

Sydney Light Rail—Resurgence of Trams

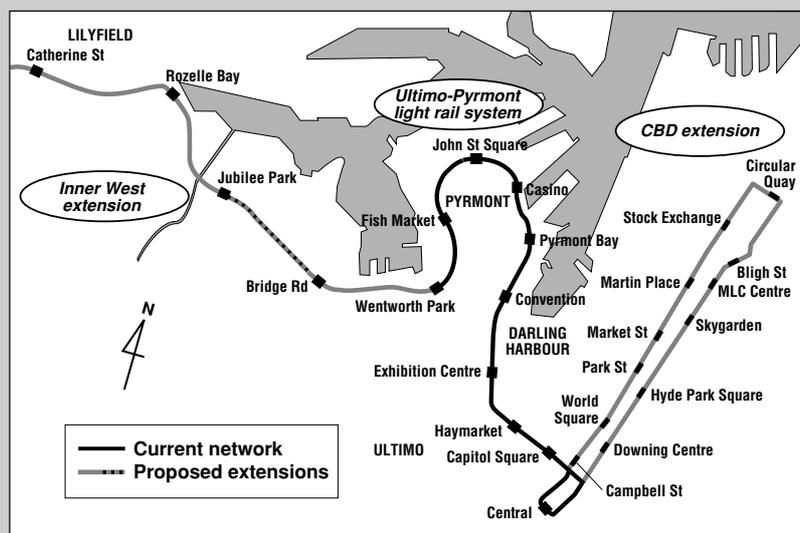
After an absence of 36 years, 1997 marked the return of trams to Sydney's streets in the form of a new light rail transit (LRT) system called Sydney Light Rail (SLR). Light rail transit systems are experiencing a resurgence world-wide as cities become more congested with motor vehicles and suffer the resultant air pollution problems—people have suddenly woken up to the fact that issues such as improving accessibility and air quality are what determine the best transport option for moving people. Sydney is no exception to this trend.

Sydney has a strong tradition of public transport. It operated one of the world's most successful light transport systems between 1899 and 1961 in the form of an electric tramway system, which, at its peak, had 1535 cars and covered an area three times the size of the Melbourne trams at that time. On weekdays between 17:30 and 18:30, trams passed the intersection of King and George streets every 19 seconds.

Sydney Light Rail Company

The new SLR is being developed by the Sydney Light Rail Company (SLRC), established in 1994 to implement the Ultimo-Pyrmont light rail project as well

Figure 1 SLR Network and Proposed Extensions



(Sydney Light Rail Company)

as to develop, construct and operate light rail and other public mass transit systems throughout Australia. The company's main shareholders are the Australian Infrastructure Fund, Utilities Trust of Australia, and Legal & General Life of Australia, Ltd. Other members of the consortium include AIDC, Asea Brown Boveri (ABB), TNT Transit Systems and GHD-Transmark.

Ultimo-Pyrmont Route & Extensions

The first stage of the new SLR links Ultimo-Pyrmont with Sydney's Central Railway Station via Chinatown, Darling Harbour and the Pyrmont Peninsula, connecting with bus, railway, and monorail services (Fig. 1). During peak periods, the service runs every 5.5 minutes, and 11 minutes off-peak, providing doorstep access to a range of facilities and locations including Paddy's Markets, the University of Technology Sydney, the Harbourside Festival Marketplace, Darling Harbour, etc., as well as much of the newly-developed residential and commercial area on the historic Pyrmont Peninsula.

There are also plans to extend the SLR along two other routes: through the central business district to Circular Quay (CBD extension), and along an existing but unused rail corridor west beyond Wattle Street, Pyrmont, to Lilyfield (Inner West extension) and beyond.

The total construction cost for the first stage was A\$65 million shared by SLRC



Stylish five-car SLR tram outside University of Technology Sydney

(R. A. Smith)

and the New South Wales government, which contributed A\$21.5 million to the project with funds from the Commonwealth Building Better Cities programme.

Construction Phase

Overseas experience in building LRT systems shows that the construction phase can become a real issue with local people if not effectively managed. Good liaison, close coordination with retailers, guaranteed pedestrian access, etc., all help to ameliorate any problems. The work was carefully managed by:

- Scheduling outside peak traffic periods whenever possible
- Working at night in traffic-sensitive areas with full vehicle access restored by 06:30
- Monitoring traffic flows to enable rapid response to problems
- Appointing manager specifically for liaison with businesses and individuals affected by construction
- Providing extensive publicity so pedestrians, motorists and others informed of developments and changes
- Reducing number of construction areas by storing and stockpiling equipment away from city centre
- Screening work from public to keep surrounding areas dust free and tidy
- Accommodating existing public transport, such as buses

Modern Vehicles and Street Equipment

The sleek SLR vehicles were manufactured in Australia based on a German design. They are composed of five articulated cars able to carry 200 passengers at speeds of 70 km/h on the dedicated track (comprising more than 60% of the line) and at 20 km/h max. in pedestrian precincts. Access to the cars is via wide doors from low platforms (29 cm)

off the ground. To provide easy access for passengers in wheelchairs or with prams, etc., the floor is flat with no steps throughout the vehicle.

Electrical power is provided by an overhead trolley wire 5.6 m over the ground, hung whenever possible from buildings. New poles combine the SLR wires with street lighting and traffic signals.

A key feature of the SLR cars is the wheels, which have a rubber ring in the hub to absorb vibration and limit noise. As a further measure against noise, the track rails have been laid in rubberized grout or on rubberized matting.

The street stops have ticket vending machines, an intercom, and a clock showing when the next vehicle is due in real-time.

Trained staff, closed circuit TV, and an efficient communications network help deliver a world-class transit system with a high level of safety.

The communications and safety systems include:

- A radio system for direct contact between drivers and the operations centre
- An intercom system enabling passengers at stops to communicate with the operations centre
- Emergency buttons in vehicles to allow passengers to alert drivers
- A 24-hour manned operations centre
- Vehicle doors fitted with sensors to open doors and stop the vehicle automatically if anything or anyone is caught in the door
- Automatic monitoring of vehicle locations and speeds from trackside beacons

Impact on Sydney City Environment

The SLR complies with strict noise standards laid down by the Australian Environmental Protection Authority. In areas that are especially noise sensitive, the track has been laid on a state-of-the-art floating slab to isolate noise and vibration from nearby structures.



Interior of articulated SLR with flat floor throughout
(H. Clark)

Since it is electrically powered, the SLR imposes no pollution burdens on the city air quality, reducing nitrogen oxide (NO_x), carbon monoxide (CO), and particulate levels—an issue of major interest to Sydney dwellers. Moreover, the SLR energy saving has been calculated at 60% to 70% compared to cars and buses, significantly reducing carbon dioxide (CO₂) levels, an important point in ameliorating global warming.

The impact on traffic levels is also expected to be substantial with feasibility studies suggesting a 15% decrease in the number of vehicles entering the central business district.

Conclusion

The world-wide resurgence in LRT systems shows people's growing concern with major issues such as city traffic congestion and air quality. Sydney, the host for the Sydney 2000 Olympic Games, is a dynamic city experiencing a period of accelerated growth and change as it approaches the next century; the SLR is playing an important role as part of an integrated urban transport system making Sydney a cleaner, safer, more accessible, and vibrant city of the 21st century. ■

Acknowledgement

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