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| To | Laing O'Rourke | Date | 22 August 2011 |
| From | Arup x 9543 (Arup Sydney) | Reference number | 221811/SBH |
| Subject | S75 modification letter - 100 Mount Street Waste | File reference | |

Introduction

There is currently an approved development application for the development of 100 Mount Street North Sydney as a multistorey commercial building. Modifications to the existing application have been made and Laing O'Rourke have requested that Arup provide a letter to support a S75 application for the project in regards to waste.

This letter is based on the latest revisions to floor schedules for 100 Mount Street (*DA139 Area Schedule Rev A 120811*) and the new basement layout of Level B1 (*DA118 Plan – B1 level Rev A 120811*). This letter and the latest basement layout for B1 are required to be appended to the original Waste Management Plan (*Laing O'Rourke Mount St Pty Ltd, 100 Mount Street Waste Management Plan, Hyder May 2009*) for the purpose of S75 application.

This letter details the changes to the design made since the issuing of the original Waste Management Plan and advises on any consequences of the changes in floor schedule and basement layout.

Summary of some of the key changes are described in Table 1 below;

Table 1 Modification summary

| Changes | WMP (2009) | S75 Application Aug 2011 |
|-------------------------------------|------------------|---|
| Basement waste storage | Located B2 level | Located B1 level |
| Basement waste storage area | 45m ² | 56m ² |
| Total waste generation (L/day) | 15,479 | 8,671 |
| Basement waste collection frequency | Twice per week | Collection once per day (allowance made for collection once every 2 days) |

Basement modifications

The proposed plan for B1 Level for 100 Mount Street (*DA118 Plan – B1 level Rev A 120811*) is similar to existing approved plan. The proposed B1 Level is to include all operational waste generated from the site with waste to be transferred to the single waste storage room provided (56m² in plan size). The room will include general waste, recyclables and storage of small amounts of bulky goods. There is also a 17m² bin storage room provided for spare bins.

The original recommendation for waste storage (see Section 32 of the Waste Management Plan) is described below;

The hub of waste storage at 100 Mount St will be the garbage room on basement level 2 on the side of Spring St. Waste will be collected from, and stored pending collection at the delivery bay on Spring St. It is estimated that the garbage room should have a floor area of at least 45m² in order to accommodate all mobile garbage bins (MGBs) and also allow some space for bulky waste storage and potentially higher waste quantities in the future.

The total storage area for waste from 100 Mount Street of 56m² is increased on the original recommendation of 45m² made by Hyder with the waste storage now to be made on Basement Level 1 rather than Basement Level 2. The proposed new arrangement on Basement Level 1 is considered to be more suitable in regards to waste collection due to proximity to the entrance point for collection vehicles and a larger proposed storage area than previously approved.

Waste from commercial and retail levels is proposed to be transferred to the basement storage room via a goods lift with waste transfer to be made by building management. This is understood to be unchanged from the originally approved transfer method.

General waste and recyclables are assumed to be required to be collected by private contractor every day. However a conservative approach has been taken, so for the purpose of basement room sizing calculations collection of recyclables and general waste is assumed once every 2 days. Twice per week collection of general waste and recyclables as referenced in the original WMP is not recommended.

Internal waste storage areas within each floor of the proposed development are maintained (with small areas for temporary storage of recyclables and wastes to be provided on each commercial and retail floor).

Construction materials and finish of the basement waste storage room must be designed to meet the requirements of the *North Sydney Council Waste Handling Code*, including the provision for wash down of the waste room and waste containers onsite.

Floor area modifications

A summary of floor areas now proposed are given in Table 2.

Table 2 Floor areas

| Description | Type | NLA (m ²) August 2011* |
|-------------------------|---------------|------------------------------------|
| Commercial (Level 1-33) | Commercial | 40,359 |
| Retail Level | Cafe / Retail | 216 |
| Level 1 | Retail | 318 |
| Total | - | 40,893 |

* *DAI39 Area Schedule Rev A 120811*

Waste generation

All waste estimates are based on the waste generation rates for retail and multi-unit residential development provided in the *City of Sydney Policy for Waste Minimisation in New Developments 2005*. While not directly applicable to the North Sydney council area, this document provides a direct method for calculating waste generation from multiple use building types and has been used to give an estimate of waste from 100 Mount Street. The similar waste generation rates given in the *North Sydney Council Waste Handling Guide* can similarly be applied but these rates are given as a range of values. The waste storage area required is calculated based on the plan area bin sizes for 240L MGBs given in the applicable *North Sydney Council Waste Handling Guide* and 660L bin size referenced from the *Randwick City Council Waste Management Guidelines Appendix A*.

MGB Size

| Size | 240L MGB | 660L MGB |
|-----------|--------------------|--------------------|
| Height | 1080mm | 1235mm |
| Depth | 735mm | 765mm |
| Width | 580mm | 1360mm |
| Plan area | 0.43m ² | 1.05m ² |

Waste generation is calculated from the provided Net Lettable Areas for commercial and retail areas. A summary of waste generation based on new floor areas is given in Table 3;

Table 3 Predicted waste generation (2011)

| Description | Type | General Waste generation L/day | Recyclables generation L/day | Generation rate* |
|-------------------------|---------------|--------------------------------|------------------------------|---|
| Commercial (Level 1-33) | Commercial | 4,036 | 4,036 | <i>Commercial</i> |
| Ground floor retail | Cafe / Retail | 173 | 108 | <i>Takeaway rate</i> |
| Level 1 | Retail | 159 | 159 | <i>Retail other than food over 100m²</i> |
| Total | | 4,368 | 4,303 | - |

* City of Sydney Policy for Waste Minimisation in New Developments 2005

The latest generation predictions are compared to those from Hyder in 2009 (see Table 4);

Table 4 Predicted Waste Quantities for 100 Mount Street (Hyder 2009)

| Waste Category | Generation kg /day | Generation L /day |
|----------------|--------------------|-------------------|
| General Waste | 1,731 | 10,807 |
| Cardboard | 48 | 952 |
| Paper | 228 | 2,558 |
| Co-mingled | 173 | 1,161 |
| Total | 2,180 | 15,479 |

Waste storage required

Waste storage estimation is based on the compaction of all general waste (at a ratio of 2:1), no compaction of recyclables (although a cardboard bailer may be used), and waste collection every 2 days. Based on correspondence with waste provider Wastech, the preferred compactor for use in the basement is a 660L bin press. Waste storage units in the basement room for general waste are therefore proposed as 660L bins (or greater).

Table 5 Waste storage required

| Description | Type | General waste bins (660L) | Recyclables bins (240L) | Plan area required in basement waste room* |
|-------------------------|---------------|---------------------------|-------------------------|--|
| Commercial (Level 1-33) | Commercial | 7 | 34 | 44m ² |
| Retail | Cafe / Retail | 2 | 3 | 7m ² |
| Bin press | 660-1100 | - | - | 3m ² |
| Total | - | 9 | 37 | 54m² |

*Plan area required is twice the plan area of bins to allow for movement within the room

The management of the bin press and waste storage in the basement requires that waste is manually transferred from smaller bins taken from collection points throughout the building and deposited into 660L bins in the basement waste storage room. Waste in the 660L bins is then to be compacted via the use of a bin press installed in the waste room. The bin press is approximately 2.4m high. No manual lifting of 660L bins is to occur, with the basement room and loading dock to be a level surface. The *North Sydney Council Waste Handling Code* does not include 660L bins as an option and as such collection will need to be made via private contractor.

There is some small additional space for storage of bulk goods (approx 5m²) within the 56m² waste storage room. Where waste can be reliably collected every day then more generous space for storage of bulky goods will be available.

Implications and conclusion

Waste storage calculations previously described in *Laing O'Rourke Mount St Pty Ltd, 100 Mount Street Waste Management Plan* (Hyder May 2009) have been superseded and the current waste storage area has been sized to accommodate a predicted waste stream estimated at approximately 8,671 L/day (4,368 L/day general waste and 4,303 L/day recyclables). The calculated waste generation from the latest floor schedule is smaller than that given in the Hyder WMP by approximately 50%.

The waste storage room in Basement Level 1 (of 56m²) is considered to be sufficiently sized to accommodate the estimated waste (based on collection every 2 days and compaction of general waste). If waste collection can be guaranteed to occur each day then the waste storage requirement could effectively be halved in size or the need for compaction removed.