This document is one of a series of information snapshots provided in conjunction with a detailed review of literature associated with Liveable Social and Affordable Higher Density Housing SBEnrc research project.

INTRODUCTION

The *Liveable Social and Affordable Higher Density Housing* project is investigating liveable and affordable higher density housing opportunities, with a focus on urban precincts. Key topics reviewed include:

1) Liveability outcomes, including accessibility in both medium and high density housing and the urban precinct.
2) Adoption of liveable design elements, highlighting successful best practice examples, and identifying pathways for adoption and barriers to uptake.
3) Understanding the value equation through capturing and demonstrating social and economic benefits to the broader community.
4) Exploring next generation thinking in order to maximise future infrastructure benefits and minimise future risks.

This snapshot outlines previous SBEnrc research *Project 1.62 Sustainable Centres of Tomorrow,* which undertook a review of how urban centres adapt and respond to the challenges of climate change, economic development and social inclusion. The aim of that project was to reflect on 'global best practices in prioritising thriving, productive, sustainable, liveable centres, towards unlocking such potential in our Australian cities' (Caldera, Desha et al. 2019), and apply the resultant framework across four urban fabrics as case studies.

THE URBAN FABRIC

Urban fabric elements

The theory of urban fabrics acknowledges that 'transport-related lifestyles and functions … have needed certain physical elements and environments to enable them' (Newman, Kosonen et al. 2016, 431). The urban fabric consists of spatial relationships, typology of buildings and land use patterns based on their transport infrastructure priorities that are overlapping in nature. These fall within the domains of walking, transit, automobile or a combination and overlapping of all three urban fabrics.

Fabric qualities across the urban fabric elements

Urban Fabric Element	Walking City	Transit City	Automotive City
1. Urban form qualities			
▪ Density	High	Medium	Low
▪ Mix	High	Medium	Low
2. Transport qualities			
▪ Car ownership	Low	Medium	High
▪ Level of service	High for pedestrians	High for transit users	High for car users
▪ Transport activity	High ped activity	High transit activity	High car activity
3. Economic qualities			
▪ Infrastructure costs per capita	Low - Medium	Medium - Low	High
▪ GDP per capita	High	Medium	Low
▪ Labour intensity	High	Medium	Low

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Fabric qualities across the urban fabric elements cont'd			
4. Social qualities			
▪ Difference between rich and poor	Low	Medium	High
▪ Ability to help car-less	High	Medium	Low
▪ Health due to walking	High	Medium	Low
▪ Social capital	High	Medium	Low
▪ Personal security	Variable	Variable	Variable
▪ Traffic fatalities	Low	Low	Medium to High
5. Environmental qualities			
▪ Greenhouse gases and oil per capita	Low	Medium	High
▪ Waste per capita	Low	Medium	High
▪ Footprint per capita	Low	Medium	High

Source: Newman et. al., 2016, 450.

Precinct design framework

The *Sustainable Centres for Tomorrow* project developed a framework of core principles and practices that can be utilised to create outcomes from the regeneration of centres around transport nodes. This aims to ensure that urban design and infrastructure development priorities are considered.

Precinct Design Framework for Sustainable Centres of Tomorrow: Core Principles and Practices

Core Principles	Core Practices
1. Precinct safety and accessibility The development should be safe and healthy for people waiting to access transport nodes.	Human centred design Walkable urban design Place and movement design
2. Carbon neutral - positive approach The development should aim for carbon positive, being at least zero carbon, in both power and transport.	Solar passive design Solar active design Carbon neutral analysis
3. Local shared mobility The development should encourage diverse local modal services to access the transit service, with defined spaces.	Local mobility design Feeder transport design Mobility as a service
4. Property diversity The density and urban mix should contribute to urban regeneration.	Community engaged planning Agglomeration economy analysis Financial modelling
5. Property affordability The development should include diverse property options to provide affordable living as well as affordable housing.	Social housing analysis Life cycle assessment Sustainability operational analysis
6. Nature-loving and biodiverse spaces The development should include and connect biophilic and biodiverse greenspaces, supporting endemic species and habitat.	Biophilic design Water sensitive design Landscape oriented design
7. Inclusive, integrated place-based planning Planning, design and implementation (operation, maintenance) should involve diverse stakeholders and all tiers of government to provide an integrated place-based approach.	Joined up governance analysis Partnership analysis Procurement option analysis

Source: Caldera, Desha et al. 2019

These principles, in particular the urban fabric elements/qualities, also have application beyond the immediate urban neighbourhood to broader considerations of city/regional connectedness, and associated economic performance.

A number of case studies applied this framework across different towns, regions and settings. One of these case studies was in Townsville, Qld. The below summary of the seven principles within the *Place-Making Framework* highlights that priority design considerations demonstrating a strong commitment to inclusive, integrated place-based planning processes are integral.

***Place-Making Framework* design prompts: Flinders St - Charters Towers Rd - Ross River Road transit-oriented development corridor.**

1. Precinct safety and accessibility: *The development should be safe and healthy for people waiting to access transport nodes* [Human centred design | Walkable urban design | Place and movement design]	
Safe and accessible connectivity to nodes Cool and comfortable (shelters, pathways) Safe, natural and open spaces	Frequent and integrated Resilient (supporting economic recovery)
2. Carbon neutral - positive approach: *The development should aim for carbon positive, being at least zero carbon, in both power and transport* [Solar passive design | Solar active design | Carbon neutral analysis]	
Solar powered with energy storage Low carbon transport approach Hydrogen fuel cell vehicles	Sustainable urban design Low embodied energy infrastructure
3. Local shared mobility: *The development should encourage diverse local modal services to access the transit service, with defined spaces* [Local mobility design | Feeder transport design | Mobility as a service]	
Modernised systems – electronic ticketing Real-time data available to all	Walking/jogging/bike paths that connect housing to communal amenity
4. Property diversity: *The density and urban mix should contribute to urban regeneration* [Community engaged planning | Agglomeration economy analysis | Financial modelling]	
Robust and current survey data Mapped population clusters, by type	Long term planning considerations
5. Property affordability: *The development should include diverse property options to provide affordable living as well as affordable housing* [Social housing analysis | Life cycle assessment | Sustainability operational analysis]	
A mix of social and affordable housing lines (rent, purchase) Housing choice and diversity	Medium density residential housing
6. Nature-loving and biodiverse spaces: *The development should include and connect biophilic and biodiverse greenspaces, supporting endemic species and habitat* [Biophilic design | Water sensitive design | Landscape oriented design]	
Cool and comfortable Water sensitive design	Natural and open spaces along and connecting corridors
7. Inclusive, integrated place-based planning: *Planning, design and implementation (operation, maintenance) should involve diverse stakeholders and all tiers of government, for an integrated place-based outcome* [Joined up governance analysis | Partnership analysis | Procurement option analysis]	
Collaboration among key stakeholders Inclusive governance	Working across agencies Working in partnership with the community

Source: Caldera, Desha et al. 2020

In conclusion:

The approach and outcomes from this previous SBEnrc research will be used to inform the development of the *Liveability Framework for Social and Affordable Higher Density Housing* being developed in the current

research project. In particular, the core principles and practices from the *Precinct Design Framework* will contribute to the developing criteria for the liveability framework.

Further detail on the *Sustainable centres of tomorrow* project is available at the project website: https://sbenrc.com.au/research-programs/1-62/ or contact Sacha Reid: s.reid@griffith.edu.au

Further information on the *Liveable Social and Affordable Higher Density Housing* project is available at https://sbenrc.com.au/research-programs/1-71/ or contact Judy Kraatz: j.kraatz@griffith.edu.au

References:

Caldera, S., C. Desha, S. Reid, P. Newman and M. Mouritz (2019). Sustainable centres of tomorrow: A Precinct Design Framework of Principles and Practices. Perth, Australia.

Caldera, S., Desha, C., Reid, S., Yen, B., Shearer, H., Newman, P. and Mouritz, M. (2020) Townsville metro: unlocking potential through improving Townsville's transit corridor, Report for Project 1.62 Sustainable Centres of Tomorrow: People and Place, Sustainable Built Environment National Research Centre, Australia.

Newman, P., L. Kosonen and J. Kenworthy (2016). 'Theory of urban fabrics: Planning the walking, transit/public transport and automobile/motor car cities for reduced car dependency'. Town Planning Review 87(4): 429-458.