BOT ENGINEERING

CONSULTANT ADVICE NOTICE

CHORA – 7 HARTINGTON STREET, NORTHCOTE

STRUCTURAL INTEGRITY REVIEW OF PROPOSED RETENTION SOLUTION ADJACENT TO EXISTING HERITAGE STRUCTURE

Client

Date: 30.03.2026
CAN 1.2

Attention:
Greek Orthodox Archdiocese of Australia Pty Ltd
C/O HUB Property Group Pty Ltd
A: Level 5, 68 Clarke Street, Southbank VIC 3006
E: Steve.Cahill@hickory.com.au

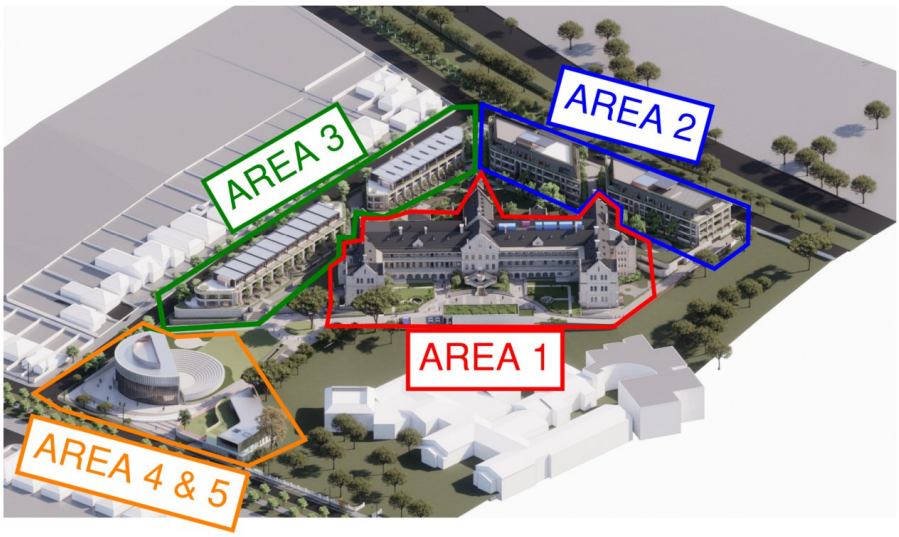
THE PROJECT

The proposed development CHORA, includes the complete restoration of the existing heritage building and the construction of several new multi-purpose spaces. The site is situated at **7 Hartington Street, Northcote** and has landholding encompasses an area of approximately 28,000 m², which extends along the length of Hawthorn Road, between St Georges Road and Hartington Street. Its boundary is irregular in form, and the development has been strategically divided into several stages/areas.

PROJECT TEAM AND AVAILABLE DOCUMENTATION

CONSULTANT	COMPANY	REFERENCE
Client	Greek Orthodox Archdiocese of Australia Pty Ltd	john.tatoulis@gmail.com
Architect	KUD	billy@kud.com.au
Project Managements	HUB Property Group	shahn@hubpg.com.au
Builder	Hickory Pty Ltd	Steve.Cahill@hickory.com.au
Heritage Consultant	Andronas Conservation Architecture	aa@andronas.com.au
Registered Building Surveyor	Codus Building Surveyors	
ESD Consultant	GIW Environmental Solutions	gary@giw.com.au

A strong consulting team is paramount when undertaking a development of this scale due to the complex nature of the project. Their expertise in areas such as design, planning, engineering, and project management ensures efficient decision-making, regulatory compliance, and successful execution, ultimately leading to the creation of high-quality dwellings that meet both functional and aesthetic requirements.



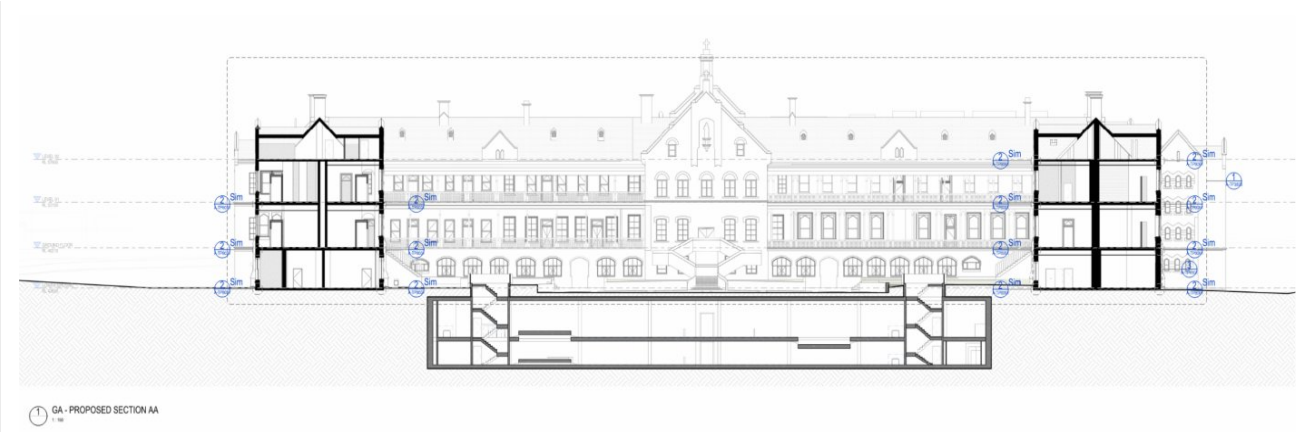
Source: HUB Property group – CHORA operating Management Plan

BOT ENGINEERING

BOT ENGINEERING CONSULTANT ADVICE NOTICE

SUBJECT AREA/MATTER

BOT Engineering has been requested to provide structural engineering advice to support the proposed basement parking and its proximity to the heritage building, as flagged at a pre-application stage. A discussion of associated potential impacts and proposed mitigation measures to ensure protection of heritage fabric is requested alongside this advice.



Source: KUD Architectural Drawings – Project 22-004 – A-TP3701 Rev – Section AA

STRUCTURAL ENGINEERING ASSESSMENT REPORT

Pursuant to the current proposed design, a two-level retention structure has been proposed to be constructed adjacent to the existing heritage building. The basement is strategically positioned a minimum 700 mm from the existing heritage-listed building. This advice outlined in this Consultant Advice Notice (CAN) is intended to support the planning application and address matters raised during the pre-application meeting, specifically relating to:

- Potential structural impacts on the heritage building arising from excavation and basement construction
- Appropriate mitigation measures to ensure the protection and retention of heritage fabric
- Structural considerations, risks, and recommended construction methodologies
- Compliance with relevant Australian Standards, the National Construction Code (NCC), and local council heritage requirements

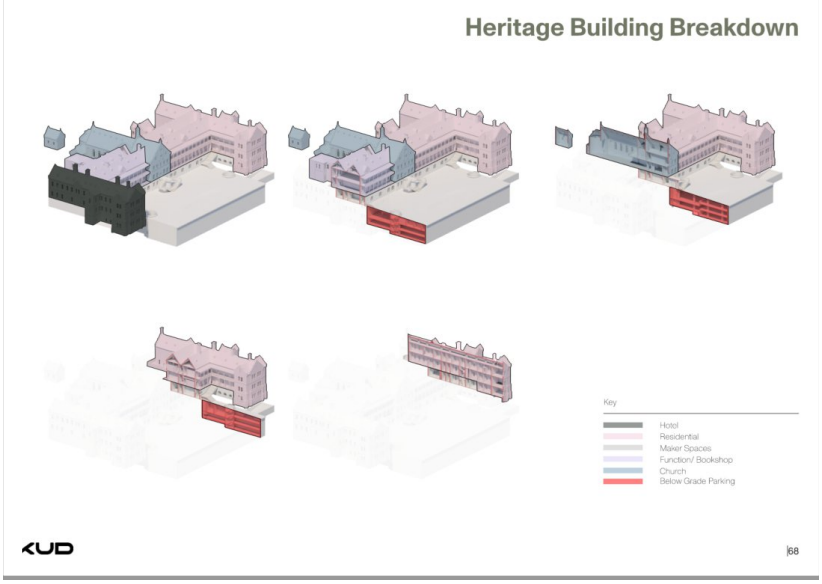
This report outlines the anticipated structural impacts, engineering assessment, and recommended protection measures to ensure the safe delivery of the basement works while maintaining the integrity of the adjacent heritage structure.

EXISTING CONDITIONS

HERITAGE BUILDING

Victorian Heritage Register: H1950
Victorian Heritage Inventory (Archaeological Sites): H7822-0922
Darebin Planning Scheme Heritage Overlay: HO175

The heritage structure is a multi-level building, constructed predominantly from masonry and lightweight materials. The existing heritage building breakdown has been detailed in KUDs Urban Context Report with the below image providing a diagrammatic representation of the proposed heritage building breakdown.



Source: KUD Urban Context Report – Project 22-004 – Page 68 of 145

A historical investigation/review of the existing footings was undertaken by the client. The below images suggest the existing shallow foundations were constructed with masonry and bluestone foundations respectively. It is difficult to confirm the overall width of strip footings; however, they appear to only extend a maximum 400-500mm beyond the outer face of the existing heritage wall structure. This appears to be within the 700mm zone allowed in the current design documentation set.

Source: Images provided by the client - investigation works of the existing footings along the exterior wall on the west elevation - heritage structure.

The existing heritage footing depths and overall configuration will also be confirmed during a formal geotechnical investigation being scheduled for the near future. Nevertheless, the above photos and expectations are that the foundations for the heritage structure will consist of:

- Shallow strip footings constructed from historical bluestone foundations
- These footings will have unreinforced masonry (URM) walls
- Variable footing depths and bearing is expected for this structure due to its configuration.
- BOT is mindful of the sensitivity to ground movement, vibration, and changes in soil moisture respectively over the life of the building and adjacent structures respectively.

SITE CONSTRAINTS

- Existing multilevel heritage structure to be re-developed and retained.
- Proposed adjacent basement excavation depth: Two levels (Approx. 6–7 m)
- Offset to heritage building: Minimum 700 mm
- Likely presence of mixed fill, silty clays, and variable founding materials typical of Northcote geology. Based on nearby geotechnical reports, the site is likely to be located within the Province of Quaternary 'Newer Volcanics' Basalt and associated soil profiles (To be confirmed once site specific geotechnical report is obtained).
- BOT expects to encounter extremely weathered and highly weathered basalt soil profiles at relatively shallow depths.

STRUCTURAL RISKS ASSOCIATED WITH THE PROPOSED BASEMENT

The proximity of the excavation to the heritage structure introduces several engineering risks:

GROUND MOVEMENT AND SETTLEMENT

Deep excavation can induce lateral soil relaxation and adverse vertical settlement, potentially causing:

- Cracking of the unreinforced masonry walls in the heritage structure.
- Differential settlement
- Loss of bearing capacity beneath shallow footings
- Undermining of Existing Footings

VIBRATION IMPACTS

Construction activities such as piling, jackhammering and excavation works may cause:

- Micro-cracking in masonry
- Dislodgement of loose mortar
- Progressive deterioration of fragile heritage elements

ENGINEERING STANDARDS AND COMPLIANCE FRAMEWORK

The assessment and recommendations herein are guided by the following standards and frameworks:

- AS 1726 – Geotechnical Site Investigations
- AS 2159 – Piling Design and Construction
- AS 4678 – Earth-Retaining Structures
- AS 3600 – Concrete Structures
- AS 1170 Series – Structural Actions
- NCC Volume One – Structural Provisions
- Local Council Heritage Overlay Requirements (City of Darebin)

RECOMMENDED MITIGATION AND PROTECTION MEASURES

To ensure the heritage building is not adversely affected by the proposed construction of the adjacent basement works, the following recommendations are outlined:

DETAILED GEOTECHNICAL INVESTIGATION

A site-specific geotechnical assessment is to be completed to determine:

- Existing footing depth and bearing conditions of the heritage building
- Soil parameters and profiles for the proposed retention design
- Groundwater conditions
- Settlement predictions under excavation loads

A geotechnical brief specifically outlining the site-specific requirements was previously prepared by BOT Engineering. The geotechnical investigation is scheduled to be undertaken within the second quarter of 2026 respectively.

RETENTION SYSTEM

A robust retention system is required to prevent ground movement and potential adverse structural implications to the existing heritage footings and above ground, unreinforced masonry structure. Given the nominated 700 mm offset, a piled retention wall structure, with a single row of temporary anchors will be detailed and designed for the two-level basement. Pursuant to receipt of the site-specific geotechnical report, it will likely suggest a reduced pile spacing along the sensitive retention elevation to ensure minimal undermining risk to the existing heritage structure (This will likely be 2 x pile diameter). Additionally, “At Rest” soil conditions in response to lateral pressured will be implemented in the BOT Engineering structural design to further mitigate the soil movements along sensitive boundaries.

Significant care and monitoring will be required during the construction phase of the retention structure directly adjacent to the heritage building. Piling through basalt profiles may induce vibrations and dynamic loads onto the existing heritage structure, hence sensitive monitoring requirements and stipulations will be implemented into the structural engineering design documentation. Below is an example of the monitoring scope that will be recommended for these sensitive areas.

MONITORING POINT NOTES — **IN ACCORDANCE WITH AS3600**

MP1. PRIOR TO THE COMMENCEMENT OF EXCAVATION, THE BUILDER IS TO UNDERTAKE A COMPREHENSIVE DILAPIDATION SURVEY OF EXISTING ADJACENT BUILDINGS, PAVEMENTS AND SERVICES.

MP2. THE EXISTING BUILDING AND ADJACENT CAPPING BEAM SECTION WILL BE MONITORED FOR LATERAL DEFLECTION TO ENSURE ACCEPTABLE TOLERANCES ARE NOT EXCEEDED.

MP3. SURVEY POINTS SHALL BE ESTABLISHED AS SHOWN ON RETENTION LAYOUT PLAN - THESE WILL BE MARKED WITH A RED STAR.

MP4. IN EACH CASE A POINT SHALL BE ESTABLISHED AT GROUND LEVEL AND ONE AT THE TOP OF EACH ADJACENT BUILDING.

MP5. THE LOCATION AND LEVEL OF THESE POINTS SHALL BE MONITORED BY A LICENSED SURVEYORS AT FORTNIGHTLY INTERVALS INITIALLY WITH A BASELINE MONITORING SCHEDULE TO BE UNDERTAKEN BEFORE ANY EXCAVATION WORK ARE UNDERTAKEN ON SITE TO BE USED AS A REFERENCE POINT.

MP6. BOT ENGINEERING NOTIFICATION PROCEDURE: 10mm THRESHOLD FOR ADJACENT EXISTING STRUCTURES

COLOUR	HORIZONTAL MOVEMENT THRESHOLD	ACTION
GREEN	0-6mm	NO ACTION REQUIRED
AMBER	7-9mm	INCREASE MONITORING FREQUENCY TO WEEKLY
RED	+10mm	CEASE CONSTRUCTION AND BOT ENGINEERING TO UNDERTAKE SITE INSPECTION PRIOR TO WORKS COMMENCING TO ENSURE EXISTING STRUCTURES HAVE NOT BEEN ADVERSELY IMPACTED. NO WORKS ARE TO RE-COMMENCE UNTIL WRITTEN CONFIRMATION IS PROVIDED THAT THE LATERAL DEFLECTION IS ACCEPTABLE

MP7. BOT ENGINEERING NOTIFICATION PROCEDURE: 20mm THRESHOLD FOR OTHER AREAS

COLOUR	HORIZONTAL MOVEMENT THRESHOLD	ACTION
GREEN	0-12mm	NO ACTION REQUIRED
AMBER	13-19mm	INCREASE MONITORING FREQUENCY TO WEEKLY
RED	+20mm	CEASE CONSTRUCTION AND BOT ENGINEERING TO UNDERTAKE SITE INSPECTION PRIOR TO WORKS COMMENCING TO ENSURE EXISTING STRUCTURES HAVE NOT BEEN ADVERSELY IMPACTED. NO WORKS ARE TO RE-COMMENCE UNTIL WRITTEN CONFIRMATION IS PROVIDED THAT THE LATERAL DEFLECTION IS ACCEPTABLE

MP8. IN THE EVENT WHERE IT IS NECESSARY TO RAISE AN ALARM, THE REQUIRED ACTION AS NOMINATED ABOVE SHALL BE IMPLEMENTED WITHIN A 24 HOUR PERIOD.

Source: BOT Engineering structural design drawings – typical monitoring note requirements.

CONTROLLED CONSTRUCTION SEQUENCING

The construction sequencing and methodology will need to be specifically adapted for the sensitive boundaries respectively. The below steps are an initial guide of the measures that will be required for these areas.

Step 1: Install all necessary monitoring equipment along the sensitive elevation of the heritage structure.

Step 2: Piles are to be set out accurately on site to ensure the piles are drilled at designated locations as per the approved design documentation. Pile sockets are to be de-watered and cleaned of debris. A geotechnical consultant will need to verify soil conditions to ensure compliance with design assumptions.

Step 3: Prefabricated reinforcement cage for each pile will need to be lowered into the drilled Socket or pre-poured concrete socket, ensuring the orientation of the vertical bars and minimum cover to the reinforcement is achieved as per the approved design documentation. Regular inspections by BOT engineering will be undertaken during these works.

Step 4: undertake localised excavation to allow for the installation and implementation of the capping beam reinforcement in accordance with approved design documentation. The bottom of the proposed capping beam will need to have a RL higher than the base of the existing footings respectively to ensure this initial excavation does not adversely affect the structural integrity of the heritage structure respectively. Pursuant to current design documentation and sections, BOT is of the opinion that this is achievable as the existing foundations appear significantly below current NGL and proposed retention levels.

Step 5: Builder to construct and pour capping beam to laterally lock of the retention pile along this sensitive elevation. Builder/contractor will then need to ensure capping beam has reached adequate/approved design concrete strength before excavating to a depth of 300-500mm below the proposed Location of the first row of ground anchors. Overall bulk excavation levels are to be in accordance with advice outlined in the site-specific geotechnical report.

Step 6: Set out and subsequently drill, install, stress, and lock off the ground anchors strictly in accordance with manufacturers specification and installation design manuals. BOT will ensure the ground anchors have adequate clearance below existing foundations (Minimum 1500mm).

Step 7: The shotcrete wall structure will then be constructed for Basement one level respectively.

Step 8: Progress with bulk excavation in acceptable increments (As per geotechnical report recommendations) to reach the desired/nominated bulk excavation level (BEL). And repeat the procedures outlined in step 6 and 7 respectively for each drop.

Step 9: Construct basement 2, slab on ground, Basement 1 suspended slab and Ground floor level suspended slab to lock in the retention system and achieve final condition for the retention scope.

VIBRATION MANAGEMENT RECOMMENDATIONS

Construction-phase monitoring is not just a risk-management tool, it is a core engineering control that materially reduces the likelihood of damage to heritage fabric and provides a defensible, evidence-based framework for decision-making

- Care is to be taken during excavation works.
- Piling directly adjacent to the existing heritage structure will be at reduced spacing to ensure the sensitive boundary is not undermined. Care to be taken during piling works to ensure no adverse dynamic impacts to the structure.
- Avoid rock coring or breaking where possible during excavation works.
- Use low-vibration excavation methods, where possible.
- Maintain safe separation distances for plant - 700mm offset is a suitable and structurally satisfactory offset for the piling machinery.
- Implement vibration monitoring with conservative limits and guidelines.

BOT ENGINEERING

RISK MATRIX – BASEMENT EXCAVATION NEAR HERITAGE BUILDING (APPROX 700 MM OFFSET)

Risk ID	Risk description	Likelihood	Consequence	Risk rating	Mitigation / control measures
R1	Ground settlement affecting heritage footings	Possible	Major	Low-Medium	Detailed geotechnical investigation; conservative retention design; staged excavation; real-time survey monitoring with specific trigger levels.
R2	Lateral ground movement causing cracking of unreinforced masonry walls	Possible	Major	Low -Medium	Reduced pile spacing along sensitive boundaries; temporary anchors; staged excavation in shallow lifts; monitoring of wall inclinometers and building movement.
R3	Undermining of existing heritage structure – shallow bluestone footings	Unlikely	Major	Medium	Pre-excavation footing investigation; underpinning (mass concrete/mini-piles/needle beams) where encroachment is predicted; strict excavation limits and supervision.
R4	Construction vibration damaging heritage fabric	Possible	Moderate–Major	Medium–High	Vibration management plan; low-vibration excavation methods; avoid rock breaking where possible; vibration monitoring with conservative limits and stop-work thresholds.
R5	Groundwater changes impacting long-term stability	Unlikely	Moderate	Low	Geotechnical assessment of groundwater; controlled dewatering; provision (If necessary). BOT is of the opinion this is unlikely.
R6	Inadequate temporary works or sequencing	Unlikely	Major	Medium	Engineer-approved temporary works design; documented construction sequence; site inspections; contractor method statements reviewed and endorsed by structural engineer.
R7	Unidentified pre-existing defects attributed to works	Possible	Moderate	Medium	Pre-construction dilapidation survey (photos + report); agreed baseline condition with owner; builder and client with ongoing inspections and documentation.
R8	Non-compliance with heritage obligations	Unlikely	Major	Medium–High	Early engagement with heritage consultant; alignment with relevant authorities; protection measures documented; monitoring and regular engineering site inspections.

BOT ENGINEERING

BOT ENGINEERING RECOMMENDATIONS/OPINION

Pursuant to the preliminary assessment and review of the existing heritage structure and proposed adjacent retention, BOT Engineering is of the opinion that:

- A two-level basement, located approximately 700 mm from the heritage building **can be constructed safely**, provided the recommended mitigation measures are implemented.
- The key to protecting the heritage structure lies in **controlling ground movement**, **managing vibration**, and **maintaining structural support** to the existing footings at all stages.
- With appropriate retention design, and real-time monitoring, the risk of adverse impacts to the heritage building can be reduced to an acceptable low level.

The proposed basement development adjacent to the heritage building presents manageable engineering challenges typical of urban infill construction in Melbourne. With a well-designed retention system, careful construction sequencing, and a robust monitoring regime, the heritage structure can be effectively protected throughout the works. The identified risks are considered manageable with standard industry controls, and the protection of the heritage fabric can be effectively maintained throughout the excavation and construction phases. BOT Engineering will continue to provide structural oversight, undertake ongoing review of contractor methodologies, and certify structural elements as required to ensure the works proceed in compliance with applicable standards, best-practice guidance, and the project's Heritage Victoria protection requirements.

BOT Engineering have completed other engineering designs and reviews of similar scale and are comfortable with the details and scope nominated within the engineering report.

Please feel free to contact me on 0414 545 770 should you wish to discuss any of the above further in detail.

Thank you.

Yours faithfully

Denis Botvenev – Director

BOT Engineering Pty Ltd

B.E Honors (CIVIL), B.Comm (ACTUARY), D.B&C (Building)
BLA Registered Engineering No.: PE0002058
MIEAust, NER, M.FESA, BPEQ

REPORT NOTES

This document is the exclusive property of BOT Engineering and has been tailored to the specific client and site detailed within it. No part of this document, including its entirety, may be employed for any other purpose or by any third party without the prior written consent of BOT Engineering. The opinions expressed in this document are based on BOT Engineering understanding of the proposed project scope and requested works by the client. BOT Engineering retains the right to append, amend, and/or modify the contents of this document upon receiving additional information. This document serves as a professional assessment of the engineering required for the proposed scope, however, does not constitute a guarantee or warranty.

1. The contractor must take all necessary precautions before and during demolition or construction works. Work to be undertaken strictly in accordance with all relevant Australian standards and national construction code requirements.
2. No wall or other similar structure shall be left unsupported in such a dangerous condition it may collapse due to wind or vibrations during the construction works stage.
3. It is the contractor's responsibility to ensure the overall stability of the structure whilst demolition or construction works are taking place at the site.
4. The proposed new structure is to be adequately supported and restrained to avoid any vertical and horizontal displacement and deformations occurring to the existing structure being retained.
5. It is the contractor's responsibility to secure all loose and unstable building components during the Demolition process.

Due to the limitations of the visual inspections (i.e. obstructions, concealed defects), BOT Engineering does not guarantee that all defects within the roadway structure have been identified. This report represents our findings on the specific matters discussed. Structural integrity (or otherwise) conclusions are not to be deduced of areas not covered in the report.

BOT
ENGINEERING

Company: Bot Engineering Pty Ltd

Email: info@botgroup.com.au

Address: Level 3/1 Como St, Malvern

Web: www.botgroup.com.au