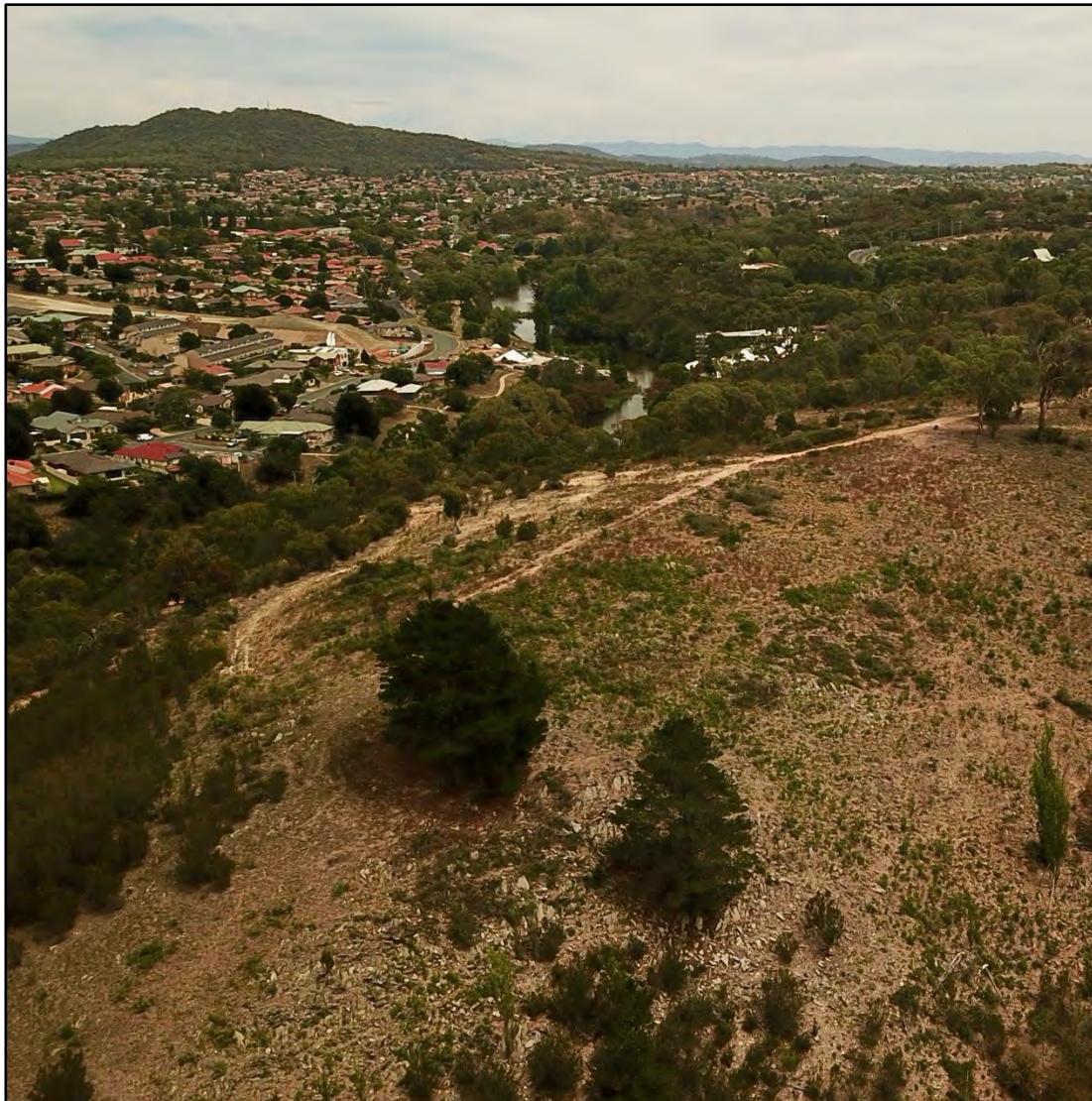




SUPPLEMENTARY BUSHFIRE ASSESSMENT REPORT

JUMPING CREEK ESTATE
QUEANBEYAN

Lot 1 DP 1249543

Multi lot residential subdivision

Prepared for Jumping Creek Limited and
Spacelab Pty Ltd

13 January 2021



1 BACKGROUND

The purpose of this supplementary bushfire assessment report is to provide additional information in support of an existing Bushfire Assessment Report (BFAR) and Development Application (DA).

The subject DA and BFAR (detailed below) is under review by NSW Rural Fire Service (NSW RFS) and Queanbeyan Palerang Regional Council.

This supplementary information is provided at the request of NSW RFS and is to be read as an “Annexure” to the original bushfire assessment report.

SITE AND DEVELOPMENT APPLICATION DETAILS

Development Application No:	QPRC – 109-2019
Development Description:	Multi lot Residential Subdivision
Lot & DP:	Lot 1 DP 1249543
Subject lot address:	30 Lonergan Drive Greenleigh
Client:	Jumping Creek Limited and Spacelab Pty Ltd
Bushfire Assessment Report Ref:	JD.50.19b
Rural Fire Service Ref:	NSWRFS -DA-2019-02513

2 PROPOSED AMENDMENTS AND

ADDITIONAL INFORMATION

Following formal commentary and an online meeting (10.11.20) between NSW RFS, PEET Limited, EMBER Bushfire Consulting and QPRC, NSW RFS raised a number of concerns regarding the general design of the Jumping Creek Estate and a number of key elements in the bushfire assessment report. NSW RFS requested “clarification and further information” on a number of issues before further review and approval could be provided.

Specifically, it is understood that the key actions required were:

1. Consideration given to additional road connections to improve access and remove dead ends where possible.
2. Review layout of larger lifestyle lots and consider including inbuilt redundancy given access concerns.
3. Provide detailed DTM survey information to allow RFS verification of assumed slopes.
4. Obtain Council agreement that open space land will be maintained in perpetuity such that fuels loads will remain below those assumed in the BFAR.

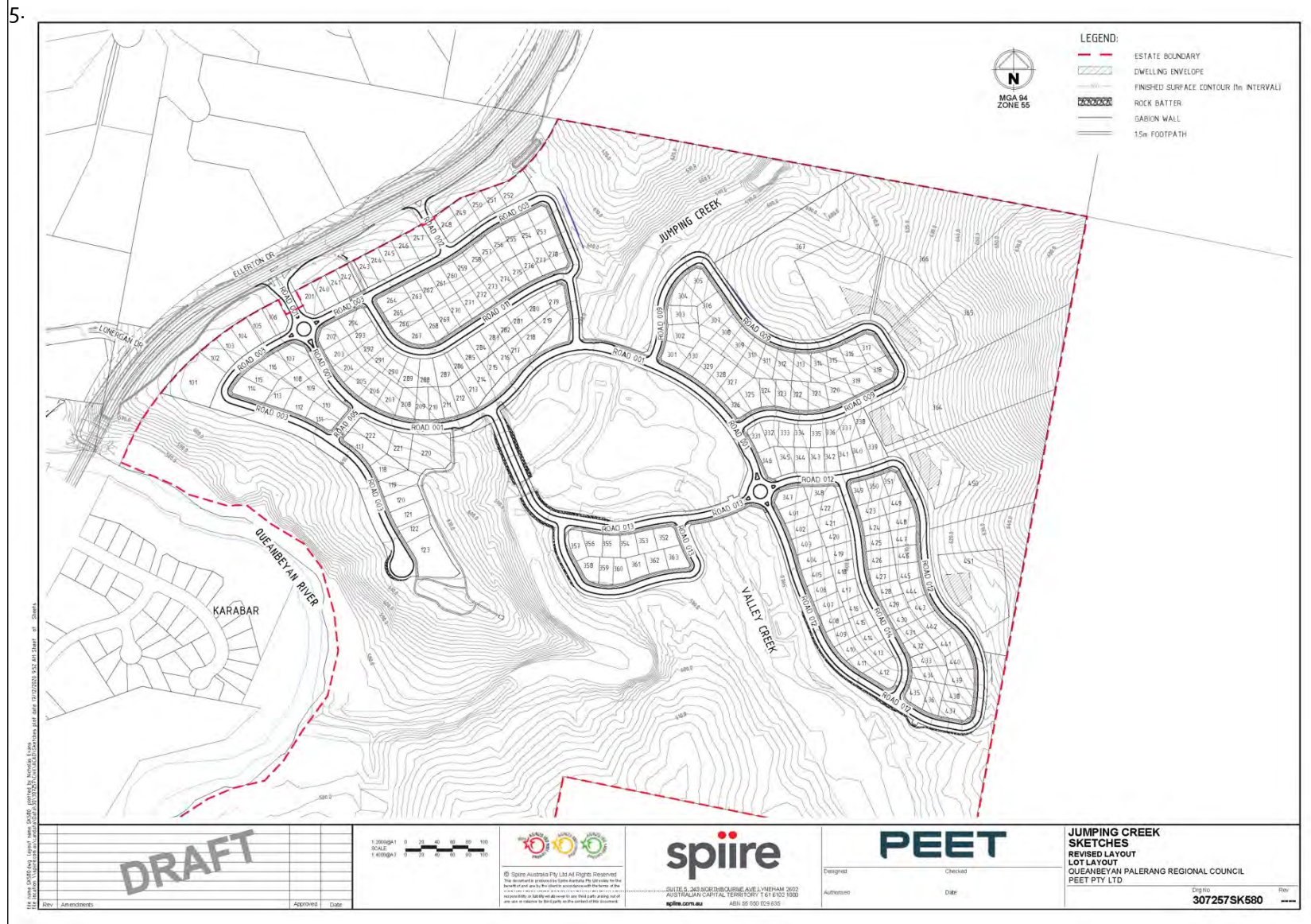


Figure 1 – Revised subdivision layout (Spiire, 2020)

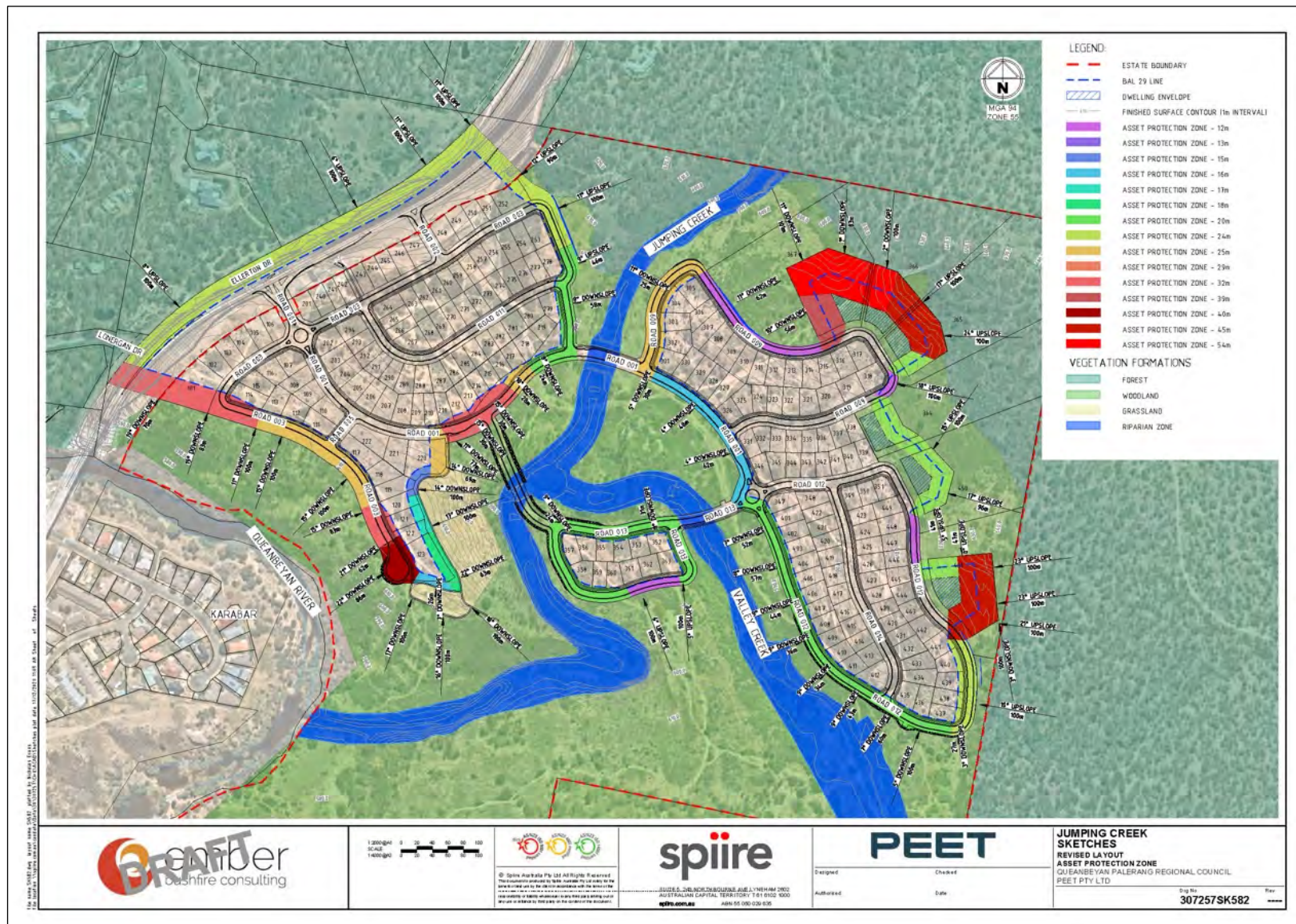


Figure 2 – Revised subdivision layout with APZ (Spiire, 2020)

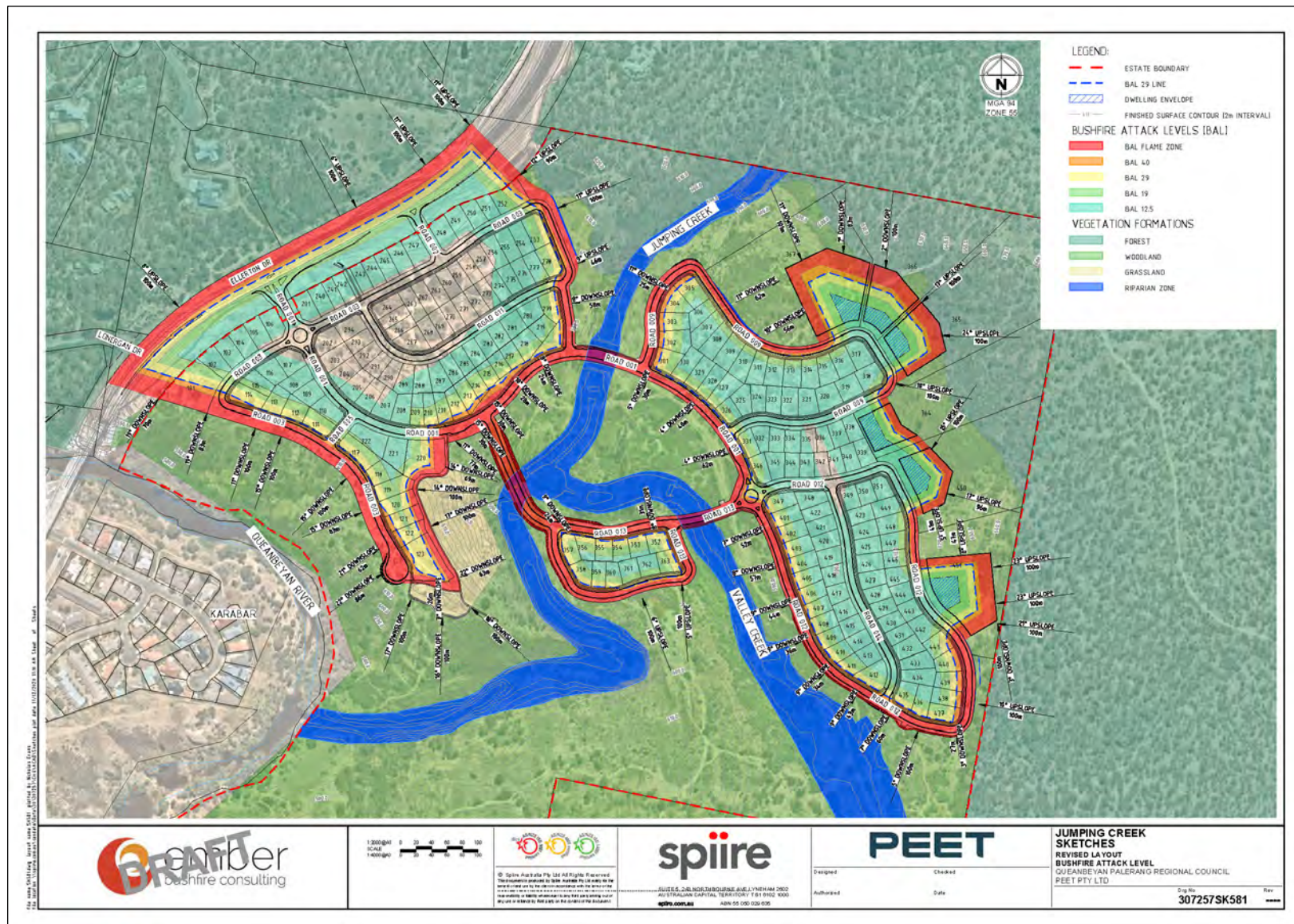


Figure 3 – Revised subdivision layout BAL Mapping (Spiire,2020)

3 ASSESSMENT OF AMENDMENTS

ACCESS

Performance criteria to be achieved:

The current layout (Fig 1) is deemed to satisfy all performance criteria for access with the use of acceptable solutions with the exception of:

- firefighting vehicles are provided with safe, all-weather access to structures.

Discussion - Road Network Design:

PEET Limited have reviewed the subdivision layout and are proposing to provide an additional link road (including bridge) as shown in Figure 1 which removes all but one dead end road (Rd 003). Rd 003 is less than 200m long and therefore conforms with the acceptable solutions in PBP 2019.

The additional link also means that the public road access throughout the subdivision as a whole can be regarded as “through road access”, given that there are 2 entry / egress points along Ellerton Drive and any property within the subdivision (except Rd 003) has alternative egress should one road be blocked.

On this basis, access within Jumping Creek Estate conforms with the following acceptable solutions:

- subdivisions of three or more allotments have more than one access in and out of the development;
- all roads are through roads;

- dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;

Discussion - Perimeter Roads:

The only acceptable solution for this performance criteria not adhered to is:

- perimeter roads are provided for residential subdivisions of three or more allotments;

“...perimeter roads provide space to conduct active firefighting operations and hazard reduction activities. In developments where no perimeter road exists, property defence in a bush fire event may be more difficult.”

Perimeter roads are provided throughout the majority of Jumping Creek Estate with the exception of 6 larger “rural lifestyle” lots. Perimeter Roads are not proposed given the steep terrain behind these lots, the large area of forest vegetation required to be cleared and the limited suitability of perimeter roads for this style of lots where residences would be separated by more than 100 m to the perimeter road offering protection.

In lieu of an acceptable solution, a performance-based design is proposed.

It should be noted that PEET Limited have reviewed the original layout of the large lots and deleted one lot where the building envelope was upslope of vegetation.

The layout of the remaining 6 large lots and associated dwelling envelopes has been reviewed, with the proposed arrangements, subsequent APZs and BAL mapping shown in Figures 2 & 3.

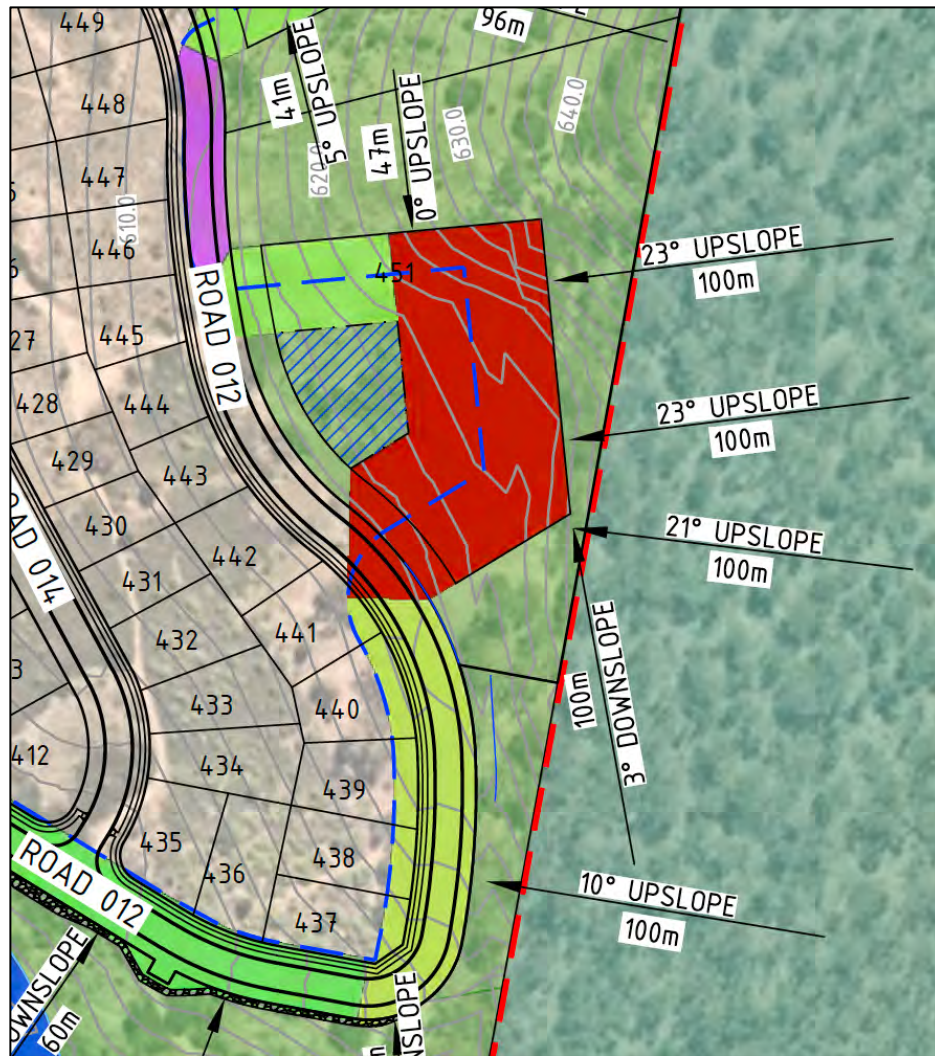


Figure 4 - Detailed design of large rural lifestyle lots including dwelling envelope (blue hatched areas), BAL-29 threshold indicator (blue line) and APZ (Red and green area)

In lieu of providing a perimeter road for these lots the following is offered:

- Dwelling envelopes (Fig 4 blue hatched area) have been assigned to all 6 lots which constrain future residential dwellings to a specific location within the lot.
- Dwelling envelopes will ensure that future residences are no greater than 50 m from the road network and no greater than 70 m from fire hydrants enabling active fire operations from the relative safety of the street front.
- APZ dimensions will be extended to ensure that a maximum BAL-12.5 rating is achieved for any future dwelling providing for lower radiant heat levels at the building face as well as large defensible space for active fire operations to take place.
- Mandatory BAL-29 construction for future dwellings in these lots offering a higher level of resilience to bushfire attack and improving the safety for residents and fire crews undertaking active fire operations.

With consideration given to the use of acceptable solutions and the inclusion of specific measures for the 6 rural lifestyle lots, access within Jumping Creek Estate is deemed to provide safe, all weather access to structures within the subdivision as planned.

SLOPE ANALYSIS

Attached to the end of this report (Attachment A) is detailed information provided by Spiire (the consulting civil engineering company for the project) used to derive slopes for the purpose of determining APZ dimensions and BAL's through the subdivision.

Where slopes have been identified over 20 degrees a AS 3959-2009 method 2 analysis has been conducted in these areas and the APZs and BALs calculated accordingly.

Please indicate if you are supportive of this analysis, or if not which areas are not correct. Furthermore, please indicate if you would like these in a GIS or CAD format as they are also available.

VEGETATION MANAGEMENT

Future vegetation management has been discussed at length with Council.

Please see a copy of the email trail and final response from Luke Perkins (Attachment B) agreeing that open space land will be maintained in perpetuity such that fuel loads will remain below those assumed in the BFAR.

4 CONCLUSION

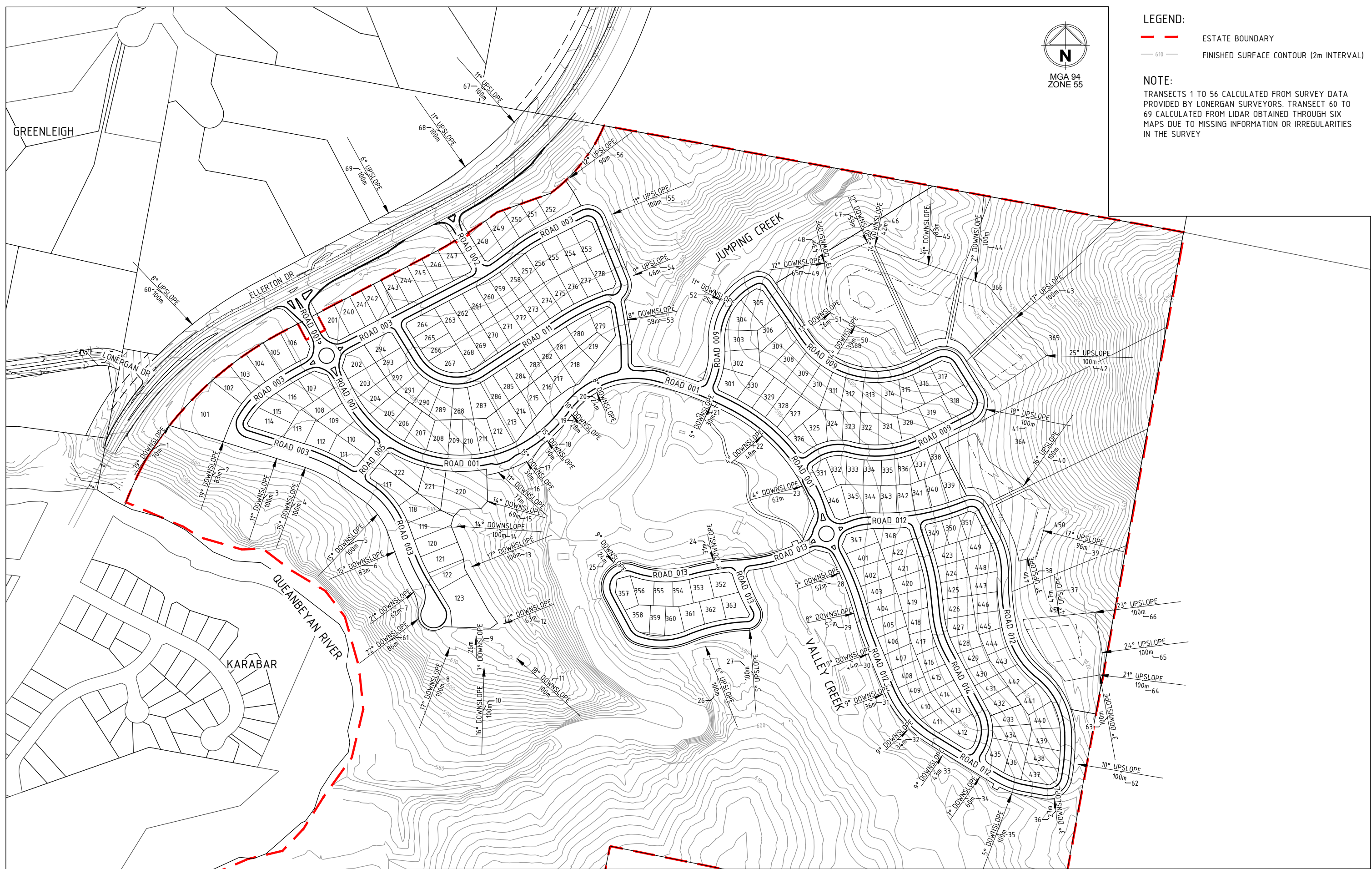
Based on the above amendments and supporting information, the proposed Jumping Creek Estate is deemed to comply with the requirements of Planning for Bushfire Protection and a re-assessment of the proposal is sought by the NSW Rural Fire Service.

Regards,



Jeff Dau - Director
BAppSc, GradDip Fire Safety Engineering,
GradDip Bushfire Protection
FPA Australia – Bushfire Protection and Design
(Level 2 - 33128)
T. 0419826282 E. jeff@bushfireassessor.com.au
W. bushfireassessor.com.au
M. 36 Forster St Bungendore ACT 26021

ATTACHMENT A - SLOPE ANALYSIS



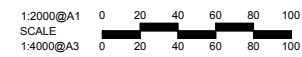
LEGEND:

- ESTATE BOUNDARY
- FINISHED SURFACE CONTOUR (2m INTERVAL)

NOTE:

TRANSECTS 1 TO 56 CALCULATED FROM SURVEY DATA PROVIDED BY LONERGAN SURVEYORS. TRANSECT 60 TO 69 CALCULATED FROM LIDAR OBTAINED THROUGH SIX MAPS DUE TO MISSING INFORMATION OR IRREGULARITIES IN THE SURVEY

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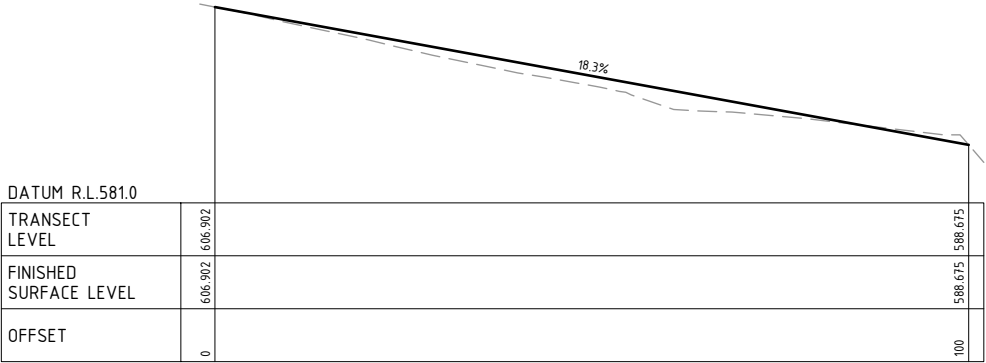


**JUMPING CREEK
SKETCHES
BUSHFIRE PLANNING
SLOPE TRANSECTS**
QUEANBEYAN PALERANG REGIONAL COUNCIL
PEET PTY LTD

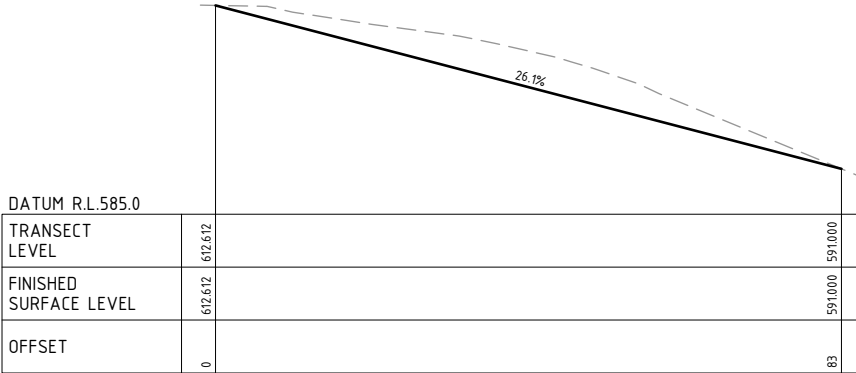
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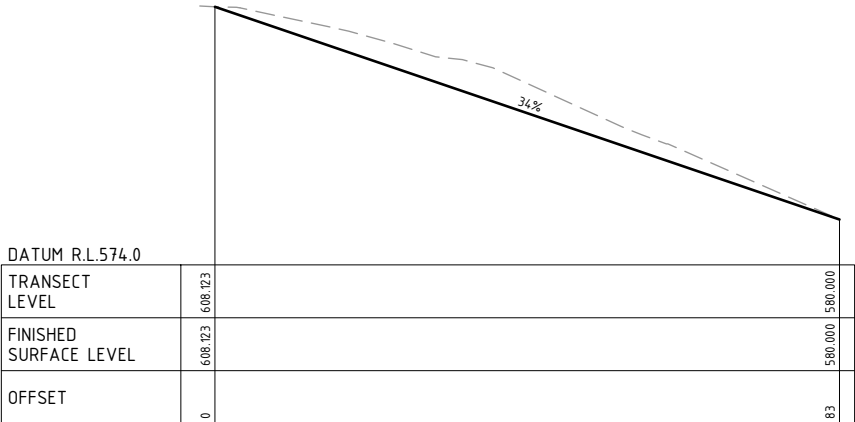
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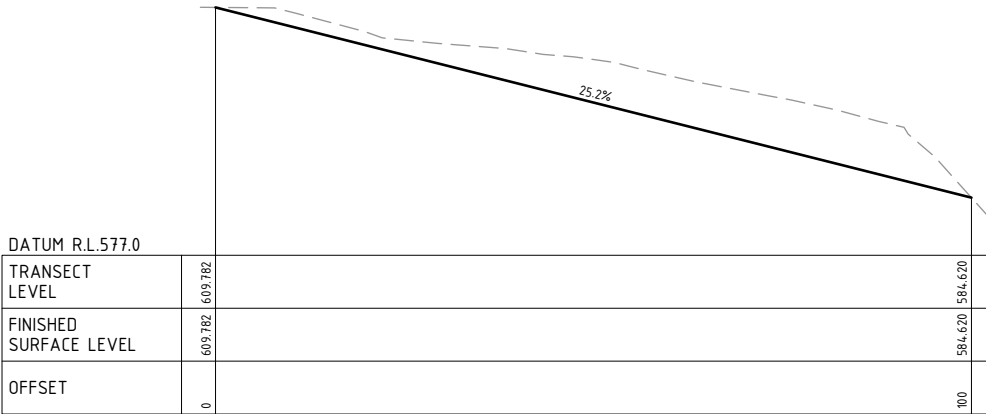
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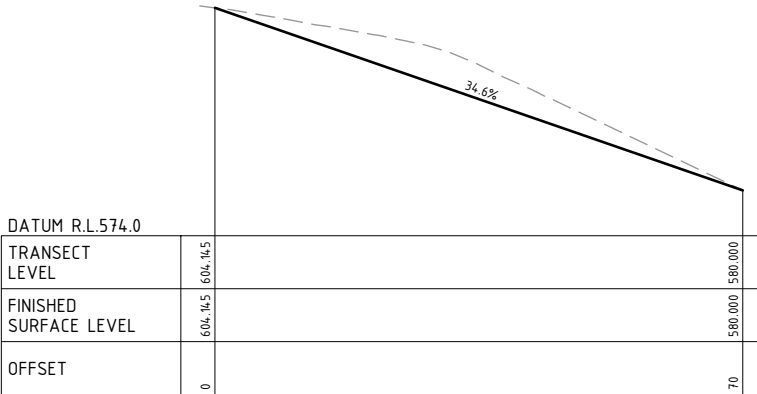
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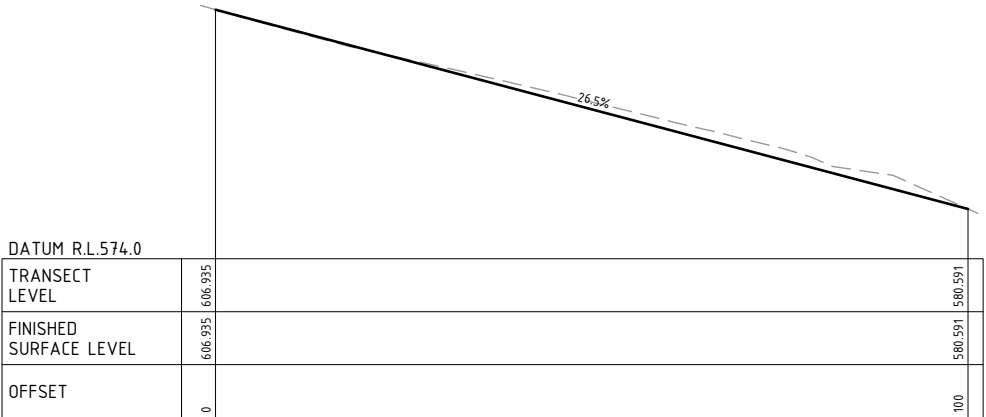
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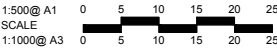
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TRANSECT 1



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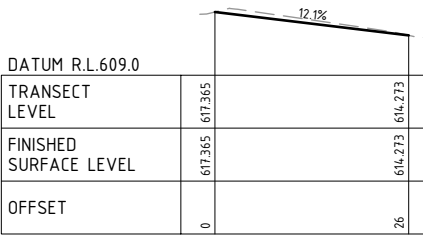


JUMPING CREEK
SKETCHES
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PEET PTY LTD

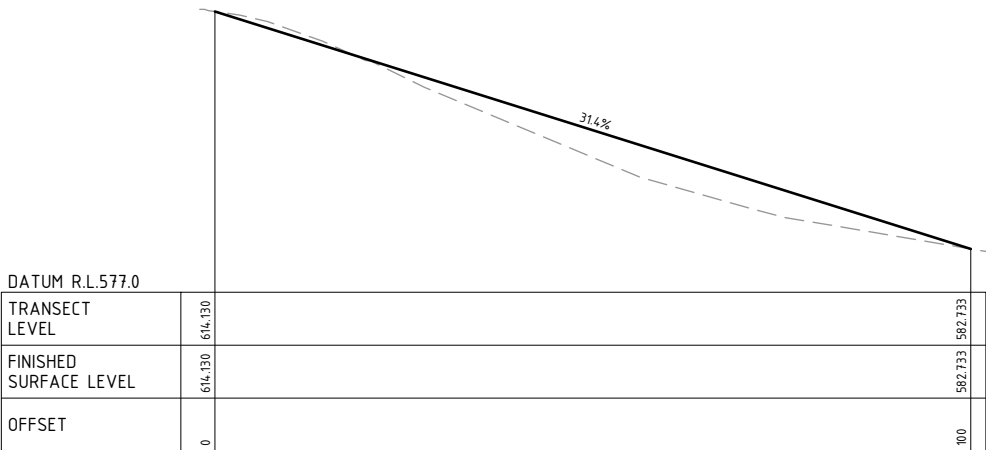
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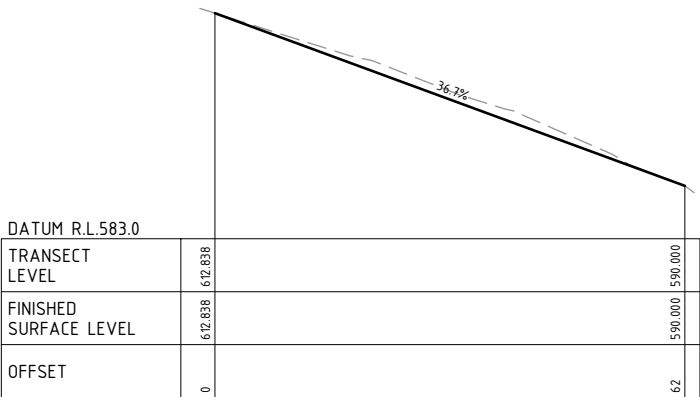
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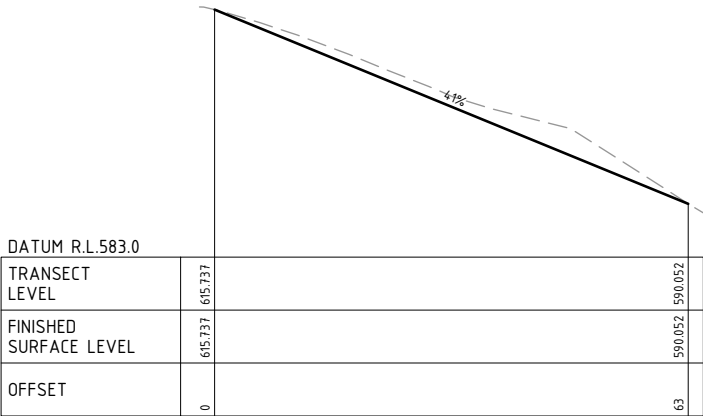
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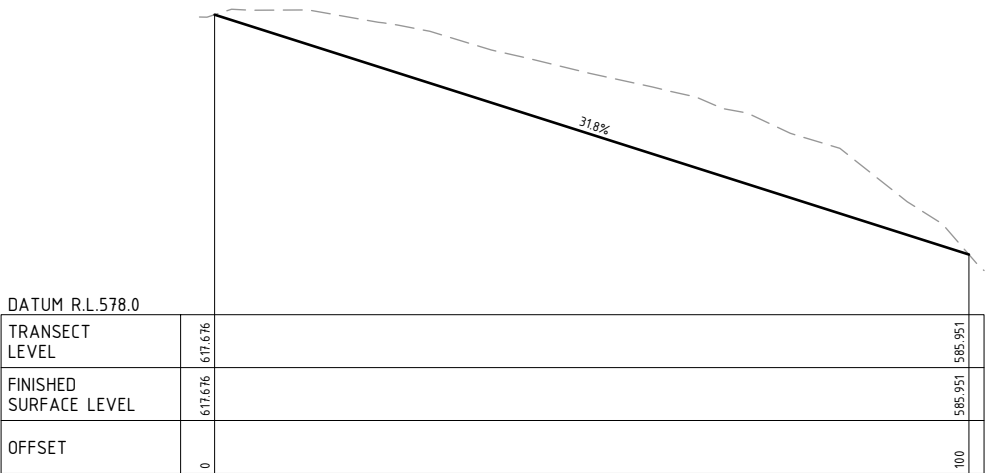
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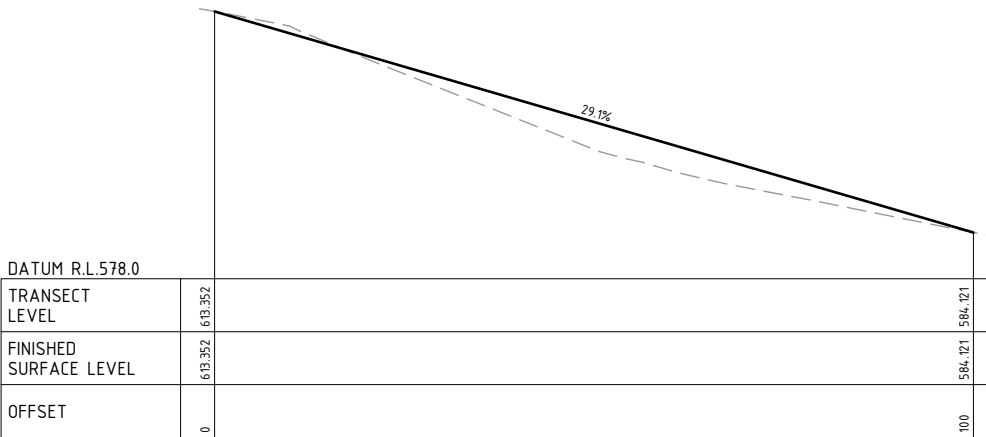
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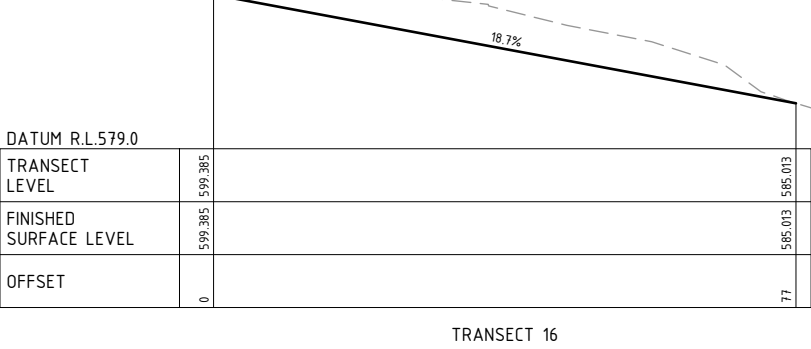
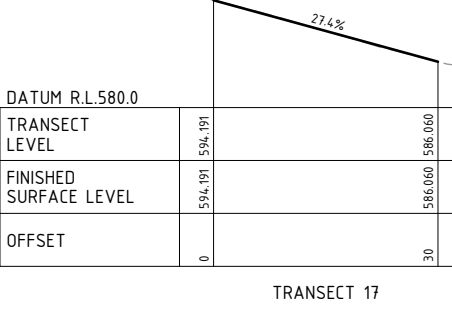
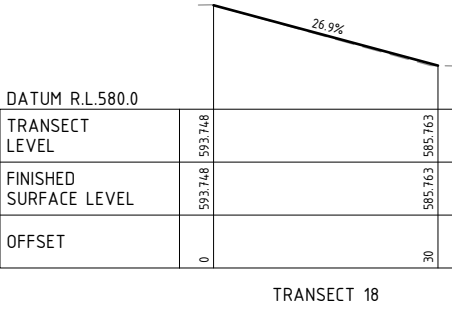
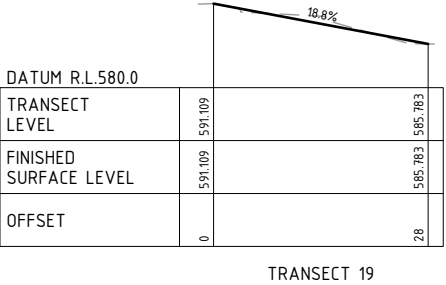
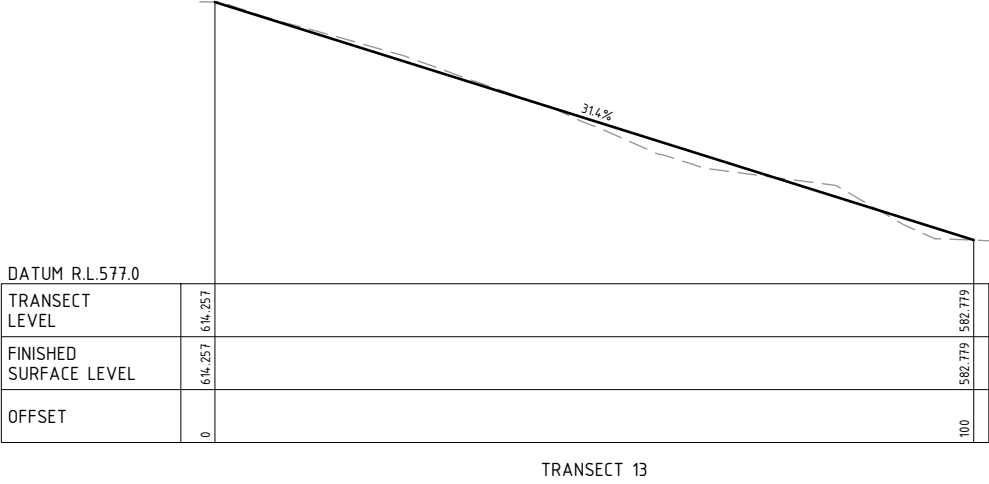
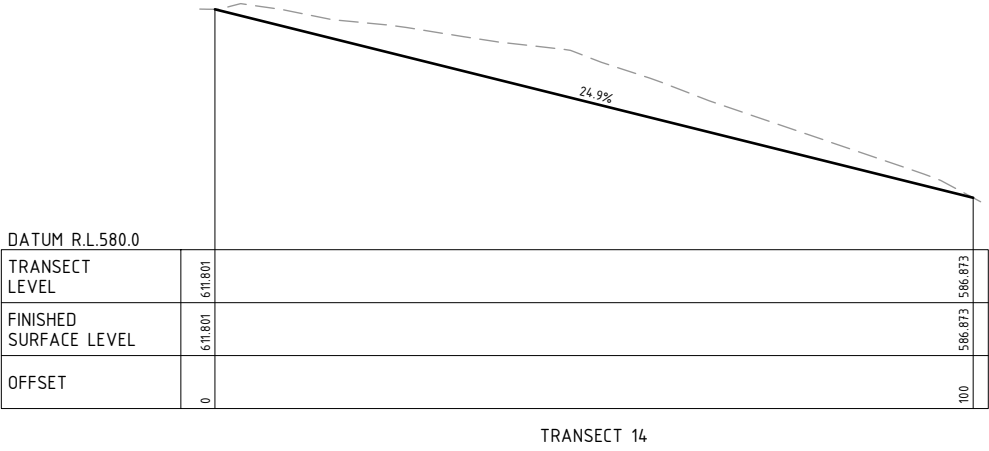
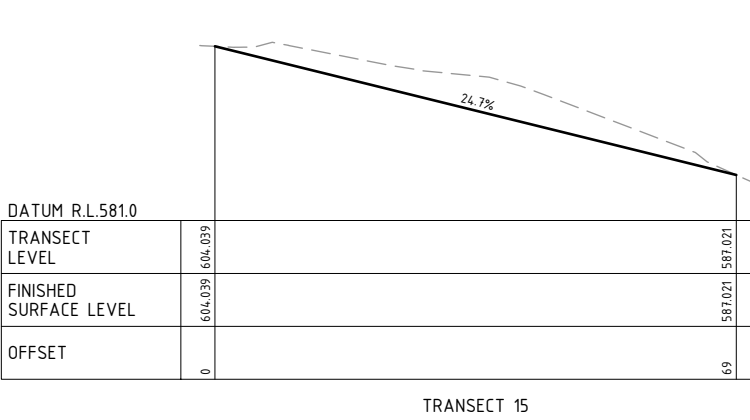
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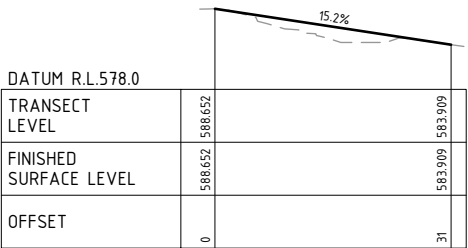
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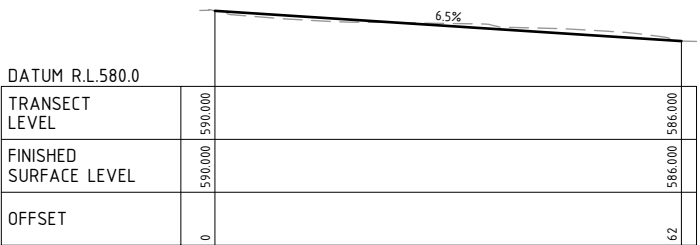
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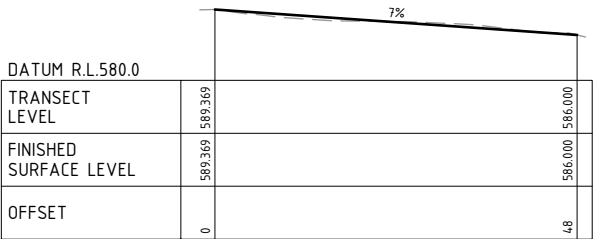
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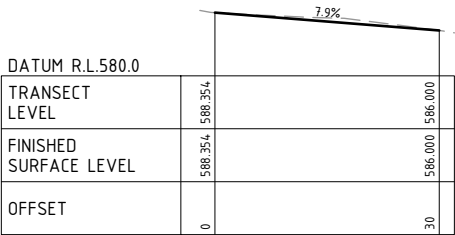
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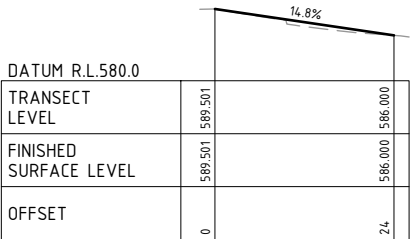
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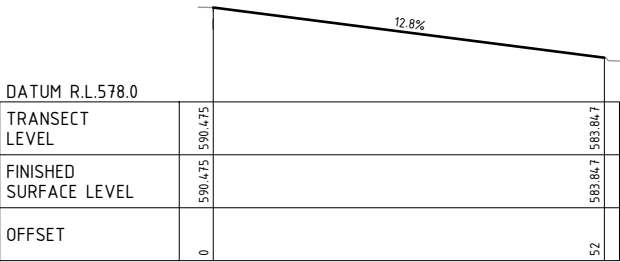
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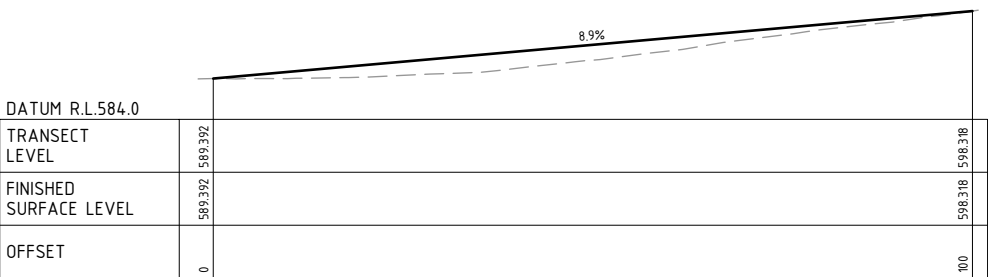
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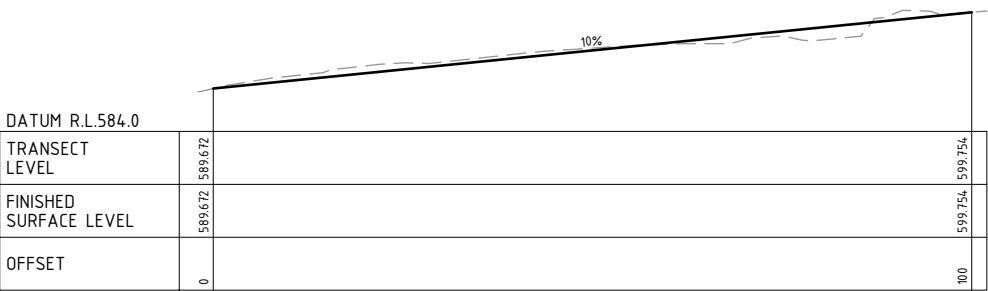
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TRANSECT 27



TRANSECT 26



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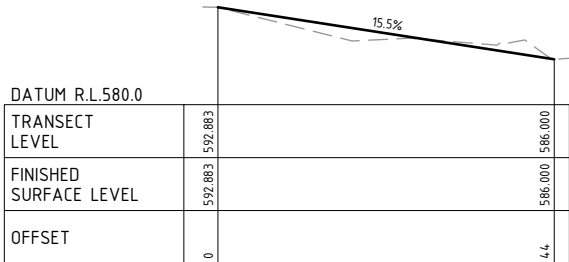
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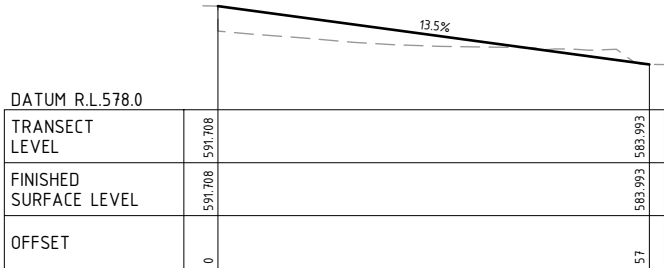
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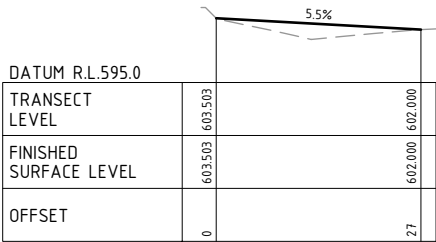
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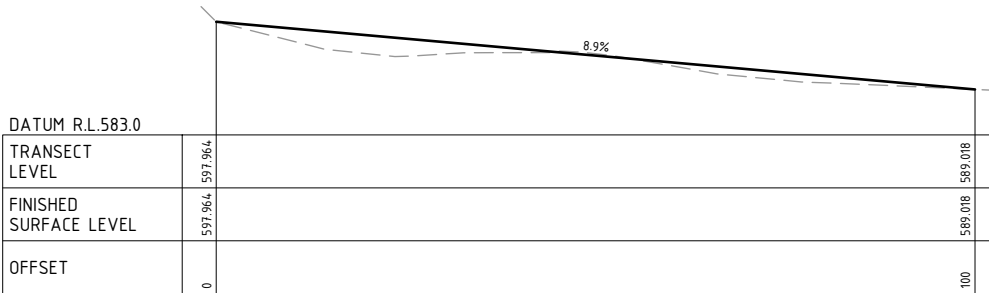
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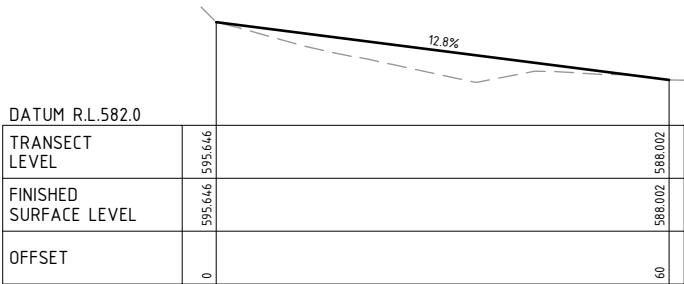
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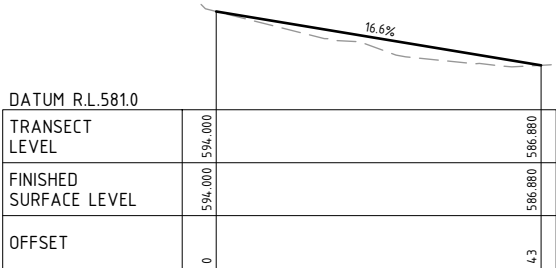
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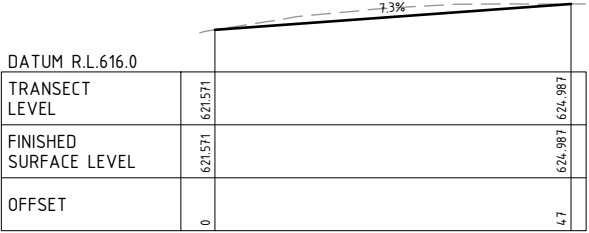
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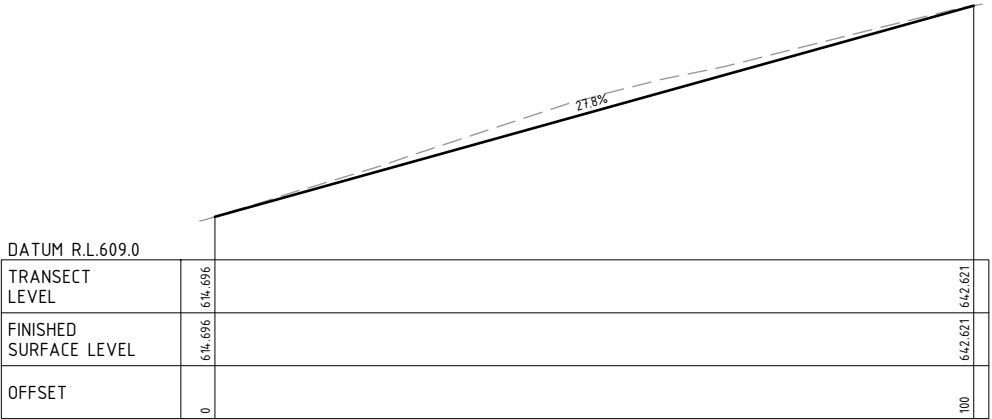
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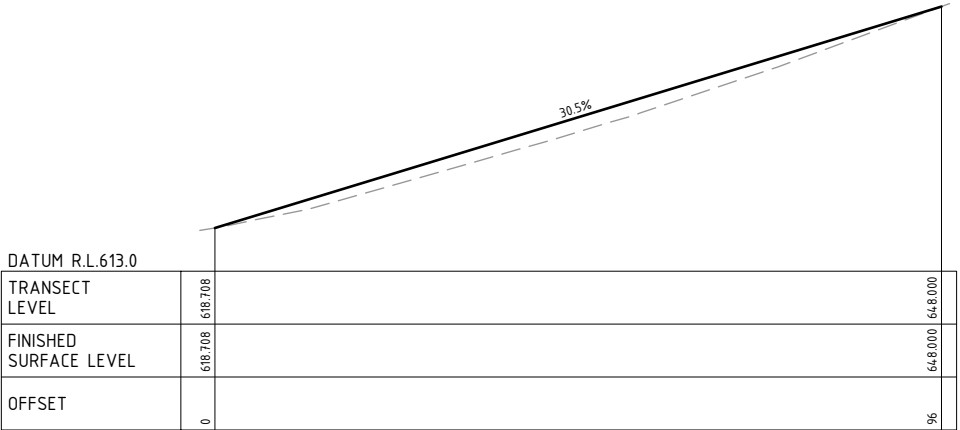
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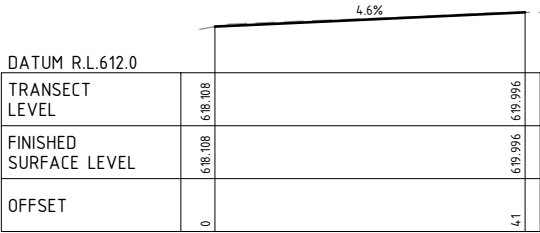
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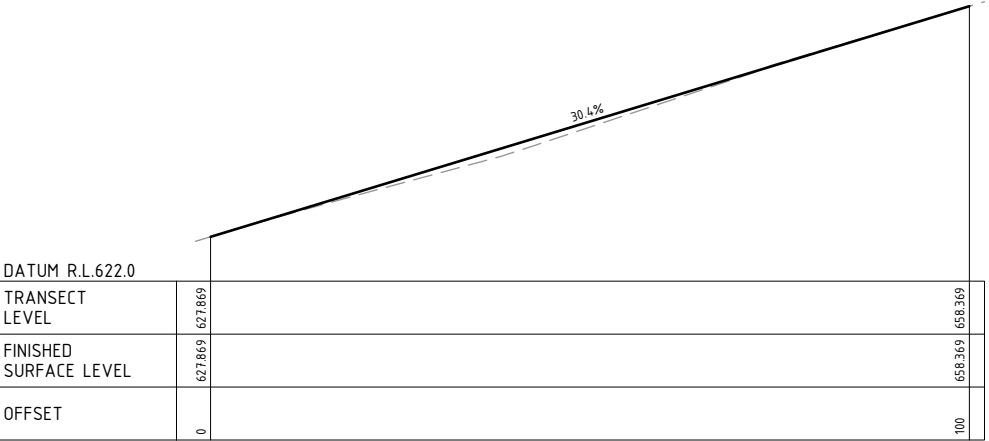
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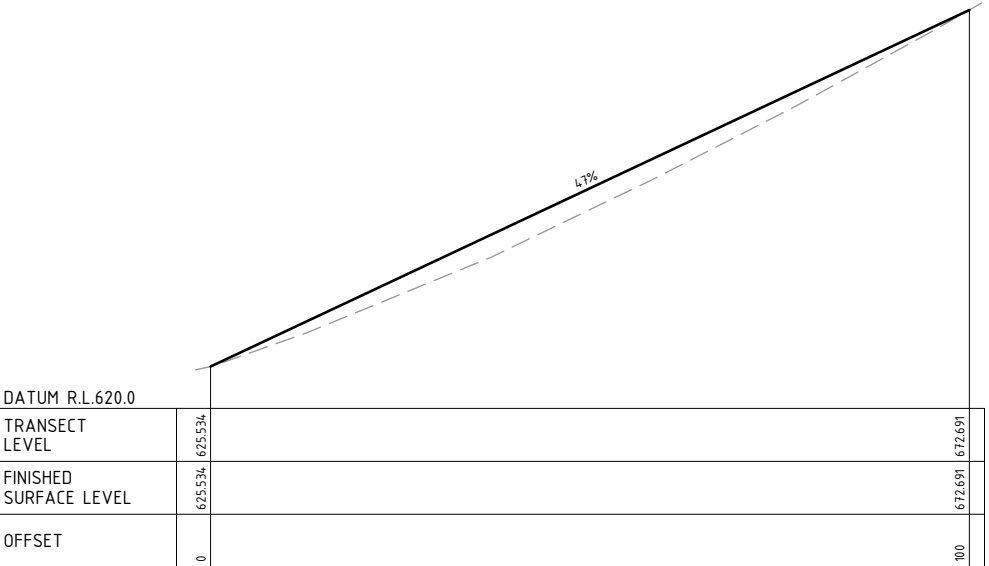
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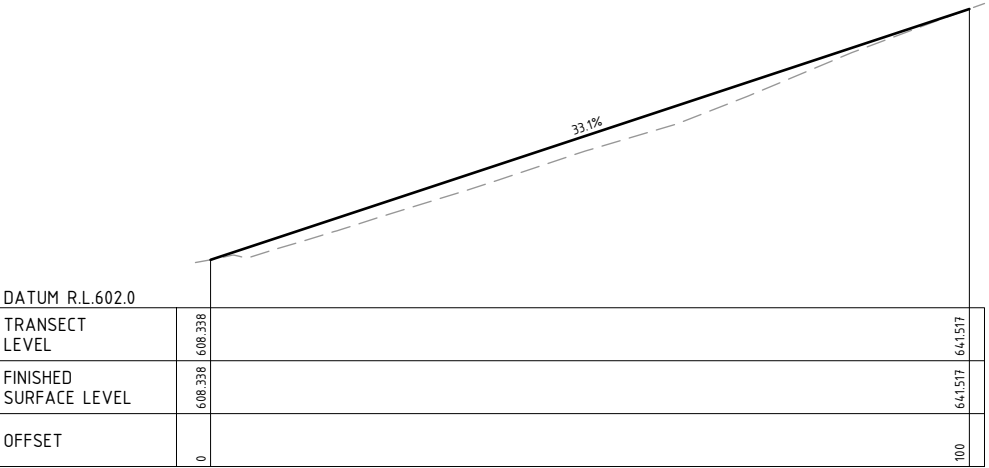
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TRANSECT 42



TRANSECT 41

UNIT CONVERSION	
SLOPE DEGREE (°)	SLOPE PERCENT (%)
5	8.75
10	17.63
15	26.79
20	36.40



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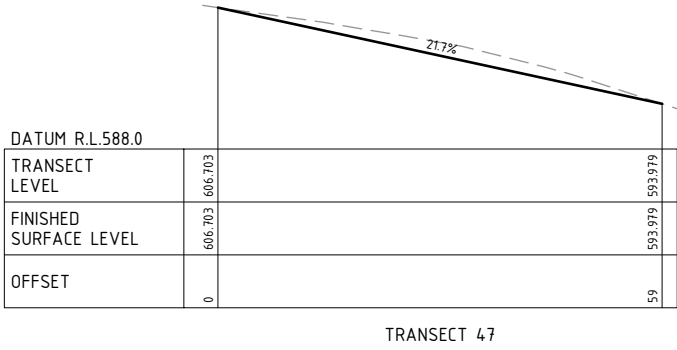
**JUMPING CREEK
SKETCHES**
BUSHFIRE PLANNING
TRANSECT CROSS SECTIONS SHEET 06
QUEANBEYAN PALERANG REGIONAL COUNCIL
PEET PTY LTD

Drg No
307257SK526

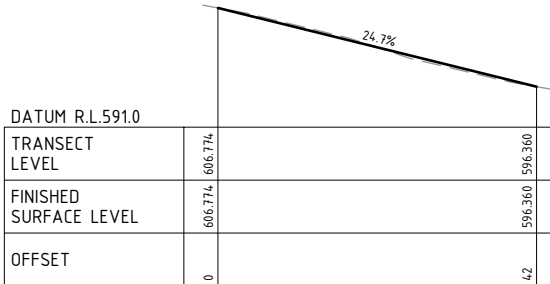
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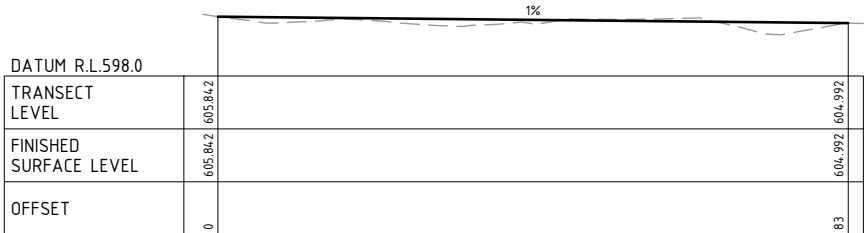
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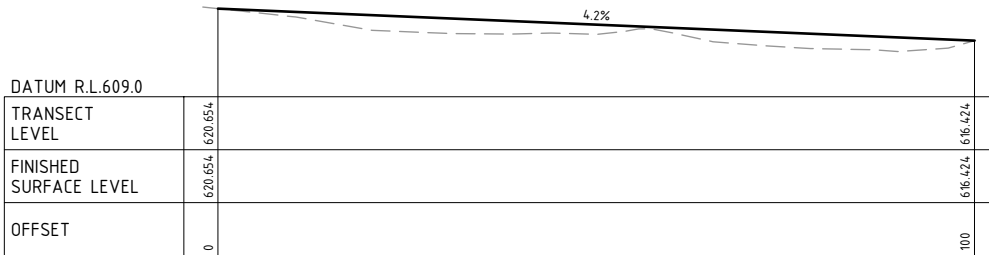
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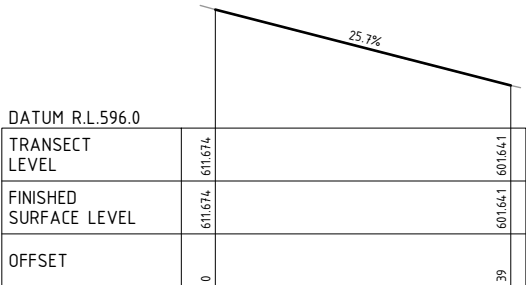
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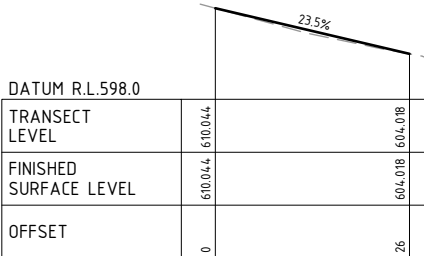
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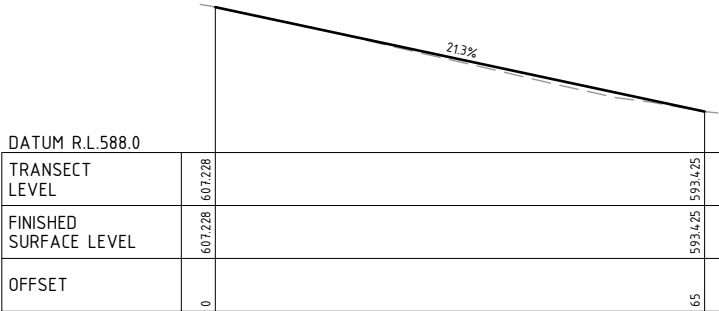
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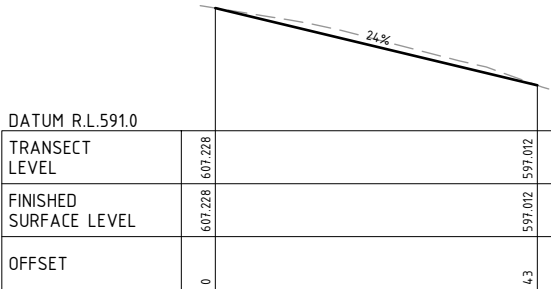
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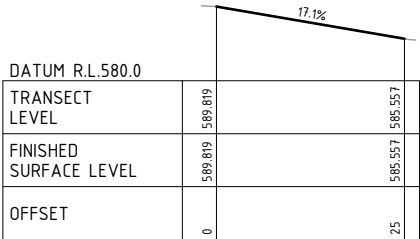
TRANSECT 50



TRANSECT 49



TRANSECT 48



TRANSECT 52



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0 5 10 15 20 25



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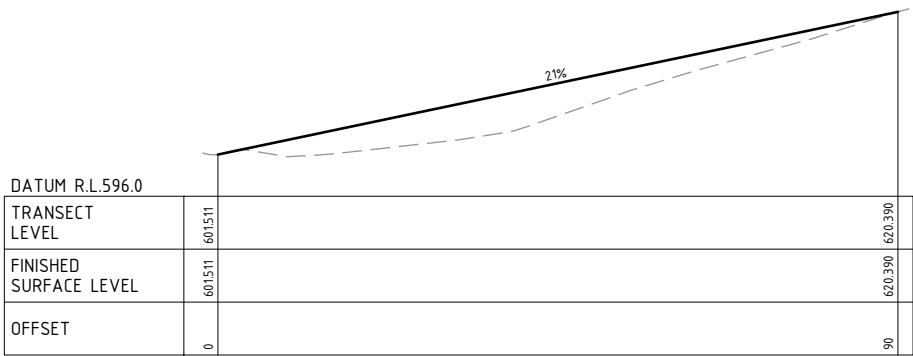
JUMPING CREEK
SKETCHES
BUSHFIRE PLANNING
TRANSECT CROSS SECTIONS SHEET 07
QUEANBEYAN PALERANG REGIONAL COUNCIL
PEET PTY LTD

Drg No
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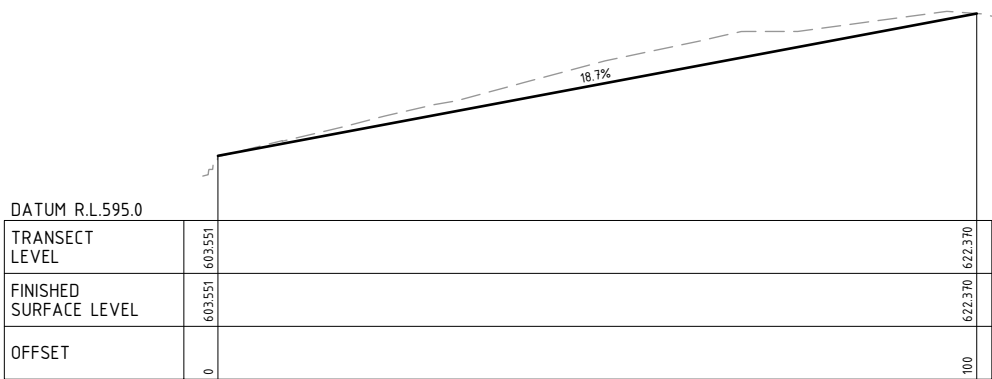
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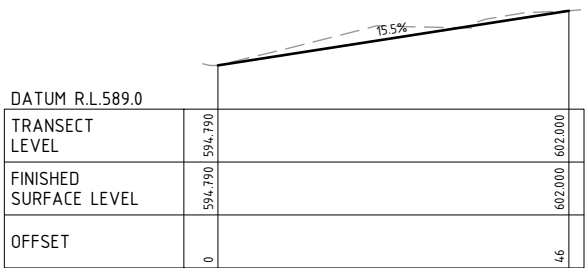
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20	36.40



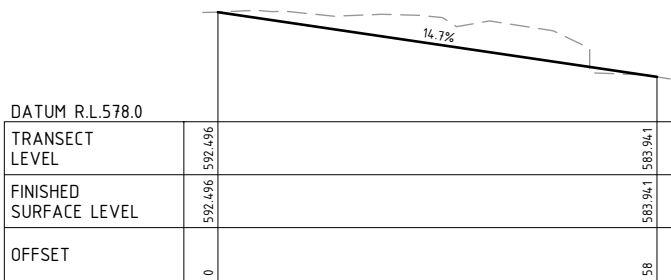
TRANSECT 56



TRANSECT 55



TRANSECT 54



TRANSECT 53



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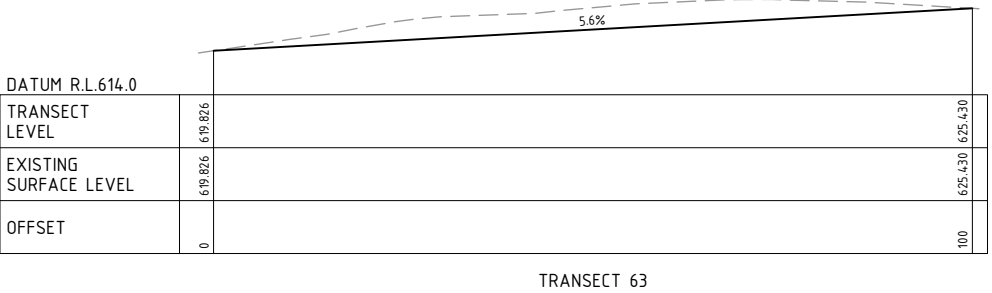
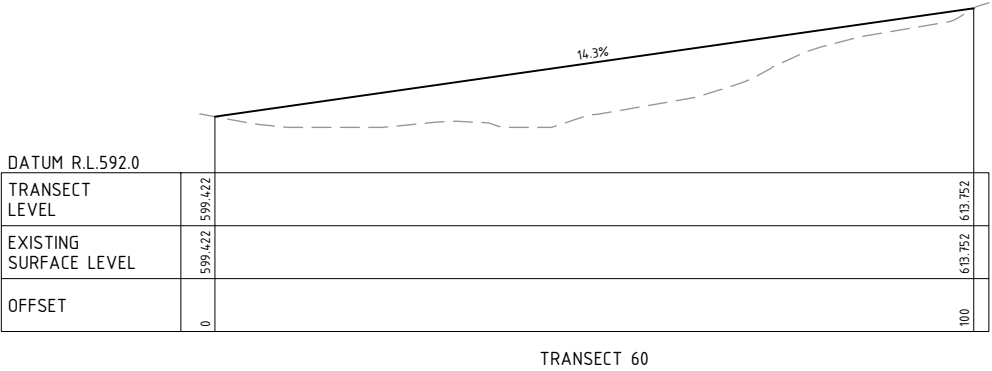
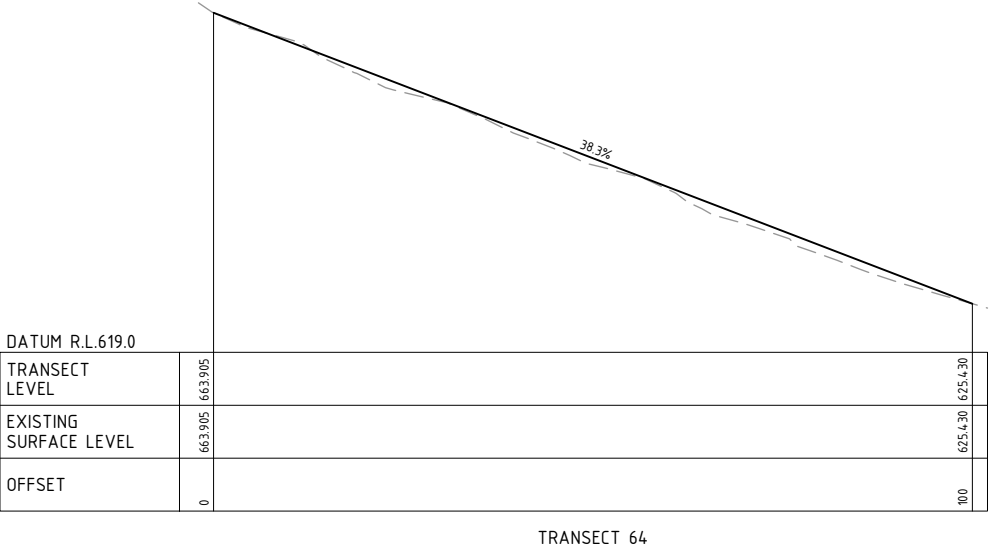
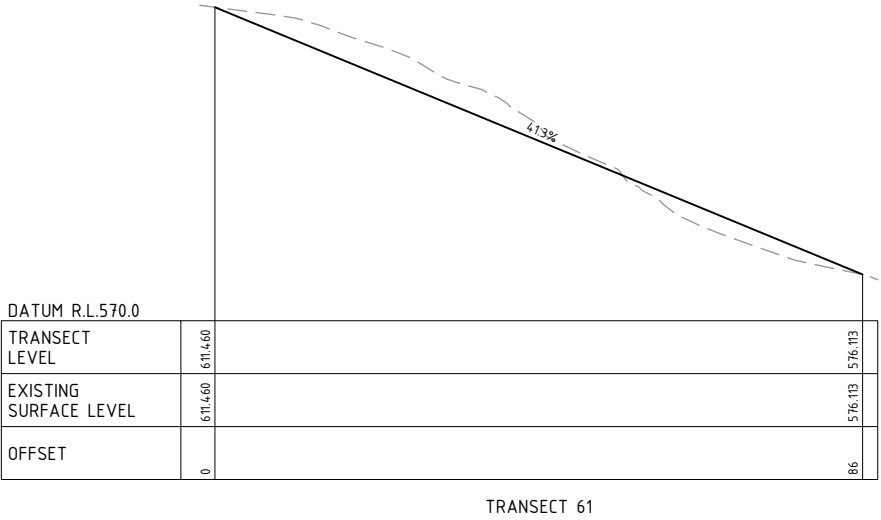
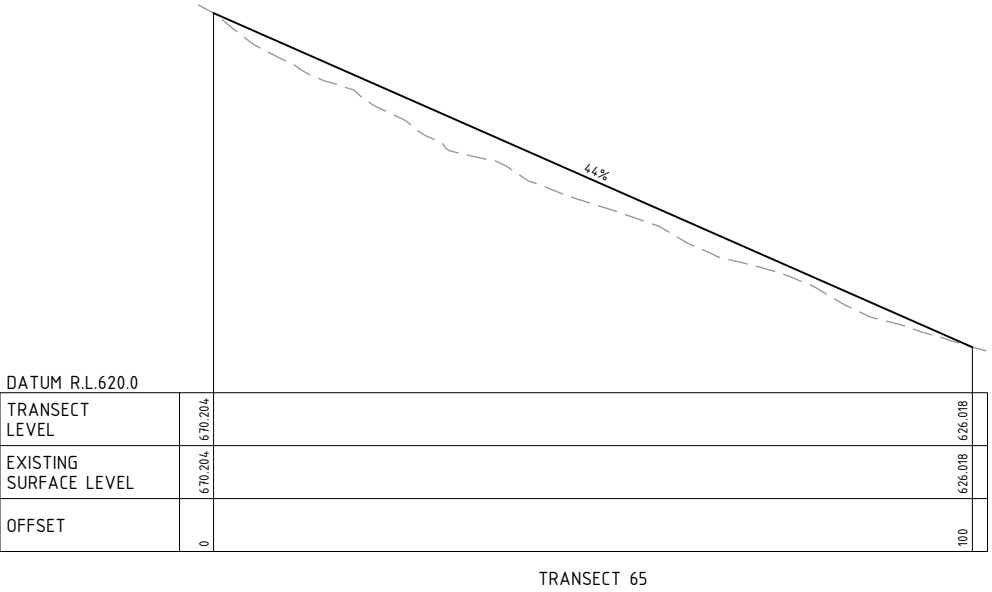
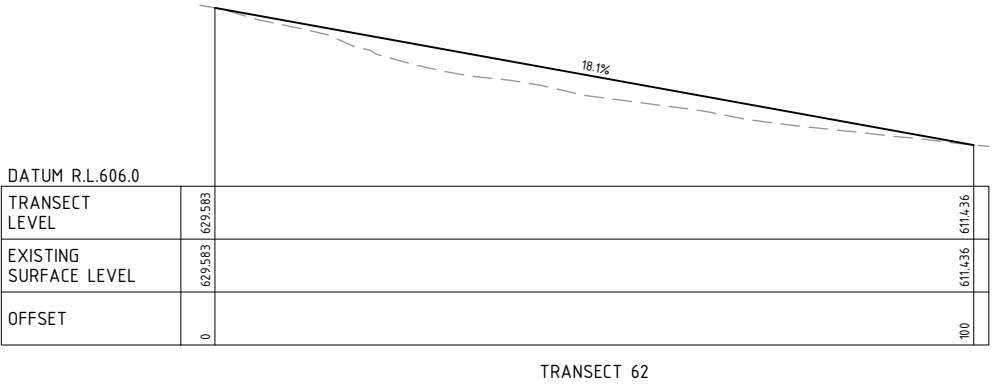
**JUMPING CREEK
SKETCHES**
BUSHFIRE PLANNING
TRANSECT CROSS SECTIONS SHEET 08
QUEANBEYAN PALERANG REGIONAL COUNCIL
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Drg No
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UNIT CONVERSION	
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5	8.75
10	17.63
15	26.79
20	36.40



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0 5 10 15 20 25
0 5 10 15 20 25



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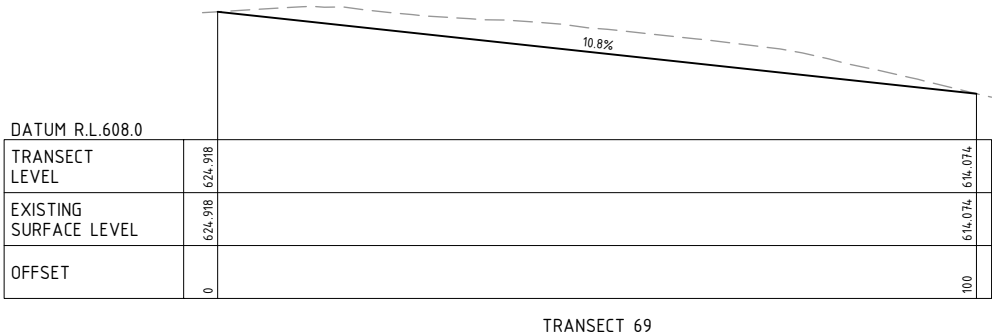
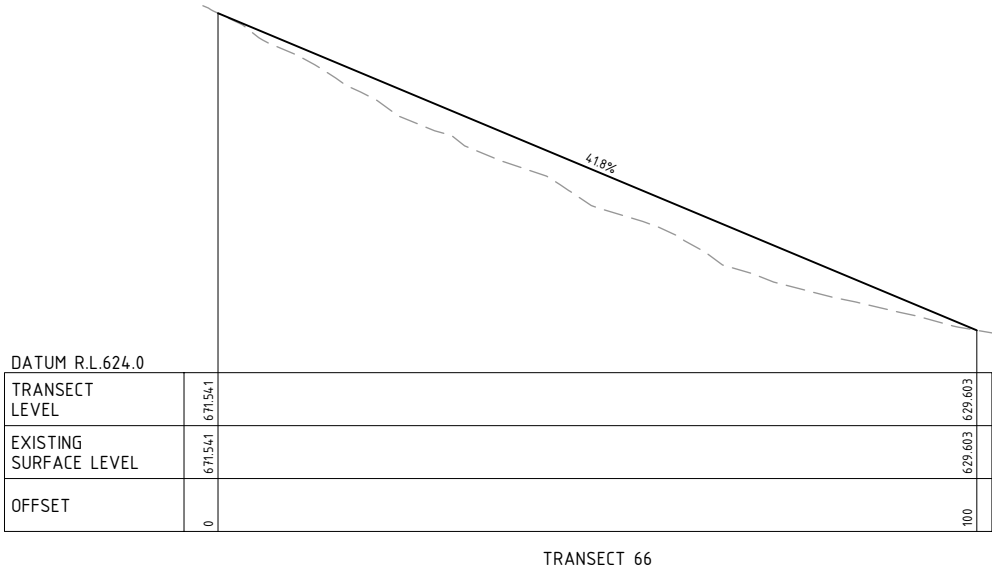
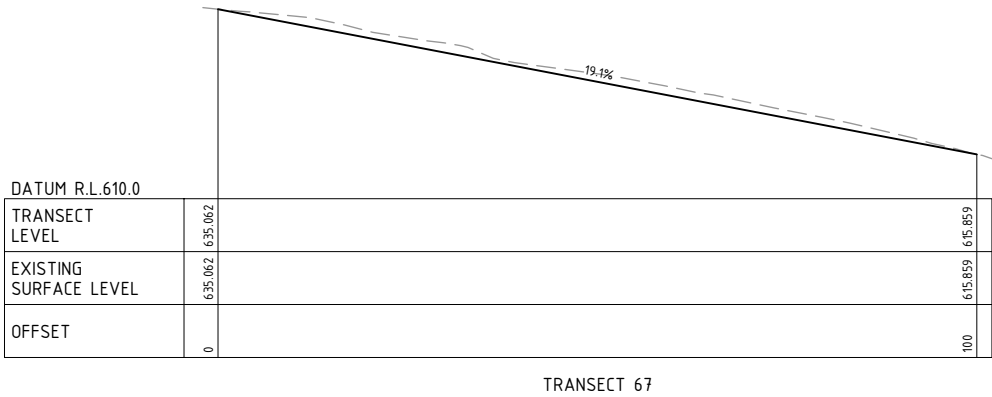
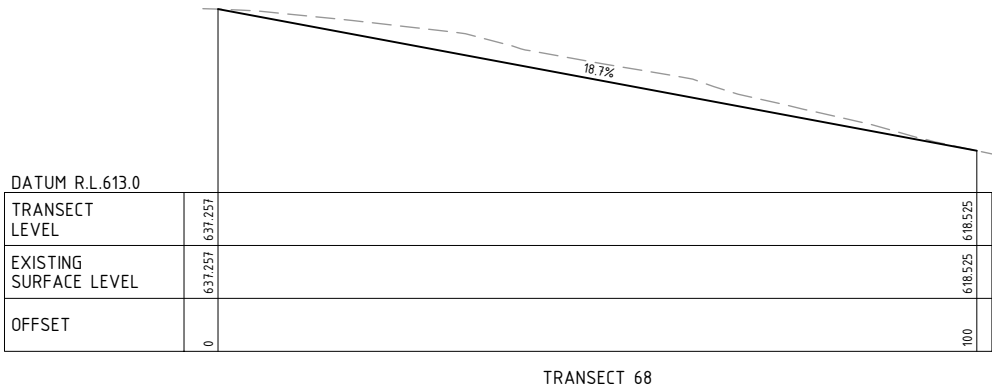
**JUMPING CREEK
SKETCHES**
BUSHFIRE PLANNING
TRANSECT CROSS SECTIONS SHEET 09
QUEANBEYAN PALERANG REGIONAL COUNCIL
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Drg No
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UNIT CONVERSION	
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JUMPING CREEK
SKETCHES
BUSHFIRE PLANNING
TRANSECT CROSS SECTIONS SHEET 10
QUEANBEYAN PALERANG REGIONAL COUNCIL
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Drg No
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Rev
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ATTACHMENT B - SUPPORTING LETTER FROM COUNCIL

Good Morning Mitchell,

Council has now had time to review the below request and confirms that no objection is raised to areas A,B and C being maintained by Council to ensure that maximum fuel loads are not exceeded in perpetuity following their dedication to Council.

I do note that further conversations will be required between yourself and Council's Landscape team regarding the final treatment of Area B, however it is agreed that suitable arrangement can be achieved resulting in a design below the maximum permissible fuel load for the area.

I hope this is sufficient for your purposes.

Please do not hesitate to contact me should you require any further information.

Regards,

Luke Perkins

New Release Coordinator

Queanbeyan-Palerang Regional Council

Tel: 1300 735 025

Office: 256 Crawford Street, Queanbeyan

Web: www.qprc.nsw.gov.au

Mail: PO Box 90 Queanbeyan NSW 2620



From: Mitchell Alexander <Mitchell.Alexander@peet.com.au>

Sent: Tuesday, 1 December 2020 1:31 PM

To: Luke Perkins <luke.perkins@qprc.nsw.gov.au>

Cc: Malcolm Leslie <Malcolm.Leslie@peet.com.au>; Tim Corby <Tim.Corby@peet.com.au>; Benjamin Cargill <Benjamin.Cargill@spiire.com.au>

Subject: RE: Jumping Creek - follow up from meeting with QPRC re vegetation maintenance

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Luke

As you are aware, to finalise their assessment of the Bushfire Assessment Report (BAR) for Jumping Creek, RFS is seeking confirmation from Council that it will maintain the various areas of open space such that fuel loads will remain below the levels assumed in the BAR.

We discussed this matter at our meeting on 20 November 2020 and this email provides the information requested by Council at the meeting.

The BAR assumes 3 vegetation types for the open space areas, Forest, Woodland and Grassland. The corresponding RFS bushfire modelling fuel loads for these vegetation types are as follows:

- Forest (Surface Fuel Load 25 t/ha Overall Fuel Load 35 t/ha)
- Woodland (Surface Fuel Load 15 t/ha Overall Fuel Load 25 t/ha)
- Grassland (Surface Fuel Load 4.5 t/ha Overall Fuel Load 4.5 t/ha)

These are the maximum fuel loads that these vegetation types will generate if left in their natural form. Three specific areas of concerns were discussed at our meeting on 20 November 2020. The three areas are shown and discussed below.



Area A - Grassland between concrete path and creek:

- This area, as depicted in the vegetation analysis in the BAR, is designated as an unmanaged Grassland Hazard, largely devoid of trees and shrubs.
- For the purposes of bushfire modelling it is assumed that this Grassland Hazard is and will always be unmanaged with a theoretical max fuel load of 4.5 t/ha. Given the rocky substrate and shallow soils this fuel load is unlikely to ever be reached even with no maintenance and the bushfire modelling is therefore highly conservative. Ember estimates that the current fuel loads in this area are in the order of 1.5 – 2.0 t/ha.
- Therefore the only management required to ensure that fuel loads do not exceed the levels assumed in the BAR, is to ensure that there are no trees or shrubs planted in the area and if any self-seeding plants do emerge, they are removed. Ground covers such as sedges and other native grasses are acceptable.
- The creek is not part of the grassland for the purposes of determining the bushfire hazard and as such trees and shrubs within the creek are acceptable.

Area B - Area between property boundary and footpath behind lots:

- This area is flat and easily accessible by Council maintenance crews via the concrete path. There are a number of options for the surface treatment of this area.
- We believe dryland grass is likely to be the best solution from a maintenance and appearance point of view. It is anticipated that it would be fairly simple for Council to include the mowing of this area as part of its regular maintenance regime for Jumping Creek.
- If this is considered too onerous, an alternative would be to treat this area with compacted gravel or an inorganic mulch, which would then only require periodic weed control.

Area C - Woodland between Rd 3 and the Queanbeyan River:

- This area has been mapped by Capital Ecology as Woodland. Both the RFS and Ember concur with this assessment. Ember and Capital Ecology confirm that there is no concern that this area could convert into Forest.
- For the purposes of bushfire modelling it is assumed that this Woodland Hazard is and will always be unmanaged with a theoretical maximum surface fuel load of 15 t/ha and a theoretical overall fuel load of 25 t/ha. Given the rocky substrate, steep slopes and relative sparseness of the vegetation, the maximum fuel load is unlikely to ever be reached even with no maintenance. The bushfire modelling is therefore highly conservative. Ember's current estimate is that the overall fuel loads in this area are in the order of 12.5 t/ha including a surface fuel load of 7 t/ha.
- Therefore no ongoing management of this area is required. All APZ's are based on the max theoretical fuel loads and are therefore highly conservative.

As requested, a plan showing sections through these areas is attached together with photographs of the existing vegetation.

Given the above information we seek Councils advice to the RFS that it is comfortable with the maximum fuel loads assumed in the BAR and that, given Councils maintenance regime, these fuel loads can be considered to be maximum limits in perpetuity.

Regards

Mitchell

Mitchell Alexander

Development Manager

Peet Limited

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From: Mitchell Alexander

Sent: Thursday, 19 November 2020 5:53 PM

To: Luke Perkins <luke.perkins@qprc.nsw.gov.au>

Cc: Malcolm Leslie <Malcolm.Leslie@peet.com.au>; Tim Corby <Tim.Corby@peet.com.au>; Benjamin Cargill <Benjamin.Cargill@spiire.com.au>

Subject: RE: Jumping Creek - meeting with QPRC

Luke

Further to email below, attached is sketch plan showing current (as per Bushfire Report provided to RFS in Aug 2020) and proposed dwelling envelopes (DE) and building envelopes that contain the APZ. As noted below we have amalgamated 2 lots and modified other boundaries to optimise DE.

Regards

Mitchell

Mitchell Alexander

Development Manager

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From: Mitchell Alexander

Sent: Thursday, 19 November 2020 4:52 PM

To: Luke Perkins <luke.perkins@qprc.nsw.gov.au>

Cc: Malcolm Leslie <Malcolm.Leslie@peet.com.au>; Tim Corby <Tim.Corby@peet.com.au>; Benjamin Cargill <Benjamin.Cargill@spiire.com.au>

Subject: Jumping Creek - meeting with QPRC

To assist in tomorrow's meeting we provide the below and attached.

We see 3 primary issues that have been raised in discussion with RFS as noted below that require amendment to the proposed subdivision and fuel loads of open space.

1. Alternate Access/Egress for all lots

Attached sketch plan shows 2 options for a 3rd creek crossing. Our preference is Option A as this has less impact on: the landscape; potential aboriginal objects; vegetation; earthworks. We believe the inclusion of this additional link would satisfy RFS's concerns regarding access.

We seek feedback from Council on Option A.

2. Dwelling Envelopes and APZ's for the large (>1.5ha) lots

We are finalising a sketch plan to show the current and proposed dwelling envelopes (DE) and building envelopes (including APZ). I'll forward in the morning. One lot has been amalgamated with another lot due to RFS's concern with the distance of the DE from the street and the vegetation surrounding the DE. The proposed DE's are set at the BAL 12.5 line and we'd propose to mandate that dwellings be constructed to BAL29 construction requirements to provide redundancy as suggested by RFS.

3. Land management and fuel loads in open space areas particularly the areas adjacent residential lots.

Attached plans indicate proposed open space landscaping. This is limited to weed removal and associated regrassing, regrassing eroded areas, improvement to maintenance trails, and planting clumps of trees to provide fauna 'stepping stones'. We would anticipate that Council would maintain the land adjacent residential lots and paths as normal verges.

RFS has raised particular concern with the classification of the area below as grassland for the purposes of assessing the bushfire hazard given that the Ecological Report classifies the area as Yellow Box Gum Woodland.



It is noted that Capital Ecology has specifically stated *“It is certain that the Vegetation Zone 3 vegetation will not naturally regenerate into vegetation close to the climax form of the relevant PCT. The vegetation throughout Vegetation Zone 3 can only be expected to remain in a similar or yet more degraded form as that currently present”*

If the subdivision design and APZ's are to be agreed as proposed, RFS seeks Council's commitment to managing the fuel loads in this area to the fuel loads associated with grassland or 4.5t/Ha. The following photograph represent a fuel load of 5 t/Ha.



We seek Council agreement to this commitment. Attached FYI are Planning for Bushfire Protection 2019 extracts for Grassland and Woodland.

We look forward to discussing these issues with Council tomorrow.

Regards
Mitchell

Mitchell Alexander
Development Manager

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Level 3, 64 Allara Street Canberra City ACT 2600
PO Box 1000, Civic Square ACT 2608
Telephone (02) 6230 0800 | Facsimile (02) 6230 0811
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