

To: Peter Dockett

Date: 27 July 2018

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Project No: RNO18292.01

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Bushfire Attack Level (BAL) Compliance Report Stages 2 & 3 Vivente



Site Details

Address: 45 residential lots within Stages 2A, 2B, 3A and 3B Vivente

Suburb:	Hammond Park	State:	Western Australia
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Local Government Area:	City of Cockburn
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Description of building works:	Class 1a buildings with associated Class 10a building/s
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Report details

Report/Job number:	RNO18292.01	Report version:	M001 Rev B
Assessment date:	12 June 2018	Report date:	27 July 2018
Report Review Endorsement	Z Cockerill 26 July 2018	BPAD37803	Level 2 Accredited

Introduction

This Bushfire Attack Level (BAL) compliance report has been prepared for 45 residential lots within Stages 2 and 3 Vivente located in the City of Cockburn.

This report provides a post-subdivisional works update of the BAL ratings for individual lots within the project area and has been prepared for the benefit of the developer, future lot purchasers and decision-makers. BAL certificates for each individual lot (contained in Appendix 3) have been prepared based on the final site compliance check and are appended to this report for use at the building permit stage.

The BAL assessment outlined in this report is the most up to date assessment relating to the project area and therefore supersedes any previous Strategen BAL assessments undertaken within the project area, including those documented in previous Bushfire Management Plans (BMPs) prepared by Strategen.

The approach for preparation of this BAL compliance report is consistent with Section 4.2 and Appendix 3 of *Guidelines for Planning in Bushfire Prone Areas* (the Guidelines).

The BAL compliance assessment has been completed by a Level 2 accredited Bushfire Planning and Design practitioner (Zac Cockerill, BPAD37803) in accordance with Method 1 of AS 3959-2009 *Construction of Buildings in Bushfire-Prone Areas* (AS 3959) and results are consistent with on-ground conditions observed at the time of inspection on 12 June 2018.

The BAL assessment takes into consideration the endorsed Bushfire Management Plan (BMP) that was prepared for the site by Strategen in 2015. The BMP was prepared on the basis of all public open space (POS) areas being maintained at less than 5t/ha to reduce the likelihood of the vegetation to support uncontrolled bushfires. On this basis, the BMP considered that the POS vegetation was low threat and therefore able to be excluded from the BAL analysis in accordance with AS 3959 Clause 2.2.3.2 (f). In order to achieve consistency with the methodology approved at previous planning stages, this BAL compliance report adopts the approach of the endorsed BMP. Also in agreement with the endorsed BMP, this BAL compliance report assigns precautionary BAL-12.5 ratings to lots directly abutting vegetated POS areas.

Should subdivision design or the classified vegetation extent be further modified prior to building construction, then an updated BAL assessment for the affected lots may need to be undertaken to account for these changes.

BAL compliance assessment

Results of the BAL compliance assessment are provided in Figure 1. A summary of assessment parameters are provided in the following subsections.

Fire Danger Index

A blanket rating of FDI 80 is adopted for Western Australian environments, as outlined in AS 3959 and endorsed by Australasian Fire and Emergency Service Authorities Council.

Vegetation class

The spatial extent of classified vegetation and exclusions located within 100 m of the project area are depicted in Figure 1, along with site photo points to verify the location of classified vegetation and exclusions observed. The photo points depicted in Figure 1 relate to the georeferenced site photographs provided in Appendix 1.

Classified vegetation was observed within Frankland Park (Plot 2) which is situated to the west of Frankland Avenue and the project area. This vegetation has been classified as Class B Woodland.

Subdivisional works have resulted in the following exclusions within and adjacent to the project area:

- Latest Nearmap imagery (dated June 2018) shows classified vegetation occurring northeast of the Stage 3 development area within the future school site (Plot 1) and future POS directly south of the school site (Plot 7). The school site has, however, recently been cleared, the extent of which is shown in Figure 1. The approved Bulk Earthworks Plan included in Appendix 2 shows that there is no classified vegetation to be retained within 150 m of the proposed Stage 2 and 3 lots.
- The subject lots (Plot 8) and surrounding development area are in a cleared, non-vegetated state and excluded from classification under Clause 2.2.3.2 (e)
- The five individual POS areas (Plot 6) to the south of the subject lots comprise a combination of active POS (maintained turf and play areas) and retained native vegetation. Strategen is satisfied that the retained vegetation is being maintained in accordance with the previous BMP prepared to support the subdivision (Strategen, 2015). In this regard, the five POS areas have been excluded under Clause 2.2.3.2 (f).
- The northern POS area (Plot 7), directly south of the cleared school site, is excluded in accordance with AS 3959 Clause 2.2.3.2 (c); multiple areas of vegetation less than 0.25 ha in area and not within 20 m of other areas of vegetation being classified or the proposed lots.
- The 100 m wide low threat staging buffer to the east and south of the subject lots (Plots 4 and 5) has been implemented properly in accordance with the previous BMP prepared over the site and is excluded from classification under a combination of Clauses 2.2.3.2 (e) and (f).

Effective slope

Class B woodland within Plot 2 was confirmed to be flat/ upslope in relation to the project area, as depicted in Figure 1.

BAL calculations

The BAL impact to the project area has been assessed in the form of BAL contours, utilising the assessment results outlined above. Results of the BAL contour assessment are outlined in Table 1 and depicted in Figure 1.

Table 1: BAL contour assessment

Plot	Vegetation class	Effective slope	Separation distance (BAL contour width)	BAL rating	Comment
Plot 2	Class B woodland	Flat/ upslope	<10 m	BAL-FZ	No development is proposed in this area
			10-<14 m	BAL-40	No development is proposed in this area
			14-<20 m	BAL-29	No development is proposed in this area
			20-<29 m	BAL-19	No development is proposed in this area
			29-<100 m	BAL-12.5	Applies to Lots 43 and 44

Precautionary BAL-12.5 ratings

To achieve consistency with the BMP (Strategen, 2015), lots in the first row of houses opposite POS A2 (westernmost POS) have been assigned a precautionary rating of BAL-12.5. In order to further increase the resilience of homes adjacent to vegetated portions of POS, this BAL compliance report has assigned precautionary BAL-12.5 ratings to lots directly abutting POS C (the central POS area). Table 2 lists the lots for which a precautionary BAL-12.5 rating has been applied.

Table 2: Lots assigned a precautionary BAL-12.5 rating

Stage	Lot	BAL
2	39, 66-70, 415	BAL-12.5
3	N/A	N/A

BAL certificates

BAL certificates are provided in Appendix 3 for the 45 residential lots that are yet to be sold within Stages 2 and 3 of Vivente as per the BAL compliance assessment outlined in Figure 1.

Should a lower BAL rating be realistically achievable through an appropriate building setback, then the landowner can refer to detailed advice for recommended setbacks in Table 3. The lower BAL rating may be achieved if the recommended building setback is reflected on the building plan for that lot and a revised BAL certificate can be issued at that time.

Table 3: Recommended setbacks to achieve a lower BAL rating

Lot number	Current separation distance	Current BAL rating	Recommended setback to achieve lower BAL	New BAL rating*
44	92 m	BAL-12.5	8 m tapered setback from southern (rear) boundary	BAL-LOW

*The new BAL rating in Table 3 can only be confirmed once the building plan for the relevant lot has been prepared to demonstrate compliance with the recommended setback. Once the setback has been confirmed, a new BAL certificate for the lower BAL rating can be prepared and issued to accompany the building permit application.

Conclusion and recommendations

This BAL compliance report has been prepared for 45 residential lots within Stages 2 and 3 of Vivente to provide a final BAL check for individual lots for use at the building permit stage. Assessment results are consistent with current on-ground conditions and the methodology adopted by the existing BMP. Strategen can confirm that the existing BMP has been implemented as intended throughout the duration of subdivisional works for the relevant Stage 2 and 3 areas and adjacent land to achieve the bushfire management outcomes as planned for in these documents. The BAL compliance report also takes into account new vegetation clearing that has occurred on adjacent land (e.g. in the northwest) that was not previously captured in the approved BMP.

In the absence of any change in development design or post-development classified vegetation extent, Strategen considers that the BAL assessment and BAL certificates outlined in this report are accurate to inform individual lot building permit applications.

Should the extent of classified vegetation change or new vegetation be introduced within 100 m of proposed development, then the BAL rating should be reassessed at the building permit stage to ensure accuracy with on-ground conditions.

Should it be determined through demonstration on the building plan that compliance with the recommended building setbacks has been achieved and subsequently a lower BAL rating has been achieved (as per Table 3), then the lower BAL rating should apply and be reflected in an updated BAL certificate prepared at that time.

The BAL assessment outlined in this report is the most up to date assessment relating to the project area and therefore supersedes any previous Strategen BAL assessments undertaken within the project area.

Ongoing requirements of the Strategen (2015) BMP and current City of Cockburn annual firebreak notice should continue to be implemented as required, particularly with regards to ongoing fuel management of vacant land (including staging buffers), POS and APZs.

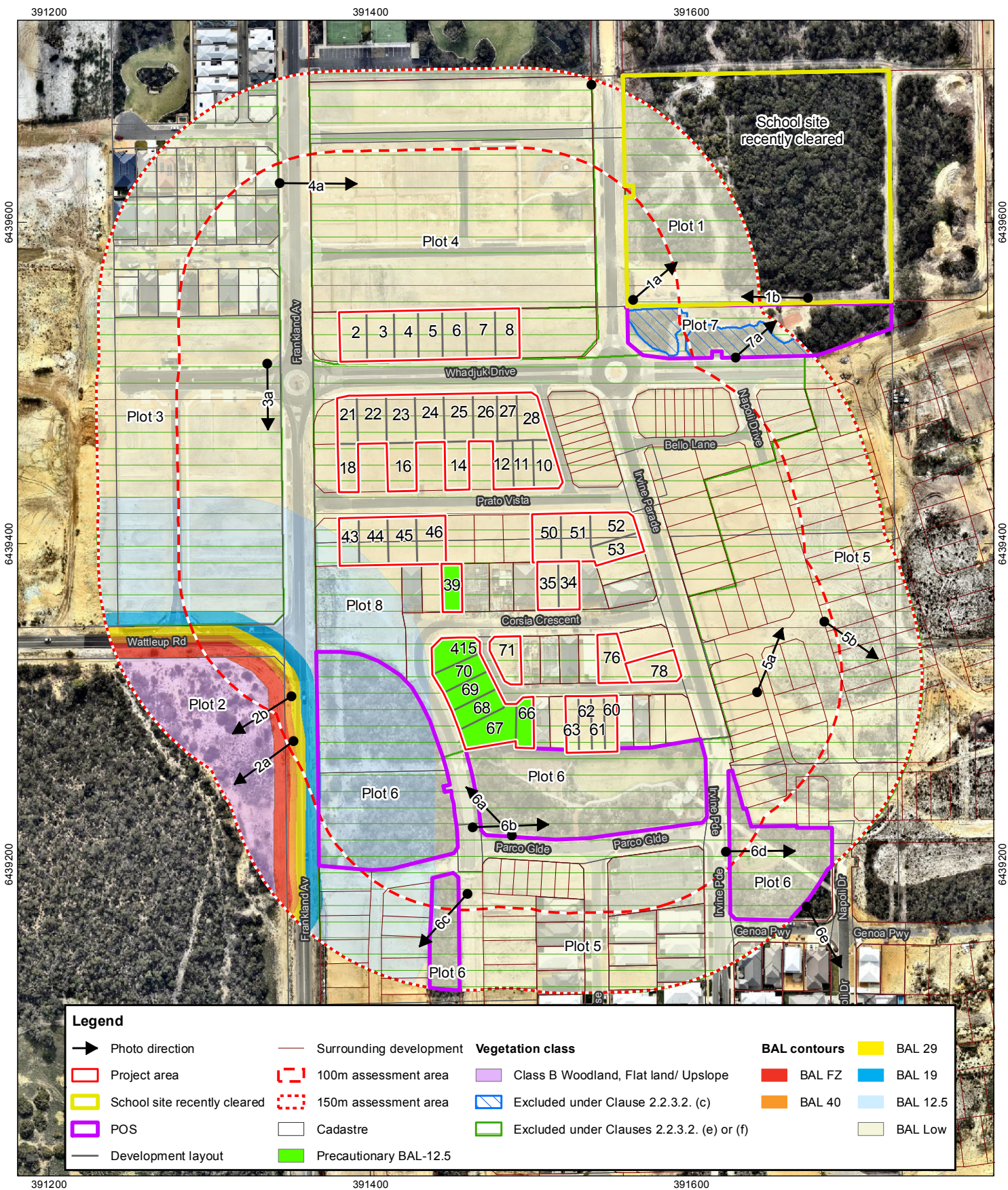


Figure 1: BAL compliance Stages 2 & 3 Vivente

N

Scale 1:3,200 at A4

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 50

Date: 27/07/2018

strategen
ENVIRONMENTAL

©:Consult\2018\RNO\RNO1829201_GIS_documents\ArcMap_documents\RNO18292_G001_RevE.mxd info@strategen.com.au | www.strategen.com.au

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Data source: Neamap; Aerial image, flown 06/2018. Landgate: Cadastre, 11/2017. Created by: jcrute

Appendix 1
Site photographs

Table 4: Vegetation classification



Plot 1:	Excluded – Non-vegetated & Low threat (Clauses 2.2.3.2 [e] and [f])
Photo 1a:	Future school site has recently been cleared.



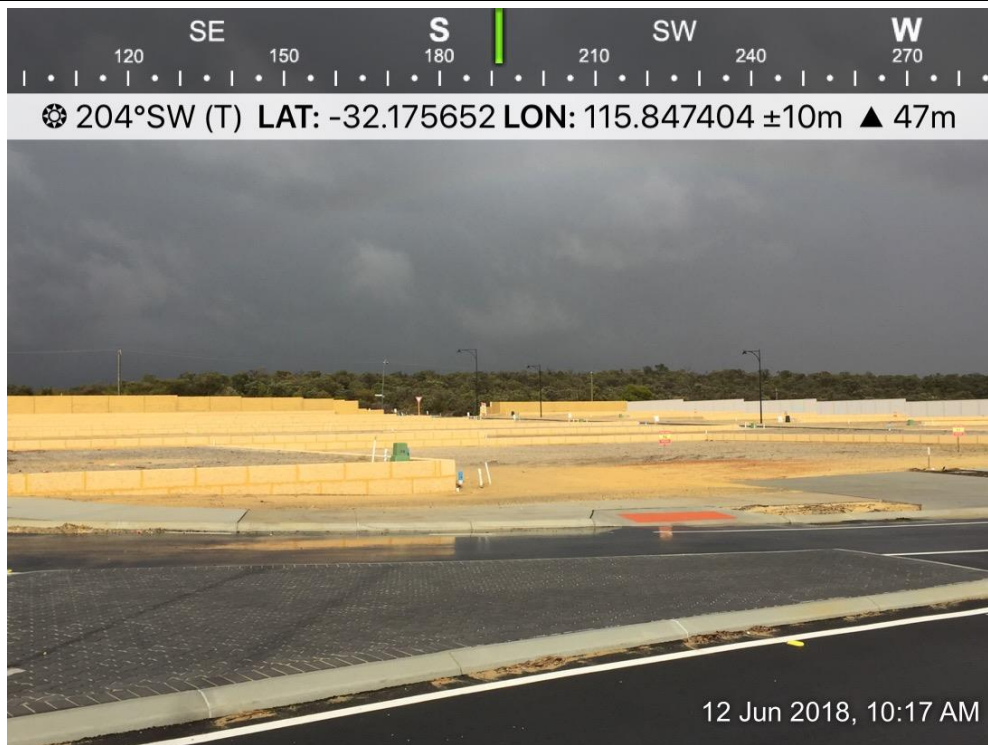
Plot 1:	Excluded – Non-vegetated & Low threat (Clauses 2.2.3.2 [e] and [f])
Photo 1b:	Future school site has recently been cleared.



Plot 2:	Class B Woodland
Photo 2a:	Regenerating banksia woodland vegetation within Frankland Park.



Plot 2:	Class B Woodland
Photo 2b:	Regenerating banksia woodland vegetation within Frankland Park.



Plot 3:	Excluded – Non-vegetated (Clause 2.2.3.2 [e])
Photo 3a:	Land to west of project area has been cleared to accommodate imminent residential development.



Plot 4:	Excluded – Non-vegetated (Clause 2.2.3.2 [e])
Photo 4a:	Land to north of project area has been cleared to accommodate imminent residential development.



Plot 4:	Excluded – Non-vegetated (Clause 2.2.3.2 [e])
Photo 4b:	Land to north of project area has been cleared to accommodate imminent residential development.



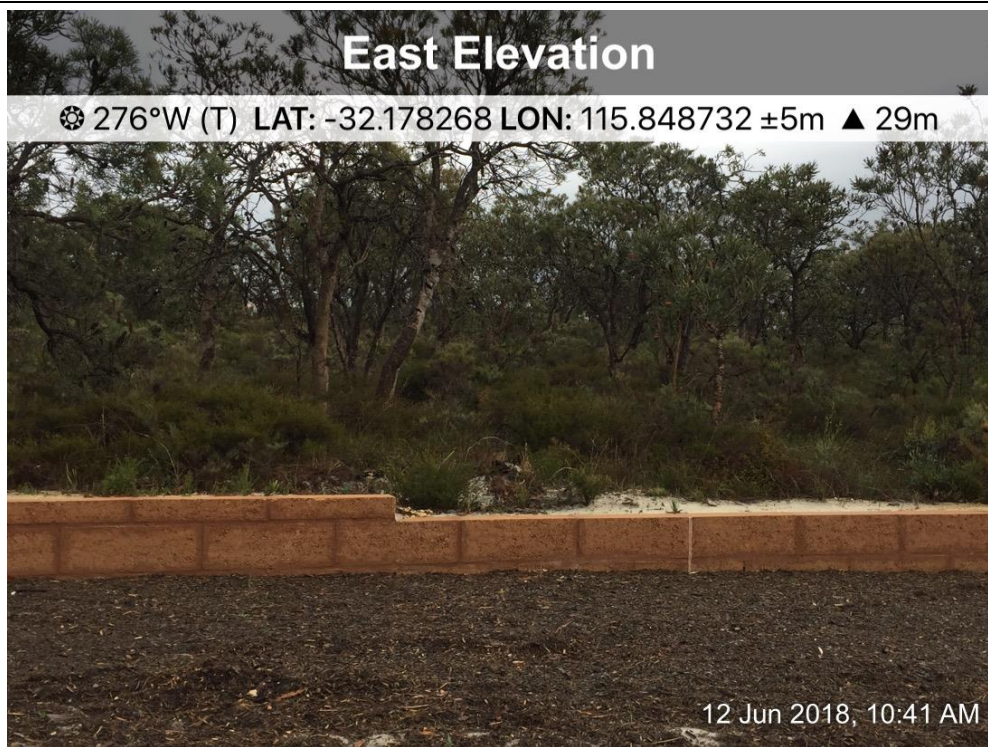
Plot 5:	Excluded – Non-vegetated & Low threat (Clauses 2.2.3.2 [e] and [f])
Photo 5a:	Vacant land within 100 m low threat staging buffer surrounding project area maintained in a low threat state, including all grassland slashed to <100 mm.



Plot 5:	Excluded – Non-vegetated & Low threat (Clauses 2.2.3.2 [e] and [f])
Photo 5b:	Vacant land within 100 m low threat buffer surrounding project area maintain in a low threat state, including all grassland slashed to <100 mm.



Plot 6:	Excluded – Low threat (Clause 2.2.3.2 [f])
Photo 6a:	Retained vegetation within POS maintained in accordance with the previous BMP (Strategen, 2015).

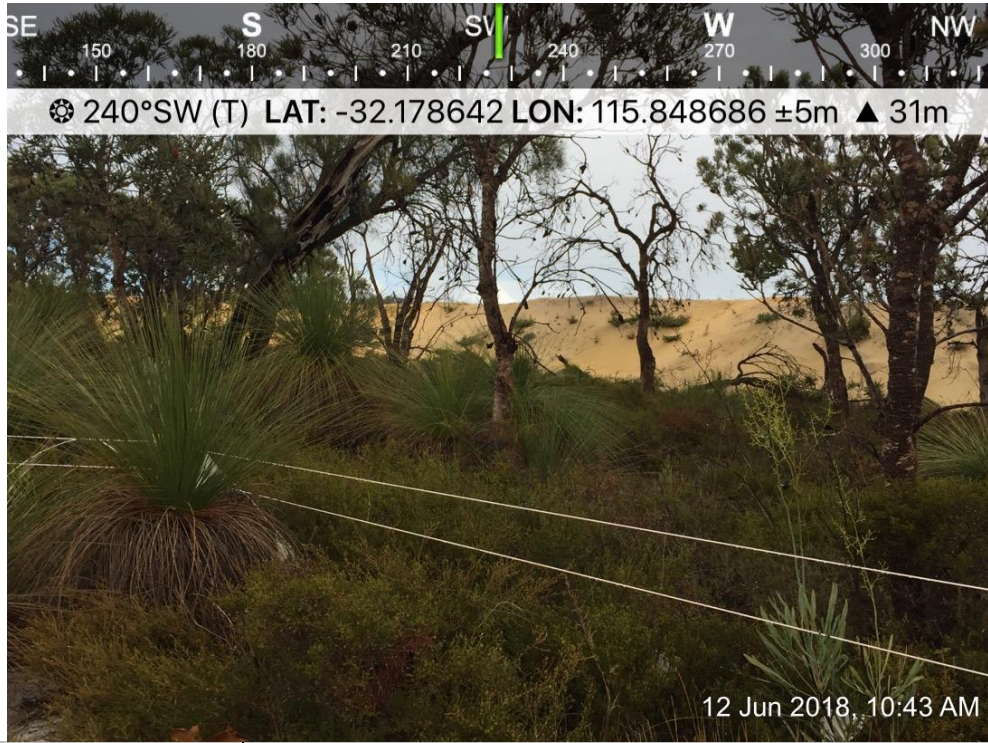


East Elevation

📍 276°W (T) LAT: -32.178268 LON: 115.848732 ±5m ▲ 29m

12 Jun 2018, 10:41 AM

Plot 6:	Excluded – Low threat (Clause 2.2.3.2 [f])
Photo 6b:	Retained vegetation within POS maintained in accordance with the previous BMP (Strategen, 2015).



📍 240°SW (T) LAT: -32.178642 LON: 115.848686 ±5m ▲ 31m

12 Jun 2018, 10:43 AM

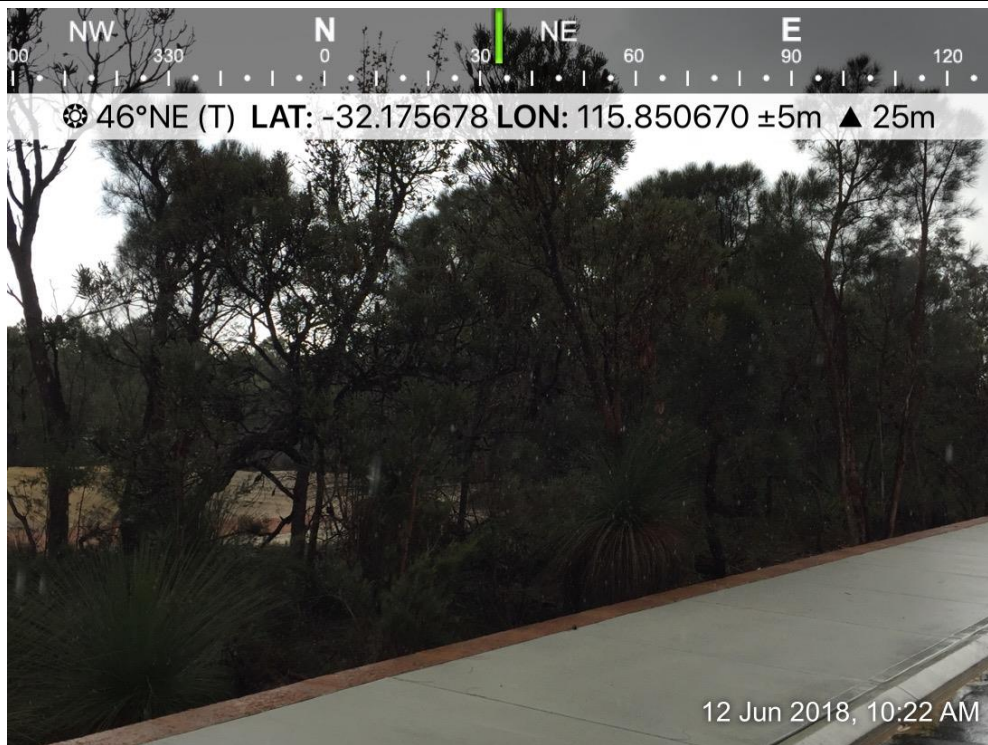
Plot 6:	Excluded – Low threat (Clause 2.2.3.2 [f])
Photo 6c:	Retained vegetation within POS maintained in accordance with the previous BMP (Strategen, 2015).



Plot 6:	Excluded – Low threat (Clause 2.2.3.2 [f])
Photo 6d:	Retained vegetation within POS maintained in accordance with the previous BMP (Strategen, 2015).



Plot 6:	Excluded – Low threat (Clause 2.2.3.2 [f])
Photo 6e:	Retained vegetation within POS maintained in accordance with the previous BMP (Strategen, 2015).



Plot 7:	Excluded – Clause 2.2.3.2 [c]
Photo 7a:	Retained vegetation within POS maintained in accordance with the previous BMP (Strategen, 2015) and excluded in accordance with Clause 2.2.3.2 (c) being vegetation less than 0.25 ha in area and not within 20 m of the proposed lots or other vegetation plots.

Appendix 2
Bulk Earthworks Plan

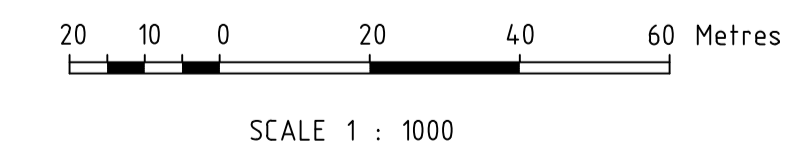
GENERAL NOTES

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS NOTED OTHERWISE.
2. HORIZONTAL DATUM TO MGA94.
3. VERTICAL DATUM TO TO AUSTRALIAN HEIGHT DATUM (AHD).

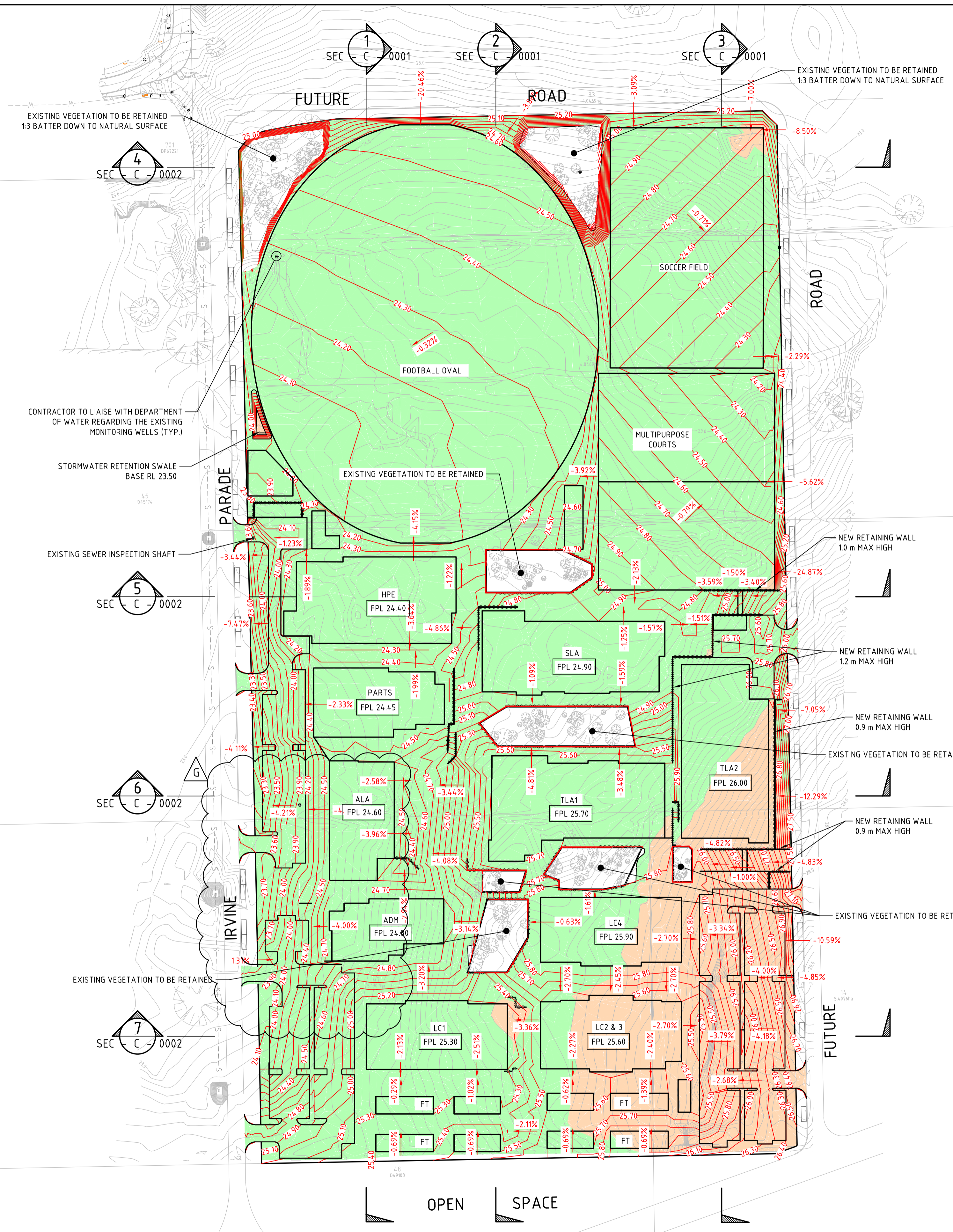
LEGEND

- CUT AREA
- FILL AREA
- BULK EARTHWORK CONTOUR (m AHD)
- FPL 26.00

REVISION 'G'
- DESIGN CONTOURS REVISED



CIVIL



EXISTING VEGETATION TO BE RETAINED
1:3 BATTER DOWN TO NATURAL SURFACE

CONTRACTOR TO LIAISE WITH DEPARTMENT
OF WATER REGARDING THE EXISTING
MONITORING WELLS (TYP.)

STORMWATER RETENTION SWALE
BASE RL 23.50

EXISTING SEWER INSPECTION SHAFT

EXISTING VEGETATION TO BE RETAINED
1:3 BATTER DOWN TO NATURAL SURFACE

NEW RETAINING WALL
1.0 m MAX HIGH

NEW RETAINING WALL
1.2 m MAX HIGH

NEW RETAINING WALL
0.9 m MAX HIGH

NEW RETAINING WALL
0.9 m MAX HIGH

EXISTING VEGETATION TO BE RETAINED

EXISTING VEGETATION TO BE RETAINED

SEC 1 C 0001

SEC 2 C 0001

SEC 3 C 0001

SEC 4 C 0002

SEC 5 C 0002

SEC 6 C 0002

SEC 7 C 0002

Sponsor
MACQUARIE CAPITAL

Architectural in Collaboration
MODE
CAMERON CHISHOLM NICOL
Structural and Civil Consultant
FORTH
Services Consultant
LUCID
Landscape Architecture Consultant
MODE

Consultants Details
FORTH
Landscape Architecture Consultant
MODE

PROJECT
WA SCHOOLS PUBLIC PRIVATE PARTNERSHIP

REV	DESCRIPTION	TC	CAG	DATE
G	DP04 - DESIGN PHASE 3 RE-SUBMISSION	TC	CAG	22.03.17
F	DP04 - DESIGN PHASE 3 SUBMISSION	CS	CAG	02.12.16
E	DP04 - DESIGN PHASE 2 SUBMISSION	TC	CAG	11.10.16
D	DP01 - DESIGN PHASE 3 SUBMISSION	TC	CAG	15.09.16
C	DP04 - DESIGN PHASE 1 SUBMISSION	TC	CAG	11.07.16
B	DP01 - DESIGN PHASE 2 SUBMISSION	TC	CAG	16.06.16
A	DP01 - DESIGN PHASE 1 SUBMISSION	DM	CAG	18.04.16
REV	DESCRIPTION	BY	APPO	DATE

BUILDING
HAMMOND PARK SS

DRAWING TITLE
**CIVIL WORKS
BULK EARTHWORKS PLAN**

PROJECT AREA STAGE ZONE & LEVEL DISCIPLINE DRAWING NO. REVISION

HAM- DD- MAP - C - 0001 G

Appendix 3
BAL certificates