

# APPENDIX 1 TRANSECT DESIGN GUIDE



# NORTH STONEVILLE TRANSECT DESIGN GUIDE

**JUNE 2024** 



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#### DOCUMENT CONTRO

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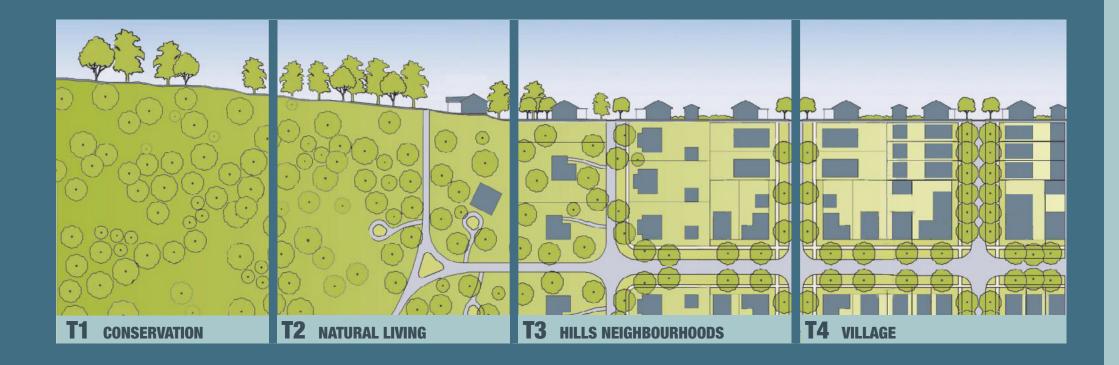
# OVERVIEW OF THE URBAN-RURAL TRANSECT

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# OF THE URBAN-RURAL TRANSECT





NORTH STONEVILLE TOWNSITE TRANSECT DESIGN GUIDE

#### HATCH



### INTRODUCTION

The North Stoneville Transect Design Guide is an initiative being progressed by Satterley to guide the delivery of thoroughfares, open space, and private land, with design guidance that is calibrated to urban context and the site's unique features.

The pages overleaf provide a summary of the rural-urban transect principles, and individual design elements that will alter in response to neighbourhood intensity.

This Guide supplements the WAPC's Liveable Neighbourhoods Operational Policy, the Local Government Guidelines for Subdivisional Development and the relevant Austroads Guidelines.

The Transect Design Guide is appended to the North Stoneville Structure Plan and forms part of the Approved documentation. The Guide represents a collaborative effort between the Department of Planning, Lands & Heritage, the Shire of Mundaring, and the North Stoneville Project Team commissioned by Satterley to deliver a shared vision for a new community over 534 hectares of land in the Perth hills. The North Stoneville Urban-Rural Transect comprises the following transect areas, as depicted on the concept masterplan (Figure 1):

- T1 Conservation
- T2 Natural Living
- T3 Hills Neighbourhoods
- T4 Village

### PURPOSE

The primary purpose for adopting a transect approach toward the delivery of the North Stoneville new community is to establish an overarching organising framework, that provides a guide to all disciplines for individual design elements.

The general intent is to define and create distinctively different character areas based on individual transects, that will assist in providing a memorable set of experiences and a variety of different environments to appeal to a broad range of demographics.

The major departure from conventional practice is to place context at the forefront of all design decisions, rather than apply the same standard without consideration to its setting and intended character. The T4 Village transect represents a small proportion of the new community but will have a neighbourhood character. A T4 area will therefore have a much more formal setting and create an arrival experience in which the built environment favours the pedestrian.

In contrast the T2 Natural living transect will contain very large lots and will be entirely organic in its character - the trees will be native, the roads will wind and respect landform, kerbing may be flush or non-existent, drainage will be open swales, and the built environment may favour the vehicle.

The T3 transect area will provide everything inbetween.

The transect has been used in the formulation of the concept masterplan, with T4 transect typically concentrated on areas with fair grades and little environmental constraints. As an extension of that logic, T2 and T3 transects containing larger lots are typically placed in areas with undulating terrain.

#### **RELATIONSHIP WITH LIVEABLE NEIGHBOURHOODS**

The Transect Design Guide supplements the WAPC's Liveable Neighbourhoods' Policy objectives and design requirements.

Liveable Neighbourhoods (LN) is an operational policy for the design and assessment of structure plans and subdivision. It is a performance-based code, with the objectives and majority of requirements capable of being satisfied in a number of ways. The introductory guide of Liveable Neighbourhoods states that "...the WAPC encourages creativity in response to the environment and in creating a thoughtful sense of place."

The North Stoneville Transect Design Guide represents a collaborative and creative effort by the project team and contributors (including the Shire of Mundaring and Government Agencies) to establish a set of guiding principles and design information that is calibrated to the site's unique landform and natural features.

The Transect Design Guide provides design information on streets, private land and parks, corresponding with Elements 2, 3 and 4 of LN respectively.

By way of example, Element 2 of LN addresses the Movement Network and generally provides for "...narrower pavement and lane widths that concurrently promote reduced vehicle speeds, reduced kerb radii and increased requirements for footpaths and large street trees, to support pedestrians, together with other details to support a more balanced movement system .. " plus "...increased use of four-way intersections..." and "...to minimise the need for roundabouts." Much of the detail related to Streets in this guide seeks to achieve exactly those requirements.

The Transect Design Guide, with its information that augments LN, is necessary in the Hills context to ensure that competing policy or standards are not given priority to the detriment of the LN design objectives.

#### 



#### RURAL

#### TRANSECT

#### **THE PRINCIPLES**

A place-led organising principle
Establishes character areas defined by different contexts
Graduation of design elements and experiences according to urban intensity

IMAGE ADAPTED FROM DUANY PLATER-ZYBERK & COMPAN

URBAN

### THE TRANSECT EXPLAINED

"A transect is a cut or path through part of the environment showing a range of different habitats. Biologists and ecologists use transects to study the many symbiotic elements that contribute to habitats where certain plants and animals thrive.

Human beings also thrive in different habitats. Some people prefer urban centre s and would suffer in a rural place, while others thrive in the rural or sub-urban zones. Before the automobile... development patterns were walkable, and transects within towns and city neighborhoods revealed areas that were less urban and more urban in character. This urbanism could be analyzed as natural transects are analyzed...

...Transect Zones instead provide the basis for real neighborhood structure... The T-zones vary by the ratio and level of intensity of their natural, built, and social components. They may be coordinated to all scales of planning, from the region through the community scale down to the individual lot and building...

...The T-zones are intended to be balanced within a neighborhood structure based on pedestrian sheds (walksheds), so that even T-3 residents may walk to different habitats, such as a main street, civic space, or agrarian land."

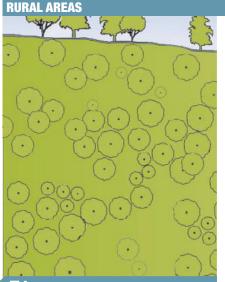
**Source:** Centre for Applied Transect Studies https://transect.org/transect.html

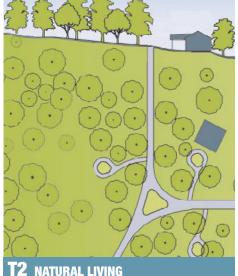
#### URBAN AREAS

BAN

R

. . . .





SEMI-RURAL SIZED LOTS

NATURALISTIC LANDSCAPING

DETACHED BUILDINGS, DETACHED

RURAL RESIDENTIAL

ROTATED FRONTAGES

LIVESTOCK/HORSES

OUTBUILDINGS

#### CONSERVATION Τ'

# 

OPEN DRAINAGE
STEEP SLOPES
BUSHFIRE PRONE AREAS
NATURAL OPEN SPACES
ORCHARDS & MARKETS
LEGACY FARMLAND
LEGACY WOODLANDS
LIMITED SERVICES
DRY, ROLLING LAND

. . . . . . .



#### Τ4

LARGER BLOCKS	LARGE BLOCKS
PRIMARILY RESIDENTIAL	PRIMARY RESIDENTIAL
MORE GREENSCAPE	MIXED HARDSCAPE & GREENERY
DETACHED BUILDINGS	DETACHED BUILDINGS
ROTATED FRONTAGES	ALIGNED FRONTAGES
DOMESTIC ANIMALS	DOMESTIC ANIMALS

#### MODEST SETBACKS DEEP SETBACKS **ROADS & CONNECTORS** STREETS NARROW PATHS WIDE SIDEWALKS **OPPORTUNISTIC PARKING** DEDICATED PARKING LARGER KERB RADII SMALLER KERB RADII OPEN SWALES **PIT & PIPE DRAINAGE** MIXED TREE CLUSTERS ALIGNED STREET TREES

**BUSHFIRE BUFFERS** NATURE PARKS & SPORTS OVALS INFORMAL GATHERING PLACES

NATIVE & EXOTIC TREES

**CIVIC SQUARES & VILLAGE CORE** FORMAL PARKS, HALLS, CENTRES

2

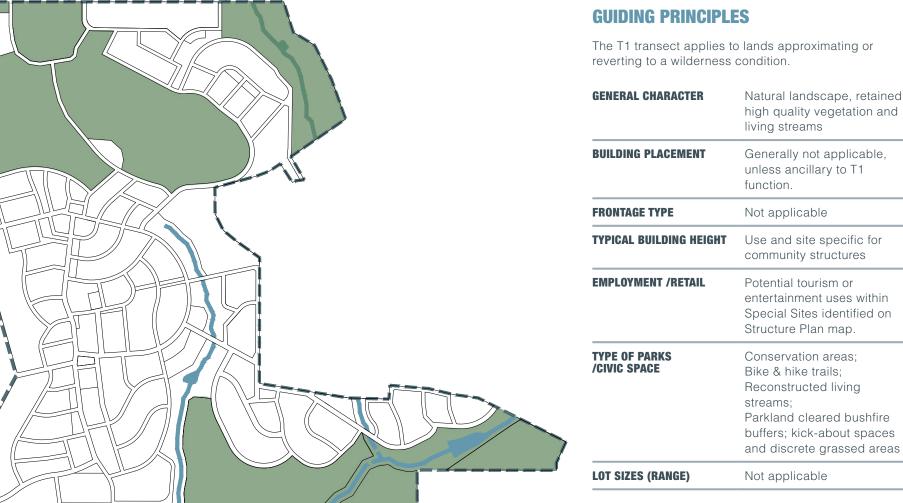
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#### **CONSERVATION** T1

The T1 transect applies to lands approximating or reverting to a wilderness condition.

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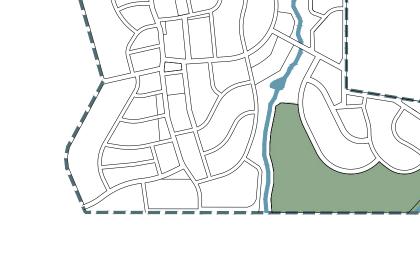


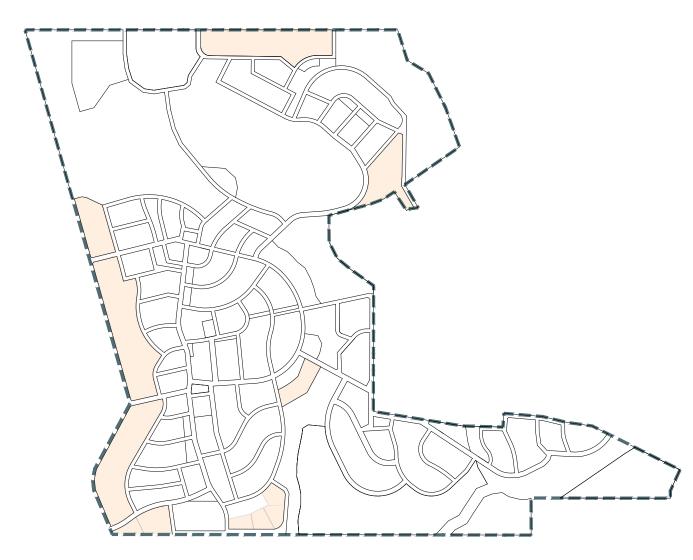
FIGURE 4: T1 CONSERVATION / RECREATION











## **T2 NATURAL LIVING**

#### **TRANSECT DESCRIPTION:**

Sparsely settled lands in open or cultivated states, with dry rolling land. These include existing cleared agricultural land, grassland, and drainage areas. Typical buildings are farmhouse style with large verandahs, and family homes with large outbuildings & sheds. Provided on periphery of Village as a transition to established larger lots surrounding.

GENERAL CHARACTER	Primarily larger lifestyle blocks, with retained vegetation and scattered buildings; vehicles are given priority
BUILDING PLACEMENT	Variable, large setbacks
FRONTAGE TYPE	No standard
TYPICAL BUILDING HEIGHT	1 to 2 Storey
EMPLOYMENT /RETAIL	Tradespersons / Home Businesses
TYPE OF PARKS /CIVIC SPACE	Bike & hike trails; Nature play; Parkland cleared bushfire buffers
LOT SIZES (RANGE)	1-2 hectares













FIGURE 6: T3 SUB URBAN

### T3 HILLS NEIGHBOURHOODS

#### **TRANSECT DESCRIPTION**

consists of low density residential areas, within walking distance of village. Home businesses and outbuildings are allowed. Planting is naturalistic and setbacks are relatively deep. Blocks may be large and the roads siteresponsive to accommodate natural conditions.

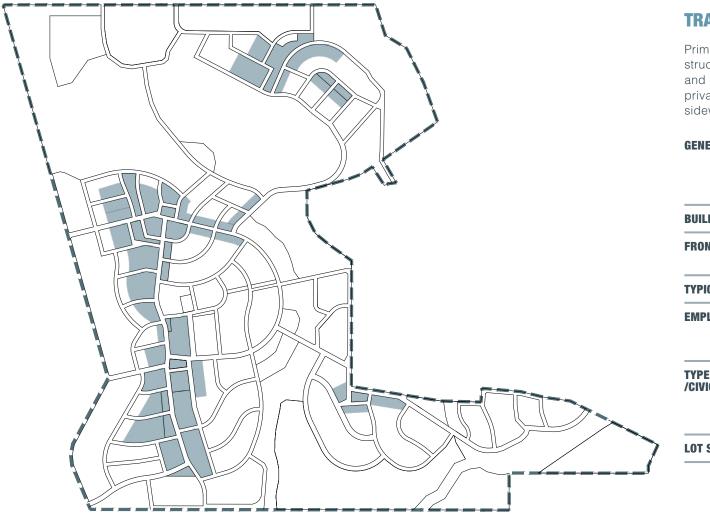
GENERAL CHARACTER	Landscaped yards surrounding detached single-family houses, pedestrians occasionally
BUILDING PLACEMENT	Modest to large setbacks, slight angles, placed to suit landform and slope as primary consideration. Driveways to respond to trees, slope and ground conditions.
FRONTAGE TYPE	fences, some connection with street
TYPICAL BUILDING HEIGHT	1- to 2-Storey
EMPLOYMENT /RETAIL	Low impact home businesses compatible with residential, generally near Connectors
TYPE OF PARKS /CIVIC SPACE	Bike & hike trails; Nature play; Parkland cleared bushfire buffers
LOT SIZES (RANGE)	1,428sqm - 2,000sqm











### **T4 VILLAGE**

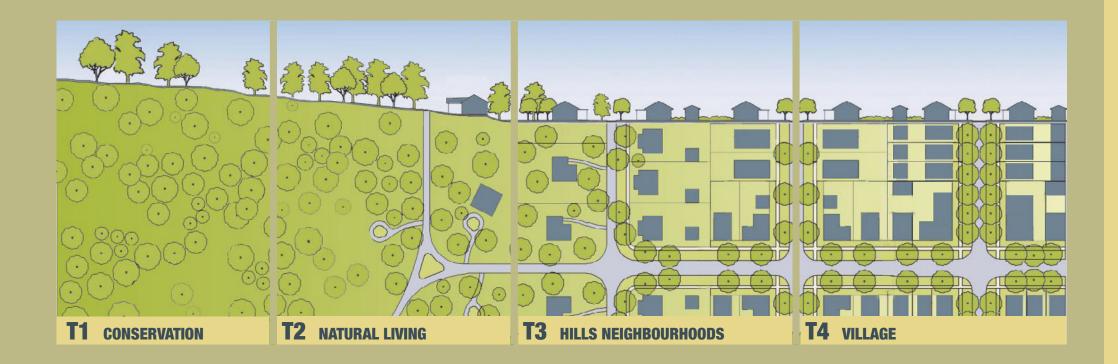
#### **TRANSECT DESCRIPTION:**

Primarily residential traditional neighbourhood <del>grid</del> structure, with a local centre a village core. Setbacks and landscaping are modest, encouraging publicprivate interaction at street level. Streets with kerbs and sidewalks define large-residential blocks

f housing types, nee between landscape Idings, pedestrians n priority
an setbacks
ndahs, fences, strong ection with street
2-Storey
num impact smaller e businesses, mixed tt core
al gathering spaces, bos & structures civic presence, grounds, ovals

FIGURE 7: T4 VILLAGE URBAN

# STREETS 2









#### **Explanatory Note:**

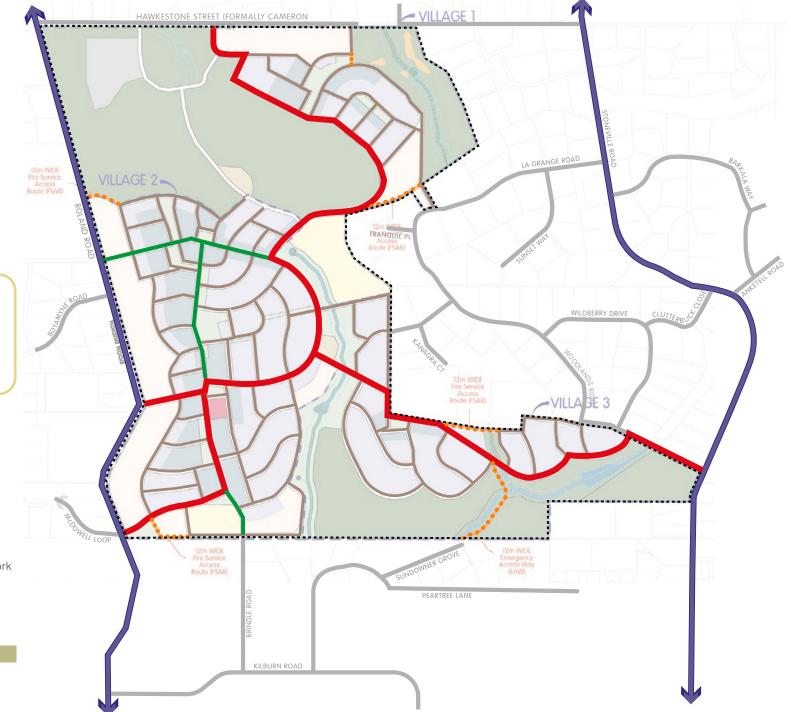
Neighbourhood Connector B and Access Street A serve a similar function, and are collectively referred to as Connectors in explanatory text.

#### LEGEND TYPE



Route (FSAR)

Refer to Structure Plan for Active Transport Network map and Public Transport map.



#### 2.1 DESIGN PRINCIPLES

#### **STREET TYPES**

The North Stoneville Townsite contains three main street types, including Neighbourhood Connector B, Access Street A and Access Street D. Important Local Roads do not traverse the site.

Neighbourhood Connector B and Access Street A serve a similar function, and are collectively referred to as Connectors in explanatory text.

The pages following provide a summary of the key design elements and function of each of the three street types, and detail the character changes that occur within each transect.

Detailed design shall have regard to the Thoroughfare Design Principles on this page.

# The importance of maintaining pedestrian desire lines.

Pedestrians are especially sensitive to minor shifts in geometry and detours.

Larger kerb radii and footpaths that contain detours are preferred in areas where pedestrians are not a priority - ie. T1 and T2 transect areas, or where the needs of emergency service vehicles, or emergency evacuation must prevail.

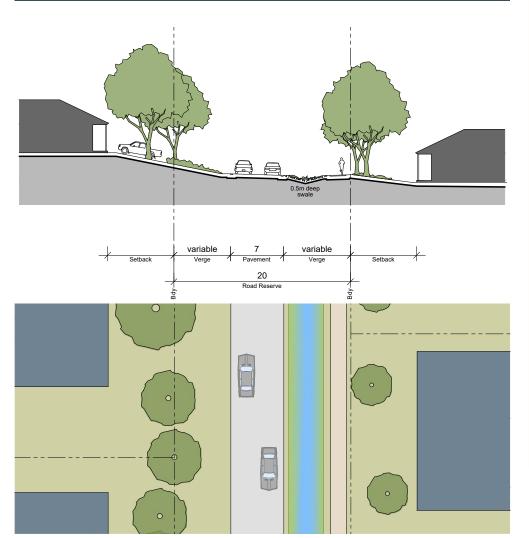
#### **STREET DESIGN PRINCIPLES**

- Streets will be designed in context with the urban form and the desired design speed, relative to the Transect area through which they pass.
- 2 Streets will be designed to reduce overall vehicle speeds to provide a safe and attractive environment for pedestrians and cyclists.
- **3** The detailed design of thoroughfares will draw inspiration from the elements found in older neighbourhoods including the provision of limited lot truncations, appropriate kerb radii, and reduced pavement widths particularly for T3 and T4 transects. Rubbish trucks may cross the centreline of the road pavement for all Access Streets in the interest of accommodating appropriate kerb radii and straight footpaths.
- 4 The street network shall be highly connected for cyclists and pedestrians. Cyclists will be accommodated with shared paths or shared low speed traffic environments.
- 5 Streets will be designed to create shady, pedestrian friendly streets and paths, and will retain existing trees in lower transects where possible.
- 6 On-street parking shall generally only be necessary closest to Village Core or selected parks, either in designated bays or as yield parking, depending on the thoroughfare and its position in the transect. As well as contributing to the total parking supply and allowing reduced-on-site requirements for retail and civic uses, on-street parking will be used to calm traffic movements.
- 7 One-way 'pinch points' and narrower pavement widths may feature in higher transect areas and be designed with the following benefits in mind: slower traffic speeds, safer pedestrian crossings, lowered street maintenance/resurfacing costs; tree canopy cover; and less heat radiation. 'Pinch points' should be trafficable or mountable by emergency vehicles.
- 8 Street reserve widths may be reduced adjacent to Public Open Space, where a verge is not required to service adjoining lots.

# **2 STREETS**

#### 2.2 STREET TYPES - ACCESS STREET A AND NEIGHBORHOOD CONNECTOR B (CONNECTORS)

#### CROSS SECTION A NOT TO SCALE



*Median not required for traffic purposes;	
only necessary where dealing with drainage or topographic level differences	

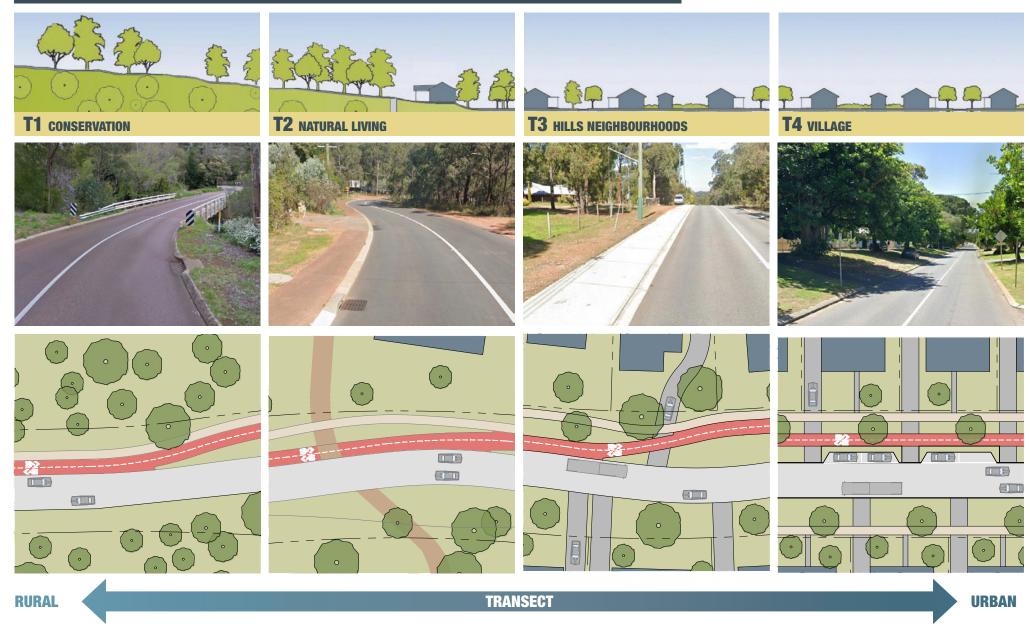
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DESIGN GUIDANCE	
THOROUGHFARE TYPE	Access Street A & Neighbourhood Connector B
MOVEMENT	Free flowing
DESIGN SPEED	Typically 50km/h (60km/h by warrant)
ROAD RESERVE	20m-30m dependent on need for drainage and on- street parking
PAVEMENT WIDTH	3.5m each lane
TRAFFIC FLOW	Two way
PARKING WIDTH / TYPE	T4 - both sides parallel within verge where required
KERB TYPE	T4/T3 - semi-mountable T2/T1 - flush / no kerb as appropriate to accommodate drainage swales
MEDIAN	n/a
TREE TYPE / SPACING	<ul> <li>T4 - Formal planting for good shade</li> <li>T3 - Semi-formal planting for shade</li> <li>T2 - Naturalistic clusters / existing groups</li> <li>T1 - Completely natural</li> </ul>
CYCLIST PROVISION	Typically a dual use path and on-street cycle lanes, consider separated cycle paths for key routes;
FOOTPATH TYPE / WIDTH	2.4m shared path one side; + 1.5m path one side in T4 only

\*Street section shown is through T3 Transect

#### **CONNECTOR STREET DETAILS**

#### **2.2 STREET TYPES - CONNECTOR**



\*dedicated cycle lanes only warranted in circumstances agreed by the Shire of Mundaring

### **2 STREETS**

#### 2.2 STREET TYPES - ACCESS STREET A AND NEIGHBORHOOD CONNECTOR B (CONNECTORS)

#### **EXPLANATORY NOTES**

Both Access Street A and Neighbourhood Connector B (referred to as Connectors) are strategic links that direct the majority of traffic through the village and to areas of interest within the townsite, and hold the highest level of movement functionality. Connectors do not contain high enough volumes to be correctly classified as 'Neighbourhood Connectors' (more than 3,000 vehicles per day), but shall be designed to accommodate bus services, in addition to dedicated cycling infrastructure.

Connectors will provide an arrival experience for residents and visitors of North Stoneville, with their physical makeup including tree species and kerb type to be informed by the corresponding transect it traverses. For most circumstances, Connectors can utilise a standard two-way 7.2m carriageway where no future bus route is anticipated. (Note that Connector Street sections identify a carriageway width of 7.0m. This dimension aligns with LN, but may be implemented at 7.2m to align with engineering practice.)

On-street parking shall only be necessary in the T4 Village" transect with the core area, such as the vicinity of the Local Centre, the school and possible oval, and shall be used to slow vehicle movements for safety. Connectors shall generally provide for free movement of vehicles at moderate speed, and can be designed to traverse natural features and existing trees with sweeping curves. The sign posted speed limit is 60km/h, except village core areas (30km/h).

The base reserve width is generally 20 metres to accommodate carriageway, footpaths, and cycleway. However, variances should be adopted to suit landform and tree retention efforts in certain locations.

SIGN POSTED SPEED LIMIT

TYPICAL CONNECTOR Up to 3,000 vehicles per day TRAFFIC VOLUMES

ACCOMMODATES BUS Yes

#### **INTERSECTION DETAILS**

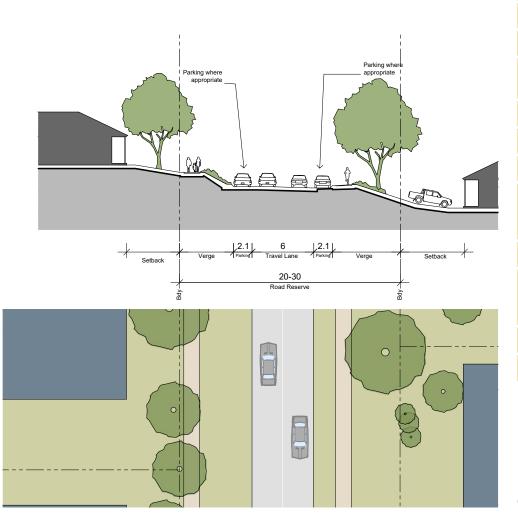
#### **2.2 STREET TYPES - CONNECTOR**



### **2 STREETS**

#### **2.2 STREET TYPES - ACCESS STREET**

#### CROSS SECTION B NOT TO SCALE



#### DESIGN GUIDANCE

THOROUGHFARE TYPE	Access Street
MOVEMENT	Yield
DESIGN SPEED	50km/h
ROAD RESERVE	Generally 20m; may be increased to retain vegetation
PAVEMENT WIDTH	6.0m
TRAFFIC FLOW	Two way yield
PARKING WIDTH / TYPE	Staggered parallel within pavement
KERB TYPE	T4 - semi-mountable T3/T2/T1 - flush / no kerb as appropriate to accommodate drainage swales
MEDIAN	n/a
TREE TYPE / SPACING	T4 - Semi-formal planting for shade T3/T2 - Naturalistic clusters / existing groups T1 - Completely natural
CYCLIST PROVISION	n/a
FOOTPATH TYPE / WIDTH	Typically 1.5m

\*Street section shown is through T3 Transect

#### ACCESS STREET DETAILS

#### **2.2 STREET TYPES - ACCESS STREET**



### 2 STREETS 2.2 STREET TYPES - ACCESS STREET

#### **EXPLANATORY NOTES**

Access Streets are the most common street type in North Stoneville, and shall support a relatively high level of pedestrian activity, with low to moderate traffic volumes. Access Streets are not designed to deal with public buses or to encourage high volumes of through traffic, with their primary function to facilitate pedestrian and cycling movements and the 'last few hundred metres' of private vehicle travel to individual homes. Given that Access Streets will comprise a large majority of public space within North Stoneville, they will serve as a catalyst for neighbourhood identity and, while they shall vary in character and tree species selection dependent on their positioning within the transect, will generally create, shaded residential streetscapes.

On-street parking nearest the Village Core transect shall be used to slow vehicle movements, but shall generally not be required in the majority of streets with larger lots. In higher transect areas, particularly the T4 Village Urban area, Access Streets shall follow a straight alignment, lined with medium single species trees in reasonably formal layout. In T3 Sub Urban and T2 Natural Living transect areas, Access Streets shall bend and follow the natural grade of landform, where possible.

Although the base reserve width is generally 20 metres, variances should be adopted to suit landform and tree retention efforts in certain locations. Streets running perpendicular to steeper downward slopes, in excess of 8% gradient, should consider using tighter reserve widths to minimise the amount of battering and earthworks required to accommodate flat verges.

SIGN POSTED SPEED LIMIT

TYPICAL CONNECTOR 750 to 1,500 vehicles per day TRAFFIC VOLUMES

n/a

ACCOMMODATES BUS

#### **INTERSECTION DETAILS**

#### 2.2 STREET TYPES - ACCESS STREET



# PRIVATE LAND TRANSECT DESIGN GUIDE







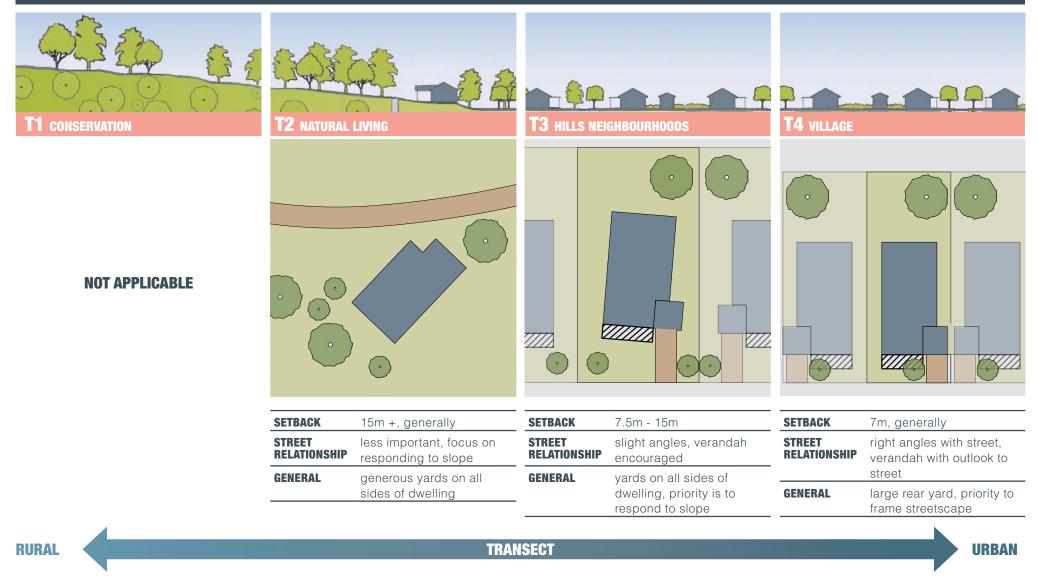


#### FRONTAGE FENCING GUIDE

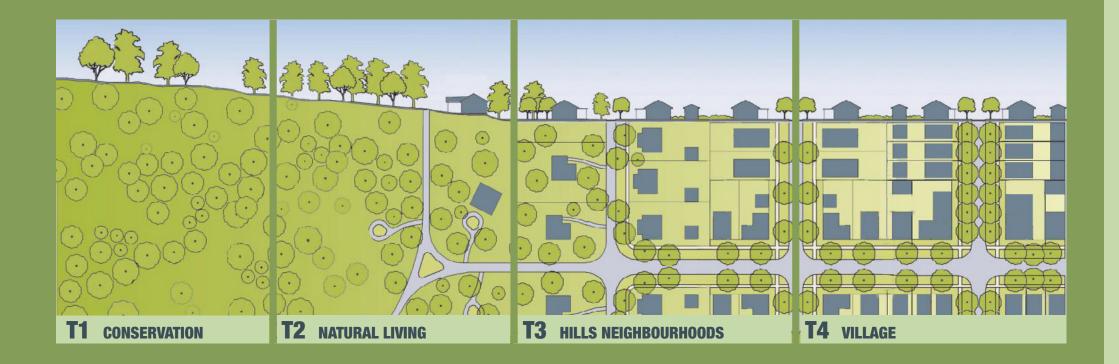


### **PRIVATE LAND 03**

#### **BUILDING DISPOSITION**



# **OPEN SPACE** TRANSECT DESIGN GUIDE







# **4 OPEN SPACE**

#### 4.1 PARK TYPES

Consistent with the transect design philosophy, parks should also respond to the context in which they sit.

A user should expect to experience a much more natural setting with minimal intervention and less modified landscaped elements adjacent T1 Conservation / Recreation and T2 Natural Living transects.

Meanwhile, spaces within the T4 area are intended to be formal in their landscape response, but flexible in their design commensurate with its village setting. Activities such as community markets, outdoor performance, and everyday gathering spaces are intended for the village squares.

T3 and T4 sub urban parks can provide kick-about spaces and traditional playgrounds, but they should still draw heavily on the hills' design references.

Nature play can be adapted to most transect areas, but should not take up large areas of T4 parks.

Nature corridors and linear parks that retain natural vegetation may connect and traverse transects, and provide opportunities for bike & hike trails.

While shade from trees is always an important consideration, tree planting efforts in parks should be concentrated within inner T4 transects, to further emphasise a higher status of amenity and attact everyday users to create vibrant activity within the village cores.

#### **OPEN SPACE DETAILS**



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playgrounds, kick-about

# ΗΔΤΟΗ