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South Creek West Precinct 5 Public School

Rapid Transport Assessment

23 Nov 2022 | Rev 2.0

Quality Assurance

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1.0	18 Nov 2022	Draft
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Executive Summary

Purpose

- SCT Consulting was engaged by BHL Group to prepare a Rapid Transport Assessment (RTA) for a potential primary school within the South Creek West Cobbitty Precinct (Precinct 5).
- The school's location in relation to the broader precinct is shown in the figure.
- The RTA will support Schools Infrastructure's assessment of the school's viability in that location as well as informing the town centre design.

Recommended investments

Mode	Recommended infrastructure
Bus	○ Bus stops with 400m spacing on all sub-arterial and collector roads in the precinct
Cycle	75 bicycle/scooter parking spaces
Transport encouragement	Cycle training Quarterly bike repair Ride2School Day
Intersection & crossings	❶ Zebra crossing on collector road at the main entrance of the school ❷ Signalised intersection at the sub-arterial and collector road intersection adjacent to the local centre if justified by warrants.

These investments would be further evaluated by SINSW for funding as part of a future business case process.

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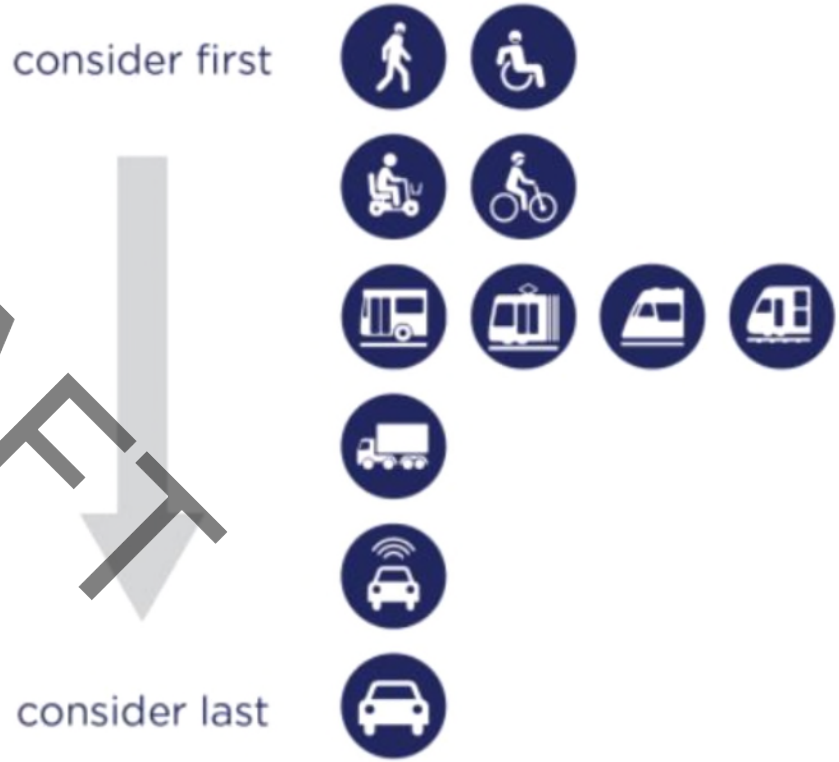
01

Plans and Strategies

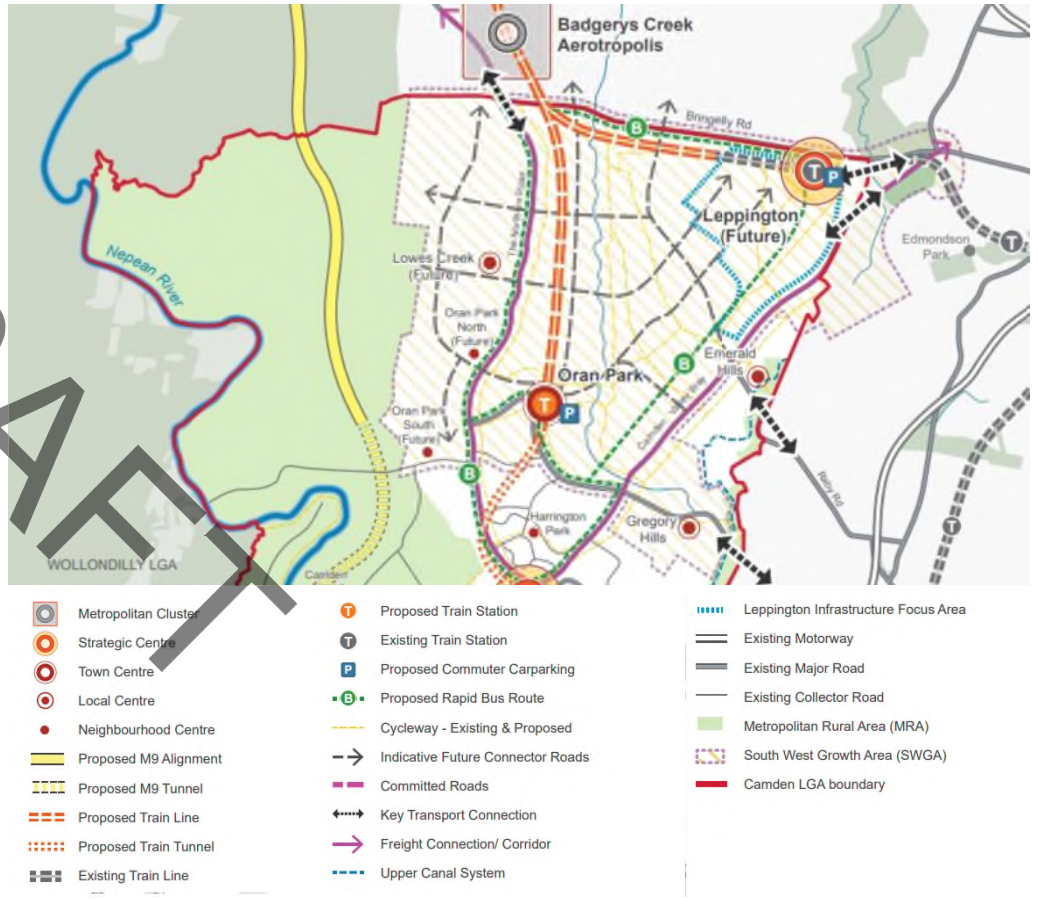
Road user space allocation policy (TfNSW 2021)

- The policy aims to allocate road space based on a hierarchy of road users with consideration being given to walking first and private car last
- The policy considers the allocation of space in terms of:
  - physical (type of infrastructure)
  - time (e.g. school peaks)
  - place (e.g. location of schools).
- The infrastructure need and requirements for the school has been framed through this policy



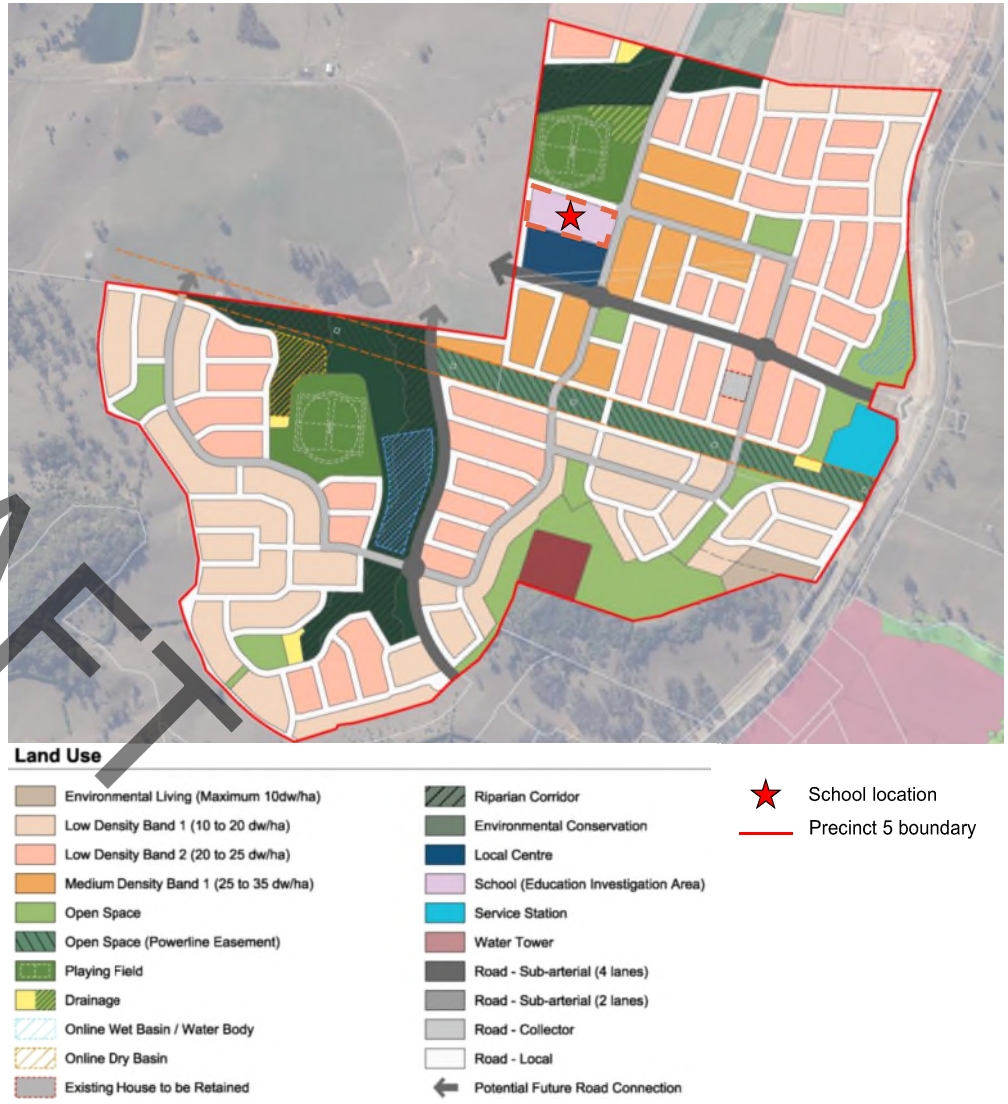
Camden Council LSPS 2040

- Camden LGA population set to grow by almost 200% between 2016 to 2036.
- South Creek West is identified in as a 'Future Urban' area. Agricultural land is targeted to change through State Government led growth precincts with substantial housing growth.
- South Creek West has a 30,000 planned housing capacity. Surrounding employment, environment, culture, and recreation uses will support housing.
- Future east-west and north-south connecting roads to Leppington and Oran Park, respectively.
- Outer Sydney Orbital (M9) will pass west of South Creek West and will provide a link between the Western Sydney Airport and future employment.
- Proposed train line east of South Creek West will connect Oran Park and Leppington to Western Sydney Airport.



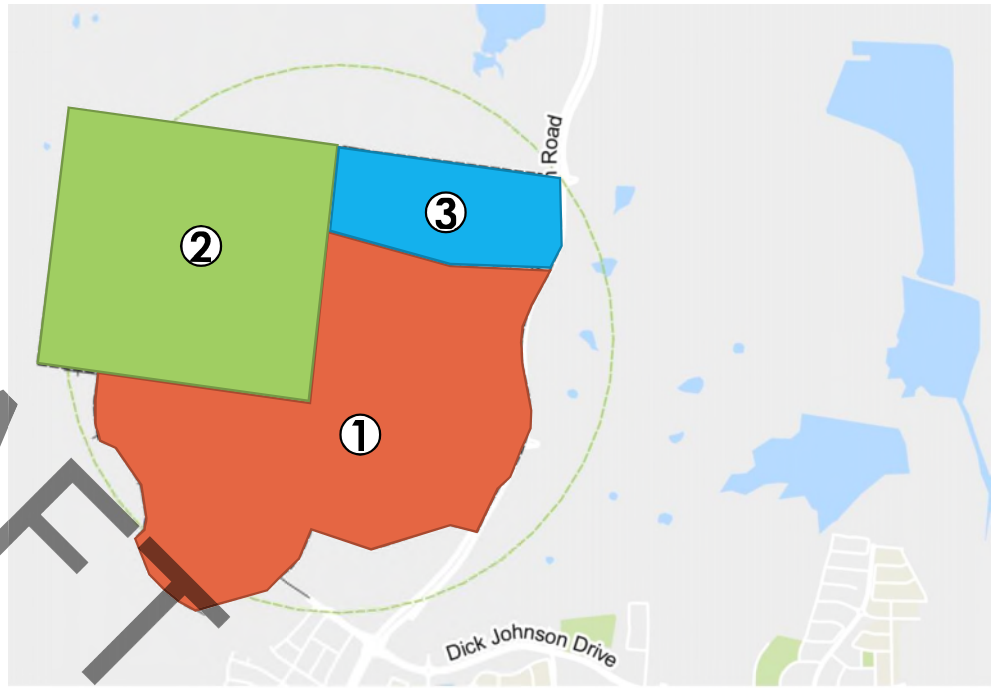
Draft Indicative Layout Plan

- The figure shows the latest Indicative Layout Plan (ILP)
- The proposed school is adjacent to the local centre and is accessible via a sub-arterial road.
- The precinct is still undergoing planning and studies are currently being undertaken to develop a South West Growth Area plan.



South Creek West Precinct land ownership

- The proposed school catchment covers the extent of the South Creek West Precinct.
- The precinct is being progressed by several proponents concurrently.
- Area ① is the land part of this planning proposal.
- Area ② is under separate ownership and will progress via a separate process.
- Area ③ has been rezoned as part of the Lowes Creek Maryland Precinct.
- The landowners of ② has requested that this planning proposal not detail components within their land, which may change as they progress.
- However, assumptions needed to be made for the purposes of this school, which covers both areas.
- The layout for area ② was determined based on historical information. It is noted that this may change as planning progresses.



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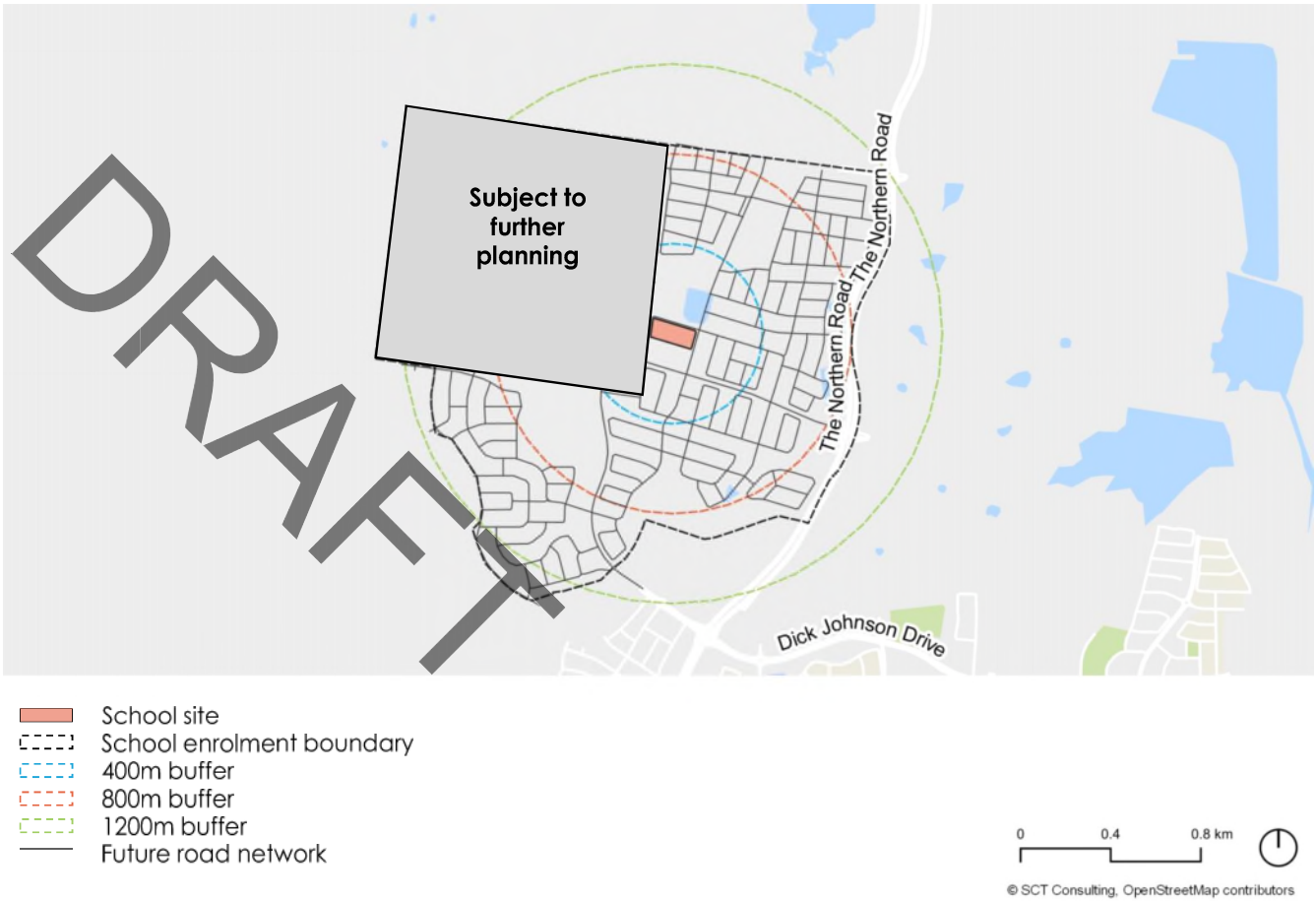
Base Conditions

South Creek West Precinct 5 Public School

- Precinct 5 is located within a greenfield site that is predominantly zoned primary production.
- SINSW confirmed the enrolment numbers (1,000 students) and boundary, which includes a portion of the Lowes Creek Maryland Precinct (north-east corner).
- No roads are built within the precinct. Future road networks were updated based on the provided draft indicative layout plans, draft pedestrian and cycling network, and the DCP for Lowes Creek Maryland Precinct.

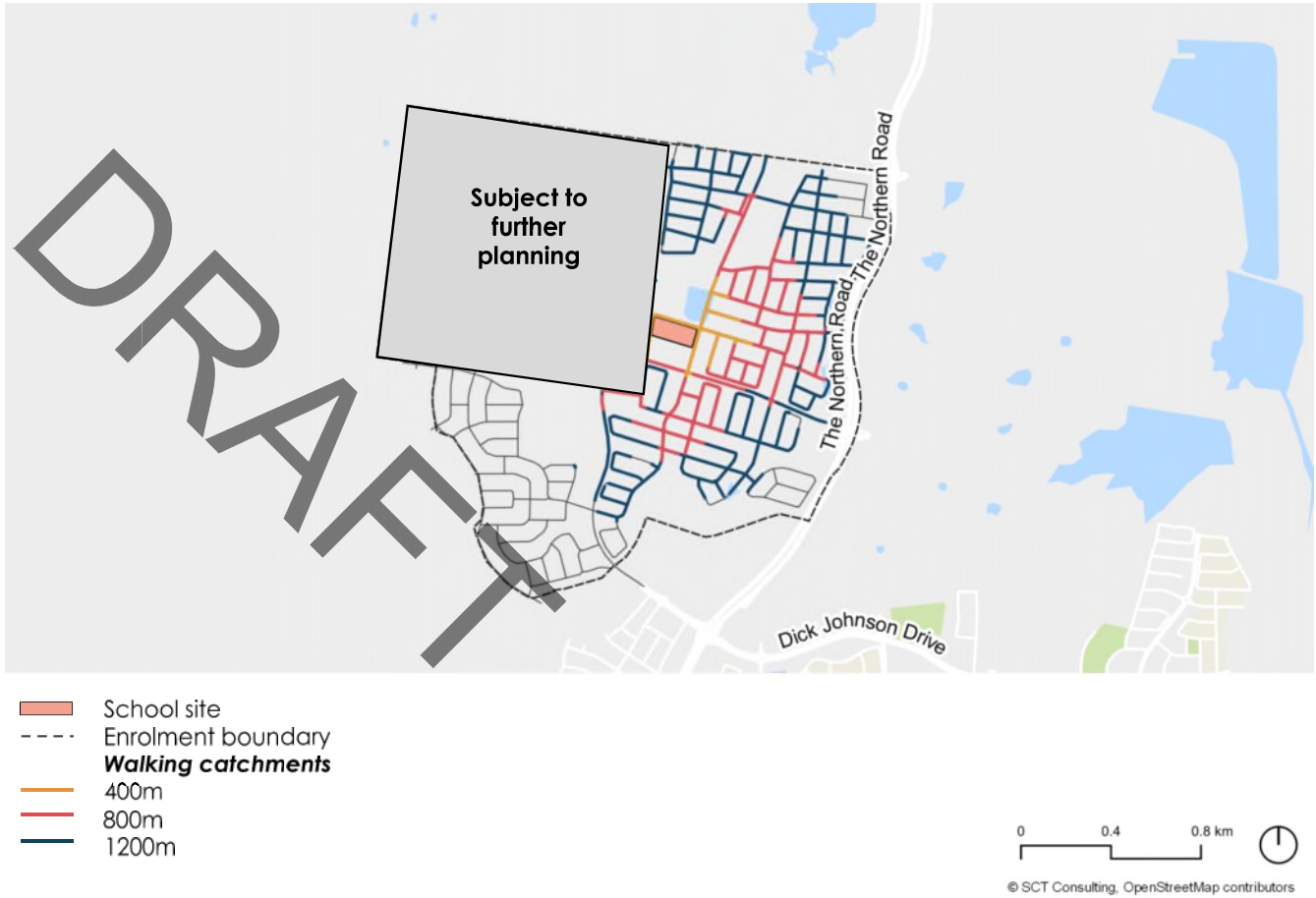


Road network

- No roads have been built within the enrolment boundary.
- **Arterial:** The Northern Road (existing)
- **Sub-arterial:** east-west connection to The Northern Road and a southern connection within the precinct
- **Collector:** to service the residential developments within the precinct

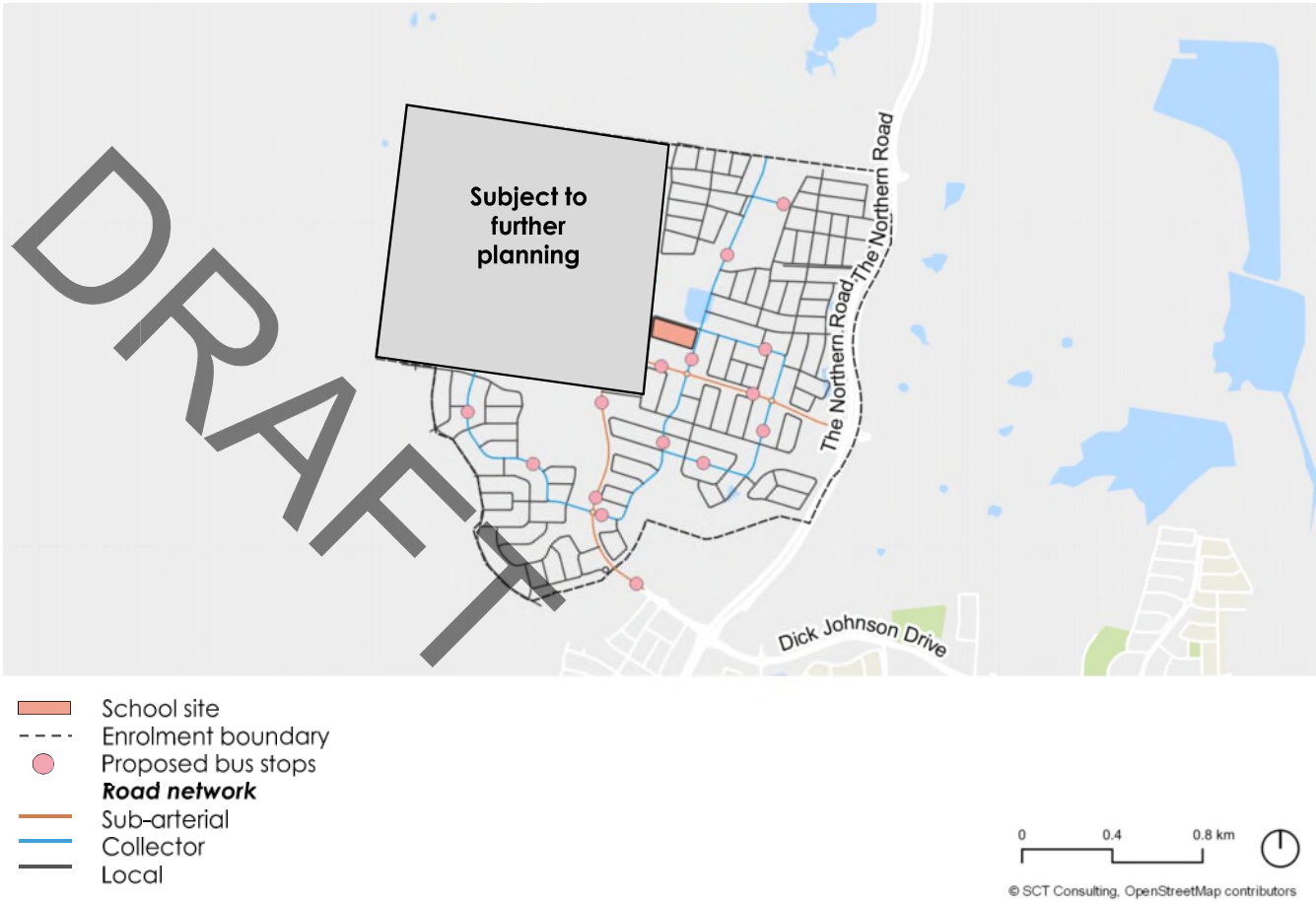
Walking & Cycling Catchment

- Students were randomly distributed in QGIS based on density categories as there are no existing students.
- The distribution was based on the land use zoning within the draft ILPs and the Lowes Creek Maryland DCP. It also considered the densities of the different residential land uses.
- The proportion of students within walking distance to school:
  - 400m – 4%
  - 800m – 20%
  - 1200m – 58%



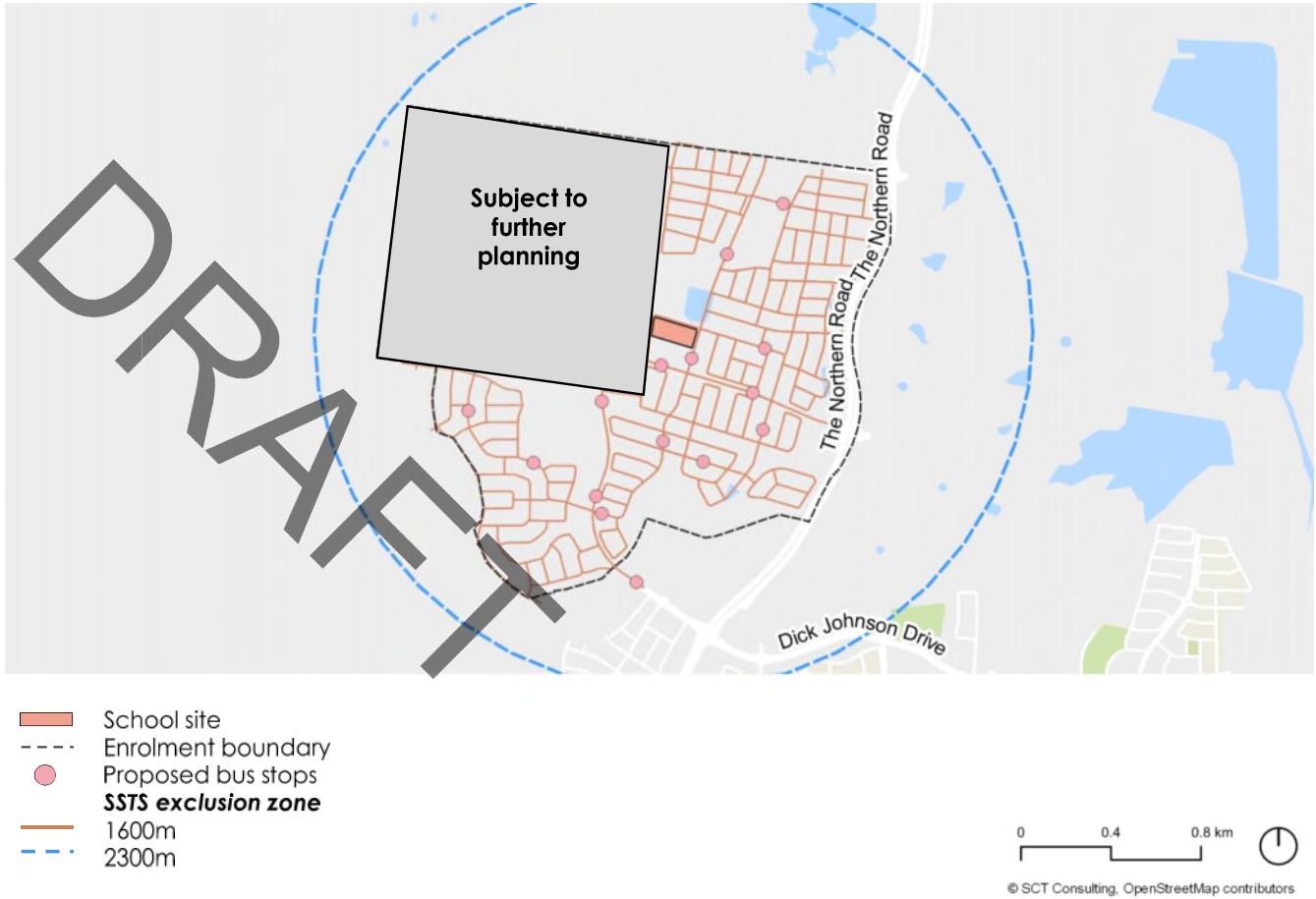
Public transport routes and service - Future

- No existing public transport within the enrolment boundary.
- There is further uncertainty about the future network as concurrent planning is being undertaken for surrounding land use changes and transport projects.
- To maximise the potential of the public transport network, the future sub-arterial and collector road networks are considered bus capable.
- One bus stop is assumed every 400m along bus capable roads.
- The proportion of students within walking distance to bus stops:
  - 400m – 96%
  - 800m – 100%



School Subsidy Travel Scheme Exclusion Zone

- All students fall within the exclusion zone and will not be eligible for subsidised travel.



Catchment analysis

- SINSW provided a school enrolment of 1,000 students.
- Assessment of number of students under each catchment is based on actual distances on the path.
- Bus stops every 400m are assumed on the bus capable roads.
- With 58% of students within 1,200m of the school, the site has potential for a more sustainable mode share than typical greenfield locations.

Catchment	Number of students	% of students
1 – 400m	41	4%
400 – 800m	159	16%
800 – 1200m	375	38%
>1200m from school & 400m from a bus stop	398	40%
>1200m from school & more than 400m from a bus stop	27	2%

Mode share forecast – base case

Catchment	Notional (as the crow flies)		Actual (on path)		Reference number	Allocation			
	#	%	#	%		Walk	Bicycle	Bus	Car
1-400m	135	14%	41	4%	41	70%	0%		
400-800m	433	43%	159	16%	159	30%	5%		
800-1,200m	384	38%	375	38%	375	10%	10%	0%	
0-1,200m (up to 15 min walk)	952		575						
Not eligible for SSTS	1000		1000						
Eligible for SSTS	0		0						
Located within 400m buffer of a bus stop	957		715						
Located within 800m buffer of a bus stop	1000		988						
>1200m from school and within 400m buffer of a school bus stop	30	3%	398	40%	398	0%	0%	0%	
>1200m from school and not within 400m buffer of a school bus stop	18	2%	27	3%	27	0%	0%	0%	
					Projected number	114	45	0	841
					Projected mode share	11%	5%	0%	84%

Base case mode share set to 84% private vehicle based on surveys of comparable primary schools

Assumptions

- Bus stops are delivered every 400m on sub-arterial roads
- Walk to school day & other typical curriculum

Mode share forecast – moderate case

Catchment	Notional (as the crow flies)		Actual (on path)		Reference number	Allocation			
	#	%	#	%		Walk	Bicycle	Bus	Car
1-400m	135	14%	41	4%	41	70%	0%		
400-800m	433	43%	159	16%	159	30%	5%	2%	
800-1,200m	384	38%	375	38%	375	10%	10%	8%	
0-1,200m (up to 15 min walk)	952		575						
Not eligible for SSTS	1000		1000						
Eligible for SSTS	0		0						
Located within 400m buffer of a bus stop	957		715						
Located within 800m buffer of a bus stop	1000		988						
>1200m from school and within 400m buffer of a school bus stop	30	3%	398	40%	398	0%	0%	12%	
>1200m from school and not within 400m buffer of a school bus stop	18	2%	27	3%	27	0%	0%	10%	
Projected number						114	45	84	757
Projected mode share						11%	5%	8%	76%

Assumptions
- Bus stops are delivered every 400m on sub-arterial roads
- Walk to school day & other typical curriculum
- Roundabout on sub-arterial and collector intersection
- **3 school bus routes**

The forecast patronage of 84 students would fit comfortably on about 2 buses

3 services is appropriate noting not every service will be filled

Mode share forecast – stretch case

Catchment	Notional (as the crow flies)		Actual (on path)		Reference number	Allocation			
	#	%	#	%		Walk	Bicycle	Bus	Car
1-400m	135	14%	41	4%	41	70%	5%		
400-800m	433	43%	159	16%	159	35%	10%	2%	
800-1,200m	384	38%	375	38%	375	15%	15%	8%	
0-1,200m (up to 15 min walk)	952		575						
Not eligible for SSTS	1000		1000						
Eligible for SSTS	0		0						
Located within 400m buffer of a bus stop	957		715						
Located within 800m buffer of a bus stop	1000		988						
>1200m from school and within 400m buffer of a school bus stop	30	3%	398	40%	398	0%	0%	12%	
>1200m from school and not within 400m buffer of a school bus stop	18	2%	27	3%	27	0%	0%	10%	
					Projected number	141	74	84	702
					Projected mode share	14%	7%	8%	70%

Cycle training and cycle parking is expected to lead to flow on confidence with students also walking on days when they don't ride.

Assumptions
- Bus stops are delivered every 400m on sub-arterial roads
- Walk to school day & other typical curriculum
- 3 school bus routes
- **cycle to school training program & abundant cycle parking**

More share scenarios

Scenario	Explanation	Assumptions
Base case	Proposal conditions	• Bus stops are delivered every 400m on sub-arterial roads • Walk to school day & other typical curriculum
Moderate case	Improvements to public transport services	Same as base case • Additional 3 school bus routes
Stretch case	Longer term changes	Same as moderate case • Cycle to school training program • 75 bicycle parking spaces

Mode share splits

Scenario	Walk		Cycle		Bus		Car	
	#	%	#	%	#	%	#	%
Base case	114	11%	45	5%	0	0%	841	84%
Moderate case	114	11%	45	5%	84	8%	757	76%
Stretch case	141	15%	74	7%	84	8%	702	70%

- Reference to trip generation surveys and mode share percentages for Dapto Public School and Kurnell Public School were taken. Both schools have public and active transport initiatives that correspond with reasonable cycle, walking and public transport mode shares.

- The *Small Suburban Shopping Centres - Trip Generation Surveys Analysis Report* indicates that approximately 22-25% of trips to shopping centres are 'linked' (pg 54). Hence the adjacent location of the school and town centre will support reduced traffic generation and increased demand for short walking trips.

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Proposal

Concept layout review

- Positives:
  - 1 Appropriate crossing location at main entrance of school
  - 2 Bus stops at front of school near primary entrance provide priority and convenience to public transport
  - 3 Shared parking with open space represents opportunity for infrastructure efficiency
  - 4 Kiss ‘n drop has generous storage prior to impacting on sub-arterial road
  - 5 Walking connection to town centre supports linked trips and reduces car demands
- Issues:
  - 6 Proximity of multiple car park entrances to roundabout could cause sight line issues. Driveway access locations could be refined in next stage of planning.

Concept design considerations

- Standards have not been reviewed for the concept plan – this would occur during design phase.

1. Zebra crossing on the western leg of the roundabout for safer crossing.
2. Shift western school gate to align with K&D location
3. Need for safe and weather appropriate route identified from kiss 'n drop to school gate to the north – recommend footpath on southern boundary of playing field

Summary comments:

- The layout provides a good frontage to the new north-south road, with pedestrian priority crossings and bus stops.
- Potential shared kiss 'n drop arrangement supports efficient use of space.
- There is queuing room from kiss 'n drop facilities before impacting on the sub-arterial road network.

04

Infrastructure investment details

Public transport

- Reference was made to Dapto Public School, which we have used as a benchmark. Dapto Public School has a relatively small catchment as well and has three school bus routes.
- ~40% of students live >1200m away from school.
- Although students in the proposed school will not be eligible for subsidized travel, a proportion of students may consider traveling by school bus if made convenient to them.
- Three school bus routes are proposed – 1, 2, and 3.

Kiss ‘n drop spaces required

- Kiss ‘n drop requirements estimated using M/M/C queue theory
- Assumed 1.7 students per car
- 90% arrival during the peak period
- Assumed 2 minutes to locate child and leave (pick up usually poorest performing)
- Queue lengths are reported based on the 95th percentile worst scenario
- **Mode shift is most effective form of queue management**
- A minimum of 17 bays is recommended to mitigate queueing
- The concept plan illustrates the potential for 88 spaces, which is more than enough to result in zero queuing. This should be optimised based on parking demands for the playing field, sustainable travel objectives and kiss ‘n drop queuing requirements.

95th percentile queue length based on # kiss ‘n drop bays

Number of bays	Base	Moderate	Stretch
13	>155 veh	>155 veh	56 veh
14	>155 veh	58 veh	18 veh
15	>155 veh	20 veh	9 veh
16	33 veh	10 veh	5 veh
17	15 veh	5 veh	2 veh
18	8 veh	3 veh	0 veh
19	5 veh	1 veh	0 veh
20	2 veh	0 veh	0 veh
21	0 veh	0 veh	0 veh

Thank you

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