St. Vincent's Hospital
O'Brien Building Redevelopment
Cnr Burton & Victoria Streets
DARLINGHURST

BUILDING REGULATION
AND FIRE SAFETY CONSULTANTS

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BCA Capability Report to accompany a Development Application

15 December 2006

Prepared for:

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1.0 Introduction and Designation

At the request of Bligh Voller Nield Pty Ltd, this commission involves the Building Code Of Australia assessment of the proposed re-development of the O'Brien Building located at the corner of Burton and Victoria Streets, Darlinghurst.

The proposed re-development will comprise four levels of below ground car park with five levels of patient care and non-patient care above the car park. The O'Brien Building will be linked to the existing DeLacy Building in the northern end on levels 3, 4 and 5.

Following compliance with this report, we are confident that the design will meet the requirments of the deemed to satisfy provisions of BCA2006 and that where necessary alternative solutions will be proposed to meet the performance requirements of BCA2006.

The design is at a point where the inherent BCA philosophies have been checked and development consent can be sought. The finer details with respect to BCA2006 can be finalised prior to the issue of a Construction Certificate / building permit.

The drawings assessed are architectural drawings prepared by Bligh Voller Nield Architects listed as follows:

Drawing No.	Drawing Title
A-B2	Level B2 (RL25.68) car park
A-B1	Level B1 (RL28.45) car park
A-00	Level 0 (RL31.25) car park
A-01 (B)	Level 1 (RL34.08) car park
Unnumbered plan (B)	Level 2 (RL36.88)
Unnumbered plan (B)	Level 3 (RL40.83)
Unnumbered plan (B)	Level 4 (RL44.39)
Unnumbered plan (B)	Level 5 (RL48.04)
Unnumbered plan (B)	Level 6 (RL52.64)
Unnumbered plan	Level 7 (RL56.64)
Unnumbered plan	Section 1

2.0 Use and Class of Buildings

Level	Use	Building Code of Australia Class
Levels B2, B1, 0 & 1	Car park	Class 7a
Level 2	Patient Care and non-Patient Care area of a Health Care Building	Class 9a
Level 3	Office	Class 5
Level 4	Office	Class 5
Level 5	Patient Care area of a Health Care Building	Class 9a
Level 6	Office	Class 5
Roof	Plant room	Class 9a

3.0 Construction

Fire Resistance

The building has an effective height of 18.76m which is less than 25m. The rise in storeys is 6. Therefore, the building will be of minimum Type A construction. Refer to Appendix A for details of the required FRLs of various building elements.

Important points to note:

- Loadbearing internal wall and loadbearing fire wall must be of concrete or masonry.
- Non-loadbearing internal walls required to be fire resisting and walls forming service shafts must be of non-combustible construction.
- The roof can be of non-combustible construction if the building is protected with automatic sprinklers throughout.

Material Control

The floor materials, floor coverings and wall and ceiling materials will be selected to comply with the fire hazard indices specified in Specification C1.10a.

4.0 Compartmentation

The O'Brien Building is considered as a united building under Part A4 of BCA as it links with the adjoining buildings. It will be fire separated from the adjoining buildings at the levels where they are linked to each other. The separation will be in the form of 120/120/120 fire wall and openings will be protected with -/120/30 self closing fire door in accordance with C2.7(b) of BCA. Thus the O'Brien Building can be treated as a separate building for the purposes of Parts C, D and E of BCA. This will negate the requirement of upgrading the existing linked buildings. Thus, the adjoining buildings will be considered as another building standing on the same allotment.

The fire source feature will be the external wall of the adjoining building. Any opening in the external wall and within 6m of each other will be protected with external wall-wetting sprinklers. Furthermore, any part of the external wall which is within 15m of the highest part of the external wall of the lower building is considered exposed to the fire source feature under clause 2.1 of Specification C1.1. The external wall will require the FRL specified in Table 3 of Specification C1.1 and openings will be protected with external wall wetting sprinklers.

As the car park will consist >40 cars, automatic sprinkler protection is required. There is no limitation on the floor area for a sprinkler protected car park.

The Patient Care areas will be divided into fire compartments not exceeding 2000m². The Ward areas will be divided into floor areas not more than 1000m² by walls with an FRL of 60/60/60 and they will further be divided into smoke compartments having a floor area not exceeding 500m².

5.0 Protection of Openings

It is assumed that the O'Brien Building is within a common allotment. Hence, the fire features will be the external wall of the adjoining building. Refer to Section 4.0 above for required protection.

6.0 Access and Egress

Patient Care Area

Travel distance to a point of choice of alternative exits must not exceed 12m and the distance to the nearer of the two exits must not exceed 30m. The distance between exits measured through the point of choice must not exceed 45m. Horizontal Exits will be utilised to ensure the travel distance will comply with the DTS requirements. The clear width of the Horizontal Exit will be 1250mm.

Non-Patient Care & Office

Travel distance to a point of choice of alternative exits must not exceed 20m and the distance to the nearer of the two exits must not exceed 40m. The distance between exits measured through the point of choice must not exceed 60m. Horizontal Exits will be utilised to ensure the travel distance will comply with the DTS requirements.

Other Requirements:

All exit swing doors, including the Horizontal Exits will swing in the direction of egress.

The balustrades will comply with D2.16 of BCA.

Access for people with disabilities will be provided to the whole of Ground floor and to those floors that are served by lifts. The circulation space at the doorway will comply with AS1428.1. The clear door width will not be less than 800mm and the door latch will be located between 900mm and 1100mm above the finished floor level. The lift will be fitted with facilities required for use by people with disabilities.

Tactile surface indicators will be provided at the top and bottom of public stairs.

Accessible toilets complying with AS 1428.1 will also be provided in accordance with F2.3 of BCA.

As the Patient Care area on Level 5 does not have direct egress to a road or open space, at least two passenger lifts will be emergency lifts. The dimension of the emergency lift must be measured clear of obstructions and must be of the followings:
Depth of car – 2280mm
Width of car – 1600mm
Floor to ceiling height – 2300mm
Door height – 2100mm
Door width – 1300mm, and
The emergency lifts will be connected to a standby power supply system where installed.

7.0 Fire Services and Equipment

The following essential fire safety measures will be installed (where necessary) throughout the building.

DESIGN / INSTALLATION STANDARD			
Item	Measure	BCA Clause	Relevant Australian Standard
1.	Automatic Fire Sprinkler Systems	BCA Clause, E1.5 & BCA Spec. E1.5,	AS 2118.1- 1999
2.	Building Occupant Warning System activated by the Sprinkler System	BCA Spec. E1.5 & Spec E2.2a Clause 6	Clause 3.22 of AS 1670.1 – 2004
3.	Emergency Lifts	BCA Clause E3.4	AS 1735.2-2001, AS 1735.11-1986 & AS 1735.12-1999 (Amdt 1, July 1999)
4.	Emergency Lighting	BCA Clause E4.4	AS/NZS 2293.1 – 2005

DESIGN / INSTALLATION STANDARD			
Item	Measure	BCA Clause	Relevant Australian Standard
5.	EWIS	BCA Clause E4.9	AS 1670.4-2004 & AS 4428.4-2004
6.	Exit Signs	BCA Clauses E4.5, E4.6 & E4.8	AS/NZS 2293.1 – 2005
7.	Fire Dampers	BCA Clause C3.15	AS 1668.1 - 1998 & AS 1682.1 & 2 - 1990
8.	Fire doors	C2.7, C3.8, C2.12, D1.11	As1905.1 -2005
9.	Fire Hose Reels	BCA Clause E1.4	AS 2441 – 2005
10.	Fire Hydrant Systems	BCA Clause E1.3	AS 2419.1 – 2005
11.	Fire Seals	BCA Clause C3.15	AS 1530.4 – 1997 & AS 4072.1 – 1992
12.	Lightweight Construction	BCA Clause C1.8	AS 1530.4 – 2005, ASTM E72-80, ASTM E695-79 – 1985 & AS 2135 – 1991
13.	Mechanical Air Handling Systems	BCA Clause E2.2	AS/NZS 1668.1 - 1998 & AS 1668.2 - 1991.
14.	Portable Fire Extinguishers	BCA Clause E1.6	AS 2444 – 2001
15.	Pressurising Systems [1]	BCA Clauses D1.7, E2.2 & Spec E2.2a	AS/NZS 1668.1-1998 (Amdt 1, Nov 2002)
16.	Smoke Dampers	BCA Clause E2.2	AS/NZS 1668.1-1998 (Amdt 1, Nov 2002)
17.	Smoke Doors	BCA Clause C2.5 & Spec. C3.4	
18.	Smoke Hazard Management Systems [2]	BCA Part E2	AS 2118.1 - 1999
19.	Wall-Wetting Sprinklers	BCA Clause C3.4	AS 2118.2 - 1995
20.	Warning & Operational signs	BCA Clause D2.23, Clause 183 of EPAR2000	

8.0 Sanitary Facilities

Adequate sanitary facilities will be provided in the building in accordance with F2.3 of BCA. At least one toilet accessible to people with disabilities will be provided and this will be located in an area which is accessible to the occupants of the building.

9.0 Room Sizes

The ceiling height to all habitable spaces will not be less than 2.4m.

10.0 Energy Efficiency

The building and its services will be designed to comply with National Section J and the applicable NSW Section J.

[1] Automatic air pressurisation to fire isolated stairs required in a Class 9a building with a rise in storeys of more than 2. Also required in basement fire stairs as they are more than 2 below ground levels.
[2] Automatic sprinklers is one option of satisfying fire smoke hazard management.

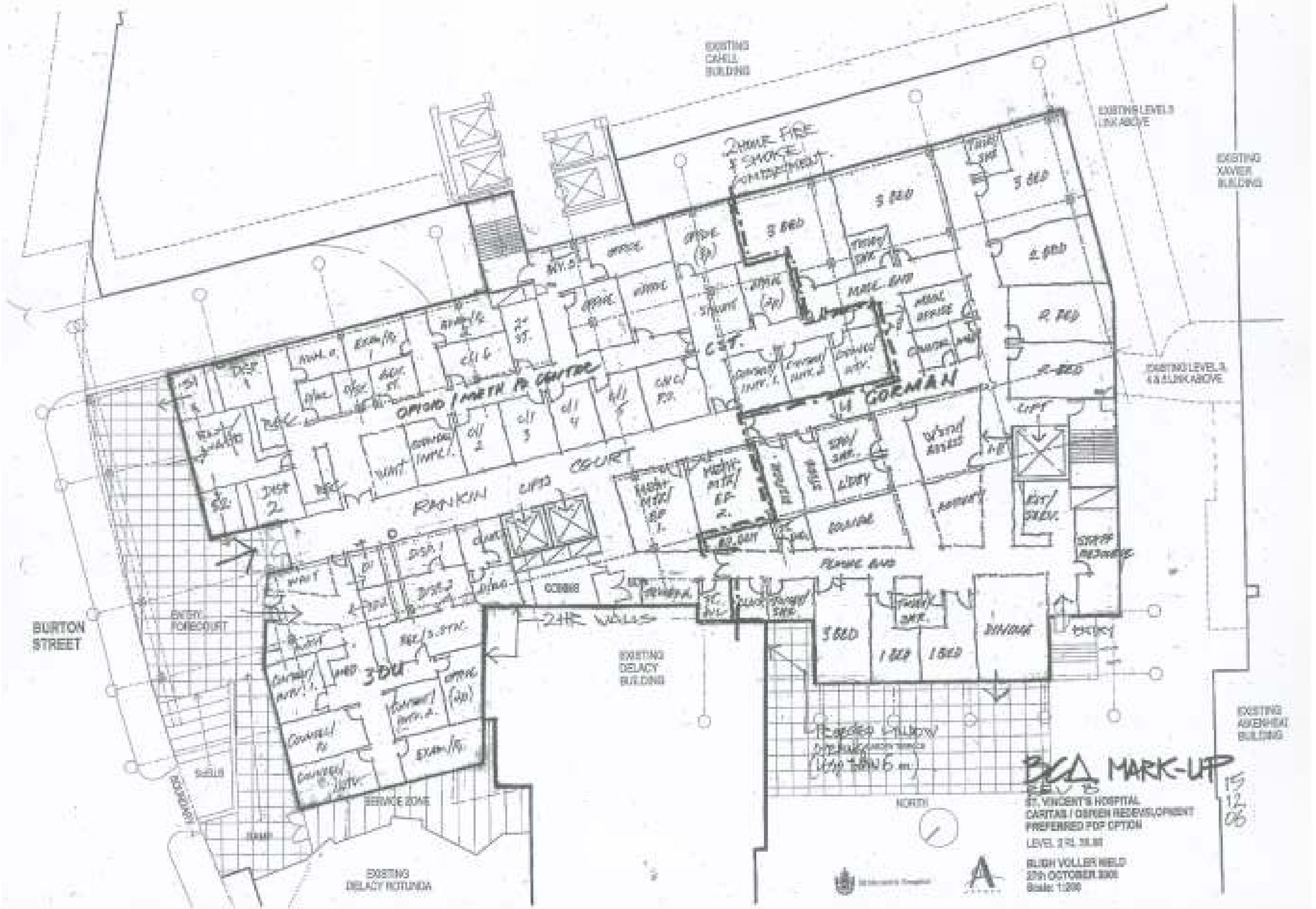
11.0 Conclusion

We have assessed the building design to date and have reviewed the scheme with respect to the Building Code of Australia. The design is at a point where the inherent BCA philosophies have been checked and development consent can be sought. The finer details with respect to BCA2008 can be finalised prior to the issue of a Construction Certificate / building permit.

Appendix A

Table 3 TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS

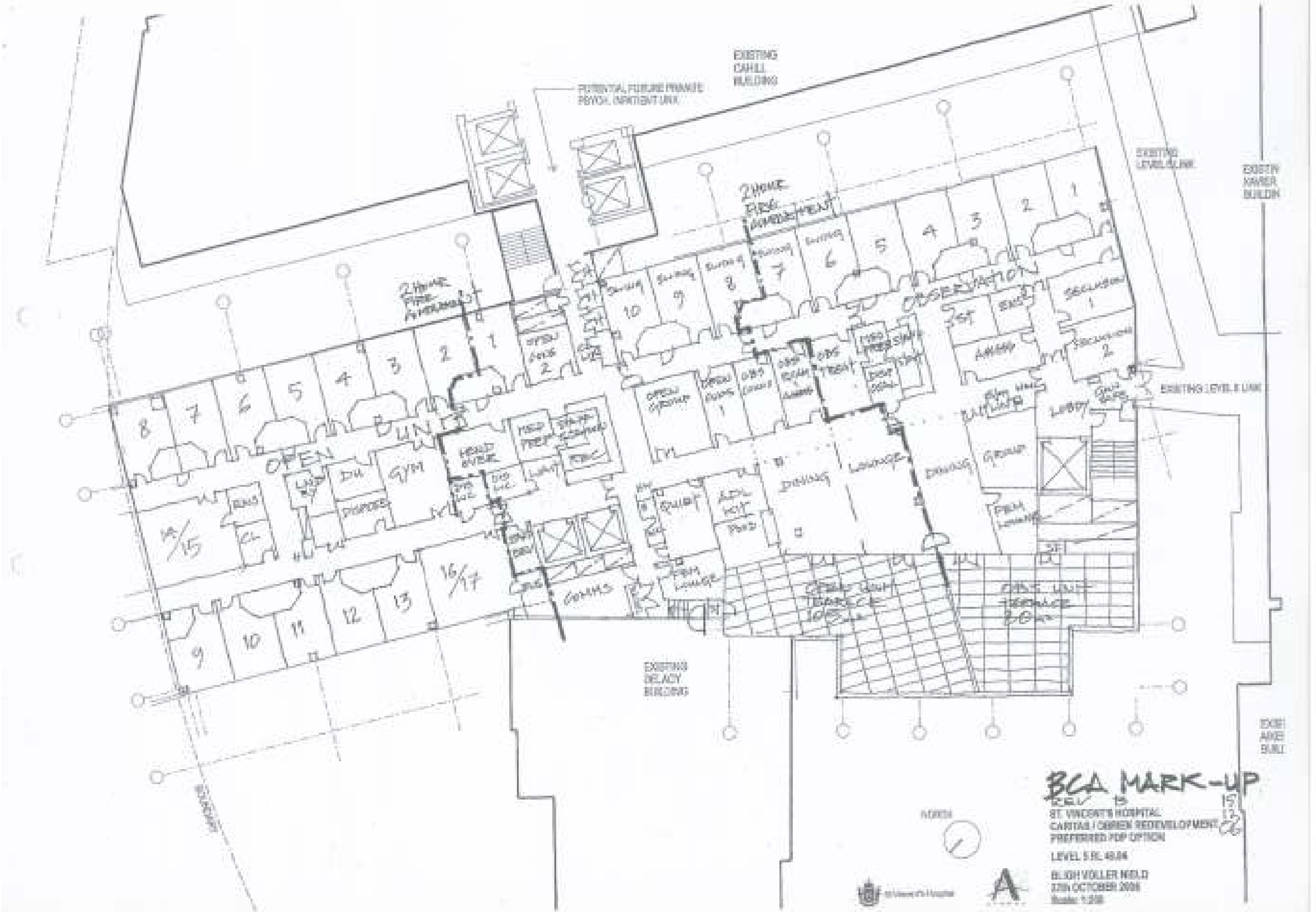
Building element	Class of building-FRL: (in minutes)			
	Structural adequacy/integrity/insulation			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is-				
For loadbearing parts				
Less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3m	90/90/90	120/90/90	180/180/120	240/240/180
3m or more	90/60/30	120/60/30	180/120/60	240/180/90
For non-loadbearing parts				
Less than 1.5m	-/90/90	-/120/120	-/180/180	-/240/240
1.5 to less than 3m	-/60/60	-/90/60	-/180/120	-/240/180
3m or more	-/-/-	-/-/-	-/-/-	-/-/-
EXTERNAL COLUMN not incorporated in an external wall, where the distance from any fire-source feature to which it is exposed is-				
Less than 3m	90/-/-	120/-/-	180/-/-	240/-/-
3m or more	-/-/-	-/-/-	-/-/-	-/-/-
COMMON WALLS and FIRE WALLS-	90/90/90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS				
Fire- resisting lift and stair shafts-				
Loadbearing	90/90/90	120/120/120	180/120/120	240/120/120
Non-loadbearing	-/90/90	-/120/120	-/120/120	-/120/120
Bounding public corridors, public lobbies and the like-				
Loadbearing	90/90/90	120/-/-	180/-/-	240/-/-
Non-loadbearing	-/60/60	-/-/-	-/-/-	-/-/-
Between or bounding sole-occupancy units-				
Loadbearing	90/90/90	120/-/-	180/-/-	240/-/-
Non-loadbearing	-/60/60	-/-/-	-/-/-	-/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion				
Loadbearing	90/90/90	120/90/90	180/120/120	240/120/120
Non-loadbearing	-/90/90	-/90/90	-/120/120	-/120/120
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES				
and COLUMNS-	90/-/-	120/-/-	180/-/-	240/-/-
Floors	90/90/90	120/120/120	180/180/180	240/240/240
Roofs	90/60/30	120/60/30	180/90/30	240/90/60

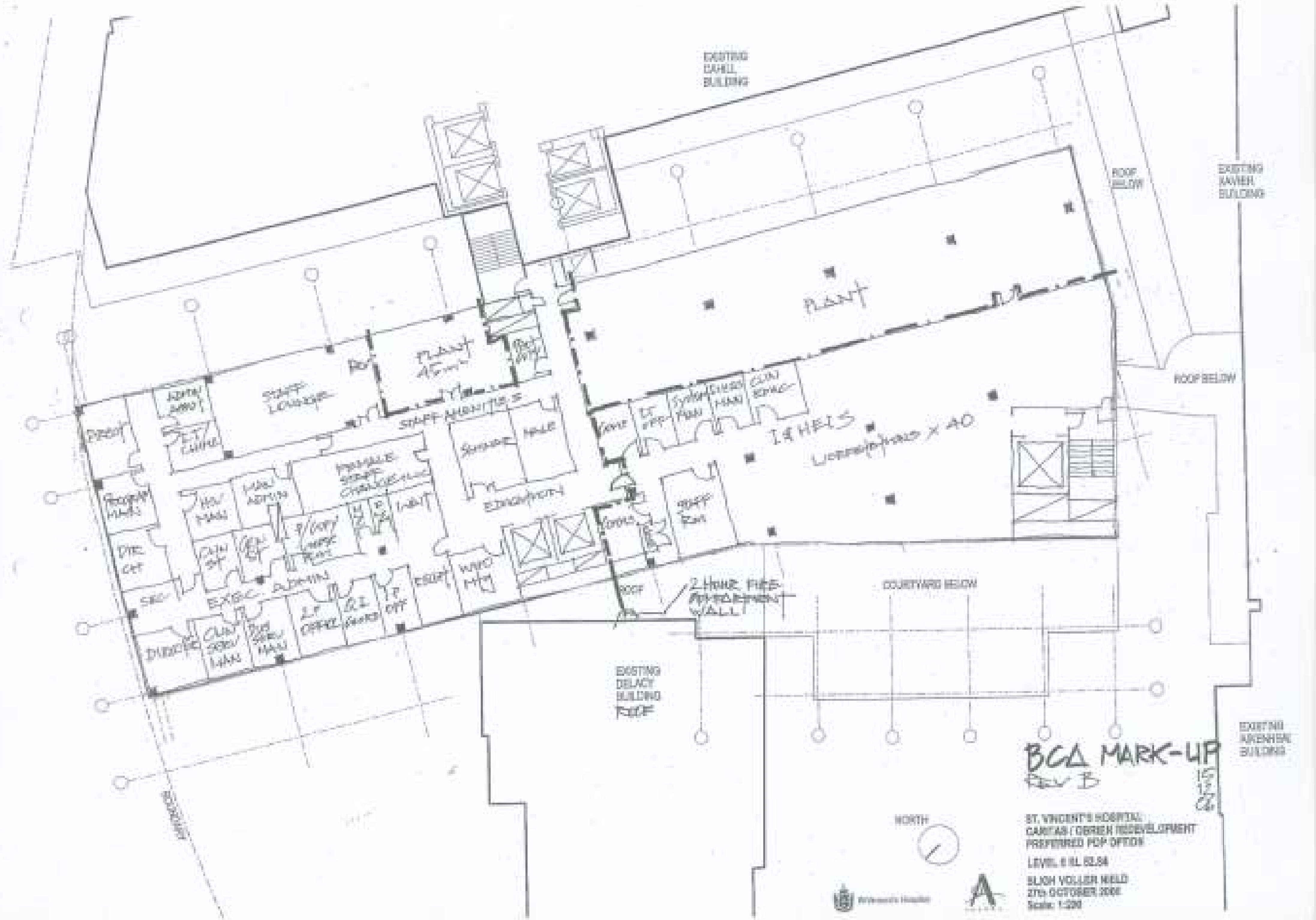


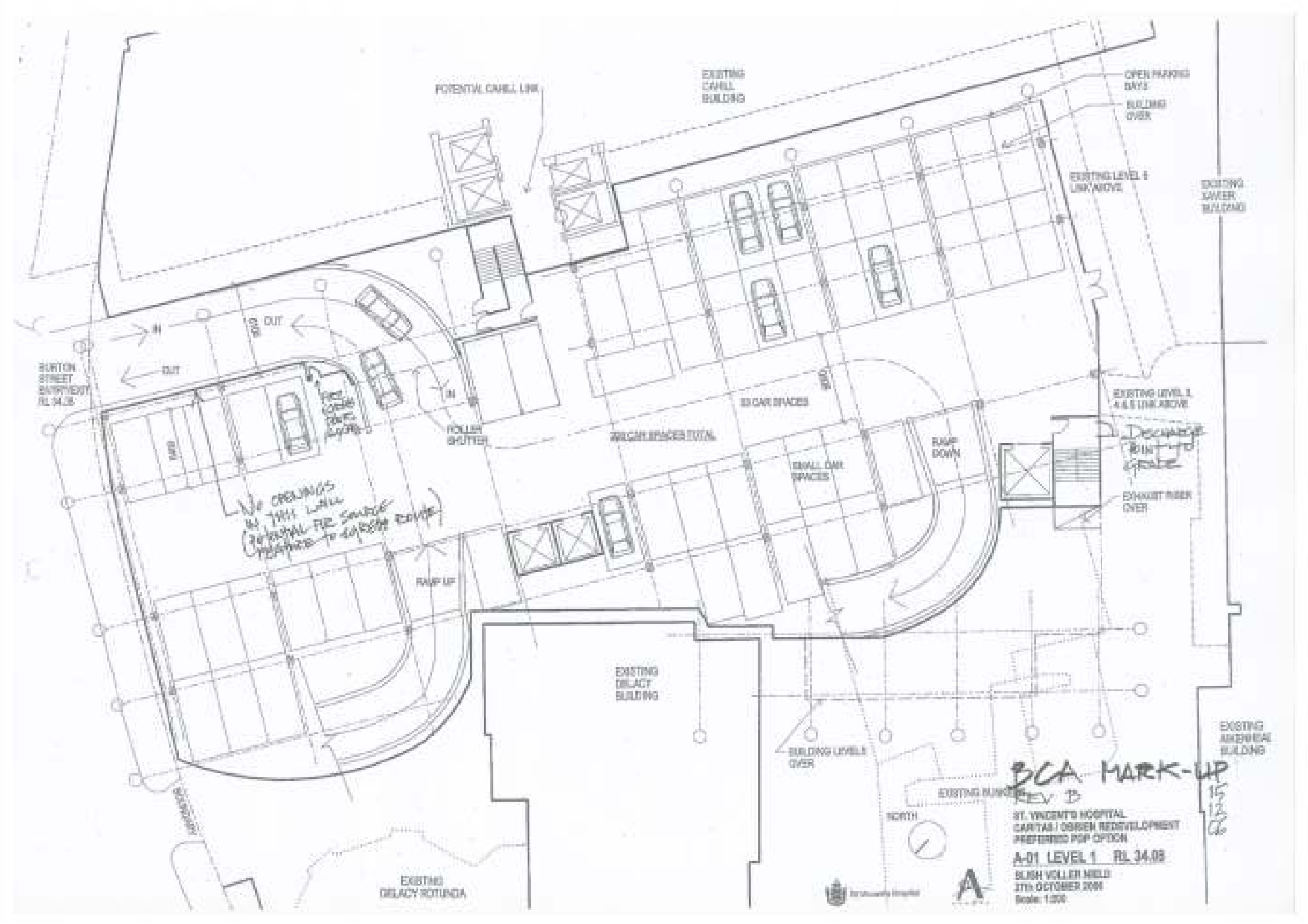
EXISTING CAHILL BUILDING
EXISTING LEVEL 3 LINK ABOVE
EXISTING XAVIER BUILDING
EXISTING LEVEL 3, 4 & 5 LINK ABOVE
2HOUR FIRE & SMOKE COMPARTMENT
3 BED
2 BED
OPIOID / METH Rx CENTRE
C.S.T.
GORMAN
RANKIN
LIFTS
COURT
2HR WALLS
LIFT
BURTON STREET
ENTRY FORECOURT
EXISTING DELACY BUILDING
3DU
DAY RX
1 BED
ENTRY
EXISTING AIKENHEAD BUILDING
SERVICE ZONE
EXISTING DELACY ROTUNDA
NORTH
BCA MARK-UP
15 12 06
ST. VINCENT'S HOSPITAL
CARITAS / O'BRIEN REDEVELOPMENT
PREFERRED PDP OPTION
LEVEL 2 FL 38.90
BLIGH VOLLER NIELD
27th OCTOBER 2006
Scale: 1:200

EXISTING CAHILL BUILDING
EXISTING XAVIER BUILDING
EXISTING LEVEL 4 LINK ABOVE
EXISTING LEVEL 3 LINK
FUTURE CAHILL LINK
EXISTING DELACY BUILDING
EXISTING AIKENHEAD BUILDING
BOUNDARY
CAMH Workstations x32
MAIN ENTRY
2 HOUR FIRE COMPARTMENT WALL
HORIZONTAL EGRESS FROM DELACY
BLA MARK-UP 27 11 06
NORTH
ST. VINCENT'S HOSPITAL
CARITAS / OBRIEN REDEVELOPMENT
PREFERRED PDP OPTION
LEVEL 3 RL 49.63
BLIGH VOLLER NIELD
27th OCTOBER 2006
Scale 1:200


EXISTING CAHILL BUILDING
LINK TO CAHILL BUILDING
EXISTING LEVEL 3 LINK ABOVE
EXISTING XAVIER BUILDING
PUBLIC HOSPITAL STREET
EXISTING LEVEL 1 LINK
PATIENT EDUCATION
MENTAL HEALTH IPU SUPPORT
LIFT LOBBY
EMERGENCY DEPARTMENT
CLP & HZM
EXISTING DELACY BUILDING
2 HOUR FIRE CONSTRUCTION WALL
REMAIN BALCONY AT L3 DELACY
BCA MARK-UP
REV B
ST. VINCENT'S HOSPITAL
CARITAS / GRIFFEN REDEVELOPMENT
PREFERRED POP OPTION
LEVEL 4 RL 44.20
OLIVER VOLLER NIELD
27th OCTOBER 2009
Scale: 1:200
NORTH


EXISTING CAHILL BUILDING
POTENTIAL FUTURE PRIVATE PSYCH. INPATIENT UNIT
EXISTING LEVEL 5 LINK
EXISTING LEVEL 6 LINK
EXISTING DELACY BUILDING
BOUNDARY
2 HOUR FIRE AMENDMENT
OBSERVATION
SECLUSION 1
SECLUSION 2
LOBBY
DINING
LOUNGE
GROUP
OPEN GROUP
GYM
COMMS
OPEN UNIT
FEM LOUNGE
NORTH
BCA MARK-UP
REV 15
ST. VINCENT'S HOSPITAL
CARITAS / O'BRIEN REDEVELOPMENT
PREFERRED PDP OPTION
LEVEL 5 RL 48.04
BLIGH VOLLER NIELD
27th OCTOBER 2008
Scale 1:200


EXISTING CAHILL BUILDING
EXISTING XAVIER BUILDING
ROOF BELOW
ROOF BELOW
PLANT
PLANT 45m²
STAFF LOUNGE
STAFF AMENITIES
SEMINAR
EDUCATION
STAFF RM
1 4 HELS
WORKSTATIONS x 40
COURTYARD BELOW
2 HOUR FIRE SEPARATION WALL
EXISTING DELACY BUILDING ROOF
EXEC. ADMIN
DIRECTOR
SEC
DIR OFF
PROGRAM MAN
BOUNDARY
EXISTING AIKENHEAD BUILDING
BCA MARK-UP
REV B
15 12 06
NORTH
ST. VINCENT'S HOSPITAL
CARITAS / OBRIEN REDEVELOPMENT
PREFERRED PDP OPTION
LEVEL 6 SL 62.56
BLIGH VOLLER NIELD
27th OCTOBER 2006
Scale: 1:200


POTENTIAL CAHILL LINK
EXISTING CAHILL BUILDING
OPEN PARKING BAYS
BUILDING OVER
EXISTING LEVEL 6 LINK ABOVE
EXISTING XAVIER BUILDING
BURTON STREET ENTRY/EXIT RL 34.09
IN
OUT
OUT
IN
ROLLER SHUTTER
EXISTING LEVEL 3, 4 & 5 LINK ABOVE
DISCHARGE IN UNDERCROFT
EXHAUST RISER OVER
RAMP DOWN
SMALL CAR SPACES
RAMP UP
EXISTING DELACY BUILDING
BUILDING LEVELS OVER
EXISTING ARBORETUM BUILDING
EXISTING DELACY ROTUNDA
NORTH
BCA MARK-UP
REV B
ST. VINCENT'S HOSPITAL
CARITAS / O'BRIEN REDEVELOPMENT
PREFERRED PSP OPTION
A-01 LEVEL 1 RL 34.09
BUSH VOLLER NIELD
27th OCTOBER 2009
Scale: 1:200
A