

Our Ref: 17007.SI170703a 69 Kissing Point Rd- Structural Inspection

69 KISSING POINT ROAD, TURRAMURRA: SITE INSPECTION 7TH JULY 2017

1. INTRODUCTION

A structural inspection of 69 Kissing Point Road was requested by Ms Maxine Bayley (Heritage Officer Ku-ring-gai Council). The purpose of the inspection was to provide a general structural condition report of the property to provide guidance of whether the damage observed on the property was so significant that demolition of the property was required. If the property was able to be remediated, the details of the works to remediate the property were to be noted. Present at the inspection, Maxine Bayley(KMC), Hari(Shreeji), Sumeer (Shreeji). Note no fabric of the property was opened up, the inspection was limited to a visual inspection, of areas accessible by foot.

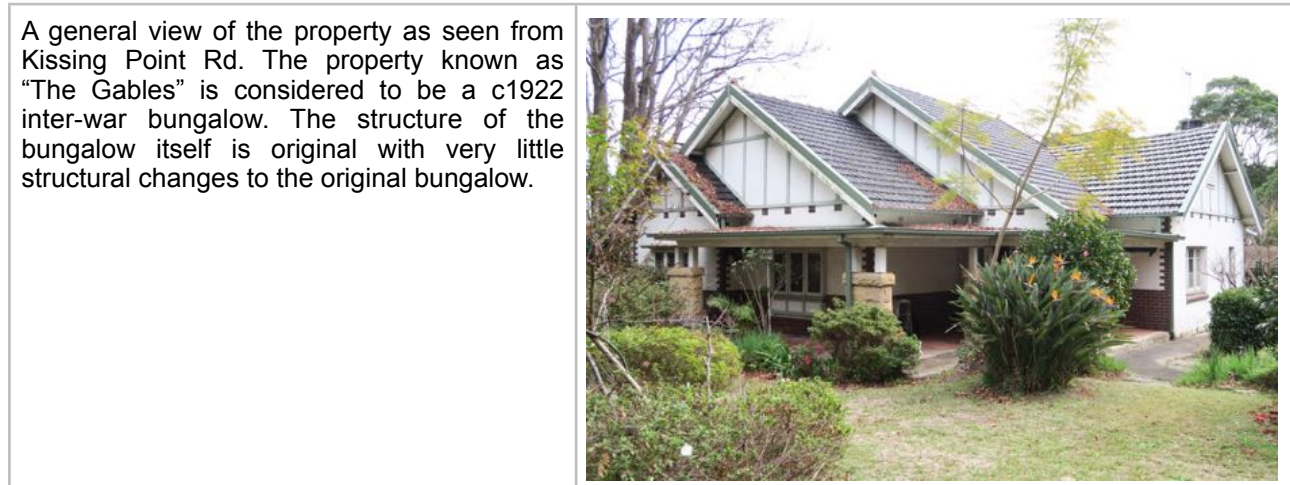
The property is constructed from double skin masonry walls, with a suspended timber floor. The roof is timber framed with concrete tiles forming the roof covering.

2. OBSERVATIONS

The photographs presented here are typical images from the site inspection, the complete photographic record is provided as appendix A.

2.1.

A general view of the property as seen from Kissing Point Rd. The property known as "The Gables" is considered to be a c1922 inter-war bungalow. The structure of the bungalow itself is original with very little structural changes to the original bungalow.



2.1.1.

A general view of the exterior of the property from the rear.



2.2. Kitchen

IMG_1449
Cracking is visible on the interior skin of brick work, above the exterior window.



2.2.1.

IMG_1450
Water damage is visible on the ceiling. It is not apparent if the water is currently entering this location or if the damage has occurred in the past, and since been rectified.



2.3. Dining Room

IMG_1452

Cracking is present on the internal southern wall.



2.3.1.

IMG_1453

Cracking is present above the window on the western wall.



2.4. Lounge Room

IMG_1456

Cracking is present above the doorway in the southern wall.



2.4.1.

IMG_1457

The junction between the rear addition and the original wall is showing some signs of minor movement.



2.5. Front door entry

IMG_1458

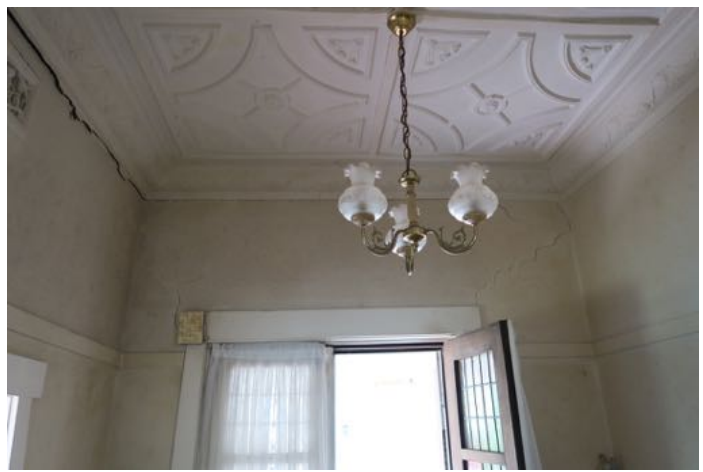
Cracking is present on the western wall in the entry way.



2.5.1.

IMG_1459

Cracking is present above the main entry doorway.



2.5.2.

IMG_1460

Cracking seen from the other side of the wall as seen in image IMG_1456



2.6. Master Bedroom

IMG_1463

Cracking on the southern wall adjacent to the window.



2.6.1.

IMG_1464

Base of the bay window shows cracking.



2.7. Bedroom Two

IMG_1469

Entry into the bedroom from the hallway.



2.7.1.

IMG_1470

Cracking is present on the upper corners of the window and below the window, similar to the main bedroom.



2.7.2.

IMG_1473

Cracking seen from the internal wall as seen in IMG_1469



2.8. Bedroom Three

IMG_1474

Cracking present at the junction of the bathroom wall/ hallway and bedroom three.



2.8.1.

IMG_1476

Cracking present in the western exterior wall. The wall in this location is showing significant bowing in the wall.



2.8.2.

IMG_1477

Cracking present in the wall between Bedroom Three and the bathroom.



2.8.3.

IMG_1478
Cracking present in the western wall.



2.9. Roof Structure

IMG_1488



2.9.1.

IMG_1493



2.9.2.

IMG_1496



2.10. External Images

IMG_1504

Cracking present in the slab on the front verandah.



2.11.

IMG_1506

Cracking at the external toilet and laundry wall junction.



2.11.1.

IMG_1514

External view of the eastern wall, with cracking visible on the corners of the windows to the dining room and the kitchen. A down pipe is present on the south east corner of the building adjacent to the dining room window.



2.11.2.

The down pipes on the property are typically not connected to a stormwater drain, the pipes empty directly to the ground adjacent to the foundations/ walls.



2.11.3.

IMG_1521

The front sandstone pier on the verandah has a down pipe emptying to the ground adjacent to it.



2.12.

IMG_1523

The sandstone pier is out of plumb by about 45mm over a length of approximately 1200mm.



2.12.1.

IMG_1527

A tree root is visible at the base of the eastern wall outside the bedroom three wall. The wall in this location has bowed outwards.



2.12.2.

IMG_1507

The wall outside bedroom three shows signs of lateral movement.



2.12.3.

IMG_1535

A view of the underfloor space at the property under the main house.

The condition of the foundations of the brick piers (if there are any) is unknown. There is evidence of water being present in the soil under the house.



3. COMMENTS

3.1. The damage observed on the property does not warrant the demolition of the property, the damage can be repaired, returning the house to a safe structural condition.

3.2. The primary cause of damage to the property is water entering the foundation soil. This water movement in the soil, is causing the foundations and internal brick piers to settle, causing cracking in the brickwork and movement in the floors.

3.2.1. The source of this water is most likely the down pipes on the property which empty directly to the ground below. It is possible that additional water is coming from the ground naturally, but considering the topography of the land that the block is situated on, this source of water should not be causing structural damage.

3.2.2. It is general practice in construction to direct water from down pipes away from a property by connecting the down pipes to the properties storm water system. This has not occurred at this property.

3.3. There are some roof framing members which require remediation, these members have possibly been damaged when the roof geometry was modified when the rear living area was constructed. The damaged members are limited to improperly installed roof struts and a structurally compromised roof purlin.

3.4. Tree roots are present close to the building west wall and these are to be investigated. For long term stability a root stop wall may be required.

3.5. A detailed pest inspection was not carried out by Shreejiconsultant as this is not our area of expertise, however during our inspection there were no obvious signs of termite damage to the structural timbers, however this should be confirmed by a suitably qualified pest expert.

4. RECOMMENDATIONS

The recommendations are presented here in order of importance and in an order which they should be carried out, a list of the structural repairs required for each room and their approximate quantities are presented in a separate table below.

It is likely that asbestos and lead paint are present in the building structure due to the age of the building.

4.1. The existing down pipes to the property are to be connected to a suitably designed stormwater system on the property. Ensure that the existing down pipes and gutters have sufficient capacity and are functional to ensure proper operation.

4.2. Following remediation of the storm water system, the existing cracks in the property can be stitched.

These cracks are to be structurally stitched with a helical reinforcement system such as Helifix or similar, to manufacturers specification. This should occur minimum six months after the down pipes have been connected.

4.3. The internal brick piers can be repacked to ensure adequate support for the floor joists is maintained, if required, the joists can be packed out to re-level the floor as required.

4.4. The sandstone pier seen in IMG_1521 at the front of the property is to be reconstructed in a plumb manner on adequate footings. The reconstruction of the pier is to be carried out by a appropriately qualified/ experienced stone mason.

4.5. The roof framing is to be repaired.

4.6. The weathered pointing at the base of the walls is to be reinstated in compatible mortar and undertaken by trade persons proficient in their trade.

4.7. The roots on the building west side are to be investigated by a suitably qualified arborist to identify if they are invasive in their nature.

4.8. The property is to be inspected by a suitably qualified pest expert.

5. SCOPE OF WORKS

General

5.1. Repack and level all existing underfloor internal brick piers.

5.2. Verify and connect all existing down pipes and drains to a suitable storm water system. No existing storm water system exists, new retention tanks and connections to the storm water drains will be required.

5.3. Repair existing cracks in masonry with helical reinforcement, at 300cts vertically, minimum 500mm beyond extent of crack on both sides. Install reinforcement to manufacturer guidelines.

5.3.1. Reinstate lime based render reinforced with stainless 316 mesh in areas where crack stitching has been carried out, do not introduce feather edges to render.

5.4. Repoint base of the walls.

5.5. Repair roof framing.

Location	Approx total crack stitch length (m)	Approx total Render repair area (m ²)
Kitchen	-	-
Dining Room	4	4
Front Entry	6	6
Master bedroom	6	6
Bed 2	5	5
Bath	0	0
Bed 3	3	3
Lounge Room	0	0
Laundry	1	0

Cost Estimates

The following cost estimates are provided for budget purposes only, they are not provided as definitive costs, verified by a quantity surveyor.

Stormwater

\$20k = new stormwater system connected to street via gravity or charged system

Crack repairs

This could be viewed 2 ways:

If looking to repair all cracks as shown in report photographs I would assume the following:

Repair all cracking

\$30k = helifix repairs

\$28k = internal and external render / whiteset repairs following crack repairs

\$6k = carpentry repairs following crack repairs

\$30k = assume full repaint of house required following completion of repairs

\$94k = sub-total

Re-pack of joists

\$7k = carpentry labour and material

Re-build sandstone pier

\$3k = using salvaged stone and flush mortar joints

Repairs to roof frame

\$3.5k = carpentry labour and material

Re-point base of walls

\$2.5k = flush mortar joints to sub-floor footing walls

Summary:

\$130k ex gst and builders overheads/ margin

\$179k inc gst and builders overheads/ margin

increase to \$200k inc GST total to allow for some unforeseen works



Sumeer Gohil
for shreeji consultant p/l

shreeji
consultant
structural civil engineers

ABN 94 095 027 320

PO Box 747
Turrumurra NSW 2074
Australia
w shreejiconsultant.com
e mail@shreejiconsultant.com
p/f +61 2 9487 4889

Appendix C: CV for Hari Gohil

heritage
conservation
remediation

shreeji consultant

structural civil engineers

ABN 94 095 027 320

PO Box 747
Turrumurra NSW 2074
Australia
w shreejiconsultant.com
e mail@shreejiconsultant.com
p/f +61 2 9487 4889

Appendix D: CV for Sumeer Gohil

heritage
conservation
remediation



IMG_1449



IMG_1450



IMG_1451



IMG_1452



IMG_1453



IMG_1454



IMG_1455



IMG_1456



IMG_1457



IMG_1458



IMG_1459



IMG_1460



IMG_1461



IMG_1463



IMG_1464



IMG_1465



IMG_1466



IMG_1467



IMG_1468



IMG_1469



IMG_1470



IMG_1471



IMG_1472



IMG_1473



IMG_1474



IMG_1475



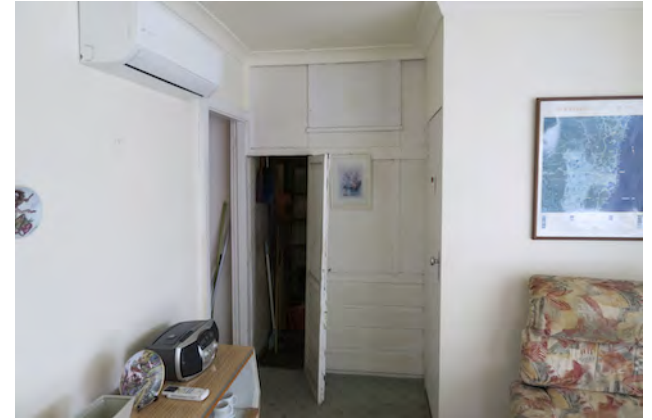
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IMG_1477



IMG_1478



IMG_1479



IMG_1480



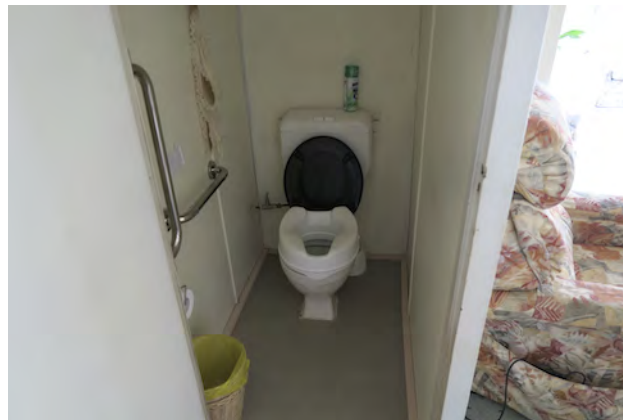
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IMG_1482



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IMG_1484



IMG_1485



IMG_1488



IMG_1489



IMG_1492



IMG_1494



IMG_1495



IMG_1496



IMG_1501



IMG_1514



IMG_1515



IMG_1516



IMG_1518



IMG_1519



IMG_1521



IMG_1523



IMG_1524



IMG_1525



IMG_1526



IMG_1527



IMG_1531



IMG_1533



IMG_1534



IMG_1535



IMG_1536



IMG_1537



IMG_1544



IMG_1545



IMG_1549



IMG_1499



IMG_1500



IMG_1502



IMG_1503



IMG_1504



IMG_1505



IMG_1506



IMG_1507



IMG_1508



IMG_1509



IMG_1510



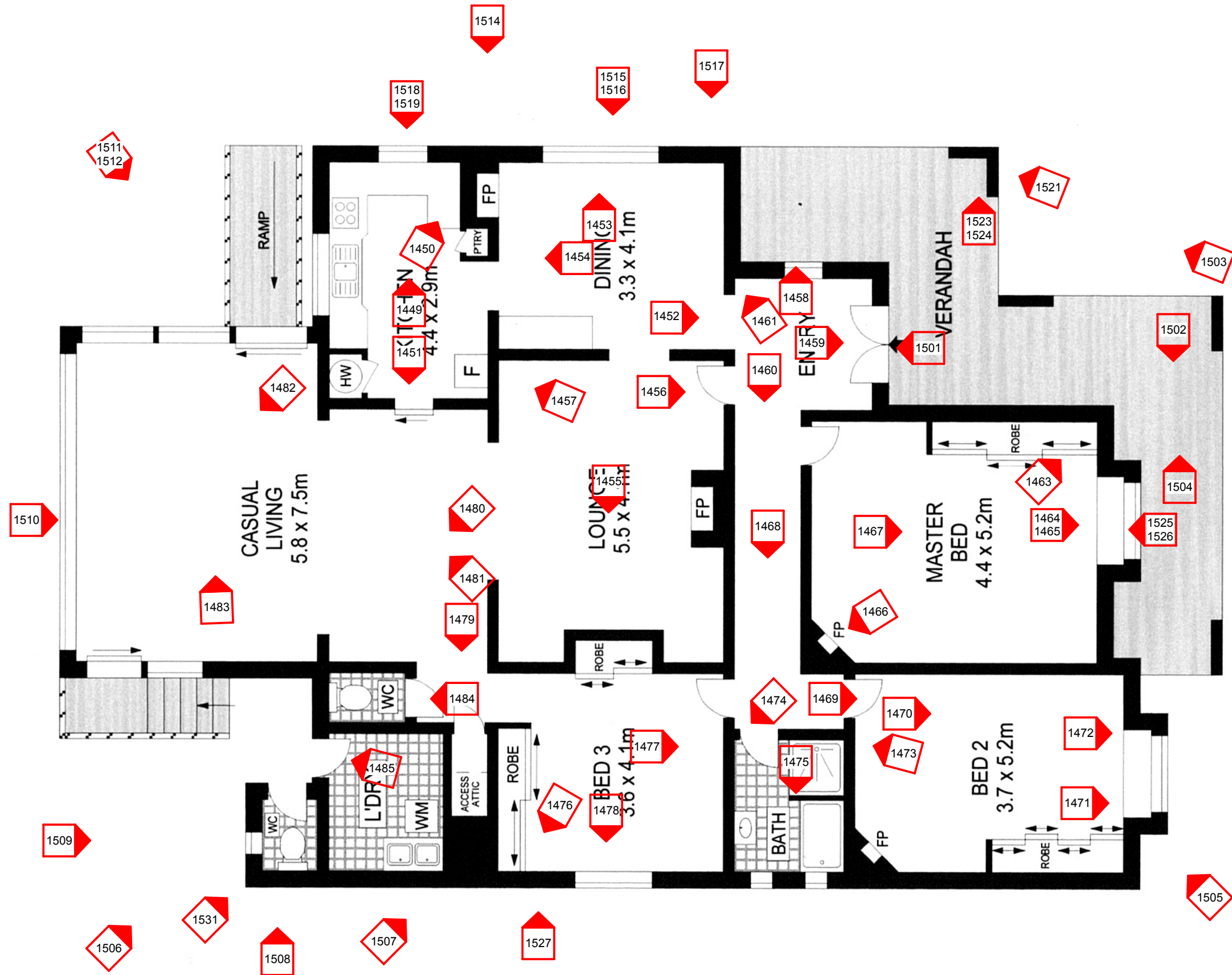
IMG_1511



IMG_1512



IMG_1517



shreeji consultant

structural civil engineers

ABN 94 095 027 320

PO Box 747
Turrumurra NSW 2074
Australia
w shreejiconsultant.com
e mail@shreejiconsultant.com
p/f +61 2 9487 4889

h a r i g o h i l | curriculum vitae

Mobile | +61 407 948 970
Email | hari@shreejiconsultant.com

education & credentials

Bachelor of Science (Civil Engineering), Honours
University of London 1972

professional affiliations

Member, Heritage Council of NSW- Technical Advisory Panel 1998
Member, Engineering Heritage Committee-Sydney Division 1996
Member, Institution of Engineers, Australia 1984
Member, Institution of Structural Engineers 1980
Member, Institution of Civil Engineers 1976
Member, International Council on Monuments and Sites 2016

professional experience

Principal, Shreeji Consultant P/L 2000-current
Senior Engineer, 1987-2000
Structural and Civil Section, Buildings Branch, DPWS
Manager, Newcastle Earthquake reconstructions project. 1989-1991
Design, document and supervision of construction with 1975-2000
NSW Public Works and Services
Director with a Sydney Consultant and Senior Engineer with a consultant in England.
Site Experience with a national contractor in England. 1972-1974

major projects

Wollongong Harbour - Seawall 2015
Inspect, assess and design remediation to the heritage listed sandstone harbour wall
Port of Melbourne, Maribyrnong Dock 2015
Assess and design temporary and permanent works for the piers
Sydney Park- Brick Kilns 2014
Inspection, design and supervision of the temporary support to brick kiln arches
Tempe Bridge - Upgrade 2014
Design, detail and supervision of the floating formwork for the piers
Cockatoo Island 2014
Inspection, documentation and supervision of remediation of the boiler chimney
Collingwood House, Liverpool 2014
Assessment and design of the stabilisation of cracking in the walls
Arts Exchange Building, Sydney 2014
Seismic Stabilisation of the gables and the tall chimney
Barrangaroo SPS 14 Relocation 2013
Assessment, review and supervise relocation of the heritage listed pumping station
'Elephant Backpacker', Sydney 2013
Assessment and monitoring of the four storey heritage listed brick structure
Concord Hospital 2013
Inspection and report on the failing tile facade accessed by high reach access
St Saviours church, Redfern 2013
Inspect, asses and document repairs to the brick structure
Sydney Park Kilns 2013
Inspection and review of the proposed repairs
Marcus Clark Building 2012
Inspection, assessment and report on the sandstone facade
National Trust Centre 2012
Inspect, assess and design seismic stabilisation to the chimneys
'Caltex' Refinery, Kurnell - Pier 2011
Inspect, assess, design and inspect repairs to concrete pier structure
Admiralty House, Kirribilli 2011
Inspect, assess, review and design stabilisation of the sandstone seawalls
No 1 Martin Place, Sydney - GPO Sydney 2011
Inspect, assess and 'make safe' sandstone facade adopting high reach access

conservation
remediation

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e mail@shreejiconsultant.com
p/f +61 2 9487 4889

machines and rope access

Ramsays Leap – Great North Wall

Document and supervise repairs to the world heritage listed wall

2010

Queen Victoria Building, Sydney

Facade remediation and McIntosh Statue Stabilisation

2010

North Beach Bathers Pavilion, Wollongong

Redesign existing ground floor, basement, promenade and amenities, rejuvenating facility for greater community usage.

2009

Glebe Town Hall

Remediation and repairs to existing building and addition of a new staircase and a lift access to facilitate greater scope of use for facility.

2009

Town Hall, Paddington

Seismic stabilisation of tower and renewal of plant platforms

2009

Victoria Parliament House

Inspect, assess, design and document repairs to facade

2008

The Great Hall, University of Sydney

Inspect, assess, review and design repairs and remediation to sandstone facade.

2008

Endeavour Bridge, Mascot

Advice on temporary works and concrete repair

2008

Metcalf Bond Store

Inspect, assess and design reuse of existing wool store to office.

2008

McLaurin Hall, University of Sydney

Inspect, assess, review and design repairs and remediation to sandstone facade.

2007

Town Hall, Sydney

Inspect, assess and make safe stone face and tower.

2007

City Hall, Newcastle

Inspect, assess and make safe stone face and tower.

2007

Central Railway Station, Clock Tower and Façade, Sydney

Investigate, record and document repairs to the sand stone clocktower and facade.

2007

Trades Hall, Sydney

Assess, design and stabilise the Heritage Frontage

2006

Singleton Court House

Design and detail seismic stabilisation of gables and chimneys

2005

Australian Museum, Sydney

Inspect, assess, design, detail and supervise stabilisation of western pediment

2004

Millers Point, Sydney

Inspect, assess, design, detail and supervise stabilisation and repair of heritage listed dwellings

2003

NSW State Library, Mitchell Wing

Inspect, assess, review and design indents and synthetic patching

2002

Prince of Wales Hospital, Edmund Blacket Building

Inspect and assess building for structural distress and recommend stabilisation.

2002

Dawes Point Park, Sydney.

Conservation and interpretation of Archaeological Site. Restoration of underground magazines in as much as possible original voussoirs.

2001

Kingston Pier, Norfolk Island

Investigation, assessment and recommendations for stabilising the convict built stone pier.

2001

St Mary's Cathedral, Sydney

Project Engineer, co-ordination, design, document and supervise, addition of spires to the existing unfinished cathedral

2000

Government House, Sydney

Investigation and documentation of seismic stabilisation of chimneys.

1999

Investigate and document repairs to damaged meat house

Sydney College of Arts

Inspect, assess and design stabilisations for adoptive reuse to Kirkbride Hospital

1999

Central Railway Station, Sydney

Project Engineer, Investigate, record and document repairs to the sand stone parapet, facade and tower. Supervise on site.

1998

education & credentials

Masters Of Structural Analysis of Historic Constructions- Erasmus Mundus Program Europe

CVUT Prague 2011/ UPC Barcelona 2012. Masters thesis on Structural Performance of Sandstone

Bachelor Of Engineering- Structural Civil Engineering

Sydney University, Broadway Campus, 2011

Bachelor Of Science- Pharmacology Major

Sydney University, Broadway Campus, 1996

Archicad for Designers

Sydney Institute TAFE College, 2007

professional engineering experience

Associate Engineer, February 2007- Current

Shreejiconsultant -Structural Heritage Engineers

Responsibilities

- Design and analysis of solutions for buildings
- Supervision of construction phases of projects
- Preparation of tender documents
- Writing specification documents
- Conducting building inspections
- Conducting site inspections
- Project management of residential construction projects
- Preparation of inspection reports
- BIM/CAD drafting
- Management of company IT infrastructure
- Client management and communication
- Accounting and invoicing

major projects

- **Scottish Hospital Legal Proceedings:2016-2017**
 - Providing expert witness evidence and advice to the Department of Planning for the Litigation case. Participate in a without prejudice conference process. Participate in a joint conferencing process with the applicants Experts.
- **Barham Bridge S60 Assessment Review:2017**
 - Assess and review the S60 application for the modifications to the state listed Heritage Bridge in Barham.
- **Black Head Bowling Club Monument- 2017**
 - Providing expert witness report on the sandstone monument involved in coroner court proceedings.
- **Barrangaroo SPS 14 Relocation:2014**
 - Assessment, review and supervise the lifting/ relocation and remediation of the heritage pumping station
- **Central Railway Station :2007- 2012**
 - Modeling and structural analysis of clock tower structure for seismic stabilisation
 - Writing of the specification documentation for the clock tower sandstone remediation, administration of the contract
- **Queen Victoria Building :2009-2013**
 - Structural analysis of the McIntosh carved marble statues for stability
 - Create the scope of works to stabilise the statues, and remediate the damage
 - Manage the remediation of the sandstone façade on York Street and George Street.
- **Sydney University, Darlington Campus :2009-current**
 - Facade Inspections of the sandstone buildings including: The Great Hall, Main Quadrangle, John Woolley Building, Anderson Stuart Building, McLaurin Hall
- **Newcastle City Hall Facade Remediation :2009-Current**
 - Construction involvement during the remediation of the facade and clock tower.
 - Evaluation/ design of an innovative non destructive method for mild steel pin removal from the clock tower.
- **Structural Inspections of large Heritage Industrial Chimneys**
 - Cockatoo Island Chimney- 50m, Sydney Park Brick Kilns Chimneys, Four Chimneys - 25-50m, John Woolley Building Chimney- 25m, Gladesville Hospital Incinerator Chimney- 35m, Rozelle College Of the Arts Incinerator- 25m
- **Structural Inspections of Industrial Brick Arched Kilns- Sydney Park Kilns**
 - Damage mapping to assess structural stability of the arch kilns, perform a thrust line analysis to ascertain stability of

the kilns.

- **No. 1 Martin Place 2010- Current**

- Sandstone Facade Inspection Internal & External Facade
- Sandstone inspection of clock tower

- **Gasworks Bridge, Parramatta 2012-2016.**

- Scoping and Inspection of sandstone units requiring remediation
- Specification and methodology for remediation of the sandstone units.

heritage
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remediation