

Croydon Major Activity Centre

Infrastructure Study



April 2020

Final Draft

Table of Contents

Introduction.....	2
Why the Integration of Land use, Transport and Infrastructure Planning is Important?	3
Scenario and Assumptions	4
Assessment Approach	5
Sector Profiles.....	6
Infrastructure Type: Electricity	7
Infrastructure Type: Gas	10
Infrastructure Type: Telecommunications (NBN and 5G).....	13
Infrastructure Type: Water and Sewerage	17
Infrastructure Type: Open Space, Sport and Recreation	21
Infrastructure Type: Education (Early years, Schools and Tertiary)	27
Infrastructure Type: Medical and Health	33
Infrastructure Type: Emergency Services (Police, Fire, Ambulance and SES)	36
Infrastructure Type: Community Centres.....	39
Infrastructure Type: Waste and Recycling	43
Key Findings.....	46
Next Steps.....	48
Sources.....	49

Introduction

Infrastructure connects households, business, and urban spaces to essential services to sustaining economic productivity, diverse mobility, urban liveability and quality of life.

The Croydon Town Centre is identified as a Major Activity Centre by Plan Melbourne 2017. As a major activity centre it plays an important role in accommodating growth, employment, education and social activation in the City of Maroondah. Consequently, it will undergo significant transformation over the next 10 years.

Realising the transformational opportunities for the centre will require deliberate land use and urban planning that is cognisant of the capabilities and performance of the infrastructure that serve the precinct. Ensuring investment in the right infrastructure at the right time will shape the centre so it is supported to develop in accordance with the vision to realise its full potential.

The Croydon Town Centre Infrastructure Study is a demonstration of a commitment to better land use and infrastructure planning. It expounds the findings of an assessment on the essential utilities, green and community infrastructure that services the centre. The purpose of the Study is to identify and verify the following aspects of infrastructure over the next 10 years.

1. Coverage and service supply reliability issues that will impact current and future development potential and function of the precinct.
2. Quality of current facilities and potential level of renewal required to respond to future purposes.
3. Advantageous opportunities and detrimental challenges that impact the access and supply in the future.
4. Timing and intensification of planned infrastructure facility modifications being conducted by infrastructure authorities.
5. Upfront and ongoing service cost implications on customers markets and consumption.

The report is one of many background papers to inform the refresh of the Croydon Civic Structure Plan. It serves as a conversation starter for robust evidence-based response to growth with appropriate scale of development and land use allocation. The outcome will be the incorporation of the best planning solutions into the next version of the structure plan.

It is acknowledged that depending on the planning priorities, there will be trade-off between the level of services people want, land use structure and the costs involved to supply the infrastructure need to support it.

Why the Integration of Land use, Transport and Infrastructure Planning is Important?

At present the centre's infrastructure networks and service supply is often good or adequate. However, there are evident signs that some services that are coming under pressure at certain times in the year or day. Congestion, overcrowding, rising prices, disruptions or poor or intermittent services are indicators that network are buckling under the pressures on long-term strains and short high intensity shocks.

When the infrastructure networks are pushed beyond capacity there are economic, environmental and community consequences. Effectiveness and resilience declines as risk of failures and disruption become more common. These disruptions undermine the development potential of a place to reach its full potential as liveable and affordable places with mobile, resilient, inclusive and sustainable communities. Conversely when infrastructure preforms at its best it enables places to thrive and prosper.

Land use and infrastructure are intrinsically linked. Each places direct and ancillary impacts the other. For this reason, population growth, development intensity, industry and urban activation must be within the confines of infrastructure capacity and performance. Conversely, infrastructure priority and investment must be informed and aligned with appropriate growth for the centre.

Land use planning must be informed by acuate intelligence on infrastructure network capabilities. Good information about the infrastructure networks and facilities that service the Croydon Town Centre, provides the strategic foresight to guide our planning decisions going forward. A closer alignment of land use with infrastructure planning at the earliest stage enables infrastructure investment, delivery and maintenance to be sequenced with anticipated growth.

We will make better informed decision about these key questions:

1. What is the pace of development and scale of density that can be supported by the infrastructure networks and services over the next 10 years?
2. How to accommodate growth in areas best suited for it and in a way that ensure the liveability, sustainability and economic viability continues?
3. How to make the most out of our existing infrastructure and were the best investments can be made?
4. What needs to happen to ensure we have the services and infrastructure the right place at the right time to respond to demand?

Scenario and Assumptions

The latest population and demographic forecast profile supplied by id Consult is a mild growth scenario for the centre. The profile is the best available evidence on projections for population, employment, and urban development.

The defining characteristics of the growth scenario to 2041 are:

- The centre will service a population of 4,581 people.
- The centre will need to accommodate 2,218 residential dwellings.
- Occupancy rates will remain stable at 95.49%.
- Housing size will decrease marginally from 2.14 to 2.12.
- The three existing General Residential Zones (GRZ1) will continue to develop as new dwellings are accommodated.
- Housing typography will transition with an increase in single units, villa unit, town house and apartment.
- Intensification of three storey apartments along the spine of Maroondah Highway.
- Retaining of existing light industry in the two industrial 1 zones (IN1Z), with moderate growth in emerging knowledge, training and health care sector.

The key assumptions are:

1. The current zoning will remain and the centre will continue to develop as permitted under the zoning.
2. Emerging development trends and housing typography will be allowed to solidify.
3. The centre's urban structure and grain will remain similar without significant centre changing infrastructure projects.
4. More people will live, work and access services in the precinct will intensify movement and access within and throughout the centre.
5. Locations surrounding the public transport interchange and along major arterial roads will be the focal points for higher density development.

The scenario sets level of service assumptions about the priorities and sequencing of infrastructure we expect the centre will need in the future.

Assessment Approach

The planning, building, operation and management of infrastructure sits with a range of public and private authorities. We have relied upon the technical knowledge and information supplied by experts in these agencies to inform the assessment. This information was obtained from direct consultation with key experts in agencies. For some sectors we have consulted with multiple experts. In this way it draws upon the latest and credible information.

The information has been collated into profiles for each infrastructure types. To give a clear understanding of the existing and future state of the networks the profile provides the findings on the following key performance aspects.

- Access: The availability of services for households and businesses based on any coverage gaps and the ease to connect.
- Quality: The standard of the service provided, focusing on the reliability and efficiency of the network.
- Cost: The upfront and ongoing charges for users, as well as the draw on taxpayer funds.
- Capacity: Can support the intensity of development at the highest forecast for the precinct.

The rating scale definitions for these aspects are defined in tables 1 and 2.

Table 1: Rating Definitions for Performance Aspects: Access, Quality and Capacity.

Designation	Access	Quality	Capacity
Very good	Infrastructure provides total coverage and access for the centre.	Infrastructure is fit for its current and future purpose.	Infrastructure can meet its current and future purpose.
Good	Minor changes are required for infrastructure to provide total coverage and access for the centre.	Minor changes required to enable infrastructure to be fits for its current and future purpose.	Minor changes required to enable infrastructure to meet its current and future purpose.
Adequate	Major changes are required for infrastructure to provide total coverage and access for the centre.	Major changes required to enable infrastructure to be fits for its current and future purpose.	Major changes required to enable infrastructure to meet its current and future purpose.
Poor	Critical changes are required for infrastructure to provide total coverage and access for the centre.	Critical changes required to enable infrastructure to be fits for its current and future purpose.	Critical changes required to enable infrastructure to meet its current and future purpose.

Table 2: Rating Definitions for Performance Aspects: Cost

Designation	Cost
Low	Upfront and ongoing service charges are easily paid by low income households.
Appropriate	Low income household can realistically pay upfront and ongoing service charges.
High	Low income household are struggling to pay upfront and ongoing service charges.

In this way, the assessment considered what is important to consumers as well as providers of infrastructure.

The profile also summaries the identifies issues, gaps, problems and untapped potential in the form of challenges and opportunities.

- **Challenges** – identify and be aware of the limitations and issues that have the potential to impacts the economic, land use, civic development of the precinct over 10 years. This information reveals where changes in infrastructure investment, delivered and maintenance is necessary to avoid detrimental impacts in the future.
- **Opportunities** – identify and be aware of options that unlock future service improvements advantageous to achieving the transport and land use vision and aspirations. This information reveals where changes can take pressure off networks and services, make better use of existing network by improving performance, efficiency, access or make services pricing cheaper.

Sector Profiles

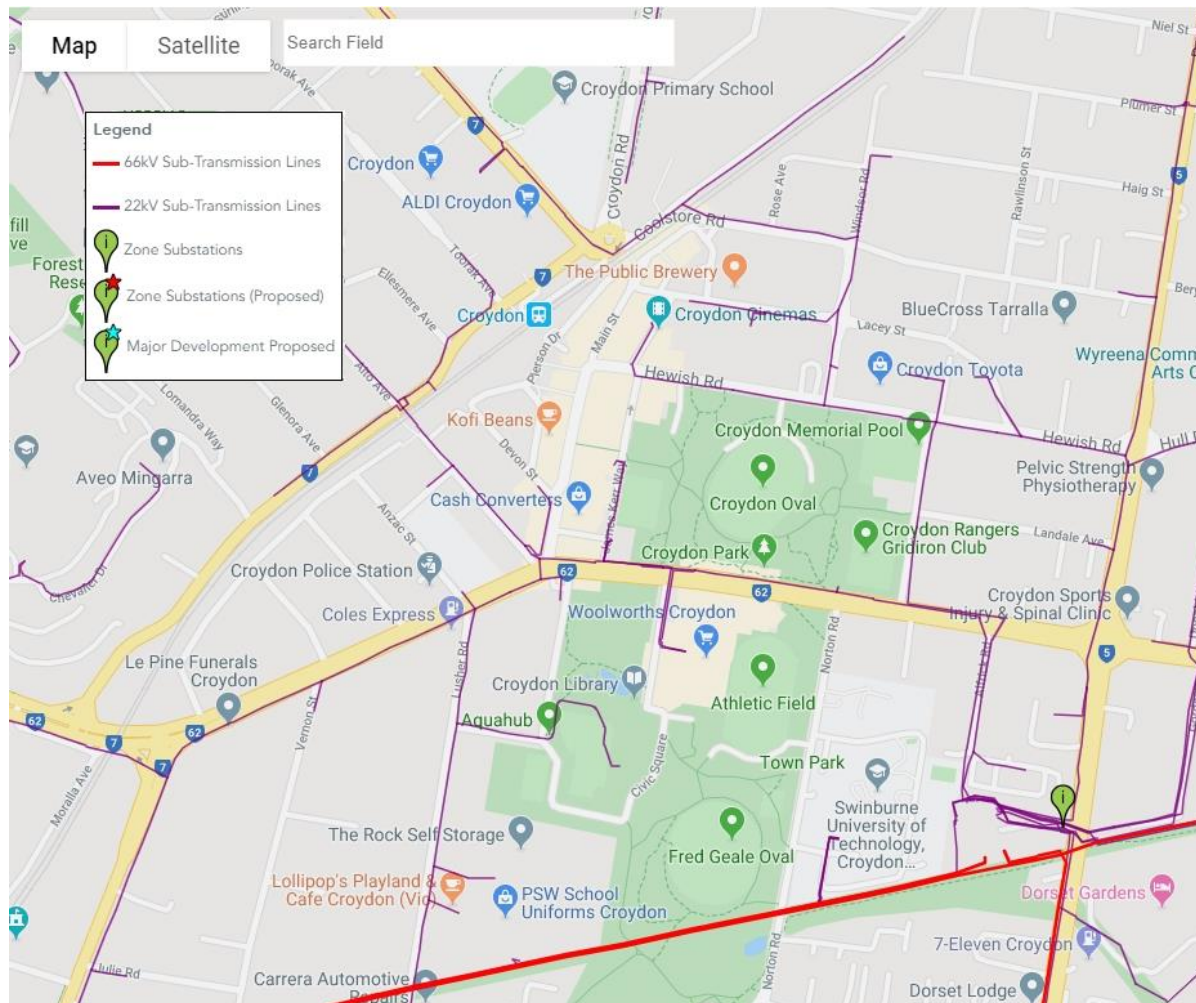
The sector profiles are based on inputs provided by relevant service authorities, ranging from evidence in pre-existing reports or identified by professional judgement from experts within the authorities. Where information is noted as ‘advised by stakeholders’, this information is informed by professional judgement. All other information provided is sourced from the documents listed.

Infrastructure Type: Electricity					
State of play:		The centre is serviced by an established electricity distribution network with every property having access to electricity. The network consists of a zone substation, overhead 66kV and 22kV transmission lines.			
Evidence base:		AusNet Services Distribution Annual Planning Report 2020- 2024 AusNet Services Distribution Infrastructure Map Australian Infrastructure Audit 2019 Infrastructure Provision in Different Development Settings: Volume 1 & 2 Technical Paper Technical information supplied from AusNet Services.			
Certainty of Evidence		High	Finding	The existing electricity distribution network can accommodate anticipated future demand and places no constraints on growth.	
Performance and Capacity					
Access	Very Good	A 22kV transmission lines provides total coverage of the centre. 10 business days to connect to network.	Cost	High	Electricity prices for households has risen by 56% over the past decade. Household energy costs have grown faster than inflation. Concern about affordability for low income households.
Quality	Very Good	Substation and transmission line assets are fit for current and future purpose.	Capacity	Very Good	Sub-transmission lines predicted at 85% summer capacity in 2024. Estimated hours a week at 95% peak load is 7 hours. Substation summer capacity predicted at 89% in 2024. Transfer capability of 34.2 MVA.

Challenges		Opportunities	
Increased solar systems and other forms of generation have resulted in significant reverse power flow at light load conditions. It is envisaged that network augmentation may be required to cater for greater bi-directional power flow.	0 -5	Coordinated investment in new localised renewable generation and network assets will lead to lower wholesale and network costs for users over time.	0 - 15 +
Energy bill increases will place added burden on many households.	0 - 5	Home solar and storage, including electric vehicles, can help households save costs and control energy usage.	0 -5
		Placement of electricity cabling underground with property turns over and road projects.	0 -10

Property of Interest
Croydon Zone Substation - 336 Dorset Road, Croydon. Status: No changes to the substations for the next 5 years. 66KV Sub-Transmission Lines along the O'Shannasey Viaduct. Status: No change to the transmission lines in next 5 years.

Map 1: Electricity Distribution Network



Source: AusNet Services Distribution Infrastructure Map - Accessed 24 December 2019

Infrastructure Type: Gas						
State of play:		The centre is served by an established gas distribution network with every property having access to gas mains. The network consists of low-pressure transmission mains and pipelines. Gas differs from other utilities as it is not mandatory for gas to be connected to a dwelling.				
Evidence base:		Infrastructure Provision in Different Development Settings: Volume 1 and 2 Technical Paper Victorian Gas Planning Report March 2019 (AEMO) Australian Gas Infrastructure Group 2018 Annual Review Technical information supplied from Multinet Gas Networks				
Certainty of Evidence		High	Finding	Gas services are adequate for current and anticipated future growth. The distribution network places no constraints on growth.		
Performance and Capacity						
Access	Very Good	Low-pressure transmission network covers the entirety of Croydon. Household connections take 20 working days.		Cost	High	Gas prices for households has risen by 46% over the past decade. Household energy costs have grown faster than inflation. Concern about affordability for low income households.
Quality	Very Good	Low-pressure transmission mains and pipelines are in very good condition. The mains are fit for current and future purposes.		Capacity	Adequate	Supply from existing and committed gas fields are forecast adequate to meet demands until 2023.

Challenges		Opportunities	
With depletion of existing fields and producers declaring more gas resources commercially unviable, production from the southern gas fields is expected to decline.	0 - 20	Renewable gases such as hydrogen being injected into natural gas networks to help decarbonise gas supply. Electrolyser producing hydrogen are currently under development.	5 - 10
Without additional gas supply capacity, supply curtailment and restrictions may be necessary on a peak winter day from 2023.	0 - 5	New developments to be feed from new high pressure main and pipeline systems that runs in parallel to existing low-pressure system.	0 - 5
Property of Interest			
Multinet Gas Networks does not own a depot or site in the study area.			

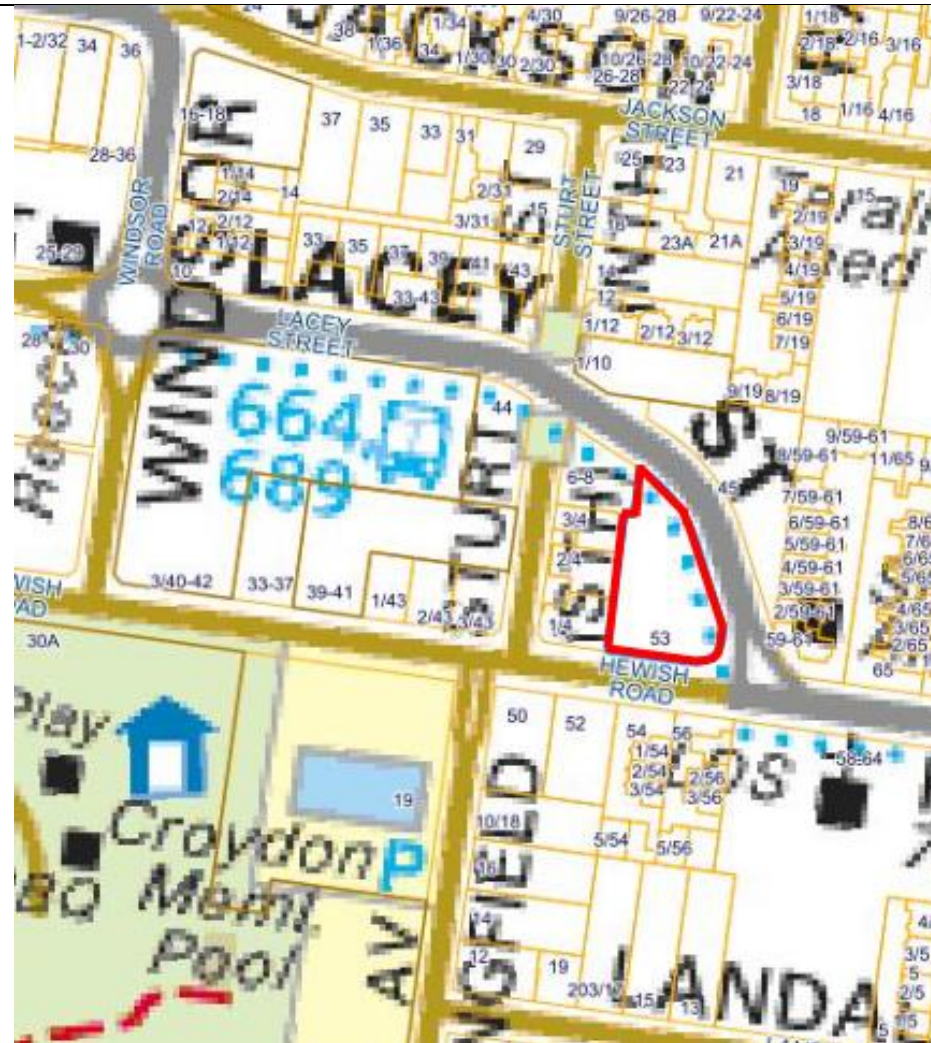
Infrastructure Type: Telecommunications (NBN and 5G)			
State of play:	The centre is served by an established fixed telephone line and 4G networks. The 4G network is augmented by 4GX technology. Fixed phoneline connections may become obsolete and no longer mandatory for dwellings into the future. The NBN and 5G are new networks. The NBN is planned to be available for the Croydon from April - June 2020. It will use fibre to the curb (FTTC) technology. The 5G network combines with the existing 4GX network. 5G transmission stations are currently being built. No coverage yet of any segments of the precinct and coverage arrival dates are arrival.		
Evidence base:	Economic, Social and Environmental Profile: Eastern Metro Region 2019. NBN Annual Report 2019 Telstra Annual Report 2019 Infrastructure Provision in Different Development Settings: Volume 1 & 2 Technical Paper. NBN online Rollout Map. Telstra Network Coverage Map.		
Certainty of Evidence	High	Findings	The digital telecommunications network is adequate. Improvement of fixed broadband speeds are required for better household liveability and business productivity. A faster fixed broadband and the 5G network can accommodate anticipated future internet and digital communications growth.

Performance and Capacity					
Access	Very Good	4GX and NBN provides total coverage and digital access for the centre.	Cost	Appropriate	A highly competitive market provides affordable choices in devices options, phone and data packages.
Quality	Good	NBN delivering variable download rates. Reports of household's experiencing low data speeds are common. 4G network speeds are quick and reliable. Speed will be boosted by the 5G rollout.	Capacity	Very Good	The digital telecommunications network can meet current and future demand and purposes.
Challenges			Opportunities		
Fixed broadband speed are poor. Failure to rapidly improve speed could constraint productivity and liveability.		0 -5	Delivering 5G networks will help to accelerate Australia's digital transformation, providing significant benefits to people and businesses.		0 - 5
5G networks will require substantial new infrastructure, creating both costs, planning and security challenges.		0 -5	The ability for network slicing to segregate different services over the same network. It will allow service differentiation based on the actual use it supports, e.g. essential services or autonomous vehicle networks.		5 - 10
			Placement of communications cabling underground with property turns over.		0 - 10

Property of Interest

Croydon Telephone Exchange - 53 Hewish Road, Croydon.

Status: Unknown.



Infrastructure Type: Water and Sewerage			
State of play:	The centre is served by an established water and sewerage distribution network. The water supply network includes water metres, local pressurised distribution pipes and low pressure trunk transmission mains that connects the reservoirs and localised recycled water treatment facilities. The sewerage network consists of distribution pipes, localised sewerage treatment facilities, truck sewerage transmission network, pump stations and treatment facilities. There isn't a drainage scheme covering the suburb of Croydon.		
Evidence base:	Australian Infrastructure Audit 2019 Infrastructure Provision in Different Development Settings: Volume 1 & 2 Technical Paper Yarra Valley Water Price Submission 2017 Yarra Valley Water Annual Report 2018 -2019 Melbourne Water Annual Report 2018 - 2019 Water for Victoria: Water Plan Melbourne Sewerage Strategy Melbourne Water System Strategy Melbourne Water Drainage Scheme Online Map. Technical information supplied from Melbourne Water.		
Certainty of Evidence	High	Finding	The water sector is moving towards an integrated water management approach, which offer the opportunity to support housing growth without further loading of the central trunk infrastructure. Sewerage infrastructure places no constraints on growth as the existing system is well suited to incremental expansion and the adoption of localised treatment. New developments that adopt recycled and grey water for non-potable use, may require additional treatment and reticulation infrastructure.

Performance and Capacity					
Access	Very Good	Water and sewerage network provide total coverage and access for the centre.	Cost	Appropriate	Household water and sewerage bills are generally affordable. The costs of essential infrastructure investment maybe passed on to consumers and bills could rise substantially over the next five to 20 years.
Quality	Very Good	Drinking water is of a very high quality and compliant with Safe Drinking Water Regulations 2015. During 2018 -19, 0.04% of Yarra Velley Water customers experienced three or more unplanned water or sewerage service interruptions. Recycled water providing Class A and C water to customers.	Capacity	Good	The water and sewerage network have the capacity to support growth with incremental expansion.
Challenges			Opportunities		
The urban water sector faces considerable water security risks from changing rainfall patterns and degrading of catchments to replenish storage and waterways.		0 - 10+	Better understanding and consideration of water's role in urban environments can lead to improved land use planning. With outcomes of enhanced quality of life, open new spaces, natural regeneration and cultural practices.		0 - 10+
Greater occurrence of extreme weather events such as floods, drought and bushfires can also damage sewerage assets and disrupt the network.		0 - 10+	Urban and building design that incorporate water conservation features can substantial reduce water consumption. Education can help households use water more wisely.		0 - 10+
			Scope to increase the supply and usage of recycled and grey water sources in urban areas.		0 - 5

Property of Interest

Croydon Retarding Basin and Wetlands

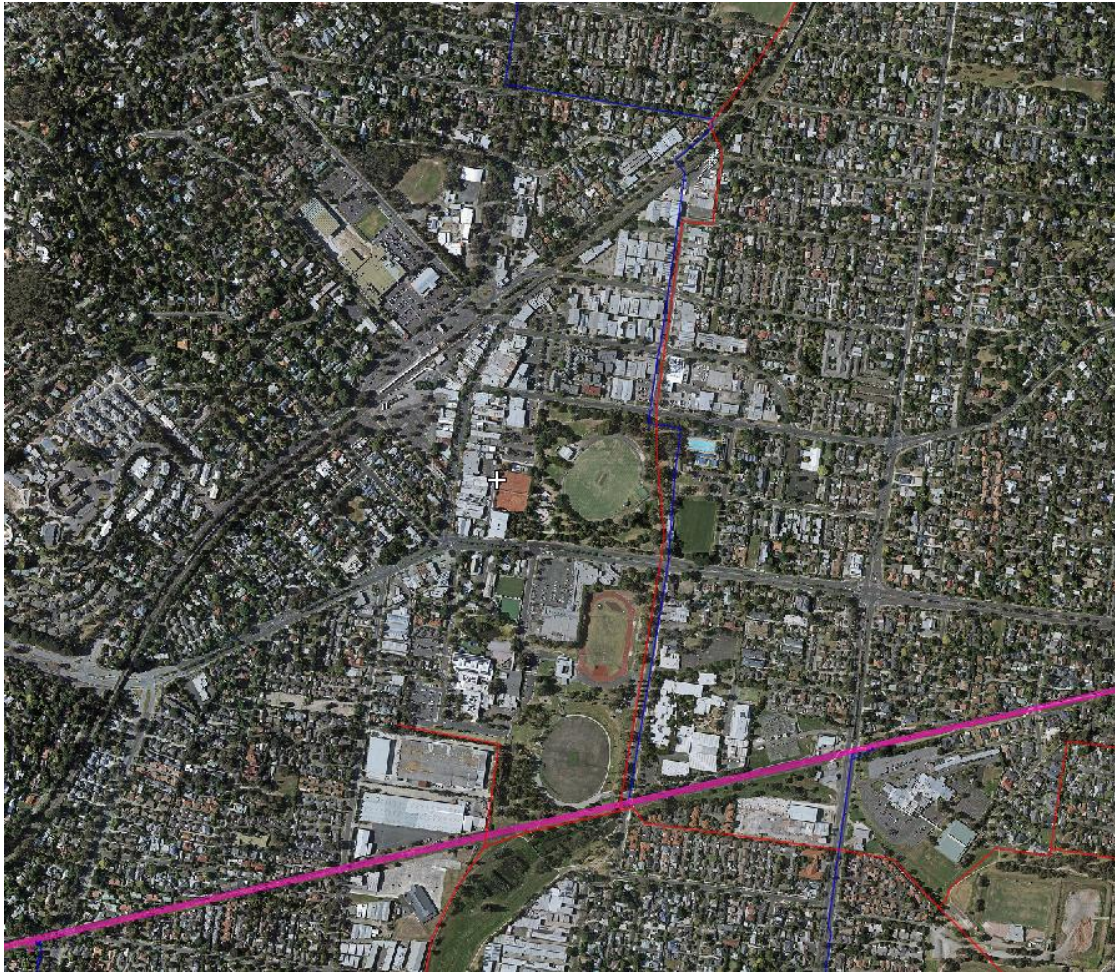
Status: The Reimagining the Tarralla Creek Project will incrementally naturalise the creek beginning with the construction of a new wetland.

Olinda - Mitcham water main (O'Shannassy Viaduct)

Status: The Olinda-Mitcham water supply main is in poor condition. There are plans to renew this water main between 2021 and 2026. The aim is to renew this water supply asset in conjunction with the drainage and waterway works planned in the area.



Map 4: Water and sewer mains.



Source: Supplied by Yarra Valley Water.

Note: The red lines are major sewer mains which would be appropriate for sewer mining and blue are major potable water mains. The pink are the major water transfer pipes owned and managed by Melbourne water.

Infrastructure Type: Open Space, Sport and Recreation	
State of play:	Sport and recreation facilities are clustered within two significant public open spaces within the study area. The open spaces offer a mix of facilities for formal sport, unstructured sport, informal leisure and social activities. Croydon Park • Croydon Memorial Pool • An oval and pavilion (cricket and football) • A tennis courts and club house • A gridiron field and pavilion • A skate park and parkour space (X Space) • 2 playgrounds (Y Space and Rotary) Town Park • An athletic field and a pavilion (athletics, football and cricket) • An oval (cricket and football) • A playground • Aquahub Aquatic and Leisure Centre • Bowls greens and clubhouse These spaces are complimented by the public space of Croydon Town Square and the pocket outdoor recreation spaces of Stuart Reserve and Lacey Reserve 1. Although outside the study area boundary, Silcock Reserve contains sport and recreation facilities that are highly utilised by the Croydon community. Silcock Reserve • 2 ovals and a pavilion • 4 soccer fields • A dog park
Evidence base:	Technical information supplied by Sport, Recreation and Events and Maroondah Leisure.

Certainty of Evidence	High	Finding Croydon households have good access to a diversity of pools, sport and recreation options within and nearby the centre. The number of pools, sport, recreation and playground facilities provide adequate capacity for most sports, recreation and social activities. The exception is the growth in female sport, especially soccer, cricket and AFL. Congestion and overuse of fields is having detrimental impact on ground maintenance and sporting experience for players. Additional soccer and hockey facilities required to address the shortfall. Aquahub's will need to cater for growth in aquatic and group exercise programs. Good program management will be vital to achieving the right balance for groups, members and general public. The X and Y spaces are an excellent playground and skate park. They provide a variety of activities for diverse age groups. X and Y spaces will continue to serve the community well over the next 10 years. Whilst the provision of facilities is adequate, the supporting amenities such as pavilions and lighting are not at a sufficient standard to meet future demand and purposes. The majority of sport field and pavilions are ageing and upgrades within the next 10 years are necessary to comply with State Sporting Authorities Standards. Likewise, urgent upgrades of Aquahub's stadium area and a dry side roof replacement are necessary for the recreation centre to continue to be a premier venue and remain competitive in the sport and recreation market. The Croydon Memorial Pool is in a good condition and will continues to serve the community well during summer. The Rotary playground in Croydon Park and Town Park playground are candidates for renewal. Smaller backyards and more apartments will place pressure on the existing open space and recreation facilities. To sustain good access and prevent overcrowding, it will be necessary for a nexus to be reached between residential developments making provision for public opens space, as well as being complemented by the existing well located public open space, sport and recreation facilities.
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Performance and Capacity					
Access	Good	A good diversity of sporting and recreation facilities exist within the precinct. Most people access sporting fields, pools and recreation centres by car. The sporting fields, pools and recreation centres are short walks from bus and train services. Parking is at highest demand at Aquahub at 8:30 - 10 am and 3 - 6 pm Weekend parking at Town Park, Croydon Park and Silcock Reserve are near capacity. Necessitating investigation into appropriate car parking management solutions to boost capacity.	Cost	Appropriate	Sporting club and recreation centre membership costs are affordable for the majority of people living in Croydon. Aquahub entry fees and memberships have gradually increased over last 3 years. Prices and memberships to remain stable over next 3 years. The costs of sport pavilions and fields management will be passed on to clubs, causing membership fees increases over the next 10 years. Organised sport with higher membership fees will become cost prohibitive for a larger proportion of the community. Consequently, potential for the redirection and growth in non-formal recreation and sports.

Picture 1: Croydon Town Square



Quality	Poor - sport fields, pavilions and playgrounds, with a few exceptions. Good to poor (depending on the area)- Aquahub Good - Croydon Memorial pool	The majority of fields, playgrounds and facilities are old and aren't DDA compliant. Those facilities that are in good or adequate condition are: • the athletics track • Fred Geale oval • Springfield pitch • 4 tennis courts • X and Y spaces. Major upgrades within the next 10 years to be compliant with state sporting organisational guidelines for female friendly sports. Upgrade of all sport field lighting to meet Australian standards, except the Athletics track. The building condition of Aquahub is variable due to different ages of sections. The newer pool, group fitness and gym areas are good. The stadium is poor with cracks in walls and floor rippled and bubbling. The roof over the dry side area is poor. A new roof is necessary. The Croydon Memorial Pool is in a good condition. The ageing plant room causes issues with ongoing pool maintenance.	Capacity	Adequate - sport fields, pavilions and playgrounds. Adequate - Aquahub Good - Croydon Memorial Pool	There are no under capacity issues with any of the sport fields or facilities. Soccer fields and pavilions are over capacity. The preference for 2 synthetic and 3 grass fields to meet demand. A synthetic hockey field will be necessary. Tennis has the potential to get to capacity in the next 10 years. The aquatics facilities at Aquahub meet current demand and purposes. The pools approach full capacity during weeknight program time (3:30 - 7:00 pm). Good management of program bookings for Learn to Swim, aqua classes and clubs is the key to the right balance of space for groups, members and general public. The gym and group fitness meets current demand. A gym refurbishment in last 2 years ensures that equipment and space is fit for future purposes and demand. Group fitness programs recently expanded and at capacity Croydon Memorial pool has sessional summer demand. The pool will continue to meet demand, except on the hottest of summer days.
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Challenges		Opportunities	
Considerable investment required to upgrade facilities to meet DDA and state sporting organisation standards.	0 - 10	Resurfacing of sport field, upgraded lighting and creating female friendly pavilions will create additional capacity.	0 -10
Damage and wear on facilities from congested and over use from growth of female sport and ground fixturing, especially in soccer, AFL and cricket.	0 - 5	Review the playgrounds in within precinct and develop a strategic approach to playground renewal.	0 -5
Demand on open space for organised and passive recreation space will increase as backyards shrink and apartments style living becomes prevalent.	5 -10	Shared use agreements to use facilities owned by other government authorities or non-government agencies.	5 - 10

Picture 2: Aquahub



Property of Interest

Croydon Town Park and Community precinct south of Mt Dandenong Road.

Status: The Croydon Community Precinct Project will renew and integrate a wide range of sport, recreation, fitness, health and wellbeing activities in multipurpose facilities and spaces.

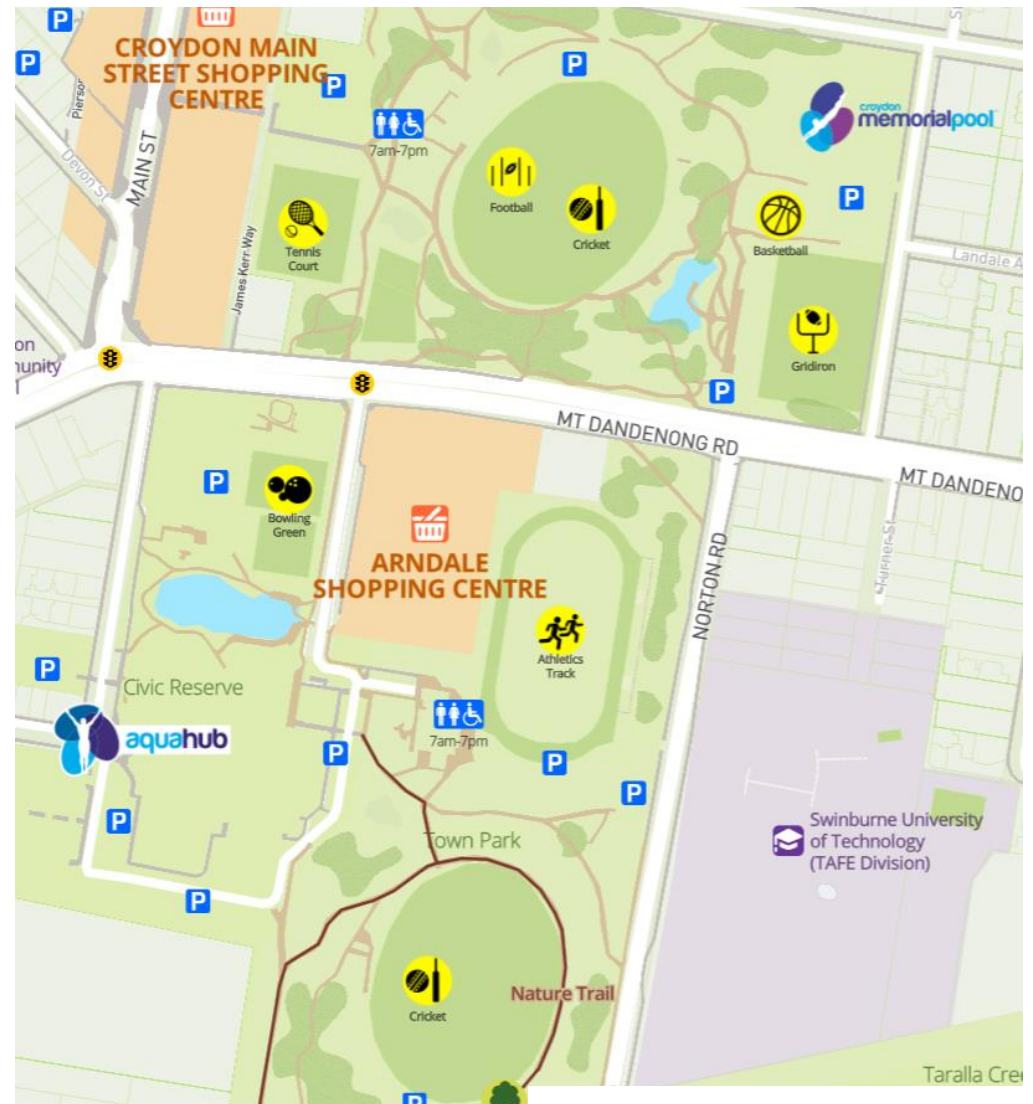
Silcock Reserve

Status: Reconstruction of two ovals, sport field lighting and pavilion upgrade in 2020 - 2021.

Aquahub

Status: Recently completed pool maintenance in 2019. Replacement of dry side roof and group fitness refurbishments in next 2 years.

Map 5: Pool, sport and recreation facilities



Source: Maroondah Interactive Map

Infrastructure Type: Education (Early years, Schools and Tertiary)	
State of Play:	Early years services are provided by the following public and private facilities within the study area. • 2 kindergartens • 5 early learning centres • 2 occasional care Croydon Primary School and Melba Secondary Collage are the designated neighbourhood schools for the precinct. Households may choose to send their children to Ainslie Parklands, Dorset and Ruskin Park Primary. Household may choose to send children to complete secondary school with catholic and independent schools. The Croydon Community School is a specialist school operating within the precinct. Swinburne University of Technology operates the Croydon Campus within the precinct. Croydon campus focuses on trades training, as well as youth programs, such as pre-apprenticeships and the Victorian Certificate of Applied Learning. Students from Croydon that choose to study close to home will favour Deakin University, Box Hill Institute, Holmesglen Institute or Monash University.
Evidence base:	Victorian Auditor - General's Report: Managing School Infrastructure May 2017 Victorian Department of Education Victorian Schools and Enrolment data. Victorian Department of Education and Training: Strategic Plan 2019 - 2023 Victorian School Building Authority website. Victorian Department of Education and Training My School website. Australian Department of Education and Training Childcare Finder website. Service Needs Analysis for Council-Owned Infrastructure for Children, Young People and Families 2019. Technical information supplied from Maternal and Child Health.

Certainty of Evidence	Medium	Finding	Households have access to a diversity of local early years and school types. Croydon is well serviced by multiple early years facilities that provide occasional and long day care. Increase demand for early years services in all forms is anticipated. Occasional and long day care enrolment growth can be accommodated by existing providers. Growth in demand for kindergarten enrolments, especially three year old, may see Council facilities struggle to provide sufficient hours. The shortfall maybe accommodated by independent providers. The school capacity places no constraints on growth. The designated neighbourhood schools zoning will be updated and built facilities augmented to respond to anticipated growth.		
Performance and Capacity					
Access	Good - early years and schooling Poor - tertiary	Households have a choice of a variety of early years, primary and secondary schools within a short journey. DET Placement Policy requires schools to prioritise enrolment for students living in that school zone. Depending on the course access to tertiary studies does have to be accessed further afield often with long commutes. Early years services are easily accessible.	Cost	High - child care Low -schools	Family’s receive funding support for 3 and 4 year old kindergarten hours. Average cost per a day for childcare services in Croydon is approximately \$100. State primary school fees are approximately \$400. State secondary school fees range from \$750 - \$950 depending on year level. Schools can offer discounted fees for families with two or more students. Free TAFE courses for priority skills areas and apprenticeship pathways.

Quality	Adequate	A third of kindergarten require significant work to be fit for current and future services. State school class sizes range between 22 to 25 students. The range is on par or slightly higher than the state average of 22 for class sizes. Variable quality of school facilities because of differences in maintenance and pass of upgrades to modernise.	Capacity	Adequate - childcare Poor - kindergarten Good - schools	Increased funding for 3 year old kindergarten will double the number of service hours for kindergartens. The department works closely with schools to address changing demographics and community needs. School zoning is updated and built capacity augmented with relocatable buildings to plan and manage enrolment growth and pressures.
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Challenges		Opportunities	
Variable quality of school education facilities. Funding limitations causes maintenance backlog and postponement of essential repairs.	0 -5	New models of higher density school construction and co-location with parks and shared community facilities to resolve issue of public land availability.	5 - 10
Limited local tertiary education services and facilities.	0 - 10	Improved joint planning with local councils to strategically collaborate on co-planned education facilities and timing for delivery.	0 -10

Property of Interest

Former Croydon Secondary School

Status: The site is decommissioned.

Croydon Primary

Status: Upgrade with the completion on new school hall and learning facilities.

Croydon Community School

Status: Commenced master planning for the rejuvenation of facilities.

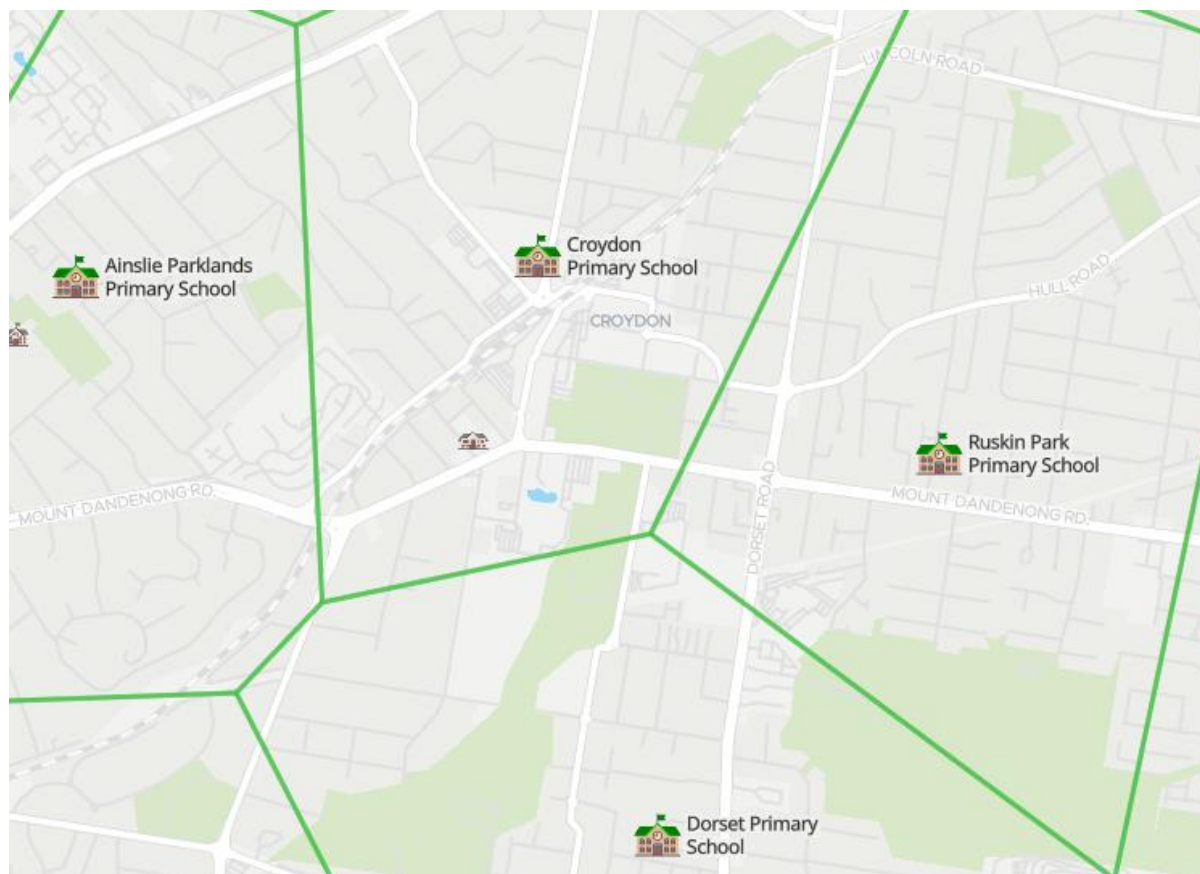
Swinburne Tafe - Croydon Campus.

Status: Swinburne has been undertaking a series of building works to upgrade the facilities of the campus.

Picture 3: Croydon Primary School

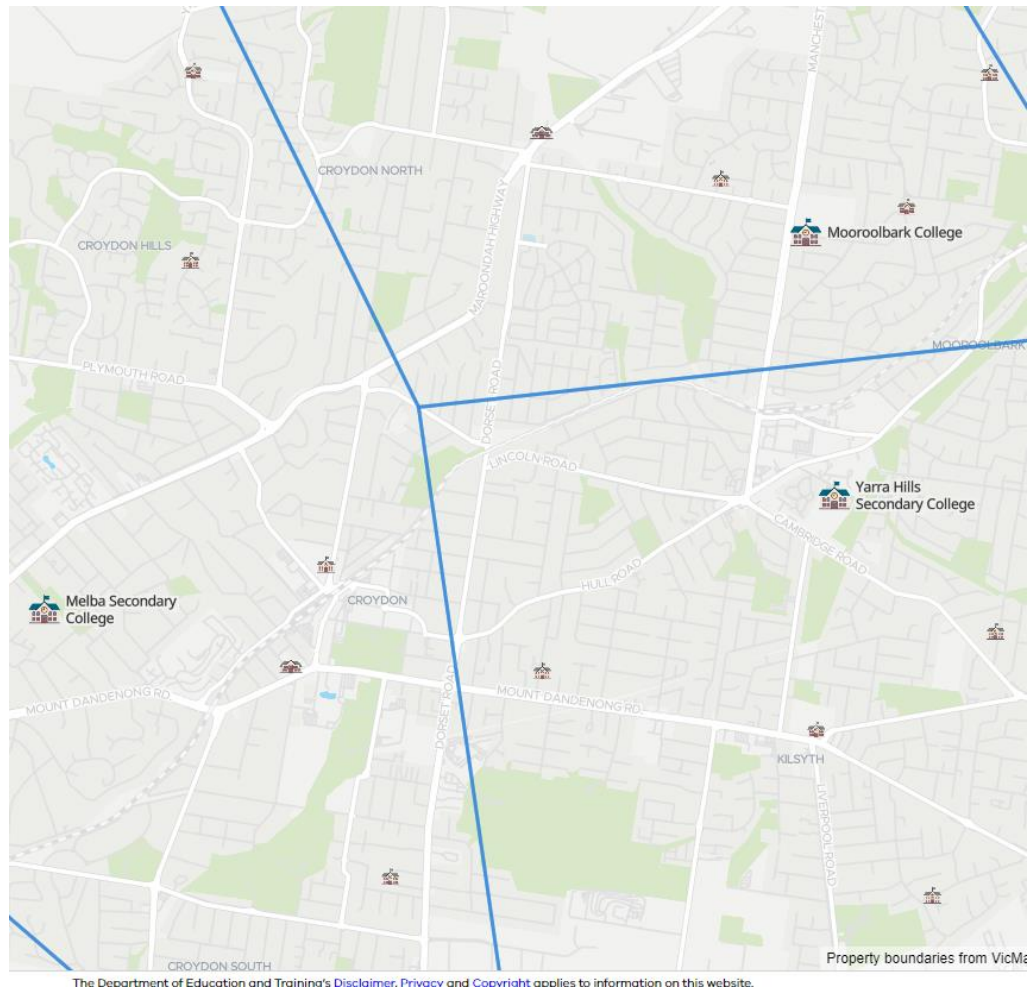


Map 6: Primary School Zones



Source: Department of Education and Training: My Schools Website - accessed on 31 December 2019.

Map 7: Secondary School Zones



Source: Department of Education and Training: My Schools Website - accessed on 31 December 2019.

Infrastructure Type: Medical and Health			
State of play:	Households can access medical and health services locally at numerous public and private facilities. The precinct is within the Maroondah Hospital catchment. The hospital complex provides the emergency, general and specialist surgery, mental health and allied health services. Households may also access Ringwood Private Hospital for generalist and specialist medical services, surgery and palliative care. Within the precinct medical and health services are provided by: • 2 maternal & child health centres • 2 medical clinics • 6 dentists • 5 pharmacies • 2 residential aged care facilities • 11 allied health services, including eye, ears, pathology, radiology, counselling, psychology, maternal and Child health. Medical and health care for animals is provided by a veteran clinic.		
Evidence base:	Infrastructure Provision in Different Development Settings: Volume 1 & 2 Technical Paper Australian Infrastructure Audit 2019 Eastern Health Annual Report 2018 -2019 Eastern Health 2022 - The Strategic Clinical Service Plan Eastern Health Strategic Plan 2017 - 2022 Australian Institute of Health and Welfare: My Hospital Website - accessed on 31/12/2019 Service Needs Analysis for Council-Owned Infrastructure for Children, Young People and Families 2019.		
Certainty of Evidence	Medium	Findings	Medical and allied health facilities and services are incrementally expanding to meet future growth in demand. The Croydon maternal and child health centres are candidates for upgrading. The Croydon MCH centres are likely to be inadequate to address forecast enrolments associated and future purposes. Through the public and private health care facilities households can access and connect to a full range of care.

Performance and Capacity					
Access	Good	Through the public and private health care services households can access and connect to a full range of care and support they need. Waiting times for allied services and elective surgery are increasing.	Cost	Appropriate	Public health care is free to all Australian citizens and most permanent residents. Affordability of specialist services and medication has decreased, particularly for low income households.
Quality	Good	Quality of health and age care has improved. The conditions of maternal and child health centres are excellent and quality of service is high.	Capacity	Adequate	Minor changes required to enable medical and health care facilities and services to continue to meet its current and future purpose. Additional 300 maternal and child health services hours will be required at Croydon centres to respond to the anticipated enrolment demand.
Challenges			Opportunities		
Ageing population and more complex health needs increase the volumes of people accessing treatment, surgery and specialist care.		0-5	New healthcare service models that improve in-home and preventive care can reduce hospitalisations.		0-5
Higher instances of preventable illness are placing pressure on health services, especially during winter.		0- 5	Renewal of areas within the precinct is an opportunity to co-locate medical and allied health services in a health hub.		0-10
The ageing maternal and child health facilities are inadequate to meet current service standards.		0 - 5	Additional maternal and child health capacity may be created through adjustments to the current service model.		0 - 5

Property of Interest
Croydon Central Maternal and Child Health Centre and Croydon Cottage Maternal and Child Health Drop-in Centre. New Facilities: The Croydon Community Precinct Project will incorporate new maternal and child health facilities.

Picture 4: Croydon Cottage Maternal and Child Health Drop-in Centre



Infrastructure Type: Emergency Services (Police, Fire, Ambulance and SES)			
State of play:	Emergency services facilities and infrastructure are established. Police services operate from the Croydon Police Station. Services are supplemented by division level services, such as highway patrol. Protective Services Officers (PSO) also operate from 6 pm, every evening at Croydon Railway Station. The closest fire services operate from Croydon (MFB) Fire Station on the corner of Dorset Road and Mt Dandenong Road. Ambulance services operate from Ringwood East Ambulance Station on Mt Dandenong Road. Emergency Medical Response (EMR) services are supplemented by the Metropolitan Fire Brigade. Victorian State Emergency Services (VICSES) operates from the Croydon depot on Lincoln Road. Coordinated emergency responses procedures are governed by the Central Regional Emergency Plans.		
Evidence base:	Ambulance Victoria Strategic Plan 2017 - 2022 Victoria State Emergency Services: Annual Report 2018 -2019 Victoria State Emergency Services: Strategic Plan 2018 - 2022 Victoria State Emergency Services: Service Delivery Strategy 2015 - 2025 Victoria State Emergency Services: Operational Capability Strategy 2017 -2020 Victoria Police: Annual Report 2018 -2019 Victoria Police Capability Plan 2016 -2025 Metropolitan Fire Brigade: Annual Report 2018 - 2019 MFB Plan 2019 -2020 Report on Government Services: Justice Report on Government Services: Emergency management		
Certainty of Evidence	High	Finding	High operational preparedness across all emergency services ensures that households and business receive timely, coordinated and appropriate response, assistance and support to incidents. Emergency services places no constraints on growth.

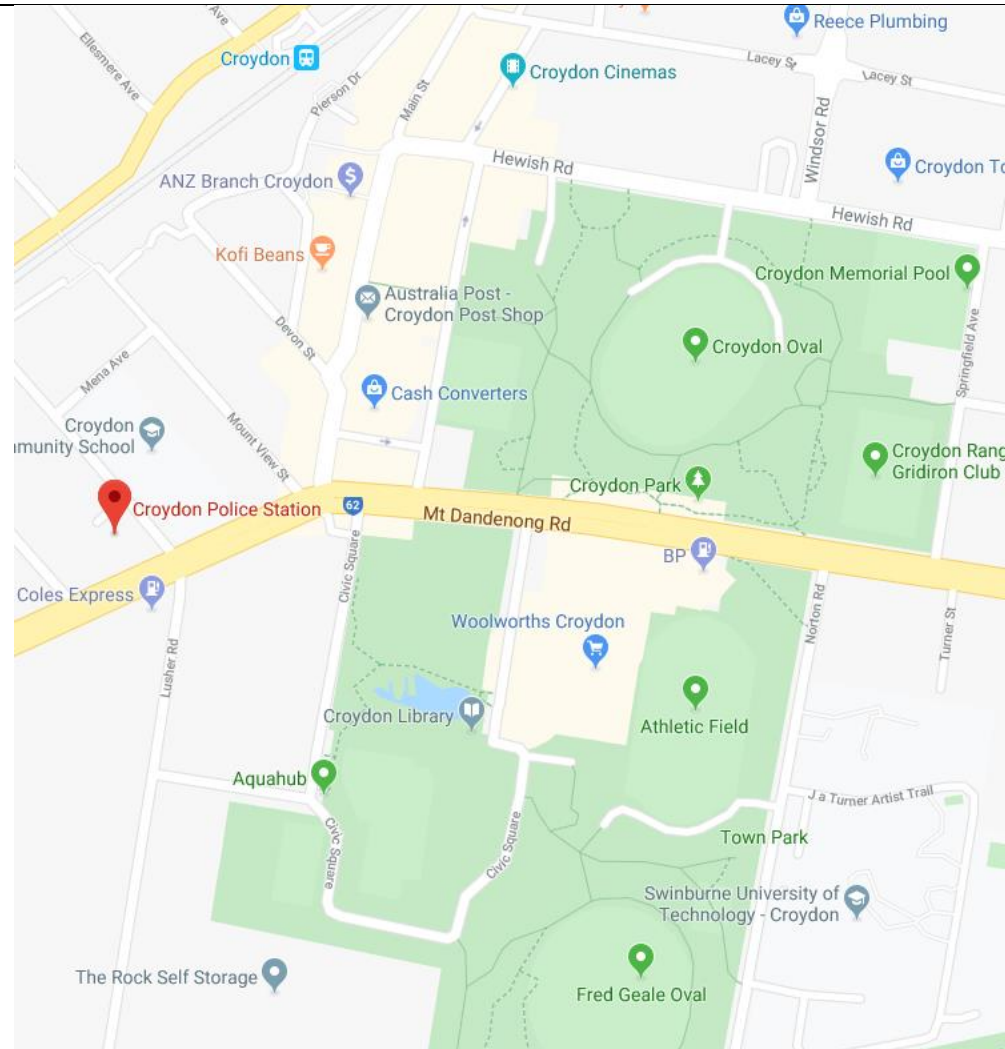
Performance and Capacity					
Access	Very Good	Proximity to nearby stations means incident response within Croydon are quick. New police assistance line provides new channel for people to report non-urgent incidents.	Cost	Low	Fire, police and SES services are subsidised by government. Ambulance fees are high. Ambulance membership is affordable and provides free ambulance services. Some health insurances cover the costs of ambulances.
Quality	Very Good	High quality incident response and care is ensured by expert training, advanced equipment and vehicles.	Capacity	Very Good	All emergency services have high operational preparedness to meet its current and future purpose.

Challenges		Opportunities	
Aging population and more complex health needs increase in health emergencies.	0 - 5	Deploy emerging technology to access better patient information or receive real-time updates, support or advice during an emergency.	0 - 5
Increase in medium to major incidents including unprecedented emergencies are testing emergency response services.	0 - 5	The changing nature of crime and incident response provides opportunity to improve coordination across sectors with joint managed facilities and programs.	0 - 5

Property of Interest

Police Station - 171 - 175 Mt
Dandenong Road

Status: Victoria Police have no
planned changes for the station.



Source: Google Maps

Infrastructure Type: Community Centres			
State of play:	The community facilities within the precinct are: • A youth venue (EV Centre) • 4 Community halls • 2 Scout Halls • A library • A Senior Citizen Centre • A Return Service League Most of the facilities are clustered in the civic and recreation hub situated south of Mt Dandenong Road. Council provides generalist youth service provided by at the EV Centre. Independent providers offer specific youth focused support services or youth activity programs at the EV Centres, Scout halls, community halls and other venues in Croydon. Library services in Maroondah are delivered by the Eastern Regional Libraries Corporation (ERLC). The Croydon library offer a wide variety of print, audio and video materials, internet access, a business information collection, book clubs, pre-school story times for young children, and a range of fun literacy and reading related activities for school-aged children. Community halls, Scout halls and the Senior Citizen Centres are used regularly by community groups for a diversity of activities. They are facilities for creativity, community connection, collaboration and dynamic learning.		
Evidence base:	Service Needs Analysis for Council-Owned Infrastructure for Children, Young People and Families 2019. Technical information supplied from Youth and Children's Services and Karralyka Centre.		
Certainty of Evidence	High	Findings	The Croydon area is expected to experience significant growth in people aged 10 - 25 years cohort. The existing EV centre has the capacity to meet future demand. Croydon Library is a convenient and well-used facility. The existing building is in good condition. Community and scout halls are regularly used by community groups. They are regularly utilised in the evenings. Croydon Library, EV Centre, Senior Citizen Centre and community halls will be redeveloped as part of the Croydon Community Precinct. The future service purposes for these important community facilities are being considered in the precincts planning. The new facilities will be adaptively designed to be fit for future purposes.

Performance and Capacity					
Access	Very Good	EV Centre is convenient for youth coming from Croydon area. Croydon Library and community halls are convenient for people living in the Croydon Area.	Cost	Low	Programs offered at the EV Centre are free services. Services offered at libraries are offer free or low cost. Community halls hired is kept at affordable rates for the community.
Quality	Very Good, Good, Adequate, Poor	The EV centre is regularly used for high quality programs. Its immense size and inflexible layout limits suitability for smaller activations and programs. Croydon Library asset condition is good and service provided are high quality.	Capacity	Good	The EV centre has a high occupation capacity that can accommodate growth. Croydon Library is very well utilised by the community and approaching capacity. Community and Scout halls are regularly used by community groups. The halls are often available during the day.

Challenges		Opportunities	
Cost associated with maintaining and updating ageing stand-alone community facilities.	0 - 5	Co-location of compatible activities, enterprises and community groups in multipurpose venues.	0 - 10
Ongoing costs for expanding service provision to respond to growth in demand and higher expectations.	0 - 10	Reform operational service model to increase effectiveness, efficiency and sustainability of the service.	0 - 5
		Creation of integrated service hubs to cluster complimentary services in the one location to aid seamless referrals of clients.	0 - 10

Property of Interest
New Facilities: The Croydon Library, EV Centre, Senior Citizens Centre, Croydon RSL and Keystone Hall are identified for redevelopment within the Croydon Community Precinct Project.

Picture 5: Keystone Hall



Map 8: Map of the key features of Croydon Town Centre including the community centres.

Key Features of the Croydon Town Centre and the Surrounding Area

Legend

-  Bus Interchange
-  Train Stations
-  Bus Routes
-  Bicycle Paths

Key Features

- | Id | Name |
|----|---|
| 1 | Croydon Central Shopping Centre |
| 2 | Croydon Town Square |
| 3 | Croydon Main Street Shopping Centre |
| 4 | Arndale Shopping Centre |
| 5 | Croydon Primary School |
| 6 | Silcock Reserve |
| 7 | Sacred Heart Primary School |
| 8 | Croydon Park |
| 9 | Memorial Pool |
| 10 | X and Y Space |
| 11 | Swinburne University of Technology - TAFE |
| 12 | Athletics Track |
| 13 | Town Park |
| 14 | Aquahub |
| 15 | Croydon Library |
| 16 | EV's Youth Centre |
| 17 | Keystone Hall |
| 18 | Croydon Community School |
| 19 | Police Station |
| 20 | Wyreena |
| 21 | Dorset Recreation Reserve |
| 22 | Eastfield Park |
| 23 | Croydon Wetlands |
| 24 | Croydon Maternal and Childrens Health |
| 25 | Croydon Central Kindergarten |
| 26 | Croydon Returned and Services League |
| 27 | Maroondah Occasional Care |
| 28 | Fire Station |
| 29 | St John Ambulance |

Created: 9 September 2019



Infrastructure Type: Waste and Recycling			
State of play:	Kerb side waste disposal and recycling is an established services. Waste collection is under contract with J.J. Richard and Sons. It is a three-bin waste system. Processing contracts are in place for the processing of materials. Two hard waste collections can be annually booked by households. Businesses and apartments may have individual private collection service contracts. General waste and recycling bins are provided within public spaces.		
Evidence base:	Infrastructure Victoria: Recycling and Resource Recovery Infrastructure: Evidence Base Report October 2019 Technical information supplied from Waste Management.		
Certainty of Evidence	High	Finding:	Half of the Croydon businesses have private collection service. Currently there is only a small number of private collection for apartments. There are no service gaps for collection within the precinct. Food and garden organics collection services to be provide to residential households by 2027. Glass only collection services to follow in 2030. Tenders and contract will be developed in the 2 to 3 years to incorporate these collection service adjustments. Household waste collection charge will rise in response to anticipated increases in landfill, recycling and food organics rates. Waste disposal, recycling and collection industry can accommodate anticipated future demand. It places no constraints on growth.

Performance and Capacity					
Access	Very Good	General waste, recycling and garden organics bins are provided to all households and some businesses. Households receive bins within 24 hours of request. The existing street network enables access for the waste collection. High density apartments and business are required to have private waste collections.	Cost	Appropriate	The residential waste collection charge is \$324. Discount applies for smaller bins. Extra fee for additional bins. Anticipated increases in landfill, recycling and food organics costs will inflate the waste collection rates.
Quality	Very Good	Completed replacement of general waste recycle and cigarette butt bins within the public realm in 2019. Bins have an anticipated asset life of ten years. The collection requirements set by contract. Council monitors aspects of service delivery to ensure high service performance.	Capacity	Adequate	Collection service contracts are set to always operate at capacity. Flexible contracts allow the expansion of collection services to respond to growth waste disposal. Service planning and model adjustments for glass only, food and garden organics collection introductions, in response to Recycling Victoria Policy. Local government working with State Government on future alternative waste treatment facility for landfill waste.

Challenges		Opportunities	
Inconsistency and vulnerability in waste and recycling sector placed under pressure by global waste export limitations.	0 -10	Food recovery with garden organics for households and food related business via the green bin.	0 - 5
Waste disposal and service costs associated with transference to alternative waste systems.	0 - 15	Expansion of circular economy in the waste disposal industry, local business and community to grow domestic use of recycling products markets. Move to change.	0- 10
Graffiti and vandalism of bins in public spaces.	0 - 5	Return of container deposit schemes to Victoria.	0 - 5
Food organics banded from general waste collection.	0- 5	Introduction of smart bin systems and on demand waste pick up can improve collection efficiencies based on tracking of bin levels.	0 -5
Poorly applied and maintained collection site on private land. The build-up of litter creates amenity and ascetics issues.	0 -5		
Property of Interest			
No properties within the study area are used by waste or recycling industry.			

Key Findings

The sector profiles have provided the evidences to understand the degree infrastructure networks can support future development, activation and major projects within the Croydon Major Activity Centre over the next 10 years. The profiles have identified the potential impacts of infrastructure networks on permitting the precinct to function as a priority growth area.

This section sets out the key findings as they relate to land use, open space and recreation facilities and community and social services.

Land use

- Electricity, water and sewerage distribution networks provide total coverage of the precinct. Supply is sufficient for current and anticipated future growth. The infrastructure is fit for purpose and places no constraints on intensified dwelling connections.
- Gas distribution networks provide total coverage of the precinct. Potential for curtailment of gas supply after 2023 may influence households to relinquish gas connections and new developments to avoid gas connection. New high pressure main and pipeline systems that runs in parallel to existing low-pressure system with service new developments.
- Coverage and access to digital telecommunications network is adequate. The 5G network can resolve broadband speeds limitations provide benefits for businesses productivity and household connection. Improved reliability and speed of the digital network can support the connected urban environments necessary for the introduction of smart infrastructure.
- Coverage and access to emergency services is excellent and places no limits on growth. The service model is prepared to respond to higher demands of an aging population.
- Waste disposal, recycling and collection industry can accommodate existing and future demand. The entire precinct has good access to waste collection services, either by Council or private companies. Introduction of glass only, food and garden organics in 2030 and 2027, will see adjustments to collection services and impact on bin storage and placement.
- Infill development opportunity with the former Croydon Secondary Collage site. A timeframe estimate for the rezoning to a mixed open space and medium density residential development would assist precinct planning.
- Fit for future purpose utility infrastructure and reliable supply enables additional development beyond the set 2006 precinct boundaries.
- Continuation of parcels of land used for utilities infrastructure facilities limits potential rezoning opportunities to support new development.
- Increase in population and dwelling density and diversity is likely to support continued growth in retail, entertainment and office development.
- A development timeline and scale of Arndale Shopping centre is an unknown. Potential may exist for a moderate mixed used development.

Open Space, sport and recreation

- Access to a good diversity of pools, sport and recreation options within and nearby the centre.
- Demand on open space for organised and passive recreation space will increase as backyards shrink and apartments style living prevalent.
- The majority of sport field and pavilions are ageing. They will require considerable upgrades within the next 10 year to comply with State Sporting Organisation Standards.
- Aquahub's stadium area and a dry side roof replacement are necessary for the recreation centre to continue to be a premier venue and remain competitive in the sport and recreation market.
- The Croydon Memorial Pool is in a good condition and will continues to serve the community well in summer.
- Sport fields and facilities are strained by pressure from the growth in female sport, especially soccer, cricket and AFL. Additional soccer and hockey facilities required to address the shortfall.
- Good program management will be vital to Aquahub meeting anticipated future demand in aquatics, gym and group fitness.
- The X and Y spaces are an excellent playground and skate park. They provide a variety activities for diverse age groups. The X and Y spaces will continue to serve the community well over the next 10 years.
- The Rotary playground in Croydon Park and Town Park playground are candidates for renewal.

Community and social services

- The limitations of the existing Croydon Library, EV Centre, Senior Citizen Centre and community halls will be addressed by the redevelopment of Croydon Community Precinct. Flexible multipurpose facilities will future proof the community hubs.
- A diversity of local early years services can be accessed within the precinct.
- The precinct includes the local primary school.
- The closure of the Croydon Secondary Collage leaves the precinct without a secondary school within or near the precinct. Families can choose from a range of secondary school options available nearby. The early years services and schools have the capacity to accommodate anticipated enrolment growth.
- Swinburne University is revitalising the TAFE site and expanding courses available. Opportunities to encourage further tertiary education facilities and services within the precinct.
- Medical and allied health facilities and services are incrementally augmenting to meet future growth in demand. The Croydon maternal and child health centres are candidates for upgrading. Public and private health care facilities have the capacity to continue to provide a full range of care and support to the community.
- Increase service costs are likely to be a factor in a retraction in the consumption of services.

The Croydon precinct is in a favourable position to leverage the capacity in the infrastructure networks to sustain growth, attract investment and support the transformation of the precinct. Enhancements to community spaces and facilities through key projects in the planning, will assist to respond to the sport, recreation and community services challenges. The community hubs, sports area and wetlands rejuvenation bring new and existing communities together and contribute to precinct character and identity.

As Croydon evolves the infrastructure will enable a variety of appropriate development types and flexible well located spaces that support multiple ways to live, work and interact.

Next Steps

The next step is to consider the study's findings alongside those of the other specific infrastructure networks studies. These studies include;

- Stormwater Management
- Green/Blue Infrastructure
- Transport and Movement
- Built Form, Neighbourhood Character and Urban Design

Alignment and integration of the findings will give a robust and realistic understanding of the impact of demand pressures, infrastructure deficits and upgrades within the centre. The synergies across networks will become more apparent and opportunities to achieve co-beneficial outcomes evident. These infrastructure considerations will be incorporated into the issues and discussions paper for the study area.

A realistic understanding of the performance of infrastructure networks allows for coordinated land use planning and appropriate development timeframes to be worked into land use and public realm strategies for the Croydon Structure Plan.

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