PROPERTY ECONOMICS

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THREE KINGS RENEWAL DEVELOPMENT ECONOMIC IMPACT ASSESSMENT

FLETCHER RESIDENTIAL LTD

Code	Date	Information / Comments	Project Leader
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DISCLAIMER

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1. INTRODUCTION

Property Economics has been commissioned by Fletcher to assess the economic costs and benefits associated with the development of a large scale residential project in the retired Three Kings Quarry, located in the Three Kings / Mt Eden area of Auckland, to the local Auckland economy. The proposed development includes between 1,200 and 1,500 residential dwellings and up to 1,000sqm Gross Floor Area (**"GFA"**) of retail floorspace. For this assessment we have assumed development to the lower end of the scope at 1,200 dwellings. This conservative approach would indicate that the economic benefits outlined (and in particular the net differences) are significantly understated. The fact that capacity currently exists in the infrastructure network curtails the potential costs of the proposal while associated economic benefits increase at a greater rate as density increases.
There are two options advanced for development including both 15H-1 and 15H-2. Option 15H-1 includes the development of the full 21.6ha of land while 15H-2 includes the development of only the existing quarry land at 15.2ha. For the purposes of this economic assessment the economic value of providing more significant public open space has not been assessed and therefore there is minimal material difference between the two options. This does not in any way imply that the provision of this public space does not have significant social and economic value.

This economic impact assessment includes both the initial economic injections during the construction phase through to the on-going annual benefits to the local economy of establishing the aforementioned residential and commercial activity proposed within the subject quarry. This assessment also includes the potential costs associated with the proposal including the opportunity costs of the identified location and activity.

1.1. INFORMATION SOURCES

Information has been obtained from a variety of sources and publications available to Property Economics, including:

- Employment Data - Statistics NZ Business Frame
- Proposed Development Composition – Fletcher Residential Ltd
- Input / Output Tables – Statistics NZ
- District Multipliers - Property Economics
- Development Expenditure – Fletcher Residential Ltd
- Infrastructure Assessment – Harrison Grierson, May 2014
- Transportation Assessment – TDG, May 2014

1.2. APPROACH AND METHODOLOGY

The following report assesses the economic costs and benefits associated with the proposed Three Kings Renewal. The report outlines both the proposed development as well as a counterfactual position that is considered to be the 'next best alternative', or opportunity cost, of the proposal. Based on these two potential outcomes a 'net' position is established indicating whether the proposal potentially results in a net community economic gain or loss.

In terms of the identification of economic costs and benefits these are firstly outlined and where possible quantified either directly or in the form of a proxy (a market indication resulting from a perceived cost or benefit). As previously stated, the assessment contained within this report has been undertaken at a conservative level based on 1,200 dwellings. The assessment itself is in line with standard economic cost / benefit assessments.

2. EXECUTIVE SUMMARY

The purpose of this report is to assess the potential economic costs and benefits associated primarily with the proposed Three Kings Renewal project. In relation to this, the net economic benefits attributable to the Auckland regional and local community have been assessed against the alternative of accommodating this residential growth in an urban fringe location. The identification, and where feasible the quantification, of these net economic benefits represent an improved economic well-being position for the community as a whole.

The approach of this report was to consider all the potential economic costs and benefits of the proposal and to discuss their relevance as they pertained to the development itself. In following this approach it was soon clear that the traditional economic costs associated with intensified residential development, such as congestion and increased infrastructure costs, were not present to any significant degree for the Three Kings Renewal. It was of interest that the proposal is in fact likely to result in a significantly improved local environment from both infrastructure and amenity stand points.

The potential economic costs and benefits are outlined in Table 1 within the report, with potential impacts on amenity and infrastructure as the primary focus. However the reports of both Harrison Grierson and TDG have clearly illustrated the capacity that exists within the local network for transportation as well as utilities.

As set out in this report, there will be a 'net positive' impact upon amenity within the local area, including improved facilities as well as the introduction of high quality residential dwellings.

Overall the quantified net economic benefits are likely to be:

- Net initial Regional economic injection of $217m
- Net Regional employment generation (construction) of 156 Employee Count (**ECs**)
- Additional 'on-going' localised (Three Kings catchment) impact $21.5m per annum
- Additional 'on-going' localised employment generation 435ECs
- Reduced land use 65ha (minimal productivity value $380,000 per annum)
- Additional wealth creation as a proxy for amenity / efficiency gains $64m
- Reduced total infrastructure capital costs (up to 35% lower)
- Reduced total infrastructure maintenance costs (up to 9%)

With qualified economic benefits including but not limited to:

- Reduced travel time
- Reduced travel costs

- Greater travel options
- Improved safety
- Greater housing diversity and affordability
- Improved labour productivity through increased densities and agglomeration effects

Overall, from an economic viewpoint, the proposed Three Kings Renewal will undoubtedly improve the economic position of both the local economy and the Auckland community as a whole.

3. GENERAL ECONOMIC COSTS AND BENEFITS

The ensuing costs and benefits are not intended to be an exhaustive list of all impacts of both the proposed development and the counterfactual position but a primary list of those considered most appropriate to assess. In terms of the two positions the costs and benefits have not been reconciled given the fact that in most cases a cost for one position represents either a proportional cost to the other or a relative benefit.

The proposal provides for the development of between 1,200 and 1,500 dwellings. For the assessment of the economic benefits and impact we have taken the conservative approach of using the lower range of 1,200 dwellings. However, in terms of issues of congestion we have evaluated this proposal in terms of the upper range of 1,500.

Given the proposal calls for the development of 1,200 dwellings the counterfactual position would be the activity that would otherwise be permitted on this site. The current activity and zoning is for quarry use. While this is technically the alternative use based on the permitted activity, it does not make sense to assess the economic value of residential development against this activity as there is no quarrying potential left at this site.

For the purposes of this report it is considered appropriate to consider the alternative potential for the accommodation of 1,200 dwellings. Given the limited opportunity for sites suitable to accommodate 1,200 new dwellings the reasonable alternative location is a site on the urban fringe.

Table 1 summaries the potential economic costs and benefits for each position relative to each other.

There are essentially four primary issues that relate to the net economic benefit of the proposed Three Kings Renewal development enabled by the private plan change:

1. **Amenity**: Given the proposed development provides view shafts and accessibility that would not otherwise exist, the visual amenity levels are considered high. The critical mass created through over 1,200 additional households also has the potential to increase local amenity through increased retail viability, employment and agglomeration benefits. As well as this, the provision of the higher density development has the potential to maintain rural amenity levels.

2. **Congestion**: A key consideration in the net economic value associated with the proposed development is its fiscal impact upon existing infrastructure and community assets, including but not limited to; roading, water, schools, libraries, communication infrastructure etc. A potential economic cost associated with increased residential density is the overutilization of this infrastructure within a given location. This utilisation potentially leads to two outcomes: the congestion of infrastructure e.g. traffic jams, or usage restrictions that in turn create economic

costs. If the capacity of the existing infrastructure is exceeded, this capacity will require expansion, creating additional costs and potentially increasing the marginal cost per dwelling.

The reports of both TDG (transportation) and Harrison Grierson (infrastructure) indicate that there are likely to be no associated community costs with regard to the utilisation and provision of infrastructure in this location.

TDG found that:

- The design disperses trips across the network
- There will be no additional congestion or significant changes in journey times along arterials.
- The location was part of the public transport 'Frequent Network'.

Harrison Grierson found that:

- There was sufficient capacity in gas, electricity, communications and potable water. Stormwater can be appropriately managed on site. There is a requirement to pump wastewater from the lower level of the development.

The relative costs of infrastructure between the two options identified are pertinent due to the fact the current location does not represent additional community costs. This is because capacity in existing infrastructure not only exists but results in lower marginal costs per dwelling. Given this fact the net economic benefit associated with infrastructure is the simply difference between the infrastructure costs for this proposed development relative to a similar quantum of residential development on the urban fringe.

Without assessing a specific urban fringe site and the potential for 1,500 average homes (which would at this stage be inappropriate) it is difficult to quantify the infrastructure costs differential. However it is possible to give an indication of the level of difference between the two options.

Recent studies have shown that the public capital costs for streets and utilities were 50% greater for urban fringe locations than for high-density planned development with operating and maintenance costs 13% lower for high density residential development.[1]

Given the existing infrastructure capacity at the Three Kings site there is little doubt that the cost of providing 1,200 urban fringe dwellings, compared to the same

[1] Including 'Infrastructure Costs: Brownfield versus Greenfield, Redevelopment Economics' June 2012

number in the Three Kings location, will result in higher capital and ongoing costs to the community.

3. **Efficiencies:** There are several economic efficiency issues with regard to the proposed development. Several of these factors are considered in the quantification of value assessed later in the report but others are simply qualified at this point.

   First, while the development of 1,200 residential dwellings in this location offers the opportunity of economies of scale, there is little doubt in the research material at hand that construction of medium to high density residential product is likely to be more expensive than its urban fringe counterpart. This cost however, and the willingness of the market to accept it, is in fact a proxy value for the potential economic and social values associated with this form of residential development. It illustrates that the potential buyers are willing to pay more per square metre for housing based on the associated efficiencies and other benefits afforded them.

   It is important to note that not all these benefits are considered by buyers and therefore represent community benefits through consumption externalities.

   'Recent case studies of recent medium density developments in various parts of Auckland found that "the business community has benefited from having more people in the area…", while residents have enjoyed the convenience of having schools and shops in close proximity to their homes (Auckland Growth Forum).

   Efficiencies also apply for public transport with greater densities improving the viability and effectiveness of its provision.

4. **Opportunity Cost:** An important consideration in the assessment of the net economic benefits of the proposed development include the 'next best alternative' to this activity and the relative economic costs and benefits associated with it. The purpose of this inclusion is to consider alternative uses for scarce resources (such as land) to ensure that the community achieves the best outcome.

   This site is currently zoned as a quarry and as such this use would generally form the basis for the opportunity cost. However there is little to no ability for this site to continue as a quarry and as such it is nonsensical to provide this as a potential cost. As such a net position is purported to be assessed including the potential costs and benefits of providing for this level of residential activity elsewhere.

There has also been a considerable amount of research undertaken regarding the benefits of medium to high density residential development on safety and lowering the costs of crime and policing.

'Improved personal security has been identified as one of the attractions of higher density living for residents of newly intensified areas in Auckland (Research Solutions, 2000).

Research and evidence supporting the concept of natural surveillance and crime reduction counters the traditional association of high density housing with "crime and anti-social behaviour". An investigation into the "social infrastructure impacts of urban growth" found that economic conditions, rather than density, are the key factors in generating such undesirable situations, and "much of the research that purports to show a relationship between high density and stressful and unhealthy living is flawed, and the relationship is uncertain..." (Auckland Regional Growth Forum).

The following table (Table 1) outlines the potential costs and benefits associated with the two scenarios for development. The table is intended to outline the potential costs which are considered later in the report. Not all the identified costs and benefits will in fact be relevant in terms of their actuality but are included here to illustrate they have been considered.

TABLE 1: POTENTIAL ECONOMIC COSTS AND BENEFITS

Proposed Development: 1,200 dwellings	**Counterfactual: Urban Fringe Residential**
Potential Costs:	
* Effect on value of surrounding properties * Increased infrastructure costs * Congestion (overutilisation of infrastructure capacity) * Opportunity Cost * Potential for poor quality housing * Increased construction costs * Effect on open space	* Inefficient land use * Opportunity Costs * Increased marginal and total infrastructure costs * Increased congestion * Reduced production * Loss of agglomeration benefits * Decreased productivity * Dispersed employment activity * Inefficient community infrastructure * Reduced community value * Reduced economic competitiveness
Potential Benefits	
* Increased infrastructure efficiency * Increased relative amenity * Increased land use efficiency * Increased wealth creation * Reduced transportation costs * Increased economies of scale * Reduced propensity for infrastruture duplication * Improved employment opportunities / agglomeration benefits * Improved critical mass * Improved personal safety and lower crime *Enhanced public transport and viability * Increased diversity in housing options * Decreased average travel distance increasing likelihood of walking and cycling	* Reduced impact on existing values * Reduced impact on existing infrastructure * Reduced congestion

*Note for the purposes of this assessment the potential costs of the proposal have been assessed in relation to 1,500 dwellings.

4. POTENTIAL ECONOMIC ACTIVITY GENERATION FROM THE PROPOSED DEVELOPMENT

This economic impact overview estimates the total additional gross injection into the Auckland Region's business activity brought about by the proposed Three Kings Renewal project, enabled by the private plan change. The proposed development for the purposes of this assessment includes:

- A minimum of 15.2 hectares of high quality residential and commercial development, with areas of open space.
- 1,200 residential units at 100sqm Net Saleable Area (**"NSA"**) per unit
- 1,000sqm GFA of retail floorspace

These initial specifications and details have been provided by Fletcher Residential Ltd and represent the development's conservative configuration and costings at this point in time.

An assumption has been made that the average dwelling is 100sqm GFA (this has been included as a sensitivity and so 120sqm GFA has also been assessed).

It is important to note that this is a gross injection and is not site specific. It also assesses the likely economic impacts upon Auckland Region's business activity given the composition of activities above.

Although there are undoubtedly economic benefits that are specific to this location, they are primarily driven by proximity to transport corridors and the opportunity costs associated with other sites.

The economic benefits likely to be experienced as a result of the anticipated development are broken down into two phases. First, the development phase, which includes the costs of the development and the proportion of those costs that are retained within the Region. The second phase is the on-going operations of the anticipated development in terms of realistic retail spend and employment generation.

Both these phases are measured in terms of their expected direct, indirect, and induced economic impacts upon the regional economy. The direct economic impacts (benefits) are derived from the actual spending / expenses incurred through the operation of the anticipated development.

Indirect economic benefits are the increased spending brought about by those firms / households and their employees / occupants, who supply the development, while induced economic benefits are measured in terms of the additional income that will be spent in the area due to increased business activity.

Benefits are measured based on initial injections of capital into the Auckland Region due to the 'construction' costs of the development, and the on-going spending and saving associated with the eventual operation of this development. This economic injection then gives rise to a chain of flow-on effects (multiplier effect) through indirect spending from suppliers and a general increase in economic activity.

5. TOTAL CONSTRUCTION ACTIVITY

Stage One includes construction costs, which have been valued for the overall development in two parts. The impact of this injection on the initial business cycle has been calculated. This 'construction multiplier' was based on the national input-output tables produced by Statistics New Zealand, which were then assessed at a regional level based on Auckland's economic activity. This estimates the 'leakage' from the local economy (within specified sectors), and therefore the overall local production (with a given business cycle) for each $1 injected.

This was performed for the general construction, commercial and retail sectors. These multipliers are based on 'net' flows by broad sector type and are therefore approximations.

Total benefits to the Auckland regional catchment for the proposed development include:

- Direct Construction Cost x 'Construction Multiplier' +
- Direct Development Cost x 'Development Multiplier' +
- Direct Increased Commercial Spending x 'Commercial Multiplier' +
- Indirect Business Spend x 'Commercial Multiplier' +
- Induced Retail Spending x 'Retail Multiplier'

Each identified multiplier relates simply to the economic sector from which the activity is generated.

ASSUMPTIONS

The following assumptions have been applied in order to assess the level of economic injection into the overall economy at this time. This has some (limited) impact on the distributional effects of the costs and benefits, but can be quickly adjusted to accommodate more specific construction and on-going costs and injections.

1. For the purposes of this assessment it has been assumed that the construction costs will fall within the definition of the following categories (based on a standard 'special' commercial ratio): 'residential construction', 'non-residential construction', 'non-building construction', 'other construction services'.

2. Not all economic impacts will be restricted to the Auckland Region, however the distribution of these impacts have not been assessed within this report.

3. The origin of labour has been assessed based on City labour movements furnished by Statistics NZ based on 2006 data. However employment data has been updated as per the Business Frame data to March 2013.[2]

4. There is also likely to be an amount of residential redistribution amongst the wider sub-national boundaries to Three Kings. This implies that Auckland increases its competitiveness for residential housing and 'retail spend' given the development of a significant residential offer such as that proposed.

5. The economic activity generated is based on this development attracting activity that may not have otherwise located here. As stated this assessment is not site specific.

6. Specific costs include:

    - Total construction
    - Site Preparation
    - Professional Fees / Levies
    - Design / Services

Given the above assumptions, Table 2 estimates the initial economic impact on the Auckland Region from the construction phase of the Three Kings Renewal development only.

[2] These data frames illustrate the level of employment within the Auckland Region (as well as the catchment) by ANZSIC category as well as showing the origin of this labour and therefore its movement.

TABLE 2: ESTIMATED CONSTRUCTION ECONOMIC IMPACT ON AUCKLAND REGION (120SQM)

Initial construction Injection	
Residential	
Number of Sites	1,200
Direct Auckland Impact ($m)	$281
Auckland Impact ($m)	**$608**
Retail	
Total Floorspace (sqm)	1,000
Direct Auckland Impact ($m)	$2
Auckland Impact ($m)	**$4**
Carparking	
Direct Auckland Impact ($m)	$1
Auckland Impact ($m)	**$2**
Other (Development Costs)	
Auckland Impact ($m)	**$138**
Initial Economic Injection ($m2013)	**$751**

NB: Total Activity is based on Output II Multipliers

Source: Property Economics

The preceding table illustrates that the total initial impact on business activity within the Auckland Region as a result of the Three Kings Renewal is estimated to be in the order of $751 million. This is based on completion of the entire development by December 2025, with an appropriate discount rate applied.

Note all figures in this economic assessment are in 2013 dollars.

This impact is broken down into the various development sectors: residential, retail space and the communal areas. The construction of each of these components has unique level two multipliers that exhibit the flow-on effects (and retention) that each will have in the region's economy. For the purposes of this report these are based on an average floorspace cost.

6. ON-GOING OPERATIONAL ACTIVITY GENERATION

6.1. PROPOSAL AND ASSUMPTIONS

The development assumptions utilised for the purposes of this component of the report include:

- Income levels for the employees (given the composition below) have been estimated in 2013 dollars for purposes of comparison and estimation of Net Present Value (**"NPV"**).
- It has been assumed that the residential development will be at full capacity by 2025 (i.e. occupancy reaching 95%).
- First and second level multipliers have been assessed for the Auckland Region based on the composition and proportion of labour and production sourced from within the region at the time of this report. For the purposes of this report, development composition has been based on this employment and production.
- The proportion of materials and labour internalised in direct benefits to Auckland are based on standardised labour movements as well as employment (depicted in Tables 3 and 4 following) and production composition within the region. As per the explanation on multipliers provided in Appendix 1 the amount of each 'flow-on' dollar retained in Auckland is based on the movement of resources (including labour) between other districts and regions.
- The proportions for the counterfactual option 2 have been assessed in the same manner as the proposed development with a summary of the net differences provided.

TABLE 3: AUCKLAND COMPARATIVE EMPLOYMENT COMPOSITION

ANZSIC SECTOR	Auckland Region	New Zealand
A Agriculture, Forestry and Fishing	5,340	111,530
B Mining	330	6,780
C Manufacturing	71,020	211,710
D Electricity, Gas, Water and Waste Services	3,920	14,280
E Construction	34,730	124,870
F Wholesale Trade	53,150	104,100
G Retail Trade	62,770	195,860
H Accommodation and Food Services	43,280	134,450
I Transport, Postal and Warehousing	32,120	82,090
J Information Media and Telecommunications	17,490	34,530
K Financial and Insurance Services	27,770	54,950
L Rental, Hiring and Real Estate Services	10,710	28,370
M Professional, Scientific and Technical Services	69,060	153,130
N Administrative and Support Services	37,550	93,610
O Public Administration and Safety	30,610	110,900
P Education and Training	54,180	167,250
Q Health Care and Social Assistance	63,500	211,350
R Arts and Recreation Services	10,990	36,320
S Other Services	21,920	64,970
TOTAL	**650,440**	**1,941,050**

TABLE 4: AUCKLAND EMPLOYMENT REPRESENTATION RATIOS

ANZSIC SECTOR	Auckland Region
A Agriculture, Forestry and Fishing	0.14
B Mining	0.15
C Manufacturing	1.00
D Electricity, Gas, Water and Waste Services	0.82
E Construction	0.83
F Wholesale Trade	1.52
G Retail Trade	0.96
H Accommodation and Food Services	0.96
I Transport, Postal and Warehousing	1.17
J Information Media and Telecommunications	1.51
K Financial and Insurance Services	1.51
L Rental, Hiring and Real Estate Services	1.13
M Professional, Scientific and Technical Services	1.35
N Administrative and Support Services	1.20
O Public Administration and Safety	0.82
P Education and Training	0.97
Q Health Care and Social Assistance	0.90
R Arts and Recreation Services	0.90
S Other Services	1.01

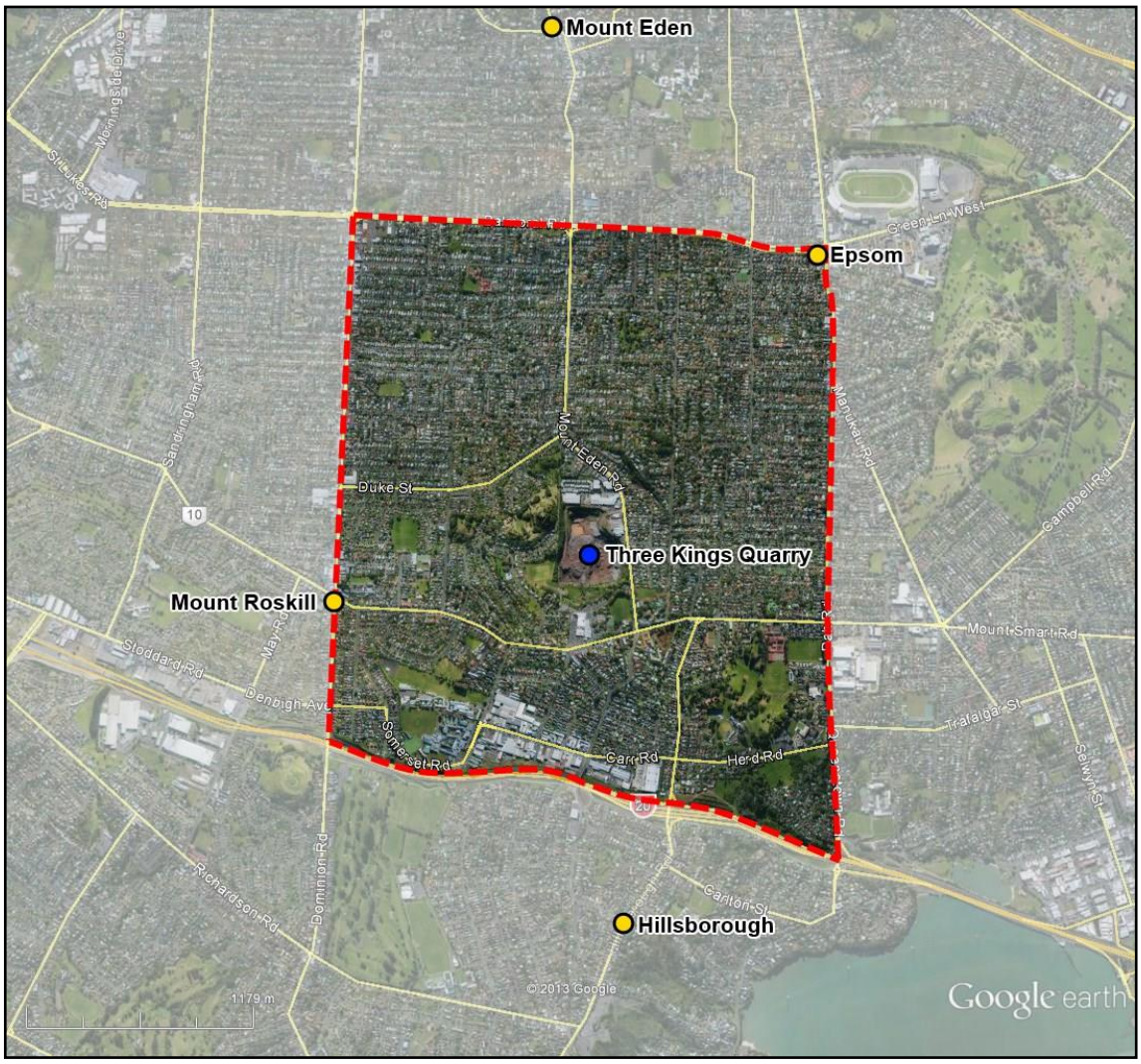
Source: Property Economics, Statistics NZ

6.2. LOCAL RESIDENTIAL IMPACT

The residential component of the Three Kings Renewal is by far the primary aspect of the development. It proposes to develop between 1,200 and 1,500 residential dwellings within the identified 21.6 ha of land (or 15.2ha). This area is comprised of 15.2 ha held by Fletchers and a further 6.4 ha owned by the Crown and administered by the Council. These two land holdings combined constitute Option 15H-1, while the Fletchers site alone makes up Option 15H-2.

The entire area of Figure 1, in which the subject Three Kings Quarry is separately delineated) represents the local catchment for which key demographics are outlined in Table 5. The information pertaining to this area has been assessed at Statistics NZ 'meshblock' level for consistency and accuracy.

FIGURE 1: THREE KINGS PROPOSED RESIDENTIAL DEVELOPMENT LOCATION AND CATCHMENT



Source: Property Economics, Google Earth

TABLE 5: LOCAL CATCHMENT DEMOGRAPHIC PROFILE (2013)

GENERAL	LOCAL CATCHMENT	AUCKLAND CITY
Population	27,505	469,548
Households	9,574	176,836
Person Per Dwelling Ratio	2.9	2.7
AGE PROFILE		
Average Age	34	34
0-9 years	12%	12%
10-19 years	16%	13%
20-29 years	16%	18%
30-39 years	15%	17%
40-49 years	17%	15%
50-64 years	15%	14%
65 plus years	10%	10%
HOUSEHOLD INCOME PROFILE		
Average (pa)	$88,134	$83,617
$0-$30,000 (pa)	23%	23%
$30,001-$50,000 (pa)	13%	16%
$50,001-$70,000 (pa)	13%	14%
$70.001-$100,000 (pa)	15%	15%
$100,001 plus (pa)	36%	32%
EMPLOYMENT		
Employed - Full Time	73%	75%
Employed - Part Time	22%	20%
Not in Labour Force	33%	31%
YEARS AT RESIDENCE		
Less Than 5 Years	59%	61%
5 - 14 Years	28%	26%
15 Plus Years	13%	13%
IMMIGRATION		
NZ Born	60%	65%
Immigrated 0-9 Years Ago	24%	21%
Immigrated 10-19 Years Ago	9%	7%
Immigrated 20 Plus Years Ago	7%	8%
ETHNICITY		
European Ethnic Groups	49%	50%
Mäori Ethnic Group	4%	7%
Pacific Peoples' Ethnic Groups	7%	12%
Asian Ethnic Groups	32%	22%
MELAA Ethnic Groups	1%	2%
Other Ethnic Groups	7%	7%

Source: Property Economics, Statistics NZ

QUALIFICATION ATTAINMENT	LOCAL CATCHMENT	AUCKLAND CITY
No Qualification	12%	13%
Secondary School	36%	35%
Trade / Vocational	15%	15%
Bachelor Degree	21%	18%
Higher Degree	9%	8%
Other	7%	11%
INDUSTRY OF EMPLOYMENT		
White Collar	83%	80%
Blue Collar	17%	20%
STUDENT PROPORTIONS		
Full Time	17%	15%
Part Time	6%	6%
Not Studying	77%	79%
SOURCE OF INCOME		
Unemployment Benefit	2%	2%
Self Employed/Own Business	12%	12%
Wages/Salary	42%	43%
Other Income	38%	38%
No Income	7%	6%
WEEKLY HOURS WORKED		
1 hr - 19 hrs	13%	12%
20 hrs - 39 hrs	21%	20%
40 hrs - 59 hrs	57%	59%
60 plus hrs	9%	9%
NUMBER OF RESIDENTS		
1 Residents	19%	23%
2 Residents	27%	31%
3 Residents	18%	18%
4 Residents	21%	16%
5 Residents	9%	7%
6 Residents	3%	3%
7 Residents	1%	1%
8 Plus Residents	1%	1%
HOUSEHOLD STRUCTURE		
Single	19%	23%
Couple	24%	26%
Single Parent With Children	12%	12%
Two Parent Family	39%	30%
Other Multi-person	7%	8%
HOME OWNERSHIP		
Residents Own / Mortgage	62%	56%
Rent	38%	44%

Source: Property Economics, Statistics NZ

Table 6 provides an employment composition breakdown for the 2000 and 2012 years of the local Three Kings catchment (as defined for this assessment), and current sector employment ratios. This indicates the level of activity by sector that will remain in the local catchment and assists in developing the multipliers employed in the economic modelling.

TABLE 6: CATCHMENT EMPLOYMENT PROFILE AND RATIO (2000 AND 2012)

	2000	2012	2012
A Agriculture, Forestry and Fishing	6	6	0.14
B Mining	9	6	2.31
C Manufacturing	612	432	0.77
D Electricity, Gas, Water and Waste Services	103	0	0.00
E Construction	227	263	0.96
F Wholesale Trade	189	210	0.50
G Retail Trade	687	692	1.40
H Accommodation and Food Services	173	276	0.81
I Transport, Postal and Warehousing	159	83	0.33
J Information Media and Telecommunications	12	95	0.69
K Financial and Insurance Services	42	36	0.16
L Rental, Hiring and Real Estate Services	101	118	1.40
M Professional, Scientific and Technical Services	177	388	0.71
N Administrative and Support Services	250	129	0.44
O Public Administration and Safety	80	410	1.70
P Education and Training	795	1,283	3.01
Q Health Care and Social Assistance	487	441	0.88
R Arts and Recreation Services	56	66	0.76
S Other Services	121	183	1.06
Total All Industries	**4,286**	**5,117**	**N /A**

Source: Property Economics, Statistics NZ

The following provides a headline snapshot of the residential market in the Three Kings catchment currently.

- There are currently around 27,500 residents residing in 9,500 homes.
- The average household size is larger than the Auckland City Isthmus average.
- The average household income is over 5% greater than the Auckland City Isthmus average.
- There are 30% more two parent families living here proportionate to the Auckland City Isthmus.

- The home ownership proportion is 10% greater than the Auckland City Isthmus average.
- The locally employed to population ratio is 19% compared to 42% across the Region.
- The local catchment (Three Kings and Mt Eden primarily) had over 480 residential house sales last year.
- The average sale price was $900,000 (Three Kings $634,000, Mt Eden $938,000).
- 3 bedroom homes were the most popular with 30%, followed by 4 bedrooms 23% and 2 bedrooms 21%.
- Interestingly 2 bedrooms were more popular in Three Kings, while 4 bedrooms were more popular in Mt Eden.

Sales rates are highly dependent on market activity. However, for the purposes of this analysis it is expected that the proposed residential development will achieve a complete sales rate (with approximately 5% sold but either on the market or unoccupied) by 2025 (assuming a construction and occupation period of 10 years). This equates to a sale rate of 120 units per annum. Table 7 below outlines the increased economic activity created by the development within the identified catchment (over and above the normal market growth).

Essentially the introduction of between 1,200 to 1,500 new dwellings within the identified catchment will affect the economic activity within the area in two ways. Firstly, the level of retail expenditure available will increase. Currently, based on the 692 retail Employee Count[3] (**"ECs"**) accommodated within the catchment the area retains approximately 36% or $138m of the retail expenditure generated within it ($380m).

With the introduction of 1,200 new households within the area this retail spend increases by $54m per annum. With the increased retail spend available the level of retention is likely to increase to approximately 38% resulting in an additional $24m spent within the catchment by 2025 (in 2013 dollars). This additional retail spend will create 150 new retail jobs within the area and the ability for the local catchment to accommodate and sustain a further 4,500sqm of net retail floorspace (around 6,500sqm GFA).

Additionally, the development of 1,200 new households will increase the demand for local services creating $4.8m in spend from these new businesses and resulting in the addition of 320 new commercial jobs from the local catchment.

[3] Statistics NZ measure for employment for a defined geographic area.

Overall the 1,200 new dwellings will result in an increase in ongoing expenditure of $25m within the Three Kings catchment creating additional income of $4.5m per annum (value added) within the local area and 470 new jobs.

TABLE 7: ADDITIONAL ONGOING 'LOCAL' ECONOMIC ACTIVITY GENERATED BY THE PROPOSED DEVELOPMENT ON AN ANNUAL BASIS ($M)

Activity	Initial Direct Expenditure	Direct Value Added	Indirect / Induced Value Added	Total Value Added	Employment
Retail	$25.00	$2.75	$0.34	$3.09	150
Commercial	$4.50	$0.36	$0.05	$0.41	320
Total	$29.50	$3.11	$0.39	$3.50	470

Source: Property Economics

Note: (2025 figures in 2013 dollars and retail spend levels)

6.3. RETAIL

A key consideration regarding the likely economic impact of the proposed retail component of the development is the level to which the retail will simply redistribute existing retail spend from existing retail offers. Although the development of retail activity itself will produce additional economic activity within the local catchment, it is difficult to be sure that the proposed retail component will attract additional spend, either from within or externally, with retail brands and tenancy sizes not yet finalised.

The proposed development will however create approximately 28 total jobs. Even with a redistribution of spend from other retail offers this employment is not likely to simply be a redistribution itself. It is expected, given the current average retail labour productivity levels for Auckland, that even with no additional spend created by the retail space, an additional 13 new jobs would be created.

Given the new jobs, additional economic activity of just over $280,000 could be expected in Auckland. With the prospect that the retail space creates additional spend at a proportional level to the current retail environment in the identified catchment, the development would add an additional $750,000 per annum.

6.4. EMPLOYMENT GENERATION

This section assesses the estimated employment generated through the potential development. There are three most commonly used multipliers: Output multipliers (as outlined above), income multipliers, and employment multipliers. Employment multipliers essentially show the resulting increase in the area's employment, based on the direct hiring of one more employee by the development. Employment multipliers refer to the number of additional full-time employees utilised in the economy as a result of increased output in the identified sectors.

The employment effects of a new project are typically measured in terms of Employment Count (EC) jobs created through direct, indirect and induced impacts associated with a new project. It is important to note that the 'jobs' created are referred to on an annual basis so that a comparison can be made with the output multipliers above. Therefore the following results should be evaluated in terms of the equivalent number of jobs created per annum.

Based on an assessment of the full time equivalent number of jobs directly related to this project the 'multiplier' effects are simply those jobs that are created from the flow-on (indirect and induced) effects of this injection into the economy. Once again these multipliers are based on the Regional economy's composition with each business sector resulting in a different multiplier effect.

Similarly to the output projections this is based on type two multipliers and is founded on a standardised composition (given that the development has not taken place yet and on the basis of a variety of assumptions, as set out earlier in the report).

Based on these results it is estimated that the construction activity generated by the development will contribute over 750 equivalent jobs for the Auckland Region per annum over the 10 year construction timeframe.

7. LOCATION SPECIFIC NET REGIONAL ECONOMIC BENEFIT (WEALTH CREATION)

7.1. CONCEPT

The preceding assessment of the economic injections into the regional and local (catchment) economy has been based on a residential development that is not in itself location specific. Although economic variables have been utilised for the specific catchment to assess the likely impact on the local economy this has been based around a standard residential development.

This implies that the residential growth that will be accommodated here would have a similar effect (especially on the region) on the economy where it was located. So the Three Kings location would not offer anything unique and therefore not result in a net economic benefit over other locations, i.e. the 1,200 residential dwellings could be produced elsewhere in Auckland not just the subject Three Kings site.

However, not all residential locations are equal with many offering the new residents valuable attributes, amenities and other economic benefits. Proximity to existing centres, transportation, and coastal access are all locational attributes that the resident community value. The market response to locations that exhibit these real or perceived benefits is most commonly a change in price over and above the 'norm'. Residential land located in these areas generally exhibit prices that are above average representing the market's desire to partake in the locational benefits on offer.

In this case, residential development that is undertaken in locations that exhibit prices above average have potential benefits to the community (or specific residents) that are above the norm, that is to say that the residential development when compared to average residential development provides the community (in this case 1,200 additional houses) with net benefits that are represented by the comparative price differential.

It is this difference that allows the assessment of the economic benefits provided by this location to the community compared to a situation where the 1,200 houses were simply undertaken elsewhere i.e. at an average level. Given the opportunities to provide such a comprehensive residential development in similar locations elsewhere it is considered appropriate to make the comparison with the average residential development alternative.

7.2. METHODOLOGY

In order to ascertain and isolate the comparative economic value differential that results from the additional real or perceived benefits from the above average location, it is important not just to compare total average prices between areas, but then to disaggregate the build cost from the equation. This removes the potential impact of house price differentials in terms of size and quality.

In December 2013 the average Auckland house price was $698,000 while the catchment assessed for the purposes of this report was $900,000. This is an average differential of $202,000 per dwelling. It is important also to note the difference in section size between the Auckland and catchment averages.

With these two factors considered it is possible to assess the value placed on the locational attributes of the catchment over and above an average residential property in Auckland. The result then considers that the alternative to the Fletcher Three Kings Renewal development option is for the development of 1,200 new homes throughout Auckland at an overall average value. The differential between these two options should provide some insight into the additional locational benefits afforded the Auckland community through providing the development in this location.

It is also important to consider the potential for negative impacts on the existing community by supplying 1,200 new homes in this location. This would ultimately be the potential corresponding decrease in house price experienced by the existing residents as a result of the new homes creating some degree of disbenefit (albeit this needs to be offset against the benefits of an increased range of dwelling typologies offered to the market in this location afforded by the development). These disbenefits may take the form of increased congestion, loss of visual amenity, or a loss of perceived value (i.e. cheaper homes lower the 'tone' of the neighbourhood). However, given the capacity of infrastructure and view shafts opened and the quality proposed in this development in terms of buildings and design of the public realm, it is considered highly unlikely that the proposed development will have any significant negative economic impact on the existing residential product, and is likely to result in net positive impacts on the area's house prices given the standard of amenity and built form proposed.

Given this, it is therefore considered that the identified price differential between the average residential site in Auckland compared to one in this location, per square metre, goes some way to represent the economic benefits attributable to this location and the proposed development.

7.3. ASSUMPTIONS

- Average Auckland house price $698,000
- Average catchment house price $900,000
- Per square metre land price differential represents the value residents place on the greater than average attributes of this location.
- The alternative to the 1,200 dwellings in this location is an overall average development scenario.

7.4. RESULT

The land component of each housing average has been assessed against the average site size with the result illustrating the square metre differential between Auckland and the catchment for land. This assessment has indicated a differential land rate of $682/sqm[4].

Given the developed land area of approximately 11.3ha[5] at the Three Kings development this would equate to an additional value at this location of nearly $77m. This represents an additional economic asset for the community.

As previously outlined, what this number represents is that compared to a situation where this development was undertaken elsewhere in Auckland (given that it does not need to occur in one location) the additional attributes valued by the community in this location represents an additional $77m of value added to the economy.

[4] The formula applied in this instance to derive the differential rate is (((Average Catchment House price – Average Catchment Improvement value)/(Average Catchment site size) *less* ((Average Auckland House price – Average Auckland Improvement value)/Average Auckland site size)).

[5] Based on an average dwelling allocation of 95sqm

8. NET ECONOMIC IMPACT SUMMARY

This section assesses the potential impacts of the proposed development against what is considered to be the next best alternative.

Table 8 illustrates a similar economic generation model for the counterfactual position or 'opportunity cost' for the proposal.

TABLE 8: ESTIMATED CONSTRUCTION ECONOMIC IMPACT ON AUCKLAND REGION ALTERNATIVE OPTION

Initial construction Injection	
Residential	Urban Fringe
Number of Sites	1,200
Direct Auckland Impact ($m)	$201
Auckland Impact ($m)	**$434**
Carparking	
Direct Auckland Impact ($m)	$1
Auckland Impact ($m)	**$2**
Other (Development Costs)	
Auckland Impact ($m)	**$98**
Initial Economic Injection ($m2013)	**$534**
NB: Total Activity is based on Output II Multipliers	

Table 9 represents a summary of direct quantified economic impacts from the proposed development of up to 1,200 new dwellings at the Three Kings site.

TABLE 9: ECONOMIC IMPACT SUMMARY OPTION

Activity	Initial Direct Expenditure ($m)	Direct Value Added ($m)	Indirect / Induced Value Added ($m)	Total Value Added ($m)	Employment
TOTAL Construction Economic Impact				$751.00	
TOTAL Construction Employment 10 years					750
Local Annual Ongoing Economic Impact					
Retail	$25.00	$2.75	$0.34	$3.09	150
Commercial	$4.50	$0.36	$0.05	$0.41	320
TOTAL Annual Ongoing Impact	$29.50	$3.11	$0.39	$3.50	470
Net 'Wealth Creation'				$77.00	

Table 10 outlines the net differences in values (and economic activity) generated by the proposal 'over and above' what could be achieved through the 'next best alternative' identified as a potential site location.

TABLE 10: QUANTIFIED NET ECONOMIC IMPACT DIFFERENTIAL (2013 $M)

Activity	Initial Direct Expenditure	Direct Value Added	Indirect / Induced Value Added	Total Value Added ($m)	Employment
TOTAL Construction Economic Impact				$217.00	
TOTAL Construction Employment 10 years					156
Local Annual Ongoing Economic Impact					
Retail	$18.24	$2.01	$0.25	$2.25	165
Commercial	$3.28	$0.26	$0.04	$0.30	270
TOTAL Annual Ongoing Impact	$21.53	$2.27	$0.28	$2.55	435
Net 'Wealth Creation'				$64.00	

The proposed development offers the ability to provide a clustered residential development (with diverse housing typologies) of significant scale and occupy only a comparatively limited land area. The opportunity to achieve this within the Auckland central isthmus is very limited, albeit not unique.

However, given Auckland's level of projected population growth (and the residential dwellings required to accommodate such growth) opportunities for such development in central / urbanised locations enable significant economic benefits to be generated for the city which will last well beyond the development timeframe of this project. The true net economic benefit with regards to the current alternative activity is therefore close to 100% of the site differentials, given the unrealistic value of the alternative use.

9. QUALIFIED LOCATIONAL BENEFITS

Additional to the quantified economic benefits identified above the location and proposed development itself offer several qualified economic benefits including:

- **Improved land use efficiencies:** The proposed residential development identifies the construction of 1,200 residential units on either 15.2ha or 21.6ha of land. A clear economic benefit of such a residential development is the efficiency of land use, with lower average net site areas that provide for greater economies of scale and ultimately reduce the need for residential land leaving greater levels of productive land available. In comparison to the alternative option this equates to a saving of 65ha of urban fringe land[6].
- **Potential to improve infrastructure efficiencies and lower marginal costs:** An increase in residential densities within a given geospatial area will result in one of two infrastructure outcomes, either the increased number creates demand that exceeds the current capital infrastructure capacity thereby necessitating the development of new infrastructure, or the increased utilisation is serviced within the existing infrastructure (or at a lower average cost per household) thereby improving the infrastructure efficiency, lowering marginal costs and improving the public cost of services.
- **Potential to reduce infrastructure duplication elsewhere:** The development of residential product within an existing urbanised area reduces the pressure from demand on new urban fringe locations that would require the development of new community and public infrastructure thereby reducing overall community costs.
- **Improved transportation efficiencies:** Low residential densities have often been blamed for the quality of the Auckland public transportation system. Increased densities provide greater centralised patronage and serviced routes, in turn increasing the propensity for utilisation. This in turn improves private transportation efficiencies as well as increasing the public benefits of public transport.
- **Increased amenity (primarily retail) offer, diversity and choice:** Intensified residential development provides a greater critical mass that the market has the opportunity to capitalise on, through greater levels of choice as well as the retention of activities within localised areas. Increased amenity is also derived from the significantly improved open space (public realm) and recreational areas within the development, and the likely increased passive security from increased patronage of the area in general.
- **Reduced local housing costs:** The provision of smaller residential sites not only reduces the overall demand for residential land (thereby lowering its cost) but also

[6] This is based on 1,200 urban fringe sites of approximately 550sqm on average

provides dwellings that exhibit higher improvement to total value ratios. The increasing of this ratio means that the value of the home is a greater component of the overall property value. This produces two simple benefits for home ownership. First, the construction costs for a dwelling are easier to manage and personally regulate (i.e. you can determine to a greater degree what you can afford rather than this being entirely dictated by the market), and second the average cost per site decreases (although the value per square metre rises, it provides the market with lower total land cost alternatives).

- **Improved business agglomeration:** The intensification of residential activity resulting from the proposed development is also likely to have a corresponding impact on the environment's ability to facilitate employment within a much more compact area. As has been assessed above, the inclusion of over 600 new jobs within an existing area will represent improved productivities through agglomeration and increased business efficiencies.

10. POTENTIAL ECONOMIC COSTS AND BENEFITS FOR THE RETAIL MARKET

Economic impacts in the context of S32 of the RMA are the effects a project (or policy) has on the economy of a designated project area (or study area). These effects are sometimes referred to as "economic development impacts". Economic Benefit-Cost Analysis is an exercise to determine an action's economic welfare effects (compared to costs), Economic Impact Analysis is an exercise to determine how a project (or policy) affects the amount and type of economic activity in a region.

Economic impacts can result from various sources, including time savings to businesses, household and business vehicle operating cost savings, the strengthening of local and regional market connectivity, induced land development, or increased tourism. In all cases, economic impacts arise when a project causes a change in prices, a change in household behaviour, or a change in business behaviour that affects business investment, attraction, expansion, retention, or competitiveness in the study area.

For the purposes of this report the cost benefit analysis includes the potential impacts upon the localised economy, its function and prosperity as well as the level of community wellbeing experienced. While many of these costs and benefits could be quantified, for the purposes of this report, it is pragmatic at this stage to identify them with some indication of their relative degree and weighting.

In terms of a retail offer such as current provided for and the demand potentially created through the development proposal an economic cost benefit analysis illustrates the potential net economic value to the community, taking into account the impacts on all parties within the community both residential and commercial. The economic impacts outlined below are based on the total provision of 1,200 new dwellings within the local retail catchment and the development of up to 1,000 of retail GFA. Essentially there are two factors potentially impacting on the retail environment, the new retail space and the 1,200 new households.

The current Three Kings retail centre is represented by a supermarket anchored, convenience oriented retail and commercial service activity. Recent changes to the retail environment have changed the parameters of the retail catchment in which the Three Kings retail offer sits. The retail developments at both Stoddard and Pah Roads have increased the level of competition that exists for Three Kings with additional access to supermarkets and The Warehouse. This has in affect resulted in a reduced catchment (convenience based) and an overall fall in demand and market opportunity for the retail offer at Three Kings. While Three Kings is unlikely to compete with surrounding retail offers in terms of comparison retail it can compete in terms of convenience and potentially amenity.

The provision for approximately 1,000sqm of retail within the proposed development is likely to result in a food & beverage precinct that capitalises on the amenities created by the density of residential as well as the water, orientation and view shafts. This retail provision is likely to primarily service a localised market but if developed appropriately could draw custom from a wider catchment than would be attributable to convenience.

Potential Economic Costs

While the potential costs of the proposal are limited due to the type (convenience) and quantum of retail proposed there are potential issue that are raised in relation to the overall market responses.

Potential impacts (risks) include:

- A limited diversion of convenience retail demand from the existing centre to the proposed retail offer. This impact is likely to be insignificant due to the 'convenience' nature of the retail offer and is not likely to result in any distributional impacts due to the same reason.
- The over provision of sustainable retail space leading to a lower quality space and offer. Given the level of associated residential development this is highly unlikely.
- Reduction in residential land supply (assessed as the most likely alternative use to retail). The demand for residential product in this location is in part driven by amenity the provided by the retail offer. A proportionate reduction of 1,000sqm of residential is both necessary and beneficial.
- Reduction in retail land supply (assessed as a potential alternative use to residential). The provision of 1,200 residential dwellings in his location may have a marginal impact on the total capacity for retail, however the largest contributing factor to this provision is the market that it services. As outlined in the benefits below the development of 1,200 residential dwellings is likely to have a significant impact on the demand and quality of overall retail in this area.

Potential Economic Benefits

The provision of economic benefits to the local community are often subject to the current provision of retail within the area as well as the potential for the market to utilise, accept and capitalise on the additional floorspace. This will in large part be predicated on the quality and suitability of the retail offer developed and maintained.

Potential impacts (benefits) include:

- Increased retail spend. The development of 1,200 residential dwellings within the localised catchment provides a significant competitive advantage for retail in this location. The resulting increase in demand is likely to support and encourage the development of a higher quality retail offer. The mixed use environment and proximity of services is also likely to result in reduced travel and increase retail and commercial agglomeration benefits.

- Increased choice. This is a fundamental economic benefit and crucial for the local catchment to retain a greater degree of retail spend and therefore economic activity.

- Increased accessibility. Also relates to decreased travel requirements.

- Increased convenience. Relates to increased choice and the reduced need to access retail offers outside the localised catchment. This will be generated further as a higher level of residential critical mass is likely to result in a higher level retail offer.

- Decreased retail leakage. A key consideration with regard to the local economy. Retail leakage decreases local economic activity and amenity. Although retail leakage, primarily in relation to comparison goods, in this location will remain high it is of value to the local community to accommodate greater levels of convenience spend where possible.

- Initial economic injection through construction. The development of retail to the level proposed would have an initial economic injection into the local community. Although a significant level of this development budget would fall outside the catchment there would be still be a relatively strong boost to the local economy, including flow-on retail spend.

- Increase in other local commercial services. Retail is a key attribute sought by commercial services. The potential increase in amenity through improved retail quality could result in increased demand from local commercial business support services.

- Increased amenity. Not only is the development of a food & beverage precinct capitalising on the location at the proposed development likely to improve the amenity levels in the localise area but the introduction of over 1,500sqm of additional convenience floorspace demand (through the 1,200 new households) will serve to improve overall retail quality.

- Increased residential house prices. Local amenity such as access to quality retail and commercial services ultimate affects the demand and competitiveness of the local housing stock, increasing both supply and potentially prices.

From the impacts outlined above the net retail economic outcome of the proposal from a S32 RMA basis is clearly a positive one. However the relativity of these costs and benefits (as stated above) are dependent on the market conditions under which they operate. The level of competition arising in the immediate catchment will continue to reduce the potential retail catchment for Three Kings. The development of additional households within a area that provides a competitive advantage for the Three Kings centre will ultimate not only encourage retail growth and quality but also safeguard the retail offer in this location. The potential for the development to 'future proof' retail spend within the local catchment would increase the relative value of these benefits over time

11. CONCLUSION

The following bullet points provide a synthesised snapshot of some of the key net economic benefits of the Three Kings Renewal development.

Summary of 'additional' economic benefits:

- Additional initial economic injection $217m
- Additional employment generation (construction) 156ECs
- Additional 'on-going' localised impact $21.5m per annum
- Additional 'on-going' localised employment generation 435ECs
- Reduced land use 65ha (minimal productivity value $380,000 per annum)
- Additional wealth creation as a proxy for amenity / efficiency gains $64m
- Reduced total infrastructure capital costs (up to 35% lower)
- Reduced marginal infrastructure costs
- Reduced total infrastructure maintenance costs (up to 9%)
- Reduced travel time
- Reduced travel costs
- Greater travel options
- Improved safety
- Greater housing diversity and affordability
- Improved labour productivity through increased densities and agglomeration effects

Potential Qualified Costs

Although the net economic position to the wider community (especially given the existing infrastructure provision) is undoubtedly positive, the distribution of these impacts may not be entirely even. There exists the potential, as with any new development, that the development of any number of new dwellings in this area may have a minimal negative impact on existing properties. It is however important to note that with the improved transport, employment and infrastructure efficiencies this is more likely to improve the overall attractiveness and value of the area.

The proposed development at Three Kings offers the local community a valuable economic opportunity. In terms of the local area the potential to increase employment, retail and amenity levels provides increased well-being and efficiencies that are likely to continue to grow the property, as well as community, values in the area.

With no real marginal impacts on infrastructure and other community assets the proposed development is likely to produce significant economic benefits without the corresponding economic costs.

The economic gains for the Auckland Region, separate from the local gains, include improved production and productivity, greater infrastructure efficiencies and lower costs as well as the opportunity to compete for residential and employment growth more effectively.

Overall, from an economic viewpoint, the proposed Three Kings Renewal development will undoubtedly improve the economic position of both the local economy and the Auckland community as a whole.

APPENDIX : 1 ECONOMIC MULTIPLIERS

A multiplier summarises the total impact that can be expected from change in a given economic activity. For example, a new manufacturing facility or an increase in exports by a local firm are economic changes which can spur ripple effects or spin-off activities. Multipliers measure the economic impact of this new business, including the resulting spin-off activities.

Consider the following example. $1 is received into the local economy from export sales of a commodity. Of this $1, 40 cents is spent for goods and services within the community. The firms and individuals who receive this 40 cents spend 16 cents within the community. Of the 16 cents, only six cents is spent locally, and so on. The total amount of money received by local firms and residents as a result of the initial $1 in added export earnings is $1.66. Therefore, the multiplier is 1.66.

Types of Multipliers

Change may be measured in several ways. Some community leaders may be primarily concerned with employment or income while others may want to estimate the total value added to the local economy. Since multipliers are simple ratios of total to initial change, numerous economic multipliers are easy to calculate. Four multipliers are commonly used to assess impacts of an initial increase in production resulting from an increase in sales, usually called final demand in multiplier analysis. The four are: (1) Output, (2) Employment, (3) Income and (4) Value Added Multipliers.

Output Multiplier

The output multiplier estimates the total change in local sales, including the initial $1 of sales outside the area, resulting from a $1 increase in sales outside of the study area (final demand). Multiplying the increase in sales of the exporting industry by the output multiplier provides an estimate of the total increase in sales for the study area, including the $1 export sales. The output multiplier is used to assess the interdependence of sectors in the local economy.

Employment Multiplier

Communities often wish to know the number of jobs that will be created as a result of a new economic activity. The employment multiplier measures the total change in employment resulting from an initial change in employment of an exporting industry. The additional employment in the new activity multiplied by the employment multiplier for the industry provides an estimate of the total new jobs created in the area of study (i.e., county, district, state or region).

Income Multiplier

The income multiplier measures the total increase in income in the local economy resulting from a $1 increase in income received by workers in the exporting industry. Multiplying the initial change in income by the income multiplier for the industry provides an estimate of the increase in income for all individuals in the study area resulting from the initial growth of one industry.

Value Added Multiplier

The value added multiplier provides an estimate of the additional value added to the product as a result of this economic activity. Value added includes employee compensation, indirect business taxes, proprietary and other property income.