



Research Paper

## Urban Corridor Development: Design Guidelines for retrofitting existing Corridors

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**ABSTRACT:** Linear development concepts have been an essential tool in urban development. This study evaluates the category of urban corridor development in the discipline of urban design and planning of three projects and the assessment of development through retrofitting of existing corridors. Exploring literature on the theme reveals the importance of urban corridor development and the need to channelize with appropriate design guidelines. The study arrives at certain design criteria to be considered for the effective development of urban corridors.

**KEYWORDS:** Guidelines, Retrofitting Corridors, Urban Corridor Development

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### I. INTRODUCTION

Linear patches of developments are often described using various terms such as Corridors, Buffers and Greenways depending upon the use of specific resource issue [1]. An urban Corridor comprises a diverse collection of neighborhoods along its length, in which people are increasingly drawn to live, work and be close to all of the opportunities that come from living. The corridor design for development or redevelopment primarily focusses on rethinking the city's composition with respect to public transportation and mobility. Using the same amount of land, it enables the transport of larger numbers of people than is possible with private vehicles, while reducing the social and environmental impact of mobility (cost of transport, flow consolidation, extension of electrically powered systems etc.) The transformation of the Corridor will also spur on investment, enhancing its emerging economic assets and providing greater access to a variety of jobs. Successful corridor and transportation planning can be achieved by unifying all components of urban design and planning [2].

#### Smart Corridor:

- A corridor that multi-tasks.
- A corridor that balances demands Corridor Plan for mobility, economic viability, environmental quality and livability.
- A place that is attractive, inviting and environmentally friendly.
- A corridor capable of regaining economic competitiveness.
- A corridor that improves the appearance of the streetscape.
- A corridor that strengthens safety and maintenance.
- A corridor that attracts new businesses.
- A corridor that promotes the area to potential customers.

Urban corridors are a part of major roads passing through major urban centres with a mix of commercial strap areas to newer developments including a majority of all kinds of commercial buildings, few residential buildings and unused vacant spaces every now and then [3]. Some of the attributes influencing use of pedestrians and transit friendliness in Urban Corridors are long and linear structure of corridors, concentration of pedestrian activities along linear pathways to increase shopping opportunities along the pathways. Various sidewalk interruptions by driveways and parking lots. The increase of transit usage, residential use proximity, and lack of basic urban facilities allows for retrofitting and densification of the corridors. This also promotes pedestrian-oriented development. Factors to consider while designing for

pedestrian street use are Technology, distance to a given goal, safety, climate and weather, culture, environmental variables, topography and physical/perceptual characteristics. Aspects that can either facilitate or inhibit pedestrian movement include type and mix of land uses, configuration and condition of the streetscape, density, pedestrian/automobile interaction, convenience, comfort, and security. An urban corridor is to be conceived as a place to have a comfortable and safe life with all necessary amenities for day to day activities and to also act as a commercial corridor whilst nurturing the green urban landscape [4].

## **II. METHODOLOGY**

The Methodology adopted in this research paper is to analyse and evaluate various cases of Urban Corridor Development with respect to Urban Design Guidelines for Corridor development. The aspects for the study and analysis of Urban Corridor development cases include Density, Pedestrian and Automobile Interaction, Street width, Land Use, Zoning, Open Space Developments, Residential and commercial development ratios, Road conditions, issues and parking. This is because mixed use developments is a major influencing factor in determining economic impact of the corridor [5]. The effort to convert a corridor with adequate urban facilities pedestrian and transit friendly movement requires a conjoined approach of land use policies, transportation controls and existing physical and environmental characteristics and improvements. The study and comparison of the various case examples will lead towards formulating Design Guidelines for retrofitting Urban Corridors.

## **III. ANALYSIS**

### **3.1 Case 1: The Great Eastern Highway, Perth, Australia**

#### **3.1.1 Case Analysis**

The Great Eastern Highway is a major road that connects Perth and Kalgoorlie in Australia. Hence there was a strong need for development of this road corridor. A powerful vision is envisaged for the development of this corridor that involves the community and works on public input and collaboration in order to create Perth's great urban boulevards and complete urban transformation by bringing in a new urban destination. The linear monotonous road of Great Eastern Highway is converted into spaces providing captivating experiences.

The structuring elements that define the urban corridor strategy of Great Eastern Highway development are categorized under Amenities, Networks, Nodes and Precincts.

**Amenity:** The Urban Corridor Concept Plan delivers a development framework acknowledging the alignment of Corridor and the Swan River that provides for movement along the Corridor and connections through the Corridor into the adjacent neighbourhoods.

**Networks:** Harnessing the opportunities presented through greater connectivity is a key objective of the Vision Plan. The definition of a strategically considered network of public spaces and streets establishes a framework for the delivery of an integrated public realm that can be utilised to support safe and comfortable spaces as well as providing general amenity and a network that offers easy and accessible connections within and through the Corridor towards built form, public realm, land use and movement.

**Nodes:** The Urban Corridor Concept Plan establishes the opportunity to celebrate and physically express key locations for creation of integrated mixed-use centres, intensification of land uses and wider housing choice. These nodes provide deliberate opportunities to create a sense of place and identity for the neighbourhoods surrounding the nodes.

**Precincts:** The Corridor consists of four distinct precincts. Defining these precincts and using these geographically defined locations helps provide greater legibility and definition of character and define the opportunity for distinctive approaches.

The Urban Corridor Strategy seeks to enhance the landscape amenities and re connect the public with the environment. Pedestrian and cyclist movement is focussed to establish human-corridor connections. This also incorporates ideas to generate economic opportunities by making the Corridor active and creating Activity Nodes and Mixed Employment options thus guiding appropriate use of land. The large traffic usage is aimed at being reduced gradually by creating pedestrian and cyclist friendly environment.

### **3.2 Case 2: Urban Corridor Planning – Houston**

#### **3.2.1 Case Analysis**

The strategy for Urban Corridor Planning in Houston is majorly about regularizing building construction rules in order to encourage and provide benefits for public who comply. The implementation of mandatory rules for performance, construction and maintenance of buildings as part of corridor development involves public participation and caters to public and pedestrian needs. The new set of rules developed for the corridor planning included the following: provision of a pedestrian space of minimum 1.8m wide and 2.25m high along all transit corridors; the city engineer is given power to modify building design to ensure technical

feasibility; the façade that starts at a distance of 3m from the pedestrian pathway can be 50% of the site width; the pedestrian pathway envisaged as a pedestrian realm should be devoid of parking or driveways; the building entrance should not be directly from the pedestrian realm and building doors should not open into the realm; a maximum of 20% soft landscape area can be provided in the pedestrian realm; public parks and plazas are to connected to the pedestrian realm.

This creates a High amenity public realm that offers a diverse range of spaces, places and connections for people to use and interact with. This strategy also brings new life into the Corridor and adjacent communities through investment in homes, jobs, transport, open space and public amenity. A better network of public places will support healthier lifestyles as development within the Corridor occurs. The Larger Green Spaces will be areas that primarily consist of a natural environment, and provide for informal passive recreation.

### 3.3 Case 3: Lincoln Neighbourhood Corridor Plan

#### 3.3.1 Case Analysis

The strategy for Urban Corridor development in Lincoln Neighbourhood concentrates on improved mobility infrastructure, safety and enhanced pedestrian usage. It also focusses on creating a public realm that reflects the character and community values of the neighbourhood. This is achieved via addressing pedestrian connectivity by providing clear crosswalk markings and signage wherever necessary; careful designing and segregation of pedestrian and bus lanes; and visualising a multi-mode street environment which satisfies the needs of pedestrians, cyclists, transit and vehicles. It is also noted that the planning strategy is implemented in various stages to ensure smooth and gradual transformation within the neighbourhood. This corridor development, in addition to the roads and road users, also concentrates on the buildings alongside the corridor by encouraging adaptive reuse and repurposing of aging buildings. This project also identifies business improvement opportunities which includes local serving commercial uses.

The strategy is designed to stabilize the social, economic and environmental conditions. The connectivity within the neighbourhood corridor is reshaped with better connecting places and high amenity spaces. This creates more of liveable spaces in the community, where small spaces along the streets provide interacting opportunities.

## IV. RESULTS & DISCUSSIONS

The results from the study are tabulated as follows:

Aspects	Lincoln Neighbourhood Corridor Plan (LiNC)	Great Eastern Highway Urban Corridor Strategy	Urban Corridor Planning - Houston
<b>Vision</b>	This is a landscape based streetscape planning that delves around the themes of Tactical Urbanism and Pop-Up Urbanism.	This is an incremental implementation of multi-use Corridor renewal strategies.	This is a development of socially and economically sustainable mixed and high density corridor.
<b>Approach</b>	Landscape and Transportation	Transportation and Streetscape	Transportation and Pedestrian movement
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• To create Pedestrian friendly neighbourhood and commercial corridor</li> <li>• To improvise Roadway enhancements, sustainability, sidewalks, landscaping.</li> <li>• To provide better driving experience.</li> </ul>	<ul style="list-style-type: none"> <li>• To attract Productive business environment</li> <li>• To establish High amenity public realm</li> <li>• To implement land use changes</li> </ul>	<ul style="list-style-type: none"> <li>• To concentrate on Pedestrian needs and requirements such as lighting, pavements etc.</li> </ul>
<b>Opportunities</b>	<ul style="list-style-type: none"> <li>• To improve character of public realm</li> <li>• To improve mobility options</li> <li>• To ensure safety</li> <li>• To enhance pedestrian activity</li> </ul>	<ul style="list-style-type: none"> <li>• To bring in new life to the corridor through investments in homes, jobs, public spaces etc.</li> <li>• To explore sustainable urbanism</li> </ul>	<ul style="list-style-type: none"> <li>• To guide land use and development decisions along six corridors with proposal for light rail.</li> <li>• To improve transit oriented development.</li> </ul>
<b>Inference</b>	It is inferred from the study that a successful urban corridor development should be an amalgamation of urban design ideas for improvising the corridor context and innovative urban economic development opportunities.		

**Table 1 A comparison of case analysis**

#### 4.1 Innovation District - As a Concept for Urban Corridors

An innovation district is a localized hub of an innovation ecosystem. It is an urban area within a city that has the capability to attract economic opportunities and support creative, entrepreneurial institutions and businesses. Creating a good urban environment which would help foster talent and also speak up for the economic success. Some of the important parameters which are seen as critical to the process of creating and sustaining are strong leadership, access to capital, diversity, networking assets and inclusive growth. One of the

major factors is the creation of ‘good urban places’ which are becoming the location of choice for a creative working class engaging in open innovation.

There are three assets of Innovation Corridor based on the typology that ‘No One Size Fits All’, they are Economic, Physical and Networking.

**Economic Assets:** Assets capable of innovating and improving economic opportunities in urban corridors should be identified and developed such as institutions, organizations etc.

**Physical Assets:** Assets that form the majority of urban usage includes public and privately owned spaces—buildings, public spaces, streets, and other infrastructure. These assets should be so designed to stimulate new and enhanced levels of connectivity, collaboration, and innovation.

**Networking Assets:** Stakeholder relationships in an urban corridor – people, businesses, and spaces- have the potential to accelerate corridor development. Hence networking amongst the stakeholders is key to such development.

Many policy level issues can be identified to improve coordination among various policy domains and urban spatial planning [6]. Modern day urban Corridors are well facilitated with number of automobile, retail shops and other office spaces. So the idea of innovation district cannot be exactly be replicated into any corridor for development but certain aspects of Innovation District can be incorporated as required. Urban corridors with a combination of land and workforce availability offers scope to address growth needs for the science and technology economies using corridor capacity as well as the potential to develop new locations around the corridor. This requires marketable services; open-air market targeted on providing access food options; Business incubators & versatile workplace area; Live work play areas with a dense mixture of land use, convenient public transportation & cultural amenities; Parking garages; increased streetscape & pedestrian facilities.

## V. INFERENCES & RECOMMENDATIONS

Urban Corridor developments need to consider the following characteristics that can be adopted as Design Guidelines for Corridor development.

**5.1 Identity:** Any innovative change in the corridor needs to be visible and accessible to the public.

**5.2 Diversity:** Combining Innovative Urban Spaces with Alternate Uses gives users a variety of reasons to use the space. Public plazas and urban gathering spaces should offer more than just being a gathering space.

**5.3 Continuity:** This begins with existing individuals and places. The existing users should be able to relate with new developments in the corridor before attracting new users. Without any continuity within the community or urban material, places usually lack the social capital and identity that builds up in alternative neighborhoods over time.

**5.4 Sociability:** Bringing individuals along through places and spaces is a great way to socialize. Strong ties connect individuals and help build up a community that develops deep levels of trust, collaboration, and information-sharing.

**5.5 Proximity:** Walkable streets with active ground floors and spirited public areas represent another such issue that conspires with proximity to make connections at intervals in the district. This can be made socially consistent with areas like cafeterias, lobbies, and alternative building common areas.

**5.6 Flexibility:** The flexibility in urban spaces plays a major role in determining the success of such spaces. The ability to adapt to urban changes in the context makes a successful urban space.

**5.7 Connectivity:** The existing street blocks along the Corridor are long and streets do not always make connections to desirable amenities. Improving pedestrian connections with the residential, will also enable the creation of functional and appealing mixed-use and mixed business nodes with strong ties to public transit.

**5.8 Opportunity:** The public domain – streets and public spaces – provides: the setting for the variety of buildings; places for celebration, democratic expression, exercise and relaxation, gathering and respite; places of beauty for visitors and locals; space for environmental cleansing. The Corridor’s existing public domain is largely characterized as a wide, barren utilitarian traffic artery – oriented almost solely to car movement, access and exposure – and a tenuous relationship with the adjoining development and community. The provision of numerous small spaces created at the corners of key streets when redevelopment occurs will help to deliver significant amenity and opportunities for outdoor life throughout the Corridor. It is important to provide more of the smaller urban open spaces throughout the mixed use areas that are easy to walk to and use by local workers and residents. The provision of local parks and Urban Gardens close to the predominantly residential areas will help in some small way to fill a void in the recreation and outdoor life opportunities of the Corridor. Provision of these various urban open space opportunities contributes substantially to the vibrancy of the Corridor.

**5.9 Livability:** Strengthening of the public realm qualities of connecting streets will help to better distribute local traffic, significantly improve pedestrian. The ability to foster the growth of the Corridor as a unified and revitalized urban environment will be greatly enhanced by additional residential life along the Corridor and adjacent areas. The well-considered planning and design of residential-friendly buildings, streets and places

along the Corridor will ensure that the area does not remain an inert place. The Corridor will better connect with their residential neighbourhood's thus embracing and enhancing livability.

#### REFERENCES

- [1] G. Bentrup, "Conservation Buffers: Design Guidelines for Buffers, Corridors, and Greenways," *Landscape*, no. September, 2008.
- [2] G. Jordaan, "Urban Design and Environmental Management Implications of Corridors," 2003, no. July.
- [3] A. Loukaitou-Sideris, "Retrofit of Urban Corridors: Land Use Policies and Design Guidelines for Transit-Friendly Environments," Berkeley, 1993. doi: 10.11436/mssj.15.250.
- [4] D. P. Sari and M. R. Alhamdani, "The Urban Design Guidelines of Sungai Pinyuh Street Corridor," *IOP Conf. Ser. Earth Environ. Sci.*, vol. 409, no. 1, 2020, doi: 10.1088/1755-1315/409/1/012028.
- [5] J. Jacobson and A. Forsyth, "Seven American TODs: Good Practices for Urban Design in Transit-Oriented Development Projects," *J. Transp. Land Use*, vol. 1, no. 2, pp. 51–88, 2008, doi: 10.5198/jtlu.v1i2.67.
- [6] H. Priemus and W. Zonneveld, "What are corridors and what are the issues? Introduction to special issue: The governance of corridors," *J. Transp. Geogr.*, vol. 11, no. 3, pp. 167–177, Sep. 2003, doi: 10.1016/S0966-6923(03)00028-0.