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Structural Engineering Further Supplementary Report

Date 21.10.2024
To Adriano Pupilli Architecture
Address Level 1, 68 The Corso, MANLY NSW 2095
Attention Adriano Pupilli

Dear Adriano,

Structural Further Supplementary Report on Proposed Alterations and Additions to Newport SLSC

1.0 Introduction

1.1 I have reviewed the Amended Statement of Facts and Contentions and provide the following comments to supplement the previous Structural Feasibility Report dated 20 August 2021 and supplementary letter dated 5 August 2024. This letter also replaces a supplementary letter dated 17 September 2024.

2.0 Comments:

2.1 In my 40 years of experience, I have never been required to provide such detailed structural engineering advice in support of a development application. Such detailed structural engineering advice will be, and is usually, provided and considered as part of the detailed design prepared as part of the application for a construction certificate.

2.2 From my review of the documents which I set out in my previous report and letter, I reconfirm that the proposed development will be structurally feasible subject to the recommendations at paragraphs 2.4. below and in my previous report and letter.

2.3 In preparing this further supplementary report I carried out a visual site inspection on 3rd October 2024. I was provided with access internally to the following:

Level 1
Hall; kitchen and toilet areas (south of the hall); committee room (North of the hall); Observatory.

Ground Floor:
Areas at centre of the building-First Aid; Entry; Gym; amenities; Nippers Store.
Extension to south: Council Lifeguards room.
Extension to North: Elite Board and Ski store.

I also carried out an external inspection of the east wall of the building. I found the layout of the above rooms to be generally in accordance with the attached Existing Floor Plans Drawings 005 and 006 (NSC – Rev D) prepared by Adriano Pupilli Architects.

2.4 I have also reviewed the amended architectural plans for resubmission (NSC Rev E) prepared by Adriano Pupilli Architects (**Architectural Plans**).

Based on my site appraisal of the structure I have marked on the attached Partridge Structural Drawings 2018S014-S1.1 Ground Floor; S1.2 Level 1 (Upper Floor); S1.3 Roof Plan; S2.1 Eastern Elevation and S3.1 Cross Sections-Proposed Building

Structural Works and 3.2 Cross Sections- with additional strengthening to east wall to support wave loading (**Structural Plans**), the indicative structural strengthening works required to achieve:

[A] *The architectural layout shown in the Architectural Plans.* This work includes:
Ground Floor: New block walls and block piers (indicated in blue on the structural plans); New lift shaft.
Upper Floor: Strengthening floor to re-support the floor on the new walls below and allow existing walls to be demolished and to support new walls above the upper floor; new concrete floor slab to the Observatory; new external concrete balconies, on east side; new steel portal frames (steel beam supported on steel column each end) at the north and south end to allow for openings in existing brick walls.
Roof: New roof over the Observatory including new steel beam (SB2) supported on new steel posts (SC) on east side; new steel beam (SB3) supported on new steel posts at the west side of the Observatory to allow for reconfiguration of opening.

[B] *The additional structural engineering work, which is required to strengthen the east wall of the existing SLSC building* to resist the maximum measured pressures (Pmax) fronted by a wave parapet for 0.2 s average duration as shown in Table 3.1 of the revised WRL 0.2 Second Duration Report dated 21 October 2021(refer extract below). This structural work is indicated in green on the Structural Plans and described at 2.7 below.

Table 3.1 Pmax on existing SLSC building – with wave return parapet

ARI	Year	SLR	ID	Panel	Pmax event (kPa)	0.2 second average Pmax (kPa)	2 second average Pmax (kPa)
100	2024	0	0090	GF bottom	6.8	3.0	1.1
			0090	GF top	12.3	5.4	1.2
			0100	UF bottom	11.7	4.1	<1.0
			0100	UF top	14.1	5.1	<1.0
100	2084	0.53	0089	GF bottom	12.6	9.1	3.4
			0089	GF top	10.6	5.8	1.9
			0103	UF bottom	5.5	4.1	1.1
			0103	UF top	4.1	1.9	<1.0

2.5 In designing the new strengthening works, I have adopted the values shown in the table for an average recurrence interval (ARI) of 100 years, for the year 2084 which includes an allowance of 0.53m rise in sea level.

Using this table I have adopted the following maximum Pmax pressures for my assessment of the east wall of the existing building:
Ground Floor Wall: 9.1kPa for the Bottom half; 5.8kPa for the Upper half.
Upper Floor Wall: 4.1 kPa for the Bottom half; 5.1kPa for the upper half

I confirm that the setback for the face of the east wall varies-

East wall Location	Setback behind wave parapet wall (m)
Observatory and ground floor rooms below	4
Remainder of east wall	Minimum 6

I note that the pressure values listed above for an ARI of 100 years for 2084 will be conservative when
a. The rise in sea level is less than 0.53m, that is in the years between 2024 and 2084.
b. The setback for the face of the wall is more than 4m -refer to section 4 in the WRL 0.2 Second Duration Report which

confirms that the Pmax pressures will reduce with distance behind the parapet wall.

2.6 I consider that a 0.2s average wave load is a reasonable duration to be adopted as it matches the 0.2s gust speed duration used in AS/NZS 1170.2 the Australian and New Zealand Standard for Structural Design Actions-Part 2: Wind Actions that the NCC references for assessing wind loads on Structures I attach a copy of table 3.1 (a) of AS/NZS 1170.2 below. Note 1 of this table confirms the moving average duration of 0.2s used in that Australian Standard.

Table 3.1(A) — Regional wind speeds — Australia

Regional wind speed (m/s)	Region			
	Non-cyclonic		Cyclonic	
	A (0 to 5)	B1, B2	C (maximum)	D (maximum)
V_1	30	26	23	23
V_5	32	28	33	35
V_{10}	34	33	39	43
V_{20}	37	38	45	51
V_{25}	37	39	47	53
V_{50}	39	44	52	60
V_{100}	41	48	56	66
V_{200}	43	52	61	72
V_{250}	43	53	62	74
V_{500}	45	57	66	80
V_{1000}	46	60	70	85
V_{2000}	48	63	73	90
V_{2500}	48	64	74	91
V_{5000}	50	67	78	95
V_{10000}	51	69	81	99
V_R ($R \geq 5$ years)	$67-41R^{-0.1}$	$106-92R^{-0.1}$	$122-104R^{-0.1}$	$156-142R^{-0.1}$

NOTE 1 The peak gust has an equivalent moving average time of approximately 0.2 s (Holmes and Ginger, 2012).

NOTE 2 Values for V_1 have not been calculated by the formula for V_R in the Australian regions.

NOTE 3 For ultimate or serviceability limit states, refer to the National Construction Code (Australia) or AS/NZS 1170.0 for information on values of importance level and annual probability of exceedance appropriate for the design of structures. For buildings in townships in cyclonic regions, users should consider overall risk to a community when selecting importance levels.

NOTE 4 For Regions C and D, only the maximum values for the region are tabulated. Lower values of V_R may apply in those regions, depending on the distance of the site from the smooth coastline.

2.7 As referred to at 2.4[B] above, the works proposed to strengthen the eastern wall include:

- Core filling the cavity in the existing east cavity brick wall at ground floor (where indicated on the structural plans).
- Constructing a new concrete wall against the internal face of the existing east wall and return walls at the north and south ends (where indicated on the structural plans).
- Constructing a new concrete bench and support walls adjacent to the east wall of the new shop at the southeast corner of the existing building.
- Core filling the cavity in the existing east cavity brick wall at Level 1 (Upper floor) with a waterproof grout and reinforcing the cavity as required, with stainless steel reinforcement thus creating a reinforced masonry wall approximately 270mm thick supported at each end and top and bottom.
- Installing a galvanized steel beam to laterally support the head of the existing east wall at roof level, north and south of the Observatory. The beam is located above the Level 1 (Upper floor) ceiling level and tied back to the internal walls.

I further note regarding the east wall at the upper floor, that the Pmax loading for the masonry walls on each side of the observatory at the Upper floor, which is setback a minimum of 6m from the wave wall has not been established from the WRL load tests. I refer to the comment at section 4 of the WRL 0.2 Second Average Report that *"Observations of the videos for the Pmax events tested, indicates that for 100- and 1000-year ARI events with a wave return parapet and a 4m setback, the overtopping water was either predominately horizontal or falling by the time it reached the face of the SLSC building (with a 4m setback). Thus, for setbacks of approximately 6m, the horizontal pressures on the upper level of the SLSC building are likely to be lower than for the 4m setback."* I conclude from this comment that adopting the Pmax values provided in the WRL 0.2

Second Duration Report is conservative for designing the strengthening works to the existing east wall at Level 1 (Upper FLOOR).

2.8 I do not consider the strengthening work required to strengthen the east wall of the existing building as significant or excessive and would include internal strengthening and bracing as I recommended in the previous letter(s). This internal strengthening and bracing will strengthen the eastern façade at ground and first floor and will also include part of the southern façade, closest to the eastern end, as indicated on the Structural Plans. This strengthening will be designed to support the predicted 0.2s wave loading provided by Coastal Engineer as appropriate for the distance of the wall from the seawall.

2.9 I note that in the Joint Heritage Expert's Report, filed on 13 September 2024, Ms Holtham opines that demolition of the north and south original end walls would diminish the structural integrity of the existing heritage building.

Ground Floor

I have examined the architectural drawing NSC 010-Rev E - Proposed Ground Floor Plan prepared by Adriano Pupilli Architects for the proposed layout of the Ground Floor of the existing building together with my site inspection. This plan indicates that:

- The East, West and South existing walls are substantially retained, and in my opinion the in-plane bracing provided by these walls is not reduced.

- The North Wall at Ground floor is approximately 7m long. Two large penetrations will be created in this wall between existing masonry piers and a new beam will be required to span across these openings. During the detailed design stage, Partridge will assess the adequacy of these existing piers to support the increased loads as a result of the openings and the piers will be strengthened, as necessary, most likely by demolishing the existing piers and rebuilding them.

  At the west end of this North Wall, a new wall, approximately 3.0m long with a 2m return (at the west end) constructed as part of the building extension will buttress the west end of the North wall. At the east end of the North Wall, it will be attached to the concrete wall of the new building. I further note that there is a parallel existing masonry wall (approximately 5m long), 4m to the south of the North wall of the building. At the west end of this second wall, a new wall 'L-shaped' on plan is being constructed, approximately 2m long.

- A new reinforced concrete lift shaft is to be constructed within the north part of the existing building which will extend to the underside of the existing roof.

In my opinion, based on the above, the lateral bracing of the building will not be compromised and will be improved.

First Floor

I have examined the architectural drawing NSC 011- Rev E - Proposed First Floor Plan prepared by Adriano Pupilli Architects for the proposed layout of the First Floor of the existing building. This plan indicates that:

- The East and West existing walls are substantially retained, and in my opinion the existing in-plane bracing provided by these walls is not reduced.

- North End (north of internal stairs)-There are several new walls and a lift shaft to be constructed in the north half of the existing building. The in-plane bracing provided by these new elements will adequately brace this end of the building in both the North/South and East/West direction.

- South End (south of internal stairs)- A large opening will be created in the existing wall at the south end of the existing Hall. A new steel portal frame (a steel post at each end of the opening connected to a steel beam spanning over the opening) will provide in-plane bracing to this wall. The existing southern wall of the building, further to the south, will be substantially retained.

  The walls around the first-floor store, the new portal frame and the existing south wall will provide adequate bracing in the East/West direction. Stability in the north/south direction will be provided by the lift shaft and new walls in the north section of the floor plan. In my opinion, based on the above, the lateral bracing of the building will not be compromised and will be improved.

2.10 Based on my experience, I am of the opinion that the works described at paragraph 2.4 [B] will be minor in the context of the overall costs of the project.

2.11 I note that it is intended that advance storm warnings will be provided for the storm events being considered (1 in 100 and 1 in 1000). A Safety and Emergency Management Plan (SEMP) has been prepared, which puts in place processes to be undertaken during significant storm events, including evacuation of the building and removal of critical equipment. I confirm that I have reviewed the SEMP prepared by Rhelm, dated 18 October 2024 and it addresses these matters, and I have taken it into account in preparing my report.

2.12 I have reviewed the letter prepared by WRL titled *'RE: Newport SLSC seawall physical model – wave pressures on SLSC wall and overtopping water through upper windows*' dated 21 October 2024, which states that the volume of water predicted to enter the upper-level windows is worst case 0.141 L/sec. I have also reviewed the letter prepared by WRL titled '*RE: Newport SLSC seawall physical model – wave trajectory on SLSC wall'* dated 16 October 2024, which comments that based on observations of physical testing, overtopping water is falling (downwards) or is predominantly horizontal at the point of impact with the building. On this basis, I do not envisage net uplift forces will be applied to the first-floor concrete slab.

2.13 The rooms on the upper level are identified on the architectural drawings as public access areas and a Hall. The floors for these spaces will need to be designed to support the Live Loads required in Australian/New Zealand Standard AS/NZS1170.1-Structural Design Actions. These loads will be confirmed during final design for the Construction Certificate stage but will be a minimum of 3kPa and possibly up to 4kPa depending on whether the Hall area needs to be designed for crowd loading. The live load capacity of the upper floor framing will need to be determined at detailed design stage and if the existing floors are not adequate to support the live loads for the designated uses (which I do not expect to occur given the current use), they will need to be strengthened as part of the design for the construction stage.

During a 1:100 or 1:1000 storm event (and taking into consideration the actions required in the SEMP), the floor framing can support the following depth of water based on its live load capacity.

Floor Design Live Load	**Equivalent d of water**	**Comment-**
3Pa	300mm	1 The volume of water that would be required to enter the upper-le openings to result in a minimum of 300mm depth of water across full hall floor area (plan area 103sqm) will be approximately 31 cu meters. 2 Large quantities of water entering the upper level will evacuate d the stairs to ground level.
4kPa	400mm	

Based on the overtopping water volume of a maximum 8.5L/min per window, I do not envisage it to be possible for the overtopping water to overload the first-floor structure.

2.14 I expect, based on my experience and training, that the further strengthening work I have recommended would strengthen the original building to address potential loads during the 1 in 100-year storm and associated coastal flooding event and therefore do not expect such an event to result in significant building repairs and content loss.

2.15 I have indicated the new internal walls and the lift shaft on the structural plans. These new walls and the lift shaft will provide additional support to the upper floor and additional lateral bracing to the building further inboard from the eastern wall.

2.16 In relation to the 1 in 1000-year storm and associated coastal flooding event, I note that this only has a 5% probability of occurring during the design life of the proposed building. There are no requirements that I am aware of to design a building to survive a 1 in 1000-year wave load and associated coastal flooding event, but in any event if this did occur, it would not have resulted in structural failure of the building, as this report demonstrates. It may result in some local damage to the building. Such damage can be repaired and areas of damaged masonry walls reconstructed.

Prepared by

Eamonn Madden
BE MSc(Struct) FIEAust CPEng
NER(Structural) APEC Engineer IntPE(Aus)
Director, Partridge Structural
For and on behalf of Partridge Structural Pty Ltd

The Following has been prepared by Mr Peter Standen
I have attended site and inspected the building on the 23rd May 2018, reviewed the WRL wave loading report, reviewed the proposed architectural drawings as well as this report and the recommended strengthening works. I have prior experience in designing structures to resist wave loading, of particular relevance is the seawall, wave return and balustrades for the building at 105 Ramsgate Avenue, North Bondi.

It is my opinion that the proposed strengthening works are readily achievable to resist the 0.2s wave loading and mitigate the risk and consequence of damage to the existing structure. I agree with the statements contained in this report.

Peter Standen
BE (Hons1) BSc GAICD MIEAust CPEng NER (Structural & Civil)
DEP (NSW- Structural, Civil, Façade) RPEQ PE (VIC)
Managing Director, Partridge Structural
For and on behalf of Partridge Structural Pty Ltd

CV - Peter Standen

Title Managing Director

Qualifications

Bachelor of Engineering (First Class Honours), University of Sydney, 2004 Bachelor of Science, University of Sydney, 2004
GAICD, Australian Institute of Company Directors

Professional Affiliations/ Registrations
NER National Engineers Register (Structural & Civil)
CPEng Chartered Professional Engineer
Registered Professional Engineer QLD (RPEQ 15512)
Registered Professional Engineer VIC (PE0000639)
Registered Professional Engineer NSW (PRE0000546)
Design Practitioner NSW: Structural, Civil, Facade (DEP0000724)
Certifying Engineer NT (Structural 289952ES)
APEC Engineer
IntPE (Aus) International Engineering Association
Member, Association of Consulting Structural Engineers, Australia
Graduate, AICD Australian Institute of Company Directors

Experience
2004:
Present
Managing Director, Partridge
Peter has been a Director of Partridge since 2012 and was appointed Managing Director in 2019. He is responsible for the oversight of the Partridge business and the alignment of our services to our vision, values and quality. As an engineer, Peter is responsible for project control and design of residential, commercial, institutional and industrial developments within the company. A sample of completed projects are listed below:

Structural & Civil Engineering Projects
Garling Road, Kings Park:
$5M prestige office and warehouse.
Wells Street Bridge, Frankston
Sculptural steel pedestrian bridge spanning 25m.
Mermaid Ave, Lurline Bay - $3M residence.
Poise Sculpture, Melbourne Docklands:
5 metre high stainless steel and toughened glass sculpture.
Sculpture by the Sea, Bondi 2006 to 2020:
Analysis of various installations.
Parsley Road, Vaucluse - $3.5M residence.
Young Street, Waterloo:
$2M refurbishment of a factory to retail space.
Airds Road, Minto:

Conversion of an existing warehouse to a galvanising facility.
Cockatoo Island, Sydney Harbour:
Structural certification of heritage structures.
Waratah Street, North Strathfield:
Alterations and additions to heritage listed cottages.
Tollymore Rd, Tasmania - $2M residence.
George St, Parramatta:
Cantilever glass fin façade.
Hillside Ave, Vaucluse - $7.2M residence.
Childcare Centres, Mona Vale, Fairlight, Mosman and Harbord.
2006 Asian Games - Opening and Closing Ceremony performance structures. Cranbrook Rd, Bellevue Hill - $3M residence.
Curtin University - Rooftop Terrace.
NSW Parliament House:
Rooftop Solar Panel installation.
'Sweetwater' Gatehouse and Cellar Door, Hunter Valley. $3M.
Killawarra Rd, Duffys Forest - $2.5M residence.
Ramsgate Avenue, Bondi - $10M 5-storey luxury apartment block.
Grandview Grove, Seaforth - $3M residence.
Cyprian St, Mosman - $4.5M residence.
Yarranabbe Road, Darling Point - $15M residence.
Whale Beach Road, Whale Beach - $6.5M residence.
Gardyne Street, Bronte - $7M residence.
Gardyne Street 2, Bronte - $6M residence.
Gardyne Street 3, Bronte - $5M residence.
Martin Road, Centennial Park - $8M residence.
VEGA Headquarters, Taren Point - $17M office and warehouse facilities. Bronte Road, Bronte - $2M residence.
Vaucluse Road, Vaucluse - $7M residence.
Vaucluse Road 2, Vaucluse - $10M residence.
Ellis Street, Chatswood - $3M apartment building.
WSU Campbelltown Campus:
Laboratory building.
Conergy Solar:
Certification of solar products.
Como Pde, Como:
Charity Group Housing.
Wentworth Road, Vaucluse - $5M residence.
Victoria Road, Bellevue Hill - $17M residence.
Hopewell Street, Paddington - $8M residence.
Gladswood Gardens, Double Bay - $3M apartment.
Christian Dior Store refurbishment, Sydney CBD.
Edward Street, Woollahra - $6M residence.
Manning Road, Woollahra - $2.5M duplex.
The Wolverine - Film Sets.
Packard Ave, Castle Hill - $5M car showroom.
Bilgola House - $17M residence.
Sydney Opera House Foyer upgrades.

'Bob Katterpult':
World's most powerful Trebuchet.
Over 1500 other structural projects in Sydney and Melbourne. Over 200 temporary, art, film set and special structures.

Expert Witness Reports
Olola Avenue, Vaucluse:
Residence unapproved works.
Victoria Street, Watsons Bay:
Shoring design and installation.
Penguins Head Road, Culburra Beach:
Concrete cracking
New Beach Road, Darling Point:
Retaining walls.
St Neots Avenue, Potts Point:
Multistorey residential building.
Section 4, Hume ACT:
Industrial Building failure.
Keston Street, Mosman:
Retaining walls.
Collins Street, Surry Hills:
Residence.
Gaerloch Avenue, Tamarama:
Glass balustrade failure.
Cole Street, Hurstville:
Multistorey residential building.
Allen Avenue, Bilgola Beach:
Residence basement excavation and shoring.
Liverpool Street, Rose Bay:
Damage to residence.
The Woolstores Alexandria:
Floor vibration.
Wentworth Point:
Multistorey residential building.
Beresford Road, Rose Bay:
Floor deflection and vibration.
Tivoli Avenue, Vaucluse:
Boundary wall.
Forbes Street, Darlinghurst:
Collapsed Retaining wall.
Spit Road, Mosman:
Damage to residence.
Hunter Street, Sydney:
Damage to office building
Sheperd Street, Redfern:
Damage to commercial premises.

Façade and Weatherproofing Projects
Dogwood Road, Seal Rocks:
FP1.4 Performance solution for rooftop membrane
Balaclava Road, Caufield:
FP1.4 Performance solution for new extension
Macleay Street, Potts Point:
Temporary waterproofing design during construction, Permanent waterproof membrane design for wet areas and balconies,
FP1.4 Performance solution for new cladding, façade and balustrades
Bay View Street, Lavendar Bay:
FP1.4 Performance solution for Unique Wall
Village Belle Hotel, St Kilda:
new operable glass roof and façade glazing
Stokehouse, St Kilda:
new operable façade screens
Bunurong Memorial Park, Dandenong:
operable façade wall and glazing
UTS Building C, Sydney: Operable façade louvres
Nola Avenue, Roseville:
Waterproofing and façade investigation and remediation of water ingress
Belah Avenue, Vaucluse:
Waterproofing design and basement tanking to prevent water ingress
Yarranabbe Road, Darling Point:
Basement waterproofing design below the water table to prevent water ingress
Woolwich Road, Woolwich:
Waterproofing internal wet areas and external balconies, and façade weatherproofing design
New South Head Road, Double Bay:
Waterproofing and weather proofing design for balcony renovation works and new cladding
Beresford Road, Rose Bay:
Investigation and report for water ingress via façade and windows, and specifying remediation works
Black Bear, Thredbo:
Façade engineering and weatherproofing for new class 2 building
King Street, Sydney:
New commercial façade to 6 storey building with custom steel framed windows
Macleay Street #2, Potts Point:
Investigation and report of façade and membrane water ingress
Galimore Avenue, Balmain:
Façade and weatherproofing design including bespoke wall cavity drainage, bespoke stainless steel windows and skylights
TILT Industrial Design:
various operable roof hatches and skylights

CV - Eamonn Madden

Title Director

Qualifications
Bachelor of Engineering, Galway University, 1980
Master of Science, Surrey University, 1985

Professional Affiliations/ Registrations

Fellow, Institution of Engineers, Australia

APEC Engineer

IntPE (Aus)

NER-3 National Professional Engineers Register Section 3 in the category Structural

CPEng Chartered Professional Engineer

Accredited Building Practitioner Tasmania CC4545 0 (Engineer)

Registered Professional Engineer of Queensland (15513 - Structural)

Board Member (2011 – 2016) and President (2013 – 2014) of the Association of Consulting Structural Engineers (ACSE), NSW.

Member of Engineers Australia National Heritage Committee. (Current)

Member of Engineers Ireland, CEng MIEI

Experience

1989 – Present

Director, Partridge
Prior to migrating to Australia, Eamonn had 9 years experience as a structural engineer in Ireland and the UK, including bridge design and upgrading historical buildings. After joining Partridge in 1989 he was appointed Director in 1999 and Managing Director in in 2009, a position he held for 10 years. His areas of expertise include bespoke architectural structures, temporary event structures, public artwork, heritage and expert witness work and a range of structural materials including glass and cable design. He has provided expert advice on various structural engineering, facade engineering and building disputes and litigation.

He has lectured in Structural Engineering in Ireland, and at the University of Technology Sydney and he delivers an annual lecture on creative thinking at the University of Sydney and National University of Ireland, Galway.

Sample of Heritage Engineering experience

Ireland and UK

Refurbishment of Leinster House, Dublin, built in 1748, home to the Irish parliament, for Office of Public Works, Ireland.

Refurbishment of roof of Castle Rushen, a medieval castle, Ise of Man, UK. For Manx Government.

Australia

Refurbishment and upgrade of Science House and The Sailor's Home, Rocks Sydney for Rocks Authority.

Rebuilding the Beulah bridge, the oldest privately owned bridge in Australia, Sydney Living Museums

Upgrade of Stables and Turrets, Vaucluse House, Sydney, Sydney Living Museums (SLM).

Strengthening works to external balconies, Mint Building, Macquarie Street, Sydney, SLM

Replacement of metal wall cladding to Heritage Listed Town Hall House, City of Sydney municipal building, City of Sydney.

Successful expert witness litigation for the retention of St Columbans Church, Mayfield, NSW, an example of early adoption of reinforced concrete in church construction. Newcastle City Council.

Retention of examples of heritage significance in Industrial construction, Corrimal Coke Works, Corrimal, NSW. Private Client.

Seismic Strengthening of brick and sandstone buildings, The Rocks, Sydney-Placemaking NSW.

Refurbishment of timber framed Wool shed, built in Rouse Hill House, Sydney Living Museums

Refurbishment of 1918, industrial building, formerly Wrigley's factory, Sydney. Private Client.

Refurbishment and strengthening of Culwarra Chambers, Sydney's first 'skyscraper' which wraps around the older heritage listed Surry Hotel. Private Client.

Conservation and restoration works to re-establish the perimeter sandstone fence of the historic Wentworth Mausoleum, including rebuilding on screw pile foundations using a substantial amount of original materials.

Sample of Structural Projects

Huntley Street Recreation Centre,(20M) conversion of industrial building to architect designed sports complex for City of Sydney.

Coolong Road, waterfront residence, designed by SAOTA architects,($40M), (Reinforced concrete).

Wingadal Place, waterfront residence, designed by MHNDU architects,($30M), (Reinforced Concrete and Steel).

Ravine House, Oceanfront Residence, designed by Rolf Ockert architect ($20M), (Reinforced Concrete and Steel).

299 Elizabeth Street Sydney, curtain wall façade rectification.

Central Park, Building 9, Soffit Nest suspended artwork

Tulsa Boat Stacker, Oklahoma, USA

Galston Aquatic and Leisure Centre, Sydney

Long Reef Surf Life Saving Club- design review

Events and Entertainment (certifying engineer for Sydney Olympics opening and closing ceremonies, Vancouver Olympics opening ceremony, Doha Asian Games opening and closing ceremonies, Elton John concert staging, Big Day Out concert staging Australia and New Zealand, Sydney Theatre stage sets, movie sets for 'Australia', 'Superman Returns' Mad Max 'Fury Road'. etc.)

Awards

'Halo', Kinetic Artwork, Central Park, Sydney (winner of Engineers Australia President's Prize NSW).

'Glebe House', Sydney (winner of Concrete Institute of Australia National Excellence in Concrete Award)

'Skymate', A cable supported steel framed *High Ropes Access climbing park*. Adelaide, SA (winner of Association of Consulting Engineers NSW, Special/Unusual Project Award)

Papers

Interaction between Façades and Building Structures
Paper presented to Association of Consulting, Structural Engineers (ACSE) seminar 1995.

The Future Engineer: Skilled at Math's, Art and Creativity
Presented to World Engineers Convention, Melbourne Australia, 2019.

Art in Engineering: Evoking a Creative Response from Engineering Students and More
with Dr Jamie Goggins; Marta Fuente Lastra and Eamonn Madden-presented to Civil Engineering Research Ireland (CERI) 2020 conference.

Lecturing and Public Speaking

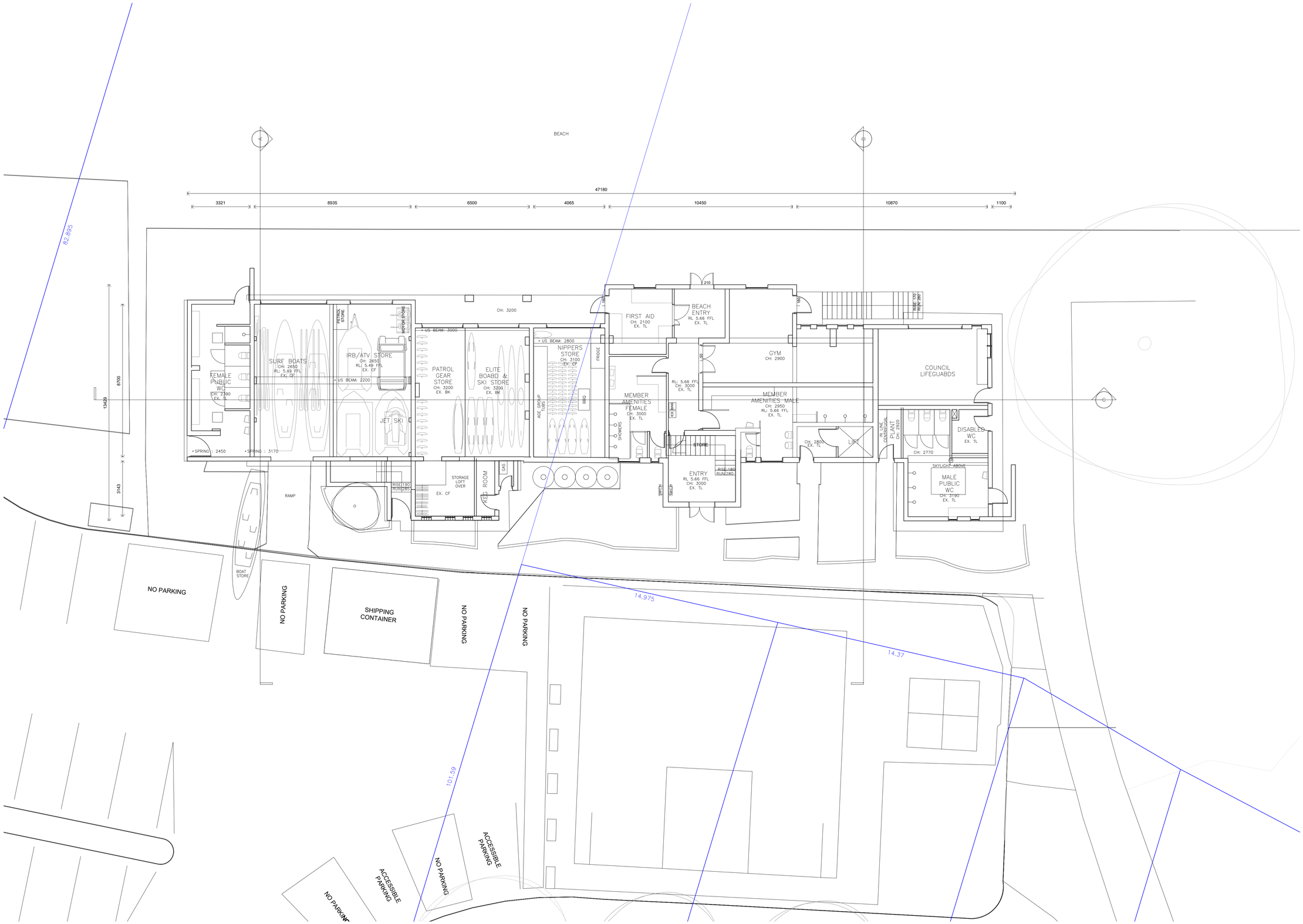
Art in Engineering and Creative Design
Annual lecture and studio at the School of Civil Engineering, Sydney University; and annual lecture and studio at the School of Civil Engineering at National University of Ireland Galway, (NUIG)

Existing First Floor Plan – NSC DA 005 & 006

NOTES:

– AMENDMENTS INCORPORATED SINCE S8.2 REVIEW ARE SHOWN CLOUDED BLUE.

– AMENDMENTS PROPOSED IN CURRENT REVISION ARE CLOUDED RED.



ISSUE	DATE	REVISION
D	31/7/24	AMENDMENTS FOR RE-SUBMISSION
C	24/2/23	
B	14/6/22	AMENDMENTS TO DA
A	25/8/21	FOR DEVELOPMENT APPLICATION

PROJECT

Alterations and Additions to Newport Surf Life Saving Club

LOT, DP
Lot 7094, DP 1059297 & Lot 1, DP 1139445

CLIENT
Northern Beaches Council

DWG
Existing Ground Floor Plan

PROJECT #	DWG #
NSC	005

SCALE @ A1	1:100	REVISION	D
SCALE @ A3	1:200		
DRAWN	AS	DATE	14/6/22
CHKD	AP		

NORTHERN BEACHES COUNCIL
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E: info@adrianopupilli.com.au
P: PO Box 770 Manly NSW 2095
T: (02) 9114 6300

NOTES:
DO NOT SCALE OFF DRAWINGS. USE DIMENSIONS.
A SURVEY IS REQUIRED TO ENSURE CORRECT RELATIONSHIP TO SITE BOUNDARIES.

NOTES:

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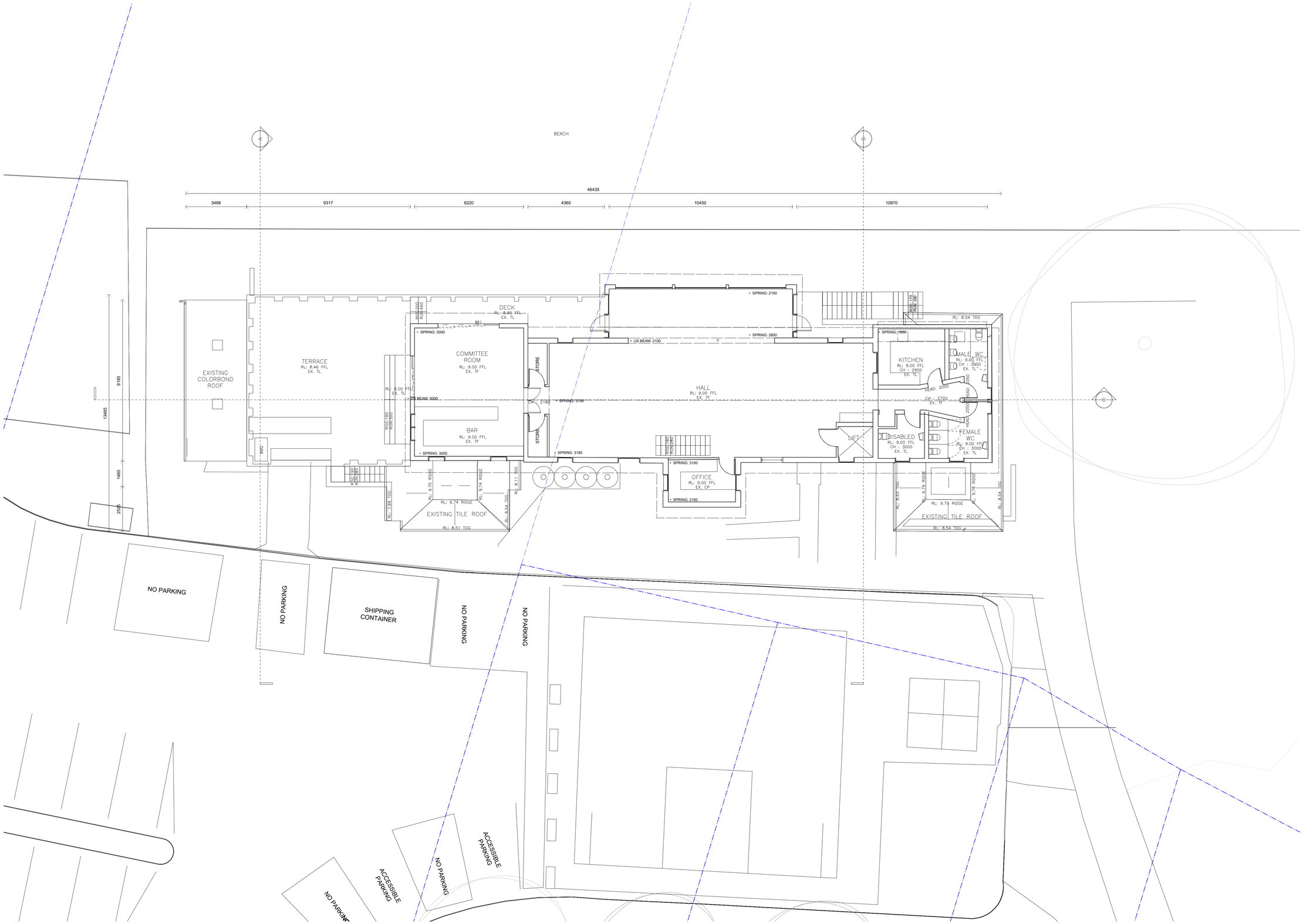

ISSUE	DATE	REVISION
D	31/7/24	AMENDMENTS FOR RE-SUBMISSION
C	24/2/23	
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A	25/8/21	FOR DEVELOPMENT APPLICATION

PROJECT

Alterations and Additions to Newport Surf Life Saving Club

LOT, DP
Lot 7094, DP 1059297 & Lot 1, DP 1139445

CLIENT
Northern Beaches Council

DWG
Existing First Floor Plan

PROJECT #		DWG #	
NSC			006
SCALE @ A1	1:100	REVISION	D
SCALE @ A3	1:200		
DRAWN	AS	DATE	14/6/22
CHKD	AP		

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Partridge Structural Plans

NOTES:

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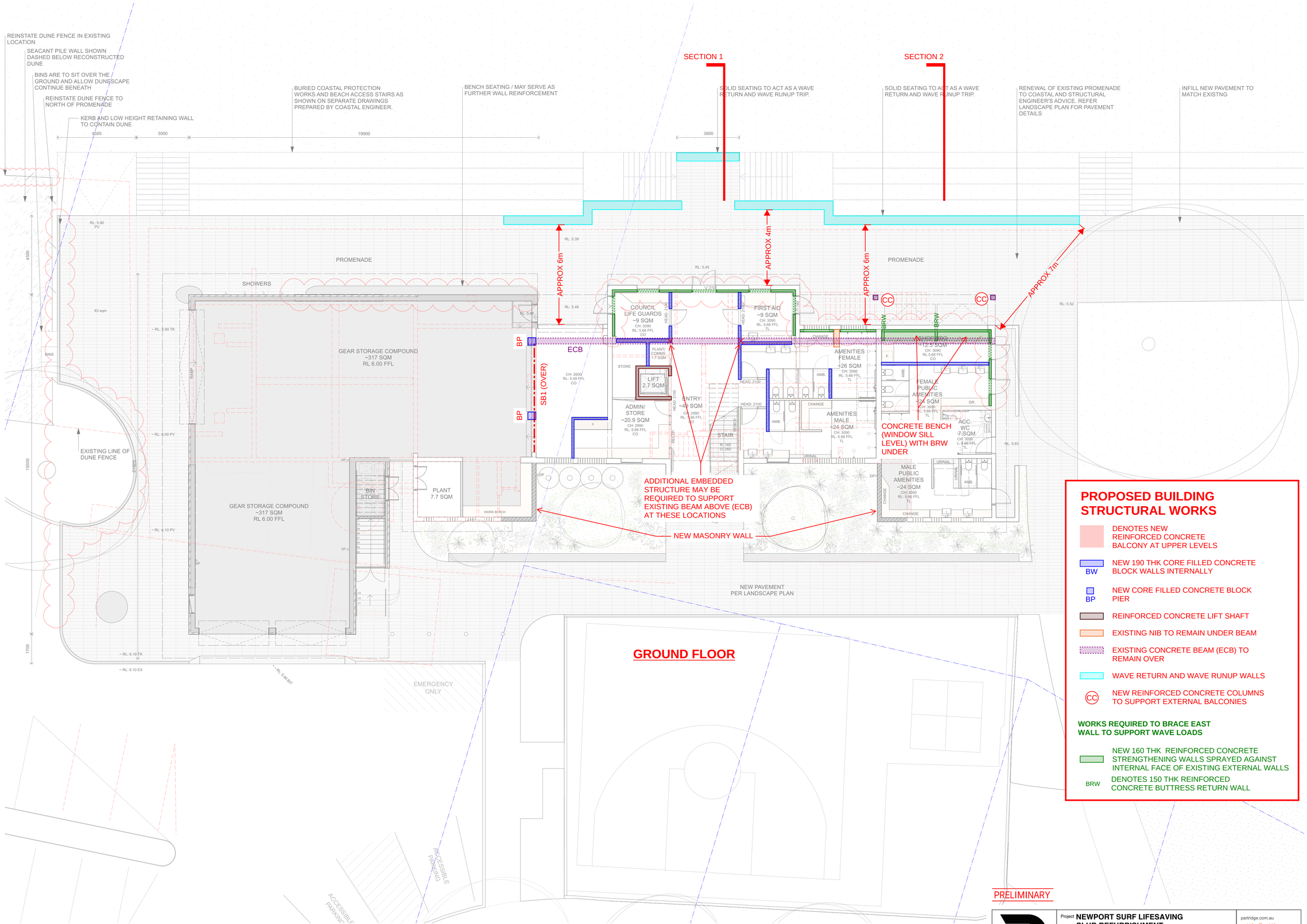

GROUND FLOOR

PROPOSED BUILDING STRUCTURAL WORKS

- DENOTES NEW REINFORCED CONCRETE BALCONY AT UPPER LEVELS
- BW — NEW 190 THK CORE FILLED CONCRETE BLOCK WALLS INTERNALLY
- BP — NEW CORE FILLED CONCRETE BLOCK PIER
- REINFORCED CONCRETE LIFT SHAFT
- EXISTING NIB TO REMAIN UNDER BEAM
- EXISTING CONCRETE BEAM (ECB) TO REMAIN OVER
- WAVE RETURN AND WAVE RUNUP WALLS
- CC — NEW REINFORCED CONCRETE COLUMNS TO SUPPORT EXTERNAL BALCONIES

WORKS REQUIRED TO BRACE EAST WALL TO SUPPORT WAVE LOADS

- NEW 160 THK REINFORCED CONCRETE STRENGTHENING WALLS SPRAYED AGAINST INTERNAL FACE OF EXISTING EXTERNAL WALLS
- BRW — DENOTES 150 THK REINFORCED CONCRETE BUTTRESS RETURN WALL

PRELIMINARY

Project	NEWPORT SURF LIFESAVING CLUB REFURBISHMENT				partridge.com.au partridge@partridge.com.au Partridge Structural Pty Ltd ABN 73 002 451 925
Title	SUGGESTED STRENGTHEING OF EXISTING BUILDING				
Job No	Drawing No	Revision	Date	By	
2018S0141	S1.1	R3	18.10.24	EM	

ISSUE	DATE	REVISION
E	16/10/2024	AMENDMENTS FOR RE-SUBMISSION
D	31/7/24	AMENDMENTS FOR RE-SUBMISSION
C	24/2/23	
B	14/6/22	AMENDMENTS TO DA
A	25/8/21	FOR DEVELOPMENT APPLICATION

PROJECT

Alterations and Additions to Newport Surf Life Saving Club

LOT, DP: Lot 7094, DP 1059297 & Lot 1, DP 1139445

CLIENT: Northern Beaches Council

DWG: Proposed Ground Floor Plan

PROJECT #	NSC	DWG #	010
SCALE @ A1	1:100	REVISION	E
SCALE @ A3	1:200		
DRAWN	AS	DATE	14/6/22
CHKD	AP		

northern beaches council

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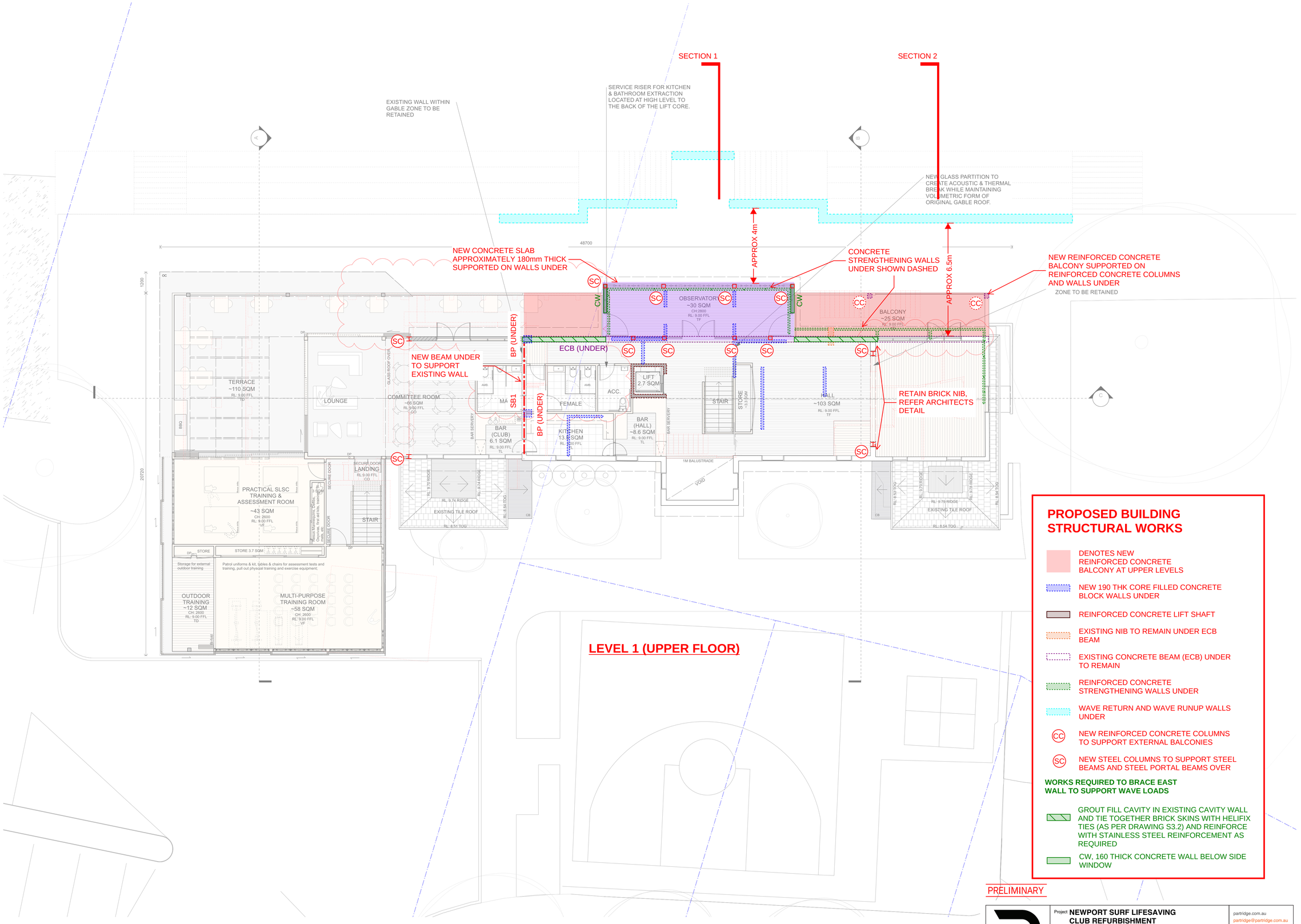

PROPOSED BUILDING STRUCTURAL WORKS

- DENOTES NEW REINFORCED CONCRETE BALCONY AT UPPER LEVELS
- NEW 190 THK CORE FILLED CONCRETE BLOCK WALLS UNDER
- REINFORCED CONCRETE LIFT SHAFT
- EXISTING NIB TO REMAIN UNDER ECB BEAM
- EXISTING CONCRETE BEAM (ECB) UNDER TO REMAIN
- REINFORCED CONCRETE STRENGTHENING WALLS UNDER
- WAVE RETURN AND WAVE RUNUP WALLS UNDER
- (CC) NEW REINFORCED CONCRETE COLUMNS TO SUPPORT EXTERNAL BALCONIES
- (SC) NEW STEEL COLUMNS TO SUPPORT STEEL BEAMS AND STEEL PORTAL BEAMS OVER

WORKS REQUIRED TO BRACE EAST WALL TO SUPPORT WAVE LOADS

- GROUT FILL CAVITY IN EXISTING CAVITY WALL AND TIE TOGETHER BRICK SKINS WITH HELIFIX TIES (AS PER DRAWING S3.2) AND REINFORCE WITH STAINLESS STEEL REINFORCEMENT AS REQUIRED
- CW, 160 THICK CONCRETE WALL BELOW SIDE WINDOW

PRELIMINARY

Project	**NEWPORT SURF LIFESAVING CLUB REFURBISHMENT**			partridge.com.au partridge@partridge.com.au Partridge Structural Pty Ltd ABN 73 002 451 925
Title	**SUGGESTED STRENGTHEING OF EXISTING BUILDING**			
Job No	Drawing No	Revision	Date	By
2018S0141	**S1.2**	**R3**	**18.10.24**	**EM**

ISSUE	DATE	REVISION
E	16/10/2024	AMENDMENTS FOR RE-SUBMISSION
D	31/7/24	AMENDMENTS FOR RE-SUBMISSION
C	24/2/23	
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A	25/8/21	FOR DEVELOPMENT APPLICATION

PROJECT

Alterations and Additions to Newport Surf Life Saving Club

LOT, DP

Lot 7094, DP 1059297 & Lot 1, DP 1139445

CLIENT

Northern Beaches Council

DWG

Proposed First Floor Plan

PROJECT #		DWG #	
NSC			011
SCALE @ A1	1:100	REVISION	E
SCALE @ A3	1:200		
DRAWN	AS	DATE	14/6/22
CHKD	AP		

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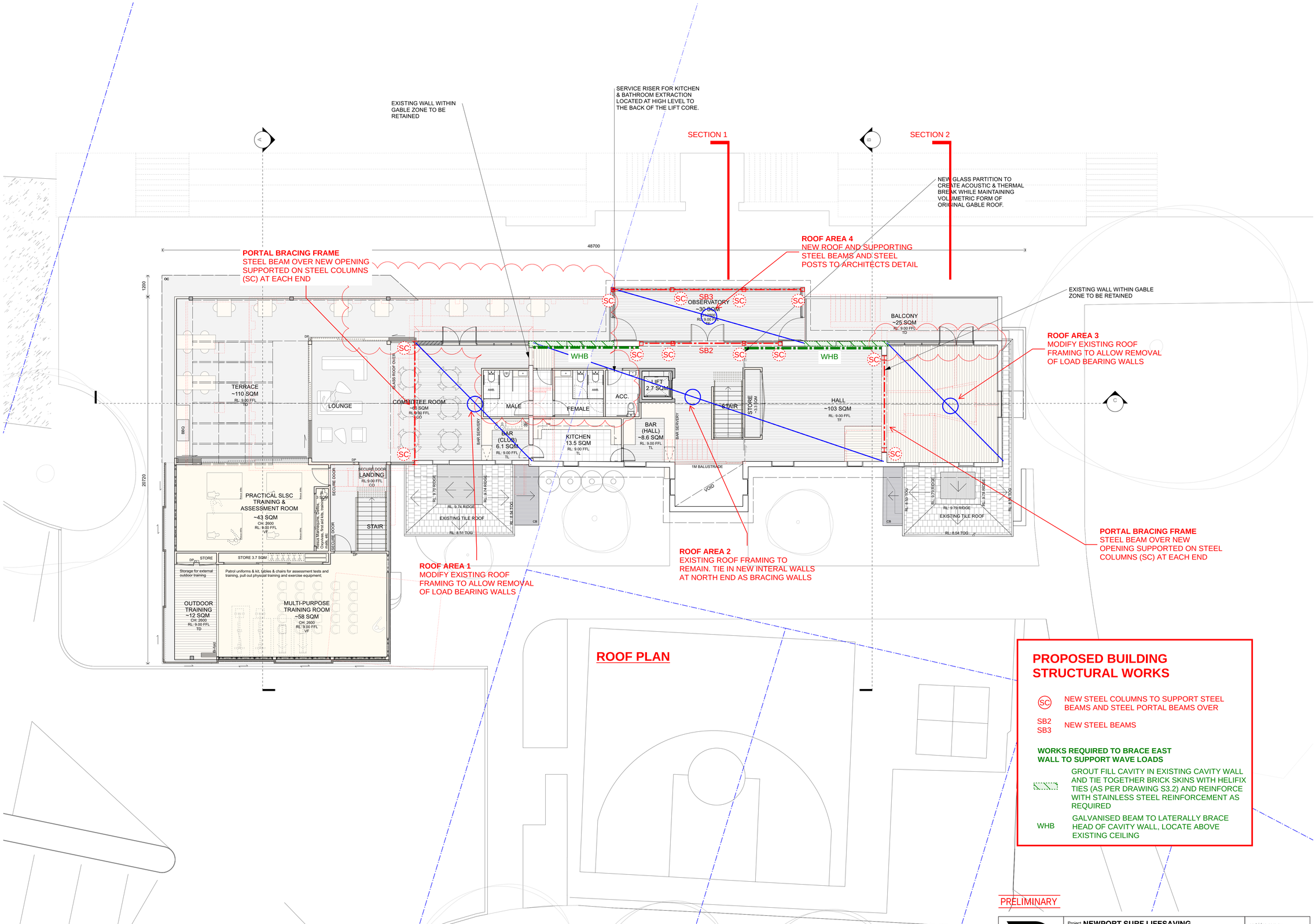

ROOF PLAN

PROPOSED BUILDING STRUCTURAL WORKS

SC	NEW STEEL COLUMNS TO SUPPORT STEEL BEAMS AND STEEL PORTAL BEAMS OVER
SB2 SB3	NEW STEEL BEAMS

WORKS REQUIRED TO BRACE EAST WALL TO SUPPORT WAVE LOADS

	GROUT FILL CAVITY IN EXISTING CAVITY WALL AND TIE TOGETHER BRICK SKINS WITH HELIFIX TIES (AS PER DRAWING S3.2) AND REINFORCE WITH STAINLESS STEEL REINFORCEMENT AS REQUIRED
WHB	GALVANISED BEAM TO LATERALLY BRACE HEAD OF CAVITY WALL, LOCATE ABOVE EXISTING CEILING

PRELIMINARY

Project	NEWPORT SURF LIFESAVING CLUB REFURBISHMENT			partridge.com.au partridge@partridge.com.au Partridge Structural Pty Ltd ABN 73 002 451 925
Title	SUGGESTED STRENGTHEING OF EXISTING BUILDING			
Job No	Drawing No	Revision	Date	By
2018S0141	S1.3	R3	18.10.24	EM

ISSUE	DATE	REVISION
E	16/10/2024	AMENDMENTS FOR RE-SUBMISSION
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PROJECT

Alterations and Additions to Newport Surf Life Saving Club

LOT, DP

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CLIENT

Northern Beaches Council

DWG

Proposed First Floor Plan

PROJECT #		DWG #	
NSC			011
SCALE @ A1	1:100	REVISION	E
SCALE @ A3	1:200		
DRAWN	AS	DATE	14/6/22
CHKD	AP		

northern beaches council

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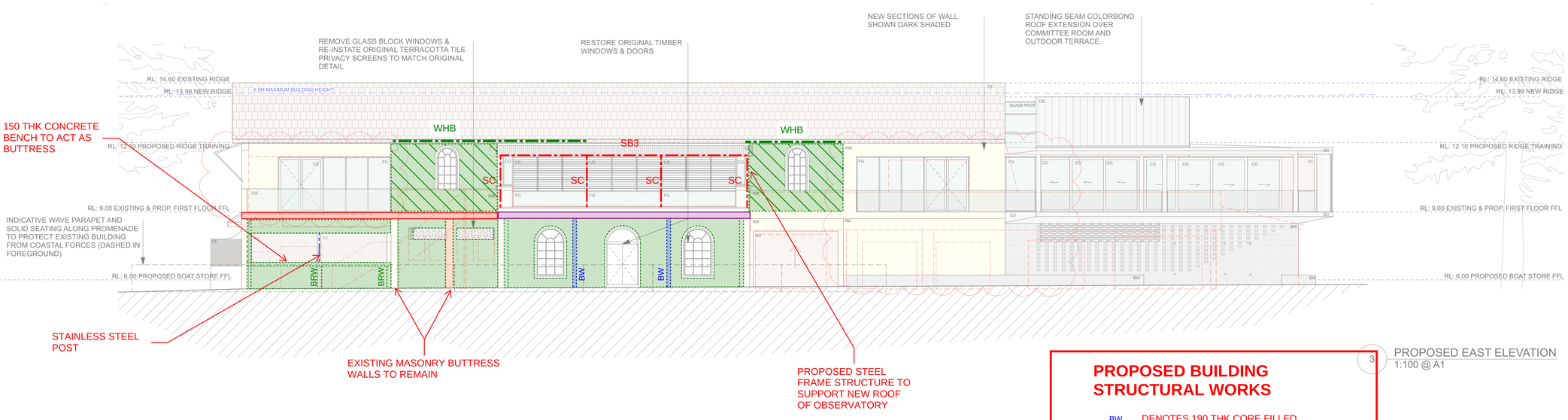

EASTERN ELEVATION

3 PROPOSED EAST ELEVATION
1:100 @ A1

PROPOSED BUILDING STRUCTURAL WORKS

BW — DENOTES 190 THK CORE FILLED BLOCK WALL

DENOTES NEW REINFORCED CONCRETE BALCONY SLAB

DENOTES NEW REINFORCED CONCRETE BALCONY SLAB

FOR SC AND SB3 REFER DRAWING S1.3

WORKS REQUIRED TO BRACE EAST WALL TO SUPPORT WAVE LOADS

BRW — DENOTES 150 THK REINFORCED CONCRETE BUTTRESS RETURN WALL

DENOTES 160 THK REINFORCED CONCRETE WALL BEHIND EXISTING MASONRY WALL

GROUT FILL CAVITY IN EXISTING CAVITY WALL AND TIE TOGETHER BRICK SKINS WITH HELIFIX TIES (AS PER DRAWING S3.2) AND REINFORCE WITH STAINLESS STEEL REINFORCEMENT AS REQUIRED

WHB — GALVANISED BEAM TO LATERALLY BRACE HEAD OF CAVITY WALL, LOCATE ABOVE EXISTING CEILING

PRELIMINARY

Project	NEWPORT SURF LIFESAVING CLUB REFURBISHMENT				partridge.com.au partridge@partridge.com.au Partridge Structural Pty Ltd ABN 73 002 451 925
Title	SUGGESTED STRENGTHEING OF EXISTING BUILDING				
Job No	Drawing No	Revision	Date	By	
2018S0141	S2.1	R3	18.10.24	EM	

MATERIALS SCHEDULE

ITEM	DESCRIPTION
CG	CLEAR GLASS - TO SECTION J JV3 REPORT
FG	FIXED GLASS - TO SECTION J JV3 REPORT
OG	OPAQUE GLASS - TO SECTION J JV3 REPORT
LG	LOUVRE GLASS - TO SECTION J JV3 REPORT
CB	STANDING SEAM COLORBOND ROOF "SS" GRADE - COLOUR TO SECTION J JV3 REPORT
RB	ROOF BALLAST OVER MEMBRANE ROOF
TR	TRANSLUCENT ROOF
TT	TERRACOTTA TILE TO MATCH EXISTING
BW	BRICKWORK - FACE BRICK EARTHY TONE FINISH
RM	RENDERED WALL - COLOUR TO MATCH EXISTING
PS	PRIVACY SCREEN - SPOTTED GUM OR EQUAL FOR CLEAR SEALER
SS	ALUMINIUM SUN SCREEN WITH KNOTWOOD FINISH OR EQUAL - 80% SHADING PER JV3 REPORT
FC	COMPRESSED FIBRE CEMENT - EQUITONE LINEAR LT10 FINISH
TF	TIMBER FLOOR - T&G SPOTTED GUM OR EQUAL FOR CLEAR FINISH
VF	VINYL FLOORING - COMMERCIAL GRADE
TD	TIMBER DECKING - SPOTTED GUM OR EQUAL FOR CLEAR FINISH
TL	TILE FINISH - NON-SLIP TO AS & BCA
OC	OFF-FORM CONCRETE
CO	CONCRETE FOR BURNISHED OR HONED FINISH
CP	CONCRETE PAVEMENT FOR BRUSHED NON-SLIP FINISH TO AS & BCA
TM	SPOTTED GUM HARDWOOD OR EQUAL FOR CLEAR SEALER
BV	BIFOLD DOOR AUSTRAL MONSOON 780 100" EQUITONE 'LINEAR' LT 10 FINISH TO MATCH FC
PP	POROUS CONCRETE PAVER - GREY SMOOTH FINISH WITH SAND INFILL
DP	DOWNPIPE - CONNECT TO EXISTING SW SYSTEM PER CIVIL ENG. DRAWINGS

ISSUE	DATE	REVISION
E	16/10/2024	AMENDMENTS FOR RE-SUBMISSION
D	31/7/24	AMENDMENTS FOR RESUBMISSION
C	24/2/23	DA - ROOF HEIGHT REVISION AS PER NB COUNCIL REQUEST
B	14/6/22	AMENDMENTS TO DA
A	25/8/21	FOR DEVELOPMENT APPLICATION

PROJECT

Alterations and Additions to Newport Surf Life Saving Club

LOT, DP

Lot 7094, DP 1059297 & Lot 1, DP 1139445

CLIENT

Northern Beaches Council

DWG

Proposed Elevations

PROJECT #	NSC	DWG #	014
SCALE @ A1	1:100	REVISION	E
SCALE @ A3	1:200		
DRAWN	AS	DATE	24/2/23
CHKD	AP		

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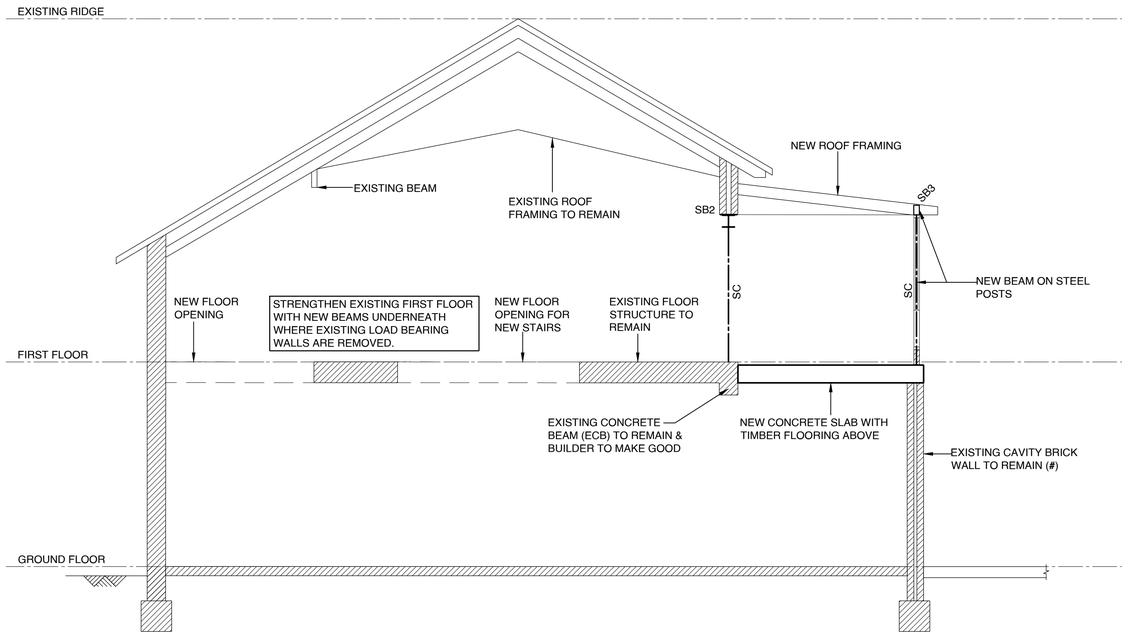
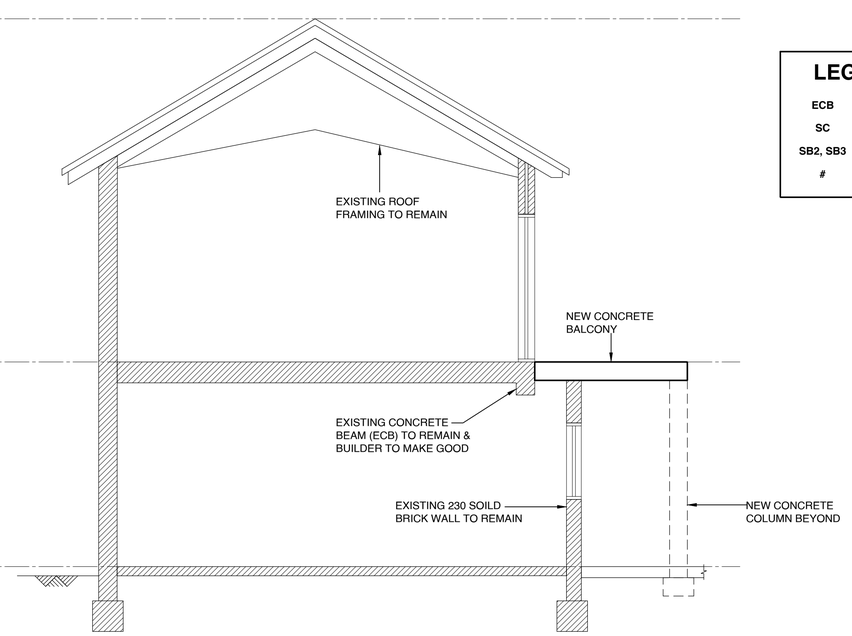


SECTION 1 1
SCALE 1:50
S1.1 S1.2



SECTION 2 2
SCALE 1:50
S1.1 S1.2

LEGEND

ECB	— DENOTES EXISTING CONCRETE BEAM SUPPORTING UPPER WALL
SC	— DENOTES NEW STEEL COLUMN
SB2, SB3	— DENOTES NEW STEEL BEAM
#	— DENOTES ALLOW FOR EXISTING CORRODED CAVITY WALL TIES TO BE REPLACED

Rev.	Issue / Amendment	By	App.	Date
P1	PRELIMINARY	V.K	E.M	18.10.24

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partridge@partridge.com.au
Partridge Structural Pty Ltd
ABN 73 002 451 925

Client
NORTHERN BEACHES COUNCIL

Architect
ADRIANO PUPILLI ARCHITECTURE

TEL 9114 6300

Project
ALTERATIONS AND ADDITIONS
NEWPORT SURF LIFE SAVING CLUB
NEWPORT

Title
CROSS SECTIONS
PROPOSED BUILDING STRUCTURAL WORKS ONLY

DO NOT SCALE: USE FIGURED DIMENSIONS

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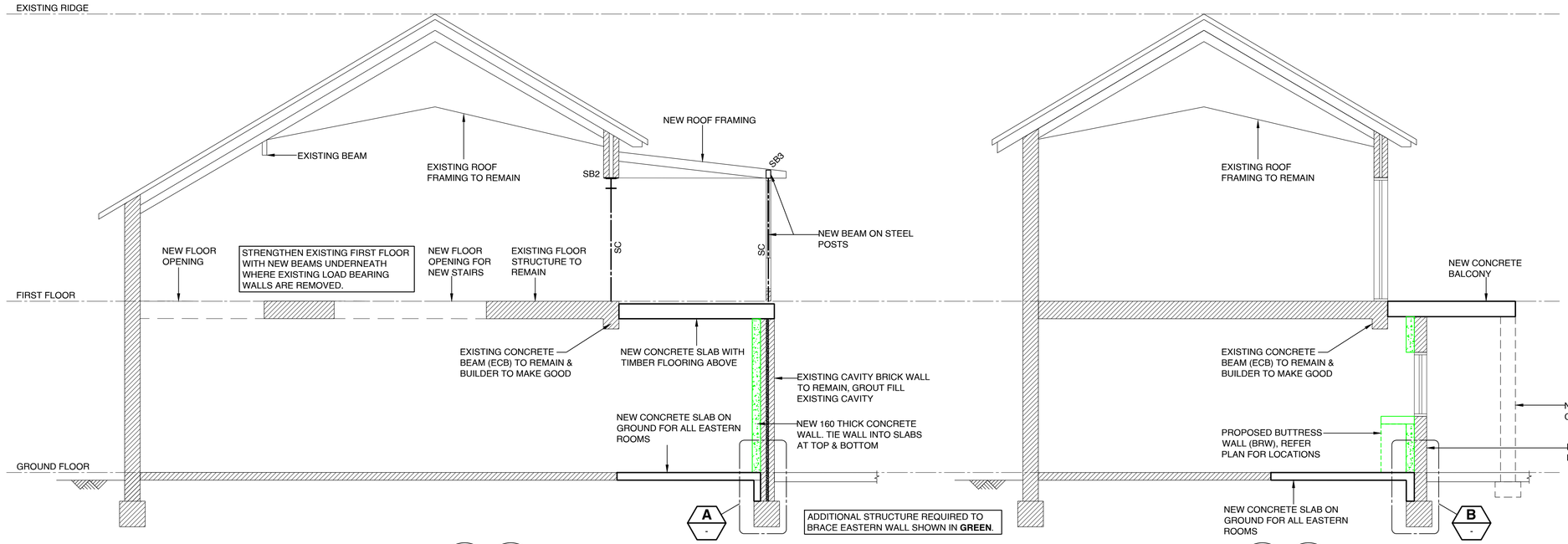
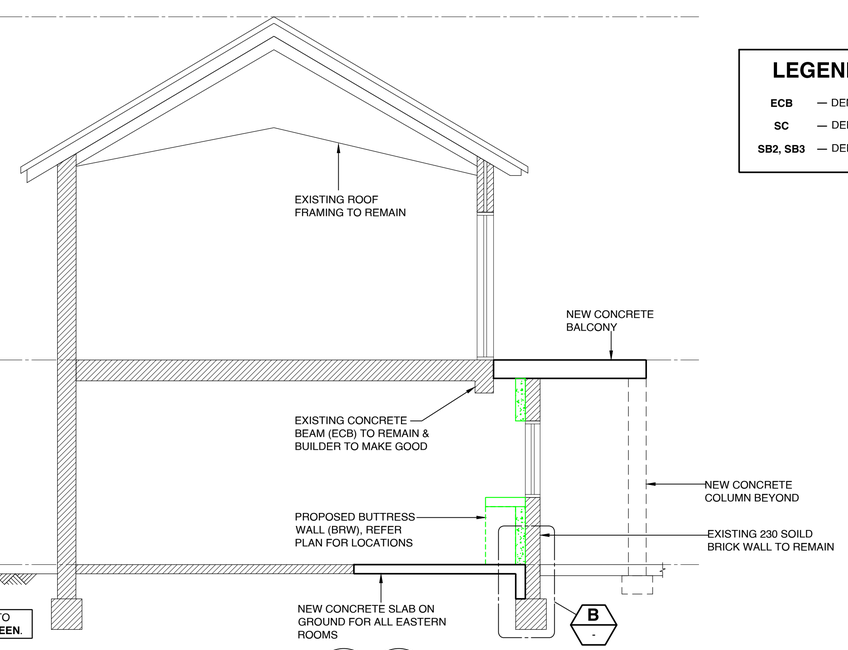
Designed **E.M**	Drawn **V.K**
Job No. **2018S0141**	Scale at A1 **AS SHOWN**
Date **OCT 2024**	Drawing No. **S3.1**
	Revision **P1**

PRELIMINARY - NOT FOR CONSTRUCTION



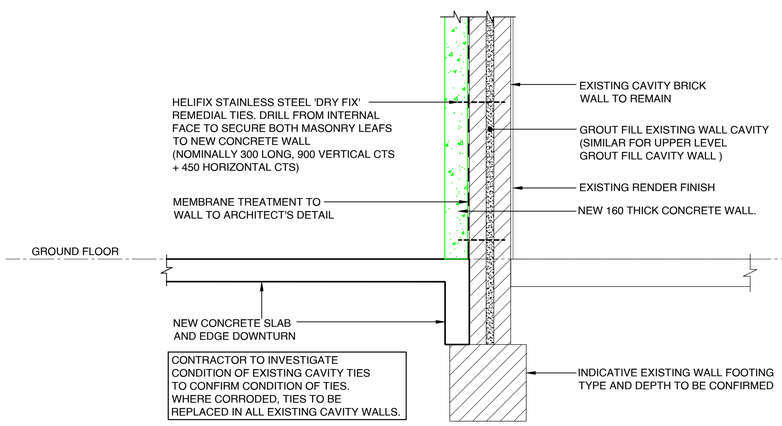
SECTION 1 1
SCALE 1:50 S1.1 S1.2



SECTION 2 2
SCALE 1:50 S1.1 S1.2

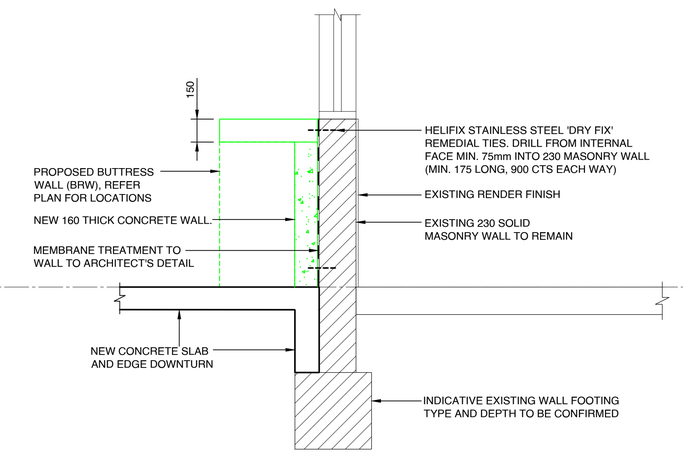
LEGEND

ECB	— DENOTES EXISTING CONCRETE BEAM SUPPORTING UPPER WALL
SC	— DENOTES NEW STEEL COLUMN
SB2, SB3	— DENOTES NEW STEEL BEAM



(NEW INTERNAL CONCRETE WALL AT EXISTING CAVITY MASONRY WALL)

DETAIL A
SCALE 1:20 -



(NEW INTERNAL CONCRETE WALL AT EXISTING 230 SOLID MASONRY WALL)

DETAIL B
SCALE 1:20 -

Rev.	Issue / Amendment	By	App.	Date
P1	PRELIMINARY	V.K	E.M	18.10.24

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Partridge Structural Pty Ltd
ABN 73 002 451 925

Client
NORTHERN BEACHES COUNCIL

Architect
ADRIANO PUPILLI ARCHITECTURE

TEL 9114 6300

Project
ALTERATIONS AND ADDITIONS
NEWPORT SURF LIFE SAVING CLUB
NEWPORT

Title
CROSS SECTIONS
WITH ADDITIONAL STREHTHENING TO EAST WALL TO SUPPORT WAVE LOADINGS

DO NOT SCALE: USE FIGURED DIMENSIONS

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Designed	Drawn
E.M	V.K
Job No.	Scale at A1
2018S0141	AS SHOWN
Date	Drawing No. / Revision
OCT 2024	S3.2 / P1

PRELIMINARY - NOT FOR CONSTRUCTION