



## **Movement and Place Evaluation Guide:**

# **Estimating placemaking impacts of transport projects in business cases**

**Economics and Assurance  
Transport for NSW**

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## About the Movement and Place Evaluation Guide:

The *Movement and Place Evaluation Guide* was developed by TfNSW Economics and Assurance in consultation with Customer Strategy and Technology (CST). It has been aligned to the NSW Government's *Practitioner's Guide to Movement and Place* which was released in March 2020 for a testing period of 12 months.

The targeted audience of the *Movement and Place Evaluation Guide* is TfNSW project development teams, business case writers and transport economists. We encourage project teams to identify, measure and acknowledge placemaking benefits during project development and business case preparation.

The *Movement and Place Evaluation Guide* is released for testing for a period of 12 months. During the testing phase, we seek feedback from users in regard to its usefulness, implemented methodologies and worked examples. The concept of placemaking is relatively new and thoughts on placemaking evaluation are constantly evolving. Your feedback will help improve its applicability, practicality and usefulness in project business case development and economic appraisal.

The *Movement and Place Evaluation Guide* was produced by TfNSW Economics and Assurance. Martin Oaten and Craig Stevens have reviewed early drafts and endorsed its progressive engagements with TfNSW Divisions and NSW Treasury. Johannes Haasler, Ben Cebuliak and Jessica Farrell from Customer Strategy and Technology Division, critically reviewed this Guide to make it better aligned it to the NSW Government's *Practitioner's Guide to Movement and Place*. Their insightful and constructive comments have materially improved this Guide. NSW Treasury has reviewed this Guide to ensure its consistency with NSW Government's Guide to Cost-Benefit Analysis.

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# 1 Purpose of the document

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In 2018, Transport for NSW released the *Future Transport 2056* which requires balancing movement and place in transport project planning, development and design. A desired outcome for the future of city living, urban street design and transport is the creation of 'successful places' through integrated land-use transport planning. Essentially, road and mass transport networks not only support the movement of people, goods and services, but also have various place functions that support a range of socioeconomic activities. The Movement and Place framework underpins the Future Transport strategy and provides a tool for working towards achieving this vision.

A number of NSW government agencies are currently working in this area to provide specific advice and guidance on how to implement the Movement and Place framework. In particular, TfNSW and the Government Architect NSW (GANSW) have released the "*Practitioner's Guide to Movement and Place – Implementing the Movement and Place Framework in NSW*" (NSW Government 2020) for internal testing over the next 12 months.

With an increasing focus on place-based planning, the value of placemaking elements is an important issue for consideration in planning for the future. Thus, investing in public spaces and infrastructure becomes critical by creating streets that are greener, more walkable and climate resilient, and making cities more liveable, productive, inclusive and sustainable. However, there is presently no consistent guidance across NSW on how place benefits should be captured. Thus, this paper aims to offer guidance on the application of the Movement and Place Framework for transport project business cases within which place benefits can be appropriately measured.

The objective of this advisory paper is to stimulate discussions and ideas on estimating the benefits of both movement and place outcomes and to develop solutions on placemaking evaluation issues. It does not describe how to make a good place, but attempts to put a dollar value on placemaking attributes. Among likely stakeholders of placemaking as shown in Table 1.1, the paper targets the following groups of audience:

- **Project Development Managers in NSW Transport Cluster**, who integrate transport planning, urban planning, urban design, environment assessment and economic evaluation into a single transport project output by infrastructure delivery.
- **Transport economists**, who provide economic appraisals in project development and business case preparation.
- **Transport modellers**, who give transport demand forecast and modelling outputs for estimating placemaking benefits.
- **Business case writers**, who develop the project business case for gateway reviews and funding approval.
- **Investment decision-makers**, who justify Government spending and prioritise projects by balancing movement and place functions.

**Table 1.1 Stakeholders of placemaking**

Function	Planning	Design	Evaluate
Movement	Transport planners	Traffic engineers Road / rail designers	Transport economists
Place	Urban planners	Architects Landscape designer Urban designers	Urban economists

The paper contains key information to identify and estimate placemaking benefits for inclusion in transport project business cases in five chapters:

- Chapter 2 sets out the Movement and Place framework where the Movement and Place functions are explained, the balanced approach between the Movement and Place is explored and infrastructure need for placemaking is discussed.
- Chapter 3 proposes an evaluation framework where the placemaking impacts are aligned to the five “built environment themes” in the Practitioner’s Guide to Movement and Place (NSW Government 2020).
- Chapter 4 identifies benefit types created by placemaking and approaches of benefit estimation.
- Chapter 5 draws on some conclusions from existing evidences.

The paper is a product of extensive research of national and international practice of placemaking evaluation and enhanced by consultation, discussion and collaboration with Project Managers of current transport placemaking projects in Infrastructure and Place (IP), Greater Sydney (GS) and Regional & Outer Metropolitan (ROM). The placemaking framework is continually evolving. Moreover, TfNSW Economics and Assurance will continue to liaise with the GANSW, and as their advice develops, this guide will be updated as appropriate.

## 2 Movement and Place Framework

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Before placemaking benefits are estimated, what constitutes a place should be clearly understood. In some projects, a consensus of place definition has proved challenging. Government agencies have ongoing discussion in defining 'place', and each stakeholder has specific focus areas for defining a "good place". For example, planners have focused on providing high-level future visions for a city of "movement and place". Urban designers provide constructible details for transport corridors provided by train, bus, metro, motorway and arterial road and functionalities of places of towns, locality and street. Economists attempt to assign dollar values on good places so that the allocation of resources to create or improve these places can be justified. The transport system forms a major part of the public space between buildings and non-built-up space. Depending on their scale and location, roads and streets can provide the setting in which we walk, eat, drink, shop, use public buildings and ride bicycles, thereby contributing to the character and vitality of public realm. Hence, placemaking is a collaborative process by which movement and place practitioners can shape a public realm in order to maximise shared value. Meanwhile, it is worth noting that the Movement and Place functions may compete with limited road and other public spaces. It is a process more than just promoting better urban design. It facilitates creative patterns of using the place, pays particular attention to the physical, cultural and social identities, and supports its ongoing evolution to strengthen the connection between people and the places they share.

The collaborative process of creating 'successful places' and emphasis on capturing the complementary relationship between transport infrastructure and places is the underlying principle of taking a Movement and Place approach.

### 2.1 Taking a Movement and Place Approach

The Movement and Place framework underpins the Future Transport 2056 strategy and its emerging place-based planning approach. The objectives of Movement and Place are to achieve roads and streets that:-

- Contribute to public space on the transport system or connected to transport network; and
- Are enhanced by transport and have the appropriate space allocation to move people and goods safely and efficiently, and connect places together (NSW Government 2020).

Hence, it is possible for transport infrastructure to have a distinctive character along its length, with a defined public domain and recognisable adjacent development and activity. As such, transport infrastructure including roads, light rails and rail stations should be designed according to their role to move people as well as the character of the areas they touch.

### 2.2 Understanding Place

Traditionally, a place is a commonly identifiable geographic area or location. This includes both the use of space and the features within the space. The Movement and Place framework considers place qualities through three lenses:

- Physical form

- Activities that happen within them; and
- Shared meaning to people

Austrroads<sup>1</sup> have adopted a narrower definition of a place - ‘street as a destination in its own right’. The place is where activities occur on or adjacent to the street and where the buildings and spaces may have a social or cultural significance in their own right (Jones and Reynolds 2012). This is very much a road-oriented interpretation of placemaking. Instead, placemaking projects require considering a wide range of aspects such as quality of a place, aesthetics, physical urban design, how the place is used, and the extent to which a place supports quality of life, health and the general well-being of residents.

#### **The definition of “Place”**

‘Place’ is defined in the context of Movement and Place, where ‘a street is a destination in its own right: a location where activities occur on or adjacent to the street, and where the buildings and spaces may have a social or cultural significance in their own right’ (Jones & Reynolds 2012, p. 2). This includes roads and interfaces with other transport corridors. In a Movement and Place context, place means both a geographic area (‘a place’) and qualities or sense of place (form, activity and meaning). The focus of this study is on the role of transport projects in creating places in a road environment.

Source: Austrroads (2020, p.5)

## **2.3 Understanding Movement**

Too often transport planning aligns movement functions of roads and streets with well-established and easily assessable measures such as travel time savings, travel time reliability improvement and vehicle operating cost savings. This has at its core an understanding of roads as corridors for movement from one place to another. The place function thereby emerges as competing function in that better placemaking may slow down vehicle traffic which is likely to be evaluated as travel time dis-benefit.

In contrast, Movement and Place recognises that transport links and all their road users are an essential adjunct to creating successful places. The Movement and Place functions may also compete with the limited space in transport corridors, thus provision of walkable, cyclable and amenable places should be balanced with the need for moving people and goods. The street network plays a dual function in the movement of people and goods (freight) in order to provide access to local places. In addition, streets will often serve different purposes, to different customers, at different times of the day. The way people move reflects the principal means of experiencing a place visually, socially and economically. On the other hand, not considering potential side effects of movement can diminish places, for example by severing places, affecting their air quality, or generating noise or traffic speeds and volumes that affect people’s comfort and safety.

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<sup>1</sup> A personal communication on Austrroads Project NEG 6181, Classifying, measuring and valuing the benefits of place on the transport system, 2019



Streets enable places, are places in their own right and provide access to places. Seeking to balance the needs of all road users, movement can therefore be classified as trips through, to/from and within places. “Each kind of interaction needs to be considered in relation to the importance of that kind of movement in the place, not just in volume” (NSW Government 2020).

## 2.4 Finding the balance between Movement and Place

It is beneficial that a Project Development Manager assesses the movement and place functions of the project to judge whether the placemaking benefit should be assessed.

Distinctiveness of movement significance and place intensity hereby helps give Project Managers some clarity at strategic and local level. NSW Government (2020) is proposing a 5 X 5 matrix to classify the movement and place functions as shown in Figure 2.1. The movement significance is assessed using the 1 to 5 scale where 1 denotes low movement significance and 5 denotes high significance. The movement significance needs to be assessed for each transport mode (walking, cycling, public transport, freight and private vehicle) for ‘Through’, ‘To / From’ and ‘Within’ trips.

The place intensity is assessed using the A to E scale where A indicates low intensity and E indicates high intensity. The place intensity is defined by activity, physical form and meaning of a place with measurement factors of population, employment density, visitation, public transport provision, building volume (footprint), urban density (floor space ratio) and heritage places. A place intensity map is available for Greater Sydney and the same map can be produced with relevant datasets for Regional NSW.

The measurement and concept are evolving. This paper will be updated with new developments of the Government Architects NSW (GANSW)’s advice.

**Figure 2.1 Classification of a transport corridor or a place by its movement significance and place intensity**



Source: GANSW (2020). Left: 5 X 5 matrix of movement significance and place intensity. Right: Street and transport environments in NSW movement and place framework

Balancing the movement and place functions of transport projects result in the following different road functionalities in the *Future Transport 2056* and GANSW (2020):

- **Main roads** – High movement significance and low place intensity, including motorways, primary freight corridors, major public transport routes, principal bicycle network, key urban pedestrian corridors and other movement corridors.
- **Main streets** – High movement significance and high place intensity. Also known as “vibrant streets”. It features competing demands for movement and local access requirements to the surrounding places. Balancing the functions of these streets is a common challenge. (Agree).
- **Civic spaces** – Low movement significance and high place intensity. Also known as “places for people”. They are important for local access, often locations with lots of people, and places of value for local communities and visitors. They are streets at the heart of our communities and have a significant meaning, activity function, or built environment. They are often in our major centres, our tourist and leisure destinations, and our community hubs. These streets are often pedestrian priority, shared spaces.
- **Local streets** – Low movement significance and low place intensity. They are part of the fabric of suburban neighbourhoods where we live our lives and facilitate local community access. They are the majority of streets within our transport networks and often have important local place qualities.

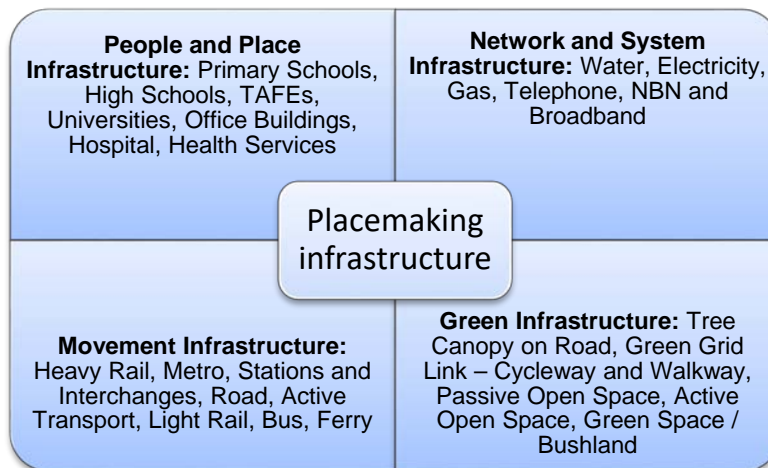
## 2.5 Infrastructure needs for placemaking

The Movement and Place Framework highlights that good placemaking and achieving a well-designed built environment will require an understanding of various infrastructures working together in a complementary manner. Four types of infrastructure are shown in Figure 2.2 and include:

- People and Place Infrastructure;
- Network and System Infrastructure;
- Movement Infrastructure; and
- Green Infrastructure.

All infrastructures will contribute to the benefit realisation of successful places, and transport infrastructure is only part of the system. A transport project evaluation should claim the benefits created from or attributable to transport infrastructure only to avoid potential double-counting of the benefit resulting from other, albeit complementary, investments.

**Figures 2.2 Placemaking infrastructure types**



Green infrastructure plays a particularly important role in placemaking. Some passive open space may be directly provided as part of the transport project scope. (Passive open space is a public realm for sitting and relaxing. In contrast, active open space is used for sports, exercise or active play). A green space / bushland could be created, preserved or acquired for a transport project which requires careful valuation in the project appraisal.

City streets can form a three-dimensional space for walking, shopping, resting and meeting. The quality of the street as a public domain is defined by building forms, architectural uses, trees and planting, lighting, street furniture, the ability to park cars and bicycles and all of the footpath and associated activity that gives it life. In this context, the Australian Department of Infrastructure, Transport, Cities and Regional Development (DITCRD) emphasises that:

*‘Well planned public infrastructure, such as a major transport project, can create benefits for a diverse range of stakeholders, including property owners, developers and occupiers; public transport users and operators; businesses and employees; and government. In the first instance, value flows to those who use the infrastructure, through improved quality of service, reduced congestion or more reliable journey times.*

*Each project or program has a unique profile of value creation and beneficiaries. For example, a very large “city shaping” project may create beneficiaries in all corners of a city for landowners, businesses and individuals; while the reach of a smaller project will be far more localised. Accordingly, project scope (including modal choice), design and proximity to other infrastructure all have a significant impact on the opportunities for value creation.<sup>2</sup>*

<sup>2</sup> Commonwealth Department of Infrastructure and Regional Development (2016), *Using Value Capture to Help Overcome Help Deliver Major Land Transport Infrastructure: Roles for the Australian Government*, Discussion Paper (November 2016), p.5

## 3 Placemaking benefit evaluation framework

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Traditional economic evaluation models and cost-benefit analysis tools have worked well to evaluate ‘movement’ benefits including travel time savings, travel time reliability benefits and vehicle operating cost savings. The economic evaluation of the movement function has been well established in the relevant national and NSW guidelines:

- National guidelines – Australian Transport Assessment and Planning<sup>3</sup>
- Transport for NSW – Cost-Benefit Analysis Guide and Economic Parameter Values, 2019.

However, they tend to omit values and benefits of public realm improvements. There is presently no guidance on how place benefits should be captured in business cases and Cost Benefit Analysis (CBA). For example, the additional benefits of investing in or improving the public realm for pedestrian users are not always adequately captured or considered and, hence, are largely omitted in favour of more established and easily assessable measures aligned with movement.

The emerging emphasis on integrated transport and land-use planning seeks to overcome previous assumptions that movement and place functions are two competing priorities. That is, placemaking has occasionally been regarded to slow down traffic and been evaluated as travel time dis-benefit in conventional CBA. Consequently, important aesthetic, social, cultural, environmental and heritage impacts are not appropriately valued in the project economic analysis.

Activation, reinvigoration and development of dense urban areas have placed a greater emphasis on use of streets and public spaces for economic and social exchange. This amplifies the need for a method of quantifying the value of investment in the public realm alongside other investment objectives. It also relates to wider consideration of place and movement functions across Sydney’s transport network.

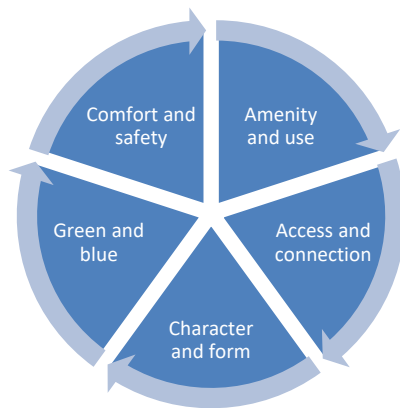
### 3.1 Proposed evaluation framework

NSW Government (2020) proposed using five “built environment themes” for evaluating performance outcomes of movement and place as shown in Figure 3.1.

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<sup>3</sup> See <https://www.atap.gov.au/>

**Figures 3.1 Proposed evaluation framework of placemaking projects**



In the project evaluation, it is more practical to value a place by its attributes and themes, summing up benefits of those themes to estimate a total value of the place. The following sections discuss some of these attributes.

### **3.1.1 Amenity and use**

Quality public space contains a combination of the following attributes:

- The quality of a place, including the aesthetics, the physical design and how the place is used. The concept of urban amenity includes not only the visual and aesthetic qualities of a place, but also a range of more functional considerations such as safety, comfort and convenience.
- Support the quality of life, health and general wellbeing of the residents. The key attributes of a place that contribute to the quality of life are local amenities, transport facilities and services. The quality of life is further enhanced by environmental sustainability by providing access to natural and built environment and low levels of pollution (ATAP 2018).
- Create local employment opportunities by supporting local business, retail and commercial by increased footfalls and sales.
- Good placemaking encourages local consumption (food and drink).

### **3.1.2 Access and connection**

Well-connected places contain a combination of the following attributes:

- Accessibility - the planning and design of roads, rail, bridges, wharfs and related infrastructure should provide good connections and movement options for communities whose quality of life is affected by their proximity to amenities and the time and effort involved in travel, and the frequency and ease with which they can cross major transport infrastructure.
- 30-minute city – percentage of dwellings located within 30-minutes of a metropolitan or strategic centre by public transport or walking. A productive place provides appropriate accessibility to employment. A high level of peak travels on key roads should be on time.

- Move through traffic away from the place to reduce the exposure to noise, air pollution and crash risks.
- By facilitating good connections for all transport modes, reduce the need for car travel, bring communities closer together and support local business. (Car travel has many conveniences – of course allow for negatives specifically).
- Walkable and cyclable – built environment should encourage and facilitate more walking and cycling.

### **3.1.3 Character and form**

The identity of a place is perceived through its built form, landscape character, culture and histories:

- Transport infrastructure should be in harmony with and protect the scale and unique qualities of the places in which it is situated. It should fit sensitively into its natural setting – the landform, landscape, natural patterns and systems, vegetation and ecology of a place.
- Supply appropriate office floorspace and maintain appropriate rental revenue and business rate growth.
- Place is designed to facilitate clustering and urban agglomeration up to a point.
- Place is designed to consume less energy and natural resources.
- Low ongoing maintenance cost - by ensuring longevity through durable, relatively low maintenance outcomes.
- Protect heritage, Country, biological diversity and ecological integrity in a project's location and design.

### **3.1.4 Green and blue**

Environmental impacts have been a core evaluation criterion of transport projects:

- Appropriately incorporate vegetation and all its ecological benefits into road corridors and projects.
- Adaptively re-use built form, landscape and materials.
- Provide more liveable streets for communities – landscaped, well lit, interesting and safe.
- Provide appropriate tree canopies in urban streets and places.

### **3.1.5 Comfort and safety**

Road safety, security in using public transport and comfort in travelling or staying in a place should be reflected in the movement and place evaluations:

- Safe place - the consideration of safety applies to all transport and placemaking provisions. The project design should ensure there is good

passive surveillance of pedestrians and cyclists by other transport users and nearby residents.

- Perceptions of safety in walking and cycling.
- Perceptions of cleanliness.

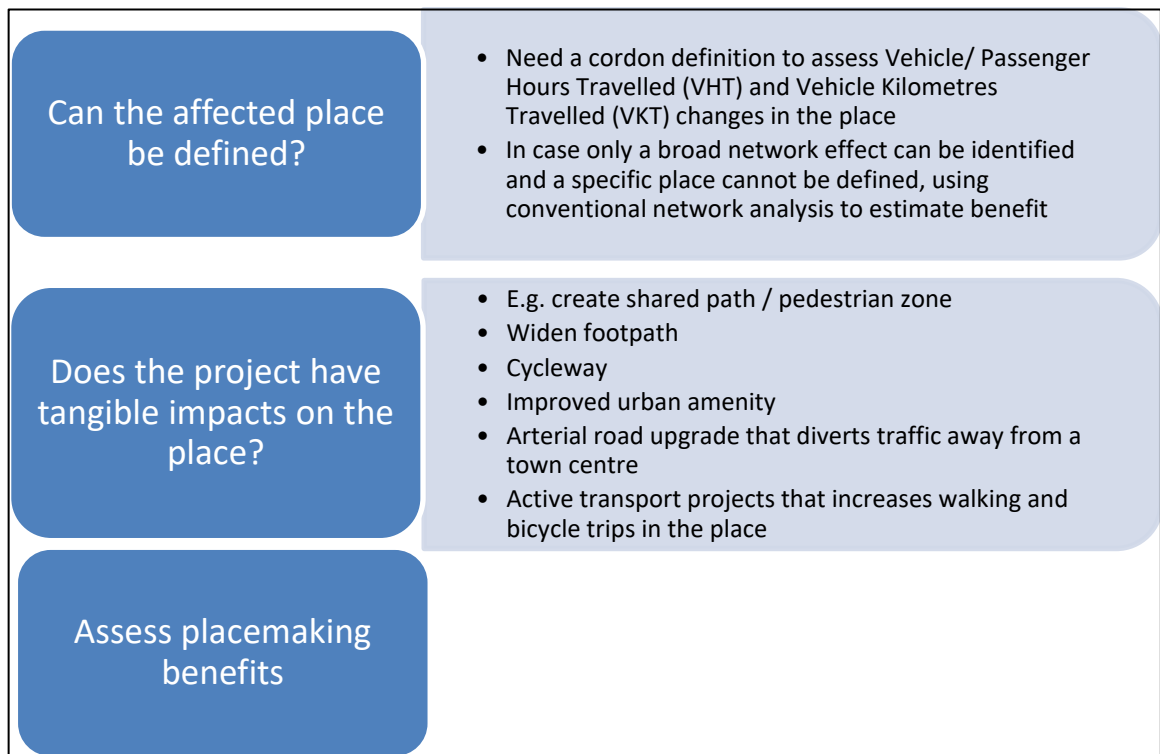
### **3.2 What types of transport projects should assess placemaking benefits?**

Movement and place functions complement each other, thus placemaking impacts occur in every project. However, the use of the matrix for road categorisation purposes reveals that some projects provide more movement capacity where the traditional evaluation approaches might be appropriate. Other projects contain significant placemaking elements where the placemaking benefits should be appropriately assessed. A transport project should assess placemaking benefits if it satisfies one of the following two conditions:

- The affected place can be clearly defined, for example, by drawing a cordon area to estimate traffic and amenity impacts. It is recommended that the placemaking benefit is not assessed unless such a specific place or a group of places can be defined.
- The transport project has tangible impacts on the place:
  - It makes physical changes to a place such as widened footpath, improved streetscape and shared street creation or contributes to increased public transport usage at the expense of private vehicle travel.
  - It significantly diverts through traffic away from the place to make it more liveable and safer.
  - It significantly increases cyclist volumes and pedestrian footfalls in the place.

All projects that change the traffic and pedestrian flows in a place of national, state, regional and municipal significance (i.e. P1-P3 in Figure 3.2) should consider placemaking benefits.

**Figure 3.2 Does the project require a placemaking benefit assessment?**



The project manager should consider the placemaking benefits for the following six project types.

### 3.2.1 Street as a destination

Street as a destination is where road is located in a place featured with shops, restaurants, coffee and offices. It views a street as a destination in its own right and identifies values of the place where people would dwell and spend time – whether dining, shopping or sitting, or partaking in associated activities like loading, parking or alighting a bus. Placemaking benefits should be evaluated for a transport project that has improved amenities by one or more of following measures: (Some of these are not benefits in themselves).

- Reduce number of traffic lanes
- Reduce width of traffic lane to allocate space for other purposes
- Widen footpaths
- Add cycling facilities (cycle lane or bicycle parking)
- Install pedestrian crossings
- Signalise an intersection to provide pedestrian crossing phase
- Road space re-allocated to bus lane.

As shown in Figure 3.3, urban street design can create a safe, comfortable and convenient walking environment to support and enhance economic and retail vitality.



By integrating the project area into the existing streetscape, it improves street aesthetics and visual quality, and facilitates connections with surrounding activity centres.

**Figure 3.3 Urban street design to enhance street as a destination**



Source: Victorian Department of Transport (2019, p.32)

These considerations in road network planning and design can help solve conflicts between busy roads, town centres and nearby communities. They can help make cities and towns more liveable and sustainable. Some large public transport has improved public realm by providing:

- **Pedestrian Zone** (e.g. George St Pedestrian Zone created by CBD to South East Light Rail).
- **Shared Street**, including marquee pedestrian priority thoroughfare (e.g. Brooklyn St in New York, Exhibition Road in London, New Road in Brighton, UK, see Figure 3.4).

These measures may lead to reduced traffic, slower speeds and reduced speed limit in the place.

**Figure 3.4 Example of street as a destination from overseas**



Brooklyn, New York



Exhibition Road, London



New Road, Brighton, UK

### 3.2.2 A transport project that diverts traffic from the place

Placemaking benefits can be significant if a project diverts a high level of traffic from the place, even if the project itself is outside the place. Examples of this type of project may include:

- Public transport project that shifts the mode share in favour of public transport
- Mass transport or motorway projects that use a tunnel option to vertically separate movement and place functions
- Upgrade of an urban arterial road that bypasses a place
- Regional town bypass that divert heavy vehicles and through traffic away from towns to makes the town more liveable.

As part of Pacific Highway Upgrade Post Completion Review, Transport for NSW (2015) undertook an economic impact study of bypassed towns in Raymond Terrace, Karuah, Bulahdelah, Taree, Coopernook and Kew. It has found that town bypasses generally resulted in positive social impacts such as better quality of life and environmental amenity to residents from reduced traffic volumes on local roads. Reduced levels of traffic led to improved safety outcomes as well as reduced noise and pollution. Residents benefited from an increased use of the main road as they can walk in a safer and more peaceful environment. The primary school also benefited as teachers were able to keep windows open in their classrooms without hearing disruptive traffic noise and students were able to play outdoors in a safer environment.

These positive changes are a testament to the reduction of traffic through the town, improved liveability and town amenity. The decreased traffic through the town and improvement in liveability, safety and tranquillity has attracted more visitors to the towns. More visitors creates more business and job opportunities for the towns. The post-bypass reduction in through traffic has resulted in improved town ambience contributing to making them more pleasant places to live in and visit.

### **Case Study:**

#### **Movement, Place and a more attractive locality**

The Eastern Distributor in Sydney's east offers a case study on how changes to the road network can enable us to improve the liveability and amenity of places in our city. Opened in 1999, the motorway between the Harbour CBD and the south-east reduced traffic on streets around the east of the Harbour CBD, particularly on Crown and Bourke Street in Surry Hills, which had previously been major traffic thoroughfares.

This enabled a number of amenity improvements to be made to streets in Surry Hills to support the local streets as places in the community, including:

- Traffic calming measures and landscaping
- Cycleways for local residents
- Lower traffic speeds, for safer and better street environments
- Creation of pedestrian spaces at Taylor Square
- Conversion of former one-way through streets to two-way, local streets with parking

\*This has been fundamental to the revitalisation of Surry Hills, where local restaurants, pubs and shops have thrived. The area is now a key attraction for residents and visitors alike, contributing to the liveability, productivity and sustainability of our city.



Picture: Crown Street in 1970s (left) and today (right)

Source: Future Transport 2056, Greater Sydney Services and Infrastructure Plan, p.52

### **3.2.3 Active transport projects**

Some active transport projects bring-in high numbers of people and generate a significant level of footfall in a place. They generate placemaking benefits by enabling the place. One example is Wynyard Walk that connects Wynyard Station and Barangaroo Ferry Wharf to provide walking access to Barangaroo Urban Renewal areas, as illustrated in Figure 3.5. For this type of active transport project, the benefit should include not only walking time savings but also placemaking benefits.

**Figure 3.5 Wynyard Walk has enabled Barangaroo Urban Renewal**



Note: Wynyard Walk links the Wynyard Station to Barangaroo Urban Renewal precinct. It provides a direct, level, safe, accessible and best practice customer experience pedestrian access from Barangaroo to Wynyard precinct transport hub, integrated with the existing road and footpath networks and operations of Wynyard Station. The pedestrian capacity is sufficient to meet the demand of up to 20,000 pedestrians in the one hour business day AM peak including contraflows. It was a precinct activator for Barangaroo with the project completion date coincided with the take-up of office space at Barangaroo South.

### **3.2.4 Station precinct upgrade projects**

TfNSW delivers station precinct improvements in mass transport corridors that should be evaluated in the placemaking framework. During the period of 2000 -2010, station developments in Bondi Junction, St Leonards, Blacktown, Chatswood and Wolli Creek have been successful in both commercial development and placemaking (TfNSW 2012). Prior to the redevelopment at the interchange, Chatswood was characterised by poor connectivity between the western commercial and eastern retail districts. The interchange has been effective in linking the western and eastern sides of the business district and providing a modern, safe and accessible transport interchange facility. In the north of Chatswood Station, a Rail Enclosure Structure (RES) has been built, according to rail requirements, providing space for rail tracks passing underneath, with trains operating at up to 80km/hr. High rise residential apartments have been built on both sides of the RES, the top of which is being used for outdoor recreational activity for the residents of the apartment block. The commercial / residential developments and placemaking have transformed Chatswood to a vibrant centre.

**Figure 3.6 Example of station development: Chatswood Interchange**



Source: PPP Contract summary of Chatswood Station, NSW Government

### **3.2.5 Urban renewal and activation projects**

Transport projects play important activating and enabling roles in some urban renewal projects. Examples of these projects may include:

- **Town Centre improvement.** One example is Epping Town Centre that upgrades intersections, footpaths and traffic flows in Epping Precinct<sup>4</sup>.
- **Urban renewal projects** where a transport project provides enabling connectivity and accessibility<sup>5</sup>.

Placemaking benefits should be assessed for these projects to justify transport investment in the fabric of the place. It is important to note that a transport project should estimate the transport generated benefits only to avoid double-counting benefits by multi-government agencies.

### **3.2.6 Area / precinct land use and transport planning**

Placemaking benefits have been assessed for some regional land use and transport planning schemes. One project example is the Greater Parramatta and the Olympic Peninsula (GPOP) that is proposed to deliver an integrated place-based planning.

The GPOP is a future economic corridor that is aligned to the vision of *A Metropolis of Three Cities: Greater Sydney Region Plan and the Central River City*. Its

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<sup>4</sup> See: <https://www.rms.nsw.gov.au/projects/epping-town-centre/index.html>

<sup>5</sup> List of urban renewal projects in City of Sydney can be found: <https://www.cityofsydney.nsw.gov.au/vision/changing-urban-precincts>

transformation will assist in rebalancing access to jobs and housing for people in Western Sydney. The vision is that the GOP will be Greater Sydney's true centre as a connected and unifying heart.

It is a 6,000-hectare area that spans 13 km east–west from Strathfield to Westmead, and 7 km north–south from Carlingford to Lidcombe and Granville. It is located within the Central River City which has a target to accommodate an additional 207,500 new dwellings over the next 20 years, the highest target of Greater Sydney's five districts.

While demand for housing is high in the GOP, it has lower levels of open space and tree canopy to support urban liveability, compared to eastern parts of Greater Sydney. Placemaking projects that increase the amount of green-blue infrastructure, boost the level of tree canopy, and ensure healthy Parramatta River waterways will contribute to mitigating pollution impacts from major transport corridors and the effects of increasing heat which is prevalent across Western Sydney.

The GOP strategic business case grouped benefit streams into three categories: liveability, productivity, and sustainability with some benefit streams being split across multiple categories to reflect their dual nature in place-making.

### **3.2.7 Public realm and public space improvements**

Public realm and public space transformation projects have been gaining momentum in global cities over the last ten years. One good example is the Trafalgar Square in London (Figure 3.7).

A major redevelopment of the square was completed in 2003, involving closing the eastbound road along the north side and diverting traffic around the other three sides of the square, demolishing the central section of the northern retaining wall and inserting a wide set of steps to the pedestrianised terrace in front of the National Gallery.

**Figure 3.7 Example of global public realm – Trafalgar Square in London**



Source: Courtesy to Jagannath, T. (2018)

The square is well served by public transport - London Underground's Charing Cross station on the Northern and Bakerloo lines has an exit in the square. The square is also served by around 20 bus routes. It has been used by large volume of

pedestrians comprised of international and national tourists and Londoners for community gatherings and political demonstrations. It is also a centre of annual celebrations on New Year's Eve. The economic value of the square would be significant.

### 3.3 Exclusions

#### 3.3.1 Station and interchange

This guide does not apply to train station and platform improvements. The amenity benefits resulting from a transport interchange upgrade, including way findings, station amenity and platform waiting area should be assessed as part of an orthodox public transport project following relevant ATAP and NSW guidelines (Douglas 2008, TfNSW 2018b, ATAP 2020).

#### 3.3.2 Fleet amenity

The placemaking framework does not apply to the amenity benefit of improved bus, train, light rail and metro fleet. Over many years, Sydney Trains / TfNSW have undertaken Stated Preference surveys and established appropriate evaluation methodologies for the fleet amenity improvement evaluations which should be continually used (Douglas 2016).

### 3.4 Steps to evaluate placemaking benefits

In general, placemaking benefits can be analysed in the following five steps.

*Step 1: Review the Movement and Place functions of the Project to determine the Movement benefits evaluated in the conventional transport cost benefit analysis and the Place benefits to be analysed in placemaking benefit framework.*

- The Project Manager should have a clear idea of the place being evaluated. The place can be the street as a destination or a locality that the Project has noticeable impacts on its use by heavy vehicles, cars, cyclists and pedestrians. A transport project can have impacts on one or several places. The placemaking benefits are difficult to assess if the place cannot be identified.
- Analyse the Project's movement and place functions. A 'movement' project can also generate 'place' benefits thus the project economist should ask the following two questions:
  1. Does the Project improve the amenity of place by physical engineering work (e.g. providing additional cycleway, improved place amenity)?
  2. Does the Project support better places by providing connectivity and access for people and goods?
  3. Does the Project divert a significant amount of traffic away from the place? (The significance of the diversion is tentatively defined as a 10% diversion threshold.)
- It is important to recognising a complementary relationship between the movement and place. *"Movement supports better places by providing connectivity and access for people and goods, and transport networks are*

*most rational and productive where they connect and improve the places they serve. Equally land uses create demand for movement, and land use change can either leverage transport investment or drive it (NSW Government 2020, p.41)."*

*Step 2: Determine what benefits should be assessed*

- Chapter 4 lists the top-10 placemaking benefit types. Analyse the Project to determine which benefits could be created by the Project.

*Step 3: Determine what data will be needed for benefit estimate*

- Socio-economic characteristics of the place
- Environmental aspects of the place
- Heritage aspects of the place
- Population and employment within 1 km of the place (walking distance) and 4 km of the place (cycling distance)
- Pedestrian volume and length of stay in a place (minutes)
- Existing and induced cycling trips
- Reduced car trips in the place area, redistribution of VKT and VHT between "movement" and "place" corridors
- How much value will users assign to the 'place' before and after either place or transport improvement?

*Step 4: Determine how data will be collected*

- Cost effective approach - Source existing data where possible
- Project specific survey - see next Section

*Step 5: Placemaking benefit estimate*

- Identify and estimate benefits. Details see Chapter 4.

## **3.5 Data needs for placemaking evaluation**

Input data is important for assessing placemaking benefits. The Project Manager should consider the following data items:

### **3.5.1 Socio-economic characteristics of the place**

Socio-economic data helps understand the dynamics of the place and provide input data for estimating induced walking and cycling trips and local economic impacts of the placemaking project.

- Define the core area, walking catchment area and cycling catchment area if possible



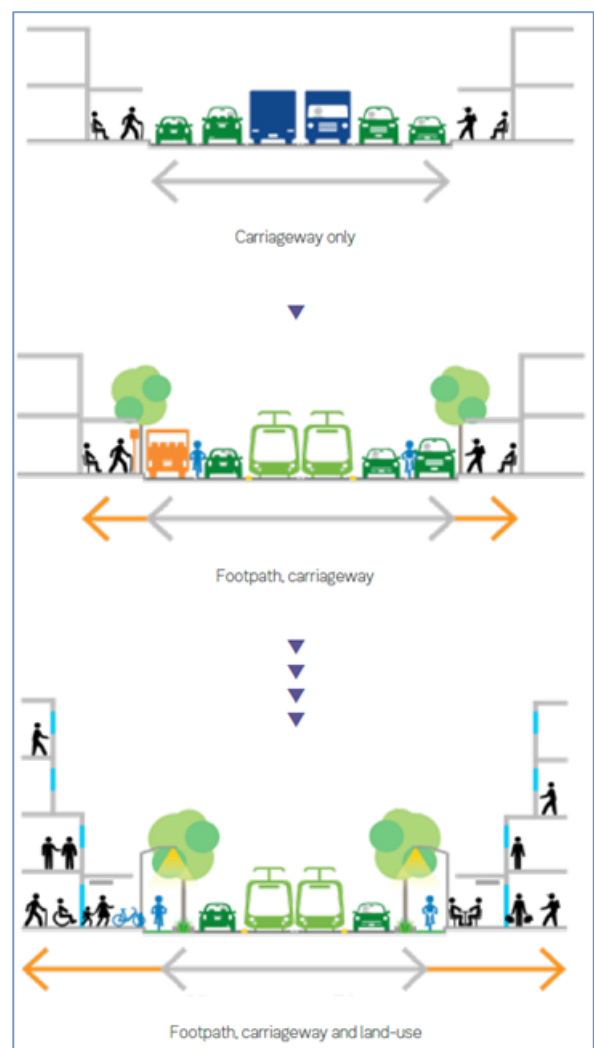
- Define land use - commercial (floor space for office, retail, restaurants and cafes etc.) and residential uses
- Quantify the level of employment in the area
- Estimate the population within the walking catchment (1 km) and cycling catchment (4 km) (May also benefit people driving to area – not many cycle)
- Estimate both population and employment densities
- Itemise commercial activities - number of storefronts per block (by type and land use), percentage of vacant retail fronts, retail rents and land value
- Quantify how many people are visiting on weekdays, weekends and Public Holidays
- Calculate the areas of open space and facilities, including both passive open space for sitting and relaxing and active open space for sports and fitness.

### 3.5.2 Urban design and proposed changes

Details of urban street design should be articulated to inform how users would value these changes. An appreciation of urban street changes will also assist in Stated Preference survey design, should such survey be undertaken. Figure 3.8 shows the evolution of urban street functions. These functions should be clearly communicated to traffic modellers and transport economists so that changes to walkers, cyclists and drivers can be appropriately integrated in traffic analysis and benefit estimation. Key inputs should include:

- Added amenities - pedestrian zone, shared path, tree canopy, signalised pedestrian crossing, zebra pedestrian crossing etc.
- Added bicycle lanes and added bike parking facilities
- Reallocated bus lane, hop-on and hop-off bus
- Introduced light rail
- Added on-street parking lots close to shop and facilities

Figure 3.8 Evolving urban street functions



Source: Victorian DOT (2019, p.8)

- Reduced speed limit on traffic lane.

### 3.5.3 Traffic and active transport

The majority of street amenity benefits are derived from pedestrians, although some benefits are also attributable to drivers, cyclists, and passengers in a bus, train or light rail project. For example, passengers on an open top Sydney sightseeing bus would be able to fully appreciate Sydney streetscape. There is no value if a place is not visited or used and the longer people stay, the more value will be attached. The Project Manager should collect information on traffic, cycling and walking usage in the following aspects:

- Pedestrian facilities - width of sidewalks (including effective width), spacing of pedestrian crossings, presence of accessibility ramps, other sidewalk furniture and facilities, and the number of people that cross the street
- Volume of walkers, length of stay in the place, footfalls to shops and likely values attached to the place
- Volume of cyclists and storage options, whether they are likely to park their bike and walk around
- Bus frequency and ridership
- Traffic volume, speed, Level of Service (LOS) and road capacity in the Base Case and the Project Case
- Number of heavy vehicles on street, noise and air pollution and exposed population.

### 3.5.4 Road crash data

Placemaking can provide improved safety outcomes for pedestrians and cyclists. Data should be collected to assess these benefits.

- Crashes by Road User Movement for pedestrian, cyclist, car and other in the past 5 years
- Expected crash reduction due to placemaking
- Safety perception for school children, other walkers and cyclists.

## 3.6 Implications to traffic modelling

In traffic modelling, a cordon area of the place is usually defined to allow an assessment of traffic impacts within the place. To estimate placemaking benefits, traffic modelling and active transport demand analysis should present the outputs in Table 3.1. The conventional traffic modelling emphasises the movement outputs such as changes in the VKT and VHT in the project case compared to the base case. The placemaking outputs should also consider pedestrian and cycling volume and length of stay.

**Table 3.1 Traffic modelling requirement for placemaking benefit assessment**

	Base (Without Project) Case	Project Case
Heavy vehicles	VKT, VHT, number of trips, speed In the place cordon and outside place cordon	How many heavy vehicles are diverted away from the place
Light vehicles	VKT, VHT, number of trips, speed In the place cordon and outside place cordon	How many light vehicles are diverted away from the place
Pedestrian	Pedestrian volume The average pedestrian dwell time (minutes)	Increased pedestrian volumes Increased dwell time
Cyclists	Cycling trip volume	Increased cycling trips Number of bicycle trips stopped in the place

## 3.7 Relationships with other economic frameworks

### 3.7.1 Conventional economic benefits

Table 3.2 shows the considerable overlaps in benefit types between conventional transport CBA and placemaking benefits. Placemaking benefits are more about reclassification and realignment of some conventional benefits. Care should be taken to ensure placemaking benefits capture those created from place function and leave the movement benefits within conventional CBA. In some cases, the demarcation may not always be clear-cut.

**Table 3.2 Relationship with conventional CBA**

Benefit type	Conventional transport CBA	Placemaking benefits
Amenity benefits	Generally not assessed	To include visual and noise reduction amenity benefits
Active transport benefit: cyclist	Included for existing cyclists	To include the increased cycling trips induced by placemaking
Active transport benefit: pedestrian	Included in walking benefits	To include the increased walking distance induced by placemaking
Traffic calming and speed reduction	Generally not assessed. If assessed, it becomes a dis-benefit	Need a balanced consideration between motorists and pedestrians
Safety for walkers and cyclists	Generally not assessed	To assess reduced crashes for vulnerable road users and how school children and other pedestrians feel safer in a people-centric street design
Value of travel time savings	Included in conventional CBA	
Value of travel time reliability	Included in conventional CBA	

Benefit type	Conventional transport CBA	Placemaking benefits
Vehicle operating cost savings	Included in conventional CBA	
Road crash reduction	Included in conventional CBA	
Land use, density and agglomeration	Included the static WEBs created from travel time reduction and effective density changes	To assess dynamic WEBs created from actual employment density due to local job creation
Environmental benefits	Included in conventional CBA	
Tourism	Generally not assessed.	To assess as part of placemaking benefits, for large project only
Inflow of resource	Generally not assessed.	To assess as part of placemaking benefits, for large project only
Local economy	Generally not assessed.	To assess as part of placemaking benefits, for large project only
Land value uplift	Assessed for projects funded by Housing Acceleration Fund (HAF) or large projects creating land use benefit	To assess as part of placemaking benefits, for large projects only

### 3.7.2 Wider Economic Benefits

Three categories of Wider Economic Benefits (WEB) include (ATAP 2019):

- WEB1 – agglomeration economies
- WEB2 – output change in imperfectly competitive markets
- WEB3 – tax revenues from labour markets.

Most WEBs are generated from agglomeration economies, which refer to the productivity impacts as a result of changes in the effective density of economic activity. Agglomeration economies are externalities and so are not reflected in transport markets and conventional CBA.

Transport investments can increase the employment density of a place through two mechanisms (UK WebTAG 2018):

- **Static clustering:** The density of economic activity can be affected by changes in generalised travel costs which brings firms and employees effectively closer together. Reductions in generalised travel costs will increase productivity arising from static clustering and vice versa. This is referred to static agglomeration benefit. In recent years, the validity of static WEBs have been questioned in some research for a lack of evidence to support the

agglomeration benefit from the effective density only (Douglas 2016, Abelson 2019).

- **Dynamic clustering:** The physical density of economic activity can change as a result of changes to either the level or location of economic activity. Note that if there is a relocation of economic activity, the increased productivity in the area gaining jobs will be at the expense of those losing jobs but the total change in productivity need not sum to zero. Only an increase in jobs at the national level will have an unambiguous positive effect on productivity arising from dynamic clustering. The net effect is referred to dynamic agglomeration benefit.

The static agglomeration is captured in conventional CBA for large projects only (TfNSW recommends a capital cost threshold of \$1 billion). The dynamic agglomeration can be included in the placemaking benefit of estimated for a large project.

## 4 Benefits

Table 4.1 presents the top-ten benefits that should be assessed in placemaking projects. Benefits 1-6 should be assessed for all projects where appropriate, while benefits 7-10 should be assessed for large projects only. The threshold for a large project is tentatively defined as \$1b capital cost, which aligns with the WEBs assessment threshold.

**Table 4.1 Benefit categories of placemaking projects**

Benefit type	Small project	Large project
<b>1. Amenity benefits</b> - Visual amenity, noise reduction amenity and alleviated urban separation. Separately, heritage benefits can result from improvements in a heritage asset and accessibility.	✓	✓
<b>2. Road safety benefit</b> – Avoided pedestrian and cyclist crashes	✓	✓
<b>3. Traffic calming and speed reduction</b> – Reduced speed limit, added pedestrian crossing.	✓	✓
<b>4. Increased pedestrian activities in the place</b> – Volume and length of stay (minutes), Pedestrian Environment Review System (PERS) valuation	✓	✓
<b>5. Increased bicycle trips</b> – Trend analysis, density analysis, elasticity	✓	✓
<b>6. Reduced car trips in the ‘place’</b> – Traffic modelling, route choice analysis	✓	✓
<b>7. Boost to local economy</b> – Retail, employment, GDP and rental.	x	✓
<b>8. Land use and land value uplift</b> – potential use of a Hedonic Price Model or similar.	x	✓
<b>9. Density and agglomeration benefits</b> – Dynamic WEBs	x	✓

Benefits 1 to 6 shown in Table 4.1 are considered various economic benefits that can be added to other core benefits of transport projects (i.e. value of travel time savings, vehicle operating cost savings, road crash reduction and environmental benefits) to estimate the Benefit Cost Ratio (BCR). Benefit items 7 and 8 may be included in sensitivity tests if double-counts with other benefits can be avoided. Benefit items 7 and 10 are economic impacts that are not additive to conventional benefits and thus should not be used in the BCR calculation. The following sections present estimation methodologies for each of the above-mentioned benefits.

### **Benefit estimation should adopt a cost effective approach if possible**

It is important to note that the effort on placemaking benefit estimation should be commensurate to the project size. The benefits should be evaluated in a flexible and cost effective way by maximising the use of existing data within Transport for NSW. Higher cost project specific studies should be considered for large projects only.

## 4.1 Amenity benefit

Amenity is the pleasantness, attractiveness or desirability of a place, facility, building or feature. Amenity is very important to communities and other stakeholders at local, district, regional and State levels. The quality of a place includes the aesthetics, the physical design and how the place is used. The concept of urban amenity includes not only the visual and aesthetic qualities of a place, but also a range of more functional considerations such as safety, comfort and convenience. Visual amenity and good urban design principles are recognised as key factors in the development of a liveable city. The amenity benefit is created from the following placemaking attributes

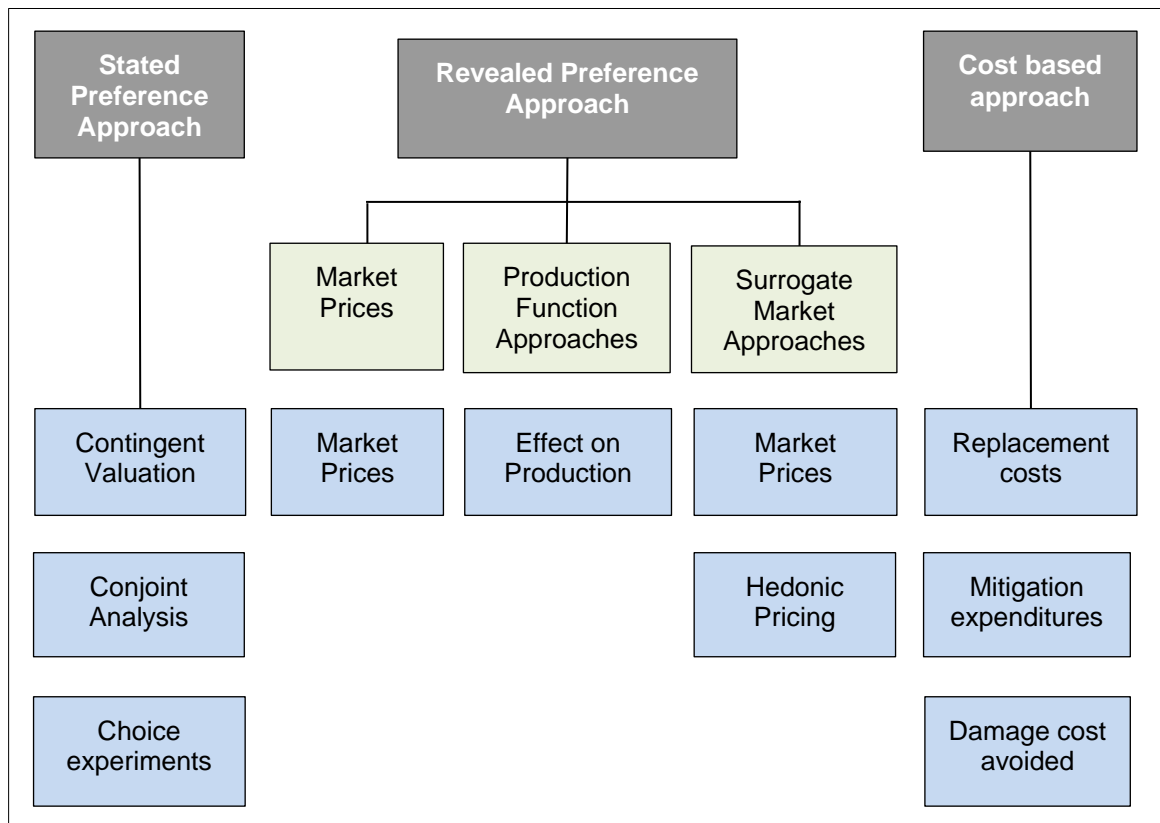
- Pedestrian zone
- Lighting in open space
- Presence of green space
- Good urban design
- Walkable streets including tree canopy
- Aesthetics of urban design and landscape
- Noise and vibration reduction from traffic street to shared street
- Reduced air pollution and odour by reducing the number of cars on the street

Four methods are recommended for valuing amenity benefits:

- Pedestrian Environment Review System (PERS)
- Stated Preference Survey
- Revealed Preference approach
- Value urban street design guide (RMS 2017).

The overall evaluation approaches are presented in Figure 4.1, and following sections provide detailed methods using case studies if appropriate.

**Figure 4.1 Approaches for economic evaluation of amenity and liveability**



Source: ATAP (2018, p.23)

#### 4.1.1 Value of public realm or public space - Pedestrian Environment Review System (PERS)

How do we quantify the benefits of the improved urban realm? In particular, what value do we place on the public realm of streets and public spaces for people? Successful public realm recognises the use of streets and public spaces for pedestrian movement, as well as the value of streets and public spaces as places of economic and social exchange - economic benefits that occur when people on foot spend time in our streets and public spaces, rather than just passing through.

Transport for London (TfL) developed the Valuing the Urban Realm Toolkit (VURT) to assess the amenity benefits of public realm improvements. It uses the Pedestrian Environment Review System (PERS) to track changes in the physical environment, like wider footpaths and better lighting; along with changes in perceived attributes, such as personal safety, a sense of place and 'feeling comfortable'. Such attributes encourage pedestrians to stay in a public space, rather than simply moving through it (Atkins Consultants and The University of Leeds 2011).

The PERS defined 6 attributes of public spaces:

- Moving in the space: Create convenient connections
- Interpreting the space: Create clear and easy to understand routes and spaces



- Personal safety: All users feel safe
- Feeling comfortable: Create streets and spaces for everyone
- Sense of place: Get the detail right
- Opportunity for activity: Create active and passive public spaces.

These attributes relate to people’s experience of walking through and staying in the street or public space. Economic benefits are calculated according to how many people experience the change in public realm quality and for how long. This means that if no-users were there to enjoy the improved places, no benefit could be derived.

Standard scaling factors (from -3 to +3, where -3 represents poor quality and +3 represents excellent quality of a public space) then produce an annualised user benefit value as well as user benefit value for the specified design life of the scheme. Accent & Colin Buchanan (2006) monetised the economic values for each scaling factor for links and public spaces for Transport for London. Tsai (2019) converted the UK willingness to pay values into Australian dollars using the Purchase Power Parity as presented in Table 4.2.

**Table 4.2 Amenity benefits for improvements to public spaces (cents per person per minute, \$2019)**

Attributes	-3	-2	-1	0	1	2	3
Moving in the space	0	0.119	0.241	0.360	0.403	0.445	0.488
Interpreting the space	0	0.027	0.053	0.080	0.106	0.133	0.162
Personal safety	0	0.114	0.228	0.342	0.456	0.562	0.668
Feeling comfortable	0	0.064	0.127	0.191	0.254	0.318	0.382
Sense of place	0	0.034	0.072	0.106	0.130	0.143	0.154
Opportunity for activity	0	0.196	0.392	0.591	0.668	0.745	0.824
<b>Sum</b>	<b>0</b>	<b>0.554</b>	<b>1.113</b>	<b>1.670</b>	<b>2.017</b>	<b>2.346</b>	<b>2.677</b>

Source: (Tsai 2019)

To apply the PERS in a project evaluation, a group of public space auditors would be required to assign scoring factors to public realm attributes. The number of public space auditors would depend on the nature of the project. A New Zealand study (Boffa Miskell 2017) suggested at least two qualified public realm auditors should be used. The background of public space auditors should be ideally from an urban planner, an urban designer, an active transport specialist or an urban economist. The auditor should be relatively independent from the Project to avoid optimism bias. Each auditor can provide individual scoring values on the attributes and consensus scores can be debated and agreed by all auditors. The benefit can be estimated from changes in the aggregated scaling factor before and after the placemaking project. A worked example is provided below.

### Worked example

#### Pedestrian Amenity Benefits of Bondi Junction Complete Street Project

Bondi Junction is a pedestrianised vicinity with around 3,860 pedestrians recorded during a one-hour peak period on a weekday. The Street Complete Project has significantly improved the existing street landscape as shown in the Figure below.



Before

After

The economic benefit of the improved walking amenity arising from the project is quantified based on the equation specified below.

*Value of improved walking amenity*

*= number of pedestrians during the peak hour*

*\* average time spent in the study area*

*\* (project case amenity score \* value – base case amenity score*

*\* value) \* expansion \* annualisation*

The base case Scoring Factor was estimated at 0, which has been improved to 1 in the Project Case. The average stay by all visitors is 10 minutes. With these input values, the annual amenity benefit was estimated for each future year. The present value of the improved walking amenity is estimated to be \$3.5 million over a ten-year appraisal period using a real discount rate of seven per cent.

Source: Tsai (2019)

The number of users is determined by counts of people walking or staying in the area. Future numbers are determined by informed assumptions, such as observed results from similar interventions in other places.

The PERS approach has received a reasonable acceptance and has been used in UK (Atkins Consultants and The University of Leeds 2011), New Zealand (Boffa Miskell 2017) and Australia (Tsai 2019). The advantages of this approach are:

- This approach is suitable for evaluating public space, public realm and pedestrian zone etc.
- By putting a monetary value on those hard-to-quantify benefits of investing in better streets and spaces, it allows them to be considered alongside conventional time savings, safety and other benefits, both in assessing options for future proposals and building business cases for their implementation.
- It compares changes in public realm quality based upon specific design attributes in the Base Case and the Project Case. This is consistent with conventional transport CBA methods.

- The methodology was designed to capture any additional amenity benefit and avoids double-counting with conventional economic benefits.
- It has some international acceptance.

Drawbacks of this approach are:

- The values are based on the results of stated preference research undertaken in the UK. The degree of its transferability to Australian users requires further assessment. (Agreed. And values may be case specific.)

World Health Organisation has developed Health Economic Assessment Tools (HEAT) for evaluating walking and cycling benefits (WHO 2011, Kahlmeier et al. 2010, WHO 2013). The HEAT can be used in conjunction with the PERS.

#### 4.1.2 Stated Preference Survey

A placemaking project could generate significant benefits in visual amenity, noise reduction amenity and alleviated urban separation. A Pedestrian Zone created as part of the CBD to South East Light Project has generated noticeable visual and noise reduction amenities (Figure 4.2), as supported by a Stated Preference survey<sup>6</sup>.

**Figure 4.2 Pedestrian Zone on George St, Sydney CBD**



The CBD and South East Light Rail was expected to enhance the walking amenity and reduce the noise level in Sydney Central Business District (CBD). To capture the

<sup>6</sup> A Stated Preference survey was undertaken as part of Business Case process

value that Sydneysiders place on the amenity and opportunities afforded by the Pedestrian Zone on George Street, the project included a Stated Preference study (see Figure 4.3). This study was designed to elicit the willingness to pay of pedestrians for improvements in amenity and assign relative priorities for the quality attributes considered.

**Figure 4.3 Stated preference survey show card**



The Stated Preference is usually conducted through surveys and questionnaires, asking people what they are willing to pay for a benefit and/or what they are willing to receive by way of compensation to tolerate a cost or a loss. The Study asked a series of questions relating to travel to the Sydney CBD, walking on George St, the walking amenity on a shared street and noise reduction by Light Rail compared to traffic. The study found that pedestrians do value the quality of the walking environment and that they have a high willingness to pay for these improvements. The result indicated that, for each minute walked on the improved CBD pedestrian zone, pedestrians on average value visual amenity at 1.2 cents and noise reduction amenity at 1.6 cents as shown in Table 4.3. These parameters are then applied to the corresponding pedestrian demand forecasts to quantify the economic benefits on this new urban environment.

**Table 4.3 Amenity benefit for Sydney CBD**

	Cents per minute walked: Visual amenity	Cents per minutes walked: Noise amenity
Pedestrian trips	1.2	1.6

It is noted that the noise reduction amenity in Table 4.3 may be double-count the environmental externality of noise impact of vehicles (TfNSW 2019, p.38). If the above benefit is included in the placemaking benefit, the relevant noise reduction benefit by cars should be removed.

A Stated Preference Study requires a survey design, survey administration and an analysis of survey results. This process can be expensive. Thus, this paper does not recommend a Stated Preference survey for small projects. A large project usually requires a better understanding of benefit creation to justify the investment where a Stated Preference survey may be more suitable. (SP can work and be case specific)

### 4.1.3 Revealed Preference approach

In the movement and place framework, urban motorways will play a core “movement” function. There is a view that some urban motorways should be “underground” as a tunnel can retain greenbelt areas or established urban areas. In some projects, the benefit of greenbelt areas has been valued by the following formula:

$$\text{Benefit of Green Space} = \text{AreaGS} * \text{ValueGS} + \text{Land Value Uplift (\%)} * \text{LV}$$

Where,

- *AreaGS* the total area of green space (m<sup>2</sup>) that is conserved in the corridor as a result of the route and alignment option
- *ValueGS* the value of green space (\$/m<sup>2</sup>)
- *LV* is the total land value of existing properties in the corridor as a result of the tunnel option.
- *Land Value Uplift (%)* is estimated percentage changes of land value of affected properties from the Base Case (without green space preservation) and the project Case (with green space preservation).

**Table 4.4 Value of green space presentation**

Parameter	Value
Value of green space (\$/m <sup>2</sup> )	\$1,750
Land value uplift due to green space preservation	5%

Source: Project based assessments using NSW Valuer General data. Values are estimated around Sydney Middle Ring.

It is a useful approach for inclusion of Green Space in the economic evaluation framework. The value of green space and land value uplift due to green space preservation are locality-specific, for example, the closer the impacted land is to the CBD, the higher the value. The values in Table 4.4 should be adjusted accordingly.

The Revealed Preference approach can use existing data collected from other projects and for other purposes. For example, the Valuer-General’s property transaction data<sup>7</sup> has been used for land value uplift estimate and CoreLogic’s RP<sup>8</sup> data has been used for the same purpose. A Project Manager should explore the innovative use of existing data for placemaking benefit evaluation as it provides a cost effective and affordable approach, provided that data transferability has been controlled.

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<sup>7</sup> See [https://www.valuergeneral.nsw.gov.au/\\_data/assets/pdf\\_file/0006/217068/Land\\_Value\\_Information\\_User\\_Guide\\_Sml.pdf](https://www.valuergeneral.nsw.gov.au/_data/assets/pdf_file/0006/217068/Land_Value_Information_User_Guide_Sml.pdf)

<sup>8</sup> See <https://www.corelogic.com.au/>

#### 4.1.4 Heritage benefits

Heritage benefits refer to the benefit to NSW residents based on an improvement in the quality of heritage assets.

Heritage benefits are similar to amenity improvements. Some urban renewal projects may be home to a range of heritage assets. Benefits related to the improvement of the condition of the heritage asset and public accessibility may also be considered in transport appraisal.

The Allen Consulting Group<sup>9</sup> recognised that there are three approaches to valuing the value of heritage places:

- **Value derived from individual perceptions:** heritage values are measured in terms of an individual's willingness to pay or accept compensation
- **Value derived from social interaction:** historic heritage is understood to serve certain, well-defined social purposes, while conservation performs the essential social function of sustaining heritage
- **Intrinsic value of heritage:** the value of heritage is absolute or intrinsic, such that their worth exists independently of any evaluation by the public, and potentially irrespective of any interaction of the public in a social capital sense.

Two approaches have been taken by Allen Consulting Group in 2005 to ascertain the value of heritage protection from adult Australians. This included simple attitudinally questions and choice modelling.

The survey revealed that over 93.4% of Australians perceive value in the protection of heritage assets and nearly 78.7% believe their day to day lives are enhanced by the opportunity to visit or see heritage assets.

Choice modelling suggested that:

- The accessibility of places is valued at \$3.60 (\$2005) per 1% increase in the proportion of places that are publicly accessible per person per year.
- The condition of places is valued at \$1.35 (\$2005) per 1% increase in the proportion of places in good condition per person per year (\$2005).

The survey results reveal the degree of social interaction regarding historic heritage matters. However, it is noted that their value as standalone indicators is currently limited.

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<sup>9</sup> The Allen Consulting Group, November 2005, *Valuing the Priceless: The Value of Historic Heritage in Australia*, Research Report 2.

## 4.2 Road safety benefit

A good urban design can reduce road crashes. Placemaking will improve safety for school children, pedestrians and cyclists. In particular, the perception of community safety can be enhanced.

### **Safety perception in public space**

*“Feeling safe is crucial if we hope to have people embrace city space. In general, life and people themselves make the city more inviting and safe in terms of both experienced and perceived security.”*

Jan Gehl 2011

The methodology of assessing road crash reduction and associated benefits has been well established in the conventional CBA framework. In the existing evaluation framework, actual crash rates are analysed from historical road crashes in the past 5 years. Safety benefits are estimated from an expected reduction of the actual crashes. It is a paradoxical approach in that road safety benefits cannot be proved if no crash actually happened. It ignores the fact that some road sections can be highly risky, users have perceived the risks, and either avoided the location or adjusted their behaviour. In the placemaking benefit, the analysis should focus on how placemaking measures would reduce road crashes for vulnerable road users (school children, walkers and cyclists). Some perceived road safety benefits could also be incorporated if a Stated Preference survey was undertaken for the project.

## 4.3 Benefit of traffic calming

Some placemaking measures can lead to a reduced speed limit on the street. As a result, travel time for cars will be increased. In conventional CBA, this effect has been counted as a dis-benefit in terms of negative travel time savings.

Pedestrians crossing in the mid-block and increased signal phase for pedestrians would make the place more walkable and ameliorates street separations. However, it increases vehicle waiting time and vehicle stops. Vehicles will slow down to respond to street configuration changes - reduced number of traffic lanes, narrower traffic lane, wider footpath, added cycleway, re-allocated road space to parking lots close to shops and spaces for bus transit. As road spaces are converted to placemaking elements, traffic capacity will inevitably be reduced resulting in a lower traffic speed.

As a result, traffic modellers have to think not only increased car travel time, but also conveniences for pedestrians as well as improved access for local businesses including shops and restaurants. Benefits gained for pedestrians and local businesses should outweigh the costs of traffic delay to make this treatment as a preferred option.

## 4.4 Benefit of increased bicycle trips

Active transport (including cycling and walking) generates economic benefits from improved health, congestion reduction, car running costs, avoided car crashes, avoided air pollution, greenhouse gas emission, noise and other road-based externalities. The methodologies and parameter values for these items have been fully established by TfNSW (2019, p.44).

For placemaking projects, the challenge is how to estimate the increased walking and cycling induced by the creation of a better place. Walking and cycling usually represent a small proportion of total travel demand thus their demand modelling has not been well covered in large strategic models (i.e. STM, PTPM, SMPM and SFTM). The demand forecasting for walking and cycling has been based on historical trends for some projects. However, when the baseline demand level is low, trend analysis is problematic as the orthodox demand modelling methodologies cannot handle the increased use as a result of improved placemaking, cycling and walking amenity offering and urban density. In some projects where significant uptake of active transport is expected, a bespoke model has been developed to forecast demand.

#### 4.4.1 Increased bicycle trips due to active transport infrastructure

Placemaking often provides additional cycle lanes and widened footways. Cycle infrastructure demand elasticities have been used to estimate the increase in active transport. UK WebTAG (2018) gives an elasticity of +0.05 that can be used to estimate the increased walking and cycling trips.

##### **Worked example**

##### **Elasticity approach to estimate increased active transport with respect to infrastructure provision**

“A district might have 2,000 trips by bicycle per day with a total road length of 500 kilometres and an existing length of cycle facilities in the district of 50 kilometres. A scheme is proposed to create a new off-carriageway cycle route of 10 kilometres in length. The new cycle facilities increase the cycle network by 20% (from 10% to 12% of total road length). The expected increase in cycle trip numbers would be 1% (+.05 \* 20%), or 20 trips per day (1% \* 2000 trips).”

Source: UK WebTAG (2018) Unit A5.1, Section 2.4.4, p. 5

#### 4.4.2 Increased bicycle trips due to population density

Placemaking can increase localised population density in the long term. Bicycle use and population density are positively correlated, i.e. in denser urban environments, jobs and services are in closer proximity, which in turn increases the opportunity to travel by bike. In addition, denser urban environments tend to have congested roads making travel by car less attractive for short trips. Table 4.5 provides elasticities of cycling transport demand with respect to the population density.



**Table 4.5 Elasticity of active transport demand with respect to population density**

Location	Population Density (Number of persons per hectare)	Elasticity
Sydney Inner	59	1.75
Sydney Outer	39	1.13
Parramatta Inner	30	0.86
Parramatta Outer	24	0.67
Aerotropolis	1	0.03
Centres	12	0.33
Rest of GS	0.3	0.01

Source: ShapeTransport (2019) Personal communication with Graham Mounsey, November 2019

**Worked example**

**Elasticity approach to estimate increased active transport with respect to population density**

A town centre has a population density of 15 persons per hectare. A Town Centre Renewal and Transport Program will lead to a population density increase to 17 persons per hectare, a 13% increase.

Currently there are 5000 cycling trips to the town centre. It has been forecast that cycling trips would increase by 4.3% (i.e.  $0.33 \times 13\%$ ) to reach 5215 trips after implementation of the Town Centre Renewal and Transport Program.

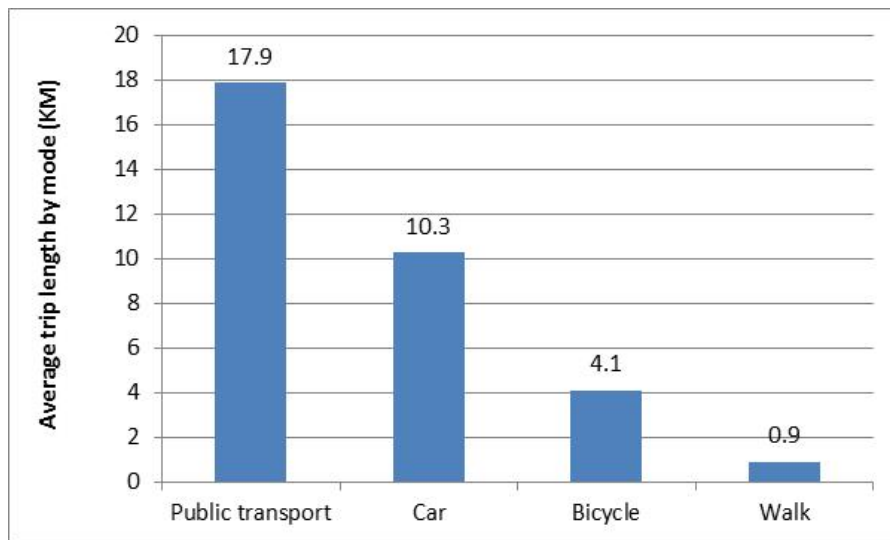
**4.4.3 Increased active travel due to better place**

The average length for a walking trip is just around 900 metres, while an average length for a bicycle trip is 4.1 KM<sup>10</sup>. Placemaking projects could potentially change travel destination by making a local-based town centre more attractive. By making a locality more walkable and cyclable, footfalls and bicycle use would increase.

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<sup>10</sup> TfNSW, Household Travel Survey (HTS), 2009-2015

**Figure 4.4 The average trip length by transport mode**



Source: Analysed in a project business case based on HTS 2007-2015

The extent of additional walking and cycling to the “place” has to be analysed on a project-by-project basis. The analysis should look at the number of short-distance trips to the place made by car and public transport in the Base Case, trip purpose, time of travel, and social and economic characteristics of travellers. Some trips could be more readily shifted to walking and cycling (e.g. leisure trips) than others (elderly travellers, night trips).

**4.4.4 Cycling ambience benefits**

Journey ambience captures the improved level of enjoyment, improved wayfinding and perceived safety associated with the use of cycle lanes and separated cycleways relative to travelling with mixed traffic. This is based on the premise that customers have different preferences when it comes to cycling facilities.

The Transport Analysis Guidance (TAG) Data Book, issued by the UK Department for Transport, has the following assumptions under Worksheet A4.1.6 titled “Value of journey quality benefit of cycle facilities, relative to no facilities”

**Table 4.6 Journey ambience benefit, Value of journey ambience benefit of cycle facilities relative to no facilities**

Scheme type	Value, Cent per Minute	Source
Off-road segregated cycle track	12.36	Hopkinson & Wardman (1996)
On-road segregated cycle lane	5.26	Hopkinson & Wardman (1996)
On-road non-segregated cycle lane	5.22	Wardman <i>et al.</i> (1997)
Wider lane	3.18	Hopkinson & Wardman (1996)
Shared bus lane	1.35	Hopkinson & Wardman (1996)

Source, UK DfT (2017) Data Book

## 4.5 Benefits of increased pedestrian volume

Walking is sustainable, healthy and economical. A more walkable environment is safer, more liveable and more equitable. Walking makes up 4% of all trips and 1-2% of distance travelled in Australia (Alavi 2019). Similar to induced bicycle trips, the elasticity approach is often used to estimate increased pedestrian trips. The demand can also be estimated using meta-analysis of existing studies and lessons learnt from similar projects. As per Section 4.4, active transport generates economic benefits from improved health, congestion reduction, car running cost, avoided car accident, avoided air pollution, greenhouse gas emission, noise and other car-oriented externalities. The methodologies and parameter values have been fully established by TfNSW (2019, p.44).

See previous comments. Walking is healthy but walking part or whole way to work does not = the marginal increase in walking that people do.

### 4.5.1 Pedestrian Comfort Tool

Within the Movement and Place Framework a series of Toolkits<sup>11</sup> are proposed to help practitioners, government and the community to understand and implement the framework.

The aim of the Pedestrian Comfort Tool is to develop a 'user friendly' best-practice reference guide (Toolkit) to aid local government practitioners in the collection, analysis and communication of pedestrian data in strategic centres and urban neighbourhoods throughout NSW.

The Tool will be developed by Government Architect NSW and is supported by TfNSW. Its usefulness for placemaking benefit analysis will be assessed when the Tool is available with recommendation reported here.

### 4.5.2 Value of parking lots

In the development of NSW Clearway Strategy, TfNSW attempted to put a dollar value of on-street parking lots using the travel cost approach (Legaspi et al. 2016). Two approaches have been used in valuing parking lot provision:

- Travel cost approach – If parking lots are not provided close to preferred shops or activity locations, some drivers may have to park somewhere else. The value of a parking lot is at least (and likely more than) the travel costs between the next available parking and the preferred location. This approach has been well established in environmental economics.
- Revealed Preference (RP) – The value of on-street parking is represented by the parking charges paid by customers and business opportunity brought to local shops.

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<sup>11</sup> Curtsey to TfNSW Walking and Cycling Strategy

The value of parking lots will vary by location. The estimated value could be as low as \$0.8 per hour for local streets or as high as the CBD car parking charge rate.

## 4.6 Benefit of reduced car trips

When amenities, cafes and restaurants are close to home, people may opt to consume locally thus reduce overall car reliance. Better local traffic management may also shift car trips to motorways that provide movement functionality more efficiently. A better place will encourage local residents eating, drinking, gathering and shopping locally which can reduce car trips to other destinations. Placemaking urban design can:

- Reduce speeds through traffic management measures
- Reduce the number and width of lanes
- Provide facilities for cyclists
- Widen and improve the footpath
- Provide more frequent, convenient and safely designed pedestrian crossings
- Create a well-designed interface between footpaths and adjacent buildings
- Provide parking lots close to shops and allow greater integration of parking into the corridor
- Reallocate road space for bus transit.

Placemaking can reduce road capacity around the “place” which could:

- Divert some trips to motorways and arterial roads that provide better movement function
- Shift some trips to active transport

The economic benefit of reduced traffic in ‘place’ will be environmental externality savings presented in Table 4.7.

**Table 4.7 Benefit of removing traffic (cent per VKT)**

Benefit type	Reasons of the benefit	Benefit of removing a light vehicle in place (Cents/ VKT)	Benefit of removing a heavy vehicle in place (Cents / VKT)
Air pollution	Air pollution from car and truck moved from the place to a lower density area	3.37	16.50
Noise	Noise is diverted to motorways and arterial roads that expose less population density and protected by noise wall	1.10	2.75
Urban separation	Reduced traffic in place	0.78	1.84
<b>Total</b>		<b>5.25</b>	<b>21.09</b>

Source: TfNSW (2019, p.37)

## 4.7 Boost to the local economy

A large ‘place’ project can impact the local and regional economy and the effects can be assessed by economic indicators including:

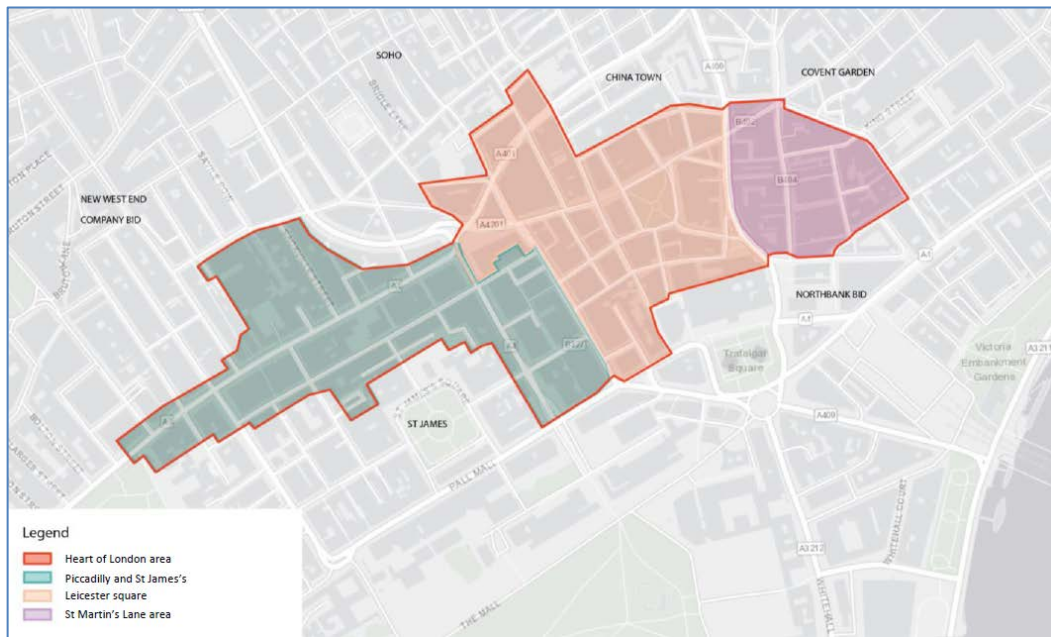
- Business output
- Value added or Gross State Product (GSP)
- Employment
- Wage income.

The following case study from UK demonstrates how local economic impacts can be assessed.

### 4.7.1 Value of Urban Realm Broad Economic Benefits – a UK Approach used for the Heart of London

The Heart of London area covers 39 hectares of prime central London as shown in Figure 4.5. It consists of three sub-districts: Leicester Square, Piccadilly and St James & St Martin’s Lane Area. The area has 750,000 m<sup>2</sup> of commercial floorspace and 65,000 m<sup>2</sup> of residential floorspace and hosts the employment of 45,000 people with a high job density of 1,180 jobs per hectare. The area generates an estimated £4.6 billion Gross Value Added (GVA) annually, one of the most economically successful areas in London. Businesses in the area include successful clusters of professional services and quality entertainment, culture and arts.

**Figure 4.5 Heart of London – Geographic Area**



Source: Heart of London Business Alliance (2019A), p.22

It is one of the most accessible places in London serviced by a variety of transport modes. Underground and rail stations are a short walking distance from any point in the Heart of London area. The imminent arrival of the Elizabeth line at Bond Street will bring an additional 80,000 commuters a day by 2041. An extra 1.5 million people will be brought within 45 minutes travelling time of central London. The area's concentration of cinemas, theatres, hotels, restaurants, nightclubs and public space is a gift from London's history. The Great Estates and developers have left a patchwork of streets and buildings which have evolved to become one of the world's most famous (and visited) locations.

### Issues

The popularity of the Heart of London comes at a cost and the high intensive use of the area, day and night, has no parallel in Britain. The challenge of ensuring the Heart of London area is clean and safe goes way beyond what is required in most other city centres. Moreover, the area must constantly change to accommodate new leisure trends. Conventional levels of street design, improvement and maintenance will never be able to meet the wear and tear on an area facing such intense usage.

Concerns over the quality and comfort of some of the streets and places in the Heart of London area mean that investment to enhance its sense of place, to support its attractiveness for investors in the face of international and domestic competition is required.

The Heart of London area is visited by a great variety of people including tourists, workers and local residents using the public realm year round, throughout the day and late into the night. The major pedestrian thoroughfares that connect these places also function as strategic vehicular movement corridors, creating conflict at street level between modes of transport. Upgrades and alterations to these places would be complex but would have the potential to affect the international appeal of the area as a whole.

## Placeshaping Strategy

To meet the ongoing challenges, the Heart of London Business Alliance (2019B) has developed a Placeshaping Strategy. The overriding aim of the Strategy is to improve the experience across the Heart of London area. This can be achieved through a series of high quality, ambitious and practical interventions aimed at improving the streetscape and enhancing distinctiveness which when viewed together will describe a world class place: The Heart of London area must play to its strengths and deliver a program of coordinated actions to improve its public spaces and routes. In order to balance requirements and aspirations for the benefit of the Heart of London, the Strategy is led by a carefully considered set of principles:

- Provide a high quality and varied public realm to attract and serve the diverse demographic
- Intensify contrasts between character areas
- Enhance gateways
- Improve side streets as alternatives to main routes and spaces
- Reduce vehicles throughout the area
- Celebrate and create opportunities for spectacle in the public realm
- Promote uses which can animate upper levels of buildings lining major spaces
- Strengthen the night time experience through varied and complementary uses

Five geographical areas or project families (Leicester Square and Piccadilly Circus, St Martin's Lane, Haymarket, Regent St & Piccadilly) are introduced which are complemented by a series of 33 illustrated projects. Figure 4.6 illustrates the improvements in Martin's Lane.

**Figure 4.6 Improvements in Martin's Lane**



Source: Heart of London Business Alliance (2019B), p.48

These measures would improve the Heart of London in the following aspects:

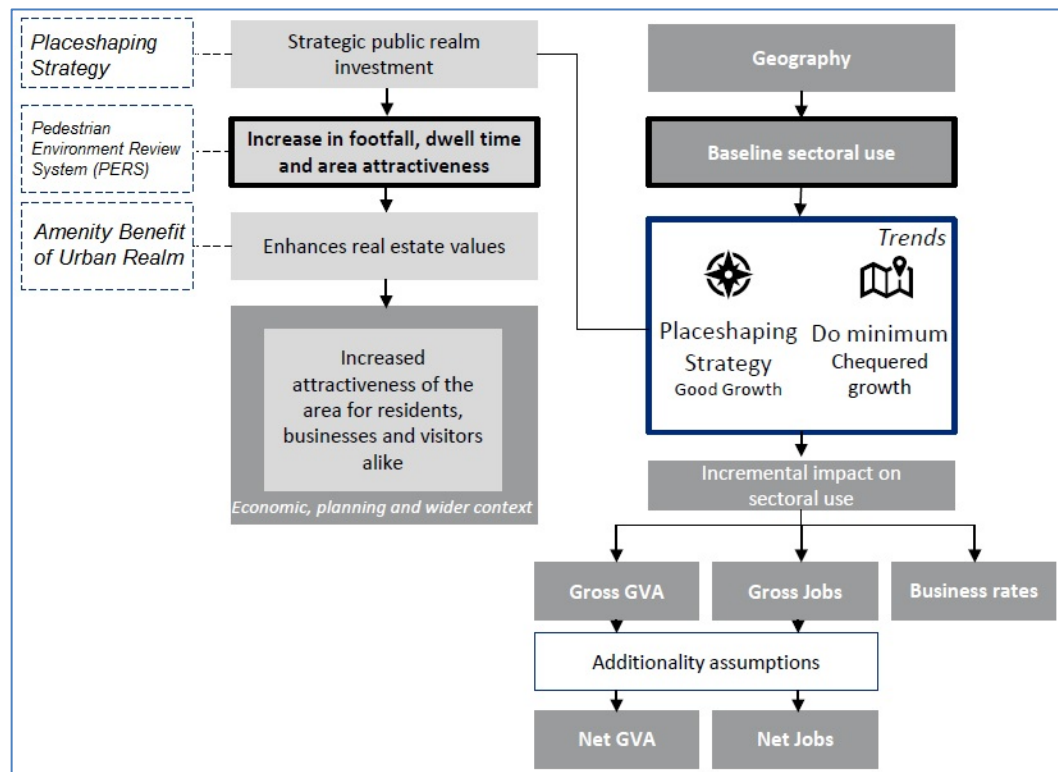
- Streetscape – Improve legibility and pedestrian experience of the area, connections between major public spaces, settings of key buildings
- Road network – Reduce the dominance of traffic in the area; Enhance pedestrian experience, air quality and promotion of active transport; Prioritise pedestrians; Investigate options to reduce traffic flow
- Cycling network – Create a more permeable and inviting district for cyclists; Coordinate all public realm improvements to promote cycling; Provide a series of pragmatic quieter routes; Provide cycle parking
- Greenery – Capitalise on existing green spaces; Highlight entrances to green spaces; Protect the green spaces of relative darkness at night; Introduce street trees; Improve the setting of pocket spaces
- Culture and events – Improve the experience of spectacle in the public realm; Celebrate the impressive streetscape; Enhance the setting of cultural uses; Coordinate major events
- Evening and night time – enhance lighting and signage; Enhance the legibility of the public realm after dark; Enhance wayfinding, safety, character and civic spectacle at night



## Economic impact assessment

The improved public realm in the Heart of London will unlock the economic potential of the area with a compelling case for investment. The public realm improvements have a positive impact on the attractiveness of an area to visitors, workers and residents. This, in turn, enhances the land values of commercial and residential properties. Figure 4.7 sets out the logic model for linking public realm investment to increased area attractiveness, property prices and, with the right economic and planning environment, increase development.

**Figure 4.7 Public realm investments and benefit generation**



Source: Heart of London Business Alliance (2019A)

Pedestrian Environment Review System (PERS) was used to assess the increased footfall, dwell time and area attractiveness. An urban amenity benefit approach reported in CABA (2007) was used to assess the enhancements in real estate values. The area economic benefits are estimated in terms of gross GVA (a measure of economic growth), jobs and business rate collection. The economic impacts are presented in Table 4.8.

**Table 4.8 Benefits of Placeshaping Strategy in the heart of London**

	Annual 2019	Net change to 2030	% change 2019-30	Net change to 2040	% change 2019-40
Floor space (retail, office, restaurant, hotel, food & beverage, entertainment, M <sup>2</sup> )	840,000	50,700	6.0%	99,600	11.9%
Gross job (FTE)	46,400	3,270	7.0%	6,500	14.0%
Net job (FTE)	46,400	2,510	5.4%	4,900	10.6%
Gross Value Added (GVA) (£m)	4,600	520	11.3%	1,550	33.7%
Net GVA (£m)	4,600	400	8.7%	1,190	25.9%
Residents	1,340	0	0%	20	1.5%
Homes	1,030	0	0%	40	3.9%
Business rates (£m)	148	12	8.3%	25	16.9%
Additional rents (£m)	656	171	26.1%	597	91.0%

Source: Heart of London Business Alliance (2019A)

The economic assessment has forecast that, by 2030, the Placeshaping Strategy will increase the floor space in the Heart of London by 6% to accommodate the increase in jobs by 7%. The employees in the area will boost the gross GVA by 11.3% with the increase in business rate by 8.3% and rents by 26.1%. Residential homes and local residents remain unchanged. The pedestrian amenity benefits are incorporated in the additional rents, estimated at £171m.

The economic approach used in the Heart of London can be used for major urban transport projects (e.g. Sydney CBD Pedestrian Zones, Greater Parramatta and the Olympic Peninsula (GPOP) Planning).

## 4.8 Land use and land value uplift benefit

Placemaking can increase land value around the place, although it should be noted that *“the benefit of land value uplift in areas surrounding a project should be excluded from a CBA. This is because in most cases land value would reflect the capitalisation of an increased output stream that is already included in other benefits, such as producer or consumer surpluses (NSW Treasury 2017, p. 59).”* However, the guidelines acknowledge that the inclusion of land value uplift benefits may be valid in

rare cases. Therefore, this benefit may be more appropriate for mass transport station precincts.

- Assumes that rents/property prices capture all of the benefits created by the urban realm, which is not necessarily the case.
- Property and rent prices are the result of many different factors and it can be difficult to separate the impact of urban realm compared to other external factors.
- Uplifts in land value - Value uplift, as defined by the Commonwealth Bureau of Infrastructure, Transport and Regional Economics (BITRE, 2015) is “the process where the value flows on the transport network are capitalised into land values”.

Three main forms of land use benefits exist and are recognised in the NSW Government Economic Framework for Urban Renewal<sup>12</sup>.

- Increase in value – more development brought to market
- Increases in quantity – improved ‘carrying capacity’ of the land
- Greater investor confidence or ‘Catalytic’ impacts – bringing forward the benefits.

Placemaking can change dynamics of a locality leading to a land value increase. The value creation process in the land markets impacted by transport and placemaking projects can be categorised by the following three separate and sequential phases:

- Change of land zoning to highest and best use - Increased accessibility leads to a demand to rezone land parcels to help achieve highest and best use, over and above existing use. In most cases, the zoning changes proposed in the land use planning were predominantly from industrial and business to residential and mixed use. In some cases, a decision of rezoning is made without a significant change in the transport network. It relies on the existing capacity of transport network to support additional population and commercial activities.
- Monetisation of accessibility benefits into infrastructure catchments – improved accessibility leads to an increased willingness to pay for land and property markets in the benefited land catchments due to a reduction in travel time and travel cost
- Increased development density in infrastructure catchments – increased accessibility and transit capacity unlocks the ability for land parcels to be developed for residential and mixed use purposes at higher densities (floor space ratios).

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<sup>12</sup> NSW Government Economic Framework for Urban Renewal

The land value uplift should be estimated using a validated statistical model or a benchmarking analysis. The land value uplift should be estimated with and without the transport scheme. The most frequently used model is the Hedonic Pricing Model (HPM). Land values can often be estimated from local property data plus cost estimates and could be more accurate than Sydney wide hedonic price models.

The land value uplift due to rezoning is the most significant urban renewal benefit. Raising land to its highest and best use and increasing its development intensity (to match the capacity unlocked by the transport project) is likely to be the most significant urban renewal impact attributable to a transport / placemaking project, especially in areas of high demand.

Land value uplift from a transport scheme could create significant value in the land and property markets it serves. The project would reduce travel times and increase accessibility to provide people with improved access to jobs, schools, retail, hospitals, and recreational and other amenities. These benefits could be monetised into land values as a reflection of people's willingness to pay (WTP) to locate (for residential or commercial purposes) in areas of good accessibility. Increased land value from changes in land-use zoning and floor space ratio (FSR) at the urban renewal precincts due to the transport scheme unlocks additional development capacity in the transport network.

#### **4.8.1 How much land value uplift can be expected from rezoning?**

The land value uplift from rezoning will be dependent on many factors including the intrinsic amenity, local population, economic growth and existing accessibility. Most studies reported the land value uplift as a result of both rezoning and transport accessibility. The estimated elasticity of land value with respect to Floor Space Ratio (FSR) was for a Sydney major transport project<sup>13</sup>. (The elasticity of 0.294 means that a 1% increases in FSR will result in a 0.294% land value uplift). A practical example can illustrate this. If a precinct is rezoned from R2 (FSR=0.55) to R4 (FSR=1.2), that is, an increase in FSR by 118%, a land value increase is estimated at  $118\% \times 0.294 = 35\%$ . A report by LUTI and MECONE (2016) indicates that a 100% increase in FSR will result in a land value uplift of 23.9%. As a rule of thumb, formal studies point out that a land value uplift of 30% can be expected from rezoning from low to high densities, while anecdotal evidence suggest that land value uplift can be very high.

#### **4.8.2 How much land value uplift can be expected from transport improvement?**

The land value uplift from an urban motorway ranges from 21% to 50%. For an urban public transport project, the uplift ranges from 9% to 29%. Again, the uplift will be affected by many other factors and will vary from locality to locality. See Table 4.9 below for example projects.

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<sup>13</sup> TfNSW's estimate based on project business case development.

**Table 4.9 Land value uplift of transport projects**

Transport project	Period	Land value uplift	Source
Westlink M7 Motorway	1993-2012	21.4%	Urbis 2013
EastLink Motorway Melbourne	1993-2012	26.4%	Urbis 2013
M1 Motorway Brisbane	2000-2012	49.1%	Urbis 2013
A review of over 64 value capture studies	Up to 2015	Heavy rail: Ave 6.9% range -42-40% Light rail: Ave 9.5% range -19-30% Bus rapid transit: Ave 9.7% range -5-32%	BITRE 2015
Gold Coast Light Rail, QLD	2014 open to use	CAGR range from -1.85% (500m catchment area) to 0.23% (500m-1km catchment area)	IA 2016
Epping to Chatswood Rai Line	2009 open to use	CAGR range from -0.50% (500m catchment area) to 0.41% (500m-1km catchment area)	IA 2016
Sydney Metro	Estimated	9%-29% depending station catchment	Internal business case <sup>(A)</sup>

(A) Due to confidentiality reason, the reference of this business case cannot be provided.

Source: LUTI and MECONE (2016) Transit and urban renewal value creation report

## 4.9 Density and agglomeration benefits

Placemaking will change resident and employment densities that generate dynamic Wider Economic Benefits (WEBs). This is additional to static WEBs that rely on travel time reduction<sup>14</sup>. Dynamic WEBs can be assessed using the approach reported in UK WebTAG (2018).

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<sup>14</sup> The static WEBs have been questioned by some recent literature (eg, Douglas & O’Keeffe 2016, Abelson 2019). However, it is still part of ATAP 2020 guideline. This section will be reviewed upon the new release of ATAP Guideline

Placemaking projects are likely to spur urban renewal and higher density development opportunities along key transport corridors, supporting government objectives to achieve a more sustainable and efficient use of land to meet growth.

#### **4.10 Non-monetised impacts**

Placemaking benefits are more likely to be qualitative. These benefits can be acknowledged in the Business Case if not quantified. For example:

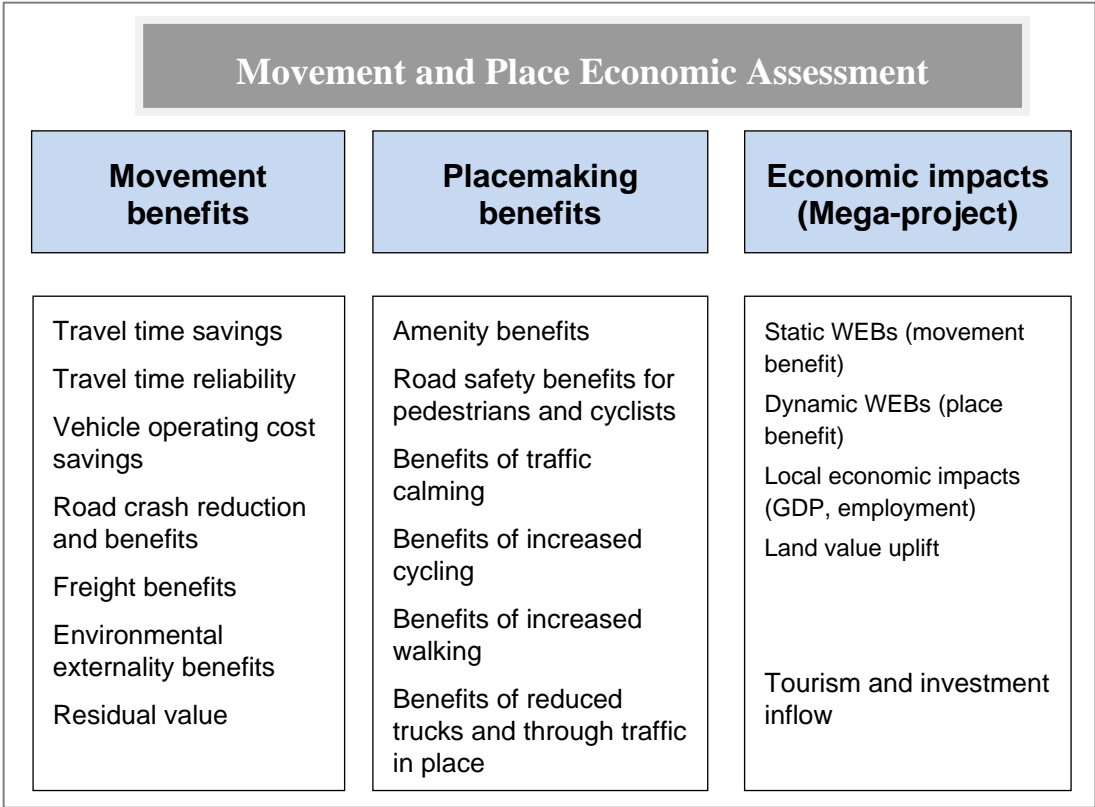
- Increased security and safety provision of CCTV
- Increased customer satisfaction through additional connectivity
- Improved quality of infrastructure through lighting, the Disability Discrimination Act 1992 (DDA) compliance access and additional path width
- Local recreation, lifestyle and health benefits
- Government reputational gains
- Social inclusion
- Improved equity and accessibility outcomes
- Reduced energy dependence
- Supporting community development
- Community engagement and interaction
- Increasing liveability.

# 5 Concluding remarks

In March 2020, NSW Government released the *Practitioner’s Guide to Movement and Place*. The Guide was developed with the NSW Government Architect (GANSW) as the place experts and Transport for NSW (TfNSW) as the movement experts in a collaborative working arrangement. Supporting the development of the Guide was a three-tiered cross-agency governance arrangement from the Movement and Place Executive Steering Committee to the Movement and Place Implementation Board and the Movement and Place Technical Working Group. The Guide has been released to State Government agencies for testing for 12 months.

This Movement and Place Evaluation Paper fits into NSW Government’s Practitioner’s Guide to facilitate Movement and Place Evaluations. It aims to provide methodologies for quantifying placemaking benefits and identifying other qualitative impacts. By following recommended methodology in this evaluation paper, the estimated placemaking benefits should be mutually exclusive to other transport benefits to avoid double counting. The placemaking benefits can be treated as a core economic benefit for estimating the project Benefit Cost Ratio (BCR). The combined Movement and Place Economic Assessment framework is illustrated in Figure 5.1.

**Figure 5.1 Combined Movement and Place economic assessment**



It has been predicted that cities around the world and in Australia will gradually reduce cars in city centres and sub-centres, which are where the knowledge economy

workers<sup>15</sup> want to live and work and play. Cities are rebalancing the movement and place functions of road and street. In various placeshaping visions and strategies, some streets will be highly walkable, some arterial roads and motorways will be more for movement purposes, and other corridors will be in between for both keeping people and goods moving and creating places for people to live, work, play and enjoy. While motorways, arterial roads and streets are rebalancing their movement and place functions, mass public transport combined with higher-density development in station precincts could also be a successful model for solving competing movement and place priorities, whilst accommodating higher populations in a more sustainable way.

The concept of placemaking is relatively new and thoughts of placemaking evaluation are constantly evolving. This current draft has been based on the author's research of the best international practice of placemaking benefit estimation. Ideas portrayed in this paper have evolved from discussions with Transport for NSW Project Managers, Project Directors, transport modellers, urban planners and economists. The approaches discussed above have been tentatively used in a number of placemaking projects and feedback has led to continual improvement of this draft document. This Evaluation Paper is released for project testing for 12 months to align with NSW Government's *Practitioners' Guide to Movement and Place*.

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<sup>15</sup> The knowledge economy (or the knowledge-based economy) is the use of knowledge to create goods and services. In particular, it refers to a high portion of skilled workers in the economy of a locality, country, or the world, and the idea that most jobs require specialized skills. In particular, the main personal capital of knowledge workers is knowledge, and many knowledge worker jobs require a lot of thinking and manipulating information.



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