
City of Edmonton
Pedestrian Focused
Wayfinding Project

Wayfinding business case

August 2014

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Executive summary

There have been several attempts to create a corporate wayfinding program in the City of Edmonton which have failed at the value for money decision. While it is understood generally that wayfinding offers many benefits to a growing city, it has not so far obtained support as a priority for the investment needed for citywide implementation.

The most recent report on city wayfinding, 'Towards a Corporate Approach to Wayfinding', describes a pedestrian-focused approach that would form the basis of multi-modal and multi-media information for Edmontonians, new residents and visitors. The scope of the project suggests benefits the foundational themes of the City Strategic Plan; integration, liveability, sustainability, innovation.

However, strategic alignment is not reason alone for implementation and to compete with other capital investment, the City wishes to demonstrate return on investment in real terms.

This report has been prepared to advise the City on real benefits from research. The study included several evaluative tasks including a review of available precedents, analysis of a prototype project and an assessment of the opportunity cost of not undertaking the project.

Based on the reference materials and research, the report concludes that a pedestrian-focused wayfinding system in Edmonton offers a positive benefit to cost proposition. In combination with other measures, wayfinding has been shown to be a cost-effective means to overcome barriers to modal shift, a way to improve the local economy and a contributor to overall city liveability. Importantly, wayfinding is becoming more complex as our cities densify while at the same time, people are expecting municipal authorities to offer more services and information.

A city wayfinding system for Edmonton is recommended as representing a positive value proposition, a timely intervention and a public expectation.

1. Introduction

1.1 About this report

This report presents a business case evaluation of the benefits and values of a pedestrian-focused wayfinding project for the City of Edmonton. This business case is not intended to demonstrate a calculated benefit cost ratio but does provide evidence of effectiveness and transferability from other projects. This transferability is key and this report is complemented by a prototype project installed in downtown Edmonton which will provide further evidence from survey work.

This report is structured as follows:

Section 2 Sets out the background of the initiative, the opportunities, strategic aims and current situation it addresses in the City

Section 3 Discusses wayfinding project evaluation from other cities in comparison to Edmonton

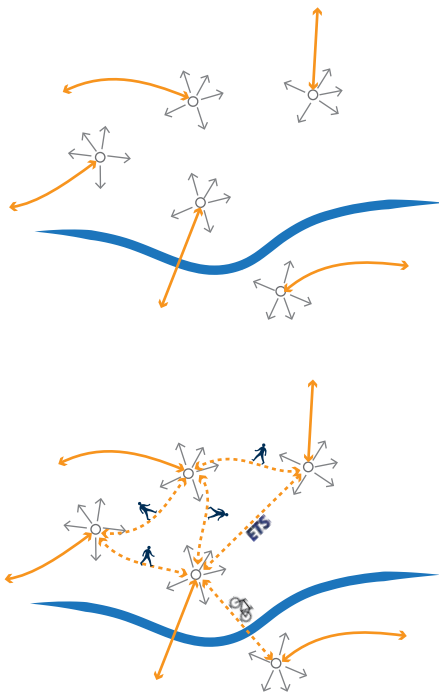
Section 4 Appraises the tangible and intangible benefits of the initiative

Section 5 Provides recommendations

1.2 Who should use this report

This report is intended for City use in preparing executive and Council reports. However the references and issues raised are generally in the public domain and it may be suitable for wider publication as the project develops.

2. Background



The central concept is to encourage walking to connect disparate areas of the city and the other modes

2.1 Description of the initiative

In September 2013, Applied produced the outline report, ‘Towards a Corporate Approach to Wayfinding’, which summarised audits, research and public involvement concerning current and potential wayfinding projects in Edmonton.

The study team suggested that visitors and residents would find it hard to understand the City’s many distributed neighbourhoods or how, and indeed why, they might wish to visit them. The scale and disconnected feel of the city and its neighbourhoods along with difficulties in finding clear, consistent information about how to travel act to support the high level of car use. This leads to the observed typical pattern of residents driving to and from discrete destinations and for visitors to stay in one place.

The report concluded that a pedestrian-focused and map-based system, could help reconnect the city visually and at a human scale. This offers the potential to encourage exploration and to enable people to consider other forms of transportation than driving. These issues and objectives mirror a strategy adopted by other major cities with similar needs.

The report described a high-level plan and costs for developing a project including three fundamental steps:

- Produce a small-scale downtown prototype for public evaluation
- Create a digital map developing existing City geospatial resources
- Prepare wayfinding system guidelines that would describe a consistent standard for elements, rules and their application anywhere in the city and for all modes of transportation.

2.2 Scope

The City of Edmonton identified that in order to move towards a corporate approach to wayfinding, the priority was to improve information for walking. This focuses attention on the connecting mode for all other transportation and the critical importance of walking to the vitality and viability of Edmonton’s neighbourhoods.

Acknowledging the success in other cities, Edmonton also accepted the recommendations of the outline report that pedestrian-focused wayfinding should emphasise the use of maps and diagrams. A visual system is more accessible and detail-rich and suitable for digital development so compatible with the ever-growing use of online and mobile technology.

While the focus is on pedestrian wayfinding, the recommended approach will create guidelines describing the elements, rules and applications (ERA) of a multi-modal approach. The ERA will offer standards and agreed references that can be utilised to design other wayfinding information such as vehicular guide signs, transit diagrams and cycling wayfinding.

Similarly, while this project is not intended to replace or make redundant, existing work conducted under the Edmonton River Valley Parks System Signage Study, the creation of central standards will guide how systems interface for a more seamless user experience.

2. Background

2.3 Objectives

The City's objectives for the wayfinding project are to help establish a corporate approach and standards that will integrate existing initiatives and can guide new ones. It is also an opportunity for the City to conclude discussions on a strategy to provide pedestrian information to improve the awareness and connectivity of city attractions and neighbourhoods.

Wayfinding is specifically mentioned in a number of strategic plans, including the Walk Edmonton Strategy, and the Bicycle Transportation Plan and is seen as a key streetscape element in a number of other plans including the Capital City Downtown Plan. An initial scan of City efforts related to wayfinding and mapping found little in the way of coordination or consistency, and very little wayfinding in the public realm.

2.4 Opportunity & risk of not acting

An important aspect of the strategy is its timeliness. Adopting a standard approach will avoid projects moving forwards with only a focus on their respective business area needs and hence producing signage and information that offer little or no continuity to the end user. One off project create a myriad of non-standard design materials and information that presents challenges for maintenance and updating.

There are a number of opportunity projects including:

- Downtown Development / Pedway Extensions
- River Valley Parks & Trails Signage Project
- Wayfinding As Part Of The Downtown Plan
- Business Revitalization Zones
- Recreation Facility & Park/Greenway Development
- Streetscaping Projects
- On-Street Bike Lanes & Shared Use Pathways Development
- LRT Development – Valley Line

The opportunity is then to help produce a better visitor experience by providing the tools and guidance for others to work in coordinated manner. In doing this, business areas and partners will save money by avoiding repeating research and design processes, and the City will gradually become

2. Background

more legible.

2.5 Identification of benefits

City-wide wayfinding will provide a range of benefits. Some can be inferred from work in other cities while others will be particular to Edmonton. To provide input on the particular benefits, a workshop was held on 22nd January 2014 for City staff and invited stakeholders (summary is included at Appendix 2).

The workshop outcomes provided a range of challenges and opportunities related to getting around Edmonton. The table right, shows needs and ideas that gained support from the group. These may be divided into four themes:

- Transportation - improving the efficiency of journeys
- Modal shift - integrating travel choices and enabling change

Outcome of workshop responses to where wayfinding could provide benefits to users and the inferred themes

Mode	Information ideas	Theme
Walking	• Where to find a washroom	City experience
	• Local area maps/destinations	City identity
	• Pedways/ explain private area access	Transportation
	• Trails and streets that are cleared in winter	Modal shift
	• Accessible routes - maps and signage	City experience
	• Night map (lit routes)	City experience
	• Standardised icons and symbols	City identity
Cycling	• Clarify where it is /is not allowed to ride	Transportation
	• Route/planner maps	Modal shift
	• Route/lane markings/directions	Transportation
	• Info about bike rentals	City experience
	• Practise bus bike racks	Modal shift
	• Walk/bike travel time estimators	Modal shift
	• How to avoid River Valley hills	Transportation
	• How to dress and prepare your bike to ride	Modal shift
Transit	• Integration at stops (live/real time displays)	Modal shift
	• Signs at LRT to bus routes	Transportation
	• Touch screen ETS journey planner at stations	Transportation
	• Pedestrian connections from transit	Transportation
	• Accessibility information for LRT & bus stations	City experience

2. Background

2.6 Strategic alignment

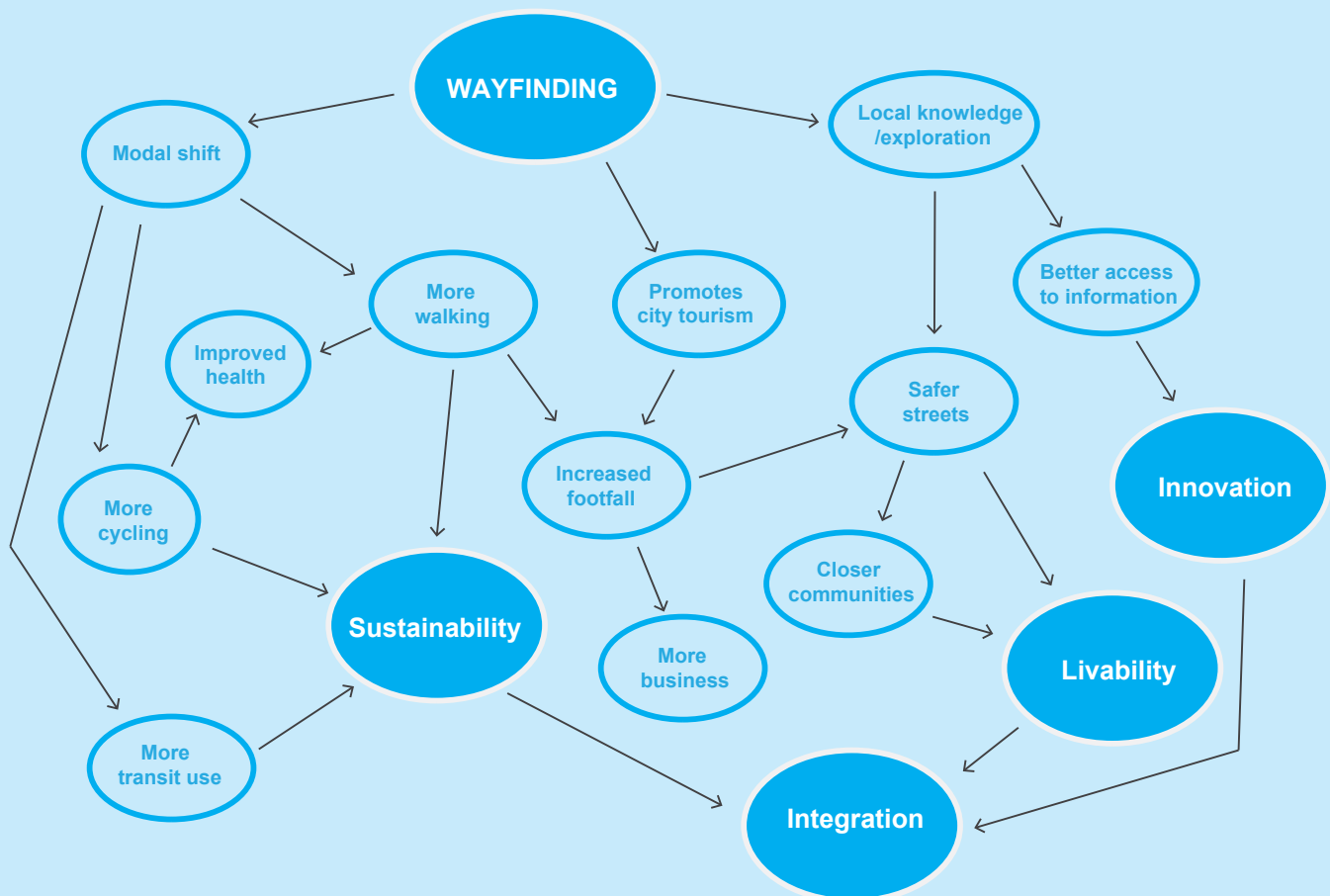
The wayfinding project will contribute to the City's Strategic Plan and in particular, to The Way We Move, The Way We Grow, The Way We Green and The Way We Live, by helping to:

- Create a walkable environment
- Ensure that streets, sidewalks and boulevards are designed to perform their diverse roles and to enable safe access for all users
- Supporting the provision of a variety of transportation modes for Edmontonians
- Foster energy efficient travel and encouraging citizens to use public transit and active modes as their preferred choice of transportation.

There are also specific actions to improve wayfinding under a number of city plans including the Downtown Plan, Walkability Strategy, and Bicycle Transportation Plan and from the Pedway Committee

The City Strategic Plan is founded on the principals of Integration, Sustainability, Liveability and Innovation. Wayfinding has causal links to all these principals as a means to support essential needs, connect, enable change and provide innovative communication as illustrated below.

Benefits of Wayfinding - Advancing the Way Ahead



2. Background

2.7 Walk Edmonton Strategy

The City adopted an walkable city strategy in the summer of 2010 as part of its Active Transportation Policy - C544.

The strategy is divided into five thematic areas; Walk Easily, Walk Safely, Walk Efficiently, Walk Deliberately, and Walk Effectively.

The table below connects the relevance of the wayfinding project to specific goals in the Walk Edmonton Strategy:

Theme	Strategy focus	Wayfinding contribution
Walk Easily	Services and infrastructure supports, including transit, that help make walking easier and more efficient	<ul style="list-style-type: none">– Indicate accessible routes (Solution 1A)– Show how to walk to transit facilities that they may not have been aware of, improving service efficiency (Solution 1E).– Negotiate challenges such as construction (Solution 1L)
Walk Safely	Measures to improve pedestrian safety and security	<ul style="list-style-type: none">– Shows the location of crossing facilities, bridges and subways for safe street access (Solution 2A).– Providing information on routes with natural surveillance or how to access to transit or cabs at night (Solution 2D)
Walk Efficiently	Neighbourhood planning and City processes such as density and land use mix as ways to increase walkability.	<ul style="list-style-type: none">– Multi-media wayfinding systems respond to modern information demands and provide tools for planning (Solution 3A).– Dense mixed use developments and TODs can encourage walking but may require wayfinding to maximise use (Solution 3H).
Walk Deliberately	Ways to enhance connectivity and people's ability to walk to their destinations.	<ul style="list-style-type: none">– Reveal new trip opportunities and show that they can be walked (Solution 4G) .– The proposed wayfinding system would be city-wide and map-based (Solutions 4P & 4Q)
Walk Effectively	City departments working together and fund enhancement of pedestrian access and connections	<ul style="list-style-type: none">– Efficient investment in walking (Solution 5E)– Requires collaboration to maximize the benefits (Solution 5A)

2. Background

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- City experience - supporting comfort, security and enjoyment
 - City identity - improving the city's image

2.8 Project costs

As part of detailed development work budgetary estimates have been prepared for all aspects of the project.

For the purposes of evaluation these projects will be divided into three sub-projects, excluding transit projects which are subject to separate approval processes and preliminary prototype projects currently underway. The roll out projects are hence:

1. Corporate Supportive Projects – including all the work necessary to produce the system estimated at between \$338,000 – \$493,000.
2. Production & Rollout – including all projects to implement the system estimated at between \$9.225m – \$10.861m. The majority of this cost represents ETS estimates for a 10 year implementation program of \$5.5m.

A difference in production costs result from the choice of map system adopted. For comparison, the estimate right shows estimates based on traditional drawn mapping compared to maps produced by a digital geospatial system.

A significant cost element is the estimate provided by ETS for including wayfinding infrastructure at existing facilities. These and other costs are highly dependent of the final scope of work and design decisions made. There may be significant opportunity to defray capital costs by repurposing existing budgets for individual project signage and wayfinding allowances and by facilitating partnering arrangements.

2.8.2 Not included

Highway signs including vehicular guide signs, parking signs and bicycle route signs while recommended within the outline strategy, are expected to fall within the remit of both the City and other agencies and maybe undertaken as maintenance schedules dictate. While the implementation is less easy to forecast, the creation of the system architecture will enable the City to guide the coherent design of highway signage as they arise.

2. Background

Detailed budget

Corporate Supportive Projects		Digital Map (High End)	Static Map (High End)
Detailed strategy	Wayfinding project definition & benefits	Complete	
Downtown prototype	Test designs and applications	Complete	
Prototype evaluation	Independent review by City	Complete	
Map mastering (Static option)	Create Manual mastermap artwork, assuming 15 sq km vicinity scale + 100 sq Km neighbourhood scale + regional overview		\$145,000
Map mastering (Digital option)	Create Manual mastermap artwork, assuming 15 sq km vicinity scale + 100 sq Km neighbourhood scale + regional overview	\$250,000	
Map system set up	Assumes proprietary Living Map carto-engine for outputting geo-data as artworks	\$50,000	
System Manual	Planning and Graphic Design Standards	\$50,000	\$50,000
Sign product specifications	Sign Specs and Shop Drawings	\$40,000	\$40,000
Neighbourhood prototype	Test Designs and applications if required (assumes minimal infrastructure)	\$10,000	\$10,000
Smartphone app report	Technical Advice for App project	\$10,000	\$10,000
Modular smartphone app	Assumes City primes private funding only	\$50,000	\$50,000
Create app API + web viewer	Source for online map uses	\$8,000	\$8,000
Pedway plan	Develop a plan for signage in pedway system	\$25,000	\$25,000
Total Corporate Supportive Projects		\$493,000	\$338,000
Development & Rollout**			
Artworks for signs (from static)	Assumes 4/maps/sign graphic design (i.e. no Living Map) + directional elements and layouts x 220 signs		\$836,000
Artworks for signs (from digital)	Assumes 4/maps/sign from Living Map + directional elements and layouts x 220 signs	\$200,000	
Downtown rollout	Assumes 30 Signs/sq km x 2.3 sq km @\$10-\$15,000 per unit installed. Unit cost dependant on materials and technical requirements	\$1,035,000	\$1,035,000
City wide rollout*	Assumes 15 signs / sq km x 10 sq km @\$7-\$10,000 per unit installed.	\$1,500,000	\$1,500,000
Pedway + RVP interfaces	Assumes 50 RVP top of bank signs @ \$5,000 per sign + 50 entry point applications at Pedway @ \$1,000 per entrance	\$300,000	\$300,000
Parking arrival	Assumes 4 signs at each of the 4 downtown garages + 20 signs at other major lots tbc @\$5,000 per sign	\$180,000	\$180,000
Cycling map	Design stylesheet for mastermap, collate data and design paper map.	\$10,000	\$10,000
Transit projects	Transit estimates for installation of wayfinding neighbourhood area maps x 3 at each existing LRT / Transit Station. Does not include new Valley Line LRT Stations	\$5,500,000	\$5,500,000
Pedway signage system	Work to develop a specific plan for the pedway system is in the developmental stage. Based on the existing 19 map pedestals / 40 intersections a base estimate is \$500,000.	\$500,000	\$500,000
Total Development & Rollout		\$9,225,000	\$9,861,000
Total all stages		\$9,718,000	\$10,199,000

*Citywide roll-out includes BRZ (outside of downtown, Oliver, the Quarters, & TOD areas external to Transit Stations

**Does not include rollout to other possible areas still being defined - i.e. Blatchford, Galleria, future LRT

‘The application of pedestrian-focused information will lead to a measurable increase in walking and so generate a range of direct and indirect benefits to city objectives.’

3.1 Introduction

Wayfinding is a human process that utilises environmental references, personal experience and cognitive abilities to enable us to navigate. There are specialist branches of behavioural and physiological science that have contributed to the understanding and development of urban wayfinding dating back to Kevin Lynch’s ‘The Image of the City’, in 1960.

Scientific research and design practice have combined to produce principles that underpin good wayfinding design. These are well-summarised by Mark A Foltz in his 1998 MIT paper ‘Designing Navigable Information Spaces’, as:

1. Create an identity at each location, different from all others.
2. Use landmarks to provide orientation cues and memorable locations.
3. Create well-structured paths.
4. Create regions of differing visual character.
5. Don’t give the user too many choices in navigation.
6. Use survey views (give navigators a vista or map).
7. Provide signs at decision points to help wayfinding decisions.
8. Use sight lines to show what’s ahead.

These principles draw upon research in various fields and collectively provide the tools to improve the fundamental legibility of a space.

Despite the research, relatively few wayfinding projects have been designed expressly working from or evaluating these principles. This is because many wayfinding projects were until recently, created to meet other aims than legibility, such as town promotion or simply signing along existing paths (such as highway guide signs). The emergence of initiatives to support walkability and to change behaviour raised the need for wayfinding to become more sophisticated.

The first example of wayfinding that improved legibility is arguably the 1996 ‘Bristol Legible City’ project in England. Bristol was designed expressly to apply design principles to create a walking information system quite unlike other seen before.

3. Precedents

3.2 Evaluating wayfinding

Wayfinding includes a wide range of applied information that assists in the processes of location, orientation and decision-making necessary for successful navigation. Wayfinding projects may relate to buildings, urban areas or networks where the physical density and complexity of the environment reduces apparent legibility and requires additional information.

This section sets out collected evidence and research into the quantifiable and perceived benefits of wayfinding projects. Sources of data are not considered exhaustive and, within a young and fast-developing field cannot be considered definitive. They are however indicative of a wider appreciation that wayfinding projects can enhance visitor experience, transport efficiency, placemaking, business viability and a host of other derived effects important to cities. It therefore has a role in decision-making and evaluation of effectiveness.

3.3 Limitations

In the case of wayfinding it is important to consider a number of factors before seeking evidence of benefit:

- 1) Purpose – the evidence collected should be appropriate to the authority considering the case. For instance, a wayfinding project could be promoted by a tourism agency or a transit authority, each will have very different guidance and interests in what constitutes a relevant return on investment.
- 2) Benefits framework – as wayfinding is not likely to suit standard business case frameworks without alteration it may be necessary to construct one. Benefits realization theory provides one way to identify objectives, causality and metrics.
- 3) Data – due to the nature of the subject, much of the evidence supporting wayfinding is from small studies, derived or entirely qualitative. It may be necessary to challenge existing benefit:cost assessment methodologies to enable qualitative benefits and extrapolation to be considered.

3.4 Transportation

The most compelling aspect of any project is the potential yield or return on investment. This is normally expressed in financial terms. However quantified benefits may also include valuable qualitative responses, such as customer satisfaction.

In transportation, value of time saved is the primary evaluation criterion and is normally calculated using well-refined and standardised coefficients. However increasingly, other factors are being quantified to account for the importance of policy drivers including climate change, human health and biodiversity. An example of a more sophisticated quantification of a wide range of benefits has been developed by the UK Department of Transport New Approach to Transport Appraisal (NATA). It is notable that the World Bank drew heavily on NATA in its own assessment toolkit for transport investment.

3. Precedents

The NATA objective areas are:

- Economy;
- Environment;
- Safety;
- Accessibility; and
- Integration

Guidance is also given on how to assess the impact of a project under these headings (WebTAG) and this approach was used by Transport for London (TfL) in respect of the Legible London project.

Legible London - The Legible London assessment is believed to be the most comprehensive assessment of a wayfinding project to date.

Legible London was promoted by TfL and designed by AIG. The project aimed to prototype a system for walking wayfinding in Central London capable of roll out across the entire Greater London area. The business case was based on the NATA assessment to provide a means to assess its benefit:cost potential as was a project that did not conform to the standard TfL business case assistant which is naturally geared to assessing transit projects.

The NATA appraisal was conducted by economists at Colin Buchanan Consultants and provided a partially monetized result for the initial stage of rollout across Central London. Both the monetized and non-monetized outcomes were considered in the approval of the scheme. In purely monetized terms the assessment indicated a benefit:cost ratio of between 1.5:1 to 5.3:1. (further details appended).

Benefits (£ millions)	Base case	High case	Key Assumptions	Base case	High scenario
Costs	£79	£79	Central London pedestrian growth	1% per annum	2% per annum
			PERS scores	Conservative improvements of a number of PERS characteristics	Optimistic improvements of a number of PERS characteristics
Benefits	£119	£418	Quality benefits to commuters and time savings to strollers	No	Yes
			Total walk trips in CL a day	2.5 million	2.7 million
BCR	1.5:1	5.3:1	Proportion users benefiting from time savings with LL	10%	25%

3. Precedents

Behind the figures was a considerable volume of original research based on a small prototype project of 19 signs in Central London. Some of the findings from the research directly underpinned the economic assessment and include:

- The percentage of people admitting they felt lost reduced by a third;
- Observed journey times reduced by 16%;
- Over 60% of interviewees responding that the system encouraged them to walk more often; and,
- Over 90% agreeing that the prototype should be expanded across London.

The Legible London project proved that information could reduce some barriers to walking including not knowing where to walk and whether the journey was walkable (in terms of time or effort). These barriers were high on London-wide transportation change surveys conducted in the mid-2000's (see also appendix).

Metro Vancouver - In British Columbia, the regional transport body TransLink has created a wayfinding system for the entire transit network. This project ultimately aims to provide seamless journey planning and information and is being rolled out across the bus and SkyTrain light rail systems. TransLink has gone through a business case process focused more directly on customer satisfaction and operational returns in line with corporate objectives.

A monetized benefit was produced for TransLink from earlier research by Douglas Economics (2006). Douglas estimated that information in rail stations had a personal valuation (e.g. willingness to pay) of between 0.4¢ and 1¢ per trip. TransLink estimated that by aggregated this against usage the return on investment for station information alone was likely to be \$2m per year.

Assessing the likely benefit of bus stop information was not derived from economic research but customer satisfaction. TransLink conduct annual customer research and the standard of bus stop information was a consistent issue. 2008 research found that those who rated bus stop information as good to excellent represented only 31-37% of respondents. This was in stark contrast to high levels of satisfaction with reliability, service quality, safety and driver courtesy, and in fact significantly reduced overall service satisfaction.

Again prototype elements of a new system were used to test operational and attitudinal responses. In the evaluation conducted in June 2010, the overall assessment of the transit system amongst infrequent transit users rose from 49% rating it good to excellent, to 87% purely on the basis of new wayfinding. It is expected that wider roll out could therefore have a major effect on the key performance indicator of customer satisfaction as well as, by implication of the response from infrequent users, increase ridership.



**Extract of station facility
'walking from here' maps used to
guide journeys from TransLink
services**

3. Precedents

City of Vancouver - The City of Vancouver installed walking wayfinding signage as part of its preparations for the 2010 Winter Olympic and Paralympic Games. The system was developed under a street furniture contract with CBS Decaux and the wayfinding designs prepared by Karo Group.

As the useful life of the Olympic system was reached the city decided that an updated system should be investigated that would provide improved updateability, opportunities for digital integration and a greater focus on promoting active transportation. Legible London was used as a reference project and a prototype of a designs were installed in the summer of 2012.

The prototype was evaluated by the city and also by the Downtown Vancouver Business Improvement Association in whose area the prototype was installed. The City undertook post implementation surveys only using a combination of street intercept and online questionnaires promoted by QR codes on prototype maps and 500 bookmarks distributed through city channels. The surveys focused more heavily on opinion to the design than London.

Of the two methods street intercept surveys were found to be much more effective and the intercept survey collected 120 interviews over four, 8 hour days. The headline results are shown below.

81%

Don't know or only partially know their way around downtown



87%

Found ahead up maps easy to use

82%

More likely to walk between places because of maps



98%

Could work out where they were on the map



61%

Could use the maps to work out how long walking would take

3. Precedents

The DVBlA survey was conducted by street ambassadors over three seasons. Key findings of the DVBlA survey were:

- 63% of users were tourists
- 53% arrived downtown by Transit
- 80 % of the map users were looking for a specific destination (of that 50%were looking for specific streets or districts.)
- 99% found it easy to read landmark information and that the map was easy to read
- 50% of users already had a mobile device with internet access.

3.5 Tourism and visitors

Navigating a new city or transport system is an element of the culture shock that may be experienced by a new visitor. Visitors are not necessarily tourists on holiday, visitors may include business travellers or local-strangers who may live in the region but have not visited the area for some time.

While the importance of wayfinding for visitors may be implicit, relative little research has been published. Compared to transportation with large budgets and relatively clear sources of data, tourism is more closely related to marketing and service industries where objective research is less common. Nevertheless there are aspects that can be drawn together to indicate the value of feeling comfortable, located and knowledgeable about an area one is unfamiliar with.

City of Cleveland, OH - The city's tourism and convention service Positively Cleveland, have been creating a multi-pronged strategy for promoting the city since a Travel and Tourism summit in November 2011. The summit agreed on six core objectives of which the first was to 'Connect Cleveland visitors using signs, maps, and technology'. This responded to Cleveland Visitor Surveys by TNS in 2012 that found 76% of leisure and 78% of business travellers felt that ease of getting around is important in the decision to visit.

In Cleveland, it was acknowledged that there was a lot to do, but many felt the city inaccessible and unfriendly so stayed away.

Positively Cleveland settled on three target markets; encouraging residents to come back downtown from the suburbs, attracting business visitors and conference organizers, and stimulating tourism. A city wide wayfinding strategy was one of five immediate actions including a destination brand, a frontline staff training program, a web communication and technology project and a downtown urban design and renewal program.

Cleveland placed third from bottom in terms of people's attitude about accessibility. At the same time the City's transit authority RTA was voted best in the country. The city is also flat so easy to walk and bike around, and there is very little traffic congestion. The inference is that the information was not available to communicate its accessibility.

Has easy accessibility within the city	2012 Overall	
San Diego	7.87	7.80
Seattle	7.78	7.75
Toronto	7.59	7.48
Indianapolis	7.57	7.78
San Antonio	7.55	7.59
Washington DC	7.55	7.46
Philadelphia	7.53	7.23
Baltimore	7.51	7.42
San Francisco	7.50	7.48
Boston	7.49	6.94
Vancouver	7.42	7.63
Denver	7.37	7.29
Montreal	7.37	7.02
Salt Lake City	7.14	7.04
New Orleans	7.09	7.01
Austin	7.08	7.13
Minneapolis	7.08	7.15
Portland	7.07	7.10
Las Vegas	7.04	6.77
Chicago	6.99	6.30
New York	6.91	6.54
Phoenix	6.82	6.80
St. Louis	6.76	6.47
Atlanta	6.61	6.64
Milwaukee	6.56	6.37
Anaheim	6.51	6.80
Louisville	6.45	6.35
Nashville	6.41	6.66
Orlando	6.41	6.17
Charlotte	6.40	6.85
Pittsburgh	6.33	6.67
Miami	6.31	6.13
Calgary	6.09	
Kansas City	6.05	5.57
Los Angeles	5.90	5.30
Dallas	5.84	5.45
Houston	5.82	6.47
Ft. Worth	5.80	
Tucson	5.65	5.45
Columbus	5.59	5.67
Cincinnati	5.48	6.08
Winnipeg	5.30	
Butte	5.27	4.83
Cleveland	5.16	5.00
Charleston	5.07	
Reno - Tahoe	4.99	5.40

3. Precedents

“... 57% agree that getting lost is one of the worst things that can happen on a business trip”

Reinforcing Positively Cleveland’s rationale, there is evidence in related fields to the effect on a city’s image of perceived difficulty with getting around.

The quote below implies that a bad business trip experience may well be communicated as a more generally poor experience to friends and colleagues. This is highly relevant to word-of-mouth recommendation and also directly to cities that promote themselves as conference capitals.

“65% agree that there are certain cities they consistently find difficult to navigate, and 57% agree that getting lost is one of the worst things that can happen on a business trip.”

Further, nearly 70 percent of travellers agree getting lost can negatively impact the outcome of their business meeting, and 93 percent said that arriving late to a business meeting as a result of getting lost makes a poor impression”.

Survey of 1,000 Americans commissioned by Avis Rent-A-Car and Motorola

3.6 Placemaking and city identity

The image of the city as a destination is a growing element of city marketing. Branding of cities is popular and often comprises many advertising and below the line marketing elements bound together under a strong central approach.

Wayfinding is part of what the public sees in a city, and indeed may be the first thing a visitor looks for. Not providing information can be seen as not caring for the visitor as much as missing a chance to promote the place. The basic ideas of public relations and advertising a city are linked closely to the tourism and visitor benefits, but wayfinding can extend beyond campaigns to help become a part of city identity.

A classic example of this is the iconic London ‘Tube’ map for the underground railway. Harry Beck’s diagram has been changed and adapted many times since it was originally conceived as a wiring diagram in the 1930’s but it is still an enduring symbol of the capital.

At the local level, wayfinding is often required in cities that have grown to consume neighbourhoods and villages leaving an amorphous suburban area with few defining features. Two examples of these values of wayfinding may be seen in Calgary and Bristol, England.

City of Calgary

In 2012 the City of Calgary launched a new wayfinding program. This is an integrated signage system that helps people easily locate City Centre points of interest and enhances people’s confidence to venture out and explore more of the city. Many of the new signs were installed at the start of the summer visitor season to support the increased number of tourists for the Stampede Centennial, 2012 Cultural Capital festivities and the many other summer events and festivals. In 2013 the City of Calgary’s wayfinding program received two awards.

The first was with a Vitality Award from the Calgary Downtown Association. The award recognized that the program contributes to the



Calgary’s downtown wayfinding has been recognized for its contribution to vitality and public space design

3. Precedents

vitality of downtown Calgary and highlights the area as a great place to work, live and play. The second was a downtown merit award in the category of public space at the World Congress & 59th Annual Conference of the International Downtown Association in New York City.

Bristol Legible City

The aim of Bristol Legible City was to enhance people's understanding and experience of the city. This was achieved through a mix of information, transportation and identity projects, including a wayfinding system featuring both city and area maps, printed walking maps, visitor information, identity projects and public art.

All together, some 40 communication projects were implemented as part of this European Union-funded demonstration project. concentrated in the city centre to promote the city, improve tourism and support regeneration.

Evaluation was carried out in 2002. The report is mostly concerned with anecdotes but includes many indications of value;

'Only a small number of people now ask for directions. This allows staff to concentrate on their business.', **John Hirst of Thomas Cook travel agents**

'All our research shows that signage was a major problem in attracting businesses to the city and helping them get the most out of it. The new pedestrian signage and maps not only helps to overcome that problem but – because it is unique – contributes to making Bristol a more attractive place.' **John Savage, CE of the Bristol Chamber of Commerce**

Surveys were also undertaken by South West Tourism. SWT found that 61.3% of visitors said that Bristol's pedestrian signs were either good or very good. The only concerns at the time seemed to stem from the system not being implemented fast enough to meet demand.

3.7 Local business

A final area where evidence is beginning to become available is the role of wayfinding to support local business. Beside the apparent benefit of advertising the existence of individual businesses by signing them, there are indications that wayfinding improves walkability and so in turn, benefits city liveability. This more fundamental case suggests a general benefit is derived.

Research into the economic effects of better street design was undertaken by the UK Centre of Architecture and the Built Environment (CABE) in 2007. CABE used a evaluation tool called PERS (Pedestrian Environment Review System) to examine 11 factors that influence street design. Amongst these was its legibility assessed in terms of signage, landmarks and sightlines.

Remarkably the study of ten London retail streets found that an increase in the PERS score of just one point would equate to a £25/sqm increase in yield or roughly a 5% increase in annual high value retail store floorspace rent. This finding suggests strongly that the street is part of the viability of businesses and that compared to major projects to improve physical walkability, wayfinding is highly cost efficient.



The Bristol system includes coordinated interpretive elements that extend the placemarking value of the wayfinding signage



4. Relevance

4.1 Relating findings to Edmonton

The evidence in support of wayfinding projects is far from comprehensive and much of it relates to studies carried out in cities that may not be seen as directly comparable to Edmonton. This section of the report therefore concentrates on how evaluation and outcomes seen elsewhere can be considered as relevant to the City of Edmonton.

4.2 Toronto 360

An important example of relevance may be drawn from the City of Toronto's Wayfinding 360 Project. Toronto's project is the first known example of a Canadian city undertaking a full economic analysis of a citywide wayfinding proposal. The project and analysis have been prepared by Steer Davis Gleave and lean heavily on the solutions and findings of the Legible London project designed by Applied and studied by Transport for London.

The Toronto business case is in the public domain at the City's website. It applies a Multiple Account Evaluation framework to arrive at a positive benefit:cost ratio as shown below.

Summary table from Toronto 360 Wayfinding Outline Business Case by Steer Davis Gleave consultants

TABLE 4.2 OUTLINE MAE RESULTS FOR IMPLEMENTING THE WAYFINDING STRATEGY

MAE Account	Measure	Description of Assessment	Score
Transportation	Pedestrian accessibility	Wayfinding can guide pedestrians to new areas and improve connectivity between key destinations and to transit services. Based on previous experience, a majority of users agreed that appropriately designed signs give them the confidence to explore the area on foot.	✓✓✓
	Pedestrian safety	Wayfinding can guide pedestrians through recommended routes where investment in street safety can be more targeted and an increase in pedestrian density can also gain self-policing effects.	✓✓
	Pedestrian journey time savings (\$m Present Values)	Wayfinding can reduce the perceived walking distances, avoid getting lost as well as help them choose the optimal route, resulting in pedestrian journey time savings. Reductions in short transit journeys also free up capacity for longer distance travellers so the transit network is used more efficiently.	\$11m - \$33m (present values)
	Auto journey time savings (\$m Present Values)	As people find it easier to navigate on foot and walking becomes more common, some shorter auto journeys can be avoided. People can choose alternative destinations that involve walking, accessing transit or a shorter auto journey. The reducing in auto use results in auto time savings. Reductions in short auto journeys also free up capacity for longer distance journeys so the road network is used more efficiently.	\$6m - \$13m (present values)
Environment	GHG reductions (tonnes per annum)	Modal shift from auto can lead to a reduction in greenhouse gas (GHG) emissions and criteria air contaminants (CAC) leading to improved local air quality and contributes against climate change.	150 - 340 tonnes p.a.
Urban Design	Wayfinding Design	A consistent suite of well designed, attractive and durable infrastructure will improve the aesthetical aspect of wayfinding infrastructure in Toronto.	✓✓✓
	Urban Realm	Well placed wayfinding infrastructure that reduces clutter and well used pedestrian paths create a more vibrant and attractive urban area.	✓✓
Social Community	Community and identity	By mapping out an area, improving the pedestrian accessibility, perceived safety and vibrancy of an area there will be benefits to the community as they spend more time locally, reinforcing their pride and identity.	✓✓
	Health benefits	There is a body of evidence suggests that walking can result in improved health. As wayfinding improves walkability, pedestrians will benefit from improved physical fitness and a better overall health which in turn delivers cost savings to the healthcare system.	✓✓
Economic Development	Tourism	By improving wayfinding and making pedestrians more confident to explore an area, they will be encouraged to walk more and visit new areas. Depending on the area and how wayfinding has been developed, there could be a significant impact on pedestrian traffic by tourists as well as residents.	✓✓✓
	Business Trade	Residents and tourists are more likely to spend more time in the City and therefore more money on products and services, resulting in a direct benefit to the local economy.	✓✓✓
Financial	Capital costs (\$m 2012 prices)	The estimated cost to implement the Phase Two pilot is \$790,000, while an indicative cost for the Phase Three implementation roll out is \$7.2m. This estimate includes management and professional fees.	\$8m (2012 real prices)
	Maintenance and renewal costs (\$k per annum)	Based on previous experience, an annual allowance of 15% of the original capital cost is assumed for keeping the wayfinding system up to date, carry out regular maintenance and renewal every 8 years.	\$830,000 p.a.
	Benefit:Cost Ratio	Using the lower and upper bound transportation user benefits, the BCR is estimated between 0.9:1 and 2.4:1. This excludes other benefits such as additional tax revenues from increased visitors and health care savings.	Between 0.9:1 and 2.4:1

4. Relevance

The relevance of this work is not specifically that Edmonton could expect the same BCR, but that a major Canadian city has accepted the findings from London, England as a reasonable basis for assumptions used in the analysis. This acceptance of transferability is strengthened in some degree by comparing the outcomes of the Legible London and City of Vancouver prototype evaluation exercises. Both these projects were designed by Applied and the evaluation work, while at very different scales and intensity revealed encouraging consistency in user reaction as seen below.

Question*	Legible London	City of Vancouver
Ease of use of maps	85%	87%
Likelihood of walking more	62%	82%

Note: the exact phrasing of the question was different in each city

These two questions are particularly useful examples as ease of use of the map suggests that the design solution for the ancient streets of London is also relevant to a young North American street grid. This infers that wayfinding needs are universal.

The positive stated preference to walking is also important as it demonstrates the value of information at overcoming reluctance or ignorance of walkability in two very different cities and transportation cultures. Again this suggests that information has a universal function in transportation change.

The value of increasing walking is enormous as a preventative health treatment. It is estimated that only 59% of Albertans are sufficiently physically active. While 74% walk, Alberta Centre for Active Living, suggests they generally do not walk enough to maintain moderate physical activity

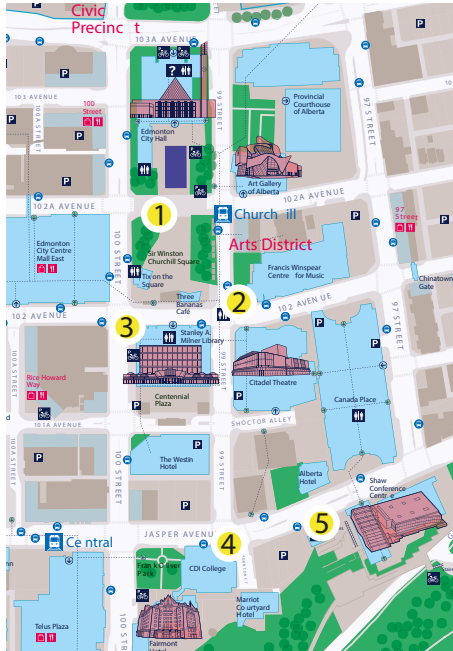
4.3 Integrating initiatives

An core objective of the Edmonton wayfinding initiative from the start has been to help the City coordinate wayfinding projects that are planned or already going ahead. Particular examples are the River Valley Parks wayfinding project and the long-running interest in improving wayfinding in the Pedway system . Irrespective of the value proposition, there is a need to consider how committed projects will interrelate to one another and how the costs of missed opportunities can be avoided.

It is difficult to place a monetary value on the impact of inconsistency between information systems but it is obvious that where adjacent sets of directions do not continue using the same references and standards, there is a very real opportunity for confusion and a distrust of directions more generally.

Consistency does not however mean homogeneity. Wayfinding relies upon and builds from legibility which itself is partially a product of local character. A successful wayfinding solution utilises standard references and methods but reflects and amplifies the local attributes that make a place unique.

5. Prototype evaluation



Prototype project sign locations

5.1 Methodology

A prototype was proposed to provide an opportunity for initial design development and also for public surveys to evaluate opinions and stated preferences to help understand the value of the project. The prototype included five full size walking signs located in a busy area of Downtown that connected Sir Winston Churchill Square to the Shaw Convention Centre.

Survey work was undertaken by the City to ensure it was independent. The survey included three main aspects:

- Pre-installation street intercept surveys
- Post-installation street intercept surveys
- An self-completion survey on the Walk Edmonton website

During the course of the post-installation surveys, City staff also talked more generally to people and videoed some of their responses, for their anecdotal value.

The surveys included questions on travel and walking habits, spatial knowledge, opinion on the design of the sign and the potential influence they might have on travel behaviour if implemented on a wider scale.

The survey questionnaire is appended.



Prototype project sign design

5. Prototype evaluation

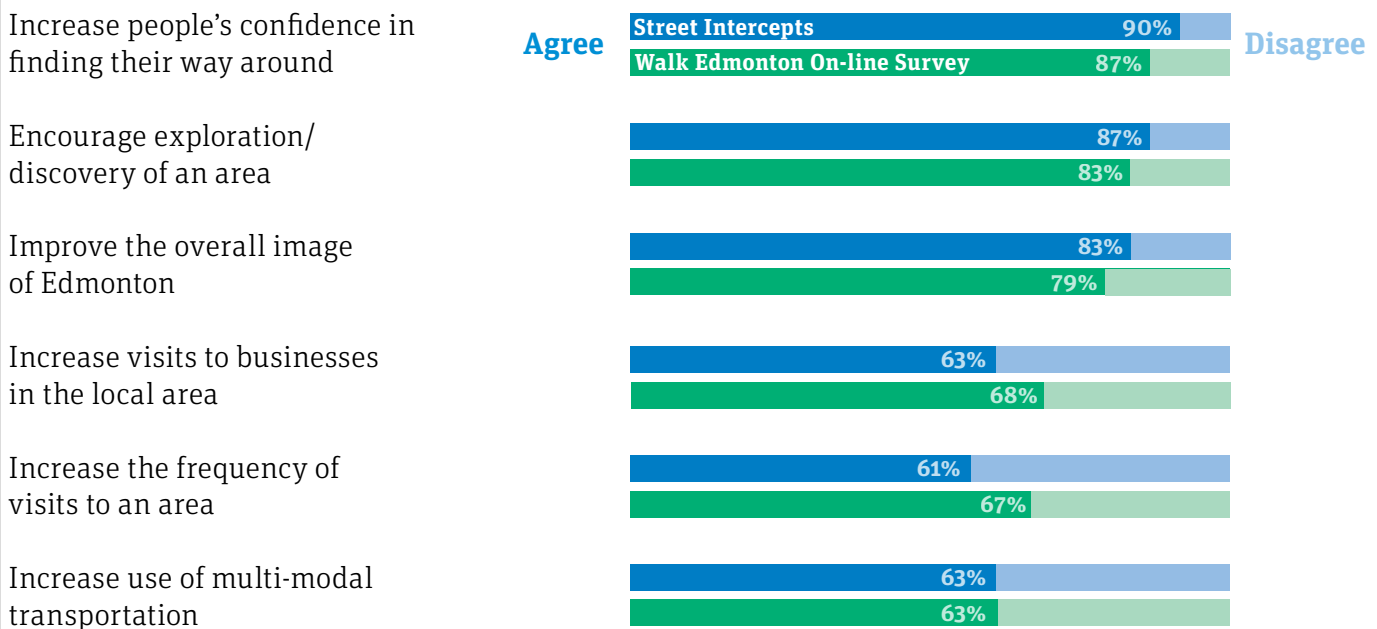
5.2 Evaluation results

Overall, the survey revealed a positive response to the prototype with 85% of street survey respondents finding the maps very easy/easy to use, and 81% saying they would use them if implemented across the City. Online respondents were also positive with 65% saying the web version of the map was very easy/easy to use and 83% saying they would use them if implemented. The answers regarding potential use should be contrasted with 45% of pre-installation respondents stating that they did not require any information to find their way around.

In terms of effectiveness, 25% of post-installation respondents said they had walked Downtown. This may be compared to the 11% of trips by walking indicated in the 2008 Census, suggesting that the audience for pedestrian wayfinding is considerably larger than may be assumed from official statistics. The post-installation and online respondents agreed on whether the wayfinding would encourage them to walk more or further with 57% and 56% suggesting it would respectively.

More specific questions revealed a significant balance in agreement with aspects that could produce a positive return on investment. The table below shows high levels of agreement that wayfinding could increase local business, visit frequency and increase transportation choice. While these are opinions, they may be considered in the light of the evidence of such benefits described in chapter 3 Precedents.

Do you think that a wayfinding system will...



I don't need any information to find my way

'Agree'

37% of street interviewees
6% of online respondents

Would you use maps and signs like these?

'Yes'

81% of street interviewees
83% of online respondents

Other segmentation suggests different information usage patterns related to time of day. Respondents interviewed after 4:30pm and on weekends were less likely to have a specific destination for their walk, but also less inclined to use street map information, expressing instead, a preference for smartphone apps. They were also less likely to be encouraged to walk further on the basis of the information. This suggests the value in multi-media solutions as part of the project scope.

5.3 Analysis

The prototype project evaluation was a useful and informative process. It provided input to refine design and critically, provides feedback that strongly supports the proposition that wayfinding would be a welcomed and effective investment for the City.

One observation that could be interpreted from the results is that there is a latent demand for street information and for a means to communicate the city at a walkable scale. There was a marked difference in opinion on the need for information between street interviewees who answered in situ and those who answered on line and presumably, without thinking of themselves in a certain area. The confidence of street respondents to locate themselves as 'Downtown' also belies the fact that Downtown is large and hard to define. Such a general reference is of little use in directions to a pedestrian and supports the strategic recommendation concerning the establishment of walkable 'stepping stones' as a means to perceive the city at a human scale.

A number of anecdotal comments made broader points about wayfinding promoting an activity (walking) that was unpleasant or hard to do in the City. This supports the value of wayfinding in the Walk Edmonton strategy and so a component of broader action to promote the idea and fulfill the promise, of a more walkable Edmonton.

Design comments were varied as might be expected. While a high percentage of respondents felt they were very easy/easy to use, anecdotal comments included a wider range, from concern about the complexity to requests for additional content. Comments included requests for context maps of the wider area. Planner maps are a common feature of similar systems and would form a useful addition for a detailed design stage.

Combination with or replacement by a smartphone app was a consistent comment. The strategy proposes a digital system which would enable the information to be output consistently across signs, print and online. The value of this multi-media approach is that it provides access to all types of user rather than prioritising one channel which may exclude certain groups. However, signage is relatively expensive and creates the need to consider location and maintenance. Developing an app could be an option to reduce the need to extend signage outside of downtown and certain key visitor areas.

5. Prototype evaluation

“It would be nice if it was bigger, or if the map could show larger area of the city...how to get to Whyte Avenue for example. How to get to neighbouring areas”

“Write more categories about what to see and do, a subjective list”

“(I) like the illustrations for buildings”

“We have been in multiple cities and any city that provides maps like this allows us to explore the area..”

Encouragingly, responses provided useful comparison with other cities. Particularly, that 57% of Edmonton street respondents suggested wayfinding would encourage them to walk more. In London, UK this figure was 60% while in Vancouver the figure was 82% (which may be related to the compact size of the Downtown).

The evaluation also suggests that there would be value in more detailed data on the amount of walking that is undertaken. At present, Statistics Canada and the Census only count journeys to work resulting in a significant underestimate of the actual importance of walking. All-trip statistics from London, UK suggests that only a third of walking trips are for work, with the majority of walking undertaken for education, shopping, visiting friends and relatives and recreational trips.



6. Recommendations

6.1 Appraisal findings

This report describes a range of anecdotal and quantified benefits to city wayfinding that in large part have been shown to be relevant to the needs and expectations in the City of Edmonton. In particular, wayfinding has the potential to increase walking and with it, support modal shift. This will in turn directly help connect transit, assist local business and contribute to improved personal health.

A systematic approach to wayfinding is expected to positively support a number of strategic objectives for city growth including supporting the visitor economy and promoting the image of the city.

The proposal is also shown to be timely and important to avoid further fragmentation of information as a result of imminent projects that will otherwise introduce their own systems of wayfinding with no connection to any other.

The prototype can be considered a success and a support for considering advancing the project. Respondents indicated that despite a belief that two-thirds did not need information, eight out of ten would use it. Moreover, online respondents, without the benefit of answering in a familiar part of the city, were even more explicit in their support for the value of wayfinding.

6.2 Project risks

A full risk assessment should be prepared and kept under review by the City independently of the wayfinding consultant. However, there are some areas of risk that should be acknowledged in investing in city-wide wayfinding.

1. Technology – the proposal assumes a digital system that can produce maps and information for various media and directly to users, all derived from City GIS assets. At present, City GIS resources are not aligned in a way that would allow centralisation and management for mapping purposes.

A mapping GIS would for technical reasons, likely create a separate geo-database which would need to be maintained. This could result in a need for the City to consider a long-term service arrangement or undertake significant internal management and staffing changes to enable a system to be directly managed internally.

There is also a risk that technological development could alter the need and value for some parts of the system. For instance, the current trend for increasing mobile device use coupled with city-wide wifi coverage, could produce conditions where physical signage is less relevant.

While there is a risk that pedestrian who use this sort of technology may find less value in the physical product, the system would be available to support the technological advances and hence create benefits in a different way. It is also notable that in Vancouver, half of the users of the city maps had mobile devices available but still preferred the physical map.

6. Recommendations

2. Roll out – there is a risk to benefits being accrued if the system is only partially completed or geographically limited. The ubiquity of the system is a significant strength and while implementation may be staged over several years according to funding priorities, decisions that curtail the completion of agreed elements or deny completion in certain areas will affect confidence and prevent the achievement of full potential.

6.3 Further study

While this report provides a strong basis for confidence in the value of wayfinding further research could refine the assumptions greatly and provide further support specific to Edmonton. The prototype exercise is expected to produce much of this local evaluation but further study could be conducted that would also benefit the wider active transportation program including:

- Further data mining of household surveys to assess all walking trips rather than just walking to work as now
- Using comprehensive walking data to project growth and target areas for interventions including wayfinding roll out
- Analysis using PERS or similar to evaluate the walking environment
- Undertaking a further prototype for a neighbourhood application of the system to confirm local value to walking and where fewer visitors may be expected

Appendix 1 - References

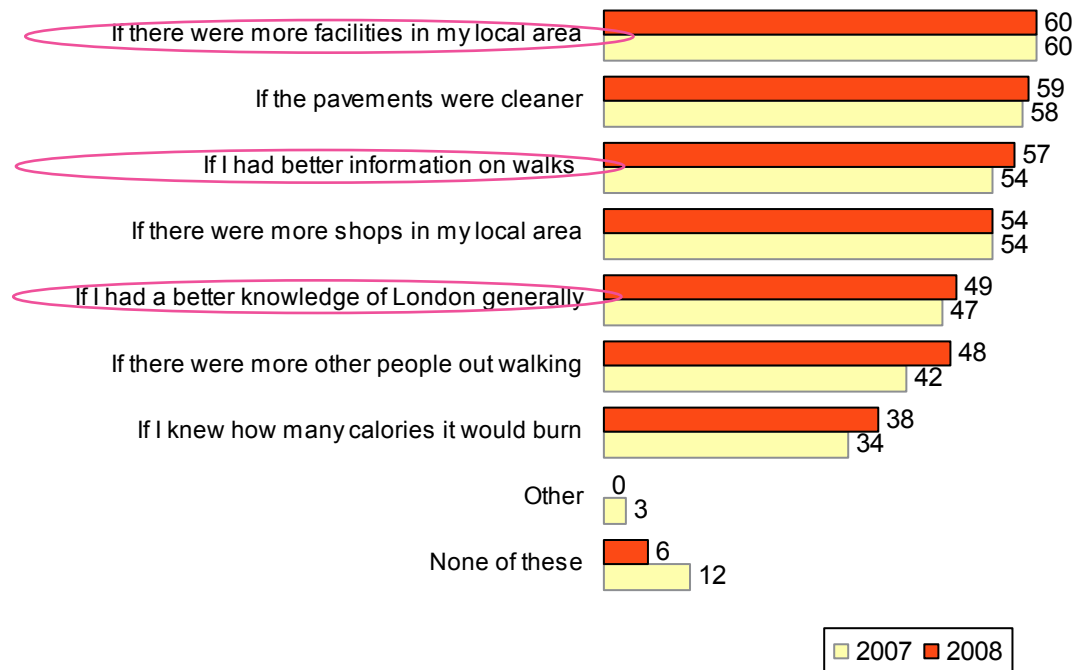
References

> Walking in London

Research commissioned by Transport for London

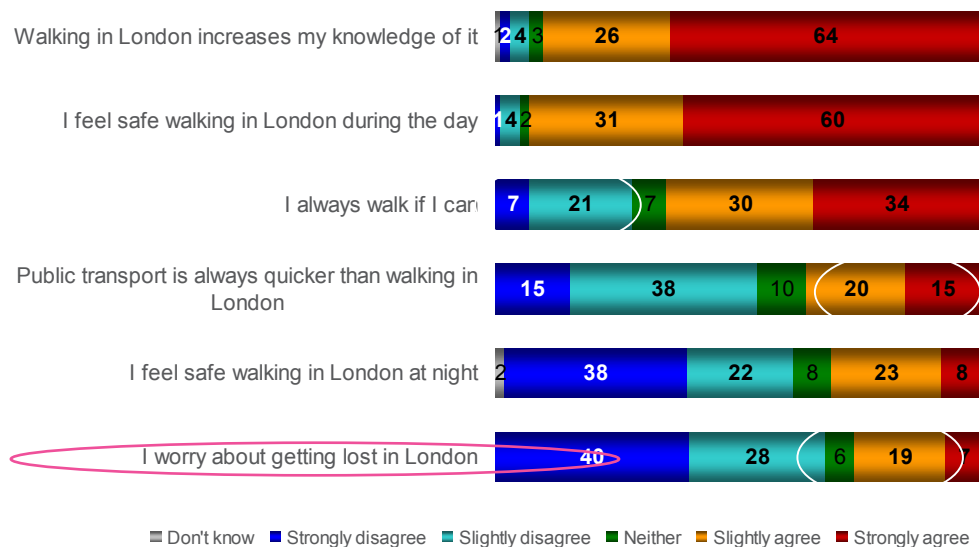
Motivation for walking more (wayfinding themes circled)

Base: Londoners 2007 (n=1014), 2008 n=1002



Attitudes to Walking

Synovate Omnibus Telephone survey for TfL, April 2006 n=632



References

> Legible London

Project consultant Applied_. Evaluation and project description maintained by Transport for London

<http://www.tfl.gov.uk/microsites/legible-london/>

> Summary of main findings from prototype:

Quantified Benefits

Benefits	Per trip (pence)		Total benefits (£ millions PV over 20 years)	
	base case	high case	base case	high case
Quality benefits	0.7 p	0.9 p	£ 57	£ 148
Time savings from mode shift	78 p	78 p	£ 4	£ 10
Time savings to existing pedestrians	10 p	22 p	£ 48	£ 234
Health benefits	50 p	50 p	£ 10	£ 26
TOTAL			£ 119 m	£ 418 m



Appendix 2 - Summary of stakeholder workshop

Exercise #1: Scenarios for wayfinding needs and problems.

Think about planning trips, on the way and changes of plan:

A Table: You are a first-time tourist who has flown in to EIA and is trying to get to Strathcona by transit.

Expect to find	Will find (in Edmonton)
<ul style="list-style-type: none"> • Frequent services over wide range of hours • Free wifi • LRT • Transit info desk (tourism, hotels, events) • Greeters (multi-lingual) • Map of transit system • LRT link • Welcome sign • Info re: Start-Route-End, travel time, progress, don't miss it, how to pay 	<ul style="list-style-type: none"> • 'New' 747 bus from EIA to Century park LRT • Transfer to LRT or 'N' routes to Strathcona • Airport taxi, limousine and hotel shuttles

B Tables: You are an infrequent business traveller staying Downtown and looking for something to do in the evening.

Expect to do/have available	Will find how to (in Edmonton)
<ul style="list-style-type: none"> • Go out to dinner • Events/shows/festivals • Grocery stores • Museums/galleries • Shows/musicals/performances • Rec centre/exercise options (safe trails and areas to walk) 	<ul style="list-style-type: none"> • Ask hotel staff • Festival guide • Nightlife posters/flyers (coffee shops and poster structures) • Web (Googling) • Ask cab driver • Newspapers/magazines • Friendly strangers
<ul style="list-style-type: none"> • Restaurant • Bar • Area guide/map • Visual map • Downtown map • Local area maps • Short travel times (walk/single transit trip) • Where's 'The Strip' • What events are on • West Ed Mall by bus • Tourist friendly info • Transit to main attractions • Map of significant landmarks • Legible/simple transit guide 	<ul style="list-style-type: none"> • 'Where' magazine • Visitor guides • Urban Spoon (app) • ETS trip planner (app) • 311 • Google • Hotel concierge • Edmonton tourism info/brochures

Appendix 2 - Summary of stakeholder workshop

C Tables: You are a new resident in the city suburbs wanting to find your way around.

Expect to find	Will find (in Edmonton)
<ul style="list-style-type: none"> • Groceries • Schools • Hardware • Gas station • Parks • Trails • Rec centre • Get to work • Emergency services • Road network (major arterials) • Where is Downtown • Major shopping areas • Restaurants • How to contact utilities • Friends/family • Exit points out of city • Religious facilities • City services • Festivals • Bike/walk routes/recreation 	<ul style="list-style-type: none"> • Neighbourhood websites • Community leagues • Transit websites/leaflets/maps • Mall websites • Go out/explore • Signs/directions • Walking maps • Comfortable routes • City website • Advertising
<ul style="list-style-type: none"> • Grocery stores • Shopping areas • Exploring on foot/by car • Access to (frequent) transit • Recreation opportunities • Understanding street network, scale walkability • Schools/childcare 	<ul style="list-style-type: none"> • Not everyone has a car • Many ways to access transit • Communities on foot • Web/Google info

Prioritisation

Visit all of the other tables and mark up to 5 needs or problems you think are most important with a tick/ check mark ... count the totals you have on each table and write the top 3 on the flipcharts along with the total numbers of ticks/ check marks they scored.

User	Most voted for ideas
<i>A Table: You are a first-time tourist..</i>	<ul style="list-style-type: none"> • Map of Edmonton + transit 13 • Frequent transit map 7 • Welcome sign - info: routes and programs 6
<i>B Tables: You are an infrequent business traveller..</i>	<ul style="list-style-type: none"> • Landmark map 13 • Area guide 10 • Local area (downtown) map 10 • Where to go to dinner 10 • Find a rec centre/ safe walk trail 8 • Grocery stores 7 <p style="text-align: right;">} 33</p>
<i>C Tables: You are a new resident..</i>	<ul style="list-style-type: none"> • Grocery, shopping areas 12 • Major shopping areas 8 • Grocery stores 7 • Street network/ scale for walking 8 • Road network/major arterials 6 • Recreation, parks 6 <p style="text-align: right;">} 27</p>

Appendix 2 - Summary of stakeholder workshop

Exercise #2: Barriers to modal shift

A Table: What are the barriers to walking more in Edmonton?

Barrier	Barrier (cont'd)
<ul style="list-style-type: none"> Discontinuity of sidewalks Icy sidewalks Large puddles Lighting Signal crossings Cyclists on sidewalk Wind tunnels Damaged sidewalks Panhandlers 	<ul style="list-style-type: none"> Unclear crossings/markings Smokers Barriers for the disabled Signs/directories (lack of) Buildings without street doors Personal security/ media exaggeration Lack of public washrooms Lack of well-planned gathering spaces

B Tables: What are the barriers to cycling more in Edmonton?

Barrier	Barrier (cont'd)
<ul style="list-style-type: none"> Weather (snow clearing/street sweeping) Trip-end facilities Knowing 'safe' routes Fear of road rage/auto culture Knowing social norms and rules of the road Distance between destinations River Valley is a barrier Intimidated by traffic Not fit/skilled enough (perceptions) Road network barriers - freeways, industrial areas, trucks Separation of land uses - greater distances Feeling sweaty at work Incomplete network of bike routes Not understanding rules (helmets) Equipment 	<ul style="list-style-type: none"> Snow/uncleared streets Lack of separation to traffic Faster to drive (perceptions) Need better maps Lack of bike wayfinding River Valley Lack of bike racks, storage infrastructure Driver's lack of awareness (Bike) Lanes to small Hostile/uncaring drivers Lack of training Unpredictable cyclists (image) Bike/transit integration Education for use of bus bike racks Lack of showers at work Unable to ride on sidewalks when street is unsafe

C Tables: What are the barriers to using transit more in Edmonton?

Barrier	Barrier (cont'd)
<ul style="list-style-type: none"> Seasons (impact walking) Weather (options) Frequency of service Understanding transfers Time constraints Complexity of system Physical + mental health Proximity of destination Knowing when to get off Windrows (snow piles) Parking (park and ride) Perceived safety Auto culture Finding elevators Not as visible - access to LRT Finding your way to destination from transit 	<ul style="list-style-type: none"> Frequency (of buses) Capacity of park and ride Transfers/waiting Doesn't go where you want to Express times Waiting in the cold Finding information Confusing maps/schedules Finding bus in transit station Bus shelters unpleasant/dirty Takes too long to get to places Doesn't run late enough Poor access to industrial areas Accessibility of/at stops

Appendix 2 - Summary of stakeholder workshop

Exercise #2: *Where could wayfinding help?*

On a new sheet, write down if wayfinding or other types of information could help address any of the barriers

Mode	Information ideas
Walking	<ul style="list-style-type: none">• Where to find a washroom• Local area maps/destinations• Pedways/ explain private area access• Trails and streets that are cleared in winter• Accessible routes - maps and signage• Night map (lit routes)• Standardised icons and symbols
Cycling	<ul style="list-style-type: none">• Clarify where it is /is not allowed to ride• Route/planner maps• Route/lane markings/directions• Info about bike rentals• Practise bus bike racks• Walk/bike travel time estimators• How to avoid River Valley hills• How to dress and prepare your bike to ride
Transit	<ul style="list-style-type: none">• Integration at stops (live/real time displays)• Signs at LRT to bus routes• Touch screen ETS journey planner at stations• Pedestrian connections from transit• Accessibility information for LRT and bus stations

Appendix 3 – Evaluation tables

Comparison of Results: Wayfinding Street Intercept Interviews- Pre-Test and Post-Sign Installation and Walk Edmonton/Wayfinding Survey: Highlight of Results				
		Wayfinding Street Intercept Interviews- Pre-Test	Wayfinding Street Intercept Interviews	Walk Edmonton/Wayfinding Survey
TOTAL SURVEYS:		223	175	559
Location	Churchill Square	36%	26%	N/A
	102 Avenue at 99 Street	16%	24%	N/A
	By Stanley Milner Library (100 St. & 102 Ave)	17%	14%	N/A
	Jasper Avenue at 99 Street	19%	10%	N/A
	Jasper Avenue at Shaw Conference Centre	13%	26%	N/A
Direction of Testing Map	North facing	N/A	54%	N/A
	South facing	N/A	46%	N/A
Do you live in Edmonton?	Yes	83%	80%	93%
[If no] Which of the following applies to you?	I work in Edmonton but live elsewhere	43%	47%	73%
	I am visiting Edmonton from elsewhere in Alberta	41%	31%	10%
	I am visiting Edmonton from somewhere outside of Alberta	16%	22%	18%
What part of Edmonton are we in at the moment?	Downtown	66%	69%	N/A
How did you get to the downtown area today?	I drove/someone drove me	34%	43%	N/A
	LRT	20%	13%	N/A
	Bus	25%	21%	N/A
	Walking	21%	25%	N/A

Appendix 3 – Evaluation tables

		Wayfinding Street Intercept Interviews- Pre- Test	Wayfinding Street Intercept Interviews	Walk Edmonton/ Wayfinding Survey
What is the main reason you are walking downtown today?	Business (in the course of work)	15%	21%	N/A
	Personal business (e.g., doctor visit, banking, etc.)	21%	18%	N/A
	Social/entertainment/ going out to eat	11%	19%	N/A
	Just out for a walk	22%	21%	N/A
Right now, would you say... ?	I know exactly where I am	90%	84%	N/A
Do you have a specific destination where you are walking to?	Yes	81%	81%	N/A
How well do you know how to get to your destination?	I know exactly how to get there	89%	82%	N/A
[Wayfinding Street Intercepts] How often do you come to or walk through this area? [Walk Edmonton/Wayfinding Survey] How often are you in the downtown Edmonton area?	Everyday	30%	19%	31%
	Every weekday	28%	25%	28%
	Once or twice a week	19%	23%	19%
Do you agree or disagree that:		n=223	n=169	n=441
I know my way around downtown Edmonton	4	25%	24%	35%
	5= Strongly Agree	52%	54%	31%
	Total Agree:	76%	78%	65%

significant

Appendix 3 – Evaluation tables

		Wayfinding Street Intercept Interviews- Pre- Test	Wayfinding Street Intercept Interviews	Walk Edmonton/ Wayfinding Survey	
		n=220	n=168	n=514	
When walking, I find it easy to find my way around downtown Edmonton	4	32%	30%	30%	
	5= Strongly Agree	44%	44%	20%	
	Total Agree:	76%	74%	50%	significant
		n=219	n=164		
[If you have a destination in mind] I know how long it will take me to walk to my destination from here	4	38%	32%	N/A	
	5= Strongly Agree	39%	27%	N/A	
	Total Agree:	78%	60%	N/A	significant
[Wayfinding Street Intercepts] Thinking of your journey today, which of the following has helped you find your way? [Walk Edmonton/ Wayfinding Survey] What information would you normally use when you are walking around downtown Edmonton?	[Wayfinding Street Intercepts] Referred to a map before I left [Walk Edmonton/Wayfinding Survey] Refer to a map before I leave	3%	7%	47%	
	Smartphone/mobile app	22%	22%	60%	
	Signs in the LRT station/ pedway	2%	10%	54%	
	Street name signs	7%	18%	79%	
	Directional signs on the street/way-markers	2%	10%	41%	
	Places I know (e.g., buildings, large stores)	8%	31%	81%	
	None needed- I know the way/I know the area	60%	50%	20%	

Appendix 3 – Evaluation tables

		Wayfinding Street Intercept Interviews- Pre- Test	Wayfinding Street Intercept Interviews	Walk Edmonton/ Wayfinding Survey
Of those ways, which was the most important?	[Wayfinding Street Intercepts] Referred to a map before I left [Walk Edmonton/Wayfinding Survey] Refer to a map before I leave	2%	7%	10%
	Smartphone/mobile app	29%	24%	28%
	Signs in the LRT station/pedway	1%	2%	9%
	Street name signs	6%	3%	19%
	Directional signs on the street/way-markers	5%	5%	17%
	Places I know (e.g., buildings, large stores)	3%	16%	8%
	None needed- I know the way/I know the area	45%	33%	6%
[Wayfinding Street Intercepts] As you were walking, did you notice a map/sign like this? [Walk Edmonton/Wayfinding Survey] Have you noticed any maps/signs like these downtown?	Yes	N/A	58%	30%
	No	N/A	41%	55%
	I have not been downtown recently	N/A	N/A	15%
			n=167	n=530
How easy would you say it is to understand a map/sign like this?	Very Easy	N/A	56%	19%
	Easy	N/A	29%	46%
Can you tell me how long it would take to walk to the Bay/Enterprise Square LRT station from here?	5 minutes to under 10 minutes	N/A	58%	N/A

significant

Appendix 2 - Summary of stakeholder workshop

		Wayfinding Street Intercept Interviews- Pre- Test	Wayfinding Street Intercept Interviews	Walk Edmonton/ Wayfinding Survey
Can you tell me where Canada Place is on the map?	Less than 5 seconds for respondent to find	N/A	47%	N/A
	Between 5 and 30 seconds for respondent to find	N/A	43%	N/A
Can you tell me where 103 Street is on the map?	Less than 5 seconds for respondent to find	N/A	50%	N/A
	Between 5 and 30 seconds for respondent to find	N/A	42%	N/A
Can you tell me which way North is on the map?	Respondent was correct	N/A	91%	N/A
Would you use maps and signs like this if they were available throughout Edmonton?	Yes	N/A	81%	83%
Do you think you would you walk more or further if maps and signs like these were available?	Yes	N/A	57%	56%
Do you think that a wayfinding system will...				
Increase people's confidence in finding their way around	Rating 4	N/A	35%	36%
	Rating 5=Strongly Agree	N/A	55%	50%
	Total Agree:		90%	87%
Increase the frequency of visits to an area?	Rating 4	N/A	30%	33%
	Rating 5=Strongly Agree	N/A	31%	34%
	Total Agree:		61%	67%

Appendix 2 - Summary of stakeholder workshop

		Wayfinding Street Intercept Interviews- Pre- Test	Wayfinding Street Intercept Interviews	Walk Edmonton/ Wayfinding Survey
Increase use of multi-modal transportation, i.e., public transit (bus/LRT), biking, walking, etc.?	Rating 4	N/A	38%	35%
	Rating 5=Strongly Agree	N/A	25%	28%
	Total Agree:		63%	63%
Encourage exploration/discovery of an area?	Rating 4	N/A	45%	39%
	Rating 5=Strongly Agree	N/A	41%	44%
	Total Agree:		87%	83%
Increase visits to businesses in the local area?	Rating 4	N/A	34%	40%
	Rating 5=Strongly Agree	N/A	29%	28%
	Total Agree:		63%	68%
Improve the overall image of Edmonton?	Rating 4	N/A	39%	26%
	Rating 5=Strongly Agree	N/A	47%	53%
	Total Agree:		87%	79%