

# NURSERY PAPERS

SEPTEMBER  
2016

## GREENING THE GOODS LINE

Once an old railway corridor in inner Sydney, the Goods Line has been redeveloped into a vibrant hub and green space transforming the way local office workers, students and tourists use the urban precinct.

This Nursery Paper looks at some of the social and environmental changes that have occurred at the Goods Line since its redevelopment in 2015.

Research undertaken by the UTS Institute for Sustainable Futures evaluates the type and scale of changes emerging from urban renewal projects and the importance of green space in big cities.

### Summary

- The Goods Line is an important pedestrian corridor highly valued by professional, student and residential populations.
- The space encourages local workers and students to interact, take a break, enjoy lunch and relax.
- Infrastructure, such as a range of seating and tables, is necessary to support public enjoyment of green space.
- Stormwater runoff rates are reduced by including green space in urban renewal plans.

### BACKGROUND

As the built environment expands and population densities grow, urban vegetation is becoming increasingly important for social and environmental health outcomes (Brown et al, 2013; Kahn & Kellert, 2002; Rodhe & Kendle, 1994).

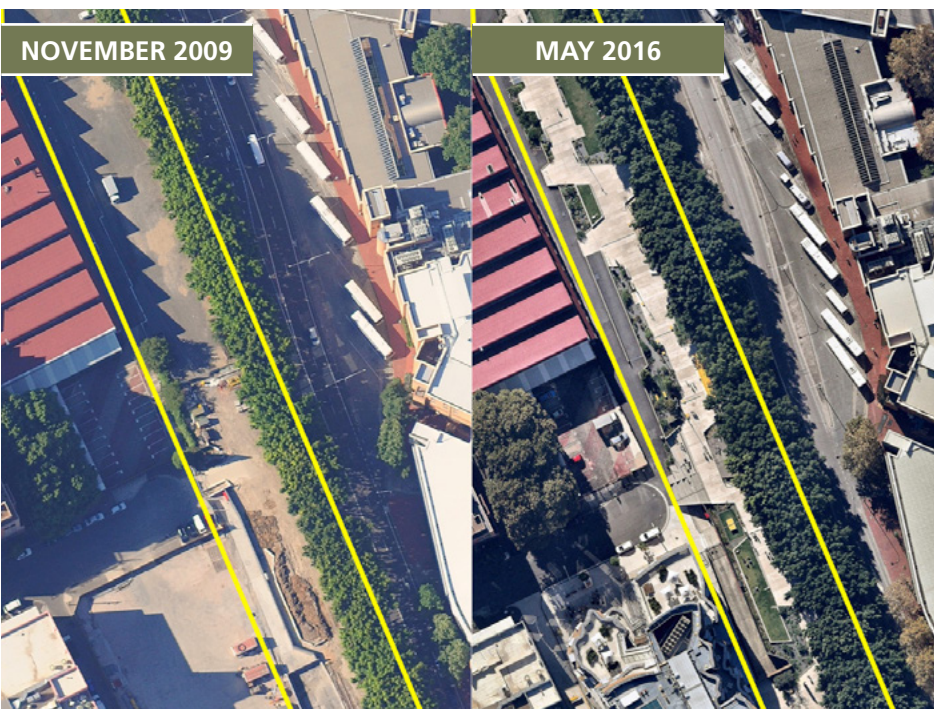
This knowledge has supported the notion of providing green space in city environments, such as the Goods Line in inner Sydney. This current research confirms that there are many benefits to open spaces that include living green infrastructure in big cities, such as improved health and wellbeing, and productivity.

### DEFINING THE GOODS LINE

The Goods Line is a shared pedestrian and cycle path and green public space, connecting Ultimo with Darling Harbour in Sydney's inner city.

The redevelopment has occurred in two phases over the past 20 years. The first phase occurred in the 1990s and is referred to in this paper as the **Goods Line South**. It consists of paved areas with little grass or ground vegetation and some trees that provide limited canopy.

The second phase of the redevelopment was completed in 2015 and is referred to in this paper as **Goods Line North**. While 33 percent of Goods Line North is now made up of green space (open turf, trees, garden beds), it also features seating, study pods, power outlets, internet, drinking water, playground, waste collection and bike racks. The redevelopment of the Goods Line North was the focus of this research project.





## THE RESEARCH

### Study Objectives

This study set out to determine the social and biophysical changes that have occurred from the redevelopment of the Goods Line North, and to what extent these changes were related to increases in green space.

The researchers also set out to develop evaluation criteria that can be applied to open space redevelopments (that include green space).

### Social Research

To determine social changes, direct observation (including time-lapse photography analysis), and on-site participant questionnaires were used. These methods aimed to gain insights into how the space is used as well as reasons for engaging with the space.

Interviews were conducted with five local businesses to assess any perceived economic change from the redevelopment of the Goods Line.

### Environmental Research

Researchers from the UTS Science Faculty conducted **air quality monitoring** of the Goods Line site to assess any change in air quality from

SURVEY QUESTION: WHAT DO YOU LIKE MOST ABOUT THIS NEW END OF THE GOODS LINE (IF ANYTHING?)		
Coded response	Frequency	Percentage
Green space	77	39%
Seating	73	37%
Aesthetics	71	36%
Urban escape	51	26%
Outdoor space (other than green space)	45	23%
Social	39	20%
Convenience	27	14%

increases in local green space. Baseline sampling was conducted across four study sites from 4 October 2013 to 25 February 2015. This involved 59 sample events.

A **stormwater runoff assessment** was included in the research to determine whether the redevelopment of the Goods Line North would affect levels of runoff from the site. To estimate total run-off, the Rational Method was used, which is accurate for estimation of runoff from small drainages with a high proportion of impervious area (ODOT 2011).

Under the advice of Birds Australia, a 25-minute bird survey was undertaken

to assess the **diversity** of bird life at the Goods Line.

### Key Findings

The research found that the Goods Line redevelopment has delivered a high quality, public open space that is well-used by the local community and others from further afield.

The site serves as an important pedestrian corridor connecting local attractions and as a valued space for local workers and students to take a break, enjoy lunch, or otherwise relax.

The research determined that visitors to the Goods Line North have a strong



affinity for green space, with that being one of the most liked features of the site. Visitors had a greater attraction to the Goods Line North when compared to the Goods Line South, and felt the Goods Line North had better infrastructure and green space, and brought more people to the area.

Visitors to the Goods Line North are likely to spend more time in the space, compared with visitors to the Goods Line South. Participant questionnaires revealed that 32 per cent of visitors remain at the Goods Line North for thirty minutes or more, compared with only 11 per cent of visitors to the Goods Line South.

A majority of visitors to the Goods Line North also said they visit the Goods Line North much more regularly than the Goods Line South, and that they spend more time per visit in the Goods Line North compared with the Goods Line South. Therefore, it is likely that the

green space and other infrastructure associated with the Goods Line North has resulted in people staying in the space for longer periods.

There is evidence to suggest that the Goods Line North encourages an increase in sedentary activity and relaxation. Although direct observation did reveal a small number of joggers, cyclists, tai chi practitioners, and individuals using the outdoor gym facilities, the Goods Line North is most popular as a site for passive rather than active recreation. Relaxing, taking a break, sitting, and simply being outdoors were some of the most popular reasons for people to visit the Goods Line North.

There is also evidence to suggest that the Goods Line North encourages social interaction, as two-thirds of 'non-commuters' (being those who were not on site just to walk through) visited the site in groups of two or more people.

However, one-third of 'non-commuters' visited the site alone, which suggests that the site also enables solitude.

The site demonstrated the importance of providing the infrastructure necessary to support public enjoyment of the space, such as a range of seating, tables, and other facilities.

The stormwater runoff modeling showed that the redevelopment is likely to deliver an almost ten per cent decrease in runoff rates. While the air quality study found no significant impact in air quality attributable to the redevelopment, it may have contributed to mitigation of some pollutant concentrations on hot days.

Although the Goods Line North redevelopment was not found to have significant impact on current air quality, biodiversity, and economic attributes, it may that these impacts will develop over the course of several years as site usage matures.

### Implications of the Findings for the Nursery Industry

This research has implications for urban renewal design as well as for designing healthy and sustainable cities.

This research demonstrates that green spaces in highly urbanised environments is valued by users and, in combination with a range of other site attributes (seating, shade, recreational opportunities) enhances a site's popularity.

These findings add weight to the industry's commitment to increased green space in urban environments, providing further evidence of the health, well-being and productivity benefits of living landscapes in situations where traditional green space options are limited.

The conclusions of this study are not meant to apply universally or be generalised to other sites. Rather, the study contributes to the growing library of site-specific studies that present the breadth of possible changes from urban developments that include green space.



This research was funded through project NY13024 - 202020 Vision: Goods Line Monitoring and Evaluation Research. Funding came from Horticulture Innovation Australia Limited using the Australian Nursery Industry levy and funds from the Australian Government. The project was undertaken by a research team led by Dr Brent Jacobs and Candice Delaney from the Institute for Sustainable Futures, University of Technology Sydney. The project investigated social and environmental changes that have occurred at the Goods Line since its redevelopment, and to what extent these changes may be related to increases in green space.

#### PROJECT TITLE

The Goods Line

#### LOCATION

Ultimo, Sydney, 2007, NSW, Australia

#### CLIENT

Sydney Harbour Foreshore Authority

#### PROJECT DESIGN LEAD

ASPECT Studios

#### DESIGN PARTNER

CHROFI

#### PHOTOGRAPHER

Florian Groehn



## LINKS TO RESOURCES

Brown, H. et al., 2014. Cool communities: Urban trees, climate and health. Available at: <http://ehia.curtin.edu.au/local/docs/CoolCommunities.pdf>

Kahn, P.H.J. & Kellert, S.R., 2002. Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations, Cambridge, Mass., United States: MIT Press Ltd.

Rodhe, C. & Kendle, A., 1997. Human Well-Being, Natural Landscapes and Wildlife in Urban Areas, English Nature.

ODOT, 2011. Hydraulics Manual: Oregon Department of Transportation, Geo-Environmental's Engineering and Asset Management Unit, Oregon, USA.

202020 Vision: [www.202020vision.com.au](http://www.202020vision.com.au)

Encouraging more urban green space in Australia's cities: <http://www.uts.edu.au/research-and-teaching/our-research/institute-sustainable-futures/news/encouraging-more-urban-green>

The final report for project NY13024 is available from Horticulture Innovation Australia upon request.