

Appendix D



Northern Settlement Strategy

Land Use Economic Modelling

Prepared for Golden Plains Shire Council

Draft – October 2016

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1 INTRODUCTION

Background

Golden Plains Shire Council commissioned HillPDA to provide a Land Use Economic Modelling service that demonstrates the financial cost of different settlement patterns.

A number of development scenarios are explored in order to identify the potential costs for Council servicing a variety of settlement patterns. The scenarios include a potential zone reform, urban consolidation and conceptual greenfield growth development.

This project will form part of the Northern Settlement Strategy; a high level strategic document, which aims to guide Council in determining sustainable areas in the northern half of the Shire to accommodate population growth to 2030. Upon completion, the Northern Settlement Strategy will be a spatial expression of population distribution, settlement size and settlement role. In addition, the Strategy will provide a planning framework for the location of development and encourage growth in those locations where there is the greatest opportunity to maximise benefit from existing infrastructure.

This report is the third key component of the Northern Settlement Strategy and complements other documents including a residential land supply review and typology of settlements.

The overall study area of the Northern Settlement Strategy covers approximately 1,928 square kilometres (192,800ha) which is bordered by the City of Ballarat, and the Shires of Pyrenees, Moorabool and Corangamite. The boundaries of the study area align with the portion of the Golden Plains Shire situated within the Central Highlands Regional Growth Plan.

Note that this cost of settlement patterns assessment is non-geographic specific, but rather uses typical scenarios to provide a guide to costs of different settlement patterns. The focus for this report is on land zoned for residential purposes such as the Township Zone (TZ), Low Density Residential Zone (LDRZ) and Rural Living Zone (RLZ).

Objectives

The objectives of this report are:

- To develop a number of potential growth scenarios for residential land use in Golden Plains Shire;
- To create a visual-based assessment of the costs of settlement patterns; and
- To provide a recommendation that outlines the best financial growth scenario for Council.

Method

The following method was implemented when undertaking the Cost of Settlement Patterns assessment:

- For a range of different settlement density patterns, determine an appropriate quantity of road, drainage and footpath infrastructure required to allow access to an additional 840 residential lots in Golden Plains Shire;
- Determine the amount and type of open space needed to support new residents under each settlement scenario;
- Assess whether demand for any additional community facilities would be generated by approximately 2,000 new residents in Golden Plains Shire; and
- Estimate the cost of maintaining and servicing the various additional infrastructures which is associated with 840 new residential lots.

Qualifications

The qualifications of this report are as follows:

- All quantities and costs in this report are indicative only, and estimates are based on the lot network structures defined in Chapter 2;
- The purpose of the provision of quantities is for high-level scenario comparison rather than a detailed engineering assessment for development;
- No assumption is made regarding the responsibility for the payment of identified capital costs; and
- Maintenance and servicing expenses (i.e. road repairs, cost of waste collection and the like) would typically be the responsibility of Council.

2 SETTLEMENT SCENARIOS

Overview of Scenarios

This report reviews eight potential growth scenarios involving approximately 2,000 residents and 840 new dwellings in the Golden Plains Shire.

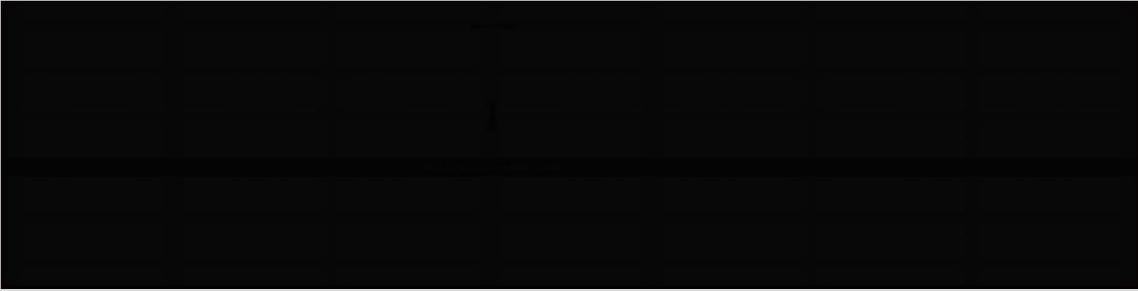
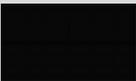
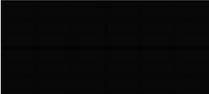
The eight development scenarios involve:

- The removal of the existing Rural Living Zone Schedule (which covers 9,500ha of land in the study area) to allow for **dispersed development** of:
 1. 2ha lots; and
 2. 8ha lots.
- A **consolidation** scenario which conceptually has undeveloped land within and around existing general residential development that can be considered for infill dwelling development at the following sizes:
 3. 1,000sqm lots;
 4. 2,000sqm lots; and
 5. 4,000sqm lots.
- A **conceptual growth** scenario of greenfield development land with subdivision to occur at the following sizes:
 6. 1,000sqm lots;
 7. 2,000sqm lots; and
 8. 4,000sqm lots.

These eight scenarios will necessitate a range of quantities of roads, drainage, footpaths, and other infrastructure. This infrastructure has been indicatively quantified in this report.

The scenarios are shown in comparison, using a general relative scale, in the figure below.

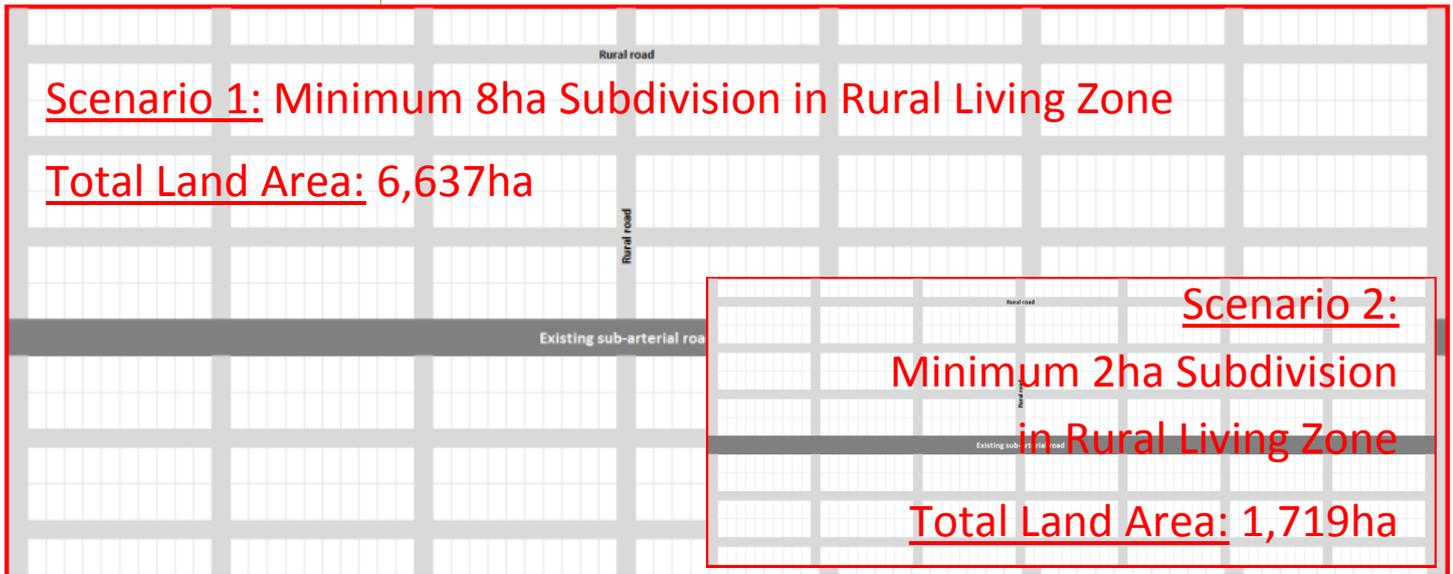
Figure 1 – General Guide to Relative Scale of the Scenarios

Settlement Scenario	Relative Size
<u>Dispersed Development Scenario</u>	
8ha rural lots Total area: 6,637ha	
2ha rural lots Total area: 1,719ha	
<u>Infill Development Scenario</u>	
1,000sqm residential lots Total area: 117ha	
2,000sqm residential lots Total area: 212ha	
4,000sqm residential lots Total area: 399ha	
<u>Greenfield Development Scenario</u>	
1,000sqm residential lots Total area: 117ha	
2,000sqm residential lots Total area: 212ha	
4,000sqm residential lots Total area: 399ha	

Dispersed Development Scenario (Rural Living Zone)

This scenario involves the removal of the existing Rural Living Zone Schedule to allow for dispersed development. Minimum lot sizes under this scenario are 8ha and 2ha.

Figure 2 - Example Lot Structure and Road Network, Dispersed Development

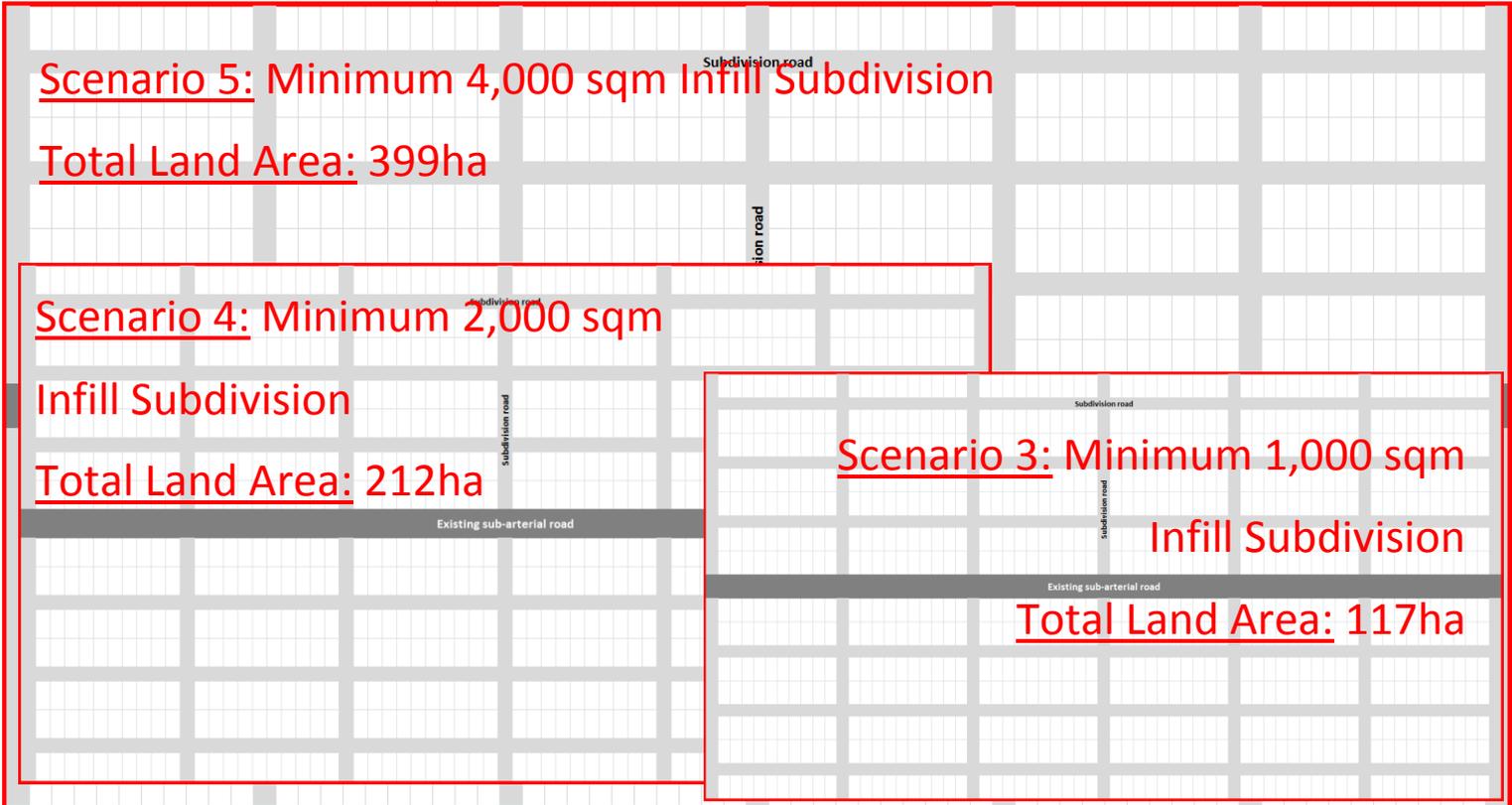


Note: Indicative Relative Scale of Scenario 1 versus Scenario 2

Consolidation Scenario (Infill Development)

The infill development scenario has new residential lots located around an existing conceptual township. The conceptual location has undeveloped land that can be considered for infill dwelling development. Minimum lot sizes under this scenario are 1,000sqm, 2,000sqm and 4,000sqm.

Figure 3 - Example Lot Structure and Road Network, Infill Development

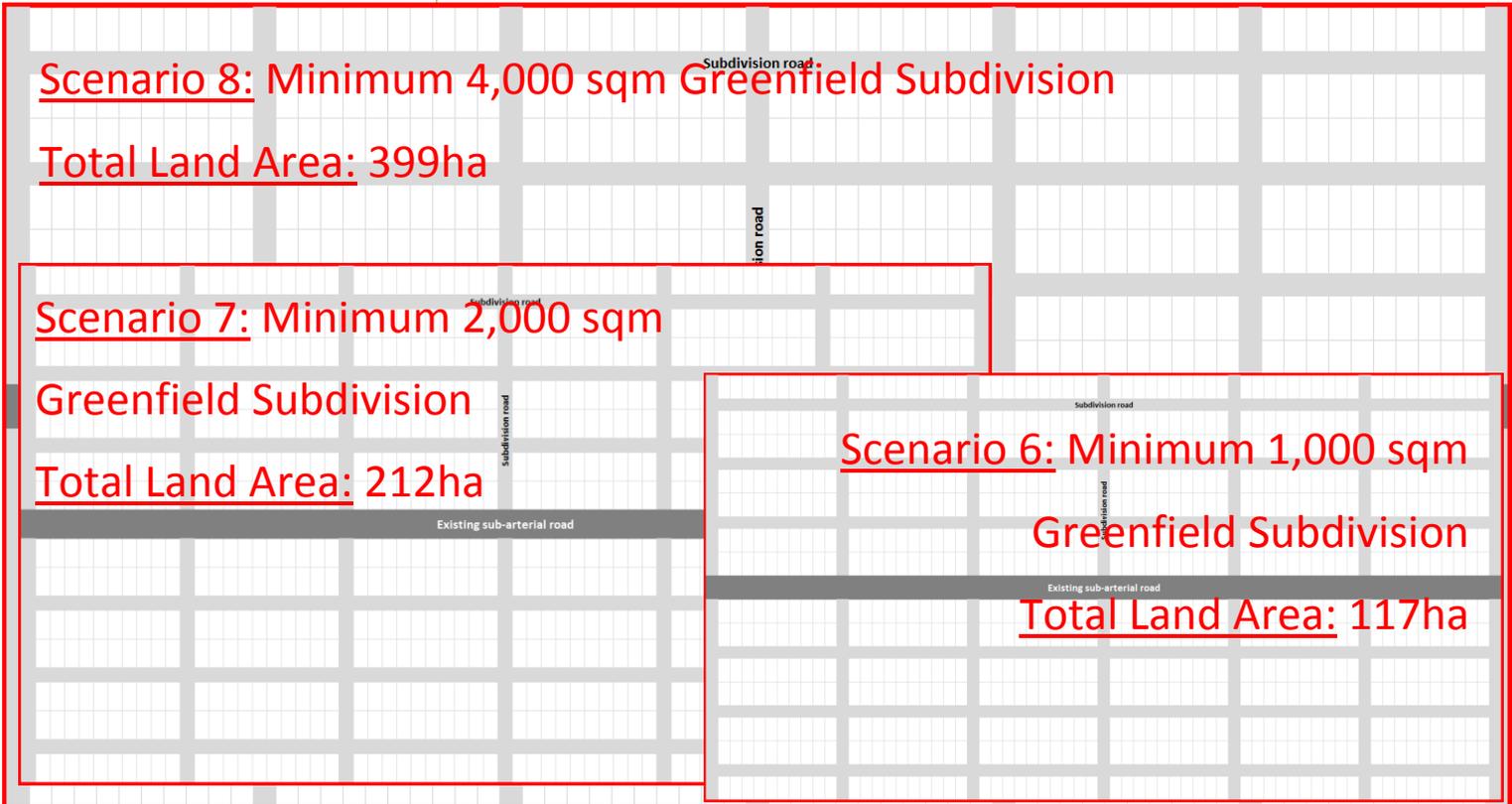


Note: Indicative Relative Scale of Scenario 3 versus Scenario 4 and Scenario 5

Conceptual Growth Scenario (Greenfield Development)

A conceptual growth scenario across a parcel of Greenfield development. Minimum lot sizes under this scenario are 1,000sqm, 2,000sqm and 4,000sqm.

Figure 4 - Example Lot Structure and Road Network, Greenfield Development



Note: Indicative Relative Scale of Scenario 6 versus Scenario 7 versus Scenario 8

3 QUANTITY AND SPECIFICATION OF INFRASTRUCTURE

Estimated Quantity

The quantity and specification of the infrastructure required is outlined in Table 1 below. The information shows the length of new roads required under each settlement pattern scenario and this ranges from 7km for the infill scenario with 1,000sqm lots to 85km for the dispersed development scenario involving 8ha rural lots. The infill and greenfield development scenarios are assumed to trigger the requirement for appropriate open space provision, however this element is excluded from a dispersed development scenario.

Table 1 –Quantity Requirements by Settlement Pattern

	DISPERSED DEVELOPMENT		INFILL DEVELOPMENT			GREENFIELD DEVELOPMENT		
	SCENARIO 1: 8ha RLZ	SCENARIO 2: 2ha RLZ	SCENARIO 3: Infill 1,000sqm	SCENARIO 4: Infill 2,000sqm	SCENARIO 5: Infill 4,000sqm	SCENARIO 6: Greenfield 1,000sqm	SCENARIO 7: Greenfield 2,000sqm	SCENARIO 8: Greenfield 4,000sqm
New roads	85,260 metres	43,260 metres	7,308 metres	9,618 metres	13,608 metres	14,616 metres	19,236 metres	27,216 metres
Footpaths	N/A	N/A	7,308 metres	9,618 metres	13,608 metres	14,616 metres	19,236 metres	27,216 metres
Drainage	85,260 metres	43,260 metres	7,308 metres	9,618 metres	13,608 metres	14,616 metres	19,236 metres	27,216 metres
Guide posts	853	433	146	192	272	292	385	544
Street lighting	N/A	N/A	73	96	136	146	192	272
Public Open Space	0	0	58,330 sqm	105,874 sqm	199,450 sqm	58,330 sqm	105,874 sqm	199,450 sqm
Community facilities	No publicly funded facilities	No publicly funded facilities	No publicly funded facilities	No publicly funded facilities	No publicly funded facilities	No publicly funded facilities	No publicly funded facilities	No publicly funded facilities
Item	New rural road		New subdivision road			New subdivision road		
Description	New, 2 lane, flexible pavement rural road		New, 2 lane, flexible pavement subdivision road, covering a range of pavement structures			New, 2 lane, flexible pavement subdivision road, covering a range of pavement structures		

Source: HillPDA

Specification and Cost Assumptions

The infrastructure specification costs are shown in Table 2. More details regarding the scope of infrastructure is shown in the appendices.

Capital costs for the infill development scenario involving 1,000sqm lots are estimated to tally in the order of \$30 million. By comparison, large 8ha rural lots would generate the requirement for approximately \$198 million in new infrastructure.

Table 2 –Estimated Infrastructure Costings by Settlement Pattern

	SCENARIO 1: 8ha RLZ	SCENARIO 2: 2ha RLZ	SCENARIO 3: Infill 1,000sqm	SCENARIO 4: Infill 2,000sqm	SCENARIO 5: Infill 4,000sqm	SCENARIO 6: Greenfield 1,000sqm	SCENARIO 7: Greenfield 2,000sqm	SCENARIO 8: Greenfield 4,000sqm
<u>New Road Network</u>								
Units Required	85,260 metres	43,260 metres	7,308 metres	9,618 metres	13,608 metres	14,616 metres	19,236 metres	27,216 metres
Benchmark Cost Per Unit	\$2,322/metre	\$2,322/metre	\$3,631/metre	\$3,631/metre	\$3,405/metre	\$3,631/metre	\$3,631/metre	\$3,405/metre
Total Cost	\$197,973,700	\$100,449,700	\$26,535,300	\$34,923,000	\$46,335,200	\$53,070,700	\$69,845,900	\$92,670,500
<u>Guide Posts</u>								
Units Required	853 posts	433 posts	146 posts	192 posts	272 posts	292 posts	385 posts	544 posts
Benchmark Cost Per Unit	\$55/post	\$55/post	\$55/post	\$55/post	\$55/post	\$55/post	\$55/post	\$55/post
Total Cost	\$46,900	\$23,800	\$8,000	\$10,600	\$15,000	\$16,100	\$21,200	\$29,900
<u>Street Lighting</u>								
Units Required	N/A	N/A	73 lights	96 lights	136 lights	146 lights	192 lights	272 lights
Benchmark Cost Per Unit	\$10,062/light	\$10,062/light	\$10,062/light	\$10,062/light	\$10,062/light	\$10,062/light	\$10,062/light	\$10,062/light
Total Cost	\$0	\$0	\$734,500	\$966,000	\$1,368,400	\$1,469,100	\$1,931,900	\$2,736,900
Total Road Costs	\$198,020,600	\$100,473,500	\$27,277,800	\$35,899,600	\$47,718,600	\$54,555,900	\$71,799,000	\$95,437,300
<u>Public Open Space</u>								
Units Required	N/A	N/A	58,330 sqm	105,874 sqm	199,450 sqm	58,330 sqm	105,874 sqm	199,450 sqm
Benchmark Cost Per Unit	\$28 /sqm	\$28 /sqm	\$55 /sqm	\$55 /sqm	\$28 /sqm	\$55 /sqm	\$55 /sqm	\$28 /sqm
Total Cost	\$0	\$0	\$3,208,100	\$5,823,000	\$5,584,600	\$3,208,100	\$5,823,000	\$5,584,600
<u>Community Facilities</u>								
Nil Required	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Infrastructure Costs	\$198,020,600	\$100,473,500	\$30,485,900	\$41,722,600	\$53,303,200	\$57,764,000	\$77,622,000	\$101,021,900
<i>Relative to Lowest Cost Scenario</i>	<i>+550%</i>	<i>+230%</i>	<i>0%</i>	<i>+37%</i>	<i>+75%</i>	<i>+89%</i>	<i>+155%</i>	<i>+231%</i>

Source: HillPDA

4 CAPITAL AND RECURRENT COSTS

Overview

This section provides a summary of the capital costs needed to deliver the necessary infrastructure under each of the eight identified settlement pattern scenarios. A summary of the ongoing maintenance costs to Council has also been provided, including road maintenance, open space upkeep and the ongoing cost of servicing the recycling and infill needs of new residents under each settlement scenario.

Capital Costs

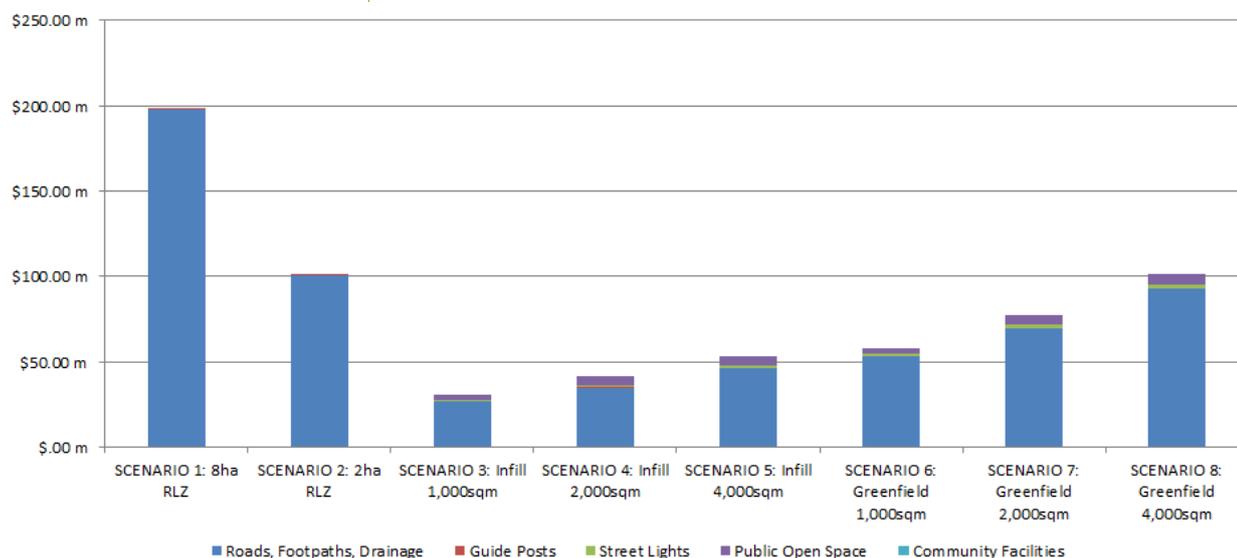
A summary of capital costs required under each development scenario is shown in Table 3 and Figure 5.

Table 3 – Indicative Capital Costs for Each Development Scenario

Capital Costs	Roads, Footpaths, Drainage	Guide Posts	Street Lights	Public Open Space	Community Facilities	Total
SCENARIO 1: 8ha RLZ	\$197.97m	\$0.05m	\$0m	\$0m	\$0m	\$198.02m
SCENARIO 2: 2ha RLZ	\$100.45m	\$0.02m	\$0m	\$0m	\$0m	\$100.47m
SCENARIO 3: Infill 1,000sqm	\$26.54m	\$0.01m	\$0.73m	\$3.21m	\$0m	\$30.49m
SCENARIO 4: Infill 2,000sqm	\$34.92m	\$0.01m	\$0.97m	\$5.82m	\$0m	\$41.72m
SCENARIO 5: Infill 4,000sqm	\$46.34m	\$0.02m	\$1.37m	\$5.58m	\$0m	\$53.30m
SCENARIO 6: Greenfield 1,000sqm	\$53.07m	\$0.02m	\$1.47m	\$3.21m	\$0m	\$57.76m
SCENARIO 7: Greenfield 2,000sqm	\$69.85m	\$0.02m	\$1.93m	\$5.82m	\$0m	\$77.62m
SCENARIO 8: Greenfield 4,000sqm	\$92.67m	\$0.03m	\$2.74m	\$5.58m	\$0m	\$101.02m

Source: HillPDA

Figure 5 – Indicative Capital Costs Comparison for Each Development Scenario



The capital costs involved with the 1,000sqm lots under the infill scenario is the lowest cost settlement option and would indicatively cost approximately \$30 million.

On the other hand, the most expensive settlement option would be the dispersed development scenario involving minimum lot sizes of 8ha. The total cost under this scenario would be in the order of \$198 million.

Capital costs have been ranked according their relativity to the lowest cost scenario (i.e. the Infill development scenario involving 1,000sqm lots):

1. Infill 1,000sqm lots	Lowest cost scenario
2. Infill 2,000sqm lots	+37% more expensive
3. Infill 4,000sqm lots	+75% more expensive
4. Greenfield 1,000sqm lots	+89% more expensive
5. Greenfield 2,000sqm lots	+155% more expensive
6. 2ha RLZ lots	+230% more expensive
7. Greenfield 4,000sqm lots	+231% more expensive
8. 8ha RLZ lots	+550% more expensive

These figures show that the large dispersed lots and residential development in new areas bear significant expense due to the costs of providing infrastructure. Adding residential lots around existing infrastructure is a notably cheaper approach.

Recurrent Maintenance Costs

A summary of ongoing maintenance costs required under each development scenario is shown in Table 4 and Figure 6.

This is based on the estimated maintenance cost per annum for roads, drainage and paths, which is assumed to equate to 2% (on average) of capital cost per annum over 30 years.

The recycling and landfill cost is assumed at a dollar per dwelling rate which varies by scenario.

The present value shows a future expenditure stream (ie, maintenance costs) over 30 years as a lump sum in today's dollars. The sum of maintenance costs over the 30 year period has been discounted at a nominated discount (or interest) rate so that the total can be shown in today's dollars. An example has been included as an Appendix.

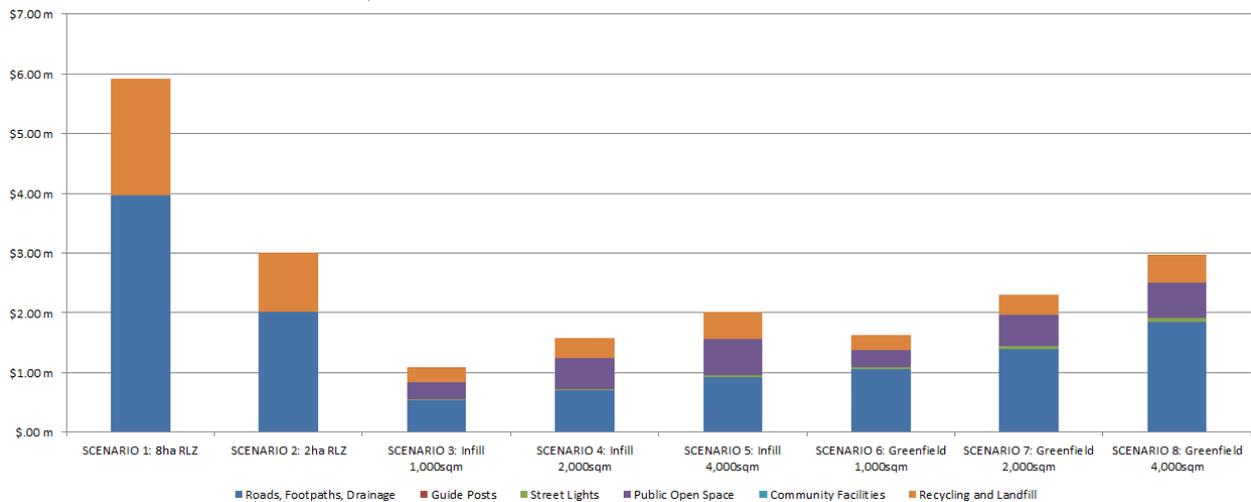
Table 4 – Indicative Maintenance Costs for Each Development Scenario

Maintenance Costs	Roads, Footpaths, Drainage	Guide Posts	Street Lights	Public Open Space	Recycling and Landfill	Total (First Year)	Total (Summed over 30 Years, shown as Present Value)
SCENARIO 1: 8ha RLZ	\$3.96m	\$0m	\$0m	\$0m	\$1.96m	\$5.92m	\$103.09m
SCENARIO 2: 2ha RLZ	\$2.01m	\$0m	\$0m	\$0m	\$0.99m	\$3.00m	\$52.31m
SCENARIO 3: Infill 1,000sqm	\$0.53m	\$0m	\$0.01m	\$0.29m	\$0.25m	\$1.09m	\$18.97m
SCENARIO 4: Infill 2,000sqm	\$0.70m	\$0m	\$0.02m	\$0.53m	\$0.33m	\$1.58m	\$27.50m
SCENARIO 5: Infill 4,000sqm	\$0.93m	\$0m	\$0.03m	\$0.60m	\$0.47m	\$2.02m	\$35.21m
SCENARIO 6: Greenfield 1,000sqm	\$1.06m	\$0m	\$0.03m	\$0.29m	\$0.25m	\$1.63m	\$28.47m
SCENARIO 7: Greenfield 2,000sqm	\$1.40m	\$0m	\$0.04m	\$0.53m	\$0.33m	\$2.30m	\$40.00m
SCENARIO 8: Greenfield 4,000sqm	\$1.85m	\$0m	\$0.05m	\$0.60m	\$0.47m	\$2.98m	\$51.83m

Source: HillPDA

Note: The Net Present Value (NPV) is the accumulative total value of maintenance over 30 years calculated in today's dollars

Figure 6 - Indicative Maintenance Costs Comparison for Each Development Scenario



Similarly to capital costs, the 1,000sqm lots under the infill scenario will be the lowest cost settlement option in terms of annual maintenance costs and would indicatively cost Council approximately \$1.1 million per annum to maintain, or \$19 million over 30 years (in 2016 dollars).

From an ongoing maintenance perspective, the most expensive settlement option for the municipality would be the dispersed development scenario involving minimum lot sizes of 8ha. Average annual ongoing maintenance costs to Council under this scenario

would be in the order of \$5.9 million, or \$103 million over 30 years (in 2016 dollars).

Maintenance costs have been ranked according their relativity to the lowest cost scenario (i.e. the Infill development scenario involving 1,000sqm lots):

- | | |
|-----------------------------|----------------------|
| 1. Infill 1,000sqm lots | Lowest cost scenario |
| 2. Infill 2,000sqm lots | +45% more expensive |
| 3. Greenfield 1,000sqm lots | +50% more expensive |
| 4. Infill 4,000sqm lots | +86% more expensive |
| 5. Greenfield 2,000sqm lots | +111% more expensive |
| 6. Greenfield 4,000sqm lots | +173% more expensive |
| 7. 2ha RLZ lots | +176% more expensive |
| 8. 8ha RLZ lots | +444% more expensive |

These figures indicate that the ongoing maintenance costs to Council are significantly lower for smaller lots than for larger dispersed lots.

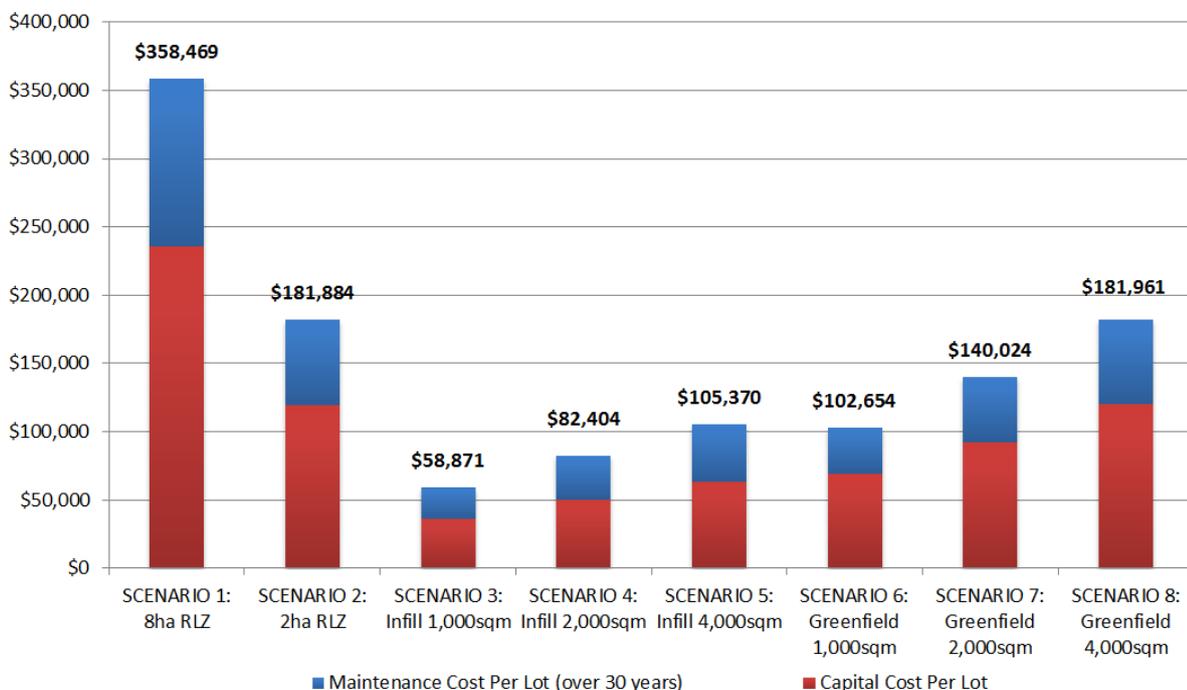
5 CONCLUSION

The cost of settlement patterns varies dramatically across the eight scenarios. Providing 840 infill residential lots at a size of 1,000sqm each represents the lowest cost option, both from an upfront capital cost perspective and an ongoing maintenance standpoint. Total capital costs (\$30 million) and the sum of maintenance costs over the next 30 years (\$19 million) mean that providing 840 residential lots in an 1,000sqm-per-lot infill pattern would cost an average of approximately \$58,900 per lot.

At the opposite end of the pricing scale, the provision of large 8ha lots in the Rural Living Zone in the Golden Plains Shire represents the most expensive and inefficient option to implement. Total capital costs (\$198 million) and the sum of maintenance costs over the next 30 years (\$103 million) mean that the 840 dispersed 8ha lots would cost an average of \$358,500 per lot.

The findings of this cost of settlement patterns assessment have been summarised in Figure 7. The chart shows the total cost **per lot** – including capital costs and maintenance costs – over a timeframe of 30 years.

Figure 7 – Per Lot Summary Cost Comparison Lot for Each Development Scenario, 30 Years (Present Value at 6%)



Source: HillPDA

Note: The Present Value is the sum value of maintenance costs over 30 years, calculated as a single figure in today's dollars

APPENDIX A: SUMMARY OF ASSUMPTIONS

Dispersed Development Scenario (Rural Living Zone)

This scenario involves the removal of the existing Rural Living Zone Schedule to allow for dispersed development.

Broad Assumptions

Minimum 8ha Subdivision in Rural Living Zone

- 840 lots clustered to 6,637ha;
- Each lot will be exactly 8ha with dimensions of 200m road frontage and 400m depth;
- No footpaths on rural road network;
- No new sub-arterial roads are required;
- 25% of the total road requirement already exists;
- One guide post every 100 metres of road; and
- No street lighting or open space requirements in rural areas.

Minimum 2ha Subdivision in Rural Living Zone

- 840 lots clustered to 1,719ha;
- Each lot will be exactly 2ha with dimensions of 100m road frontage and 200m depth;
- No footpaths on rural road network;
- No new sub-arterial roads are required;
- 25% of the total road requirement already exists;
- One guide post every 100 metres of road; and
- No street lighting or open space requirements in rural areas.

Consolidation Scenario (Infill Development)

The infill development scenario has new residential lots located around an existing conceptual township. The conceptual location is undeveloped land that can be considered for infill dwelling development.

Broad Assumptions

Minimum 1,000sqm Subdivision in Infill Location

- 840 lots clustered to 117ha
- Each lot will be exactly 1,000sqm with dimensions of 20m road frontage and 50m depth

- Footpaths on new road network
- No new sub-arterial roads are required
- 50% of the total road requirement already exists
- One guide post every 50 metres of new road
- One street light every 100 metres of new road
- Open space requirement of 5% of developable land

Minimum 2,000sqm Subdivision in Infill Location

- 840 lots clustered to 212ha
- Each lot will be exactly 2,000sqm with dimensions of 25m road frontage and 80m depth
- Footpaths on new road network
- No new sub-arterial roads are required
- 50% of the total road requirement already exists
- One guide post every 50 metres of new road
- One street light every 100 metres of new road
- Open space requirement of 5% of developable land

Minimum 4,000sqm Subdivision in Infill Location

- 840 lots clustered to 399ha
- Each lot will be exactly 4,000sqm with dimensions of 40m road frontage and 100m depth
- Footpaths on one side of new road network
- No new sub-arterial roads are required
- 50% of the total road requirement already exists
- One guide post every 50 metres of new road
- One street light every 100 metres of new road
- Open space requirement of 5% of developable land

Conceptual Growth Scenario (Greenfield Development)

Broad Assumptions

Minimum 1,000sqm Subdivision in Greenfield Location

- 840 lots clustered to 117ha
- Each lot will be exactly 1,000sqm with dimensions of 20m road frontage and 50m depth
- Footpaths on new road network

- No new sub-arterial roads are required
- 0% of the total road requirement already exists
- One guide post every 50 metres of new road
- One street light every 100 metres of new road
- Open space requirement of 5% of developable land

Minimum 2,000sqm Subdivision in Greenfield Location

- 840 lots clustered to 212ha
- Each lot will be exactly 2,000sqm with dimensions of 25m road frontage and 80m depth
- Footpaths on new road network
- No new sub-arterial roads are required
- 0% of the total road requirement already exists
- One guide post every 50 metres of new road
- One street light every 100 metres of new road
- Open space requirement of 5% of developable land

Minimum 4,000sqm Subdivision in Greenfield Location

- 840 lots clustered to 399ha
- Each lot will be exactly 4,000sqm with dimensions of 40m road frontage and 100m depth
- Footpaths on one side of new road network
- No new sub-arterial roads are required
- 0% of the total road requirement already exists
- One guide post every 50 metres of new road
- One street light every 100 metres of new road
- Open space requirement of 5% of developable land

Example of Present Value

	Year 1	Year 2	Year 3	Year 4	Year 5
Cash Flow or Expenditure Flow ...	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
... which can be summarised or represented as ...					
Present Value ...	\$4,212				
... which is the lump sum at a 6% Discount Rate.					

In other words, you could put \$4,212 in an account that earns 6% annual interest, and that sum would pay \$1,000 per year for five years.

Scope of Infrastructure

The table below provides more detail on the infrastructure scope.

Table 5 – Indicative Infrastructure Scope

	DISPERSED DEVELOPMENT		INFILL DEVELOPMENT			GREENFIELD DEVELOPMENT		
	SCENARIO 1: 8ha RLZ	SCENARIO 2: 2ha RLZ	SCENARIO 3: Infill 1,000sqm	SCENARIO 4: Infill 2,000sqm	SCENARIO 5: Infill 4,000sqm	SCENARIO 6: Greenfield 1,000sqm	SCENARIO 7: Greenfield 2,000sqm	SCENARIO 8: Greenfield 4,000sqm
Scope	<p>Scope of the infrastructure item:</p> <p>Inclusions:</p> <ul style="list-style-type: none"> - Pavement structure: 150mm SMZ, 150mm DGS20, 150mm DGB20, 14/7 spray seal - Road corridor: 2 lanes x 3m wide carriageway, road reserve 8m and carriageway width 6m - 2 x 500mm wide turfed grass nature strip - 1.8m wide swale drain with hydro mulching - Typical signage - 1 small to medium sized sign (eg, speed limit sign) every 50 - 60m - Line-marking - Tie-in works to existing lane <p>Exclusions (may be reasonably required):</p> <ul style="list-style-type: none"> - Guardrails and guide post - Street lighting <p>Exclusions (exceeds minimum requirements or not on the essential infrastructure list):</p> <ul style="list-style-type: none"> - Kerb & gutter - Footpath - Stormwater drainage 	<p>Scope of the infrastructure item:</p> <p>Inclusions:</p> <ul style="list-style-type: none"> - Pavement structure: 150mm - 200mm SMZ, 150mm to 200mm DGS20, 150mm to 200mm DGB20, two coat bitumen seal (10mm and 14mm), 25mm to 30mm AC wearing course - Road corridor: 2 lanes x 4.5m wide carriageway, road reserve 16m and carriageway width 9m - Roll- top gutter - Stormwater drainage - Subsoil drainage - 100mm diameter corrugated perforated plastic pipe with sock, including drainage filter backfill - Parking lane - 2 x 2.5m reinforced concrete footpath – 2,500mm wide x 125mm thick concrete on 125mm thick DGS20 - 2 x 500mm wide turfed grass nature strip - Typical signage - 1 small to medium sized sign (eg, speed limit sign) every 50 - 60m - Tie-in works to existing lane - Line-marking <p>Exclusions (may be reasonably required):</p> <ul style="list-style-type: none"> - Guardrails and guide post - Street lighting <p>Key scope of work inclusions:</p> <ul style="list-style-type: none"> - Nominal 500mm cut/fill balance - Clearing and grubbing of light to medium vegetation - Minor traffic control allowance for construction vehicles/pedestrian and around tie-in point with trafficked road (includes installation and removal of signage and barriers) - Installation works <p>Key identified risks (excluded from base cost, but allowed for in contingency):</p> <ul style="list-style-type: none"> - Relocation and diversion of existing utilities - Contaminated materials - Surplus excavated material requiring disposal off-site - Imported fill required for site levelling <p>Minimum quantity:</p> <ul style="list-style-type: none"> - 1,000sqm (120m length) 	<p>Scope of the infrastructure item:</p> <p>Inclusions:</p> <ul style="list-style-type: none"> - Pavement structure: 150mm - 200mm SMZ, 150mm to 200mm DGS20, 150mm to 200mm DGB20, two coat bitumen seal (10mm and 14mm), 25mm to 30mm AC wearing course - Road corridor: 2 lanes x 4.5m wide carriageway, road reserve 16m and carriageway width 9m - Roll- top gutter - Stormwater drainage - Subsoil drainage - 100mm diameter corrugated perforated plastic pipe with sock, including drainage filter backfill - Parking lane - 2 x 2.5m reinforced concrete footpath – 2,500mm wide x 125mm thick concrete on 125mm thick DGS20 - 2 x 500mm wide turfed grass nature strip - Typical signage - 1 small to medium sized sign (eg, speed limit sign) every 50 - 60m - Tie-in works to existing lane - Line-marking <p>Exclusions (may be reasonably required):</p> <ul style="list-style-type: none"> - Guardrails and guide post - Street lighting <p>Key scope of work inclusions:</p> <ul style="list-style-type: none"> - Nominal 500mm cut/fill balance - Clearing and grubbing of light to medium vegetation - Minor traffic control allowance for construction vehicles/pedestrian and around tie-in point with trafficked road (includes installation and removal of signage and barriers) - Installation works <p>Key identified risks (excluded from base cost, but allowed for in contingency):</p> <ul style="list-style-type: none"> - Relocation and diversion of existing utilities - Contaminated materials - Surplus excavated material requiring disposal off-site - Imported fill required for site levelling <p>Minimum quantity:</p> <ul style="list-style-type: none"> - 1,000sqm (120m length) 					

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