

Exploring the Role and Development of Urban Planning for Urban Space: The Case of Adelaide

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Abstract. With the economy's vigorous development, at the same time, people's quality and demand for living space is more and more high, so the planning and construction of urban space is a hot topic in recent years. The basis for the change of urban space is urban planning, which is mainly the planning and design of space planning, road traffic planning, green vegetation, and water planning. This paper focuses on the characteristics of urban road planning and green vegetation in the city of Adelaide. Adelaide is known for its sustainability and livability and has been at the forefront of Australia, especially in terms of urban greening and transport road network. Through the research and discussion, it is concluded that good road planning can improve the overall convenience of urban commuting and the utilisation of urban space, as well as better planning for pedestrian traffic and the configuration of the living area; the setting of green space is also an indispensable part of people's lives, and the construction of good green space affects human health and the livability of the city, and the green vegetation not only beautifies the city, improves people's green vegetation not only beautifies the city, improves people's living space and enhances the well-being of the community, but also improves the air quality and regulates the temperature of the local city. Adelaide is renowned for its sustainability and livability and has been at the forefront of Australia's greening and transport road network in particular.

Keywords: Green vegetation; Adelaide; road network; transport planning; urban planning.

1. Introduction

In Australia, more than eighty percent of the population lives in cities [1]. Because urban areas are the center of human existence, Australia places great importance on the planning and development of urban space. Adelaide's urban road network is conveniently distributed and Adelaide's roads have a walkable environment [2]. In Australia, it is predicted that the surface temperature in Australia may rise by 3.8 °C by 2090, so good green space is very important for urban space because greening can play a role in cooling and improving air quality [3]. Greening can decorate the city and improve the appearance of the city, and in Australia, parks, urban forests, rooftop green walls, streams and community gardens are all important green spaces in the city [3]. They are all important green spaces in the city [4]. This research has a very important significance to understand the impact of green vegetation of urban transport on urban space; this study mainly focuses on the distribution of urban road network and greening rate and other specific aspects of the study in Adelaide; the method of literature analysis was used to find and read the relevant information and literature, and the advantage of this method lies in the fact that it can be very good at analysing the traffic network and green vegetation, which is The ultimate research objective of this study is that good urban planning can bring convenience to urban space, improve community well-being and enhance people's happiness index, in order to achieve the objective, fieldwork, and the summary of relevant information were carried out.

2. Characteristics of the Urban Road Transport Network

The urban road transport network in Adelaide has many advantages such as high efficiency, good safety performance, reasonable sustainability and good accessibility [5]. Contributing to the livability of Adelaide city and the well-connected urban transport network, the road map of Adelaide city can be clearly shown according to Fig. 1. Adelaide's road transport network is very well planned, and the

roads are designed as a city-centred network structure with a radial outward dispersion, which greatly improves the efficiency of people's commuting, reduces the degree of congestion in the city, and provides more convenient and faster routes for commuters. Adelaide's road network has a connectivity that connects different parts of the city (residential, commercial, industrial), which facilitates access between residents and businesses and factories, as well as boosting Adelaide's economy, saving time and improving the quality of life by facilitating communication between people.

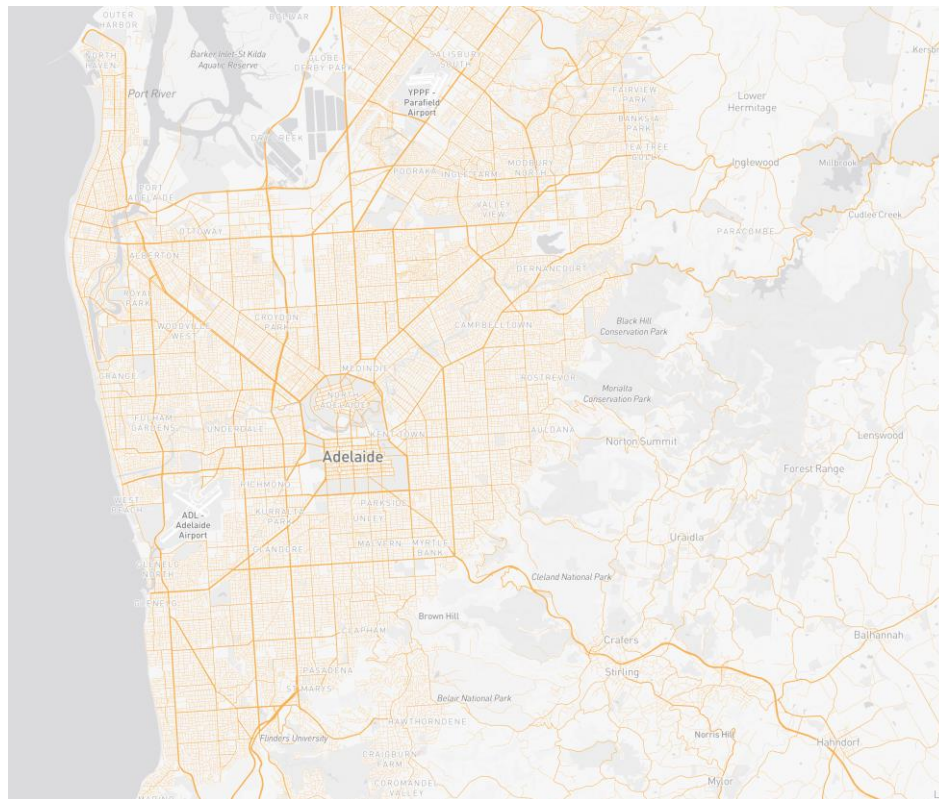


Fig 1. Road map of Adelaide.

At the same time, the safety of urban roads is one of the most pressing issues facing modern society, and the safety of roads has been improved by designing and modelling urban roads [6]. Adelaide's roads have certain safety measures and are accessible and inclusive in some areas. Adelaide's urban roads are distributed with various safety measures such as signage, signals, speed bumps, pedestrian crossings, bike lanes, etc., which can better protect the safety of the people and the users of aircraft delivery vehicles. At the same time, some of Adelaide's roads are equipped with kerb ramps, disabled parking, blind corridors, etc., which ensure that people with different levels of health (healthy or disabled) can walk around the city more safely and comfortably; Adelaide is also responding to the government's concerns about the emergency response infrastructure, and has designed its roads in a way that allows the emergency services such as ambulances, fire trucks or police cars to reach their destinations as quickly as possible, so as to maximise the safety of people and users of air delivery vehicles. The roads are designed to enable emergency services such as ambulances, fire engines or police vehicles to reach their destinations as quickly as possible, thus maximising the availability of help in emergency situations.

The renewal of smart cities can improve the quality of life and social participation of people and contribute to the sustainable development of the city [7]. Adelaide has a smart transport design with real-time traffic checking system, traffic management system, likewise traffic flow monitoring, road congestion monitoring and so on. At the same time, Adelaide has a unique integration of public transport, where the road network is integrated with the tram, bus, motorised and non-motorised transport systems, which provide more ways to commute to work. Free trams and buses, supported by the government, are available in some areas, encouraging people to choose public transport for their commute, which reduces traffic congestion and air pollution.

3. The Effects of Urban Greening

Nowadays, urban greening is an important planning strategy in modern urban planning, which can bring many benefits [4]. Such as environmental sustainability, improving community well-being, reducing air temperature, and regulating air quality. Adelaide is known for its commitment to sustainability and livability and has been at the forefront of Australia's efforts in urban greening in particular (Figure 2).



Fig 2. Greening of Adelaide.

Adelaide's urban greening development has contributed significantly to environmental sustainability by mitigating the negative environmental impacts of urbanisation. The strategic integration of green infrastructure such as parks, gardens, and street trees or the re-programming of green spaces has contributed to Adelaide's mitigation of the urban heat island effect (Figure 3), which has improved Adelaide's air quality while conserving local biodiversity [8]. The city's extensive network of green spaces not only serves a low-carbon function but also provides a good habitat for local flora and fauna, thus contributing to the overall ecological balance.

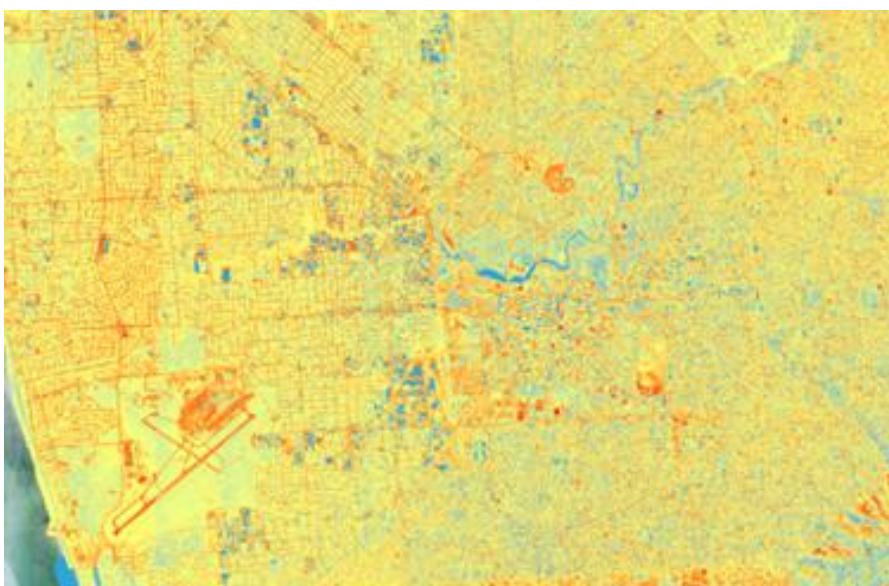


Fig 3. Adelaide Heat Map.

The benefits of urban greening go far beyond environmental sustainability and have a huge impact on people's wellbeing. The use of green space is therefore linked to improved mental health, lower stress levels and an overall better quality of life for people. In Adelaide, government programs such as the Greening Adelaide Plan aim to create open, inclusive, and accessible green spaces that meet the diverse needs of different communities [9].

At the same time, urban greening is a catalyst for economic development, bringing significant benefits to both residents and businesses. Studies have shown that properties near green spaces have higher market values and increased demand, which drives property appreciation in Adelaide, thereby stimulating investment by real estate companies. In addition, economic investment in urban greening has been demonstrated in sectors such as landscape planning and eco-tourism, which have created significant employment opportunities and contributed to Adelaide's economic growth and social vitality. Adelaide's Adelaide Botanic Gardens and the Tandanya National Institute of Aboriginal Culture are prime examples of how green spaces can be used as cultural and economic assets, attracting tourists and supporting local businesses.

Urban greening has also been characterised in the face of climate change and urbanisation, with the concept of resilient resilience of urban greening growing as cities grow to find a balance between adaptation and development in the face of ever-changing changes in challenges [10]. There is a key role to play in increasing the resilience of Adelaide's green spaces. By mitigating the effects of heatwaves and to adapt to the climate of the current metropolis, green spaces have become an important component in terms of Adelaide's climate adaptation strategy. In addition, green infrastructure is integrated with stormwater management systems and urban planning aspects to ensure the long-term sustainability and resilience of the city.

In summary, Adelaide's approach to urban greening is characterised by the creation of a sustainable, inclusive city that prioritises the well-being of Adelaide's residents and the preservation of its natural landscape heritage. By harnessing the self-healing power of nature, Adelaide has not only mitigated the degradation of the urban environment but has also created a vibrant and resilient cityscape that sets an example for urban greening design globally.

4. The Relationship between Good Urban Environmental Planning and People

Urban environmental planning plays an important role in shaping the quality of life suitable for the inhabitants of global cities [11]. The city of Adelaide is a very typical example of the far-reaching impact of good urban planning on the sustainability of urban development and the liveability of people. Overall urban environmental planning consists of a wide range of strategic planning strategies that focus on optimising the local historic built environment, preserving and protecting the historic character of the area; improving people's well-being so that they can live better and happier lives; and minimising the impact on the urban environment on the overall ecological environment. In Adelaide, urban planners use the principles of sustainability, resilience, and inclusivity to design cities that are environmentally sustainable and socially equitable and enjoyable. In more detail, Adelaide's urban environmental planning focus is characterised by a focus on sustainable infrastructure development in the city, including initiatives such as green building conservation regeneration design, integrated use of renewable energy and efficient transport systems [11]. By prioritising the promotion and development of walking, public transport and cycling infrastructure. As a result, Adelaide's urban residents have reduced their reliance on private cars, thereby reducing urban traffic congestion and actively promoting a healthy lifestyle for residents in a practical way. Most illustratively, case studies such as the tram network in the city of Adelaide and the Water Sensitive Urban Design Project in South Australia have demonstrated how innovative urban infrastructure can improve the quality of life while protecting the urban environment.

A cornerstone of Adelaide's urban environmental planning is the protection of natural assets and cultural heritage. From Adelaide's iconic Adelaide Park Lands to the Adelaide Botanic Garden and Adelaide Festival Centre, these spaces include spaces that: enrich the lives of residents and visitors,

express local cultural identity, have some recreational and spectator facilities, and are indigenous to the area. By incorporating green spaces, heritage sites, and cultural complexes into the urban planning framework, Adelaide promotes connections between people and the landscape, bringing people closer to nature and contributing to greater social cohesion and community well-being.

Effective urban environmental planning prioritises social equity and inclusion above all else [12]. Ensuring that all residents, regardless of their socio-economic status and social background, have access to clean air, safe housing and green spaces. Planning approaches such as the Affordable Housing Action Plan and the City of Adelaide Greening Masterplan in the City of Adelaide therefore address unequal access to housing and green infrastructure for local residents, thereby promoting social cohesion and fostering a sense of belonging and responsibility in diverse communities. Challenges such as homelessness and unequal access to resources still require attention, however, but they better highlight the need for sustained efforts to create more equitable urban environments, which are somewhat characteristic of Adelaide's urban environment.

At the heart of successful urban environmental planning is the active involvement of the community in the decision-making process [13]. When confronted with an urban planning process in Adelaide, residents, businesses and stakeholders are given the opportunity to contribute their insights, preferences and concerns to better ensure that the city's development plans reflect the aspirations and needs of the people it serves. Case studies, such as the Adelaide City Council's Community Engagement Framework and the Adelaide Living Labs program, demonstrate how community-progressive planning programs can promote greater trust, transparency, and accountability in urban governance. At the same time, the relationship between good urban environmental planning and the well-being of Adelaide's citizens is a coexisting dynamic that influences and fulfills each other. By applying the principles of sustainability, resilience, equity and community engagement, Adelaide has become a benchmark for urban innovation and liveability, setting an example for cities around the world to follow. As Adelaide continues to grow and develop, it is important to prioritise a people-centered approach to planning that improves the quality of life while preserving the natural and cultural heritage that defines the city's identity.

5. Conclusion

As one of the most livable cities in the world, Adelaide's urban space is very important. The distribution of good traffic road network can bring certain convenience to people, the regular road division can improve people's commuting efficiency, and encourage people to walk or use non-motorised vehicles, which can greatly improve the air quality, and also encourage people to exercise, improve people's health, and improve people's sense of well-being. At the same time, Adelaide's greening has sustainable characteristics; a good greening rate in the city can improve air quality, lower the temperature of the city, beautify and decorate the city, and improve people's living environment; a good transport road network combined with green landscaping can improve both the overall cityscape and the community's happiness index. This study provides a lot of valuable reference significance for future research in this direction, mainly affecting the future construction of urban road networks and urban greening planning and construction, future research should be more focused on the diversity of urban greening diversity of traffic road diversity direction for in-depth investigation.

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