

Building 301 Link Tower and Podium

Demolition Overview & Methodology

Executive Summary

The purpose of this document is to assist UoA in the approval of Fletcher Construction's lump sum recommendation for the 301 Link Tower & Podium Demolition (as per the UoA Tender Documents dated May 2013).

The site is located at 23 Symonds Street and the contract works generally includes the soft strip-out and hard demolition to approximately 8500sqm of an existing building. The following stage of works will be the construction of circa 23,600m² of a new high rise building including fitout and refurbishment works.

The Demolition phase consists of 2 distinct separable portions, being:

- "Soft" demolition removal of all fixed furniture, timber walls, ceilings and services back to the structural skeleton of building. The complex part of this demolition will be the removal of asbestos. This hazardous product will be fully removed prior to the structural demolition commencing.
- "Hard" Demolition deconstruction of the 310 Link tower and podium buildings, down to ground basement level, excluding all stage 2 demolition.

Please find the attached high level "Summary Programme" which shows an overall project completion & P.C. achieved on the 18th January 2016. Within this programme the soft demolition (including Asbestos) commences on the 5th of August 2013 and will be completed by the 1st November 2013.

As previously agreed, the dates detailed above can only be achieved if the University have decanted the facility, including all loose furniture and equipment by the 1^{st} of August 2013. Please note there will be a period between the 1^{st} and 8^{th} of August 2013 that the existing 301 building will be affected due to the isolation of services to allow the link tower and podium soft demolition to commence

Hard demolition works are to take place over the academic break from 4th November 2013 to 28th February 2014. We understand that no hard demolition works are permitted outside this period.

We understand that UoA have particular concerns over public safety, security, protection of existing buildings, dust and noise, and all efforts will be made to eliminate or minimise the University's concerns. Details of our controls are detailed within the methodology below.

Demolition - Site Establishment

Pedestrian Safety

Symonds Street Gantry

An overhead gantry will be erected along Symonds Street above the existing pedestrian footpath to provide safe pedestrian access below. The gantry is to be made from structural steel portal frames and a roof consisting of closely spaced 310UB40 steel beams designed to protect the public against a 50 kg falling load from the top of the building. This is a requirement of the New Zealand loading code. A specific gantry building consent will be lodged with Auckland city council in the next couple of weeks. See attached Fletcher Building, Gantry Building Consent Drawings 302FC – 001, 302FC-002.

From the 1st August 2013, a timber hoarding will be erected along the Symonds street boundary with gate access into the new site accommodation in 302. As per the usual Auckland Transport requirements, the doors on any hoardings will open inwards to the building site.

Wellesley Street.

Before the hard demolition commences, the footpath along Wellesley Street outside of building 301 and 302 will be closed to the public. Pedestrians will be re-routed to the other side of Wellesley Street via existing pedestrian crossings. Fletchers will install signs informing pedestrians to use the south side with appropriate arrow indicators.

Fletchers will lodge a construction Traffic Management Plan with Auckland Transport over the next couple of weeks.

Building 303 Fire Egress

The existing pedestrian fire egress route from building 303 through car park 40 will be maintained during demolition. Overhead protection will be provided where necessary.

Loading Bays – Wellesley Street

Two loading bays will be formed on the existing footpaths on the north side of Wellesley Street. Where truck access to site crosses the footpath, a temporary concrete slab over DPC will be installed as protection and will be fully reinstalled upon completion of main contract.

Hoardings and lockable gates will be erected between the loading bay and the north lane of Wellesley Street. All truck movements to the loading bays will be front in - front out, left in – left out.

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Vehicle Site Entry – Wellesley Street
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Vehicle site entry will be from the one way lane on Wellesley Street. When possible, after loading demolition materials, trucks will turn around on site and exit forwards. This will not always be possible due to the site configuration and limited turning room.

When trucks need to be backed out onto Wellesley Street (subject to the TMP) Fletchers will provide a specific traffic controller. Where necessary, the vehicles will be washed down prior to exit from site. Wash down facilities will be provided at site entry / exit for this purpose.

Tower Crane

A Liebherr 280 EC-H tower crane will be erected in car park 40 commencing with the crane foundations in August, with it being operational late September, prior to the commencement of the hard demolition. The crane has a 65m jib and a capacity of 12 tons at a radius of 23m dropping down to 3.5 ton at the extremity.

This is the first of two site tower cranes but the only one that will be in place for the demolition. The crane provides full site coverage and will work with the demolition contractor to remove demolition material from building 302.

During this period the crane will also provide lifts for the new roof to building 302 and other associated activities. It is envisioned that the crane will be working on 302 demolition 90 per cent of the time and the balance (10 per cent) on enabling two.

All lifts will be within the site boundaries.



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BLISHMENT-MAIN CONSTRUC	TION FEATUR	ES_	
A LEVEL	·		
10m 20m	A	PPROVAL	
		Job No	
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		U0A301-102	
		•	



Demolition Methodology

As described above, there will be two distinct demolition stages that will be performed by two separate subcontractors who have been selected due to their specific expertise in either the soft/asbestos demolition or the structural demolition.

Before our soft demolition contractor commences on site all existing site services will be isolated on the particular floor and made safe. Temporary power will be made available by Fletchers during the demolition works, including running power to the lifts which are critical for the removal of demolition material. We assume that the "Goods Lift" will be made available exclusively for the soft demolition material from the 1st of August 2013 (i.e. no UoA staff use)

We confirm that Simon Ayris, our registered Engineers, will be based full time on site reviewing our detailed work plans submitted by our specialist soft/hard demolition contractors. Simon will also be signing off all of the temporary propping and other structural requirements.

We also note that there will be a dilapidation report completed for the remaining structures, with points that will be checked regularly through the hard demolition phase.

Soft Demolition

Fletchers will engage ATL Group as the soft demolition and asbestos removal subcontractor and the following methodology will describe broadly how this will be achieved. Prior to commencement on site, a detailed demolition methodology and a site specific safety plan will be provided to the University.

We understand that there are special safety hazards / measures associated with the soft demolition including:

- Cobalt 60 source: located within the sub-basement of the building
- Asbestos: located in areas throughout the building
- Chemical hazard
- Fume cupboards and ducting

As ATL have not been formally engaged yet all detailed work plans for the above specialist items will be submitted to UoA for signoff prior to commencing on site.

An early task will be the installation of safety signage and physically securing all external entries to the building. The doors will be locked to the occupied side but provisions will be made on the demolition side of the door to enable access in the case of an emergency.

Once the site has been made secure, dust samples will be taken and tested to determine where asbestos is present and if an area is found to contain asbestos, the floor will be classified as contaminated.

Excluding the rooftop plant room, the demolition sequencing will be working top down (from level 8 to the ground floor). Wall and ceiling linings will be removed early to reveal the asbestos and to confirm the scope of asbestos within the site.

On a floor-by-floor basis, a work plan will be developed and will include isolation and decontamination procedures.

ATL are a specialist asbestos removal contractor and full measures will be undertaken to ensure the safety of the ATL staff, UoA occupants and the general public.

As asbestos containing materials are removed they will be placed in marked polythene bags, the contents dampened down as required and the bags sealed with PVC tape. Bagged material will be stored in the work area until a suitable load for removal has been accumulated. Asbestos removed from site will be taken to one of the three designated disposal sites in the Auckland area. These are Redvale, Whitford and Hampton Downs.

On completion of the asbestos removal works and detailed cleaning of the area, Dowdell & Associates will be commissioned to carry out a visual inspection and, if they are satisfied that the area is clean, to place the relevant number of air monitors. On receipt of a positive result for the air tests the polythene masking will be removed, the area given a final clean and the polythene disposed of as asbestos contaminated waste.

ATL will conduct a daily briefing with their staff to establish the work plan and identify risks for each day's works. A formal daily signoff sheet will also be used to confirm that the floor is left in a safe condition for the following day.

If the floors can be temporarily waterproofed, we intend to remove easily craneable items from the roof with the tower crane while the soft demolition continues below.

In order to effectively remove demolition material, we propose to erect scaffolding adjacent to the existing Carpark 40 entrance up to the level of the ground floor. A 30m hooker bin will be located on the existing Wellesley Street footpath and the anticipated bin swap-over movements will be 1 truck per day.

It is more economical to recycle general demolition material (i.e. glass, ceiling tiles, vinyl flooring etc.) and it will be sorted at source. ATL & Fletchers are committed to reducing solid waste to landfills

Hard Demolition

Fletchers will engage Ward Demolition as the structural demolition subcontractor and the following methodology graphically describes how this will be achieved. Prior to commencement on site, a detailed demolition methodology will be provided to the University.

Ward Demolition will commence the hard demolition once all the linings, floor finishes, ceilings, fixed joinery, services etc. are removed (by ATL).

Ward Demolition is a specialist in structural demolition and they have gained significant recent experience in this type demolition from work carried out following the Christchurch earthquake. Ward Demolition has also updated their systems as a result and they insist that all their employees attend a daily pre-start meeting. This meeting is a critical function to ensure that the day's tasks are carried out safely, efficiently and with minimum disruption to UoA (refer to attached "Daily Pre Start Meeting" proforma)

Demolition will commence on the roof – cutting, pulverising and lifting out the upper structure. Propriety high-strength drop cloths will be installed to protect the south-

west face of building 301 (which remains occupied during the demolition). To gain access for the high-reach machinery, a section of the podium floors need to be demolished, thereby allowing a ramp to be built for the large demolition machinery.

Once the upper levels of the tower (including plant floors) are removed, the high reach machine & multi-processor will begin the process of demolishing the 4-storey podium building. Sections of the building will be systematically demolished and transported off site, working around the tower which will remain in place at a height of approximately 30 metres.

When the PC-60 has deconstructed the 301 building the demolition of the tower can commence. The drop cloths that will be fixed to the face of building 301 will be essential to protect the face of the building from debris.

As this is a very technical demolition, due to the proximity of the demolition site to occupied buildings, Peter Ward and John Kendall will conduct the on-site management of the hard demolition works for Ward Demolition. Their team is trained to carry out all aspects of this demolition, as demonstrated in the attached "Skills Matrix".

Ward Demolition will truck the concrete demolition material to Onehunga, where it will be processed, crushed and on-sold as recycled material. Records will be kept of this recycling regime and they will be available to the University on request.

Once demolition is complete, a survey of the existing building will be completed and appropriate cleaning will be conducted to remove any soiling as a result of the demolition.

GENERAL NOTES

- 1. All concrete elements of the existing building to be removed with a high reach excavator are to be pulverised to reduce aggregate size to reduce point loads on slabs below to reduce the risk of uncontrolled collapse.
- 2. Demolition debris is to be scrapped clear of the building as it is created.
- 3. Floor units are to be removed prior to supporting beams where possible to reduce the risk of uncontrolled collapse of the building.
- The engineer is to be contacted in the event of any irregularities 4. with the drawings.
- Dust supression by way of water from fire truck. 5.
- 6. Please refer http://www.youtube.com/watch?v=Kz S7P52htQ for video of demolition sequence.

Project Timeline

Key Denotes site inspection by CPEng engineer.

Duration (Weeks)

Services isolation and diversions	Duration TBC
Asbestos removal	Duration TBC
Hi Level Podium Tower Demolition	► 7w
Tower roof strip and plant removal	3w
Upper tower demolition	2w
Lower tower demolition and cart away	► 3w
base slab and foundations demolition and cart away	5 w
	Duration = 17 weeks





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Stage 5 - Deconstruction

• Deconstruct building in location shown using high reach with multi processor.

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Stage 6 - Deconstruction

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Stage 8 - Deconstruction

• Deconstruct building in location shown using high reach with multi processor.

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Stage 9 - Deconstruction

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Stage 11 - Deconstruction

- Build ramp in location shown to allow high reach excavator to deconstruct South West end of building.
- Deconstruct building in location shown using high reach excavator with multi processor.

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Stage 12 - Deconstruction

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Stage 14 - Deconstruction

• Deconstruct building in location shown using high reach with multi processor.



• Deconstruct building in location shown using high reach with multi processor.

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Stage 15 - Deconstruction

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Stage 17 - Deconstruction

• Deconstruct building in location shown using high reach with multi processor.

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Stage 20 - Deconstruction

• Deconstruct building in location shown using high reach with multi processor.

• Deconstruct building in location shown using high reach with multi processor.

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Stage 21 - Deconstruction

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Stage 23 - Deconstruction

• Deconstruct building in location shown using high reach with multi processor.

Stage 24 - Deconstruction

• Deconstruct building in location shown using high reach with multi processor.

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Dust Control

Dust control is acknowledged as a serious concern of the University. To manage dust, Ward will water down the demolition material manually with a hose (refer photo 1).



The high reach PC600 is also fitted with a water connection at the end of the machine to water down material at the source (refer to photo 2).



Another form of dust minimisation used by Ward Demolition is the "Buffalo mist spray unit". The Buffalo Turbine Monsoon misting system is an all-inclusive dust suppression, odour control and smoke control solution especially designed for the Demolition (refer to photo 3).



Noise Control

We appreciate that noise is to be reduced to minimise the impact on the University's normal operations.

Ward Demolition's excavators have rock breakers fitted with suppressors to minimise the sound to a manageable level. We will also ensure that Ward Demolition abides by the resource consent noise conditions and this will be verified on site using sound monitors.

Time of Week	Time period	Fine Duration of Work beriod Typical Duration Noise Limit		Duration of Work Short Duration Noise Limit		
		L _{eq} (dBA)	(dBA)	Leg (dBA)	L _{max} (dBA)	
Weekdays	06:30- 07:30	60	75	65	75	
	07:30- 18:00	75	90	80	95	
	18:00- 20:00	70	85	75	90	
	20:00- 06:30	45	75	45	75	
Saturdays	06:30- 07:30	45	75	45	75	
	07:30- 18:00	75	90	80	95	
	18:00-20:00	45	75	45	75	
	20:00-06:30	45	75	45	75	
Sundays and Public	06:30- 07:30	45	75	45	75	
holidays	07:30- 18:00	75	90	80	95	
	18:00- 20:00	45	75	45	75	
	20:00-	45	75	45	75	

Table 1: The recommended upper limits for construction noise received in residential zones as per Table 2 of NZS 6803

		Daily P	re Start Mee	eting	
	Job Name:	·····			
	Day:	_Date:	Month:	Year:	
Job Number:	Site Controlle	er:		·····	

1. Issues carried through from previous day:

2. Today's work areas:

3. Day's Tasks to achieve:

4. TA and Hazard ID Checks and Reminders:

New Hazard on this T/A	Eliminate, Isolate, Minimise	Controller

5. Machine, Equipment issues:

6. House Keeping issues:

7. Safety and PPE issues:

8. Attendees:

Name:	Sign:
-	





Safety Training and Competency Register

PROJECT/SITE : Auckland University - Science building

			Training Course Name								
Percon	Site Induction	Data	Asbestos	Building Construction Passport	Copy of Drivers Licence	Emergency First Aid	Forklift F Endorsement	Height and Harness	Red Zone Pass	Rollers	TORO Consent
		Data Euroine e			25/22/2224						
Fred Manuel		Expires		20/05/2015	25/03/2021						
		Licence/ID			CB179579						
Gerard Sweeney		Expires		21/01/2015							
		Licence/ID									
Hanna Kendall		Expires		28/03/2015							
		Licence/ID		57687							
Irie Moon		Expires		21/01/2015							
		Licence/ID		381391							
Mark (Black Ass) F	R	Expires		24/03/2014		28/07/2014	4/12/2012		30/06/2013	4/12/2012	
		Licence/ID		433865			BL015943		15861	BL015943	
Matt Brown		Expires	1/02/2015	24/03/2014		25/08/2014			13/03/2013		
		Licence/ID	08999	340930					2716		
Peter Ward		Expires		1/09/2012		28/07/2014	6/06/2020		30/06/2013	6/06/2020	
		Licence/ID		272575					512		
Ratu Samani Vosa	ł	Expires		21/01/2015							
		Licence/ID									
Richard Kareko		Expires		21/01/2015							
		Licence/ID		212929							
Scott Timperley		Expires		21/01/2015							
		Licence/ID									

Tracks	Truck Class 2	Truck Class 3	Truck Class 4	Truck Class 5	Vehicle Policy Agreement	Wheels
4/12/2012	4/12/2012	4/12/2012	4/12/2012	4/12/2012		4/12/2012
BL015943	BL015943	BL015943	BL015943	BL015943		BL015943
6/06/2020	6/06/2020	6/06/2020	6/06/2020	6/06/2020		6/06/2020





			Training Cours	e Name							
			Asbestos	Building Construction	Copy of Drivers	Emergency	Forklift F	Height and	Red Zone Pass	Rollers	TORO Consent
Person	Site Induction	Data		Passport	Licence	First Aid	Endorsement	Harness			
Temple Moon		Expires		21/01/2015							
		Licence/ID									
Tomasi Uliafa		Expires		21/01/2015							
		Licence/ID									
Wayne (Farmboy)	1	Expires		21/01/2015							
		Licence/ID									
Zoran Piyic		Expires		21/01/2015							
		Licence/ID									

Competency Key

N: Not Trained	
I: Under Supervision	
R: Requires Supervision	
P: Proficient	
T: Trainer	
C: Completed	