAND AND ADHERE TO, BECAUSE IT REDUCES THE REQUIREMENT FOR EXTENSIVE REDESIGN OR THE DEVELOPMENT SITE SPECIFIC TYPOLOGIES IN LOW INCOME ENVIRONMENTS, BUT NONETHELESS ALLOWS FOR CONSIDERABLE FLEXIBILITY AND INTERPRETATION OF EACH TYPOLOGY BY INDIVIDUAL ARCHITECTS.
THE SELECTION OF THE MOST APPROPRIATE TYPOLOGY TO USE IN ANY PARTICULAR CIRCUMSTANCE ARE TO BE DETERMINED BY ASSESSING THE IMPLICATIONS OF:

- **DENSITY**
  Although each unit is approximately 40m² in size, density will only be maximised if the appropriate type is used on appropriate slopes and are combined in appropriate layouts. Wide frontage units used on flat slopes or narrow frontage units on steep slopes would not achieve the required densities. Similarly, depending on the platform and retaining wall dimensions on steep or very steep slopes, double storey or duplex units would be required rather than single storey units.

- **TOPOGRAPHY**
  Wide frontage units can be used on steeper slopes because of the narrowness of the platforms they require. Medium and narrow frontage types are better suited to flat, moderate and gentle slopes.

- **STAND PLACEMENT**
  Stand design to accommodate the units should ensure that types are placed on their stands in such a way that they are as close to the street as possible to reduce service costs, stand frontage is minimal to reduce road length and houses are to be placed close to a side boundary to allow for private sideways and backwards expansion of at least one additional room in each direction. Although car ownership is low in informal areas, side space should be enough to accommodate at least one off-street car space. No unit should be placed in the centre of its’ stand.
**URBAN FORM**

In addition to stand placement, careful consideration of overall urban form is important in selecting appropriate house types to apply to a particular site. House types should be combined and varied as much as possible to break up monotonous urban landscapes. Different architecture should also be applied to the typologies to create variety and interest. Wide frontage units would not be appropriate for use on flat slopes and neither would narrow frontage units on steep slopes create good urban form.

**COST**

Each unit is approximately 40m² in size. Medium frontage units have the shortest total outside wall length, whilst the narrow and wide frontage units have longer wall length. This makes them more expensive from a construction point of view but depending on the site, cheaper from a services (shorter service runs for narrow frontage units) or civil engineering (lower retaining walls for wide frontage units) point of view.

The selection of an appropriate typology to be used in the development of a particular site will need to be based on a clear understanding of:

- The guiding principles and whether or not they have been adhered to,
- The underlying logic behind the typology development,
- The implications of the tradeoffs to impact the selected form will have on density requirements, slope application, stand placement, urban form and costings.
BASIC HOUSE TYPOLOGIES - TYPICAL PLANS AND STREET FRONTAGE ELEVATION

NARROW FRONTAGE

MEDIUM FRONTAGE

WIDE FRONTAGE

12m

3m

6m

7m

3m

14m

3.6m
BASIC HOUSE TYPOLOGIES – AREAS AND DENSITY IMPLICATIONS

NARROW FRONTAGE

HOUSE SIZE: 43.7m²
DIMENSIONS: 3.6m x 12m
TOTAL WALL LENGTH: 30.6m

MEDIUM FRONTAGE

HOUSE SIZE: 42m²
DIMENSIONS: 6m x 7m
TOTAL WALL LENGTH: 26m

WIDE FRONTAGE

HOUSE SIZE: 39.3m²
DIMENSIONS: 14.2m x 2.96m
TOTAL WALL LENGTH: 36.6m
BASIC HOUSE TYPOLOGIES - SLOPE APPLICATIONS

NARROW FRONTAGE

FLAT, GENTLE AND MODERATE SLOPES

MEDIUM FRONTAGE

FLAT, GENTLE AND MODERATE SLOPES

WIDE FRONTAGE

STEEP AND VERY STEEP SLOPES
BASIC HOUSE TYPOLOGIES – PRIVATE EXPANSION OPTIONS

NARROW FRONTAGE

MEDIUM FRONTAGE

WIDE FRONTAGE

SPACE FOR EXPANSION (SIDEWAYS, BACKWARDS)

SPACE FOR EXPANSION (SIDEWAYS, BACKWARDS)

SPACE FOR EXPANSION (SIDEWAYS)
BASIC HOUSE TYPOLOGIES – COST IMPLICATIONS

NARROW FRONTAGE

MEDIUM FRONTAGE

WIDE FRONTAGE

MEDIUM HOUSE COSTS
LOW SERVICE COSTS
LOW CIVILS COSTS

LOW HOUSE COSTS
MEDIUM SERVICE COSTS
LOW CIVILS COSTS

HIGH HOUSE COSTS
HIGH SERVICE COSTS
HIGH CIVILS COSTS
BASIC HOUSE TYPOLOGIES – URBAN FORM IMPLICATIONS

NARROW FRONTAGE
- CLOSE TO STREET
- NARROW STREET FRONTAGE
- SPACE FOR EXPANSION
- SHORT SERVICE RUNS
- GOOD PUBLIC/PRIVATE SPACE DELINEATION
- HIGH QUALITY URBAN FORM

MEDIUM FRONTAGE
- CLOSE TO STREET
- WIDE STREET FRONTAGE
- SPACE FOR EXPANSION
- LONG SERVICE RUNS
- GOOD PUBLIC/PRIVATE SPACE DELINEATION
- MEDIUM QUALITY URBAN FORM

WIDE FRONTAGE
- CLOSE TO STREET
- WIDE STREET FRONTAGE
- SPACE FOR EXPANSION
- LONG SERVICE RUNS
- GOOD PUBLIC/PRIVATE SPACE DELINEATION
- HIGH QUALITY URBAN FORM
BASIC HOUSE TYPOLOGIES – SINGLE STOREY APPLICATIONS

NARROW FRONTAGE

MEDIUM FRONTAGE

WIDE FRONTAGE

DETACHED

SEMIDETACHED

ROW
### BASIC HOUSE TYPOLOGIES – DUPLEX / DOUBLE STOREY APPLICATIONS

<table>
<thead>
<tr>
<th>Narrow Frontage</th>
<th>Medium Frontage</th>
<th>Wide Frontage</th>
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<tbody>
<tr>
<td>Detached</td>
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<tr>
<td>Semi-Detached</td>
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<tr>
<td>Row</td>
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</tbody>
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*Image of various housing typologies for different frontage types.*

**Detached**

**Semi-Detached**

**Row**
LAYOUT APPLICATIONS

CLUSTERS, COURTYARDS AND STREETS

STREET

CLUSTER

COURTYARD

SEMI DETACHED

DETACHED

ROW
CLUSTERS, COURTYARDS AND STREETS