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SUSTAINABLE CERTIFICATION ISO 9001 ISO 45001 ISO 14001

Our Ref: 110608-03-The Maltings - Peer Review of Previous Civil/Structural Report

7 Feb 2024

Colliers
Level 30, Grosvenor Place,225 George Street,
Sydney NSW 2000

Attn: Gabrielle Chidiac

Subject: The Maltings – Review of Civil Engineering Report

Dear Gabrielle,

This letter is to confirm that J. Wyndham Prince has undertaken a peer review of the *"Civil & Structural Engineering Report*" which was originally undertaken by ARUP (April 2020). This was originally undertaken to provide both structural and civil advice for the Concept Development Application (DA) for the proposed Maltings development.

As part of the original report, proposed structural works included partial refurbishment, reinstatement and extension of the existing buildings combined with a number of new buildings. Whilst civil related items included new access roads and carpark works.

Details of the review are included in the following sections.

1. REVIEW OF REPORT

1.1. Project Description

This peer review letter has been undertaken to support the original approved DA as well as its Modification. The original DA:

- On 13 May 2022, consent was granted by the NSW Land and Environment Court for a staged development application (DA) relating to 2 Colo Street, Mittagong, commonly known as "The Maltings" (the site).
- The approved proposal consists of a development concept for adaptive re-use of the site, in conjunction with a detailed design proposal for alterations and additions to the former malthouses (M1, M2 and M3) and redevelopment of Maltster's Cottage to accommodate a range of uses in multi-purpose spaces for art, exhibitions, functions, recreation activities and performances, as well as construction of a hotel with ancillary uses (M4). The detailed design proposal encompasses site works, including rehabilitation of the riparian corridor along Nattai River.

The current proposal seeks to amend the existing development consent via two separate but related applications that are prepared concurrently:

- A DA to alter the design of the alterations, additions and adaptive re-use of Maltings M3, and amendment to the façade and interiors of the M4 hotel.
- A section 4.55 modification to alter the design of the alterations, additions and adaptive re-use of Maltings M1, M2, the Southern Sheds, the new Northern Shed as well as the redevelopment of Maltster's Cottage

1.2. Objective

The review has been undertaken upon all civil engineering related items (excluding structural). The objective of this review is to confirm if there are any additional or amended civil recommendations which are required to support the proposed mod to buildings M1 / M2, sheds and Maltster's Cottage along with the proposed DA for buildings M3 and M4.

1.3. Site

Section 1.3 of ARUP's Report included a Site Plan showing the proposed buildings and site works which were proposed in the original Concept DA. An updated plan is provided on Plate 1-1 below for reference.

The overall works remain generally similar with the proposed building / refurbishment works at buildings M1, M2, M3 and M4. Whilst the proposed new access roads / carpark area are then proposed to service the Maltings Development.

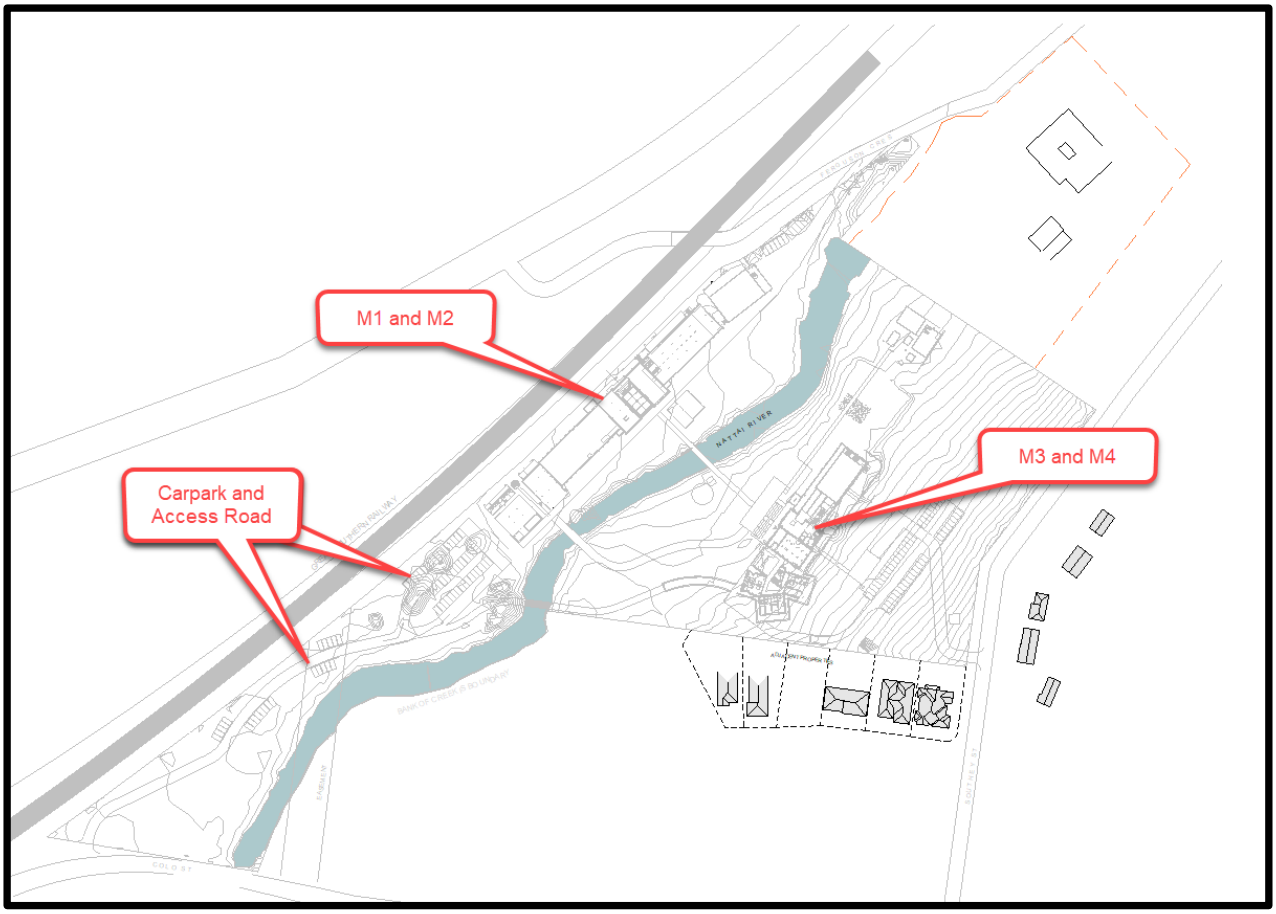


Plate 1-1 – Updated Site Plan

2. REVIEW OF CIVIL DESIGN

Section 8 of the ARUP Report encompasses the civil design related items "road design", "pavement" and "bulk earthworks". We have undertaken a review of this advice and confirm that the recommendations are generally suitable to support the proposed modification to the DA. Further discussion is provided below.

2.1. Road Design

It is noted that each of the proposed access roads and carparks will need to be designed in accordance with statutory guidelines. This includes each of the following:

- AS/NZS 2890.1-2004 Parking Facilities – Off Street Car Parking
- Austroads Guide to Road Design Part 3: Geometric Design 2021
- Design Vehicles and Turning Path Templates 2023
- Engineering Design Specifications D05 Geometric Road Layout
- Standard Drawings by Wingecarribee Shire Council.

The ARUP Report includes the following Table 15, which outlined the design criteria for the proposed access roads.

Table 15: Design Criteria for New Access Roads

Criteria	**Value**
Design Speed	25km/hr where possible
Maximum Design Vehicle	MRV
Horizontal Alignment	
Minimum Horizontal Radius	R = 20
Curve Widening	As per Table 7.13 of AustRoads 2016 Part 3 – using turning templates where applicable.
Longitudinal Gradient	
Desirable Maximum Gradient	10%
Absolute Maximum Gradient	15%
Cross-Section	
Traffic Lane Width	3.0m (Two-way) - widened at bends. 3.5m (One-Way)
Cross-Fall	Typically 3% Maximum 5%
Verge	Min 0.5m

Source – ARUP "Civil & Structural Engineering Report – Concept DA" page 28

In accordance with *Section 3.3.7 of Wingecarribee Shire Council D05 Geometric Road Layout, Austroads and the Land and Environment Court Approval*, the design vehicle shall be adopted based on the largest vehicle servicing the development along with the frequency of use.

We understand that the largest vehicle the site for waste removal will be a *10.2m long rear – loading refuse collection vehicle.* It is noted that turning paths should be designed in accordance with the templates/parameters outlined in *Design Vehicles and Turning Paths Template Guide 2023*, particularly Table 2.3 which provides recommended turning radii for design and checking vehicles (see below).

Table 2.3: Guide to selection of the appropriate design and checking vehicle and the recommended turning radii

Intersecting road types	Design	Checking
Arterial/Arterial	Prime mover and semi-trailer (19 m) (1) Radius 15 m	Appropriate vehicle e.g. B-double (25 m) (2) **or** Prime mover and long semi-trailer (25 m) **or** Road train (3) **or** appropriate PBS level
Arterial/Collector	Single unit truck/bus (12.5 m) Radius 12.5 m	Prime mover and semi-trailer (19 m) Radius 15 m
Arterial/Local (residential)	Service vehicle (8.8 m) Radius 12.5 m	Single unit truck/bus (12.5 m) Radius 12.5 m
Collector/Collector (industrial)	Prime mover and semi-trailer (19 m) (1) Radius 15 m	Prime mover and semi-trailer (19 m) (1) Radius 15 m
Collector/Collector (residential)	Single unit truck/bus (12.5 m) Radius 12.5 m	Prime mover and semi-trailer (19 m) (1) Radius 15 m
Collector/Local (residential)	Service vehicle (8.8 m) Radius 9 m	Single unit truck/bus (12.5 m) Radius 12.5 m
Local/Local (industrial) (4)	Prime mover and semi-trailer (19 m) (1) Radius 12.5 m (5)	Appropriate vehicle e.g. B-double (25 m) (2) **or** Prime mover and long semi-trailer (25 m) **or** Road train (3)
Local/Local (residential)	Service vehicle (8.8 m) Radius 9 m	Single unit truck/bus (12.5 m) Radius 12.5 m

1 *Select the appropriate vehicle for the design of sites that are frequently used by such vehicles.*
2 *B-double length may vary between jurisdictions.*
3 *Select appropriate road train from the Austroads Guide to Road Design: Part 3: Geometric Design (Austroads 2016) or from relevant jurisdiction guide.*
4 *Also for intersections with industrial land use for collector/local intersections.*
5 *Simulations show that for this radius the maximum steering angle occurs at the exit of the turn and not applied at the crawl speed.*

Source: Austroads Guide to Road Design: Part 4: Intersections and Crossings: General, Austroads (2023a).

- Consideration should also be given to *Section 7. Vehicle Access Requirements in the Access for Fire and Rescue NSW* for design requirements for general fire appliance, and specialist fire appliance. The proposed roads may require access for the fire appliances.

  Given the site includes a large number of trees along Nattai Creek and in the surrounding areas, the design needs to also consider fire truck access (i.e a 12.5m HRV) through the site to access buildings and these areas.

6.2 Overall parameters for design

6.2.1 While specifications vary between *fire appliances*, for the purpose of design overall parameters are broadly categorised into two distinct *fire appliance* types as follows:

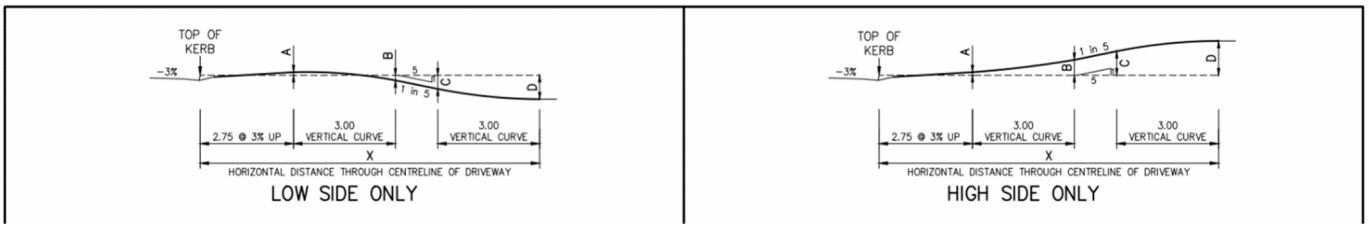
General fire appliance	
Gross vehicle mass	15 000 kg
Overall length	10.0 m
Overall width (incl. mirrors)	3.0 m
Body width (excl. mirrors)	2.5 m
Overall height	3.7 m

Specialist fire appliance	
Gross vehicle mass	29 300 kg
Overall length	12.5 m
Overall width (incl. mirrors)	3.0 m
Body width (excl. mirrors)	2.5 m
Overall height	4.3 m

Table 1 Overall parameters of fire appliances

Note: A medium rigid (MR) licence or higher is required for a general *fire appliance*, while a heavy rigid (HR) licence is required for a specialist *fire appliance*.

- The longitudinal gradient is suitable based on the maximum 1 in 5 grading specified in the Standard Driveway Gradings SD123 by Wingecarribee Shire Council.



- With reference to SD164 Private Road Residential Cross Sections by Wingecarribee Shire Council, the crossfall of 3% is suitable if the road is sealed, if unsealed the cross fall will need to be 6%.

NOTES:

① WIDTH FOR SERVICES MIN 1.5m
② WIDTH FOR STORMWATER DRAINAGE
③ CROSSFALL = 3% IF SEALED
= 6% IF UNSEALED
④ SEAL ROAD WHERE LONGTITUDINAL GRADE > 5%

- The proposed access roads will also need to consider roadside drainage as outlined in *4.6 Roadside Drainage, Austroads Guide to Road Design Part 3: Geometric Design 2021*, or *Standard Drawing Private Road Residential Cross Sections SD164*. In addition to managing the roadside drainage, it will need to follow Water-sensitive urban design in order to ensure the runoff is not damaging the surrounding environment.

  It is understood that the proposed development may include the use of road side swales and / or dish drains to manage surface flows. These will be assessed as part of the detailed design.

2.2. Pavement Design

As recommended in the ARUP Report, pavement design will need to be undertaken in accordance with Wingecarribee Shire Council's *"Development Design Specification D2 – Pavement Design"*. Whilst driveways will also need to be undertaken in accordance with Council standards.

It is understood that the proposed development may include a range of pavement treatments which may include pervious pavers in parking areas and asphaltic concrete surfaces on access roads. These shall have a 25 year design life.

2.3. Bulk Earthworks

The provided preliminary bulk earthworks estimates provided in the ARUP report are generally suitable. It is noted that levels in flood affected areas along Nattai Creek should generally not be raised to avoid potential flood impacts on surrounding properties (unless there is a balanced cut / fill to alleviate impacts). Reference should be made to Flooding Report.

Based on a high level review, estimates have been updated in the layout changes for the access road and carpark areas from both Colo Street and Southey Street. These numbers will be confirmed as part of the detailed design.

Table 16: Preliminary Bulk Earthworks Estimates

Item	Cut (m^3)	Fill (m^3)	Net (m^3)	Notes
M2 Shed	0	315	315	
M4 Basement	6,450	0	-6,450	Excludes temporary excavation
Stockpiles	1,200	0	-1,200	
Access Road + Car Park from Colo Street	~~887~~ 706	165	~~-722~~ -541	Excludes topsoil strip to formation level.
Access Road and Car Park from Southey St.	~~1194~~ 333	480	~~-714~~ 147	Excludes topsoil strip to formation level.
Western Approach to M4 Basement	380	5	-375	Excludes topsoil strip to formation level and temporary excavation.
Eastern Exit from M4 Basement	804	0	-804	Excludes topsoil strip to formation level to temporary excavation.
Total	~~**10,915**~~ 9873	**965**	~~**-9,950**~~ -8908	

Yours faithfully,

CHRIS RANDALL

Technical Lead - Design