KHSK

ECONOMIC CONSULTANTS

Design of a Supplementary Development Contribution Scheme for Metro North

Report

September 2006

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Note:
The provision of estimates in this report for property values currently and following construction of the Metro involved accessing data on current land usage and assumptions in relation to future usage. This involved forecasts of the potential for future changes of use. Statements and forecasts regarding current and potential land usage are based directly on information provided by Fingal County Council for the sole purposes of this report and the consultants have not undertaken research on this aspect of the study. As a result, nothing in this report should be interpreted as either a commitment or a recommendation in relation to current or potential aspects of land usage in the study area.

Executive Summary

1. Under Section 49 of the Planning & Development Act 2000, Planning Authorities may include conditions when granting planning permission requiring the payment of a contribution towards the costs of providing a specified piece of public infrastructure. This report is designed to provide an estimate of the impact of the proposed Metro North on relevant property values in Fingal and to provide recommendations for the design of a Supplementary Development Contribution Scheme (SDCS) to part-finance the required investment including estimates of the present value of such a scheme.

2. In accordance with international study and experience, and existing Section 49 schemes, the area to which the SDCS is to apply has been set at 1 km distance from the proposed route for Metro North. As a result, only property within this catchment area has been assessed.

3. The estimated value that would be created is based on consultations with estate agents in the Swords area to identify their expectations, interviews with property experts in other areas of Dublin close to the Luas lines and review of published material from other areas where new public transport infrastructure has been provided. The calculations are based on the estimated increase in the value of properties on developed land as a result of the Metro being constructed and not on the increase that may occur when a decision to change land use is applied.

4. The results indicate that the increase in property values within the study area due to Metro North will be in the range €1.71 to €3.39 billion in 2006 values (1,458 ha.). Under Section 49 of the Act, only property that will be developed or redeveloped can be subject to the scheme. The impact on this subset of the total (873 ha.) is estimated at €1.41 to €2.8 billion.

5. Calculations are provided for a range of levy rates and indexation factors and for different time profiles for development. The criteria for identifying an appropriate levy rate are that:
   - it must be set at a level that will raise revenue with a present value that is adequate to part-finance construction of the infrastructure;
   - the amount raised must be proportionate to the service that is provided in terms of the number of passengers that will use the Metro when compared to other systems;
   - it must not inhibit the position of Swords as a leading and attractive place for residential and commercial development if there is a downturn in the economy or the property market;
   - the present value of the projected revenue must be a portion of the increase in property values that has been calculated.

6. The recommended levy rates in Year 1 are €290,000 per ha for residential development, €900,000 per ha for retail and €660,000 per ha for other commercial developments. These rates should be indexed at 5% per annum.

7. Discounted at 5% per annum, the present value of this scheme would be €525 million. This represents 37% of the value created assuming a low impact of the Metro on prices and just under 19% if the impact is towards the higher end of the range assessed. Estimates are also provided for the present value of the scheme under alternative assumptions.

8. The Council may decide to consider certain types of development as exempt under the Scheme. These could include special provisions in relation to social and affordable housing. Indicative estimates of the cost of such exemptions are included.

9. The following recommendations are made:
   - The levy should be applied on a per hectare basis that distinguishes between residential and various types of commercial development;
   - The per unit rates identified for Year 1 should be applied;
   - These rates should be indexed at 5% per annum but the Council should retain some flexibility to alter this in the light of general economic conditions;
   - A discount rate of 5% per annum should be used on all calculations;
   - An incremental levy for high density residential development i.e. a per unit charge for densities above 100 units per hectare, should be considered;
   - Consideration should be given to making some categories of development exempt.

10. This report provides the answers to 6 questions set out as tasks in the Call for Tenders by Fingal County Council.

    Task 1: Estimate the benefit arising in terms of increased land values as a result of the construction of Metro North in the context of developing a SDCS

    A total of 2,304.8 ha lies within the catchment area of which 1,458.4 will be impacted by the Metro. Estimates of the property stock and of the potential impact of the Metro indicate that property values will increase by between €1.71 and €3.39 billion.

    Task 2: Estimate of the amount of the benefit that can be included for calculating the basis for the Contribution Scheme

    The SDCS levy will apply to areas where development and redevelopment are forecast to occur. The area identified amounts to 873.4 ha or 38% of the total catchment area. The estimated increase in these property values will be in the range of €1.4 to €2.8 billion.

Task 3: Identify the optimum rate of levy to maximise revenue within market constraints

In line with general principles of taxation the levy must be set at a level that will raise revenue with a present value that is adequate to finance in part construction of the infrastructure; be proportionate to the service that is provided by the Metro; not inhibit the development of Swords; be an appropriate proportion of the increase in property values.

Task 4: Advise on the appropriate levy rates for alternative types of development

The recommended rates for residential and commercial development, excluding retail, are the Luas B1 inflation adjusted rate of €290,000 per ha and €660,000 per ha respectively. In recognition of the greater values inherent in retail development a rate of €900,000 per ha is recommended. Under the central assumptions, the present value of the proposed levy scheme in the year before application of the levy is just over €525 million.

Task 5: Advise on the appropriate indexation rate for the levy scheme

It is recommended that the levy should be indexed at a flat rate of 5% per annum but that some flexibility should be built into the conditions of the SDCS in this matter to allow for a lower rate in times of adverse conditions.

Task 6: Identify the most appropriate basis for application of the levy

It is recommended that a flat rate should be applied on a per unit basis but that different rates should be used according to the zoning and nature of the development that is proposed.

1. Overview

Under Section 49 (1) of the Planning & Development Act 2000, Planning Authorities may include conditions when granting planning permission requiring the payment of a contribution towards the costs of providing a specified piece of public infrastructure. The specific projects include the provision of rail and other public transport infrastructure, roads and waste water facilities. The spatial area to which the Scheme will apply must be specified in designing the scheme for the contributions and the particular public infrastructure must be identified. It must also be shown that the projects qualifying for inclusion under such a scheme must provide a direct benefit to the development for which planning permission is being granted.

This report relates to the design of a Supplementary Development Contribution Scheme (SDCS) to part finance the investment required to extend the proposed Metro North from the City boundary to north of Swords. The decision to extend Metro North to beyond Swords is recognition of the significant growth potential of the region. This decision provides a number of opportunities that can be realised through area planning and zoning decisions in the future and greatly enhances the potential of land close to the proposed Metro route. The Planning and Development Act 2000, provides Local Authorities with the power to levy land owners who have the opportunity to realise this enhanced value so as to provide finance for this infrastructure. The extent of the investment envisaged means that it is important that the scheme is designed and is implemented in a manner that is transparent, certain, equitable and efficient, and that it is appropriate to the particular development in question. In recognising these requirements, Section 49 allows for considerable flexibility in designing schemes while recognising the need to contribute to the aims of good spatial planning.

As part of this process, Fingal County Council has commissioned KHSK Economic Consultants to provide economic advice in the form of a written report. The call for tender specified a number of tasks that provide the framework for this report. The tasks identified were to:

- Provide an estimate of the benefits in the form of enhanced property values that arise from the construction of Metro North.
- Estimate the proportion of the total property base that that can be included for calculating the contribution base.
- Provide advice towards identifying the optimum rate of levy
- Identify optimal levy rates for alternative types of development.
- Advise on an appropriate index for levy inflation
- Advise on the optimal basis for application of the levy

It was recognised at an early stage that precise numerical values are required in relation to a number of parameters such as levy and inflation rates and discount factors, but that the nature of the tasks identified meant that some results would be of a more qualitative

nature. One example is in relation to the potential impact of the Metro on property prices and property markets in the Swords area.

Section 2 of this report covers the first of these tasks and discusses the potential impact of the Metro on property values. The rationale is that this is a reflection of the benefit of the Metro. Section 3 identifies the property basis for the application of the levy and levy rates and provides recommendations on levy rates in year 1, indexation and discounting procedures. Section 4 provides estimates of the present value of the scheme under the preferred rates and central assumptions in relation to indexation and timing and valuations under alternative assumptions. Recommendations are made for the preferred structure of the SDCS. Section 5 summarises the results and structures the conclusions according to the tasks identified in the Terms of Reference for the project.

2. Assessment of Benefits

2.1 Basis for Calculation

Section 49 requires that a planning authority developing a SDCS clearly identifies the new infrastructure and that benefits will accrue directly to the subject of the levy as a result of this infrastructure being in place. Thus, financing the Metro on the basis of a SDCS requires that the potential property benefits are identified. Clearly this is the result of two factors: the amount of property in question and the change in value as a result of the Metro. Three approaches were used to provide an estimate of the potential impact on property values:

- Consultations with local property professionals to identify their views on the potential impact;
- Interviews with property professionals in other areas of Dublin where major investments in transport infrastructure have been completed. In particular, these were in the Dundrum and Sandyford areas, which the Luas Green Line serves, and along the Luas Red Line from Crumlin to Tallaght.
- Review of material from other studies.

Expert Opinion in the Swords Area

Estate agents in Swords were contacted in order to get an insight into the potential impact of the Metro on property values in the Swords area. Perhaps the most striking result of these consultations was the wide range of views that were expressed. However, there was unanimous agreement on three points:

- transport is a key issue to be addressed for the future development of Swords and the Metro would have a significant positive impact on prices;
- it is not possible to isolate this effect or identify any particular percentage increase;
- the impact of the levy on demand in the residential market would probably be irrelevant when placed against the factors driving the market.

Beyond this there was little compatibility in the responses.

Most respondents said that there is a good awareness of the proposed infrastructure and that this was an influencer in the market. A number are actively using the Metro as a marketing tool for property in Swords although others do not view it as a particularly important factor at this stage. Some respondents believe that the proposal has already begun to influence prices and is a part of the rapid increase in prices in the past year, which has exceeded the average for the city. However, the main driver of prices is seen to be an inadequate pace of development i.e. an insufficient supply of new houses relative to very buoyant levels of demand.

The general view was that the impact of the metro on prices would not really be seen until the system was close to operational. This would seem to be supported by experience along the Red Luas line discussed below. While most respondents appear to view the impact as a once-off rise in prices, a number of respondents take a different view and spoke in terms of Swords achieving a more desirable image. Comparisons were drawn with towns to the North of the county such as Balbriggan which, although further from the city, have benefited from being on the rail commuter line. In effect, estate agents would see the Metro as providing Swords with a competitive edge on which it could build so that the impact on prices would be more dynamic than is implied by a once-off rise. In this, respondents were echoing the idea discussed below in relation to Sandyford, and supported by the international evidence, that the Metro in itself will be positive but that the benefits are augmented as a result of the additional development that is facilitated i.e. the total package offered by the town.

Views were generally more conservative in terms of the likely impact on commercial property prices. Land used for general industrial and warehouse development would tend to benefit least from transport infrastructure such as the Metro while higher value uses such as offices and retail would be attracted to the area as these would benefit to a greater extent. Particularly positive effects would arise for high value service and knowledge industries. Retail will benefit to an extent as there will be a larger catchment area in Swords but also as it is easier to travel to Swords from other areas, such as the city area along the route, although car transport would be likely to remain the favoured mode for shoppers. The Metro will also promote the development of higher value retail operations. The fairly conservative views expressed in relation to commercial benefits relative to residential values would seem to contrast somewhat with the experience of Sandyford but it is likely that this reflects the difficulty felt be estate agents in isolating the impact of the proposed infrastructure on property values in Swords, with the overall nature of the area's development seen as the most important driver of value.

Respondents were generally unwilling to identify precise numbers in terms of the likely size of the impact on residential prices. The general view was that prices will be determined to a much greater extent by factors such as interest rates, the rate of new supply and overall economic performance. When pressed, most respondents were comfortable with the idea that they would increase their valuations of properties within a reasonable distance of the Metro and that this would be a significant percentage of 5% or more. Many were willing to countenance a higher premium when the system becomes operational and most opinion indicated that an increase of 10% would appear possible.

There was widespread agreement that the levy would not have a major impact on the property market. Other costs such as the planning levy have been easily absorbed and it is unlikely that there would be any opposition or difficulty in implementing the scheme. The attractiveness of Swords will depend on the overall development of the area and general conditions in the economy. The Metro would add to the attractiveness and the levy would not be detrimental. However, these views were expressed against the background of a very vibrant market currently and very little knowledge regarding the terms of the SDCS. The easy acceptance of the idea in principle is an interesting issue

however, and underlines the strongly held view that the transport issue is very important for Swords and property purchasers would be willing to pay for an improvement there.

Expert Opinion from Other Areas

The results from along the Luas lines were somewhat similar to what was found in the Swords area in as far as the difficulty of identifying a precise impact is concerned. However, some interesting issues emerged. In all cases, the estate agents said that the new infrastructure had been positive, although the general rise in property prices and other developments meant that it is very difficult to net out the effect of the Luas. All have used the Luas as a key marketing tool although there is no agreement in relation to the distance from the line where this is important with respondents varying between 1km and 3km in terms of the area influenced. All agreed that the impact would extend to at least 1km. One important issue on which there is general agreement is that while the rise in prices that could be identified as resulting from the Luas started before construction, the real impact was seen once the infrastructure became operational and a real acceleration in prices was seen.

It is particularly difficult to assign a rise in prices to the Luas along the Luas Green Line where the completion of the M50, the Dundrum Shopping Centre and the new employment opportunities in the Sandyford area are all very important. The latter two factors however depend in part on the Luas. It was notable that agents in this area tended to identify local developments, rather than wider or national trends as the key drivers of property prices. In summary, there was a strong feeling that the impact of the Luas depended on the total package offered by the area. Given that there are similarities between Swords and Sandyford in terms of their current stage of development it can be concluded that the final impact on property values in Swords will depend on the development of the area in general and that it is not possible to identify transport infrastructure separately.

The situation along the Red Line is somewhat different in that it tends to serve a more settled area for most of its length. Here agents were more willing to see the impact as something in isolation. Prices all along the line have risen rapidly with slightly faster rises along the older more settled areas closer to the city. For example, prices in the Drimnagh area have risen by close to 20% in the past year and while estate agents would not assign all of this to the Luas it is considered to be the major factor. It was not possible to identify if the impact was a once-off gain or a move to a higher rate of growth but the evidence for settled areas suggests the latter. This is based on the observation that the Luas has made housing in some areas attractive to people who would not have otherwise considered the area i.e. the area comes to be seen as qualitatively superior. Easy access to the city, as distinct from access only to local facilities, is now a key marketing issue in many areas outside the M50.

The Luas has also had an impact on commercial decisions but not necessarily on the value of commercial premises with the likely exception of the Sandyford area. In this

case, a concentration on the development of knowledge-intensive industries means that there is a considerable premium from high quality supporting services such as rapid commuter transport. Such is not the case with heavy or general industry where the road infrastructure is vital. While some activities such as retailing benefit, one of the main effects seen in the Tallaght area has been that large firms located in the city who provide accommodation have come to see Tallaght as a much more attractive area in which to rent accommodation given the certainty of travel times into the city. As a result, rental properties near the line have benefited in a period when the rental market has been somewhat softer in general. However, road infrastructure appears to be a much more important consideration for industry in Tallaght although rents for office space have risen.

When pushed to place a precise percentage on the impact of the Luas on prices, most estate agents said that it was not possible to net out a single element in the development of the Sandyford area although all accepted that a rise in the region of 5 to 10% would not be an exaggeration for residential property and that it could be greater in the long run. There is no perception that the levy to fund the B1 extension would impact negatively on the rate or the type of development given the over-riding perception that the area is now a highly attractive location for knowledge businesses and workers. Once again, the emphasis was placed on the impact of local developments that mean the area is a premium location. This also suggests that the impact is likely to arise from a higher rate of growth in values in the long term rather than just a short term gain.

Respondents along the Luas Red Line were somewhat more inclined to identify the Luas as a distinct element in the development of the area and assign an impact. Many accepted that prices have been boosted by 10% in settled areas as a result of the Luas, particularly since it began operation. The rise might be greater and ongoing and some impact was seen before operation so that a greater rise in values is possible although none would assign an increase above 15% in values as a result of the infrastructure. In all cases, the impact on commercial property prices was seen as lower with limited impact on general industrial property.

Published Material

Although it is clear that the link between investment in infrastructure and property values is an important issue, particularly given the trend towards the joint sharing of costs that underlies the introduction of Section 49, there is actually very little comparable published research that concludes unequivocally that specified property prices rose as a result of a particular piece of infrastructure let alone research that puts a value on the increase.

There is a long standing general acceptance that, in theory, "*any improvement in transportation infrastructure is capitalized into land values in a short – term urban partial equilibrium*" (Mills, 1972). Many empirical studies have tested this theoretical premise using different techniques in a range of locations and have provided contrasting results. Some studies have found a significant positive impact on property values. It is

estimated that the Helsinki Metro developed in the 1980s increased house prices within a 1km limit by 6% but that the increase was less in the immediate vicinity of stations due to noise and congestion[1]. In the case of Hong Kong it has been estimated that the light rail system increased apartment prices by 3% within an equivalent radius of a 10 minute walk from a station[2]. The strongest effects appear when the transport infrastructure is in place over a considerable period. For example, research has found that distance from a metro station was a key determinant of rents for apartments in Washington DC with each one-tenth of a mile extra distance resulting in a decrease in rent of 2.5%[3]. However, elsewhere in the US, it was found that development of the Miami Metrorail had only a marginal effect on house prices over the longer term. In this case it would appear that accessibility was only marginally improved and subsequent development did not take place as expected emphasising the point that the investment in itself might not provide the expected benefits.

In the UK, the Manchester Metrolink has been found to have had only a marginal impact on prices of nearby houses with adverse effects thought to have counteracted the gains[4]. The same study found a more complicated picture in Sheffield. Prices were estimated to have risen modestly before construction work began on the Supertram system but this had disappeared by 1993 and a fall in values of 3% was recorded. However, a later study found that by 1996 a small rise in prices could be attributed to the new transport infrastructure[5]. It is notable that this cycle would appear to be correlated with house prices in the UK in general in this period suggesting that the impact of new infrastructure may be to magnify gains in a rising market but that there may be little impact in a relatively quiet market. Further afield, a study in Taipei found that there was a significant impact of new infrastructure on prices but that the impact of the subway system on prices varied from location to location depending on factors such as distance from the city centre and building type[6].

Some work has also been undertaken in advance of investment in the proposed Crossrail project in London. This study estimated that the value of the property stock in the relevant area would increase by 5-10% once completed[7]. The study appears to see this as a once-off effect on the area and did not examine the enhanced development opportunities for the area, presumably since the route was through an already developed area where considerable redevelopment had already taken place or would occur in any case. This estimate would appear to be towards the upper end of the results found by

[1] Laakso, S. (1992) 'Public Transportation Investment and Residential Property Values in Helsinki'. *Scandinavian Housing and Planning Research*, Vol. 9, pp. 2170229

[2] So, H., R. Tse, and S. Ganaesan (1998) 'Estimating the Influence of Transport on House Prices: Evidence from Hong Kong. *Journal of Property Valuation and Investment*, Vol. 15, pp.40-47

[3] Benjamin, J. and G. Stacy Sirmans (2001) 'Mass Transportation, Apartment Rent and Property Values'. *Journal of Real Estate Research* Vol. 12, pp. 1-12

[4] Forest, F., J. Glen and R. Ward (1996) 'The Impact of a Light Rail System on the Structure of House Prices'. *Journal of Transport Economics and Policy*, Vol. 30, pp. 15-29

[5] Henneberry, J. (1998) 'Transport Investment and House Prices' *Journal of Property Valuation and Investment*, Vol 16 pp. 144-158

[6] Lin, J. J., and C. H. Hwang (2004) Analysis of Property Prices Before and After the Opening of the Taipei Subway System. *Annals of Regional Science*, Vol. 38 pp687-704

[7] Hillier Parker (2002) *Crossrail: Property Value Enhancement*. Report prepared for Canary Wharf Group

researchers for operational systems. However, considerable positive price effects have been found in relation to the Jubilee Line Extension on London Underground in 1999[8].

The conclusions of the available literature can be summarised as follows:

- Improved infrastructure does generally provide a gain to landowners in the vicinity;
- It is very difficult to identify this in respect of a particular parcel of land and a particular investment because the timing may be due to cycles in property prices arising from interest rates changes and economic conditions, and changing tastes and demographics may submerge the effect;
- The impact will depend on associated developments, such as retail opportunities and environmental enhancement, and planning permissions that allow the values to be released.

In other words, the impact is positive in a general sense but the specific effect is difficult to identify due to wider changes in the economy and will depend in any case on associated developments in the area. The major exception of course is where new development is undertaken and could not have occurred without the new infrastructure. This often applies in the case of roads and utilities but would not be the case for light rail as road transport is an alternative. These findings appear to be very much in keeping with the expectation and observations identified from consultations with estate agents.

Conclusions

The evidence from areas close to the Luas confirms the expectation in the Swords area that the Metro will have a positive impact on property prices, although this is difficult to quantify. While some early impact is likely, the greatest impact is likely to be seen once the system is operational and to be most obvious in residential values and office and commercial property values and where high-tech services and information workers are located. There is potential for the impact to be ongoing in the sense of a long term increase in the growth rate of property values rather than a once-off gain. The overall impact will depend on the whole package offered in the Swords area, of which Metro is just one, albeit essential, element. Although any development in prices will depend on general developments in the economy, there is a strong expectation that areas close to the Luas will fare better than the market in general.

Internationally, it is widely accepted that there are benefits but these have been difficult to identify in practice and estimates have varied widely. A 10% rise would appear to be high but the extent of the gain will depend on the benefits of the infrastructure in terms of easing congestion, improving accessibility and facilitating or incentivising further property development. The potential for Swords to grow, the development that has taken place and the extent of the deficiency in Dublin's transport infrastructure all mean that it

[8] *Rail Business Intelligence*, Issue 247 June 2005 and Jones Lang La Salle Report for Transport for London (2004). The former report provided estimates of increased property values of £2.1 billion within 1km of the Canary Wharf station but the latter estimated only £78 million in the case of the Southwark station.

is reasonable to expect that the potential gain is towards the higher end of the range in line with what is expected from the Crossrail project in London.

This analysis suggests that the impact on residential property prices should be at least 5% and that a rise above 10% is not out of question in the longer term once the system is operational. However, the full impact may take some time to be seen. As a result, the calculation below uses two rates of 6% and 10% for residential property. The impact on commercial property will depend on the type of property in question. The determining factors are complex in the case of retailing as car transport will remain the main mode of transport to retail destinations in the Swords area. The main impact will be as a result of the greater residential population just north of Swords, the generally higher socioeconomic profile of this population, customers travelling from the city area along the line, and the overall provision of a generally more attractive retail location[9]. Accepting that there are particular difficulties in estimating the impact that should be attributed to the Metro on retail values and the calculation below uses a range of 3 to 7% for the impact.

For office and high technology commercial enterprises, significant rises somewhat below those for residential property are potentially possible as the area is more attractive for high value businesses and is easier to access. The calculation uses high and low rates of 3% and 6% in the calculation. The evidence suggests that the impact on industrial property may be limited but some impact is likely to result from competition for sites for alternative uses. This impact is likely to appear in the longer term. The calculation below assumes a range of 2% to 4% for this part of the property base. These estimates are summarised in Table 2.1.

Table 2.1: Projected Ranges for Impact of Metro on Property Values

Residential	6 to 10%
Office/high tech commercial	3 to 6%
Retail	3 to 7%
General industrial	2 to 4%

One further point for note is that the full impact on prices is unlikely to appear in the short term. Thus, any delayed or ongoing effect would be subject to discounting to get the present value. However, the assumption here is that these effects will be over and above any general rise in property prices. As a result, provided property prices in general continue to rise at least at the rate of inflation, the results of the calculation can be taken to represent present values.

[9] It is important to recognise that many of the customers who use the system will be diverted from cars rather than additional and there will also be potential for part of the existing customer base to be diverted to the city centre due to the easier access provided. Achieving a favourable balance between attracting customers from other areas along the route and the potential for diverting potential customers from the area to the city centre is the main reason for locating major retail outlets close to stops.

2.2 Property Base and Valuations

Approach and Methodology

The study area is defined, in accordance with the material prepared by Fingal County Council, as property within 1 km distance from the proposed route for Metro North. This is in accordance with international study and experience, and existing Section 49 schemes. As a result, only property within this catchment area has been assessed.

Two issues arise regarding the methodology used to assign values, in addition to the obvious difficulties of projecting future events, that are worthy of comment. The first relates to the airport. Clearly, this is a key part of the Metro catchment area and covers a considerable area. There is no doubt that it will benefit greatly from the Metro and, indeed, its further development and growth relies to an extent on such infrastructure being developed. However, it is not possible to place a value directly on the airport and much of its land area will not increase in value as it cannot be developed for other uses. The ideal approach would be to adopt a consumer surplus approach on the basis that the benefits will accrue to users and that the increase in consumer surplus reflects an increase in the underlying value of the property. However, this would require a considerable piece of research that is not feasible within the scope of this project. The approach taken below is to view the airport as just another commercial entity in the area. Thus, its land holding is composed of greenbelt – where no increase in value will result – the terminal area which is treated as commercial property – 70% industrial and 30% office – which will experience an increase in property values, and other currently developed areas outside the terminal area some of which can be redeveloped commercially but in line with DA objectives.

Second, it is possible to envisage two different approaches to the valuation of the impact of the Metro on property values depending on underlying assumptions and the purpose of the exercise. The first is based on the recognition that the value arises as a result of the increased benefits to residents and visitors to the area and businesses located in the area. As a result, these property owners are willing to pay more for their houses and premises in Swords as reflected in market prices. The methodology therefore identifies the increase in these values as the benefit. The second approach arises from the argument that the Metro will facilitate changes in the use of lands and plot ratios that would not otherwise occur. Since a higher density or a change in the zoning of lands would greatly increase the value of these lands it might be argued that this is the value created along with the increase in the value of existing property.

The methodology adopted in this report is based on the first approach and the latter is considered to be inappropriate for a number of reasons[10]. First, there is an assumption with the second approach that the change of zoning and usage takes place because of, and

[10] If the purpose of this exercise was to conduct a cost benefit analysis of the Metro North i.e. to inform a decision on whether or not is should be considered rather than identify how it should be financed, then the arguments for the second approach would be much stronger.

only because of, the investment in the infrastructure. Research has indeed concluded that much improved transport infrastructure is required if the area is to achieve its potential growth and contribution to Ireland's overall development[11]. However, in the context of a 30 year time horizon and given the very rapid development of Swords that has taken place including a number of new transport and other infrastructural developments, this assumption would certainly be open to question. In other words, it cannot be determined that the changes would not have occurred in any case. Second, assuming that because prices increase there is an equivalent value created is problematic in this context. Numerous costs, such as providing utilities and actual construction, arise when a change of use is facilitated and these would have to be deducted. Perhaps more importantly, from the point of view of the economy, allowing a change of use does not automatically create value but merely displaces it from somewhere else in the economy i.e. the development that would occur in Swords might have occurred in any case in some other part of the city. However, the fact that this would occur in Swords near a Metro means that the buildings that can be developed should be of greater value than elsewhere. This is captured by adopting the first approach described above. Third, it should be recognised that the purpose of this valuation is to identify a basis for the application of a levy under the SDCS. Under the legislation – Section 49 1(c) of the Planning and Development Act 2000 – this levy is applicable when planning permission is finalised and this implies that the decision to allow a change of use has already been made well in advance. Finally, and arguably most importantly from the point of view of designing and implementing the Scheme, the levy is essentially a tax and, as argued below, the tax will fall on final purchases and business operators[12]. The value of the levy that is accessed can only be a proportion of the value that is perceived by the final purchasers – otherwise they would not pay it by not buying property in the area. The methodology adopted is fully in line with this. If the alternative approach was adopted, the calculation would identify value that had accrued to property owners far removed from those paying the levy, for example, the original owners of the land and a possible succession of developers and others along the line, and suggest that this value – basically the difference between the price of agricultural land and land with planning permission for development – could be included in calculating the potential take from the Scheme. Clearly this is not the case. In addition, the estimated base for the application of the levy would include increases in value on which capital gains tax is payable. Including this would therefore amount to a proposal for double taxation which is not allowable.

In summary, the calculation is not based on the increase in the value of land when a decision is made to facilitate development or redevelopment but on the impact of the Metro in increasing the value of the buildings that will be constructed plus a similar increase on existing buildings. This approach is in keeping with the rationale for Section

[11] *Metro North: A Link to the Future*. Study prepared by Fingal County Council in association with Dublin City Council, Dublin Airport Authority and Railway Procurement Agency. February 2005. This report states that, in the area, 'planning will be increasingly circumscribed … due to lack of public transport links to remove road-based travel as the sole option.' (p.28).

[12] In other words, it will be passed on to home owners and business operators who may be able to pass it on to their customers. Whether they do so will be a business decision depending on economic conditions. To argue otherwise would be to argue that potential purchasers were unwilling to pay for the benefits that accrue from accessing the Metro.

49 which stresses the importance of identifying the direct impact of the infrastructure and the objectives of this report.

Property Stock in Study Area

Clearly, the value of property is the amount of each type of property multiplied by the value of each. Three distinct property types are identified. These are residential, commercial and green-belt. The latter is excluded from the further calculations on the basis that the Metro will have no impact on the (commercial) value of farmland and open spaces, no additional rezoning of greenbelt areas will occur beyond what is currently forecast (although some change in the use of small open spaces in the town is forecast as discussed below) and only a relatively few buildings exist with strict restrictions on future developments in these areas.

The available data allow for the property to be split between that in the town centre and other areas. This latter group of areas can be identified for use as residential, office and high technology-related commercial (including retail), or general industrial. On the basis of the information provided, the total area of 2,304.8 ha within the 1km catchment area is divided into the zoning objectives shown in Table 2.2.

Table 2.2: Zoning Objectives within 1km Catchment Area

Description	Code	Area (hectares)
Major centre	MC	53.1
Existing residential	RS	200.2
Planned residential	RS1	118.6
Existing industrial & warehousing	GI, WD	241.0
Planned Industrial	GI1	58.6
Existing office/hi-tech & retail	ST	31.6
Planned office/hi-tech & retail	ST1	257.1
Greenbelt, Open Space & Amenity	GB, OS, HA	713.0
Neighbourhood & Suburban Centres	NC, SC	21.2
Airport non-developed	DA	449.4
Airport terminal (industrial)[13]	DA	51.8
Airport terminal (office)	DA	22.2
Airport Office/High-tech related	DA	33.0
Airport industrial	DA	54.0
Total		2,304.8

It is forecast that some changes in existing zonings will take place during the period covered by the proposed SDCS and these are shown in Table 2.3. The valuations below

[13] The area in the Airport terminal – 74 ha – is split 30% office and 70% industrial. The 33 ha identified as suitable for office and high technology related commercial development in the Airport comprise 24 ha already developed for mixed use close to the roundabout and 9 ha undeveloped at the northwest corner of the site. Already developed industrial areas total 54 ha. With the non-developed area these areas total to 610.4 ha zoned DA.

assume that these changes go ahead as forecast and the impact of the Metro is assessed on the basis of the revised zoning[14].

Table 2.3: Forecast Changes in Zonings

Area (ha)	Current zoning	Forecast zoning
252	GB	ST1 (30% residential)
15	GI	ST
7	OS	MC
4	OS	RS
50	GI	ST1
10	GI	ST
50	OS	ST1 (30% residential)

Data on the stock of property in the Swords area are available at the level of planning zonings in hectares only so it is necessary to translate the existing zonings into estimates of the amount of each type of property available i.e. numbers of residential units and square metres of commercial space, for valuing purposes. The major centre and neighbourhood centre areas comprise residential, office and retail space and it is necessary to divide this according to the amount of each to allow for valuing. The information provided indicates that apportioning the current land use of the area in the major centre as 30% residential, 35% retail and 35% office would be appropriate for existing development. For the neighbourhood centre the area is 25% residential, 25% office and 50% retail. A density of 25 residential units per ha is used for the town and neighbourhood centres. These areas are generally low rise with the exception of the Council Offices and the Pavilions Centre in Swords so a plot ratio of 1:1.2 is assumed for commercial space. For areas outside these centres, existing residential development is based on 20 units per ha for existing development. Outside the major centre, it is assumed that 25% of the existing office and high technology related commercial development is used for office and high technology related industry with the remaining 75% comprising retail. A plot ratio of 1:1 is used for existing office and high technology related industry, while 1:0.7 is used for retail and 1:0.4 for general industrial. These plot ratios are also used as appropriate for existing development in the airport area zoned DA.

New development and redevelopment will achieve higher plot ratios on average. Redevelopment in Major Centre and Neighbourhood Centre areas is projected to be 25% residential, 25% office and high technology related industry and 50% retail, similar to current land usage in Neighbourhood Centres. Plot ratios of 1:1.2, similar to the existing development, will be achieved for office and high technology related development and retail. It is projected that 85% of the relevant area being developed or redeveloped will comprise office and high technology related industry at a plot ratio of 1:1.5 while the remainder will be developed for retail purposes with a ratio of 1:1. It is projected that new residential development in all areas will achieve 100 units per hectare.

[14] It is important to reassert that this forecast does not imply either a commitment that any changes in use will be implemented, or a recommendation that any changes should be implemented. The consultants have not assessed the potential for any forecasts beyond discussions with staff in Fingal County Council and the forecasts are based on this alone.

Redevelopment in the Airport will achieve similar plot ratios but no retail is included. All new general industrial development and redevelopment will achieve a plot ratio of 1:0.5.

Table 2.4 contains a summary of the estimates for existing and forecast land uses for the area within 1km of the proposed Metro route that are used to translate total hectares to areas that can be valued i.e. units per ha for residential and plot ratios for commercial[15].

Table 2.4: Existing and Forecast Land use within 1km of Metro Route

	Office	Residential	Retail	Industrial
Current development				
Major Centre	35% of area Plot ratio = 1:1.2	30% of area 25 units per ha	35% of area Plot ratio = 1:1.2	N/A
Neighbourhood Centre	25% of area Plot ratio = 1:1.2	25% of area 25 units per ha	50% of area Plot ratio = 1:1.2	N/A
Office & high tech related commercial	25% of area Plot ratio = 1:1	N/A	75% of area Plot ratio = 1:0.7	N/A
Residential	N/A	20 units per ha	N/A	N/A
General Industry	N/A	N/A	N/A	Plot ratio = 1:0.4
Dublin Airport	30% of area Plot ratio = 1:1	N/A	N/A	70% of area Plot ratio = 1:0.4
Forecast development following construction of Metro				
Major Centre	25% of area Plot ratio = 1:1.2	25% of area 100 units per ha	50% of area Plot ratio = 1:1.2	N/A
Neighbourhood Centre	25% of area Plot ratio = 1:1.2	25% of area 100 units per ha	50% of area Plot ratio = 1:1.2	N/A
Office & high tech related commercial	85% of area Plot ratio = 1:1.5	N/A	15% of area Plot ratio = 1:1	N/A
Residential	N/A	100 units per ha	N/A	N/A
General Industry	N/A	N/A	N/A	Plot ratio = 1:0.5
Dublin Airport	33 hectares Plot ratio = 1:1.5	N/A	N/A	36 hectares Plot ratio = 1:0.5

Value of Property in the Area

A survey was undertaken of houses currently on sale and recently sold in Swords. These were divided according to the house type and the average prices are shown in Table 2.5[16].

Table 2.5: Current House Prices in Swords

Town Centre	Semi ≤ 3 bed	Semi 4 bed+	Detached	Apartment
470,000	378,000	428,000	767,000	332,000

[15] The information for the forecast development relates to areas newly developed or to be redeveloped only.
[16] Some outliers were excluded as these would distort the results

Overall, the average house price in Swords is currently €452,000 for all types, and €388,000 for typical semi-detached properties not in the town centre where prices are likely to be influenced by commercial and redevelopment potential[17]. This latter value is used to value residential property in the area outside the town centre. This is not out of line with recently published results which found that the average price for the north side of Dublin is currently €442,000[18]. When valuing new residential developments the price for apartments is used since new development will be high density.

Commercial property is somewhat more difficult to value since there are far fewer properties on the market – despite the sale of the Pavilions Centre – and a wide range of types. As a result, average prices are based on properties around Dublin's suburbs and county under 3 headings: industrial, office and retail, with a distinction between retail properties in town centres and retail parks. Annual yields for these types of properties are currently estimated at 6.56% for industrial, 5% for office, and 3.79% for retail for Ireland as a whole[19]. Applying these yields to currently available industrial/warehouse property indicates a value in the region of €2,000 per m^2 for new premises. Vacancy rates and construction rates for office space outside the prime areas are currently quite high. Rents in suburban locations are in the range €130 to €260 per m^2. At 5% yield this translates into a sale value of €2,600 to €5,200 per m^2. Locations close to good transport infrastructure are towards the upper end for high specification offices for information-intensive businesses. However, this would be too high a figure to apply to all the areas assigned for office and high technology related commercial development around Swords since the development on these areas will include elements of both office and manufacturing/service activities. Thus, a mid-point estimate for the suburban range is used giving a figure of €3,900 per m^2 when developed.

In the case of retail it is necessary to distinguish between the relatively small scale units that are typical of the town centre, including the Pavilions in Swords, and the larger units in retail parks outside this area such as the Airside Park. Smaller retail outlets at the Omni Centre are renting at over €500 per m^2 inferring a market price of about €14,000 per m^2 at the average yield. Looking wider to include a range of retail properties indicates that an appropriate value for town centre retail property would be in the region of €11,000 per m^2 with €6,000 per m^2 for other retail property. However, there is a very large range with some prime locations worth well above this. On the basis of commercial property currently available for rent and for sale this would give the values contained in Table 2.6.

[17] While this is a true average of the properties on sale, in terms of the value of the stock of property there is a possibility of a bias towards the price of apartments in these results as apartments may make up a greater proportion of the properties on sale than the total stock of property but there is no way to validate this.

[18] *Daft.ie Quarterly Report* 1st Quarter 2006 as reported in Irish Independent, 19th May 2006

[19] Society of Chartered Surveyors (2006) *SCS/IPD Irish Property Index, 1st Quarter*. The €575 million paid for the Pavilions indicates a yield below 3% but in the region of 3.25% when the potential for rent reviews and further developments are included.

Table 2.6: Commercial Property Values (€ per m^2)

Industrial	2,000
Office/High-tech	3,900
Retail (in town centre)	11,000
Retail (outside town centre)	6,000

Potential Increase in Value

Applying these estimates to the property base that is developed or has been identified as suitable for development provides the values for the potential impact of the Metro on the value of property in the area for the high and low range. Fingal County Council has identified currently developed sites that may be forecast to be suitable for redevelopment during the period of the SCDS, in addition to the undeveloped areas where development is forecast. Thus the total area can be divided into 4 categories:

- developed areas where no redevelopment is forecast;
- developed areas where redevelopment is forecast;
- undeveloped areas where development is forecast; and
- undeveloped areas where no development is expected.

Dividing the area in this way facilitates valuation and identification of the areas to which the levy can be applied. This categorisation is shown in Table 2.7[20]. The final category is excluded since there is assumed to be no increase in the value of undeveloped areas where no development is expected. These are mostly greenbelt areas and a large proportion of the total area zoned DA. A detailed explanation of the derivation of the values in Table 2.7 is contained in Appendix 1.

The values above are then applied using the densities and plot ratios summarised in Table 2.4. The total area included amounts to 1,458.4 ha. This valuation shows a range of €1.71 to €3.39 billion for the total.

Table 2.7: Estimated Impact of the Metro on Property Values in Study Area

	Area ha.	Value created (€ millions)	
Major Centre (MC)	**60.1**	**Low**	**High**
Existing Retail, no redevelopment	11.15	44.15	103.03
Existing Office, no redevelopment	11.15	15.65	31.31
Existing Residential, no redevelopment	9.55	6.73	11.22
Developed, forecast retail redevelopment	6.13	24.27	56.64
Developed, forecast office redevelopment	3.06	4.30	8.59
Developed, forecast residential redevelopment	3.06	6.10	10.16
New retail forecast	8.00	31.68	73.92
New office forecast	4.00	5.62	11.23
New residential forecast	4.00	7.97	13.28

[20] Note that this table includes forecast changes in zonings and forecast development/redevelopment.

Neighbourhood Centre (NC & SC)	**21.2**		
Existing Retail, no redevelopment	3.60	7.78	18.14
Existing Office, no redevelopment	1.80	2.53	5.05
Existing Residential, no redevelopment	1.80	1.05	1.75
Developed, forecast retail redevelopment	5.50	11.88	27.72
Developed, forecast office redevelopment	2.75	3.86	7.72
Developed, forecast residential redevelopment	2.75	5.48	9.13
New retail forecast	1.50	3.24	7.56
New office forecast	0.75	1.05	2.11
New residential forecast	0.75	1.49	2.49
Other Areas (excluding DA zone)	**1,216.1**		
Existing Retail, no redevelopment	16.65	20.98	48.95
Existing Office, no redevelopment	5.55	6.49	12.99
Existing Residential, no redevelopment	292.30	136.09	226.82
Existing industrial, no redevelopment	139.47	22.32	44.63
Developed, forecast retail redevelopment	26.70	48.06	112.14
Developed, forecast office redevelopment	151.30	265.53	531.06
Developed, forecast residential redevelopment	4.00	7.97	13.28
Developed, forecast industrial redevelopment	78.43	15.69	31.37
New retail forecast	56.24	101.23	236.21
New office forecast	318.66	559.25	1,118.50
New residential forecast	120.10	239.24	398.73
New industrial forecast	6.70	1.34	2.68
Dublin Airport (DA)	**161.0**		
Existing Office, no redevelopment	22.20	25.97	51.95
Developed, forecast office redevelopment	24.00	42.12	84.24
Existing industrial, no redevelopment	69.80	11.17	22.34
Developed, forecast industrial redevelopment	36.00	7.20	14.40
New office forecast	9.00	15.80	36.86
Totals	**1,458.4**	**1,711.27**	**3,388.20**

3. Property Basis for the Scheme and Levy Rates

3.1 Property Basis

Having identified the total property base and the potential impact of the Metro on values, the next step is to identify the basis for applying the levy. This will be the developed areas where redevelopment is forecast and undeveloped areas where development is forecast. These are derived from Table 2.7. These areas are mostly new development areas to the North of Swords and near the M50. In addition, sites that are forecast to be suitable for redevelopment are subject to the levy and are included. These areas are summarised in Table 3.1.

Table 3.1: Areas for Development and Redevelopment

Type of Development	Area (Hectares)
Major Centre retail	14.13
Major Centre office	7.06
Major Centre residential	7.06
Neighbourhood Centre retail	7.00
Neighbourhood Centre office	3.50
Neighbourhood Centre residential	3.50
Retail outside Centres	82.94
Office, high technology and industry	555.09
Residential outside Centres	124.10
Airport related office, high technology and industry	69.00
Total	873.38

Clearly this is a sub-set of the total area within the catchment area of the Metro that was used for valuing the impact of the Metro on property prices in Section 2 above. The area amounts to 873.4 ha or 38% of the total catchment area. If the same approach as was used above for valuation is applied to these areas then the estimated increase in these property values will be in the range of €1.41 to €2.81 billion. This calculation shows an estimate of the increase in property values of which the SDCS would take a percentage.

3.2 Basis for Application of Levy

The levy will be applied on a per-unit basis. Two decisions are required. First, the levy can be applied either as a fixed flat rate across the area or it can be related to underlying property values within the area. The former is clearly simpler to apply, consistent and transparent and would not provide any incentive for developers to distort the location of development within the area to avail of lower rates. The downside is that it may mean that less valuable property is subject to the same rate as other property, a situation that

would be addressed by applying variable rates. It is recommended that a flat rate should be applied but that different rates should be used according to the zoning and the nature of the development proposed. On balance, the benefits outweigh the costs with a flat rate. No internal distortion will occur and it is easily understood. Three rates are proposed below representing residential, office and high technology related commercial and general industrial, and retail development[21].

The second decision is whether the levy should be applied on the basis of the underlying property i.e. € per hectare, or on the basis of the actual area developed i.e. € per housing unit or per m^2 for commercial property. There are two main benefits with the former approach. First, it provides some degree of certainty in relation to projections of future revenue streams since the areas to which the levy will be applied are known. With the latter, the revenue stream would be related to the plot ratios and densities achieved and these are a lot less certain in advance. Second, the former approach provides an incentive for developers to increase the plot ratios and densities of development and this is in line with national and local policy. No such incentive exists with the second approach and the opposite might be the case. On the downside, there is greater flexibility when applying the levy on the basis of the developed area and this would allow the Council greater control in relation to the proportion of the underlying value created that is accessed through the levy. On balance, the benefits of applying the levy on a per hectare basis outweigh this weakness and it is recommended that this approach is adopted provided the levy is related to the broad category of development as discussed in the previous paragraph.

Based on Table 3.1, the forecasts of future development to which the levies will be applied are shown in Table 3.2.

Table 3.2: Areas for Development for Application of Levies (hectares)

Retail	104.07
Office & Industry	634.65
Residential	134.66
Total	873.38

3.3 Levy Rate

Criteria for Consideration

Although there is no ideal comparable situation for 'pricing' the levy, it is possible to identify a number of standards that the levy adopted must meet. In line with general principles of taxation the levy must:

[21] Where a planned development comprises office and retail development, the levy contribution should be calculated on the basis of gross floor area of the various development types, with regard to the relevant levy rate for the development and applied pro-rata to the site area.

- be set at an appropriate level to raise the finance required;
- be justified in terms of the service provided;
- be enforceable without undue diversion of activity and distortion of the economy; and
- be proportionate so as to recognise the realities of the tax base and the risks and uncertainties that exist.

In terms of the project under consideration, these can expressed as a number of criteria that the levy rate set under the scheme must meet. These are:

- With due recognition of the appropriate indexation rate and associated risks, the levy must be set at a level that will raise revenue with a present value that is adequate to finance in part construction of the infrastructure;
- Since the levy is a tax, the amount raised in tax must be proportionate to the service that is provided in terms of the number of passengers that will use the Metro when compared to other systems;
- The levy must not inhibit the position of Swords as a leading and attractive place for residential and commercial development particularly in the light of the high probability that there will be at least one complete property cycle during the 30 year time horizon where regions may compete for development[22];
- The present value of the projected revenue must be a portion of the increase in property values that has been calculated so as not to distort locational decisions.

Level of Finance Required

The first criterion that the levy must raise a particular proportion of the cost is not dealt with in this report. To design the levy when emphasising this would risk working back from the conclusion to see what rate might provide this value rather than analysing what rate the area can be expected to bear so as to provide a revenue stream taking due recognition of the potential and risks involved. However, this is clearly a matter of considerable concern for the Council in reviewing the conclusions of this report and in subsequent decisions relating to the design of the Scheme.

Service Provided

A Contribution Scheme for financing the Luas B1 extension has been developed. It can be argued that the levy should be set at a level that reflects the service that will be provided as a means of ensuring consistency. This approach was used as identify a levy rate for the proposed SDCS for Phase 1 of the Navan Dublin Railway Line. In this case, peak transit was estimated at 6 trains per hour – 50% of the Luas B1 estimate – so the levy was set at 50% of the Scheme for Luas B1.

[22] It is important to recognise that while the development of Schemes under Section 49 provides access to revenue to develop infrastructure, it also imposes an onus on the Authorities to raise the finance through ensuring in as far as possible that the development takes place, in line with other elements of local development plans.

Planning for the Luas B1 Scheme modelled demand with a 5-minute headway at peak and 10 to 15 minutes at off-peak times using the DTO model. This identified hourly demand of 6,629 persons in peak times and 1,967 off-peak with incremental demand as a result of the extension estimated at 1,238 per hour peak and 367 off-peak[23]. The capacity on the Luas Green line to Sandyford is currently 4,500 persons in one direction based on 40 metre trams at 4 minute intervals. Recent work estimates that 7,500 trips one way would be generated from Swords in both the morning and evening peaks with a total daily ridership of 37,500 to and from Swords on the average weekday[24]. This work estimated that the potential for total annual ridership would be over 1.5 times updated projections for the Luas Green Line. Clearly, therefore, the proposed Metro would be expected to provide a service superior on this measure to the Luas B1. Thus, while Luas B1 offers a comparable situation in some respects as discussed below, setting the levy at a similar revenue level would arguably be somewhat conservative and this criterion would not be a constraint to adopting a higher rate.

Minimise Diversion and Distortion

The value of the Scheme will depend on the levy rate applied and on the amount and timing of the development that takes place. While the purpose of the levy is to raise finance, it is relevant to view it in terms of the overall competitiveness of the region as a location for future development. This might be particularly relevant in a period of relative downturn in property markets.

A region that could emerge as a competitor lies along the route of the proposed Luas B1 route. Sandyford and the route has targeted similar high quality residential and high-tech development as Swords and has greatly improved transport infrastructure in recent years, including the Luas, and a SDCS has been implemented. The rates set for the Luas B1 scheme in 2003 were €250,000 per ha for residential development and €570,000 per ha for commercial development indexed at 5% per annum. It is necessary to ensure that the rate set for Metro North would not be perceived in a difficult economic environment as placing Swords at a relative disadvantage as an area for development that could overly delay or displace the development.

Proportionality

The legislation is designed to allow the providers of infrastructure to access part of the value created in property. As a result, the revenue obtained must be a percentage of the value created for the people who ultimately pay the levy. Failure to do so would greatly increase the risks associated with the potential for development to be displaced. It is not possible to assess this issue until the calculations have been undertaken and it is returned to in Section 4 below. In advance it is possible to identify some objectives. It is

[23] *An Economic and Planning Assessment of an Extension to LUAS Line B to Cherrywood & Shankhill*. Report by Peter Bacon & Associates, McHugh Town Planners and Steer Davies Gleave, January 2000.

[24] Private correspondence with Roughan & O'Donovan Consulting Engineers. The population basis for these estimates were the 2011 population forecasts which are below current projections for population growth in the Swords area based on the existing Development Plan for the Swords area.

necessary to keep the proportion of the overall value that accrues to the Council not only below the overall amount but well below it. As a result, it is recommended that the Council should in the first instance consider setting the levy so that the present value of the revenue that is earned does not exceed 40% of the total value identified for the tax base, and 50% for any of the individual categories – residential, office and high technology related commercial and industry, and retail. Within this, it is recommended that the proportion should be lowest in the case of residential development since this could be easier to displace than some other types of development. For retail some flexibility would be possible since this is less likely to move away from where the market exists i.e. near the residential development.

Levy Rate in Year 1

From the foregoing, it is clear that the criteria relating to the need to raise a particular proportion of the overall cost should be assessed when the overall calculations have been undertaken. Therefore, the other criteria mean that the levy rates should be proportionate to the service provided and should be such that will not hinder the area as a leading area in terms of desirability for office/high tech and residential development, as well as a proportion of the value created. The first two of these require that a comparator scheme is identified. The Luas B1 SDCS is designed for an area and infrastructure with similarities to the Swords and Metro. As a result, this is used as a comparator for assessing the optimal levy rate and calculating the potential revenue.

Three potential rating schemes are identified for the calculation:

- rates equal to the Luas B1 rate indexed to 2006 at 5% per annum i.e. €290,000 for residential and €660,000 for commercial development;
- the original Luas B1 rates which is equivalent to approximately a 15% discount given the 3 year indexation period;
- a retail rate that would ensure that the present value of the revenue under assumptions detailed below will amount to about 40% of the total value arising due to increased property values, when assessed at the lower end of the range identified above. This implies a commercial levy of €900,000 per ha, approximately 35% above the Luas B1 rate. The residential rate 35% above the Luas B1 rate would be €390,000 per ha.

Section 4 of this report contains estimates of the revenue that would accrue using these various rates and assesses this against the overall value created. The decision regarding whether this is adequate to raise the revenue required is not assessed and the council may decide to deviate from the recommended rates in the light of this requirement. The implications of any deviation for the other criteria can easily be assessed against the information contained in this report.

3.4 Indexation and the Discount Rate

These rates will be indexed. Different indexation factors are available. The Luas B1 scheme adopted a flat rate of 5% per annum with no reference to wider developments such as the possibility that inflation might exceed this rate. On the other hand, Cork County Council has indexed the levy to the CPI i.e. the rate of consumer inflation. The stated ECB target rate of inflation is 2% although the evidence to date is that Ireland will probably continue to exceed this somewhat for a period with an average in the region of 2.5%. However, there is no reason why the index should be the CPI and it may be inappropriate for a number of reasons. Property prices have outperformed this index for a prolonged period and the most recent projections are that a rate of price increase closer to 5% is likely for housing over the medium term. However, it cannot be projected that this will continue for the next 30 years and at least one cycle of depressed property markets is likely. This 5% rate is also in line with the medium term projections for Irish economic growth and thus affordability. Furthermore, the CPI is not a good indicator of the change in any particular price category. The long term evidence is that manufactured goods have been rising much slower than this while services inflation is higher. Given that the ultimate cost factor is a service i.e. the Metro, it is arguable that the cost of financing this should be indexed at a rate above the CPI.

On balance, there would appear to be a more persuasive argument that the index rate should not be linked to the CPI but should exceed this rate. A key issue is the wish to preserve the real value of revenue i.e. to try to ensure that the impact of discounting is offset by the indexation. As a result, the recommendation is that the Council should endeavour to index the levy at 5% per annum.

It is important to recognise that indexation at 5% per annum is well above the projected CPI rate of inflation. As a result, it might not always be possible to implement this index against a very weak economic environment and efforts to do so could divert development from the area. Given this, the Council would be prudent to consider designing some flexibility into the conditions of the scheme in this matter so as to retain some (positive) influence over the rate of development of the area. It is recommended that this should be included in the conditions[25]. To allow for this possibility, the calculations below were done assuming that the average index rate is 3.5% as well as for the recommended 5% rate. In addition, the calculations were also done at a rate of 2.5% to show the impact of indexation to the CPI.

The Discount Rate

The purpose of discounting is to allow a single number to provide a summary value for a future stream of income or payments. The procedure requires that a common base year is adopted and that future payments are discounted by a percentage each year. This report

[25] The main recommendation remains that the levy should be indexed at 5% per annum with any deviation only considered in exceptional circumstances.

adopts the year before the levy is applied as the base year i.e. year 0 with the scheme then running for 30 subsequent years.

The main decision is to identify an appropriate discount rate. Where the entity in respect of which the discounting is being undertaken is a private person or firm, the underlying rationale of the exercise is simply the observed preference to have money today rather than to have to wait, even if there is no risk regarding the possibility of future payment. The rationale for discounting in the public sector is more complex but it is generally accepted that it is appropriate that a similar discounting approach should be adopted, although it is often argued that the appropriate 'social' discount rate should be lower than for a private individual or firm.

It is generally accepted that the interest rate is a reflection of individual time preferences and perceived risks. A problem with basing the discount rate on interest rates is that there are many interest rates quoted in the market and it is necessary to identify the most appropriate one. The starting point is to identify a risk free rate of return that can be earned on funds. This is usually taken to mean the rate of return on government bonds. Currently this is approaching 5%.

Over the years it has also been usual to adopt repayment of the national debt as the alternative use of public funds. Based on this, a discount rate of 5% per annum has been recommended by the Department of Finance since the early 1990s[26]. This has approximated the rate paid on public debt in Ireland in the past – repayment of which is assumed to represent the alternative use, and thus the opportunity cost, of public funds. However, interest rates have been low in recent years and since there are grounds for arguing that the social discount rate should remain below the commercial rate a case may be made of for using a 4% rate. However, while this may be appropriate currently, it would be inadvisable to extrapolate from recent experience over the whole 30 years of the scheme.

An important point for consideration relates to the discounting of revenue that will accrue in the long term. It has been claimed over the years that required public investments have indicated poor returns since many of the benefits arise in the distant future and discounting even at low rates over 30 years soon reduces the values to very low levels. One possible solution is to allow the risk free discount rate to decline with time[27]. This view has influenced thinking in the UK Treasury and the current recommendation is that a discount rate of 3.5% should be used for the first 30 years into the future and reduced thereafter[28].

[26] Department of Finance (1994) *Guidelines for the Appraisal and Management of Capital Expenditure Proposals in the Public Sector*

[27] Spackman, M. (2002) *Observations on Discounting and the Very Long Term*. UK Treasury Paper

[28] HM Treasury (2003) *The Green Book: Appraisal and Evaluation in Central Government*. London: HM Treasury. The recommended 3.5% rate excludes risk and also excludes an allowance for 'optimism bias' i.e. a confirmed tendency for researchers undertaking appraisals to be systematically optimistic in relation to future flows. Including this would increase the recommended rate somewhat.

These arguments do not provide a definitive reason to conclude that the 5% per annum discount rate recommended by the Department of Finance is not appropriate, although an argument can be made for a lower rate. The recommended rate is 5% per annum.

3.5 Timing of Development

Unless it is assumed that the levy will be indexed at 5% per annum over the whole period to offset the impact of discounting then the timing of any development that takes place will affect the present value of the revenue stream. The timing of development will be affected by the potential for the levy being introduced to divert or delay development in the area and also by general economic development in the housing market and the wider economy.

Potential Diversionary Impact of the Levy

The payment of the levy imposes a cost on either the current owners (or some future owners) of undeveloped land or land suitable for redevelopment that must be met at the time of the development. However, it may be possible for this cost to be passed on to the final owners e.g. homebuyers, once the land is developed. While it is not possible to predict with certainty the extent to which this will occur, economic theory gives some indication of where the incidence of the levy will fall. This is described in Appendix 2. The conclusion is that the impact of the levy will depend on the ability of developers to pass it on to purchasers without affecting demand i.e. the price elasticity of demand.

The development of lands in the catchment area represents the development of a high quality location in a market where the supply of such locations is fairly restricted. As a result, it appears likely that price elasticity of demand will be low in response to modest increases in prices as a result of a levy. This means that a substantial proportion of the levy will be passed on. However, some of it will be absorbed unless elasticity is zero.

Consultations with estate agent indicate that the impact of the levy would be small and quite easily absorbed in the residential sector although there could be some impact in the commercial sector. This is certainly borne out by recent experience although there are clear difficulties with extrapolating forward 30 years. Preliminary indications for other areas also suggest that there would be a limited impact. As a result, it would appear that there would only be a limited direct impact from introducing the levy assuming that recent conditions are maintained. The potential for the wider economic environment to change would appear to be far more important.

Wider Economic Developments

It is not necessary here to comment in any detail on the performance of the property market in recent years and the role of a very buoyant economy in promoting this. Neither

is it necessary to rehearse the arguments that have been put forward with regularity that a change is likely with slower economic growth and a weaker property market likely into the future. What is clear is that on almost any measure, property in Ireland is expensive and interest rate increases are imminent to address what has been a period of unusually low rates. Estate agents were unanimous in pointing to these developments as being far more important in terms of the future performance of the property market in the Swords area than the impact of introducing a levy. Of course, the two factors cannot be totally separated and against a weaker economic environment the impact of the levy could be magnified.

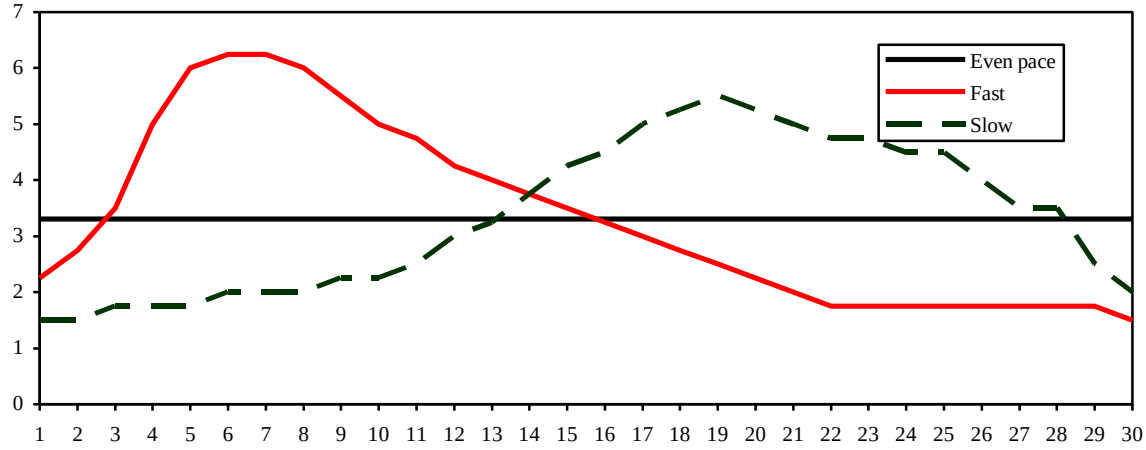
There is no point in trying to forecast economic developments and their impact on property in any detail in the context of this report. A key issue is to recognise that the scheme has a 30 year span and this is sufficient for almost any cycle that might emerge to run its course. Thus, the best forecast is that conditions will be average over the period. Against this, it is possible that the timing of development might be affected by adverse conditions. As a result it is possible to envisage 3 different outcomes:

- a base case where development takes place at an even rate i.e. 3.33% of the total each year;
- a good outcome where the levy has a slight impact in the short term but the strong performance soon reasserts itself and development takes place faster than would be the case with a constant rate; and
- an adverse outcome where development slows but the strong market reasserts itself after some years.

These potential outcomes are illustrated in Figure 3.1 in terms of the percentage of development that takes place each year.

The present value of the levy revenue may be affected by the timing of development particularly if it is slower than expected. This would indicate a relatively weak property market where developers were finding it hard to pass on the levy cost to purchasers. These are precisely the conditions that might make it difficult for the Council to achieve 5% indexation every year. The result might be that the discount rate would exceed the rate of indexation for a number of years.

Figure 3.1: Alternative Time Profiles for Development



To account for the possibility that the index applied might not be 5% each year, the revenue projections were done under each scenario with an even rate of development being used as the central or base outcome.

3.5 Recommendations

The present values of the average unit levy under these alternative scenarios are shown in Table 3.3. The 5% discount rate was used in all cases. It is clear from this table that the rate of indexation that can be applied is an important factor with the present value under a constant 5% indexation being almost 40% greater than the value with a 2.5% average index rate in each case. The difficulty is that the Council might find that it has limited control over the ability to impose this rate without adverse consequences in terms of the timing of development of the area, and thus the present value of the finance that is raised by the scheme.

The different starting values assumed, ranging from €250,000 to €390,000 for residential and €570,000 to €900,000 for commercial development, result in almost a 60% difference in the present value of the average levy between the highest and lowest rates. On first glance therefore there would appear to be a reasonable argument in favour of starting with a high levy rate and applying low indexation compared to starting with a relatively low rate and applying high indexation. These figures also hide a key point that strengthens this argument. The decision is best analysed in terms of risk and the ability of the Council to manage the revenue stream. The risk stems from the possibility of adverse developments in the property market and a reversal of the trends of the past decade or so. The Council has little power to affect this market as it is mostly driven by interest rates and general economic conditions and any effort to increase the revenue stream in a slow market could risk reducing the rate of development if the levy is raised or reducing prices if increased supply becomes available. Against this background, the Council would gain from the flexibility to reduce the rate of indexation and thus it should

be assumed that the full 5% might not be achieved on average, although this is retained as the preferred rate. On the other hand, current conditions remain very strong and positive.

Table 3.3: Average Unit Levies, Present Values under Alternative Indexation Rates

Residential			
Starting Rate	290,000	250,000	390,000
2.50%	209,000	180,000	281,000
3.50%	237,000	204,000	319,000
5%	290,000	250,000	390,000
Commercial			
Starting Rate	660,000	570,000	900,000
2.50%	476,000	411,000	648,000
3.50%	540,000	466,000	736,000
5%	660,000	570,000	900,000

The conclusion therefore is that a relatively high starting rate would have little impact on the market currently and would provide the Council with the ability to adopt a flexible approach to indexation in the light of market developments without impacting greatly on the revenue stream. To minimise the risk of diversion, the recommended rate for residential development is the Luas B1 inflation adjusted rate of €290,000 per ha. Similarly, it is recommended that the commercial rate to be applied to office and high technology related commercial development should be €660,000 per ha. However, in recognition of the greater values inherent in retail development and the fact that it is less mobile than other commercial development with an incentive to remain close to residential development, thereby reducing the risk of diverting development from the area, it is recommended that the starting rate should be such that would ensure that 40% of the value created would accrue as revenue. This gives a rate of €900,000 per ha for retail.

To allow the Council to assess the impact of diverging from these recommendations, Section 4 provides projections for the present value of revenue under all the rates identified.

4. Levy Valuation under Alternative Assumptions

4.1 Present Value of Levy Revenue

The levy revenue has been calculated using a variety of combinations of the above described factors. The returns from alternative assumptions are summarised in Section 4.2 below. Table 4.1 below contains estimates of the present value of the levy revenue under the recommended and base case assumptions. These are:

- The levy will be implemented with the following rates in Year 1:
  - The residential levy will be €290,000 per ha;
  - The commercial levy will be €660,000 per ha for office and high technology related and general industrial, and €900,000 for retail development.
- These rates are indexed at 5% per annum over the entire period.
- Development takes place at a constant rate so that all the identified area is developed/redeveloped in 30 years.
- A discount rate of 5% per annum is used.

Table 4.1: Present Value of Levy under Central Assumptions

	Levy per hectare (€)	Present Value (€ millions)
Residential	290,000	€37.19
Office, high technology commercial & industry	660,000	€398.92
Retail	900,000	€89.20
Total		€525.31

This shows that under the central assumptions, the present value of the proposed levy scheme in the year before application of the levy is just over €525 million.

A striking result in this table is the importance of the revenue from office, high technology related commercial and industrial development. This source accounts for almost 76% of the total. Thus, in addition to the risks already discussed, the key risk here is the ability of the Swords area to develop as an important location for this activity. While many of the competitive strengths are in place to attract the residential development, Swords is not as yet a leading location in this sector. Development as such is a central objective in the planned development of the Fingal area. As a result, the ability of the scheme to raise the funds required to finance the Metro is strongly aligned with the region's success in developing as planned. Given that the Metro is a key piece of infrastructure for Fingal, the strength of the inter-relationship that exists between the planned development of the area and the investment in this infrastructure is clear.

Comparison with Values Created

The scheme aims to ensure that a proportion of the value in private property that is created by the infrastructure can be accessed by the public sector to finance the investment. Ensuring that the value of revenue earned from the levy is appropriate relative to the value created is one criterion in identifying the optimal rate as discussed earlier. Table 4.2 compares the projected revenue arising from each type of development with the value created.

Table 4.2: Comparison of Value Created and Revenue Earned (€ million)

	Value Created		Levy Revenue	Revenue % of Value	
	Low Impact	High Impact		Low Impact	High Impact
Residential	268.2	447.1	€37.19	13.9%	8.3%
Office, etc.	921.7	1,843.5	€398.92	43.3%	21.6%
Retail	220.4	514.2	€89.20	40.5%	17.3%
Total	1,410.4	2,804.8	€525.31	37.2%	18.7%

This table shows that on the basis of the Metro having only a low impact on property values, the present value of the revenue stream under the central assumptions amounts to 37.2% of the total property value created. With a high impact, it amounts to 18.7%. The fact that both of these are below 40% indicates that the recommended levy rates result in an appropriate portion of the value created accruing as levies under the SDCS The proportion in respect of office, high technology related commercial and industrial development is slightly higher than for retail. This is because of the relative low impact of the Metro on general industrial development. This provides an incentive for commercial development to be concentrated on office and high technology related industry rather than general industry. In addition, the burden of the levy is not overly borne by house buyers.

4.2 Present Value of Levy Revenue under Alternative Assumptions

Tables 4.3 to 4.6 show the present value of the revenue streams under alternative assumptions. These relate to:

- The alternative levy rates in year 1 as discussed earlier;
- The indexation applied – 5%, 3.5% and 2.5%. The first is the recommended rate, the second reflects the possibility of not achieving this in a weak property market and the final rate approximates using the CPI.
- The timing of development – a constant rate, a fast rate and a slow rate[29].

A constant discount rate of 5% is used throughout.

[29] It is assumed that all the area is developed. If this is not the case then the returns would be reduced according to the percentage left undeveloped.

Table 4.3: Present Value of Revenue from Recommended Levy Rates

Constant rate of construction	Levy per ha	Discounted PV		
Index rate		5%	3.5%	2.5%
Residential	290	€37.19	€30.42	€26.80
Office/High tech	660	€398.92	€326.32	€287.44
Retail	900	€89.20	€72.97	€64.27
Total		**€525.32**	**€429.71**	**€378.51**
Fast rate of construction				
Residential	290	€37.19	€31.72	€28.68
Office/High tech	660	€398.92	€340.25	€307.57
Retail	900	€89.20	€76.08	€68.78
Total		**€525.32**	**€448.06**	**€405.02**
Slow rate of construction				
Residential	290	€37.19	€29.45	€25.33
Office/High tech	660	€398.92	€315.90	€271.67
Retail	900	€89.20	€70.64	€60.75
Total		**525.32**	**415.99**	**357.74**

Table 4.4: Alternative Assumptions; Constant Rate of Development

Index rate	Levy per ha	5%	3.5%	2.5%
Residential	390	€50.02	€40.91	€36.04
Office/High tech	900	€543.99	€444.98	€391.96
Retail	900	€89.20	€72.97	€64.27
Total		**€683.21**	**€558.86**	**€492.28**
Residential	290	€37.19	€30.42	€26.80
Office/High tech	660	€398.92	€326.32	€287.44
Retail	660	€65.42	€53.51	€47.13
Total		**€501.53**	**€410.25**	**€361.37**
Residential	250	€32.06	€26.23	€23.10
Office/High tech	570	€344.52	€281.82	€248.24
Retail	570	€56.50	€46.21	€40.71
Total		**€433.08**	**€354.26**	**€312.05**

Table 4.5: Alternative Assumptions; Fast Rate of Development

Index rate		5%	3.5%	2.5%
	Levy per ha			
Residential	390	€50.02	€42.66	€38.56
Office/High tech	900	€543.99	€463.98	€419.41
Retail	900	€89.20	€76.08	€68.78
Total		**€683.21**	**€582.73**	**€526.75**
Residential	290	€37.19	€31.72	€28.68
Office/High tech	660	€398.92	€340.25	€307.57
Retail	660	€65.42	€55.79	€50.44
Total		**€501.53**	**€427.77**	**€386.68**
Residential	250	€32.06	€27.35	€24.72
Office/High tech	570	€344.52	€293.86	€265.63
Retail	570	€56.50	€48.19	€43.56
Total		**€433.08**	**€369.39**	**€333.91**

Table 4.6: Alternative Assumptions; Slow Rate of Development

Index rate		5%	3.5%	2.5%
	Levy per ha			
Residential	390	€50.02	€39.61	€34.06
Office/High tech	900	€543.99	€430.77	€370.45
Retail	900	€89.20	€70.64	€60.75
Total		**€683.21**	**€541.02**	**€465.26**
Residential	290	€37.19	€29.45	€25.33
Office/High tech	660	€398.92	€315.90	€271.67
Retail	660	€65.42	€51.80	€44.55
Total		**€501.53**	**€397.15**	**€341.54**
Residential	250	€32.06	€25.39	€21.83
Office/High tech	570	€344.52	€272.82	€234.62
Retail	570	€56.50	€44.74	€38.47
Total		**€433.08**	**€342.95**	**€294.93**

One further issue is worthy of consideration. Future residential development is targeted to achieve 100 housing units per ha. It is recommended that the residential levy is implemented on a set basis for planning permissions up to 100 units per hectare but with an incremental value for higher density. Higher densities are only likely to be sought in a strong market. The evidence suggests that in a strong market this will not provide a

disincentive to develop higher densities while it would encourage the targeted level of density at all times. The recommended rate for the levy of €290,000 per ha equates to €2,900 per housing unit – less than 1% of the sale price if fully passed on – when the density is 100 units per ha. It is recommended that for higher densities the levy should be applied at the recommended rate plus a levy of €2,900 per housing unit over 100 per ha. This is equivalent to expressing the rate on a per unit basis of €2,900 for high density development.

This recommendation has not been built into the estimates produced for revenue streams. If it is assumed that 25% of residential development in the town centre and 10% in other areas achieves a density ratio of 120 then introducing this condition would provide a revenue stream with a current value of just over €1 million and a present value of about €500,000. However, it is also relevant that this retains the incentive to build up to the desired density ratio of 100 units per ha but avoids any incentive to achieve higher densities.

4.3 Potential Exemptions

Section 49 of the Planning and Development Act 2000 allows flexibility in relation to the exclusion of certain types of development from the Scheme. The possible categories of development that might be excluded include:

- Social Housing Units as specified under Part V of the Act or other comparable developments;
- Development by organisations that are exempt from payment of planning fees such as development for social or religious use or facilities for people with disabilities where these are not for profit;
- Voluntary and Co-operative housing bodies; and
- Protected structures.

In addition, the Council may decide to reduce the contribution paid in respect of affordable housing units as specified in the Act and may provide a part refund for first-time buyers that meet certain criteria.

It is necessary to include some recognition of the possibility of such exemptions in the calculations. Arising for the Planning and Development Act 2000 Part V, it is targeted that 15% of housing units will fall into the Social and Affordable categories. Assume that this results in 7.5% social and 7.5% affordable housing being developed. The Council could consider reducing or eliminating the levy in respect of this construction. Assume that the levy is zero for social housing and reduced by 50% for affordable housing. The central estimate – see Table 4.1 above – estimated the present value of residential levy revenue at €37.2 million. On this basis, the cost of the exemptions described would be €4.2 million, just over 1% from the total.

5. Conclusions

The Terms of Reference for this project were based on providing the answers to 6 questions set out as tasks in the Call for Tenders by Fingal County Council. These questions centred on identifying the potential impact of the proposed construction of the Metro North to Swords and providing advice and estimates to be used in designing a SDCS to part finance this infrastructure. The methodologies employed are described in detail in the text and are summarised in this section along with the conclusions drawn from the results obtained[30].

Task 1: Estimate the benefit arising in terms of increased land values as a result of the construction of Metro North in the context of developing a SDCS

The impact of the Metro on property values will depend on the amount of property in question and the change in value as a result of the Metro. Three approaches were used to provide an estimate of the potential impact on property values:

- Consultations with local property professionals to identify their views on the potential impact;
- Interviews with property professionals in other areas of Dublin where major investments in transport infrastructure have been completed. In particular, these were in the Dundrum and Sandyford areas, which the Luas Green Line serves, and along the Luas Red Line from Crumlin to Tallaght.
- Review of material from other studies.

The study area is defined in accordance with international study and experience and existing Section 49 schemes as property within 1 km distance from the proposed route for Metro North. The calculation is based on the impact of the Metro in increasing the value of the buildings that will be constructed plus a similar increase on existing buildings. This approach is in keeping with the rationale for Section 49. The estimate of the property stock is based on current zoning objectives in the area and forecast potential changes of zonings. Values are base on recent residential sale prices around Swords and rental prices for commercial properties. A total of 2,304.8 ha lie within the catchment area. The Metro would have an impact on the value of 1,458.4 ha of this area.

The research indicated that the Metro will have a positive impact on property prices, although this is difficult to quantify. While some early impact is likely, the greatest is seen once the system is operational and is most obvious in residential values and office and commercial property values and where high-tech services and information workers are located. There is potential for the impact to be ongoing in the sense of a long term

[30] All spatial data in this report in relation to current and potential land usage and zonings are based directly on information provided by Fingal County Council and do not result from research undertaken by the consultants. Assumptions in relation to spatial and planning issues, such as plot ratios and housing densities, are similarly based on discussions with staff in Fingal County Council and have not been reviewed by the consultants.

increase in the growth rate of property values rather than a once-off gain. The potential for Swords to grow, the development that has taken place and the extent of the deficiency in Dublin's transport infrastructure all mean that it is reasonable to expect that the potential gain will be towards the higher end of what has been experienced elsewhere. This analysis suggests that the impact on residential property prices will be greatest with significant effects on commercial property depending on the type of property in question.

The research produced the estimates shown in Table 5.1.

Table 5.1: Projected Increase of Property Values

	Percentage	€m, low impact	€m, high impact
Residential	6 to 10%	412.1	686.9
Office/high tech commercial	3 to 6%	948.2	1,901.6
Retail	3 to 7%	293.3	684.3
General industrial	2 to 4%	57.7	115.4
Total		1,711.3	3,388.2

Applying these to the property stock provides an estimate that the Metro will increase property values by between €1.71 and €3.39 billion.

Task 2: Estimate of the amount of the benefit that can be included for calculating the basis for the Contribution Scheme

The SDCS levy will apply to areas where development and redevelopment are forecast to occur. The area identified amounts to 873.4 ha or 38% of the total catchment area. If the same approach as was used above for valuation is applied to these areas then the estimated increase in these property values will be in the range of €1.4 to €2.8 billion. This estimate is broken done by property type in Table 5.2

Table 5.2: Values Created in Areas Subject to SDCS

	Area ha	€m, low impact	€m, high impact
Retail	104.1	220.4	514.2
Office & Industry	634.7	921.7	1,843.5
Residential	134.7	268.2	447.1
	873.4	1,410.4	2,804.8

Task 3: Identify the optimum rate of levy to maximise revenue within market constraints

In line with general principles of taxation the levy must:

- be set at an appropriate level to raise the finance required;
- be justified in terms of the service provided;

- be enforceable without undue diversion of activity and distortion of the economy; and
- be proportionate so as to recognise the realities of the tax base and the risks and uncertainties that exist.

In terms of the project under consideration, these can be expressed as a number of criteria that the levy rate set under the scheme must meet. These are:

- With due recognition of the appropriate indexation rate and associated risks, the levy must be set at a level that will raise revenue with a present value that is adequate to finance in part construction of the infrastructure;
- Since the levy is a tax, the amount raised in tax must be proportionate to the service that is provided in terms of the number of passengers that will use the Metro when compared to other systems;
- The levy must not inhibit the position of Swords as a leading and attractive place for residential and commercial development particularly in the light of the high probability that there will be at least one complete property cycle during the 30 year time horizon where regions may compete for development[31];
- The present value of the projected revenue must be a portion of the increase in property values that has been calculated so as not to distort locational decisions.

The requirement for the levy to raise a particular percentage of the cost of the infrastructure is not used to identify an appropriate rate. To design the levy when emphasising this would risk working back from the conclusion to see what rate might provide this value rather than analysing what rate the area can be expected to bear so as to provide a revenue stream taking due recognition of the potential and risks involved.

In terms of the service provided, recent work has estimated that the potential for total annual ridership would be over 1.5 times updated projections for the Luas Green Line. Thus, while Luas B1 SDCS offers a comparable situation in some respects this criterion would not be a constraint on adopting a higher rate.

The impact of the levy on the overall competitiveness of the region as a location for future development might be relevant in a period of relative downturn in property markets. Sandyford and the Luas B1 route has targeted similar high quality residential and high technology commercial and office development as Swords. It is necessary to ensure that the rate set for Metro North would not be perceived in a difficult economic environment as placing Swords at a relative disadvantage as an area for development that could overly delay or displace the development.

The levy revenue obtained must be a percentage of the value created for the people who ultimately pay the levy. Failure to do so would greatly increase the risks associated with the potential for development to be displaced. It is recommended that the Council should

[31] It is important to recognise that while the development of Schemes under Section 49 provides access to revenue to develop infrastructure, it also imposes an onus on the Authorities to raise the finance through ensuring in as far as possible that the development takes place, in line with other elements of local development plans.

in the first instance consider setting the levy so that the present value of the revenue that is earned does not exceed 40% of the value identified for the tax base. This could be allowed to increase somewhat if the rates identified were too low in terms of the overall revenue that can be earned. Within this, it is recommended that the portion should be lowest in the case of residential development since this could be easier to displace than some other types of development. For retail it can be increased since this is less likely to move away from where the market exists i.e. near the residential development.

Task 4: Advise on the appropriate levy rates for alternative types of development

The recommended levy rate is based on the need to ensure that it is proportionate to the service provided, that it will not hinder the area as a leading area in terms of desirability for office and high technology related commercial and residential development, and that the revenue received is an appropriate proportion of the value created. The Luas B1 SDCS is designed for an area and infrastructure with similarities to Swords and the Metro so this is used as a comparator for assessing the optimal levy rate and calculating the potential revenue.

Three potential rating schemes are identified for the calculation:

- rates equal to the Luas B1 rate indexed to 2006 at 5% per annum i.e. €290,000 for residential and €660,000 for commercial development;
- the original Luas B1 rates which is equivalent to approximately a 15% discount given the 3 year indexation period;
- a commercial rate that would ensure that the present value of the revenue under assumptions detailed below will amount to 40% of the total value arising due to increased property values, when assessed at the lower end of the range identified above. This implies a commercial levy of €900,000 per ha, approximately 35% above the Luas B1 rate. The residential rate 35% above the Luas B1 rate would be €390 per ha.

The analysis leads to the conclusion that a relatively high starting rate would have little impact on the market currently and would provide the Council with the ability to adopt a flexible approach to indexation in the light of market developments without impacting greatly on the revenue stream. To minimise the risk of diversion, the recommended rate for residential development is the Luas B1 inflation adjusted rate of €290,000 per ha. Similarly, it is recommended that the commercial rate to be applied to office and high technology related commercial development should be €660,000 per ha. However, in recognition of the greater values inherent in retail development and the fact that it has an incentive to remain close to residential development, it is recommended that the starting rate should be such that would mean that 40% of the value created would accrue as revenue. This gives a rate of €900,000 per ha for retail.

The present value of the revenue earned under central assumptions detailed in the report is shown in Table 5.3. This shows that under the central assumptions, the present value of the proposed levy scheme in the year before application of the levy is just over €525 million.

Table 5.3: Present Value of Levy under Central Assumptions

	Levy per hectare (€)	Present Value (€ millions)
Residential	290,000	€37.19
Office, high technology commercial & industry	660,000	€398.92
Retail	900,000	€89.20
Total		€525.31

To allow the Council to assess the impact of diverging from these recommendations, Section 4 provides projections for the present value of revenue under alternative levy rates and indexation rates.

Task 5: Advise on the appropriate indexation rate for the levy scheme

It is recommended that the levy should be indexed at a flat rate of 5% per annum. This is in line with recent projections for rate of housing price increases and medium term projections for Irish economic growth and thus affordability. The CPI – the usual measure of inflation in Ireland – is not thought to be appropriate since property prices have not moved in line with this index for a prolonged period and the CPI is not a good indicator of inflation in services sectors which is usually higher. Furthermore, since it is recommended that all future revenue should be discounted to present values at a rate of 5%, this would preserve the value of revenue streams if development was delayed.

However, it is important to recognise that indexation at 5% per annum is well above the projected CPI rate of inflation. As a result, it might not always be possible to implement this index against a very weak economic environment and efforts to do so could divert development from the area. Given this, it is recommended that some flexibility should be built into the conditions of the SDCS in this matter. To allow for this possibility, the calculations in this report are done assuming that the average index rate is 3.5% as well as for the recommended 5% rate. In addition, the calculations were also done at a rate of 2.5% to show the impact of indexation to the CPI. This does not alter the recommendation that the levy rate should be indexed at a flat rate of 5% per annum.

Task 6: Identify the most appropriate basis for application of the levy

The levy will be applied on a per-unit basis. It is recommended that a flat rate be applied but that different rates be used according to the zoning and nature of the development proposed. Two decisions are required. First, the levy can be applied either as a fixed flat rate across the area or it can be within the area. Compared to relating the levy rate to underlying property values, this is simpler to apply, it is consistent and transparent and would not provide any incentive for developers to distort the location of development within the area to avail of lower rates.

It is recommended that the levy should be applied on the basis of the underlying property i.e. € per hectare, rather than on the basis of the actual area developed i.e. € per housing unit or per m^2 for commercial property. This provides some degree of certainty in relation to projections of future revenue streams since the areas to which the levy will be applied are known and it provides an incentive for developers to increase the plot ratios and densities of development in line with national and local policy. No such incentive exists with the alternative approach and the opposite might be the case.

Appendix 1: Derivation of Values in Table 2.7

The total area zoned Major Centre is 60.1 ha. This is comprised of 53.1 ha under existing zoning objectives (Table 2.2) and the forecast change in zoning of 7 ha from OS to MC (Table 2.3). Fingal Co. Co. has identified sites amounting to 12.25 ha currently developed in the MC zone that may potentially be redeveloped during the period of the SDCS. There are 9 ha currently zoned MC that remain undeveloped plus the 7 ha where a change in zoning is forecast. This leaves 31.85 currently developed ha in the MC zone where no redevelopment is forecast. These categories are divided into residential, office and high technology related industry, and retail according to the ratios in Table 2.4 and valued according to the estimates in Tables 2.5 and 2.6 and assumptions in the text. The range for the increase in values that are attributable to the Metro is found by applying the percentage increases in Table 3.1 to these underlying values.

The area included under neighbourhood centre totals 21.2 ha – 19.9 ha zoned NC and 1.3 ha zoned SC. Sites on currently developed land totalling 11 ha have been identified as potentially available for redevelopment during the SDCS. An additional 2 ha zoned NC and 1 ha zoned SC can also be developed. This leaves 7.2 ha currently developed where no redevelopment is forecast. These areas are then divided by use as summarised in Table 2.4 and valued accordingly.

The area zoned DA totals 610.4 ha but 449.4 ha of this are not suitable for development. This leaves 161 ha as shown in Table 2.2. The 74 ha in the terminal area comprises 22.2 ha offices (30% assumed) and 51.8 ha of industrial use. No redevelopment is forecast for this area. In addition, 18 ha of the current area developed for industrial use lies within the inner safety zone and no redevelopment is forecast for this area giving the total of 69.8 ha. This leaves 36 ha in industrial use where redevelopment is forecast. A further 24 ha near the roundabout that is currently developed and 9 undeveloped ha towards the back of the airport are suitable for office and high technology airport related redevelopment and development.

In relation to residential, from Table 2.2, there are 318.8 ha zoned RS and RS1. Table 2.3 also identifies a forecast 4 ha that may be changed from OS to RS. In addition, 3 ha zoned GB are forecast to be available for residential development (site R10). Table 2.3 also identifies a total of 252 ha currently zoned GB and 50 ha zoned OS that are forecast to change to ST1. It is projected that development of these areas will be 30% residential giving 90.6 ha. This gives a total of 416.4 ha currently or forecast residential development. Developed sites totalling 4 ha are forecast to be suitable for residential redevelopment. Undeveloped areas currently zoned RS and RS1 total 25.5 ha. In addition, forecast residential developed on other undeveloped sites will total 94.6 ha. This is comprised of 4 ha changed from OS to RS, 30% of the 50 ha forecast change from OS to ST1, the 3 ha currently zoned GB and 30% of the 252 ha site identified in Table 2.3. This means that no further development is forecast on the remaining 292.3 ha of residential development.

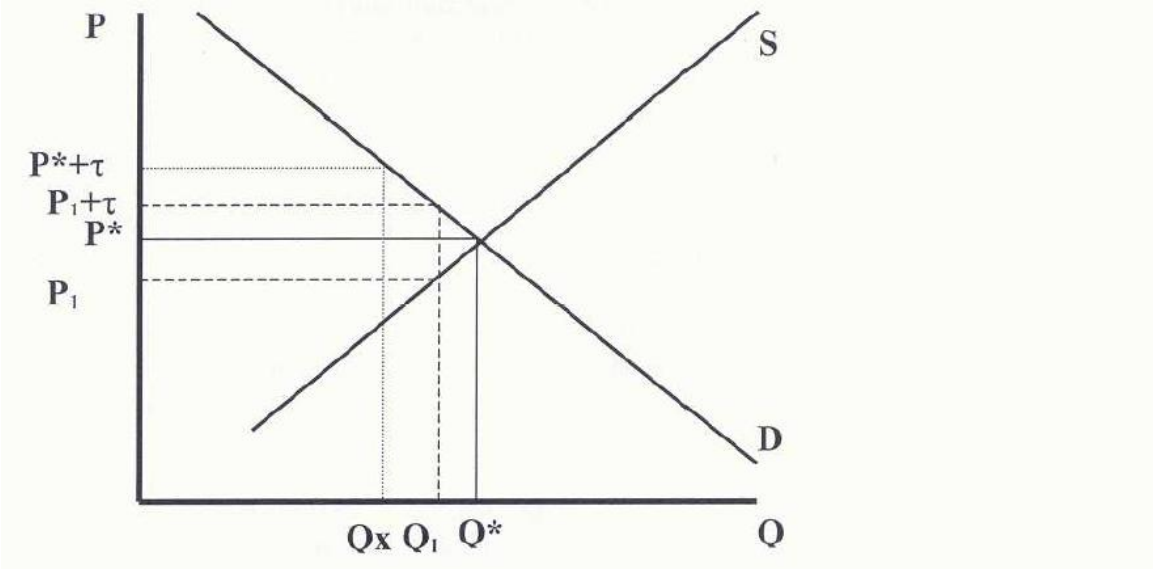
Table 2.2 identifies 288.7 ha zoned ST and ST1. Table 2.3 forecasts zone changes from GI to ST & ST1 for 75 ha. The additional 50 ha change in zoning from OS will provide a further 35 ha (70%) and the change of zoning in relation to the 252 ha GB to ST1 will provide 176.4 ha (70%) for office and high technology related industry and retail development. This totals 575.1 ha. Developed sites forecast for redevelopment total 178 ha (defining the 35 ha of rezoned OS as undeveloped). Undeveloped areas where development is forecast amount to 374.9 ha. This leaves 22.2 ha of existing development where no redevelopment will take place. Following the assumptions in Table 2.4, existing development is taken to be 25% office and high technology related industry and 75% retail, while new development and redevelopment is assumed to comprise 85% office and high technology related industry and 15% retail.

Table 2.2 identifies a total of 299.6 ha zoned industrial (GI, GI1 & WD). It is forecast that 75 ha will change to ST & ST1 (Table 2.3) leaving a total of 224.6 ha. Sites totalling 78.43 ha of developed and 6.7 ha undeveloped lands have been identified as potentially available for redevelopment and development during the period of the SDCS. This leaves 139.47 ha currently developed on which no redevelopment is forecast.

Appendix 2: Impact of a Levy on Demand

Consider the market for a representative good as is illustrated in Figure 1. Demand (D) and Supply (S) are equated at a price P* with Q* representing the quantity that is traded on this market. At P* the market clears and there is no pressure on price to change. The market is said to be in equilibrium.

Figure 1: Incidence of a Levy

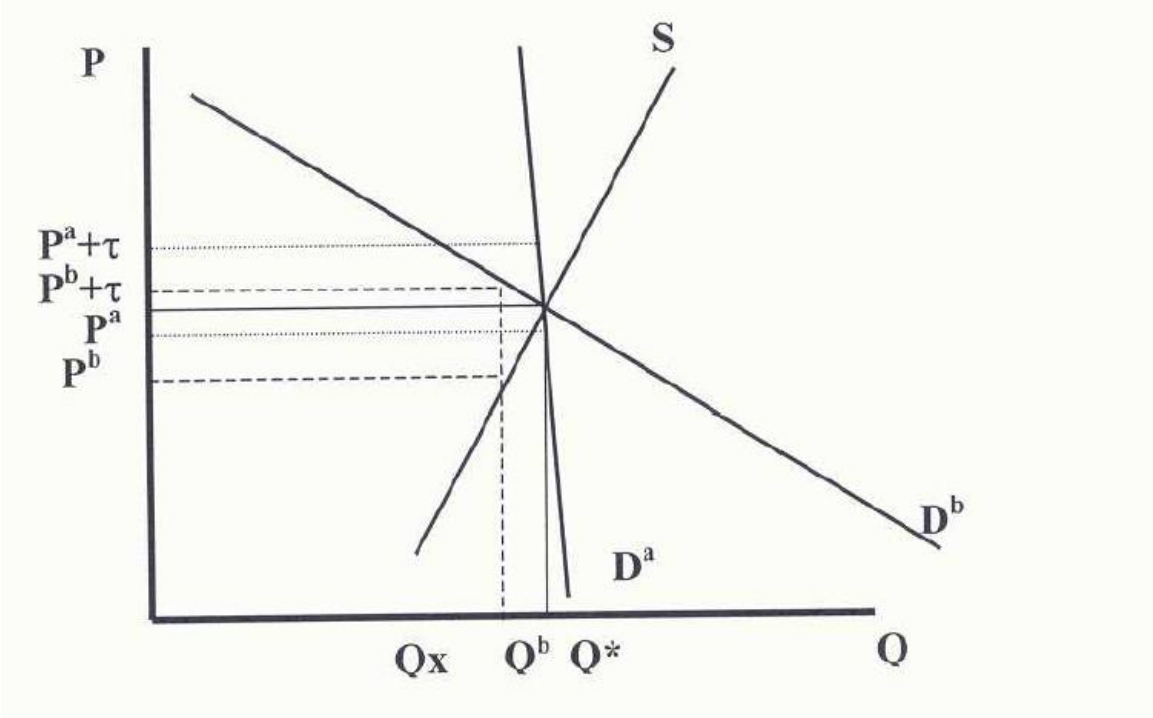


Assume that a levy is introduced. The value of this levy is τ. The first impact is to increase the price to $P^* + \tau$, with the suppliers continuing to receive P* and the Council receiving τ per unit sold. However, it is clear that at this price demand (Qx) is now less than supply, which has not changed. In a market with excess supply there will be downward pressure on price that will not be eliminated until price falls sufficiently so that demand equals supply. This happens where the market price is $P_1 + \tau$ with the supplier now receiving P_I. Q_I is traded in this market. Clearly this price is less than P*, although $P_I + \tau$ is still above P*. As a result, it can be said that only part of the tax or levy is being passed on to the final purchasers with part being paid by suppliers. There is some fall in the quantity traded and a rise in the final price.

The extent of the change in quantity and price will depend on the responsiveness of supply and demand to the change. This is measured by elasticity. If the response is low then the good in question is said to be inelastic with respect to price. In a diagram, this would be indicated by a steep supply or demand curve. Consider Figure 2. Demand curve D^a is relatively inelastic compared to demand D^b. (Note that the supply curve is also drawn fairly steep as this is likely to be representative of the situation in the property market i.e. supply does not change greatly in the short to medium term as a result of a change in price). This has a major impact on the incidence of the tax. It is clear that with D^a the market price $p^a + \tau$ is further above p^a than would be the case if demand curve D^b were to be used. In other words, where elasticity of demand is low, suppliers would be

able to pass on the tax to the final purchasers. The quantity trade does not fall much but the final price rises more than with an inelastic demand.

Figure 2: Impact of the Levy and Elasticity



This means that the incidence of the levy will depend primarily on the price elasticity of demand on the part of final purchasers. Measuring this in the case of housing is complicated for two reasons. First, expectations in regard to future developments in the housing market are important in determining demand. Thus, demand can change - and the elasticity of demand can be quite volatile - even when market price is unchanged in absolute value. But market price may have changed relative to expected future values. This is extremely difficult to capture in empirical research. Second, the housing and property markets are not homogenous but are a whole series of markets. Property varies considerably depending on location, quality and other factors. Thus, each development, is in a sense, a once off. However, this is important in a general sense since it means that close substitutes to a particular piece of property may not be available, although other properties may be available. This has the general effect of reducing elasticity.

This analysis has a further important implication also. When the tax is imposed, the quantity of goods traded in the market fell. This effect is known as the deadweight burden of taxation. Where there is an elastic response, the impact of this distortion is considerable and the deadweight loss can be considerable. However, with an inelastic response the impact is lessened. Indeed, in the extreme case where elasticity is zero, the loss is also zero in this market. In other words, buyers accept the higher price as they feel they are still getting sufficient value to entice them to buy, even though the price is above its price in the absence of the levy.