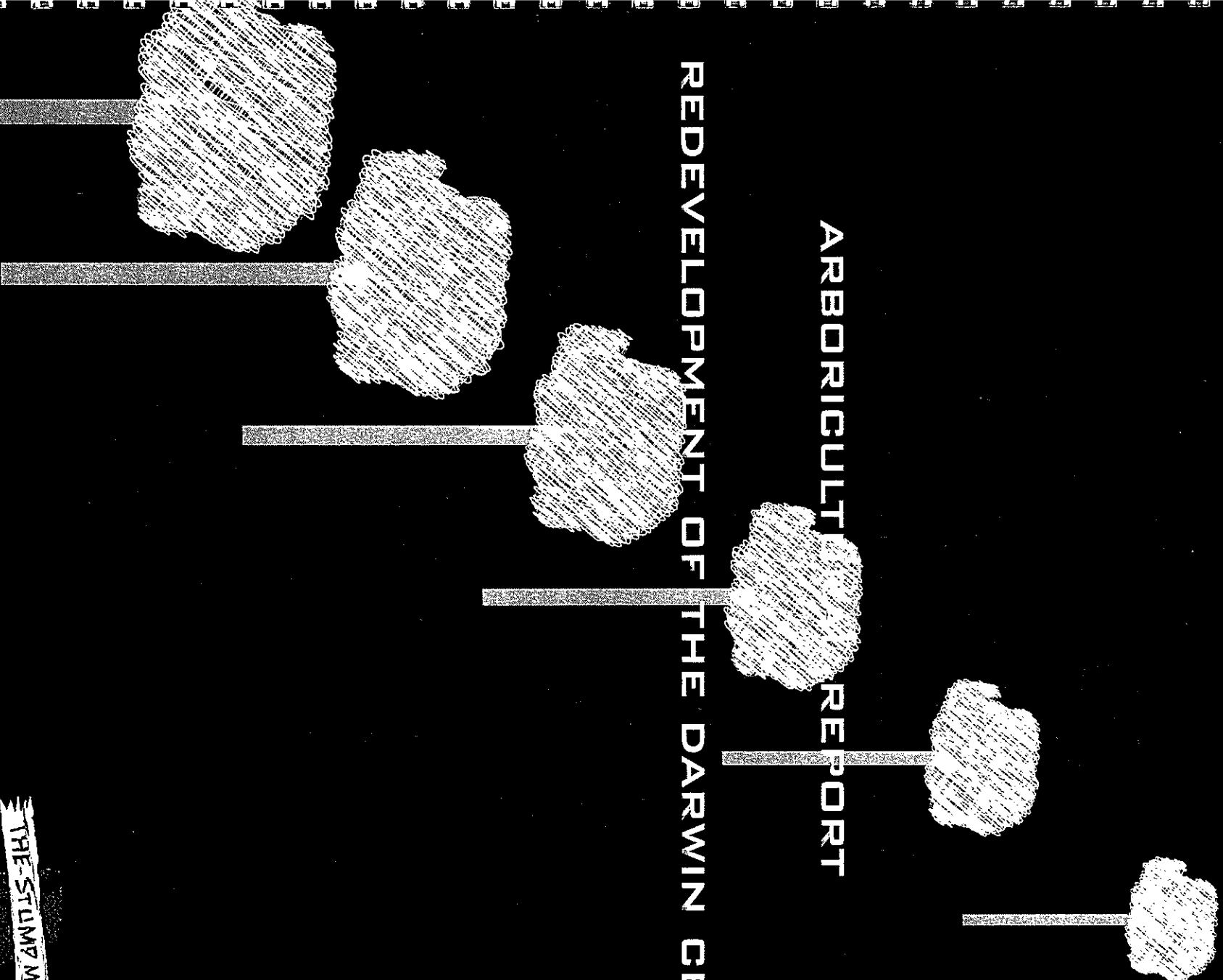


ARBORICULTURE REPORT REDEVELOPMENT OF THE DARWIN CBD



THE STUMP MAN

Tree # 5

Khaya senegalensis – common name: African Mahogany: Large spreading tree from Senegal in East Africa introduced into the Top End in the mid 1940s. *K.senegalensis* may reach heights of 45 metres under Top End conditions. These trees have been a feature of the Darwin CBD for many years.

Location: On the footpath outside Central Furnishings, Smith Street

Tree Characteristics:

- Height - 18 metres
- Spread – 17 metres
- Number of trunks – 1
- DBH – 950 mm
- Form – minor asymmetry
- Crown class – dominant
- Live crown ratio – 25%
- Age class – mature

Pruning history:

- Crown lifted
- crown cleaned
- lion tailed
- multiple pruning

Special value:

- Street Tree

Health status:

- general health status is average
- Vigor – average
- foliage color – normal
- previous history of failure
- pests and disease – none visible

Growth characteristics and tree development:

- average to poor

Growth obstructions:

- curbing/paving/ concrete footpath
- ground surface packed with compacted gravel
- roadway
- raised planted bed surrounding the tree has constricted the growth of the roots

Defects:

- damaged root crown
- severe damage to the structural root system from surrounding concrete wall
- excessive end weight on previously lion tailed limbs
- bow/sweep on some branches
- root crown is approx. 1,100mm above the artificial grade within the concrete surrounds

Potential targets:

- pedestrian traffic
- vehicular traffic
- buildings

Risk assessment:

• Failure potential :	2
• Size of part:	3
• Target rating:	3
• Total Risk Rating =	8

S U L E:

- Category 4
- Sub-category C (4)

SUMMARY.

The Visual Tree Assessment showed this tree to be in poor health due mainly to the constraints placed upon the root system by the surrounding retaining wall. This is a common cause of tree decline in Darwin. When this retaining wall is demolished during the re-development the likelihood of complete tree failure is high. Water mains and other services are present under this tree.

This tree should be removed prior to the re-development commencing.

TREE VALUATION:

No Tree Valuation is included as the tree is recommended for removal in the interests of public safety.

Tree # 6

Alstonia actinophylla – common name: Northern Milkwood: Erect, compact tree, native to the Top End. This tree is on the “Significant Tree List” (#103). This species has been a feature of the Darwin CBD for many years.

Location: On the footpath in front of # 59, Smith Street

Tree Characteristics:

- Height - 10 metres
- Spread – 12 metres
- Number of trunks – 1
- DBH – 660 mm
- Form – generally symmetric
- Crown class – dominant
- Live crown ratio – 20%
- Age class – senescent

Pruning history:

- Crown lifted
- crown cleaned
- lion tailed
- multiple pruning

Special value:

- Significant Tree # 103

Health status:

- general health status is poor to average
- Vigor – average
- foliage color – normal
- previous history of failure
- pests and disease – Mistletoe (*Amyema sanguineum*)

Growth characteristics and tree development:

- average

Growth obstructions:

- curbing/paving/ concrete footpath
- ground surface packed with compacted gravel
- roadway

Defects:

- damaged root crown with decay present

Potential targets:

- pedestrian traffic
- vehicular traffic
- buildings

Risk assessment:

• Failure potential:	1
• Size of part:	0
• Target rating:	3
• Total Risk Rating =	4

S U L E:

- Category 3
- Sub-category D (3)

SUMMARY.

The Visual Tree Assessment showed this tree to be in below average health but with little risk of failure in the short term. As this is a significant tree every effort should be made to retain it for as long as possible.

Damage to the root crown will continue unless a protective guard is erected around the tree. A plaque depicting the botanical details of the tree and its history should be attached to the guard.

Insect attracting fairy lights should be removed. Water mains and other services are present under this tree.

TREE VALUATION:

Ref #	Species	Tree Size (M)	SULE	Importance In the landscape	Presence of other trees	Relation to setting	Form	Special Factors	Calculation details	Value
# 6	<i>Alstonia actinophylla</i>	Large- 120 sq m 3 pts	10-20 Years 1 pts	Great 4 pts	Few 3 pts	Very Suitable 3 pts	Fair 2 pts	Four 3 pts	3x1x4x3x3x2x3 = 648 x \$50	\$32,400

Reference: Standards Australia. Draft Australian Standard: DR 99307.

Tree # 7

Khaya senegalensis – common name: African Mahogany: Large spreading tree from Senegal in East Africa introduced into the Top End in the mid 1940s. *K. senegalensis* may reach heights of 45 metres under Top End conditions. These trees have been a feature of the Darwin CBD for many years.

Location: On the footpath next to 59 Smith Street

Tree Characteristics:

- Height - 18 metres
- Spread – 26 metres
- Number of trunks – 1
- DBH – 1.46 metres
- Form – major asymmetry
- Crown class – dominant
- Live crown ratio – 25%
- Age class – mature

Pruning history:

- Crown lifted
- crown cleaned
- lion tailed
- multiple pruning

Special value:

- Street Tree

Health status:

- general health status is average
- Vigor – average
- foliage color – normal
- previous history of failure
- pests and disease – none visible

Growth characteristics and tree development:

- average to poor

Growth obstructions:

- curbing/paving/ concrete footpath
- ground surface packed with compacted gravel roadway
- raised planted bed surrounding the tree has constricted the growth of the roots

Defects:

- damaged root crown
- severe damage to the structural root system from surrounding concrete wall
- excessive end weight on previously lion tailed limbs
- bow/sweep on some branches
- root crown is-approx. 1,100mm above the artificial grade within the concrete surrounds

Potential targets:

- pedestrian traffic
- vehicular traffic
- buildings

Risk assessment:

• Failure potential :	2
• Size of part:	3
• Target rating:	3
• Total Risk Rating =	8

S U L E:

- Category 4
- Sub-category C (4)

SUMMARY.

The Visual Tree Assessment showed this tree to be in poor health due mainly to the constraints placed upon the root system by the surrounding retaining wall. This is a common cause of tree decline in Darwin. When this retaining wall is demolished during the re-development the likelihood of complete tree failure is high. A major structural root is causing damage to an adjacent building. Water mains and other services are present under this tree.

This tree should be removed prior to the re-development commencing.

TREE VALUATION:

No Tree Valuation is included as the tree is recommended for removal in the interests of public safety.

Tree # 000

Khaya senegalensis – common name: African Mahogany: Large spreading tree from Senegal in East Africa introduced into the Top End in the mid 1940s. *K. senegalensis* may reach heights of 45 metres under Top End conditions. These trees have been a feature of the Darwin CBD for many years.

Location: On the footpath at Darwin Central Hotel and McDonalds Restaurant. This tree has a triple zero number as it was a late addition to the list and is numerically out of sequence. It does not have a number tag.

Tree Characteristics:

- Height - 15 metres
- Spread ~ 14 metres
- Number of trunks – 1
- DBH – 1.1 metres
- Form – major asymmetry
- Crown class – dominant
- Live crown ratio – 15%
- Age class – mature

Pruning history:

- Crown lifted
- crown cleaned
- lion tailed
- multiple pruning

Special value:

- Street Tree

Health status:

- general health status is poor
- Vigor – poor
- foliage color – chlorotic
- no previous history of failure
- pests and disease – none visible

Growth characteristics and tree development:

- average to poor

Growth obstructions:

- curbing/paving/ concrete footpath
- ground surface packed with compacted gravel
- roadway
- raised planted bed surrounding the tree has constricted the growth of the roots
- compacted gravel in the raised planter has restricted the supply of oxygen to the roots
- compacted gravel packed tightly around the trunk is constricting the translocation process and thus killing the tree.

Defects:

- 50% of this tree is dying from the effects of hard landscaping
- some bird damage to the canopy
- severe damage to the structural root system from surrounding concrete wall overhang on 1 scaffold limb which is rapidly declining

Potential targets:

- pedestrian traffic
- vehicular traffic
- buildings
- outdoor eating area

Risk assessment:

• Failure potential :	2
• Size of part:	3
• Target rating:	3
• Total Risk Rating =	8

S U L E:

- Category 4
- Sub-category C (4)

SUMMARY.

The Visual Tree Assessment showed this tree to be in poor health due mainly to the constraints placed upon the root system by the surrounding retaining wall. This is a common cause of tree decline in Darwin. The hard landscaping surrounding this tree has been packed with semi-fine gravel to a height of 600mm above grade and consequently this artificial fill is deficient in oxygen. This compacted gravel is constricting the translocation process and killing the tree. Water mains and other services are present under this tree.

This tree should be removed prior to the re-development commencing.

TREE VALUATION:

No Tree Valuation is included as the tree is recommended for removal in the interests of public safety.

Risk assessment:

•	Failure potential:	1
•	Size of part:	0
•	Target rating:	3
•	Total Risk Rating =	4

S U L E:

- Category 2
- Sub-category D (2)

SUMMARY.

The Visual Tree Assessment showed this tree to be in good health with a very low risk factor. There is no arboricultural reason to remove this tree during the re-development but careful consideration must be given to the future growth requirements of this tree.

Ref. #	Species	Tree Size (M)	SULE	Importance In the landscape	Presence of other trees	Relation to setting	Form	Special Factors	Calculation details	Value
# 10	<i>Peltophorum pterocarpum</i>	Large 120m sq.	20-40 Years	Considerable	Few	Very Suitable	Good	Two	4x2x3x3x3x3x3 =1,458 x \$50	\$72,900
		3 pts	2 pts	3 pts	3 pts	3 pts	3 pts	3 pts		

Reference: Standards Australia: Draft Australian Standard: DR 99307.

Tree # 11

Khaya senegalensis – common name: African Mahogany: Large spreading tree from Senegal in East Africa introduced into the Top End in the mid 1940s. *K.senegalensis* may reach heights of 45 metres under Top End conditions. These trees have been a feature of the Darwin CBD for many years.

Location: In front of the Victoria Hotel, Smith Street Mall

Tree Characteristics:

- Height - 22 metres
- Spread – 25 metres
- Number of trunks – 1
- DBH – 750mm
- Form – minor asymmetry
- Crown class – dominant
- Live crown ratio –25%
- Age class – mature

Pruning history:

- Crown lifted
- crown cleaned
- lion tailed
- multiple pruning

Special value:

- Street Tree

Health status:

- general health status is average to good
- Vigor – average
- foliage color – normal
- no previous history of failure
- pests and disease – none visible

Growth characteristics and tree development:

- average to good

Growth obstructions:

- raised area of hard landscaping well above the buttress and root crown
- restricted root area
- high volume of human traffic

Defects:

- moderate phototropism – 20 degree of lean
- moderate bow/sweep on limbs

Potential targets:

- pedestrian traffic
- buildings

Risk assessment:

- Failure potential : 1
- Size of part: 0
- Target rating: 3
- Total Risk Rating = 4

S U L E:

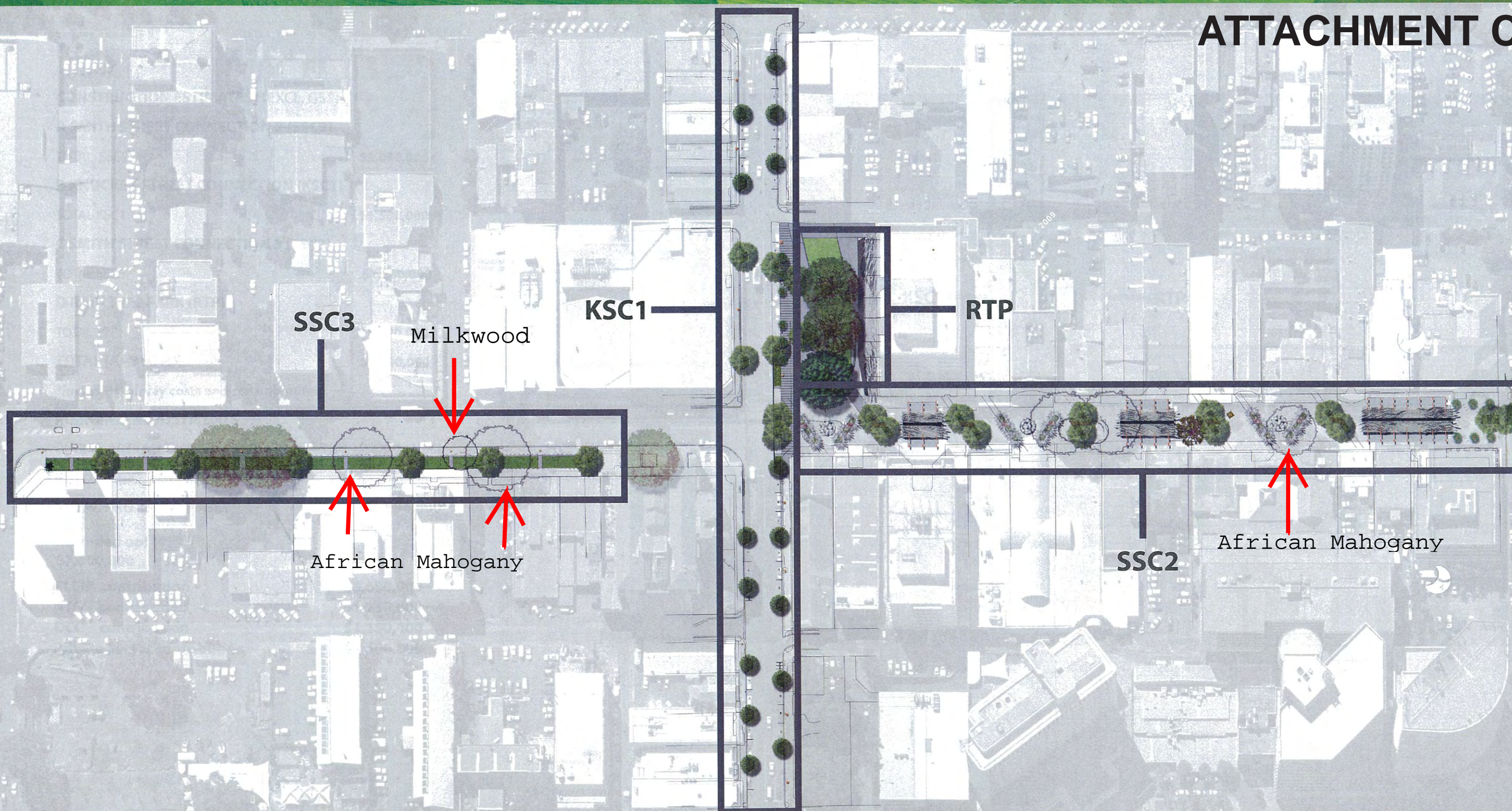
- Category 3
- Sub-category D (2)

SUMMARY.

The Visual Tree Assessment showed this tree to be in average to good health with a medium risk factor and a Safe Useful Life Expectancy of up to 15 years but the tree is suffering from previous lack of management in that it did not have any formative pruning in it's early life and has been haphazardly and incorrectly pruned for many years. This tree has an observed history of periodically doing poorly but this can be attributed to the fact that the tree is completely enclosed by hard landscaping which should be removed.

There is no arboricultural reason to remove this tree. This tree is the best example of *K. senegalensis* in the Mall.

ATTACHMENT C



0800

ATTACHMENT D



Concept Design (CD) December 2009

The Mall

Rain Tree Park

Smith Street



SSC3

KSC1

RTP

SSC2

Note- KSC1 already adopted by DCC



Core components of the city

It is intended that this project will kick start the revitaliation of Darwin's CBD.

The core components of the city are :

- *The sustainable city* - recognising and valuing the role of street and park planting in defining the unique tropical character of the city and to promote Darwin as a walk-able city.
- *The event city* - creating streets and public spaces capable of staging important cultural and civic events.
- *The retail city* - building better, less cluttered connections whilst establishing a framework for private sector investment in street level retail.
- *The 24 hour city* - promoting a safe and covered pedestrian environment.





Core components of the project

The core components of the project are :

- **Greening** the CBD

Trees

Groundcover

- **Connecting** people to places

De-cluttering

Shelter

Lighting

Seating

Signage

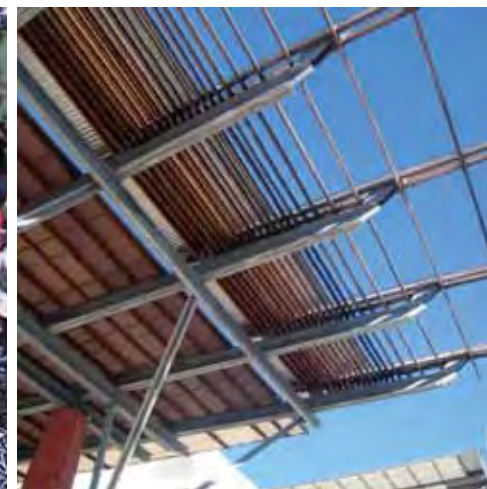
Public Art

- **Meeting** in my 0800

Play spaces

Event spaces

Retail spaces





The Team



Australian Government



Northern
Territory
Government



Tract



dotdash



aurecon

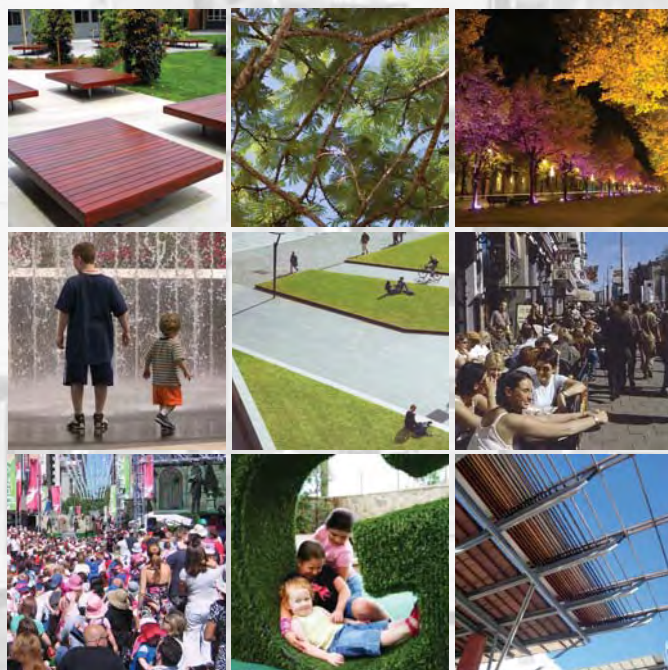
RLB | Rider Levett Bucknall





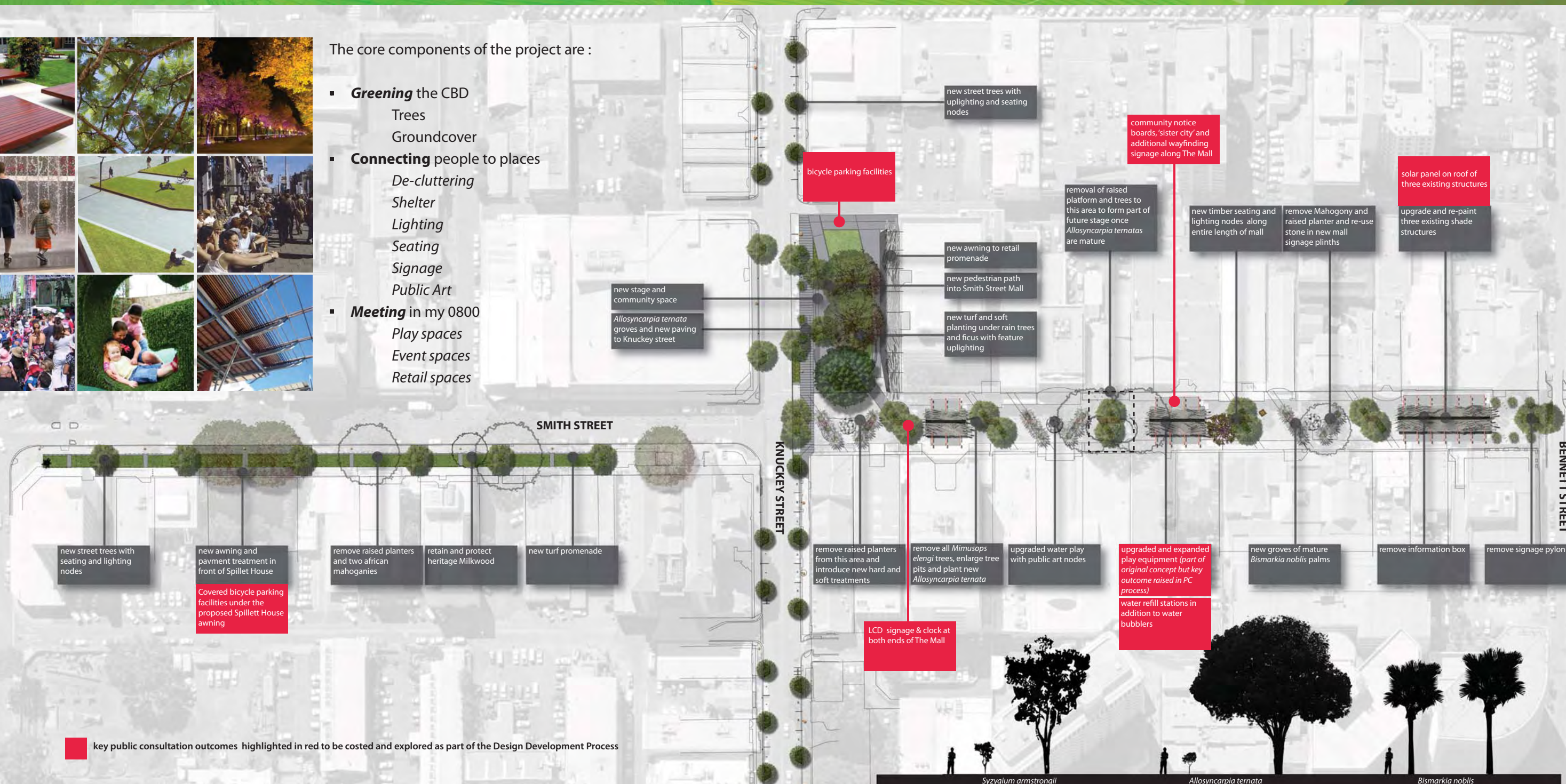


concept design - overview with key public consultation outcomes



The core components of the project are :

- **Greening** the CBD
 - Trees
 - Groundcover
- **Connecting** people to places
 - De-cluttering
 - Shelter
 - Lighting
 - Seating
 - Signage
 - Public Art
- **Meeting** in my 0800
 - Play spaces
 - Event spaces
 - Retail spaces





The Cost

CONSTRUCTION ESTIMATES* (EXCL. GST)

A SMITH STREET CONNECTION 2 (SSC2)

TOTAL SSC2 \$3,000,000

B KNUCKEY STREET CONNECTION (KSC1)

TOTAL KSC1 \$1,500,000

C SMITH STREET CONNECTION 3 (SSC3)

TOTAL SSC3 \$1,200,000

D RAIN TREE PARK (RTP)

TOTAL RTP \$1,000,000

TOTAL (A+B+C+D) \$6,700,000

*including survey costs and consultant fees

MARGIN & ADJUSTMENTS

PUBLIC ART (ALLOWANCE) 4.0% \$ 268,000

END OF PROJECT AUDIT \$ 26,000

TOTAL PROJECT BUDGET \$6,994,000

(rounded up)

\$7,000,000

RLCIP contribution \$3,600,000

NTG contribution \$1,750,000

DCC contribution \$1,150,000

Private Sector contribution \$ 500,000



Smith Street can be considered the traditional main street of the city. Smith Street is the centre of town, a place to meet and throughout Darwin's European history it was the 'everyday' street for locals.

Current Problems

- Lack of retail sightlines (street to shop-front).
- Unsafe environment at night.
- Lack of a continual covered connection between China Town Carpark and the Mall.



The core components of SSC3 are :

- **Greening** the CBD

Trees - six *Allosyncarpia ternata*.

Groundcover - Turf promenade

- **Connecting** people to places

De-cluttering - raised planters and shrubbery.

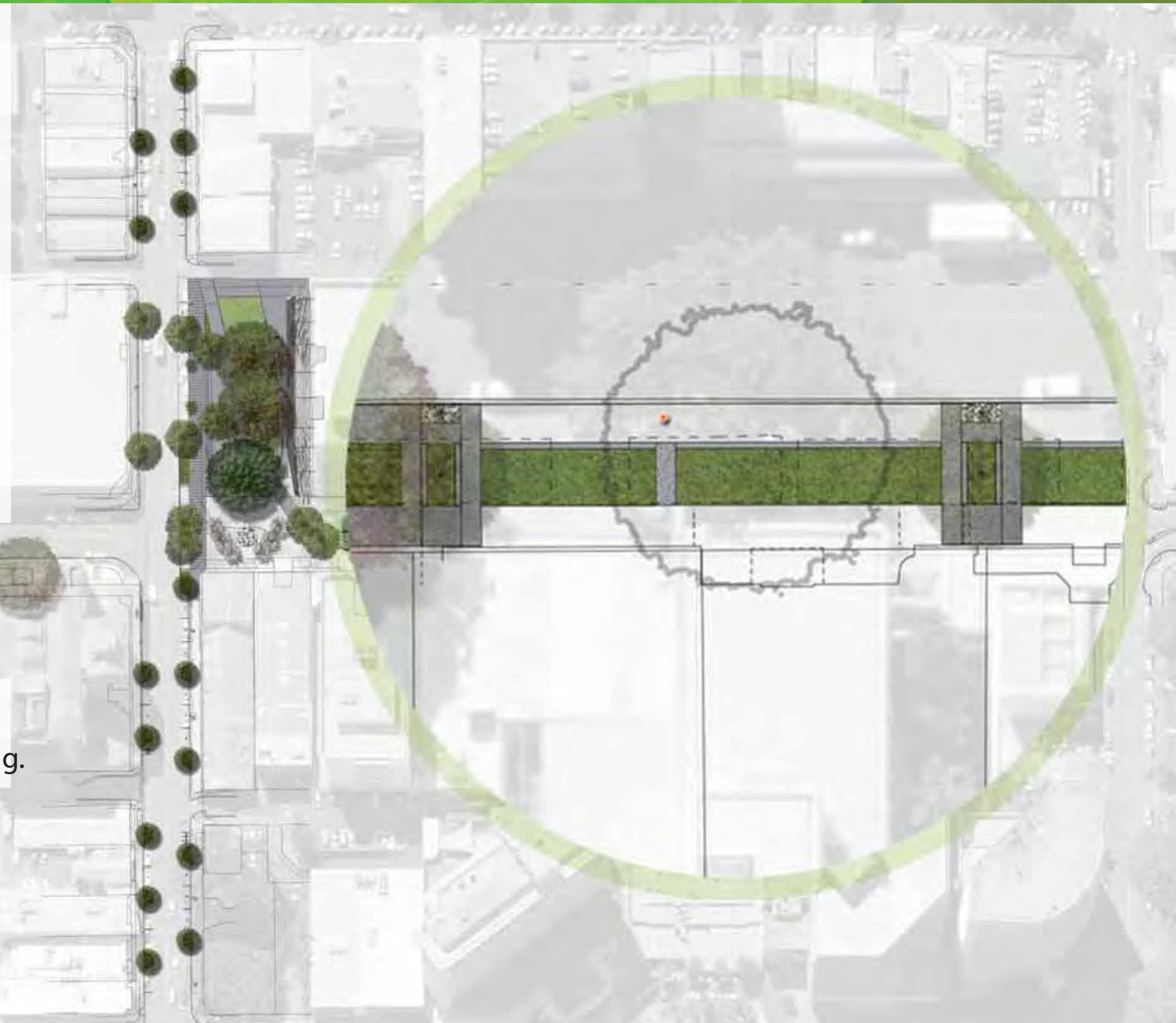
Shelter - new awning to Spillet House.

Lighting - pedestrian & tree uplighting.

Seating - local stone blade walls.

Signage - wayfinding.

- **Meeting** in my 0800
Retail space - catalyst for future retail /alfresco dining.



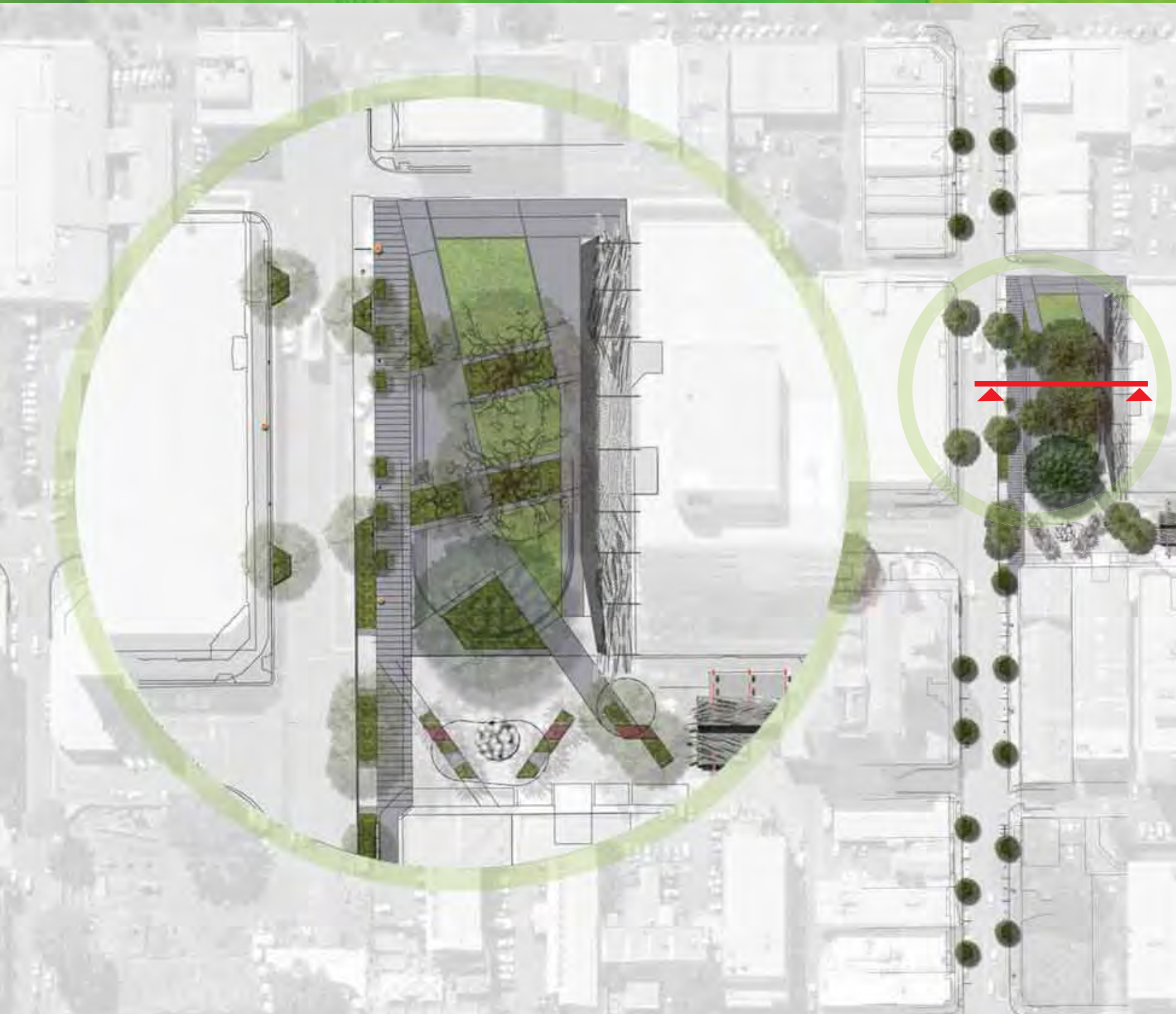


Raintree Park is a key pocket park centrally located in the CBD.

Current Problems

- Conflict between paving and tree health.
- Weak edges.
- Isolated heart.





The core components of RTP are :

- **Greening** the CBD

Trees - *Allosyncarpia ternata*, Rain Trees, *Ficus*.
Groundcover - *Turf & Gardenia*.

- **Connecting** people to places

De-cluttering - soft heart / urban edge.
Shelter - new awning to retail promenade.
Lighting - pedestrian & tree uplighting.
Seating - timber around *ficus*.
Signage - environmental & wayfinding.

- **Meeting** in my 0800

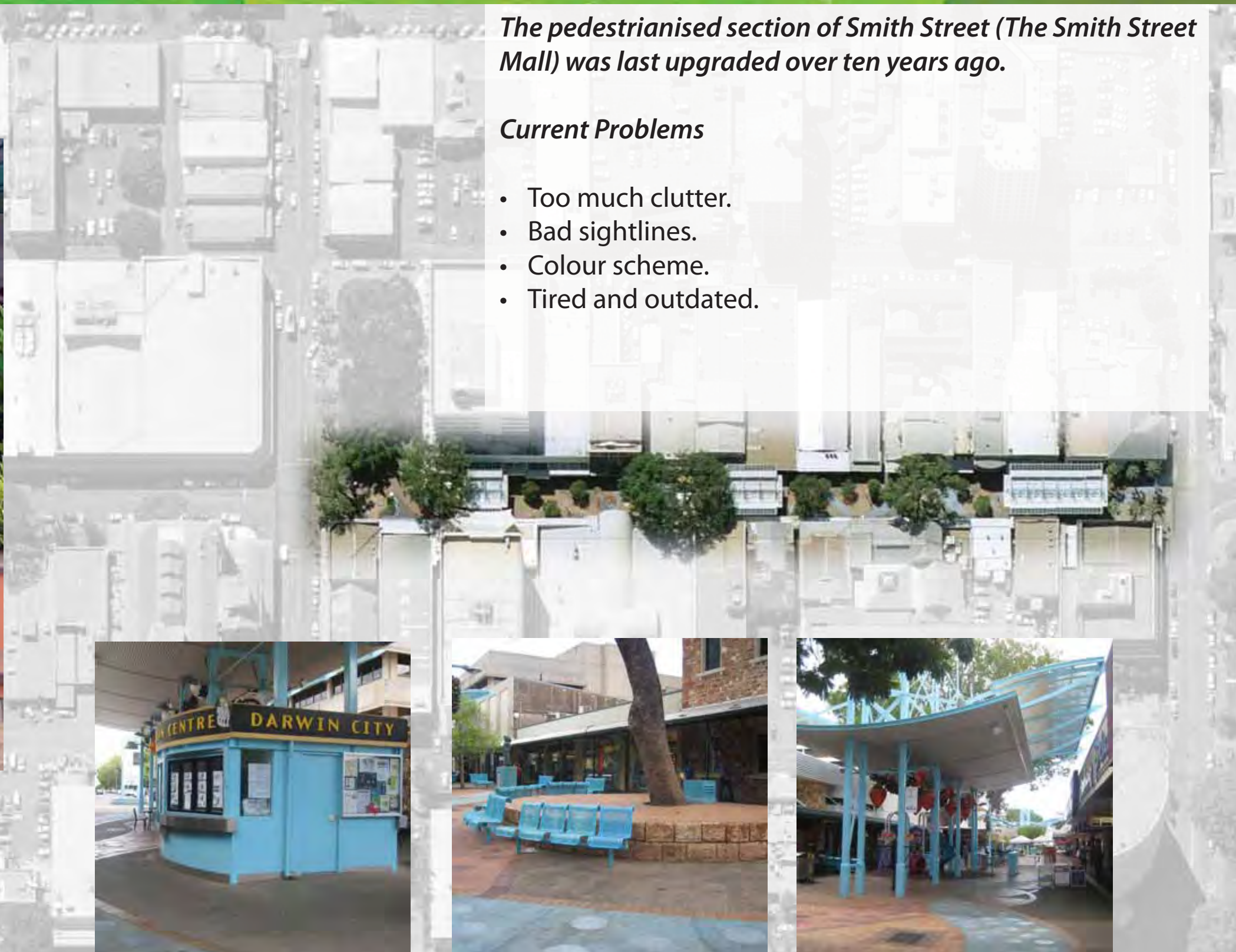
Play spaces - the long lawn.
Event spaces - the city stage.
Retail spaces - the retail promenade.

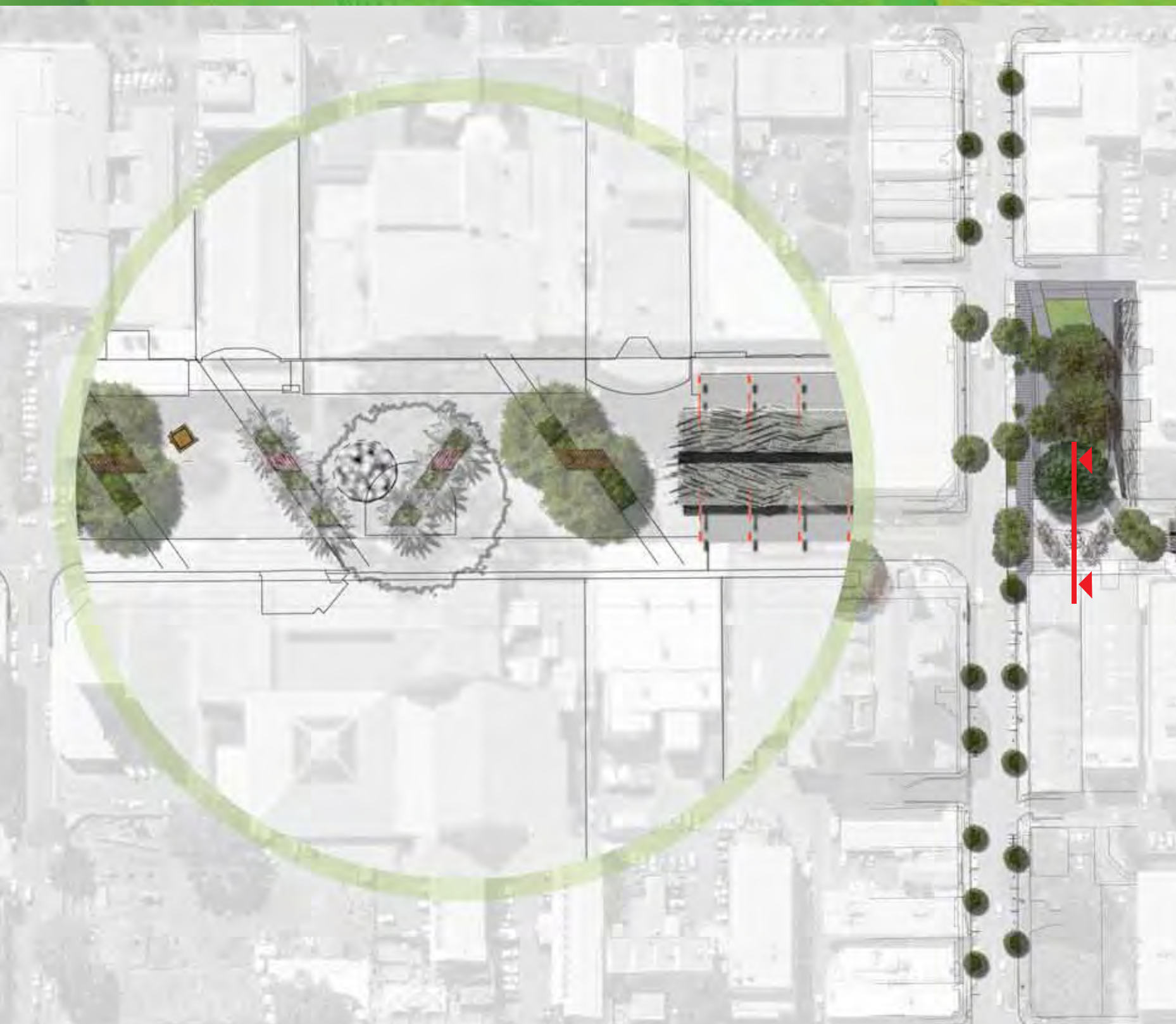


The pedestrianised section of Smith Street (The Smith Street Mall) was last upgraded over ten years ago.

Current Problems

- Too much clutter.
- Bad sightlines.
- Colour scheme.
- Tired and outdated.





The core components of SSC2 are :

- **Greening** the CBD

Trees - *Allosyncarpia ternata* & *Bismarkia nobilis*.
Groundcover - *Gardenia*.

- **Connecting** people to places

De-cluttering - raised planters, seating, info box.
Shelter - upgrade shade structures.
Lighting - pedestrian & tree uplighting.
Seating - local stone blade walls.

Signage - wayfinding.

Public Art - lighting, kids play and groundworks

- **Meeting** in my 0800

Play spaces - three play nodes including upgraded water play.

Event spaces - the three structures.





0800

MY 8000

