



AFFORDABLE HOUSING, WICKHAM

North was engaged as design and construct partner to deliver a new 7-storey affordable housing development in Wickham on behalf of Home in Place.

LOCATION:

Wickham, NSW

LOCAL GOVERNMENT AREA:

City of Newcastle

ABORIGINAL LAND CUSTODIANS:

The Awabakal and Worimi people

CLIENT:

Home in Place

PROJECT COST:

\$6,700,000

PROCUREMENT PROCESS:

AS4902-2000 (D&C)

COMMENCEMENT DATE:

03/07/2020

COMPLETION DATE:

03/09/2021

DURATION:

60 weeks

NORTH'S PROJECT TEAM:

Josh Sheather,
Construction Manager

Shane Prior,
Senior Project Manager

Colin Delaforce,
Site Supervisor

ARCHITECT:

CKDS Architecture



OVERVIEW

The Affordable Housing development located in Wickham NSW involved the demolition of the existing townhouses on site and construction of a 7-storey, 16-unit apartment building. The ground floor comprised a small commercial tenancy, foyer, services plant-rooms, bin storage and seven off-street car parking spaces with modest landscaping. Levels 1, 2 and 3 comprised two 1-bedroom units and one 1-bedroom unit, each with balconies. Level 4 comprised three 1-bedroom units. Levels 5 and 6 comprised two 2-bedroom units. Level 7 comprised common storage and roof top landscaped area and accessible WC.

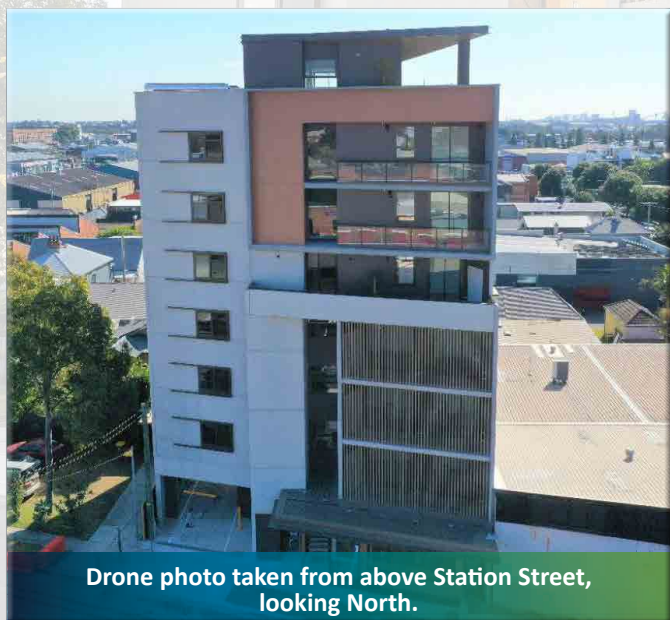
The building was constructed on CFA piles and conventional reinforced concrete footings and slabs. The superstructure was constructed out of pre-cast concrete walls, insitu columns and conventional reinforced concrete slabs. The rooftop common area has a structural steel frame and clad with FC panels and metal roof sheeting. External doors and windows facing the rail corridor were double glazed.

Services augmentation included: installing a new 150mm water main from the existing Hunter Water main 150m away on Railway Street; installing a new Ausgrid Power Pole and UGOH overhead powerline from across the road in Station Street; and installing new NBN connection in coordination with new infrastructure along Station Street to the site.

Significant consultation and approvals were required from Sydney Trains due to the site being within close proximity to the rail corridor.

The project was designed and certified against LHA Silver As-built by Peter Donn and ADG by Dr Phillip Pollard.

The project commenced following approval of the Construction Certificate on 14/10/21.



Drone photo taken from above Station Street, looking North.

CHALLENGES, SOLUTIONS, AND INNOVATIONS

Ground contamination: The site was subject to uncontrolled fill in an alluvial plain and contamination from previous industrial use. The site was subject to contamination from several elements including ACM and Acid Sulphate Soils. To solve this, detailed geotechnical and industrial hygienists testing, reporting and remediation solutions were developed. To minimise the cost of remediation, North redesigned the footings to reduce the depth of excavation as much as possible to decrease the amount of spoil having to be disposed off site.

Piling design: Due to the prevalence of DC voltage leak from the Sydney Trains rail corridor, the piling method was restricted to CFA piles with sufficient concrete cover. North would have liked to select screw piles but due to their susceptibility to accelerated corrosion, no mitigating solutions such as thicker walls or corrosion protection coatings could be found acceptable. The CFA piling meant that more acid sulphate soils would be extracted from the ground and have to be treated. North solved this problem by treating the acid sulphate soils with lime under the supervision of a geotechnical engineer and was able to acceptably neutralise the soil to be disposed off site as GSW.

New services infrastructure to feed the site:

The site did not have the required services infrastructure within the street to service the development.

- ✓ **Power:** The site was subject to a lack of permanent power until Ausgrid augmented its local infrastructure by completing a substation in the development down the road. Once this was complete (late in the project), North could install the new power pole and upgraded UGOH overhead power lines to the site's main switchboard.
- ✓ **Water:** The site did not have a large enough water main in the street to tap into to supply sufficient water. North was required to install a new 150mm water main from the existing Hunter Water network in the adjacent Railway Street. This proved difficult as records of the recent water main diversion works from the recent station redevelopment nearby were not published in DB4YD, nor within quick accessibility from Hunter Water. To solve these problems North engaged a hydraulic contractor who worked on the previous Hunter Water asset diversion works to obtain their prior knowledge and accurately locate the existing water main without further expensive, destructive digging within the road reserve and avoiding having to damage a tree council required us to protect.

- ✓ **NBN:** The site did not have NBN infrastructure within the street. North had to collaborate with NBN to get the infrastructure installed within the local area to a point where incoming cables could reach the site. This took an extended timeframe which North mitigated by collaborating directly with the subcontracting partners of NBN, Ventia.

Tight site: The site area was very small measuring only 415m². This raised challenges with on-site amenities, materials laydown and storage and logistics. Solutions involved:

- ✓ **ROP:** Temporary Lane Closure of Eastbound land including parking spaces on Station Street and temporary re-linemarking the road to enact one-way traffic westbound
- ✓ **Hoarding permit:** to close the footpath to establish some site accommodation and scaffolding above
- ✓ **Work zone:** Work Zone to close the parking lane in front of site to establish a material Loading Zone
- ✓ **Road closures:** Full Station Street road closures when conducting a concrete pour with concrete pump occupying the full width of Station Street.
- ✓ **Road closures:** Full Station Street road closures when conducting heavy lifts such as precast concrete panels with mobile crane
 - Tower crane installed in the furthest back corner of site on a static 'ballast block' base with screw piles
 - Small personnel hoist installed at the rear of the building.



Site logistics solution at building rear: Tower crane, personnel hoist, and retractable loading platforms.

Building boundary-to-boundary: The building was situated just millimetres away from the East and West boundaries of the site. The eastern neighbour's wall was situated right on the boundary and was in fact bowing into the site some 50mm. To overcome the challenge of building on the boundary, North redesigned the precast concrete walls to be as large as possible:

- ✓ Mobile craneable by 200t crane – the largest that could fit onto the street
- ✓ To rise 2 to 2.5 storeys high
- ✓ Redesigned all vertical walls in the project to be pre-cast.

This solution achieved:

- ✓ Building on the boundary without the need for scaffold
- ✓ A safety enclosure/barrier/handrail for the workers to work behind
- ✓ Reduced the number of precast concrete installations – reduced number of road closures, disruption to neighbours, speed of construction
- ✓ Increased the speed of construction.



Station Street site logistics solution: Hoarding permit, work zone, ROP/lane closure and redirection.



Double-storey precast panels providing a safe construction method when building boundary to boundary.