

WARREN AND MAHONEY®

International Case Study Climate Emergency Solution; NARC

Northcote Aquatic and Recreation Centre



Climate Emergency

9 Key Directions

- Climate Emergency mobilisation and leadership
- Energy efficiency
- Renewable energy and fuel switching
- Zero emissions transport
- Consumption and waste minimisation
- Fossil fuel divestment
- Adaptation and resilience
- Engaging the community
- Climate Emergency Darebin



Climate Emergency Plan

Darebin Climate Emergency Plan 2017-2022 Summary

Council recognises that we are in a state of climate emergency. Unless we restore a safe climate at emergency speed, there will be dramatic and negative impacts on our community and around the world. We are already seeing more intense and frequent heatwaves, heavy rainfall and flooding, the bleaching of the Great Barrier Reef, extreme fire weather and more bushfires.

Our best hope of securing our future is to move into emergency mode. Darebin Council is committed to urgent action to make our planet safe for ourselves, our children and future generations. Council has developed this Climate Emergency Plan to work together with our community and other levels of government to restore a safe climate.

Eliminating emissions

To avert or reduce the effects of climate change, we need to stop emitting greenhouse gases and remove the excess emissions already in the atmosphere. Greenhouse gases are produced when fossil fuels are burned to create energy to power our homes and businesses, and run vehicles and machinery. Eliminating our emissions will involve: ambitious energy efficiency (decreasing the energy we use in the first place); getting our electricity from renewable sources (such as solar); moving away from gas; and moving to transport powered by renewable energy, and cycling and walking.

This is a breakdown of where our carbon emissions in Darebin are coming from:

Darebin Community Emissions 2015/16

Category	Percentage
Commercial/Industrial - Gas	7%
Waste	1%
Commercial/Industrial - Electricity	39%
Transport	18%
Residential - Electricity	23%
Residential - Gas	12%

Existing Site





CLIFTON STREET

WILMOTH STREET

VICTORIA ROAD

WARREN AND MAHONEY AVENUE

EXISTING STORMWATER PIPE

Existing Site

25m POOL

50m POOL

01

02

03

04

05

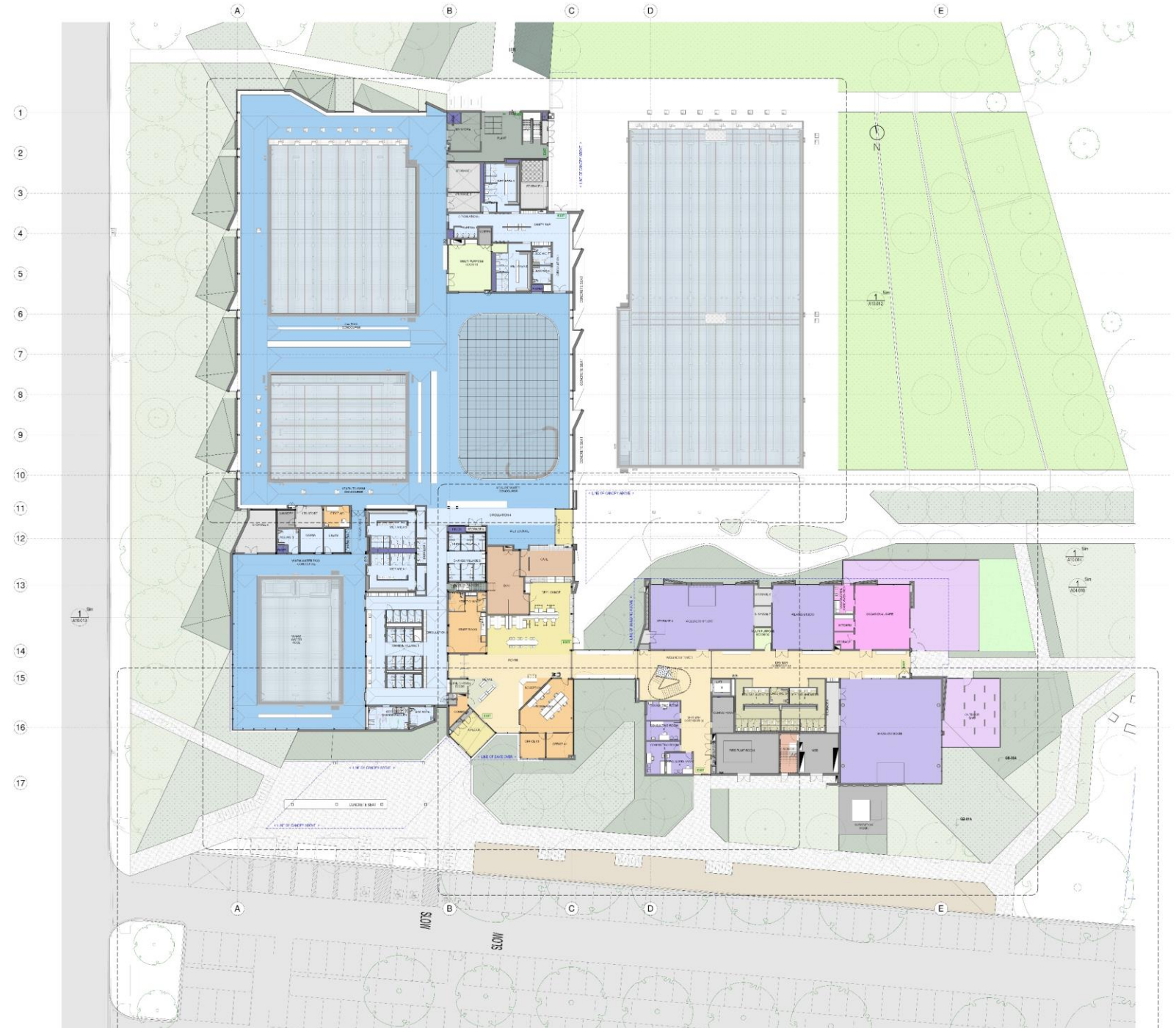
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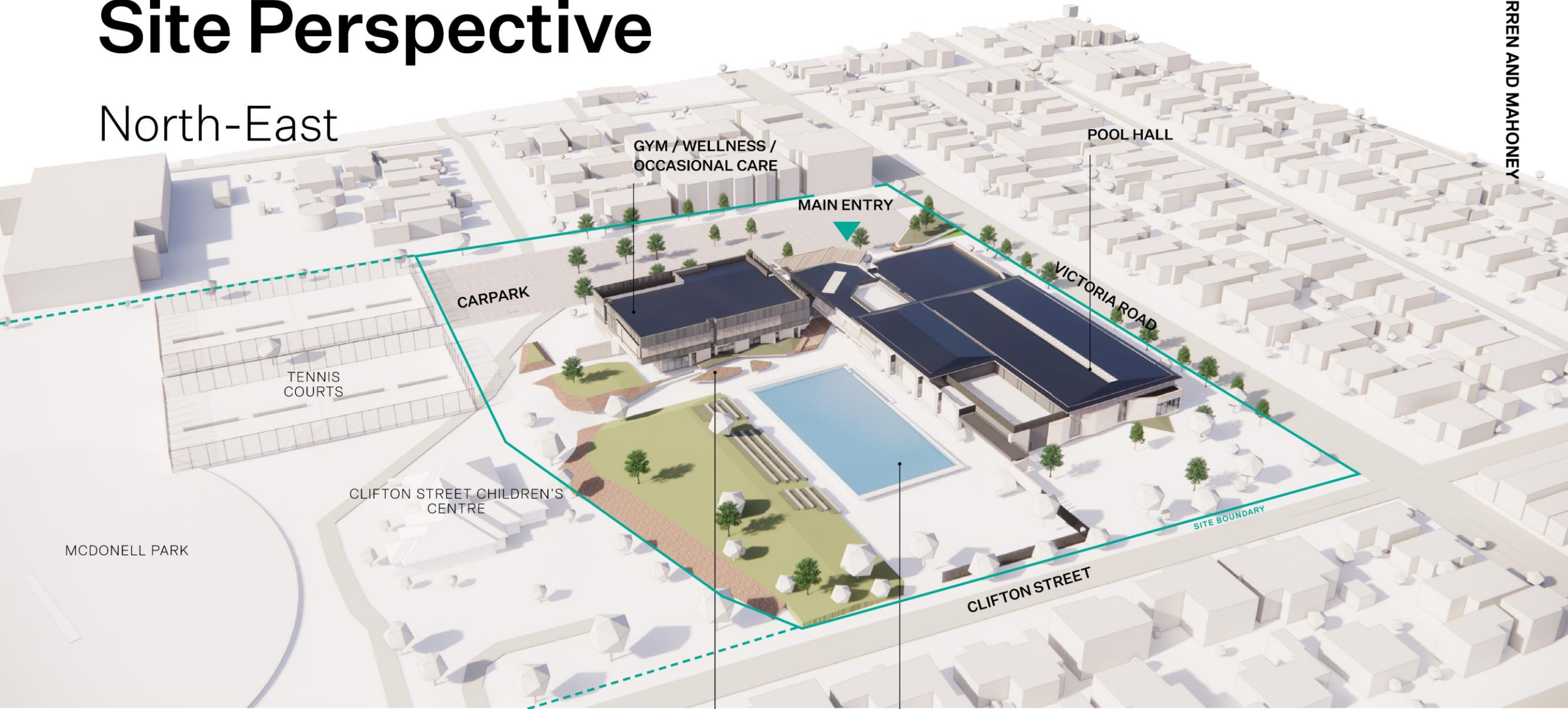
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Proposed Site Plan



Site Perspective

North-East



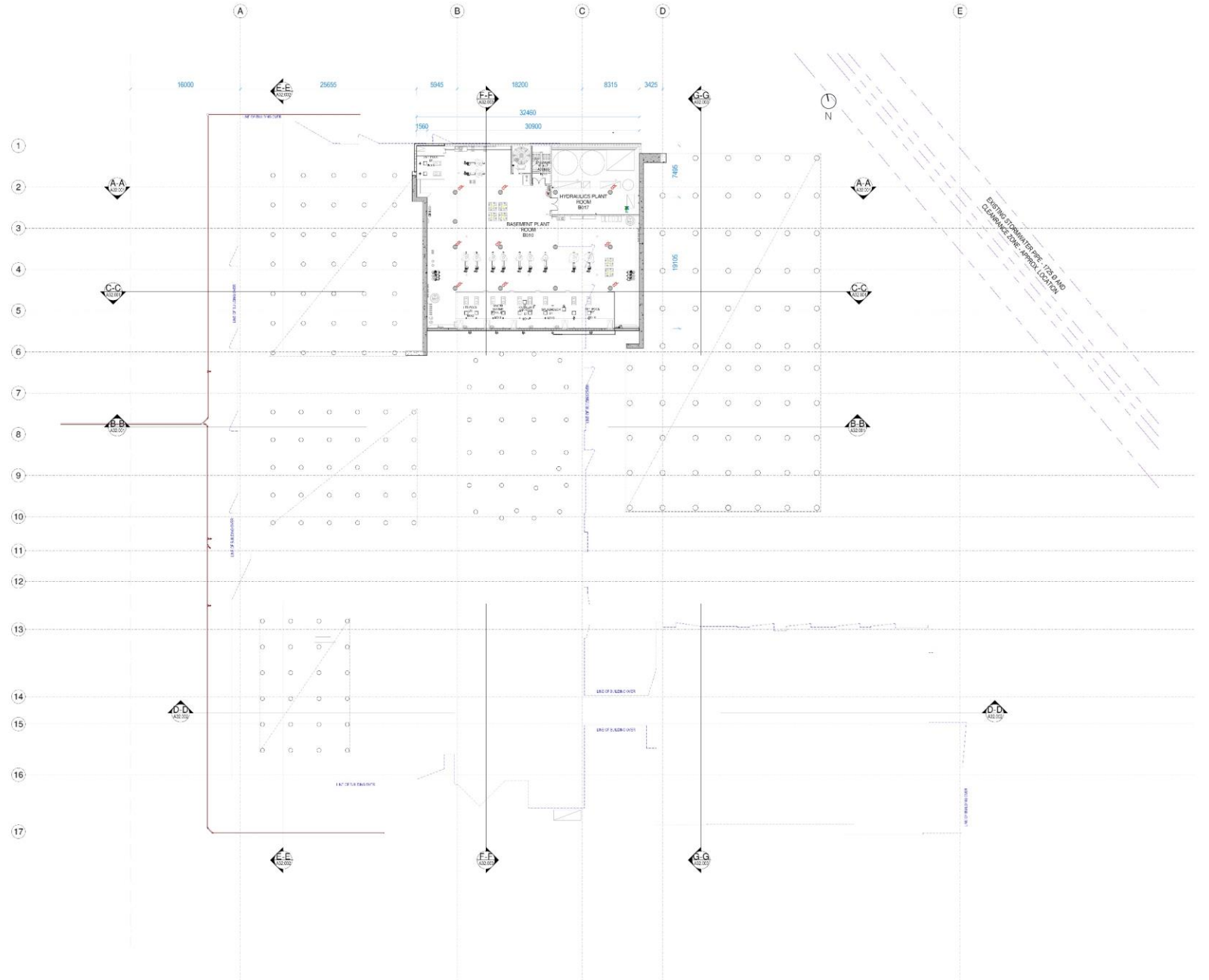
OUTDOOR SPLASH PAD

OUTDOOR POOL



NORTH

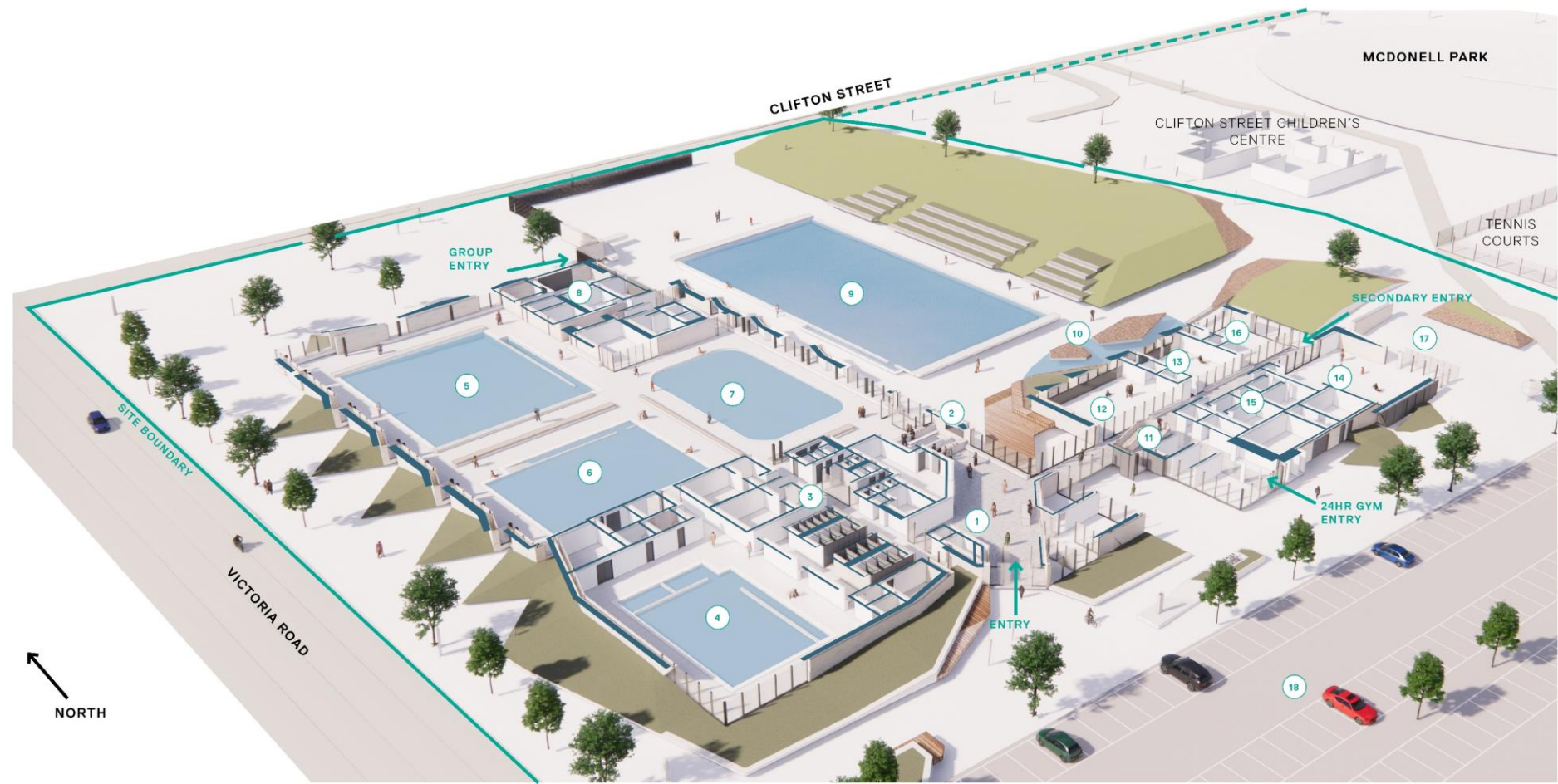
Basement Plan



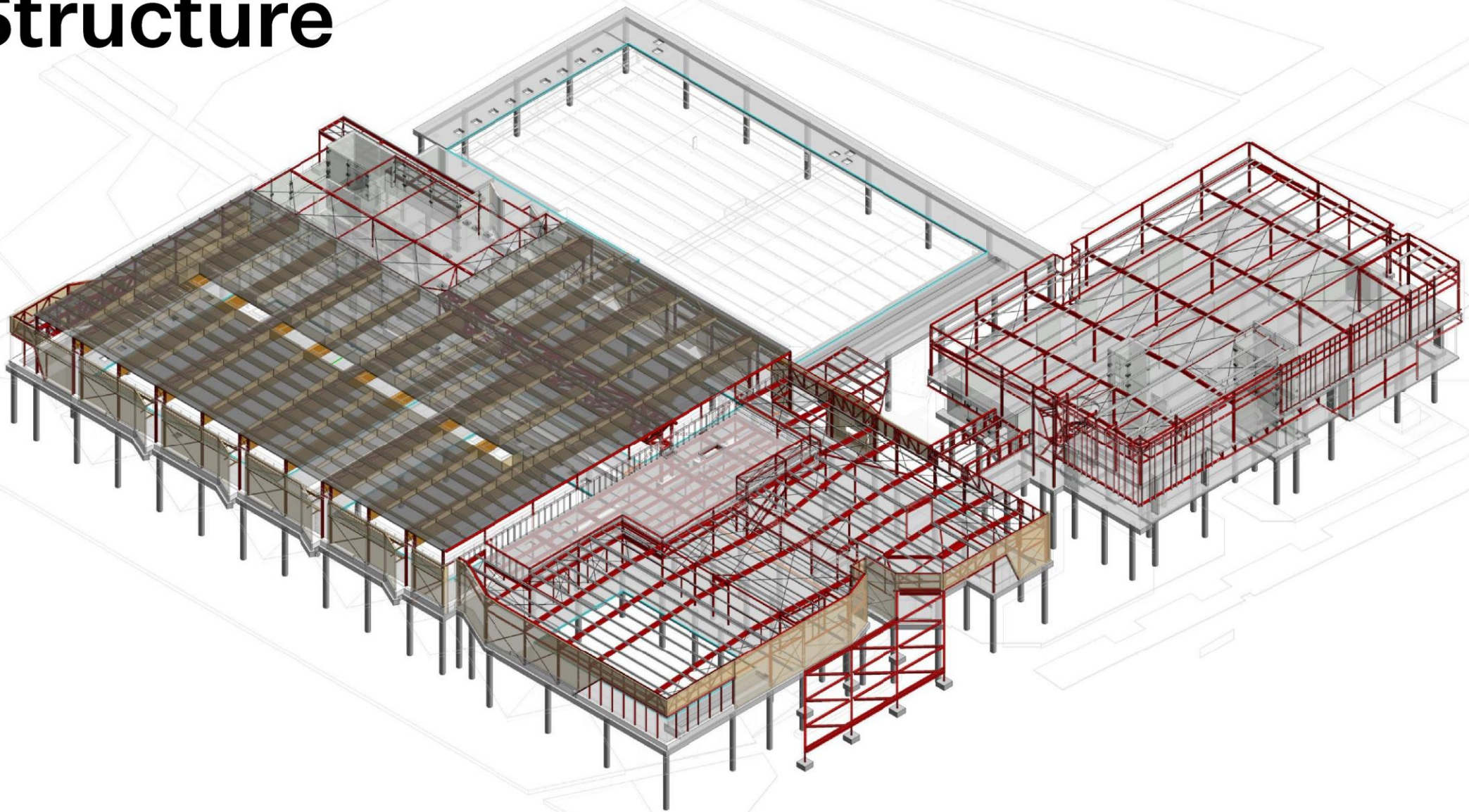
Sectional Perspective Ground Floor Plan

Key

1. Entry Foyer
2. Cafe
3. Amenities
4. Warm Water Pool
5. 25 Metre Pool
6. Learn To Swim Pool
7. Leisure/Toddler Pool
8. Services And Group Change
9. Outdoor 50 Metre Pool
10. Outdoor Splash Pad
11. Wellness Foyer
12. Wellness Studio
13. Pilates
14. Program Room
15. Amenities
16. Occasional Care
17. Outdoor Gym
18. Car Park



Structure



Is All Electric Possible?



NORTHCOTE AQUATIC
& RECREATION CENTRE

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Energy Demands



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NARC - Scope

Northcote Aquatic and Recreation Facility

POOL	SURFACE AREA	VOLUME	WATER TEMPERATURE
50m External Lap Pool	1,320m ²	2,575m ³	26-27 °C
25m Indoor Lap Pool	545m ²	900m ³	27 – 28 °C
Indoor Learn to Swim Pool (LTS)	315m ²	425m ³	32 °C
Indoor Warm Water Pool (WWP)	195m ²	305m ³	34 °C
Indoor Splash and Toddler Pool	310m ²	190m ³	32 °C
Outdoor Splash Pad / External Pool	125m ²	80m ³	29 °C

NARC - Start up Loads

Northcote Aquatic and Recreation Facility

POOL	ELECTRICAL LOADS	DURATION (HOURS)
50m External Lap Pool	800kW	60
25m Indoor Lap Pool	325kW	48
Indoor Learn to Swim Pool (LTS)	170kW	64
Indoor Warm Water Pool (WWP)	115kW	72
Indoor Splash and Toddler Pool	85kW	48
Outdoor Splash Pad / External Pool	200kW	24
TOTAL	1,695kW	60-24

NARC - Maintenance | Operational Loads

Northcote Aquatic and Recreation Facility

POOL	ELECTRICAL LOADS
50m External Lap Pool	250kW
25m Indoor Lap Pool	85kW
Indoor Learn to Swim Pool (LTS)	40kW
Indoor Warm Water Pool (WWP)	25kW
Indoor Splash and Toddler Pool	17.5kW
Outdoor Splash Pad / External Pool	15kW
TOTAL	432.5kW

The Opportunity



Strategies for Reduction



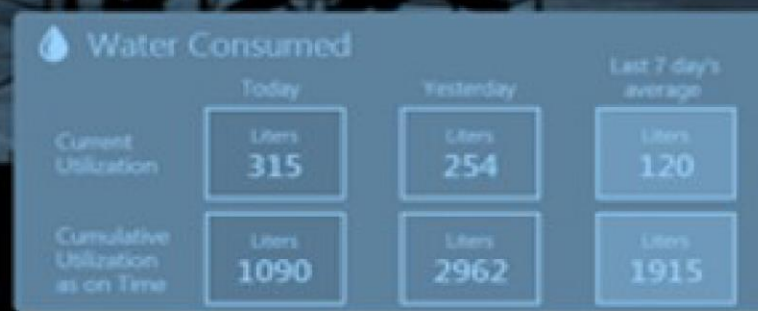
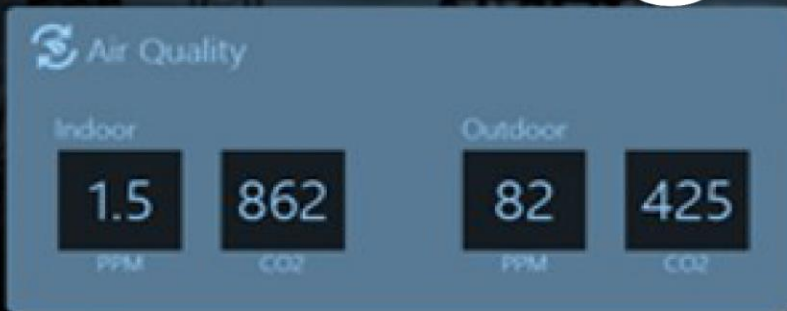
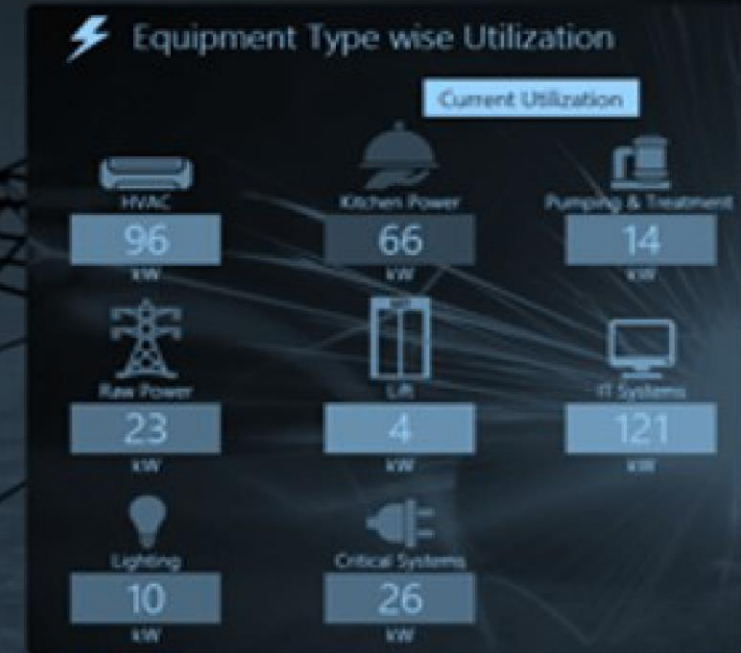
Inhibitors and Barriers





Equipment

Performance | Tuning





Capital vs Operational Costs

Compliance and Certification



Life Expectancy & Recyclability



ESD and Sustainability

Energy

Fossil fuel free; future proof for alternative energy sources

Skylights

Reduce glare while maintaining maximum solar gains into the pool hall.

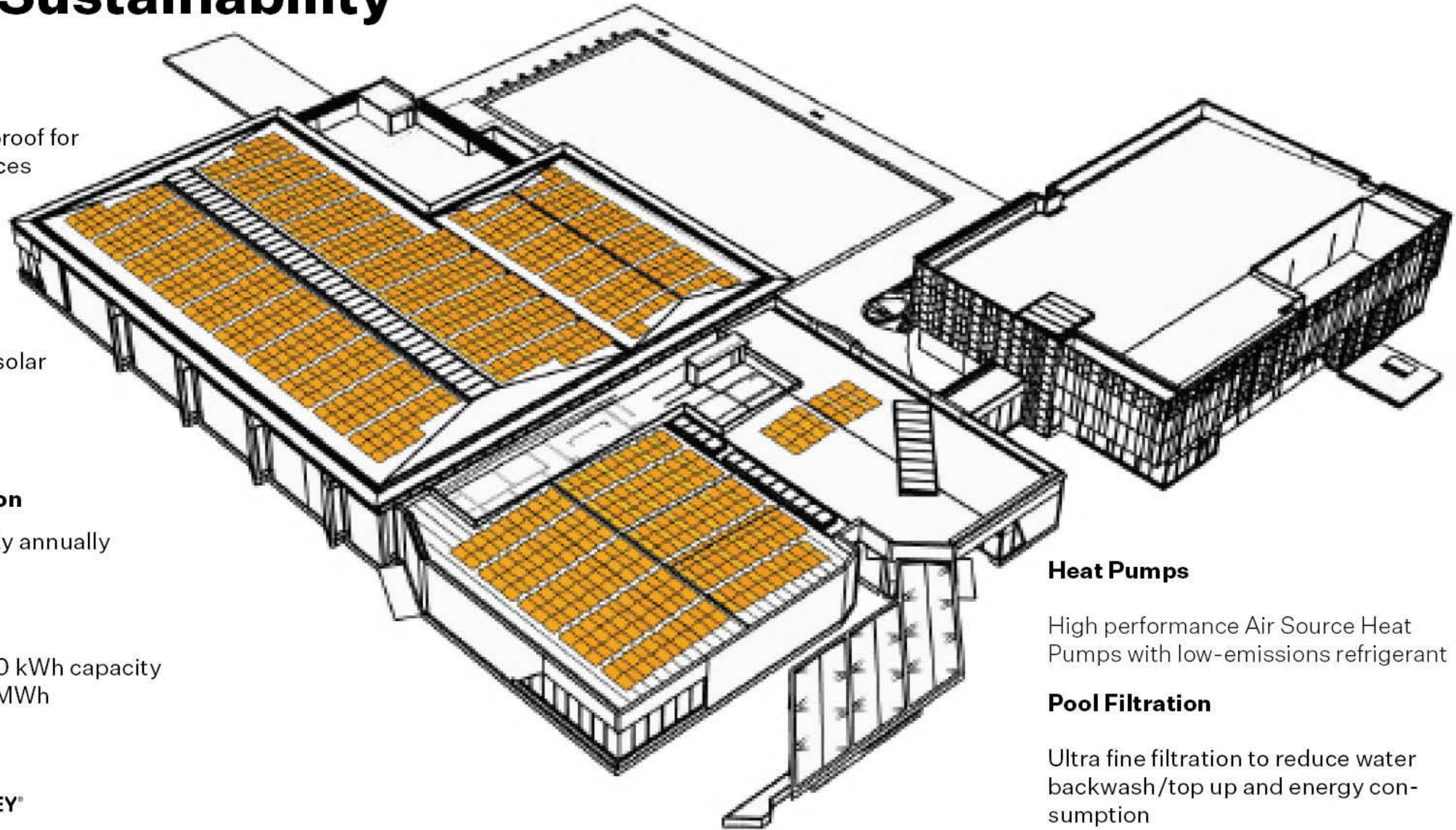
Estimated consumption

3.1GWh of grid electricity annually

PV Panel Capacity

1,125 No panels with 450 kWh capacity
Annual solar yield: 520MWh

WARREN AND MAHONEY®



Heat Pumps

High performance Air Source Heat Pumps with low-emissions refrigerant

Pool Filtration

Ultra fine filtration to reduce water backwash/top up and energy consumption

Australia's Best Practice Aquatic Centre

WHOLE OF LIFE CARBON

AIR TIGHT HIGHLY INSULATED BUILDING ENVELOPE

GOOD NATURAL DAYLIGHT

BICYCLE PARKS

INDIGENOUS ENGAGEMENT

LOW IMPACT REFRIGERANTS

CLIMATE CHANGE ADAPTATION PLAN DEVELOPED

LARGE VEGETATED AREA

PARTIAL TIMBER STRUCTURE

WASTE WATER HEAT RECOVERY

GREEN CLEANING WITH E-WATER

EXCELLENT INDOOR AIR QUALITY

PUBLIC ART

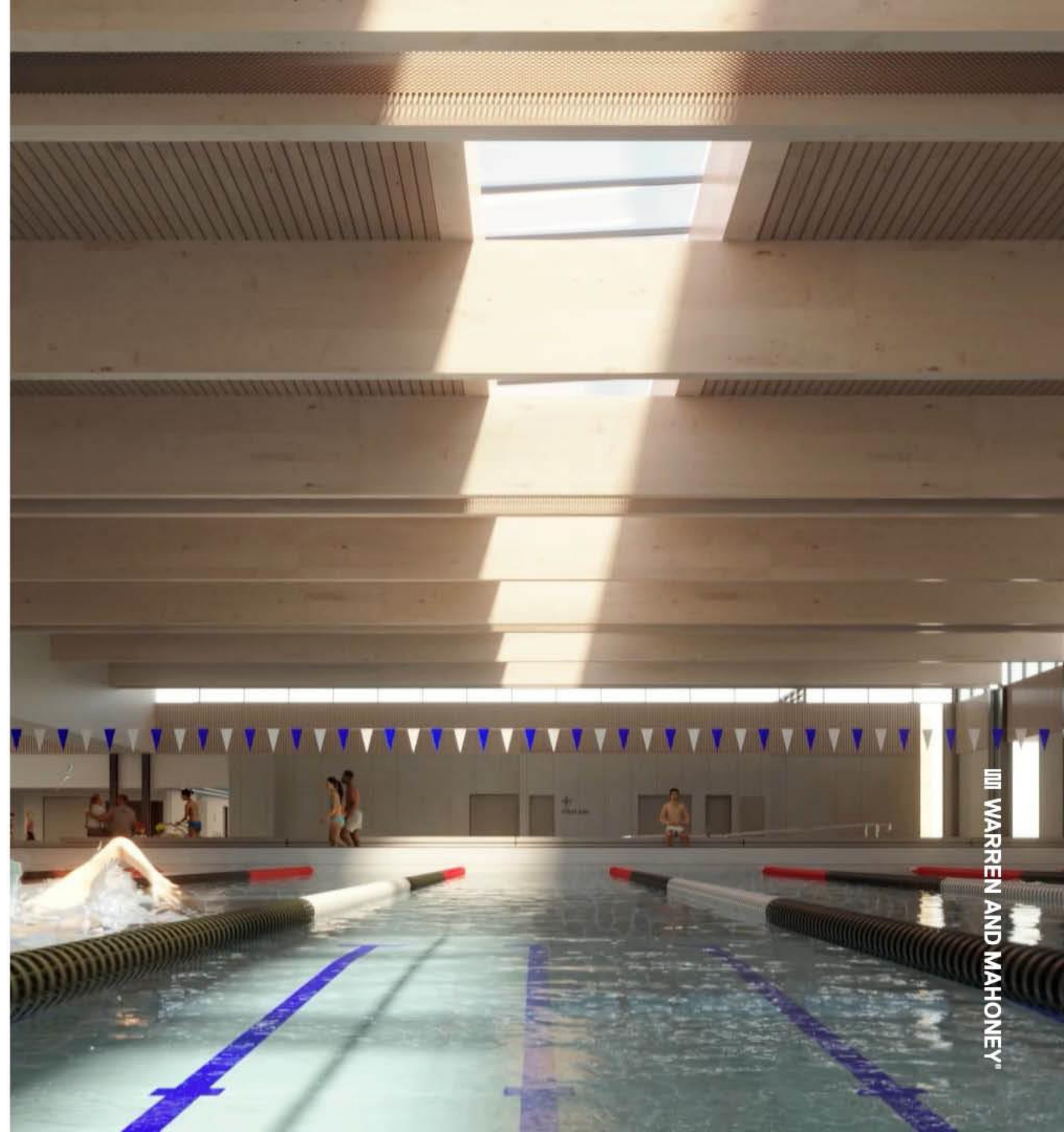
COMMUNITY ENGAGEMENT DISPLAYS

HIGH PERFORMANCE FIXTURES AND FITTINGS

6 STAR GREEN STAR ALL ELECTRIC DEVELOPMENT

ELECTRIC CAR CHARGING

ROOF TOP SOLAR AND 100% GREEN POWER



An aerial photograph of the Northcote Aquatic and Recreation Centre. The building is a large, modern structure with a dark, flat roof and light-colored walls. In front of the building is a large, rectangular swimming pool with multiple lanes. The pool is surrounded by a green lawn and several trees. In the background, a dense residential neighborhood with many houses and trees is visible, followed by a city skyline with several tall buildings under a blue sky with scattered clouds.

Thank you

WARREN AND MAHONEY

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**Our studios span across New Zealand
and Australia, yet we operate as one.**

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