SITE PLAN
Scale: 1:500

GENERAL NOTES:
* ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.
* ALL PLANS DRAWN TO SCALE SHOWN @ A3 PAPER SIZE
* CONTOURS @ 0.25m BASED ON AHD
* ALL CONSTRUCTION TO BAL 29 + LAND MANAGEMENT AS PER BUSHFIRE MANAGEMENT PLAN
* STRUCTURAL SIZES SHOWN ARE SUBJECT TO CONFIRMATION BY BUILDER OR STRUCTURAL ENGINEER
* REFER NOTES + SPECIFICATIONS

STAGE 2:
NEW CLASSROOM
FOR SPIRIT OF PLAY
COMMUNITY SCHOOL

2 INLET DRIVE, DENMARK, WA 6333

CONTENTS:

12 Mar 2019

NOT FOR CONSTRUCTION

bei mir
building design
9 Bell Road, William Bay, WA, 6333
dm.beimir@gmail.com +61 424506920

0 5 10 15 20 25 M

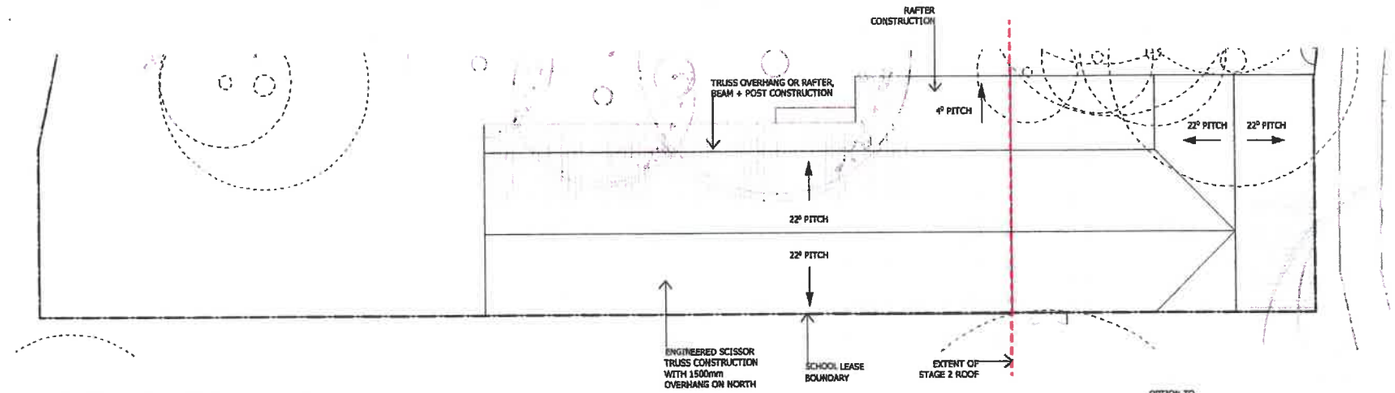
CLIENT: SPIRIT OF PLAY COMMUNITY SCHOOL

PROJECT STAGE: STAGE 2 - CLASSROOM

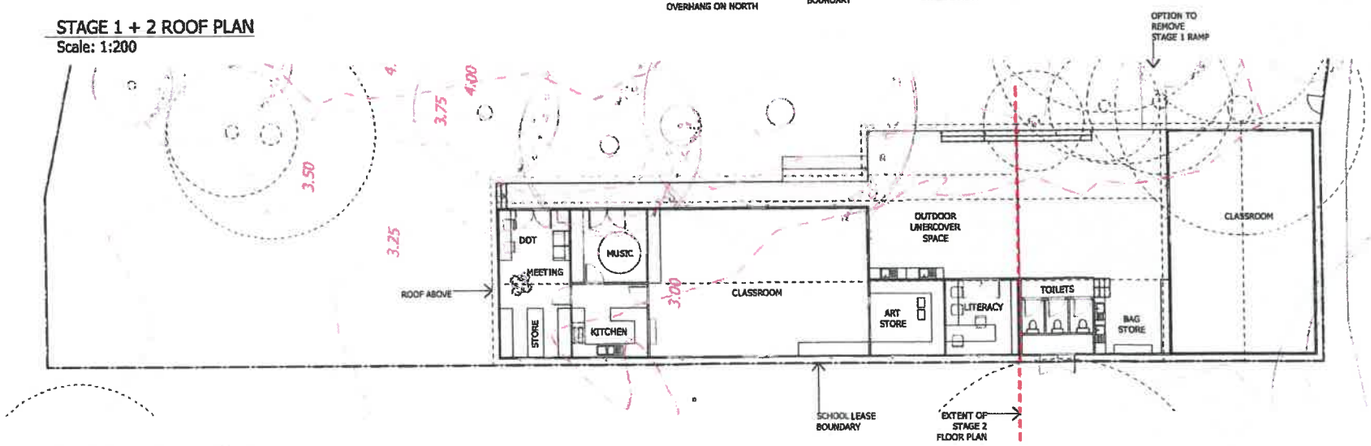
DATE: 12/3/19

SHEET 01 / 11: SITE PLAN

GENERAL NOTES:
* REFER NOTES + SPECIFICATIONS



STAGE 1 + 2 ROOF PLAN
Scale: 1:200



STAGE 1 + 2 FLOOR PLAN
Scale: 1:200

NOT FOR CONSTRUCTION

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9 Bell Road, William Bay, WA, 6333
dm.beimir@gmail.com +61 424506929

0 2 4 6 8 10 M

CLIENT:
SPIRIT OF PLAY
COMMUNITY SCHOOL

PROJECT STAGE:
STAGE 2 - CLASSROOM

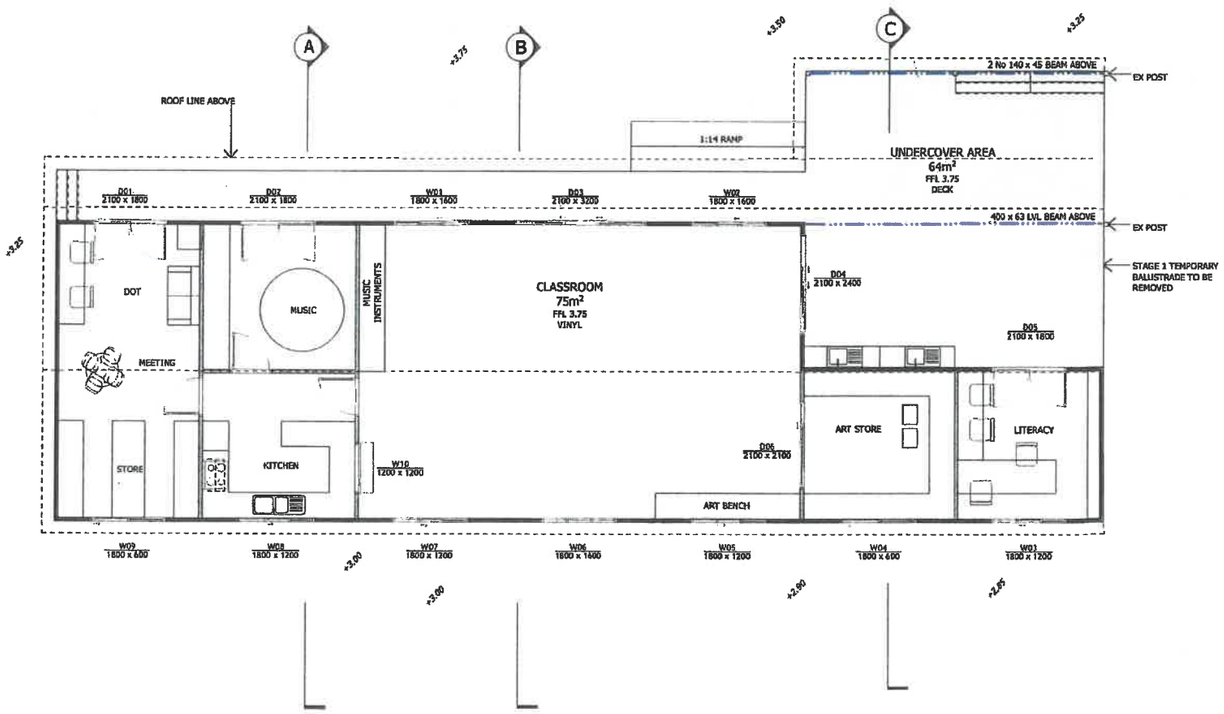
DATE:
12/3/19

SHEET 02 / 11:
STAGE 1 + 2 FLOOR PLAN

GENERAL NOTES:
*** REFER NOTES + SPECIFICATIONS**

LEGEND:

WALL EXTERNAL 90mm TIMBER STUD
WALL INTERNAL 90mm TIMBER STUD
POST DECK



FLOOR PLAN
Scale: 1:100

NOT FOR CONSTRUCTION

bei mir
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9 Bell Road, William Bay, WA, 6333
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0 1 2 3 4 5M

CLIENT: SPIRIT OF PLAY COMMUNITY SCHOOL

PROJECT STAGE: STAGE 2 - CLASSROOM

DATE: 12/3/19

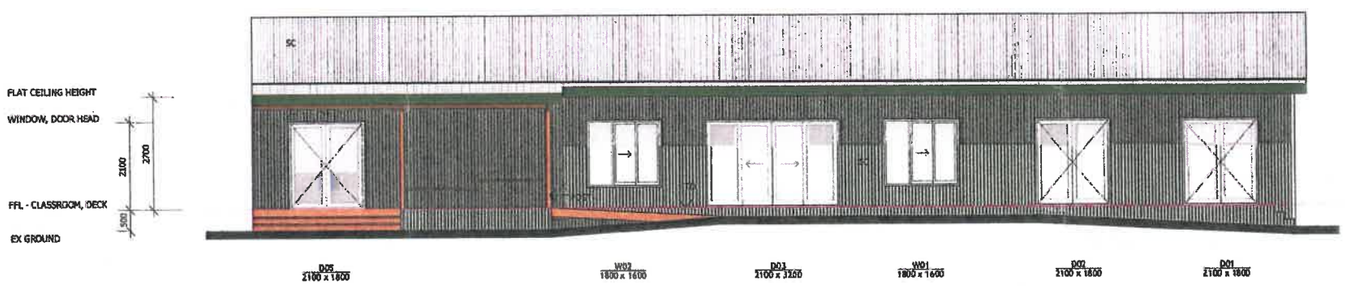
SHEET 03 / 11: FLOOR PLAN

LEGEND:

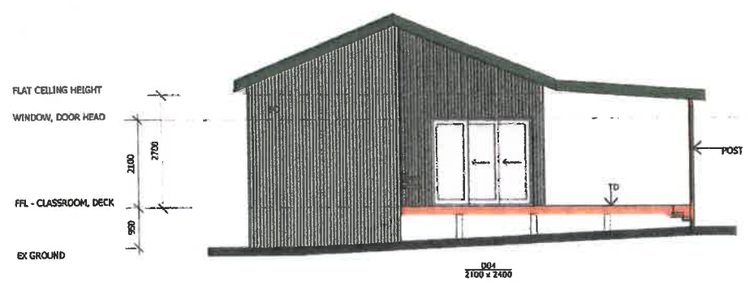
STEEL CLADDING	SC
TIMBER DECK	TD

GENERAL NOTES:

* REFER NOTES + SPECIFICATIONS



NORTH ELEVATION
Scale: 1:100



EAST ELEVATION
Scale: 1:100

* STAGE 1 BUILDING NOT SHOWN FOR CLARITY

NOT FOR CONSTRUCTION

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0 1 2 3 4 5 M

CLIENT: SPIRIT OF PLAY COMMUNITY SCHOOL

PROJECT STAGE: STAGE 2 - CLASSROOM

DATE: 12/3/19

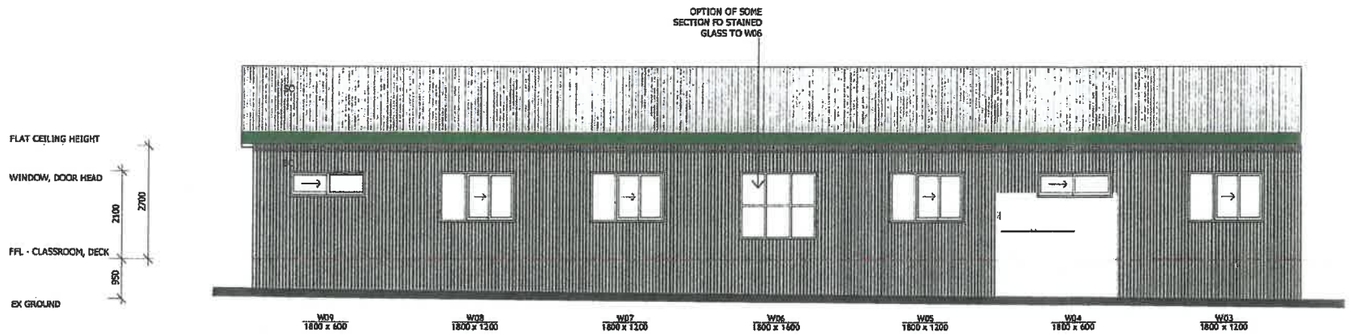
SHEET 05 / 11: ELEVATIONS

LEGEND:

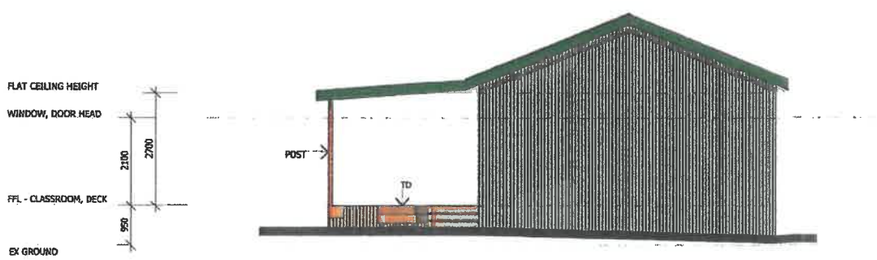
STEEL CLADDING	SC
TIMBER DECK	TD

GENERAL NOTES:

* REFER NOTES + SPECIFICATIONS



SOUTH ELEVATION
Scale: 1:100



WEST ELEVATION
Scale: 1:100

NOT FOR CONSTRUCTION

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9 Bell Road, William Bay, WA, 6333
dm.belmir@gmail.com +61 424506929

0 1 2 3 4 5M

CLIENT:
SPIRIT OF PLAY
COMMUNITY SCHOOL

PROJECT STAGE:
STAGE 2 - CLASSROOM

DATE:
12/3/19

SHEET 06 / 11:
ELEVATIONS

NOTES:

* REFER COVER SHEET FOR SHEETS WITH ADDITIONAL RELEVANT INFORMATION.
* CONTOURS @ 0.25m BASED ON AHD

SITE PLAN
Scale: 1:500

OFFICE COPY

RECEIVED
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CONTRACTOR TO CHECK ALL DIMENSIONS ON SITE. ALL WORK TO COMPLY WITH THE NCC + RELEVANT AUSTRALIAN STANDARDS. FIGURED DIMENSIONS TO TAKE PRECEDENCE OVER SCALED DIMENSIONS.

0 5 10 15 20 25 M

N

CLIENT: **SPIRIT OF PLAY COMMUNITY SCHOOL**

PROJECT LOCATION: 2 INLET DRIVE, DENMARK, WA

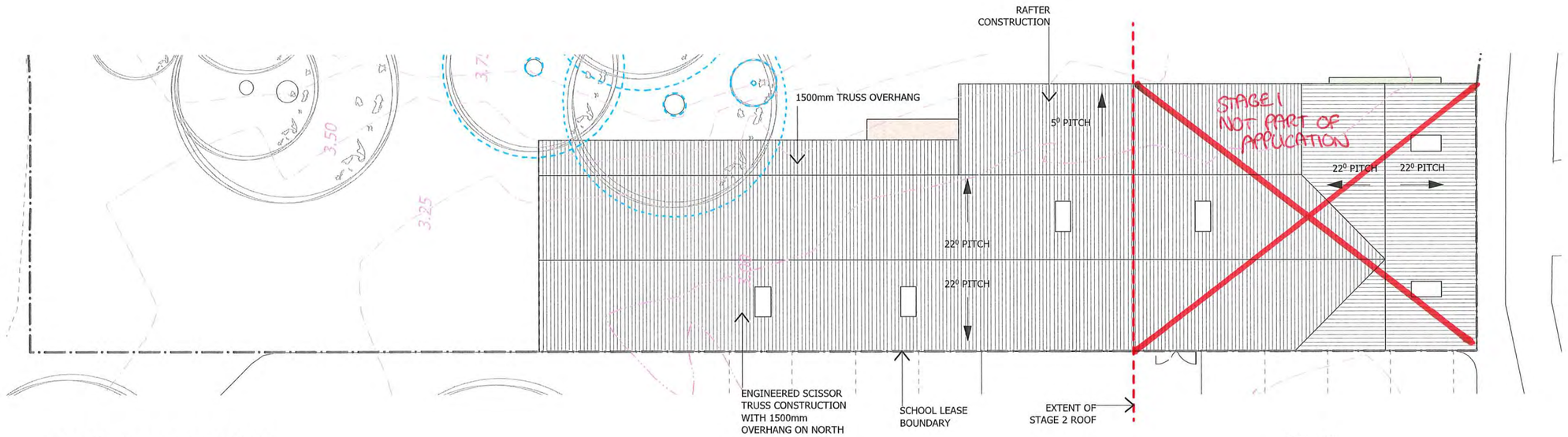
PROJECT STAGE: STAGE 2 CLASSROOM

DATE: 30/9/19

SHEET: **A.03** SITE PLAN

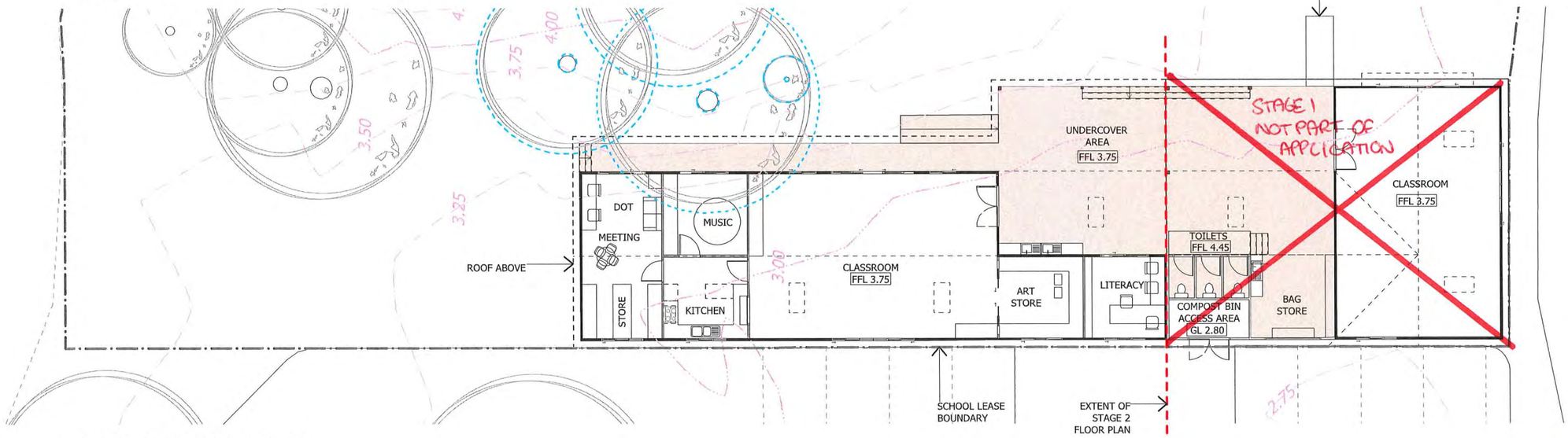
GENERAL NOTES:

* REFER NOTES + SPECIFICATIONS



STAGE 1 + 2 ROOF PLAN

Scale: 1:200



STAGE 1 + 2 FLOOR PLAN

Scale: 1:200

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0 2 4 6 8 10 M

N

CLIENT:
SPIRIT OF PLAY COMMUNITY SCHOOL

PROJECT LOCATION:
2 INLET DRIVE, DENMARK, WA

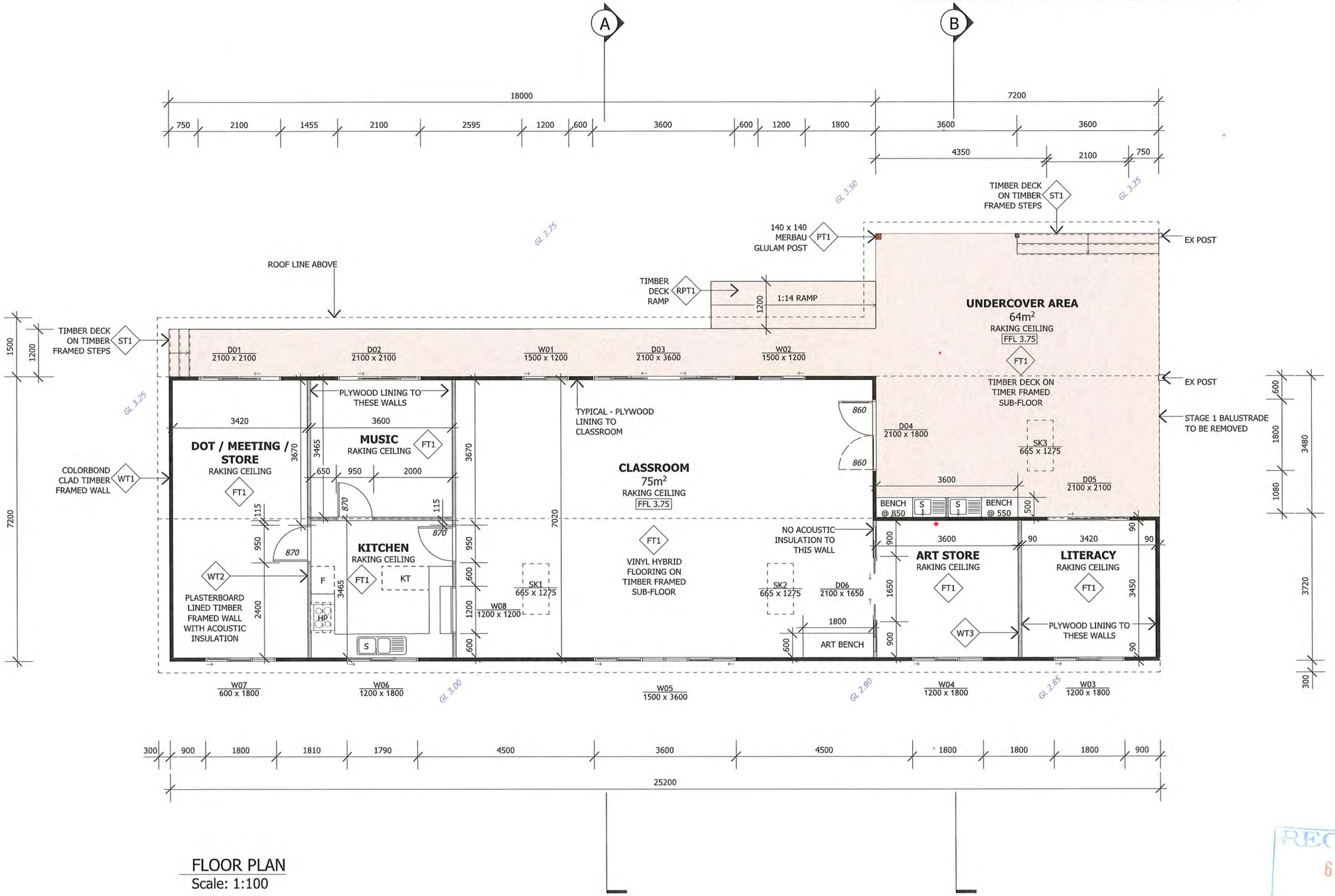
PROJECT STAGE:
STAGE 2 CLASSROOM

DATE:
30/9/19

SHEET: **A.04**
STAGE 1 + 2 PLANS

NOTES:

* REFER COVER SHEET FOR SHEETS WITH ADDITIONAL RELEVANT INFORMATION.



FLOOR PLAN
Scale: 1:100

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CONTRACTOR TO CHECK ALL DIMENSIONS ON SITE. ALL WORK TO COMPLY WITH THE NCC + RELEVANT AUSTRALIAN STANDARDS. FIGURED DIMENSIONS TO TAKE PRECEDENCE OVER SCALED DIMENSIONS.

0 1 2 3 4 5 M

N

CLIENT:
SPIRIT OF PLAY COMMUNITY SCHOOL

PROJECT LOCATION:
2 INLET DRIVE, DENMARK, WA

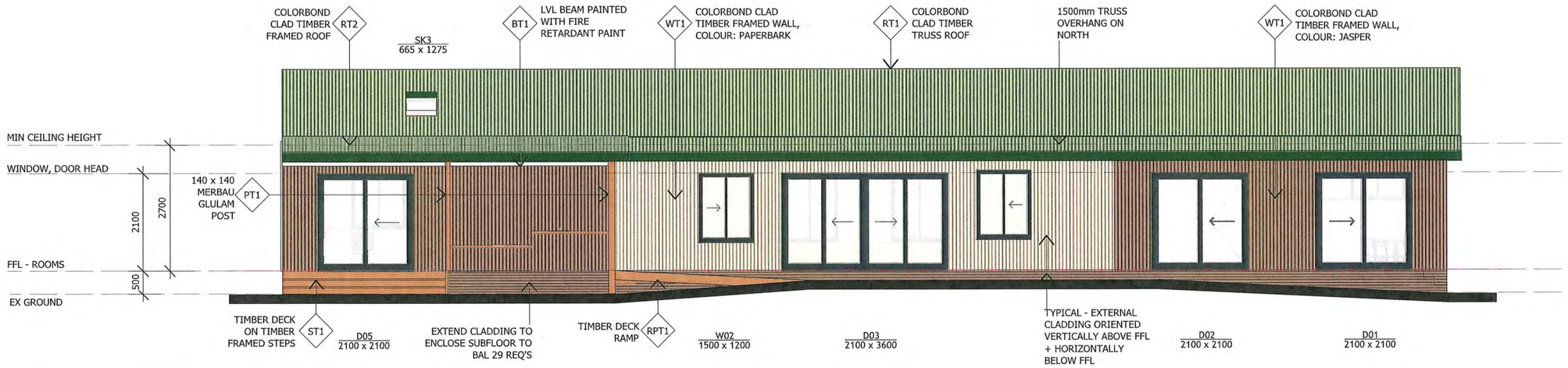
PROJECT STAGE:
STAGE 2 CLASSROOM

DATE:
30/9/19

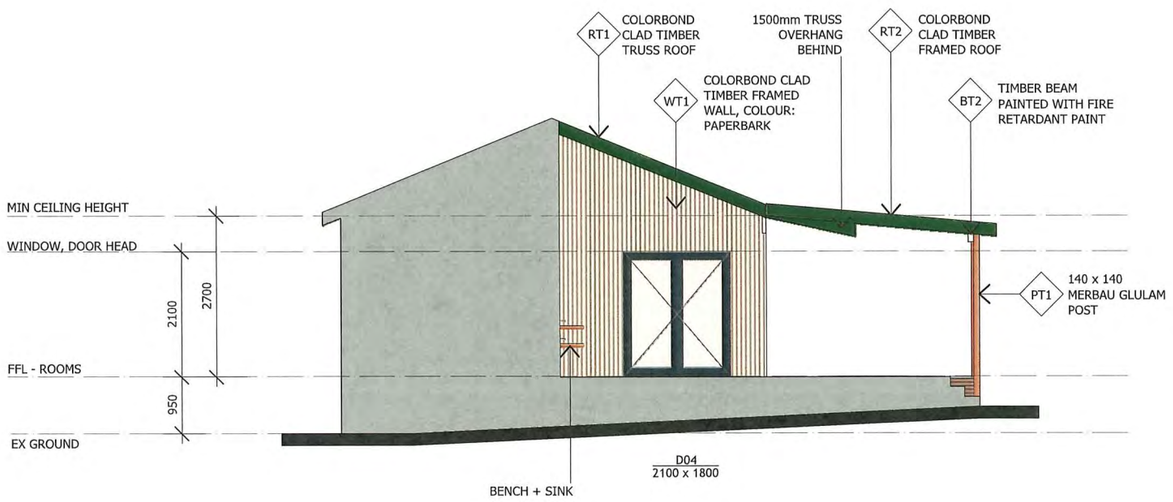
SHEET: **A.05**
FLOOR PLAN

NOTES:

* REFER COVER SHEET FOR SHEETS WITH ADDITIONAL RELEVANT INFORMATION.



NORTH ELEVATION
Scale: 1:100



EAST ELEVATION
Scale: 1:100

- GREY SHADING DENOTES STAGE 1 BUILDING IN FRONT

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0 1 2 3 4 5 M

CLIENT: **SPIRIT OF PLAY COMMUNITY SCHOOL**

PROJECT LOCATION: 2 INLET DRIVE, DENMARK, WA

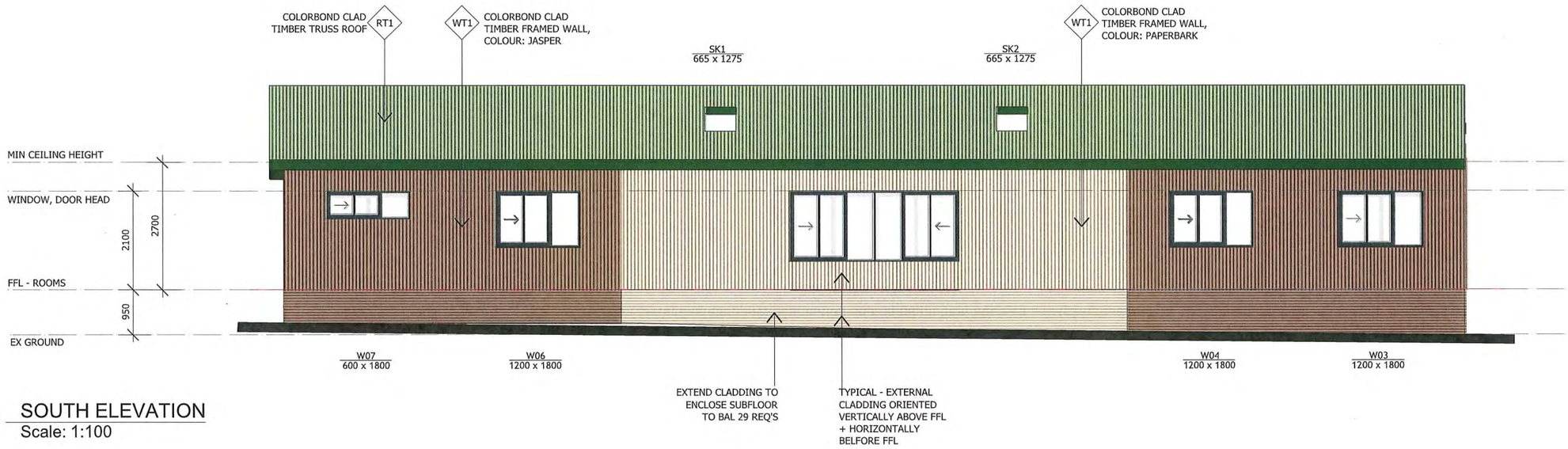
PROJECT STAGE: STAGE 2 CLASSROOM

DATE: 30/9/19

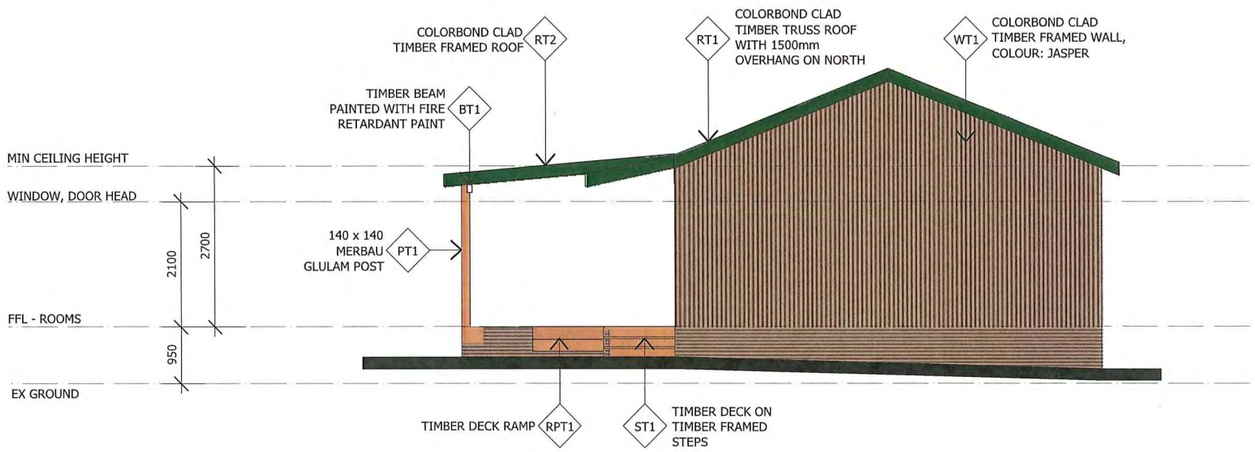
SHEET: **A.06**
ELEVATIONS

NOTES:

* REFER COVER SHEET FOR SHEETS WITH ADDITIONAL RELEVANT INFORMATION.



SOUTH ELEVATION
Scale: 1:100



WEST ELEVATION
Scale: 1:100

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0 1 2 3 4 5 M

CLIENT: **SPIRIT OF PLAY COMMUNITY SCHOOL**

PROJECT LOCATION: 2 INLET DRIVE, DENMARK, WA

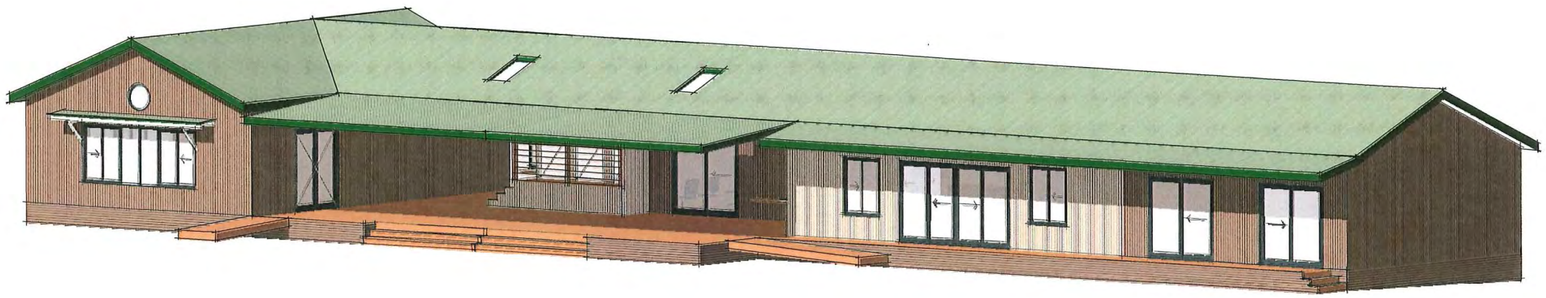
PROJECT STAGE: STAGE 2 CLASSROOM

DATE: 30/9/19

SHEET: **A.07** ELEVATIONS

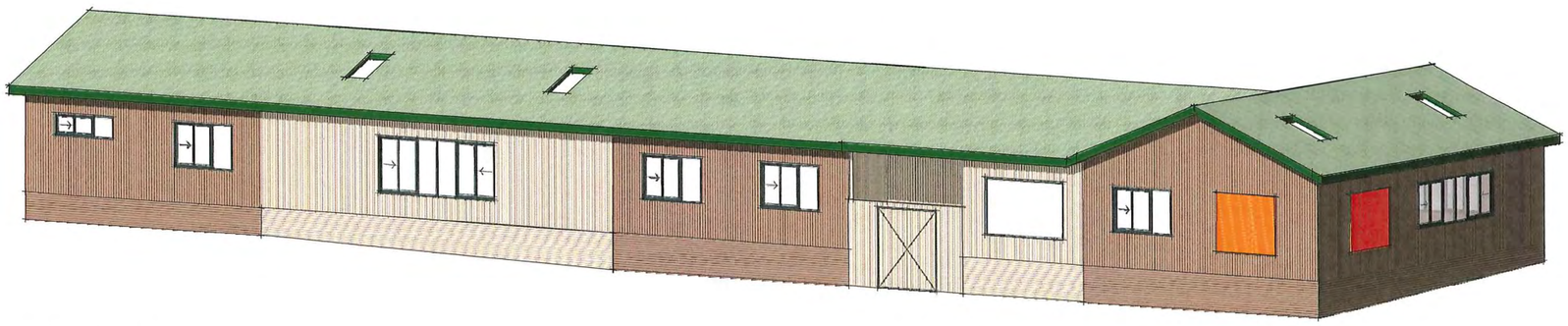
NOTES:

* REFER COVER SHEET FOR SHEETS WITH ADDITIONAL RELEVANT INFORMATION.



N/W VIEW

* STAGE 1 + STAGE 2 SHOWN
* SHADOWS SHOWN FOR NOON WINTER SOLSTICE



N/W VIEW

* STAGE 1 + STAGE 2 SHOWN

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CONTRACTOR TO CHECK ALL DIMENSIONS ON SITE. ALL WORK TO COMPLY WITH THE NCC + RELEVANT AUSTRALIAN STANDARDS. FIGURED DIMENSIONS TO TAKE PRECEDENCE OVER SCALED DIMENSIONS.

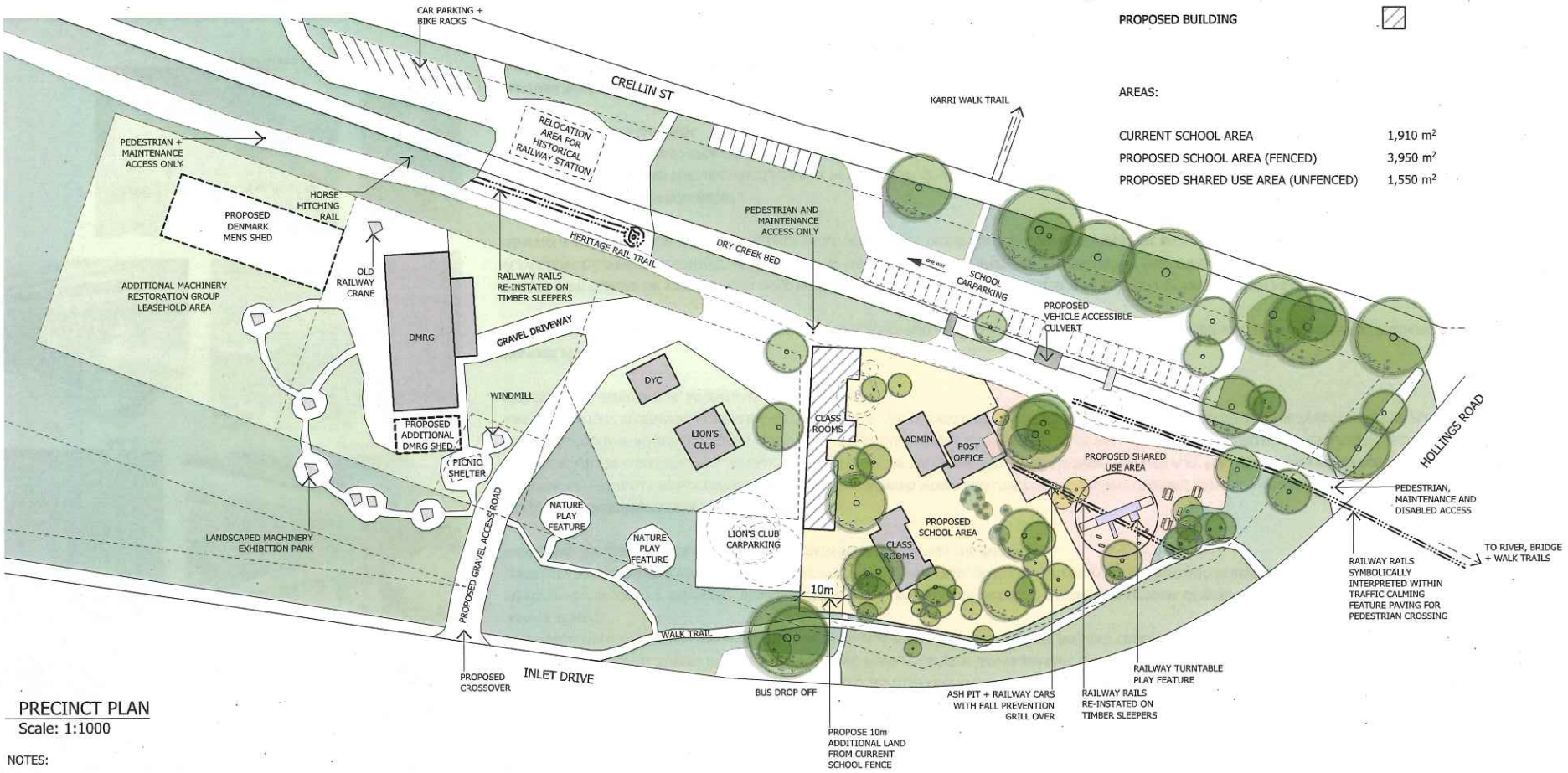
CLIENT:
SPIRIT OF PLAY COMMUNITY SCHOOL

PROJECT LOCATION:
2 INLET DRIVE, DENMARK, WA

PROJECT STAGE:
STAGE 2 CLASSROOM

DATE:
30/9/19

SHEET: **A.02**
STAGE 1 + 2 3D VIEWS



PRECINCT PLAN
Scale: 1:1000

NOTES:

* SCHOOL SITE MASTERPLAN STILL AT CONCEPT STAGE. ALL PROPOSED STRUCTURES, TREE REMOVALS, LANDSCAPING ETC TO BE CONFIRMED.
* SPIRIT OF PLAY COMMUNITY SCHOOL'S VISION, DEVELOPMENT + USE OF THE SITE IS IN KEEPING WITH THE SHIRE APPROVED PRECINCT CONCEPT. THE PROPOSED LEASE EXPANSION WILL STILL ALLOW FOR THE VAST MAJORITY OF THE PRECINCT TO BE DEVELOPED AS PER THE APPROVED MASTERPLAN.

ADOPTED BY COUNCIL 19 FEBRUARY 2019 / RESOLUTION NO. 230219

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0 10 20 30 40 50 M

CLIENT: SPIRIT OF PLAY COMMUNITY SCHOOL

PROJECT STAGE: DENMARK HISTORICAL RAILWAY STATION PRECINCT SPIRIT OF PLAY LEASE EXPANSION CONCEPT

DATE: 9/4/19

SHEET 02 / 02: PRECINCT PLAN

From: Ashleigh Murch [redacted]
Sent: Monday, 7 October 2019 11:45 AM
To: enquires@denmark.wa.gov.au
Subject: ISUB19101409 - Denmark Historical Society response to Spirit of Play Proposed Multipurpose Classroom, Kitchen, Store and Meeting place.....

Attn Craig Pursey
Manager Sustainable Development
Your Ref A5598 (2019/104)

Dear Craig,

re: Proposed Multi-purpose Classroom, Kitchen, Store and Meeting Place (Stage 2) - No. 2 (Lot 952) Inlet Drive Denmark (Reserve 30277)

The committee of the Denmark Historical Society discussed this matter and have agreed that the only issue we have with this development is the fact that this development is situated right on the boundary of the Spirit of Play lease. We have been informed that other groups developing building plans for the same reserve have been asked by the Shire to ensure appropriate set-backs from their lease boundaries. If this is the case, why does this condition not apply to the Spirit of Play Development?

kind regards

Ashleigh Murch
Chairperson
Denmark Historical Society

Bushfire Management Plan and BAL Contour Plan

Site Details			
Address:	Reserve 30277 Inlet Drive		
Suburb:	Denmark	**State:**	WA
Local Government Area:	Shire of Denmark		
Description of Building Works:	Proposed new buildings Spirit of Play and Men's Shed in lease areas.		
Stage of WAPC Planning	N/A		

BAL Contour Plan Details			
Report / Job Number:	SOD001	**Report Version:**	FINAL Version 2
Assessment Date:	05/02/2019	**Report Date:**	9/09/2019
BPAD Practitioner	Kathryn Kinnear	**Accreditation No.**	BPAD30794

19 November 2019 - Attachment 8.1.5e

BIO DIVERSE SOLUTIONS

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

CONTENTS

Appendices

1 Proposal Details

Bio Diverse Solutions was commissioned by the Shire of Denmark to assess Reserve 30277 Inlet Drive, Denmark for bushfire planning requirements. This site contains the Historical Railway Station Precinct (herein referred to as the Subject Site). The subject site is located approximately 1.5kms south east of the Denmark town centre within the Shire of Denmark. It is bound by Inlet Drive to the east, Hollings Road to the north, residential properties to the south, caravan park to the north east and nature reserve (No.15513) to the west. The location of the Subject Site is shown on Figure 1.

The site is currently utilised for community services and consists of Spirit of Play School which includes the old town post office building (3 buildings), Denmark Lions Club (2 buildings) and Denmark Machinery Restoration Group (DRMG) (1 large shed). It is proposed to expand the uses of the site to include two additional school buildings, a Men's Shed and an additional DRMG shed adjoining the existing shed as per the concept plans shown as Figure 2a and 2b.

The Subject Site is located in the WA bushfire prone area mapping (SLIP, 2018) as shown on Figure 3 and is therefore required to adhere to the Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017).

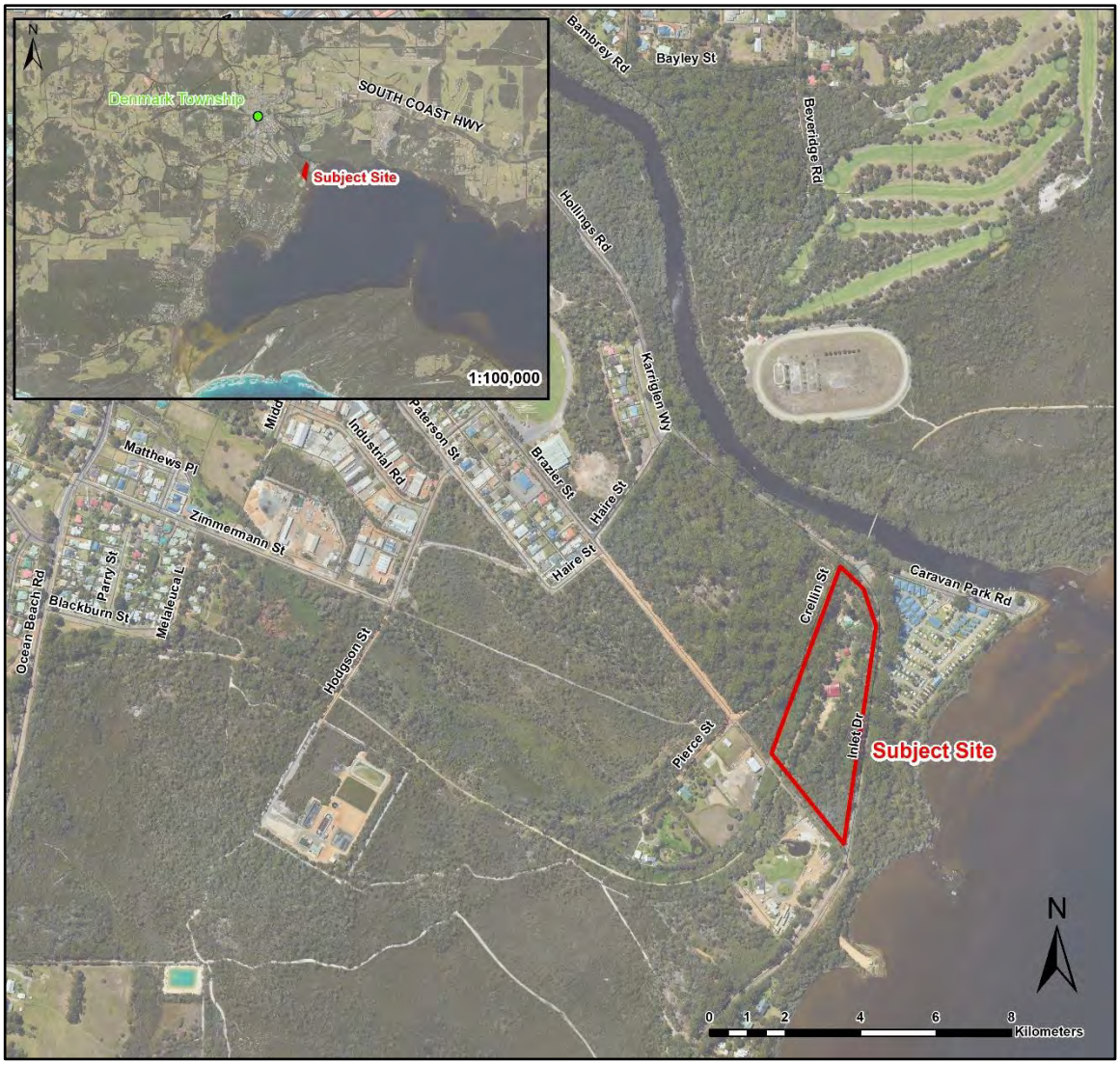


Figure 1: Location Plan

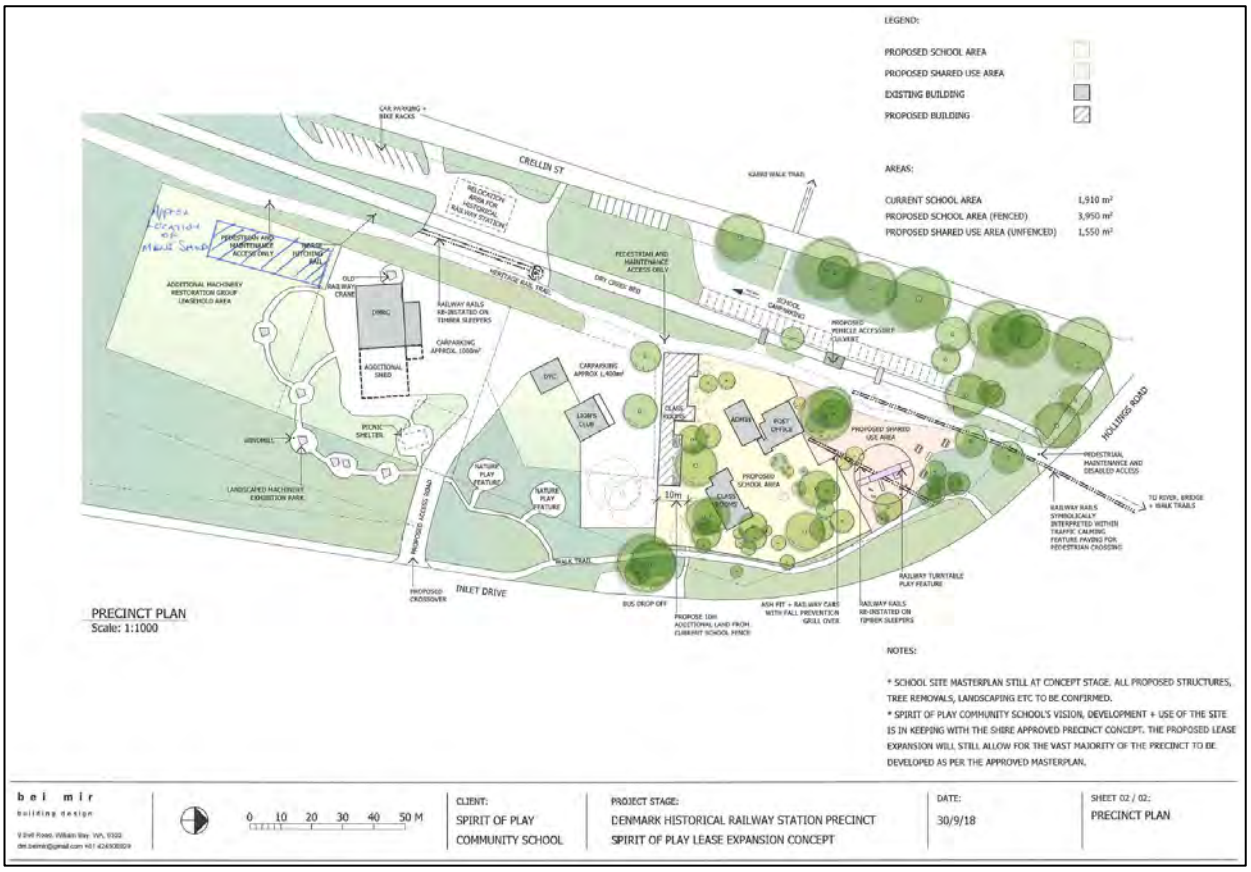


Figure 2a: Development Concept Plan

Figure 2b: Site Plan – Stage 2 Proposed School Building

Figure 3: State Bushfire Prone Area Mapping (SLIP 2018)

2 Environmental Considerations

Vegetation modification proposed: There is no native vegetation clearing of the site for the proposed school buildings as they are proposed to be built in the existing carpark area. There is also no vegetation clearing required for the proposed additional DMRG shed. Clearing of vegetation will be required for the proposed Men's Shed, the vegetation that requires clearing is replanted introduced vegetation. There is also thinning of both Woodland Type B and Forest Type A required in areas across the Subject Site to ensure existing and proposed buildings meet Asset Protection Zone (APZ) standards, these areas are minimal. A significant tree survey has been conducted for the site and significant trees will be retained across the site where possible.

Re-vegetation/landscape plans: No revegetation or landscaping plans are proposed for the proposal.

3 Assessment Results

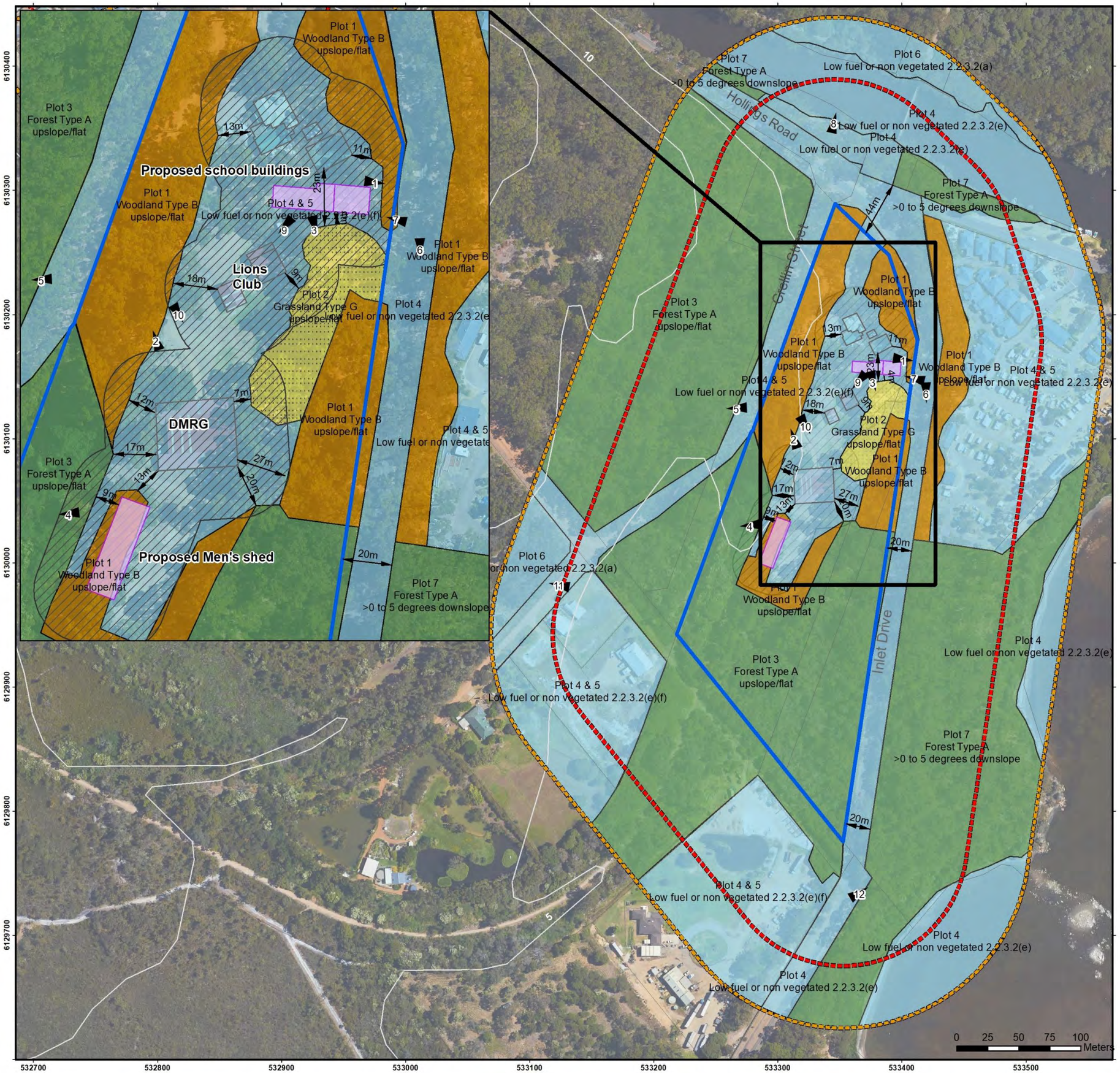
Bushfire Assessment inputs for the site has been calculated using the Method 1 procedure as outlined in AS3959. This incorporates the following factors:

- WA adopted Fire Danger Index (FDI), being FDI 80;
- Vegetation Classes;
- Slope under classified vegetation; and
- Distance between proposed development site and classified vegetation.

Vegetation Classification (Bushfire Fuels)

A method 1 BAL Assessment was undertaken of the lot. A site inspection was undertaken on the 5th February 2019 by Level 2 Bushfire Practitioner Kathryn Kinnear (BPAD 30794) to assess the current land use, topography/slope, vegetation and conditions of the site and its surroundings. Photographs of the Subject Site and surrounding areas

were taken and have been presented in the following pages. All vegetation within 150m of the lot boundary was classified in accordance with Table 2.3 and Exclusion clauses 2.2.3.2 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified in the following pages with the Vegetation classes map shown in Figure 4, page 6.



This BAL Plan was prepared by:
Kathryn Kinnear, Bio Diverse Solutions
Accreditation No: BPAD30794
Jurisdiction: Level 2 - WA

BPAD Bushfire Planning & Design Accredited Practitioner Level 2
BIO DIVERSE SOLUTIONS
29 Hercules Crescent
Albany, WA 6330
Australia
Tel: 08 9842 1575
Fax: 08 9842 1575

Overview Map Scale 1:100,000

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 5m Contours
- Slope Degrees
- Existing Buildings
- Photo Point
- Proposed Buildings
- APZ Standards to apply to proposed and existing buildings
- APZ standards to apply to Grassland Type G

Vegetation

- Forest Type A
- Woodland Type B
- Grassland Type G
- Low fuel or non vegetated 2.2.3.2

Scale
1:3,000 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Shire of Denmark
Reserve 30277 Inlet Drive
Denmark, WA 6330

Figure 4: Vegetation Classes

BAL Assessor	*QA Check*	*Drawn by*
KK	**KK**	**CC**
STATUS	*FILE*	*DATE*
FINAL	**SOD001**	**5/09/2019**

Plot	1	Classification or Exclusion Clause	Woodland Type B
			**Location:** Internal and external to the Subject Site directly north, east, south and west of existing buildings. **Separation distance:** Between 11m and 27m of existing school and DMRG buildings. **Dominant species & description:** Mixed Eucalyptus of Mahogany, Blue gums, Jarrah, Karri and Marri trees with a grassy (modified) understorey. Occasional Zamia or grass tree. Not multilayered. **Average vegetation height:** 18-20m. **Vegetation Coverage:** 10–30% foliage cover. **Available fuel loading:** 15-25 t/ha. **Effective slope:** Upslope/flat.

Photo Id 1: View of Woodland Type B to the east of the School.

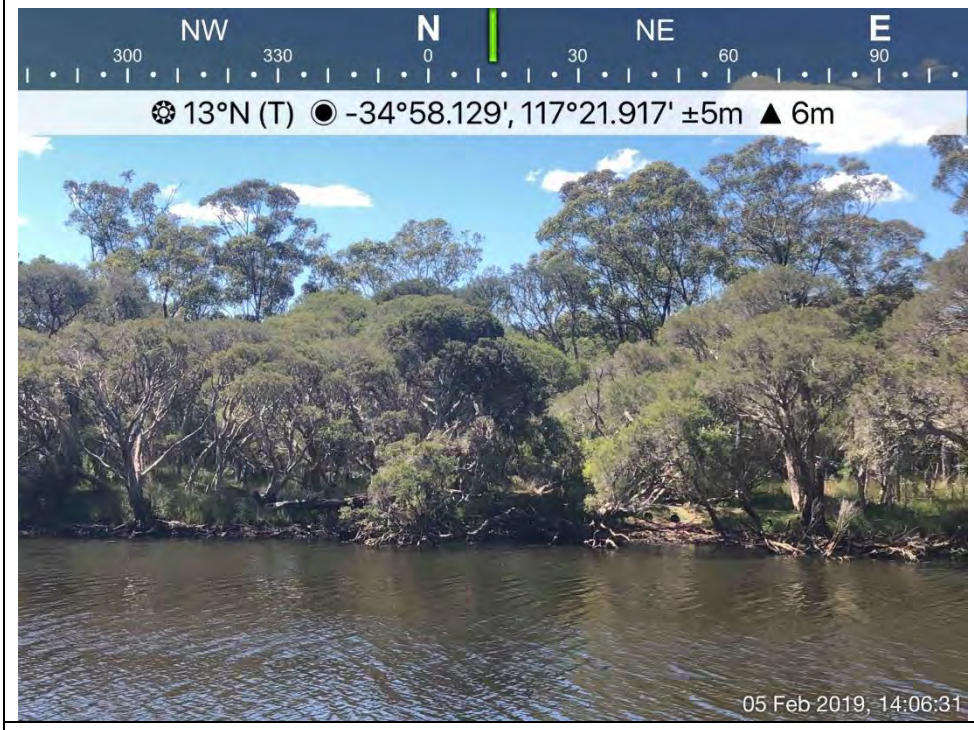
Plot	1 cont.	Classification or Exclusion Clause	Woodland Type B
			Additional Plot 1 photograph.

Photo Id 2: View of Woodland Type B to the west of the School.

Plot	2	Classification or Exclusion Clause	Grassland Type G
			**Location:** Internal to the site adjacent to the Denmark Lions Club and Denmark Machinery Restoration Group buildings. **Separation distance:** 7m to DMRG building, 9m to Lions Club and 23m to existing School buildings. **Dominant species & description:** Kikuyu, Bracken, Fleabane, Phalaris spp, Cape weed and Briza spp. Unmanaged grassland. **Average vegetation height:** 50-100mm. **Vegetation Coverage:** <10% trees. **Available fuel loading:** 4.5t/ha. **Effective slope:** Upslope/flat. **Note**: could be managed if combined into slashing/mowing program.
Photo Id 3: View to the south of unmanaged grassland within the Subject Site.			
Plot	**3**	**Classification or Exclusion Clause**	**Forest Type A**
			**Location:** Internal to the south and external to the west of the Subject Site. **Separation distance:** 17m to DMRG building and 9m to proposed Men's Shed. **Dominant species & description:** Modified (previously logged) regrowth Karri Forest, introduced trees (and weeds) in south internal to the site. Canopy connection and elevated fuels in midstorey and understorey. Multilayered. **Average vegetation height:** 18-20m. **Vegetation Coverage:** >30-70% foliage cover. **Available fuel loading:** 25-35 t/ha. **Effective slope:** Upslope/flat land.
Photo Id 4: View to the west of Forest Type A within Subject Site. Note introduced trees and weeds.			

Plot	3 cont.	Classification or Exclusion Clause	Forest Type A
			Additional Plot 3 photograph.
Photo Id 5: View to the west of Forest Type A west of Subject Site, adjacent Shire Reserve.			
Plot	**4**	**Classification or Exclusion Clause**	**Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)**
			**Location:** Internal to the site, to the east (caravan park), south (residential) and north (Denmark River). **Description:** Roads, hardstand areas and buildings within subject site, caravan park to the east and residential areas to the south. Also includes Denmark River and Wilson Inlet. As per exclusion clause 2.2.3.2 (e) of AS3959.
Photo Id 6: View to the south of Inlet Drive adjacent to Subject Site.			

Plot	4 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			Additional Plot 4 photo.
Photo Id 7: View to the west of Subject Site entrance and carpark.			

Plot	4 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)
			Additional Plot 4 photo.
Photo Id 8: View to the north of Denmark River.			

Plot	5	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)
			**Location:** Internal to the site, to the east (caravan park & inlet) and south (residential). **Description:** Maintained lawns and gardens associated with the community buildings within the Subject Site, existing houses to the south and caravan park to the east. As per exclusion clause 2.2.3.2 (f) of AS3959.
Photo Id 9: View to the south west of community buildings within Subject Site.			
Plot	**5 cont.**	**Classification or Exclusion Clause**	**Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)**
			**Location:** Internal to the site, to the east (caravan park & inlet) and south (residential). **Description:** Maintained lawns and gardens associated with the community buildings within the Subject Site, existing houses to the south and caravan park to the east. As per exclusion clause 2.2.3.2 (f) of AS3959**.**
Photo Id 10: View to the south east of managed (mowed) areas within Subject Site.			

Plot	6	Classification or Exclusion Clause	Low fuel or non-vegetated areas exclusion 2.2.3.2 (a)

Location: External to the subject site to the south-west, and north of the subject site.

Description: Forest Type A excluded as located >100m form the subject site.
As per exclusion clause 2.2.3.2 (a) of AS3959.

Photo Id 11: View to the west of vegetation excluded as >100m from the lot boundary.

Plot	7	Classification or Exclusion Clause	Forest Type A

Location: External of Subject Site to the south east and east in Wilson Inlet foreshore reserve and to the north in Denmark River foreshore reserve.

Separation distance: 20m to lot boundary to the east and 44m to lot boundary to the north.

Dominant species & description: Jarrah/Marri forest interspersed with Paperbark swamp on fringe of Wilson Inlet.

Average vegetation height: 12-15m.

Vegetation Coverage: >30-70% foliage cover.

Available fuel loading: 25-35 t/ha.

Effective slope: Downslope >0-5 degrees.

Photo Id 12: View to the south east of Forest Type A to the south east of the Subject Site.

COMMENTS ON VEGETATION CLASSIFCATIONS:

- Distances from vegetation were made based on surface fuels to edge of lot (subject site) boundary;
- Effective slopes were measured in the field using a Nikon Forestry Pro and represented on the respective plots;
- Method 1 (AS3959) Simplified procedure was used for vegetation classification and BAL Assessment process;
- All vegetation was classified within the subject site and within 150m of the lot boundary to AS3959 Table 2.3; and
- The perimeter of the vegetation was measured using field GPS and notations on field GIS maps.

4 Bushfire Assessment Outputs

A Method 1 BAL calculation (in the form of BAL contours) has been completed for the proposed and existing buildings, this includes mapping over:

- The existing School, DRMG, Lions Club and DYC buildings; and
- The proposed additional Spirit of Play School buildings and new Men's Shed.

The BAL Contours are depicted in accordance with AS 3959-2009 and WAPC defined methodology. The BAL rating gives an indication of the level of bushfire attack (i.e. the radiant heat flux) that may be received by proposed buildings and subsequently informs the standard of building construction required to increase building tolerance to potentially withstand such impacts in line with the assessed BAL.

The potential bushfire impact to the site / proposed development from each of the identified vegetation plots are identified below in Table 1 and shown in the BAL Contour Plans Page 12.

Table 1 - Potential Bushfire impacts to AS3959

Plot number	Vegetation Type (Table 2.3)	Slope (Table 2.4.3)	Separation distance to vegetation (m)	Highest BAL Contour	Modified BAL Contour in APZ areas
1	Woodland Type B	Upslope/Flat	11m	BAL FZ	BAL 19 in 21m APZ for existing School buildings BAL 19, but built to 29 on proposed School buildings due to refuge requirement. With a 21m APZ.
2	Grassland Type G	Upslope/Flat	7m	BAL FZ	BAL Low - to be mowed as part of ongoing management of the reserve.
3	Forest Type A	Upslope/Flat	8m	BAL FZ	BAL 29 in 21m APZ for proposed Men's Shed
4	Low fuel or non-vegetated areas exclusion 2.2.3.2 (e)	N/A	N/A	BAL Low	N/A
5	Low fuel or non-vegetated areas exclusion 2.2.3.2 (f)	N/A	N/A	BAL Low	N/A
6	Low fuel or non-vegetated areas exclusion 2.2.3.2 (a)	N/A	N/A	BAL Low	N/A
7	Forest Type A	Downslope >0-5 Degrees	20m	N/A overridden by Plots 1 and 3	N/A

COMMENTS ON BAL CALCULATIONS/METHODOLOGY:

- Method 1 (AS3959) Simplified procedure was used for vegetation classification and BAL Assessment process;
- The BAL Contour Plan was prepared by an Accredited Level 2 Bushfire Planning Practitioner (BPAD30794);
- The BAL Contour Map has been prepared in accordance with Department of Planning (WAPC) Guidelines for Planning in Bushfire Prone Areas (Version 1.3, 2017);
- Internal Grasslands are to be maintained to 100mm as per the WAPC APZ standards, refer to Appendix A, this is to be included in the Shires ongoing operations works on the site;
- All existing buildings and future Spirit of Play School buildings are to have a 21m APZ and the Men's Shed a 21m APZ consistent with BAL 29 requirements in Forest Type A; and
- The introduced trees and weeds within the subject site (to the south near the future Men's Shed) are to be removed and APZ standards to apply, any replanting is to conform to APZ standards as per Appendix A.

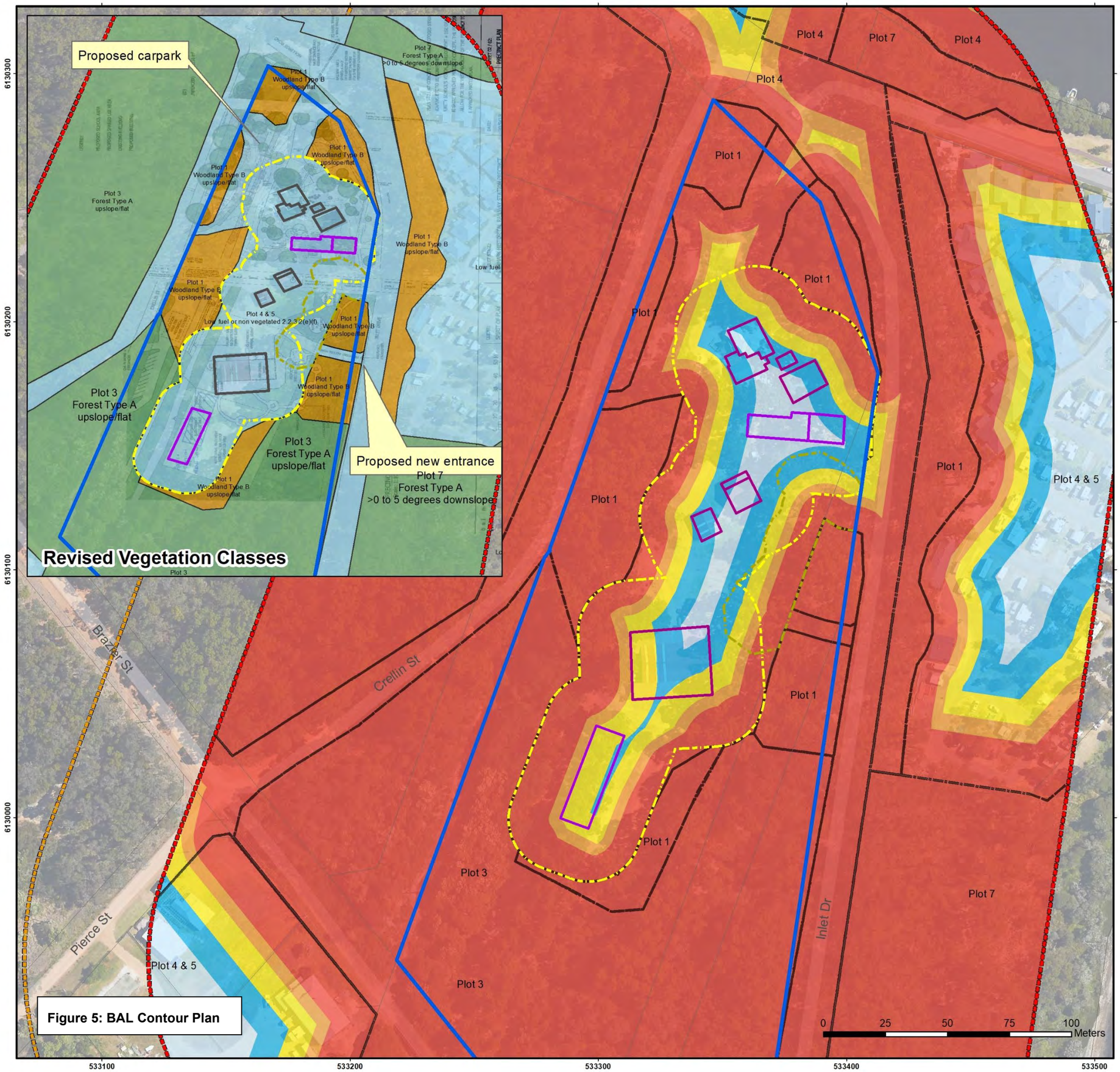


Figure 5: BAL Contour Plan

This BAL Plan was prepared by:
Kathryn Kinnear, Bio Diverse Solutions
Accreditation No: BPAD30794
Jurisdiction: Level 2 - WA

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

BIO DIVERSE SOLUTIONS

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Albany, WA 6330
Australia
Tel: 08 9842 1575
Fax: 08 9842 1575

Overview Map Scale 1:100,000

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- Existing Buildings
- Proposed New Buildings
- APZ Standards applied to Grassland Type G
- APZ Standards applied to proposed and existing buildings

BAL Contours

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

Scale
1:1,500 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT

Shire of Denmark
Reserve 30277 Inlet Drive
Denmark, WA 6330

BAL Contour Plan

BAL Assessor	*QA Check*	*Drawn by*
KK	**KK**	**BT**
STATUS	*FILE*	*DATE*
FINAL	**SOD001**	**9/09/2019**

5 Identification of Bushfire Impacts

The Bushfire risks associated with the subject site include the continuous remnant vegetation external to the site to the north, north west and west in Shire managed reserves. There is limited bushfire threat from the east due to the presence of Wilson Inlet and to the south there is residential areas which present low fuel. Internal to the site the forest vegetation to the south does present Extreme Bushfire Hazards. Large introduced and native trees are located too close to existing buildings at the school and DMRG buildings. Trees should not be overhanging buildings and should not be within 6m of a building. Trimming and/or removal of selected trees is recommended.

Under hot, dry and unstable conditions (Severe to catastrophic/bushfire weather) the Subject Site is most at risk from bushfire from the north, north west and west directions. The implementation of the Works Program Mapping (as shown on Figure 6) will reduce the bushfire risks to the existing buildings and the proposed new buildings.

Management strategies of the bushfire issues on the Subject Site include:

- APZ areas of 21m to existing buildings as per the Shire of Denmark Fire Management Notice;
- APZ standards are to be as per the Guidelines for Planning in Bushfire Prone Areas Version 1.3 (WAPC, 2017), refer to Appendix A;
- Grasslands internal to the site are managed and are to be maintained to <100mm (Low fuel loads) during the fire season (December to April);
- Any new buildings at the school are to be built to BAL 29 and AS3959;
- The Men's Shed is to be placed in BAL 29 area however may not be required to build to AS3959 (Class 9 building); and
- Shire of Denmark continue to undertake fuel reduction burning in the nature reserve (No.15513) to the west.

SECTION 5: Assessment to Bushfire Protection Criteria

The Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017) outlines bushfire protection criteria which subdivision and development proposals are assessed for compliance. The bushfire protection criteria (Appendix 4, WAPC, 2017) are a performance-based criterion utilised to assess bushfire risk management measures and they outline four elements, being:

- Element 1: Location;
- Element 2: Siting and Design of Development;
- Element 3: Vehicle Access; and
- Element 4: Water.

(WAPC, 2017)

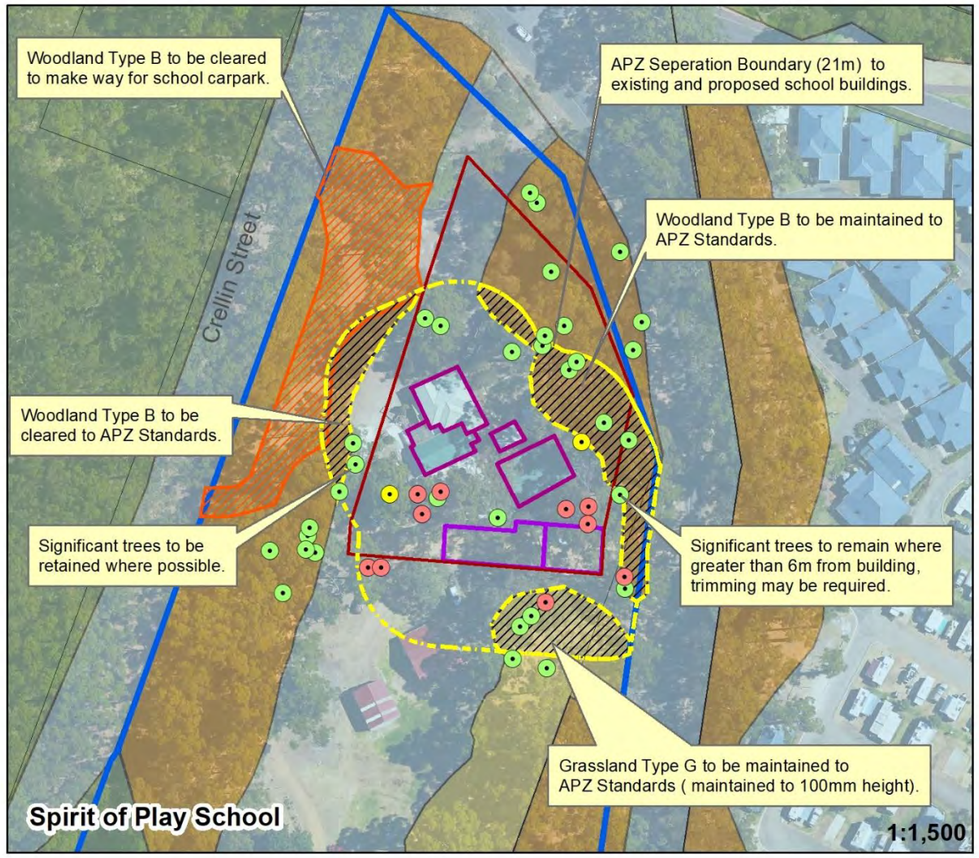
The reserve is required to meet the "Acceptable Solutions" of each Element of the bushfire protection criteria (WAPC, 2017). The proposal has been assessed against the bushfire protection criteria Acceptable Solutions for Elements A1, A2, A3 and A4. A summary of the assessment is provided in Table 2.

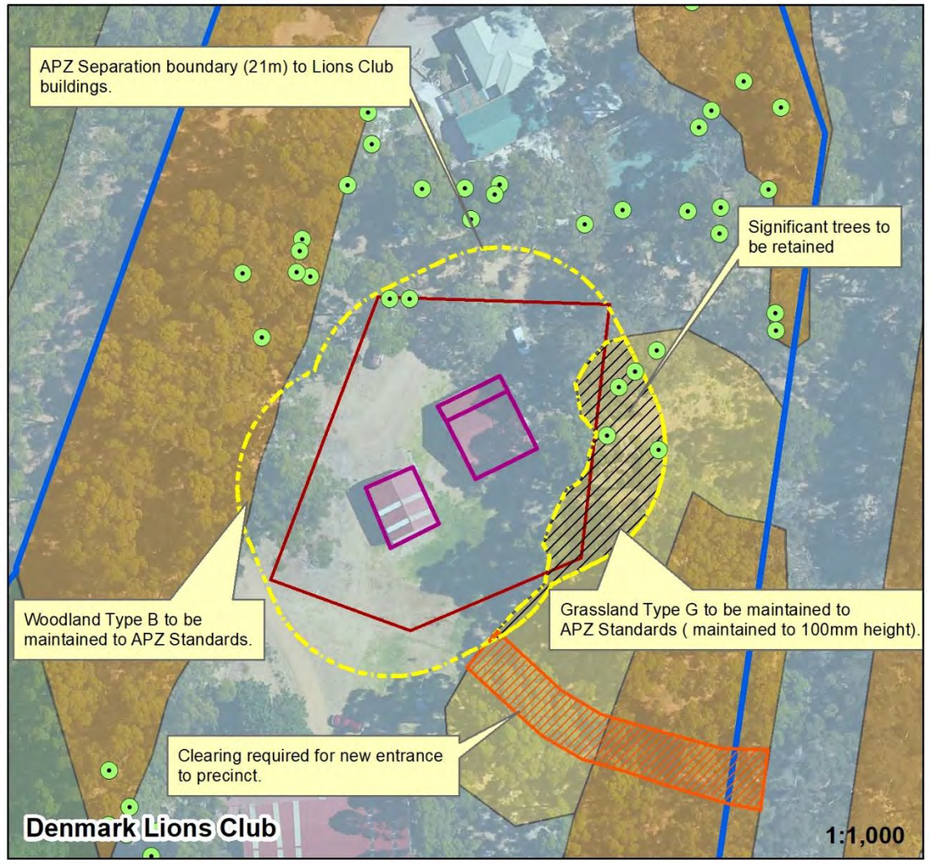
Table 2: Bushfire protection criteria applicable to the site

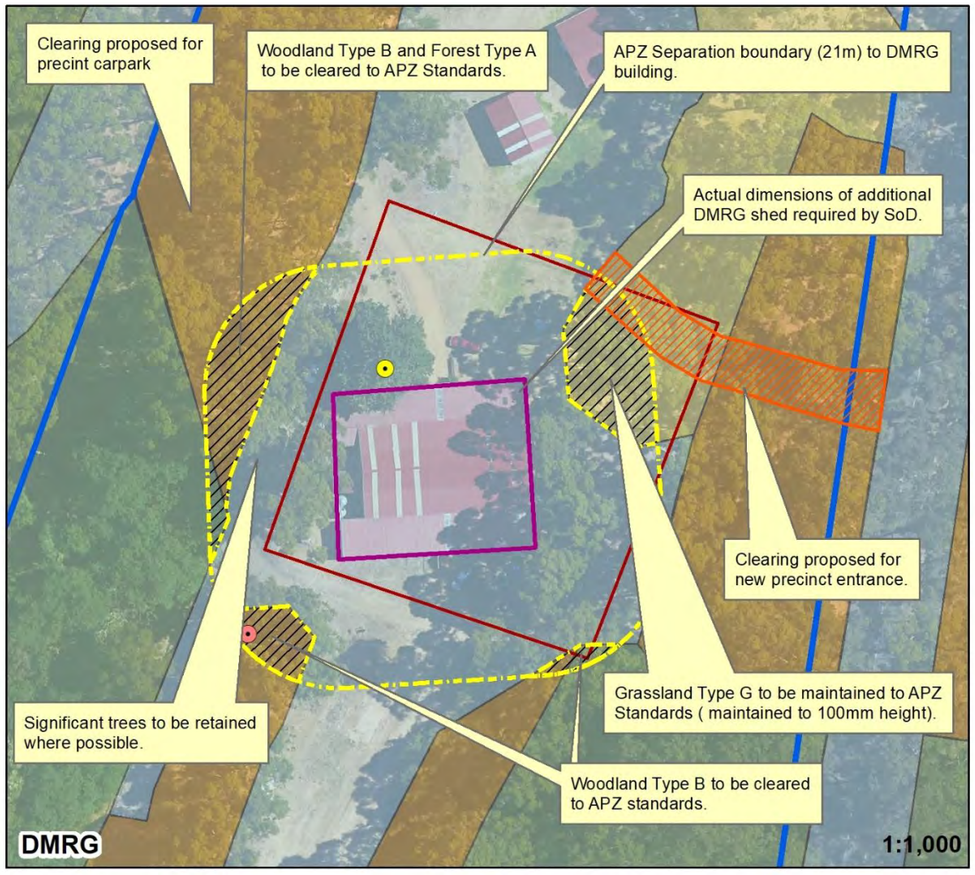
Element	Acceptable Solution	Applicable or not Yes/No	Meets Acceptable Solution
Element 1 – Location	A1.1 Development Location	Yes	Compliant. The proposed School buildings and Men's Shed development will be subject to BAL 29 or less as shown on the BAL Contour Plan (Figure 5), noting that the Mens Shed may not be required to build to AS3959 as is a class 9a building. New buildings for the Spirit of Play are to be located in BAL 29 zones and built to BAL 29 (although BAL 19 can be achieved) for any refuge requirements (see Spirit of Play BEEP). This can be achieved within the reserve boundary utilising mostly previously disturbed areas, as shown on Figure 5. BAL 29 and BAL 19 will apply to the existing buildings in the reserve by applying a 21m Asset Protection Zone (APZ) around the buildings. These buildings are a legacy to previous building approvals. A Works Program has been developed for each lease area and indicates the APZ areas to be fuel reduced to meet BAL 29 or less on proposed new buildings. Refer to Figure 6. Proposal meets acceptable solution A1.1.
Element 2 – Siting and Design	A2.1 Asset Protection Zone	Yes	Compliant. The proposed (indicative) school buildings and Men's Shed has an APZ area compliant to BAL 29 or less with the implementation of the Works Program (Figure 6). The existing buildings will have 21m APZ areas once the Works Program is implemented. It is noted the existing buildings are a legacy to previous building approvals. As future details evolve other maintenance works may be required and obligations will be detailed in consultation with the leaseholder and with the Shire. An indicative Works Program for each lease area is shown on Figure 6. An APZ will apply to every building in the lease area and will utilise low existing fuel areas and each adjacent lease/low fuel area. This will include tree/canopy separation as outlined in the works program. Any internal landscaping or gardens is to be to WAPC APZ standards, refer to Appendix A. Grounds staff are to briefed and fully conversed with this standard and is to apply to the whole of APZ area in the individual lease areas. Proposal meets acceptable solution A2.1.
Element 3 – Vehicular Access	A3.1 Two Access Routes	Yes	Compliant. The road network in the local area is a legacy issue to the precinct. Inlet Drive is a local road which connects to the north and the south to alternative destinations. There is currently only one exit from the site to the east which provides access to Inlet Drive. As part of development works it is proposed the current access point be shifted further south maintaining access to Inlet Drive and a secondary access is constructed in the north-west providing access via Crellin Street which runs along the western boundary of the Subject Site. Crellin Street connects to Hollings Road in the north and Brazier Street to the south-west. Access within the site between the two access points will also be provided and is be consistent with Vehicular Access Technical Requirements (WAPC,2017) as shown in Table 3. The access plan for the site is shown on Figure 7. With the implementation of a second entry/exit point for the reserve the subject site is deemed compliant to A3.1

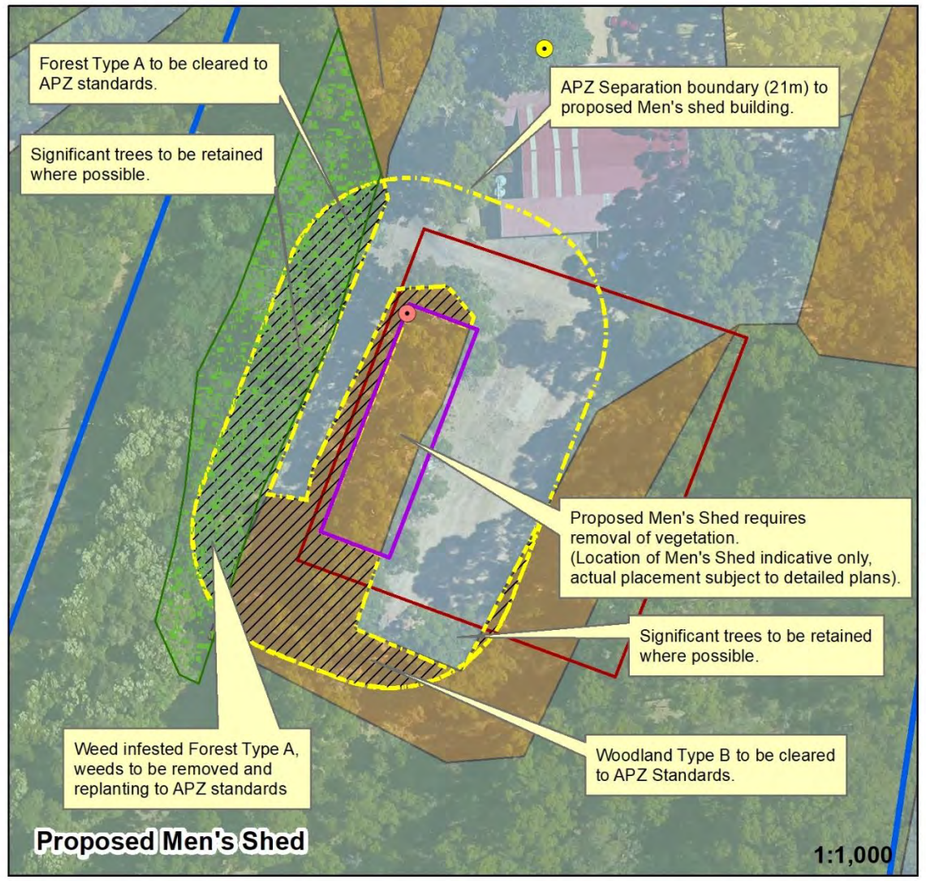
Table 2 cont.

Element	Acceptable Solution	Applicable or not Yes/No	Meets Acceptable Solution
Element 3 – Vehicular Access cont.	A3.2 Public Road	No	No public roads are proposed. Not assessed to A3.2.
	A3.3 Cul-de-sacs	No	No cul-de-sacs are proposed. Not assessed to A3.3.
	A3.4 Battle axes	No	No cul-de-sacs are proposed. Not assessed to A3.3.
	A3.5 Private driveways	Yes	Compliant. Internal driveways are already in effect to existing buildings and are 4-6m wide. Trimming is required along the western edge to ensure there is 4.5 m vertical clearance. All internal (current and future) driveways are to meet minimum technical requirements as shown in Table 3. Subject Site is deemed compliant to A3.5.
	A3.6 Emergency Access Ways	No	No EAWs proposed as the public road network will be utilised. Not assessed to A3.6.
	A3.7 Fire Service Access Ways	No	No FSA's proposed as the public road network will be utilised. Not assessed to A3.7.
	A3.8 Firebreaks	Yes	Compliant. Strategic fire access is evident through the site to the south and adjacent to the southern boundary. Inlet drive and Crellin Street act as firebreaks to the reserve in the north, east and west.
Element 4 – Water	A4.1 Reticulated areas	Yes	Compliant. Water supply is via the existing reticulated scheme water into the area. Connections are already to the school, DMRG and Denmark Lions Club and are to WCWA standards.
	A4.2 Non-reticulated areas	No	Not assessed to A4.2.
	A4.3 Individual lots in non-reticulated areas	No	Not assessed to A4.3.









This BAL Plan was prepared by:
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Overview Map Scale 1:100,000

- Subject Site
- Indicative Lease Area
- Cadastre
- Existing Buildings
- Proposed New Buildings
- Clearing for proposed development
- 21m APZ for existing and proposed buildings
- 21m Fuel reduction required to APZ Standards

Significant Trees

- Trees to be retained where possible
- Trees to be removed
- Trees require trimming

GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Shire of Denmark
Reserve 30277 Inlet Drive
Denmark, WA 6330

Figure 6: Works Program

BAL Assessor	*QA Check*	*Drawn by*
KK	KK	CC
STATUS	*FILE*	*DATE*
FINAL	SOD001	5/09/2019

Table 3 –Vehicular Access Technical Requirements (WAPC, 2017)

Technical requirements	Private Driveways
Minimum trafficable surface (m)	4m all-weather trafficable
Horizontal clearance (m)	6m
Vertical clearance (m)	4.5m
Maximum grades	1 in 10
Minimum weight capacity (t)	15
Maximum cross fall	1 in 33
Curves minimum inner radius (m)	8.5

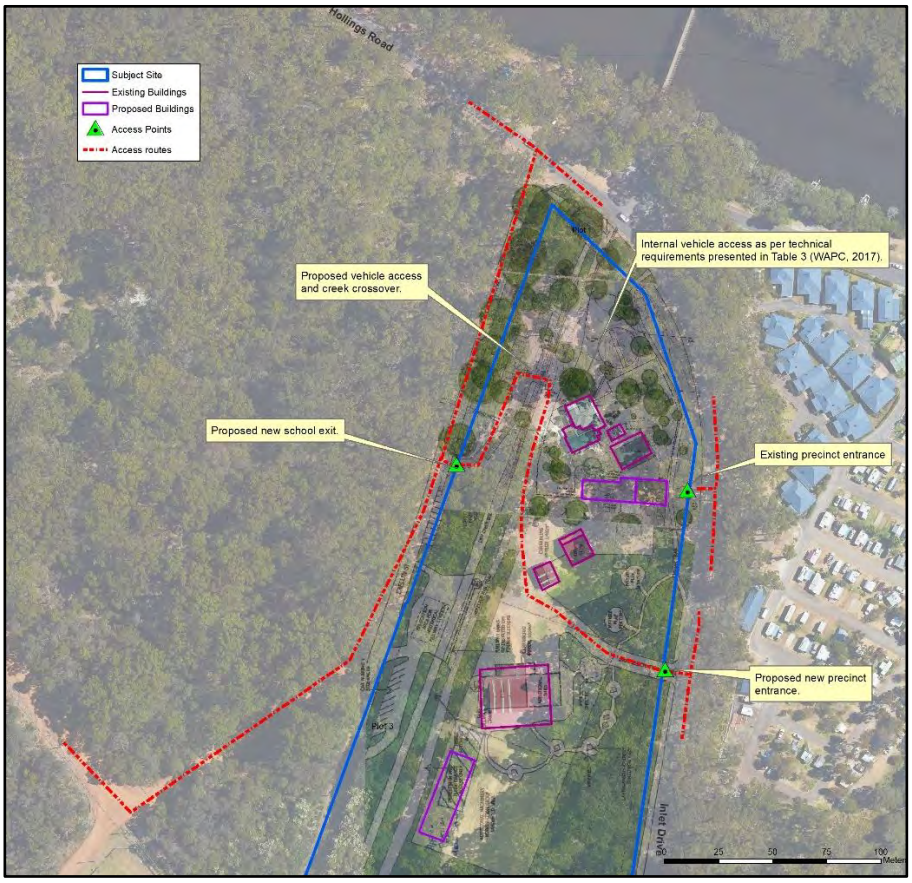


Figure 7: Access Plan

6 Other Fire Mitigation Measures

6.1 Evaporative air conditioners

Evaporative air conditioning units can catch fire as a result of embers from bushfires entering the unit. These embers can then spread quickly through the home causing rapid destruction. It can be difficult for fire-fighters to put out a fire in the roof spaces of homes.

It is also recommended that:

- Ensure that suitable external ember screens are placed on roof top mounted evaporative air conditioners compliant with AS3959 (current and endorsed standards) and that the screens are checked annually; and
- Maintain evaporative air conditioners regularly as per DFES recommendations, refer to the DFES website for further details: http://www.dfes.wa.gov.au

6.2 Barrier Fencing

In November 2010, the Australian Bushfire CRC issued a "Fire Note" (Bushfire CRC, 2010) which outlined the potential for residential fencing systems to act as a barrier against radiant heat, burning debris and flame impingement during bushfire. The research aimed to observe, record, measure and compare the performance of commercial fencing of Colourbond steel and timber (treated softwood and hardwood).

The findings of the research found that:

".. *Colourbond steel fencing panels do not ignite and contribute significant heat release during cone calorimeter exposure"* (exposure to heat)

.."Colourbond steel (fencing) had the best performance as a non-combustible material. It maintained structural; integrity as a heat barrier under all experimental exposure conditions, and it did not spread flame laterally and contribute to fire intensity during exposure"

It is also noted that non-combustible fences are recommended by WAPC (APZ standards: Fences and sheds within the APZ are constructed using non-combustible materials e.g. Colourbond iron, brick, limestone, metal post and wire). ACC will be encouraged to build Colourbond or non-combustible fences where applicable.

6.3 Fuel reduction

Fuel reduction to the south (internal to the reserve) is recommended through hazard reduction burning. Internal lease areas are to be to APZ standards at all times. To the west, the Reserve (No.15513) managed by the Shire has planned fuel reduction burning for the forest area and will be subject to Shire priorities and rotations. Any internal slashing is to be to a parkland cleared standard with standing trees remaining to be as per WAPC standards Appendix A. Mulching is to be fine in nature (<200mm) and compacted to ensure low fuel standards prevail. Trees are not to be within 6m of a building and not overhanging buildings.

The Works Program for each lease area as shown on Figure 6 is to be implemented by the lease holders and prior to the occupation of new buildings to ensure APZ standards prevail over the buildings. The secondary emergency access way is to be constructed prior to occupation of Stage 1 buildings.

6.4 Bushfire Emergency Evacuation Plan

A Bushfire Emergency Evacuation Plan (BEEP) has been prepared to support the development of the Spirit of Play School in accordance with policy measure 6.6 of SPP 3.7 and the WAPC Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017). Level 3 Bushfire Practitioner Bruce Horkings (Eco Logical Australia, FPAA BPAD 29962-L3) and Daniel Panickar (Eco Logical Australia, FPAA BPAD 37802-L2) were commissioned to prepare the Bushfire Emergency Evacuation Plan (BEEP), this has been supplied as a separate document to Spirit of Play.

6.5 Further information for lease holders

More information on bushfire preparation and can be gained from the DFES website (s):
www.dfes./wa.gov.au
www.emergency.wa.gov.au

www.emergency.wa.gov.au

www.emergency.wa.gov.au

7 Implementation Actions

The responsibilities of the lease holders are shown in Table 4. As the BMP outlines concept plans only, as future details evolve other maintenance works may be required and obligations will be detailed in consultation with the leaseholder and with the Shire.

Table 4: Implementation Actions lease areas

Spirit of Play		
No	**Implementation Action**	**Completed**
1	Place new buildings and construct buildings to BAL 29 AS3959 and are located to BAL 29 or less areas.	☐
2	Ensure the "Works Program" as supplied in this report is implemented on the existing buildings as soon as possible and prior to occupation of new buildings.	☐
3	Consider ember protection on existing buildings and regular (monthly) cleaning of gutters on all buildings during summer months.	☐
4	Ensure lease areas are maintained in a low fuel conditions with 21m APZ over existing buildings, standards are as per Appendix A.	☐
	Ensure all driveway access is not obstructed and accessible by vehicles at all times. Maintain driveway standards as per Table 3 Column 1.	☐
Denmark Lions Club		
No	**Implementation Action**	**Completed**
1	Ensure the "Works Program" as supplied in this report is implemented on the existing buildings as soon as possible and prior to occupation of new buildings.	☐
2	Ensure lease areas are maintained in a low fuel conditions with 21m APZ over existing buildings, standards are as per Appendix A.	☐
3	Regular (monthly) cleaning of gutters on all buildings during summer months.	☐
4	Ensure all driveway access is not obstructed and accessible by vehicles at all times. Maintain driveway standards as per Table 3 Column 1.	☐

Table 4 cont.

Denmark Machinery Restoration Group		
No	**Implementation Action**	**Completed**
1	Ensure the "Works Program" as supplied in this report is implemented on the existing buildings as soon as possible and prior to occupation of new buildings.	☐
2	Ensure lease areas are maintained in a low fuel conditions with 21m APZ over existing buildings, standards are as per Appendix A.	☐
3	Regular (monthly) cleaning of gutters on all buildings during summer months.	☐
4	Ensure all driveway access is not obstructed and accessible by vehicles at all times. Maintain driveway standards as per Table 3 column 1.	☐
Men's Shed		
No	**Implementation Action**	**Completed**
1	Place buildings to AS3959 as shown in BAL Contour Plan and (noting construction to AS3959 is only required on Class 1, 2 and 3 buildings).	☐
2	Ensure lease areas are maintained in a low fuel conditions with 21m APZ setbacks to WAPC APZ standards are as per Appendix A.	☐
3	Regular (monthly) cleaning of gutters on all buildings during summer months.	☐
4	Ensure all driveway access is not obstructed and accessible by vehicles at all times. Maintain driveway standards as per Table 3 column 1.	☐

The Shire of Denmark will be responsible for the following as shown in Table 5.

Table 5 Shire of Denmark Implementation Table

Shire of Denmark		
No	**Implementation Action**	**Completed**
1	Ensure lease agreements have maintenance measures as referred to in this BMP implemented. As future details evolve other maintenance works may be required and obligations will be detailed in consultation with the leaseholder and with the Shire.	☐
2	Maintain the balance of land through fuel reduction strategies as outlined in Section 5.3 of this report.	☐
3	Ensure all internal driveways are maintained and installed to Table 3 Column 1 minimum technical requirements.	☐

8 Disclaimer

The recommendations and measures contained in this assessment report are based on the requirements of the Australian Standards 3959-2009 – Building in Bushfire Prone Areas, WAPC State Planning Policy 3.7 (WAPC, 2015), WAPC Guidelines for Planning in Bushfire Prone Areas (WAPC, 2015), and CSIRO's research into Bushfire behaviour. These are considered the minimum standards required to balance the protection of the proposed dwelling and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed dwelling are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the fire protection consultant has no control. Notwithstanding anything contained within, the fire consultant/s or local government authority will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the fire consultant/s and the local government authority, their servants or agents) arising out of the services rendered by the fire consultant/s or local government authority.

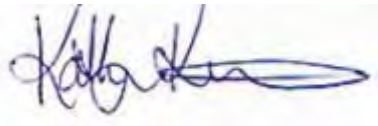
AS3959 disclaimer: It should be borne in mind that the measures contained within this Standard (AS3959) cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the unpredictable nature and behaviour of fire and extreme weather condition.

Building to AS3959 is a standard primarily concerned with improving the ability of buildings in designated bushfire prone areas to better withstand attack from bushfire thus giving a measure of protection to the building occupants (until the fire front passes) as well as to the building itself.

(AS3959)

9 Certification

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS3959 (Incorporating Amendment Nos 1, 2 and 3) and the Guidelines for Planning in Bushfire Prone Areas Ver. 1.3 (WAPC, 2017).

SIGNED, ASSESSOR: ..  ..... DATE: 9/09/19

Kathryn Kinnear, Bio Diverse Solutions
Accredited Level 2 Bushfire Practitioner (Accreditation No: BPAD30794)

BIO DIVERSE SOLUTIONS

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

10 References

AS 3959-2009 Australian Standard, Construction of buildings in bushfire-prone areas, Building Code of Australia, Primary Referenced Standard, Australian Building Codes Board and Standards Australia.

Department of Fire and Emergency Services Bushfire ready website, accessed 30/10//2018 from: www.emergency.wa.gov.au

Western Australian Planning Commission (WAPC) (2017) Guidelines for Planning in Bushfire Prone Areas Version 1.3. Western Australian Planning Commission and Department of Planning WA, Government of Western Australia.

Western Australian Planning Commission (WAPC) (2015) State Planning Policy 3.2 Planning in Bushfire Prone Areas. Department of Planning WA and Western Australian Planning Commission.

State Land Information Portal (SLIP) (2018) Map of Bushfire Prone Areas. Office of Bushfire Risk Management (OBRM) data retrieved from: https://maps.slip.wa.gov.au/landgate/bushfireprone/

REVISION RECORD

Revision	Summary	Revised By	QA Checked	Date
DRAFT ID 21/2/2019	Prepared by	Chiquita Burgess	Bianca Theyer Bianca Theyer	21/02/2019
DRAFT ID 22/2/2019	Draft issued to client for review	Kathryn Kinnear	Bianca Theyer	22/2/2019
FINAL ID 12/03/2019	Issued to client as final	Kathryn Kinnear	Bianca Theyer	12/03/2019
FINAL ID Vers 2. 9/9/2019	Updated and issued to client as final	Bianca Theyer	Kathryn Kinnear	9/9/2019

Appendix A

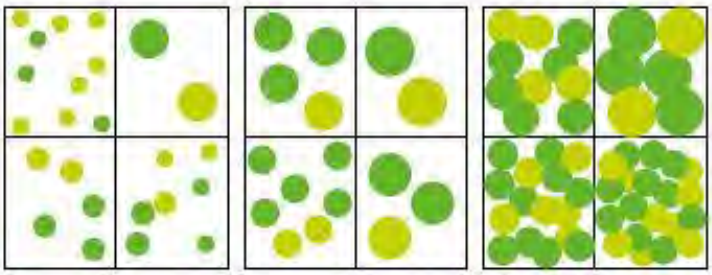
WAPC Asset Protection Zone (APZ) standards to apply

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

Figure 18: Tree canopy cover – ranging from 15 to 70 per cent at maturity



- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m² in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:** should be managed to maintain a height of 100 millimetres or less.