



INDORE RAILWAY STATION

02

Guidebook for operationalizing National TOD Policy for Railway Station (Re)development

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Preface

The Development Control plays an important role in guiding and facilitating the physical Development. Since the commercial development along with station redevelopment in the railway land is to be done under Section 11 of the Railways Act 1989, there was a need to have set of Manuals/Guidelines to guide the entire development. In fact the Union cabinet has approved (in terms of communication received from Ministry of Railways, GOI vide letter No. 2011/LMB.WCS/22/07/25 Pt.1 dated 17.10.2018) that ‘Railways/RLDA/IRSDC shall consult urban local bodies/other statutory authorities while approving its plans in terms of powers conferred to it under Section 11 of the Railways Act 1989 so that the development in Railway Land is harmonious with surrounding development, generally following National Transit Oriented Development (TOD) Policy. No change in Land Use is required pan India by Railways for developing railway land for commercial use.’ It is further approved that IRSDC shall be the Nodal Agency and the main Project Development Agency for redevelopment/development of all stations. MoHUA has also conveyed the approval of Union Cabinet to Chief Secretaries of All States/UTs to incorporate suitable provisions in the local byelaws/ development control norms in congruence with the National TOD Policy as well as relevant provisions of the Railways Act to facilitate Railways/RLDA/IRSDC to proceed with their development plans in consultation with local bodies/other statutory authorities, at the earliest.

Accordingly as the Nodal Agency for station redevelopment, IRSDC took upon the responsibility, on behalf of Railways/RLDA besides for guiding its own work for station redevelopment along with commercial development, to produce a series of Manuals/Guidelines to guide the Architects/Developers/Concessionaires as well as the Authority on the Procedures, Dos & Don’ts in preparing development plans and submitting the applications for approval of Layout Plans and Building Plans of the commercial development to IRSDC.

IRSDC aims to transform the railway stations and the adjoining land into a “RAILOPOLIS” - a Mini Smart 24/7 City Centre where one can live, work, play and ride while putting the land resources to optimal use following the National Transit Oriented Development Policy norms. The aim is to facilitate developments by streamlining policies and making the Manuals/Guidelines as transparent as possible to promote ease of doing business. The Manual on Form Based Codes explains various developments such as buildings set back, ground coverage, FAR, heights etc. while Manual on building plan approval and commercial assets covers the process for the approval of building plans. The Manuals are mandatory while the Guidelines are Recommendatory and the Development Agreement/Concession Agreement or any other legal agreement between IRSDC (Authority) and Developments/Concessionaires shall prevail over and above the guidelines.

The advantage of the Manual on Form Based Codes is that it facilitates flexibility in development of mix use (horizontal and vertical mixing) to make the development sustainable, user friendly and market responsive while most of the local building byelaws restrict mixing which is essential for development of TOD. The guidelines propose good practices related to Construction Standards that promote and protect health, safety and general welfare of the occupant and environment across its life cycle while permitting dynamic building use.

These “Manuals for Station (Re)development including Commercial Development” is a comprehensive set of documents which provide standards and guidelines in the following order of decreasing priority-

1. Safety Standards, (like fire safety, earthquake related controls, etc.)
2. Passenger and user comfort and convenience.
3. Environmental Conservation (Natural and Man-made)
4. Heritage Conservation
5. Design and aesthetic in harmony

These Manuals and Guidelines have been prepared over a period, after research, site visits, case studies, best practices, study of other similar national, international designs, National TOD Policy and Form Based Codes (as advised by MoHUA), National Building Codes, UBBL-2016 and Environment Management Guidelines issued by MoEF&CC. Some of these have also been applied and tested on the on-going projects of IRSDC.

PUBLIC CONSULTATIONS: The (draft) Manuals and Guidelines were posted on IRSDC’s website. These documents are available for reference at- www.irsdc.in. The stakeholder consultation was held via six (6) national webinars during April 2021- July 2021. The attendees were provided with a brief overview of salient features of the Manual, Guidelines, etc. Over 1300 participants, which included about 25 Government Agencies, Educational Institutions, Professional Bodies, Centres of Excellence, and senior professionals, attended, and shared their valuable feedback during the Webinars and over emails.

These Manuals and Guidelines have now been adopted for Station Redevelopment Works after incorporating relevant feedback and other suggestions by all the stakeholders. Further, final draft Manuals and Guidelines were discussed in the Plan Sanctioning and Monitoring Committee (PSMC) where subject experts were also invited as special invitees in July 2021. IRSDC’s Board of Directors (BOD) has also deliberated on this subject in August 2021 for adoption and application to the program of (re)development of Railway Stations along with Commercial Development. These Manuals and Guidelines are expected to transform the railway area around stations into model development as envisaged also by MoHUA and spur similar development in surrounding area.

STRUCTURE OF THIS GUIDEBOOK FOR OPERATIONALIZING NATIONAL TOD POLICY FOR STATION (RE)DEVELOPMENT

Sl. No.	Chapter	Content
1.	Introduction	IRSDC’s Mandate, Who should use the Guidebook and How?, The National TOD Policy: The Guiding Framework & Creating value through Railway Station (Re)development
2.	Step-by-Step Methodology for Masterplan Preparation	Pre-Design Surveys and Assessments, Response To Railway Heritage Assets, Step-by-Step Methodology
4.	Planning for Sustainability	Contains guidelines and frameworks for planning for sustainability
5.	Design Guidelines: To Aid Value Creation	<ol style="list-style-type: none"> 1. Guidelines for Strategic city-wide linkages, Strategic across-track vehicular linkages, Strategic across-track pedestrian linkages, Decreasing congestion and reducing unnecessary delays & Increasing salable frontage with a finer grid 2. Guidelines for Mixed use and use zoning, Retail planning to address three different user groups & Setbacks and active frontage on street 3. Guidelines for Multi-modal Integration (MMI) 4. Guidelines for Public Spaces 5. Guidelines for Revenue Generating Shared and Managed Parking
5.	Keeping the Guidebook relevant	Measures required to keep the guidelines relevant for long.

The manuals and guidelines are intended to be comprehensive for promoting balance and orderly development of railway stations and surrounding city area. Manuals and Guidelines inter-alia provide the framework, necessary technique, norms and standards, and development promotion techniques. Conditions may vary from place to place and accordingly these manuals and guidelines may be applied to all situations and places by adopting to local conditions. These manuals and guidelines fulfil the need for a planning process which facilitate efficient and dynamic station development in overall urban framework.

The manuals and guidelines are also intended to be a possible reference for various aspects of urban planning and design by State Governments, Development Authorities, Private Sector and Planning Organizations.

(Sanjeev Kumar Lohia)

Managing Director and Chief Executive Officer
Indian Railway Stations Development Corporation Ltd.

About this Guidebook

Guidebook for Operationalizing National TOD Policy for Railway Station (Re)development

This Guidebook lays down processes for Value creation in railway land as recommended by National Transit Oriented Development Policy. Some of the measures for Value Creation are, creating mixed-use, mixed-income, active areas creating vibrant public places, providing amenities for residents and transit users, etc.. Such areas which encourage high socialisation, walking, cycling, access through public transport while discouraging use of private motor vehicles are found to be environmentally, socially and financially sustainable.

This Guidebook is meant to assist Technical Consultants and experts preparing schemes for Station (Re) development.

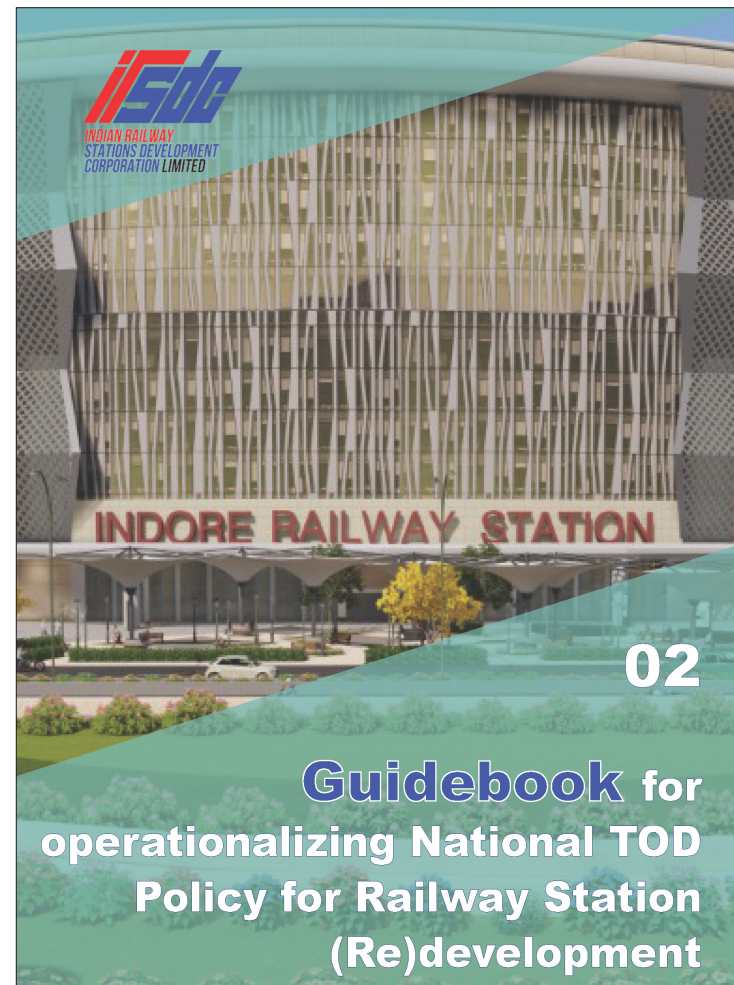


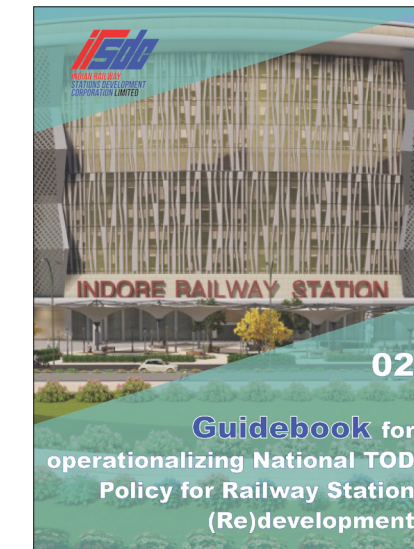
Table 1: Schedule of remaining parts of the Manuals for Station Redevelopment including Commercial Development

Handbook for Station Planning (For Internal Use)



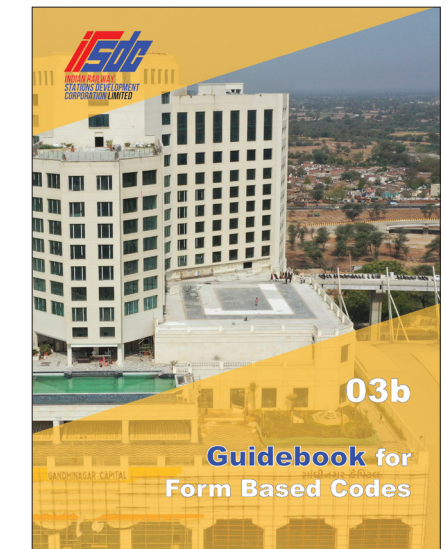
This document contains Norms, Standards and Tools for Design of Station Operational Areas.

Guidebook for operationalizing National TOD Policy for Railway Station (Re)development



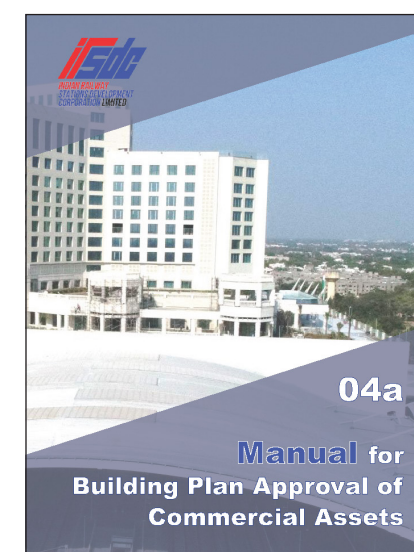
This document contains Tools and Processes for Layout Planning within the Railway Land, with the intent of 'Land Value Capture' for optimum monetization.

Guidebook for Form Based Codes



This document assists in preparation of Layout Regulating Plans and Property Development Card.

Manual for Building Plan Approval of Commercial Assets



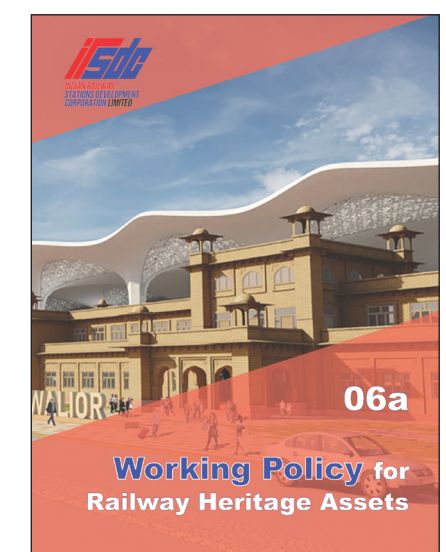
This document contains the procedures and parameters for the approval of Building Plan of Commercial Assets.

Environment Management Guidelines for Station (Re)development



This document contains guidelines for integrating provisions of Environment Management during Layout Planning and is based on the recommendations issued by MoEF&CC, NGT and other Statutory bodies.

Working Policy for Railway Heritage Assets



This document contains Working Policy for a desired response to Railway Heritage Assets.



Figure 1: Chennai Central Station (Source: erail.in)

Introduction

Purpose of the document

Indian Railway Stations Development Corporation Limited (IRSDC) is a deemed Government Company and a Joint Venture of Rail Land Development Authority (RLDA) and IrCO International Limited under the purview of the Ministry of Railways, Government of India. IRSDC is the nodal agency mandated to develop / redevelop existing and/or new railway stations in India (and all ancillary infrastructure and facilities) to upgrade the levels of service and amenities to the highest standards to serve the needs of passengers better.

As per the decision of the Union Cabinet, in addition to being the nodal agency for stations re-development in the entire country, IRSDC is also now the main Project Development Agency (PDA). Further, IRSDC, besides Railways and RLDA, has been empowered by the above said Cabinet decision to approve its plans under the powers conferred to it as per section 11 of the Railway Act 1989. IRSDC has been directed to ensure that the development planned in Railway land after due consultation with Local bodies and other statutory authorities, is harmonious with its surroundings and generally follows the National Transit Oriented Development (TOD) Policy. It is worth noting that **No Change in Land-Use is required Pan India by Railways for developing Railway land for commercial use.** The model for redevelopment of stations followed by IRSDC is governed by a 'no cost to railways' principle and is therefore based on complete funding from land monetization.

Entrusted with Stations across the country, IRSDC on priority is responsible for developing around a 1000 world class stations in the next 10-15 years, This provides a tremendous opportunity to reshape the urban landscape of the country, catalyzing development in various Tier 2 and Tier 3 cities and setting up exemplar TOD projects in Tier-1 growth centres. Since most station developments are in the heart of existing cities, they provide a great opportunity to reconnect and unlock the potential of previously fractured areas through TOD and value capture mechanisms, in line with the Hon'ble Prime Minister's vision of 'Railway Stations functioning as mini Smart Cities'.

In parallel, many agencies around the country are also currently executing TOD based projects under various National schemes such as Smart City, metro policy, etc. Along with such agencies, IRSDC aims to lead the setting up detailed systems for TOD project approvals, guidelines and performance standards for projects.

Amongst the first in a suite of documents planned to ensure the above, this Guidebook provides detailed design guidance for Station Area Master Planning. It aims to enable the enhancement of value in the precinct through strategic restructuring and regeneration of derelict, under-utilised and/or overburdened parts of the city to create a sustainable new Station quarter.



Figure 2: Midnapur Railway Station (Source: railanalysisindia.com)

IRSDC's mandate

1. To develop / re-develop existing / new Railway Stations.
2. To undertake projects for development of real estate on Railway/ Government land and its commercial utilization
3. To undertake preparation of projects including planning, designing, development, construction, commissioning, operation, maintenance, and financing
4. To carry on any railway infrastructure work including development of railway stations through various implementation models.
5. To approve all Railway Station (Re)Development Projects.

Some facts about the Indian Railways

8,116 Million	Passengers transported
67,368	Route kilometers covered
1,149,835	Passenger kilometers covered
64,223	Passenger carriages as rolling stock
8,613	Stations

Source: Statistical Summary—Indian Railways 2016-2017



Figure 3: Churchgate Station © Randy Olson

Who should use the Guidebook and How?

There are many players in the station redevelopment process including, the Indian Railways, the landowners, IRSDC, the nodal agency for redevelopment, Developers, Urban Local Bodies, other local agencies and experts working in the field including architects, urban designers, planners, engineers etc. Under the larger framework of the National Transit Oriented Development (TOD) Policy, this Guidebook aims to provide guidance to all players, setting out how a station redevelopment project should be masterplanned such that enhanced value is created in the newly built asset. It is structured simply, as follows:

- National TOD Policy, the guiding framework
- Creating Value through Station (Re)Development Projects
- Step-by-Step Methodology for Masterplan Preparation
- Planning for Sustainability - Objectives and Approach
- Design Guidelines:
 - 01 Access & Circulation
 - 02 Mix use, zoning & Retail Planning
 - 03 Multi-Modal Integration
 - 04 Public Spaces
 - 05 Parking

Please note, while the Guidebook, sets guidelines, the uniqueness of each Railway Station and Station Area must be studied and understood and solutions based on the specificities of each site must be developed under the larger framework provided by this document.

Components and Supporting Tools for TOD as per the National TOD Policy

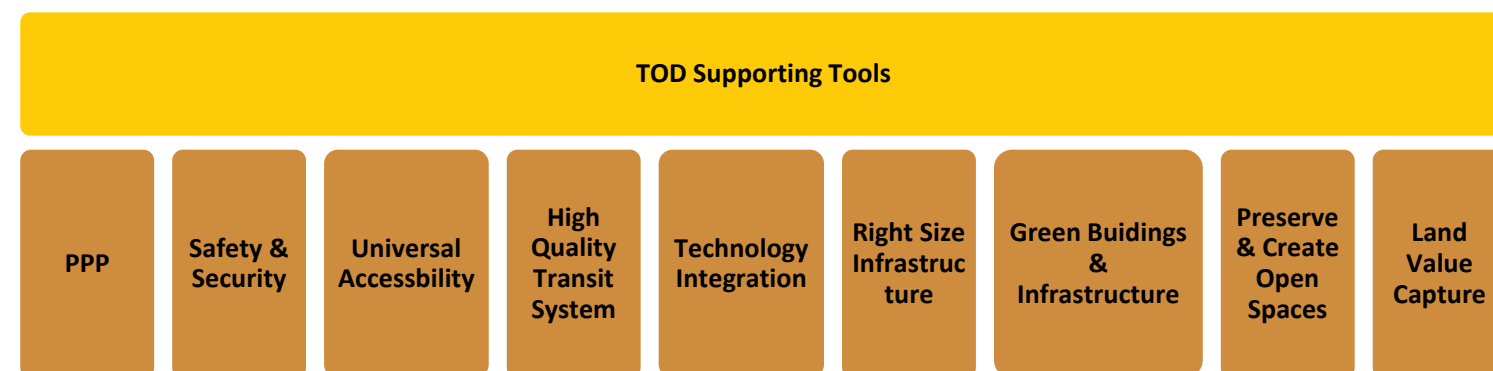


Figure 4: Components and supporting tools for TOD as per the National TOD Policy

The National Transit Oriented Development (TOD) Policy, The Guiding Framework

"TOD integrates land use and transport planning and aims to develop planned sustainable urban growth centers, having walkable and livable communes with high density mixed land-use. Citizens have access to open green and public spaces and at the same time transit facilities are efficiently utilized. TOD focuses on creation of high density mixed land use development in the influence zone of transit stations, i.e. within the walking distance of (500-800 M.) transit station or along the corridor in case the station spacing is about 1km. TOD advocates pedestrian trips to access various facilities such as shopping, entertainment and work. TOD increases the accessibility of the transit stations by creating pedestrian and Non-Motorised Transport (NMT) friendly infrastructure that benefits large number of people, thereby increasing the ridership of the transit facility and improving the economic and financial viability of the system. Since the transit corridor has mixed land-use, where the transit stations are either origin (housing) or destination (work), the corridor experiencing peak hour traffic in both directions would optimize the use of the transit system"

The National TOD policy is a guiding document for the Central Government ministries/ departments/ agencies to ensure that their schemes, policies, etc. encourage TOD in cities, especially those with upcoming mass transit systems.

How does this Guidebook relate to the National TOD Policy?

This Guidebook demonstrates how the principles set out in the National TOD Policy apply to Railway Stations and Railway Station Areas. Imbibing the 12 TOD components as demonstrated to the left, it provides guidance on Masterplanning and Value Creation for a Station (Re)Development Project. Please note, the Guidebook is structured to include five sections, some of which combine 2-3 TOD components each.



Figure 5: Kings Cross Station, London (Source: Arup)

Creating value through Railway Station (Re)development

‘Good urban design has the capacity to change market perceptions and behaviour. It can help to create and establish markets where none exist. Design has been at the heart of recent initiatives such as the city centre redevelopments and housing market renewal schemes. A fundamental understanding of context, urban structure, connections and investment in details and management have helped to make these once more places where people want to be.’

“Well-designed places where people want to live, spend time and work can generate financial value.”

*- Urban Design Compendium II - Delivering Quality Places (UDC2),
A best practice document published by the Homes and Community Agency, Govt. of UK.*

Increased value

The value of well-planned and designed places maybe measured in not just financial terms but also through the enhancement of social and environmental value that will positively impact quality of life and well-being of a community.

According to UDC2, International research has found that developments based on sound design principles can raise values by 10-15%. A 2007 study undertaken by NWDA/RENEW Northwest found that...

not only could good urban design lead to an increase of 15-20% in rental or capital value, but it would also accelerate lettings and sales rates.



Figure 6: Kings Cross Station, London (Source: KingscrossUK.com)

Value can be enhanced through multiple interdependent strategies across scales, including:

1. Direct linkages and access to key existing destinations / hubs / zones of economic activity in the city, outside the Station Area to capitalise on existing and potential synergies.
2. In doing so, creating a framework for transforming the Railway Station into a new City Centre and a catalyst for regenerating existing neighborhoods.
3. Increased access to this new City Centre supported by enhanced connectivity within the Station Area through a fine street network.
4. Thereby creation of a larger number of smaller saleable parcels with increased access and visibility, enabling a flexible and effective disposal strategy.
5. Ensuring flexibility of landuses within the Station Area to enable it to respond to changing socio-economic demands of a growing city, creating a more robust development context and in turn adding value.
6. Creating a vibrant mix of uses distributed across site such that synergies between distinct use classes is maximized, enabling enhanced vitality, safety and easy access to amenities that has a direct impact on value of the area and individual properties.
7. Locating different uses within the station building such that the benefit of large passenger footfalls is maximized for heightened retail sales.
8. Ensuring convenient and seamless integration between modes at the Station and rest of the Station Area, encouraging the use of public transport for both long and short distance trips and enabling last mile connectivity.
9. Ensuring different segments of society and the needs of all irrespective of gender, age, or socioeconomic background are addressed, providing a healthy mix that makes communities sustainable in the long run and also generates more value due to inherent inter-dependencies.
10. Creating a built form with street oriented buildings with active frontages that not only provide a sense of place, safety and liveliness but also enhance value of retail / commercial uses due to increased access and visibility. They also encourage walking and cycling, thereby resulting in greater footfalls and patronage than when buildings are tucked away behind boundary walls and setbacks.
11. Creating high quality public realm, encouraging people of all ages to choose slower low carbon modes and actively use public space, thereby ensuring greater vitality in the district. This also results in greater footfalls and the tendency to linger, giving greater impetus to local shops and small businesses
12. Using Parking as a demand management tool with effective pricing and enforcement that addresses the needs of all users – resident, shop-owner, customer, visitor, employee – can help alleviate value of each individual use category.

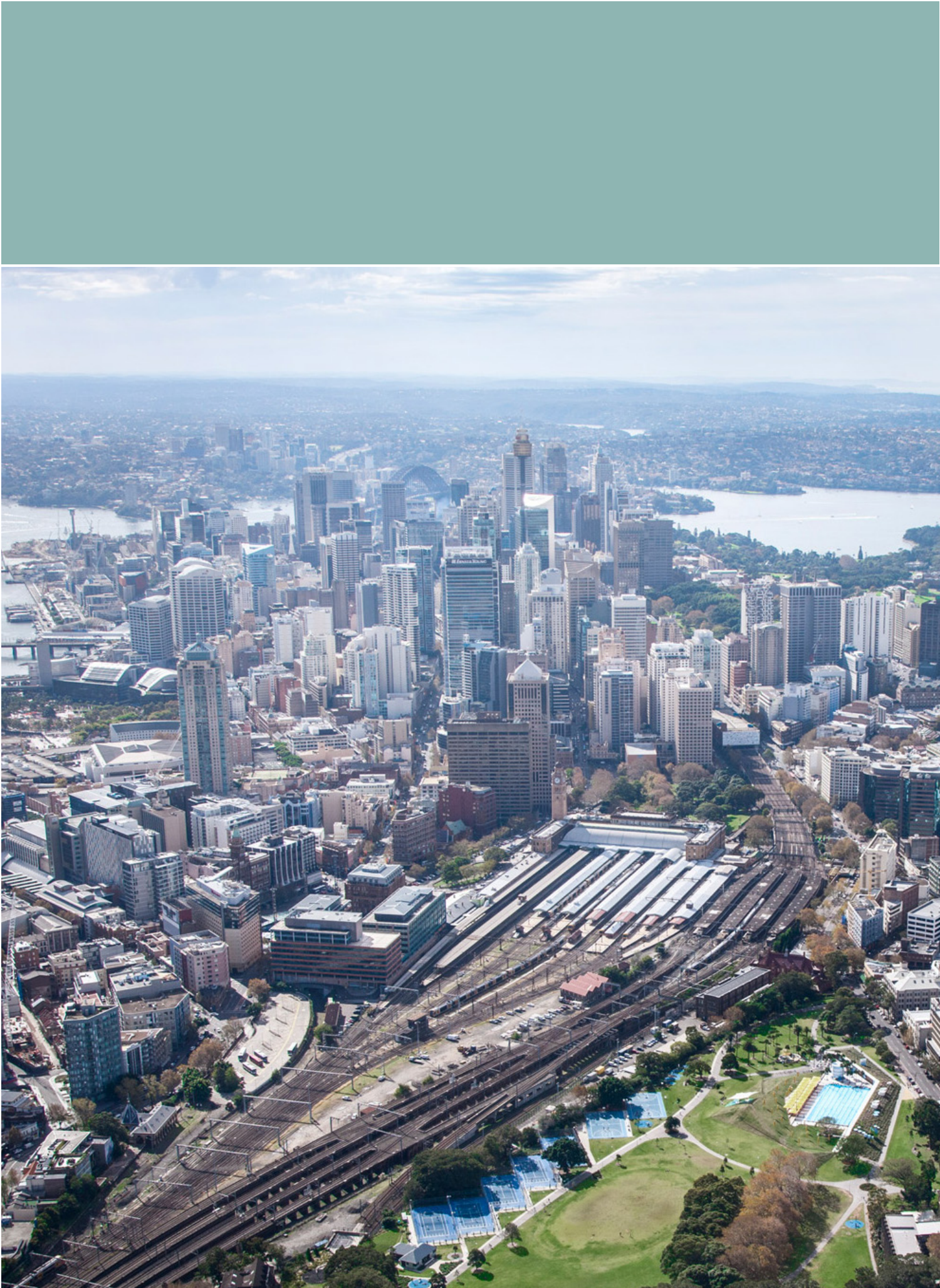


Figure 7: Sydney Central Station

Step-by-Step Methodology for Masterplan Preparation



Figure 8: Proposal to position a stadium on top of the Sydney Central Station, with adjoining development

PRE-DESIGN SURVEYS AND ASSESSMENTS

PRE-DESIGN SURVEYS AND HOLDING CAPACITY ANALYSIS OF THE RAILWAY STATIONS

Before taking up station for design and development following stages/surveys are involved to arrive at indigenous design for the city and assess the holding capacity for future development. Accordingly, gaps, additional requirements over the projected period for station and city is worked out.

1. Review of previous reports/available plans/ drawings/data and verify the available drawings details at the site;
2. Traffic study,TIA and development of integrated traffic plans for max. 5 kms radius;
3. Studies, Surveys and Investigations;
 - a. Engineering Survey
 - b. Geotechnical Survey;
 - c. Ascertaining condition, ownership and usage of structures;
 - d. Existing utilities mapping, assess and plan permanent and temporary diversion utilities;
 - e. Land due diligence and Preparation of Land acquisition Plan, if any, and opportunities for joint development and for TDR etc. if possible and desirable;
 - f. Building condition survey; and
 - g. Study of identification of sensitive structures;
4. Applicable Development control norms;
5. Assessment of additional requirement of utility infrastructure such as power, water, solid waste management, sewage treatment etc as well as their availability for the Project;
6. Relocation plan of buildings and structures;
7. Development of Concept Plans and Master Plan of the project: The Consultant shall follow the applicable laws, by-laws and Master Plan of the city with a view to enabling an 'in principle' approval of municipal authorities.
8. Construction methodology, sequencing, scheduling and time frame;
9. Social impact assessment including Resettlement and Rehabilitation Plan (R&R), if any;
10. Environment Impact Assessment and to actively work with Authority and obtain environment clearance of entire Project;
11. Preliminary designs and review / update of design criteria/outline specifications for the Mandatory Works and Architectural Controls for the Project including areas identified for commercial and/or other development identified in the Master Plan

In addition to above a special response to Heritage assets are to be drawn up, as many stations are more than 100 years old. So, strategy has to be drawn up well in advance for Heritage, Environment and local requirements of the station and city.

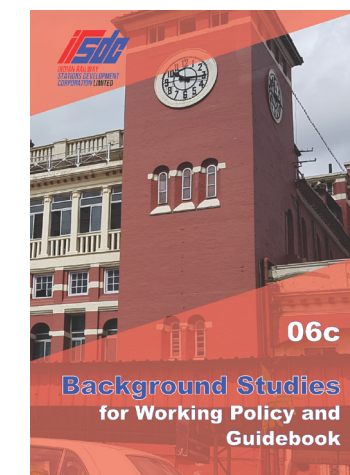
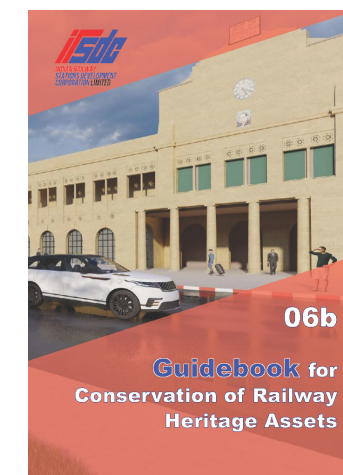
CATEGORIES OF RAILWAY HERITAGE ASSETS

CATEGORY	DESCRIPTION	APPLICABLE MANUAL/ GUIDEBOOKS/ CODES
I	Inscribed on UNESCO`s World Heritage List and the Tentative List or is located in the Property Boundary or the Buffer Zone of a World Heritage Property inscribed on the World Heritage List and the Tentative List	Latest version of the Operational Guidelines of the World Heritage Convention'72 (WHC'72) Nomination Dossier, its Management Plan, State of Conservation Reports, Periodic Reporting and any other, and Tentative List document submitted to the World Heritage Centre, Paris
II	Listed by any other Agency as Central or State Heritage	As per approval of National/ State Level Heritage Conservation Committee. Additional items as per Working Policy for Railway Heritage Assets
III	Listed by Indian Railways	As per approval of Competent Authority based on Working Policy for Railway Heritage Assets
IV	Object of Significance (Unlisted Heritage)	As per approval of Competent Authority based on Working Policy for Railway Heritage Assets

FOR STATIONS WITH HERITAGE ASSETS FOLLOWING ASSESSMENTS ARE TO BE CONDUCTED AND THEIR FINDINGS ARE TO BE INTEGRATED WITH THE STEP-BY-STEP METHODOLOGY EXPLAINED IN THIS SECTION.

STAGE	DOCUMENTS TO B E PREPARED/ ADHERED TO	INTEGRATION WITH STEP-BY-STEP METHODOLOGY
Surveys	Heritage Assessment Report a) HA Form to be filed b) Heritage Building Condition Report (HBCR)	Documentation at this stage to be integrated with Steps 01, 02, 03 and 04 of 'Step-by-Step Methodology'
DPR	Heritage Conservation & Reuse Plan (HCRP) a) Restoration and Reuse plan b) Management Plan	Proposals and recommendations at this stage to be integrated with Steps 05, 08, 09, 11, 12 and 13 of 'Step-by-Step Methodology'

FOR DETAILS REGARDING DESIRED RESPONSE TO RAILWAY HERITAGE ASSETS, REFER:



STEP 01 IDENTIFY STATION AREA

Setting the physical boundaries of the project

Note: Station Area is defined as the Railway Station, and all other adjoining Railway Lands including operational, non-operational, staff quarters and other uses. Generally, entire Railway Land/Plot between one Home Signal to the next Home Signal.

STEP 02: PREPARE THE CONTEXT PLAN/ INFLUENCE AREA

Highlighting major connections in synergy with surrounding areas and land uses

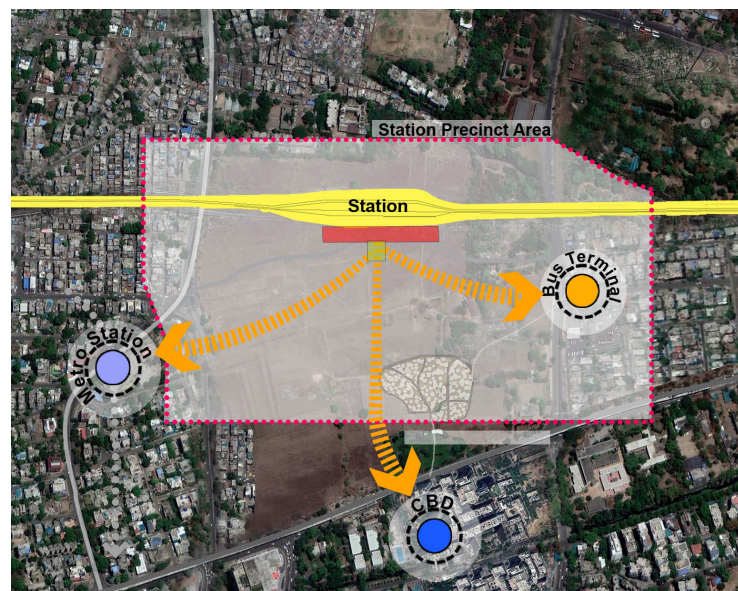


Figure 9: Sample Context Plan

STEP 03 : CONNECT / RESPOND TO CITY MAGNETS

Creating the movement framework

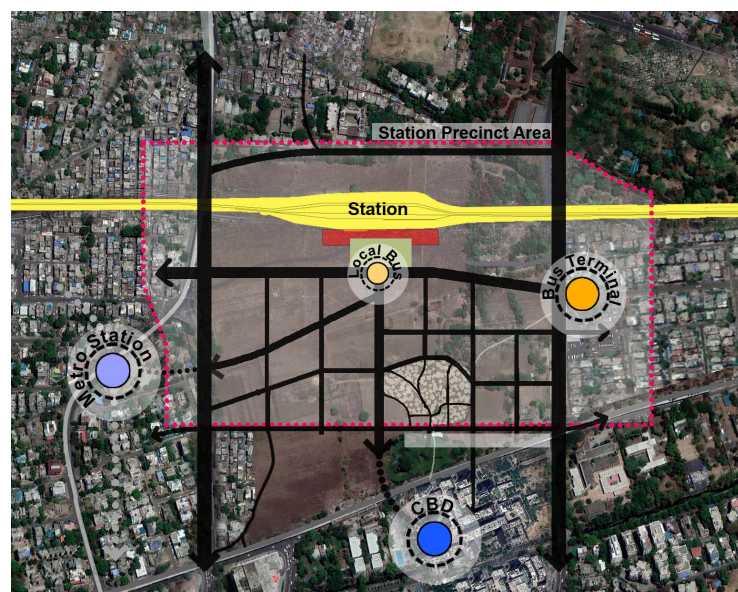


Figure 10: Sample Movement Framework

1. Within the Influence Area defined as per MSSR, 2009, identify important urban activity centres, nodes, transit hubs, etc.
2. However, each Railway Station and city is unique in character and function, therefore context plan / influence area may vary from city to city based on due diligence and primary surveys, after examining current development plan / master plan / other relevant planning documents to identify:
 - a. Plan provisions for any new roads, Public transport corridors, development projects, etc.
 - b. Norms applicable to relevant Station precinct - synergies and challenges
 - c. Existing and suggested circulation/ access to station
3. Identify improvements that the city needs to do to improve access to the railway station from both sides of the tracks.

REF: 1.1

1. Identify important connections with citywide road network and public transport nodes, urban centres, public spaces, recreational centres, ecological assets, etc .
2. Provide linkages to enable seamless interchange with public transport nodes serving the railway station.
3. Identify major locations where vehicular cross connectivity over the track may be needed to reconnect both sides of the Station for both city-level benefit and station-level advantage;
4. Provide shortest movement paths for pedestrians to access important nodes within and around the railway station precinct.

REF: 1.1 - 1.3

STEP 04: PREPARE THE BASEMAP

Documenting all site related data including utilities, opportunities and constraints

Generally, Railways have Land Plans and Yard Plans which might require updating. Following base maps are suggested:

1. Context Area Plan / Influence Area Plan including railway station and surrounding area upto 5 km preferably in 1:10,000 scale.
2. Layout Plan and existing Utility Plan of the project area preferably in 1:1,000 to 1:2,500 scale depending on the level of details required.

STEP 05: PREPARE THE PROPOSED CIRCULATION PLAN BASED ON CONTEXT

Planning the Street Network

After the Basic circulation map prepared in step 5, overlay a fine network of vehicular and pedestrian streets that provide multiple options for movement of people, while providing the shortest/ most direct pedestrian access between important nodes.

Identify multiple entry/exit and dispersal points to and from the station site - so as to not create congestion at a few junctions serving the station.

Identify locations where grade-separated infrastructure would be inevitable, in order to improve: (1) access to the station, (2) access to nearest public transportation nodes, and (3) access to developable parcels within the railway land. (However as a general rule, grade separated infrastructure should be avoided as they increase project cost and decrease land value in the immediate vicinity).

REF: 1.3 -1.4

STEP06: PLAN FOR ACTIVE RETAIL FRONTAGES

Planning for retail distribution

Based on the hierarchy of Movement in the circulation plan, identify the preferable locations for all 3 types of retail frontages.

REF: 1.5, 2.2

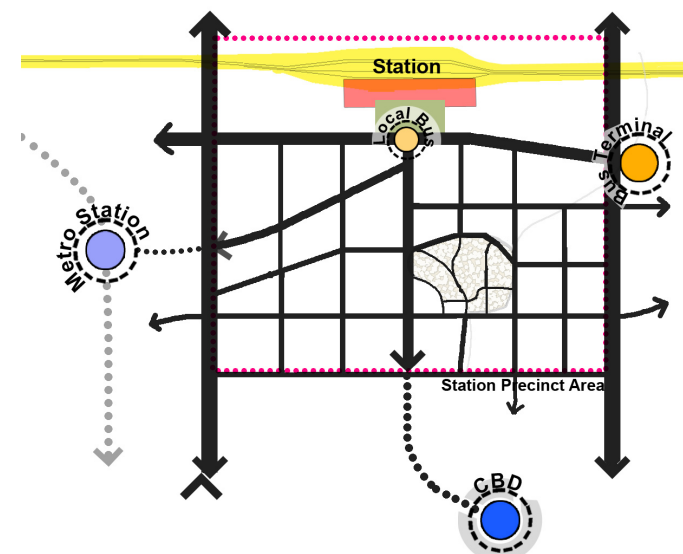


Figure 11: Sample Contextual Circulation Plan

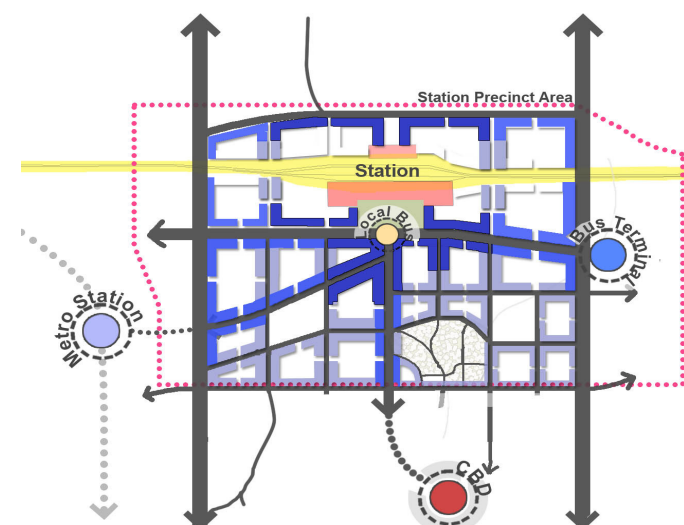


Figure 12: Sample Plan for Active Retail Frontage

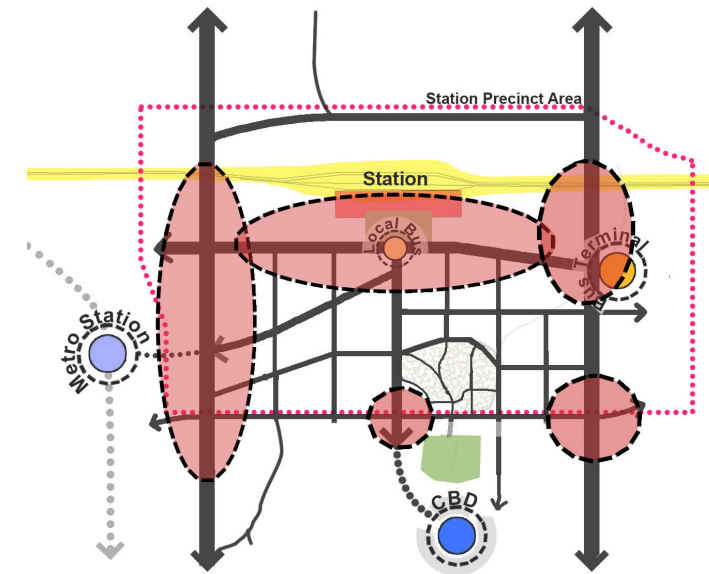
STEP 07: PREPARE A VALUE CREATION MAP*Creating the framework for use distribution*

Figure 13: Sample Value Creation Map

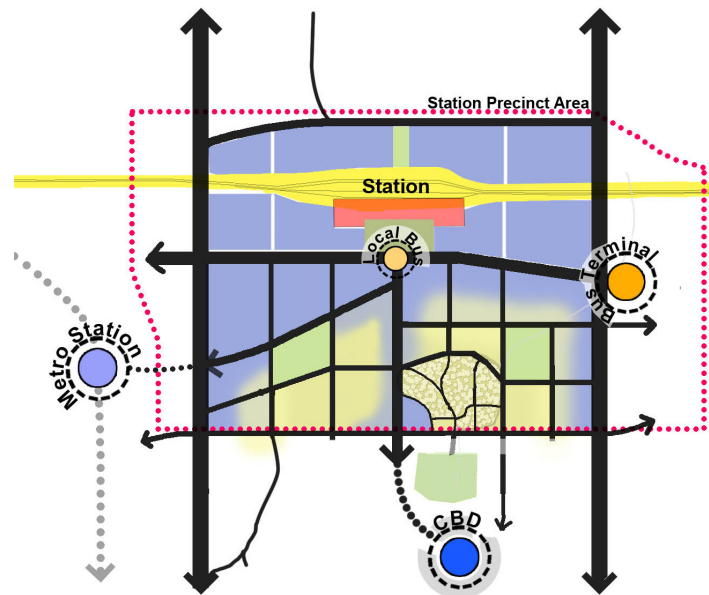
STEP 08: PREPARE USE DISTRIBUTION STRATEGIES*Planning for mixed-use horizontally & vertically*

Figure 14: Sample Use Distribution Strategies Map

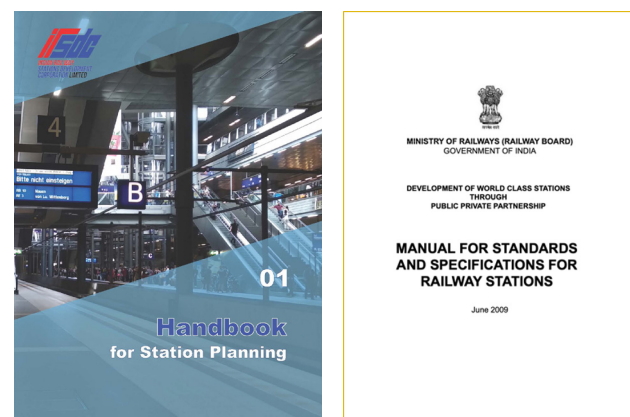
STEP 09: PREPARE STATION DESIGN - CONCEPT, SIZING, LOCATION

Figure 15: 01 Handbook for Station Planning and MSSR

1. Based on the Circulation plan and hierarchy of Roads, level of access and Visibility, prepare a graded map of valuable zones within the station precinct.
2. Based on this, identify the best locations for different types of uses: most accessible and visible plots may be most suitable for Commercial, while slightly private plots with indirect access may be suitable for residential. In case of high demand, buildings above the station may be considered. (The actual programming shall be based in the Real Estate potential and Projection for the site, but these guidelines may help in maximizing the value of various use types.)

REF: 2.1

1. Based on the above principles as well as the real estate forecast for the site, prepare a use distribution map for the site - both horizontal and vertical. (At this stage, it is a must to demonstrate the circulation and use-distribution within the Station precinct using 3-dimensional models)

REF: 2.1

1. Prepare Station Design as per 01:Handbook for Station Planning and MSSR, 2009.
2. As per the Passenger forecast, LOS targets and Performance standards for the Station building, prepare a conceptual sketch of the detailed Station building showing the Concourse(s); Entry/ exit sizing and segregation; Retail integration with circulation; Construction and O&M cost optimization; integration of the historic building (if relevant); and '24x7 Station' Placemaking strategies.
3. Prepare multiple options for Arrival Departure segregation for discussion.

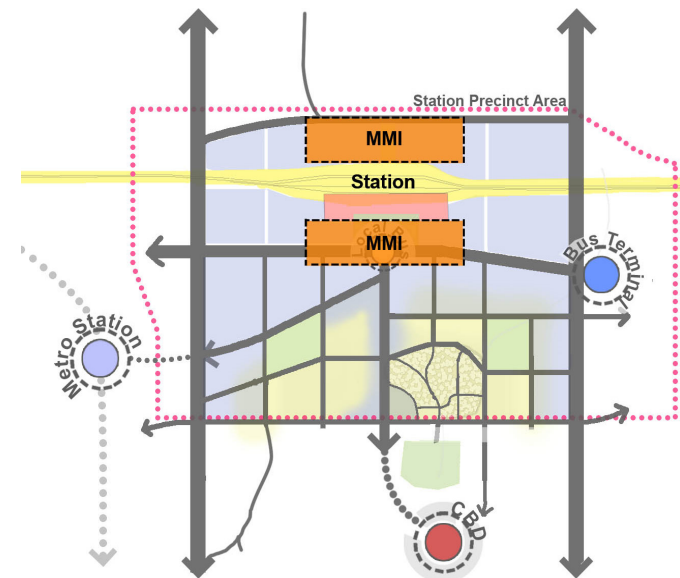


Figure 16: Sample MMI Map

STEP 10: PREPARE MULTIMODAL INTEGRATION STRATEGIES (HORIZONTAL AND VERTICAL INTEGRATION)*Planning For Seamless Integration, first and last mile connectivity*

1. Prepare various options for Multimodal integration, and drop-off/wait/pick-up facilities for various modes within the Station precinct.
2. The priority of access should be given to high-occupancy and/or public transport and shared transport modes.
3. Parking should preferably be concealed and placed behind or within buildings having active retail frontages.

REF: 3.1, 5.1

STEP 11: PREPARE PUBLIC OPEN SPACE CONCEPT*Planning for streets, green open space, public plazas, parks, active recreation spaces, working landscapes, 24/7 spaces*

1. A station is a place with the highest Footfall and therefore Large public spaces within and outside the station building should be provided integrated seamlessly with retail frontages. Resting and waiting areas are the ideal locations for large format retail and F&B; while movement areas are better for shop-on-the-go/ take away format retail.
2. Based on this, the Station Concourse and the Entrance plaza of the station are the ideal location for retail-oriented Placemaking.
3. Such spaces should be designed to provide comfort to all age groups and people with differential abilities. It must be ensured that women and children travelling late at night feel safe and enjoyable in these spaces.
4. Similarly the streets/ parkways leading to the Residential development with the precinct must be safe and active around the clock.
5. For Residential areas, adequate amount of public parks and active/passive recreational facilities must be provided.

REF: 4.1

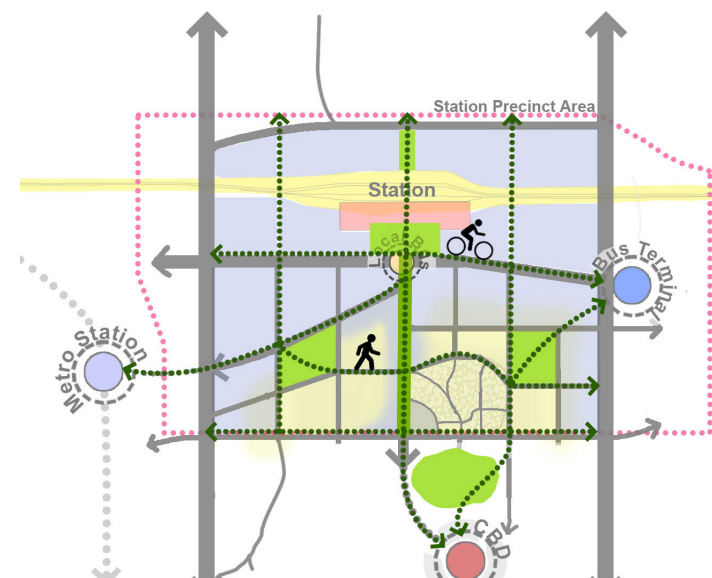


Figure 17: Sample Landscape Plan

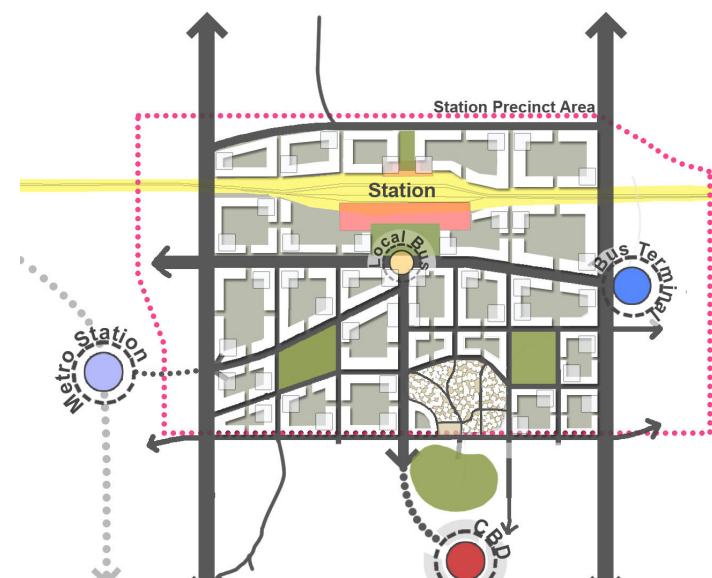


Figure 18: Sample Landscape Plan indicating public space within developments

STEP-BY-STEP METHODOLOGY

STEP 12: PREPARE OVERALL MASTERPLAN

1. Masterplan with full build-out and phasing plan
2. Phasing based on value capture and value maximization
3. Detailed station plan
4. Phase-1 detailed plan
5. Comprehensive landscape and infrastructure plan
6. Stormwater management masterplan:
7. Rainwater harvesting
8. Working landscape details
9. Water and Wastewater management plan
10. Solid waste management plan
11. Energy Strategy:
 - Passive design components for demand reduction estimation (mandatory to reduce O&M costs)
 - Energy supply strategies

STEP 13: URBAN DESIGN AND PLANNING VISION

Prepare an Urban Design and Planning Vision which reflects all approved components of the Layout Plan and shows all the applicable parameters of the Property Development Card in a single 3-dimensional massing view.



Refer 03a: Manual of Form Based Codes for Station (Re)development and 03b: Guidebook for Form Based Codes

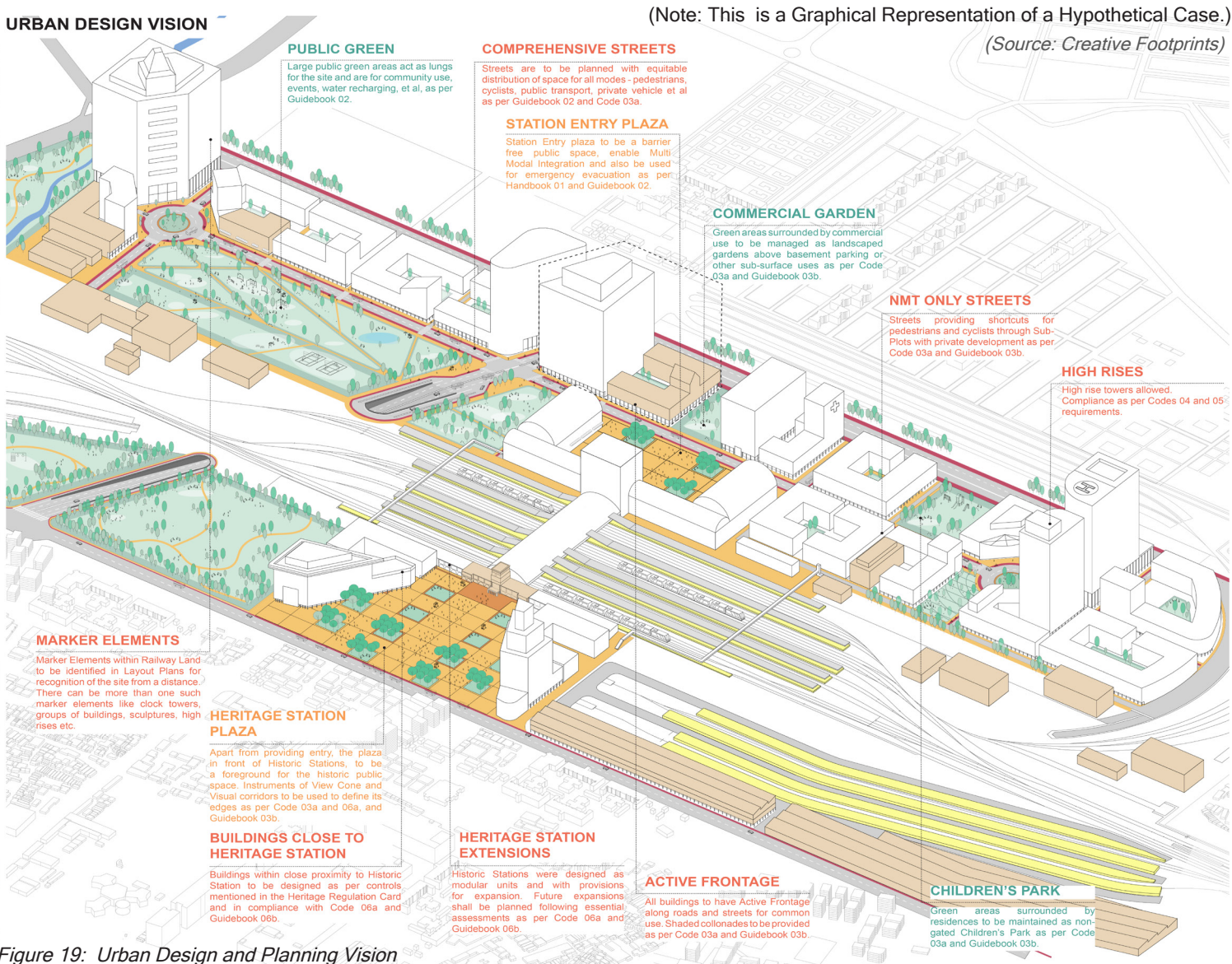
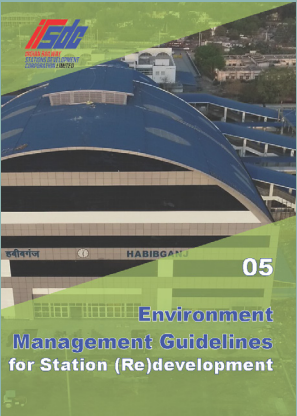


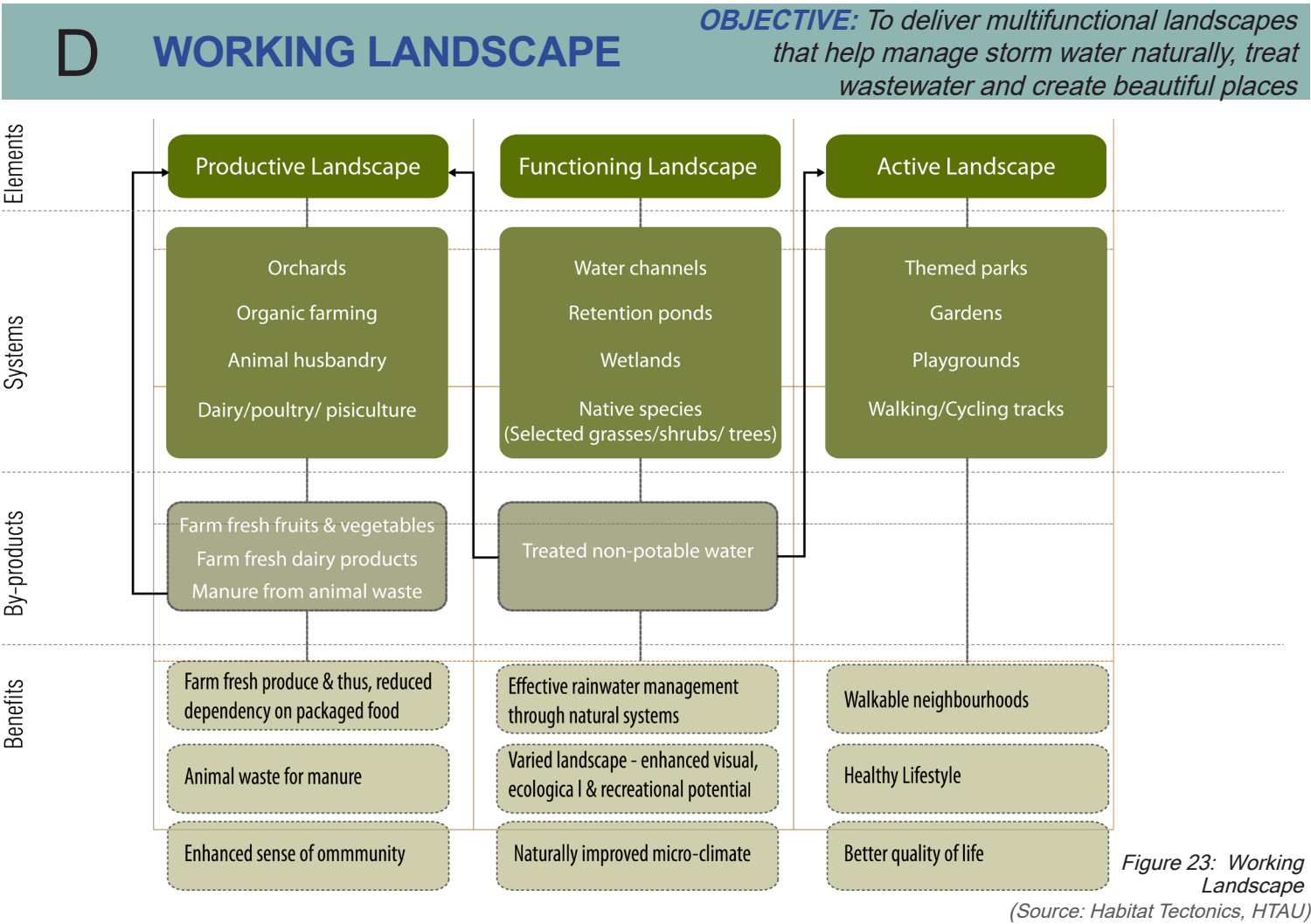
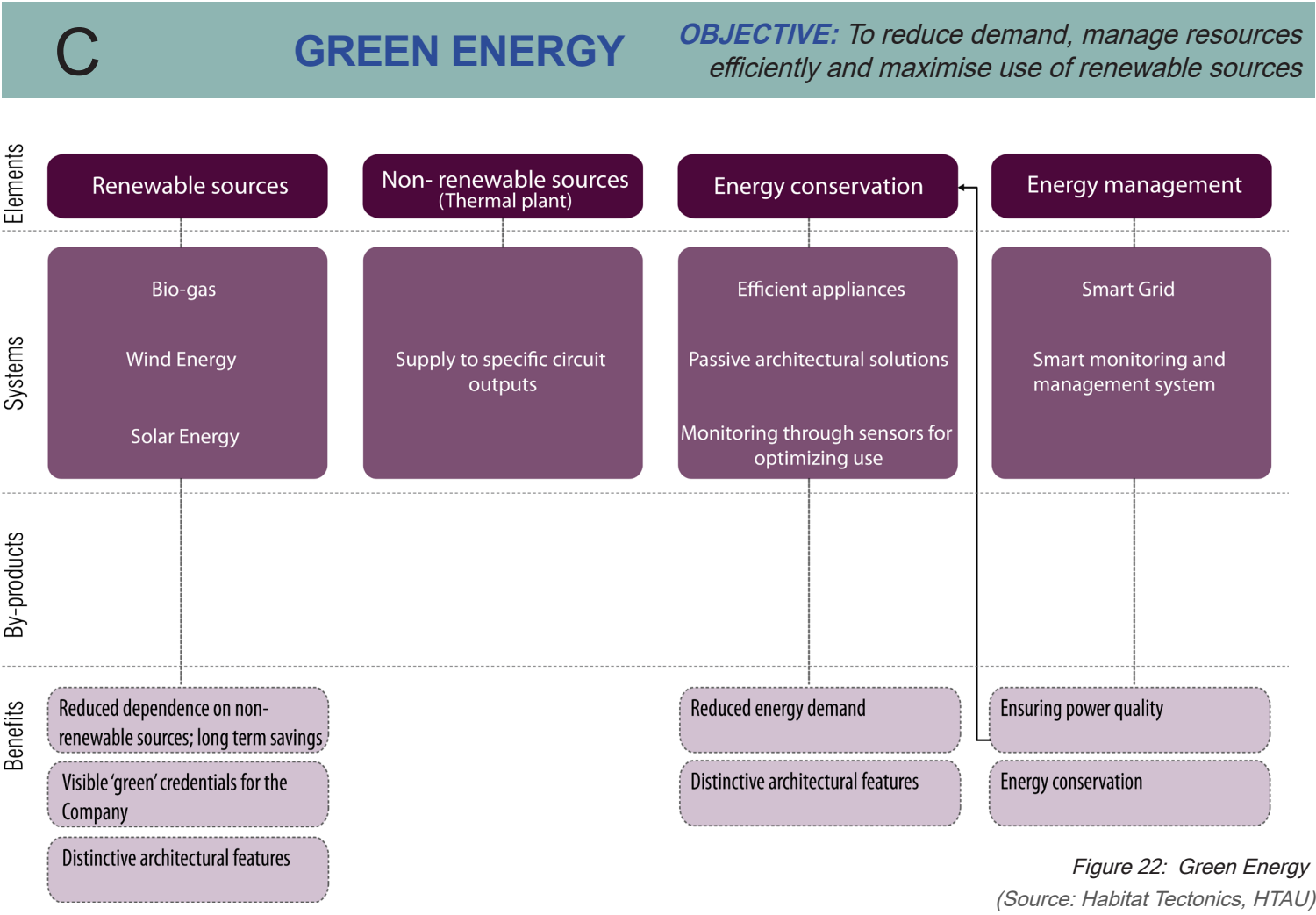
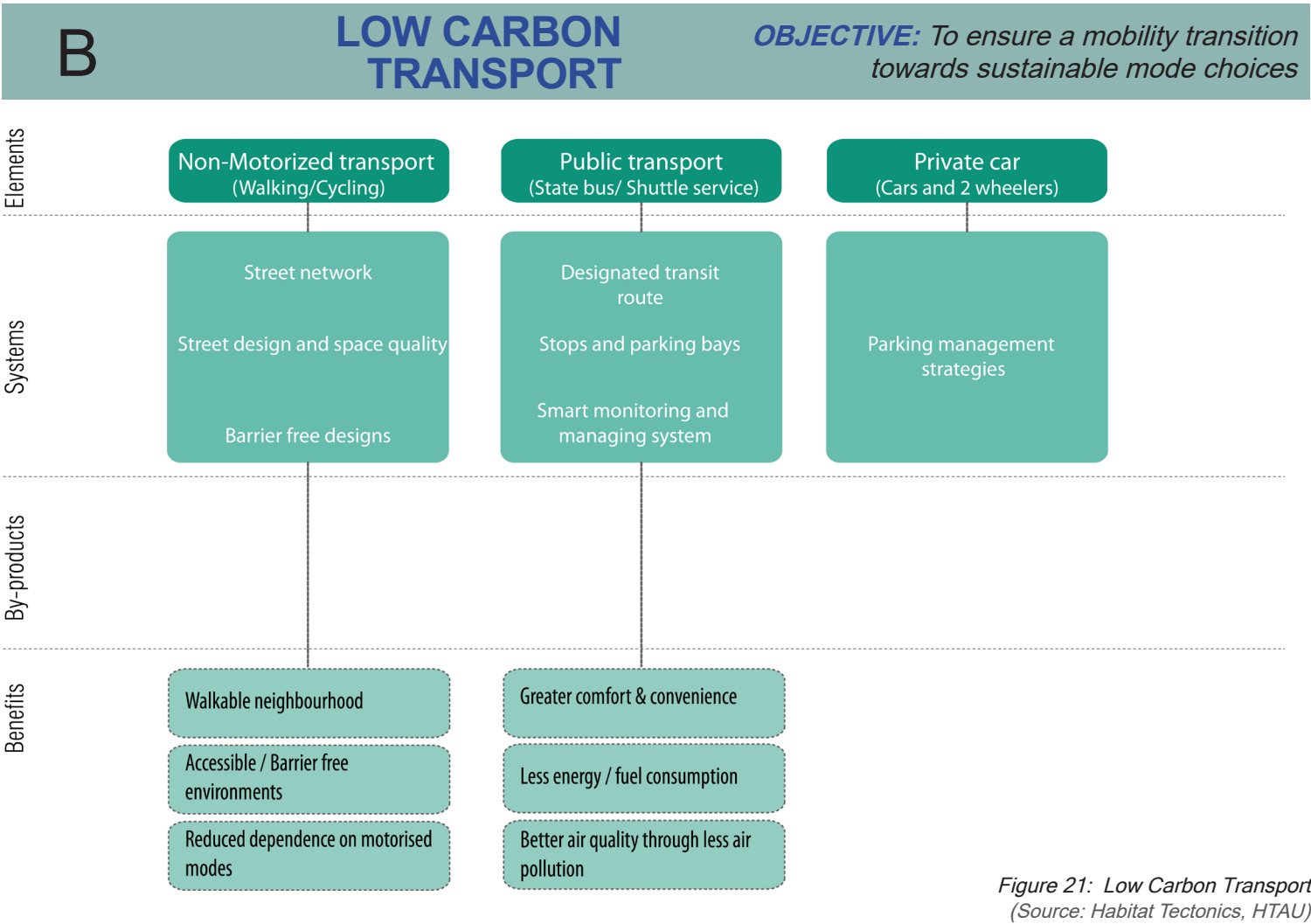
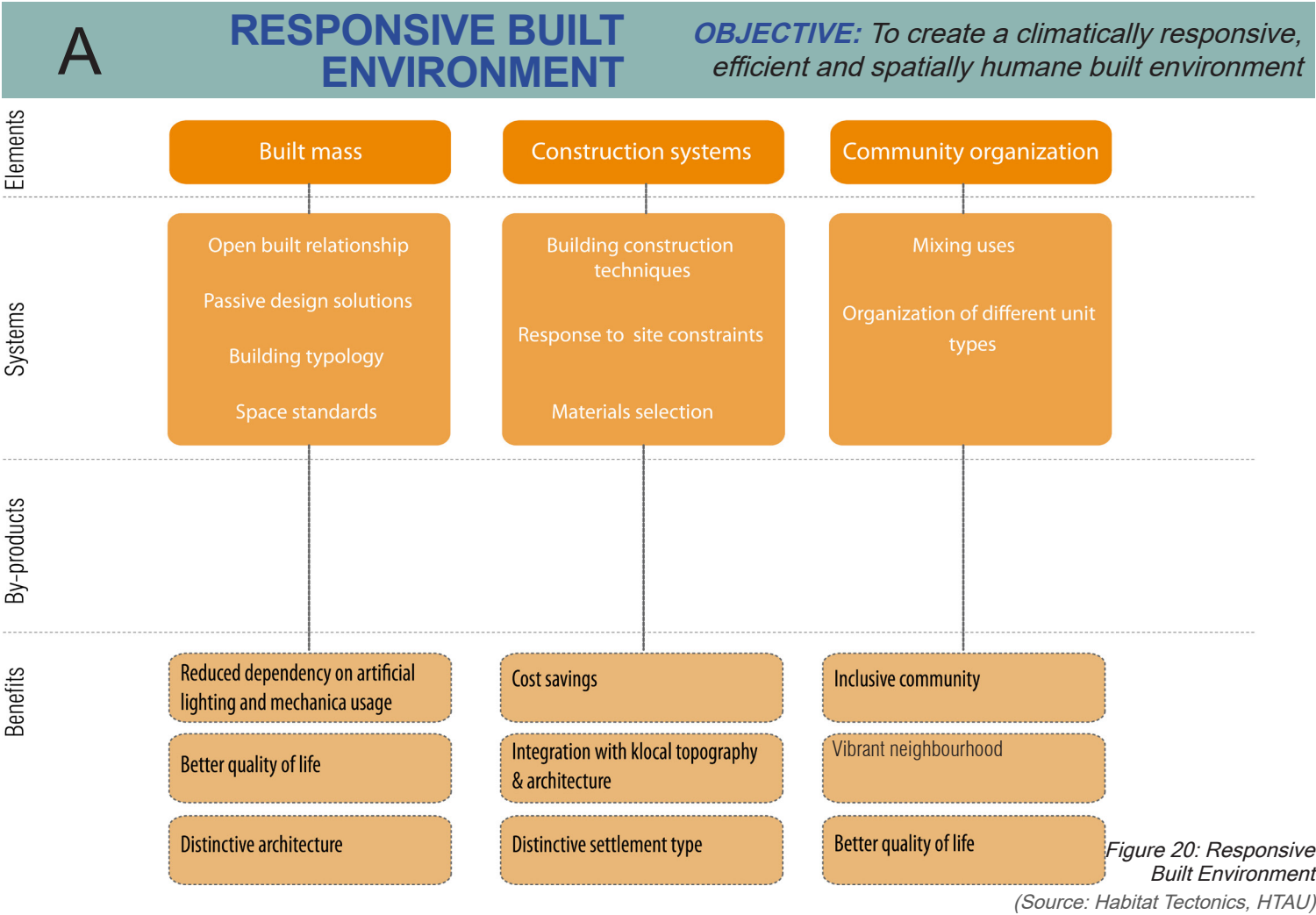
Figure 19: Urban Design and Planning Vision

Planning for Sustainability Objectives and Approach



Refer 05: Environment Management Guidelines for Railway Station (Re) development regarding detailed guidelines to be complied with during station redevelopment planning as provided by MoEF&CC, NGT and other Statutory bodies.

As directed by MoEF&CC, these guidelines are mandatory for Railway Station (Re)development planning, implementation and operations.



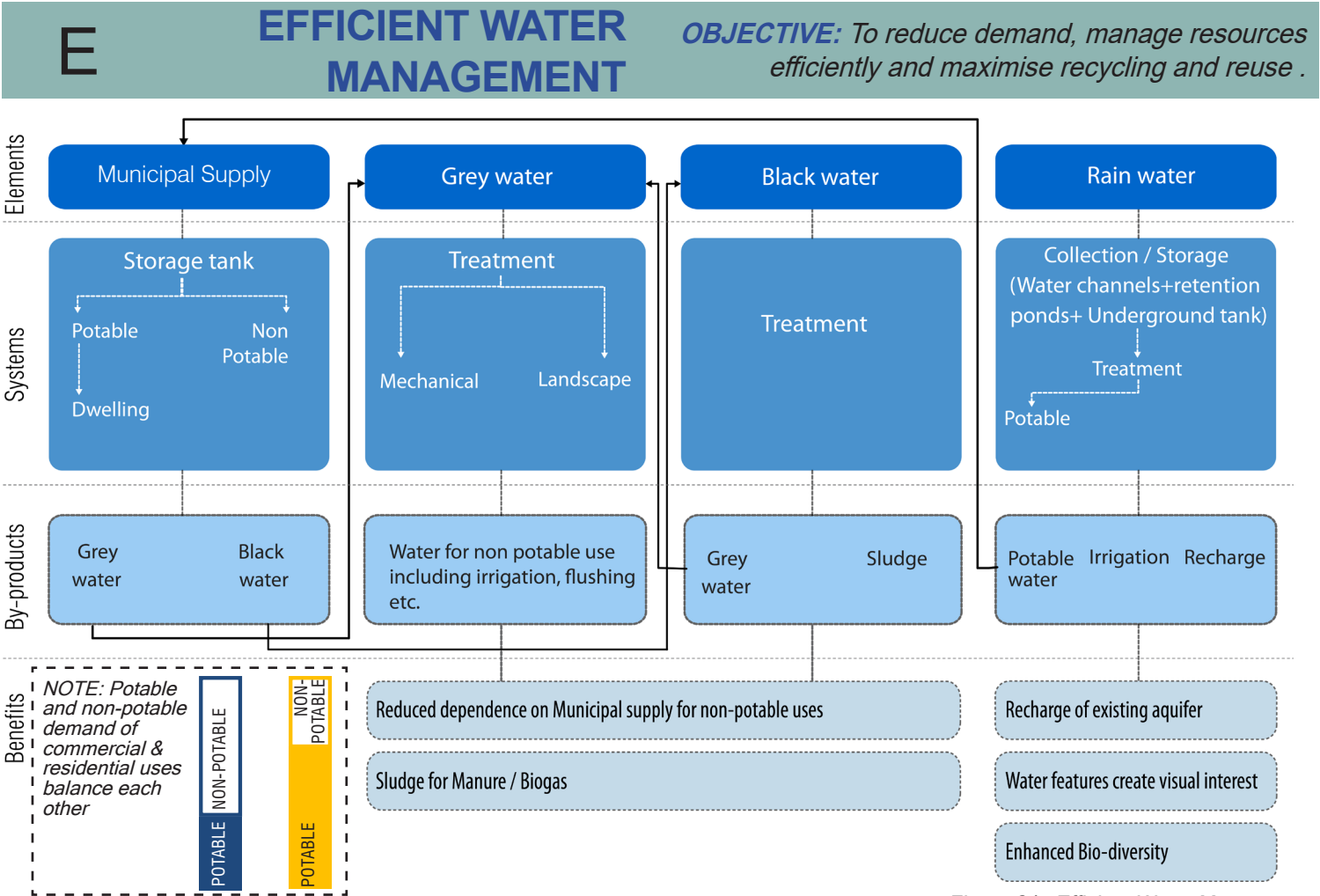


Figure 24: Efficient Water Management
(Source: Habitat Tectonics, HTAU)

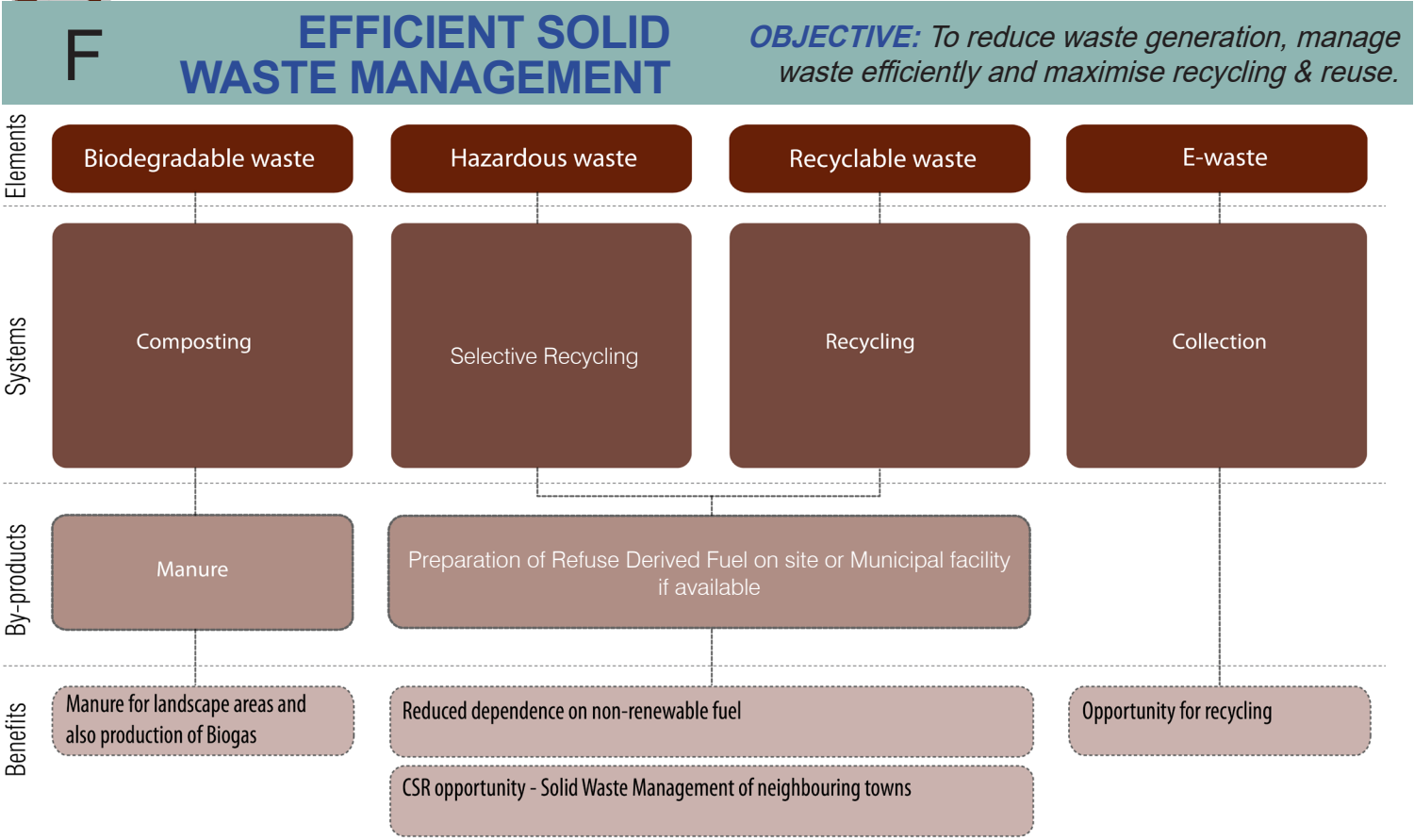


Figure 25: Efficient Solid Waste Management
(Source: Habitat Tectonics, HTAU)

Design Guidelines: To Aid Value Creation



Figure 26: Paleisbrug, Holland (Source: Archdaily)

01

ACCESS AND CIRCULATION

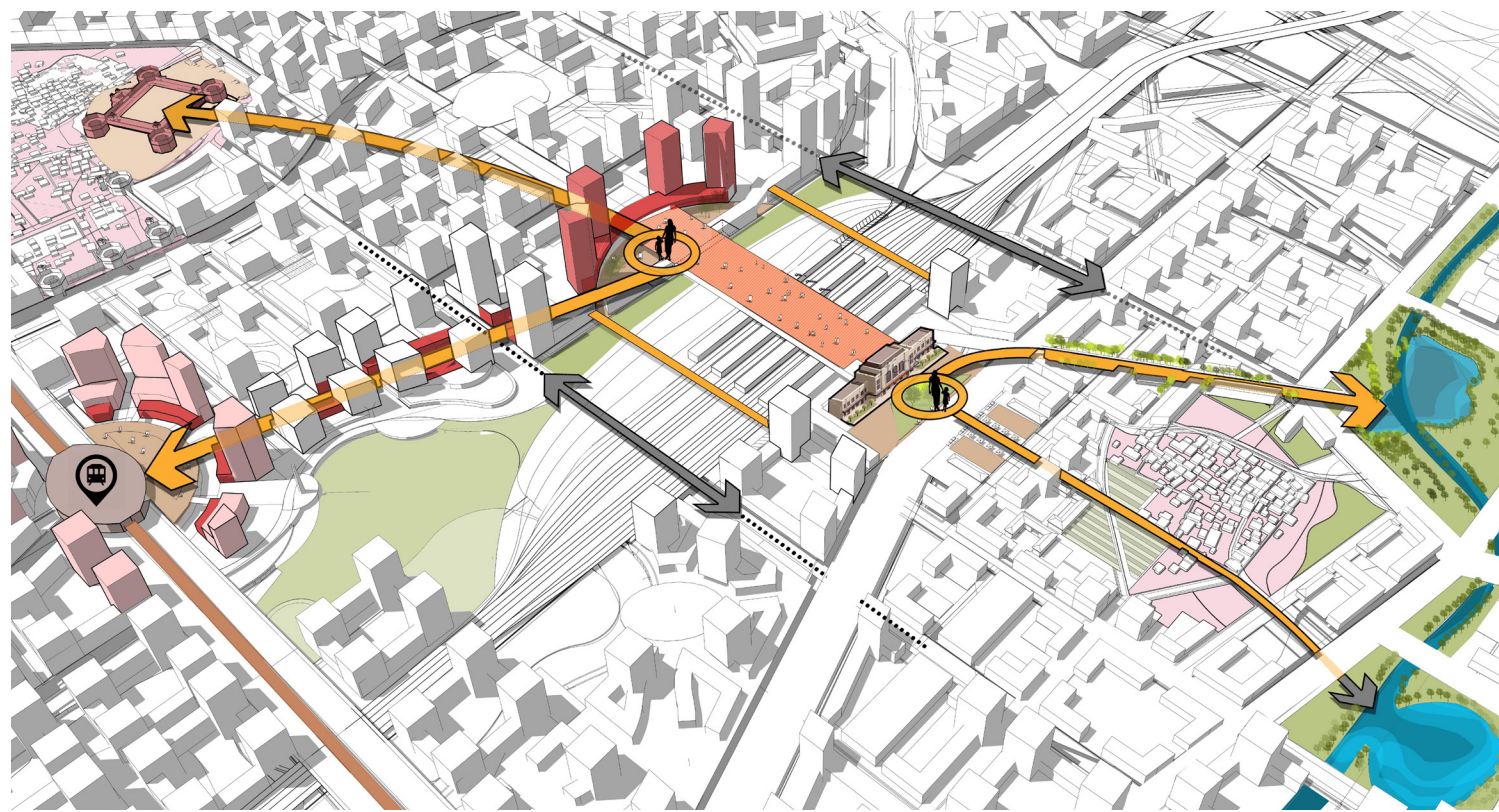


Figure 27: Railway Station Area enabling strategic city-wide linkages



Figure 28: Existing Indian urban setting with strategic linkages as recommended

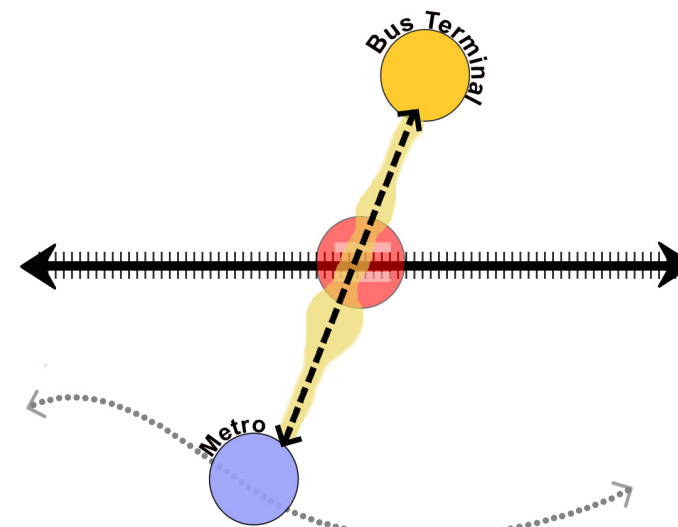


Figure 29: Shortest routes to other transit infrastructure

1.1 STRATEGIC CITY-WIDE LINKAGES

OBJECTIVES

To ensure the Railway Station creates new and reinforces existing linkages to centres of economic, social and recreational activity (both existing and planned), in the City, maximizing ease of access to and from and synergies between these.

Guidelines

1. Identify possible direct routes to other transit infrastructure such as Metro Stations, BRT, and Bus Terminals.
2. Identify desire lines to other city level destinations / centres of activity such as the Central Business District, Heritage Precincts, Natural assets.
3. Identify possible direct routes to local neighborhoods and districts
4. On priority, create street network enabling 1-3 above to achieve:
 - Shortest routes from the Railway Station to other transit infrastructure including Metro Stations, BRT and Bus Terminals
 - Direct routes to local neighborhoods / districts
 - Streets along desire lines to city level destinations / centres of activity connecting to the closest city road / street.

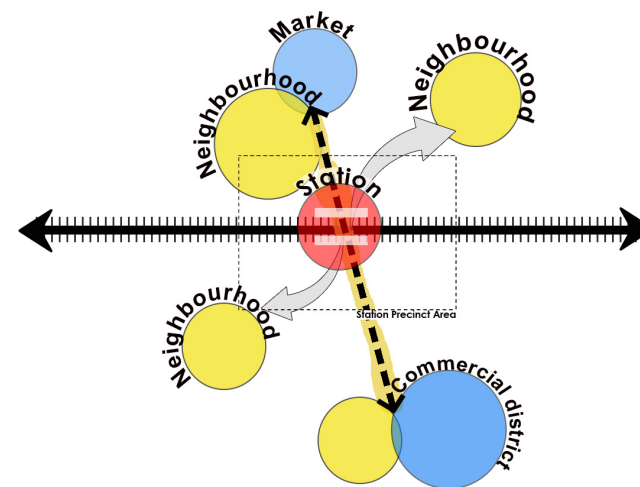


Figure 30 Direct routes to local neighborhoods / districts

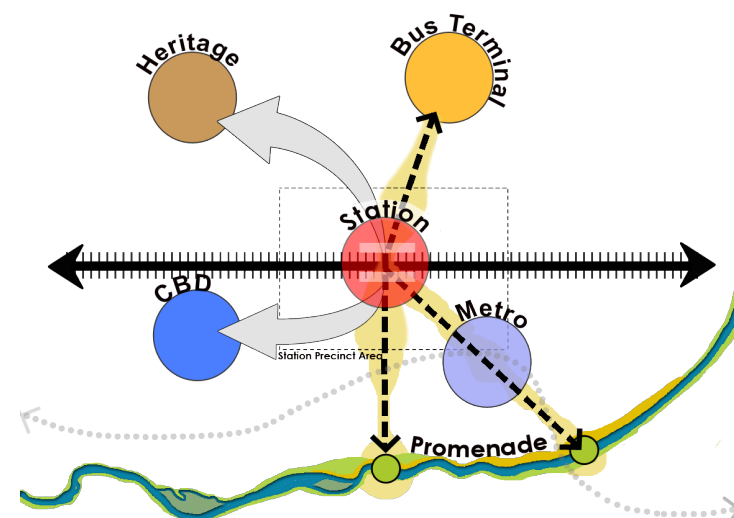


Figure 31: Streets along desire lines to city level destinations

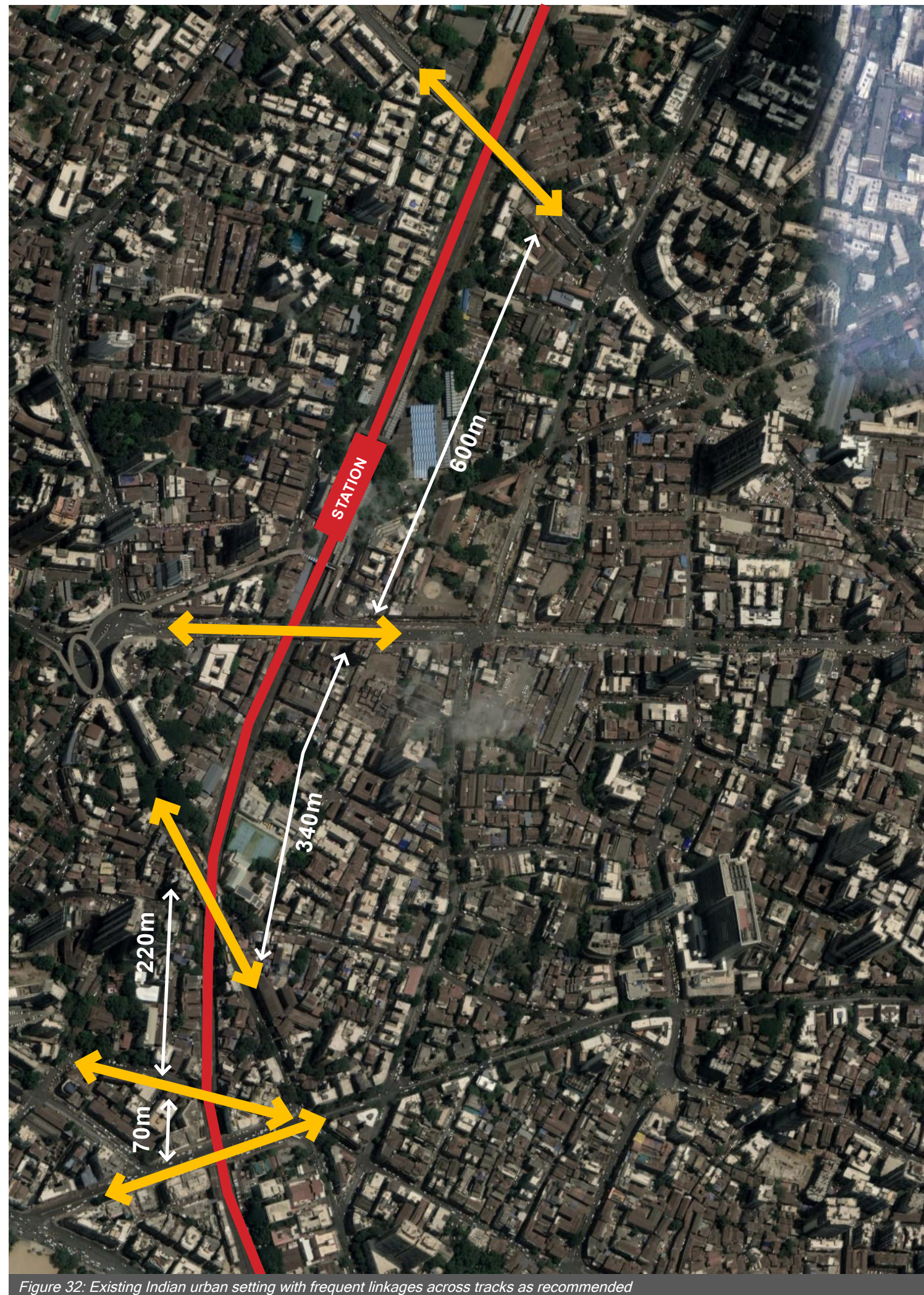


Figure 32: Existing Indian urban setting with frequent linkages across tracks as recommended

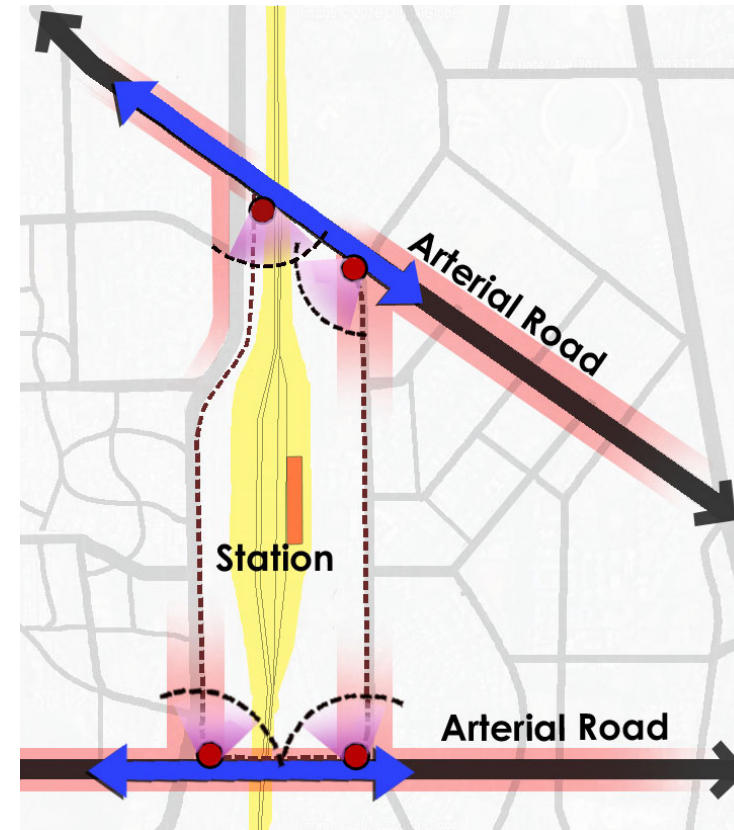


Figure 33: Value Mapping with existing Road Network

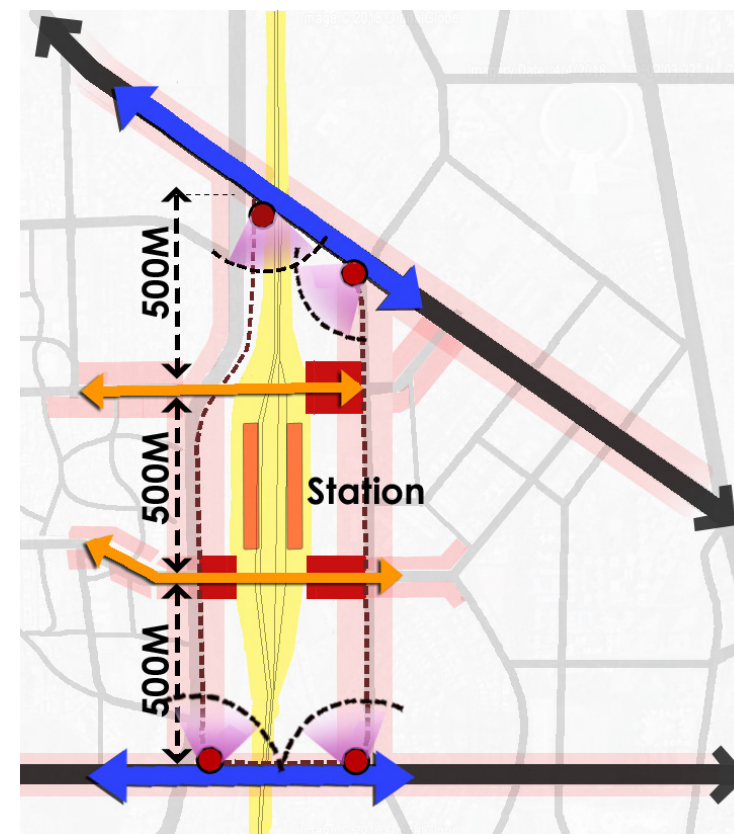


Figure 34: Value Mapping with new linkages at 500m

1.2

STRATEGIC VEHICULAR LINKAGES OVER THE TRACKS

OBJECTIVES

To ensure rail-based infrastructure no longer creates a barrier in the city.

To deliver new linkages across the tracks to enable the above.

To ensure these new linkages connect to existing city roads, extending these and allowing for greater permeability through safe and accessible crossings.

To ensure these new linkages maximise development value for developable parcels within the Station Area by enhanced access, visibility and safety.

Guidelines

1. Create a vehicular connection at approximately every 500 M. through the Railwayland to developments/communities on either side of the tracks through RUB/ROB, etc
2. Connect these new linkages to the existing road network, keeping in mind existing and future network capacity, and road right-of-way on both sides.
3. Integrate new linkages with the overall City Mobility Plan

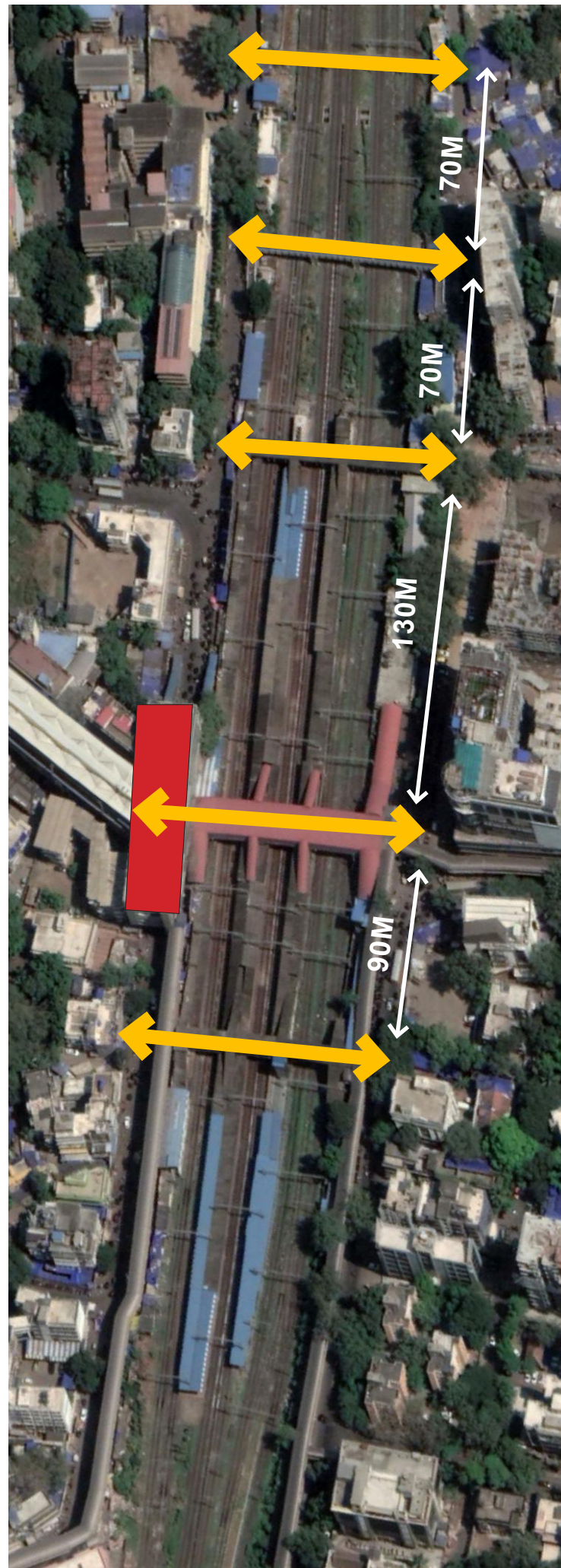


Figure 35: Existing Indian urban setting with desired frequency of connections

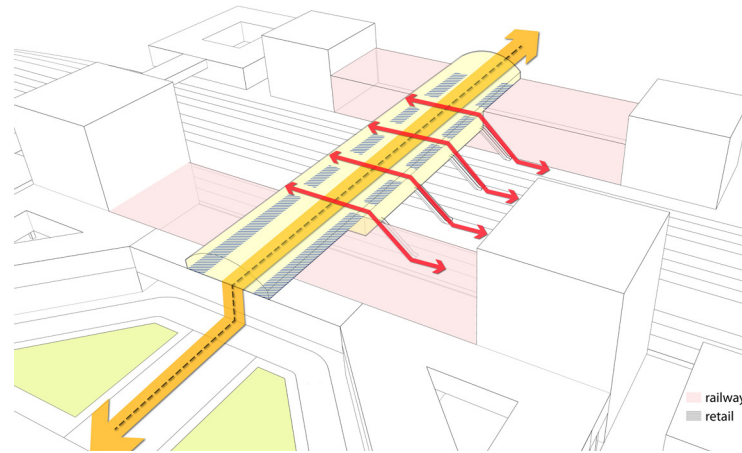


Figure 36: New Concourse with new station on the other side - connects two sides through station retail

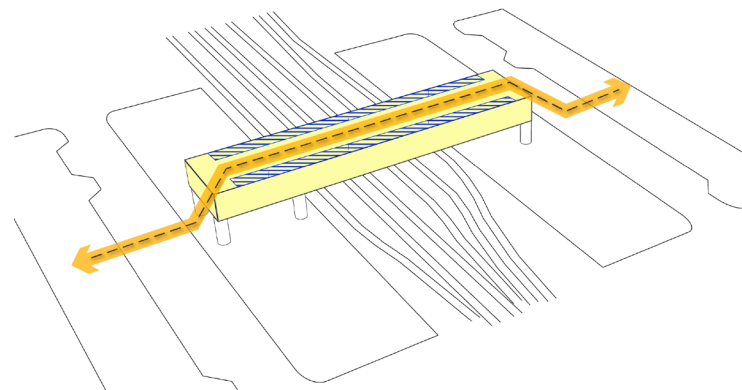


Figure 37: New unpaid connections - integrated with new buildings, with FOB having vendor spaces

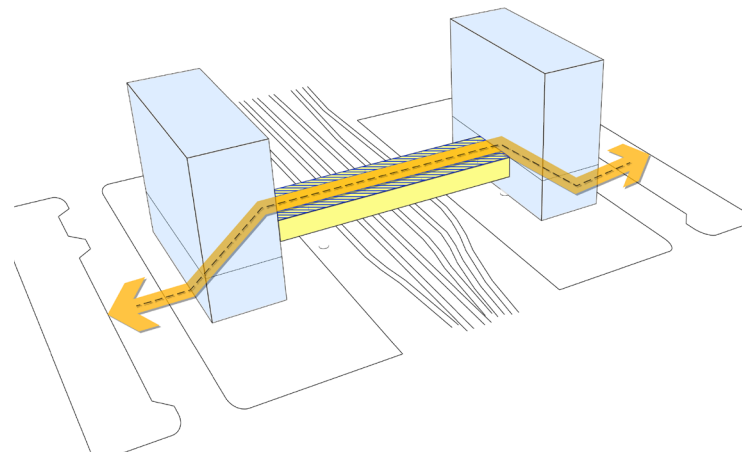


Figure 38: New unpaid connections with retail integrated seamlessly with Commercial / Mixed Use buildings on either side

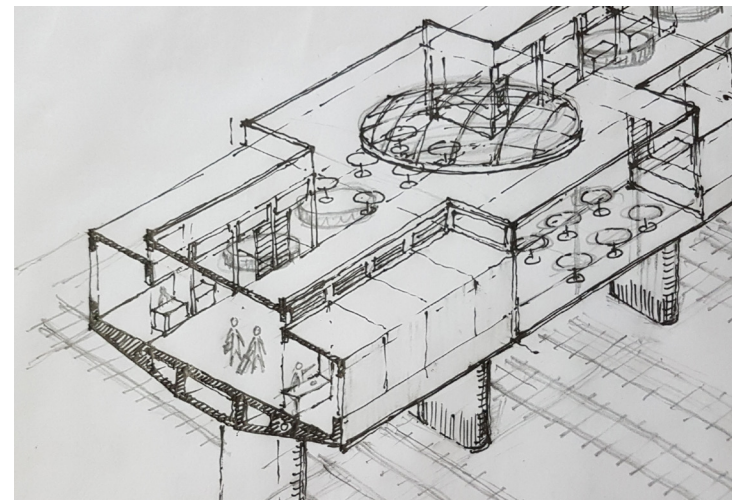


Figure 39: Retail along the paid concourse in York Station, UK (Source: Wikimedia.org)



Figure 40: Unpaid foot over bridge at Ghatkopar Station thrives with vendors

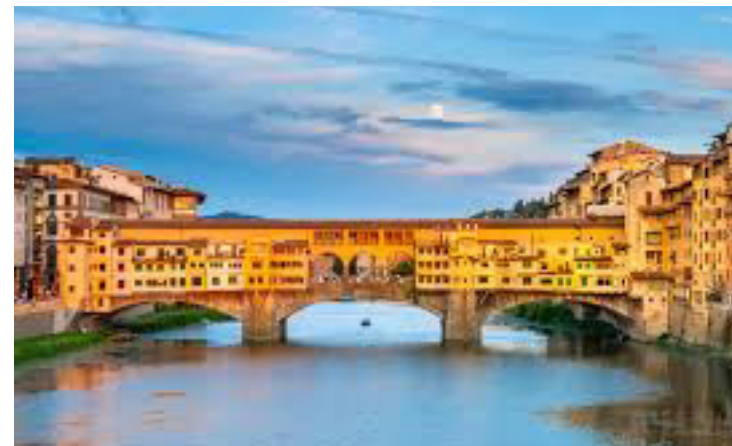


Figure 41: The Ponte Vecchio bridge in Florence connects two mixed use districts and is also flanked by specialist retail on either side (Source: wordpress)

1.3

STRATEGIC PEDESTRIAN LINKAGES OVER THE TRACKS

OBJECTIVES

To ensure railway tracks do not create a barrier for movement of both passengers and others pedestrians.

To provide frequent 'unpaid' connections across the tracks to enable direct route choices for city-dwellers, in addition to the 'paid' concourse that links both sides of the Railway Station.

To locate and design the 'unpaid' connections as integral to the surrounding commercial development as far as possible to ensure financial viability through provision of retail space along these.

Guidelines

1. Create direct public pedestrian connections (i.e. non-ticketed / unpaid) at approximately every 100 M. through the Station Area to developments / communities on either side of the tracks through FOBs / Skywalks etc.
2. Connect these FOBs / Skywalks to existing / proposed buildings where feasible and align retail uses along these to maximize the advantage of increased footfalls, thereby generating revenue to offset the cost of infrastructure built.

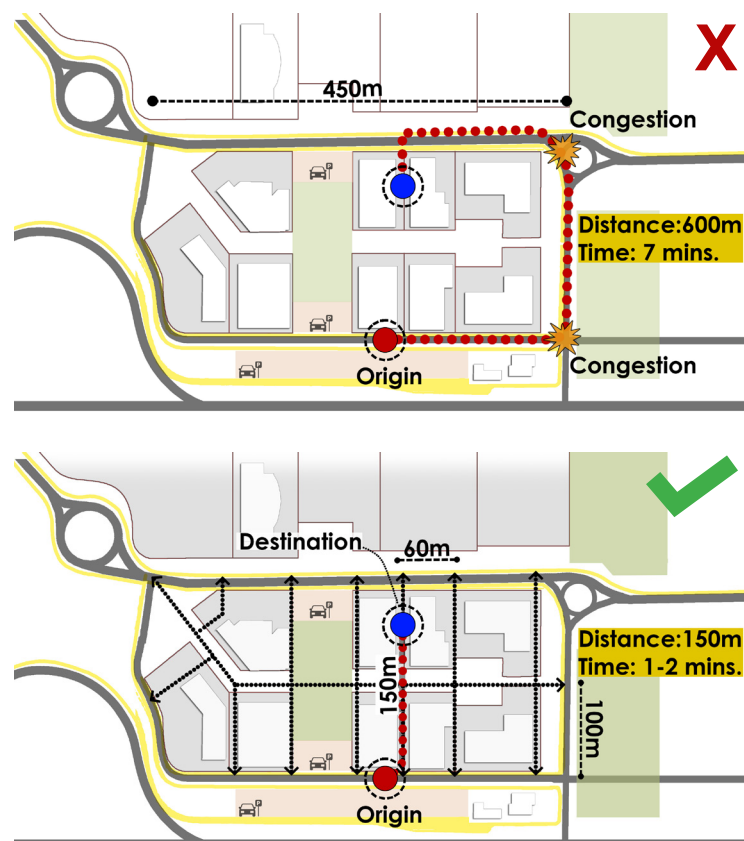


Figure 42: A finer street grid reduces distance and travel time manifold

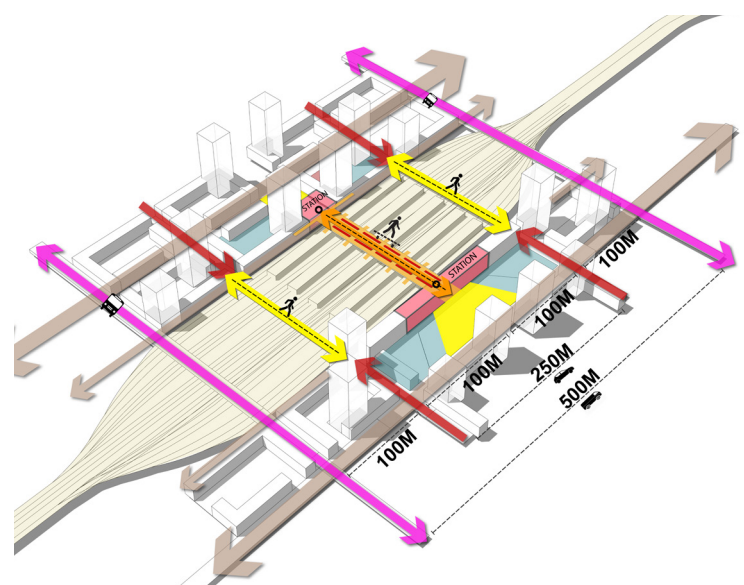


Figure 43: Required Street Grid

1.4 DECREASING CONGESTION AND REDUCING UNNECESSARY DELAYS

OBJECTIVES

To encourage the use of low carbon transport for short and medium length trips.

To ensure route choices through direct connections that will make movement more efficient and reduce congestion of primary roads.

To enable enhanced vitality, safety and easy access to amenities that has a direct impact on value of the area and individual properties.

Guidelines

1. Create a vehicular road network with a maximum spacing of 250 M. (centre to centre) to create a permeable grid.
2. Create streets that link to at least two other streets to avoid cul-de-sacs.
3. Substantiate this further with a Non Motorized Transit (NMT) network with a maximum spacing of 100 M. (centre to centre)
4. Provide signalized safe at-grade crossings for pedestrians and NMT at all junctions and midblocks aligned with the street grid network and/or desire lines of movement.
5. Ensure street designs adhere to IRC: 103 (2012) & IRC: SP:50 -2013.

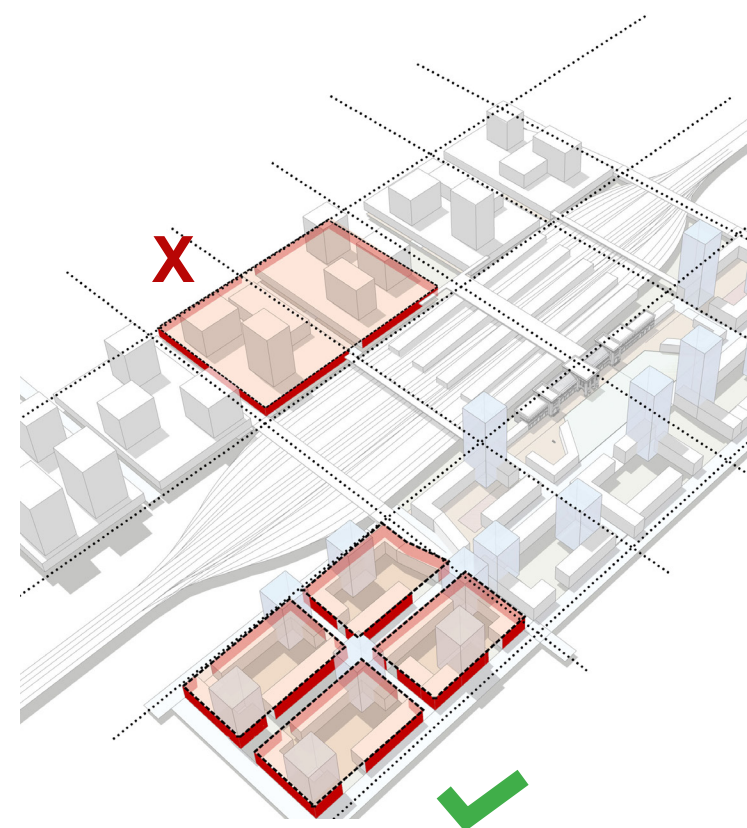
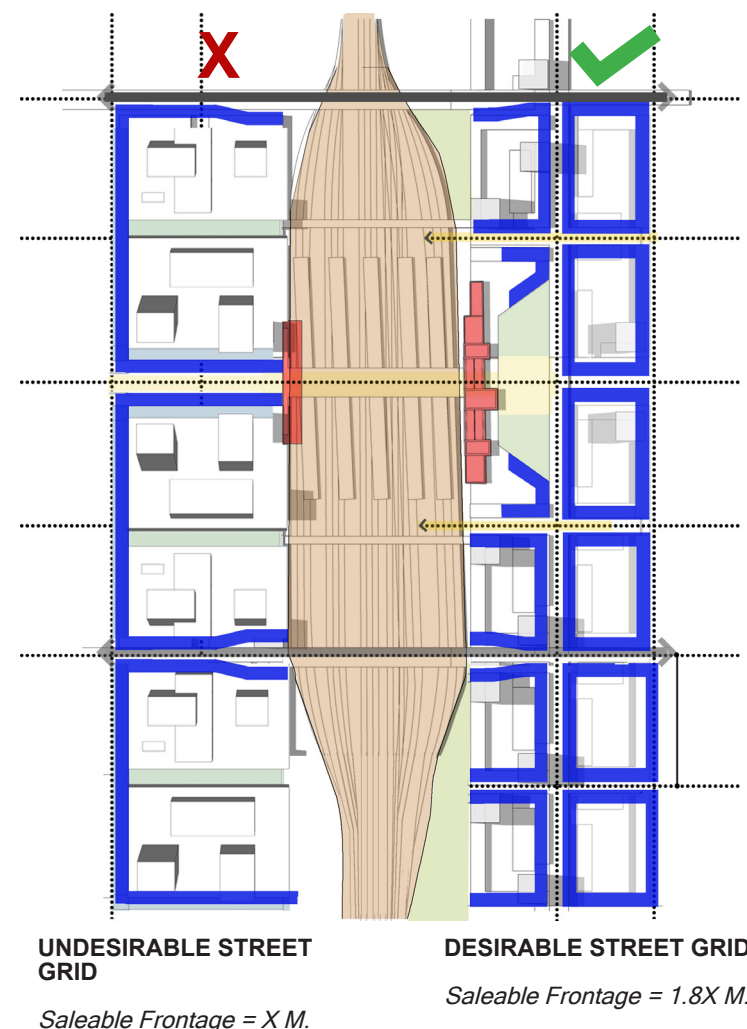


Figure 44: Saleable frontages increase two-fold with the recommended street grid

1.5 INCREASING SALEABLE FRONTAGE WITH A FINER GRID

OBJECTIVES

To use the finer street grid to create a larger number of smaller parcels with enhanced access and visibility.

To use the enhanced vitality, safety and easy access to create valuable saleable frontages.

Guidelines

1. Use the vehicular road network with a maximum spacing of 250 M. (centre to centre) to create smaller development parcels with enhanced access from all abutting roads and therefore also enhanced visibility.
2. Plan for at-grade junctions to maximise value of adjacent developable parcels. *Note: grade separators not only hinder visibility but also reduce footfalls.*
3. Use the NMT network with a maximum spacing of 100 M. (centre to centre) to create secondary frontages that can benefit from high footfalls.

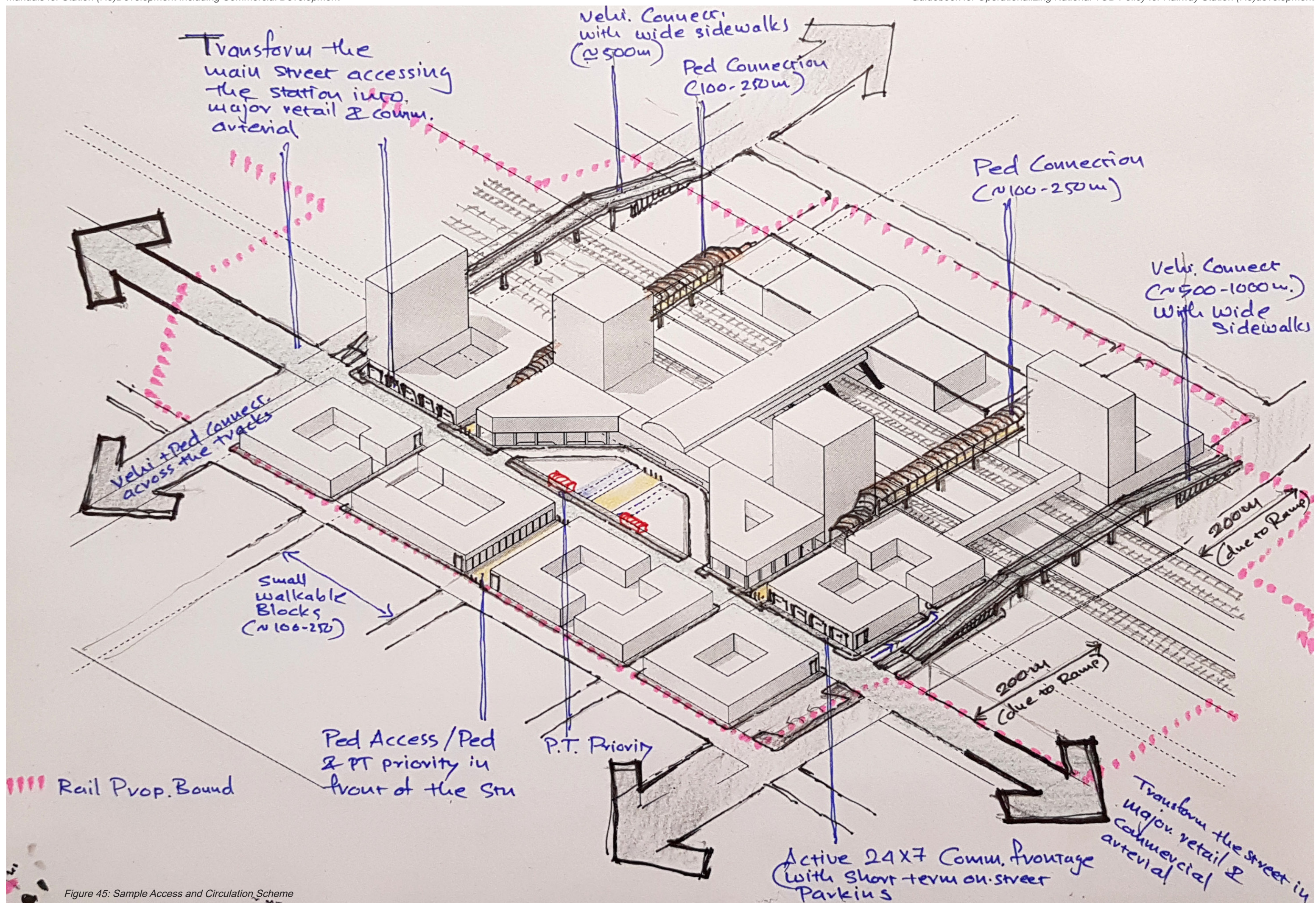


Figure 45: Sample Access and Circulation Scheme



Figure 46: Robson Street, Vancouver (Source: Destination360.com)

02

MIX USE, ZONING AND RETAIL PLANNING

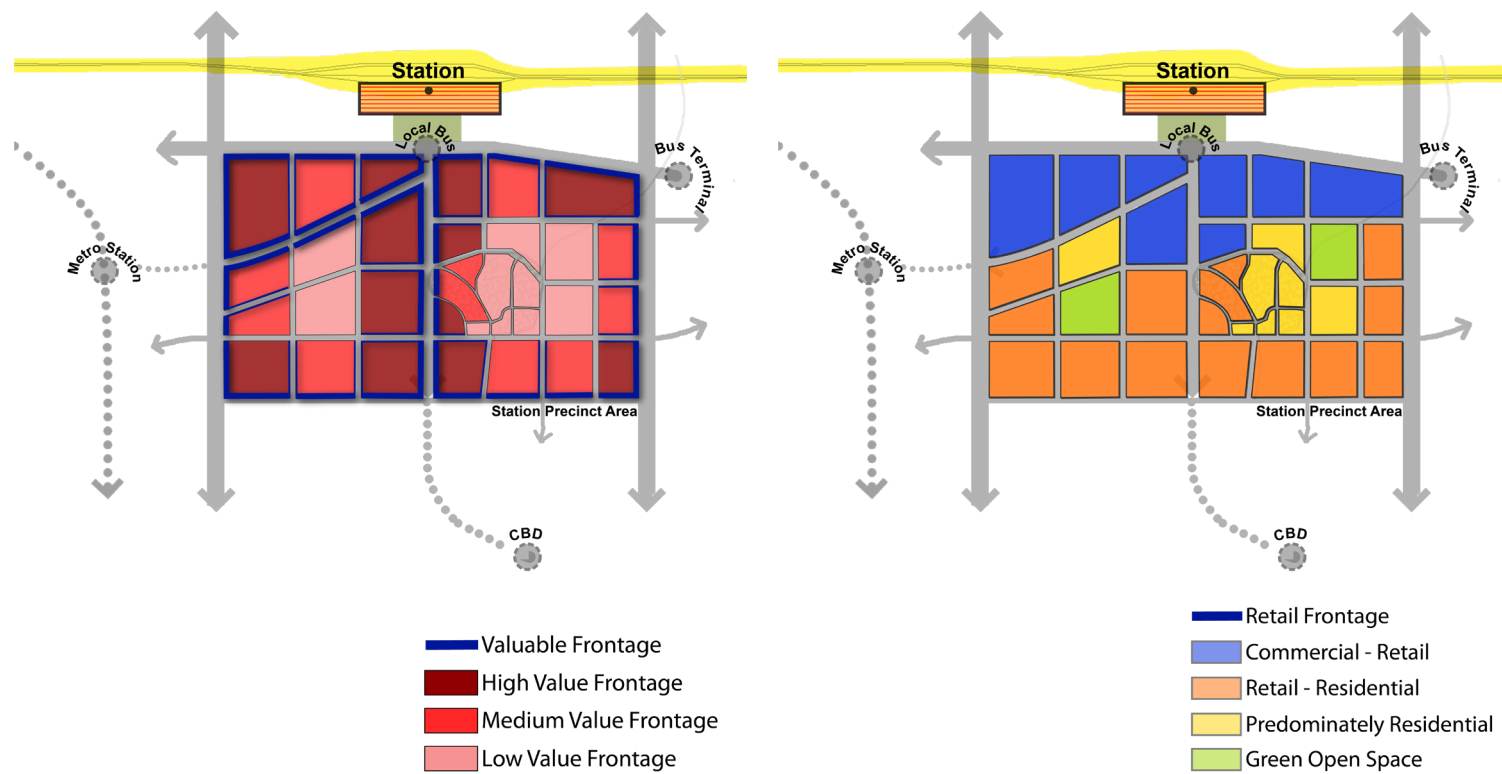


Figure 47: Value Mapping

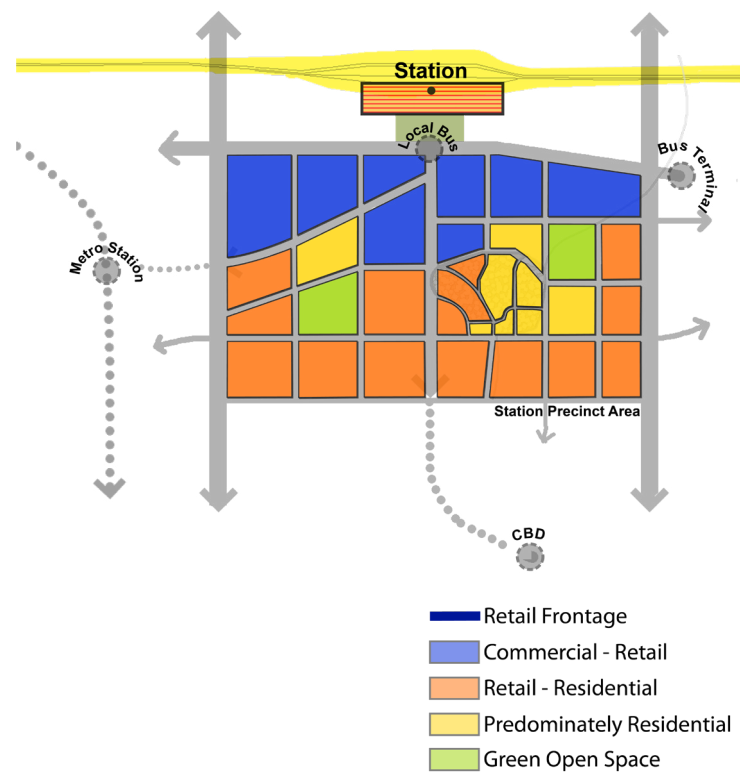


Figure 48: Use Zoning as per Value Mapping

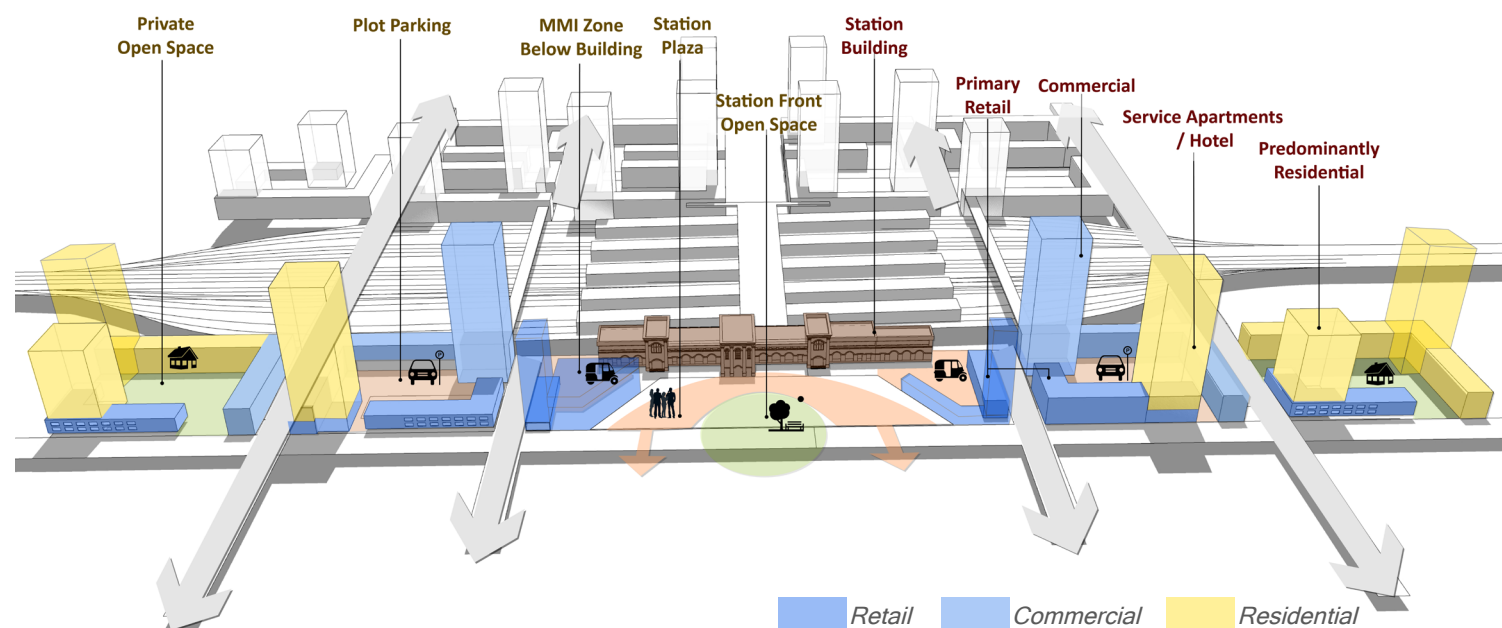


Figure 49: Land use distribution - Horizontal and Vertical



Figure 50: Office and retail space work seamlessly along Market Street, Toronto



Figure 51: In Bethesda, USA, this mixed use lane supports high value retail.



Figure 52: The London Olympic Park Development includes low rise mixed use.



Figure 53: Retail fronts residences & offices along Liverpool St. Melbourne.

2.1 MIXED USE AND USE ZONING

OBJECTIVES

To enable flexibility in mix of various possible uses, with the exception of polluting and potentially hazardous uses.

To provide a good mix of employment generating uses, residential (preferably smaller sized units to aid affordability), and supporting social infrastructure, to create active zones at all times of day.

To plan the distribution of uses across the site such that they respond to the value of each parcel as identified in Section 01.

Guidelines

1. Arrive at a development mix for the Station Area in consultation with real estate experts involved in the project. Include affordable housing where viable.
2. Prepare a Value Map for the Station Area by identifying zones with high, medium, and low value, based on levels of access and visibility.
3. Distribute uses from the development mix as follows:
 - High Value - Predominantly Retail / Commercial
 - Medium Value - Commercial / Residential
 - Low Value - Predominantly Residential

Note: Residential use must always be accompanied with the required Social Infrastructure and Public Open space to cater to the resident population

4. Mix these uses within the development parcel either horizontally, vertically or both.
5. Design access arrangements for different uses to ensure secure and independent access.

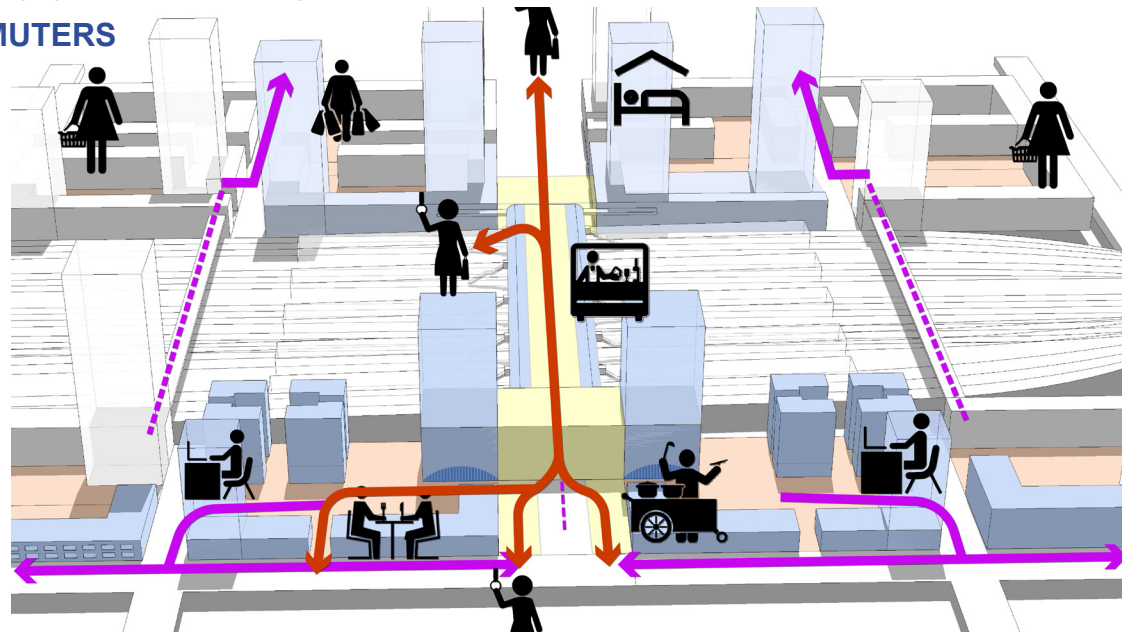
DAILY COMMUTERS

Figure 54: Movement pattern of the Daily Commuter / Zones to locate related retail

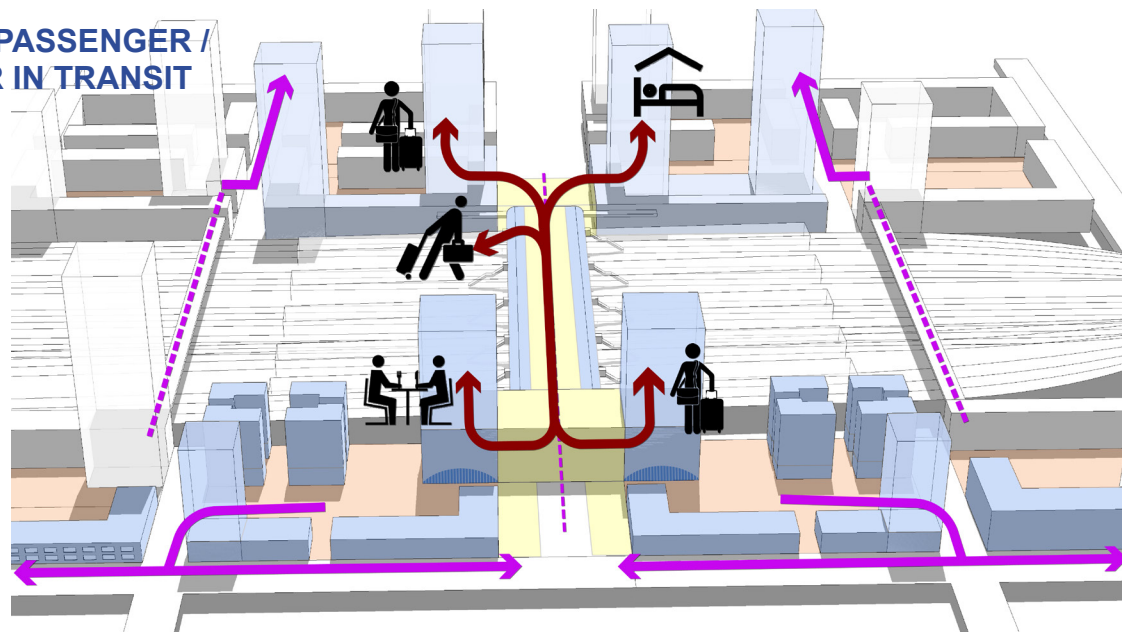
INTER-CITY PASSENGER / PASSENGER IN TRANSIT

Figure 55: Movement pattern of the Inter-City Passenger / Passenger in Transit / Zones to locate related retail

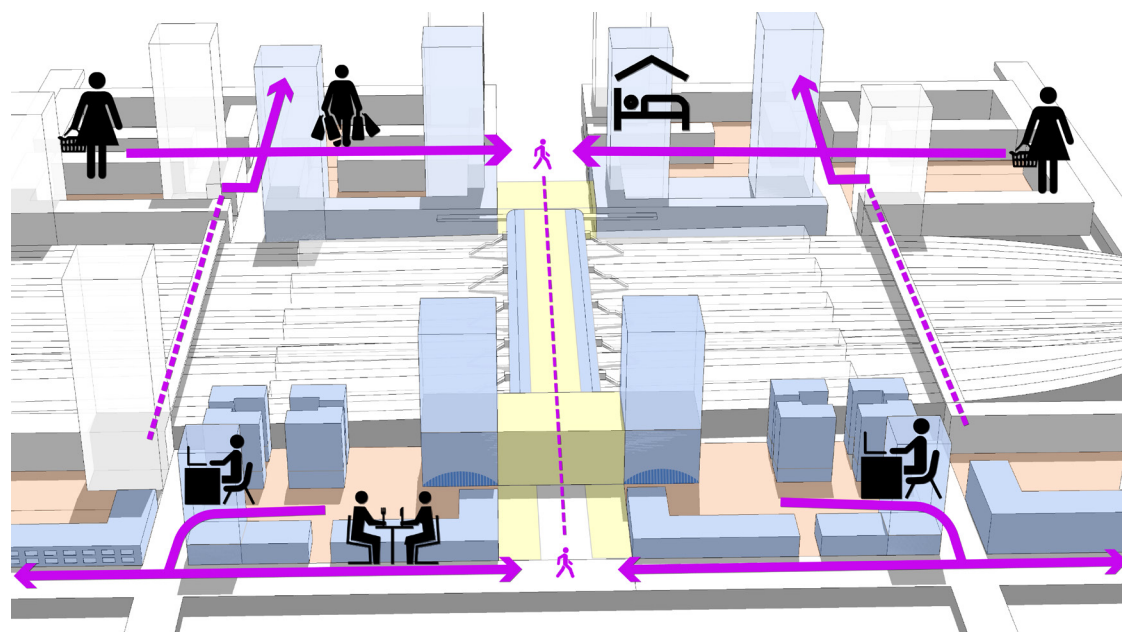
LOCALS

Figure 56: Movement pattern of the Local / Zones to locate related retail



Figure 57: Retail for all passengers at Stockholm Station Concourse



Figure 58: Sleeping pods such as these provide respite to transit passengers



Figure 59: A Shopping Arcade welcomes passengers and locals alike in Windsor Station, UK.



Figure 60: 24x7 Shops in Kuala Lumpur are popular and highly successful

2.2 RETAIL PLANNING TO ADDRESS 3 DIFFERENT USERS GROUPS

OBJECTIVES

To ensure the retail provision within the Station Area caters to three distinct users groups:

- 1) Commuter
- 2) Inter-city / Passenger in Transit / Tourist
- 3) Locals

To ensure the distribution of the retail provision ensures convenient access to each of the user groups

To ensure the Station Area remains active through different times of day, creating a vibrant and safe environment.

To integrate the informal economy and create a community destination for nearby neighborhoods

Guidelines

1. Plan retail provision for different user groups as:
 - Commuter: Grocery, Quick Meals, First Aid, Amenities/facilities
 - Inter-city / Passenger in Transit / Tourist: Grocery, Quick Meals, First Aid, Amenities/facilities, restaurants / canteens, sleeping pods, hotels, shopping etc
 - Locals: Grocery, Amenities/facilities, restaurants / canteens, shopping, work etc
2. Locate provision for commuters within the Station Building and Station Fore court
3. Locate additional provision for inter-city / Passenger in Transit / Tourists immediately adjacent to the Station i.e. within neighboring commercial buildings such that these can be partly shared by non Station destined users as well
4. Locate provision for locals in the remaining Station Area.
5. Create a proportion of retail amenities to function as 24x7, addressing the needs of passengers at late / early hours. Also, designate areas within the station (with access from the outside) that can serve both the station users and the city with uses such as eateries, chemists, hostels, hotels, restaurants etc.
6. Plan designated vending zones within and outside the Station building where spots maybe allocated through short-term flexible license agreements.



Figure 61: Active frontages with 0 setback create a vibrant and safe street.



Figure 62: Coal Harbour condo tower podium in Vancouver is lined with retail and residential units. (Source: Dumitru Onceanu)

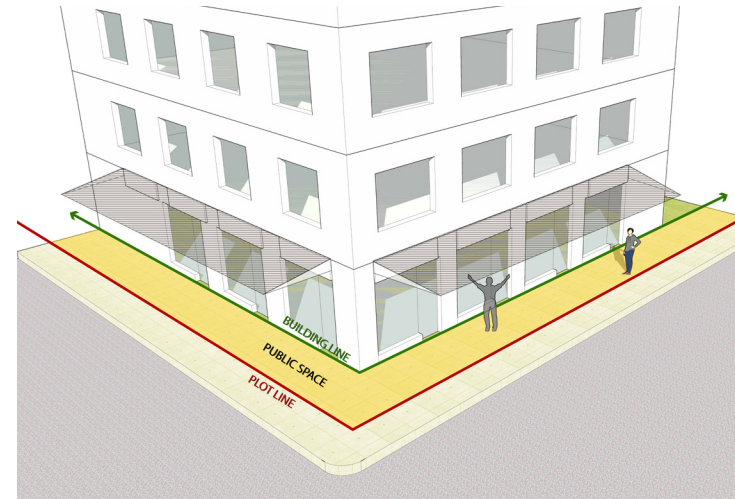


Figure 63: 1.0M Setback used as public space

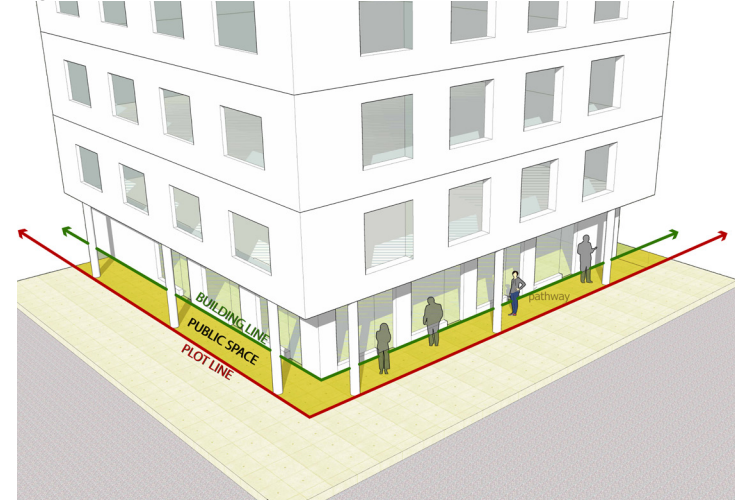


Figure 64: 0 M Setback- Building recessed on ground floor to create public space



Figure 65: Buildings showing 0 setback, with and without recessed ground floor



Figure 66: Arcade defines 0 setback line, ground floor recessed.

2.3 SETBACKS AND ACTIVE FRONTAGE ON STREET

OBJECTIVES

To ensure the Station Area creates value for all uses and convenience and safety for all users.

To ensure building frontages get direct access from the street and maximum visibility to enhance value.

To create safer public environments.

Guidelines

1. Frontage of any TOD development should be 'active' with primary means of access (doors) and ventilation (windows) along it.
2. Design buildings with maximum 1.0M setbacks and active frontages to maximise visibility and proximity to primary lines of movement
3. Line non-active uses such as railway infrastructure, parking, etc with active frontages
4. On sites with level differences, plan main access to the buildings from the road highest in the hierarchy even if access is achieved at a higher floor. Lower floors may be accessed from secondary streets for servicing, parking etc.
5. A maximum length of 20M of an 'unwatched' frontage (e.g. gaps in frontage, fences or building walls of properties where there are no access points, doors, or windows) is permitted at any one instance



Figure 67: Tokyo Railway Station (Source: Alamy - to buy)

03

MULTI-MODAL INTEGRATION

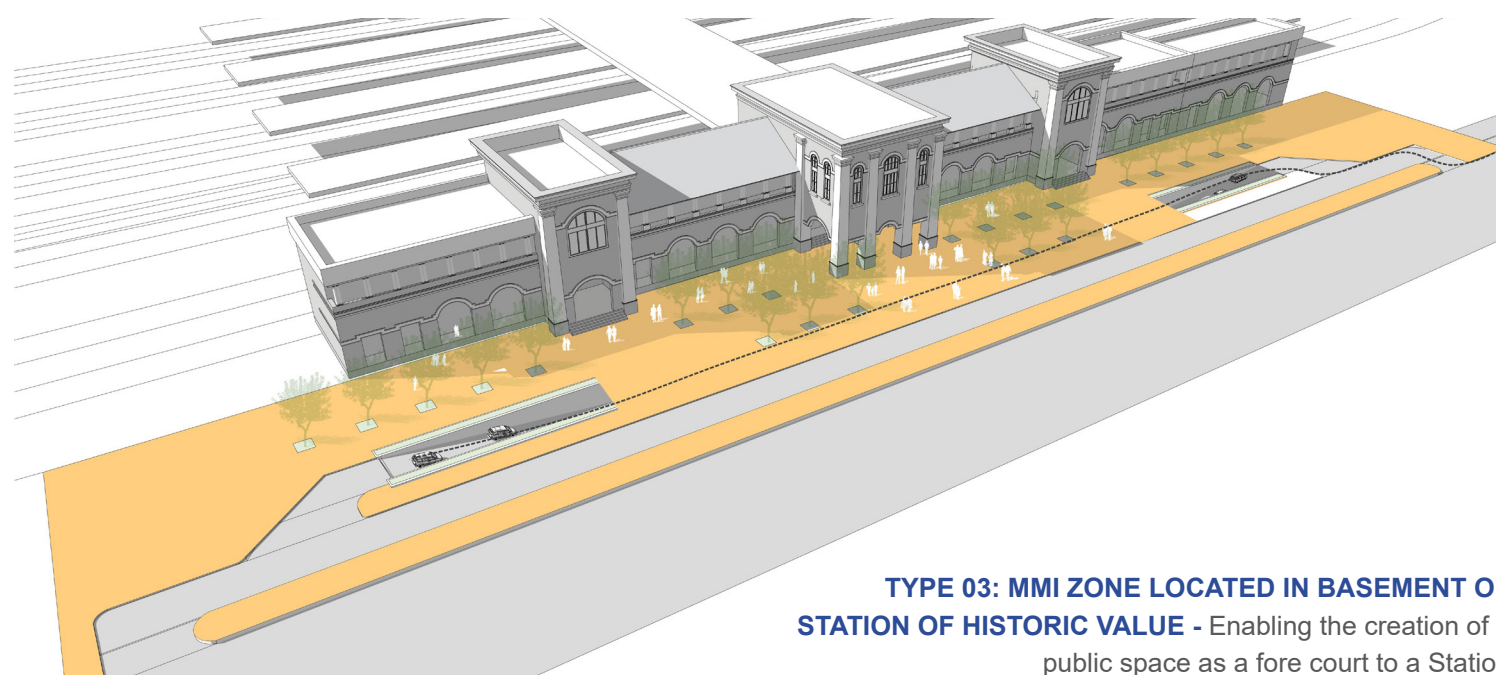
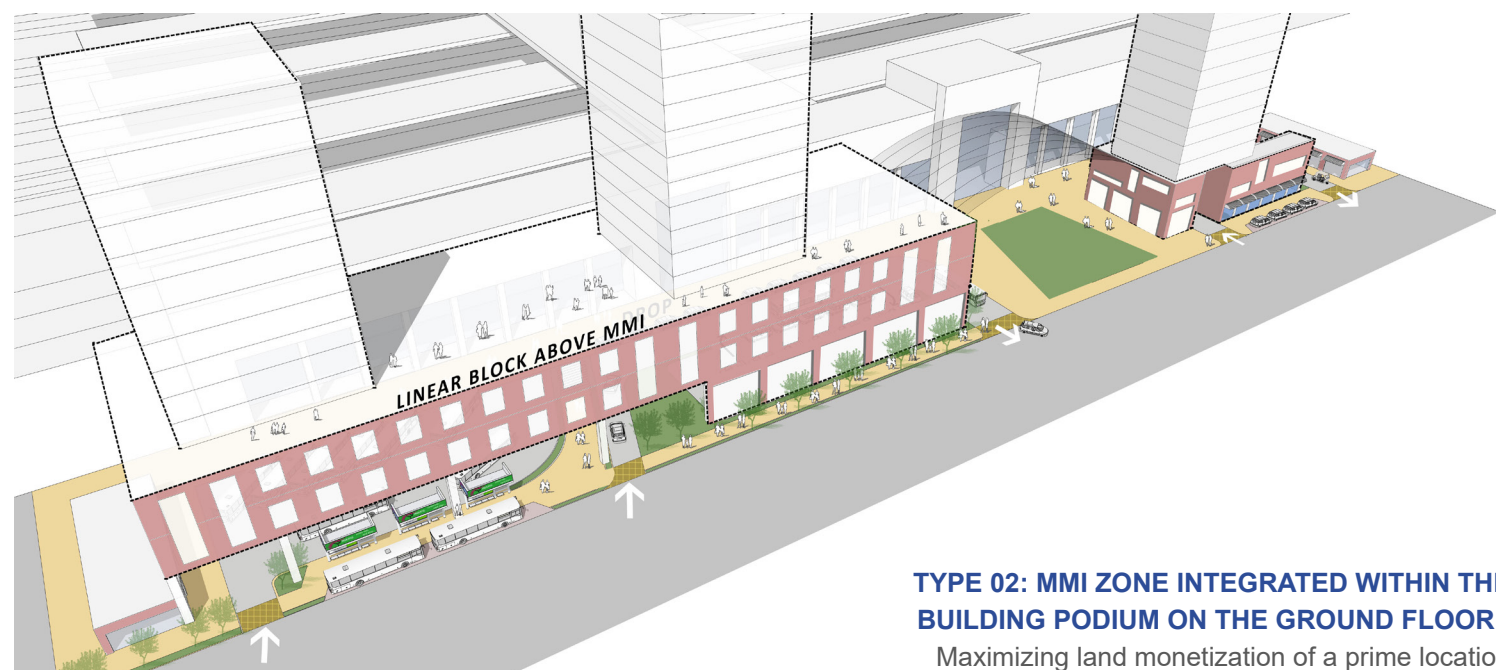
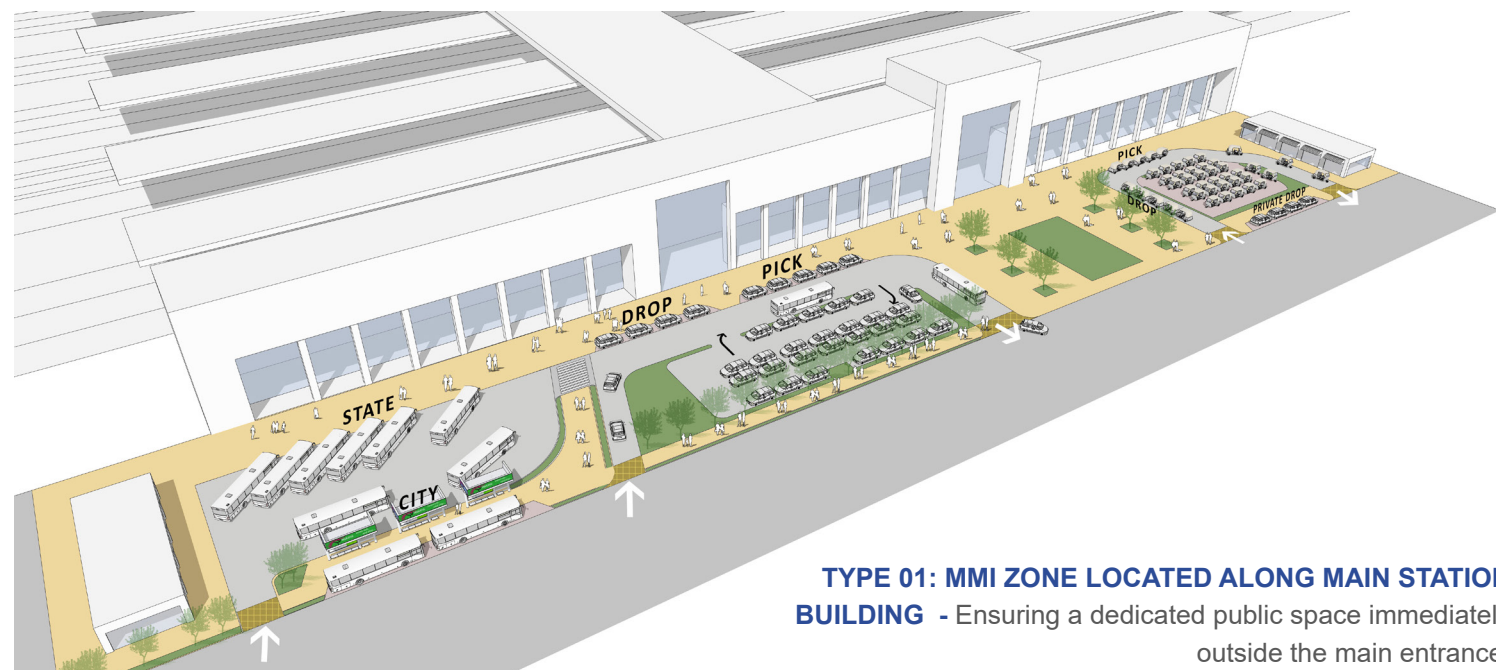


Figure 68: Multi-Modal Integration Schemes

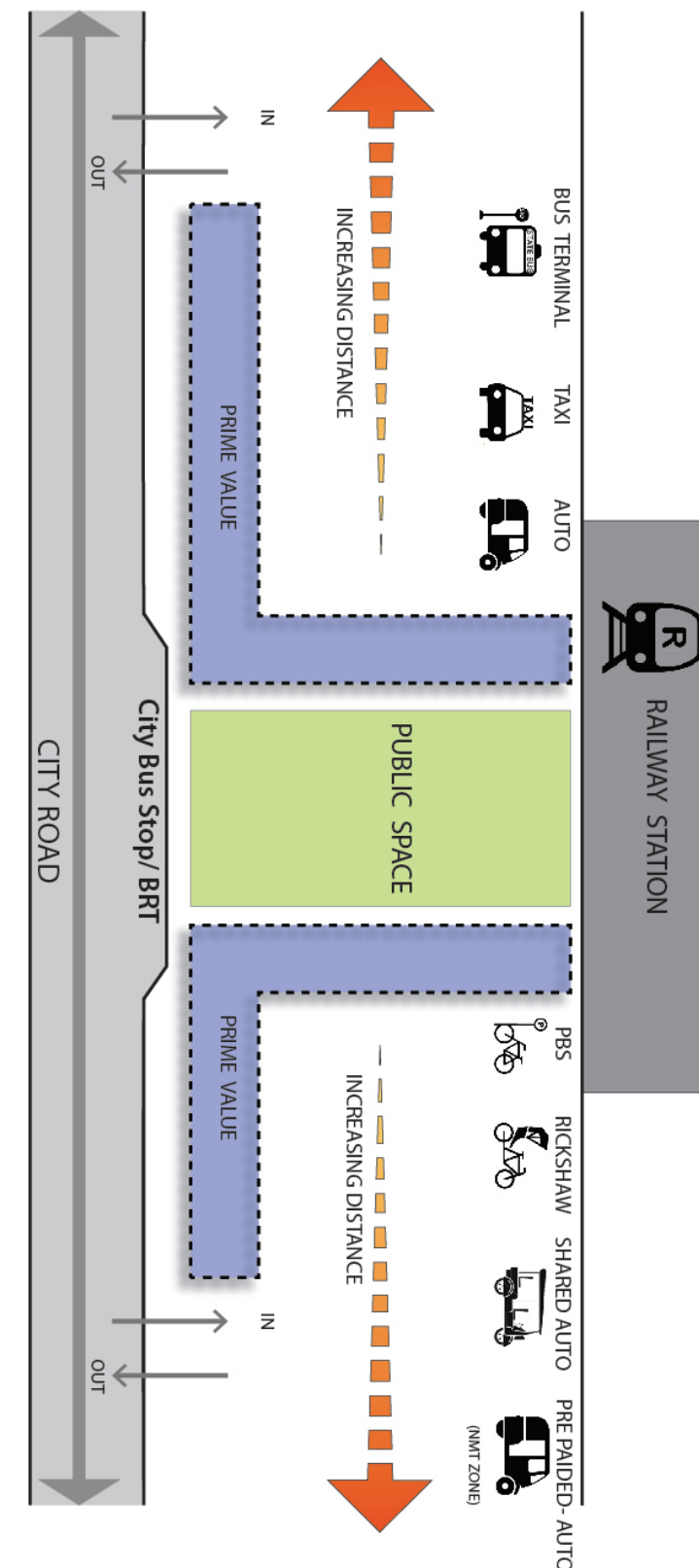


Figure 69: Spatial strategy for MMI

3.1 MULTIMODAL INTEGRATION (MMI)

OBJECTIVES

To ensure easy and seamless integration between different modes, conveniently located for all users.

To ensure high value real estate is not dedicated solely for MMI.

To ensure direct pedestrian access to and from the Station is not impeded due to MMI infrastructure.

To ensure views of and to the Railway Station are not impacted negatively by MMI infrastructure

Guidelines

1. Plan MMI Zones immediately adjacent to the railway station exits including zones for buses (city, tourist, state, chartered etc), autos, taxis, rickshaws, ideally with a linear arrangement of drop off and pickup zones
2. Plan a public space immediately outside the main Station building as a pedestrian / cycle only zone.
3. Integrate MMI zones under podiums of buildings to maximise land monetization. In the case of a Station of historical value, MMI may also be located in basements if financially viable.
4. Explore provision of liner retail along lines of passenger movement within the MMI Zone to capture higher value.
5. Ensure junction of entry/exit into the Station / MMI Zone with the city roads is designed such that it does not cause congestion on the latter,



Figure 70: Bryant Park, New York City (Source: Wikipedia)

04

PUBLIC SPACES

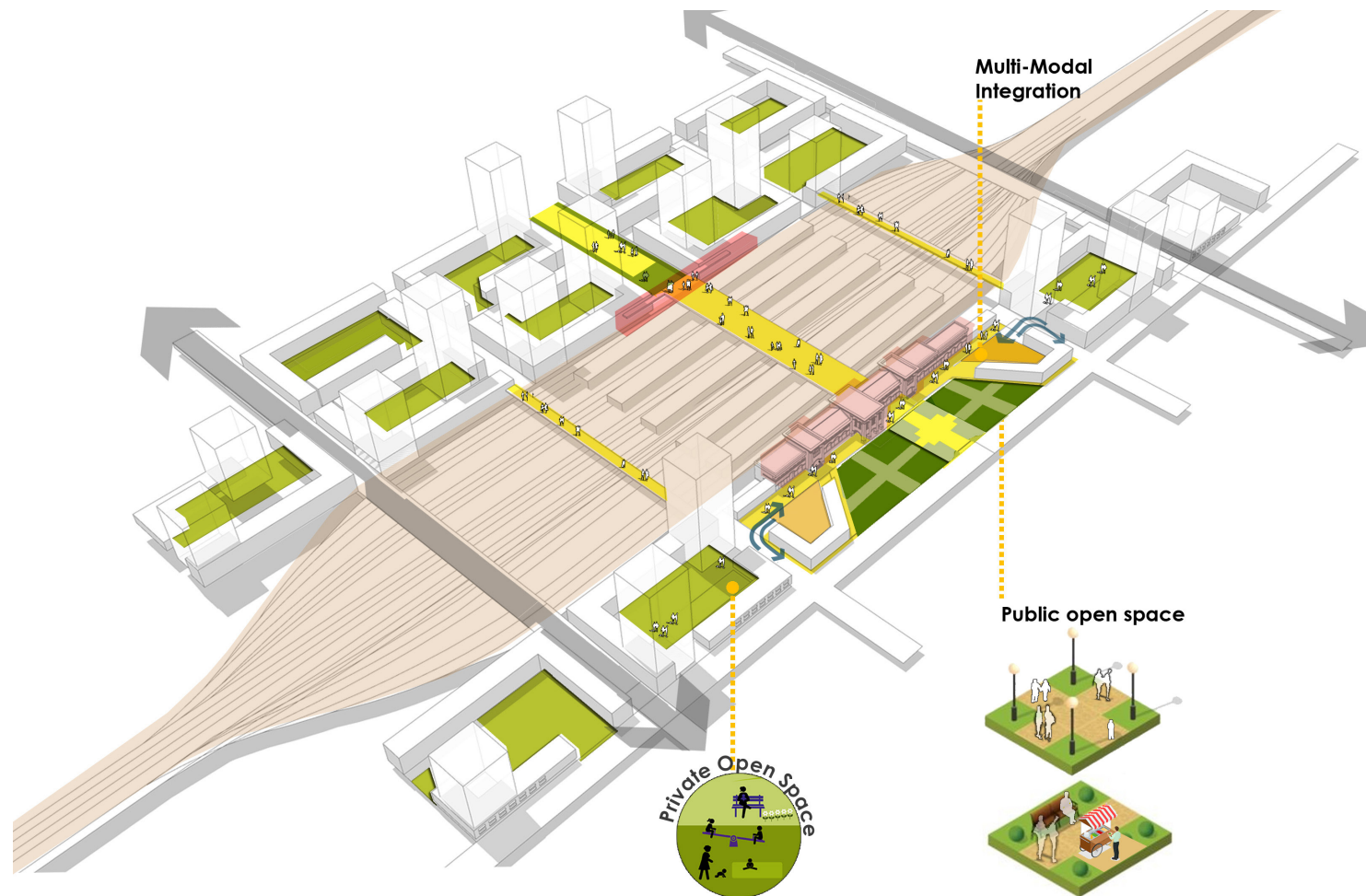


Figure 71: Public spaces must perform multiple functions - active play, recreational, utilitarian in terms of water management etc.



Figure 72: A constructed wetland treats wastewater in a group housing open space in Oslo



Figure 73: A landscaped courtyard in New York City, provides respite to office workers



Figure 74: A play area within a housing development provides

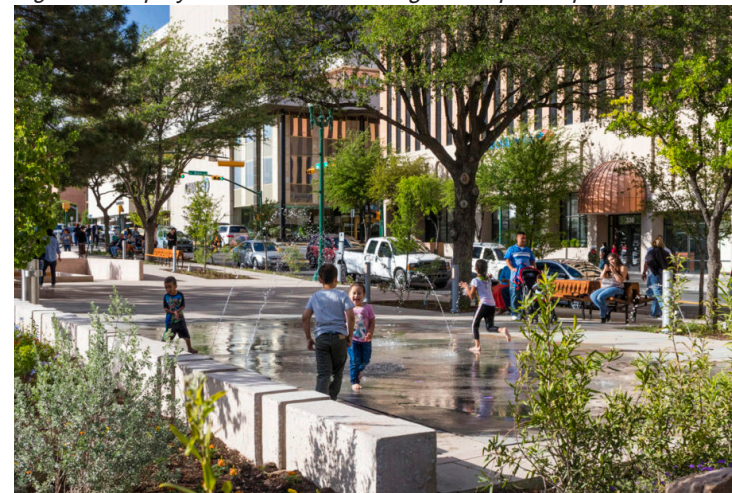


Figure 75: Informal play areas can be integrated into the street scape

4.1 OPEN SPACE PROVISION AND DISTRIBUTION

OBJECTIVES

To provide adequate open space for residents and other users within the developments in the Station Area. To ensure this provision meets the diverse needs of all groups of people.

To ensure this open space is located in the lower value areas (i.e. those with lesser visibility and indirect access) to enable 1) effective utilisation of such low value zones and 2) in turn, enhancing the value of adjoining properties.

To ensure the open space simultaneously performs multiple functions, from the provision of a recreational amenity, access to nature to also that of provision of a utility such as treatment of wastewater.

Guidelines

1. Set aside 20% proportion of land within every developable parcel for local level recreational open space to serve the immediate population.
2. Locate this open space behind the perimeter block with at least two points of access from surrounding roads.
3. Ensure all open spaces perform the function of managing storm water sustainably.
4. Plan all public spaces to meet at least two of the following four functions
 - Recreation
 - Organized play / sport
 - Nature
 - Revenue / Utility
5. Design open spaces such that the minimum dimension shall not be less than 10m and if average width of such public space is less than 20m, its length shall not exceed 2.5 times its average width.
6. Ensure all Open Spaces and buildings therein are universally accessible.
7. All boundary / edge conditions of Open Spaces shall be transparent. In case toe-walls with fences are provided, frequently placed openings must be kept allowing rain water to flow into the open spaces.
8. Use of Open Spaces for parking, shall not be permitted.



Figure 76: This parking structure, i.e. Memorial Hermann Medical Plaza in Houston is integrated with Medical Facility. (Source: www.harveycleary.com).

05

PARKING

PARKING FOR NEXT 40 YEARS HORIZON

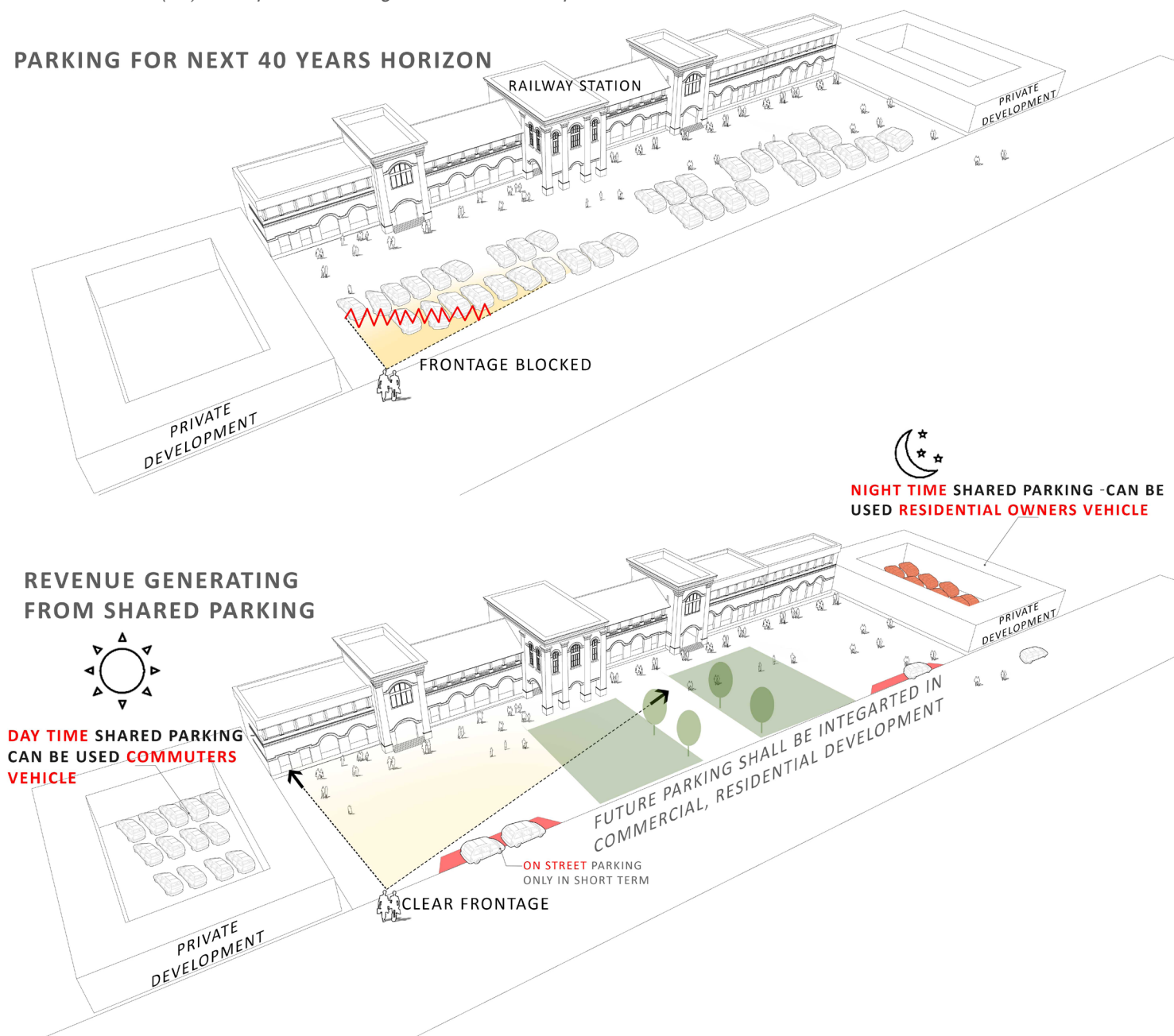


Figure 77: Unbundled parking facilities that can be shared by all uses including the Railway Station can help retain valuable land for development or high quality open space.



Figure 78: This parking structure in Boulder, Colorado, is hidden behind street-level retail and office space above. (Source: <http://buildabetterburb>.)

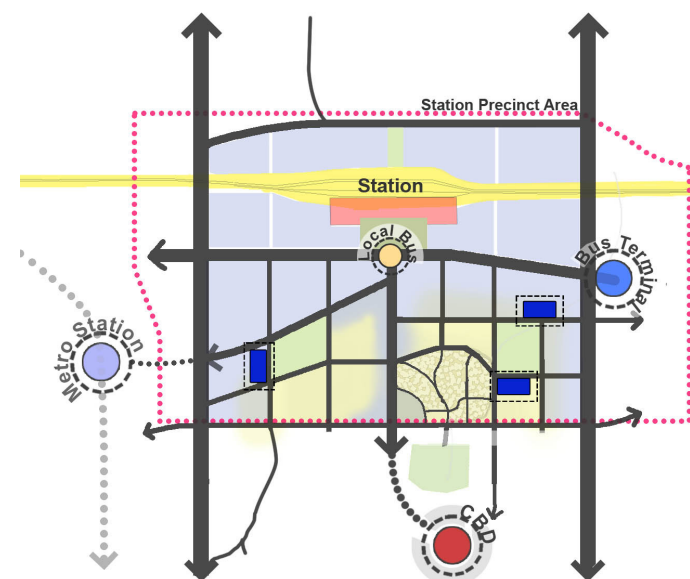


Figure 79: Locations for revenue generating shared and unbundled parking should be located within the Station Area

5.1

REVENUE
GENERATING
SHARED AND
MANAGED PARKING

OBJECTIVES

To Use Parking as a Demand management Tool to ensure the value of the public realm is not diminished by the parked car while providing limited yet high-turnover well-managed parking through a Parking Management Zone.

While doing so, generate revenue from parking.

Guidelines

1. Design all streets for no long-term parking.
2. Integrate all parking within buildings as a paid, shared and unbundled facility.
3. Design clearly defined parking access from the street lower in the hierarchy abutting an urban block.
4. In case of parking integrated within the ground floor of a building, define the frontage with active uses.



Figure 80: Car parking is located in the podium of a mixed use building in Nolan Quay, Melbourne

Keeping the Guidebook Relevant

The purpose of this Guidebook is to guide the Masterplanning and Value Creation process for Railway Station (Re)Development projects. Therefore, it is of utmost importance that it stays relevant to not only different geographies across India but also to the ever changing development context of the country.

It is, therefore, our endeavour to update the Guidebook regularly. For this, IRSDC will not only learn from its own project experience but will also continue to work closely with different stakeholders including developers, urban local bodies, expert groups and agencies, architects, engineers etc.



Figure 81: Churchgate Station (Source: hellotalalay.blogspot.com)

Testimonials

Congratulations to MD & CEO, IRSDC for giving us the opportunity to share our views on the Form Based Codes and Layout Planning documents. Also, congratulations for becoming the Nodal Agency for Commercial Development of the Railway Land. The Manuals are flexible, and not straight-jacketed, instead adapts to the context of the city. The redevelopment works of the Chandigarh Railway Station and Delhi Railway Station are a good example, where both cities have its own characteristics and requirements and the redevelopment work is undertaken accordingly. The Manuals & Guidebooks incorporate all case studies such as Bandra Railway Station, Secunderabad Railway Station, Gandhinagar Railway Station. The presentations are thoughtful and excellent.

Prof. Dr. D.S. Meshram, President, ITPI (29 May, 2021)

Extremely high level, professional and quality work. Compliments to the lead authors, who should be credited in acknowledgement.

Mr. A.K Jain, Ex Commissioner (Planning) DDA (29 May, 2021)

These are comprehensive guidelines on the subject.

Architectural Heritage Division, INTACH (14 June, 2021)

Congratulations to IRSDC for such a commendable work. The international group of participants who saw the works at Habibganj Station (Bhopal) 3 years back have conveyed that they're happy to see the kind of development at the site and hope to see the same in other Stations as well. It is good to see such development in tier one and two cities too.

Mr. Akshaya Kumar, HUDCO (22 May, 2021)

Railway stations are ingrained in our memory so much so that it overtakes the other monuments in the city. If we had these Manuals earlier, probably the Char Bagh (Railway Station), which is in the memory of everyone from Lucknow would not be lost forever.

Dr. Ajay Khare, Conservation Architect (14 June, 2021)

Congratulations to IRSDC for this tremendous, and ambitious initiative that has been put forward in the form of these Manuals and Guidebooks. This is one of those initiatives that, will become a game changer in the way public areas will develop for general use and specific purposes of movement and transportation.

Mr. Arunava Dasgupta, Vice President, IUDI & HoD, Urban Design Dept., SPA Delhi (15 June, 2021)

The documents are really well-made and address most of the planning issues.

Ms. Sanika Jain, Planner and Management Consultant (29 May, 2021)

The presentations were an eye-opener and the Codes are excellent.

Ms. Vidya Kotak, Sr. Planner, MMRDA (14 June, 2021)

My appreciation to IRSDC for the initiative taken and excellent work done.

Mr. S.B. Khodankar, Secretary General, ITPI (29 May, 2021)

Testimonials

Rigorous, elaborate background survey and research work has gone into developing these Manuals and Guidebooks. While preparing a Niti Ayog report on hundred thousand unprotected structures and those protected under various Central Ministries, and State Departments, we found that the Ministry of Railways and IRSDC were really a role model example, looking at these codes. So please accept compliments on this achievement and this is what other ministries could also take on.

Dr. Shikha Jain, DRONAH (14 June, 2021)

Let me congratulate excellent presentation, excellent concept. And, when I see our airports being like this way, I don't see a reason why our Railway Stations cannot be.

Mr. Hitesh Vaidya, NIUA (22 May, 2021)

The legibility and simplicity of the Manuals succeed in breaking down the complexity of the redevelopment project.

Ms. Seetha Raghupathy, Urban Designer (15 June, 2021)

My congratulations to all involved for this amazing corpus of work. The fact that the conventional grade 1, 2 and 3 is not followed will give a good impetus in allowing the Railway heritage to be reused and also made functional. This is because it comes from John Marshals observations (his manual clause 2 and 24) which quite clearly says that it is a moot point to grade. And instead of treating the Railway heritage as standalone entities the Manuals and Guidebooks allow to look at them in their functional context. Very interesting how Railway boundaries want to be opening up to the public and perhaps starting public-participation with their personal stories and around it, would indeed be great. Congratulations again.

Mr. Nishant Upadhyay, Conservation Architect (14 June, 2021)

The guidelines have duly taken into considerations the principles set out in the National Transit Oriented Development Policy and demonstrate how the twelve Transit Oriented Development components which act as supporting tools to operationalize it.

TCPO, Ministry of Housing and Urban Affairs (24 May, 2021)

Form Based Code will create revolution in Station modernization.

Anonymous during National Webinars (19 April, 2021)

While Guidelines provide objectives and design guidance to achieve them, Form-Based Codes (FBC) regulate building forms. The advantage of FBC based development is flexibility of mixed (land and building) uses which make development sustainable and market responsive. These FBC are the minimum mandatory requirements for Commercial Development on Railway Land. They transform the traditional 'Layout Plans' to include details on mobility of all modes, integration with surrounding areas and allow flexibility in actual use of subplots. The guidelines recognize that well-designed station areas where people want to live, spend time and work can generate financial value. It also recognizes that the value of places designed with good urban design is much wider than just financial value. Embedding the principles of place making within a station area also improves the quality of life for those living and working there, and for travellers, delivering social and environmental value. The seven key points of the Railopolis vision provide a comprehensive and integrated framework.

World Bank, Serge Salat, Gerald Ollivier & Tatiana Peralta Quiros (April 27, 2021)

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