Transportation Group Conference

Getting Transit Oriented Development Right

Darren Davis, Stantec Urban Places

Stantec

Contents

1. What is TOD?
2. Urban Form Influences
3. Case Studies
4. Implementation Strategies
5. Conclusions

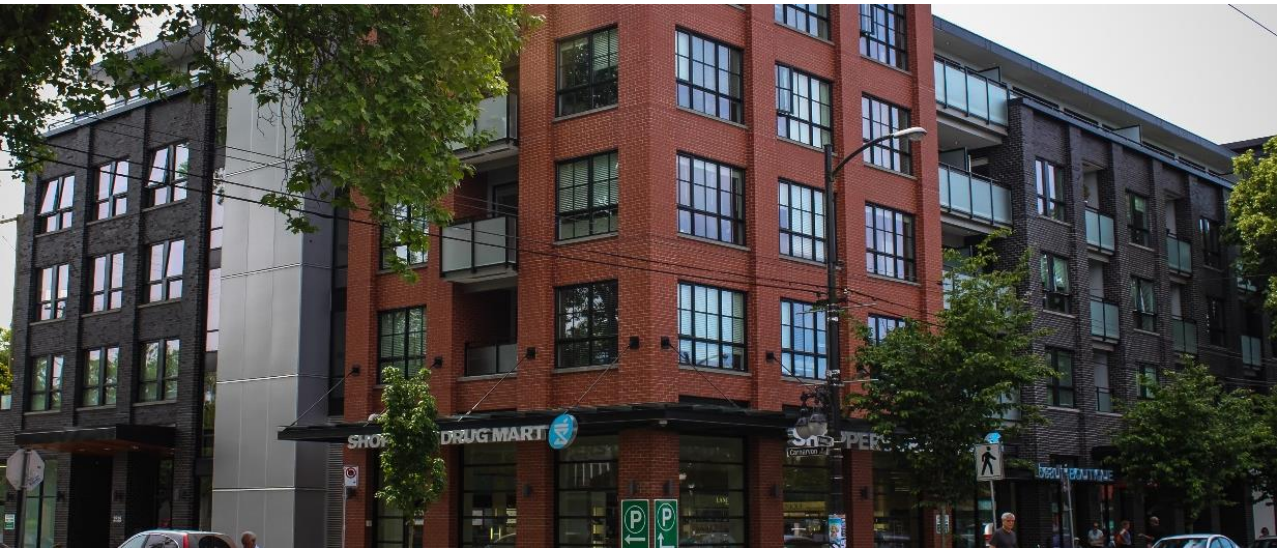
1

WHAT IS TOD?

Transit Oriented Development is….
"A compact development, with moderate to higher densities, located within an easy walk of a transit station, generally with a mix of residential, employment, and shopping opportunities designed for pedestrians [and cyclists] without excluding the auto."

Source: Arrington, G.B: Transit Oriented Development: Understanding the Fundamentals of TOD, 2007

Density



- 400m is optimal range for high-density development.
- Beyond 400m, modal shift to public transport drops off significantly.

Diversity

- Land use diversity supports:
  - Transport efficiency
  - Sense of place
- Mix of some or all of:
  - Institutional
  - Employment
  - Retail and Service
  - Residential Uses

Design

- High-quality design is key to success and should address:
  - Buildings
  - Public spaces
  - Streets
  - Public transport infrastructure
- TOD-supportive design includes:
  - Ground-floor active edges
  - Hidden parking
  - Multi-modal streets
  - Public plazas and parks

WHAT IS TOD?

Benefits of TOD

PUBLIC TRANSPORT BENEFITS

- Public transport use within TOD areas consistently exceeds urban averages (see below).
- Increased farebox recovery creates a virtuous circle: increased patronage → increased service → increased patronage.

HEALTH & SAFETY BENEFITS

- Fewer car-related injuries due to fewer car trips; higher use of lower incidence modes and reduced speeds.
- The "eyes on the street" effect of active, walkable streets.
- Increases in walking and cycling in TODs.

ENVIRONMENTAL BENEFITS

- Significant reductions in transport-related greenhouse gas emissions.
- Reductions in car use by up to 45% compared to conventional development.
- Less energy use overall, due to transport shifts and energy efficiency of more compact development.

LIVABILITY BENEFITS

- Increases in social interaction and inclusion through placemaking and quality public realm.
- Significantly reduced car ownership (costs can exceed $10,000 p.a.).
- Convenience of being able to carry out daily tasks with a short walk.

TOD versus TAD

TRANSIT ORIENTED DEVELOPMENT (TOD)

TOD is a compact development, with moderate to higher densities, located within an easy walk of a transit station with a mix of residential, employment and shopping opportunities.

TRANSIT ADJACENT DEVELOPMENT (TAD)

TAD typically consists of development near a public transport station or stop that does not prioritise the station as a point of focus, instead allowing car access to dominate the needs of pedestrians, cyclists and public transport users.


Stantec. 2014. Charlesview Mixed-use Development.

2

URBAN FORM CHARACTERISTICS INFLUENCING REDEVELOPMENT ACTIVITY

Light Rail Transit

LIGHT RAIL INFRASTRUCTURE

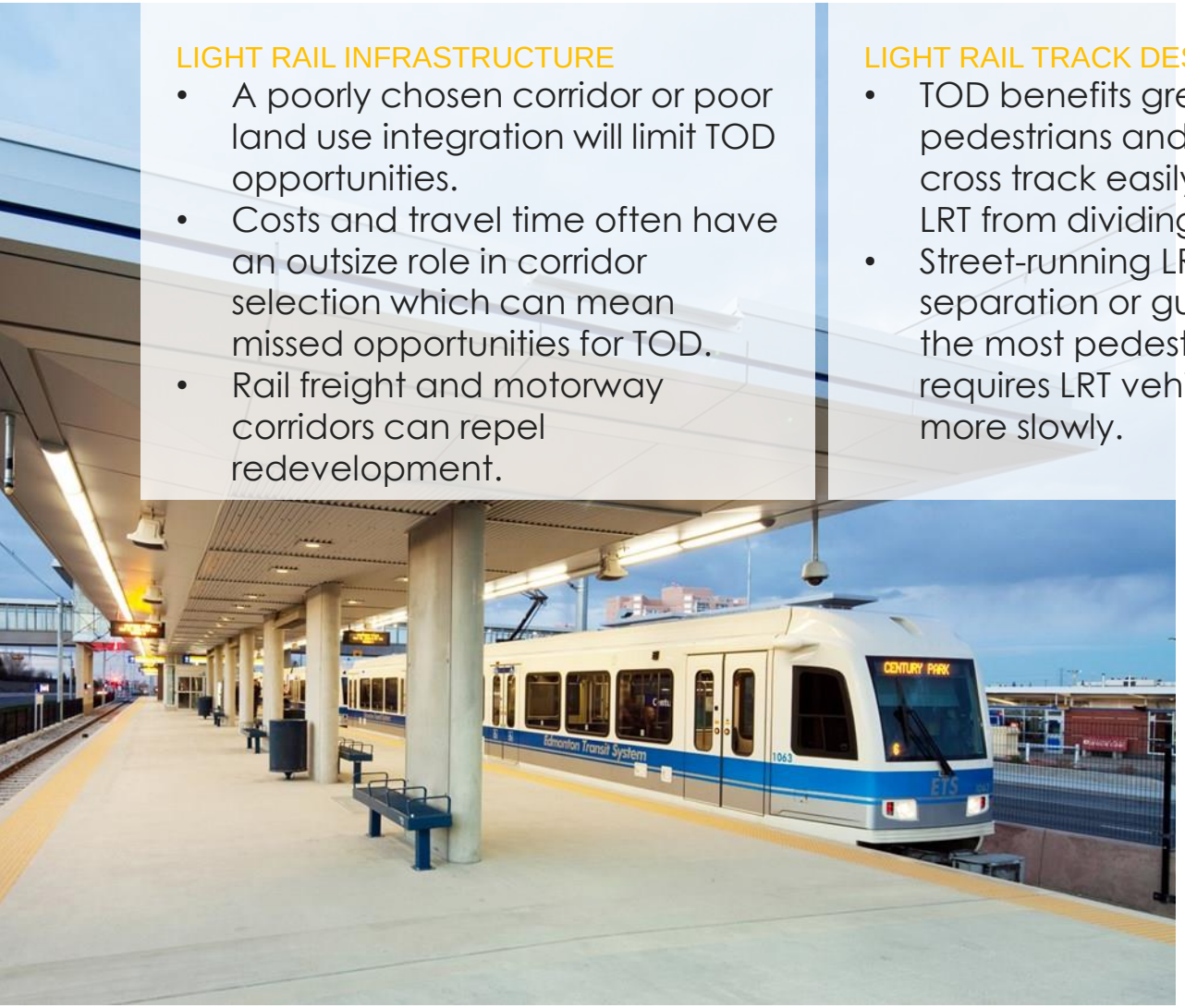
- A poorly chosen corridor or poor land use integration will limit TOD opportunities.
- Costs and travel time often have an outsize role in corridor selection which can mean missed opportunities for TOD.
- Rail freight and motorway corridors can repel redevelopment.

LIGHT RAIL TRACK DESIGN

- TOD benefits greatly when pedestrians and cyclists can cross track easily and prevents LRT from dividing communities.
- Street-running LRT without grade separation or guard fencing is the most pedestrian-friendly but requires LRT vehicles to travel more slowly.

LIGHT RAIL STATION DESIGN

- Design of the station and surrounding area will strongly influence development.
- Stations should integrate with the public realm.
- Station scale should match the expected level of use.
- Station spacing should be contextual and generally closer than heavy rail.



Bus Rapid Transit

Some key differences between LRT and Bus Rapid Transit (BRT) are:

1. **Flexibility**:
   LRT – exclusively runs in fixed corridors
   BRT – can run in fixed corridors and on-street in mixed traffic. Can be re-routed around disruptions.

2. **Capacity**:
   LRT – 200-300 passengers per car (typically multi-car operation)
   BRT – 70 per single decker bus;
   100 per double-decker bus;
   up to 200 per articulated bus;
   250 per bi-articulated bus

LRT or BRT can both foster TOD, however perceptions influence mode choice and a more positive reputation for mode and quality of service may influence use.

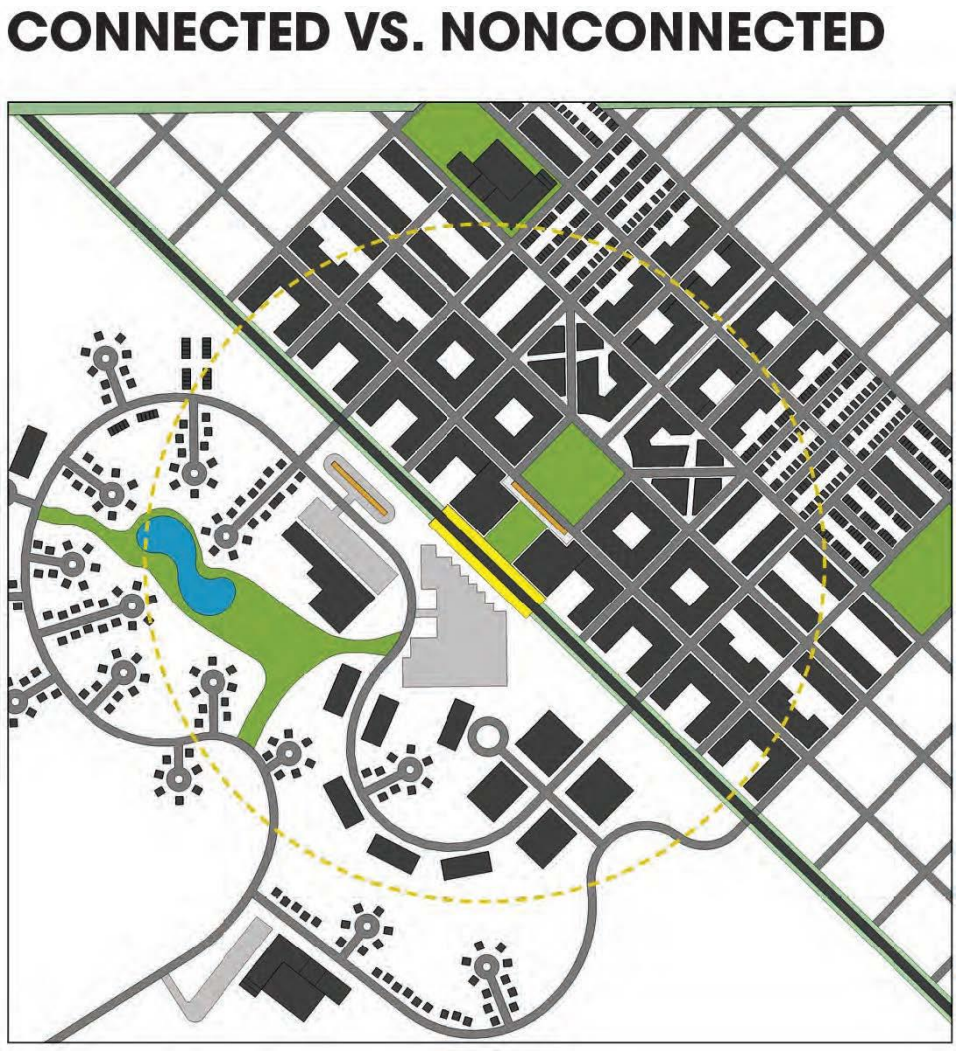
Existing Density and Land Use Diversity / Local Transport Conditions

EXISTING DENSITY AND LAND USE DIVERSITY

- Some locations such as CBDs are already very transit oriented, reflecting significant density and land use diversity.
- TOD in low density residential areas may take a long time to gain momentum.
- Infrastructure needs to be in place for TOD to act as a catalyst for further intensification of land uses.
- Existing social infrastructure such as libraries, community centres and medical centres provide strong anchors.

LOCAL TRANSPORT CONDITIONS

- Pre-WW II neighbourhoods typically reflect grid layouts.
- Post-WW II neighbourhoods tend toward more hierarchical and disconnected patterns.
- The connectivity of the local road network influences walking and cycling, plus ability to provide feeder public transport to a PT station.
- Station areas with a connected street grid offer more pedestrian friendly environments that increase the station's 5- to 10- minute walk catchment.



Property Conditions: Ownership Patterns and Parcel Sizes

OWNERSHIP PATTERNS

- **TOD potential fall into three broad categories:**
  - Public ownership
  - Corporate ownership
  - Individual ownership
- **Greatest opportunity:**
  - Housing NZ sites
  - Council-owned properties in station areas
  - Commercial sites with ageing buildings
  - Ageing apartment or townhouse sites in single ownership
- **Least opportunity:**
  - Areas of fragmented individual ownership
  - Areas of recent auto-oriented development or reinvestment

PARCEL SIZES

- Larger land parcels have greater redevelopment opportunities than smaller ones.
- Where a lack of consolidated ownership is present some local governments have acquired parcels to facilitate development.
- Zoning incentives in areas of small-holdings can encourage property acquisition and amalgamation by providing bonuses that allow increased height, FAR, or parcel coverage.

Dominion Road

Onehunga

Socio-Economic Conditions

SOCIO-ECONOMIC CONDITIONS

- Brisbane research identified five indicators of TOD community suitability. TOD-supportive neighbourhoods have:
  - Less educational attainment
  - Younger populations
  - Larger average household sizes
  - Fewer private dwellings
  - Car-ownership less than 85%

CRIME AND NEIGHBOURHOOD PERCEPTIONS

- Other Brisbane research measured three elements of social capital—trust, reciprocity and connections with neighbours—in three types of neighbourhoods: TODs, TADs & traditional suburbs.
- TOD residents had significantly higher levels of trust, reciprocity and connections with neighbours than residents of TADs.

3

TOD CASE STUDIES

Edmonton – Alberta, Canada

EARLY APPROACH

- 1978: Edmonton opened a LRT system on repurposed rail corridor with high platform stations.
- Edmonton wanted significant redevelopment around LRT.
- Few urban design moves were made to integrate them into the urban fabric.
- LRT was well-patronised (115,000 daily pax), but TOD zoning did not provide much return.

STRATEGIC SHIFT

- Early 2000s: Edmonton pursued strategies to increase infill development, including a reconsidering of TOD strategies.
- A more nuanced and market-driven approach was developed, resulting in the 2012 Transit Oriented Development Guidelines.
- New LRT design shifted towards new urban-style low-floor LRT lines with more focus on walking and cycling.

OUTCOMES

- 2018: Results have been dramatic for development in TOD areas with 30,000+ new homes and 230,000m^2 commercial floor space.
- New LRT stops in market –attractive locations, whilst the improved design of the infrastructure offers greater neighbourhood integration.

Seattle – Washington, USA

LAND USE CHANGE AS A RIDERSHIP STRATEGY

- Link Light Rail opened between the city centre and the airport in 2009 and was extended to University of Washington in 2016.
- Sound Transit has developed its own TOD strategy for its lands around stations.
- The City of Seattle developed TOD plans with targets for jobs, population, and development.

STATION AREA STUDY LESSONS

- Stantec studied four station areas to identify factors that led to successful TOD implementation.
- Early TOD plans allow infrastructure and policy gaps to be addressed.
- Investment increases over time as the system matures.
- TOD areas better support growth compared to areas not served by rapid transit.
- Large sites, older buildings or government-owned land provide better TOD opportunities.

EQUITY CHALLENGES

- Areas considered “not market ready” by banks.
- Increased land values have pushed low-income residents further out.
- Equitable TOD “80-80-80” Policy for surplus property: 80% surplus land for affordable housing, and 80% of units affordable to people earning 80% or less of median income.

Minneapolis / St. Paul – Minnesota, USA

CONNECTING URBAN DESTINATIONS

- Green Line opened in 2014 reconnecting the downtowns of St. Paul & Minneapolis, serving major destinations such as the University of Minnesota,
- Most of the alignment in the centre of an arterial, presenting challenges for station access; managing and supporting business.

PLAN EARLY, COMMUNICATE OFTEN

- The urban alignment gave the chance to plan the LRT concurrently, ensuring lands were ready for TOD investment
- TOD grants to assist affordable housing, environmental clean-up, and TOD implementation.
- Developer-focused tools built greater understanding of TOD and its potential.

OUTCOMES

- Strategic planning, community engagement and influences on rail alignment, and incentives provided for a strong TOD market.
- Parking requirements continue to be refined.
- Affordable housing projects led the development with market rate development following behind.

Gold Coast – Queensland, Australia

LIGHT RAIL AS A PLACEMAKING TOOL

- Gold Coast LRT has 19 stations on a 20 km route within the highly populated, dense but heavily car-oriented linear coastal strip.
- It spurred additional investment, directing growth that maximised development outcomes.
- Integrated into the wide Gold Coast Highway, LRT is carrying around 22,000 pax daily.

KEY GOALS

- Accommodating growth.
- Improving the appeal of the Gold Coast.
- Supporting Southport as the Gold Coast's city centre.
- Promoting economic and workforce diversity.

OUTCOMES

- Big construction impacts on business.
- Car trips reduced by 10%.
- Crucial role in 2018 Commonwealth Games, carrying 1.1 million pax.
- Positive announcement effects on property values in the corridor.

Subiaco, Perth – Western Australia, Australia

BACKGROUND

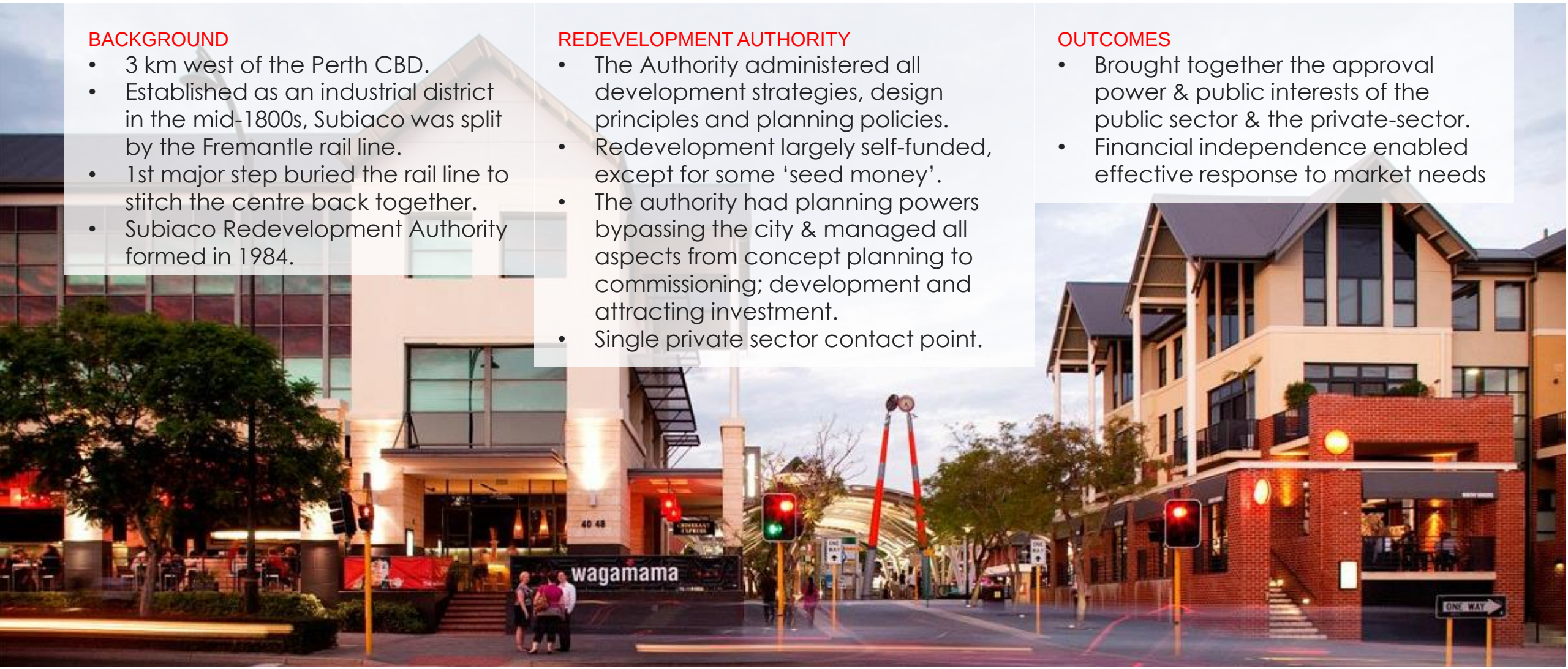
- 3 km west of the Perth CBD.
- Established as an industrial district in the mid-1800s, Subiaco was split by the Fremantle rail line.
- 1st major step buried the rail line to stitch the centre back together.
- Subiaco Redevelopment Authority formed in 1984.

REDEVELOPMENT AUTHORITY

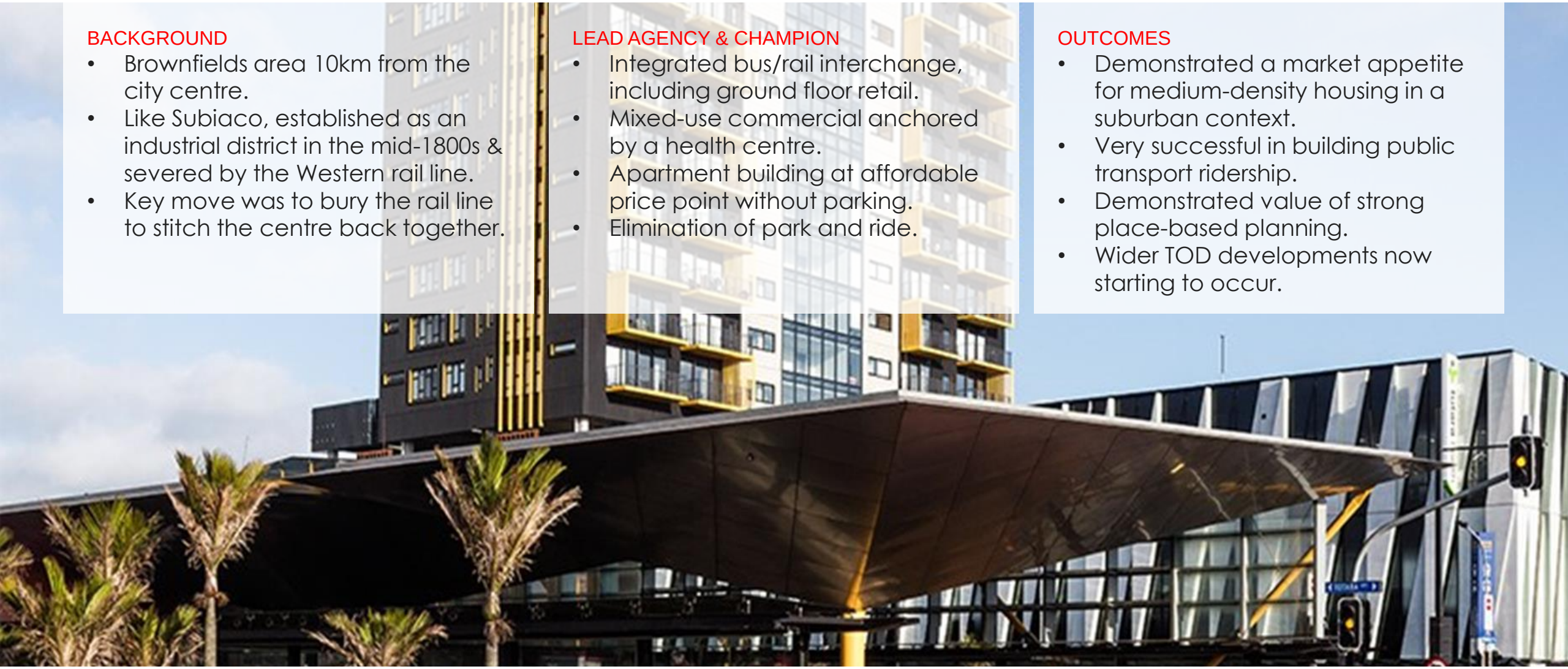
- The Authority administered all development strategies, design principles and planning policies.
- Redevelopment largely self-funded, except for some 'seed money'.
- The authority had planning powers bypassing the city & managed all aspects from concept planning to commissioning; development and attracting investment.
- Single private sector contact point.

OUTCOMES

- Brought together the approval power & public interests of the public sector & the private-sector.
- Financial independence enabled effective response to market needs



New Lynn, Auckland – New Zealand



BACKGROUND

- Brownfields area 10km from the city centre.
- Like Subiaco, established as an industrial district in the mid-1800s & severed by the Western rail line.
- Key move was to bury the rail line to stitch the centre back together.

LEAD AGENCY & CHAMPION

- Integrated bus/rail interchange, including ground floor retail.
- Mixed-use commercial anchored by a health centre.
- Apartment building at affordable price point without parking.
- Elimination of park and ride.

OUTCOMES

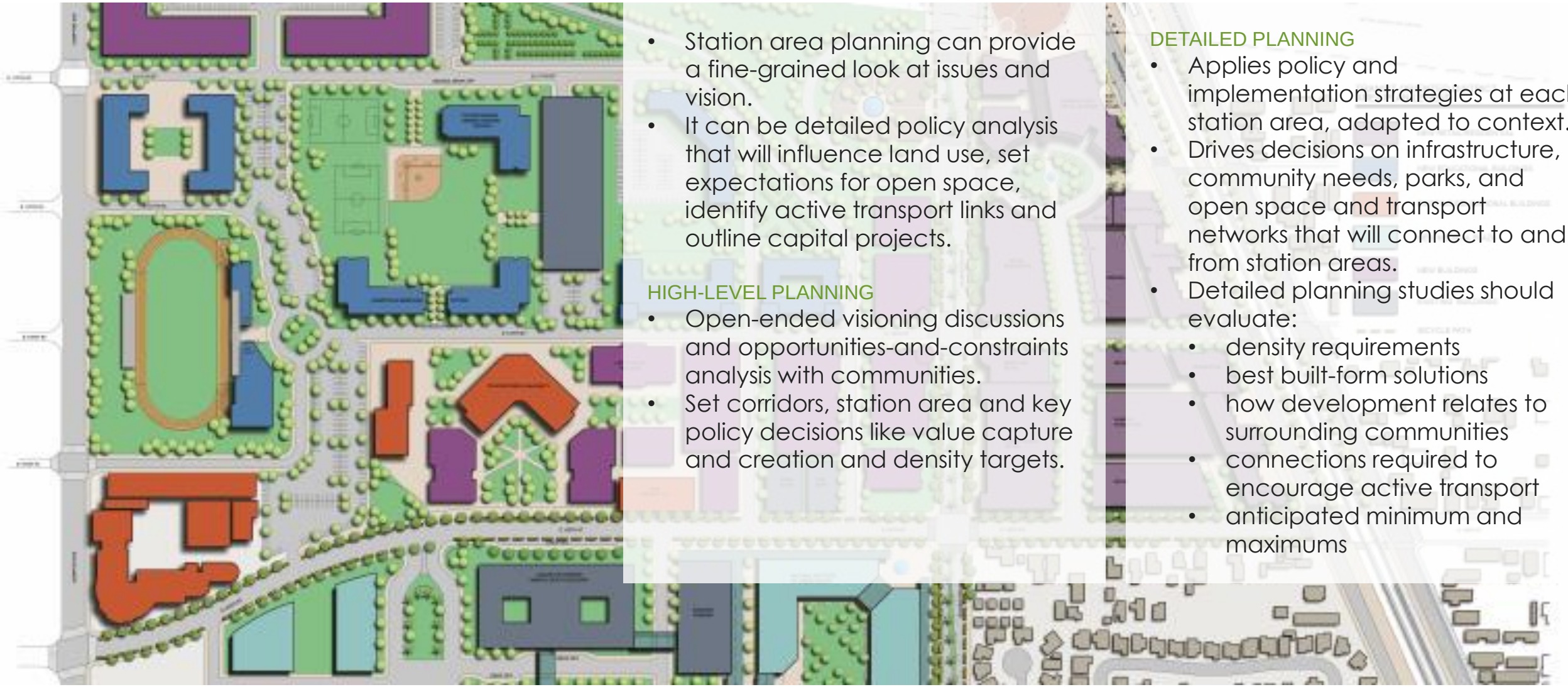
- Demonstrated a market appetite for medium-density housing in a suburban context.
- Very successful in building public transport ridership.
- Demonstrated value of strong place-based planning.
- Wider TOD developments now starting to occur.

Stantec. 2017. One Charlestown, Boston.

4

IMPLEMENTATION STRATEGIES

Station Area Planning



- Station area planning can provide a fine-grained look at issues and vision.
- It can be detailed policy analysis that will influence land use, set expectations for open space, identify active transport links and outline capital projects.

HIGH-LEVEL PLANNING

- Open-ended visioning discussions and opportunities-and-constraints analysis with communities.
- Set corridors, station area and key policy decisions like value capture and creation and density targets.

DETAILED PLANNING

- Applies policy and implementation strategies at each station area, adapted to context.
- Drives decisions on infrastructure, community needs, parks, and open space and transport networks that will connect to and from station areas.
- Detailed planning studies should evaluate:
  - density requirements
  - best built-form solutions
  - how development relates to surrounding communities
  - connections required to encourage active transport
  - anticipated minimum and maximums

Parking

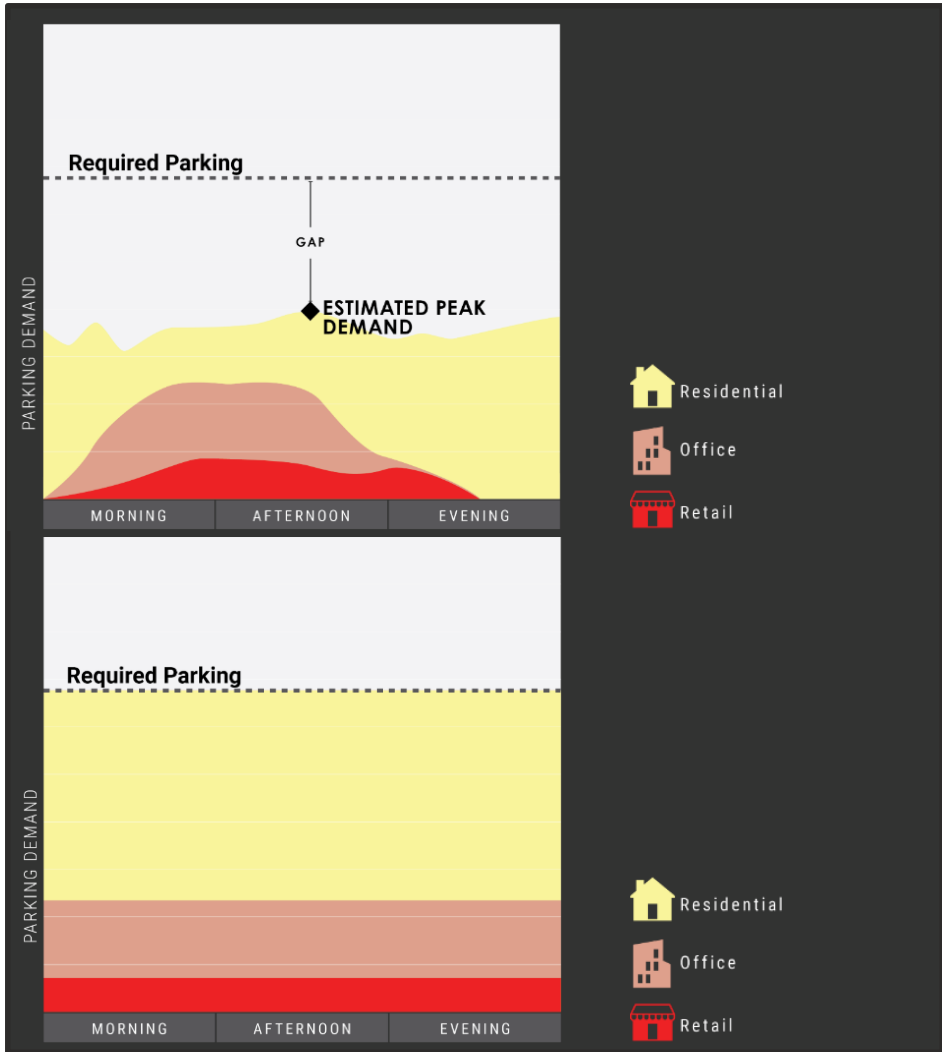
- Whilst an important component of the area's mobility network, TOD area parking can compete with the goal of a pedestrian-oriented station.
- As TOD strategies begin to bear fruit, parking should give way to other, higher-value land uses.

SPACE IS VALUABLE

- Active uses generate dollars, vitality and public transport users.
- Parking supports those uses but, except in park-and-rides, generates little public transport use.
- Public transport increases the value of adjacent land and attracts more intensive forms of development. Parking revenue cannot compete.

PARK AND RIDE

- Poses challenges to the success of TOD
- Park and ride poses challenges to the success of TOD:
  - Space consumptive
  - Should locate immediately adjacent to the station for convenience
  - Prioritises automobile access
- Park and ride needs careful consideration in conjunction with the character of the corridor and should be avoided in any station area with:
  - a strong existing pedestrian orientation
  - high potential to become pedestrian oriented with public and private investment



Walking and Cycling

- When designed well, TOD areas create opportunities to connect the surrounding community to the station.
- TOD pedestrian and cycling networks should:
  - Create additional desire lines that are efficient, direct and redundant.
  - Connect to larger pedestrian and bicycle networks.
  - Increase in permeability as density increases closer to the station.
- Buildings in TOD areas should have multiple pedestrian entries oriented towards the street and station.
- Pedestrian routes should also be direct, well-lit, and animated by adjacent uses.
- An attractive and comprehensive pedestrian network can also facilitate a “park once” environment in addition to supporting increased public transport use.
- These considerations can be addressed through:
  - Infrastructure planning guidance
  - Design guidelines
  - Zoning

Value Creation and Capture

- Value creation and capture (VCC) enables communities, funding organisations and government bodies to recover and reinvest increases in land values that result from major public investments.

APPROACHES TO VALUE CREATION AND CAPTURE

- **Development-based VCC**
- Direct transit agency involvement in development delivery — the "Hong Kong" model
- Other public sector leadership of station area redevelopment
- **Taxation-based VCC**
- Uses taxes and levies to capture the uplift value of new development

Urban Development Authorities

- Urban development authorities (UDA) are quasigovernmental bodies that hold special powers to fast-track complex projects.
- UDAs succeed when they:
  - Take an entrepreneurial approach
  - Offer communities and developers a streamlined point of contact
- However, they could create new challenges, primarily regarding real or perceived loss of Council, mana whenua and community influence over decision-making.

Stantec. 2010. Tie and ballast track at South Campus station, Edmonton.

5

CONCLUSION

Key Lessons

- Establish clear expectations.
- One size does not fit all: Retain leverage over the rezoning process.
- Success requires concerted effort over long periods.
- Station area plans allow agencies to prioritise and signal to the market.

- Public affordable housing development can pave the way for private investments,
- Incentives can help attract private investments to areas that present additional barriers to redevelopment.
- The easiest corridor is not always the best corridor.

- Station areas with large sites, older buildings and/or public land are better TOD opportunities.
- Urban corridors may complicate LRT design but they also offer greater opportunities for TOD.
- Design to link not sever.

- LRT can help shift car-oriented areas.
- Placemaking forms a critical part of LRT projects.
- Construction can disrupt businesses and needs to be carefully managed.
- LRT can result in sustained land value uplift.

Thank You!