



STRUCTURAL REPORT

# 81-85 Campbell Street Surry Hills NSW

PREPARED FOR  
The Salvation Army

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# Structural Report

## Revision Schedule

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19.09.22	1	Preliminary Issue	Rod Pratt	Rod Pratt
30.09.22	2	Revised Issue	Rod Pratt	Rod Pratt
25.10.22	3	Revised Issue	Rod Pratt	Rod Pratt
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## Executive Summary

Northrop Consulting Engineers (Northrop) have been engaged by The Salvation Army to provide structural engineering services for the development of new commercial premises 81-85 Campbell Street Surry Hills NSW.

The purpose of this report is to provide an overview of the structural components of the new commercial premises at 81-85 Campbell Street Surry Hills.

Based on our site inspection and investigations undertaken to date as well as concept design documentation development with the wider design team, we are of the opinion that a structural system is readily determined that is suitable for the proposed commercial building.

We remain available to provide additional structural advice as required.

Yours faithfully,



**Rodney Pratt**

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# 1. Introduction

## 1.1 Project Background

The Salvation Army (TSA) own a collection of properties in the Sydney Inner City which are used to support people who are experiencing hardship or injustice, including alcohol or other drug dependency, homelessness, family and domestic violence, emergency accommodation and disaster services. The properties' uses vary from short term crisis and domestic violence accommodation, longer term transitional housing, alcohol and drug withdrawal management and a residential rehabilitation centre.

TSA is seeking to refurbish and/or redevelop several of these sites as a part of their Inner-City Project renewal program of social mission services, aiming to improve the quality of accommodation and the services they are able to provide to people in need. Most of the existing facilities are no longer fit for purpose and require excessive maintenance.

In the current framework of social care providers within the inner Sydney area, many people have found themselves moving through each of the systems periodically, without transitioning out of the circle of disadvantage and harm. The TSA services sought as part of its 'Inner City Projects', the subject of these applications, aim to create platforms and pathways for people to build their lives in ways that are meaningful and purposeful, and ultimately transition out of the care systems currently on offer and into more stable and permanent housing, with the required support.

81-85 Campbell Street is a part of this collection of properties sought to be redeveloped and is currently used as commercial office space. It comprises of two address/allotments 81-83 Campbell St is publicly listed for lease, and the 85 Campbell St is currently vacant.

## 1.2 Site Description

The site is located at 81-85 Campbell Street, Surry Hills within the City of Sydney Local Government Area (LGA). It is located to the northern east of Central Station and south of Museum Station and forms a corner of the street block bound by Campbell Street and Foster Street (north), Hands Street, Reservoir Street (south), Mary Street (east) and Hands Lane (west). The site is irregular in shape and has primary frontages to Campbell Street and service access via Foster Street. The site comprises two allotments, legally described as Lot 2 DP213619 and Lot 2 DP213619 and has a site area of 593m<sup>2</sup>. The site itself does not contain a heritage item, however is located within the vicinity of both a number of heritage listing items and the Reservoir Street and Fosterville Heritage Conservation Area under the Schedule 5 of the Sydney LEP.

The site currently contains two separate buildings. The current buildings and fit out of the office spaces are dated and do not maximise the potential of the site, located in close proximity to Central Station and within an emerging tech/creative hub of Surry Hills.

## 1.3 Proposed Development

The proposed works at 81-85 Campbell St seek to redevelop the site to provide high-quality commercial office space and retail space that will be leased out to provide long term sustainable income to support the mission of The Salvation Army. The proposed works to include:

- Demolition of all existing improvements and structures on 85 Campbell Street,
- Retention of façade of 81-83 Campbell Street, including exposing face brickwork and re-establishing blocked up window openings;
- Construction of a new 7-storey commercial office building comprising:

- Extension and reconfiguration of Basement with 11-space carpark; bicycle storage; plant mechanical services and utilities; and end-of-trip facilities.
- Ground floor lobby and retail office/showroom/commercial space
- Commercial office space on Levels 1, 2, 3, 4 and 5
- Small terraces on Levels 2, 4 and 5
- Level 06 Shared Amenities and larger outdoor courtyard for commercial tenants and their visitors
- Rooftop plant and extension and augmentation of services and utilities to the development as required.

Despite not being heritage listed or within a Heritage Conservation Area, the project team believe that there is merit in retaining the façade of 81-83 Campbell Street. The frontage of the new works in the location of the existing 85 Campbell Street building is stepped back to allow for the retention of the existing street tree.

#### 1.4 Site Investigations

Rodney Pratt of Northrop Engineers attended site on 18 May 2022 and 8 August 2022. The purpose was to inspect the observable structural components of the existing buildings in order to inform the structural design of the new components of the proposed building.

#### 1.5 Architectural Documentation

The architectural documentation referred to in the proposed works has been developed by SJB, project number 6591. Documentation reviewed to date is the following:

#	DRAWING NAME	REV
DA-0000	COVER	15
DA-0101	SITE PLAN	15
DA-0102	LOCALITY PLAN	15
DA-0301	DEMOLITION PLAN BASEMENT	15
DA-0302	DEMOLITION PLAN GROUND FLOOR	15
DA-0303	DEMOLITION PLAN LEVEL 01	15
DA-0304	DEMOLITION PLAN ROOF	15
DA-0305	DEMOLITION ELEVATION NORTH	15
DA-0306	DEMOLITION ELEVATION WEST	15
DA-1001	FLOOR PLAN BASEMENT	15
DA-1002	FLOOR PLAN GROUND FLOOR	15
DA-1003	FLOOR PLAN LEVEL 01	15
DA-1004	FLOOR PLAN LEVEL 02	15
DA-1005	FLOOR PLAN LEVEL 03	15
DA-1006	FLOOR PLAN LEVEL 04	15
DA-1007	FLOOR PLAN LEVEL 05	15
DA-1008	FLOOR PLAN LEVEL 06	15
DA-1009	FLOOR PLAN ROOF LEVEL	15
DA-1401	ELEVATION NORTH	15
DA-1402	ELEVATION EAST	15
DA-1403	ELEVATION SOUTH	15

DA-1404	ELEVATION WEST	15
DA-1501	SECTIONS 1 & 2	15
DA-1502	SECTION 3	15
DA-1503	TREE STRATEGY - SECTIONS	15
DA-4901	SIGNAGE MAIN ENTRANCE	15
DA-6031	VIEW FROM THE SUN - 9AM TO 11AM - EXISTING	15
DA-6032	VIEW FROM THE SUN - 11.15AM TO 1.15PM - EXISTING	15
DA-6033	VIEW FROM THE SUN - 1.30PM TO 3PM - EXISTING	15
DA-6034	VIEW FROM THE SUN - 9AM TO 11AM - PROPOSED	15
DA-6035	VIEW FROM THE SUN - 11.15AM TO 1.15PM - PROPOSED	15
DA-6036	VIEW FROM THE SUN - 1.30PM-3PM - PROPOSED	15
DA-6101	AREA PLAN GFA	15
DA-8001	PHOTOMONTAGE VIEW 01	15
DA-8002	PHOTOMONTAGE VIEW 02	15
DA-8003	EXTERNAL FINISHES 01	15
DA-8004	EXTERNAL FINISHES 02	15

## 2. Existing Building Structure

### 2.1 General Description

The existing buildings at 81-85 Campbell Street are proposed to be demolished, with the exception of the façade of 81-83 Campbell Street and a portion of existing sandstone footing to 85 Campbell Street adjacent to the tree on the verge.

The façade at 81-83 Campbell Street is an existing two/three storey unreinforced masonry brick façade with associated brick parapet. The façade has numerous regular windows at all levels and an access driveway to the basement level.

We note that a survey of the existing façade has been undertaken. Refer to documentation prepared by LTS Lockley (reference number 42410DT 24-05-22).

Portions of the existing façade also form a retaining and shoring wall to the basement level.

The existing footing to the 85 Campbell Street northern boundary is proposed to be kept in order not to disturb the existing root zone of the adjacent tree.



### 3. Proposed Building Works

The proposed building works comprise a new seven storey commercial premises with basement level car parking and a rooftop communal space.

The building maintains the existing façade to 81-83 Campbell Street, which will be permanently supported by the new building.

#### 3.1 Imposed Loading

The following imposed loads are proposed for the design of the building:

Proposed Use	Proposed Loading in accordance with AS1170.1
General Unit	1.5kPa
Balconies	3kPa
Stairs – common	4kPa
Corridors, hallways, lobbies, Ramps	4kPa
Plant Rooms	5kPa minimum, or as required for the particular plant equipment
Roof Trafficable	1.5kPa
Roof Non-trafficable	0.25kPa
Commercial	3kPa
Rooftop Communal Area	5kPa
Planter Areas	5kPa
Outdoor Landscaped Areas	5kPa, or as noted on plans
Car Park	2.5kPa

#### 3.2 Lateral Stability

The proposed building is required to comply with the requirements of AS1170.0 and AS1170.4 in relation to the building's stability under lateral loads such as wind and earthquake loads.

Given the presence of an existing portion of existing unreinforced masonry brick façade at 81-83 Campbell Street, the building has been designed to limit the ductility of the building so as to minimise the risk of cracking of the existing masonry.

The building has been designed for the following design criteria:

Criteria	Value
Design Code	AS1170.4:2007
Location	Sydney, NSW
BCA Importance Level	2

Design Event for Safety (ULS)	1:500
Probability Factor, $K_p$	1.3
Hazard Factor, $Z$	0.08
Subsoil	Shale
Site Subsoil Class	$C_e$
Earthquake Design Category	EDC II
Performance factor $S_p$	0.77
Ductility factor $\mu$	1.25

The stability of the building will be provided through the concrete walls forming the lift shaft and the concrete wall on the southern boundary.

### 3.3 Shoring to the Basement Level

Portions of the boundary will require to be shored in order to construct the proposed basement level. These portions are at 85 Campbell Street fronting Campbell Street and Mary Street.

The preliminary structural design proposes a cantilevered contiguous piled shoring and shotcrete wall will provide the required support for these basement walls.

The shoring wall is proposed to be a 'wet' wall and so will require drainage to be considered at its base. This will require coordination with the architect and hydraulic engineer.

Preliminary design earth pressures have been provided in the geotechnical report prepared by Douglas Partners numbered 218811.00.R.001.Rev0 and dated October 2022:

Material	Unit Weight (kN/m <sup>3</sup> )	Earth Pressure Coefficient		Ultimate Passive Earth Pressure (kPa) <sup>1</sup>
		Active ( $K_a$ )	At Rest ( $K_0$ )	
Fill / Firm Clay	20	0.4	0.6	-
Residual Clay	20	0.35	0.5	-
Weathered Shale (very low strength to low strength)	22	0.25 <sup>2</sup>	0.4 <sup>2</sup>	400 <sup>2</sup>
Medium and High Strength Shale	24	0 <sup>2</sup>	0 <sup>2</sup>	3500 <sup>2</sup>

Figure 1. Retaining wall design parameters (Douglas Partners)

### 3.4 Footings and Foundations

The proposed building will be founded on concrete bored piles founded in underlying medium to high strength shale bedrock.

Preliminary footing design parameters have been provided in the geotechnical report prepared by Douglas Partners numbered 218811.00.R.001.Rev0 and dated October 2022:

Material Description	End Bearing (kPa)		Shaft Adhesion (kPa)	
	Allowable	Ultimate	Allowable	Ultimate
Compacted Filling	150	500	10	20
Stiff / Very Stiff Clay	150	500	15	25
Weathered Shale (very low strength to low strength)	1,000	3,500	100	150
Medium and High Strength Shale	3,500	30,000	300	450

**Figure 2. Footing design parameters (Douglas Partners)**

Preliminary design suggests that 750mm diameter piles with a 4.5m socket into bedrock will be a suitable preliminary footing for support of the primary columns for the building.

### 3.5 Vertical Support

Vertical support for the building is proposed to be reinforced concrete columns and reinforced concrete walls.

The reinforced concrete walls can be either precast concrete or cast insitu using permanent or temporary formwork subject to fire rating requirements.

The façade is proposed to be either load bearing precast or reinforced concrete columns. This will be determined in detailed design.

The lift shaft and associated walls adjacent to the stair shaft, and the southern boundary wall will be either precast concrete or cast insitu concrete walls.

### 3.6 Floor Plates

The suspended floor levels are proposed to be post-tensioned concrete slabs. These slabs will comprise a flat soffit where possible, though the slab will fold through wet area setdowns.

The current preliminary structural design has provided varying depth slabs at each level dependant on the structural loading arrangement.

The building steps back to the south at Levels 3, 4 and 5, forming balconies at each of these levels.

### 3.7 Existing Façade

The existing façade will be retained during demolition. This will require the provision of temporary stability to the façade as the rest of the supporting structure is demolished.

It is proposed to provide structural steel walers and associated diagonal braces to temporarily support the façade. The braces will be founded on concrete footings poured within the basement. It is likely that small cut-outs in the Ground floor slab (and possibly the first-floor slab) will be required to accommodate the diagonal braces.

When the new building structure is constructed it is proposed to provide the existing façade with new permanent supports into the back side of the wall.

### 3.8 New Façade

The new façade is proposed to be finished with glazed masonry to the eastern portion, and finished concrete to the western portion of the façade.

The façade can be either a non-load bearing façade supported off galvanised steel lintels or it could be load bearing and incorporated into a precast concrete panel.

If it is non-load bearing reinforced concrete columns will need to be incorporated at regular centres on the inside face of the façade.

If precast panels are used as the façade system they will need to be either utilised as load bearing elements and tied into the slab using sleeved dowels, or installed after the structure has been installed and clipped to the face of the structure. This would necessitate internal load bearing columns to the inside face of the façade.

### **3.9 Rooftop Area**

The rooftop area comprises areas for communal activities, landscaping and plant equipment.

## 4. Conclusion

This report has been provided in support of the Development Application for this property.

We consider that there are realistic structural solutions for the structural components of the proposed commercial building that are in keeping with good construction practice.

We recommend this proposal and remain available to provide further structural advice as required in support of this development.

Yours faithfully,

A handwritten signature in black ink, appearing to be "R. Pratt".

**Rodney Pratt**

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