30th October 2020

Mr Tony & Mrs Allison Nicol
C/- Micris Design
361 Stoney Creek Road
KINGSGROVE NSW 2208

Attention: Mr Michael Di Ramio

RE: ALTERATIONS AND ADDITIONS – S4.55 WORKS
2 TOURMALINE STREET, NARRABEEN

Dear Michael,

In light of the concerns raised regarding the recent demolition works at the above site, we refer to the attached site instruction 2019S0150_site instruction_200921, issued by Partridge on the 22nd September 2020.

In summary, we assessed the structural adequacy of the existing house structure, carried out a risk assessment of possible damage/injury and reviewed the site constraints associated with keeping the existing walls and ground floor slab as noted on the approved DA works. In order to allow construction works to be carried out in a safe and structurally sound manner and to meet coastal engineering requirements, we recommended to demolish the existing walls and slab, subject to Council conditions and approvals.

We have reviewed the S4.55 plans A101-A106, revision B and note that the proposed lift shaft and new external stairs have no additional structural impact relative to the current approved DA design.

Should you have any further queries please do not hesitate to contact the undersigned.

Yours faithfully,

Prepared by,

Sonia Cunningham
BE (Hons.1) BDesArch MIEAust CPEng NER(Structural)
Senior Engineer

Reviewed by,

Tadd Walford
BE(Hons) Civil Eng MIEAust Dip. PM
Associate

For and on behalf of:
Partridge Structural Pty Ltd

t 612 9460 9000 I Sydney Level 5, 1 Chandos Street, St Leonards NSW 2065 Australia
t 613 7020 5300 I Melbourne Level 6, 40 City Road, Southbank VIC 3006 Australia
e partridge@partridge.com.au I www.partridge.com.au
Partridge Structural Pty Ltd – 73 002 451 925
Partridge Event Pty Ltd – 50 139 601 433
Partridge Remedial Pty Ltd – 89 145 990 521
Partridge Hydraulic Services Pty Ltd – 11 608 027 578

Site Instruction

To	Micris Design, Bespoke Projects NSW		
Attention	Michael Di Ramio, Hassan Darwiche		
From	Sonia Cunningham, Tadd Walford		
Date	22nd September 2020	Pages (Inc Header)	Page 1 of 5
Reference	2 Tourmaline Street, Narrabeen	Project No.	2019S0150
Subject	**Assessment of existing walls and slabs and construction methodology adjacent to and beneath existing structure**		

At the request of Mr Michael Di Ramio of Micris Design, and Hassan Darwiche of Bespoke Projects NSW, Mr Tadd Walford, an Associate of Partridge Structural Pty Ltd, consulting structural and forensic engineers, carried out an inspection on the 10th September 2020 of the existing structure at the above property. Also present at the time of the inspection was Sonia Cunningham, Senior Engineer of Partridge Structural Pty Ltd. Following the inspection, the wall and floor finishes were removed to further expose the existing structure, of which Partridge has received photographs from Bespoke Projects NSW.

The following observations were made:

- The existing walls at the lower ground floor level appeared to be core-filled, reinforced blockwork.
- The existing walls at the ground floor level appeared to be block wall but not core-filled or reinforced.
- Approximately 2-3mm wide cracks were observed in the ground floor walls.
- A number of window openings at the ground floor appeared to have no lintels, and some openings had timber lintels supporting the block wall.
- Cracking was observed in the hollow blockwork over one opening on the southern wall.
- The existing concrete slab at the ground floor had a number of areas of concrete spalling and corrosion was observed on exposed reinforcement bars in these areas.

Photos of the existing structure have been provided on pages 4 and 5 of this instruction.

As part of the building works, extensive piling and underpinning is required to re-support the existing lower ground floor foundations down to a deeper level in order to support the additional floor levels and to meet the coastal engineering requirements noted in report lrJ0131-2 prepared by Horton Coastal Engineering. Partridge has provided details on drawings S2.1 and S2.2 to achieve this, noting that the existing slab and ground floor walls are to be temporarily propped during construction.

However, we understand that in order to install the piles to the depth needed for the coastal requirements (min. 9.5m embedment), localised penetrations of approx. 1m x 1m dimension would need to be cut into the slab at each pile location to allow access for the pile drilling and installation of the reinforcement cages to the required length.

Level 5, 1 Chandos Street, St Leonards NSW 2065 Australia
t 612 9460 9000 e partridge@partridge.com.au
www.partridge.com.au
Partridge Structural Pty Ltd – 73 002 451 925
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We also understand that access to install the piles along the southern boundary will be difficult with the existing slab and walls in place.

We note that the existing roof is to be demolished to allow access for the piling and for the construction of the new first floor level.

We understand that there are concerns about the structural adequacy of the existing structure, safety of workers and the public, and risk of damage to neighbouring property. As such, we provide the following comments and recommendations:

Ground floor walls:

- The ground floor walls are hollow block and so are considered structurally inadequate. The walls are at risk of failure, especially if machinery is proposed to be used in close proximity to the walls, which may cause damage to neighbouring property and/or injury of occupants of the neighbouring property, passers-by on the street, or construction workers.
- To minimise this risk the walls would need to be temporarily braced to be stable during construction, taking into account the high winds at the site and possibility of vibrations during piling works. We note that the amount and layout of wall bracing required will likely interfere with access for the piling works.
- The existing hollow block walls will need to be strengthened, most likely by core-filling and/or adding reinforcement, in order to support the proposed first floor level and roof and also to be stable under wind. As some areas of the block walls have already cracked, these areas would likely have to be replaced in order to core-fill the wall.
- For these reasons, we believe it would be safer and more efficient to carefully demolish the wall and then rebuild with a structurally adequate wall system in the exact location of the original walls and in accordance with the plans approved by Council.

Ground floor slab:

- Repair of the existing concrete slab would require the corroded reinforcement to be cut out and then repaired with new bars. Following this the spalled areas would be patched and repaired. However, we suspect the spalling observed indicates that the existing slab has insufficient concrete cover to the reinforcement, and so there is a high risk of further concrete spalling and corrosion of the reinforcement, especially considering the proximity to the ocean.
- As numerous penetrations need to be cut into the slab to allow for pile installation, the slab will need to be temporarily propped to support it. Not only will this limit access to construct the proposed new lower ground floor slab, we believe that the number of penetrations required are impractical and will impair the future structural integrity of the slab, even if the penetrations were to be infilled.
- Cutting the penetrations in the slab also exposes the reinforcement bars which creates a risk of further corrosion if not appropriately treated.
- We believe that the existing slab would require extensive repairs in order for us to certify its structural adequacy for the proposed works, and that it would be more prudent and efficient to demolish and rebuild the slab with adequate concrete cover to the reinforcement for the coastal conditions.

Lower ground walls:

- To enable installation of the southern boundary piles, machinery would either need to reach over the wall, or have machinery sit onto the ground floor slab to drill the piles, for which the slab does not have sufficient strength to support.

- Assuming the ground floor slab can be demolished, temporary bracing would be required to stabilise the lower ground walls, which, similar to the ground floor walls, will likely interfere with access for piling.
- Similar to the ground floor walls, the use of machinery adjacent to these walls also presents a risk of damage to neighbouring property and/or injury of occupants of the neighbouring property or construction workers.

In light of the above, we consider that it would be safer and structurally required to demolish the existing walls at both levels and the existing ground floor slab (subject to Council conditions). Following completion of the piling works, the walls and slab can then be re-built in the exact original locations, in accordance with the plans approved by Council and suitably designed for the coastal conditions.

All piling and temporary works are to be carried out in accordance with Partridge structural drawings and the recommendations provided in geotechnical report number 34219Rrpt, prepared by JK Geotechnics.

Should you have any further queries please do not hesitate to contact the undersigned.

Prepared by,

Sonia Cunningham
BE (Hons.1) BDesArch MIEAust CPEng NER(Structural)
Senior Engineer

Reviewed by,

Tadd Walford
BE(Hons) Civil Eng MIEAust Dip. PM
Associate

For and on behalf of
Partridge Structural Pty Ltd

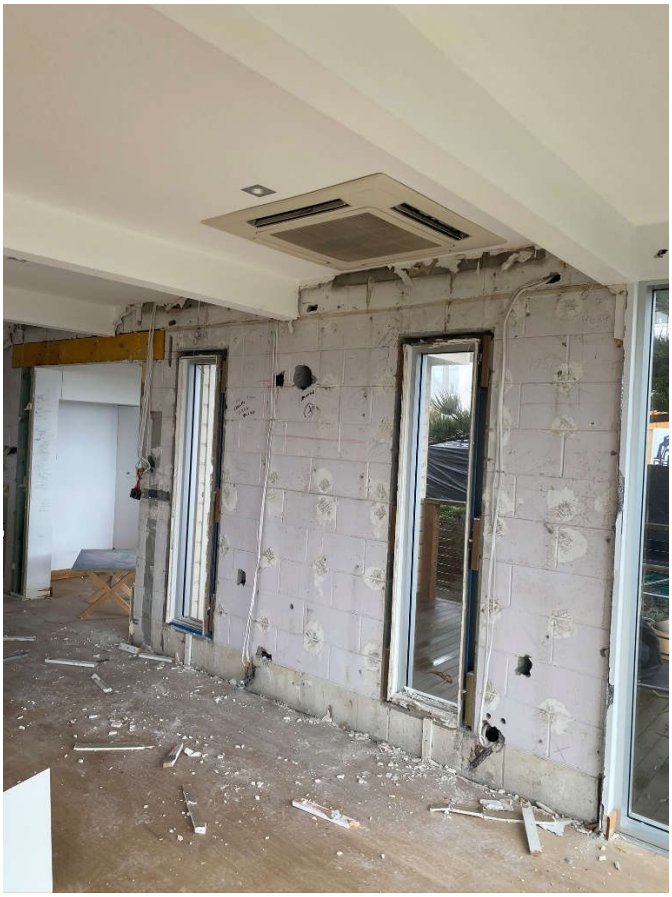

Photo 1 – Ground floor wall built with hollow blocks

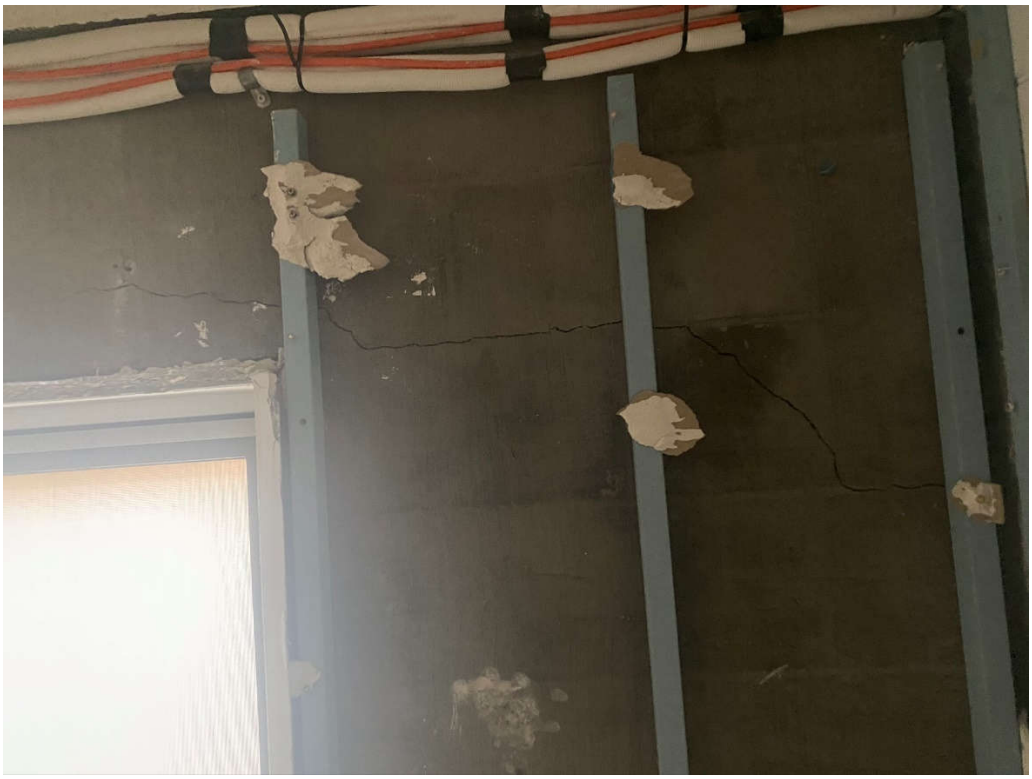

Photo 2 – Cracking observed on the ground floor hollow wall

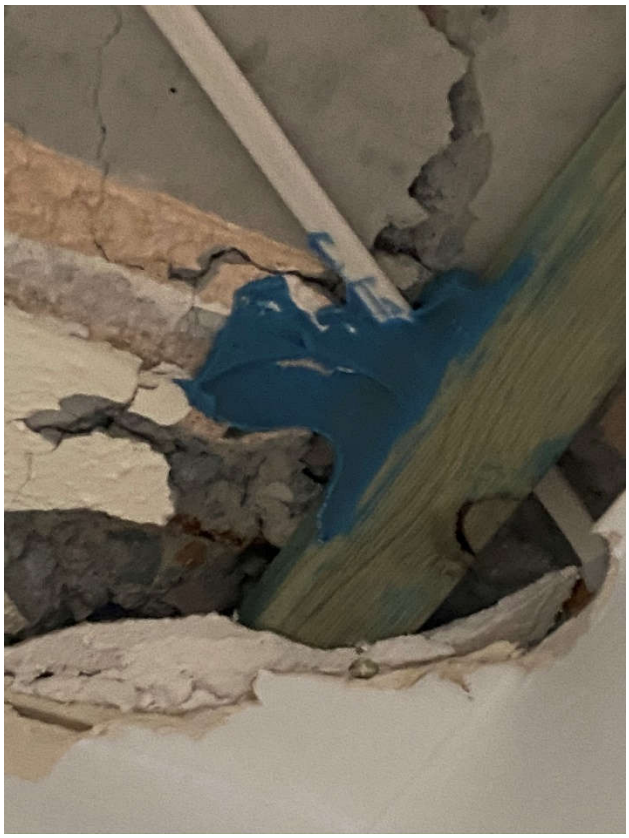

Photo 3 – Spalling ground floor slab and exposed corroded reinforcement

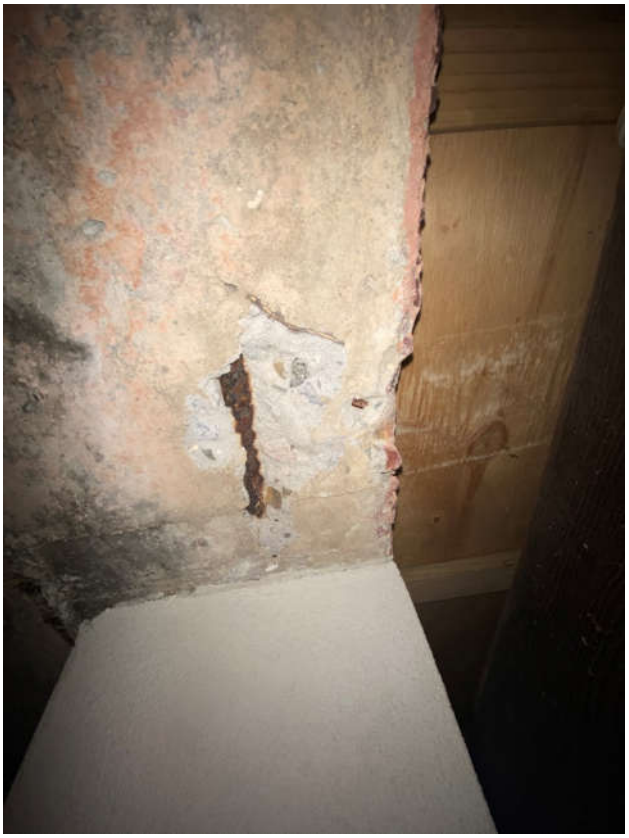

Photo 4 – Spalling ground floor slab and exposed corroded reinforcement

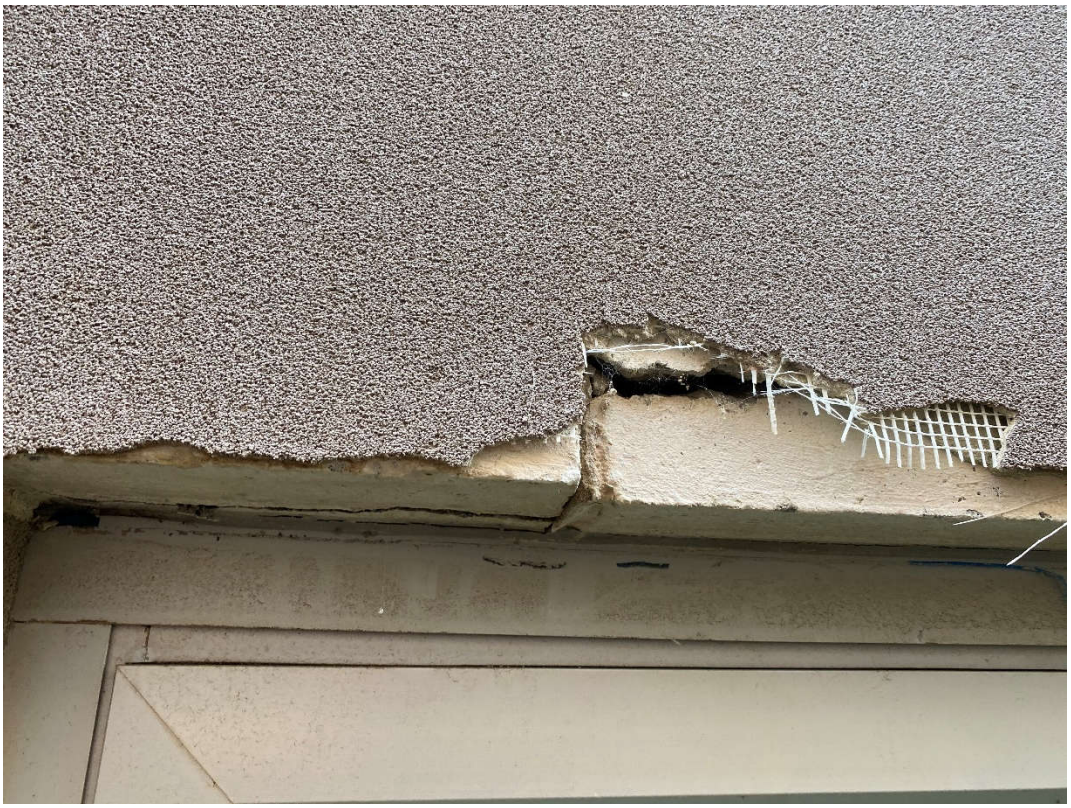

Photo 5 – Cracking in hollow block wall over southern window opening