# Economic Analysis

## Introduction

We have been asked by the AHC to undertake an analysis of the perceived economic benefits to be derived from the construction of the proposed development of their land at Redfern. We would emphasise that we have assessed the potential **"gross"** benefits. With this approach, the economic impact of the proposed development is viewed in isolation, ignoring external contributory influences and assuming that all benefits are the result of the new development alone.

We have investigated the benefits to be derived during the Construction Phase. The Construction Phase encompasses all benefits attributable to the project from the construction start up date until the construction hand-over date.

It should be noted that no allowance has been made for benefits derived through the Preliminary or the Occupation Phase. The Preliminary Phase, which is assumed to occur before the construction start-up date, would typically include such activities as building design work, master planning, contract negotiation and sales and marketing. The Occupation Phase encompasses the present value of all future benefits attributable to the project from the hand-over date.

The benefits attributable to the project can be direct, indirect or induced. Direct benefits are those derived from the supply of goods and services by the construction industry during the Construction Phase. Indirect benefits are those derived from industries that support the construction industry or building occupiers and induced effects are those that are derived from the redistribution of wealth, through wages into other sectors of the economy.

All information regarding employment multipliers, wages, taxes and expenditure patterns have been derived from Australian Bureau of Statistics publications unless otherwise stated.

## Methodology

The method used to estimate the direct, indirect and induced effects of the proposed development is **input-output** analysis. The main application of this form of analysis is to examine the effects on the economy of a change in private or government final consumption expenditure.

Input-output multipliers derived from Australia's national accounting tables have been employed as summary measures which quantify anticipated direct, indirect and induced effects on all industries of changes in demand for the output of any one industry. In this way, input-output multipliers allow us to quantify the increased activity in other sectors of the economy, which indirectly results from the proposed

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development. It is also possible to examine the employment effects of these developments.

### Multiplier Analysis

Input-output multipliers are summary measures used for predicting the total impact on all industries in an economy, of changes in the demand for the output of any one industry. There are three forms of multiplier that are useful in the diagnosis of the potential worth of the proposed development of the site, these being Output, Income and Employment Multipliers.

- **Output Multipliers** are defined, as the total value of production by all industries of the economy required to satisfy one extra dollar's worth of final demand for that industry's output.

- **Income Multipliers** are defined as the total value of income from wages, salaries and supplements required to satisfy a dollar's worth of final demand for the output of that industry.

- **Employment Multipliers** are defined as the total number of persons employed as a result of the change in output.

The are seven types of multipliers, each used to define a different portion of the multiplicative process. Four of these multipliers are unique and three are merely summations of some or all of the unique multipliers. The seven multipliers are outlined below:

1. The Initial Effects multiplier is the initial direct requirement for extra capital, wages or personnel to generate an extra dollar worth of output. By definition this is equal to one for the income multiplier, because to satisfy $1.00 extra in demand an industry must produce $1.00 worth of output.

2. First Round Effects are the direct amount of output, wages or employment required from all industries in an economy to produce the initial effects.

3. Industrial Support Effects are the amount of indirect output, wages or employment that results from the first round effects. This is in effect the measurement of the second, third and further flow-on effects of the initial increase in demand.

The demand for the extra output is regarded as having 'caused' the production of these outputs. These are commonly know as backward linkages.

For example, increased output in the construction industry will require intermediate products such as drills, cables and wires, which are sourced locally and overseas. The First Round Effects measure the increased production of these intermediate products. Intermediate products and services may come from a variety of sectors within the economy. The

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Industrial Support Effects measure the increased production of all of the products used to produce the intermediate products

(4) = (2) + (3)  **Production Induced Effects** are the amount of output, wages or employment required from all industries of the economy to produce the initial output and all the subsequent indirect output. It is equal to the sum of the First Round and Industrial Support Effects multipliers.

(5)   **Consumption Induced Effects** are the result of the extra income, wage and salary earners will redistribute through the economy through their households as a result of the increase in demand.

(6) = (1) + (2) + (3)  **Simple Multipliers** are the sum of the Initial Effects, First Round Effects and Industrial Support Effects multipliers.

(7) = (1) + (2) + (3) + (5)  **Total Multipliers** show the total amount of output, wages or employment induced by the requirement from all industries to produce output to satisfy the extra demand from an industry and by the spending of the extra wages and salaries earned. This is equal to the sum of the Initial, First Round, Industrial Support and Consumption Induced Effects multipliers.

### Application

As previously stated, we have analysed the potential gross benefits that may be derived from the development of the AHC land. Again we would emphasise that the gross realisable benefits investigated are the perceived economic benefits to be derived from the development when examined in isolation, and ignore those benefits that would likely have been available irrespective of the proposed development.

Australian-wide multipliers have been employed for this analysis. It is also important to note that input-output multipliers describe average effects, not marginal effects, and thus do not take account of economies of scale, unused capacity, technological change, or the effect of the proposed development on the Sydney market for residential space.

### Construction Phase

The proposed development incorporates the construction of residential dwellings as per the base case scenario. Construction multipliers were used to determine the direct, indirect and induced economic effects of this development.

The table below indicates that for every $1.00 spent on construction, $1.00 would be spent on the construction process, $0.49 would be spent by companies directly supplying goods and services to the construction company, $0.47 would be spent by industries supporting the production of intermediate goods and services, and $0.99 would be spent by households through the inducement to increase expenditure, through the

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redistribution of wealth through wages and salaries. This process gives a total output of $2.95 for every $1.00 in construction costs.

A similar process can be followed through for the income multiplier, whereby $1.00 spent on construction activity will eventually lead to a total of $0.67 being distributed to employees through wages and salaries.

The employment multiplier indicates the number of employees that would on average be required to construct $1,000,000 worth of building facilities. The multipliers indicate that 10 employees would be required directly on site during the construction period, a further 4 would be employed in the manufacture and supply of intermediate goods used for construction purposes and a further 2 would be employed through the indirect supply of goods and services to these intermediate industries. A further 8 persons would be employed though consumption induced expenditure as the wages and salaries earned by employees during this process are redistributed through the household to other sectors of the community. This process indicates that in total 24 persons will be employed for every $1,000,000 of capital spent on the construction process.

| Construction Multipliers | Output | Income | Employment |
|---|---|---|---|
| 1) Initial Effects | 1.000 | 0.228 | 10 |
| 2) First Round Effects | 0.490 | 0.108 | 4 |
| 3) Industrial Support Effects | 0.470 | 0.105 | 2 |
| 4) Production Induced Effects | 0.960 | 0.213 | 6 |
| 5) Consumption Induced Effects | 0.991 | 0.230 | 8 |
| 6) Simple Multipliers | 1.960 | 0.441 | 16 |
| 7) Total Multipliers | 2.951 | 0.671 | 24 |

Source: ABS Catalogue No. 5209.0: Table 15: Note Multipliers are derived using constant 1994-95 prices and the direct allocation of inputs

Using the multipliers stated above, it is possible to derive to the value of the project in terms of total output, wages and employment.

We have made an estimate of the cost of constructing 117 residential terrace houses based upon Rawlinsons Australian Construction Handbook (1999). This is based upon broad assumptions including building areas. It shows a total capital cost of $19,000,000 and does not include things such as consultants fees which would represent an additional cost.

As noted in the table below, if the project has an anticipated construction cost of $19 million, then the total value to the community will be $111.5 million, the amount of wages and salaries will equal $25.175 million and 74 persons will be employed during the construction phase.

However it should be noted that all these benefits will not necessarily be derived by the community in close proximity to the development.

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| Construction Multipliers | Output | Income | Employment |
|---|---|---|---|
| 1) Initial Effects | $19,000,000 | $4,332,000 | 190 |
| 2) First Round Effects | $9,310,000 | $2,052,000 | 76 |
| 3) Industrial Support Effects | $8,930,000 | $1,995,000 | 38 |
| 4) Production Induced Effects | $18,240,000 | $4,047,000 | 114 |
| 5) Consumption Induced Effects | $18,829,000 | $4,370,000 | 152 |
| 6) Simple Multipliers | $37,240,000 | $8,379,000 | 304 |
| 7) Total Multipliers | $111,549,000 | $25,175,000 | 874 |

Whilst this is a relatively subjective exercise and relies upon numerous assumptions, it is sufficient to note that the proposed development has the potential to derive a significant amount of income and benefit to the local and wider community.

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