



One Tasman Pukeahu Park Structural Effects & Construction Methodology

Structural Effects

The site of the proposed One Tasman Pukeahu Park development has a moderate to high exposure to natural hazard risks. While Wellington generally has a high seismic shaking hazard, the site risks arising from flooding, liquefaction/lateral spreading potential and Tsunami/Seiche waves are low to moderate. The site is on the flanks of Mt Cook (Wellington), around 18m above mean sea level and so has natural protection from local inundation and foreseeable sea-level rise.

The structural, geotechnical and architectural design addresses and mitigates the natural hazards with a high-performance structure expected to perform well in excess of code minimum requirements. In addition, the development will result in some remediation of existing in-ground (low-level) contamination and remove/dispose of hazard materials within the existing buildings [Refer also to Tonkin & Taylor Statement dated 13 September 2021].

The site is on swamp deposits/alluvial/colluvial soils with depth to rock varying across the site between 10-30metres. The upper subsoils (below groundwater level) have a potential for localised liquefaction and the heavier (concrete) structures will be supported on piles founded either on rock or in the Lower Alluvium that comprise typically dense gravel/sand or stiff silt. Piles are proposed to be bored and concreted type (e.g. Continuous-Flight-Auger drilled piles or bored piles). The installation of these piles generates negligible vibration and only relatively low noise levels.

The proposed development involves removal of all the existing buildings on the site and construction of five new structures:

- Two apartment tower blocks on the western side of the site (Northern Apartments & Southern Apartments).
- A two level carparking building along the eastern side of the site which will support two timber-framed, town-house blocks (Courtyard Terraces).
- A series of concrete town-house units in the north-west corner of the site (Pukeahu Terrace Houses).
- A row of timber-framed town-house units in the north-east corner of the site (Buckle Street Terrace Houses).

The two apartment tower blocks will be base-isolated to provide a high level of seismic life-safety protection coupled with damage avoidance, and protection of

contents, in excess of code expectations. Above the base isolators these structures will be predominantly steel framed to provide the strength and resilience at the least weight/mass. The upper floor slabs will be predominantly reinforced concrete with options of some timber substitution to improve carbon embedment. The other structures will be more conventional but designed for low-ductility demands and low-damage.

The lowest inhabited levels of each of the structures has been set above adjoining road levels to provide mitigation against localised inundation.

Demolition material from the existing structures may be recycled where practical and feasible, particularly steel, concrete aggregate, aluminium and glass. Hazardous demolition material together with any in-ground contamination will be taken to secure hazardous-waste landfill. Non-recyclable demolition material and non-contaminated excavation material will be taken to solid-waste landfills.

Bulk excavation will be carried out generally as shown on the attached drawings. The volume of excavation is expected to be approximately 10,000m³. Note that some areas will require limited fill to bring the ground level to underside of new ground floor slab levels. This is in areas of existing basements and existing low-lying areas. The fill volume expected to be approximately 800m³. Fill will be a mixture of re-compacted excavated material from the site, crushed demolition aggregate and imported hardfill.

Excavation will typically be shallow, with the exception of the piles. Pile depths are likely to be in the order of 15-25m. Excavated pile material will be tested for contamination and treated/disposed as appropriate.

Along the west side (Tasman St), the excavation will typically be battered to meet existing back-of pavement levels. In localised areas, temporary retaining will be required. Along the north (Old Buckle St) boundary, low-level battering will be required. Along the adjoining property boundaries (east and south sides), bulk excavation levels are typically above neighbouring land or will abut adjoining walls. Minor battering/temporary retaining will be carried out as required.

All run-off will be contained and treated on site as appropriate, refer to the LT McGuinness draft site management plan. Localised de-watering may be required to enable formation of lift pits and possibly some of the deeper foundation beams. No significant lowering of the water-table is anticipated, any effects will be extremely localised.

Specialist geotechnical engineering input is being provided by Tonkin and Taylor.

Construction Methodology

The One Tasman Pukeahu Park development foundations will be constructed fully within the site. In-ground construction activities will include demolition, excavation, removal of existing foundations, piling, minor de-watering and construction of the reinforced foundation beams, concrete slabs and lift pits. The following steps outline, in concept, the construction methodology that will be used. Refer also to the LT McGuinness draft site management plan

1. Additional proof-drilling / pile testing to determine depths for piles.
2. Site establishment, hoardings, protective footpath gantries, site sheds etc.
3. Storm-water protection/diversion etc. Temporary filters, kerbs etc. to prevent construction and excavation materials entering the storm-water system.
4. Demolition of the existing structures on the site. Note that the gym building at the north end of the site will remain during the construction of the northern apartment tower, to act as an apartment show/sales suite.
5. Site-wide excavation generally as shown on the bulk excavation plans, attached. This will include localised excavation to expose the existing foundations for demolition. The excavated/demolished material shall be assessed for contamination, treated if required and disposed to landfill/cleanfill as appropriate.
6. Drilling and pouring piles.
7. Additional localised excavation, as required, to the underside of the ground floor foundation beams. The excavated material shall be assessed for contamination, treated if required and disposed to landfill/cleanfill as appropriate.
8. Construction of a concrete tidy slab under foundation beams and the ground/sub-ground floor slabs as required.
9. Construction of the foundation beams, reinforced-concrete ground/sub-ground floor slab and lift pits.
10. Installation of the base-isolators, for the tower blocks.
11. Construction of the superstructures.

Note that the construction of the different buildings will be staged, commencing with the northern apartment tower.

Dunning Thornton Consultants Ltd

230117 – RC Amendment

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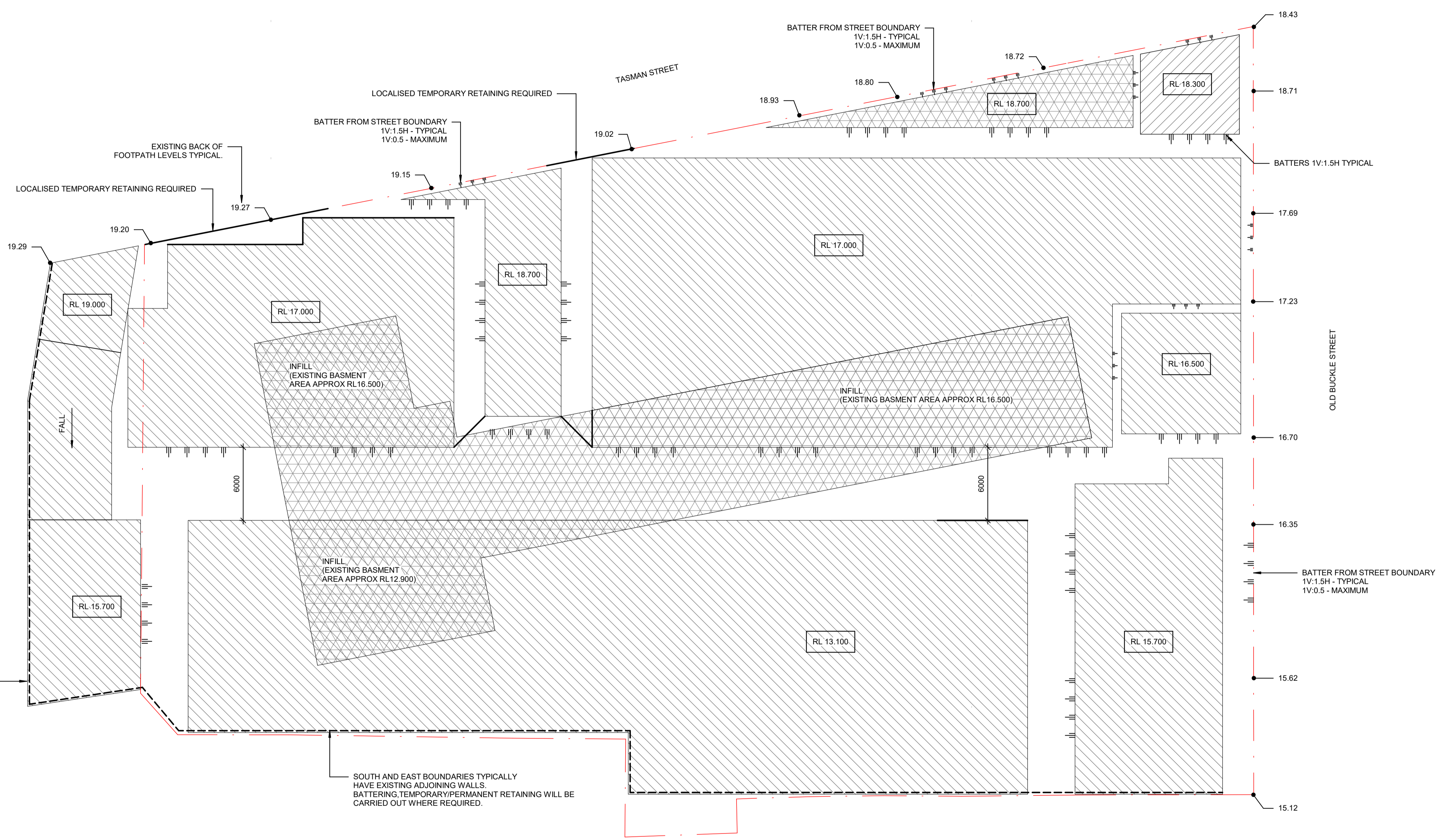
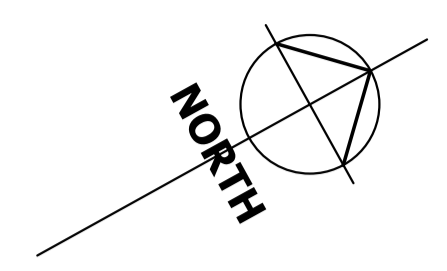
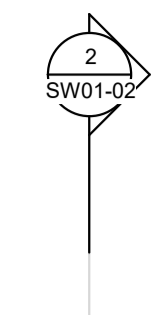
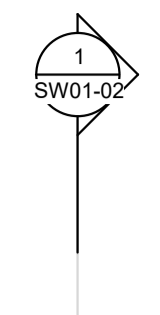
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Original Scale

ORIGINAL SIZE A1



SOUTH AND EAST BOUNDARIES TYPICALLY HAVE EXISTING ADJOINING WALLS. BATTERING/TEMPORARY RETAINING WILL BE CARRIED OUT WHERE REQUIRED.

SOUTH AND EAST BOUNDARIES TYPICALLY HAVE EXISTING ADJOINING WALLS. BATTERING/TEMPORARY/PERMANENT RETAINING WILL BE CARRIED OUT WHERE REQUIRED.

WILLIS BOND & Co
ONE TASMAN DEVELOPMENT LIMITED PARTNERSHIP

ONE TASMAN PUKEAHU PARK

RESOURCE CONSENT
BULK EXCAVATION PLAN

REVISIONS	
0A	RESOURCE CONSENT REVISED 13/01/2023
0	RESOURCE CONSENT 17/09/2021

Scales 1:200
A3 Scales 1:400
Designed Chis Speed
Drawn Julie Nicholson
CAD Reference

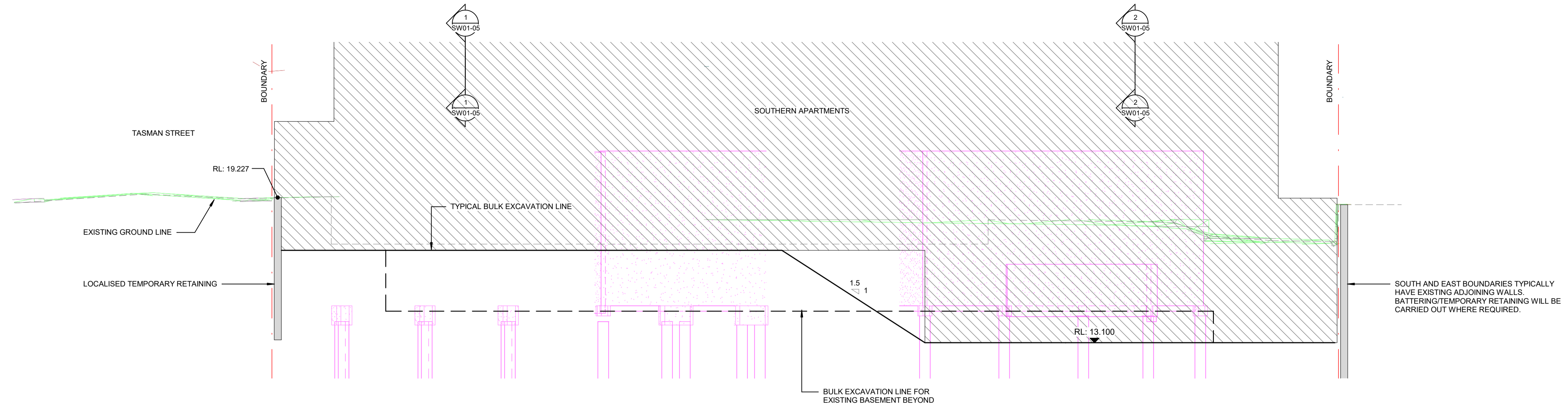
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Rev 0A



IF IN DOUBT ASK

DO NOT SCALE

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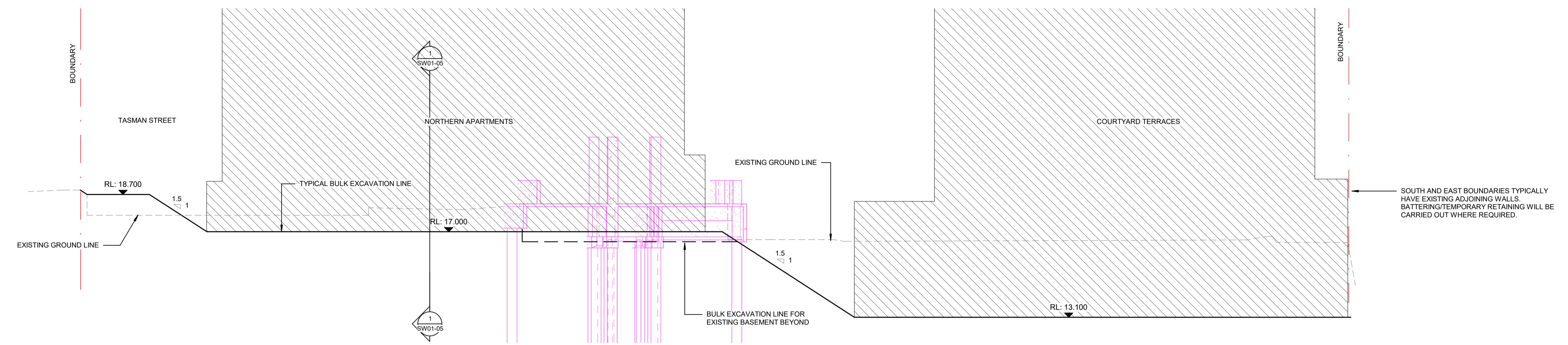
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Original Scale

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WILLIS BOND & Co
ONE TASMAN DEVELOPMENT
LIMITED PARTNERSHIP

ONE TASMAN PUKEAHU PARK

RESOURCE CONSENT
BULK EXCAVATION SECTIONS

REVISIONS	
0A	RESOURCE CONSENT REVISED 13/01/2023
0	RESOURCE CONSENT 17/09/2021

Scales 1:100
A3 Scales 1:200
Designed Chis Speed
Drawn Julie Nicholson
CAD Reference

Job Number 8507
Drawing Number SW01-02
Rev 0A



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