Moubarak & Partners Consulting Engineers Pty Ltd

Yeshiva College, Bondi
Structural Condition Assessment

For:

Karimbla Properties (No 10) Pty Ltd

Job No: 23014
DATE: 21/03/2023

Prepared by: Moubarak and Partners Consulting Engineers Pty Ltd
[redacted]
Greenacre
NSW 2190

Telephone: [redacted]
Email [redacted]

Authorised by: Anthony Moubarak

Moubarak & Partners Consulting Engineers Pty Ltd

CONTENTS

DISCLAIMER

This report has been prepared in good faith and with due care, having regard for the scope of the brief and the timeframe for reporting. It is provided for the information of the party only to whom it is addressed.

We have generally used and relied upon information from consultants and other sources regarded as authoritative and reputable.

No liability for negligence or otherwise is assumed by Moubarak and Partners Consulting Engineers Pty Ltd (MPCE) for any loss or damage suffered by any party to whom this report is not addressed resulting from their use of this report. The whole or any part of this report must not be produced or copied or provided to any party to whom it is not addressed without MPCE's written consent

LIMITATIONS

This report has been prepared on the basis of a visual 'walk through' inspection carried out on the 8th March 2023

This Structural Condition Report does not represent an in-depth analysis to identify any latent defects nor does it provide a conclusive estimate of the cost of any rectification work. Such estimates as may be provided are intended to be an indication of the nature of such deficiencies only. No structural analysis and design calculations have been carried out for the preparation of this report, nor has any material testing been carried out or any concealed areas been opened-up for inspection.

Work on these aspects have not been done by MPCE and these matters are expressly not dealt with in this report as they require a more comprehensive study than our instructions allow. The opinions expressed in this report are specifically qualified in this way

1. INTRODUCTION

Moubarak and Partners Consulting Engineers **(MPCE)** were engaged by Karimbla Pty Ltd to assess the structural condition of the Synagogue building located at **Yeshiva College, Bondi**. MPCE were required to visually inspect the condition of the existing Synagogue building and identify any pre-existing visible structural defects. The amount and the severity of the defects identified will form the basis of the following structural assessment and final conclusions.

The Synagogue within Yeshiva College Bondi, located at **36 Flood St, Bondi** was visually inspected by MPCE on **08.03.2023** with representatives from Meriton present. The purpose of the inspection was to gain a more thorough understanding of the site, the building construction type of the Synagogue, and the structural condition of the existing Synagogue building structure. Our visual observations at the time of the inspection were noted and photographed.

The following report will outline these observations and findings, which will be the basis of our overall final conclusions. Sketches and photographs taken at the time of the inspection outlining our findings are included in the report. A photographic record of the photographs taken at the time of the inspection are also included in the Appendix of this report.

MPCE are Structural Engineering Consultants who specialise in all aspects of Structural Engineering Design as well as building audits and reporting. The representative who carried the inspection and compiling of this report is Anthony Moubarak – Director/Principal Structural Engineer.

2. SITE DESCRIPTION

2.1. Site Configuration

The site is located at **36 Flood St, Bondi NSW 2026** and is located in Sydney's Eastern suburbs and is approximately 7km East of the Sydney CBD. The site consists mainly of a college building as well as the Synagogue Building. The two buildings are attached with a masonry brick wall, which runs in the East-West direction dividing the two buildings at the Synagogue level. The site extends from Flood St at the Western end, then across to a number of neighbouring properties along the Eastern Boundary along Anglesea St. The site has a connection to Anglesea St and is occupied by a single dilapidated building, which is understood to be a former dwelling. (Only limited external observations of this building were conducted). Access into the site is via a ramp entry from Flood St, which slopes downwards along the Northern boundary of the site. Refer to Figure 1 over the page for a graphical summary of the site.

Figure 1 – Site Location

2.2. Building Description

As mentioned earlier, the college and Synagogue buildings are joined together and are divided by a masonry brick wall at the Synagogue level, which appears to be non-load bearing. The buildings are also joined at the level above via a fire escape passage that appears to be constructed much later after the original construction of the synagogue. The original building appears to be constructed around the 1950's-1960's. The Synagogue building specifically, appears to be of reinforced concrete construction with a series of prominent arches that make up the roof structure of the Synagogue. These also appear to be of reinforced concrete construction. It is understood that the original design of the Synagogue was completed by Harry Seidler, however we are not aware to what extent of the original design remains as there seems to be a number of subsequent internal and external changes to the building. The base of the arches are supported by a series of beams that span the width of the Synagogue. It appears that the beams supporting these arches are then supported by primary beams at each end of the building, which run perpendicular to these arch support beams. The primary beams appear to be supported by reinforced concrete columns. The façade consists generally of brick masonry walls, which appear to be non-load bearing. The Northern masonry brick façade appears to be cement rendered. The Synagogue building is approximately 50m long and 20m wide and consists of three levels. The college building immediately adjacent extends one level above and overlooks the Synagogue arched roof. Refer to Figures 1-4 for building description.

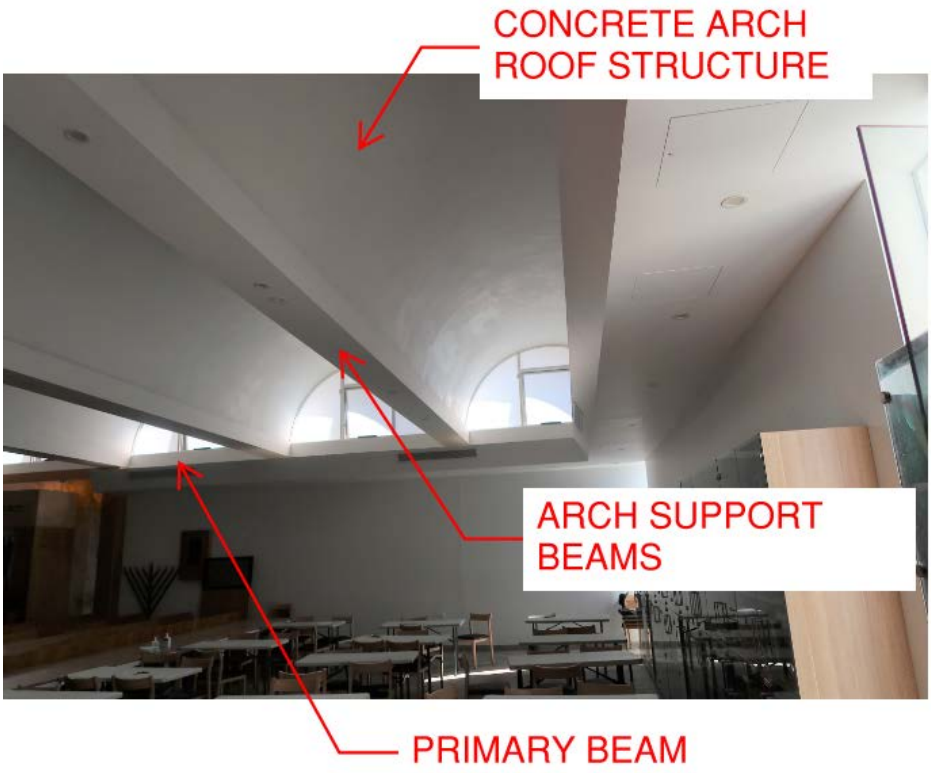


Figure 2 – Building Description Summary (View from Inside Synagogue)

Figure 3 – Building Description Summary (View from College Building)

Figure 4 – Building Description Summary (View Between Buildings)

3. OBSERVATIONS

During the inspection the following was observed:

- Cracking, concrete spalling and corrosion of exposed reinforcement at the Southern end of the concrete arches adjacent to the fire escape passage. This was evident in multiple locations along this end. Refer to Figure 5 below and Photos S01-13 of the photographic record in the Appendix.

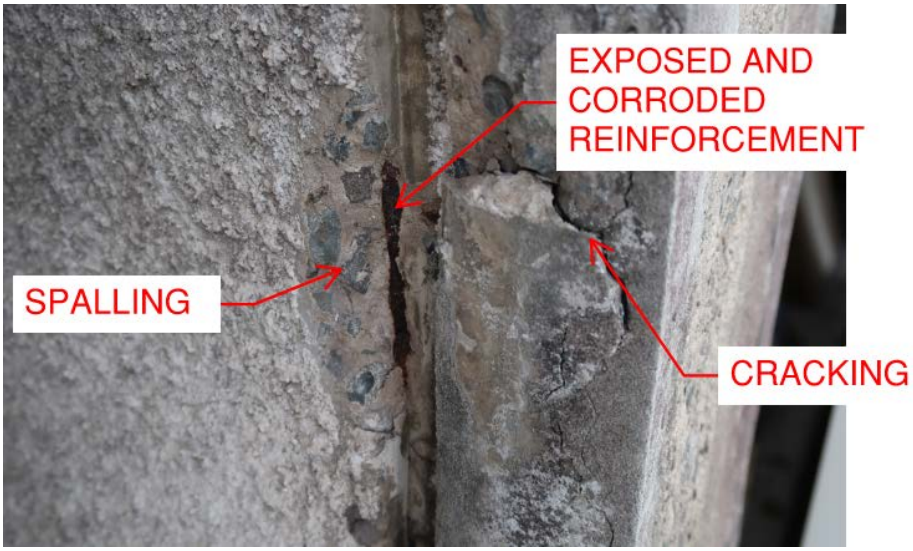


Figure 5 – Cracking and Spalling of the Concrete Arches

- This is an indication of apparent “concrete cancer” whereby exposed reinforcement corrodes and expands, therefore inducing internal stresses within the concrete due to the reinforcement volume change. The build-up of these increased internal stresses over time leads to further

cracking and concrete spalling resulting in further exposure of reinforcement to the elements and therefore continuing the corrosion and repeating the process.

- Honey combing of the concrete at the arches was also observed. This is due to insufficient vibrating of the concrete at the time of construction, where air voids are left resulting in the honey comb effect observed. The issue with this is that reinforcement at these locations is exposed or has insufficient cover resulting in the corrosion of the reinforcement. Refer to Photos S03, S09, S012

- Weathering and rotting of the timber slat roof cladding base were also observed on the Southern end of the Synagogue building. The ends of these slats appear to have been exposed to rainwater over the years, which appears to have rotted the timber. The gap between the slats and the top of the concrete surface appears to be a water ingress path, which may have further damaged these timber slats. This could not be viewed during the inspection as these are covered by the roof membrane. Refer to Figure 6 below and Photographs S05 and S07 in the Appendix of this report.

Figure 6 – Weathering of the Timber Slat Cladding Base

- Weathering of the Synagogue roof membrane was observed. Weathering was in the form discoloration, surface irregularity, and weathering at the membrane joints. Refer to Figure 7 below and Photos S14-15 in the Appendix of this report.

Figure 7 – Weathering of the Roof Membrane

- Exposed electrical wiring and scattered service conduits were observed above the roof arches. Refer to Photos S14-16.

- Cracking, concrete spalling and corrosion of exposed reinforcement at the Northern side of the concrete arches, at the side of the entry ramp from Flood St was observed. This was evident in multiple locations along this side also. Refer to Figure 8 below and Photos S18-23 of the photographic record in the Appendix

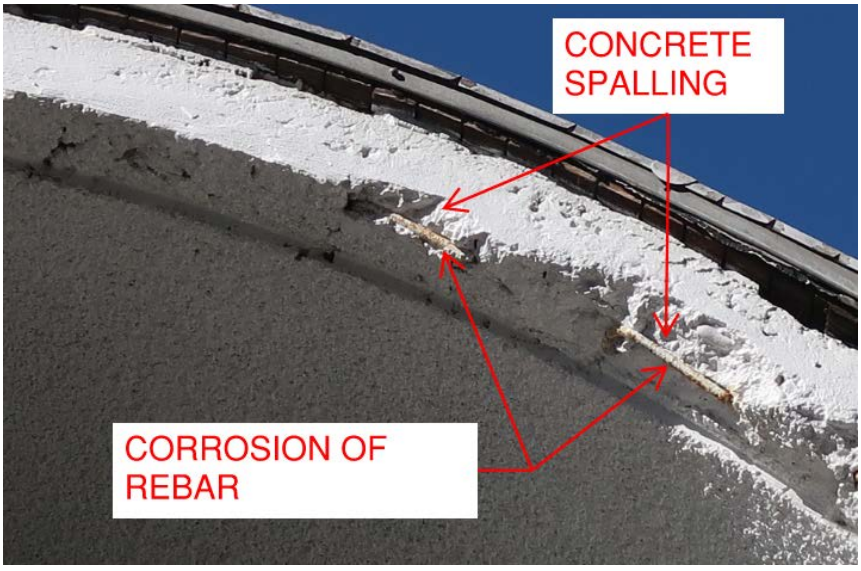


Figure 8 – Cracking and Spalling of the Concrete Arches at the Northern End

- The former residential building located at the rear of the site at the Eastern end was observed to be significantly dilapidated. Significant damage to the timber window and door frames, cracking to the masonry walls, cracking of the glass windows and staining to the masonry wall facades were all observed. Refer to Photographs S30-48 in the Appendix of this report.

4. CONCLUSION

From our observations on site and our assessment of the condition of the Synagogue building, we conclude the following:

1) The significant and widespread cracking, spalling and corrosion of exposed reinforcement indicates the apparent onset of “concrete cancer” to the arch roof structure.

2) The structural integrity of the Synagogue building at the time of the inspection still appeared to be satisfactory.

3) The apparent onset of “concrete cancer” may lead to further damage and possibly more serious structural damage if remedial measures are not implemented.

4) Being within a couple of kilometres of the coastal seawater, the issue of “concrete cancer” is increasingly problematic as the exposed reinforcement is more susceptible to corrosion in areas close to the coastline. There may be a chance of a spread of the “concrete cancer” throughout the roof arch structure.

5) The concrete roof arch structure appears to have reached the end of its design life. On-going maintenance and remedial measures are now required to extend the life of the building for its current usage.

6) Remedial measures of the affected areas may include the following procedure:

- Removal of any loose or spalled concrete in the damaged areas identified

- Assessment of the extent of the corrosion of the rebar. Rebar may be retained and surface rust removed. If rust has penetrated the re-bar, then this needs to be cut out and replaced. Bars replaced will then be site welded to the existing reinforcement. All site welds and surface rust must be treated with a non-corrosive agent.

- Removal of spalled concrete and concrete removed for the treatment of the reinforcement must be replaced and be made good with an approved concrete repair mortar such as the Fosroc Renderoc products.

- Final remedial measures are to be confirmed

7) Due to the limitations of a visual inspection, the extent of these possible remedial works are not known as the damage observed at the ends of the arch structure may have extended below the timber roof slats and roof membrane.

8) Remedial works appear to be also required in terms of providing satisfactory waterproofing. Potential water ingress paths were identified between the top of the concrete arch and the timber slats supporting the roof membrane. Slats have weathered and rotted as a result of this water exposure and require removal and replacement.

9) Service conduits exposed and scattered above the roof arches need to be re-diverted to the appropriate safety and building standards.

5. APPENDIX

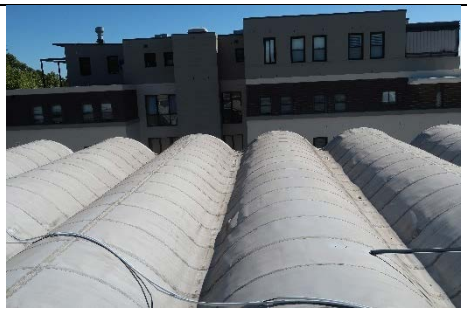
APPENDIX 1 - PHOTOGRAPHS

	
S01 – Concrete spalling, cracking and corrosion of exposed rebar Southern end	**S02 – Concrete spalling at edge of arch Southern end**
	
S03 – Honey combing of concrete at concrete arch at Southern end	**S04 – Cracking of concrete arch at Southern end**
	
S05 – Rotting of timber slat roof cladding base	**S06 – Corrosion of exposed rebar and concrete spalling of arch at Southern end**

APPENDIX 1 - PHOTOGRAPHS (Continued)

	
S07 – Rotting of timber slat roof cladding base	**S08 – Corrosion of exposed rebar and concrete spalling of arch at Southern end**
	
S09 – Honey combing at concrete arch and corrosion of exposed rebar	**S10 – Corrosion of exposed rebar and concrete spalling of arch at Southern end**
	
S11 – Corrosion of exposed rebar and concrete spalling of arch at Southern end	**S12 – Honey combing and cracking at concrete arch at Southern end**

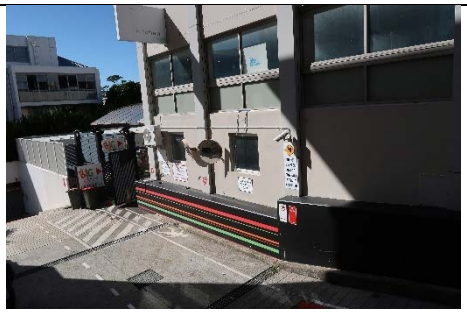
APPENDIX - PHOTOGRAPHS (Continued)

	
S13 – Cracking and spalling of the concrete arch at the Southern end	**S14- View of the roof membrane over the concrete roof arches looking North**
	
S15 – Wearing of the roof membrane	**S16 – View of both the college and synagogue roofs**
	
S17 – View of the Northern façade of the synagogue building	**S18 – Corrosion of exposed rebar and concrete spalling of arch at Northern end**

APPENDIX - PHOTOGRAPHS (Continued)

	
S19 – Corrosion of exposed rebar and concrete spalling of arch at Northern end	**S20 – Significant concrete spalling of the concrete arch at the Northern end**
	
S21 – Corrosion of exposed rebar and concrete spalling of arch at Northern end	**S22 - Corrosion of exposed rebar and concrete spalling of arch at Northern end**

APPENDIX - PHOTOGRAPHS (Continued)

	
S23 – Significant concrete spalling of the concrete arch at the Northern end	**S24- View of the vehicular access ramp located at the Northern end**
	
S25 – View of the North-Eastern corner of the Synagogue building	**S26 – Concrete blast wall at Flood St**
	
S27 – Concrete blast wall at Flood St	**S28 – Yeshiva College front entry from Flood St**

APPENDIX - PHOTOGRAPHS (Continued)

	
S29 – View of Synagogue roof from Flood St	**S30- Masonry façade of the storage building located at the Eastern end**
	
S31 – Damaged front entry door of the storage building	**S32 – Cracking along the masonry joints at the base of the masonry wall of the storage building**

APPENDIX - PHOTOGRAPHS (Continued)

	
S33 – Cracking of the storage building masonry wall	**S34- Rotting of the storage building door entry timber framing**
	
S35 – Rotting of the timber window frames of the storage building	**S36 – Rotting of the timber window frames of the storage building**

APPENDIX - PHOTOGRAPHS (Continued)

	
S37 – Rotting of the timber window frames of the storage building	**S38- Rotting of the timber window frames of the storage building**
	
S39 – Rotting of the timber window frames of the storage building	**S40 – Rotting of the timber window frames of the storage building**
	
S41 – Rotting of the timber window frames of the storage building	**S42 – Rotting of the timber window frames of the storage building**

APPENDIX - PHOTOGRAPHS (Continued)

	
S43 – Rotting of the timber window frames of the storage building	**S44- Rotting of the timber window frames of the storage building**
	
S45 – Rotting of the timber window frames and window cracking at the storage building	**S46 – Rotting of the timber window frames and window cracking at the storage building**
	
S47 – Rotting of the timber window frames of the storage building	**S48 – Staining of the brick wall façade of the storage building**