

ITEM NO: 21

SUBJECT: LURLINE STREET FEASIBILITY STUDY

FILE NO: F02082 - 09/174874

Management Plan Link

Principal Activity: Using Land for Living

Service: Town Centre Amenity

Project: This report does not relate to a Management Plan project

Recommendations:

1. *That the information in this report is received and noted; and*
2. *That funding for a comprehensive improvement plan for the public domain in Lurline Street is considered for inclusion in the Council's 10 year Resourcing Strategy and that grant funding opportunities be investigated.*

Report by the Group Manager Community & Corporate:

Reason for report

The purpose of this report is to advise on the feasibility of planting street trees in Lurline Street, Katoomba, as resolved by the Council at its meeting of 26/05/2009.

Background

At its meeting of 26/05/2009 the Council resolved to:

- "1. Undertake a study to assess Lurline Street, Katoomba in relation to feasibility for street tree planting.*
- 2. Consider the suitability and prioritisation of Lurline Street in the context of the City-wide Street Tree Masterplan currently underway; and*
- 3. Identify and investigate potential funding sources."*

(Minute 195 26/05/2009)

A study into the feasibility of planting street trees in Lurline Street, Katoomba has been undertaken and is provided with this report (Attachment 1). Recommendations from the feasibility study are outlined in this report. Broad cost estimates have been prepared and potential funding sources investigated.

In assessing the feasibility of street tree planting an analysis of the strengths and weaknesses has been prepared and likely constraints have been investigated. These constraints include:

- The location of utilities on the footpath and roadway,
- The retention of adequate traffic sightlines,
- The condition of existing Council infrastructure, and current maintenance and replacement programs,
- The requirements to accommodate tree root systems , and
- Species specific issues such as the potential allergenic properties of Plane trees.

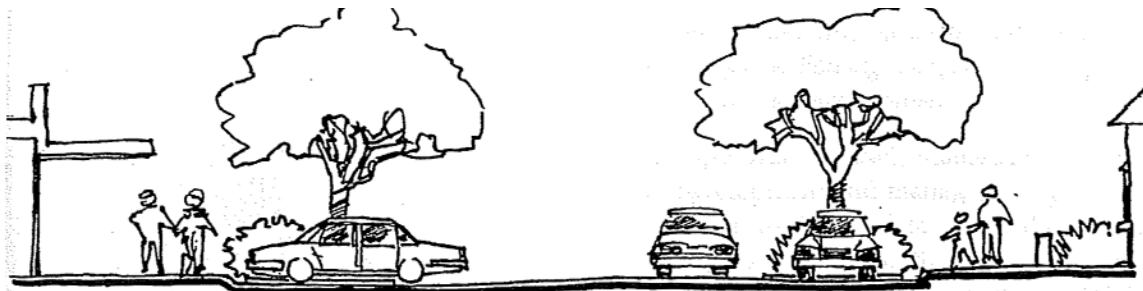
The major points from the feasibility study are discussed below.

The Context

Lurline Street is the major route to Echo Point, a premier tourist attraction, and the most significant gateway within the Blue Mountains. It has a high level of visual character and heritage attributes and is also at a relatively level grade. It has been identified as a significant street worthy of streetscape improvements in relevant Council policies and studies including:

1. The *Draft Echo Point Plan of Management* (EDAW, 1995) identifies Lurline Street as a major access way to Echo Point and recommends that the Council:

“Undertake streetscape improvements including tree planting and upgrading street furniture to improve character of the primary access routes to Echo Point”. (see Figure 1 below)



Streetscape treatments such as tree planting bays, define entrances to precincts and reduce the visual dominance of parked cars.

Figure 1: (EDAW, *Draft Echo Point Plan of Management* 1995, p.7-8)

2. The *Plan of Management for Proposed Echo Point Crown Reserve* (Manidis Roberts, 2000) recommends that the links between Katoomba, Echo Point and other villages be identified (p.36); and
3. The *Draft Street Tree Master Plan* (in preparation), which aims to establish tree themes for major roads in towns across the Blue Mountains, identifies Lurline Street, Katoomba as a major street for improved street tree planting. The preferred theme for this street is discussed in Attachment A.

Scope for Tree Planting

The feasibility study identified that the major opportunity for new street tree planting in Lurline Street lies between Waratah Street and Birdwood Avenue as shown on Map A below. The northern section of Lurline Street from Waratah Street intersection is highly constrained for tree planting due to the narrow roadway, steep side slopes, high retaining walls and the significant bend in the road. The northern section also benefits from the proximity of large trees associated with Kingsford Smith Park.



MAP A: Area of Lurline St with potential for Street Tree Planting

Feasibility Study

The feasibility study shows that to achieve an appropriate scale of amenity and visual impact, medium to large trees are required. Single trunked specimens with elevated canopies are most appropriate as they occupy a minimum of path space and maximise sightlines for cars and pedestrians.

The layout of utilities beneath and over the footpath reserve does not allow space for provision of adequate tree root volumes to achieve longevity and an appropriate canopy size and vigor. Planting into the roads (similar to Craigend Street, Leura) may achieve additional rootball space, but is not likely to provide sufficient volume in isolation, and experience elsewhere indicates that this strategy can invoke a heavy maintenance burden. This issue will require more consideration during any design development phase.

Short and medium term options have been considered, but due to the significant constraints present, they are not recommended. Only an approach coordinated with utility placement and the life cycle of Council owned infrastructure will deliver trees of an appropriate vigor, scale and longevity.

There is already an identified need to undertake major infrastructure renewal within this section of Lurline Street. The road infrastructure i.e. roads, paths and kerbs and guttering requires significant repair and/or renewal in the short to medium term. This maintenance work would normally be included in the capital works program.

There exists an opportunity for the Council to adopt a whole-of-precinct approach to renewal of the infrastructure and to prepare an integrated design which coordinates streetscape improvements such as tree planting, footpath treatments, furniture, stormwater drainage maximising Water Sensitive Urban Design and necessary road infrastructure renewal. This would achieve a significantly higher standard of presentation for the public domain than presently exists, or could be achieved with tree planting alone.

Although this would be a major project involving significant resources it would also be a project which could qualify for major grant programs. However applications for large scale infrastructure and streetscape grant funding would require development of supporting documentation with a detailed program for design and implementation.

Sustainability Assessment

Effects	Positive	Negative
Environmental	<ul style="list-style-type: none"> • Deciduous canopy provides microclimate benefits • Carbon capture over time • Habitat extension likely, especially for small birds and parrots • Potential to incorporate a number of Water Sensitive Urban Design elements 	<ul style="list-style-type: none"> • Possible erosion and sedimentation impacts during constructions
Social	<ul style="list-style-type: none"> • Potential to increase “ownership” of the street by local organisations and individuals • Deciduous canopy provides significant amenity and increases use of street as pedestrian “boulevard” • Good design will strengthen “sense of place” and enhance the distinctiveness of the street • Extends design quality of Echo Point up to town centre 	<ul style="list-style-type: none"> • Considerable disruption possible during construction
Economic	<ul style="list-style-type: none"> • Contribution to general amenity promotes property values and growth in small tourist attractions in the street and the general tourism economy. 	<ul style="list-style-type: none"> • Large funds required – grants required • Increase to maintenance burden of BMCC
Governance	<ul style="list-style-type: none"> • Improves perception of quality of the LGA to a significant number of visitors 	<ul style="list-style-type: none"> • Nil

Financial implications for the Council

Council staff estimate the order of cost to be \$3-3.5 million which would be well beyond current Council resources. However the Council could review and bring forward the priority for funding road and kerb renewal works in Lurline Street in the Capital Works Program. The balance of funding is likely to require Federal and/or State funds. A number of grant programs have funded similar programs including “Better Regions” and “Regional and Local Community Infrastructure Program”, however more detailed project planning would be required to support any grant application.

It is recommended that this project is considered for inclusion in the Council's 10-year Resourcing Strategy. In order to be ready to seek grant funding it is also recommended that the Council consider allocation of around \$100,000 for preparation of Detailed Design and Documentation, and review the priority for kerbing and guttering and road improvement works in Lurline Street within the Capital Works Program.

Legal and risk management issues for the Council

There are no unusual identified legal and risk management issues for Council. Usual legal and risk management issues will be dealt with as they arise during the design process and project management.

External consultation

In preparation of the feasibility study brief discussions have been held with representatives from the Katoomba Chamber of Commerce. It is however recommended that public consultation with the full range of stakeholders is incorporated with the design and documentation process. Discussions have been commenced with the local branch of the R.S.L.

Conclusion

There are significant constraints to achieving viable street tree planting in Lurline Street, namely the current lay-out of utilities in and over the footpath, and the condition of the kerb and road works. There is an opportunity to renew the entire public domain, incorporating footpath, road works, new kerbing and guttering and tree planting in an integrated fashion. While this is a large undertaking requiring access to large scale grant funding, the primacy of Lurline Street as a tourist link between Katoomba town centre and Echo Point and the existing qualities of the street make this a worthwhile project.

It is recommended that the Council receive and note the information in this report and consider inclusion of a comprehensive improvement plan for the public domain of Lurline Street Katoomba in the 10 year Resourcing Plan.

ATTACHMENTS/ENCLOSURES

1	Lurline Street Feasibility Study	09/178164	Attachment
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Attachment 1 - Lurline Street Feasibility Study

LURLINE STREET TREE PLANTING FEASIBILITY STUDY 19th October, 2009

1. Project aims:

The primary project aim is to establish a significant avenue of trees in Lurline Street, improving the visual and physical amenity of the street, and making a fitting and memorable link between the town centre of Katoomba and the international tourist attraction of Echo Point. To achieve this, physical constraints need to be investigated and potential budget identified, as the project is likely to fall outside the capability of BMCC to fund within existing revenue.

A number of other improvements may be attainable:

- Achieve general traffic improvements (e.g. speed reduction) to the street
- Establish a major formal pedestrian boulevard which optimises exposure for other attractions along the street.
- Enhance the existing heritage streetscape and set potential for a major Heritage walk.
- Provide for a bicycle link to Echo Point
- Include Water Sensitive Urban Design features such as permeable pavement, nutrient stripping from storm water, and stormwater harvesting for secondary use.

2. Project Constraints

2.1 Utilities

Research was carried out in order to identify the range and location of utilities within the road reserve. The diagram shows a typical scattering of utilities across the width of the street, from Waratah Street to Birdwood Avenue.

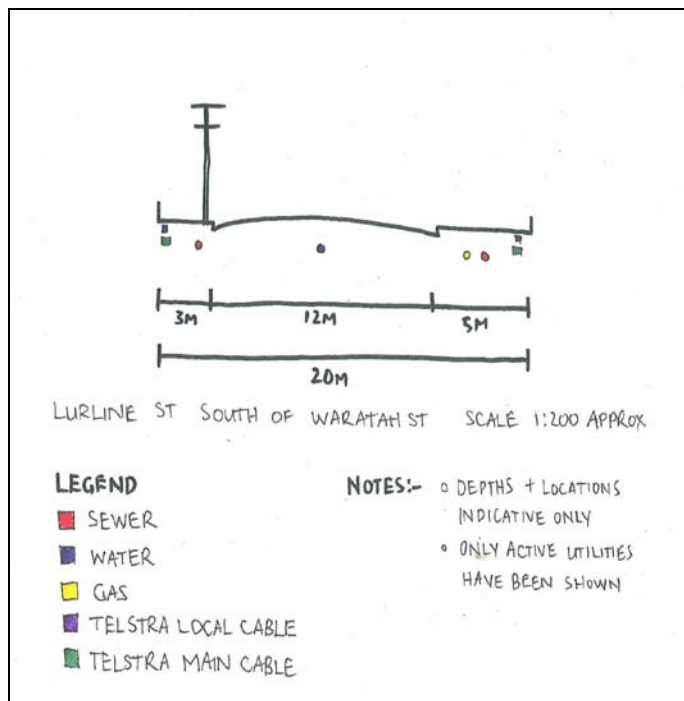


Figure 1: Typical Lurline street cross section

This configuration presents a number of problems:

- Space to excavate an acceptable root volume is not available in the current arrangement
- There is a significant risk of disrupting/damaging utilities during excavation

- Overhead powerlines currently render large tree planting on the eastern side of the street non-viable
- New plantings may be significantly impacted by future renewals/servicing of utilities

It is worth noting that Integral Energy has recently identified funding to convert existing overhead lines to underground or to Aerial Bundled Cable (ABC) in priority streets, and has asked BMCC to provide such a priority list. Lurline Street will be a high priority on BMCC's list.

Approximately half the houses in the street are serviced by a sewer main in the street, the remainder by mains at the rear of properties. Other utilities present are water, Telstra local cable and main cable, and gas. Coaxial cable was not detected during the investigation.

2.2 Sightlines

Investigations were carried out in consultation with BMCC's traffic engineer to establish whether traffic sightlines could be maintained for cross roads, bus stops and residential driveways. The generous road reserve, preferred standard tree shape (single trunk with elevated canopy), and length and alignment of the road from Waratah Street to Birdwood Avenue make adequate sightlines achievable.

2.3 BMCC infrastructure

BMCC owned infrastructure in Lurline Street consists of paths, roads, kerbs and stormwater drainage.

- Kerbs: While the street is kerbed and guttered for its entire length, this infrastructure is due for re-assessment. Preliminary advice by an assets inspector recommends replacement. A number of problems in regard to its age and functioning have been identified including the raising of the gutter through progressive road reseals.
- Roads: Road camber requires correction due to past reseals. Resealing is currently programmed in sections from 2010 onwards. Budget is allocated generally on a priority basis.
- Stormwater: Pit heights require readjustment when road camber is corrected
- Paths: There is currently no budget allocated specifically for paths in this street. Funds are allocated on a priority basis.

It is not recommended that money is invested in tree planting if infrastructure is due for wholesale renewal within a relatively short time, as the construction works will inevitably impact on established trees. However the replacement of large sections of kerb presents a rare opportunity to renew paths and incorporate street tree planting in a coordinated fashion, with potential to improve coordination of utilities.

There are considerable potential economic efficiencies to be gained from establishing a single large construction project, as opposed to a number of incremental projects.

2.4 Species selection

The draft Street Tree Masterplan has developed a list of attributes as a guide to species selection. Selection is neither random nor arbitrary, but involves consideration of many factors.



Figure 2: Preferred Street Tree Form

Small trees are not regarded as desirable for a number of reasons. The reliable shape of a single trunk and elevated canopy of larger trees makes them more suitable (see Figure 2 above). This is because they occupy little physical space where it counts most – from the path surface vertically to a height of over two metres – leaving sightlines open, space for pedestrians and setbacks for opening car doors.

Deciduous trees are preferred in this location due to their ability to provide summer shade and winter sun, and the fact that they drop their leaves at one time of the year, unlike many evergreens which shed all year round. Maintenance can be programmed for an annual leaf drop.

Appropriate street trees with the requisite scale & form and suitable for climate and soil include, but are not restricted to:

- *Platanus x digitata* – Plane tree
- *Fagus sylvatica* - Beech
- *Liquidambar styraciflua* – Sweet Gum

The final selection must be extremely hardy, tolerate occasional harsh pruning and preferably be fairly fast growing.

The existing theme at Echo Point is Plane tree, and this species would be a logical choice to extend further north into Lurline Street, as it also possesses considerable hardiness and displays the appropriate form and scale. However questions were raised in response to the previous council report prompting investigations in regard to its allergenic properties.

Recent advice on this matter from Dr Ming-Wei Lin of the Westmead Allergy Clinic indicates that “*There is some concern about the potential allergenicity of plane trees, although we do not see too many patients that are troubled by this in our clinic.*”

When needed, further investigation on this matter can be made.

2.5 Root Volumes

In a highly urban setting such as this, it is no longer considered adequate to dig a hole in the footpath and plant a tree. Engineering standards for the installation of roads and pedestrian paths now require compaction rates that generally discourage root infiltration. Root volumes required to grow medium-large trees are significant. Personal communication with Judy Fakes, Head Teacher of Arboriculture at Ryde

School of Horticulture indicates a rule of thumb of 0.6m³ of root ball space is required for every 1.0 m² of canopy cover. A larger tree with canopy cover of say, 40m² (7m diameter crown) therefore requires a root volume of around 25m³. When adequate root volumes are not provided the tree either fails to thrive - declining rapidly - or roots infiltrate adjacent areas, leading to failure of infrastructure and trip hazards. There are examples of both these problems in the existing remnant street tree planting in the street.

Extending planting areas into the road to achieve traffic-calming devices and gain additional planting space has been considered and may form part of a design. While this strategy can achieve additional root ball volumes, by themselves they do not provide enough volume for tree root systems, and previous experience in other local roads indicate that the resulting garden beds may require heavy maintenance, depending on surface treatment. The best achievable final configuration would be considered during any design development.

3. SWOT Analysis

An analysis of the projects strengths, weaknesses, opportunities and threats brings a number of key considerations into focus.

3.1 Strengths

1. The street is the existing major transport route between Katoomba town centre and a busy tourist icon. As an international tourist attraction, visitor numbers are significant, 2-2.5 million, and a significant proportion (probably more than half) access Echo Point via Lurline Street. Both private bus operators use Lurline Street as the major tourist route.
2. There is a strong residential architectural character and many (30-40) heritage items based on architectural character and quality along the street.
3. There is an unbroken and consistent private garden frontage along the street with many existing large trees in private gardens. These provide a significant treed skyline to both sides of the street.
4. Wide road reserve gives some flexibility with potential road/path configurations.
5. There is a developing critical mass of tourist attractions along the route, which utilizes the existing building stock.
6. The route is a gentle grade between the town and Echo Point, with excellent potential for development of themed visitor walks. It has been labeled in a local brochure as "Katoomba Art and Heritage Walk. It has also been identified as benefiting from pedestrian way-finding in the current Tourism Signage Review.
7. The 'Strategic Land & Water Capability assessment' by Sydney Catchment Authority indicates significant soil capability on the ridgetop – the existing soil (where undisturbed) has the capability to grow good specimens of large trees. The evidence of this within private property is clearly evident.

3.2 Weaknesses

1. Large root ball volumes required to grow medium-large trees are significant, and distribution of services through the path on both sides of the road leaves little room for establishment of adequate root volumes without expensive interventions. The existing street trees are either small with an inappropriate shape, or larger trees in very poor condition. The condition of the larger trees indicates extreme constraints to growth.
2. There will be lengthy disruption to the street during installation of any urban infrastructure.

3. Street tree planting may reduce on-street carparking.

3.3 Opportunities

1. To express appropriate 'Blue Mountains' heritage and visual quality values, in this most major of streets with high visitor numbers.
2. Provide opportunity for coordinated service trench and underground power.
3. Achieve economic efficiencies in establishing one major construction improvement, rather than multiple and incremental projects.
4. Develop a "boulevard" with a range of improvements to pedestrian amenity e.g. street furniture and bike route.
5. Reduce reliance on private gardens for the provision of visual amenity.
6. Build ownership of the public domain by town and street residents through consultation and participation in the improvements.
7. Build-in innovation e.g. Water Sensitive Urban Design improvements.
8. Reconfigure street to achieve traffic calming and reduced road speeds.

3.4 Threats:

1. In-adequate external or internal funding.
2. Possible difficulties that may arise when working with numerous utility providers.
3. A perception of trees as hazards.
4. The reluctance of BMCC to add to assets list due to a high maintenance burden.

4. Costs

The following project estimate was prepared with assistance from the Assets and Contract Management section of Council.

Element	Quantity	Unit	Rate \$	Total \$	Notes
Utilities trench	3300	Linear metres	Item	\$250,000	Sewer mains in footpath for a total of half the length of works.
Kerb	3300	Linear metres	\$140	\$462,000	All but 300 metres due for renewal in 2016. \$10 /m added for house connections to stormwater
Road (making good edges & adjusting levels)	1650		Item	\$72,000	
Road re-seal	1650	Linear metres	Item	\$500,000	Sections programmed for re-seal 09-13 This item would constitute a dedicated part of BMCC contribution to project

Path – concrete	1650 x 5 = 8250	m2	\$75	\$625,000	No current funds allocated for renewal
Path – decomposed compacted granite	1650 x 3 = 4950	Linear metres	\$40	\$200,000	Covering to tree planting strip
Tree planting	200	each	\$5000	\$1,000,000	Integrated planting strip includes soil, drainage & root barrier to rear of kerb
Furniture	Seating = 6 Bins = 4	each	\$2000 \$2500	\$12,000 \$10,000	Coordination with Echo point and Katoomba Street required
TOTAL				\$3,131,000 + utilities coordination	

Therefore the scale of this project is likely to require access to grant funding of significant size.

5. Potential funding sources:

A number of grant funds have been used to provide projects of similar scale and purpose:

- Better Regions: now closed
- Regional and Local Community Infrastructure Program Round one: Closed
- Regional and Local Community Infrastructure Program Round two: closes early November.

While these are no longer current they demonstrate that this funding becomes available from time to time. Some projects recently funded include:

- Public Domain improvements to Ocean Boulevard, Manly (\$2.5M)
- Upgrade of streets, parks and public spaces of Darwin city centre (\$3.6M)
- Revitalization of South Street, Granville Town Centre, through improvements to public amenity, safety, urban design and infrastructure. (\$2.451M)

The Council has commenced business planning for 2010-2020 (Resourcing Strategy) and 2010-2013 (Delivery Program / Operational Plan) to align with the NSW Local Government Integrated Planning and Reporting Reforms which have now been adopted by the NSW State Government. Any decisions on resourcing this project will need to be considered in the context of the Resourcing Strategy / Delivery Program and assessed in terms of the Council's current financial and asset management priorities and challenges.

6. Options

Due to the nature of the existing constraints, minor works to establish tree planting are not recommended, as trees are unlikely to be viable in the longer term.

6.1 Do nothing

While the street could be an important focus for development, the scale of costs and the difficulty of providing the necessary degree of coordination across a range of utilities are very significant constraints which may prove too difficult to overcome.

6.2 Establish a major project

To establish this project the following needs to happen:

- Enter Lurline Street Public Domain improvements into the four-year Resource Plan and the Ten Year Integrated Plan;
- Establish a working group to undertake project development stage
- Develop a major project plan over 3-5 years;
- Identify and allocate budget to Master-planning, design development and documentation involving suitably qualified consultants and factor in public consultation with a range of stakeholders;
- Commence applications for major grant funding when design and documentation are sufficiently advanced. Project will seek to address a range of issues in a coordinated fashion and some contribution in kind from BMCC will be likely.

7. Scheduling Considerations

Establishment of a major project should be undertaken 2010-2011. More detailed project programming will follow as the project is established and planned.

8. Recommendations

It is recommended that BMCC commence the actions in 6.2 to establish a major project.