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Environmental Noise Assessment

Redevelopment of Wentworthville Public School
70 – 100 Fullagar Road, Wentworthville, NSW

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1.0 CONSULTING BRIEF

Day Design Pty Ltd was engaged by Fulton Trotter Architects to carry out an acoustic assessment of the proposed redevelopment of the Wentworthville Public School at 70-100 Fullagar Road, Wentworthville, NSW. This commission involves the following:

Scope of Work:

- Inspect the site and environs
- Measure the background noise levels at critical locations and times
- Establish acceptable noise level criteria
- Quantify noise emissions from the School taking into consideration the proposed redevelopment
- Calculate the level of noise emission, taking into account building envelope transmission, screen walls and distance attenuation
- Prepare a site plan identifying the development and nearby noise sensitive locations
- Provide recommendations for acoustical treatment (if necessary)
- Prepare an Environmental Noise Assessment Report.

2.0 PROJECT DESCRIPTION & SUMMARY OF FINDINGS

The Department of Education propose to redevelop the existing Wentworthville Public School at 70-100 Fullagar Road, Wentworthville, NSW.

The existing site is situated on land zoned R2 – Low Density Residential under Holroyd Local Environmental Plan (LEP) 2013.

The existing School comprises of an administration building, library, hall and permanent and demountable learning spaces.

The proposal seeks approval for the removal of the existing structures on the site to accommodate the redevelopment of the School's existing buildings and also the construction of 31 new permanent teaching spaces (home bases). The site plan is shown in the attached Appendix C. The proposal will allow for an additional enrolment of approximately 396 students, taking the total number of students enrolled at the School to (604 + 396 =) 1000 students.

Mechanical plant, including but not limited to air conditioning condenser units and exhaust fans, will be required to serve the proposed home bases, administration building, library and hall.

Wentworthville Public School is bounded by Fullagar Road to the north, Station Street to the east, Monash Street to the south and Garfield Street to the west. Residential dwellings are located in all direction on the opposite sides of the roads and streets bounding the School, as shown on Figure 1.

The nearest noise sensitive receptors to the School, in various directions, are shown on Figure 1 and as follows in Table 1.

Table 1 Noise Sensitive Receptors

Receptor and Type	Address	Direction from site
R1 – Residential	109 Fullagar Road	North
R2 – Residential	176-178 Station Street	East
R3 – Residential	10 Monash Street	South
R4 – Residential	77 Garfield Street	West

Each receptor location has been selected to represent the adjacent residential premises, eg R1 is representative of all residential receptors to the north of the School.

The existing and ongoing operating hours for the School are:

Standard Hours:

- Monday – Friday: 8.00 am – 4.00 pm.

Outside of standard school hours (community use), the existing and ongoing operating hours for the refurbished Hall are:

Outside of Standard Hours:

- Monday: 7.00 pm – 9.00 pm;
- Wednesday: 8.00 am – 10.00 am;
- Saturday: 2.00 pm – 6.00 pm; and
- Sunday: 2.30 pm – 4.30 pm.

The proposal is a State Significant Development (SSD) and has been issued by the NSW Department of Planning and Environment with the Secretary's Environmental Assessment Requirements (SEARs). The SEARs require an assessment against the NSW Environment Protection Authority's (EPA) *Noise Policy for Industry 2017* and the NSW Department of Planning's (DoP) *Development Near Rail Corridors and Busy Roads – Interim Guideline.*

An acoustic assessment of the noise from the outdoor play areas, home bases, public address system and school bell, mechanical plant and the use of the hall both during and outside of standard school hours has been carried out to ensure the noise impact of the School, subsequent to the proposed redevelopment, will not adversely affect the acoustic amenity of the nearby residences or schools.

Calculations show that, provided the recommendations in Section 5 of this report are implemented and adhered to, the level of noise emission, subsequent to the proposed redevelopment, from the School will meet the acoustic requirements in the NSW Department of Planning and Environment's *SEPP (Educational Establishments and Child Care Facilities) 2017*, NSW Environment Protection Authority's (EPA) *Noise Policy for Industry* and the Association of Australasian Acoustical Consultants (AAAC) *Technical Guideline for Child Care Centre Noise Assessment*.

Also, although not applicable to this site, the proposal will also comply with the requirements of the State Environment Planning Policy (SEPP) (Infrastructure) 2007 and the Department of Planning and Environment's (DoPE) *Development Near Rail Corridors and Busy Roads – Interim Guideline.*

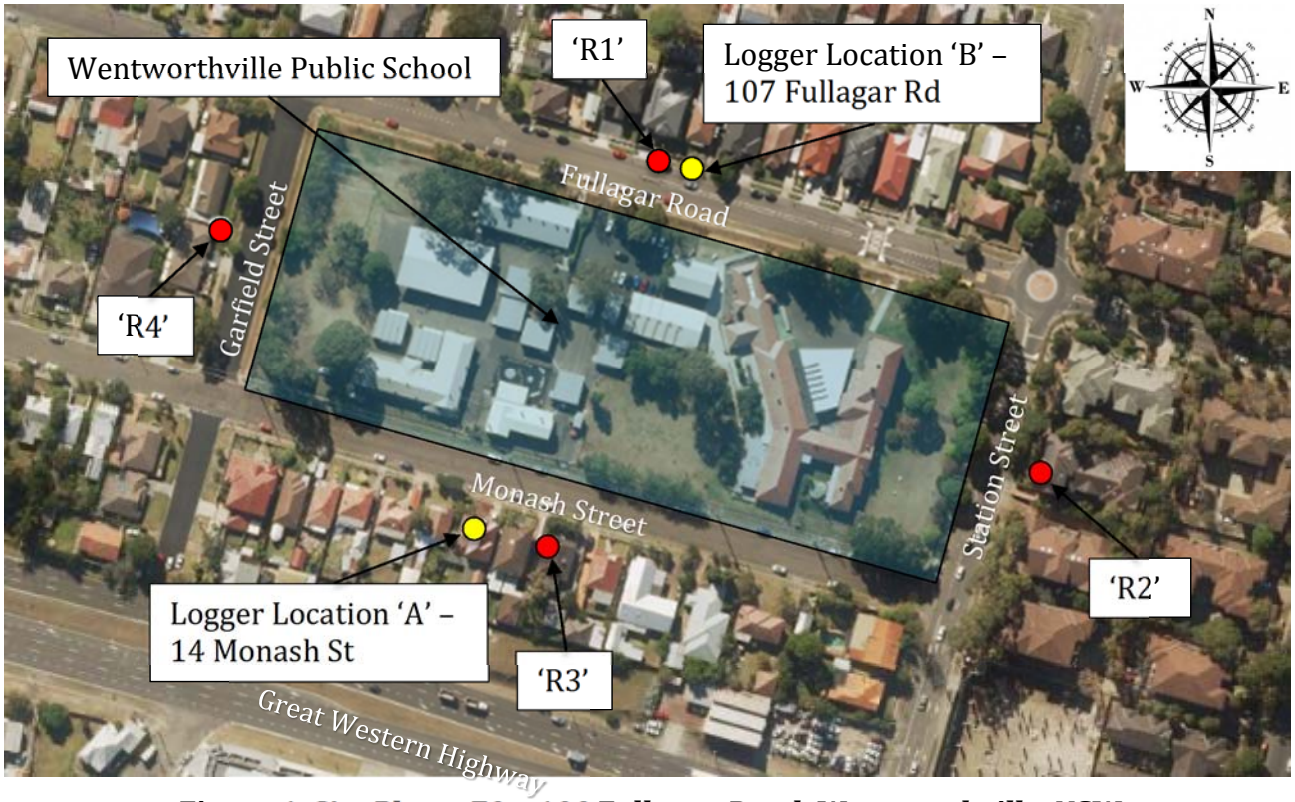


Figure 1. Site Plan – 70 – 100 Fullagar Road, Wentworthville, NSW

3.0 ACOUSTIC CRITERIA

3.1 Measured Ambient Noise Levels

In order to assess the severity of a possible environmental noise problem in a residential area it is necessary to measure the ambient background noise level at the times and locations of worst possible annoyance. The lower the background noise level, the more perceptible the intrusive noise becomes and the more potentially annoying.

The ambient L_{90} background noise level is a statistical measure of the sound pressure level that is exceeded for 90% of the measuring period (typically 15 minutes).

The Rating Background Level (RBL) is defined by the Environment Protection Authority (NSW) as the median value of the (lower) tenth percentile of L_{90} ambient background noise levels for day, evening or night periods, measured over a number of days during the proposed days and times of operation.

The places of worst possible annoyance are the nearby residential dwellings. These locations are shown in the Site Plan on Figure 1 as 'R1' to 'R4'. The times of worst possible annoyance will be during the day when the School is operating.

Ambient noise levels were measured in two locations - the front yards of 14 Monash Street and 107 Fullagar Road - shown as Logger Locations 'A' and 'B' on Figure 1, from Wednesday 13 December to Wednesday 20 December, 2017.

The day time ambient noise levels are presented in the attached Appendix B1 and B2 and also below in Table 2.

Table 2 Ambient Noise Levels

Noise Measurement Location	Time Period	L_{90} Rating Background Level	Existing L_{eq} Noise Level
Logger Location 'A' - Front yard - 14 Monash Street	Day (7 am to 6 pm)	**43 dBA** **45 dBA**	**53 dBA** **58 dBA**
Logger Location 'B' - Front yard – 107 Fullagar Road	Day (7 am to 6 pm)	**43 dBA** **44 dBA**	**55 dBA** **58 dBA**

Meteorological conditions during the testing typically consisted of clear skies and temperatures of 16 to 42°C. Atmospheric conditions were ideal for noise monitoring. Noise measurements were therefore considered reliable and typical for the receptor areas.

3.2 NSW Department of Planning and Environment

3.2.1 SEPP (Educational Establishments and Child Care Facilities) 2017

The NSW Department of Planning and Environment (DoPE) published the State Environmental Planning Policy (SEPP) (Educational Establishments and Child Care Facilities) 2017 on 1 September 2017. 'Schedule 4 Schools – design quality principles' of the SEPP requires the following:

'Principle 5. Amenity

> *Schools should provide pleasant and engaging spaces that are accessible for a wide range of educational, informal and community activities, while also considering the amenity of adjacent development and the local neighbourhood.'*

3.2.2 SEPP (Infrastructure) 2007

The NSW Department of Planning and Environment (DoPE) published the *"Development Near Rail Corridors and Busy Roads – Interim Guidelines"* in 2008. The Guidelines refer to Clauses 87 (Rail) and Clause 102 (Road) of the State Environment Planning Policy (Infrastructure) 2007 for the noise criteria for developments affected by railway or road traffic noise.

3.2.2.1 SEPP Clause 87 (Rail)

Clause 87 of the State Environmental Planning Policy (SEPP) (Infrastructure) 2007 details the following in with regards to rail noise and vibration:

(1) This clause applies to development for any of the following purposes that is on land in or adjacent to a rail corridor and that the consent authority considers is likely to be adversely affected by rail noise or vibration:

- *(a) a building for residential use,*
- *(b) a place of public worship,*
- *(c) a hospital,*
- *(d) an educational establishment or child care centre.*

(2) Before determining a development application for development to which this clause applies, the consent authority must take into consideration any guidelines that are issued by the Director-General for the purposes of this clause and published in the Gazette.

The rail corridor (T1 – North Shore, Northern & Western Line and T5 Cumberland Line) is approximately 750 metres to the north of the development. Therefore, the development will not be '*adversely affected by rail noise or vibration*' as per the above, therefore the SEPP is not applicable.

3.2.2.2 SEPP Clause 102 (Road)

Clause 102 of the State Environmental Planning Policy (SEPP) (Infrastructure) 2007 details the following in with regards to road noise and vibration:

This clause applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 40,000 vehicles (based on the traffic volume data published on the website of the RTA) and that the consent authority considers is likely to be adversely affected by road noise or vibration:

(a) a building for residential use,

(b) a place of public worship,

(c) a hospital,

(d) an educational establishment or child care centre.

It is unlikely that the AADT will reach 40,000 on roads surrounding the development site, therefore the SEPP is not applicable.

3.3 NSW Environment Protection Authority – Noise Policy for Industry

The NSW Environment Protection Authority (EPA) published the *Noise Policy for Industry* (NPfI) in October 2017. The *NPfI* is specifically aimed at assessing noise from industrial noise sources listed in Schedule 1 of the Protection of the Environment Operations Act 1997 (POEO, 1997).

While the *NPfI* is not strictly applicable to this site, as the site is not scheduled, as the standards are consistent with the SEPP, the limits set out in the *NPfI* will be used as a guide in determining whether the level of noise is considered intrusive or not.

3.3.1 Intrusiveness Criteria

The EPA states in Section 2.3 of its NSW *NPfI* (October 2017) that the intrusiveness of an industrial noise source may generally be considered acceptable if the level of noise from the source (represented by the L_{Aeq} descriptor), measured over a 15-minute period, does not exceed the rating background noise level by more than 5 dB when beyond a minimum threshold (EPA *NPfI*, 2017, Section 2.3).

The NSW EPA in their *Noise Policy for Industry* (2017), Section 2.3, state the following:

"The objective of carrying out long-term background noise monitoring at a location is to determine existing background noise levels that are indicative of levels during the entire year. However, the RBL for evening or night periods calculated from long-term unattended background noise monitoring can sometimes be higher than the RBL for the daytime period. This situation can arise due to increased noise from, for example, insects or frogs during the evening and night in the warmer months, or due to temperature inversion conditions during winter.

In determining project noise trigger levels from RBLs, the community's expectations also need to be considered. The community generally expects greater control of noise during the more sensitive evening and night-time periods than during the less sensitive daytime period. Therefore, in determining project noise trigger levels for a particular development, it is generally recommended that the project intrusiveness noise level for evening be set at no greater than the project intrusiveness noise level for daytime. The project intrusiveness noise level for night-time should be no greater than the project intrusiveness noise level for day or evening. Alternative approaches to these recommendations may be adopted if appropriately justified."

The Rating Background Level at Logger Location 'A', 14 Monash Street, Wentworthville was 43 dBA during the day and 45 dBA in the evening (see Table 2).

Therefore, the acceptable $L_{eq,\ 15\ minute}$ noise intrusiveness criteria in this area is:

- (43 + 5 =) 48 dBA $L_{eq,\ 15\ minute}$ during the day and in the evening.

The Rating Background Level at Logger Location 'B', 107 Fullagar Road, Wentworthville was also 43 dBA during the day and 44 dBA in the evening (see Table 2).

Therefore, the acceptable $L_{eq,\ 15\ minute}$ noise intrusiveness criteria in this area is also:

- (43 + 5 =) 48 dBA $L_{eq,\ 15\ minute}$ during the day and in the evening.

3.3.2 Amenity Criteria

Depending on the type of area in which the noise is being made, there is a certain reasonable expectancy for noise amenity. The NSW *NPfI* provides a schedule of recommended L_{eq} industrial noise levels that under normal circumstances should not be exceeded. If successive developments occur near a residential area, each one allowing a criterion of background noise level plus 5 dB, the ambient noise level will gradually creep higher.

The recommended L_{eq} noise levels below in Table 5 are taken from Section 2.4, Table 2.2 of the NPfI.

Table 3 Amenity Criteria

Receiver	Noise Amenity Area	Time of Day	L_{eq}, dBA, Recommended Amenity Noise Level
Residential	Suburban	Day	55
		Evening	45
		Night	40

The L_{Aeq} is determined over a 15-minute period for the project intrusiveness noise level and over an assessment period (day, evening and night) for the project amenity noise level. This leads to the situation where, because of the different averaging periods, the same numerical value does not necessarily represent the same amount of noise heard by a person for different time periods. To standardise the time periods for the intrusiveness and amenity noise levels, the *NPfI* assumes that the **$L_{Aeq,15min}$** will be taken to be equal to the **$L_{Aeq, period}$ + 3 decibels (dB)** (Section 2.2, NPfI).

Compliance with the amenity criteria will limit ambient noise creep. Wherever the existing L_{eq} noise level from industrial noise sources approaches or exceeds the amenity criteria at a critical receptor location, the intrusive L_{eq} noise from the noise source in question must be reduced to a level that may be as much as 10 dB below the existing L_{eq} industrial noise level. **Section 2.4** of the *NPfI* states that where the project amenity noise level is 10 dB or more lower than the existing industrial noise level, the project amenity noise levels can be set at 10 dB below the existing industrial noise levels, provided the existing industrial noise levels are unlikely to reduce over time.

The existing L_{eq} noise level at Logger Location 'A', 14 Monash Street, Wentworthville was 53 dBA during the day and 58 dBA in the evening (see Table 2). Therefore, the acceptable amenity criteria for the residential receptors in this area are:

- (55 – 5 + 3 =) 53 dBA $L_{eq,\ 15\ minute}$ during the day; and
- (58 – 10 + 3 =) 51 dBA $L_{eq,\ 15\ minute}$ in the evening.

The existing L_{eq} noise level at Logger Location 'B', 107 Fullagar Road, Wentworthville was 55 dBA during the day and 58 dBA in the evening. Therefore, the acceptable amenity criteria for the residential receptors in this area are:

- (55 – 5 + 3 =) 53 dBA $L_{eq,\ 15\ minute}$ during the day; and
- (58 – 10 + 3 =) 51 dBA $L_{eq,\ 15\ minute}$ in the evening.

3.4 AAAC Noise Criteria for Outdoor Play Areas

In May 2008, the Association of Australasian Acoustical Consultants (AAAC) first published the *Technical Guideline for Child Care Centre Noise Assessment*. The guideline was updated in 2010 to assist both AAAC members and local councils to assess the noise impact from proposed child care centres both accurately and fairly, (see www.aaac.org.au).

Although the proposed development comprises alterations and additions to an existing school, and therefore may produce different levels of noise than a childcare centre, there are similarities in noise emission from uses of outdoor play areas for schools and childcare centres. As students do not play outdoors continuously for long periods of time, and as the duration of time for students playing outside is reduced, the overall noise annoyance reduces. Therefore, it is reasonable to allow a higher level of nose impact for a shorter duration.

The AAAC document states that a total time limit of 2 hours of outdoor play per day (e.g. 1 hour in the morning and 1 hour in the afternoon) should allow an additional 5 dB noise impact.

We recommend that the noise criteria detailed in *Technical Guideline for Child Care Centre Noise Assessment* be applied to outdoor areas of the School.

The relevant criteria is $L_{eq,\ 15min}$ noise level emitted from the outdoor play area shall not exceed the background noise level by more than 10 dB at the residential assessment location.

Up to 2 hours (total) per day – The $L_{eq,\ 15minute}$ noise level emitted from the outdoor areas shall not exceed the background noise level by more than 10 dB at the assessment location.

More than 2 hours per day – The $L_{eq,\ 15minute}$ noise level emitted from the outdoor areas shall not exceed the background noise level by more than 5 dB at the assessment location.

3.5 Project Specific Noise Criteria

When all the above factors are considered, we find that the most stringent noise criteria are:

Residential Receivers – 'R1' to 'R4' – based on Logger Locations 'A' and 'B'

- **53 dBA** $L_{eq,\ 15\ minute}$ during the day **for outdoor activities** for up to 2 hours (total) per day;
- **48 dBA** $L_{eq,\ 15\ minute}$ during the day and evening for all other noise.

These criteria apply at the most-affected point on or within the residential property boundary. For upper floors, the noise is assessed outside the nearest window.

4.0 SCHOOL NOISE EMISSION

The main sources of noise from the School, will be as follows:

- Students playing in the outdoor play area;
- Students inside the home bases;
- Public address system and school bell;
- Mechanical plant; and
- Use of the Hall.

The noise assessment was based on the drawings by Fulton Trotter Architects for Project No. 7068WV01, attached as Appendix C.

4.1 Outdoor Play Areas

Children will be outside for a range of times, including before school, recess, lunch, PE classes and after school, however the outdoor areas are only likely to be at capacity during recess and lunch.

In order to model the worst case scenario of noise emission from students outdoors at play, we have assumed that 2/3 of the 1000 students (666) will engage in active play at the one time, with half (333) of those students making noise at any given time.

Sound power levels of children at play were previously measured for other similar projects and are presented below in Table 4. We believe these levels represent the typical $L_{eq,\ 15\ minute}$ maximum noise levels of children at play and will be used in this noise assessment.

Table 4 $L_{eq,\ 15\ minute}$ Sound Power Levels - Children Playing in Outdoor Play Areas

Description	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dBA	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**
1 Child at play – Primary School	**79**	50	54	58	71	77	72	66	64
666 Children at play (333 children making noise)	**104**	75	79	83	96	102	97	91	89

4.2 General Learning Areas

We have assumed that the maximum home base class size within the proposed new rooms will be (1000 / 45 =) 23 students.

During normal classroom activities, the main source of noise will be from the teachers and students talking. We have assumed that there may be a maximum of 1/3 (8) of the students talking normally. We have also assumed that the teacher in each classroom may be talking loudly.

Calculations assume students are distributed evenly throughout the inside of the home bases and windows and doors are partially open (10 % of floor area).

Day Design Pty Ltd has previously measured and quantified the Octave Band Centre Frequency sound power level of teachers and students talking at different noise levels. The $L_{eq,\ 15\ minute}$ sound power levels of teachers and students are shown below in Table 5.

Table 5 $L_{eq,\ 15\ minute}$ Sound Power Levels – Teacher & Students – GLAs

Description	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dBA	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**
Teacher talking loudly	**79**	60	70	75	80	73	70	62	55
School student talking normally	**63**	53	53	60	63	58	53	52	47
1 teacher and 23 students	**80**	64	71	76	81	74	71	65	59

4.3 Public Address System & School Bell

The School will be provided with a public address system and a bell to signal the start and end of classes. The location of the speakers has not yet been determined however assuming up to 6 speaker locations are provided, the maximum sound pressure level should be no greater than **70 dBA** at 3 metres from each speaker in order to meet the residential noise criteria.

4.4 Mechanical Plant

We have assumed that the air conditioning condenser units will be located in ground floor plant areas on the outer façades of the new buildings or in rooftop plant areas on the new buildings, throughout the development site.

The type of mechanical plant have not yet been selected. The proposed mechanical plant will typically only operate during day time hours, Monday to Friday.

The $L_{eq,\ 15\ minute}$ sound power levels for typical equipment used at school sites are presented below in Table 6.

Table 6 $L_{eq,\ 15\ minute}$ Sound Power Levels - Mechanical Plant

Description	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dBA	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**
Toilet Exhaust Fan	**59**	48	48	56	57	54	53	45	38
Split system Air Conditioner (Classrooms)	**72**	76	73	72	69	68	63	55	52
VRF Air Conditioner (Large Spaces)	**89**	82	82	85	74	87	80	77	69

Once mechanical plant selection has been finalised, a final assessment should be made, prior to the issue of a Construction Certificate.

4.5 Hall Usage

We have assumed the proposed Hall will have capacity for up to 200 people. From our observations of other sites, we have modelled the noise emission from the Hall as follows:

- People talking loudly (10%), guests talking with a raised voice (20 %), guests talking normally (20 %) and the rest are not talking or listening (50 %)
- Amplified music will be played during performances and will consist predominantly of either pre-recorded amplified music or live performances.
- We have assumed as a worst case scenario the Hall may operate at full capacity during a performance.
- We have assumed that the doors will be closed during performances.
- We have assumed any windows will be open (10 % of the floor area) during performances.

Based on information in Harris[1] and in our noise level database gathered over many years, we calculate the sound power levels shown below in Tables 7.

Table 7 $L_{eq,\ 15\ minute}$ Sound Power Levels - Proposed Hall

Description	L_{eq} Sound Power Level dBA
One Man Talking Loudly	**80**
One Man Talking with Raised Voice	**69**
One Man Talking Normally	**63**
Amplified Live Band	**102**
200 People	**94**
200 People with Amplified Live Band	**103**

[1] *Handbook of Acoustical Measurements and Noise Control, Third Edition, Cyril M. Harris, McGraw-Hill Inc, New York, (Page 16.2)*

4.6 Predicted Noise Level at Receptor Locations

Knowing the sound power level of a noise source (See Tables 4 - 7), the sound pressure level (as measured with a sound level meter) can be calculated at a remote location using suitable formulae to account for distance losses, sound barriers, building envelope transmission, etc. The predicted noise level at the residential and educational receptors from the various noise producing facets of the development are shown below.

Where applicable, calculations include acoustic shielding provided by the proposed School buildings to the residential receptors.

4.6.1 Outdoor Play Areas

Based on a maximum of 530 children playing in the outdoor play areas at any one time, the predicted $L_{eq\ 15\ minute}$ noise level is calculated to be as shown below in Table 8. The noise prediction was determined by placing all 530 children into four equal groups of 133 children throughout the outdoor play areas.

Table 8 Predicted $L_{eq,\ 15\ minute}$ Noise Levels – Outdoor Play

Receptor Location	Predicted Noise Level (dBA)	Noise Criterion (dBA)	Compliance (Yes/No)
R1 – 109 Fullagar Road	47	53	Yes
R2 – 176-178 Station Street	45	53	Yes
R3 –10 Monash Street	*55*	53	Yes*
R4 – 77 Garfield Street	45	53	Yes

**An exceedance of up to 2 dB is not considered significant and is generally not audible to the human ear.*

The predicted level of noise from the children playing outdoors at the receptor locations 'R1', 'R2', 'R3' and 'R4' complies with the criteria in Section 3.5 of this report, and is therefore acceptable.

4.6.2 Cumulative Noise Level – Home Bases & Mechanical Plant

The cumulative noise impact from the home bases and mechanical plant within the School are summarized and shown in Table 9.

Table 9 Predicted Cumulative $L_{eq,\ 15\ minute}$ Noise Levels – Home Bases & Mechanical Plant

Receptor Location	Predicted L_{eq} Noise Level (dBA)	Acceptable L_{eq} Noise Level (dBA)	Compliance
R1 – 109 Fullagar Road			
- Home Bases	42		
- Mechanical Plant	51		
Cumulative Noise Level	51	48	**No (+ 3 dB)**
R2 – 176-178 Station Street			
- Home Bases	47		
- Mechanical Plant	41		
Cumulative Noise Level	48	48	Yes
R3 – 10 Monash Street			
- Home Bases	43		
- Mechanical Plant	36		
Cumulative Noise Level	44	48	Yes
R4 – 77 Garfield Street			
- Home Bases	37		
- Mechanical Plant	49		
Cumulative Noise Level	*49*	48	Yes*

**An exceedance of up to 2 dB is not considered significant and is generally not audible to the human ear.*

The predicted cumulative level of noise from the Home Bases and mechanical plant at the receptor locations 'R2', 'R3' and 'R4', complies with the criteria in Section 3.5 of this report, and is therefore acceptable.

However, the predicted cumulative level of noise from the Home Bases and mechanical plant at the receptor location 'R1', exceeds the criteria in Section 3.5 of this report, therefore noise controls as outlined in Section 5 are necessary.

4.6.3 School Hall

The noise impact from the Hall are summarised and shown in Table 10.

Table 10 Predicted $L_{eq,\ 15\ minute}$ Noise Levels – Hall

Receptor Location	Predicted L_{eq} Noise Level (dBA)	Acceptable L_{eq} Noise Level (dBA)	Compliance
Day & Evening – 7.00 am to 10.00 pm			
R1 – 109 Fullagar Road			
- Live Performance	51	48	**No (+ 3 dB)**
R2 – 176-178 Station Street			
- Live Performance	44	48	Yes
R3 – 10 Monash Street			
- Live Performance	53	48	**No (+ 5 dB)**
R4 – 77 Garfield Street			
- Live Performance	56	48	**No (+ 8 dB)**

The predicted level of noise from the Hall at the receptor location 'R2', complies with the criteria in Section 3.5 of this report, and is therefore acceptable.

However, the predicted cumulative level of noise from the Hall at the receptor location 'R1', 'R3' and 'R4' exceeds the criteria in Section 3.5 of this report, therefore noise controls as outlined in Section 5 are necessary.

5.0 NOISE CONTROL RECOMMENDATIONS

5.1 Construction Certificate / Detailed Design

5.1.1 Mechanical Plant

The levels of noise emission from the mechanical plant associated with the primary school has potential to be in excess of the acceptable noise criteria in Section 3.5 of this report. Therefore, noise controls may be required.

The specifications for the mechanical plant have not yet been finalised for this development. For typical mechanical plant equipment with sound power levels not exceeding those listed in Table 6, it is reasonable and feasible to locate the plant area or equipment itself so that noise will not impact the neighbouring properties.

Once mechanical plant has been finalised, a detailed acoustic assessment should be made, prior to the issue of a Construction Certificate / during the detailed design stage. We recommend that the mechanical services engineers select mechanical plant equipment with the lowest sound power levels to reduce the amount of acoustic treatment necessary to achieve the noise criteria at nearby residential receivers.

We offer to provide detailed noise controls when specifications of the mechanical plant equipment have been finalised.

5.1.2 Use of School Hall

There is the potential for noise emissions to exceed the noise criteria at several nearby residential receivers during the proposed use of the Hall.

Noise controls including, but not limited to, the following may be required:

- Closing eternal windows during noisy events;
- Limiting the noise level of any amplification system inside the Hall; and
- Limiting the noise level of any live instruments to be used in the Hall.

5.2 Air Conditioning Condenser Unit Plant Areas – Ground Floor

We recommend 1.8 metre high sound barrier walls be constructed on the three open sides around ground floor air conditioning unit plant areas, as shown in the attached Appendix D. The barriers may have a maximum gap of 200 mm between the ground and the bottom of the barrier provided the condenser units are installed on a plinth equal to or above this height (200 mm), to allow for the required airflow to condenser units.

The barrier walls around the eastern plant area may be constructed from 6 mm fibre cement, 19 mm marine plywood, Colorbond steel or masonry. Gaps should be fully sealed to create a solid barrier.

The sides of the barrier facing the air conditioning units and the façade of the building should be lined with 75 mm thick glasswool insulation (density 32 kg/m^3) with water resistant woven fibreglass facing, such as CSR Bradford Supertel faced with Ultraphon as shown on attached Appendix E.

6.0 NOISE IMPACT STATEMENT

Day Design Pty Ltd was engaged by Fulton Trotter Architects to carry out an acoustic assessment of the proposed redevelopment of the Wentworthville Public School at 70-100 Fullagar Road, Wentworthville, NSW.

Calculations show that provided the recommendation in Section 5 of this report are implemented and adhered to, the level of noise emitted from the Wentworthville Public School at 70-100 Fullagar Road, Wentworthville, NSW, will meet the noise level requirements of the NSW Department of Planning and Environment's *SEPP (Educational Establishments and Child Care Facilities) 2017*, NSW Environment Protection Authority's *Noise Policy for Industry* and the Association of Australasian Acoustical Consultants *Technical Guideline for Child Care Centre Noise Assessment* as detailed in Section 3 of this report, and be considered acceptable.

In addition, the amenity of adjacent development and the local neighbourhood will be respected and upheld.

Also, although not applicable to this site, the proposal will also comply with the requirements of the State Environment Planning Policy (SEPP) (Infrastructure) 2007 and the Department of Planning's (DoP) *Development Near Rail Corridors and Busy Roads – Interim Guideline.*

Adam Shearer, BCT (Audio), MDesSc (Audio and Acoustics), MAAS
Senior Acoustical Consultant
for and on behalf of Day Design Pty Ltd

AAAC MEMBERSHIP

Day Design Pty Ltd is a member company of the Association of Australasian Acoustical Consultants, and the work herein reported has been performed in accordance with the terms of membership.

APPENDICES

- Appendix A – Noise Survey Instrumentation
- Appendix B1 & B2 – Ambient Noise Surveys
- Appendix C – Proposed Site Layout
- Appendix D – Air Conditioning Plant Sound Barrier
- Appendix E – Cross Section of Air Conditioning Plant Sound Barrier

APPENDIX A – NOISE SURVEY INSTRUMENTATION

Noise level measurements and analysis were made with instrumentation as follows in Table A:

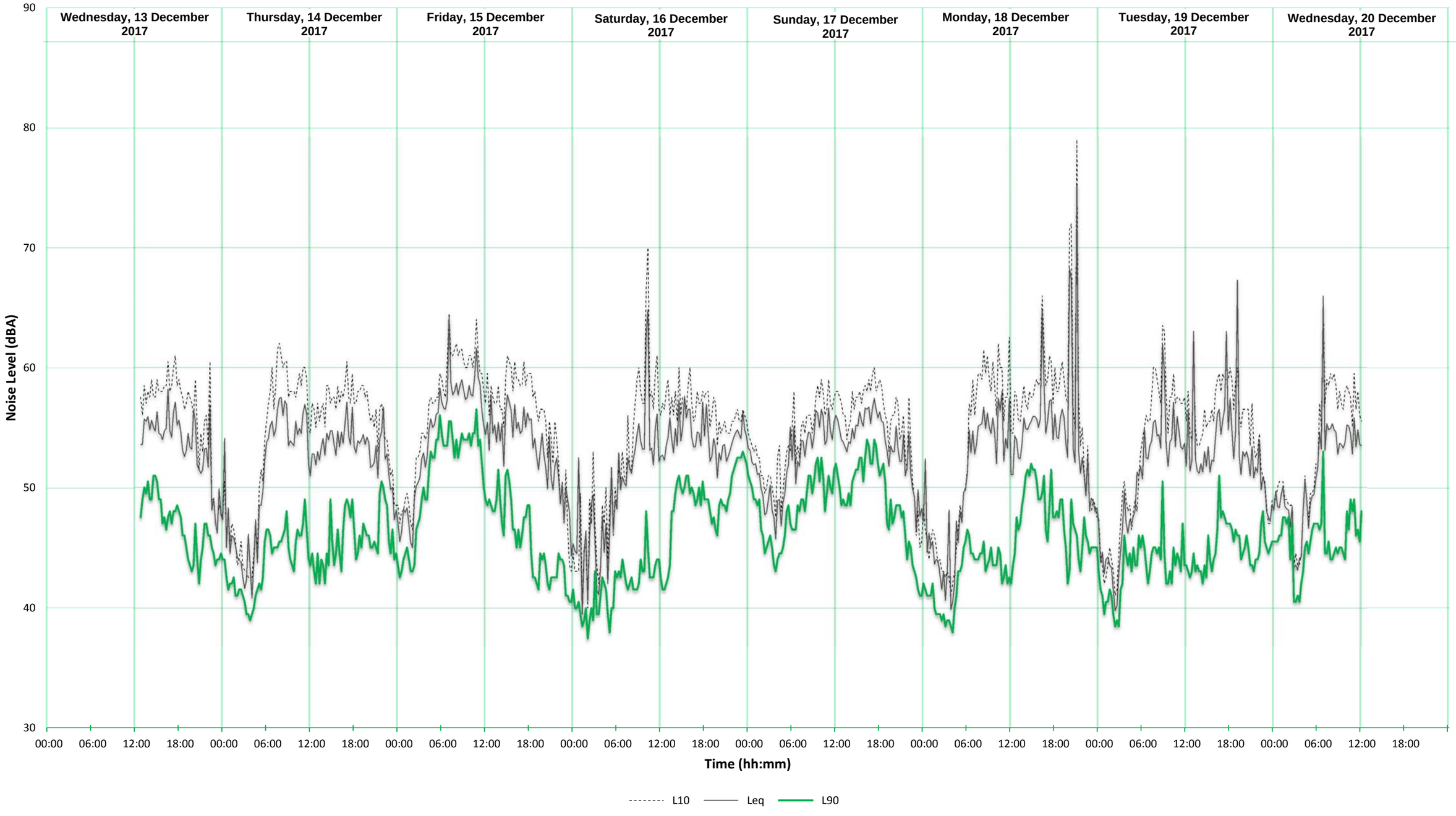
Table A Noise Instrumentation

Description	Model No.	Serial No.
Infobyte Noise Logger	iM4	105
Condenser Microphone 0.5" diameter	MK 250	7112
Infobyte Noise Logger	iM4	116
Condenser Microphone 0.5" diameter	MK 250	116

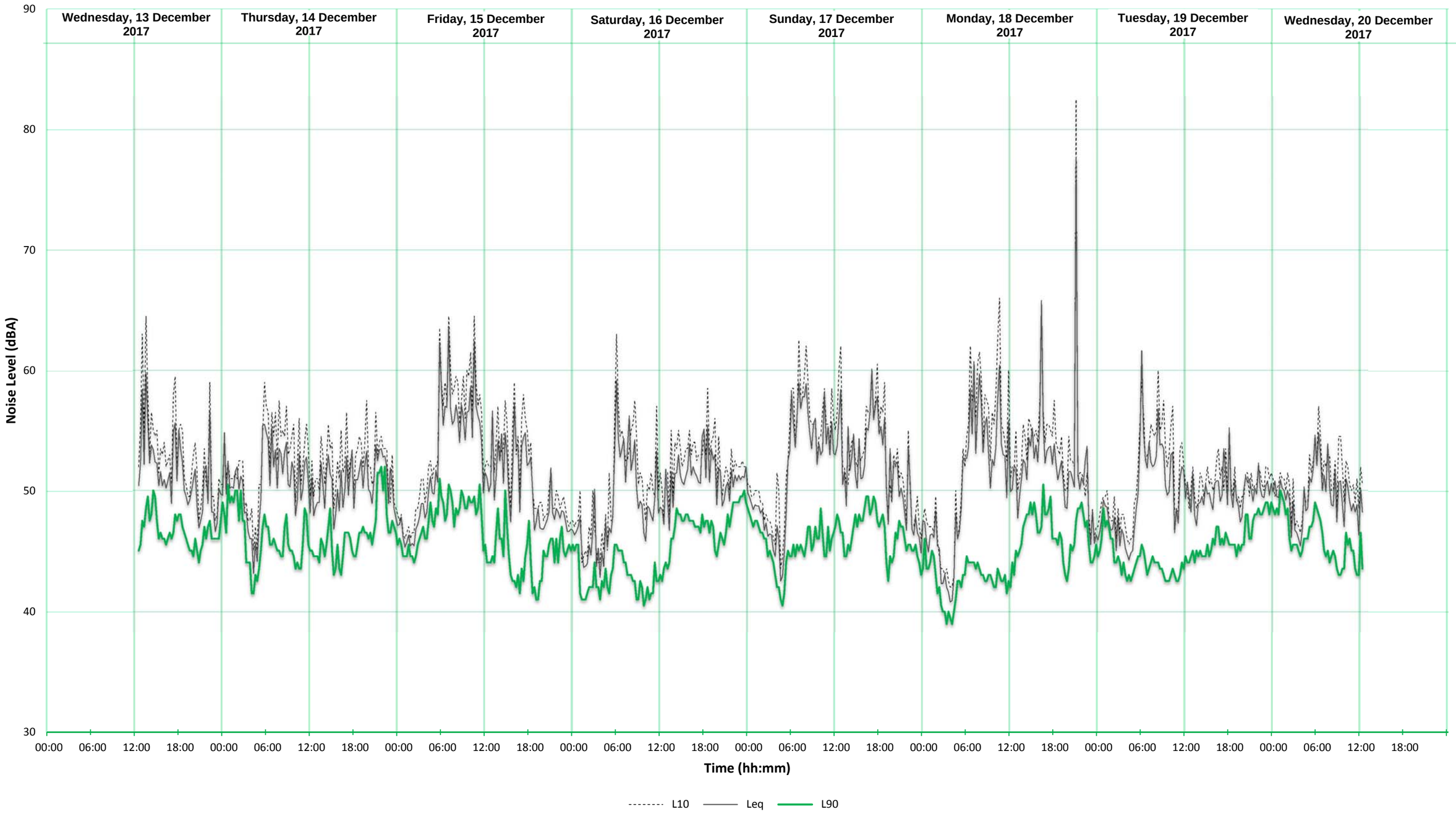
An environmental noise logger is used to continuously monitor ambient noise levels and provide information on the statistical distribution of noise during an extended period of time. The Infobyte Noise Monitor iM4s #105 and #116 are Type 1 (105) and Type 2 (116) precision environmental noise monitor meeting all the applicable requirements of AS1259 for an integrating-averaging sound level meter.

All instrument systems had been laboratory calibrated using instrumentation traceable to Australian National Standards and certified within the last two years thus conforming to Australian Standards. The measurement system was also field calibrated prior to and after noise surveys. Calibration drift was found to be within 1 dB for long-term measurements. No adjustments for instrument drift during the measurement period were warranted.

Located at 107 Fullagar Road, Wentworthville, NSW



Located at 14 Monash Road, Wentworthville, NSW



1 PLAN
LEVEL 2 - BUILDING A
SCALE: 1:100

1150mm @ A1 | 1150 | 150 | 50 | 100 | 150mm @ A1

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS

REV.	DESCRIPTION	DATE	INIT.
P8	Draft Schematic Design Issue	04/09/2018	JFK
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Paul Sakava raia		NSW 7180 QLD 3108
Paul Trotter fraia		NSW 7177 QLD 2646
Ryan Loveday raia		QLD 4500
Robert Wiesener fraia		NSW 5802 QLD 2633

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PHASE: SCHEMATIC DESIGN

CLIENT: NSW Department of Education

PROJECT: Wentworthville Public School

ADDRESS: 70-100 Fullagar Road
WENTWORTHVILLE, NSW

DRAWING: BLOCK A - GROUND FLOOR PLAN

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER: SD-A-2001

REVISION: P13

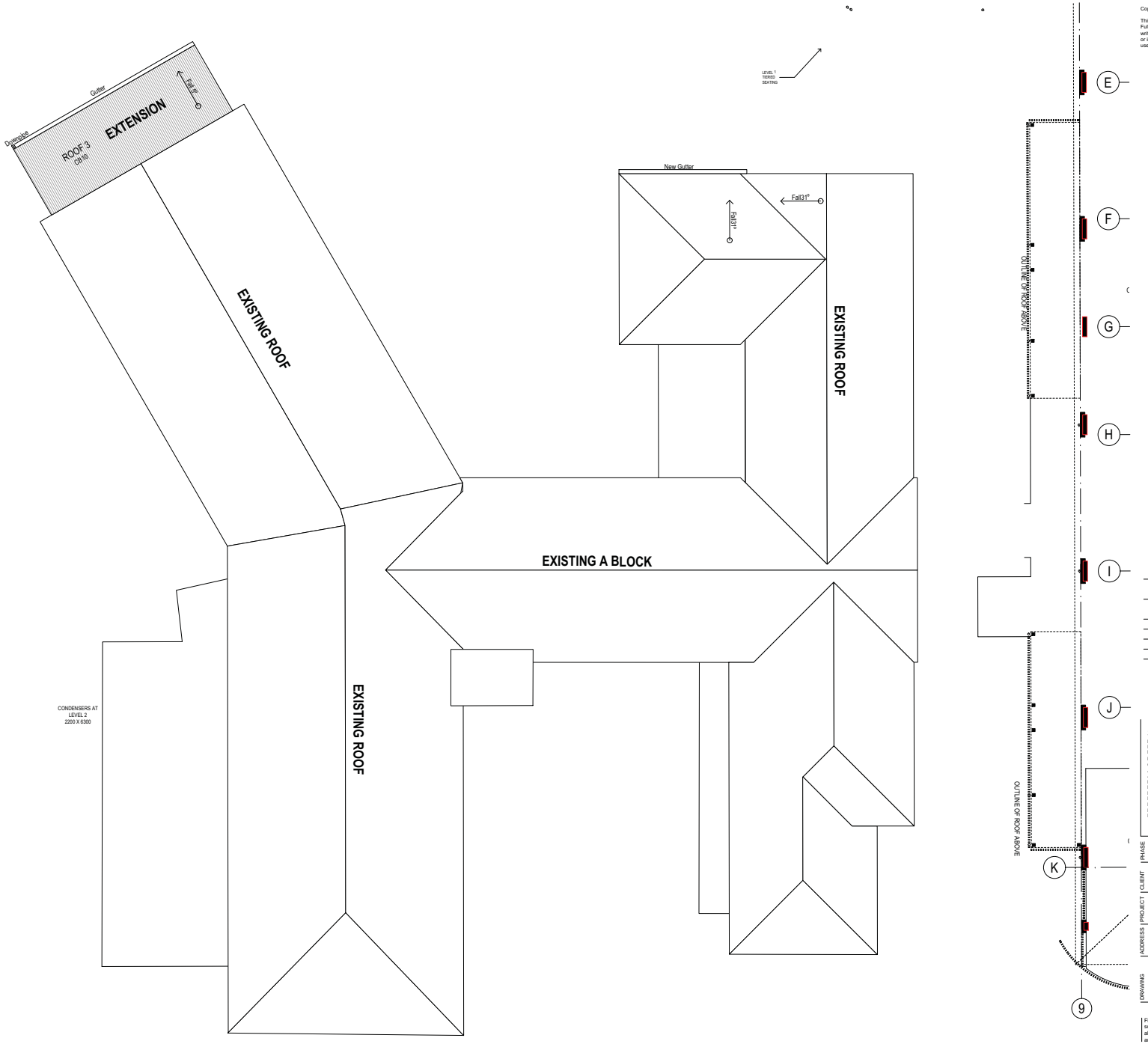
Safe Roof Access System
A safe roof access system shall be provided that complies with the following Australian Standards -

- Industrial fall-arrest systems and devices - Selection, use and maintenance: To AS/NZS 1891.4
- Industrial fall-arrest systems and devices - Safety belts and harnesses: to AS/NZS 1891.1
- Industrial fall-arrest systems and devices - Horizontal lifeline and rail systems: to AS/NZS 1891.2
- Industrial fall-arrest systems and devices - Fall-arrest devices: to AS/NZS 1891.3
- Industrial safety belts and harnesses - Selection, use and maintenance: to AS 2626 (for anchorages only)

The system shall provide a complete fall-arrest roof safety system that:
- Includes a fixed access ladder in a lockable location to provide access to the roofs of multi-storey buildings
- has minimal visual impact on the completed roof, and is compatible with the roofing materials, construction, loading constraints and colours;

- is structurally sufficient in respect of all loads reasonably expected to be imposed on it, and has no adverse structural or other effect on the completed roof;
- may include a number of fully-compatible subsystems, all from one manufacturer/supplier, that allow users to work safely at any point on the roof at all times without the need to disconnect harnesses or restraint lines and lanyards completely, or to carry components of other systems with them;
- prevents free falls wherever possible, and limits possible free falls to the absolute minimum consistent with the user's anticipated work tasks (600mm or less wherever possible, but in no case exceeding 2000 mm);
- allows restrained falls on non-fragile roofed areas only, and includes additional diversionary anchorages near roof edges to prevent a pendulum effect in the event of a fall;
- includes removable means of protecting sharp edges that any line or lanyard may come in contact with, in the event of a free fall;
- exerts a force not exceeding 6kN on any user who is secured to it, and falls;
- distributes fall-arrest forces over the body so that injury is minimised after a fall, and that holds a user in a suitable attitude for rescue after a fall;

- includes anchorages complying with AS 2626;
- has all anchorages positioned so that line and lanyard attachment hardware is kept clear of sharp edges;
- does not include the use of slings, or backhooking of lanyards, as part of an anchorage;
- may include single point, one-person anchorages that have a minimum ultimate strength in the direction of loading of not less than 15kN;
- includes heavy duty, easily operated attachment hardware, other than snaphooks, that is appropriately sized for all lines and lanyards provided as part of the systems;
- includes carrying bags for each complete set of personal fall-arrest equipment;
- includes all necessary labels and signs with an expected life equal to the item referred to;
- remains intact, usable and water-resistant under the local and regional ambient climatic conditions with a minimum amount of maintenance;
- includes at least four ladder securing access points to the roof edge or gutter, including a level concrete slab at ground level, unless specified elsewhere in the documents;
- includes at least one removable Type 3 fall-arrest device, that may be attached anywhere a free fall is possible, to assist in the immediate recovery of a user who has fallen;
- includes at least two fully adjustable harnesses, each with an attachment point to front and back. Restraint belts will not be allowed;
- includes the appropriate number (but not less than two) of lanyards, restraint lines, and pole lines as appropriate: each with energy-absorbing fall-arrest characteristics or devices fitted; and
- is certified by a Registered Professional Engineer specialising in structural design and certification.



1 **PLAN**
ROOF PLAN - BUILDING A
SCALE: 1:100

150mm @ A1 | 1150 | 150 | 50 | 100 | 150mm @ A1

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS

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P4	SD / SSDA Client Review Issue	11/10/18	JFK
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P6	SSDA Final Coordination Issue	9/11/18	JFK
REV.	DESCRIPTION	DATE	INIT.

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PHASE **SCHEMATIC DESIGN**
CLIENT NSW Department of Education
PROJECT Wentworthville Public School
ADDRESS 70-100 Fullagar Road
WENTWORTHVILLE, NSW
DRAWING **BLOCK A - ROOF PLAN**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER **SD-A-2101** REVISION **P6**

1 PLAN
LEVEL 3 - BUILDING E PROPOSED
SCALE: 1:100

150mm @ A1 | 100 | 50

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS

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P11	SSDA Consultant Report Issue	05/10/18	WG
P12	SD / SSDA Client Review Issue	11/10/18	JFK
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PHASE **SCHEMATIC DESIGN**

CLIENT NSW Department of Education

PROJECT Wentworthville Public School

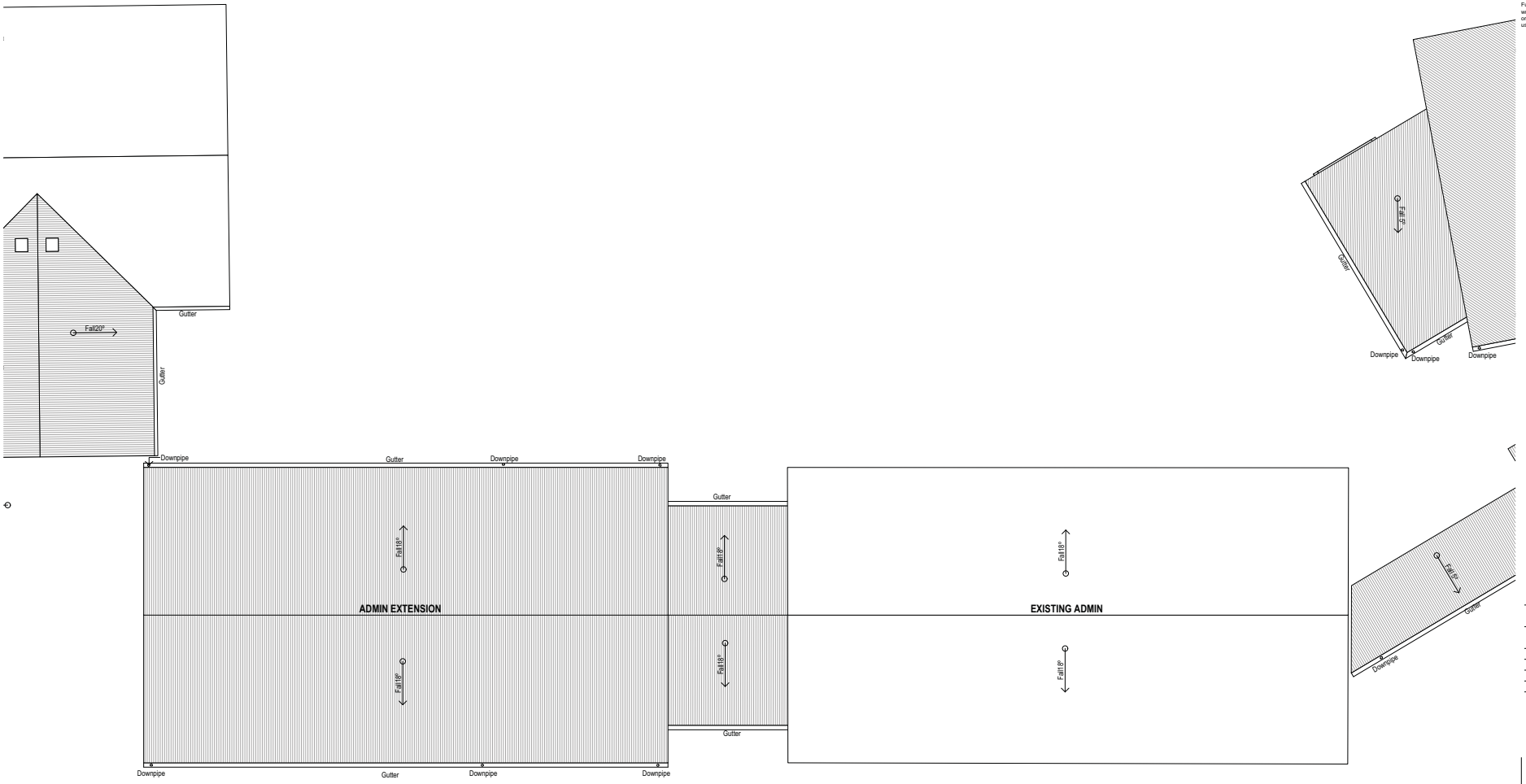
ADDRESS 70-100 Fullagar Road
WENTWORTHVILLE, NSW

DRAWING **BLOCK E - GROUND FLOOR PLAN**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER **SD-E-2001** REVISION **P14**



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P4	Issued For TSG Review	20/09/2018	JFK
P5	SSDA Consultant Report Issue	05/10/18	WG
P6	SD / SSDA Client Review Issue	11/10/18	JFK
P7	SSDA Draft Issue	6/11/18	JFK
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PHASE **SCHEMATIC DESIGN**

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PROJECT Wentworthville Public School

ADDRESS 70-100 Fullagar Road
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DRAWING **BLOCK E - ROOF PLAN**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER	REVISION
SD-E-2101	P8

Safe Roof Access System
A safe roof access system shall be provided that complies with the following Australian Standards -

- Industrial fall-arrest systems and devices - Selection, use and maintenance: To AS/NZS 1891.4
- Industrial fall-arrest systems and devices - Safety belts and harnesses: to AS/NZS 1891.1
- Industrial fall-arrest systems and devices - Horizontal lifeline and rail systems: to AS/NZS 1891.2
- Industrial fall-arrest systems and devices - Fall-arrest devices: to AS/NZS 1891.3
- Industrial safety belts and harnesses - Selection, use and maintenance: to AS 2626 (for anchorages only)

The system shall provide a complete fall-arrest roof safety system that:
- Includes a fixed access ladder in a lockable location to provide access to the roofs of multi-storey buildings
- has minimal visual impact on the completed roof, and is compatible with the roofing materials, construction, loading constraints and colours;
- is structurally sufficient in respect of all loads reasonably expected to be imposed on it, and has no adverse structural or other effect on the completed roof;
- may include a number of fully-compatible subsystems, all from one manufacturer/supplier, that allow users to work safely at any point on the roof at all times without the need to disconnect harnesses or restraint lines and lanyards completely, or to carry components of other systems with them;
- prevents free falls wherever possible, and limits possible free falls to the absolute minimum consistent with the user's anticipated work tasks (600mm or less wherever possible, but in no case exceeding 2000 mm);
- allows restrained falls on non-fragile roofed areas only, and includes additional diversionary anchorages near roof edges to prevent a pendulum effect in the event of a fall;
- includes removable means of protecting sharp edges that any line or lanyard may come in contact with, in the event of a free fall;
- exerts a force not exceeding 6kN on any user who is secured to it, and falls;
- distributes fall-arrest forces over the body so that injury is minimised after a fall, and that holds a user in a suitable attitude for rescue after a fall;
- includes anchorages complying with AS 2626;
- has all anchorages positioned so that line and lanyard attachment hardware is kept clear of sharp edges;
- does not include the use of slings, or backhooking of lanyards, as part of an anchorage;
- may include single point, one-person anchorages that have a minimum ultimate strength in the direction of loading of not less than 15kN;
- includes heavy duty, easily operated attachment hardware, other than snaphooks, that is appropriately sized for all lines and lanyards provided as part of the systems;
- includes carrying bags for each complete set of personal fall-arrest equipment;
- includes all necessary labels and signs with an expected life equal to the item referred to;
- remains intact, usable and water-resistant under the local and regional ambient climatic conditions with a minimum amount of maintenance;
- includes at least four ladder securing access points to the roof edge or gutter, including a level concrete slab at ground level, unless specified elsewhere in the documents;
- includes at least one removable Type 3 fall-arrest device, that may be attached anywhere a free fall is possible, to assist in the immediate recovery of a user who has fallen;
- includes at least two fully adjustable harnesses, each with an attachment point to front and back. Restraint belts will not be allowed;
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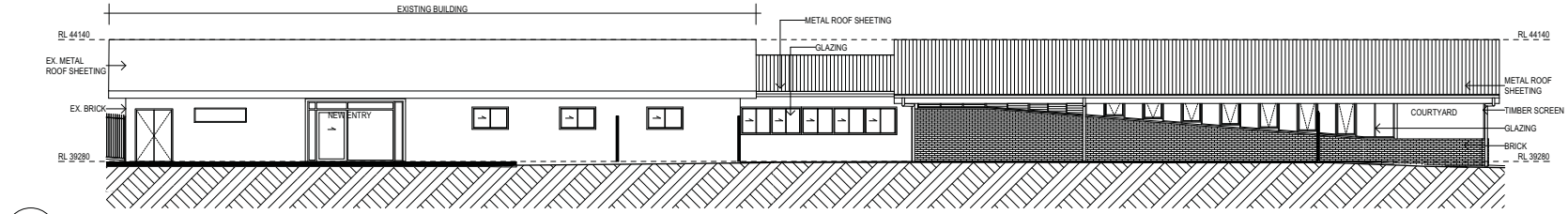
- is certified by a Registered Professional Engineer specialising in structural design and certification.

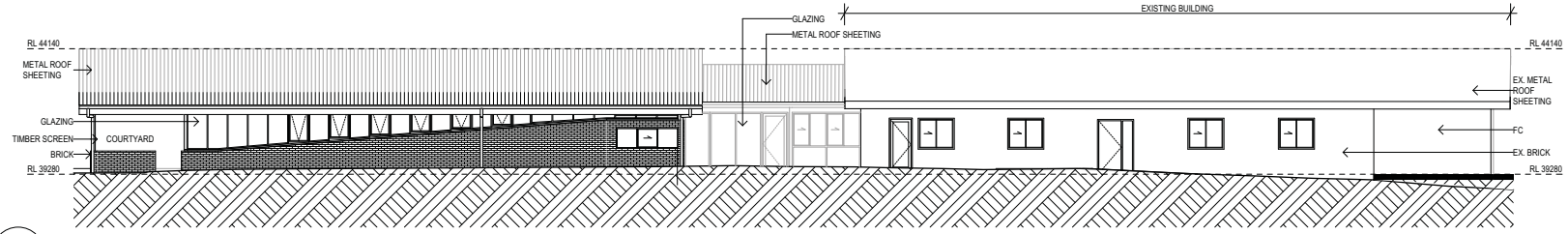
1 **PLAN**
ROOF PLAN - BUILDING E
SCALE: 1:100

150mm @ A1 1150 50 50 100 150mm @ A1

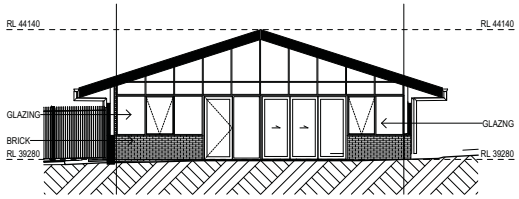
plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WV/PS



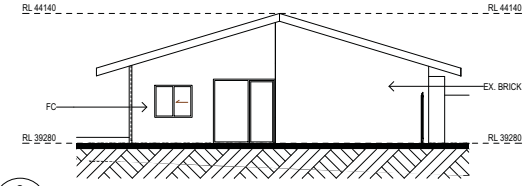
1 ELEVATION
BUILDING E - NORTHERN ELEVATION
SCALE: 1:100



2 ELEVATION
BUILDING E - SOUTHERN ELEVATION
SCALE: 1:100



3 ELEVATION
BUILDING E - WESTERN ELEVATION
SCALE: 1:100



3 ELEVATION
BUILDING E - EASTERN ELEVATION
SCALE: 1:100

P3	Schematic Design	24/07/18	LW
P4	Draft Schematic Design Issue	04/09/2018	JFK
P5	Issued For TSG Review	20/09/2018	JFK
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PHASE **SCHEMATIC DESIGN**

CLIENT NSW Department of Education

PROJECT Wentworthville Public School

ADDRESS 70-100 Fullagar Road
WENTWORTHVILLE, NSW

DRAWING **BLOCK E - ELEVATIONS**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

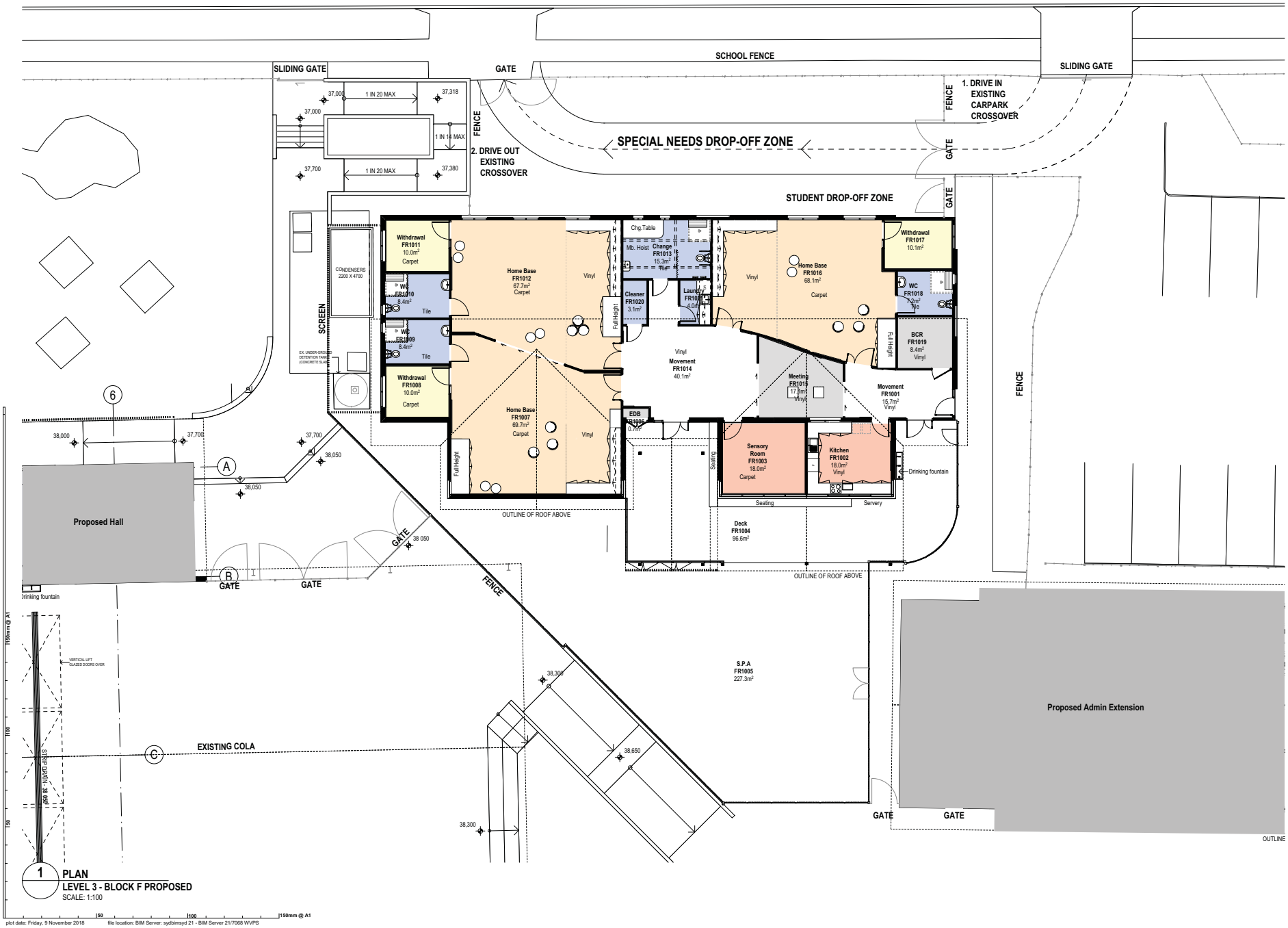
PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER **SD-E-3001**

REVISION **P9**

150mm @ A1 | 50 | 100 | 150mm @ A1

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS



1 PLAN
LEVEL 3 - BLOCK F PROPOSED
SCALE: 1:100

150mm @ A1 — 50 — 100 — 150mm @ A1

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS

REV.	DESCRIPTION	DATE	INIT.
P9	Draft Schematic Design Issue	04/09/2018	JFK
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Ryan Loveday raia QLD 4500
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PHASE **SCHEMATIC DESIGN**

CLIENT NSW Department of Education

PROJECT Wentworthville Public School

ADDRESS 70-100 Fullagar Road
WENTWORTHVILLE, NSW

DRAWING **BLOCK F - GROUND FLOOR PLAN**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER **SD-F-2001** REVISION **P14**

Safe Roof Access System
A safe roof access system shall be provided that complies with the following Australian Standards -

- Industrial fall-arrest systems and devices - Selection, use and maintenance: To AS/NZS 1891.4
- Industrial fall-arrest systems and devices - Safety belts and harnesses: to AS/NZS 1891.1
- Industrial fall-arrest systems and devices - Horizontal lifeline and rail systems: to AS/NZS 1891.2
- Industrial fall-arrest systems and devices - Fall-arrest devices: to AS/NZS 1891.3
- Industrial safety belts and harnesses - Selection, use and maintenance: to AS 2626 (for anchorages only)

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- is structurally sufficient in respect of all loads reasonably expected to be imposed on it, and has no adverse structural or other effect on the completed roof;
- may include a number of fully-compatible subsystems, all from one manufacturer/supplier, that allow users to work safely at any point on the roof at all times without the need to disconnect harnesses or restraint lines and lanyards completely, or to carry components of other systems with them;
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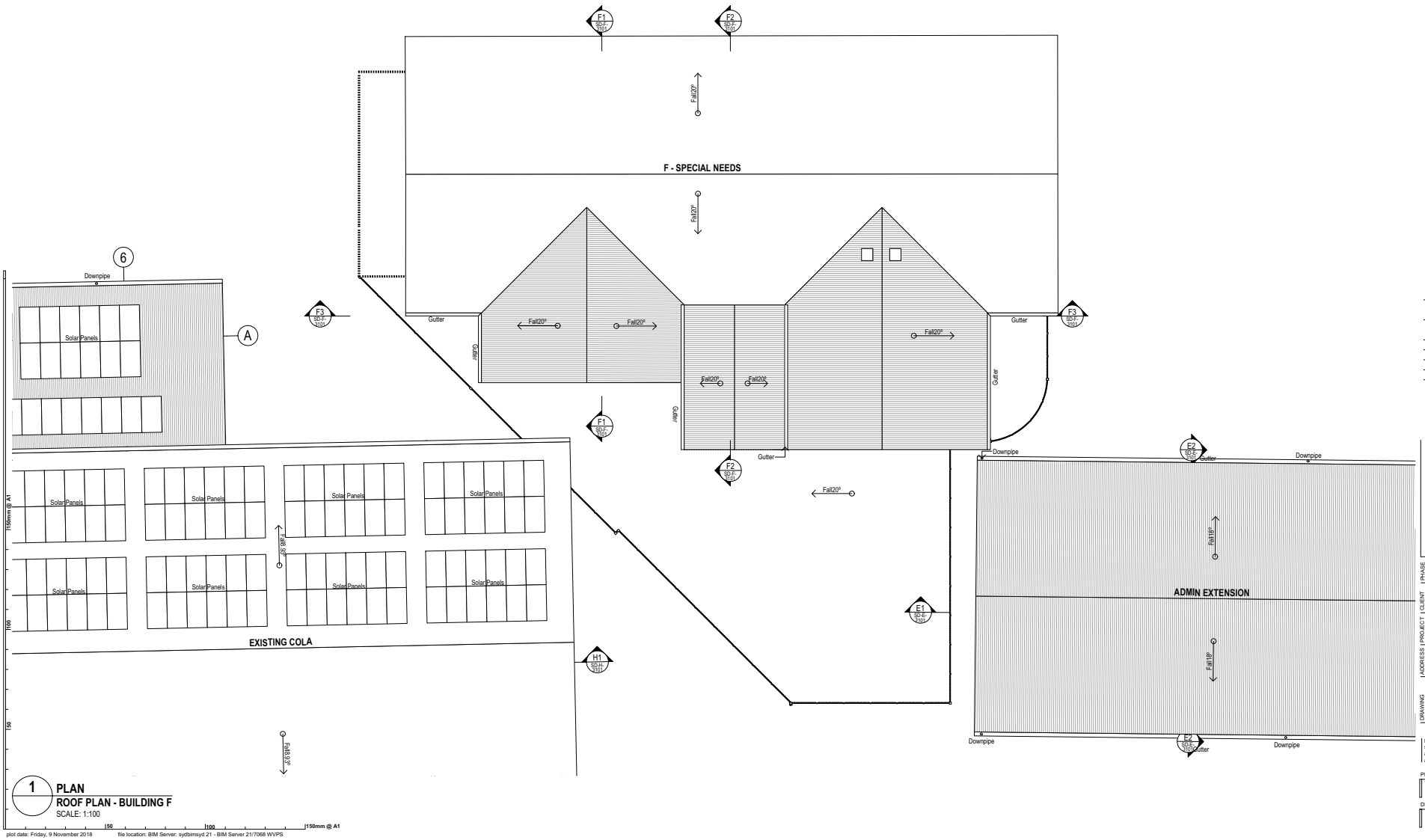
- includes removable means of protecting sharp edges that any line or lanyard may come in contact with, in the event of a free fall;
- exerts a force not exceeding 6kN on any user who is secured to it, and falls;
- distributes fall-arrest forces over the body so that injury is minimised after a fall, and that holds a user in a suitable attitude for rescue after a fall;
- includes anchorages complying with AS 2626;
- has all anchorages positioned so that line and lanyard attachment hardware is kept clear of sharp edges;
- does not include the use of slings, or backhooking of lanyards, as part of an anchorage;
- may include single point, one-person anchorages that have a minimum ultimate strength in the direction of loading of not less than 15kN;
- includes heavy duty, easily operated attachment hardware, other than snaphooks, that is appropriately sized for all lines and lanyards provided as part of the systems;
- includes carrying bags for each complete set of personal fall-arrest equipment;
- includes all necessary labels and signs with an expected life equal to the item referred to;
- remains intact, usable and water-resistant under the local and regional ambient climatic conditions with a minimum amount of maintenance;
- includes at least four ladder securing access points to the roof edge or gutter, including a level concrete slab at ground level, unless specified elsewhere in the documents;
- includes at least one removable Type 3 fall-arrest device, that may be attached anywhere a free fall is possible, to assist in the immediate recovery of a user who has fallen;
- includes at least two fully adjustable harnesses, each with an attachment point to front and back. Restraint belts will not be allowed;
- includes the appropriate number (but not less than two) of lanyards, restraint lines, and pole lines as appropriate: each with energy-absorbing fall-arrest characteristics or devices fitted; and
- is certified by a Registered Professional Engineer specialising in structural design and certification.



1 **PLAN**
ROOF PLAN - BUILDING F
SCALE: 1:100

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WV/PS

REV.	DESCRIPTION	DATE	INIT.
P2	PRE-DA	18/07/18	IP
P3	Draft Schematic Design Issue	04/09/2018	JFK
P4	Issued For TSG Review	20/09/2018	JFK
P5	SSDA Consultant Report Issue	05/10/18	WG
P6	SD / SSDA Client Review Issue	11/10/18	JFK
P7	SSDA Draft Issue	6/11/18	JFK
P8	SSDA Final Coordination Issue	9/11/18	JFK

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Paul Sakavra raia		NSW 7180	QLD 3108
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PHASE **SCHEMATIC DESIGN**

CLIENT NSW Department of Education

PROJECT Wentworthville Public School

ADDRESS 70-100 Fullagar Road
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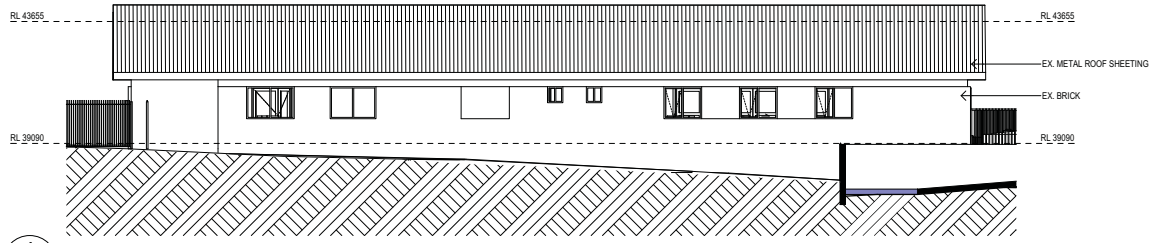
DRAWING **BLOCK F - ROOF PLAN**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

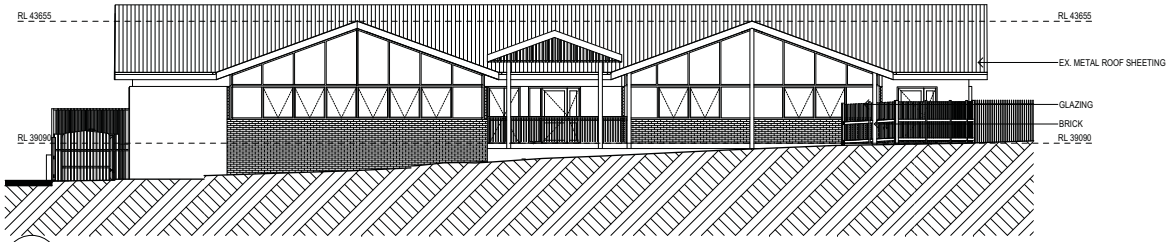
PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER **SD-F-2101**

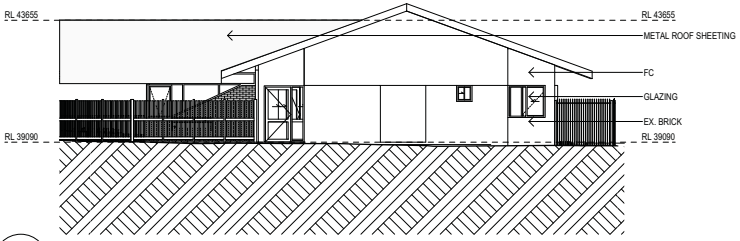
REVISION **P8**



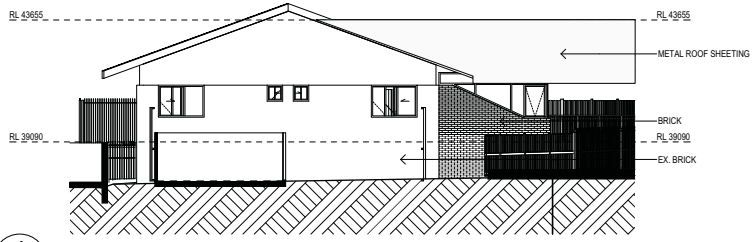
1 PLAN
BUILDING F - NORTHERN ELEVATION
SCALE: 1:100



1 PLAN
BUILDING F - SOUTHERN ELEVATION
SCALE: 1:100



3 PLAN
BUILDING F - EASTERN ELEVATION
SCALE: 1:100



4 PLAN
BUILDING F - WESTERN ELEVATION
SCALE: 1:100

REV.	DESCRIPTION	DATE	INIT.
P2	Consultant Issue	22/06/18	WG
P2	PRE-DA	18/07/18	IP
P3	Schematic Design	24/07/18	LW
P4	Issued For TSG Review	20/09/2018	JFK
P5	SSDA Consultant Report Issue	05/10/18	WG
P6	SD / SSDA Client Review Issue	11/10/18	JFK
P7	SSDA Draft Issue	6/11/18	JFK
P8	SSDA Final Coordination Issue	9/11/18	JFK

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DRAWING **BLOCK F - ELEVATIONS 1**

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PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

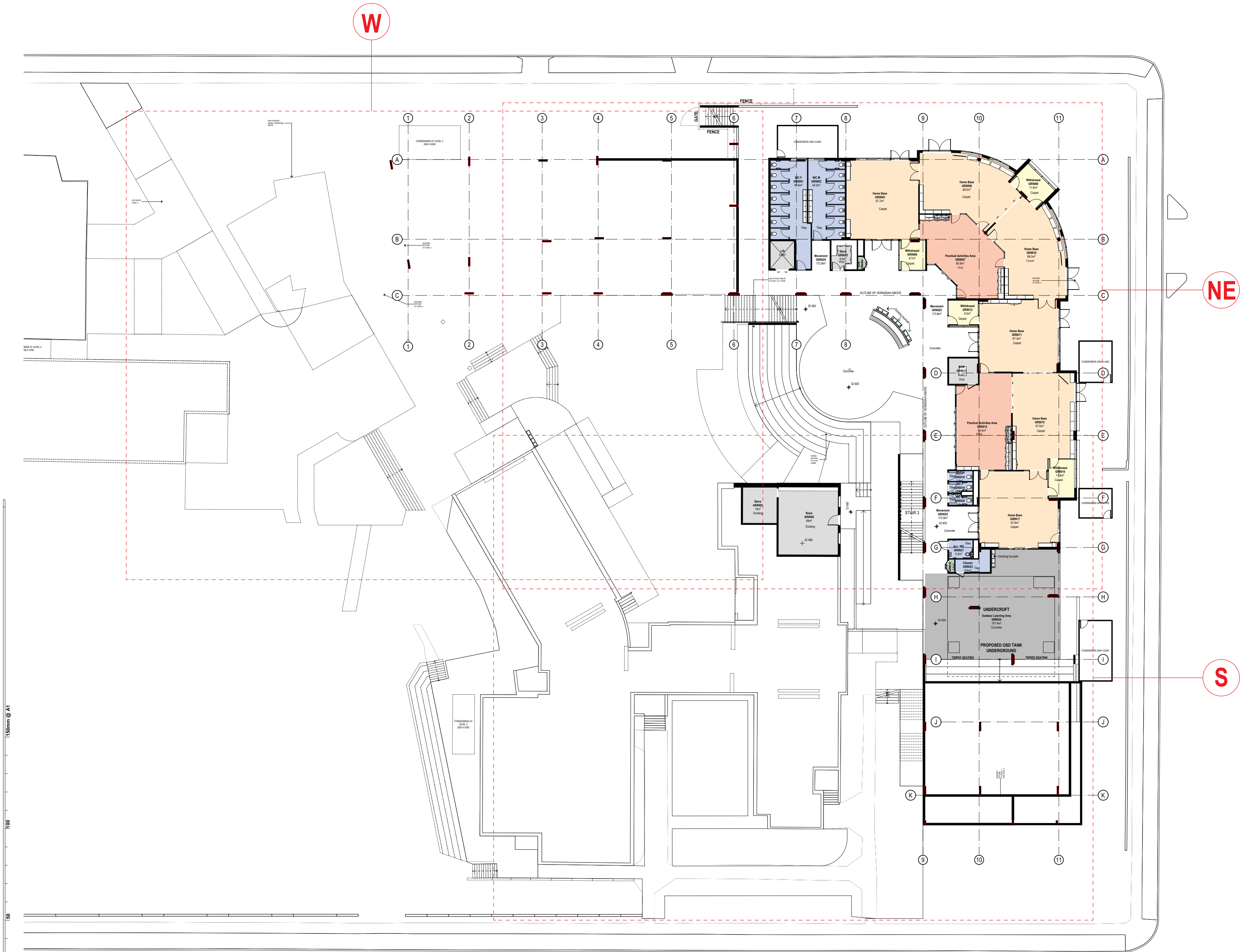
DRAWING NUMBER **SD-F-3001**

REVISION **P8**

150mm @ A1 1150 150

50 100 150mm @ A1

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS



1 PLAN
LEVEL 1 - KEY PLAN
SCALE: 1:200

50 100 150mm @ A1

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS

REV.	DESCRIPTION	DATE	INIT.
P8	Draft Schematic Design Issue	04/09/2018	JFK
P9	Issued For TSG Review	20/09/2018	JFK
P10	SSDA Consultant Report Issue	05/10/18	WG
P11	SD / SSDA Client Review Issue	11/10/18	JFK
P12	SSDA Draft Issue	6/11/18	JFK
P13	SSDA Final Coordination Issue	9/11/18	JFK

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PROJECT: Wentworthville Public School

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DRAWING: **BLOCK G - LEVEL 1 - KEY PLAN**

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PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER	REVISION
SD-G-2001	P13

P1 PLAN
LEVEL 2 - KEY PLAN
SCALE: 1:200

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS

REV.	DESCRIPTION	DATE	INIT.
P7	Draft Schematic Design Issue	04/09/2018	JFK
P8	Issued For TSG Review	20/09/2018	JFK
P9	SSDA Consultant Report Issue	05/10/18	WG
P10	SD / SSDA Client Review Issue	11/10/18	JFK
P11	SSDA Draft Issue	6/11/18	JFK
P12	SSDA Final Coordination Issue	9/11/18	JFK

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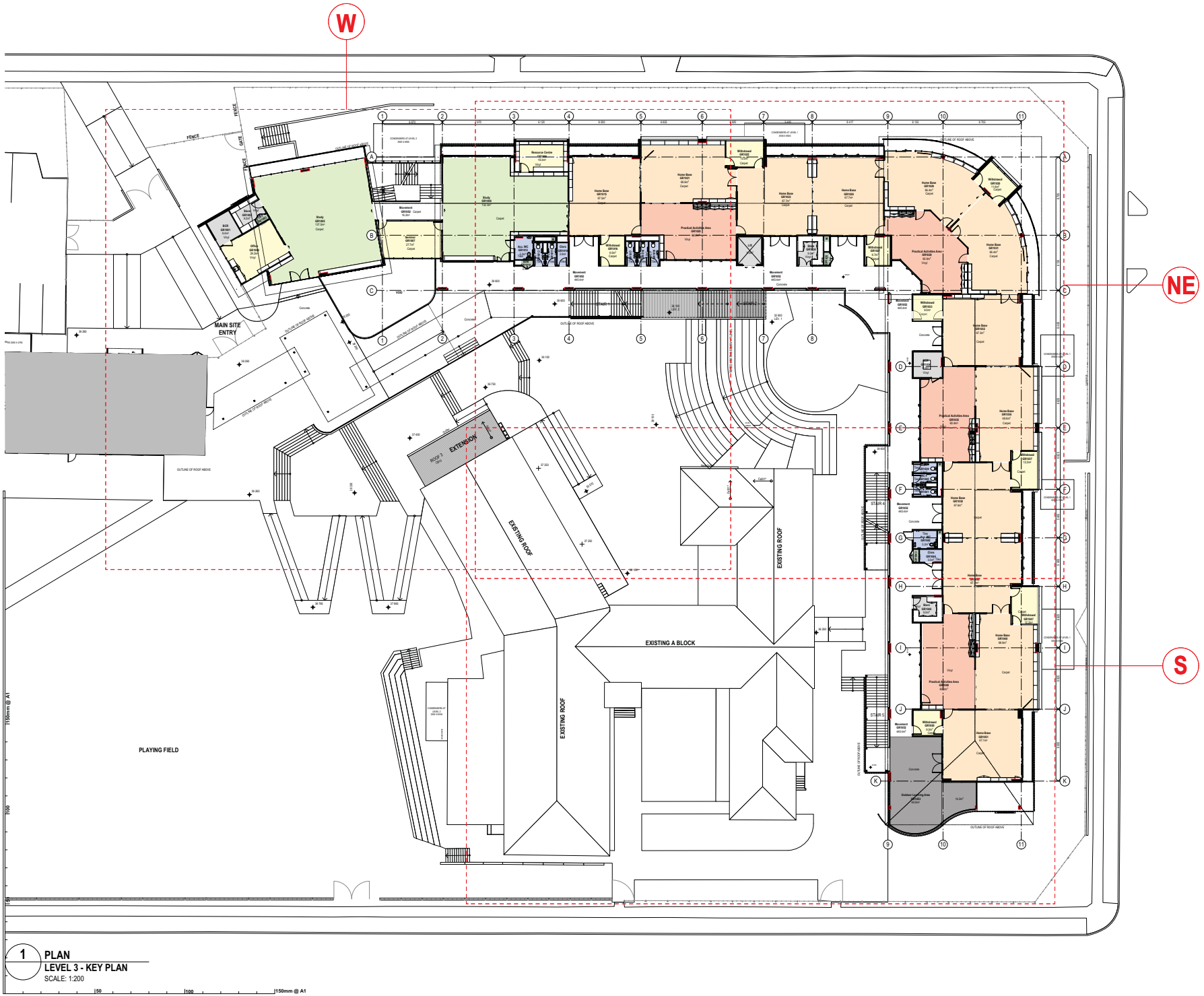
DRAWING **BLOCK G - LEVEL 2 - KEY PLAN**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER **7068WV01** DIRECTOR **JW** CHECKED

DRAWING NUMBER **SD-G-2002** REVISION **P12**



1 PLAN
LEVEL 3 - KEY PLAN
SCALE: 1:200

50 100 150mm @ A1

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WV/PS

REV.	DESCRIPTION	DATE	INIT.
P7	Draft Schematic Design Issue	04/09/2018	JFK
P8	Issued For TSG Review	20/09/2018	JFK
P9	SSDA Consultant Report Issue	05/10/18	WG
P10	SD / SSDA Client Review Issue	11/10/18	JFK
P11	SSDA Draft Issue	6/11/18	JFK
P12	SSDA Final Coordination Issue	9/11/18	JFK

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DRAWING **BLOCK G - LEVEL 3 - KEY PLAN**

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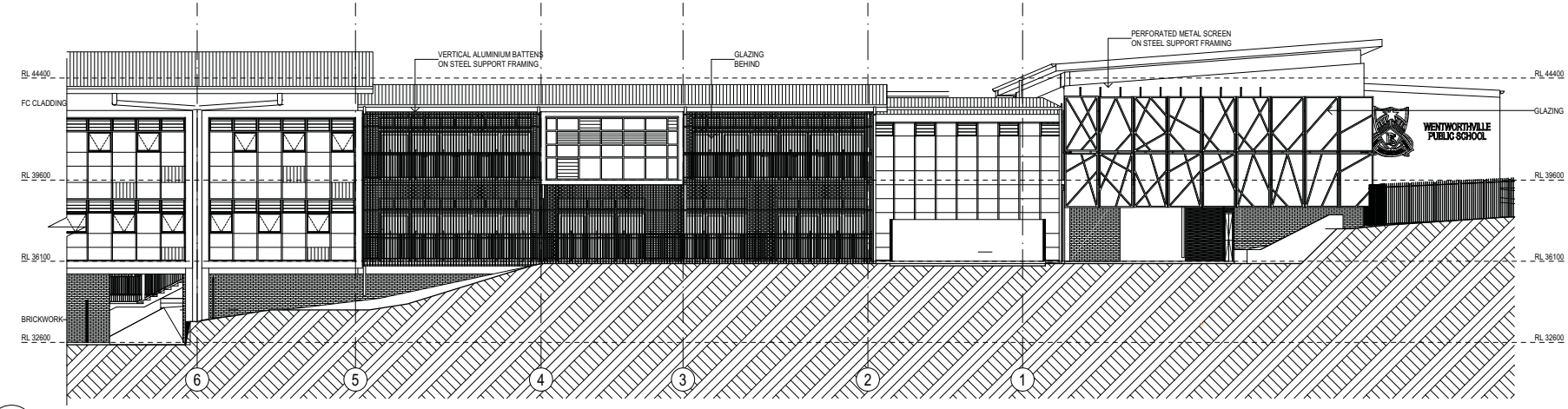
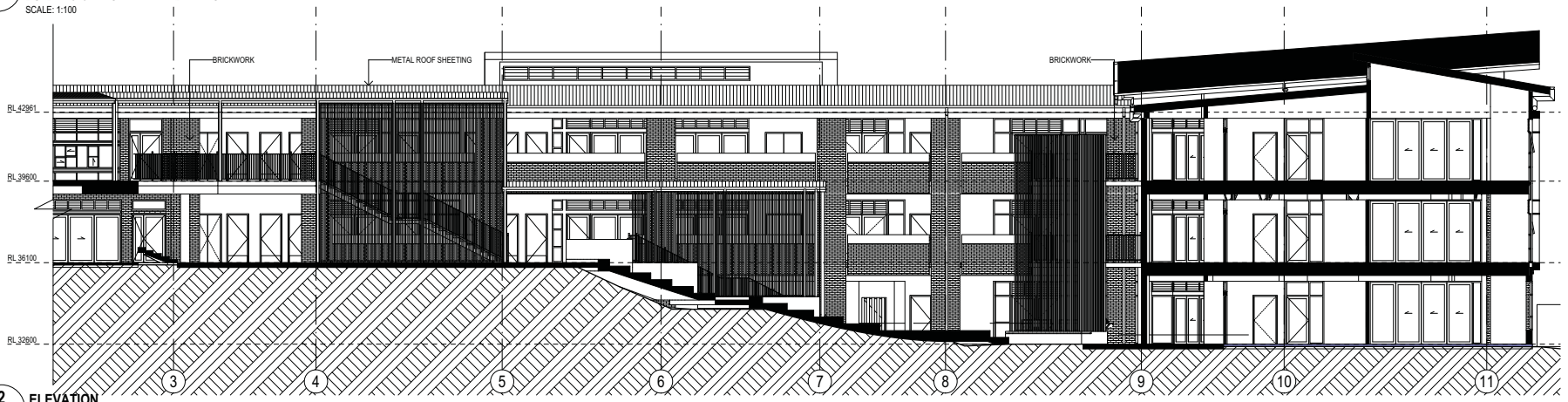
PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER **SD-G-2003**

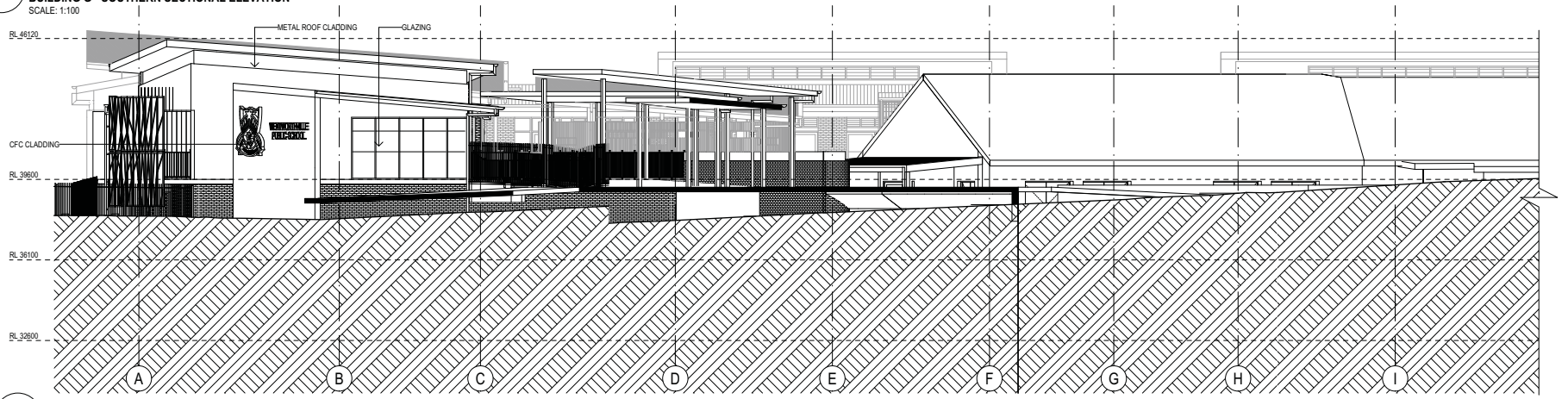
REVISION **P12**



1 ELEVATION
BUILDING G - NORTHERN ELEVATION
SCALE: 1:100



2 ELEVATION
BUILDING G - SOUTHERN SECTIONAL ELEVATION
SCALE: 1:100



3 ELEVATION
BUILDING G - WESTERN ELEVATION
SCALE: 1:100

REV.	DESCRIPTION	DATE	INIT.
P1	PRE-DA	18/07/18	IP
P2	Draft Schematic Design Issue	04/09/2018	JFK
P3	Issued For TSG Review	20/09/2018	JFK
P4	SSDA Consultant Report Issue	05/10/18	WG
P5	SD / SSDA Client Review Issue	11/10/18	JFK
P6	SSDA Draft Issue	6/11/18	JFK
P7	SSDA Final Coordination Issue	9/11/18	JFK

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Paul Sakava raia		NSW 7180	QLD 3108
Paul Trotter fraia		NSW 7177	QLD 2646
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DRAWING **BLOCK G - ELEVATIONS 1**

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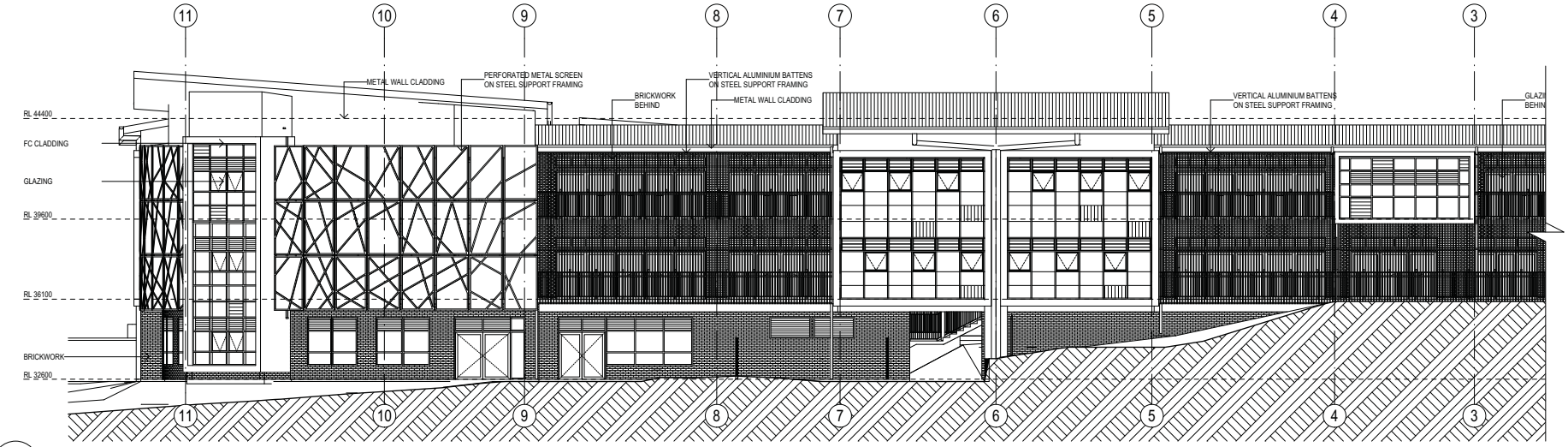
PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER **SD-G-3001**

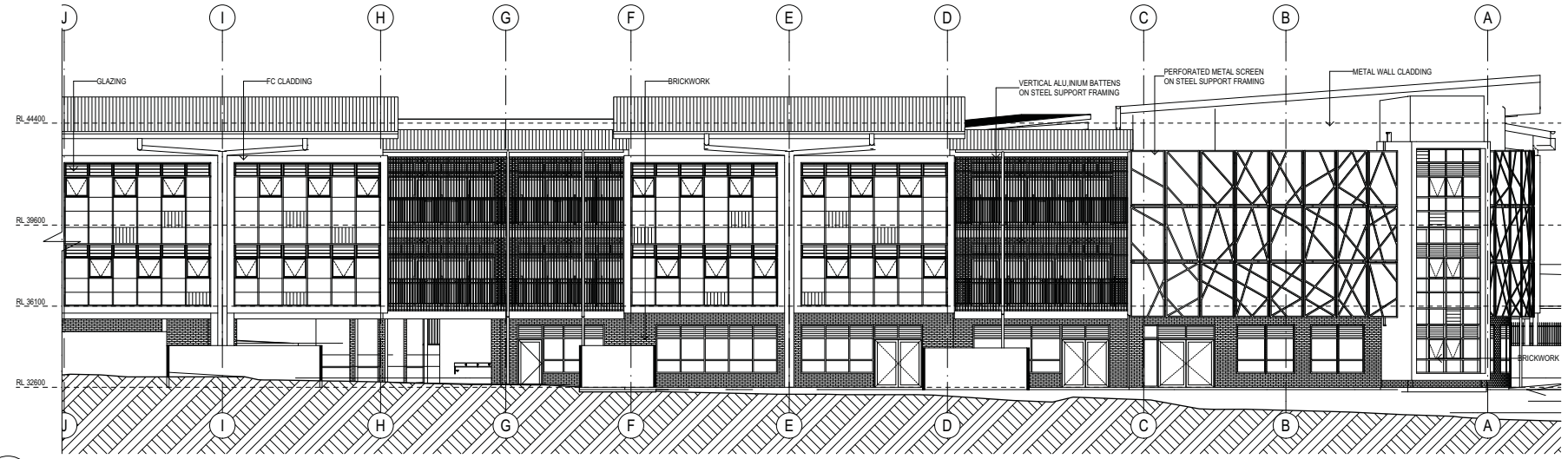
REVISION **P7**

150mm @ A1 150 100 50 0 150mm @ A1

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS



1 ELEVATION
BUILDING G - NORTHERN ELEVATION
SCALE: 1:100



2 ELEVATION
BUILDING G - EASTERN ELEVATION
SCALE: 1:100

P1	PRE-DA	18/07/18	IP
P2	Draft Schematic Design Issue	04/09/2018	JFK
P3	Issued For TSG Review	20/09/2018	JFK
P4	SSDA Consultant Report Issue	05/10/18	WG
P5	SD / SSDA Client Review Issue	11/10/18	JFK
P6	SSDA Draft Issue	6/11/18	JFK
P7	SSDA Final Coordination Issue	9/11/18	JFK
REV.	DESCRIPTION	DATE	INIT.

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Paul Trotter fraia		NSW 7177	QLD 2646
Ryan Loveday raia			QLD 4500
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DRAWING **BLOCK G - ELEVATIONS 2**

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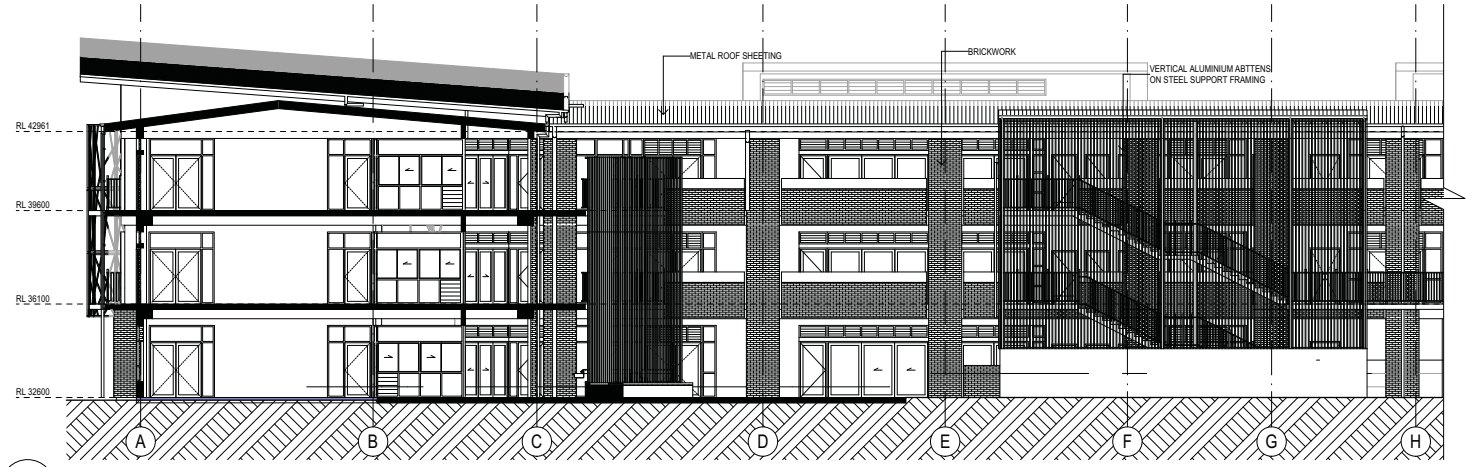
PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER **SD-G-3002**

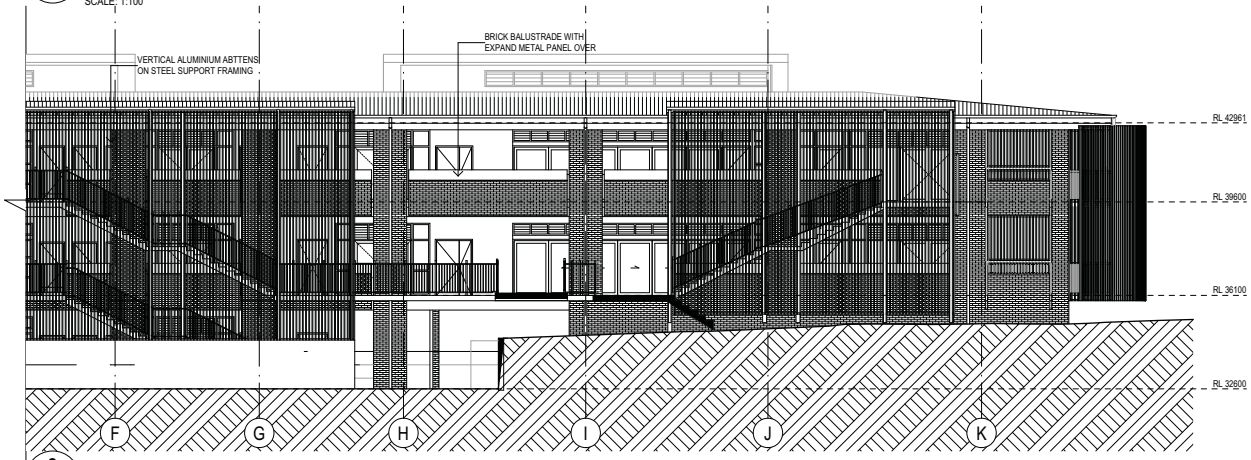
REVISION **P7**

150mm @ A1 150 100 50

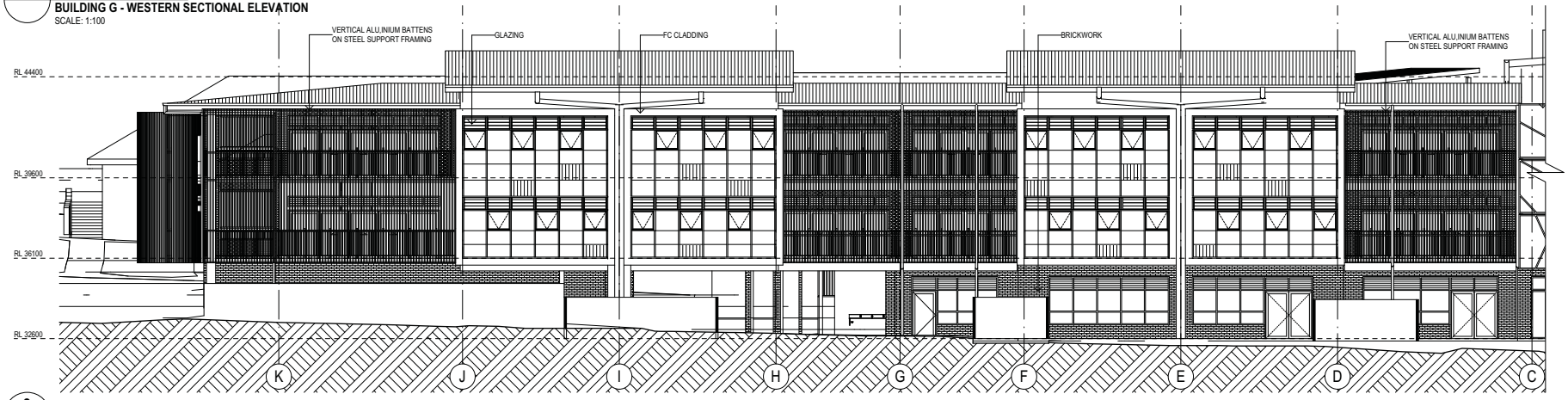
plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WV/PS



1 ELEVATION
BUILDING G - WESTERN SECTIONAL ELEVATION
SCALE: 1:100



2 ELEVATION
BUILDING G - WESTERN SECTIONAL ELEVATION
SCALE: 1:100



3 ELEVATION
BUILDING G - EASTERN ELEVATION
SCALE: 1:100

150mm @ A1
150mm @ A1
1160
150
plot date: Friday, 9 November 2018
file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS

P1	PRE-DA	18/07/18	IP
P2	Draft Schematic Design Issue	04/09/2018	JFK
P3	Issued For TSG Review	20/09/2018	JFK
P4	SSDA Consultant Report Issue	05/10/18	WG
P5	SD / SSDA Client Review Issue	11/10/18	JFK
P6	SSDA Draft Issue	6/11/18	JFK
P7	SSDA Final Coordination Issue	9/11/18	JFK
REV.	DESCRIPTION	DATE	INIT.

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DRAWING **BLOCK G - ELELVATIONS 3**

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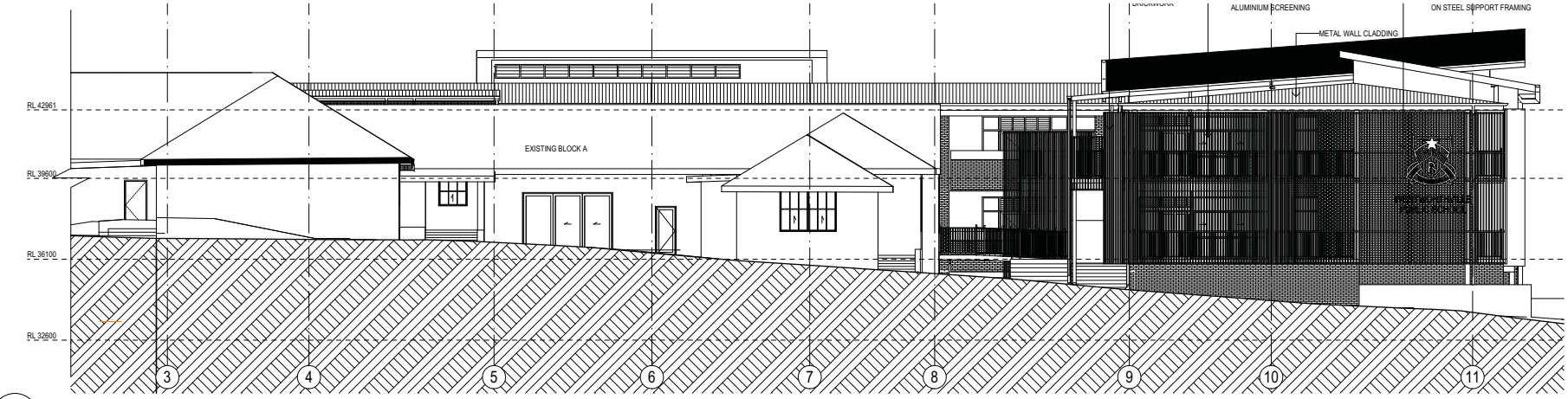
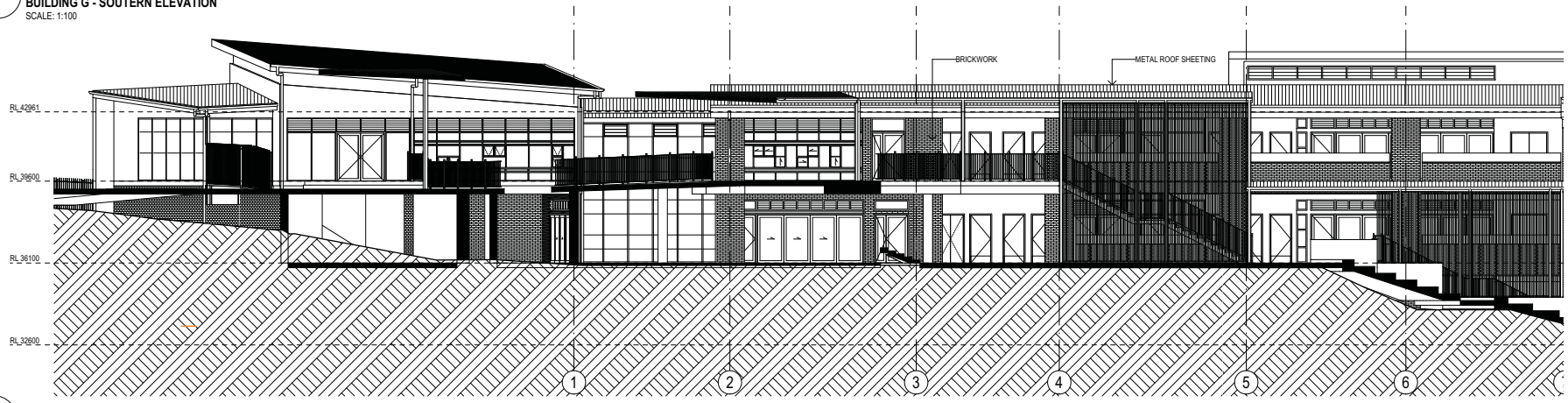
PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER **SD-G-3003**
REVISION **P7**



1 ELEVATION
BUILDING G - SOUTERN ELEVATION
SCALE: 1:100



2 ELEVATION
BUILDING G - SOUTHERN SECTIONAL ELEVATION
SCALE: 1:100

REV.	DESCRIPTION	DATE	INIT.
P1	PRE-DA	18/07/18	IP
P2	Draft Schematic Design Issue	04/09/2018	JFK
P3	Issued For TSG Review	20/09/2018	JFK
P4	SSDA Consultant Report Issue	05/10/18	WG
P5	SD / SSDA Client Review Issue	11/10/18	JFK
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P7	SSDA Final Coordination Issue	9/11/18	JFK

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DRAWING **BLOCK G - ELEVATIONS 4**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

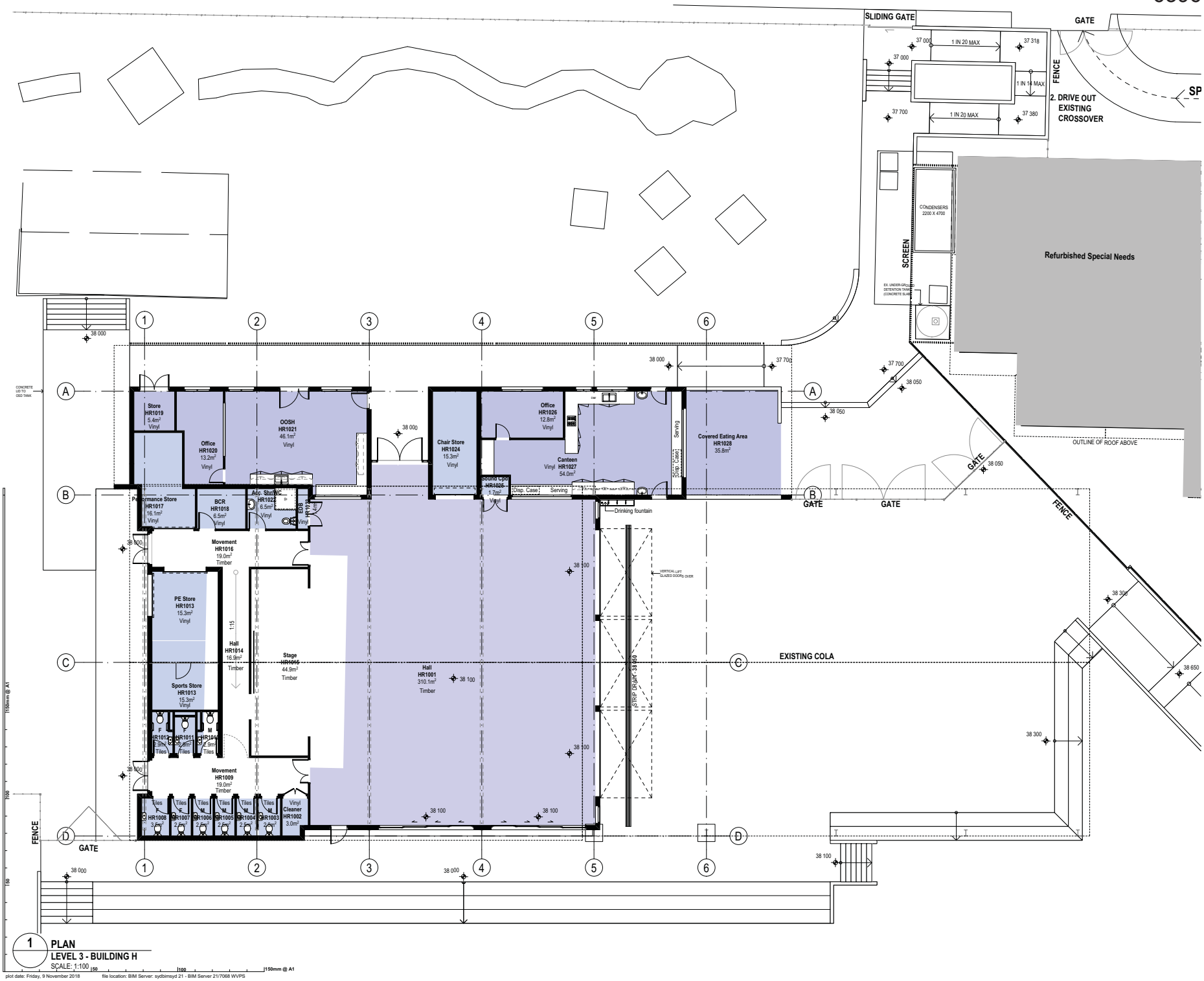
PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER **SD-G-3004**

REVISION **P7**

150mm @ A1 | 100 | 50 | 150 | 150mm @ A1

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS



1 PLAN
LEVEL 3 - BUILDING H
SCALE: 1:100

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS

REV.	DESCRIPTION	DATE	INIT.
P10	Issued For TSG Review	20/09/2018	JFK
P11	Consultant Issue	27/09/2018	JFK
P12	SSDA Consultant Report Issue	05/10/18	WG
P13	SD / SSDA Client Review Issue	11/10/18	JFK
P14	SSDA Draft Issue	6/11/18	JFK
P15	SSDA Final Coordination Issue	9/11/18	JFK

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Paul Sakava naia		NSW 7180	QLD 3108
Paul Trotter fraia		NSW 7177	QLD 2646
Ryan Loveday naia			QLD 4500
Robert Wessener fraia		NSW 5802	QLD 2633

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PHASE **SCHEMATIC DESIGN**

CLIENT NSW Department of Education

PROJECT Wentworthville Public School

ADDRESS 70-100 Fullagar Road
WENTWORTHVILLE, NSW

DRAWING **BLOCK H - GROUND FLOOR PLAN**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

DRAWING NUMBER **SD-H-2001**

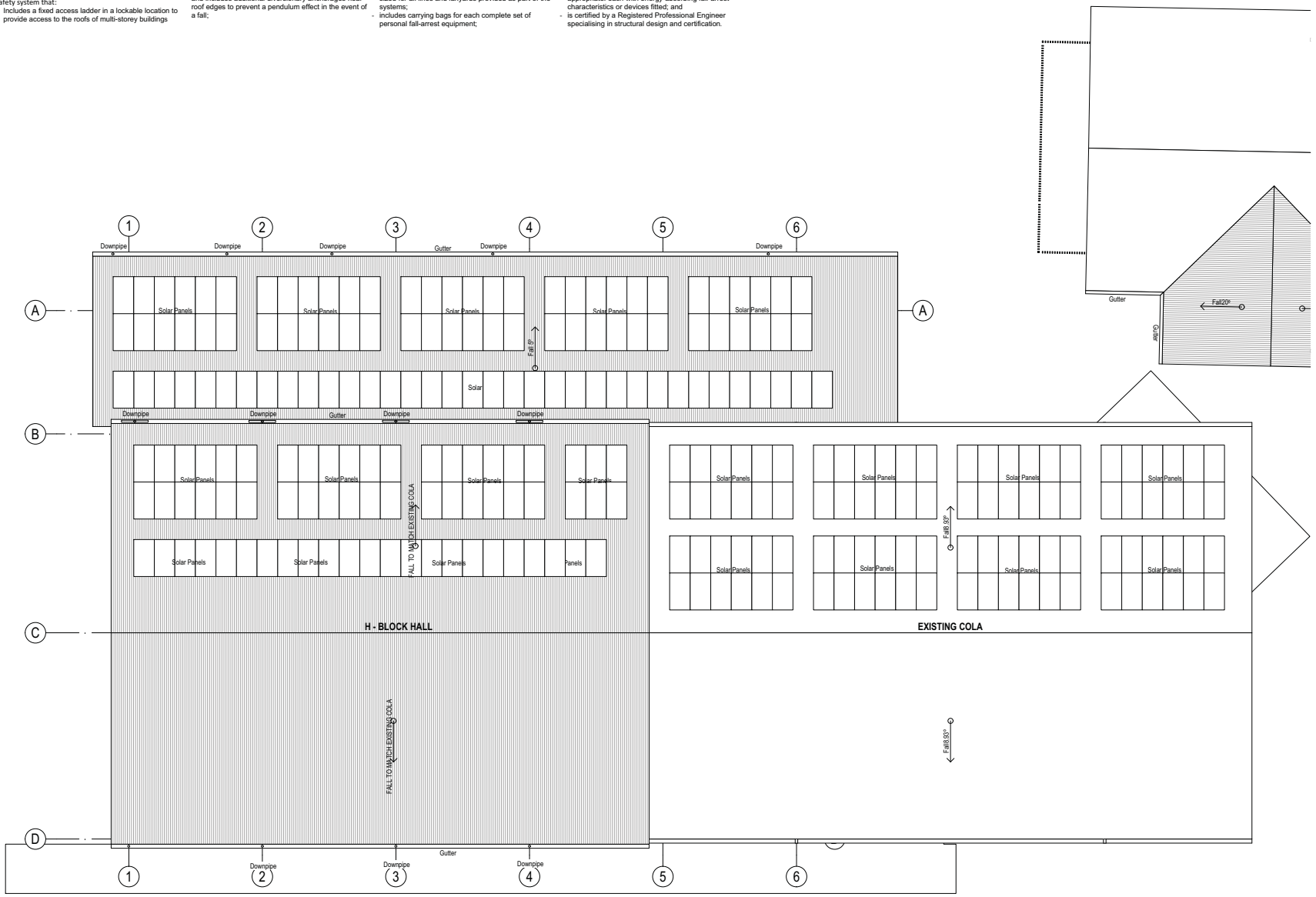
REVISION **P15**

Safe Roof Access System
A safe roof access system shall be provided that complies with the following Australian Standards -

- Industrial fall-arrest systems and devices - Selection, use and maintenance: To AS/NZS 1891.4
- Industrial fall-arrest systems and devices - Safety belts and harnesses: to AS/NZS 1891.1
- Industrial fall-arrest systems and devices - Horizontal lifeline and rail systems: to AS/NZS 1891.2
- Industrial fall-arrest systems and devices - Fall-arrest devices: to AS/NZS 1891.3
- Industrial safety belts and harnesses - Selection, use and maintenance: to AS 2626 (for anchorages only)

The system shall provide a complete fall-arrest roof safety system that:

- Includes a fixed access ladder in a lockable location to provide access to the roofs of multi-storey buildings
- has minimal visual impact on the completed roof, and is compatible with the roofing materials, construction, loading constraints and colours;
- is structurally sufficient in respect of all loads reasonably expected to be imposed on it, and has no adverse structural or other effect on the completed roof;
- may include a number of fully-compatible subsystems, all from one manufacturer/supplier, that allow users to work safely at any point on the roof at all times without the need to disconnect harnesses or restraint lines and lanyards completely, or to carry components of other systems with them;
- prevents free falls wherever possible, and limits possible free falls to the absolute minimum consistent with the user's anticipated work tasks (600mm or less wherever possible, but in no case exceeding 2000 mm);
- allows restrained falls on non-fragile roofed areas only, and includes additional diversionary anchorages near roof edges to prevent a pendulum effect in the event of a fall;
- includes removable means of protecting sharp edges that any line or lanyard may come in contact with, in the event of a free fall;
- exerts a force not exceeding 6kN on any user who is secured to it, and falls;
- distributes fall-arrest forces over the body so that injury is minimised after a fall, and that holds a user in a suitable attitude for rescue after a fall;
- includes anchorages complying with AS 2626;
- has all anchorages positioned so that line and lanyard attachment hardware is kept clear of sharp edges; does not include the use of slings, or backhooking of lanyards, as part of an anchorage;
- may include single point, one-person anchorages that have a minimum ultimate strength in the direction of loading of not less than 15kN;
- includes heavy duty, easily operated attachment hardware, other than snaphooks, that is appropriately sized for all lines and lanyards provided as part of the systems;
- includes carrying bags for each complete set of personal fall-arrest equipment;
- includes all necessary labels and signs with an expected life equal to the item referred to;
- remains intact, usable and water-resistant under the local and regional ambient climatic conditions with a minimum amount of maintenance;
- includes at least four ladder securing access points to the roof edge or gutter, including a level concrete slab at ground level, unless specified elsewhere in the documents;
- includes at least one removable Type 3 fall-arrest device, that may be attached anywhere a free fall is possible, to assist in the immediate recovery of a user who has fallen;
- includes at least two fully adjustable harnesses, each with an attachment point to front and back. Restraint belts will not be allowed;
- includes the appropriate number (but not less than two) of lanyards, restraint lines, and pole lines as appropriate: each with energy-absorbing fall-arrest characteristics or devices fitted; and
- is certified by a Registered Professional Engineer specialising in structural design and certification.



P2	PRE-DA	18/07/18	IP
P3	Draft Schematic Design Issue	04/09/2018	JFK
P4	Issued For TSG Review	20/09/2018	JFK
P5	SSDA Consultant Report Issue	05/10/18	WG
P6	SD / SSDA Client Review Issue	11/10/18	JFK
P7	SSDA Draft Issue	6/11/18	JFK
P8	SSDA Final Coordination Issue	9/11/18	JFK
REV.	DESCRIPTION	DATE	INIT.

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PHASE **SCHEMATIC DESIGN**

CLIENT NSW Department of Education

PROJECT Wentworthville Public School

ADDRESS 70-100 Fullagar Road
WENTWORTHVILLE, NSW

DRAWING **BLOCK H - ROOF PLAN**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

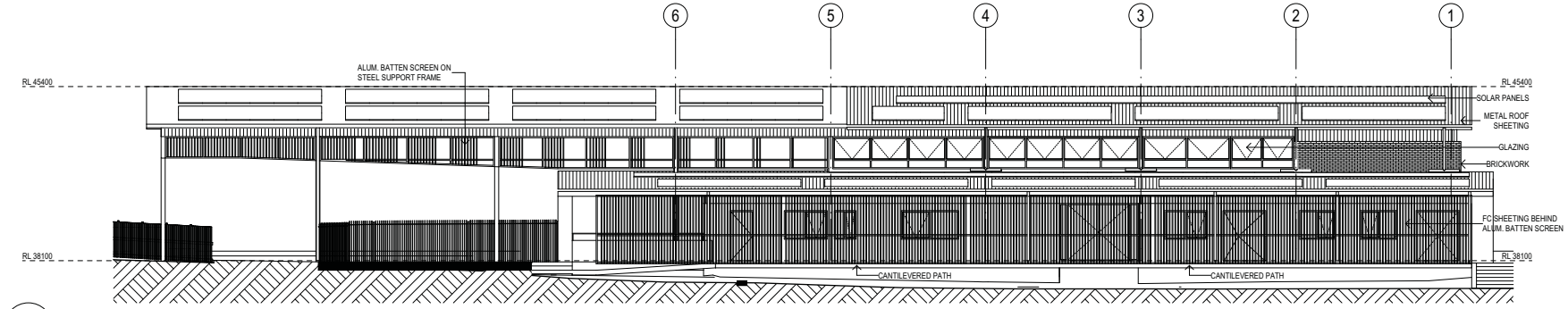
DRAWING NUMBER **SD-H-2101**

REVISION **P8**

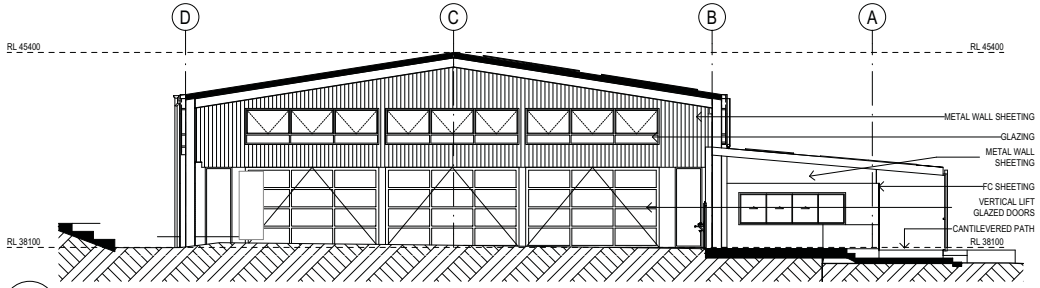
1 **PLAN**
ROOF PLAN - BUILDING H
SCALE: 1:100

150mm @ A1
1150
150
50
100
150mm @ A1

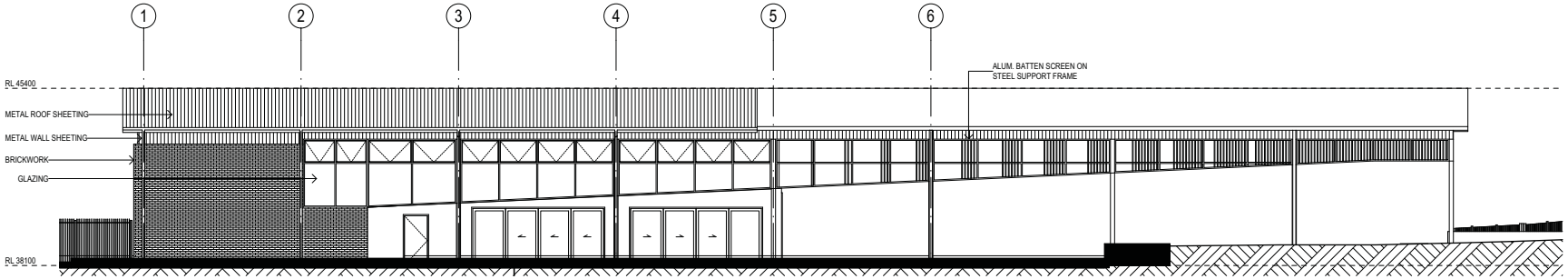
plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS



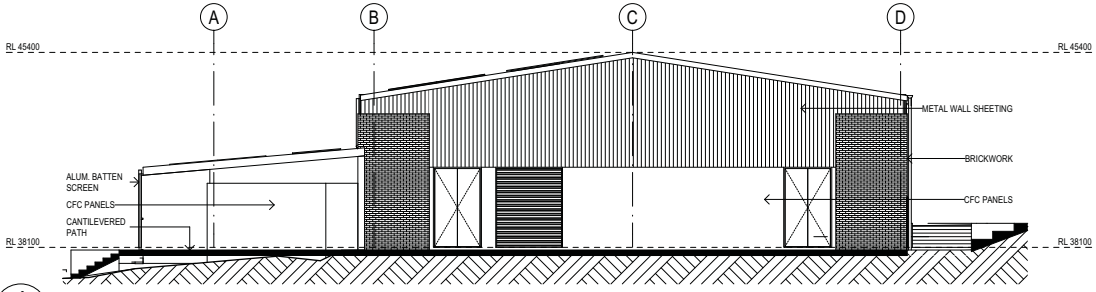
1 ELEVATION
BUILDING H - NORTHERN ELEVATION
SCALE: 1:100



2 ELEVATION
BUILDING H - EASTERN ELEVATION
SCALE: 1:100



3 ELEVATION
BUILDING H - SOUTHERN ELEVATION
SCALE: 1:100



4 ELEVATION
BUILDING H - WESTERN ELEVATION
SCALE: 1:100

P3	Schematic Design	24/07/18	LW
P4	Draft Schematic Design Issue	04/09/2018	JFK
P5	Issued For TSG Review	20/09/2018	JFK
P6	SSDA Consultant Report Issue	05/10/18	WG
P7	SD / SSDA Client Review Issue	11/10/18	JFK
P8	SSDA Draft Issue	6/11/18	JFK
P9	SSDA Final Coordination Issue	9/11/18	JFK
REV.	DESCRIPTION	DATE	INIT.

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PHASE **SCHEMATIC DESIGN**

CLIENT NSW Department of Education

PROJECT Wentworthville Public School

ADDRESS 70-100 Fullagar Road
WENTWORTHVILLE, NSW

DRAWING **BLOCK H - ELEVATIONS**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER	DIRECTOR	CHECKED
7068WV01	JW	

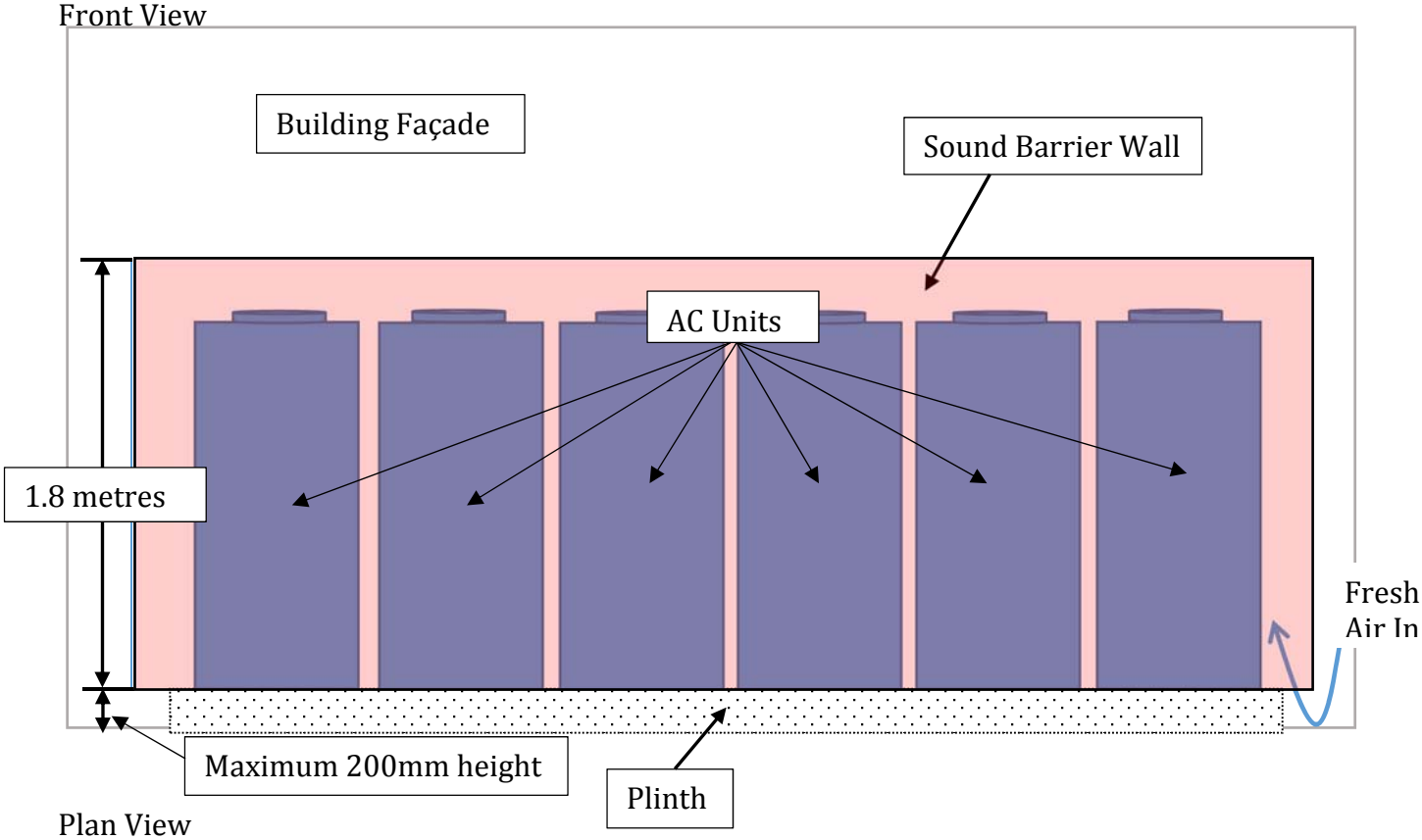
DRAWING NUMBER **SD-H-3001**

REVISION **P9**

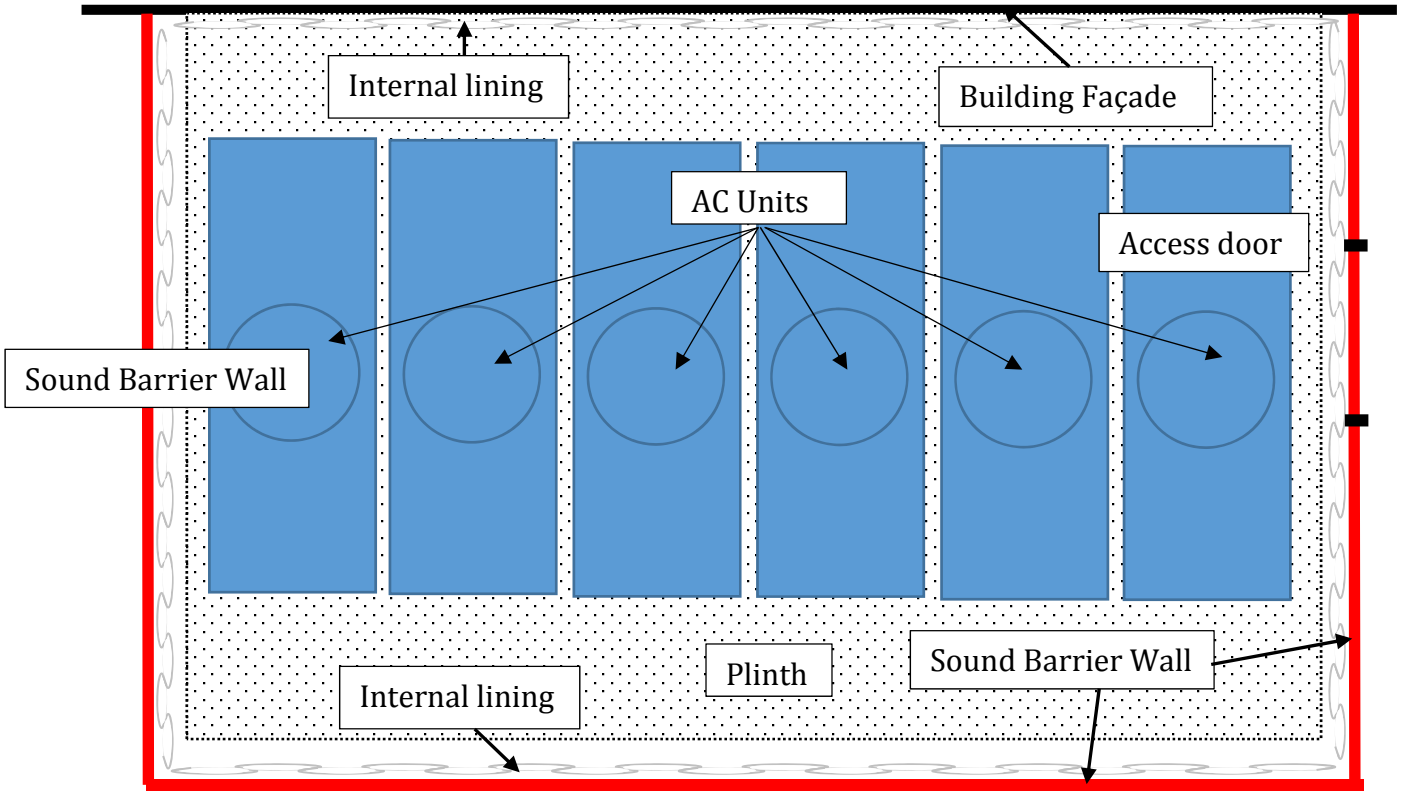
150mm @ A1 1150 150 50 100 150mm @ A1

plot date: Friday, 9 November 2018 file location: BIM Server: sydbimsyd 21 - BIM Server 21/7068 WVPS

Front View



Plan View

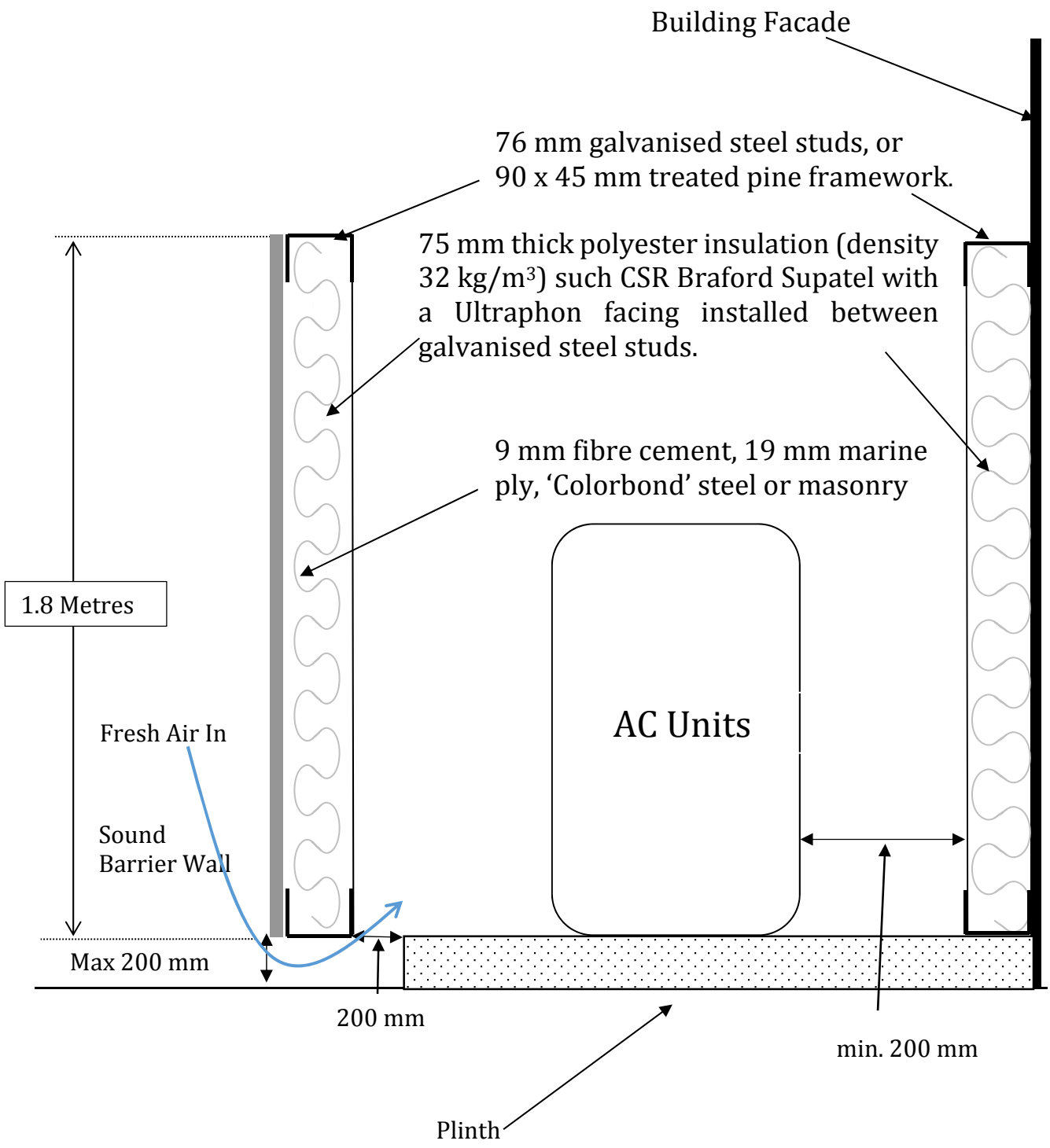


Note: Not to Scale

Date: 24.10.2017 Drawn By: AS

Cross Section of Sound Barrier – 70-100 Fullagar Rd, Wentworthville, NSW

6396-1
Appendix E



Date: 24/10/2017
Drawn By: AS

Note: Not to scale