

4.5 Apartments

Strategy 1

Courtyard deep soil zone

The strategy explores having central deep soil space at the heart of a block including large trees.



Building lot typology study

Benefits:

- Good building separation (due to modest street setback) allows increased yield and height.

Further testing required:

- Elevated construction required (3 storey walk up) required to meet permeability target
- Deep soil located within courtyard limiting the efficiency of car park.

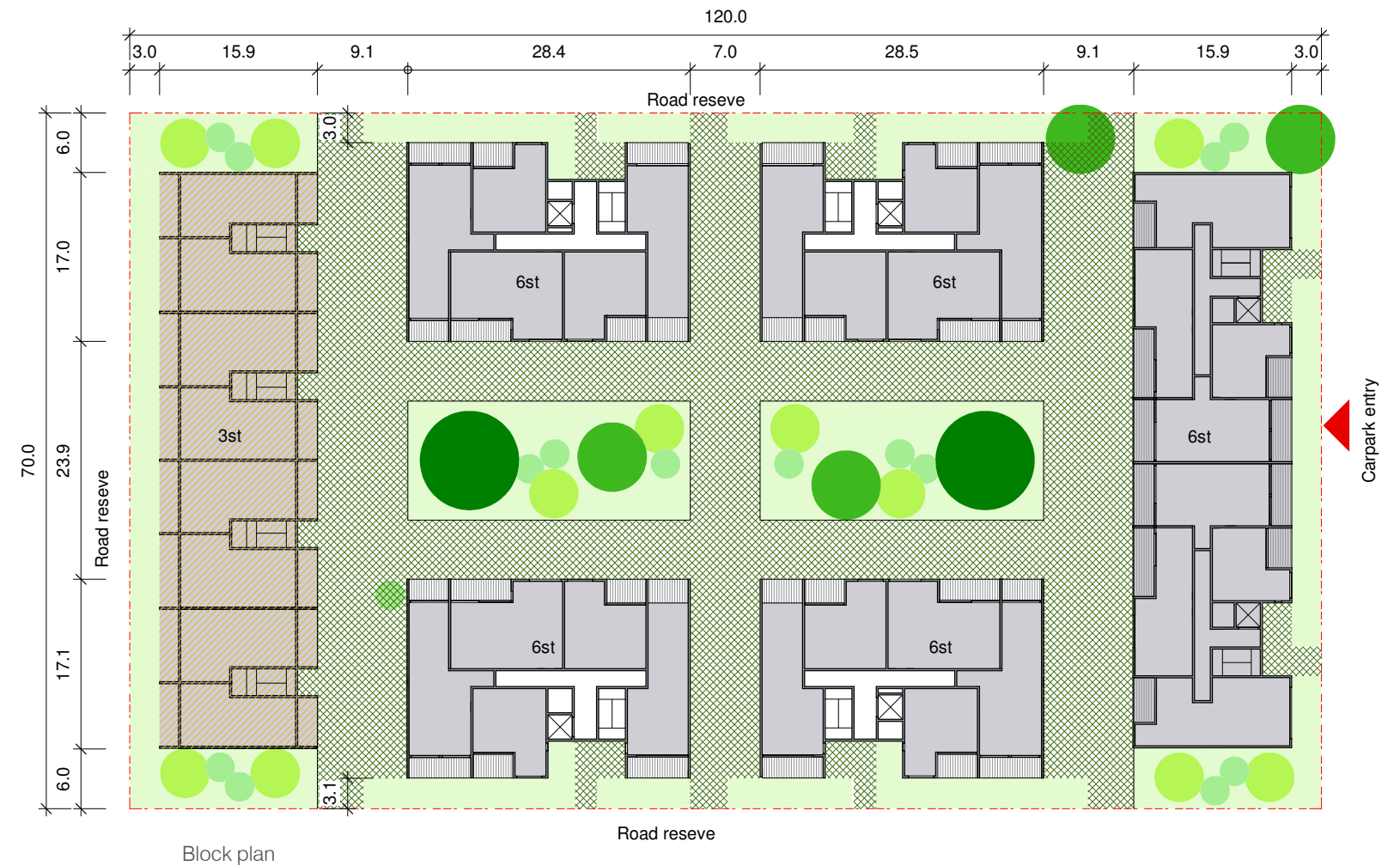


Figure 56. Strategy 1 – Courtyard deep soil zone

Typology overview:

- Three storey walk-up + 6 storey apartments
- Cottage construction + commercial construction
- Basement car parking below grade assumed in metrics. Parking within envelopes would improve permeability however increase building heights to achieve the same floorspace
- Mid-block through site link (7m)
- Through site link under community title (50% permeable assumed)
- Deep soil courtyard to achieve ADG requirement.

Table 15. Key metrics: Apartments – Strategy 1

Lot size	Approx. GFA	Approx. FSR
8400m ²	16,326m ²	1.94:1

Permeable surfaces	Permeability	Area
Deep soil (<6m width)	100%	1138m ² (15%)
Deep soil (>6m width)	100%	767m ² (8%)
Non-dwelling surfaces	50%	2080m ² (25%)
Dwelling site coverage	0%	3045m ² (36%)
Elevated dwellings	100%	900m ² (11%)
Total		8400m²

Apartments

Blocks + streets

Stormwater management strategies

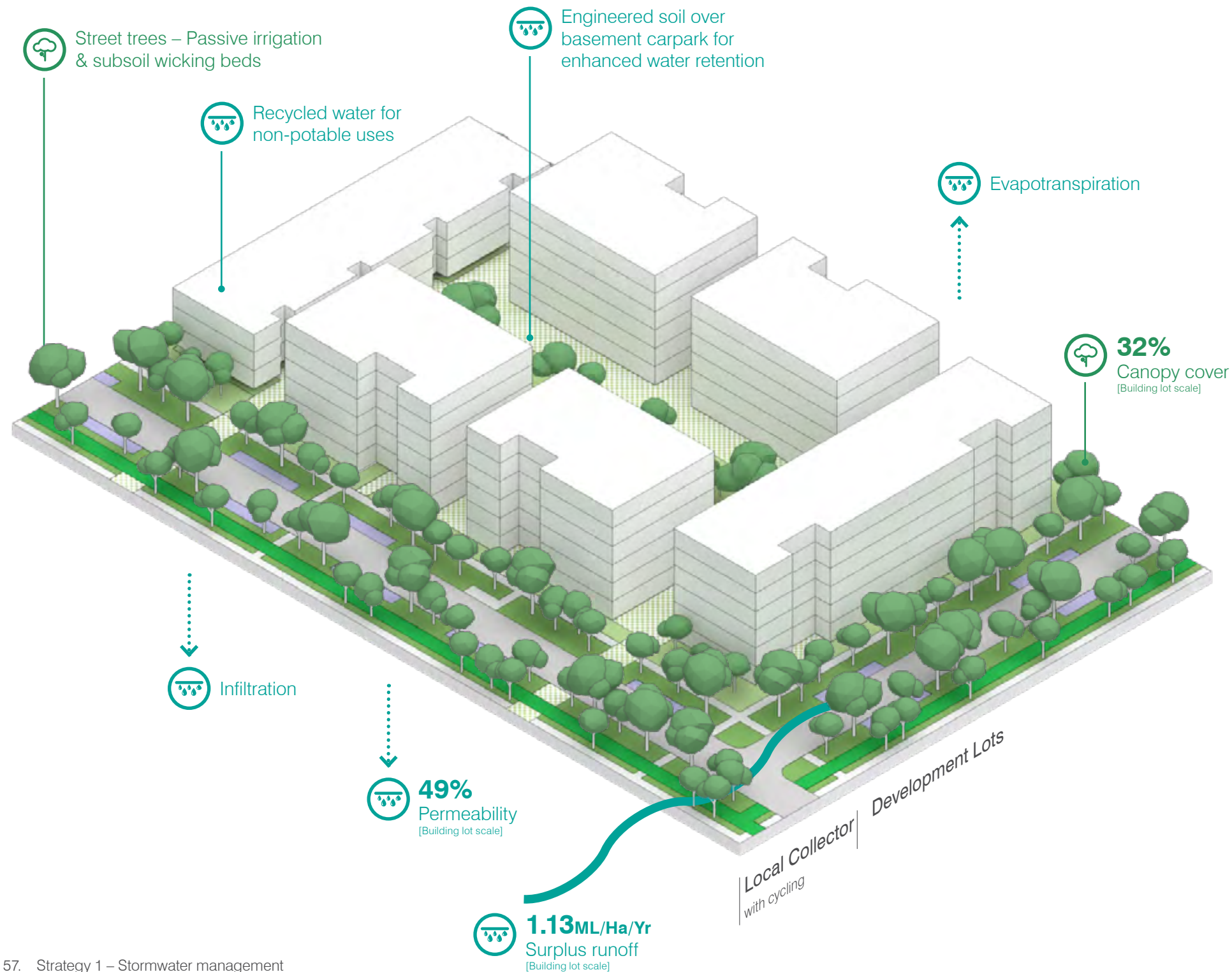


Figure 57. Strategy 1 – Stormwater management

Key metrics

Density	109 Dwellings per hectare
	208 Residents per hectare [Urban typology scale]
Green	27 m ² of open space [per building lot]
	49 % canopy cover [Block+street scale]
Water	43 % permeability [Block+street scale]
	1.13 ML/Ha/Yr surplus runoff [Block+street scale]
Stormwater	80 kL rainwater tank [per building lot]
	x m ² sponge area [per building lot]
	27 'Wianamatta' street trees [per building lot]

Precedent

Balgowlah Mixed Use Development



Aerial view



Courtyard elevation

Apartments

Strategy 2

Deep soil front setbacks

The strategy explores a 6m deep soil perimeter setback.

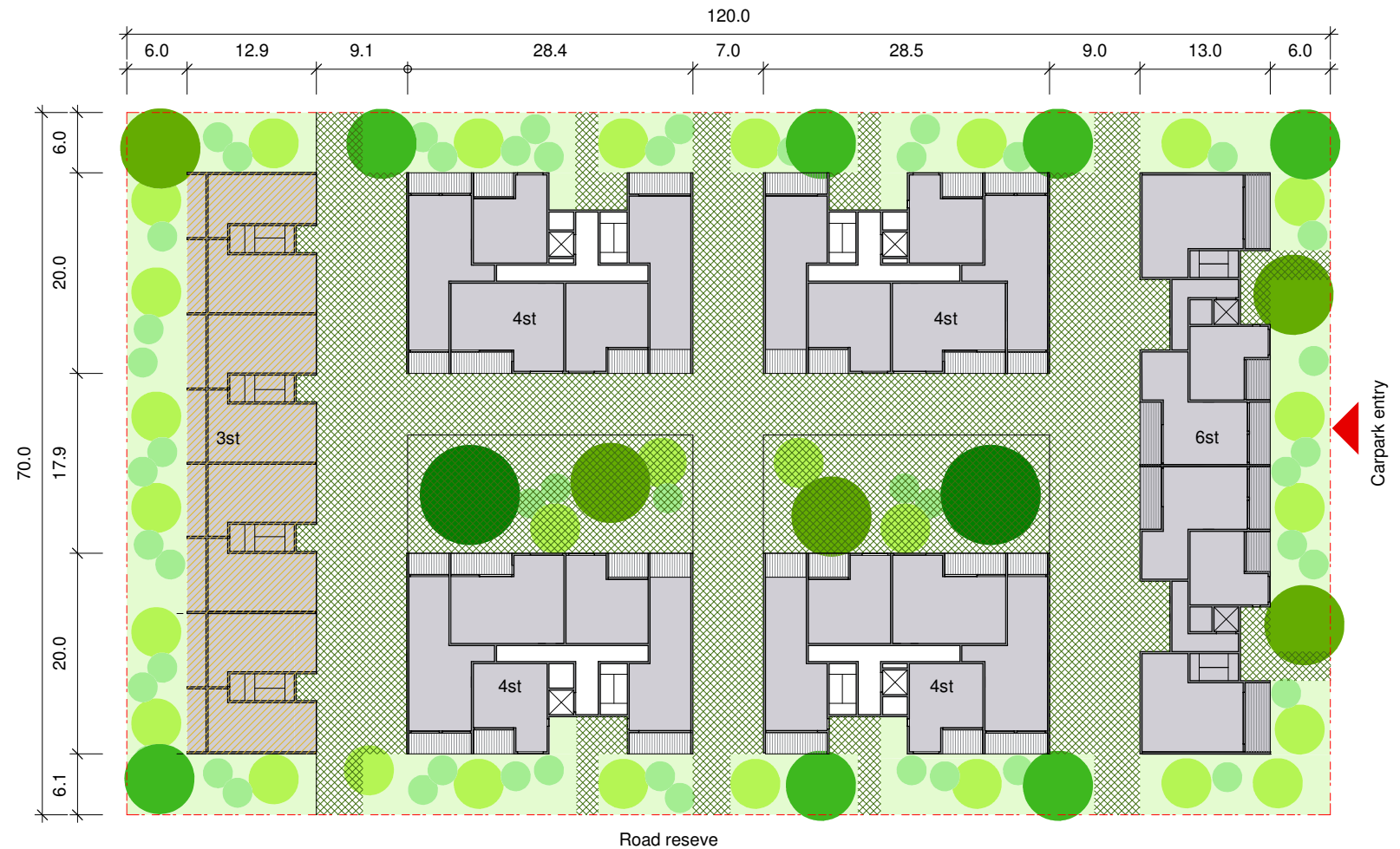


Figure 58. Strategy 2 – Deep soil front setbacks

Building lot typology study

Benefits:

- 6 metre deep soil zones at perimeter will improve opportunities for increased tree canopy on streets
- Deep soil is located away from basement area maximising car park efficiency.

Further testing required:

- Scenario is reliant on elevated construction required (3 storey walk up) required to meet permeability target
- Reduced building height + yield due to reduced building separation.

Typology overview:

- Three storey walk-up + 4-6 storey apartments
- Cottage construction + commercial construction
- Basement car parking below grade assumed for metrics. Higher permeability can be achieved with in-building parking
- Mid-block through site link (7m)
- Through site link under community title (50% permeable assumed)
- 6m perimeter setback to achieve ADG requirement.

Table 16. Key metrics: Apartments – Strategy 2

Lot size	Approx. GFA	Approx. FSR
8400m ²	12,954m ²	1.54:1

Permeable surfaces	Permeability	Area
Deep soil (<6m width)	100%	0m ² (0%)
Deep soil (>6m width)	100%	1942m ² (22%)
Non-dwelling surfaces	50%	2899m ² (35%)
Dwelling site coverage	0%	2659m ² (32%)
Elevated dwellings	100%	900m ² (11%)
Total		8400m²

Apartments

Blocks + streets

Stormwater management strategies

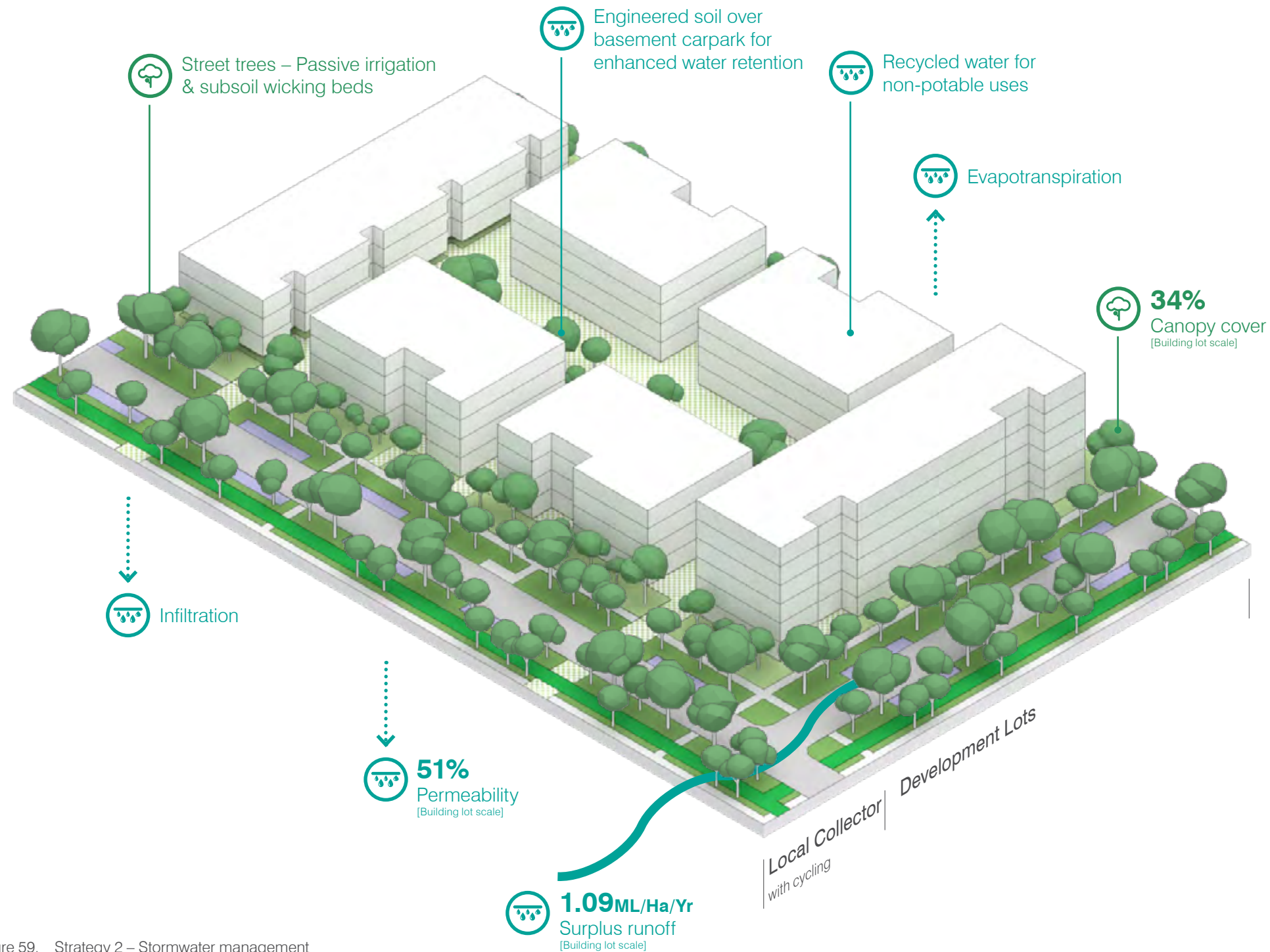


Figure 59. Strategy 2 – Stormwater management

Key metrics

Density	87 Dwellings per hectare
	165 Residents per hectare [Urban typology scale]
	1.54 FSR (x:1) [Building lot scale] 0.87 FSR (x:1) [Urban typology scale]
Green	32 m ² of open space [per building lot]
	51 % canopy cover [Block+street scale]
Water	45 % permeability [Block+street scale]
	1.09 ML/Ha/Yr surplus runoff [Block+street scale]
	80 kL rainwater tank [per building lot]
	308 m ² sponge area [per building lot]
	27 'Wianamatta' street trees [per building lot]

Precedent

Balgowlah Mixed Use Development



Aerial view



Courtyard elevation

Apartments

Strategy 3

Parking courts

This strategy explores the use of permeable parking courts as both an aid to increasing permeability and reducing development costs associated with basement parking.

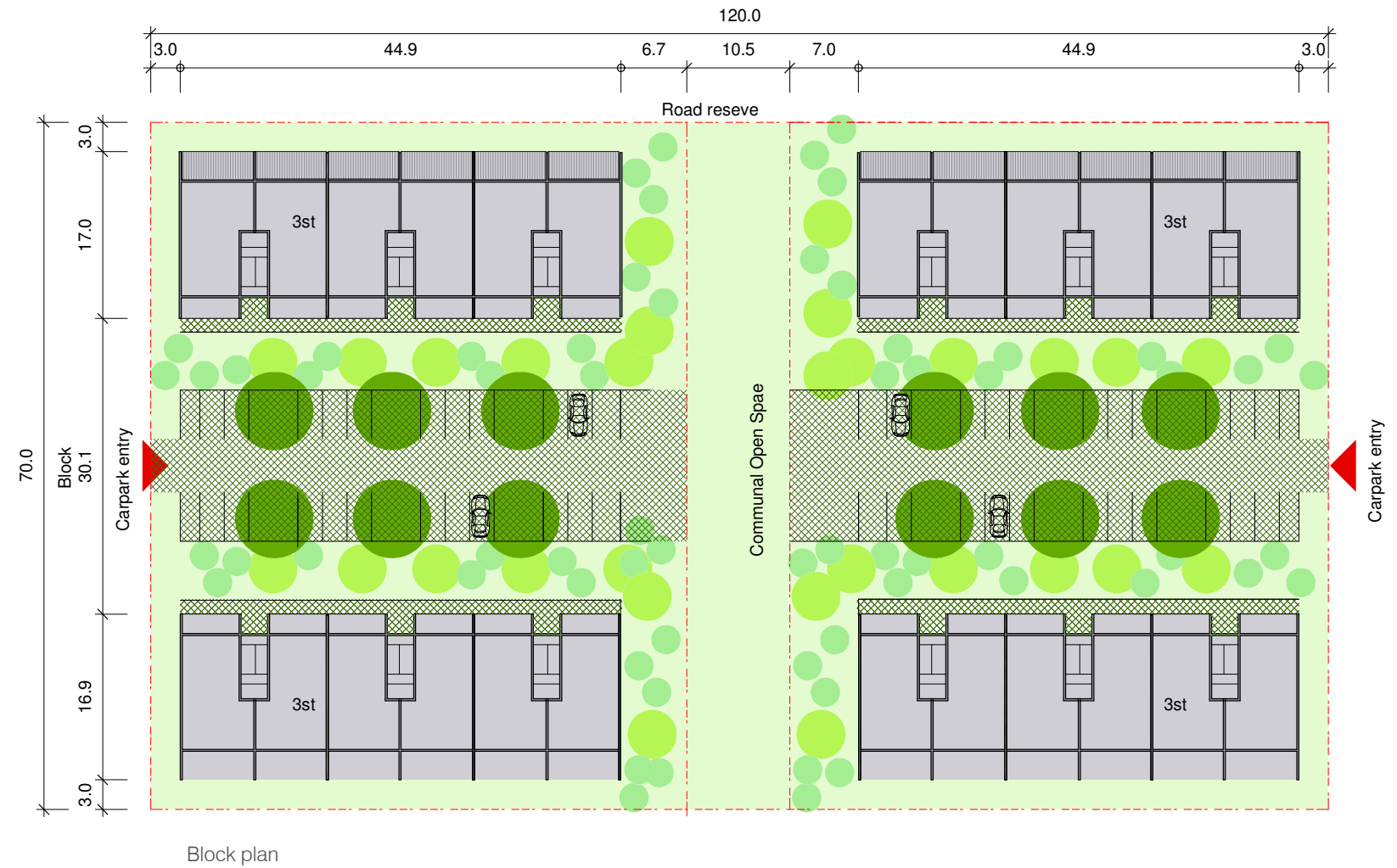


Figure 60. Strategy 3 – Parking courts

Building lot typology study

Benefits:

- Lack of basement construction will improve financial viability
- Excellent tree planting opportunities on site and within communal open space.

Further testing required:

- Parking courts have not been common in Sydney despite popularity in Europe
- Parking courts are likely to only be able to deliver the parking need for smaller apartment blocks
- Ownership and maintenance of communal open space is unclear.

Typology overview:

- Three storey walk-up development, no lifts
- Domestic/ cottage construction
- Car court style parking located between buildings
- Linear park located on a mid-block spine
- Community title linear park (100% permeable assumed) 10.5m width.

Table 17. Key metrics: Apartments – Strategy 3

Lot size	Approx. GFA	Approx. FSR
7665m ²	6,840m ²	0.81:1
735m ² (community title)		

Permeable surfaces	Permeability	Area
Deep soil (<6m width)	100%	1370m ² (18%)
Deep soil (>6m width)	100%	1370m ² (18%)
Non-dwelling surfaces	50%	1950m ² (25%)
Dwelling site coverage	0%	2975m ² (39%)
Total		7665m²

Apartments

Blocks + streets

Stormwater management strategies

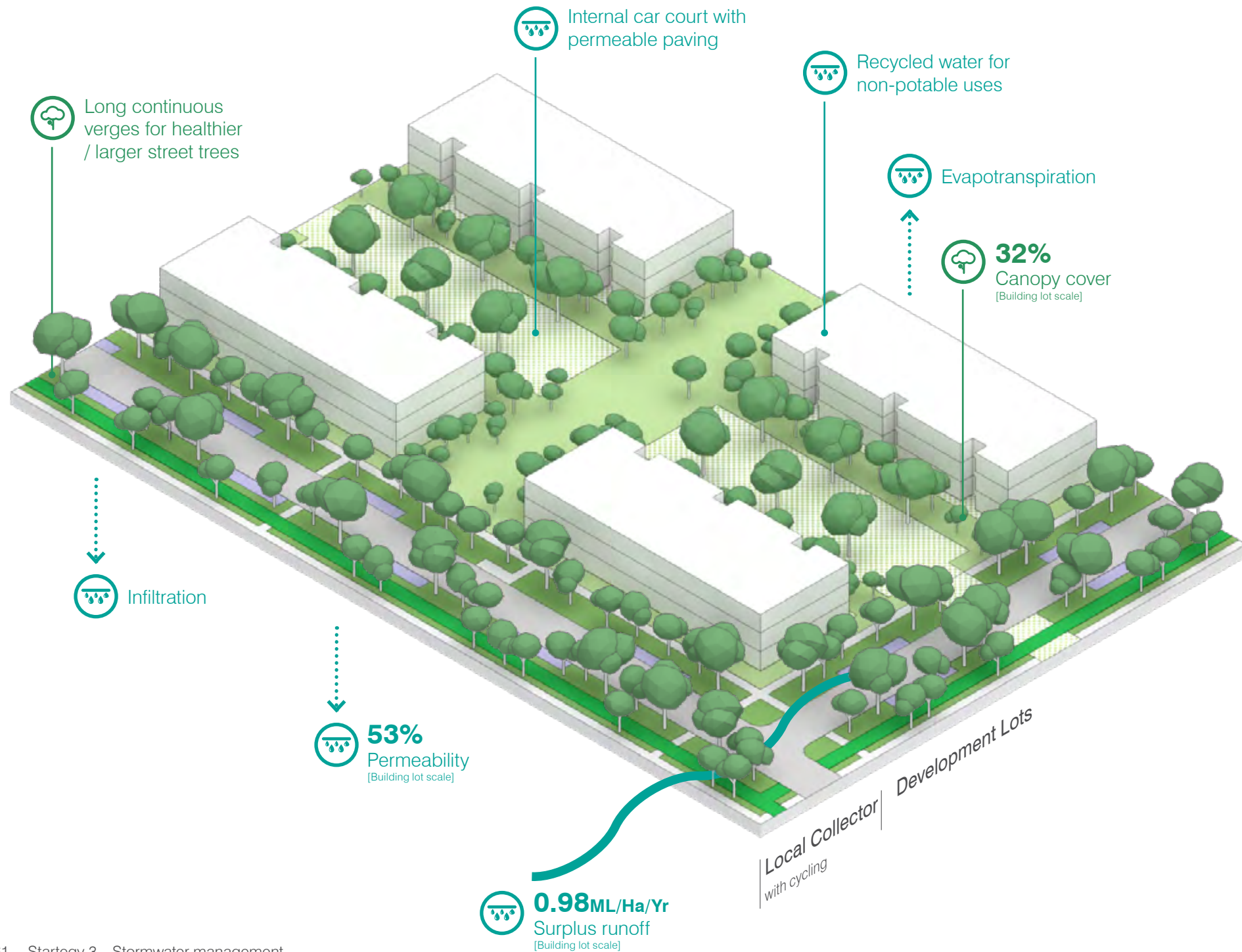


Figure 61. Strategy 3 – Stormwater management

Key metrics

Density	46 Dwellings per hectare
	87 Residents per hectare [Urban typology scale]
Density	0.81 FSR (x:1) [Building lot scale]
	0.46 FSR (x:1) [Urban typology scale]
Green	58 m ² of open space [per building lot]
	49 % canopy cover [Block+street scale]
Green	46 % permeability [Block+street scale]
	0.98 ML/Ha/Yr surplus runoff [Block+street scale]
Water	80 kL rainwater tank [per building lot]
	308 m ² sponge area [per building lot]
	27 'Wianamatta' street trees [per building lot]

Precedent

Vikkii Eco-Housing, Finland



Aerial view



Street elevation

Apartments

Strategy 4

Apartments to public park

This strategy explores the use of a public open space to increase permeability and minimise the overall building footprint on the site.



Building lot typology study

Benefits:

- Large local open space to promote active uses
- Excellent tree planting opportunities within the park and street setbacks to promote wildlife habitat.

Further testing required:

- Ownership and maintenance of communal open space is unclear. Need to consider overall development feasibility.

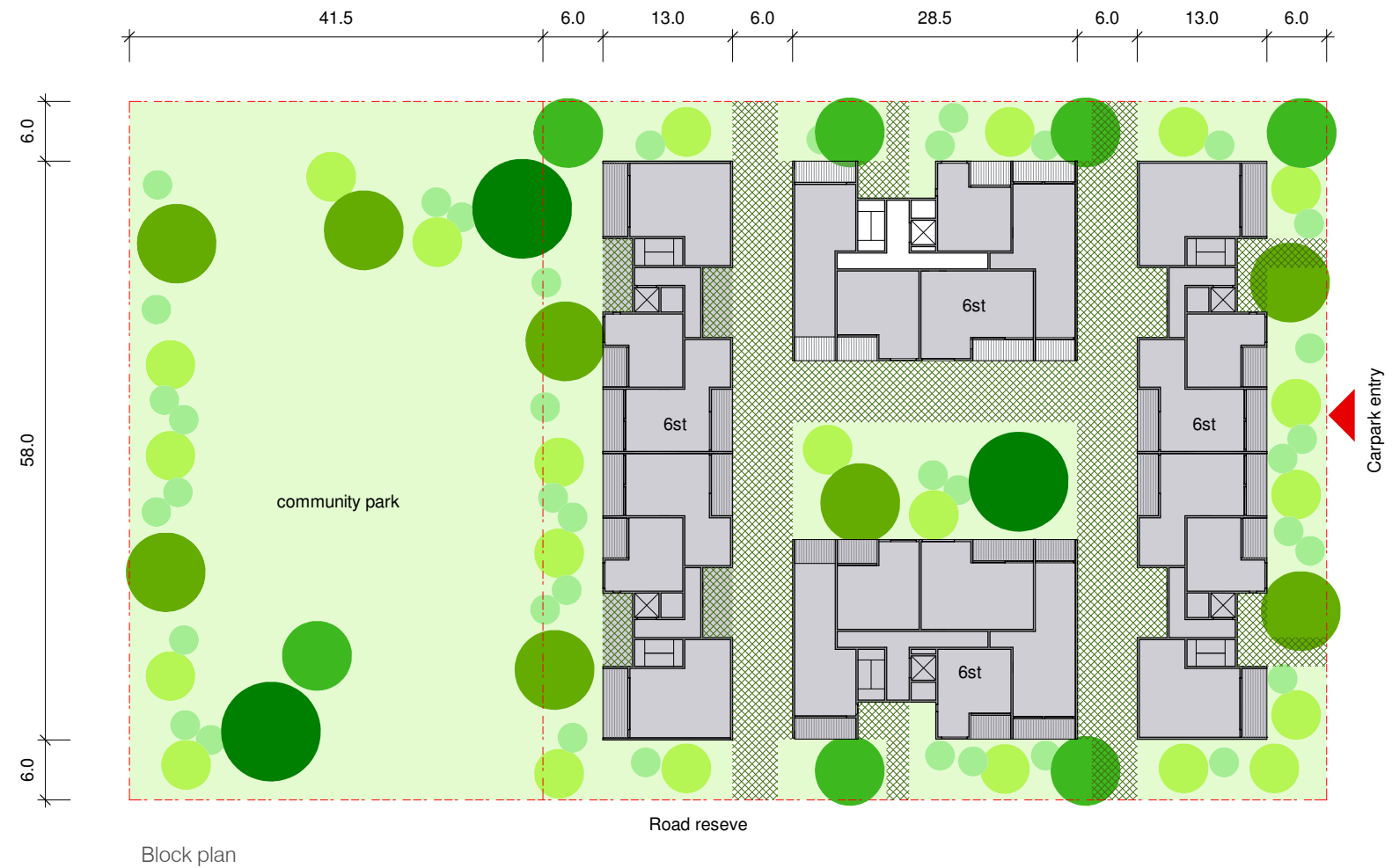


Figure 62. Strategy 4 – Apartments to public park

Typology overview:

- Basement car parking below grade.
- Linear park located on a mid-block spine 18m
- Central courtyard and perimeter with deep soil to maximise perviousness.

Table 18. Key metrics: Apartments – Strategy 4

Lot size	Approx. GFA	Approx. FSR
5498m ²	11727m ²	1.40:1
2902m ² (community title)		

Permeable surfaces	Permeability	Area
Deep soil (<6m width)	100%	1828m ² (33%)
Deep soil (>6m width)	100%	0m ² (0%)
Non-dwelling surfaces	50%	1250m ² (23%)
Dwelling site coverage	0%	2420m ² (44%)
Total		5078m²

Apartments

Blocks + streets

Stormwater management strategies

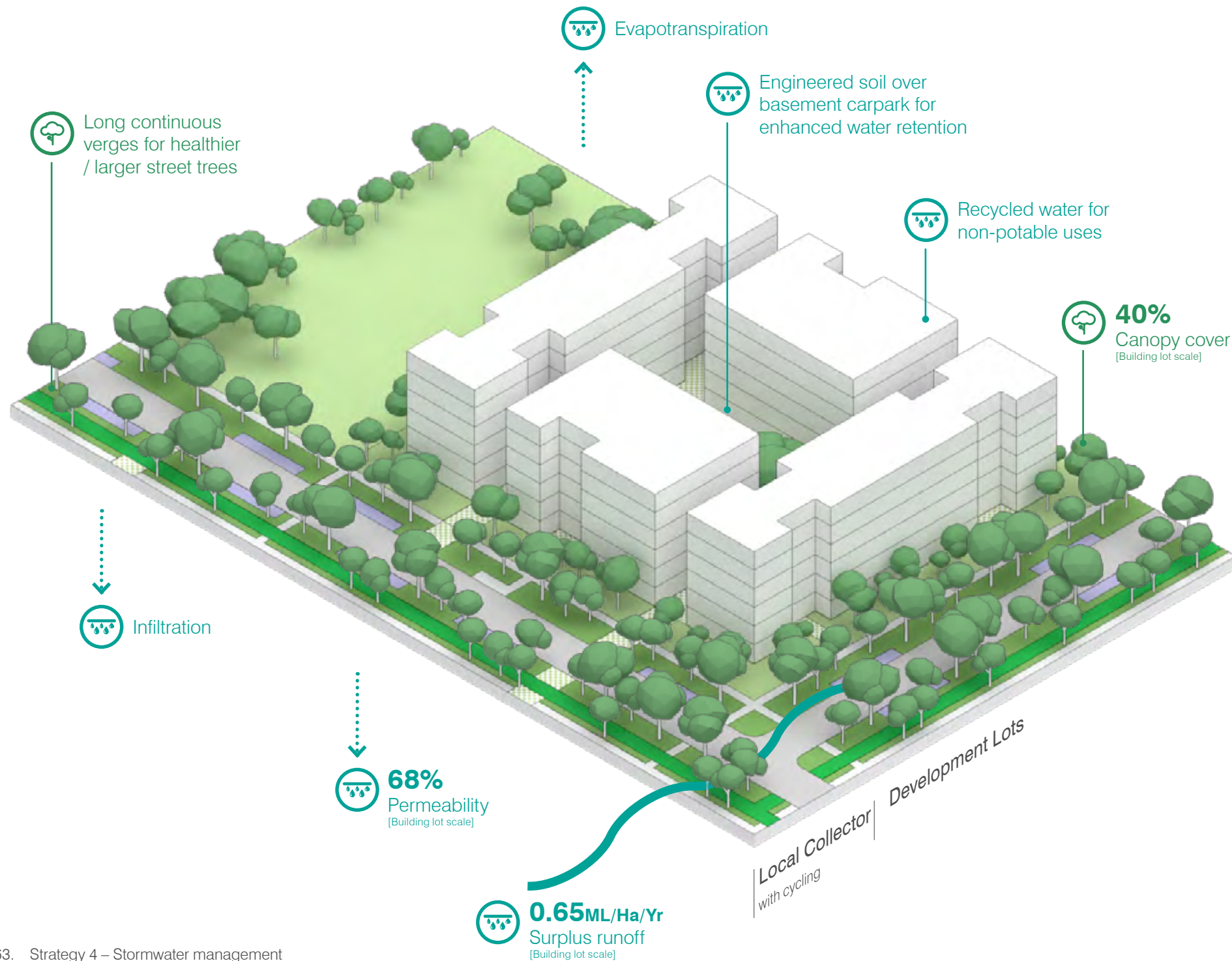


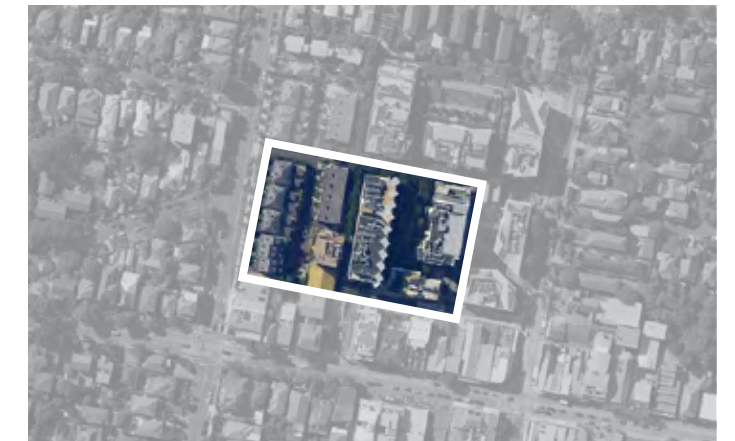
Figure 63. Strategy 4 – Stormwater management

Key metrics

 Density	78 Dwellings per hectare
	149 Residents per hectare [Urban typology scale]
	1.40 FSR (x:1) [Building lot scale] 0.78 FSR (x:1) [Urban typology scale]
 Green	48 m ² of open space [per building lot]
	54 % canopy cover [Block+street scale]
	55 % permeability [Block+street scale]
 Water	0.65 ML/Ha/Yr surplus runoff [Block+street scale]
	80 kL rainwater tank [per building lot]
	308 m ² sponge area [per building lot]
	27 'Wianamatta' street trees [per building lot]

Precedent

Balgowlah Mixed Use Development



Aerial view



Courtyard elevation

4.6 Mixed Use

Strategy 1

Mixed use/high density shoptop housing

This strategy explores a high density housing scheme for use within centres.



Building lot typology study

Benefits:

- Balances high density and permeability requirements
- Creates attractive open space that provides high amenity for residents.

Further testing required:

- Higher density results in lower permeability across the block
- Does little to improve tree canopy, shade or urban heat effects.

Typology overview:

- High density shoptop housing up to 12 storeys, 4-6 storey podium
- Courtyard shape arrangement
- Private open space bisected with community title
- Basement parking assumed for metrics however higher outcomes achievable with parking in building forms
- Typical building depths 15-20m
- Smaller buildings capable of supporting town/terrace houses.

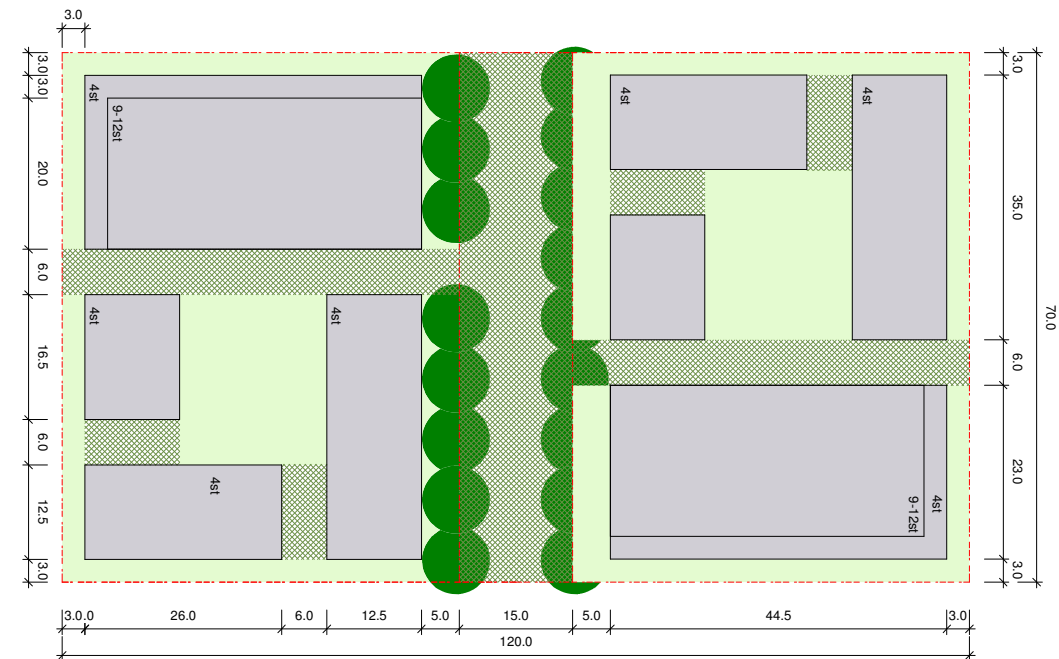


Figure 64. Strategy 5 – High density mixed use

Table 19. Key metrics: Apartments – Strategy 5

Lot size	Approx. GFA	Approx. FSR
8,400m ²	22,702m ²	2.7:1

Permeable surfaces	Permeability	Area
Deep soil	100%	2,435m ² (29%)
Parking hardstand	50%	1,985m ² (24%)
Service hardstand	50%	0m ² (0%)
Building site coverage	0%	3,980m ² (47%)
Total		8,400m²

Mixed Use

Blocks + streets

Stormwater management strategies

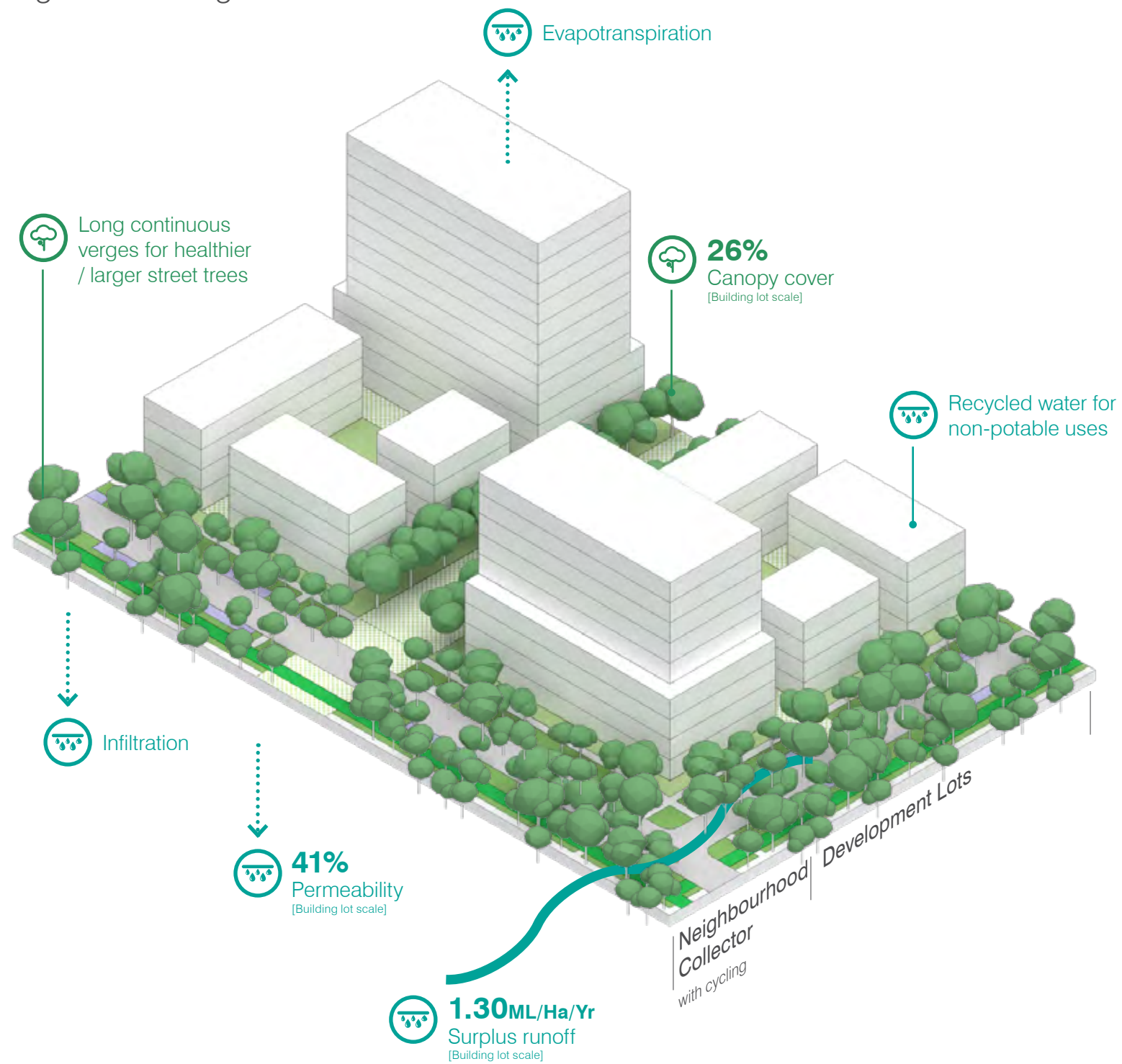


Figure 65. Strategy 5 – Stormwater management

Key metrics

Density	152 Dwellings per hectare
	289 Residents per hectare [Urban typology scale]
Green	19 m ² of open space [per building lot]
	46 % canopy cover [Block+street scale]
Water	38 % permeability [Block+street scale]
	1.30 ML/Ha/Yr surplus runoff [Block+street scale]
	80 kL rainwater tank [per building lot]
	308 m ² sponge area [per building lot]
	27 'Wianamatta' street trees [per building lot]

Precedent
Waterloo NSW



Aerial view



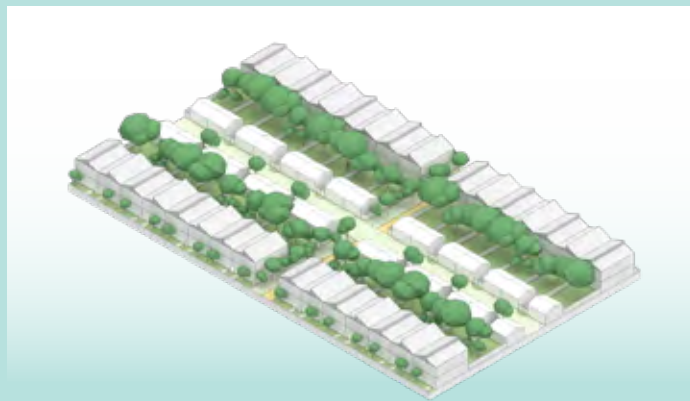
Street view

4.7 Attached housing

Strategy 1

Community laneways and narrow streets

This model demonstrates how we can use the need for great site permeability to also get cars off streets and into green, permeable rear lanes.



Building lot typology study

Benefits:

- Minimised impact of driveways on street scape of front streets
- Works well with a small street type, where garbage trucks will not need to be accommodated
- Double car garage per lot
- Opportunities to accommodate secondary dwelling in future
- Streets will become green places for people and have great canopy cover and large trees.

Further testing required

- With little certainty about trees in backyards, and the rear lane being used for cars, the private lots would not accommodate any large trees
- Permeable laneway and mid-block link may require community title or similar arrangement if Councils will not adopt
- Compact terrace house footprint compared to typical market housing today
- Reliance on laneway + through site link to achieve overall permeability target.

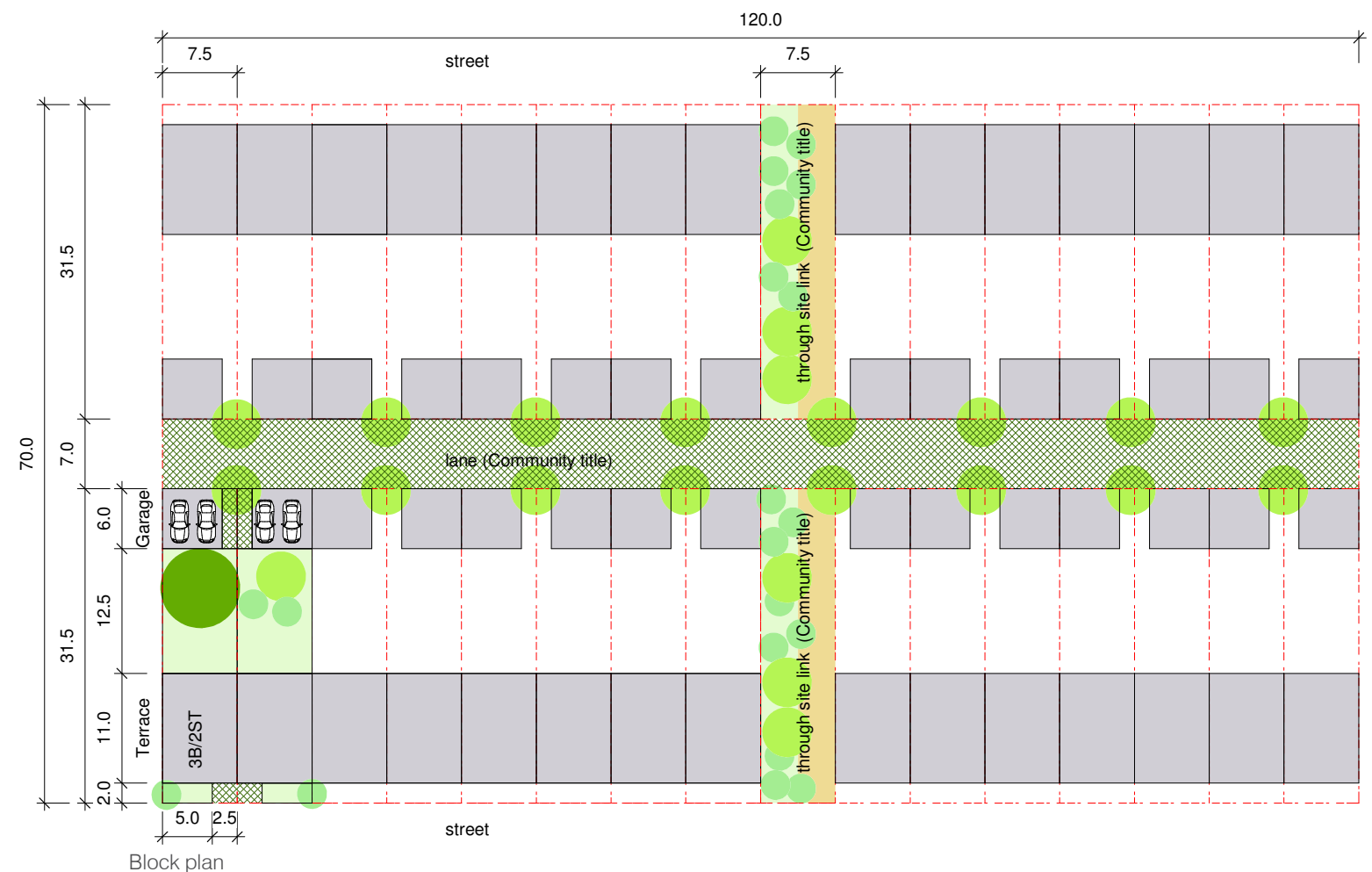


Figure 66. Strategy 1 – Community laneways and narrow streets

Typology Overview:

- Two storey development with compact footprint
- Large rear yards (11m)
- Rear loaded double garage
- Paved surfaces assumed as semi-permeable
- Lane + Through site link (50% permeable assumed).

Table 20. Key metrics: Attached housing – Strategy 1

Lot size	Approx. GFA	Approx. FSR
236m ²	128m ²	0.54:1

Permeable surfaces	Permeability	Area
■ Rear yard	100%	94m ² (40%)
■ Front yard	100%	10m ² (4%)
■ Non-dwelling surfaces	50%	13m ² (6%)
■ Dwelling site coverage	0%	82m ² (35%)
■ Non-dwelling surfaces	0%	37m ² (16%)
Total		236m ²

Attached housing

Blocks + streets

Stormwater management strategies

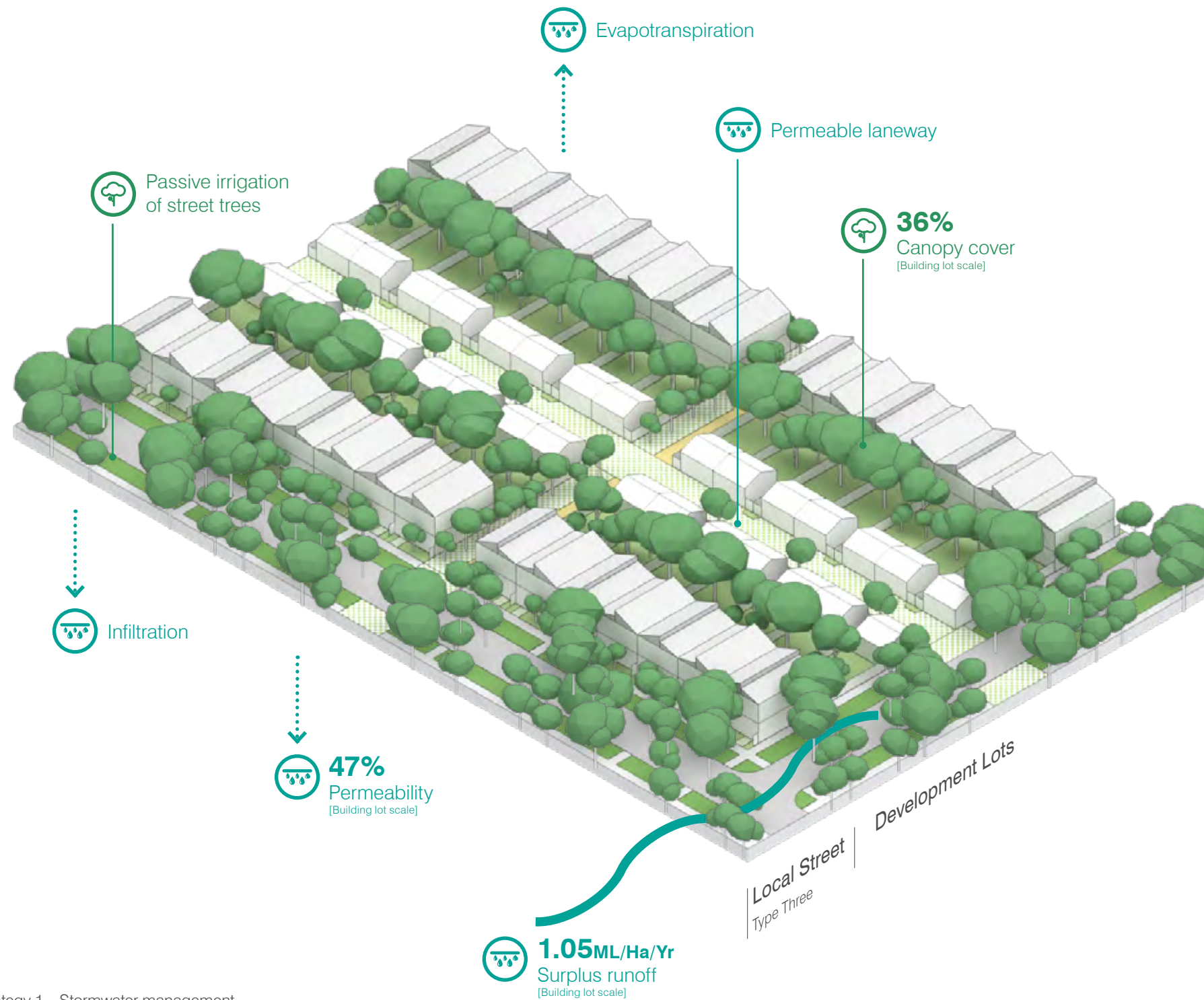


Figure 67. Strategy 1 – Stormwater management

Key metrics

 Density	22 Dwellings per hectare
	70 Residents per hectare [Urban typology scale]
	0.54 FSR (x:1) [Building lot scale]
 Green	133 m ² of open space [per building lot]
	50 % canopy cover [Block+street scale]
 Water	41 % permeability [Block+street scale]
	1.05 ML/Ha/Yr surplus runoff [Block+street scale]
	5 kL rainwater tank [per building lot]
	10.35 m ² sponge area [per building lot]
	0.75 'Wianamatta' street trees [per building lot]

Precedent

Edmondson Park



Aerial view



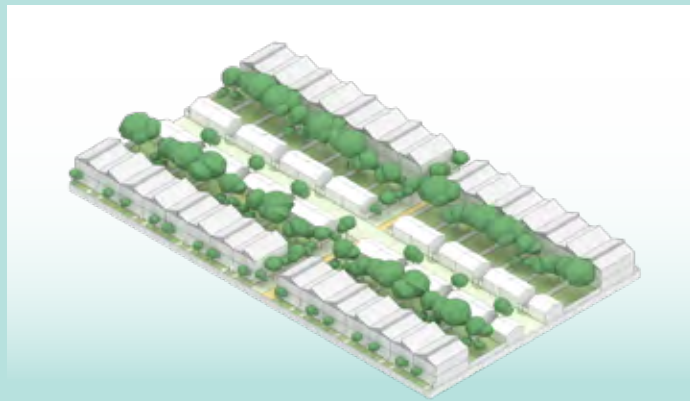
Indicative street view

Attached housing

Strategy 2

Living out front

This strategy inverts the big backyard approach to create a space for a large tree in the front yard encouraging people to spend time out front, where they can connect to their community.



Building lot typology study

Benefits:

- Very large setbacks provide sufficient area for 1 large tree per front yard (6 metre canopy)
- Minimised impact of driveways on streetscape of front streets
- Double car garage per lot
- Opportunities to accommodate secondary dwelling in future
- Tree canopy in through site link will help promote wildlife habitat.

Further testing required

- Very small rear yards (4m) compared to typical market housing today
- Permeable laneway and mid-block link may require community title or similar arrangement if Councils will not adopt
- Compact terrace house footprint compared to typical market housing today
- Reliance on laneway + through site link to achieve overall permeability target.

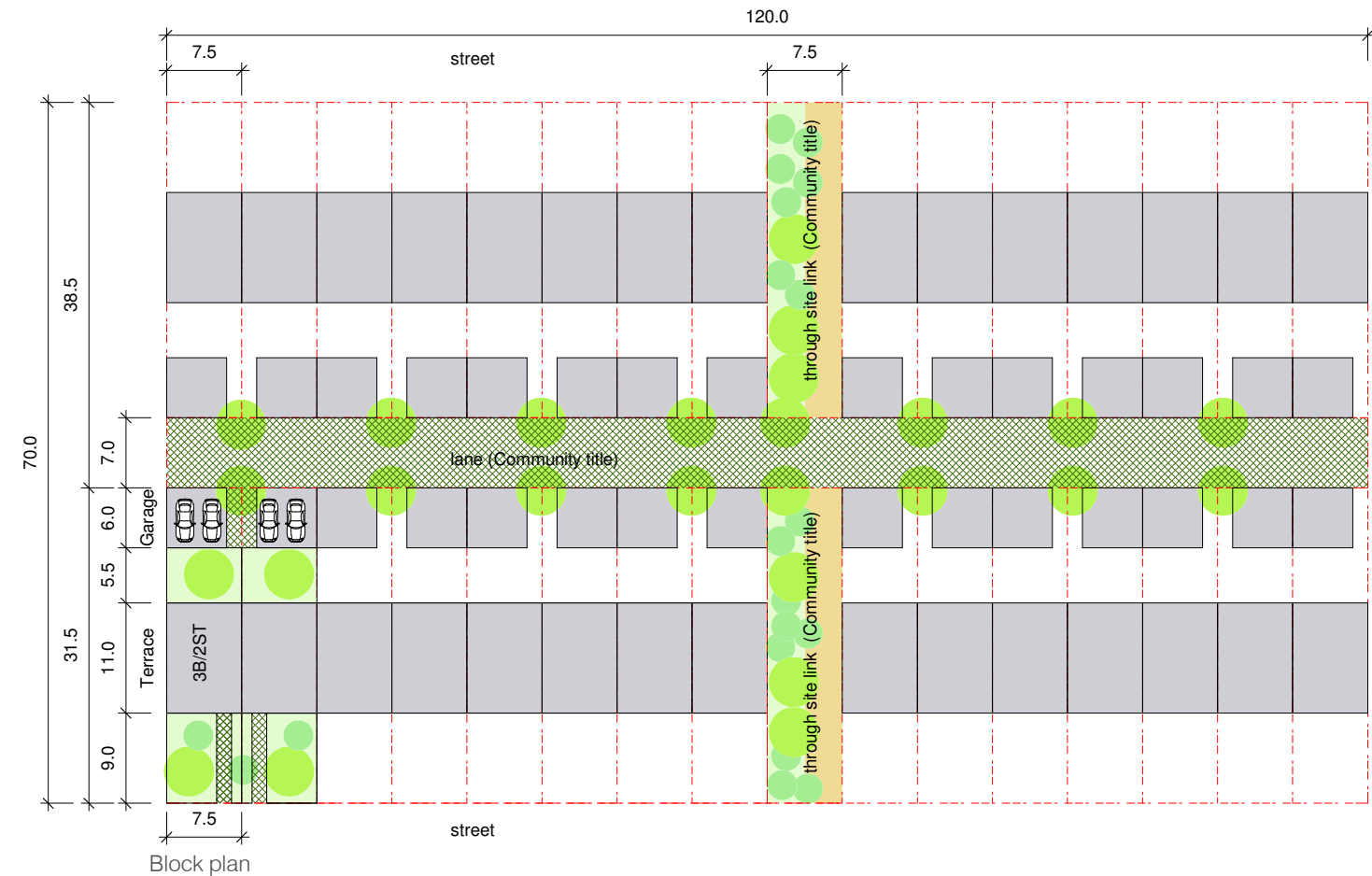


Figure 68. Strategy 2 – Living out front

Typology Overview:

- Two storey development with compact footprint
- Large front yards (9m)
- Double garage shown
- Paved surfaces assumed as semi-permeable
- Lane + Through site link (50% permeable assumed).

Table 21. Key metrics: Attached housing – Strategy 2

Lot size	Approx. GFA	Approx. FSR
236m ²	128m ²	0.54:1

Permeable surfaces	Permeability	Area
■ Rear yard	100%	55m ² (23%)
■ Front yard	100%	41m ² (17%)
■ Non-dwelling surfaces	50%	23m ² (10%)
■ Dwelling site coverage	0%	80m ² (35%)
■ Non-dwelling surfaces	0%	37m ² (16%)
Total		236m ² (30x7.5m)

Attached housing

Blocks + streets

Stormwater management strategies

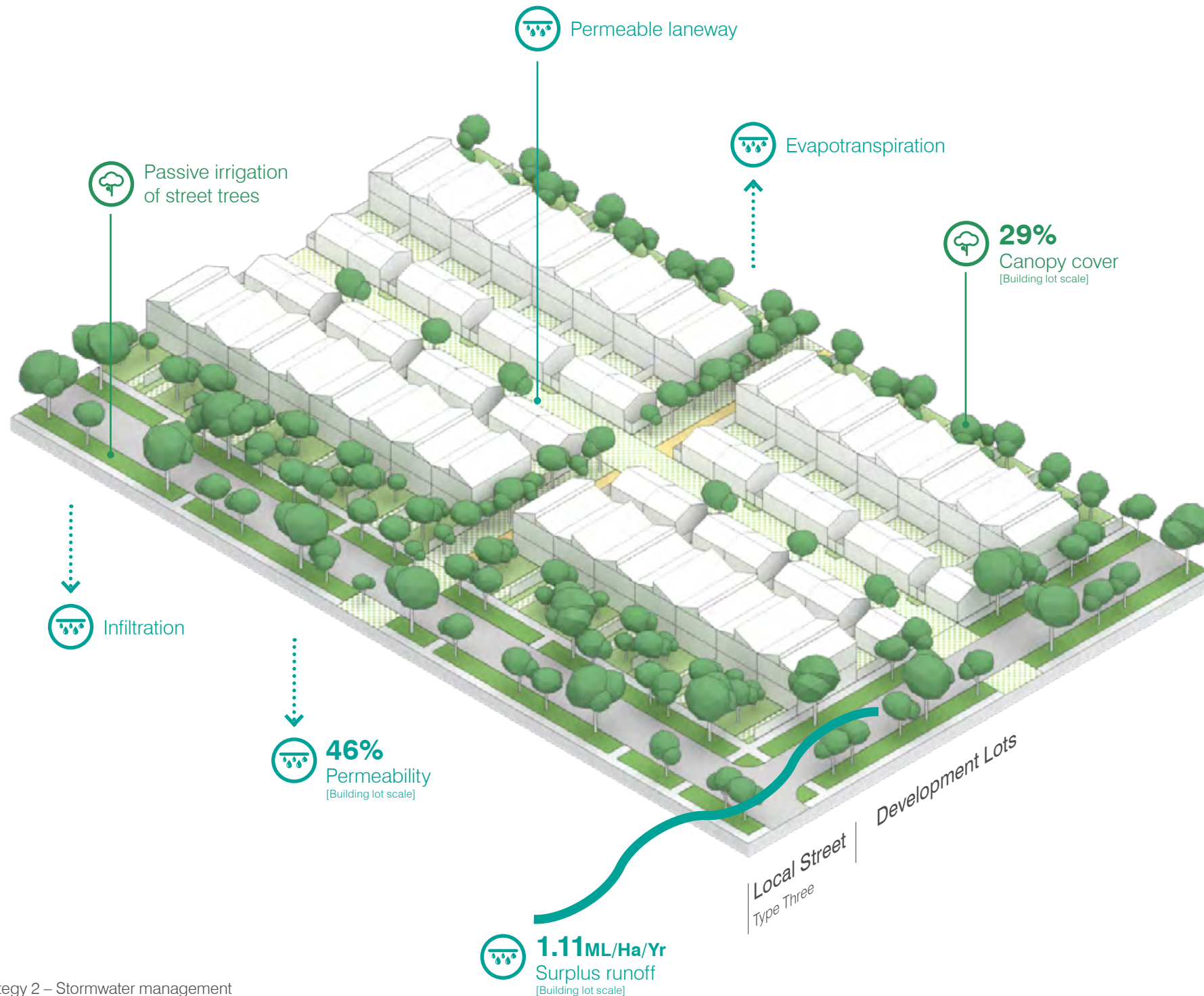


Figure 69. Strategy 2 – Stormwater management

Key metrics

 Density	22 Dwellings per hectare
	70 Residents per hectare [Urban typology scale]
	0.54 FSR (x:1) [Building lot scale] 0.28 FSR (x:1) [Urban typology scale]
 Green	135 m ² of open space [per building lot]
	45 % canopy cover [Block+street scale]
 Water	41 % permeability [Block+street scale]
	1.11 ML/Ha/Yr surplus runoff [Block+street scale]
	5 kL rainwater tank [per building lot] 10.35 m ² sponge area [per building lot] 0.75 'Wianamatta' street trees [per building lot]

Precedent

Edmondson Park/ Crimson Hill



Aerial view



Street elevation

Attached housing

Strategy 3

Large rear yards

This strategy explores the benefits of large back yards for private amenity.

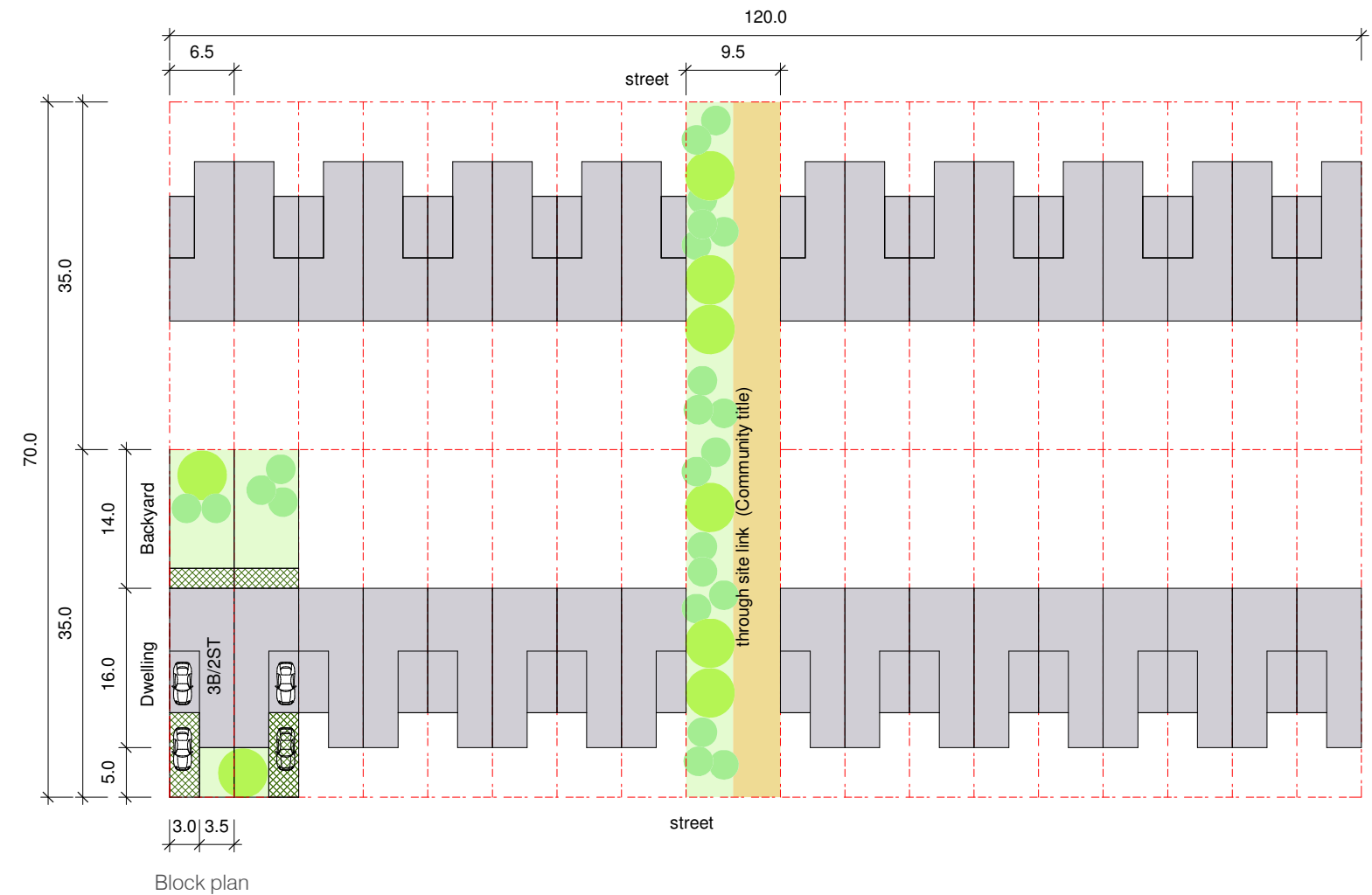


Figure 70. Strategy 3 – Large rear yards

Building lot typology study

Benefits:

- Excellent private amenity
- 1 large tree per every 2 dwellings possible in front yard (6 metre canopy)
- 1 large tree per dwelling possible in rear yard (6 metre canopy)
- Permeability target achieved by lot and does not require dependency on Through Site link.
- Tree canopy in through site link will help promote wildlife habitat.
- **Further testing required**
- Very large rear yards (14m) and front yards (5m) compared to typical market housing today
- Front loaded parking and narrow lots can create streetscape issues and reduce capacity for street trees.

Typology Overview:

- Large rear yards (14m) and front yards (5m)
- Front loaded tandem parking
- Building footprint minimised to 45% of lot
- Through site link (50% permeable assumed).

Table 22. Key metrics: Attached housing – Strategy 3

Lot size	Approx. GFA	Approx. FSR
228m ²	132m ²	0.58:1

Permeable surfaces	Permeability	Area
■ Rear yard	100%	77m ² (34%)
■ Front yard	100%	20m ² (9%)
■ Non-dwelling surfaces	50%	34m ² (15%)
■ Dwelling site coverage	0%	82m ² (36%)
■ Non-dwelling surfaces	0%	15m ² (7%)
Total		228m ² (35x6.5m)

Attached housing

Blocks + streets

Stormwater management strategies

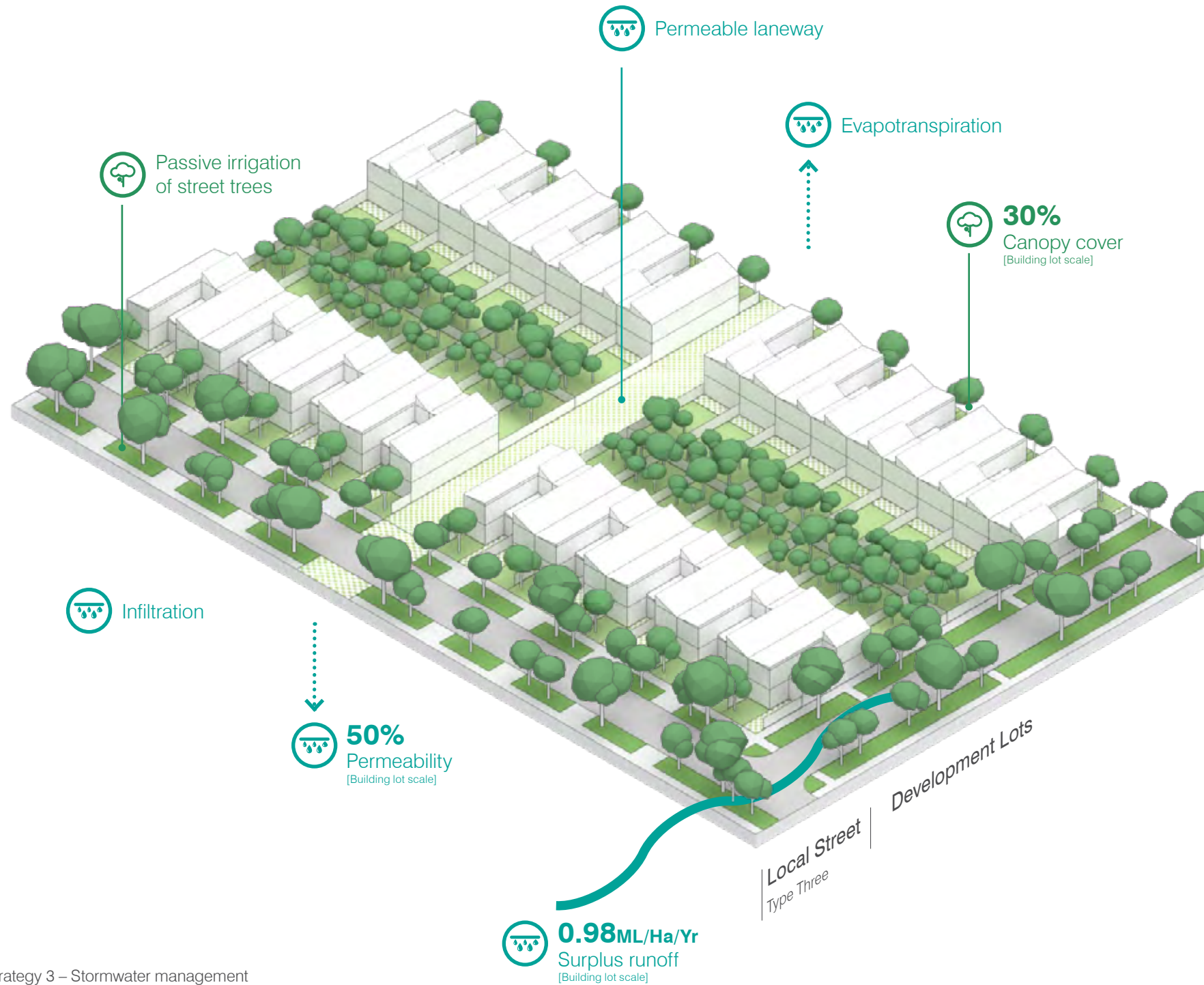


Figure 71. Strategy 3 – Stormwater management

Key metrics

Density	25 Dwellings per hectare
	80 Residents per hectare [Urban typology scale]
Density	0.58 FSR (x:1) [Building lot scale]
	0.33 FSR (x:1) [Urban typology scale]
Green	151 m ² of open space [per building lot]
	46 % canopy cover [Block+street scale]
Water	43 % permeability [Block+street scale]
	0.98 ML/Ha/Yr surplus runoff [Block+street scale]
	5 kL rainwater tank [per building lot]
Water	8.97 m ² sponge area [per building lot]
	0.65 'Wianamatta' street trees [per building lot]

Precedent

Hudson Street, Thornton



Aerial view



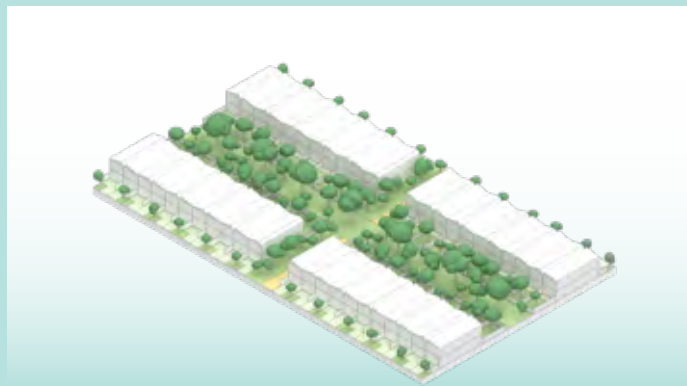
Street elevation

Attached housing

Strategy 4

Open Space

This strategy explores the potential for communal green links to augment the street network and private yards in providing communal amenity and increased permeability.



Building lot typology study

Benefits:

- Excellent communal amenity with opportunities for tree planting
- Narrow frontages maximise yield
- Back yards a similar size to similar most development on the market and able to accommodate a large tree (up to 4m canopy)
- Tree canopy in linear park will help promote wildlife habitat.

Further testing required

- Linear parks and through site links require common ownership and management if not adopted by Council
- No covered garage on lot which is uncommon for dwellings of this type
- On grade car space to the street limits deep soil planting opportunities to street
- Reliance on laneway + through site link to achieve overall permeability target
- Safety of common open spaces may be an issue (see for example redevelopment of 'Radburn estates' in Minto).

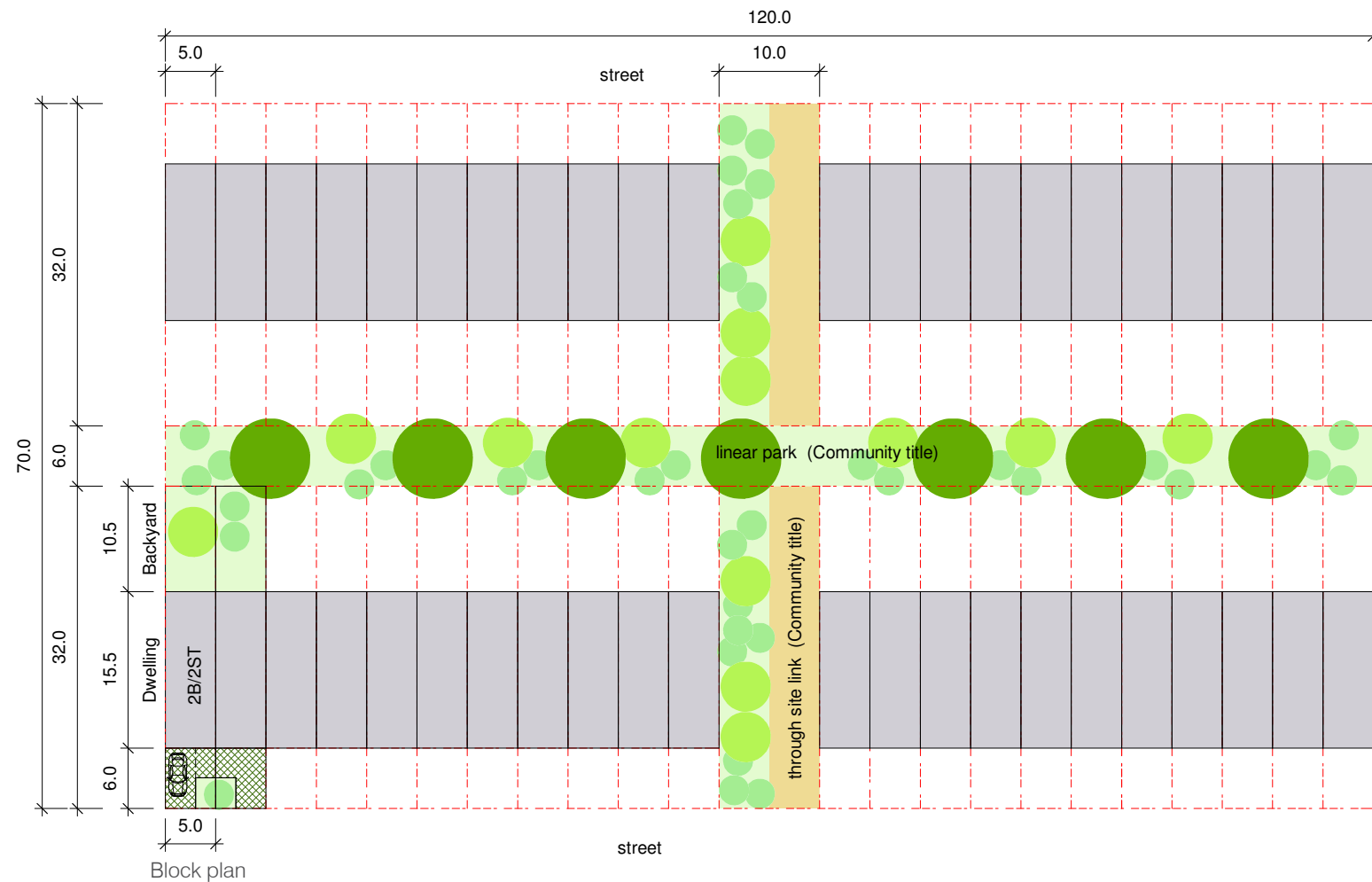


Figure 72. Strategy 4 – Open Space

Typology Overview:

- Two storey development
- Single on grade parking
- Large rear yards (10.5m)
- Large linear park (100% permeable assumed)
- Through site link (50% permeable assumed).

Table 23. Key metrics: Attached housing – Strategy 4

Lot size	Approx. GFA	Approx. FSR
160m ²	115m ²	0.72:1

Permeable surfaces	Permeability	Area
Rear yard	100%	53m ² (33%)
Front yard	100%	6m ² (4%)
Non-dwelling surfaces	50%	23m ² (14%)
Dwelling site coverage	0%	78m ² (49%)
Non-dwelling surfaces	0%	0m ² (0%)
Total		160m ²

Attached housing

Blocks + streets

Stormwater management strategies

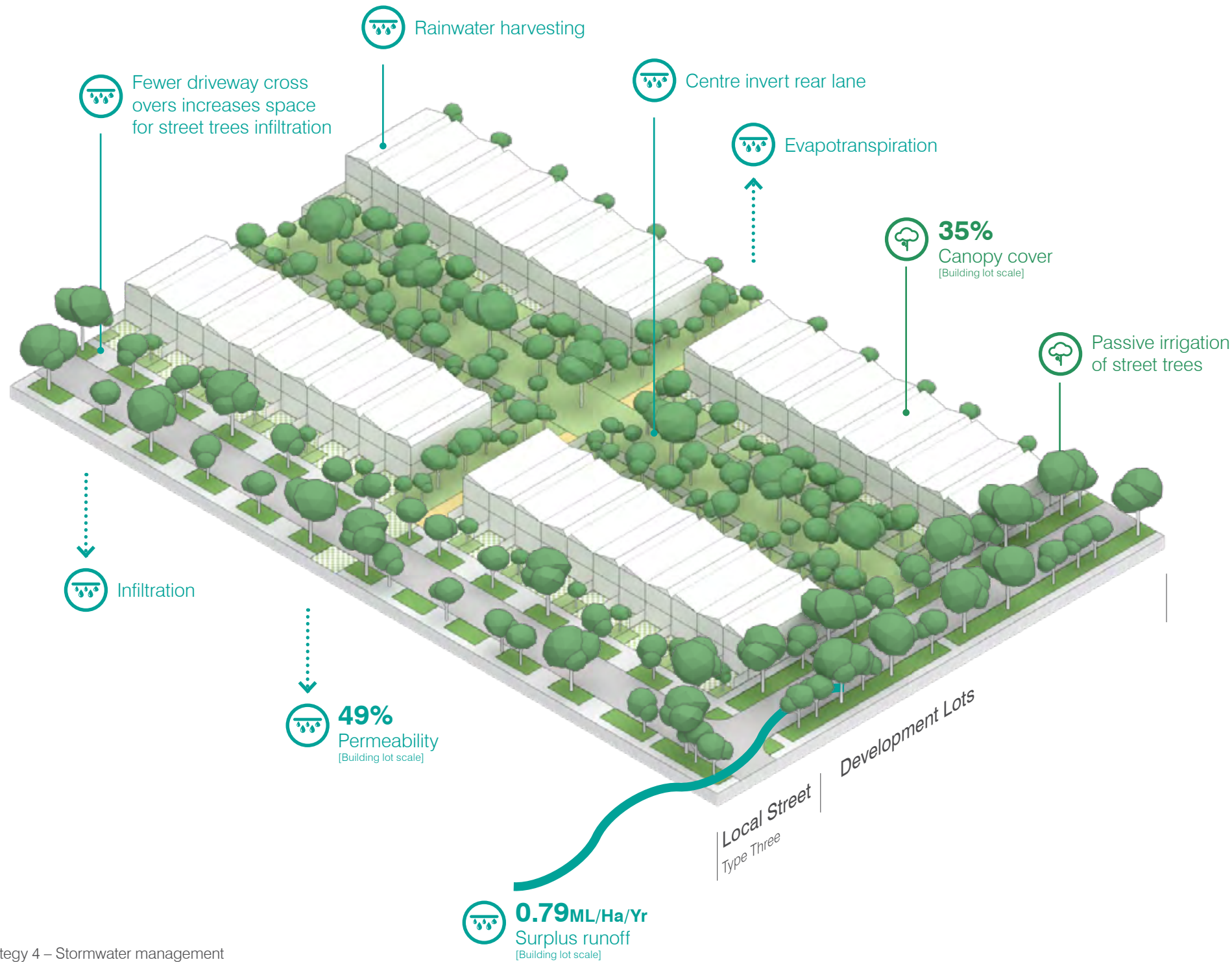


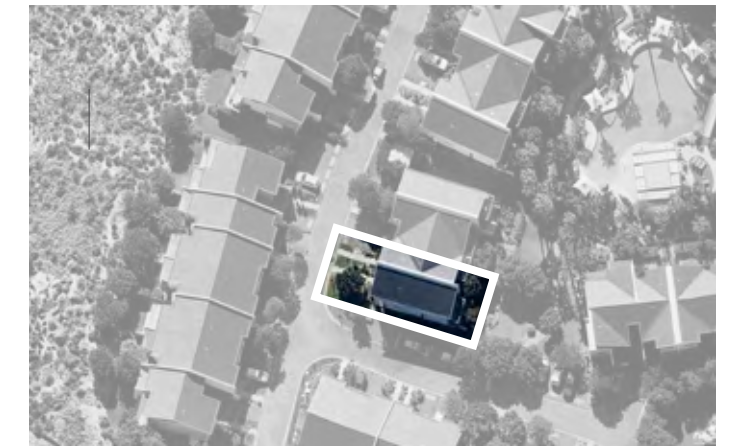
Figure 73. Strategy 4 – Stormwater management

Key metrics

Density	32 Dwellings per hectare
	103 Residents per hectare [Urban typology scale]
Density	0.72 FSR (x:1) [Building lot scale]
	0.37 FSR (x:1) [Urban typology scale]
Green	113 m ² of open space [per building lot]
	49 % canopy cover [Block+street scale]
Water	42 % permeability [Block+street scale]
	0.79 ML/Ha/Yr surplus runoff [Block+street scale]
	5 kL rainwater tank [per building lot]
	6.9 m ² sponge area [per building lot]
	0.5 'Wianamatta' street trees [per building lot]

Precedent

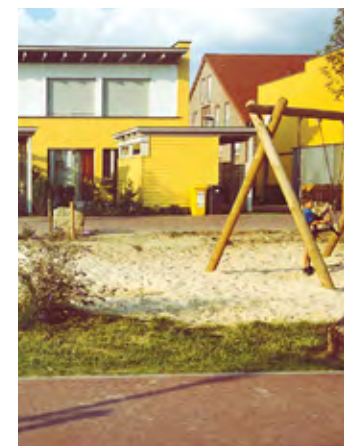
Turnberry Avenue, Magenta



Aerial view



Street elevation



Communal open space (Sandkuhle Recklinghausen)

4.8 Detached housing

Strategy 1

The big front and back yard



Benefits:

- Large trees with enough soil in front and backyards
- Large open spaces provide good private amenity
- Streetscape impact of front-drive access can be managed on large frontages
- Liveable front yards, including food cultivation
- Flexibility for adaptation of different household types over time, for example multi-generational dwellings
- Works with most street types, including very narrow streets
- Potential to use as an interim strategy for parts of the 1 in 100 area that may be difficult to purchase.

Further testing required

- Low density yield (currently 10 dwellings / ha where standard low density is between 10-15 dwellings / ha) needs to be tested with market
- May form a smaller part of a bigger, mixed density precinct
- Affordability likely to be lower than smaller lots
- Develop design controls for the front and rear yards to ensure the largest trees can be accommodated.

Building lot typology study

A large lot containing typical dwelling-house in a single storey.

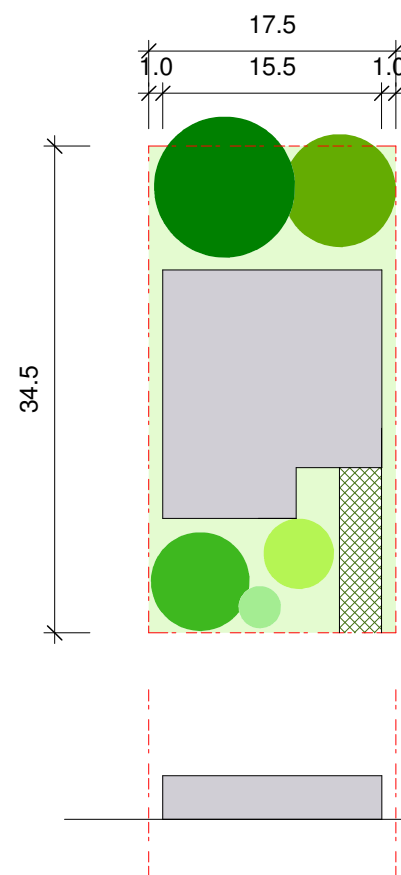


Figure 74. Strategy 1 – Big front and rear yard

Typology Overview:

- Single storey
- Front, rear and side setbacks
- Semi-pervious driveways
- Double garage parking shown.

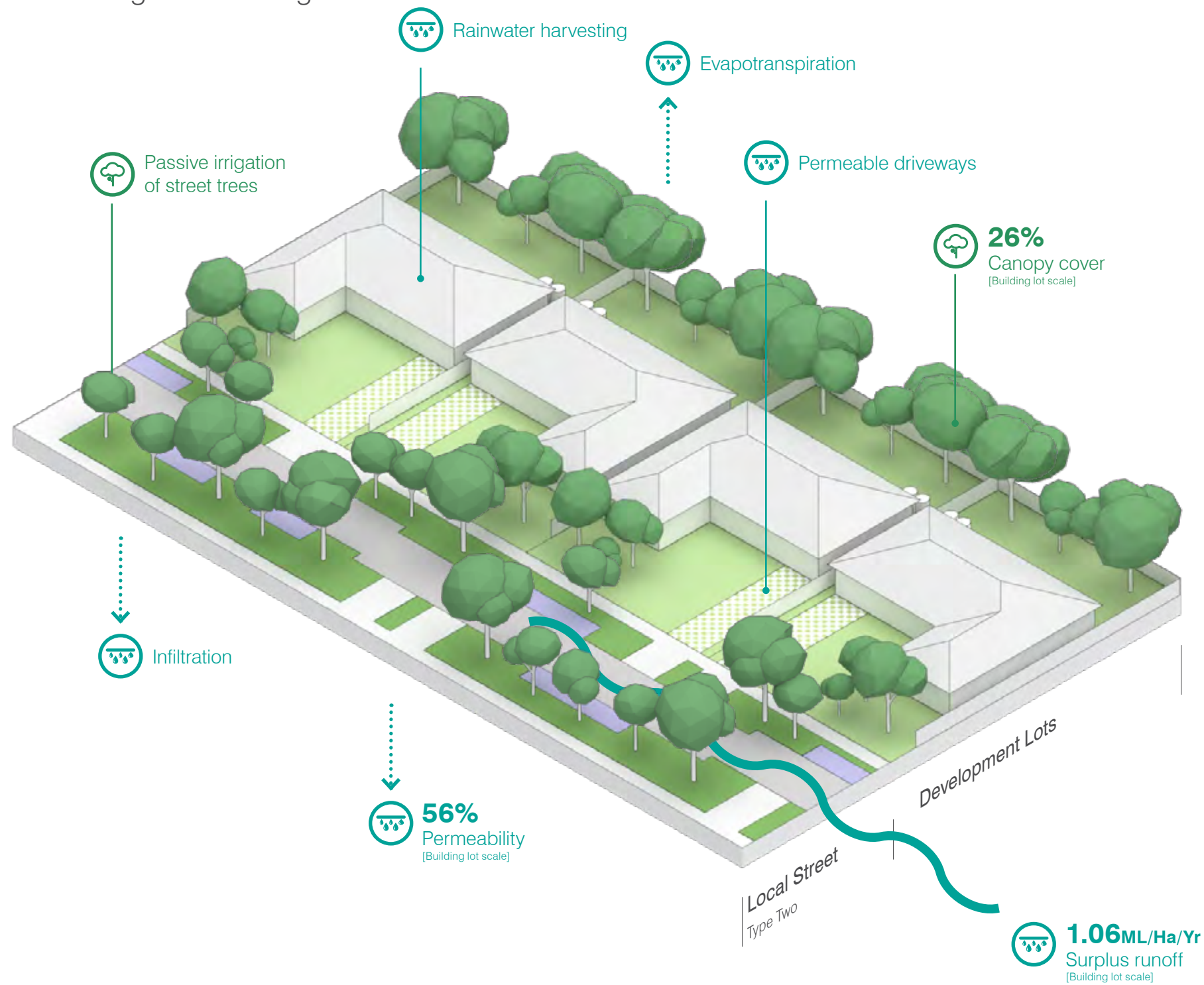
Table 24. Key metrics: Detached housing – Strategy 1

Lot size	Approx. GFA	Approx. FSR
602m ²	200m ²	0.33:1

Permeable surfaces	Permeability	Area
■ Rear yard	100%	165m ² (27%)
■ Front yard	100%	153m ² (25%)
■ Dwelling site coverage	0%	250m ² (42%)
■ Non-dwelling surfaces	50%	34m ² (6%)
Total		602m² (22x35m)

Detached housing

Blocks + streets Stormwater management strategies



Key metrics

Density	9 Dwellings per hectare
	30 Residents per hectare [Urban typology scale]
Green	318 m ² of open space [per building lot]
	43 % canopy cover [Block+street scale]
Water	47 % permeability [Block+street scale]
	1.06 ML/Ha/Yr surplus runoff [Block+street scale]
	5 kL rainwater tank [per building lot]
	31.5 m ² sponge area [per building lot]
	2.45 'Wianamatta' street trees [per building lot]

Precedent Established Sydney Suburb Turramurra



Aerial view



Street view

Figure 75. Strategy 1 – Stormwater management

Strategy 2

Two storey dwelling on a regular lot



Benefits:

- An existing typology in Sydney that has had market acceptance and success
- Compact lots enable good density
- The siting may result in no potential for large trees in either the front, rear or side boundaries.

Further design testing required

- Car parking may be limited to single garage, which may effect marketability
- Compact dwelling size differs from existing Sydney housing market
- Fewer trees on lot. May also be able to consolidate green space in front or rear
- Explore how detailed design controls can ensure soil area to support a large tree on every lot.

Building lot typology study

A typical lot size, and a typical dwelling size, but the dwelling is spread over two levels with more open space

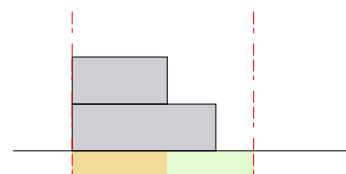
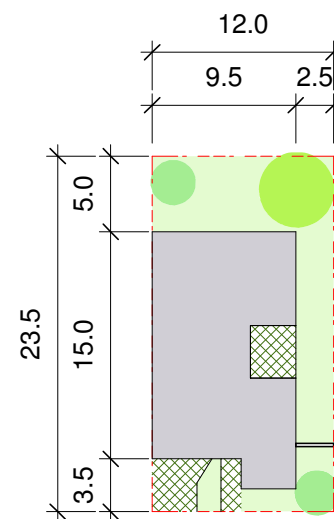


Figure 76. Strategy 2 – Two storey dwelling on regular lot

Typology Overview:

- Two storey
- Potentially zero-lot
- Paved surfaces assumed as impermeable
- Single parking space shown.

Table 25. Key metrics: Detached housing – Strategy 2

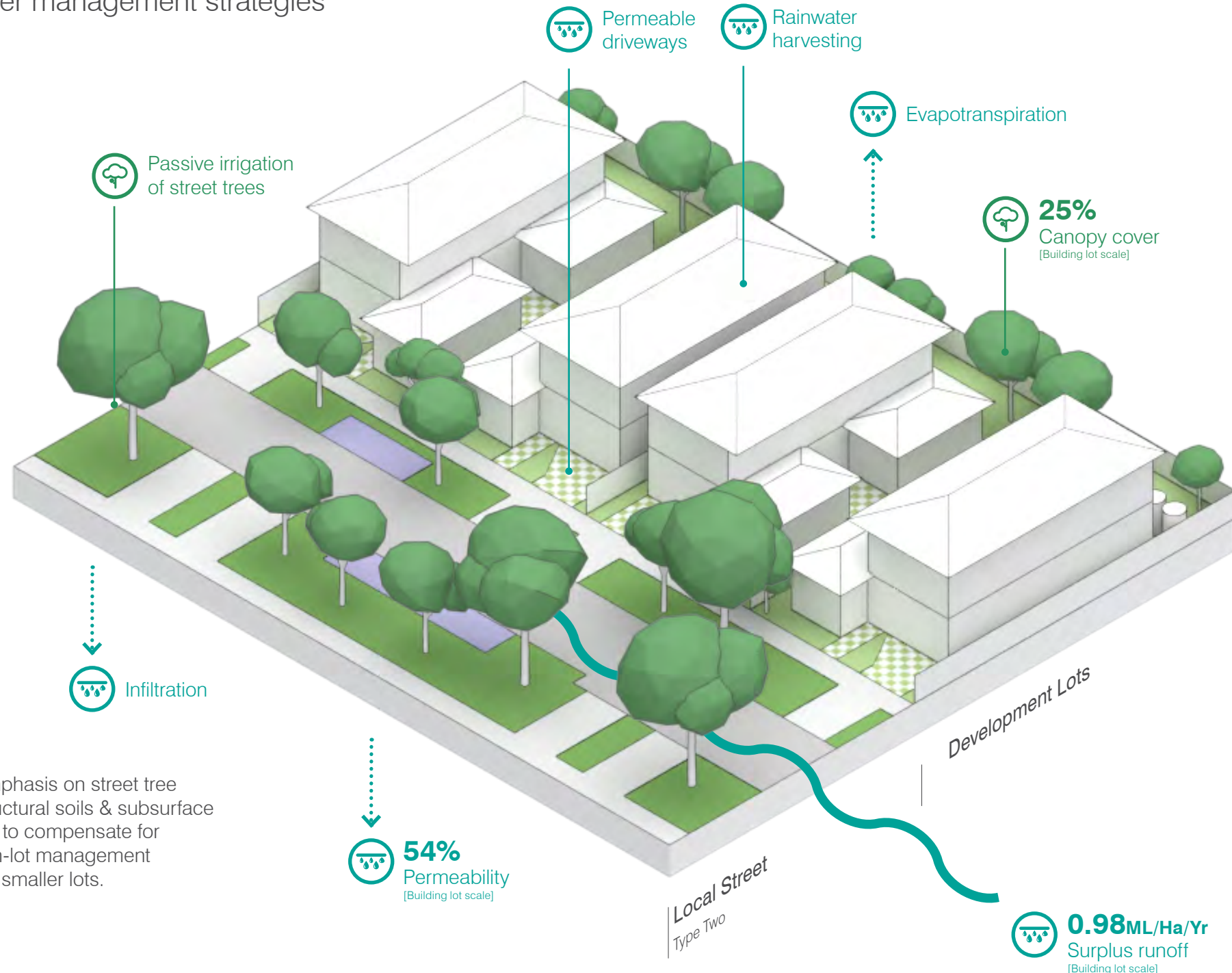
Lot size	Approx. GFA	Approx. FSR
282m ²	175m ²	0.62

Permeable surfaces	Permeability	Area
Light green Rear yard	100%	105m ² (37%)
Light green Front yard	100%	37m ² (7%)
Grey Dwelling site coverage	0%	120m ² (43%)
Dark green Non-dwelling surfaces	50%	20m ² (7%)
TOTAL		282m ² (23.5x12m)

Detached housing

Blocks + streets

Stormwater management strategies



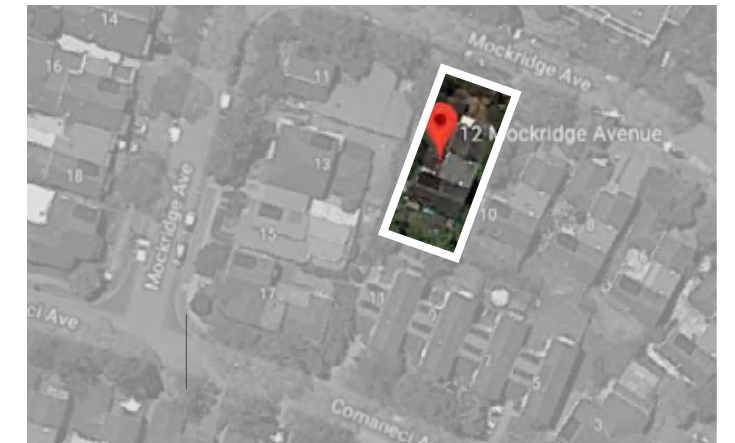
Increased emphasis on street tree health via structural soils & subsurface wicking beds to compensate for decreased on-lot management especially on smaller lots.

Key metrics

Density	20 Dwellings per hectare
	64 Residents per hectare [Urban typology scale]
Green	0.62 FSR (x:1) [Building lot scale]
	0.35 FSR (x:1) [Urban typology scale]
Water	142 m ² of open space [per building lot]
	42 % canopy cover [Block+street scale]
	46 % permeability [Block+street scale]
Water	0.98 ML/Ha/Yr surplus runoff [Block+street scale]
	5 kL rainwater tank [per building lot]
	21.6 m ² sponge area [per building lot]
	1.68 'Wianamatta' street trees [per building lot]

Precedent

Mockridge Avenue, Newington



Aerial view



Street view

Figure 77. Strategy 2 – Stormwater management

Strategy 3

Green fingers + communal spaces



Benefits:

- The community title lot could have a range of uses – green pedestrian connections (as seen in Newington), communal play spaces, community garden, or even car parking for the near to medium term future after which it could be something else
- Significant opportunities for tree planting
- The community title would have the effect of protecting more trees, compared to the trees being in private lots
- Social and community benefits – playing outside, getting to know neighbours, places for gathering
- A great option for managing overland flow, on sites closer to the water.

Further testing required

- Ownership – resistance to community title and impacts on sales value.

Building lot typology study

A community title lot provides some of the additional pervious surface required at a street block scale.

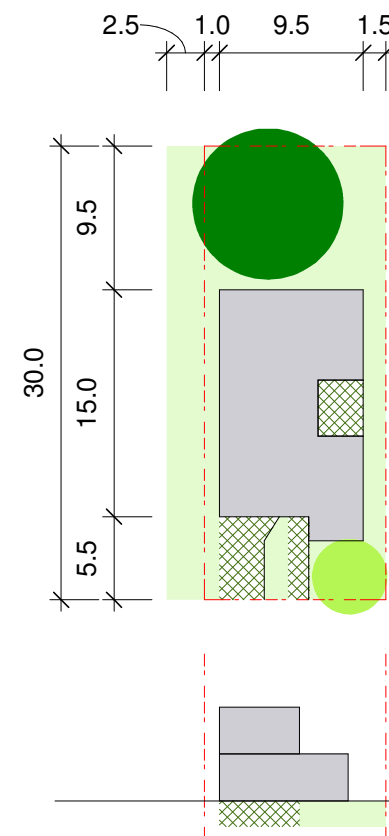


Figure 78. Strategy 3 – Green fingers and communal open spaces

Typology Overview:

- Two storey
- Large rear yard
- One garage plus driveway parking
- Paved surfaces assumed as impermeable.

Table 26. Key metrics: Detached housing – Strategy 3

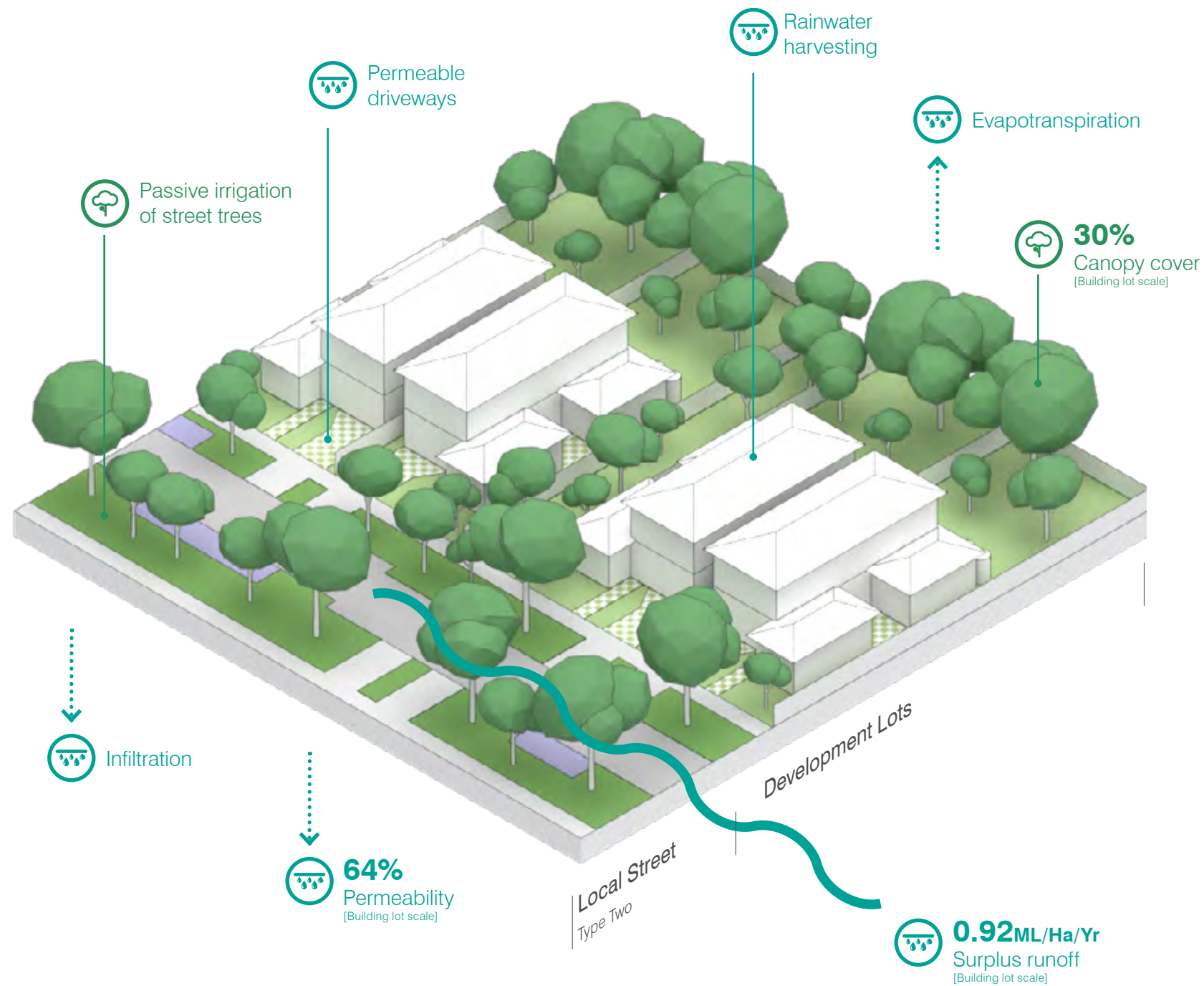
Lot size	Approx. GFA	Approx. FSR
360m ²	190m ²	0.53
75m ² (community title)		

Permeable surfaces	Permeability	Area
Rear yard	100%	150m ² (50%)
Front yard	100%	37m ² (9%)
Communal open space	100%	75m ² (17%)
Dwelling site coverage	0%	136m ² (31%)
Non-dwelling surfaces	50%	36m ² (8%)
TOTAL		435m²

Detached housing

Blocks + streets

Stormwater management strategies



Key metrics

Density	13 Dwellings per hectare
	42 Residents per hectare [Urban typology scale]
Density	0.53 FSR (x:1) [Building lot scale]
	0.25 FSR (x:1) [Urban typology scale]
Green	262 m ² of open space [per building lot]
	45 % canopy cover [Block+street scale]
Water	53 % permeability [Block+street scale]
	0.92 ML/Ha/Yr surplus runoff [Block+street scale]
	5 kL rainwater tank [per building lot]
	26.1 m ² sponge area [per building lot]
	2.03 'Wianamatta' street trees [per building lot]

Precedent

Popov Avenue, Newington



Aerial view

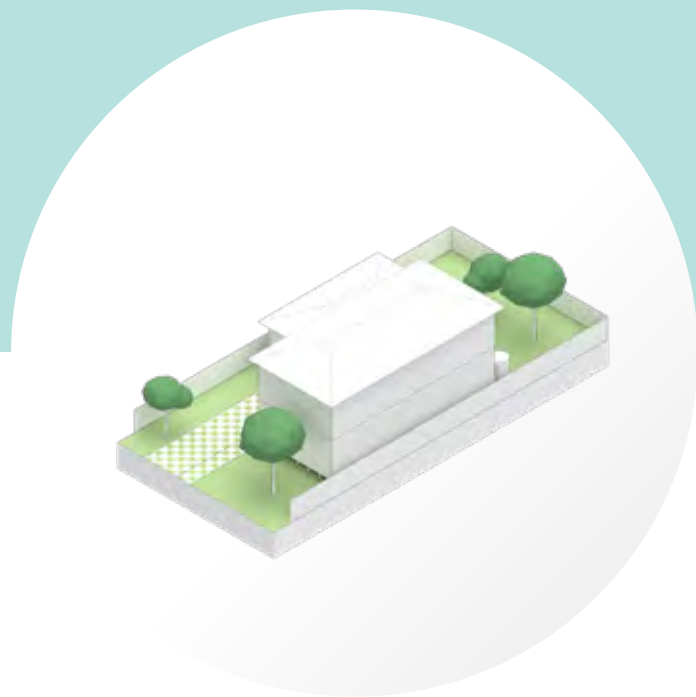


Street view

Figure 79. Strategy 3 – Stormwater management

Strategy 4

Suspended + elevated construction



Benefits:

- Potential for greatest deep soil permeability
- May be adapted to most existing housing models.

Further testing required

- Depending on its location on site, this option may not present the opportunity for medium or large trees in the front or rear yard
- Undercroft space poses a potential security, pest control risk
- Non-typical slab construction required (suspended above ground) may impact feasibility
- Entire block testing.

Building lot typology study

Suspended construction (a house on stilts) to maximise permeability on private lots, with a typical house size and on a typical lot.

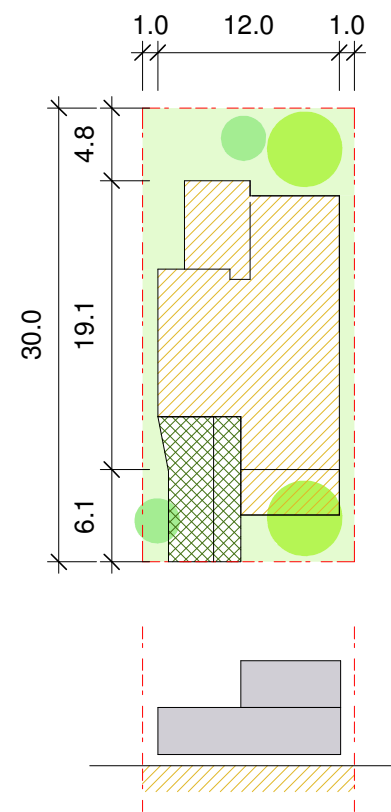


Figure 80. Strategy 4 – Elevated and suspended construction

Typology Overview:

- Two storey suspended construction
- Small rear yard
- One garage plus driveway parking shown
- Paved surfaces impermeable.

Table 27. Key metrics: Detached housing – Strategy 4

Lot size	Approx. GFA	Approx. FSR X:1
420m ²	315m ²	0.75

Permeable surfaces	Permeability	Area
Rear yard	100%	90m ² (21%)
Front yard	100%	68m ² (16%)
Dwelling site coverage	100%	215m ² (51%)
Non-dwelling surfaces	50%	47m ² (11%)
TOTAL	94% average	420m² (23.5x12m)

Detached housing

Blocks + streets

Stormwater management strategies

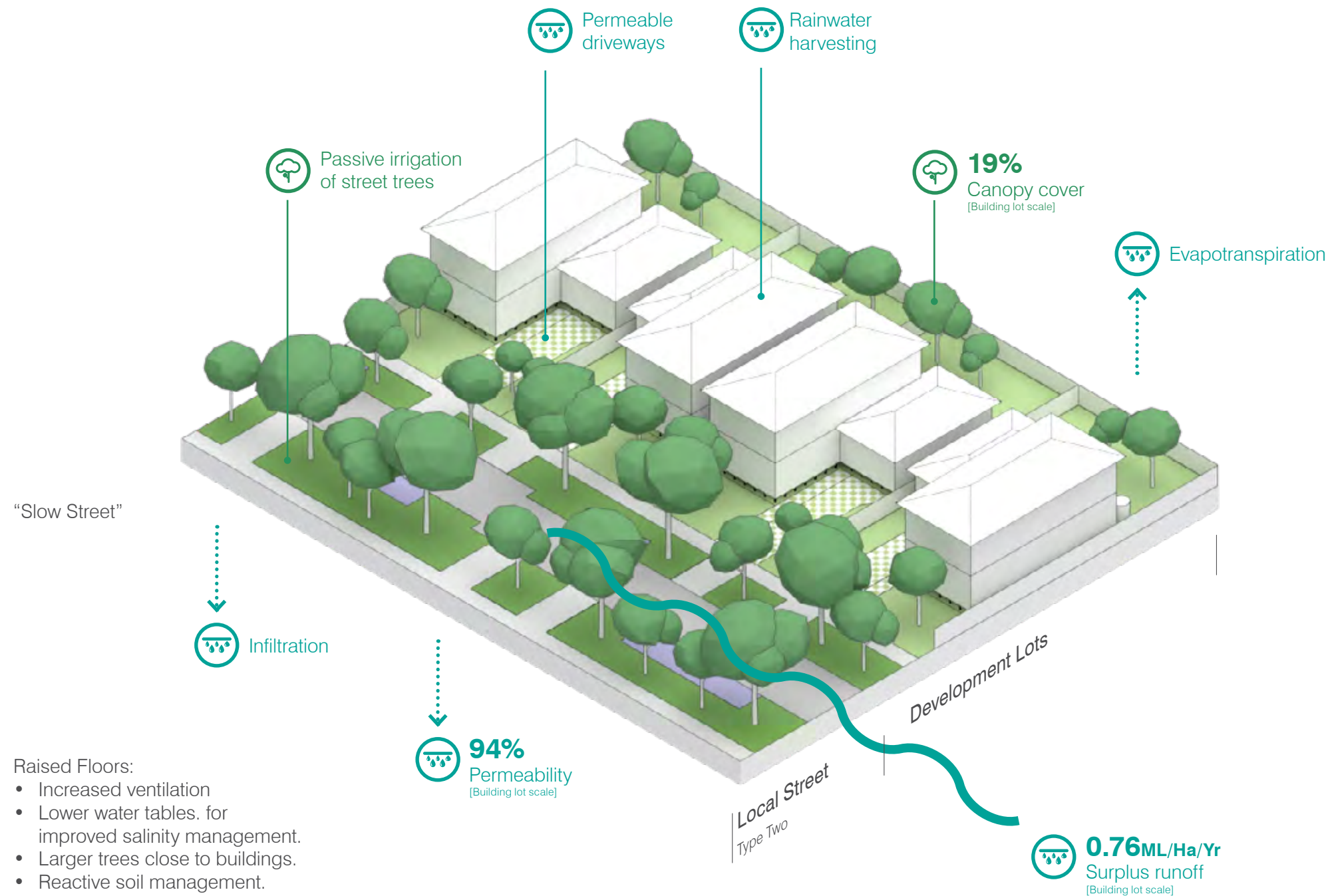


Figure 81. Strategy 4 – Stormwater management

Key metrics

 Density	14 Dwellings per hectare
	43 Residents per hectare [Urban typology scale]
 Green	158 m ² of open space [per building lot]
	38 % canopy cover [Block+street scale]
 Water	73 % permeability [Block+street scale]
	0.76 ML/Ha/Yr surplus runoff [Block+street scale]
	5 kL rainwater tank [per building lot]
	25.2 m ² sponge area [per building lot]
	1.96 ‘Wianamatta’ street trees [per building lot]

Precedent

Angourie House, Byron Bay



Aerial view



Street view

