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 1
NEW CLASSROOM
FOR SPIRIT OF PLAY
COMMUNITY SCHOOL

2 INLET DRIVE, DENMARK, WA 6333

CONTENTS:

4 Apr 2019

NOT FOR CONSTRUCTION

b e i m i r
building design
9 Bell Road, William Bay, WA, 6333
dm.beimir@gmail.com +61 424506929

0 5 10 15 20 25 M

CLIENT:
SPIRIT OF PLAY
COMMUNITY SCHOOL

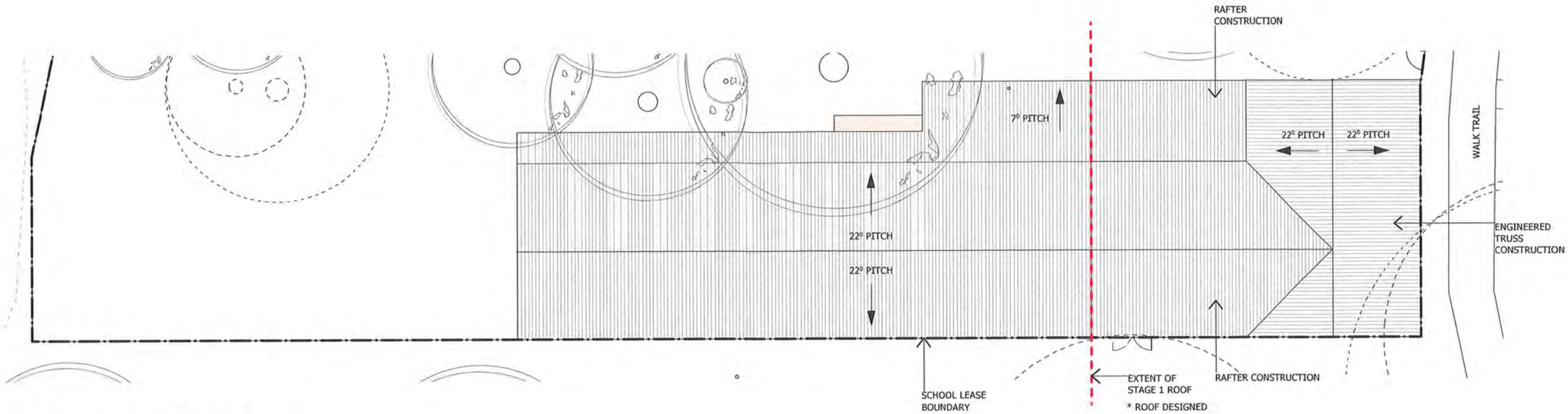
PROJECT STAGE:
STAGE 1 - CLASSROOM

DATE:
4/4/19

SHEET 01 / 10:
SITE PLAN

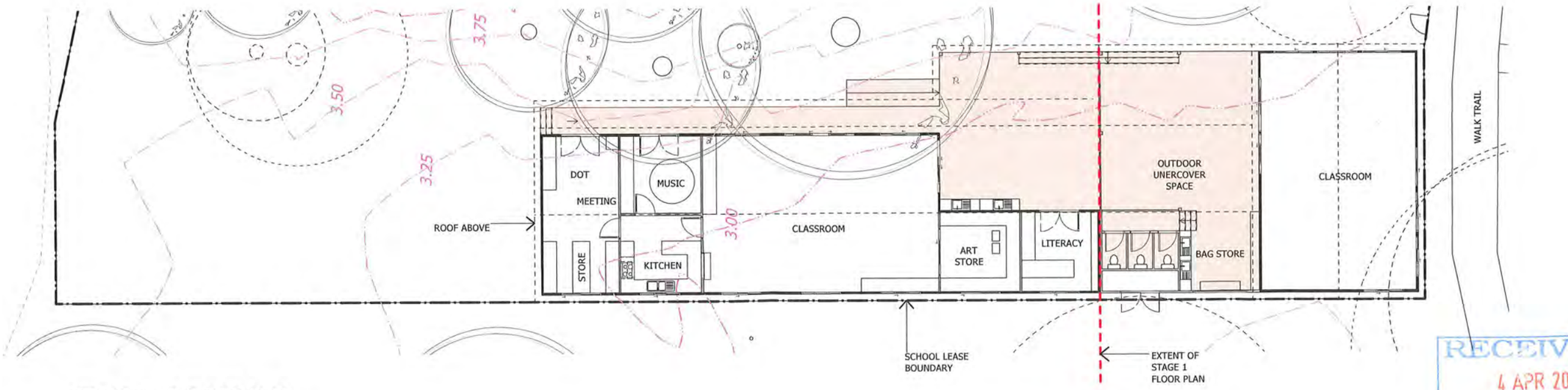
GENERAL NOTES:

* 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

CLIENT:
SPIRIT OF PLAY
COMMUNITY SCHOOL

PROJECT STAGE:
STAGE 1 - CLASSROOM

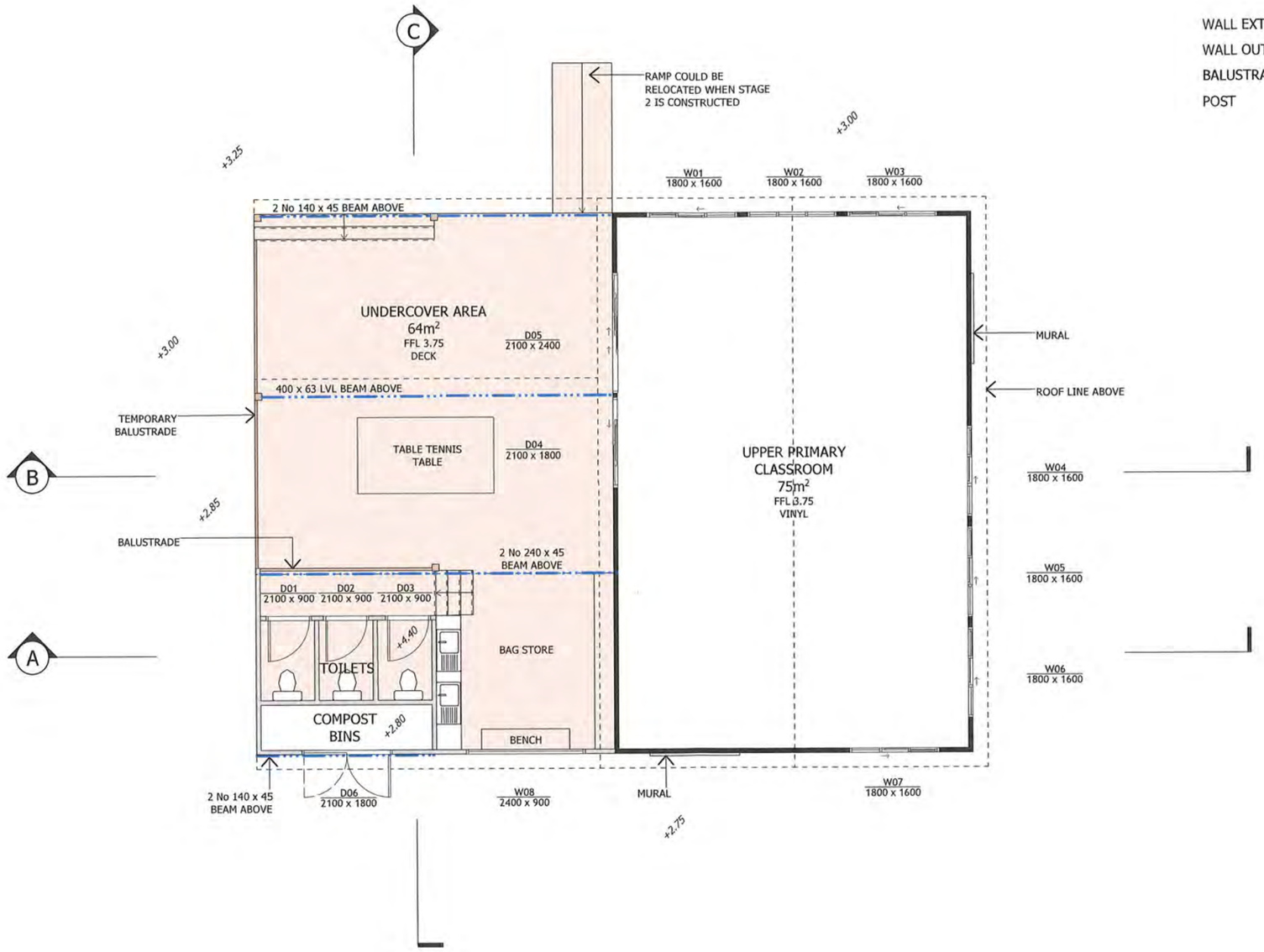
DATE:
4/4/19

SHEET 02 / 10:
STAGE 1 + 2 FLOOR PLAN

GENERAL NOTES:
* REFER NOTES + SPECIFICATIONS

LEGEND:

WALL EXTERNAL 90mm TIMBER STUD
WALL OUTDOOR 90mm TIMBER STUD
BALUSTRADE
POST



FLOOR PLAN
Scale: 1:100

NOT FOR CONSTRUCTION

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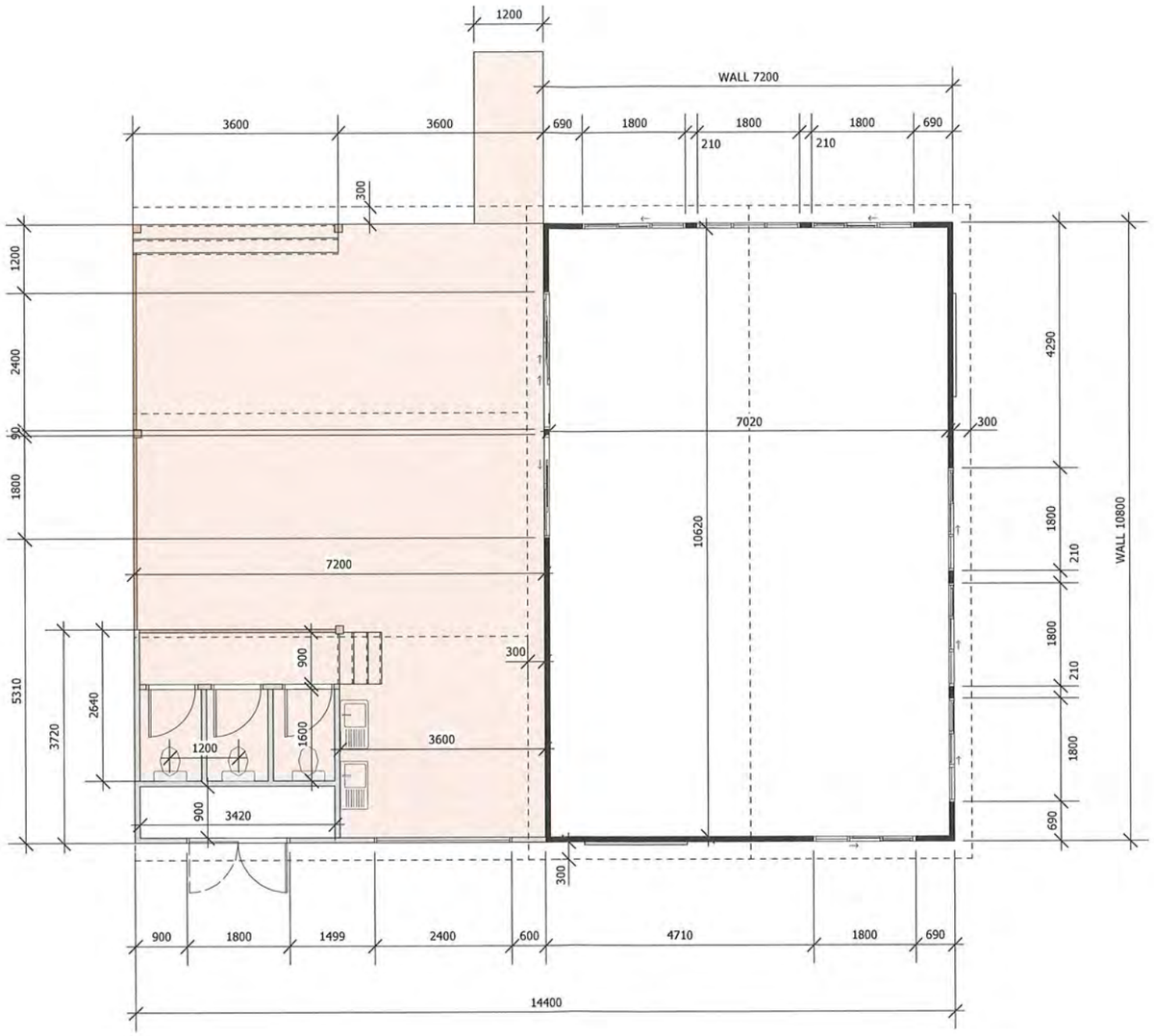
0 1 2 3 4 5 M

CLIENT:
SPIRIT OF PLAY COMMUNITY SCHOOL

PROJECT STAGE:
STAGE 1 - CLASSROOM

DATE:
4/4/19

SHEET 03 / 10:
FLOOR PLAN



FLOOR PLAN WITH DIMENSIONS
Scale: 1:100

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0 1 2 3 4 5 M

CLIENT:
SPIRIT OF PLAY
COMMUNITY SCHOOL

PROJECT STAGE:
STAGE 1 - CLASSROOM

DATE:
4/4/19

SHEET 04 / 10:
FLOOR PLAN WITH
DIMENSIONS

LEGEND:

STEEL CLADDING	SC
FIBRE CEMENT	FC
TIMBER DECK	TD

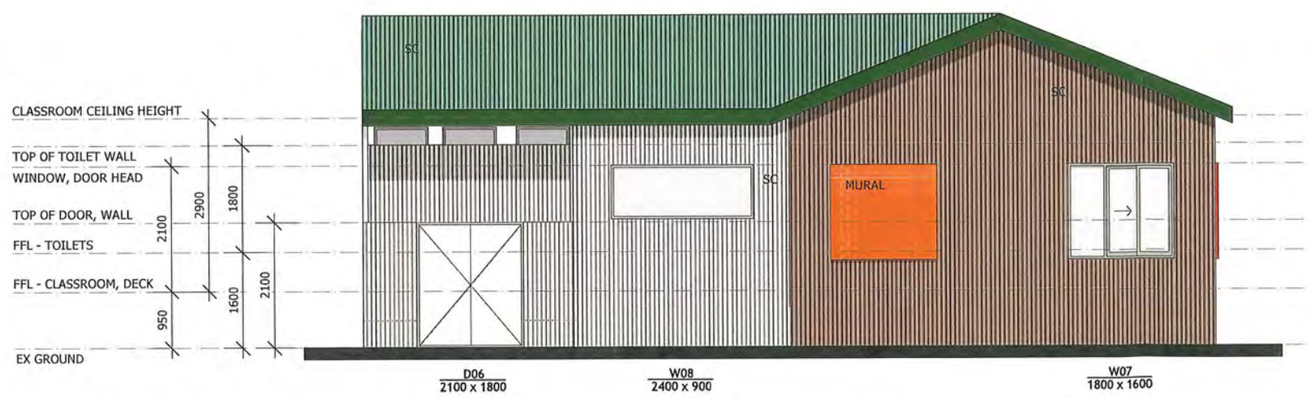
GENERAL NOTES:

* REFER NOTES + SPECIFICATIONS

NORTH ELEVATION
Scale: 1:100

* RAMP NOT SHOWN FOR CLARITY

EAST ELEVATION
Scale: 1:100



SOUTH ELEVATION
Scale: 1:100

WEST ELEVATION
Scale: 1:100

NOT FOR CONSTRUCTION

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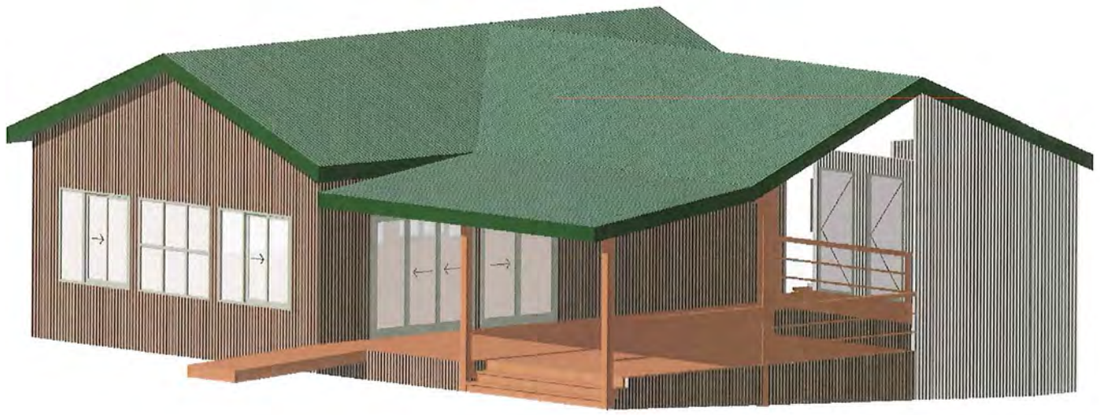
CLIENT:
SPIRIT OF PLAY
COMMUNITY SCHOOL

PROJECT STAGE:
STAGE 1 - CLASSROOM

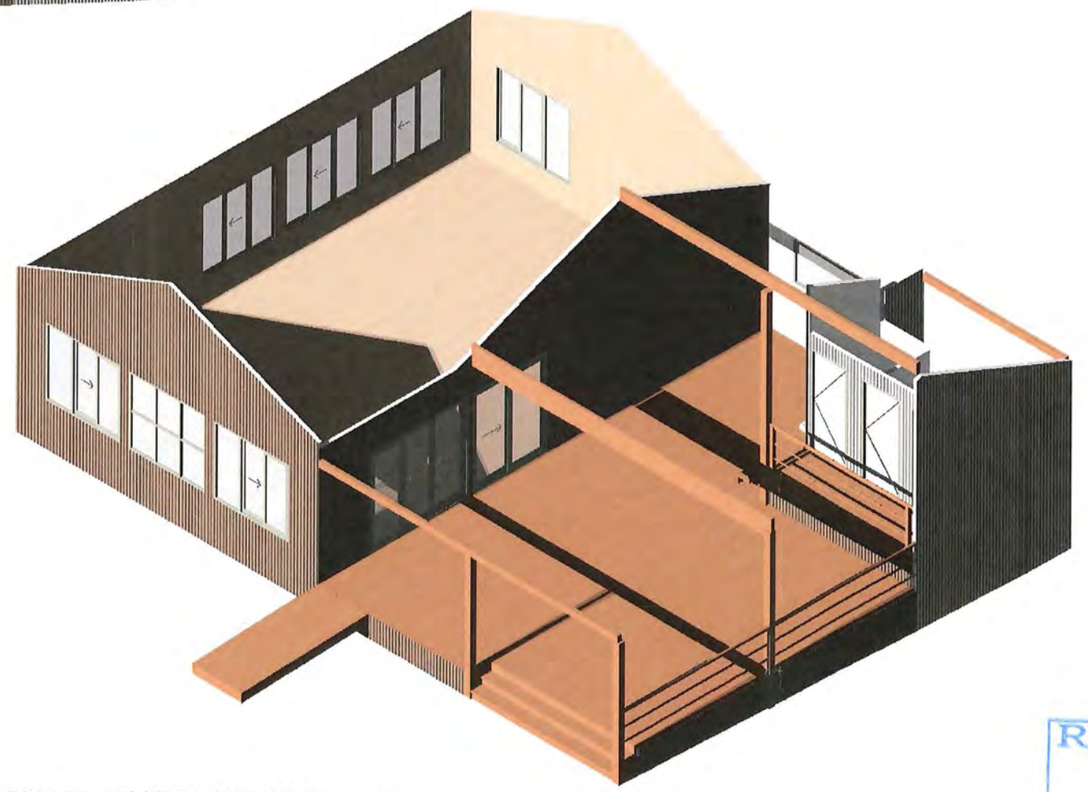
DATE:
4/4/19

SHEET 05 / 10:
ELEVATIONS



N / E VIEW

* SHADOWS SHOWN FOR NOON WINTER SOLSTICE



ISOMETRIC VIEW WITHOUT ROOF

NOT FOR CONSTRUCTION

b e i m i r
building design

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CLIENT:
SPIRIT OF PLAY
COMMUNITY SCHOOL

PROJECT STAGE:
STAGE 1 - CLASSROOM

DATE:
4/4/19

SHEET 09 / 10:
3D VIEWS

NOTES

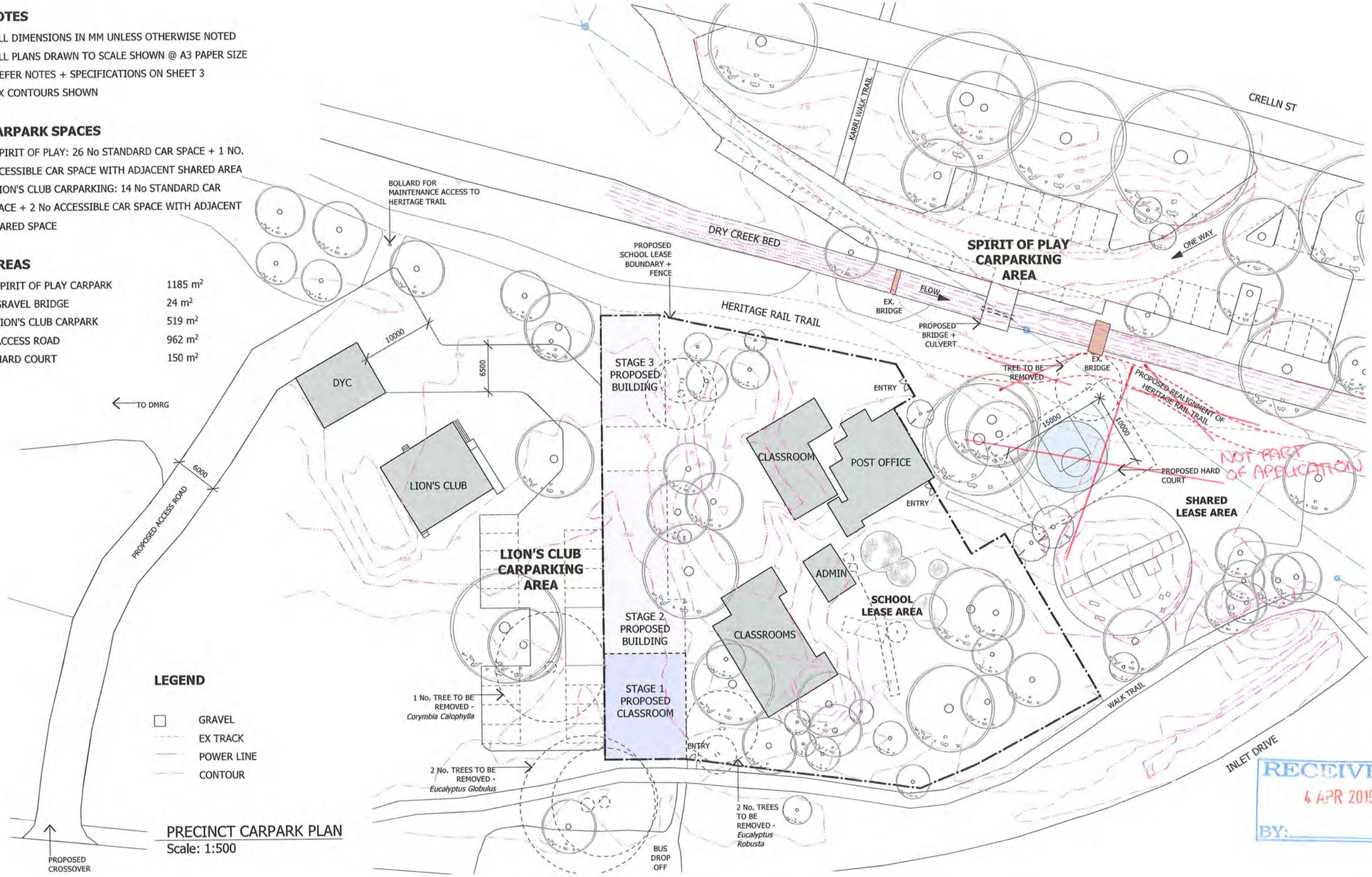
- ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED
- ALL PLANS DRAWN TO SCALE SHOWN @ A3 PAPER SIZE
- REFER NOTES + SPECIFICATIONS ON SHEET 3
- EX CONTOURS SHOWN

CARPARK SPACES

- SPIRIT OF PLAY: 26 No STANDARD CAR SPACE + 1 NO. ACCESSIBLE CAR SPACE WITH ADJACENT SHARED AREA
- LION'S CLUB CARPARKING: 14 No STANDARD CAR SPACE + 2 No ACCESSIBLE CAR SPACE WITH ADJACENT SHARED SPACE

AREAS

- SPIRIT OF PLAY CARPARK	1185 m²
- GRAVEL BRIDGE	24 m²
- LION'S CLUB CARPARK	519 m²
- ACCESS ROAD	962 m²
- HARD COURT	150 m²



PRECINCT CARPARK PLAN
Scale: 1:500

RECEIVED
4 APR 2019
BY:

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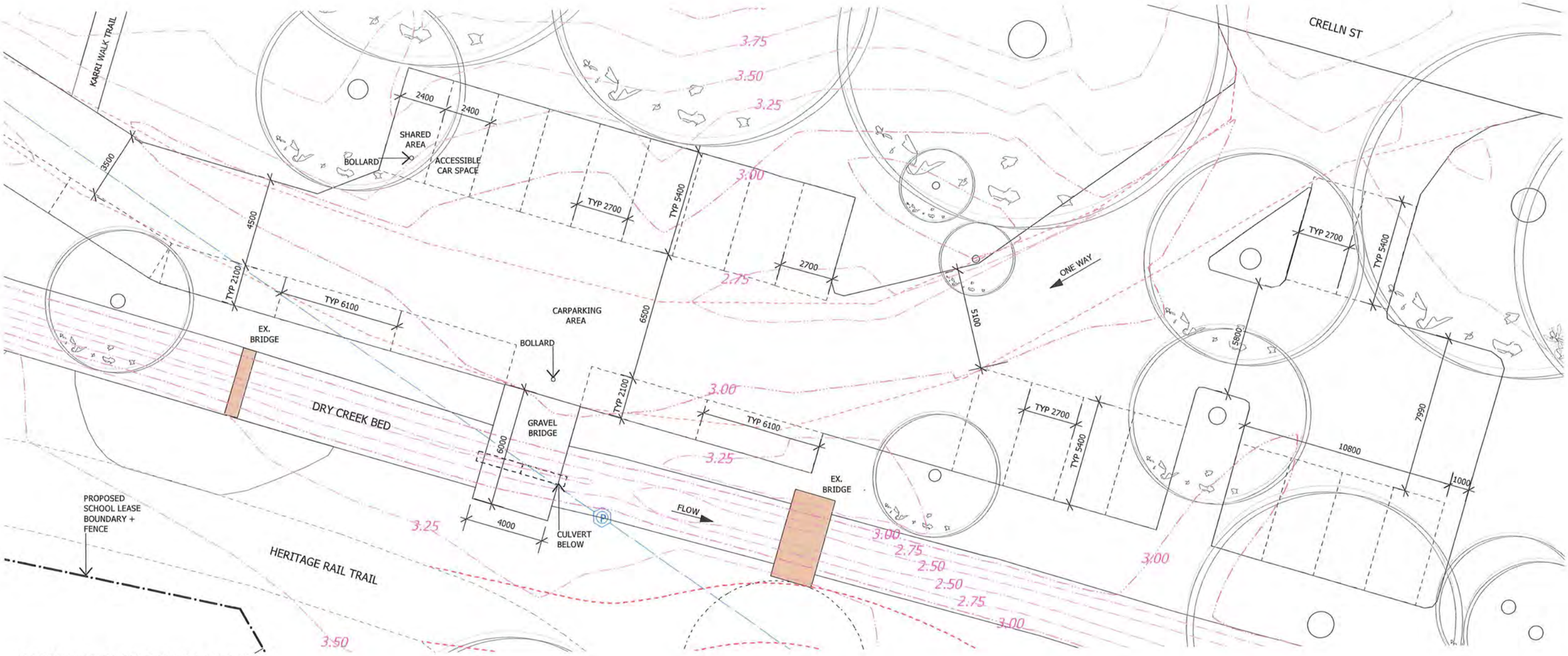
0 5 10 15 20 25 M

CLIENT:
SPIRIT OF PLAY COMMUNITY SCHOOL

PROJECT STAGE:
DENMARK HISTORICAL RAILWAY STATION PRECINCT CARPARKING PLAN

DATE:
4/4/19

SHEET 01 / 03:
PRECINCT CARPARKING PLAN



SPIRIT OF PLAY CARPARK PLAN
Scale: 1:200

NOTES

- REFER NOTES + SPECIFICATIONS ON SHEET 3
- EX CONTOURS SHOWN

CARPARK SPACES

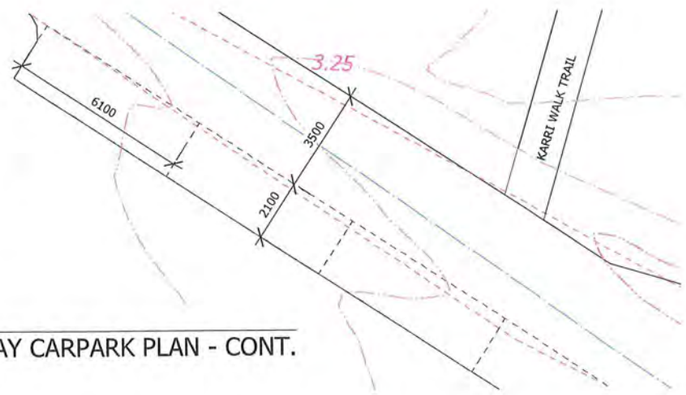
- SPIRIT OF PLAY: 26 No STANDARD CAR SPACE + 1 NO. ACCESSIBLE CAR SPACE WITH ADJACENT SHARED AREA

AREAS

- SPIRIT OF PLAY CARPARK	1185 m2
- GRAVEL BRIDGE	24 m2

LEGEND

- GRAVEL
- EX TRACK
- POWER LINE
- CONTOUR



Scale: 1:200
SPIRIT OF PLAY CARPARK PLAN - CONT.

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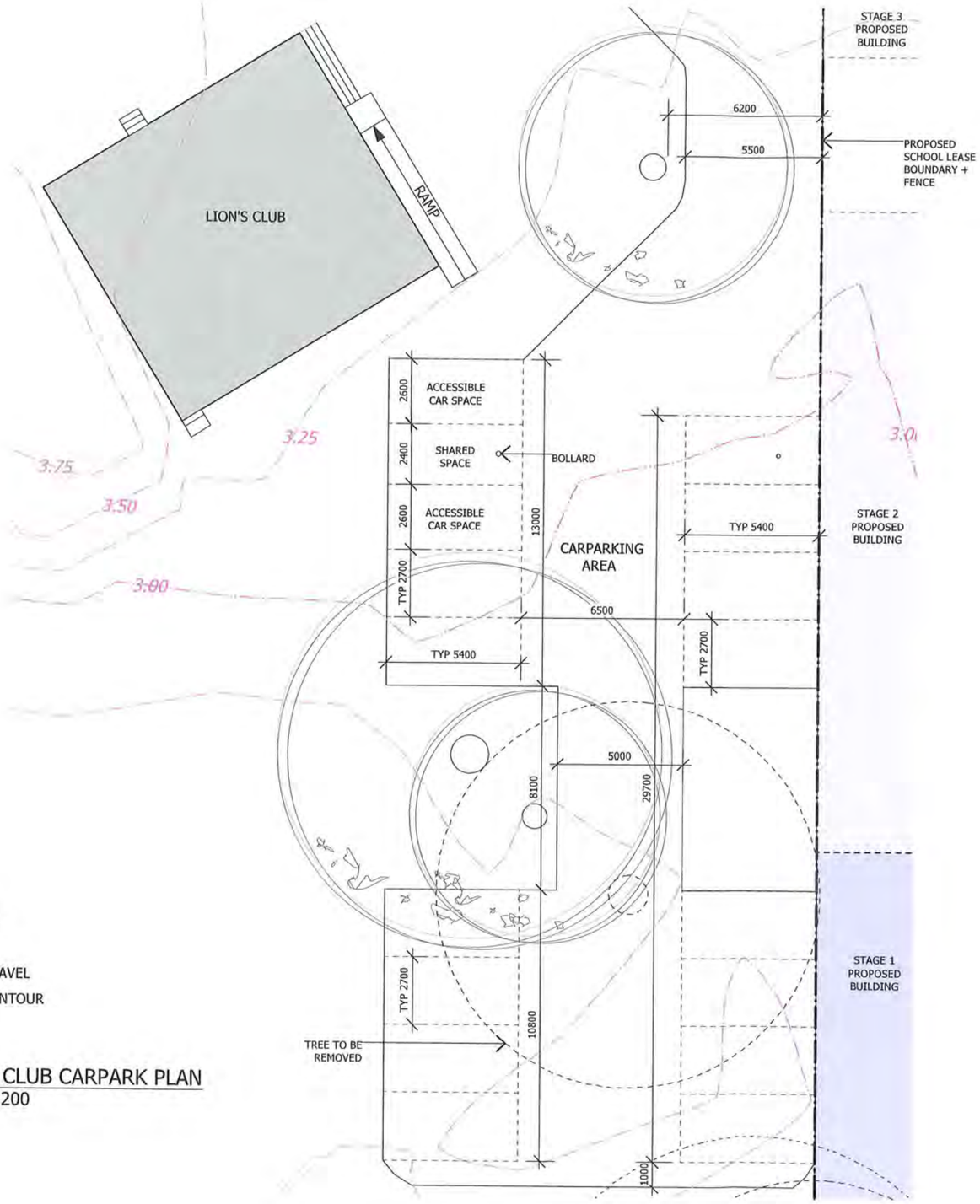
0 2 4 6 8 10 M

CLIENT: SPIRIT OF PLAY COMMUNITY SCHOOL

PROJECT STAGE: DENMARK HISTORICAL RAILWAY STATION PRECINCT CARPARKING PLAN

DATE: 4/4/19

SHEET 02 / 03: SPIRIT OF PLAY CARPARKING PLAN



LEGEND

- GRAVEL
- CONTOUR

LION'S CLUB CARPARK PLAN
Scale: 1:200

NOTES + SPECIFICATIONS

- EX CONTOURS SHOWN
- CONSULT BUSHFIRE MANAGEMENT TO CONFIRM IF ADDITIONAL TREES NEED TO BE REMOVED
- MAINTAIN AS MUCH BRACKEN UNDERSTOREY AS POSSIBLE
- CARPARK LAYOUT DESIGNED TO MINIMISE CARPARKING DIRECTLY BELOW LARGE KARRI BRANCHES
- MINIMISE DISTURBANCE + COMPACTION TO TREE ROOT ZONE AREAS DURING CONSTRUCTION AS MUCH AS POSSIBLE
- CLEAR NEW SCHOOL CARPARKING AREAS FROM EXISTING ACCESS ROAD NOT FROM CRELLIN ST TO MINIMISE DISTURBANCE TO EXISTING VEGETATION + UNECCESARY CLEARING
- CARPARK SPACE LINES SHOWN FOR CLARITY ON DRAWING ONLY, THERE WILL BE NO LINES MARKED ON CONSTRUCTED CARPARKING AREA
- CARPARKING TO COMPLY WITH AS 2890.1:2004
- GRAVEL CARPARKING AREA: 200mm DEEP COMPACTED GRAVEL ON 75mm LIMESTONE BASE
- CLASS 4 CONCRETE CULVERT WITH 400mm COVER, ENSURE DIAMETER OF PIPE IS EQUAL TO OR GREATER THAN UPSTREAM PIPE
- BOLLARD + SIGNAGE FOR ACCESSIBLE CAR SPACES TO COMPLY WITH AS 2890.6 IF REQUIRED
- LEVEL + GRADE CARPARKING AREAS TO ONE POINT + INSTALL DRAINAGE WITH EROSION PROTECTION, ENSURE ADEQUATE FILL TO CARPARKING AREA SO AREA DRAINS CORRECTLY + THERE ARE NO AREAS FOR WATER TO POOL
- BATTERS NOT TO EXCEED 1:3
- CROSS FALL 2 - 3% + LONGITUDINAL GRADE GREATER THAN 1%
- CULVERT + DRAINAGE TO SHIRE SPECIFICATIONS
- HARD COURT 15 x 10m WITH 2m RUN OFF CLEARANCE ON ALL SIDEA, 150mm DEEP REINFORCED CONCRETE SLAB WITH HALF BASKETBALL COURT LINE MARKINGS + DEFINED CIRCLE WITHIN FOR GATHERINGS DETAIL TBC

CARPARK SPACES

- LION'S CLUB CARPARKING: 14 No STANDARD CAR SPACE + 2 No ACCESSIBLE CAR SPACE WITH ADJACENT SHARED SPACE

AREAS

- LION'S CLUB CARPARK	519 m2
- ACCESS ROAD	962 m2

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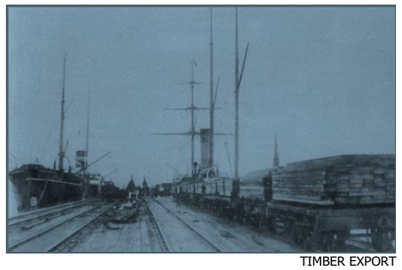
0 2 4 6 8 10 M

CLIENT:
SPIRIT OF PLAY
COMMUNITY SCHOOL

PROJECT STAGE:
DENMARK HISTORICAL RAILWAY STATION PRECINCT
CARPARKING PLAN

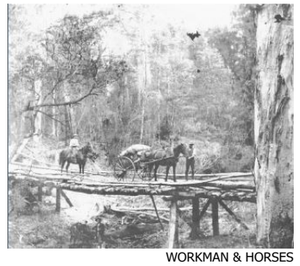
DATE:
4/4/19

SHEET 03 / 03:
LION'S CLUB
CARPARKING PLAN

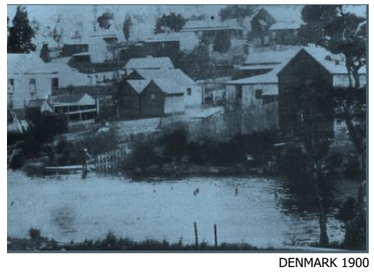


TIMBER EXPORT

TIMBER LOGGING



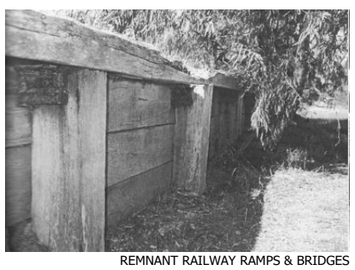
WORKMAN & HORSES



DENMARK 1900

DENMARK RAILWAY STATION

DENMARK RAILWAY STATION 1950



REMNANT RAILWAY RAMPS & BRIDGES

DENMARK RAILWAY STATION PRECINCT

THE FORMER DENMARK RAILWAY STATION WITH IT'S RAILWAY LINES LEADING TO ALBANY AND NORNALUP FORMS AN IMPORTANT PART OF DENMARK'S HISTORICAL HERITAGE. IT PLAYED A LEADING REGIONAL ROLE IN THE DEVELOPMENT OF THE TIMBER INDUSTRY AND IT WAS A VITAL PART IN PEOPLE'S LIVES UNTIL IT'S FINAL CLOSURE IN 1957. THIS CONCEPT PLAN PORTRAYS THIS RICH AND INTERESTING HISTORY THROUGH THE DEVELOPMENT OF THE FOLLOWING ELEMENTS.

* A LANDSCAPED PARK ADJACENT TO THE EXISTING MACHINERY SHED WITH EXHIBITION SPACES FOR HISTORICAL MACHINERY AND ARTIFACTS.
* THE RELOCATION OF THE OLD RAILWAY STATION BUILDING TO THE SOUTH WEST OF THE PRECINCT WITH AN OPTION FOR COMMUNITY USE.
* THE DEVELOPMENT OF A NATURE PLAY SPACES WITH PICNIC FACILITIES.
* THE DEVELOPMENT OF AN HISTORICAL INTERPRETATION SYSTEM THROUGHOUT THE RAILWAY STATION PRECINCT AND EXTENDING ALONG THE HERITAGE RAIWAY TRAIL.

TRAIL HUB

THIS AREA HAS A NATURAL CONVERGENCE OF WALKING, CYCLING AND BRIDLE TRAILS WHICH ADDS SIGNIFICANTLY TO THE LIFESTYLE AND RECREATIONAL VALUE OF THE AREA. THIS CONNECTIVITY IS A GREAT ASSET FOR THE FACILITY.

LANDSCAPE

PLANTINGS WITHIN THE PRECINCT ARE TO BE INDIGENOUS SPECIES WITH AN EMPHASIS ON COLOURFUL WILDFLOWERS WHICH WOULD BE AT THEIR BEST IN SPRING. INDIGENOUS COLOURFUL WILDFLOWERS AND SMALL SHRUBS INCLUDE: - *Acacia pulchella, Bossiaea aquifolium, Boronia gracilipes, Chorizema* species*, Dampiera* species*, Hovea trisperma, Hibbertia* species, *Kennedia coccinea, Leschenaultia biloba, Oxylobium capitatum* and *Trymalium floribundum*. FEATURE TREES WITHIN THE PRECINCT COULD BE *Corymbia ficifolia* KNOWN FOR ITS SPECTACULAR RED BLOSSOMS OVER THE SUMMER MONTHS.
CONSIDER FORMATION OF A 'FRIENDS OF DENMARK HISTORICAL RAILWAY STATION PRECINCT'TO TACKLE THE REMOVAL OF WEEDY SPECIES IN PARTICULAR *Robina pseudoacacia* WHICH ARE CURRENTLY DOMINATING THE VEGETATION ALONG THE HERITAGE RAILWAY TRAIL. SUCH A GROUP COULD ALSO BE INVOLVED IN REVEGETATING THE EXISTING CREEK BED WITH RUSHES AND SEDGES AND THE ESTABLISHMENT OF BUFFER AND SCREEN PLANTINGS WITHIN THE PRECINCT.

HISTORICAL INTERPRETATION FOR CHILDREN.

CHILDREN ARE NATURALLY HIGHLY INTERESTED IN THEIR SURROUNDING WORLD AND LOVE DISCOVERING AND LEARNING ABOUT ITS HISTORY. THEREFORE THE HISTORICAL INTERPRETATION IN PLAY AREAS WILL BE CHILD SENSITIVE, INTERACTIVE AND FOLLOW THE TOUCH AND FEEL BASED 'LEARNING THROUGH PLAY' PHILOSOPHY. THE DELIVERY OF HISTORICAL FACTS TO CHILDREN IN PLAY AREAS COULD BE ACHIEVED THROUGH SCULPTURES, HISTORICAL MACHINERY AND STRUCTURES AS WELL AS THE USE OF MATERIAL AND TEXTURES REFLECTING UPON LIFE DURING THE 19TH AND 20TH CENTURY IN DENMARK AT THE 'MILLARS' TIMBER MILLS; THE TRAIN STATION; AND THE TIMBER LOGGING AREAS. MACHINERY AND TOOLS LOCATED IN PLAYSPACES SHOULD BE MADE ACCESSIBLE FOR EXPLORATION, ADVENTURES, LEARNING AND PLAY.

'NATURE PLAY'

'NATURE PLAY' IS A WORLD WIDE MOVEMENT TO IMPROVE CHILDREN'S PLAY OPPORTUNITIES AND TO DEVELOP A STIMULATING PLAY ENVIRONMENTS FOR CHILDREN.

'NATURE PLAY' IS BASED ON RESEARCH INTO CHILD HEALTH AND WELLBEING WHICH HAS REVEALED THAT A VARIETY OF FACTORS SUCH AS URBAN SPRAWL; STANDARDIZATION OF PARKS AND PLAYGROUNDS; DIMINISHING CONTACT WITH NATURE; AND THE INCREASE OF COMPUTER BASED ACTIVITES MAY HAVE CAUSED PROBLEMS AND DEFICIENCIES (SUCH AS OBESITY, SEDENTARY BEHAVIOUR AND DEPRESSION) FOR SOME CHILDREN WHILE GROWING UP. THIS IS DUE TO A LACK OF STIMULATION, LACK OF UNSTRUCTURED PLAY AND LACK OF PHYSICAL ACTIVITIES.

THE VALUE OF NATURAL PLAYSPACES

RESEARCH HAS ALSO SHOWN THAT UNSTRUCTURED PLAY IN NATURAL OR SEMI-NATURAL ENVIRONMENTS ENHANCE CHILDREN'S DEVELOPMENT, INTEREST, IMAGINATION AND CONNECTION WITH NATURE. NATURAL SPACES ALSO SPONTANEOUSLY STIMULATE HIGH LEVELS OF PHYSICALLY ACTIVE PLAY IN CHILDREN AND INCREASE THE LEVEL OF SOCIAL INTERACTION, COOPERATION AND ACCEPTANCE BETWEEN CHILDREN.

NATURAL PLAY ENVIRONMENTS

NATURAL ENVIRONMENTS ARE DYNAMIC AND CONSTANTLY CHANGING IN SPACE AND TIME. THEY CONSIST OF A VARIETY OF HIGHLY COMPLEX HABITATS. THESE SPACES OFFER CHILDREN A MULTIPLICITY OF ENCOUNTERS AND SENSATIONS; A DIVERSITY OF TOPOGRAPHY AND TEXTURES; AND A VARIETY OF CHILD-SIZED SPACES, HIDEAWAYS AND HOLES TO EXPLORE AND INHABIT.

ADOPTED BY COUNCIL 19 FEBRUARY 2019 / RESOLUTION NO. 230219

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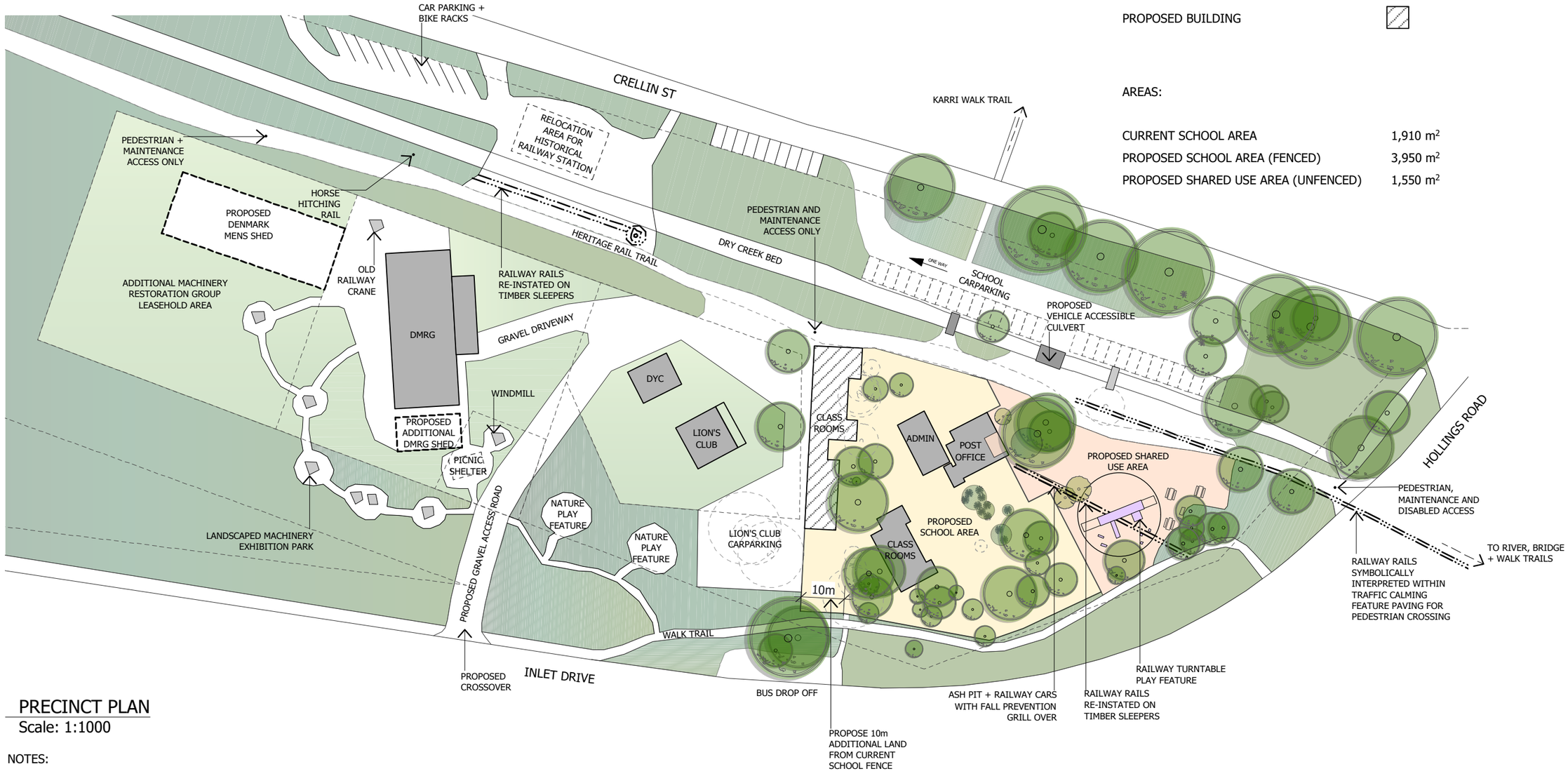
dm.beimir@gmail.com +61 424506929

CLIENT:
SPIRIT OF PLAY
COMMUNITY SCHOOL

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

DATE:
30/3/19

SHEET 01 / 02:
PRECINCT CONCEPT



LEGEND:

- PROPOSED SCHOOL AREA
- PROPOSED SHARED USE AREA
- EXISTING BUILDING
- PROPOSED BUILDING

AREAS:

CURRENT SCHOOL AREA	1,910 m^2
PROPOSED SCHOOL AREA (FENCED)	3,950 m^2
PROPOSED SHARED USE AREA (UNFENCED)	1,550 m^2

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

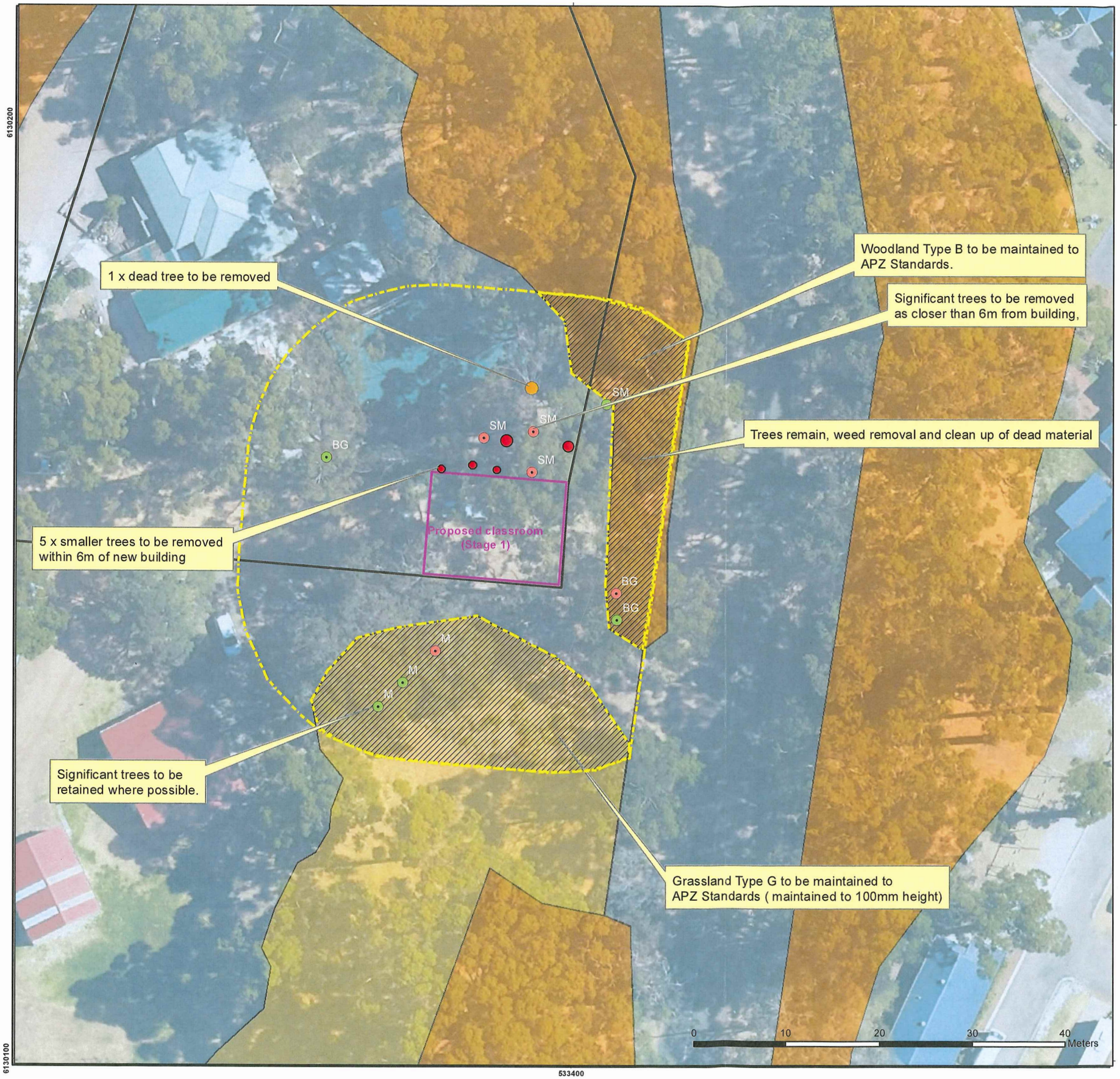
CLIENT:
SPIRIT OF PLAY COMMUNITY SCHOOL

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

DATE:
9/4/19

SHEET 02 / 02:
PRECINCT PLAN

19 April 2019 Attach - Works Program- Tree Removal



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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Australia
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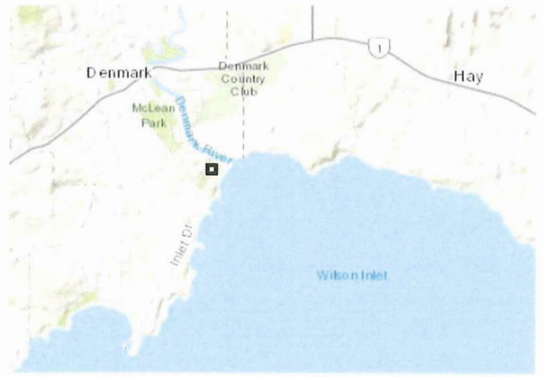
Fax: 08 9842 1575



Overview Map Scale 1:100,000

- Subject Site
- Proposed New Buildings
- Indicative Lease Area
- Cadastre
- APZ boundary for existing and proposed buildings
- Fuel Reduction Required to APZ Standards
- Clearing proposed for school carpark

Vegetation

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

Significant Trees

- Trees to be retained where posssible
- Trees to be removed (<6m from buildings)
- Trees require trimming

Scale
1:400 @ 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

Spirit of Play School (Stage 1)
Works Program to BAL 29

BAL Assessor	*QA Check*	*Drawn by*
KK	KK	CC
STATUS	*FILE*	*DATE*
FINAL	SOD001	02/04/2019

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
Assessment Date:	05/02/2019	**Report Date:**	18/03/2019
BPAD Practitioner	Kathryn Kinnear	**Accreditation No.**	BPAD30794

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 2.

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).

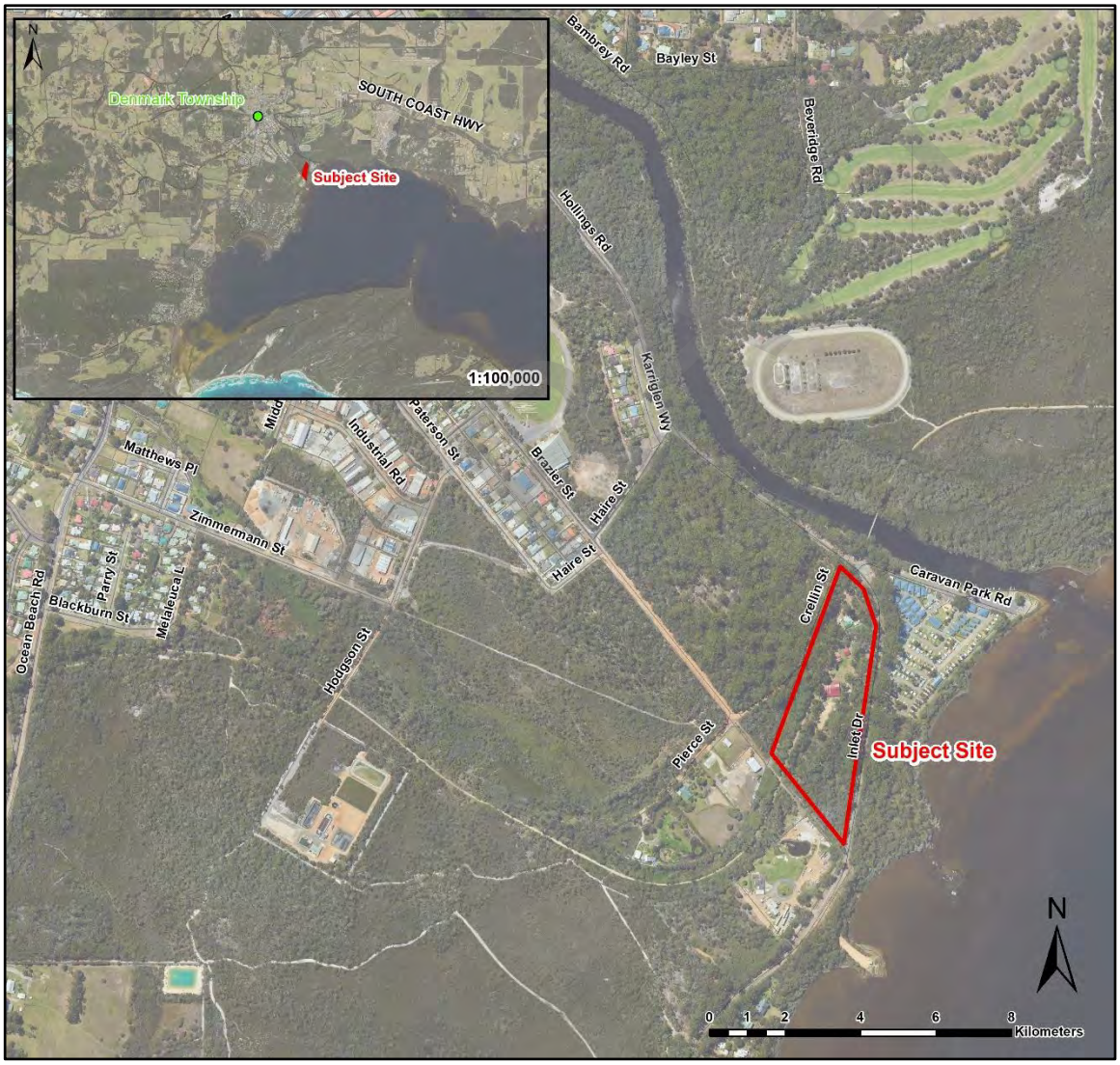


Figure 1: Location Plan

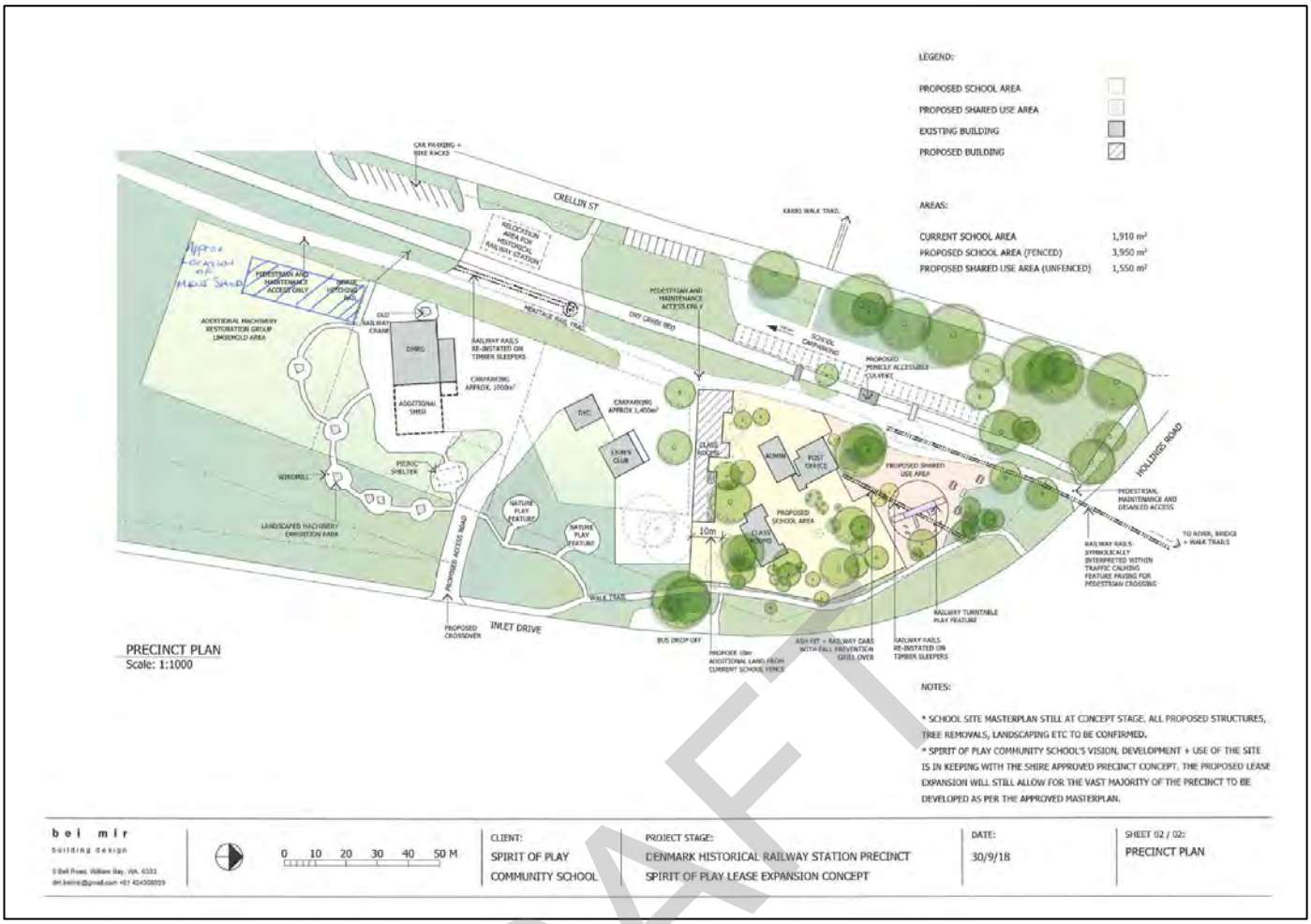


Figure 2: Development Concept Plan

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.

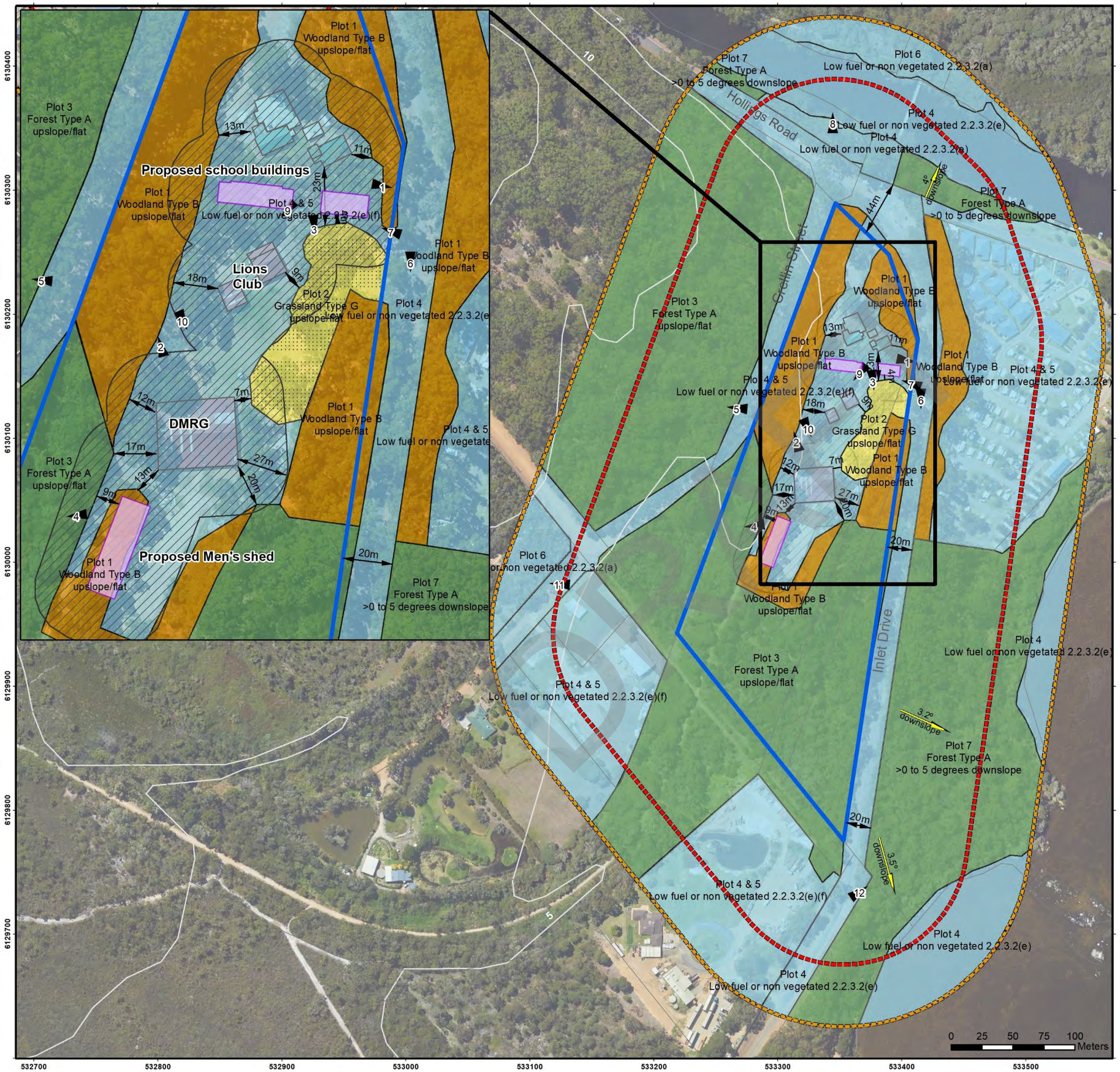
3 Assessment Results

Bushfire Assessment inputs for the site has been calculated using the Method 1 procedure as outlined in AS3959-2009. 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

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Overview Map Scale 1:100,000

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 5m Contours
- Slope Degrees
- Existing Buildings
- 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
- Shrubland Type C
- Scrub Type D
- 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**	**22/02/2019**

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.

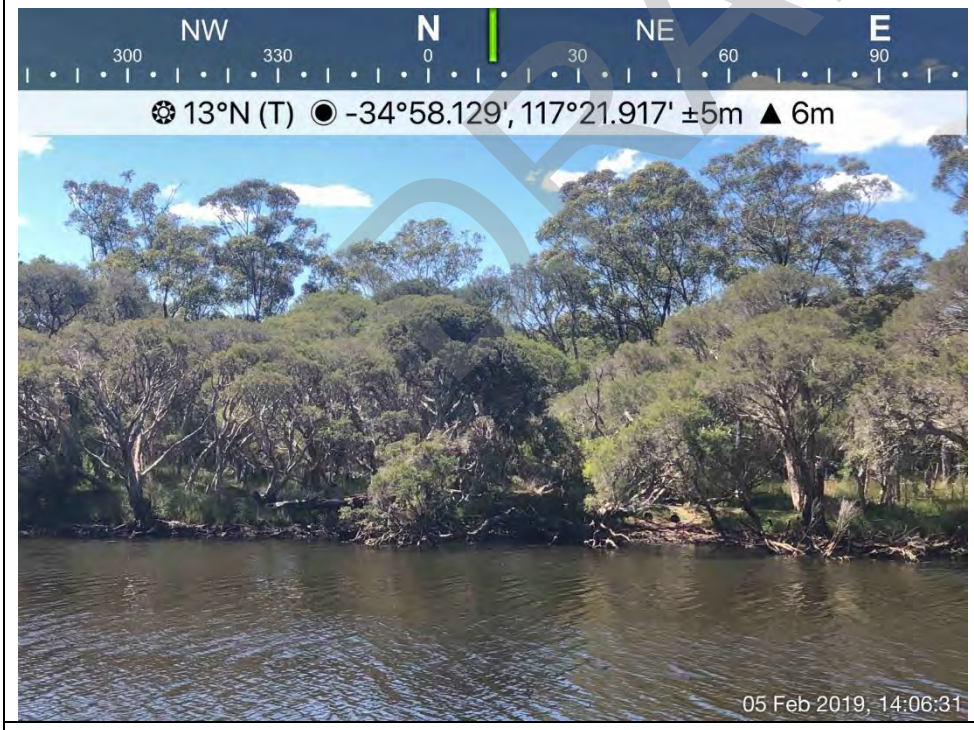
Plot	1 cont.	Classification or Exclusion Clause	Woodland Type B
			Additional Plot 1 photograph.

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 AS3959-2009.

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 (AS3959-2009) 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 29 in 20m APZ for existing School buildings BAL 29 on proposed School buildings
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 (AS3959-2009) 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 20m 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.

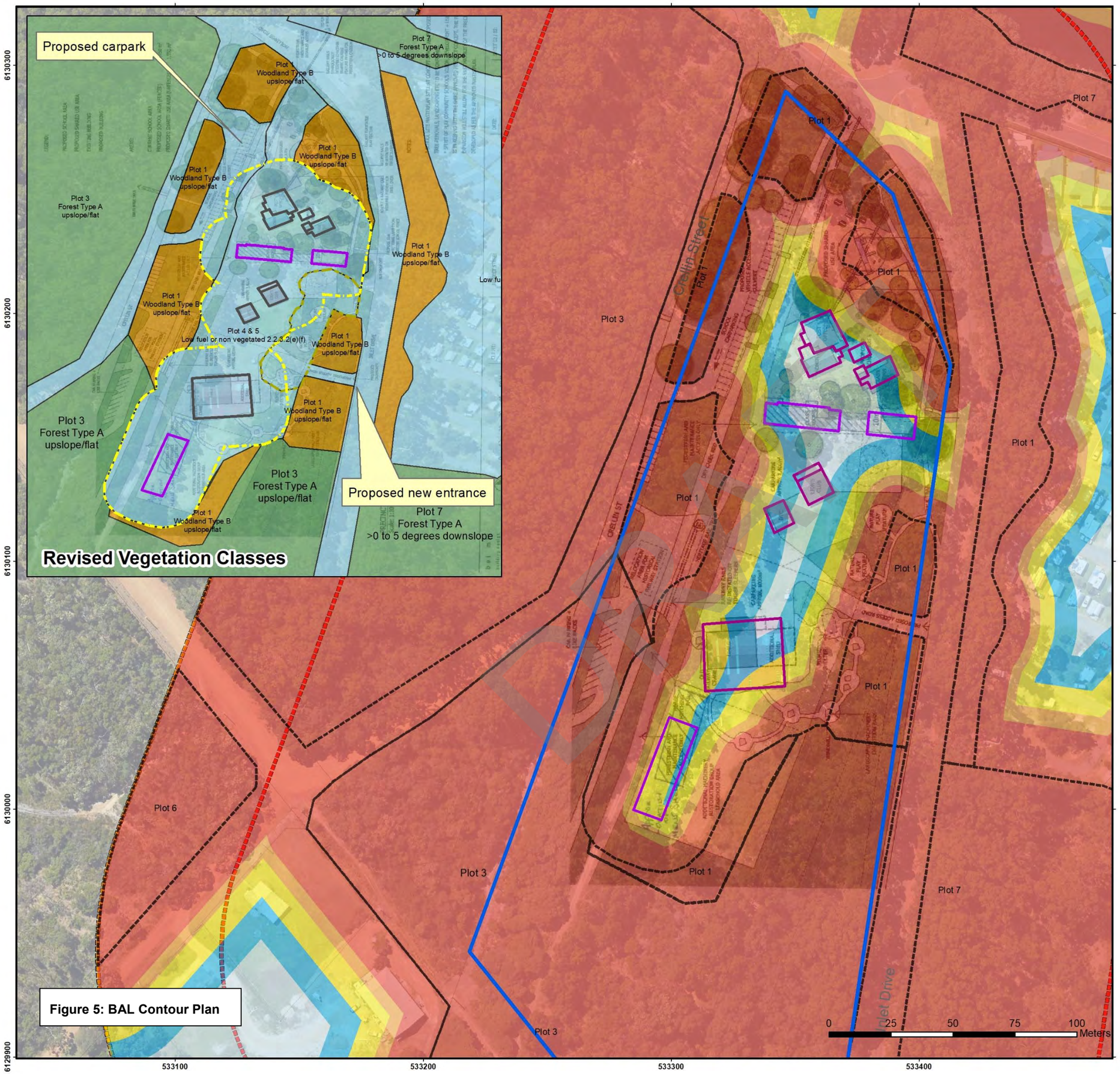


Figure 5: BAL Contour Plan

This BAL Plan was prepared by:
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Jurisdiction: Level 2 - WA

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Overview Map Scale 1:100,000

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- Existing Buildings
- Proposed 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	CC
STATUS	**FILE**	**DATE**
FINAL	SOD001	22/02/2019

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 20m 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); and
- Any new buildings at the school are to be placed in BAL 29 areas or less, and should be required to build to AS3959; and
- The Men's Shed is to be placed in BAL 29 area however is not 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)

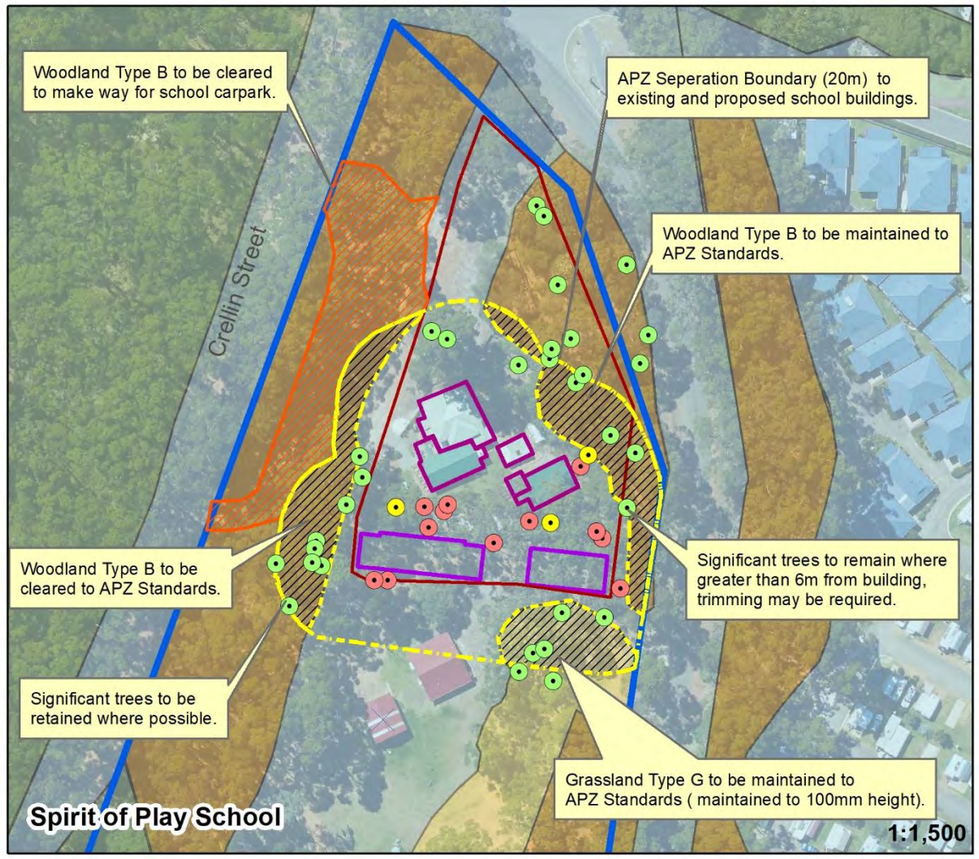
The reserve is required to meet the "Acceptable Solutions" of each Element of the bushfire protection criteria (WAPC, 2017). The proposal has been assessed against the bushfire protection criteria Acceptable Solutions for Elements A1, A2, A3 and A4. A summary of the assessment is provided in Table 2.

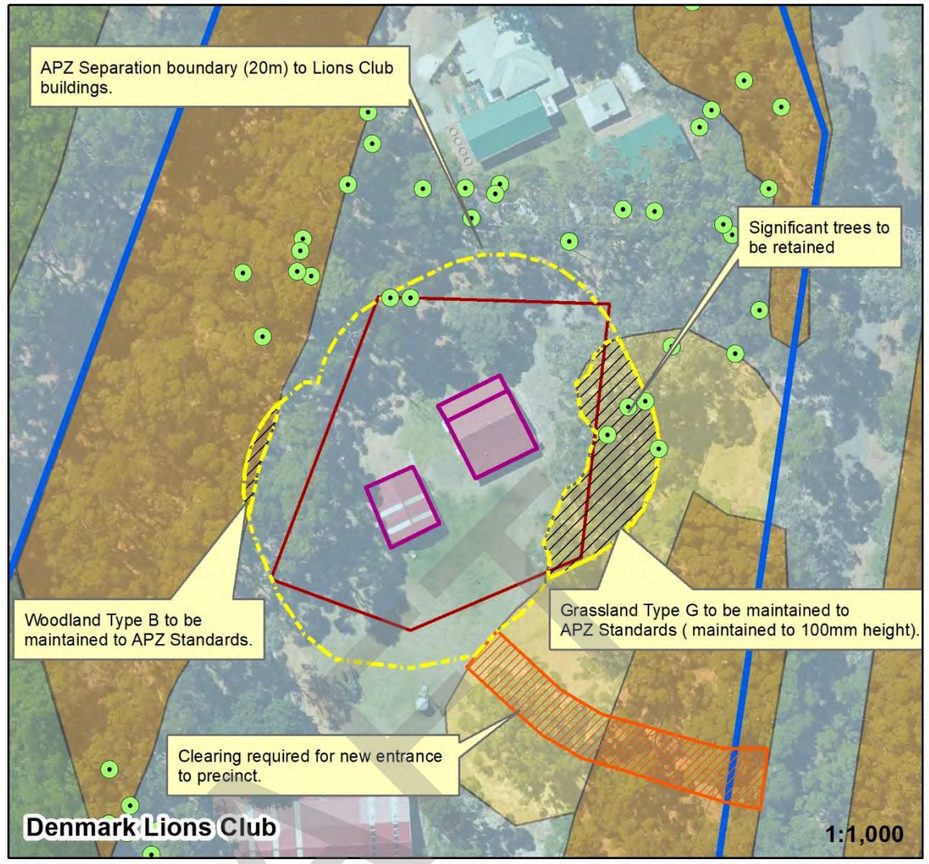
Table 2: Bushfire protection criteria applicable to the site

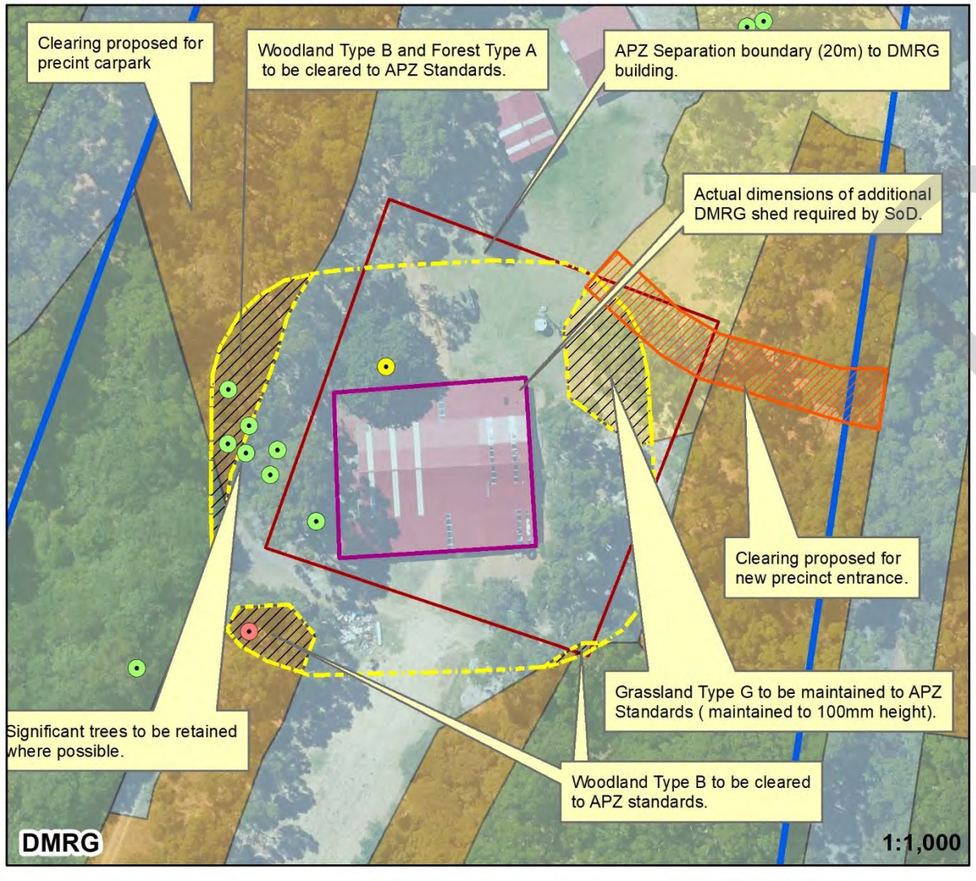
Element	Acceptable Solution	Applicable or not Yes/No	Meets Acceptable Solution
Element 1 – Location	A1.1 Development Location	Yes	Compliant. The proposed School buildings and Men's Shed development will be subject to BAL 29 or less as shown on the BAL Contour Plan (Figure 5), noting that the buildings may not be required to build to AS3959 as they are class 9a buildings. BAL 29 will apply to the existing buildings by applying a 20m Asset Protection Zone (APZ) around the buildings, this is consistent with the Shire of Denmark Fire Management Notice (FMN) (2018/19). These buildings are a legacy to previous building approvals. New buildings are to be located in BAL 29 zones and can be achieved within the reserve boundary utilising mostly previously disturbed areas, as shown on Figure 5. A Works Program has been developed for each lease area and indicates the APZ areas to be fuel reduced to meet BAL 29 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 20m APZ areas consistent with the SoD FMN 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

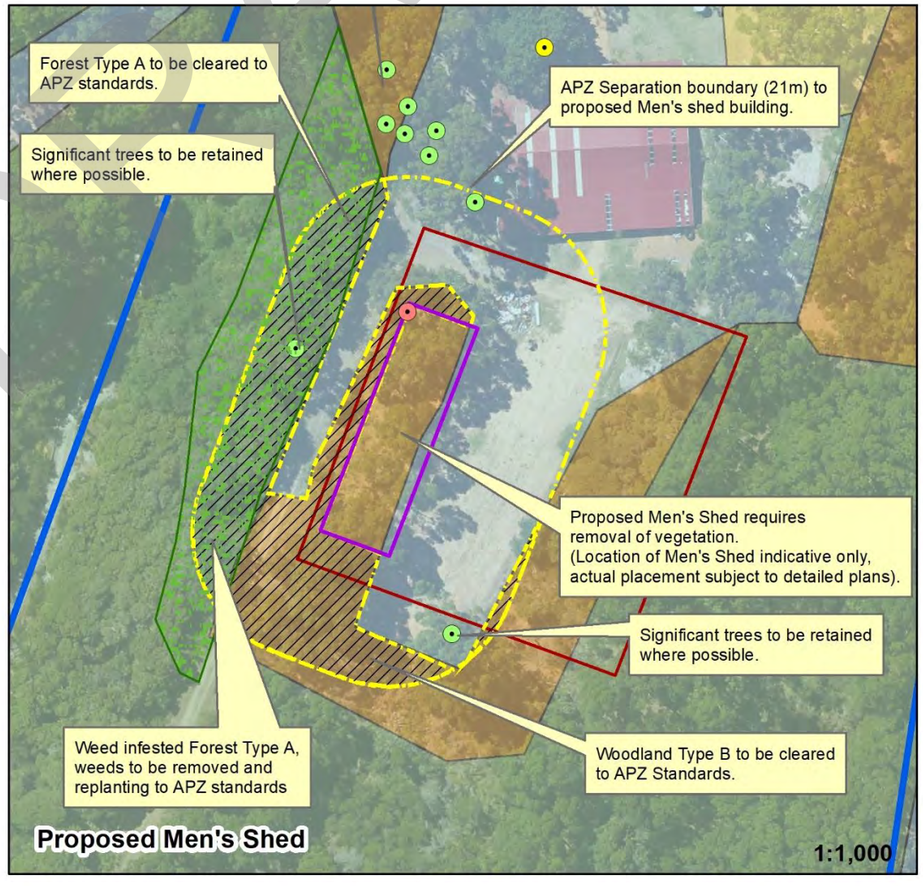
Table 2 cont.

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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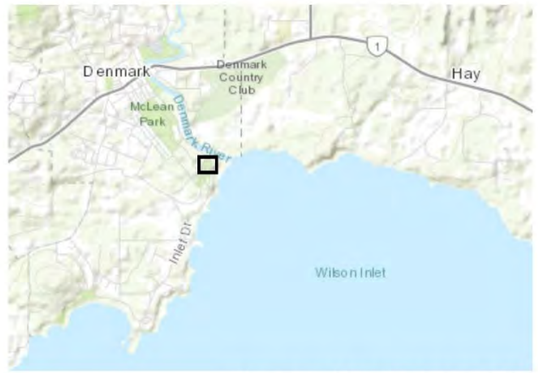


Overview Map Scale 1:100,000

- Subject Site
- Indicative Lease Area
- Cadastre
- Existing Buildings
- Proposed New Buildings
- Clearing for proposed development
- APZ for existing and proposed buildings
- 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	19/02/2019

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

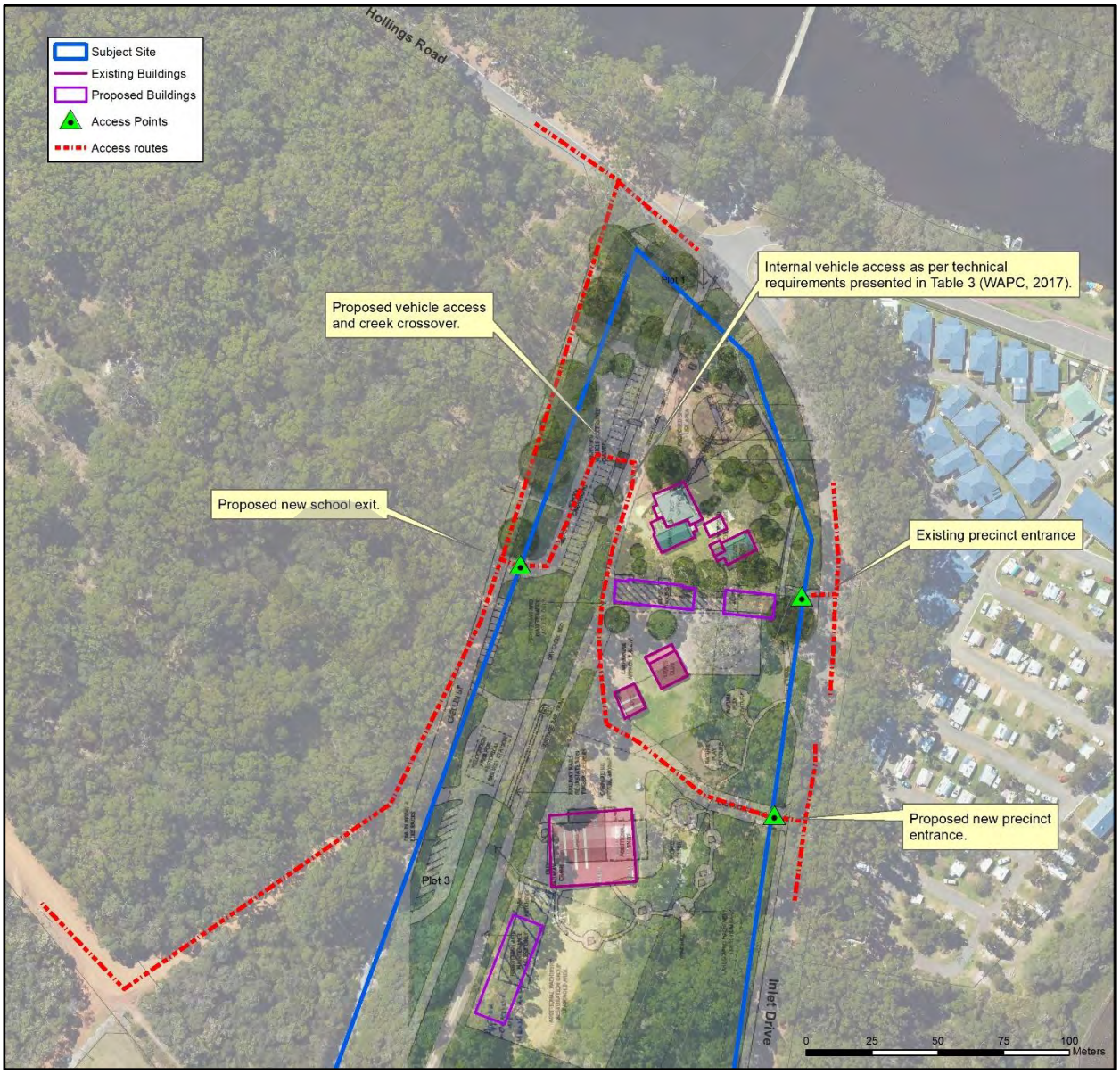


Figure 7: Access Plan

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 AS3959-2009 (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 as shown in BAL Contour Plan 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 20m 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 20m 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 20m 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.

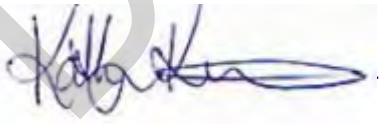
AS3959-2009 disclaimer: It should be borne in mind that the measures contained within this Standard (AS3959-2009) cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the unpredictable nature and behaviour of fire and extreme weather condition.

Building to AS3959-2009 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, 2009)

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 AS 3959-2009 (Incorporating Amendment Nos 1, 2 and 3) and the Guidelines for Planning in Bushfire Prone Areas Ver. 1.3 (WAPC, 2017).

SIGNED, ASSESSOR: ..  ..... DATE: 18/03/19

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	Date
DRAFT ID 21/2/2019	Prepared by Internal QA review	Chiquita Burgess Bianca Theyer	21/02/2019
DRAFT ID 22/2/2019	Draft issued to client for review	Kathryn Kinnear	22/2/2019
FINAL ID 12/03/2019	Issued to client as final	Kathryn Kinnear	12/03/2019

Appendix A

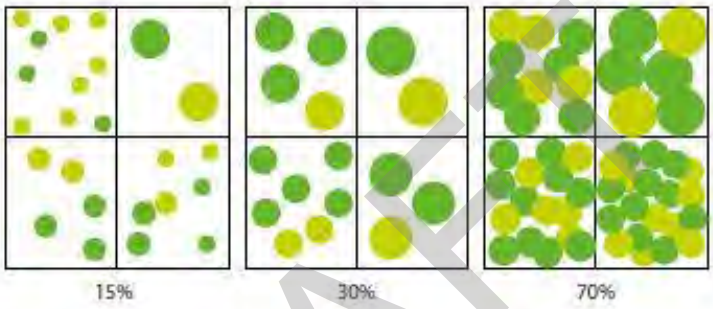
WAPC Asset Protection Zone (APZ) standards to apply

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.