MAX Light Rail Planning Framework

Outcomes of PIA Workshop

2012

The Metro Area Express, or MAX, is the proposed new light rail system set to power Perth's public transport into the future.The Department Planning in collaboration with the Department of Transport is currently preparing a system-wide planning framework for the MAX light rail route, which sets out objectives and design criteria for the public transit, land use and urban design interface.

The purpose of the objectives-setting phase is to ensure that a suite of best practice, robust and applicable objectives are prepared to guide the planning work required across the light rail transit system generally, as well as further detailed planning in key activity centres identified by the Western Australian Planning Commission. Preparing a system-wide planning framework for the MAX light rail route, which sets out objectives and design criteria for the public transit, land use and urban design interface. What the DoP would like to achieve through the objectives-setting phase is to ensure that we have a suite of best practice, robust and applicable objectives to guide the planning work required across the LRT system generally, as well as further detailed planning in key activity centres identified by the WAPC.

On the 27th November 2012, PIA held a workshop with planning, urban design and other allied professionals where participants were asked to document high level principles and objectives for the public transit, land use and urban design interface along the light rail corridors. The document summarises the work undertaken at the workshop.

It is emphasised that these notes are not meant to be exhaustive or comprehensive but serve as a guide to assist Department of Planning and Department of Transport as they continue to prepare and finalise the planning framework for the MAX light rail route.

PIA Planning Institute Australia
Western Australian Division

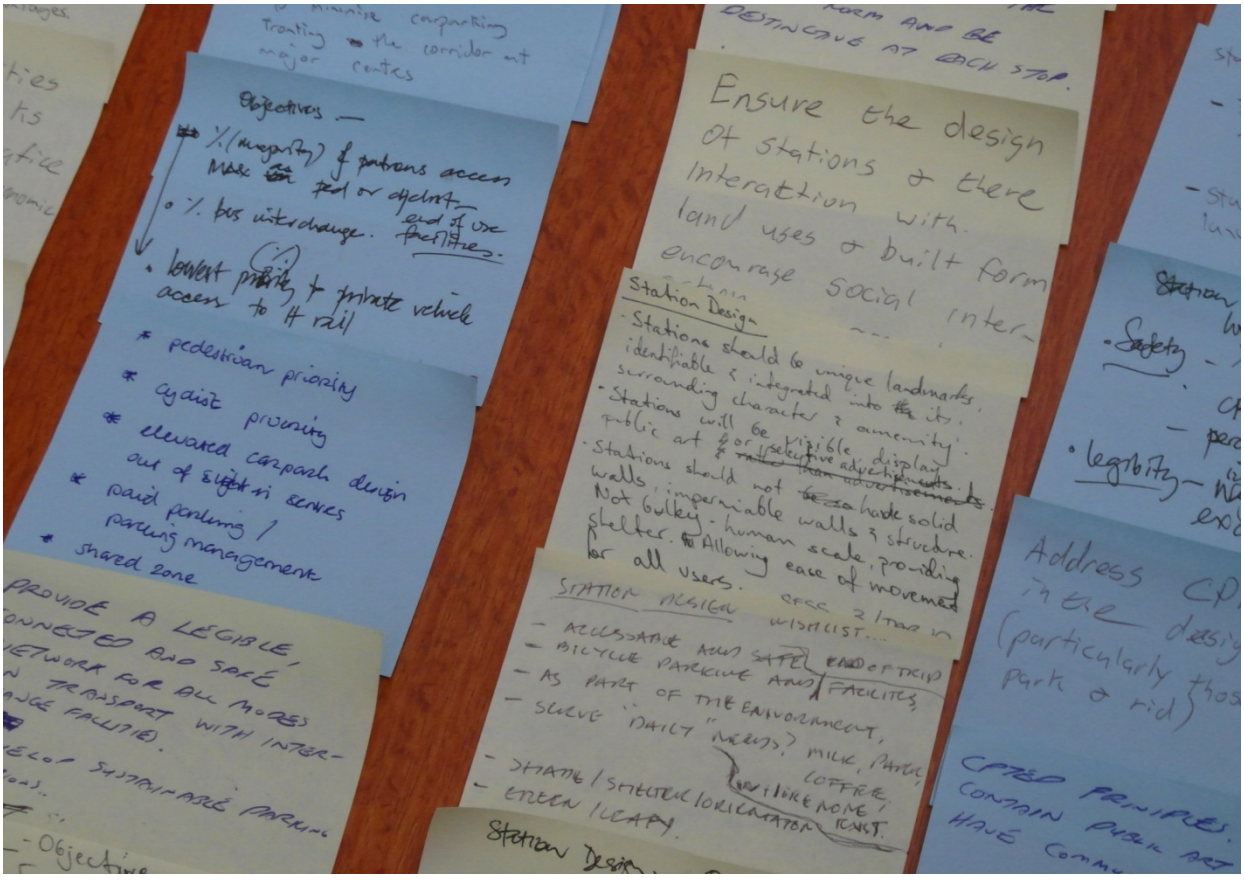
Planning Institute of Australia (WA)
27 Charles Street, SOUTH PERTH
9367 2599
wa@planning.org.au

MAX PLANNING FRAMEWORK

Using two different colours of sticky notes each participant was asked to document the principles and objectives under the four main general headings of Built Form, Transport, Station Design and Implementation.

Principles **– a two or three sentence high level statement that sets the direction of an broad topic**
Objectives – a more specific breakdown of the principle, which may or may not include a quantifiable target

Built form (in *centres*, at *stops* and the *links* in-between)
Density
Land uses
Housing
Public realm and open space design
Transport
Pedestrian design
Cyclist design
Car parking design
Station Design
Easy to navigate and transfer, a part of the public realm
Safe day and night
Prominent and quality design
Implementation
Centres
Links



SYNOPSIS

LAND USE

- A mix of land uses: horizontally or vertically
- Vibrant ground floor retail or active services
- Lively, mixed use development precincts - the rejection of mono-functional areas is a perquisite for integration of various types of people and activities
- Incorporate retail into the development if it is a viable use at the location without transit component, ideally drawing customers both from the LRT (Light Rail Transit) and major street
- Mix of uses: vertical or horizontal, prohibit auto-oriented uses close to transit
- Place commercial, housing, jobs, parks and civic uses within walking distance of transit stops
- Activity diversity: a diverse mix of users and activity are desirable for an economically, environmentally and socially sustainable city, enabling users to access multiple needs with fewer trips and contributing to higher rates of employment self-sufficiency
- Include a broad mix of land uses in activity centres and structure them as mixed use centres in a predominately main street format to best serve their surrounding communities
- Land uses are mixed and may include a combination of residential, commercial and entertainment activities
- Ensure transit supportive land uses by generating high levels of transit use and provide a mixed-use activity node for the local community and city-wide transportation and network benefits. This provides the community with increased *services,* employment and housing options within their community
- Promote a degree of diverse housing choices to reflect changing household trends in the inner and middle ring suburban areas of Perth.

BUILT FORM AND DESIGN

- Permeability and pedestrian design focus
- Compact pedestrian oriented design and streetscape
- Building design and orientation to street which allows easy pedestrian and transit access
- Building oriented to transit (i.e. doors located convenient to a transit stop)
- Identify key pedestrian corridors
- All new development will be required to provide no less than 80% active frontage along all street frontages
- Orienting building frontages as close to the street and transit stops as possible
- Compact pedestrian-oriented: orientate buildings to sidewalks, calm streets, active streets edges with wide sidewalks
- Make public spaces the focus of building orientation and neighbourhood activity
- Improving the aesthetics, attractiveness and pleasantness of the physical environment makes an urban area more conducive to frequent and prolonged use
- Design and site development to reinforce and reflect local character and achieve innovation and design excellence
- Ensure new development utilises existing infrastructure or can be provided with timely transport infrastructure, community services and employment
- A focus on designing walkable neighbourhoods

- Pedestrian orientation : streets and open spaces are friendly to pedestrians
- Create pedestrian oriented design: create convenient, comfortable, direct and safe pedestrian linkages to and from all transit stations in order to support a walkable station area and promote the use of transit
- Ensure compatibility and connectivity with surrounding neighbourhoods

DENSITY

- Concentration of passengers and activity at key stations- among all of the built environment factors that influence transit ridership, density in and around transit stations is the most important
- The appropriate level of development, 4 to 8 storeys, needs to be determined up front and where possible given as of right development approval, subject to specified Urban Design criteria that ensure quality engagement with the adjacent properties; particularly the public realm
- Requiring larger scale developers to provide either a transit stop or a connection to a transit stop if demanded
- Create a compact development within an easy walk of public transit and with sufficient density to support patronage
- Promote density (relative to context)
- Create compact development
- Encourage infill and redevelopment along transit corridors within existing neighbourhoods
- Compact development - conserve land by making the most efficient use of land allocated for urban development
- Compact development - development is compact, at medium to high densities
- Increase density around transit stations: to support high frequency rapid service and provide a base for a variety of housing, employment, local services and amenities that support a vibrant station area community
- The vision should increase the opportunity for density along the corridor and respond to existing centres and future transit stops

PARKING

- Limited parking, the parking supply has been 'pinched' or placed in multi-level parking structure
- Analyse parking supply and demand
- Consider whether to supply parking
- Introduce creative parking strategies that integrate, rather than divide the site and reduce the sense of auto domination
- Limited parking: no parking ratios, disconnect parking from buildings managed by district
- Providing for a variety of transportation choices and reduced car dependency
- Manage parking, bus and vehicular traffic: accommodate transit bus and private automobile circulation and parking needs, while creating a comfortable pedestrian environment
- Manage parking to minimize the amount of land devoted to car parks around stations

LIGHT STATION AND INTERCHANGE ENVIRONS

- Encourage public transport use by providing convenient, prominent and active stations and interchanges.
- Integrate transit stops and interchanges into the design and layout of the activity node/centre, and locate them centrally.

- Develop light rail station forecourts as part of an activity centre's public space system. This can be achieved by developing the entrances and approaches to stops to enhance their appearance, and to make them function as arrival points in the activity centre and as public spaces in their own right.
- Entrance points that are generous in proportions and provide for safe, convenient access will assist in this process.
- Surround the light rail stations, transit stops with active, ground-level uses. In particular, convenience shops, cafes and other day-to-day services and uses that stay open for extended periods can enhance safety and contribute to the liveliness of the transit stop.
- Minimise low-activity uses, large car parks and blank walls around stations and interchanges as they can make the interchange feel unsafe.
- Maximise the efficiency of railway stations/major bus stops as transport interchanges. For example, provide separate, direct bus access to interchanges to avoid conflict with parking and pedestrian routes.

PASSENGER FACILITIES

- Provide comfortable, weather-protected stops. Integrate weather-protected stops into the architecture and streetscape of the activity centre and, where appropriate, provide air-conditioned waiting facilities and real-time travel information, in safe, active areas.
- Ensure the interior lighting of shelters supports people's ability to see into darker surrounding areas at night, by limiting the brightness level and ensuring a high quality 'white-light'.
- Provide secure end-of-trip bicycle storage. This will extend the catchment area of public transport routes.
- Provide local and relevant travel information. For example, provide route maps, timetables and clear signage to transit stops, station exits, platforms and public facilities including toilets, telephones and taxi ranks. Where appropriate, signage should incorporate familiar international symbols and walking times and distances and include a current contact telephone number to call for maintenance.
- Provide safe, attractive and direct pedestrian and cycling access to stations, interchanges and transit stops.
- Provide clear, continuous, direct and attractive pedestrian and cycle routes to stations and transit stops. For example, focus well-used and connected local pedestrian paths and cycle routes on the station or interchange.
- Ensure a high level of visibility and natural surveillance along access routes and encourage active uses to front onto them.
- Ensure safe and convenient access is provided for people with special mobility requirements such as people with a disability and those with prams and gophers

LIGHT RAIL TRANSIT CORRIDORS

- Minimise the dividing effect of LRT on activity centres.
- Identify opportunities to develop under-utilised land near LRT stops
- Improve the pedestrian and cycling connectivity around LRT Corridors. For example, develop cycle and walking paths along rail corridors, where appropriate, and link these paths to both sides of the rail corridor where possible. Encourage natural surveillance of these paths to enhance the safety of these public spaces.
- Consider the role of landscaping around the LRT corridor. Improve the outlook from the train and the local environment and air quality by landscaping available land beside LRT stops. When undertaking landscaping, ensure

existing significant vegetation is not destroyed and that planting does not impede sightlines or the ultimate growth of vegetation.

- Development incentives (such as development bonuses) are offered at station areas in order to encourage high-density and transit oriented development
- Joint development projects are introduced at station areas in order to encourage development along the LRT system
- New public developments are located at station sites, or public buildings are relocated at station sites
- Certain streets in the city centre are pedestrianised (to increase the attractiveness of the city centre)

TABLE SUMMARIES

TABLE 1

- Protect long term vision from short term opportunistic opportunities i.e. avoid developing key sites near transit stops that do not maximise development potential/opportunities.
- Set minimum development standards i.e. Residential
- Differentiate centre stops and in between.
- Journey to each of the stops have to be conducive to walking
- Create new minor high street environments around outer centres
- Universal access
- Separation of cycle lanes. Cyclists should be given same priority as pedestrians
- Pedestrian and cycle environment and design is vital
- If you have parking (don't have dedicated parking facilities) create multiple purpose parking
- Station Design – Due consideration needs to be given to the design and integration of any bus turning facilities. Limit areas that are just dedicated to bus turning circles on a particular site, these can have a significant negative impact on pedestrian connectivity and urban design outcome.
- Well branded LRT Stations
- Seamless Integration with surrounding development
- Lease Incentives for things like coffee carts, fruit stands etc
- Escape Routes (CPTED Principles)
- Set a standard of Town Planning Scheme principles provide a set of consistent minimum standards that are applied consistently across all applicable local government areas
- Implement through Local Area Plan/Structure Plans
- Development Control Plans (over LRT stops)
- Use of form based that designates the appropriate form and scale for development is an option to achieve an integrated built form within transit stop locations.
- Explore public-private development opportunities (where appropriate) as well as joint development opportunities within transit stop area. Both these options provide the potential for introducing new investment dollars at the local level to advance TOD.

TABLE 2

Built form (in *centres*, at *stops* and the *links* in-between)	
PRINCIPLES	OBJECTIVES
• Housing choices. Housing diversity affordable with right amount of density • Land uses to be as mixed as possible • Should be driven by the role and function of the place, what makes it aesthetic and viable • Assume 'commerce' drivers a lot(if not all) development • Enhance & brand the context of locality • Work with what you've got • Mixed use activity centres focused around stations that enable people to live, work and play relying on public transport • Work to enhance & develop existing nodes • Establish individual sense of place • Recognise the importance of the public realm in promoting space and setting for the station • Activation – mixed use • Intensity both living and working opportunities primarily at activity centres nodes • Don't control development through density	• Build flexibility into local government planning schemes • Building centred around the LRT stations with active frontages • Type of centre • Origin or destination (short term/long term) • What is the appropriate mix of business for that place to be viable • Usual good practice urban design active fronts etc • Concentrated in nodes high quality mixed use development will be linked by MAX • Each node will be maximised for it own potential as a destinations, village, institute • Create active frontage with landscaping and trees • Define character of local place by revealing local people with community
Transport	
• Use the notion of origins and destination to 'marry' the function of the place and the transport patterns character. • Do not promote 'Park & Ride' the LR system should focused on "Active –Public" • Active streets & street fronts • Dedicated cycle lanes or totally separate routes • Preference for minimal on street parking • Integrated multi modal transport system with appropriate priorities where required.	• Create intimate, active, interesting places • Minimize park +ride function in inner urban locations • Keep ticketing simple • Brand each 'line' • Design very beautiful looking trams with underground electrical power • Use the notion of origin or destination to determine the dominance of parking • An easily negotiable environment for all

• A pedestrian oriented environment with convenient, efficient public transport which operates day and night • An LRT system which brands Perth and is aesthetically pleasing • Promote cycle storage facilities at stops to increase the catchment potential for active public mode use • Minimize car parking (that is purely for park & ride • Design walkable but “legible” routes around the “station” • Encourage workers to use system • Connecting people to active places with improved accessibility & mobility	• Well integrated convent by multi modal system • Cyclist facilities as each station & the opportunity transport bikes on the LRT • Aesthetically pleasing LRT vehicles • Pedestrians integrated with route
Station Design	
Easy to navigate and transfer, a part of the public realm	
• Safe, edgy, bright with inbuilt brand/font that is generic to the ‘Line Brand’ • Simple, elegant & generic • Theme routes and individual stations using architecture art, colour, to get a sense of playfulness, welcome and delight • Attractive stations that are safe & accessible • A 24hr system that is reliable frequent, safe and service surrounding night time activity • Encourage active uses and the station – ie the private and public realm gives the place character then station itself can be really simple • Station design should respond to the place – same will be simple stops others will be key urban nodes • Ensure adequate light to station environments and key pedestrian routes from station.	• Statement stations & functional statements • Each statement station to have a unique character • A cohesive branding of the system • 24 hr system • Incentivise development via Local government schemes • Transparent structure create shelter as public art • PTA other public authority could purchase land + catalyse development • Simple Shelters • Station itself to be well integrated with its surroundings that reflect the character of the stop itself • Bring an element of delight into station & tram design. Use art or native flora & fauna at stations
Implementation	
Centres	
• Swift, efficient development of nearby centre, then surrounding residential areas	• Plot incentives and value capture tools on a cash flow time line

• Good salesmanship • Timing & staging to meeting stakeholders needs • Encourage partnering to achieve results • Understand planning does not make it happen • Engage community, business and landowners to work out what catalysts are needed to help regenerate 'their' centre/community/place/land/business • Recognise that centre/place creation is largely private investment and to support it • Take time into account – allow for places to change from origin to destination in the long term through avoiding strata title on interim development and leasing public & ride as future development sites • The market will follow, not lead • Reward innovation & integration from developers • Ensure Local Governments are on board and in partnership from the start • Foster exemplar projects along route as partnerships that include Local Governments • Market system as a transformational project that has multiple benefits for the lifestyle of community.	• Create Partnerships • Aware Innovation • Government to kick start • Select site redevelopment • Encourage councils to be bold, pro development & adopt flexible scheme that enable significant growth in the future • Incentivise development • Improving & promoting council developer relationships • Reward innovation • Provide exemplar centres to encourage future development

TABLE 3

Built form (in *centres*, at *stops* and the *links* in-between)	
DENSITY	
PRINCIPLES	OBJECTIVES
• Context specific and recognised local objectives • Acknowledge density and intensity around stations.	• Assist small operators in surviving the implementation stage • Acknowledge main streets are fragile • Work with community to establish typologies • Ask the community what is the local character? • Education programmes at local level • Community consultations is different for each committee • Impact on land requirements unclear • Don't just maximise make development locale specific • Ensure all services are near a station
Transport	
Pedestrian design	
• Part of an integrated approach • Encourage people to use public transport (stop building roads, increased petrol prices) • Make transport safe, including routes to station, make footpaths follow desire lines • Make it easy to use • Car parking for station is to be site specific and contextual	• Provide opportunities to connect to cycle routes • Do not displace cyclists • Architectural quality and part of the urban frame • Stations provide a design cue as wayfinding
Station Design	
Easy to navigate and transfer, a part of the public realm	
• Stations are architectural statements they contribute to the community and reflect the local community values	• No two stations to look the same • Community participation in station design • Retail analysis for small local uses, consider intervention, low cost on street vendor licences, MRA model • CPTED • Mixed land uses at the train stations • Good way finding – electronic apps, signage, built form

	• Incorporate local characteristics • Local intervention to establish and aid fine grain land uses around the station
Implementation	
Centres	
• Acknowledge implementation will be different for different areas • Implementation might have a 10-15 year impact on existing development • Identify key responsibilities between local and state government	• Assist local businesses survive the construction phase • Make the development/construction have as little impact as possible • Acknowledge the main streets are the gem in the urban/suburban landscape ensure they survive the implementation • More detailed investigation into the impacts of the time modelling

TABLE 4

Built form (in *centres*, at *stops* and the *links* in-between)	
PRINCIPLES	OBJECTIVES
• Designing out crime around centres • Should respond to changing street environment • Constrained by existing framework – Implementation, form based codes reflective of local environment • New design opportunities landscaping and creating microclimates • Steps to integrate to major built form or future • Built form to be "urban designed" not designed as an individual site • Respect local character in sense of place. Need to be recognised in planning process. • Integration of built form with open space and public realm to create activated centres with high amenity. • Public art to be a mix of cultural expression and interactive fun	• Efforts should be made to maximise housing diversity around LRT stops • Community aspirations; for economic/social benefits; for character & sense of place • Locationally relevant; character test, bulk/scale test, card use density/mix • Creation of open piazza settings with high pedestrian use and landscape quality • Community to be involved in all stage of the built form discussion • Urban design model for light rail centre and corridors guide development, uses and built form in consistent manner • Design of steps (size)to be appropriate to surrounding land use • Land use- Should identify opportunities to maximise economic benefits • Density land use should maximise the potential for housing within the walkable catchment of the LRT stations
Transport	
• Cost must reflect long term vaule – We are implementing "places" for 100 years. • Pedestrian have priority access and utilisation of light rail corridors/centres with cars and cycling catered for outside of core areas • Pedestrians to have a safe environment and are most important • Zurich - textual changes	• Transparency of Pedestrian access • Issue of transport mode interchange needs to be addressed • Providing secure bike storage areas in close proximity to stations
Station Design	
• Station Design; Provides shelter; Designed for climate; Community emergency evacuation point. • Spend now with 100 year timeframe station design is hold and capacity read long term staging	• Every stop is different hierarchy of stops • Engineers solutions – row of trees • Marketing and placemaking of stops to create destination vital

• Cyclist not mixing with pedestrians • Activate to make it a safe place • Integrate stop seamlessly into setting with land uses • Rename station to stop	• High use of design & texture of materials to minimise need for signage intuitive design • Stations need to reflect their roles & surrounding urban design • Kiss & ride at hierarchy of stops- not in the core – off the street • Calm space with high volume of cars
Implementation	
• Issue of design making - ensuring the LGA's are encouraging innovation in urban design outcomes without be unnecessarily restrictive • Decision makers need to be adaptive and innovative • Zoning may change around stops – 'Enterprise zone' • Recognise growth cycles and future proofing • Challenge to bring state gov investment to task • Hierarchy of stops are established and supported by governance and commercial implementation models	• Design advisory council • LG may not be capable of transformationall change of centres • MAX activation groups – multi organisation and stakeholder groups to guide decisions • Objective effective & community based design guidelines eg ignore boundaries • Capture innovative concepts of community thinking • Adaptive design – revisiting design steps. • State investment to go beyond rail infrastructure itself. State should be actively involved in land development around stations and building places. • Design advisory committees must be implemented in whatever implementation framework. • Community must be engaged. Must use 21st century engagement techniques to enagage all members of the community.

TABLE 5

Built form (in *centres*, at *stops* and the *links* in-between)	
PRINCIPLES	OBJECTIVES
• Should Respond to Regional Growth • The way Density is defined needs to be changed - should be related to urban typologies and street networks (Dublin example) • Infill first – then development at new nodes and corridor over time. • Locate major attractors at centres • Let market determine what densities are along the route i.e. linked to profitable market outcomes rather than utopian ideals	• Quality of built form should be prime objective not just achieving a certain density • Have a hierarchy of development i.e. Centre/Stop/corridor
• Hierarchy concept – Centre – Existing Mixed Use (Market Will dictate extent of Retail) Stops – Institutional, Links – Residential • Changes along the route which facilitates character nodes to develop	• Integrated transport and built form objectives through facilitated interchange (see Subiaco example) • Existing Street patterns need to change • Higher order design quality at stops as catalyst for development
• Centres – allow densification and sufficient residential mix – Stops -	
Transport	
• Pedestrians to be king in nodes/Centres. • Design of road and light rail to be secondary to transport infrastructure	• More cyclist facilities (Netherlands example)
Car parking design	
• No Park and Ride • Disincentive the car • Residential parking – zero or ½ bay per residence	• Minimal parking i.e. for emergency vehicles/ACROD
Station Design	
• Dual mode infrastructure for stations i.e. Bus feeder network and LR to be seamlessly integrated i.e. bus pulls in, followed shortly by LR	• Welcoming and shaded constructions

• Stations a part of mixed use precinct i.e. inside buildings	
• Each station needs to be a landmark • Placemaking needs to be the most important element • Individualisation of stations to be balanced against maintenance minimisation.	• Public Art that's not obstructive to pedestrians
Implementation	
• State Takes control – Strategic development zoning (SDZ)for stations and route (see Dublin LR for example of application) • Improvement Scheme – with LandCorp/MRA as developer • Levies • Explore PPP & Developer contributions -Need to consider funding mechanisms	• Developer Contributions • Gov't buys land along the route and puts in where the nodes and stops should be

TABLE 6

Built form (in *centres*, at *stops* and the *links* in-between)	
DENSITY	
PRINCIPLES	OBJECTIVES
• Individual sense of place & active frontage. The return you can get on rent/investment • Fully develop the site through flexibility • What is the function of each place – which makes it viable • Assess & explore what the function & character is of each place	
Transport	
Pedestrian design	
• Intermodal network which prioritises the nodes • Good looking/appealing trams • Recognisable /easy to differentiate different routes through design	
Station Design	
Easy to navigate and transfer, a part of the public realm	
• Artistic and appealing station – people want to use • Recognisable stations in each place • Keep all people on ground don't go over to access the station • Safety at all times of night • Visual/ transparent	
Implementation	
Centres	
• Incentivise development along the route to develop • LG needs to recognise the individual land owners to development • Need to have initiators to provide confidence to redevelop • Development guidelines • Market the system to help councils want to participate in the process	

TABLE 7

Principles	
Objectives	
Built form (in *centres*, at *stops* and the *links* in-between)	
DENSITY	
PRINCIPLES	OBJECTIVES
• Diverse mix of uses • Maximise development around stations. Development does not need to be immediately adjacent Design of stations to be a catalyst for local development themes	
Transport	
• Ensure the system provides access for all use (entertainment, recreation ect) not only commuting. • Prioritise access to stations for walking cycling and vehicles • Surrounding movement networks need to be integrated into the station to provide safe pedestrian/cycling access. • Parking limited in the centres	
Station Design	
• Explore option for underground power supply • Station design should be architecturally significant • Access to stations should be at grade and verge side in the built up areas, maximising safety for users • Stops should be fit for purpose (not all stops need to be intense development) • Stops should be integrated into the development (eg. Into buildings) at major sites	• Stations to be fit for purpose (not all stations need to be large scale. • Where appropriate, the integration of stations within development should be explored. • Station design should maximise user safety. Where possible stations should be verge side and allow grade access. • Explore option for underground power supply rather than overhead.
Implementation	
Centres	
• Collaboration between local, state, federal government and the local community to align goals is critical • Stakeholders to agree to acceptable timetable and outcomes for delivery of planning framework • Explore options for demonstration project • Explore option of improvement schemes to deliver projects • Ensure system is flexible for future uses (e.g. freight movements to centres)	

TABLE 8

Principles	
Objectives	
Built form (in *centres*, at *stops* and the *links* in-between)	
DENSITY	
PRINCIPLES	OBJECTIVES
• A mix of hosuing types should be available along transit routes • Pedestrian scale and taller form need to be comfortably integrated consistent with the order of a centre or stop. • A mix of land uses should be promoted along route • The density of housing, employment and services should increase closer to transit stops • Development density • Character retention • Higher density at stations –TOD • Integrated design – part of local neighbour needs to be integrated to the "story" of the area • Integration of residential & commercial development concentrated in the activity nodes • Function open space • Precinct/place based approached responding to existing context and corridors	• Lane redevelopment • Studies to identify opportunity sites where density/intensity can be maximised • Active frontages requires at ground level at high order or town centre stop locations • Residential at ground level appropriate in residential or lower order stop locations • To develop a sustainable system that provides opportunities for housing and economic growth • To promote better use of public transport through the implementation of an efficient and accessible system. • Development appropriate for setting • To provide a diversity of housing typology that addresses existing & projected demographics of each area • Encourage an appropriate level of density that responds to the projected growth of each centre.
Transport	
• Integrated model mix • Safe & sustainable • Reduce reliance on cars • Design for pedestrian ease and comfort > Quality urban public ream • Station design to consider cycle parking & access lanes • Maximise integration between transit & there modes of transit eg cycling • 24/7 use using low maintenance/energy saving technology • No overhead wires/strings • Conducted system that's is easy to transfer if	• To provide a range of housing opportunities along the length of the system (aged, student, affordable, accessible) • To encourage higher density housing around key centres • Station design & pedestrian routes to need to allow for shade, safety, easy of crossing, CPTED principles • Consider bike racks on trains • MAX fold up bike • Cyclist facilities, integration 'park & rides' should be 'walk n ride' or 'cycle & ride' • To educate users on the benefits of light rail

necessary • Integrated system for all users • Encourage mode shift • Allow for bikes on the system • Safe environment for pedestrians	• Providing a dedicated carriage for cyclist – allowing space to bring bike on MAX • Provide a safe reliable & convenient transport options for a range of demographics
Station Design	
• Accessible to pedestrians • Safe, attractive to all demographics • Safety of stations • Safe routes to the stations • Accessible and integrated with surrounding areas • Stations have the opportunity to be points of interest • Ramps lift up to low florr and then drop away when MAX gone • A focus on high quality public realm	• Integrate with the scale of existing & proposed built for & surrounding areas • Readily accessed by pedestrians • Integrated with transport modes • Well designed, aseptically attractive • Comfortable, safe attractive streets and stations • Acknowledge the civic importance of the infrastructure • Safe environment –Day and night • Providing appropriate routes, signage, and facilities
Implementation	
Centres	
• Focus implementation of urban outcomes at most important stops first • Coordination between state & local government and the community • State to provide high level, local government to implement into scheme/policy • Better east – west connections not just everything feeding into CBD • Look at MAX in pieces not all linked to city centre • Community engagement • Consideration of various planning mechanisms	• Mix services for minimal & max stop patterns • Some sites may be appropriate for holistic – large scale redevelopment by MRA • Start engaging with the community sooner. • Prepare structure/ precinct plans to guide redevelopment around stops/stations • Identify opportunity sites as catalyst – allow ‘special’ treatment • Change parking provisions to allow density • To provide high level overacting principles for the system that can be implemented into the local system • Integration across the whole system • Use planning tools appropriate for each area.

TABLE 9

Built form (in *centres*, at *stops* and the *links* in-between)	
PRINCIPLES	OBJECTIVES
• Density driven by market • Integration of density & development with area • Land – Use mix around station stops • Provide opportunity for choice that responds to local needs/wants	• Break down barriers – governance issues • Bring the community along; What are their aspirations • Built form that fits in with the area • Needs for locals and new arrivals
Transport	
• Accessibility/connectivity • Prioritisation of different access modes eg walking, Public Transport or car • Focus on delivering a pleasurable travelling experience- this could reduce the perception of distance. • Planning in context • Public space takes priority – facilitate walking/cycling	• Efficient use of land • Decrease large seal surface car parking • Governance issue • Ownership barriers - Overcoming
Station Design	
• Iconic design • Quality station/materials • Integrated with the local area • Have a hierarchy of stations • Activation – day & night • Unique – fits with local context	• Use quality materials & branding • Consistent look but individual at the same time • Comfort & inviting • Consider the stations as on part of the whole. Place and Space
Implementation	
Centres	
• Monitoring outcomes • Social capital – table advantage • Build enthusiasm within local communities • Delivery mechanism that actually deliver • Flexibility • Coordinated	• Incentive to develop & diversity • Start up environments • Increase density • Clear roles & responsibilities • Education of users/public and drives

TABLE 10

PRINCIPLES	OBJECTIVES
Built form (in *centres*, at *stops* and the *links* in-between)	
Principles	Objectives
• Maximise opportunity for housing intensity within each station walkable catchment • Create places where people want to be- active, safe, convenient, vibrant and creative • Maximise value of transport investment with matching intensity and diversity of land uses within each station/catchment context. • Develop a sense of place • Provide a variety of residential dwelling types in line with changing demand • Reflect the character and location of the existing area • Build on enhance current communities, places and facilities • High quality lasting legacy that creates diversity, vibrancy and employment • The design of centres and links should address walkability, diversity, housing and attractive and safe urban design	• A percentage of single bedroom dwellings in proximity to transit stops.
Transport	
• Ensure existing transport networks are suitability integrated into the MAX network. Particularly bikes and cycle networks • Pedestrain and cycle amenity primary focus of centre and station design • Vehicle interchange – bus, park n ride secondary focus • Main street on street carparking retained • Parking facilities at transport links should not sacrifice the aesthetics and economic potential of those links • Provide places people want to access and fell safe doing so. Link into existing infrastructure, convenient access, crossing points	• Pedestrain priority • Cyclist priority • Elevated car park design • Shared zones • Lowest priority given to private vehicles acces to MAX • Minimise carparking fronting the corridor at major centres • Develop walkability criteria, adopt smart road principles • End of trip facilities/allow bikes on light rail

Station Design	
• Departure Information • Wifi Opportunities • Commercial opportunities • Vandalism Proof • Cyclist parking • Stations user friendly • Stations shall be aesthically attractive • Station Design – as place marker, high quality architecture which promotes safety and integrates with surrounding land uses and transport connections. • Stations – simple, legible and measurable • Integration with commercial operations • Stations should be unique landmarks, identifiable and integrated into its surrounding character and amenity. • Stations will be visible, display public art or selctive advertisements. • Stations should not have solid walls, impermiable walls and structure. Not bulky, be of human scale, providing shelter. Allowing ease of movement for all users. • Ensure the design of stations and their integration with land uses and built form encourage social interaction. • Link strongly into the urban form and be destictive at each stop. • Ensure stations are designed in a way which prioritises comfortable pedestrian movement between links	• Stations shall include all relevant information zones, timetables, concessions etc – clearly marked. • Stations to include robust landscaping. • Address CPTED principles in the design of links (particularly those with park and ride) • CPTED audit perception of patrons. • Legibility – intuitive wayfinding without excess signage.
Implementation	
• Develop a whole of life governance model beyond the plan and build phase • Demonstrate the linkage between urban planning and transport • Public Consultation and education on design and implementation e.g. expectations, numbers, density, rezone – impacts, noise parking, land uses • Consistent community consultation throughout the life of the project.	• Redevelopment of centres – encourage/enforce small residential • Public Open Space and places to meet adjacent to centres/stations • Link LRT to schools and school bus • Allow links to develop as local/neighbourhood centres in areas where these facilities are not located within a walkable catchment. • Consider density/rezoning reviews at centres after the

• Keep community and developers up to date with implementation progress • Embracing interactive/collaborative planning and decision making processes • Planning should be centre specific, location specfic • Development of links and centres needs to consider the impacts on nearby land uses.	development of a Detailed Area Plan to address interaction with nearby uses. • Land use planning should cater for each specific centre accounting for existing urban design. • Impacts and risks of implementation are identified

TABLE 11

<table>
<tr><th colspan="2">Built form (in centres, at stops and the links in-between)</th></tr>
<tr><td colspan="2">DENSITY</td></tr>
<tr><td>PRINCIPLES</td><td>OBJECTIVES</td></tr>
<tr><td>

Active land uses and community facilities very close to stations to reduce perceived waiting times and provide useful land uses such as cafes etc
Minimum development standards rather than maximum for plot ratio, height and parking etc
List preferred and contemplated uses
Density/development bonuses for desired uses
What should be the acceptable upper and lower limits on the density of redevelopment? Because built form is following mass transit, it is important to communicate and acknowledge that the final outcome will be URBAN by definition- there will be no suburban form to the redevelopment.

</td><td>

Minimum densities and plot ratios imposed rather than maximum to achieve full potential of MAX infrastructure.

</td></tr>
<tr><th colspan="2">Transport</th></tr>
<tr><td colspan="2">Pedestrian design</td></tr>
<tr><td>

Consider introducing bike hire at stations to increase catchment of the land use
Cycle parking infrastructure to be visible, easy to use and in practical locations.
MAX must be equal or faster than private vehicle transport without unfairly slowing vehicles
Long distance commuters will form the backbone to justifying MAX but local trips are what will make it a success.
Ease of use of facilities for cyclist

</td><td>

Restrict car parking for certain uses such that transport by car does not compromise MAX infrastructure.

</td></tr>
<tr><td colspan="2">Transport Other – Should be spatially integrated relate to form and movement</td></tr>
<tr><th colspan="2">Station Design</th></tr>
<tr><td colspan="2">

Ensure each station has a recognisable and identifiable meeting place
Ensure signalised pedestrian crossings go green just before light rail car arrives so pedestrians can access platforms in time

</td></tr>
</table>

- Architectural features and wifi
- Universal access
- Integrate stations into the streetscape
- Pedestrians have priority when crossing the road

Implementation

- Introduce incentives to stimulate development and for the preferred type of development/land use
- Local government to receive funding grants for ancillary (ped+cycle) infrastructure from the state and spend where it feels best appropriate
- To implement the renewal it will be necessary to have the right combination of controls and incentives.

TABLE 12

<table>
<tr><th colspan="2">Built form (in centres, at stops and the links in-between)</th></tr>
<tr><td>PRINCIPLES</td><td>OBJECTIVES</td></tr>
<tr><td>• Imminently walkable, people places that will facilitate connectivity and help propel Perth
• Place based, typological approach to stations focusing on the seamless integration of built form movement
• Beautiful, quality, diverse, curves, discoverable, unexpected, various angles.</td><td>• MAX stops must be in areas with potential for higher density residential use
• Maximise density within walking distance
• Mix of housing and densities</td></tr>
<tr><th colspan="2">Transport</th></tr>
<tr><td colspan="2">Pedestrian design</td></tr>
<tr><td>• Smarter mode – change
• Selective park & ride – Commuters during the week/shoppers on the weekend
• Useable cycle facilities
• Faster/more bus links
• Convenient, Fun, relaxed, easy, integrated
• Cyclist facilities critical to mode change
• Safety and security for pedestrians</td><td>• MAX stops should each be within walking distance of several activity destinations</td></tr>
<tr><th colspan="2">Station Design</th></tr>
<tr><td>• Seamless integration with environment
• Maximise offers created by light rail
• Created and designed with the community – an essential part of “placemaking”
• Integration with places
• Landmarks with identity
• Community approach to station
• Passive surveillance
• No blank stations</td><td>• Landmarks with their own identity
• Signage/ good clear/ legible
• Surveillance urbanism
• Safety in number
• Cycling safety and track line
• Stations not the landmark rather the ‘Flare’
• Public realm accessible to all
• Urbanism source of identity</td></tr>
<tr><th colspan="2">Implementation</th></tr>
<tr><td colspan="2">• Governance of corridor critical to bring together 6 LGAS
• Rename barriers to transformation in LGAS
• Specialist development authority
• Flexible master planning that is fluid
• Parking standards place specific</td></tr>
</table>

- Holding land where in interest of vision
- “Modular” design >interchangeable
- Interchange in strategic locations

  Pedestrian traffic direction

WORKSHOP ATTENDEES

First Name	Last Name	Organisation	PIA Member
Louise	Ainsworth	Louise Ainsworth Consulting	
Lauren	Aitken	Department of Planning	
Danya	Alexander	ARUP	MPIA
Michael	Allen	Mike Allen Planning	MPIA
Daniel	Arndt	City of Cockburn	MPIA
Steve	Beyer	Department of Transport	
Sharon	Biermann	Planning and Transport Research Centre (PATREC)	
Kathleen	Bonus	City of Subiaco	MPIA
Melanie	Bradley	Department of Planning WA	MPIA
Ian	Brashaw	UrbanPlan	MPIA CPP
Johann	Brits	Aurecon	MPIA
Andrew	Brodie	Roberts Day	
Daniel	Bromley	Department of Planning	
Jayne	Bryant	City of Canning	
Mitch	Busby	Student	MPIA (Student)
Murray	Casselton	TPG Town Planning, Urban Design and Heritage	MPIA CPP
Ray	Cook	Cardno	
Robina	Crook	HASSELL	MPIA
Scott	Davies	HASSELL	MPIA
Emma	de Jager	Planning Institute of Australia (WA)	MPIA CPP
Emma	Dean	Parsons Brinckerhoff	
Eric	Denholm	Planning Solutions	MPIA
Patrick	Dick	Department of Transport WA	FPIA
Rod	Dixon	RPS Group	MPIA
Greg	Dobson	Ernst & Young	
Philip	Elliott	Department of Planning	
Caoimhe	Finn	Department of Planning	
Glen	Finn	Department of Planning	
Remo	Formato	City of Stirling	
Belinda	Foster	Urbis	
Nanette	Garland	Department of Planning	
Warren	Giddens	consultWG	MPIA
Simon	Hall	Shire of Harvey	
Chris	Harman	TPG Town Planning, Urban Design and Heritage	MPIA
Fraser	Hendersen	City of Stirling	
Cole	Hendrigan	Curtin University Sustainability Policy Institute	
Daniel	Heymans	City of Stirling	
Geoffrey	Hingston	Public Transport Authority of WA	
Phil	Hinton	PHC Projects	
Ian	Humphrey	City of Stirling	
Evan	Jones	ACUITUS	MPIA

Jutta	Kober	Town of Victoria Park	
Paul	Kotsoglo	Planning Solutions (Aust) P/L	FPIA
Leon	Kroep	City of Stirling	
Rochelle	Lavery	Town of Victoria Park	MPIA
Verity	Lee	Department of Planning	
Daniel	Lees	TPG Town Planning Urban Design & Heritage	MPIA (Grad)
Wilmot	Loh	City of Belmont	
Rhiannon	Longville	Sinclair Knight Merz	
Rachel	Marie	City of Vincent	
Mick	McCarthy	South West Group	
Jane	McCredie	Department of Planning	MPIA (Grad)
James	McIntosh		
David	Meager	Evans & Peck	
David	Milliken	Department of Transport	MPIA
Sid	Moodley	City of Stirling	
Trevor	Moran	Landvision	
Denise	Morgan	Cardno WA	FPIA CPP
Michael	Mouritz	City of Canning	MPIA
Don	Newman	Relix	FPIA CPP
David	O'Brien	Taylor Robinson	
Chris	O'Connor	City of Belmont	MPIA
Barbara	Pedersen	Parsons Brinckerhoff	MPIA
Casimir	Penheiro	City of Stirling	
Anthony	Pignatiello	Planning Institute of Australia (WA)	
Ross	Povey	City of Stirling	
Mani	Ragireddy	Town of Victoria Park	
Joseph	Ravi	City of Stirling	
Alice	Reynolds	TPG Town Planning, Urban Design and Heritage	MPIA (Grad)
Eleanor	Richards	Town of Victoria Park	MPIA (Grad)
Heidi	Riddell	Ernst & Young	
William	Schaefer	City of Melville	MPIA (Student)
Rachel	Seal	Hames Sharley	
Andy	Sharp	Curtin University	
Grant	Shepherd	Department of Planning	MPIA (Student)
Hans	Smit	Woods Bagot - Perth	MPIA
Tony	Smith	Evans & Peck	
Frank	Squadrito	Town of Victoria Park	
Ian	Stanger	Hames Sharley	
Retha	Steenkamp	City of Swan	MPIA
Graham	Taylor	Taylor Robinson	
Nicholas	Temov	Department of Planning	
Jeff	Thierfelder	Urbis	MPIA CPP
Owen	Thomas	Department of Transport	
Tim	Urquhart	Lend Lease	

Anthony	Vuleta	Town of Victoria Park	
Cara	Westerman	Sinclair Knight Merz	MPIA
Josh	Wilson	Town of Claremont	
Geoff	Wilson	RPS	
Melanie	Wirtz	City of Stirling	
Don	Yates	Columbus Group	
Tory	Young	City of Vincent	