

23 January 2019

Tim Stuckey, Senior Planner
Department of Planning and Environment
320 Pitt Street Sydney, NSW 2000

Dear Tim,

MP10_160 Mod 6 White Rock Wind Farm (WRWF) - Further Information

This letter has been prepared by White Rock Wind Farm Pty Ltd (WRWFPL) in response to the Department's request for further information (RFI, email dated 21 November 2018), to address additional comments received from the Office of Environment and Heritage (OEH) and the Roads and Maritime Service (RMS).

The application for White Rock Wind Farm Modification 6 (Mod 6) to Planning Approval MP10_0160 and associated Environmental Assessment (EA) were submitted to the Department of Planning and Environment (DPE) in January 2018. Following a period of public exhibition and the receipt of comments from government/non-government agencies and the public in February/March 2018, the Response to Submissions (RtS) was prepared and submitted to the DPE in September 2018.

The DPE subsequently sent the completed RtS out to the relevant stakeholders and placed it on the DPE's Major Project website for public viewing. Several agencies responded with no additional comments. The OEH and RMS requested further information (Attachments C and D) and/or clarification in addition to details contained in the Mod 6 EA and RtS.

WRWFPL commissioned:

- NGH Environmental (NGH) to provide a report addressing the OEH RFI and
- Rex J. Andrews (RJA) to prepare a route survey addressing the RMS RFI.

The consultant reports are provided in Attachments A and B respectively, as well as being summarised below.

1. OEH Request for Further Information (Letter dated 5 November 2018)

OEH originally provided comment on the Mod 6 Environmental Assessment (EA), specifically the Biodiversity Assessment Report (BAR), on the 22 March 2018. The comments from OEH were considered and addressed in the proponent's RtS document. In their recent letter, OEH confirmed that these original matters were adequately addressed and had no further comment on the responses given.

OEH have since provided an additional set of comments (Attachment C) on the BAR approximately 8 months after their original submission in March 2018. NGH's responses to OEH's comments are presented in a tabulated form in Attachment A.

NGH considers that the species listed in OEH's additional comments have been adequately assessed by the current and previous ecological impact assessments undertaken for White Rock Wind Farm (both Stage 1 and 2). This includes pre-construction Environmental Assessments for the WRWF project as well as post-construction/operational survey and monitoring work on birds and bats prepared for Stage 1. Imposition of additional ecological survey requirements at this time does not appear warranted as NGH considers the level of survey effort has been appropriate across the project area, and would mean a delay to the project of 10 months until the spring survey period in October/November 2019.

Consequently, based on NGH's response to OEH's comments, WRWFPL considers that a robust survey effort has been carried out across the Stage 2 project area. WRWFPL therefore requests the DPE take this into account when considering any need for further survey work.

1.1 Scarred Tree, Proposed 330 kV Substation Site

As identified in the RtS (Section 6.3 and Appendix 4), there is a potential scarred tree located in the eastern section of the proposed 330 kV substation site. Prior to the start of construction, WRWFPL will work with the Aboriginal community to assess this tree to determine if it is an actual scarred tree. If confirmed, WRWFPL commits to avoiding any impacts on the tree from the construction of the substation in order to preserve the heritage item.

2. RMS Request for Further Information (Email dated 8 November 2018)

At the request of RMS (Attachment D), WRWFPL asked RJA to reassess the WRWF Stage 1 Route Study to consider the proposed route's suitability for transporting blades up to 85 m in length. The survey is presented in Attachment B and considers two blade lengths of 76 m and 82 m based on current Goldwind wind turbine models and blade designs. The corresponding oversize and overmass components which form the rest of the wind turbine structure (nacelle, hub, tower sections, transformers, etc) can more easily be transported from the Port to site compared to the blades themselves.

The route study demonstrates that it is possible to transport blades up to 82 m in length but modifications to sections of the transportation route are required. The scale of additional work ranges from minimal to large / extreme (RJA definitions), the latter referring to certain pinch points along the route. These pinch points may require road upgrades, infrastructure changes and private land access rights to allow the blades to travel through each pinch point. Table 2.1 highlights those key pinch points identified in RJA's report which require large or extreme modifications to allow the passage of the blades. It also indicates what potential solution(s) can be applied to overcome them.

Potential solutions to overcome these pinch points, as well as other minor / moderate requirements, along route could include some or all the following:

- Temporarily relocate or remove street furniture to allow the passage of the blade;
- Temporary access across private land to allow truck turning or blade over-sail, including removal of fencing/walls, placement of hardstand, modifications to pavement, etc;
- Purchase of private land to allow truck turning or blade over-sail; and
- Use of blade transporters at one or more locations to remove or minimise the requirement to cross private land (Response to Submissions, section 5.8 and section 2.1 below).

Table 2.1 Key pinch points along proposed transportation route

Distance ID	Description	Works Required	Involved Parties	Solutions
1.3 km	Selwyn Street onto Industrial Drive	Large	Newcastle City Council	1. Modification of central reservation at junction to allow truck to turn. 2. Temporary relocation of traffic signal and road signs, as required.
168.1 km	Wybong Road onto Kayuga Drive	Large	Muswellbrook Shire Council, Landowners	1. Obtain permission to cross one of three private land blocks to the left, right or opposite road junction.
321.0 km	New England Highway onto Scott Road	Large / Extreme	Tamworth Regional Council, RMS, Landowners	1. Obtain permission to cross private land bordering junction. 2. Temporary relocation of traffic signal and road signs, as required. 3. Purchase vacant land block to allow blade turning. 4. Use of blade transporters to navigate pinch point. 5. Investigation of alternative routes to avoid pinch point.
323.0 km	Murray Street onto New England Highway	Large	Tamworth Regional Council, RMS	1. Temporary relocation of traffic signal and road signs, as required. 2. Modification of median strips to allow passage of truck and trailer.
481.2 km	New England Highway onto Ben Lomond Road	Large	Armidale Regional Council, RMS	1. Temporary modification of junction to allow passage of truck and trailer.
493.8 to 512.4 km	Maybole Road tight corner	Large	Glen Innes Shire Council, Inverell Shire Council, Landowners	1. Previous agreement with landowner to temporarily modify corner for Stage 1 blade transportation.
512.4 km	Maybole Road onto Kelley's Road	Large	Glen Innes Shire Council, Inverell Shire Council, Landowners	1. Highlighted corner belongs to involved landowner.

Temporary works, such as lowering of curbs or relocating infrastructure, would be reinstated once blade deliveries had been completed based on consultation with the relevant authorities. Works on private land would be subject to agreement with the landowner(s) and rehabilitation carried out in accordance with the agreements reached.

The report demonstrates that it is possible to transport blades of this length from the Port of Newcastle to the project site, subject to modifications and minor works at identified locations along the proposed route. The report shows that transportation of the shorter 76 m blade requires fewer

road upgrades than the longer 82 m blade. The scale of works required along the transportation route is consistent with other major infrastructure projects requiring oversize and/or overmass deliveries.

2.1 Blade Transporters

To clarify the use of blade transporters, for example the FTV 300, they could be used to overcome pinch points along the route, such as at Muswellbrook or Tamworth. In such situations, the blade would be transported by normal trailer to a suitable location close to the pinch point. The blade would then be transferred from the trailer to the blade transporter to make the short trip past the pinch point. The blade would then be transferred back to the normal trailer to continue its journey to site.

At this stage, it is not anticipated the blade transporters would be used for the entire length of the journey from the Port to site. However, WRWFPL will consult with the RMS and local Councils, prior to the start of construction, about the suitability of using such trailers for long or short distances.

2.2 Transformer Delivery

WRWFPL has requested the option of delivering the second 33 kV-to-132 kV transformer required at the WRWF substation via the junction of the Gwydir Highway and Ilparan Road. RMS have indicated that the junction would require upgrading to the Austroads standards and WRWF would undertake to meet this requirement if the route is to be used for the delivery of the transformer. WRWFPL would consult with the RMS and local Council prior to the start of construction to ensure the design and upgrade works were undertaken as required.

3. Conclusion

The reports from NGH and RJA have addressed the additional comments by OEH and RMS respectively. WRWFPL considers the responses adequately address the concerns raised by both agencies without the need for additional surveys or reporting.

If you have any questions or require further information, please do not hesitate to contact me.

Regards,



Adrian Maddocks

Development Manager

Attachment A – Response to OEH Comments, NGH Environmental, January 2019

Attachment B – Route Study, Rex J Andrews, January 2019

Attachment C – OEH Letter, 5 November 2018

Attachment D – RMS Email, 8 November 2018

Adrian Maddocks

Development Manager

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Dear Adrian,

RE: MP 10_0160, DOC18/778938-8 (NGH Ref 16-321)

Response to Submissions White Rock Wind Farm Proposed Modification

Thank you for forwarding OEH's additional review of the Response to Submissions, dated 5 November 2018.

We note that our responses to the previous comments from OEH provided on the 22 March 2018, eight months ago, were deemed adequate. We would like to highlight the potential time and resourcing impost of this additional request, of comments that should ideally have been incorporated into OEH's original request. This is particularly an issue should additional survey work be required, as the spring season suiting most species has now past.

Our aim is of course to ensure that our documentation is adequate, and we provide the attached further information in order to address the comments of the most recent request. We would ask DPE and OEH to reconsider the survey adequacy with reference to Table 2's justification of any deviations from FBA. The information has been set out as requested by OEH to facilitate this.

NGH Environmental contend that the candidate species were surveyed appropriate to the habitat identified onsite and, in consultation with OEH, enough to provide a high level of confidence that the species would not risk impact sufficiently to warrant offsets.

Further, given the findings of the additional information and to speed the process along, we request the ability to provide the following response separate to, and instead of, updating the BAR.

Yours sincerely,



Mitch Palmer | Senior Ecologist (Technical Lead) | Hunter, North Coast and New England
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TABLE 1: NGH RESPONSE OVERVIEW

ID	OEH comment	Discussion	NGH proposed action
1	There appears to be habitat present (including marginal habitat) for the following candidate species which require assessment under Step 3 of Section 6.5 of the Framework for Biodiversity Assessment (FBA): Fauna • Koala (<i>Phascolarctos cinereus</i>) • Regent honeyeater (<i>Anthochaera Phrygia</i>) Flora • Austral toadflax (<i>Thesium australe</i>) • Bluegrass (<i>Dichanthium setosum</i>) • Hawkweed (<i>Picris evae</i>) • Narrow-leaved black peppermint (<i>Eucalyptus nicholii</i>) • <i>Callistemon pungens</i> • Silky swainson pea (<i>Swainsona sericea</i>) • Small snake orchid (<i>Diuris pedunculata</i>) OEH Recommendation: All credit species for which habitat occurs require detailed description of survey method appropriate to the FBA. If inadequate, expert reports are recommended or further survey.	NGH Environmental consider that adequate survey has been conducted to confidently detect the presence of threatened flora and fauna species identified as candidate species within the BAR. Survey effort is provided in Section 4.5.2 of the BAR report, and locations are mapped on Figure 4-1 to 4-3. Further, NGH Environmental consider that adequate justification for survey effort, including limitations and deviations from the FBA have been addressed within section 4.1 and Section 4.5.2 of the BAR. A summary table has been provided to assist OEH, refer to Table 2 below. Where the methods do not align with the FBA, justification is provided. In general, regarding methods and adequacy, it is noted that: • The BAR surveys augment previous surveys undertaken onsite, as this is the sixth modification of the wind farm project as such substantial background information is available, increasing confidence in relation to species occurrence and survey strategies for this assessment. Additionally, the data collected during surveys within the adjacent Sapphire and Glenn Innes Wind Farm projects were used to inform the risk-based approach of assessment of species habitat and likelihood of presence. • Given the linear pattern of impact (due to discrete turbine areas and tracks), a risk based approach with surveys targeting highest-quality habitat was considered appropriate. This approach was discussed and agreed to with OEH during a phone discussion in 2017 with threatened species officer Terry Mazzer (Palmer, M. Pers. comms.). Discussion focused on species that may occur in modified habitat ie <i>Dichanthium setosum</i> and how to ensure surveys are deemed adequate where potential habitat may be present over large areas via a risk based approach. Flora surveys used 10m wide transects walked by 3 staff, creating a 30m wide survey corridor. • The BAR survey approach was consistent with the methodology applied for White Rock Solar Farm BAR, and has not been previously identified as a deficiency during OEH's White Rock Solar Farm BAR response or the initial White Rock Wind Farm Mod 6 BAR response. NGH Environmental contend that the candidate species were surveyed appropriate to the habitat identified onsite and in consultation with OEH, sufficient to provide a high level of confidence that the species would not risk impact sufficient to warrant specific offsets, additional to the currently proposed offset site.	NGH Environmental proposed way forward: • Ask OEH to reconsider adequacy with reference to Table 2's justification of deviations from the FBA.
2	Erroneous justification to exclude the small snake orchid (<i>Diuris pedunculata</i>) as a candidate species New information shows this species may occur at the site's elevation and in low condition vegetation. OEH Recommendation: All credit species for which habitat occurs require detailed description of survey method appropriate to the FBA. If inadequate, expert reports are recommended or further survey.	The threatened species profile for the small snake orchid states that the species flowers from August to October, with survey period being identified as September – October. According to the OEH BioNet, the species has the potential to be associated with approximately 85 ha of vegetation within the impact footprint. Whilst it is acknowledged that recently provided information from OEH indicates that the species occurs at an altitude within which the site occurs, and in low condition vegetation, the survey effort completed to date within both the WRWF project and within surrounding projects during the correct survey period has not identified the species, and the level of survey undertaken to date is considered adequate to have determined habitat availability and species presence Surveys nearby by RPS (2011) conducted during September – October (the flowering period) at WRWF	NGH Environmental proposed way forward: • Ask OEH to reconsider that the low likelihood of this species occurring based on a lack of nearby records, degraded habitat, and extensive surveys in comparable sites in proximity to the

ID	OEH comment	Discussion	NGH proposed action														
		did not detect this species. Surveys by RPS included “random meander surveys conducted throughout a majority of the development envelope area. The random meander technique involves walking in a random manner throughout the study area and recording all species seen”. Surveys undertaken by RPS were conducted in September/October 2010 and did not detect the species. Surveys targeting threatened flora were undertaken immediately north of the WRWF site, within the Tangari Offset site. These included 54 BioBanking plots, and extensive threatened flora transects. These surveys were completed during optimal survey periods in September and October 2016 as well as further surveys in November 2016 and December 2017 Additionally, surveys undertaken by EcoLogical Australia in 2008 and 2011 approximately 10 km north of the WRWF site did not identify the species during surveys. Further, grazing and pasture improvement at the site are considered to have degraded potential habitat and this site is still considered by NGH environmental to be sub-optimal for the species. .	project site.														
3	Inadequate koala survey effort The assessor did not appear to use a combination of spotlighting, call playback and application of a standardized koala scat search method (e.g. spot assessment technique) as recommended in the OEH assessment guidelines. The survey effort did not reflect the importance of koala habitat determination by limiting the scope/extent of the survey. The level of survey effort was not detailed in the BAR (e.g. no. of koala feed trees searched, no. of person hours completed). The assessor’s conclusion that koalas are absent from the site is not adequately supported. OEH Recommendation: All credit species for which habitat occurs require detailed description of survey method appropriate to the FBA. If inadequate, expert reports are recommended or further survey.	OEH guidelines (DECC 2004) cite call playback only in relation to survey for this species. Limited spotlighting was undertaken by RPS in 2010. Most ecologists acknowledge however, that the spot assessment technique (SAT) is now considered a superior technique. An adaption of the latter technique was adopted by NGH, appropriate to the linear impact areas proposed (due to discrete turbine areas and tracks). This is a risk based approach with surveys targeting highest-quality habitat. A two-step approach was taken, whereby searches would be undertaken within vegetation plots for signs of Koala presence, and were presence identified in these surveys, detailed SAT and spotlighting surveys would be undertaken. As the surveys did not detect evidence of the species, this second stage of detailed survey was not enacted. The potential importance of koala habitat onsite is acknowledged in the discussion of the feed trees feed tree surveys and habitat areas detailed in table below <table><tr><th>Feed tree species</th><th>Vegetation communities</th><th>Occurrence</th></tr><tr><td>Ribbon Gum (<i>Eucalyptus viminalis</i>)</td><td rowspan="3">Ribbon Gum – Mountain Gum – Snow Gum grassy open forest of the New England Tableland Bioregion (PCT 554)</td><td rowspan="3">Occurs as remnant patches of native vegetation throughout the project area (61.92 ha proposed for clearance).</td></tr><tr><td>Mountain Gum (<i>E. dalrympleana</i>)</td></tr><tr><td>Snow Gum (<i>E. pauciflora</i>)</td></tr><tr><td>Yellow Box (<i>E. melliodora</i>)</td><td>Blakely’s Red Gum – Yellow Box grassy woodland of the New England Tableland Bioregion (PCT 510)</td><td>Occurs as discrete patches of native vegetation within the project area (7.95 ha proposed for clearance)</td></tr><tr><td>Silver-topped Stringybark (<i>E. laevopinea</i>)</td><td>Silvertop Stringybark - Mountain Gum grassy open forest of the New England</td><td>Occurs as remnant patches of native vegetation along the western extent of WRWF (12.33 ha proposed for clearance)</td></tr></table>	Feed tree species	Vegetation communities	Occurrence	Ribbon Gum (<i>Eucalyptus viminalis</i>)	Ribbon Gum – Mountain Gum – Snow Gum grassy open forest of the New England Tableland Bioregion (PCT 554)	Occurs as remnant patches of native vegetation throughout the project area (61.92 ha proposed for clearance).	Mountain Gum (<i>E. dalrympleana</i>)	Snow Gum (<i>E. pauciflora</i>)	Yellow Box (<i>E. melliodora</i>)	Blakely’s Red Gum – Yellow Box grassy woodland of the New England Tableland Bioregion (PCT 510)	Occurs as discrete patches of native vegetation within the project area (7.95 ha proposed for clearance)	Silver-topped Stringybark (<i>E. laevopinea</i>)	Silvertop Stringybark - Mountain Gum grassy open forest of the New England	Occurs as remnant patches of native vegetation along the western extent of WRWF (12.33 ha proposed for clearance)	NGH Environmental proposed way forward: Ask OEH to reconsider adequacy with reference to Table 2’s justification of deviations from the FBA.
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ID	OEH comment	Discussion			NGH proposed action															
		<table><tr><td></td><td>Tableland Bioregion (PCT 565)</td><td></td></tr></table> As discussed above, due to the size of the survey area, random inspections of koala feed trees for scats and activity were undertaken throughout the site, as well as inspections for scats and other Koala evidence where primary and secondary feed trees were located within biometric plot survey areas. Whilst not strictly in accordance with the SAT methodology, it is considered likely that were claw marks, urine stains, or scats present within or in proximity to the trees searches, they would have been identified using this level of survey. Approximately 52 person hours were spent on surveys within suitable koala habitat. Given how long koala scat persists in the landscape and the focus of the surveys on areas with feed tree species, this method was considered a suitable modification of accepted methods, suitable for the linear pattern of impact proposed. In combination with the habitat assessment and vegetation surveys, where scat would also have been observable (150 hrs) and RPS surveys (1 hr), the survey effort provides a high level of confidence that the species would not be impacted sufficient to warrant offsets. <table><tr><th>Date</th><th>Survey type</th><th>Survey effort</th><th>Survey timing</th></tr><tr><td>NGH (Nov 2016, Jan 2017) and RPS (Sept 2010)</td><td>Habitat and vegetation survey and assessment</td><td>Numerous hours of on-ground survey have been undertaken by both NGH and RPS during vegetation survey and mapping, habitat assessment and travelling to and from survey locations. Landscape features and vegetation type and condition have been surveyed in detail to inform likelihood of threatened species occurring within the project area. Total combined effort – 150 hrs</td><td>The results from random inspections along with habitat assessment and vegetation survey were considered adequate to determine the habitat condition and likelihood of the Koala occurring at WRWF. Adverse impact to this species are not expected and extensive surveys were not considered necessary.</td></tr><tr><td>NGH Nov 2016, Jan 2017</td><td>Random inspections Plot Surveys</td><td>Opportunistic searches for scats and physical evidence of Koalas within primary and secondary feed trees within biometric plot survey areas. Inspections of trees for scratch marks and presence of scats was undertaken throughout</td><td></td></tr></table>				Tableland Bioregion (PCT 565)		Date	Survey type	Survey effort	Survey timing	NGH (Nov 2016, Jan 2017) and RPS (Sept 2010)	Habitat and vegetation survey and assessment	Numerous hours of on-ground survey have been undertaken by both NGH and RPS during vegetation survey and mapping, habitat assessment and travelling to and from survey locations. Landscape features and vegetation type and condition have been surveyed in detail to inform likelihood of threatened species occurring within the project area. Total combined effort – 150 hrs	The results from random inspections along with habitat assessment and vegetation survey were considered adequate to determine the habitat condition and likelihood of the Koala occurring at WRWF. Adverse impact to this species are not expected and extensive surveys were not considered necessary.	NGH Nov 2016, Jan 2017	Random inspections Plot Surveys	Opportunistic searches for scats and physical evidence of Koalas within primary and secondary feed trees within biometric plot survey areas. Inspections of trees for scratch marks and presence of scats was undertaken throughout		
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				Biometric plots within suitable PCTs, particularly surrounding larger trees. Total effort – Approximately 52 person hours Within PCT 554 Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion – good condition – 12 biometric plots Within PCT 565 Silvertop Stringybark – Mountain Gum grassy open forest of the New England Tableland Bioregion – Good condition - 8 biometric plots PCT 510 Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion- good condition – 6 plots			
		RPS 25 Sept to 1 Oct 2010	Spotlighting	5 km Vehicle transects and on-foot searches (30 minutes x 2 people) Total effort – approximately 3 person hours	If a population of the species was present within the site, the species would be present year-round, thus surveys in September and October would be appropriate for detection.		
		No Koala’s or evidence of Koala activity were detected during the surveys. Although there are historical records surrounding the project area, none of these were recorded within the last 20 years. The paucity of recent records (i.e. within the last 20 years) indicates that although the site contains a large area of suitable habitat, the locality and site are not considered to contain a substantial koala population. Two records of the species occur within the 2004-2006 period, one within the site boundary and one approximately 13 km west of the site. However, the accuracy of these records is indicated at 10 km, thus the location of the original record is not truly known. A further recent record from 2014 exists approximately 21 km west of the site. Despite the presence of these records, the level of survey effort undertaken within the site and surrounding projects is considered sufficient to have detected a population of Koala within the site. On this basis of this information, NGH Environmental contend that the candidate species was surveyed appropriate to the habitat identified onsite.					

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		It is noted that the offset site contains feed species for the koala and that potential habitat is therefore being offset as part of the current offset site. The offset site being established includes approximately 99 ha of Ribbon Gum - Mountain Gum vegetation, approximately 148 ha of Blakely's Red Gum - Stringybark - Rough-barked Apple open forest and Blakely's Red Gum - Yellow Box grassy tall woodland, and approximately 19.29 ha of Silvertop Stringybark - Mountain Gum grassy open forest. In addition to these habitats impacted by the proposal, other areas of suitable koala habitat exist within the offset site in the form of approximately 26 ha of White Box grassy woodland on the Inverell basalts and a further 64 ha of Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland occurring as scattered trees, that the koala would likely utilise were it present on the site. As such, the presence of suitable habitat within the site, the offset area, the linear nature of the impacts, and the lack of a koala population within the site indicate that the species is not likely to be impacted as a result of the proposal.															
4	Inadequate Regent Honeyeater survey effort Appropriate detection techniques were not adequately utilised. Surveys should also consider the seasonal activity and broad daily roaming of the species as constraints of species detection for the BAR. Furthermore, there was reference to bird census surveys by Brett Lane and Associates, but no detail of their scope was provided. Due to the inadequate sampling efforts, the assessor's conclusion that regent honeyeaters are absent from the site is not adequately supported.	The intense scrutiny of wind farm operational impacts, and the base line bird and bat utilization information required to address them, provides this assessment of an advantage. A very large and long term data set is being collected upon which to base assumptions about the occurrence of birds and bats, vastly greater than is required to address current bird and bat survey effort guidelines. This is particularly important for nomadic species such as the Regent Honeyeater. The Bird Utilization Surveys conducted by BLA are considered much more likely to detect the presence of this species and provided greater survey effort than required by the FBA to address the occurrence of this species. The complete BLA reports, including survey maps and results were provided in Appendix H of the BAR, submitted August 2018. Appended again to this response. In combination with NGH's targeted transect surveys (6 person hours) and song meter survey (approximately 15 hours of survey), and RPS point surveys (6 person hours), the BAR now provides greater survey effort than required by the FBA to address the occurrence of this species. It is noted that as no survey times are identified in TSPD for species credit breeding habitat, survey timing in accordance with EPBC Act guidelines, with targeted survey within optimal habitat was undertaken, being identified as areas of predominantly Yellow Box and Blakely's Red Gum containing flowering eucalypts and/or mistletoes. Bird surveys undertaken within the site are detailed in the table below. <table border="1"> <thead> <tr> <th>Date</th><th>Survey type</th><th>Survey effort</th><th>Survey Timing</th></tr> </thead> <tbody> <tr> <td rowspan="2">NGH Nov 2016, Jan 2017</td><td>Targeted transect surveys</td><td>4 x 2 ha transect surveys Total effort – 6 person hours</td><td rowspan="2">Surveys within breeding season when species conspicuous – optimal timing for surveys as specified under EPBC survey guidelines.</td></tr> <tr> <td>Song meter survey</td><td>2 song meters placed in Yellow Box dominated patches of remnant woodland in good/moderate condition. Total effort – 30 hrs on recording and analysis</td></tr> <tr> <td>BL&A</td><td>Fixed-point count survey</td><td>Pre-construction BUS Surveys - Spring 2016 and Autumn 2017 – 6 impact points and 2 reference point surveyed 8 times over the</td><td>Surveys outside of breeding season but detection still possible as</td></tr> </tbody> </table>	Date	Survey type	Survey effort	Survey Timing	NGH Nov 2016, Jan 2017	Targeted transect surveys	4 x 2 ha transect surveys Total effort – 6 person hours	Surveys within breeding season when species conspicuous – optimal timing for surveys as specified under EPBC survey guidelines.	Song meter survey	2 song meters placed in Yellow Box dominated patches of remnant woodland in good/moderate condition. Total effort – 30 hrs on recording and analysis	BL&A	Fixed-point count survey	Pre-construction BUS Surveys - Spring 2016 and Autumn 2017 – 6 impact points and 2 reference point surveyed 8 times over the	Surveys outside of breeding season but detection still possible as	NGH Environmental proposed way forward: Ask OEH to reconsider adequacy with reference to Table 2's justification of any deviations from FBA.
Date	Survey type	Survey effort	Survey Timing														
NGH Nov 2016, Jan 2017	Targeted transect surveys	4 x 2 ha transect surveys Total effort – 6 person hours	Surveys within breeding season when species conspicuous – optimal timing for surveys as specified under EPBC survey guidelines.														
	Song meter survey	2 song meters placed in Yellow Box dominated patches of remnant woodland in good/moderate condition. Total effort – 30 hrs on recording and analysis															
BL&A	Fixed-point count survey	Pre-construction BUS Surveys - Spring 2016 and Autumn 2017 – 6 impact points and 2 reference point surveyed 8 times over the	Surveys outside of breeding season but detection still possible as														

ID	OEH comment	Discussion				NGH proposed action
		4-8 November 2016 27 February – 4 March 2017 21-28 April 2018	Opportunistic observations	survey week at different times of the day (total 128 surveys). Birds surveyed within 200m area for 15 minutes at each fixed point. Pre-construction BUS Surveys – Autumn 2018 – 6 impact points and 1 reference point surveyed 8 times at different times of the day (total 56 surveys). Birds surveyed within 200m area for 15 minutes at each fixed point. Opportunistic observations recorded for species of concern (threatened species, raptors, waterbirds) while traveling between fixed-point survey locations. Total effort –184 surveys, 46 person hours	specified under EPBC survey guidelines.	
		RPS 25 Sept to 1 Oct 2010	Point census bird survey	18 x 20 minute census within 1 ha area Total effort – 6 person hours	Surveys within breeding season when species conspicuous – optimal timing for surveys as specified under EPBC survey guidelines.	
5	Inconsistent reflection of flora sampling methodology Figure 4-1 within the BAR appears to be inconsistent with the sampling description provided in text and the requirements of the 'NSW Guide to Surveying Threatened Plants'.	Figure 4-1 of the BAR shows the location of threatened flora surveys, however as detailed in Section 4.5.2, three people were involved in each of the threatened species surveys, meaning that a width of 30 m per transect was covered in each of the mapped transect. Maps of our GPS tracks, marking the central transect, are provided with this letter (Attachment 2). Note that a number of survey tracks are not able to be mapped. As discussed above, these surveys were undertaken within areas determined as a higher likelihood of occurrence for the target species, based on habitat quality, within the access track easements and wind turbine pad footprints. These surveys combined with the analysis of records within the broader locality are considered adequate to have detected the presence of threatened flora species within the development envelope.				NGH Environmental proposed way forward: Ask OEH to reconsider adequacy with reference to Table 2's justification of any deviations from FBA.
6	Recommendations for the proposed substation and access track Active efforts are to be made to ensure the design and construction of the work avoids native vegetation and/or areas of threatened species habitat.	For areas covered by the BAR, minimisation and avoidance is discussed in section 6.1 of the BAR. For additional areas submitted in the RtS, Goldwind engaged NGH Environmental to provide constraints mapping and advice to guide further assessment, specific to the proposed substation and access track. This information was used to guide the development of the layout in order that higher conservation areas could be avoided (along with subsequent assessment). The revised 132/330 kV substation site proposed in the Mod 6 Response to Submissions (RtS) avoids impact on White Box – Yellow Box BGGW by relocating the area away from the creek to the south where land isn't being used for agricultural purposes.				Proposed way forward: - Design and construction of the works will avoid impacts on native vegetation. - If impacts cannot be avoided, further

ID	OEH comment	Discussion	NGH proposed action
		Note, areas in which impacts could not be avoided in higher conservation values areas include the access track from the Gwydir Highway to the substation site. The track is a well-defined gravel track in good repair, lined with potential native vegetation species. In this area, the track width is sufficient and if no upgrades are undertaken, no impact would result.	assessment would be undertaken as required.
7	Recommendations for the Aboriginal scarred tree Active efforts are to be made to avoid damaging the scarred tree. Where avoidance is not possible, an expert in scarred tree identification should be engaged to determine if the scar is of Aboriginal origin. Relevant Aboriginal stakeholders should be consulted in its determination and to assess its significance if necessary.	NGH's review of the revised substation site was undertaken by an ecologist who was not suitably qualified to confirm if the tree was a heritage item. Therefore, the significance of the tree will be investigated as a possible scarred tree prior to the start of construction. Impacts on this and other trees will be avoided where possible and, if removal is necessary, the appropriate steps will be undertaken to get the necessary consents to do so.	Proposed way forward. • Employ a suitably qualified heritage consultant to check validity of scarred tree, then • Consult with Aboriginal heritage expert prior to the start of construction to assess significance of scarred tree.

TABLE 2: SUMMARY OF ALL CANDIDATE SPECIES

Common name	Surveys timing and effort requirements	Potential habitat onsite	Survey date	Survey method	Survey effort	Adequacy
Austral Toadflax <i>Thesium australe</i>	10 m transects in suitable habitat	84, 507, 510, 565 23.1 ha	November 2016 20-22 February 2017	Parallel transects at distances of approximately 10 m (depending on vegetation density), covering as much of the vegetation patch as was accessible. Three persons were involved in the searches giving a coverage of 30m per pass. November 2016 surveys were undertaken by Matthew Hingee (BioBanking accredited botanist), Mitch Palmer (BioBanking and BAM accredited senior ecologist) and Aleksei Atkin (BAM accredited senior ecologist). February 2017 surveys were undertaken with Mitch Palmer, Aleksei Atkin and graduate ecologist.	Approximately 90 hours in total were spent surveying for threatened flora species. Note that the survey maps do not show the entire extent of survey – a number of days of survey GPS data are not available and as such cannot be mapped.	The 30m transects widths allowed for by using 3 staff ensured very good coverage of each transect undertaken in optimal habitat. The random meander is not an endorsed method but augmented our survey in suboptimal habitat and improves opportunities for detecting sparsely distributed plant species.
Bluegrass <i>Dichanthium setosum</i>		84,510 8.09 ha				
Hawkweed <i>Picris evae</i>		84, 510, 565 20.42 ha				
McKie's Stringybark <i>Eucalyptus mckieana</i>		84, 565 12.47 ha				
Narrow Goodenia <i>Goodenia macbarronii</i>		84, 507, 510 10.77				
Narrow-leaved Black Peppermint <i>Eucalyptus nicholii</i>		510, 565 20.28 ha				
Silky Swainson-pea <i>Swainsona sericea</i>		84, 510, 565 20.42 ha	November 2016 20-22 February 2017	Additionally, random meander searches (after Cropper 1993) were undertaken on foot throughout the proposal site where habitat was deemed less than optimal		
Small Snake Orchid <i>Diuris pedunculata</i>		84, 507, 510, 554, 565 85.02 ha	September to October by RPS	Random meander surveys conducted throughout a majority of the Stage 1 development envelope area. The random meander technique involves walking in a random manner throughout the study area and recording all species seen	N/A	Whilst targeted surveys were not conducted for this species within the Stage 2 site, the lack of records of the species within the Stage 1 area, the adjacent Tangari offset site or within proximate project areas indicates a low likelihood of the species occurring. The site remains above the species typical range, and habitat is marginal and of poor quality, with history of

Common name	Surveys timing and effort requirements	Potential habitat onsite	Survey date	Survey method	Survey effort	Adequacy
						grazing and 'improvement'.
<i>Callistemon pungens</i>		84 ha, with 0.14 ha within 100m of permanent drainage lines that crossed the development envelope (mapped in BAR, Appendix B.2 for location of permanent waterways).	May 2018	Walked transects aligned parallel to the subject drainage lines, on either bank 10m parallel to the drainage line, for the length of drainage line that fell within the search area.	30 person hours	The targeted survey outside the flowering period was justified as Callistemons are still identifiable to genus in May and no Callistemons at all were found during the survey.
Black-throated Finch (southern subspecies)	Bird census	seeding native grasses within 100m of water	Spring 2016 and Autumn 2017 and Autumn 2018	Fixed-point count survey 184 x 15-minute Bird Utilisation Surveys were undertaken by Brett Lane & Associates	These surveys identified all birds within 200 m of survey points. The survey effort totals 46 person hours	The surveys did not only include potential habitat but were a subset of extensive bird surveys by Brett Lane & Associates. Within the Stage 2 Modification area and sufficient to identify this species.

Common name	Surveys timing and effort requirements	Potential habitat onsite	Survey date	Survey method	Survey effort	Adequacy
Regent Honeyeater	Bird census, effort not stated in DEC 2004 survey guidelines.	Only one recording within 20km, and minimal clearance of marginal habitat. Song meters were placed in Yellow box dominated patches of remnant woodland in good/moderate condition	November 2016 February 2017	Fixed-point count surveys were undertaken within the Stage 1 area by RPS in 2010. 18 20 minute point counts were conducted. Transect surveys and song meter surveys were undertaken by NGH in November 2016 and February 2017 184 x 15-minute Bird Utilisation Surveys were undertaken by Brett Lane & Associates within the Stage 2 area, totalling 14 person hours	Transect surveys were undertaken over a 2 ha area for 20 minutes per site with two surveyors, at sites containing flowering eucalypts and/or mistletoes. Surveys were conducted by Aleksei Atkin and Mitch Palmer, both Senior Ecologists who have previously identified wild Regent Honeyeaters and their habitat. Four 2 ha area searches were undertaken in November 2016 and February 2017. Additionally, an incidental species list kept throughout survey periods. Approximately six person hours of survey was undertaken on 2 ha transects and opportunistic surveys. Approximately 30 hours was spent on the song-meter recording time and analysis in total. This is additional to the BLA BUS above of 14 person hours, which covered a significant portion of the site, and in addition to the approximate 6 hours of point count surveys undertaken by RPS in 2010.	Surveys targeted areas of flowering Yellow Box and Mistletoe. The surveys did not only include potential habitat but were a subset of extensive bird surveys by Brett Lane & Associates. Within the Stage 2 Modification area and sufficient to identify this species. The volume of bird survey collected for the wind farm operational assessment is vastly larger than would be required to meet the survey guidelines.
Koala	Call playback 2 sites per stratification unit up to 200 hectares, plus an additional site per 100 hectares above 200 hectares. Each playback site must have the session conducted twice, on	Feed trees used to define habitat, see table 1. Apx 85 ha	September 2010 (Stage 1) November 2016 January 2017	A period of spotlighting was undertaken within the Stage 1 area in 2010 by RPS. This included spotlighting along an access track in a slow-moving vehicle, and approximately 1 hour of spotlighting at a call playback point. Most ecologists acknowledge spot assessment technique (SAT) is a superior technique. An adaption of SAT was adopted, searching for scats where primary and secondary feed trees were located within biometric plot survey areas as well as random eucalypts where confirmation	Total effort Spotlighting (Stage 1 area): 5 km of spotlighting, 1 hr at call playback point Sign and Scat Searches (Stage 2 area) Dedicated 7 hrs within 26 biometric plots Sign and Scat Searches (Stage 2 area) - Incidental 150 hrs	Given the persistence of koala scat in the landscape and the focus on areas with feed tree species, surveys were considered a suitable modification of accepted methods, suitable for pattern of impact proposed and potential habitat onsite. In combination with the incidental observations during intensive plot and habitat assessments, the survey effort provides a high level of confidence

Common name	Surveys timing and effort requirements	Potential habitat onsite	Survey date	Survey method	Survey effort	Adequacy
	separate nights (DEC 2004)			of floristic identification was required. Searches included observation of koala scratches, urine stains, visual inspections of trees and searches around the base of feed tree species for scats. This is a risk based approach with surveys targeting highest-quality habitat, and should signs of koalas be detected, additional surveys including detailed SAT surveys, call playback and spotlighting would have been undertaken. As no signs of koala presence were identified, no further detailed surveys were undertaken. This was augmented with incidental observations during other survey work.		that the species would not be impacted sufficient to warrant offsets.
Boolorong Frog	NA	Presumed present in subset of potential habitat type	May 2018		Expert report	
Pale-headed Snake	NA	Presumed present in subset of potential habitat type	May 2018		Expert report	

ATTACHMENTS

1. OEH letter
2. Survey effort maps updated showing central line of walked transects
3. BLA BUS survey map (Appendix H from BAR)

1. OEH letter



Our Ref: DOC18/778938-8

Your Ref: MP 10_0160

Mr Tim Stuckey
Senior Environmental Assessment Officer
Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Dear Mr Stuckey

Re: MP 10_0160 White Rock Wind Farm Proposed Modification – Response to Submissions

Thank you for your email 11 October 2018 seeking comments from the Office of Environment and Heritage (OEH) on the Response to Submissions on the White Rock Wind Farm Modification 6 (Mod 6). I appreciate the opportunity to provide input.

The OEH has reviewed the Response to Submissions (RtS), and the relevant information supporting the Mod 6 application, including the revised Biodiversity Assessment Report (BAR), the revised Bird and Bat Strike impact assessment, and the proposed substation and access track preliminary biodiversity assessment.

While the deficiencies outlined in our letter dated March 22 have been rectified, our subsequent review of the amended BAR has revealed several additional omissions and inconsistencies with the requirements of the Framework for Biodiversity Assessment (FBA). The key deficiencies are in relation to the assessment of candidate 'species credit' species and these are discussed in detail in **Attachment 1** to this letter.

Generally, where threatened species surveys have been undertaken to assess the extent of impact of Stage 2 of the wind farm, the survey methods and sampling effort appear to be inconsistent with the requirements of the OEH threatened species survey guidelines specified at Section 6.6.1.5 of the FBA.

In summary, we recommend:

1. For all 'species credit' species for which habitat occurs on site, provide a detailed description of the survey methodologies adopted, demonstrating the fulfilment of the requirements of the appropriate survey guidelines and the FBA.
2. If the surveys undertaken to date for the candidate 'species credit' species are confirmed to be inadequate or inconsistent with the guidelines and the FBA (including whether surveys were undertaken outside of the suitable timeframes listed in the Threatened Species Profile Database), additional assessment will be required to satisfy the FBA.

3. The FBA provides three options to determine whether a 'species credit' species is present or not, and we recommend that each of these options be considered by the applicant to determine a preferred way forward should time constraints limit the ability to perform surveys in suitable months.

Rather than conducting additional surveys that meet the requirements of the published guidelines, other options include - assume presence of the species (an offset will be required), or engage the services of a OEH Chief Executive endorsed species expert to prepare an expert report that confirms that suitable habitat is absent (and therefore no further assessment or offset is required), or, that identifies suitable habitat in which the species is likely to be present (for which an offset will be required). The OEH can assist in the selection of appropriate experts.

4. It is preferable for the revised assessment to determine the presence of candidate 'species credit' species prior to the determination of the modification application. This would allow the biodiversity credit requirement to be established and included as a condition of consent to the modification.
5. Should 'species credit' species be determined to occupy the site, either following survey, assumed presence or by an expert, the Biodiversity Credit Calculator will need to be re-run to determine the appropriate 'species credit' offset requirement.
6. In relation to the proposed substation and access track, every effort should be made to ensure that the design and construction of the proposed substation and access road avoids native vegetation, and/or areas of threatened species habitat.
7. Where avoidance is not possible, and areas of native vegetation and/or threatened species habitat will be affected by the substation and access road, an assessment of these areas will be required in accordance with the FBA, prior to determination. Potentially, an offset may be required to counter the loss of native vegetation and/or threatened species habitat as a result of the construction works.
8. In relation to the scarred tree observed by ngh during the substation biodiversity assessment, every effort is to be made to avoid damaging the scarred tree.
9. However, if the scarred tree is likely to be affected by the proposed substation and access track, an expert in the identification of Aboriginal scarred trees should be engaged to determine if the scar is of Aboriginal origin. The relevant Aboriginal stakeholders should also be consulted in the determination of the origin of the scar, and should it be necessary, to assess the significance of the Aboriginal object.

Our recommendations are discussed in more detail in **Attachment 1**.

If you have any further questions about this issue, I can be contacted on 6659 8254 or at nicky.owner@environment.nsw.gov.au.

Yours sincerely



5 November 2018

NICKY OWNER
A/Senior Team Leader Planning, North East Branch
Conservation and Regional Delivery

Enclosure: Attachment 1 – Detailed OEH Comments of the proposed White Rock Wind Farm – Modification 6.

Attachment 1: Detailed OEH Comments – White Rock Wind Farm – Modification 6

Stage 2 Proposal:

It is our understanding that Modification 6 (Mod 6) includes the following key components in relation to Stage 2 of the Wind Farm proposal:

- Reducing turbines from 49 to 48.
- Relocation of 20 stage 2 turbines to new locations not included in the original approval.
- Minor changes at 9 turbine locations.
- Increasing turbine dimensions (max RSA - 200m; hub height 130m; turbine diameter 170m).
- Increasing native veg clearing extent - from 28 to 90 hectares (an increase of 62 hectares), required for turbine siting, access track, substation and powerline modifications (mod 6).

The OEH has reviewed the Response to Submissions (RtS), and the relevant information supporting the Mod 6 application, including the revised Biodiversity Assessment Report (BAR), the revised Bird and Bat Strike impact assessment, and the proposed substation and access track preliminary biodiversity assessment.

Stage 2 - Biodiversity Assessment Report

The purpose of the BAR is to assess the impact of native vegetation removal resulting from Stage 2 works, and to quantify the number of biodiversity credits to be retired to offset the impact of the development. The BAR is to be prepared in accordance with the requirements of the Framework for Biodiversity Assessment (FBA).

While many of the deficiencies outlined in our letter dated 22 March 2018 (our ref - DOC18/74075) have been rectified, our subsequent review of the amended BAR has revealed several additional omissions and inconsistencies with the requirements of the FBA. The key deficiencies are in relation to the assessment of candidate 'species credit' species and these are discussed below.

Based on the justification contained within the BAR, we agree it is unlikely that suitable habitat occurs within the stage 2 wind farm site for McKies Stringybark (absence of granitic soils), *Prasophyllum* sp. Wybong (unlikely habitat), black-throated finch (presumed extinct), pale-headed snake (elevation and climatic factors) and booroolong frog (elevation, climatic and disease factors). Furthermore, narrow goodenia is no longer listed as threatened, and therefore does not require further assessment.

However, based on the discussion included within the BAR, there appears to be habitat present (including marginal habitat) within the impact area for the following 'species credit' species:

- Koala,
- Regent honeyeater,
- Austral toadflax (*Thesium australe*),
- Bluegrass (*Dichanthium setosum*) (unable to withstand further loss),
- Hawkweed (*Picris evae*) (unable to withstand further loss),
- Narrow-leaved black peppermint (*E. nicholii*) (unable to withstand further loss),
- *Callistemon pungens* (unable to withstand further loss)
- Silky swainson pea (*Swainsona sericea*)

As such, these species are the candidate species for the purposes of the FBA, and therefore, require assessment under Step 3 of Section 6.5 of the FBA.

In addition, the justification used to exclude the small snake orchid (*Diuris pedunculata*) from the list of candidate species is erroneous. While the BAR references Quinn *et al.* (1995) which states that the species is confined to 50 and 900m altitude, a number of occurrences of *D. pedunculata* discovered since the 1995 Quinn publication, including two *D. pedunculata* Saving Our Species sites, occur at an altitude of 1300m. It is understood that the windfarm site has an elevation in the vicinity of 1100m.

The small snake orchid is also associated with three of the vegetation community types occurring within the wind farm site, including black sallee–snow gum grassy woodland, ribbon gum–mountain gum–snow gum grassy open forest/woodland and silvertop stringybark – mountain gum grassy open forest. As per the Threatened Species Profile Database, the species is known to occur in low condition vegetation and, along with Austral toadflax, bluegrass, hawkweed, narrow leaved black peppermint and *C. pungens*, is unable to withstand further loss in the Border Rivers–Gwydir catchment area.

Based on these facts, the small snake orchid also requires assessment under Step 3 of Section 6.5 of the FBA.

In determining whether a candidate ‘species credit’ species utilises the wind farm site, Section 6.5.1.9 of the FBA specifies that:

‘An assessor must establish whether any species that remains a candidate is present on the development site, or is likely to use the potential habitat on the development site by either:

- (a) Assuming it is present (development sites only) or*
- (b) Undertaking a threatened species survey in accordance with Section 6.6, or*
- (c) Obtaining an expert report in accordance with Subsection 6.6.2.*

Generally, where threatened species surveys have been undertaken to assess the extent of impact of Stage 2 of the wind farm, the survey methods and sampling effort appear to be inconsistent with the requirements of the OEH threatened species survey guidelines specified at Section 6.6.1.5 of the FBA. The appropriate guidelines are the ‘NSW Guide to Surveying Threatened Plants’, and the ‘Threatened Biodiversity Survey and Assessment: Guidelines for Development and Activities’.

Furthermore, inappropriate justification has been provided for excluding several candidate species from the need for survey, or, for minimal survey effort, such as the assumption that a significant impact is unlikely on the species concerned. This assumption is irrelevant in the application of the FBA.

These deficiencies are further discussed below in relation to the candidate ‘species credit’ species:

1. Koala:

The site contains one preferred koala feed tree species, (*Eucalyptus viminalis*), and two secondary feed tree species, snow gum (*E. pauciflora*) and yellow box (*E. melliodora*).

The RtS report states ‘the proposed action may result in clearing up to 82 hectares of critical habitat’. (The OEH assumes ‘critical habitat’ in this context means suitable koala habitat.) Despite this, the BAR states ‘due to the size of the survey area, random inspections of koala feed trees for scats and activity were undertaken, as well as inspections for scats and other koala evidence where primary and secondary feed trees were located within biometric plot surveys’. The size of the survey area should not be used to justify limiting the scope or extent of the survey effort.

Also, it appears the assessor has not used a combination of spotlighting, call playback sampling and application of a standardised koala scat search method (e.g. spot assessment technique) as recommended in the OEH assessment guidelines.

Furthermore, the level of survey effort completed for incidental koala scat searches has not been detailed in the BAR (e.g. number of koala feed trees searched, and number of person hours

completed). Consequently, we cannot determine the adequacy of survey effort applied to this sampling technique. Therefore, the assessor's conclusion that koalas are absent from the site is not adequately supported by the survey undertaken.

2. Regent honeyeater:

The BAR explains that two song meters were set for three days recording at dawn and dusk and that four transect surveys as well as opportunistic surveys were undertaken to detect the regent honeyeater. Additionally, the BAR refers to additional work undertaken by Brett Lane and Associates (BLA) as part of their bird census surveys. There is no detail provided within the BAR regarding the scope of the BLA work.

A lack of observations resulting from inadequate survey effort, without use of the range of appropriate detection techniques, and an absence of historic records for regent honeyeaters in the locality does not necessarily mean that regent honeyeaters do not utilise the habitats of the Stage 2 windfarm site.

3. Flora:

According to the BAR, targeted searches were carried out for bluegrass, Austral toadflax, hawkweed, silky swainson pea, narrow-leaved black peppermint and *Callistemon pungens*.

The BAR states '*The surveys comprised parallel transects at a distance of approximately 10m (depending on vegetation density), covering as much of the vegetation patch as was accessible*'.

However, Figure 4-1 contained within the BAR illustrates targeted flora survey tracks which do not appear to reflect the methodology outlined above, and which appears to be inconsistent with the sampling description provided in text and the requirements of the '*NSW Guide to Surveying Threatened Plants*'.

Recommendations:

1. For all 'species credit' species for which habitat occurs on site, provide a detailed description of the survey methodologies adopted, demonstrating the fulfilment of the requirements of the appropriate survey guidelines and the FBA.
2. Limitations to the surveys and reporting should be specified in the BAR, along with justification of deviations from appropriate sampling methods, survey effort and survey timing. This should include an explanation of site accessibility issues.
3. If the surveys undertaken to date for those species listed previously are confirmed to be inadequate or inconsistent with the guidelines and the FBA (including whether surveys were undertaken outside of the suitable timeframes listed in the Threatened Species Profile Database), additional assessment will be required to satisfy the FBA.
4. However, as outlined above, the FBA provides three options to determine whether a species credit species is present or not, and we recommend that each of these options be considered by the applicant to determine a preferred way forward should time constraints limit the ability to perform surveys in suitable months.

Rather than conducting additional surveys that meet the requirements of the published guidelines, other options include assume presence of the species (an offset will be required), or engage the services of a OEH Chief Executive endorsed species expert to prepare an expert report that confirms that suitable habitat is absent (and therefore no further assessment or offset is required), or, that identifies suitable habitat in which the species is likely to be present (for which an offset will be required). The OEH can assist in the selection of appropriate experts.

5. It is preferable for the revised assessment to determine the presence of candidate 'species credit' species prior to the determination of the modification application. This would allow the

biodiversity credit requirement to be established and included as a condition of consent to the modification.

6. Should supplementary surveys be selected as a way forward, potential habitat for all 'species credit' species should be mapped and used to guide the location of targeted surveys.
7. It is a requirement of the FBA (refer to Table 20) for a map illustrating the location of survey transects to be provided as part of the BAR. A map should also be provided to illustrate the location of transects for each species targeted. These maps should be derived from initial mapping of the areas identified as potential habitat for the relevant species and used to determine the field survey plan.
8. Targeted surveys for the koala must include spotlighting, call playback and targeted scat searches as per the threatened species survey guidelines.
9. Targeted surveys for the regent honeyeater should use a mix of area search and point count methods within suitable habitat to increase the likelihood for the detection of this species. Areas including yellow box (*E. melliodora*) and mistletoe (*Amyema*) species should be targeted. The assessor needs to quantify the survey effort (e.g. person hours for each sampling method).
10. Given the regent honeyeater forages over large areas each day, it may take several visits to record its presence. In addition, due to the regent honeyeater being a seasonal migrant, this should be considered in the timing of the survey and listed as a constraint of species detection during the field assessment.
11. The survey for regent honeyeaters would be best undertaken when key food resources on site are flowering.
12. Targeted surveys for candidate flora species should include parallel field traverses at appropriate spacing, within areas of suitable habitat (suitable habitat includes 'sub-optimal' and 'marginal' habitat).
13. Should 'species credit' species be determined to occupy the site, either following survey, assumed presence or by an expert, the Biodiversity Credit Calculator will need to be re-run to determine the appropriate 'species credit' offset requirement.

Bird and bat strike.

We have reviewed the updated bird and bat strike impact assessment prepared by Brett Lane and Associates (August 2018).

It appears that the assessment undertaken incorporates appropriate responses to the recommendations contained in our earlier correspondence (DOC18/74075, dated 22 March 2018).

As such, the bird and bat impact assessment is now considered satisfactory.

Proposed substation and access track:

We have reviewed the results of ngh's inspection of the proposed substation site and access road, dated 14 May 2018, which forms Appendix 6 of the Response to Submission Report.

Recommendations:

14. Every effort should be made to ensure that the design and construction of the proposed substation and access road avoids native vegetation, and/or areas of threatened species habitat.

15. Where avoidance is not possible, and areas of native vegetation and/or threatened species habitat will be affected by the substation and access road, an assessment of these areas will be required in accordance with the FBA, prior to approval. Potentially, an offset may be required to counter the loss of native vegetation and/or threatened species habitat as a result of the construction works.

Scarred tree:

We note that ngh has observed a scarred tree within the area examined in relation to the proposed substation and access road.

Recommendation:

16. Every effort is to be made to avoid damaging the scarred tree.
17. However, if the scarred tree is likely to be affected by the proposed substation and access track, an expert in the identification of Aboriginal scarred trees should be engaged to determine if the scar is of Aboriginal origin. The relevant Aboriginal stakeholders should also be consulted in the determination of the origin of the scar, and should it be necessary, to assess the significance of the Aboriginal object.

2. Survey effort maps updated showing central line of walked transects

Updated survey Overview

16-321 White Rock Wind Farm

- ▲ Plot locations
- Turbines
- Targeted flora species survey tracks
- 100 metre buffer
- Extrapolated vegetation types
 - Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland
 - Silvertop Stringybark - Mountain Gum grassy open forest
 - Proposed footprint
- Vegetation types
 - Black Sallee - Snow Gum Low
 - Black Sallee - Snow Gum Moderate to Good
 - Blakely's Red Gum - Yellow Box Low
 - Blakely's Red Gum - Yellow Box Moderate to Good
 - Ribbon Gum - Mountain Gum - Snow Gum Low
 - Ribbon Gum - Mountain Gum Moderate to Good
 - River Oak Moderate to Good
 - Silvertop Stringybark Moderate to Good
 - Exotic

Notes:
 - Data collected by nghenvironmental (2017)
 - Client data courtesy of Goldwind, received 2017
 - Base map Copyright © Esri and its data suppliers.

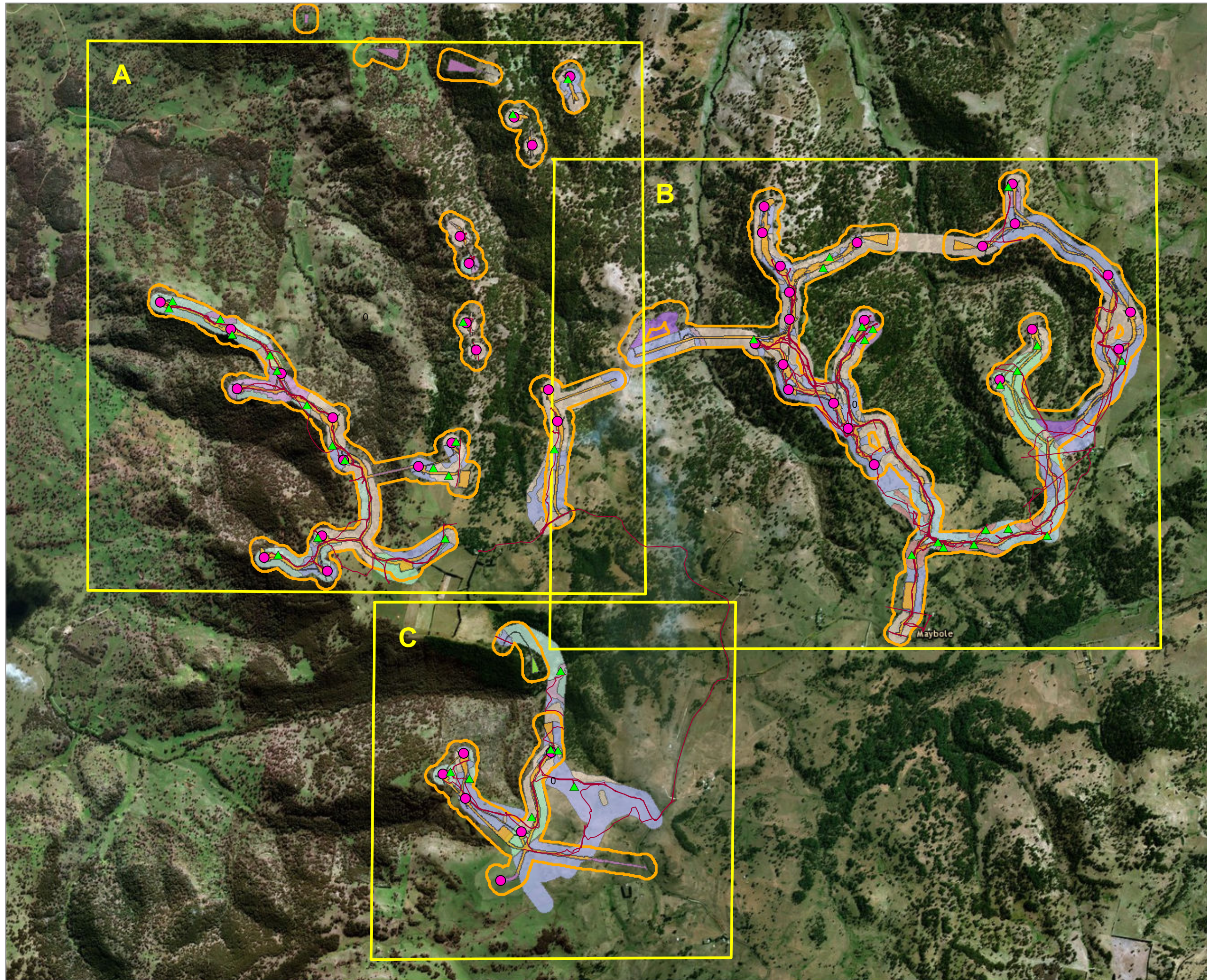
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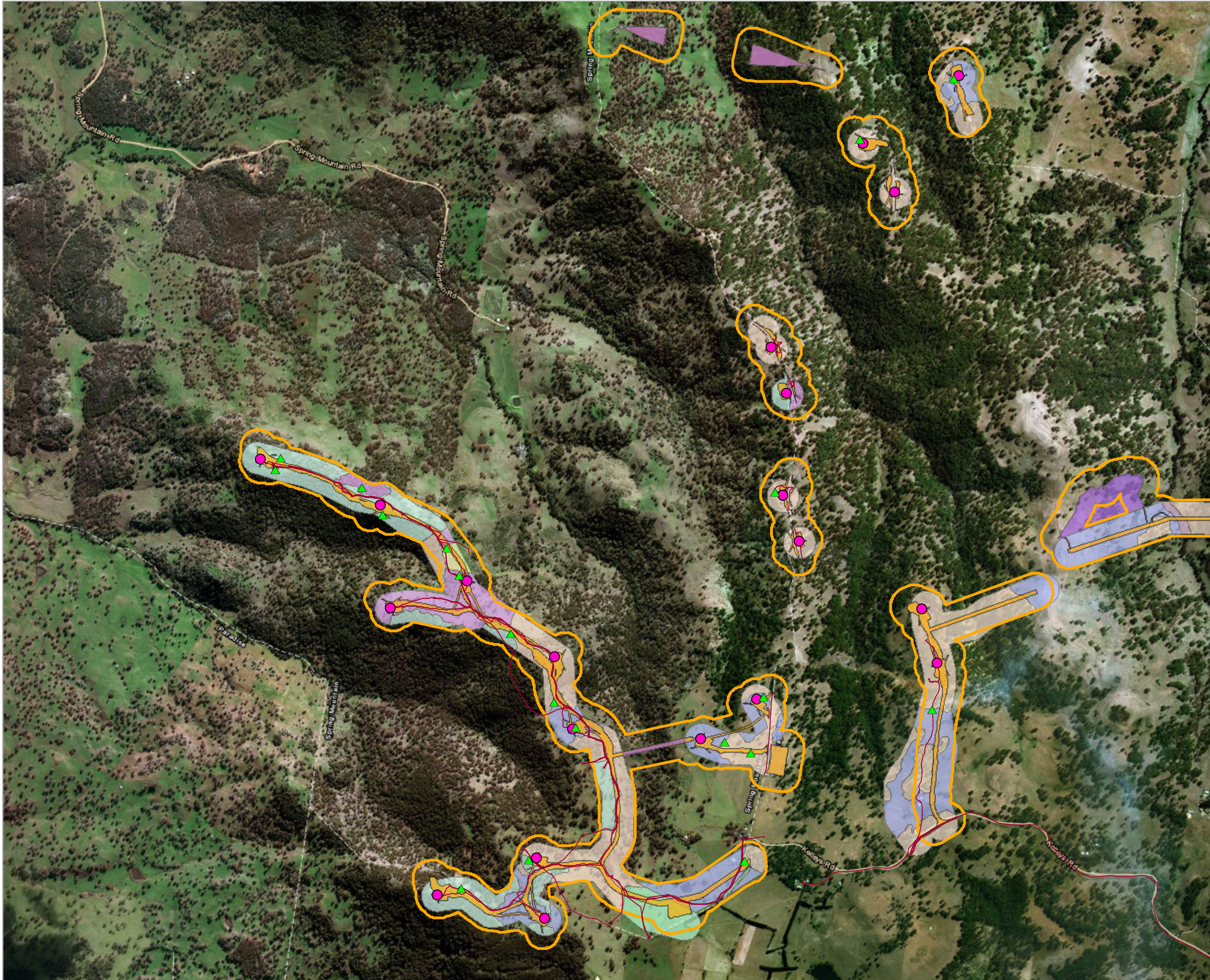
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 Ref: 16-321 05.12.2018
 Author: LB

ngh environmental



www.nghenvironmental.com.au





Updated survey
Map A

16-321 White Rock Wind Farm

- ▲ Plot locations
- Turbines
- Targeted flora species survey tracks
- 100 metre buffer
- Extrapolated vegetation types
 - Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland
 - Silvertop Stringybark - Mountain Gum grassy open forest
- Proposed footprint
- Vegetation types
 - Black Sallee - Snow Gum Low
 - Black Sallee - Snow Gum Moderate to Good
 - Blakely's Red Gum - Yellow Box Low
 - Blakely's Red Gum - Yellow Box Moderate to Good
 - Ribbon Gum - Mountain Gum - Snow Gum Low
 - Ribbon Gum - Mountain Gum Moderate to Good
 - River Oak Moderate to Good
 - Silvertop Stringybark Moderate to Good
 - Exotic

Notes:
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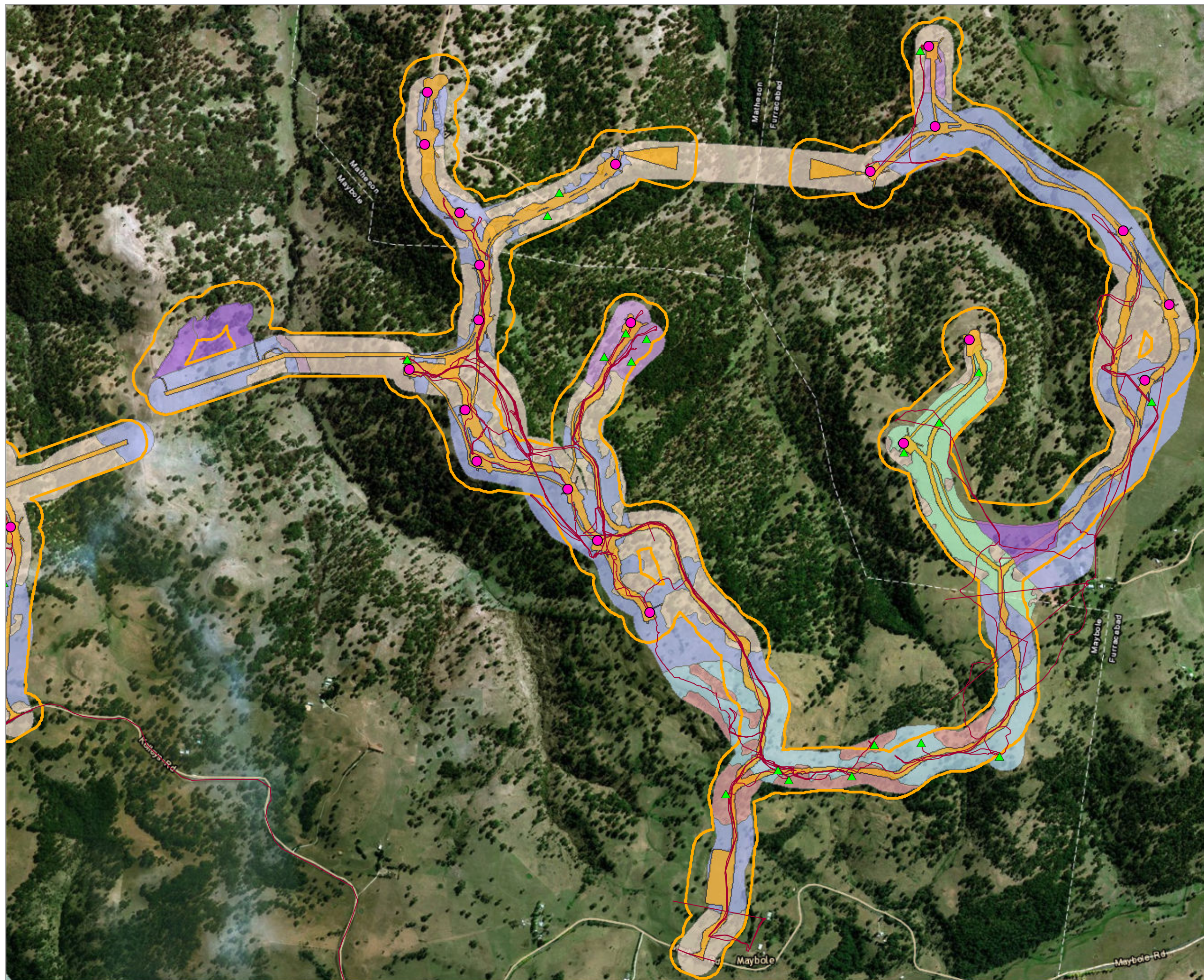
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Author: LB

ngh environmental



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Updated survey Map B

16-321 White Rock Wind Farm

- ▲ Plot locations
- Turbines
- Targeted flora species survey tracks
- 100 metre buffer
- Extrapolated vegetation types
 - Ribbon Gum - Mountain Gum - Snow Gum
 - grassy open forest or woodland
 - Silvertop Stringybark - Mountain Gum grassy open forest
- Proposed footprint
- Vegetation types
 - Black Sallee - Snow Gum Low
 - Black Sallee - Snow Gum Moderate to Good
 - Blakely's Red Gum - Yellow Box Low
 - Blakely's Red Gum - Yellow Box Moderate to Good
 - Ribbon Gum - Mountain Gum - Snow Gum Low
 - Ribbon Gum - Mountain Gum Moderate to Good
 - River Oak Moderate to Good
 - Silvertop Stringybark Moderate to Good
 - Exotic

Notes:
 - Data collected by nghenvironmental (2017)
 - Client data courtesy of Goldwind, received 2017
 - Base map Copyright © Esri and its data suppliers.

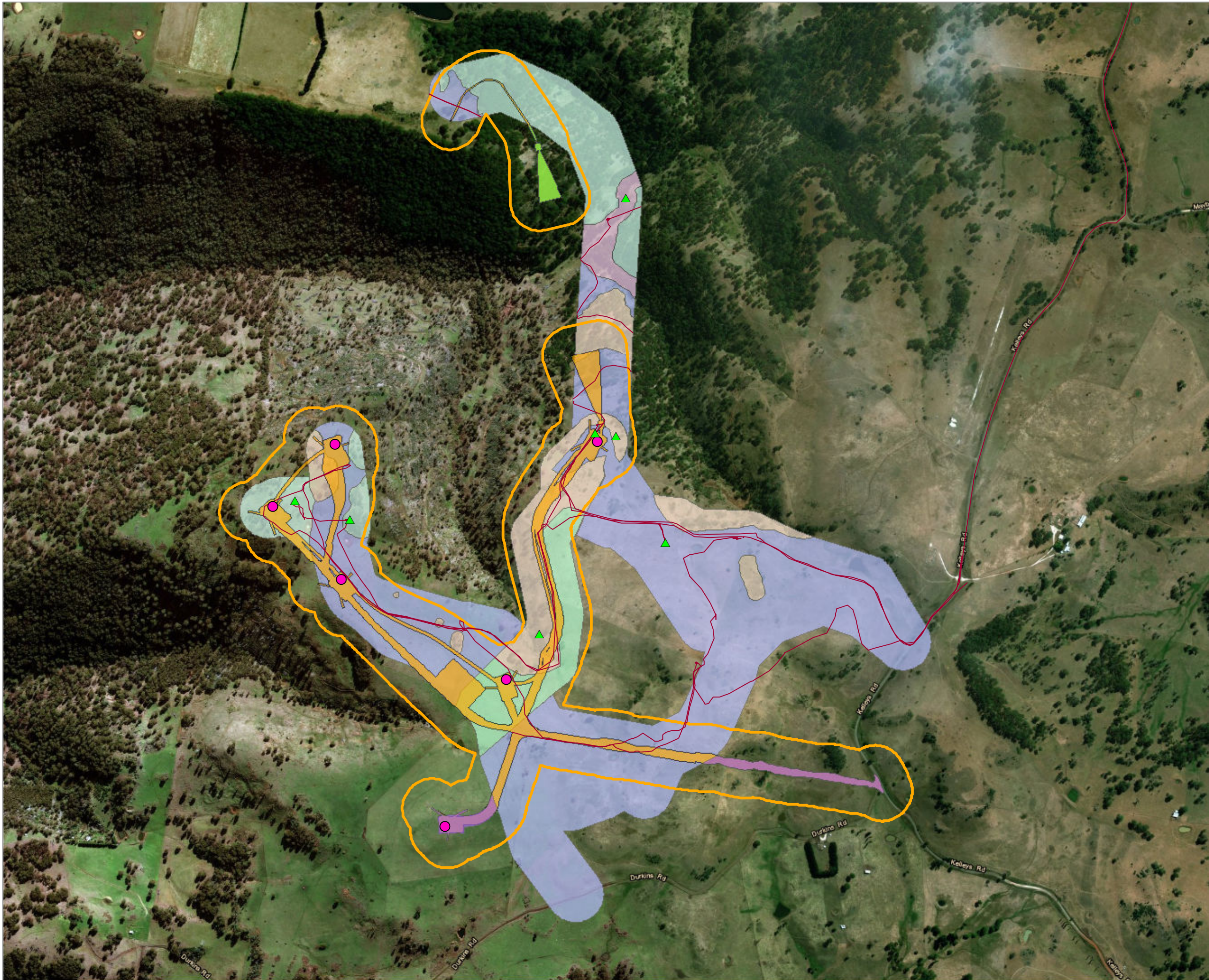
0 150 300 600 Metres

A3 @ 1:18500
 Ref: 16-321 05.12.2018
 Author: LB

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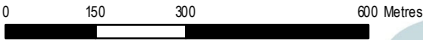


Updated survey
Map C

16-321 White Rock Wind Farm

- ▲ Plot locations
- Turbines
- Targeted flora species survey tracks
- 100 metre buffer
- Extrapolated vegetation types
 - Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland
 - Silvertop Stringybark - Mountain Gum grassy open forest
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A3 @ 1:12500
Ref: 16-321 05.12.2018
Author: LB

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3. BLA BUS survey map (Appendix H from BAR)

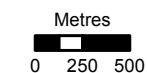
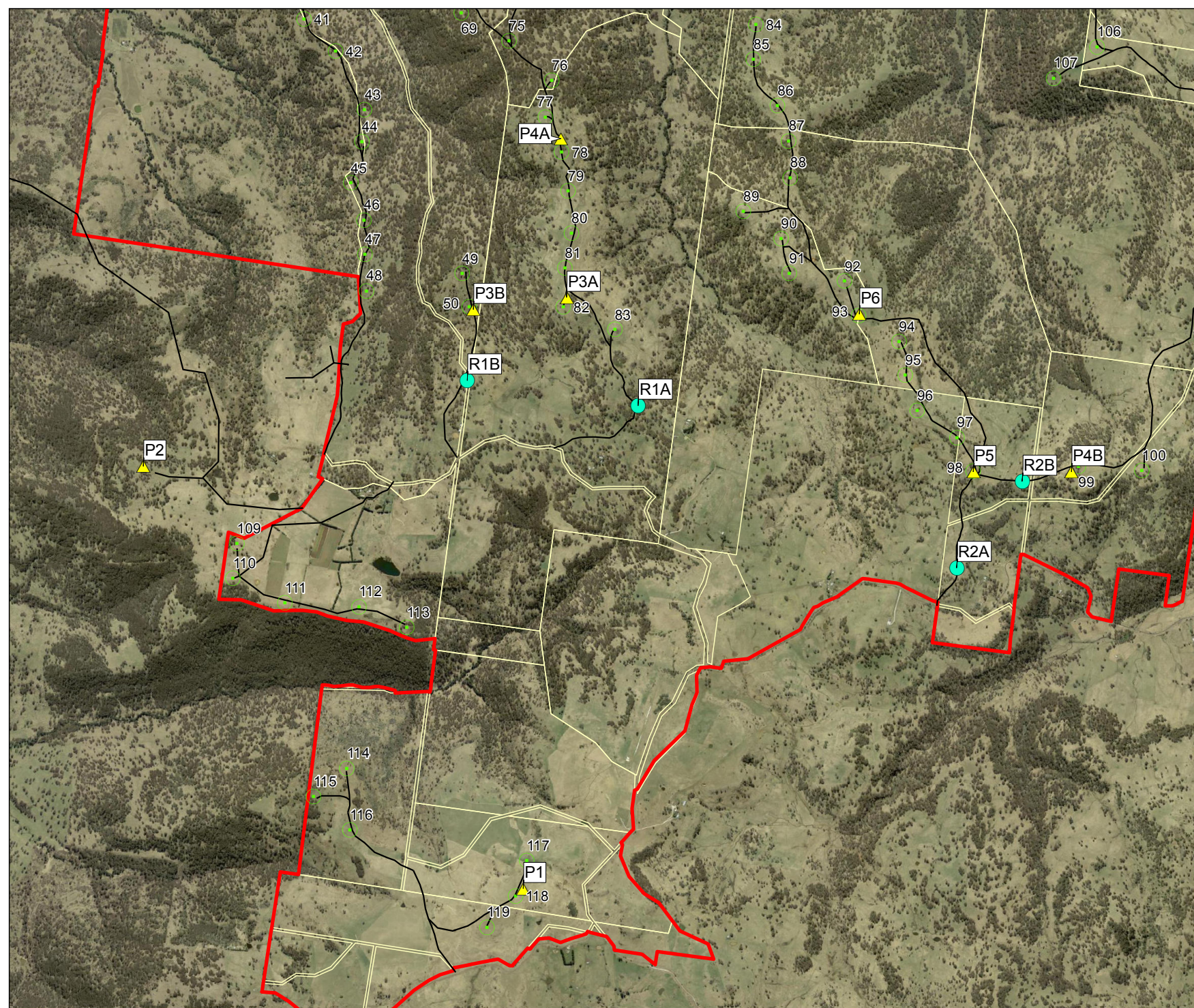
Figure 1: BUS survey points

Project: White Rock Wind Farm

Client: Goldwind Australia

Legend

-  119 turbine layout
-  Tracks
-  Wind Farm boundary
-  Cadastre
- BUS points**
-  Survey
-  Reference



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**Figure 1: 2016 - 2018
BUS points**

Project: White Rock Wind Farm

Client: Goldwind Australia

Date: 5/06/2018

Legend

2018 BUS points

▲ Reference

● BUS

2017 BUS points

▲ Reference

● Survey

2016 BUS points

▲ Reference

● Survey

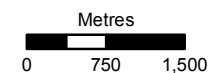
— Wind Farm boundary

● Phase 1 turbines

● Phase 2 turbines

— Phase 1 tracks

— Phase 2 tracks



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ROUTE STUDY:

PROJECT: WHITE ROCK WIND FARM STAGE 2
EX PORT OF NEWCASTLE.

22/01/2019 REV 02

Rev.	Date	Change	Responsible	Checked
00	20/11/18	Route Assessed	W Andrews	✓
00	10/12/18	Report compiled	W Andrews	✓
00	22/12/18	Report completed	W Andrews	✓
01	03/01/19	Various editing	W Andrews	✓
02	22/01/19	Various editing	W Andrews	✓

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1.0 Introduction

This document describes observations and previous experience on route and explains the Transport of Wind turbine equipment from Newcastle to White Rock wind farm stage 2.

This Route survey took place on 20-11-18.

2.0 Evaluation

1	No Cost
2	Some Work
3	Urgent Modification
4	Extreme Amount of Work

(Mark below boxes with an X)

		1	2	3	4
A	Harbour		X		
B	Road Modification				X
C	Road Furnishings			X	
D	Trees			X	
E	Site Entrance			X	
F	Bridge Calculations			X	
G	Traffic Control		X		

3.0 Project data.

Date of latest Route Assessment. 20/11/2018

Survey undertaken by. (Rex J Andrews P/L)

Project name. White Rock Windfarm stage 2

Location. Newcastle port (NSW) to Glen Innes (NSW)

Turbine type.

48 x Goldwind GW155 108 metre H/H

or

48 x Goldwind GW166 108 metre H/H

4.0 Transport combinations 4.5MW.

Nacelle bodies (14l x 4.9w x 4.9h x 38T)

Possible transport configuration. Prime mover with 2x4 dolly 4x4 Low loader.

Overall length: 25.0l x 4.9w x 5.9h x 54.5T.

Generators (7l x 6.3w x 3.4h x 135T)

Possible transport configuration. Prime mover with 14x8 Platform trailer.

Overall length: 55.0l x 6.3w x 4.6h x 235.0T.

Hubs (5.6l x 5.1w x 5.1h x 64.0T)

Possible transport configuration. Prime mover with 2x8 4x8 Low Loader.

Overall length: 28.0l x 5.1w x 5.9h x 54.5T.

GW 155 Blades (76.0l x 4.7w x 3.4h x 25T)

Possible transport configuration. Prime mover with 2x8 dolly with 4x4 steerable extendable.

Overall length: 86.0l x 4.7w x 5.2h x 78.5T.

GW 166 Blades (82.0l x 5.6w x 4.4h x 35T)

Possible transport configuration. Prime mover with 2x8 dolly with 2x8 jinker.

Overall length: 92.0l x 5.6w x 5.4h x 86.5T.

Bottom section (16.2l x 4.8 x 4.5 x 100T)

Possible transport configuration. Prime mover with 9x8 Platform trailer.

Overall length: 30.0l x 4.8w x 5.6h x 108.5T.

Mid lower section (21.8l x 4.5 x 4.5 x 95.2T)

Possible transport configuration. Prime mover with 8x8 extending platform trailer.

Overall length: 32.0l x 4.5w x 5.5h x 144.5T.

Mid section (21.8l x 4.5 x 4.5 x 72.5T)

Possible transport configuration. Prime mover with 6x8 extending platform trailer.

Overall length: 32.0l x 4.5w x 5.5h x 124.5T.

Mid upper section (21.8l x 4.5 x 4.5 x 52.3T)

Possible transport configuration. Prime mover with 6x8 extending platform trailer.

Overall length: 32.0l x 4.5w x 5.5h x 104.5T.

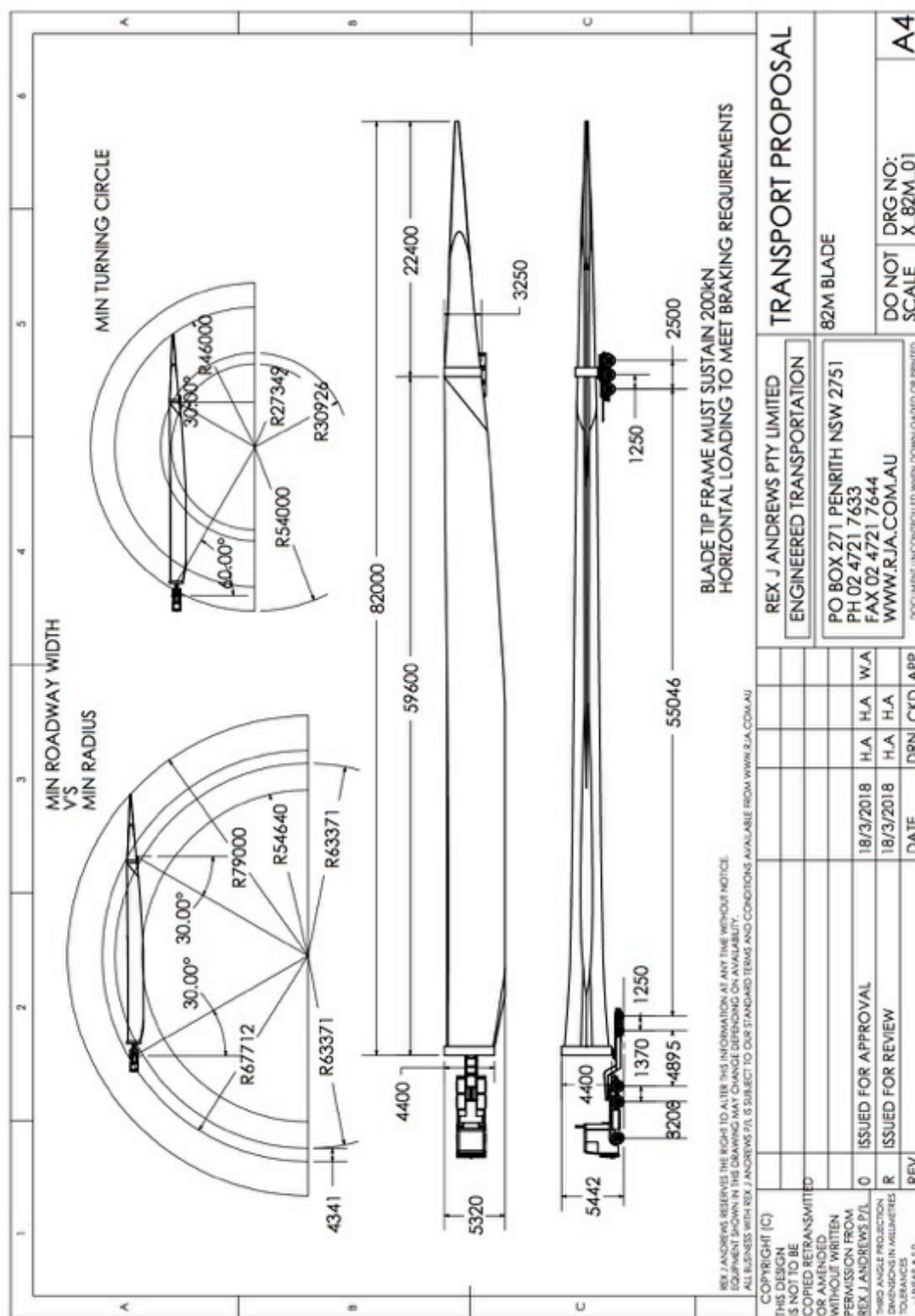
Top section (24.8l x 4.5 x 3.4h x 47.3T)

Possible transport configuration. Prime mover with 2x8 2x8 dolly-jinker.

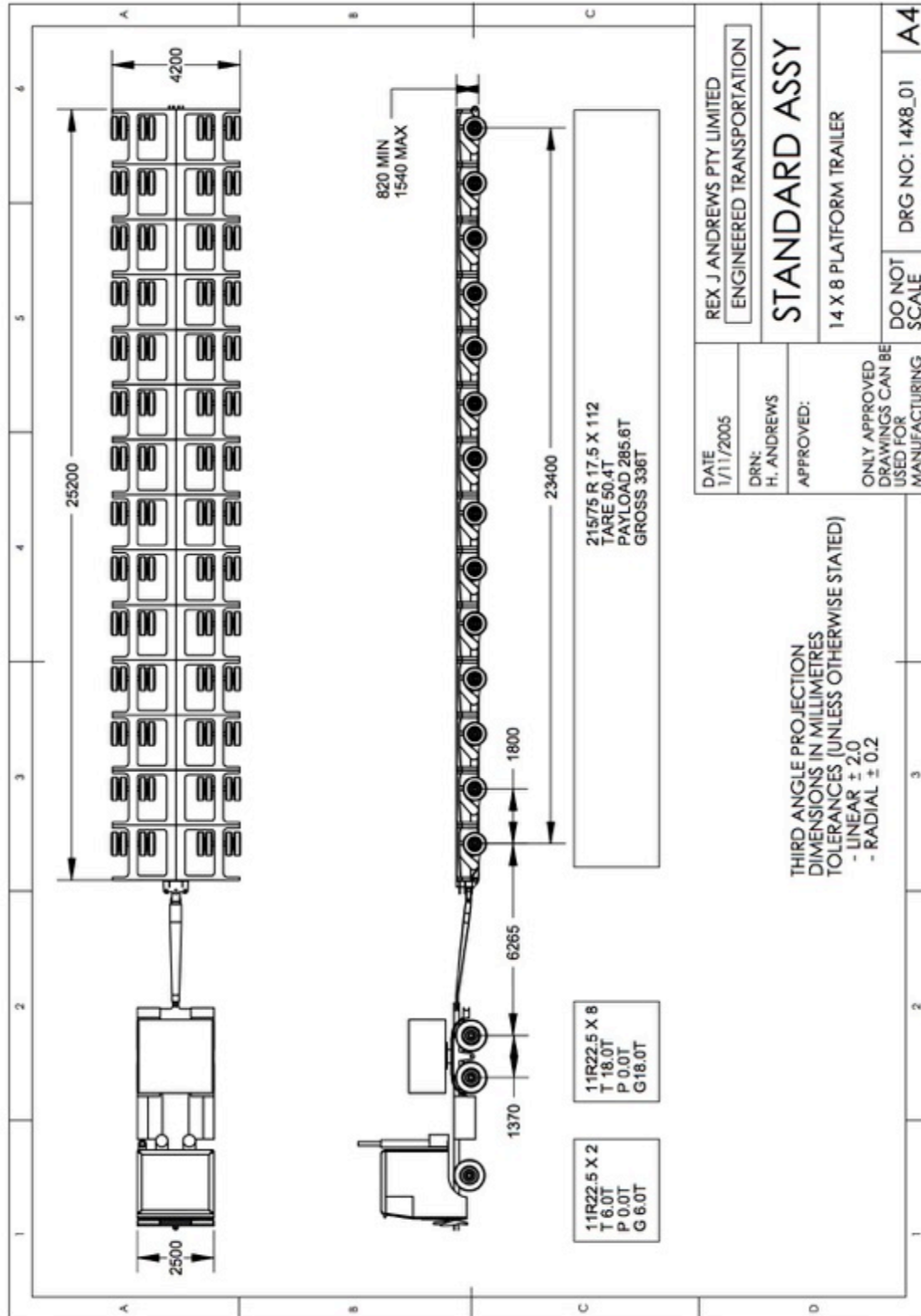
Overall length: 35.0l x 4.5w x 5.5h x 86.5T.

5.0 Sample transport drawings.

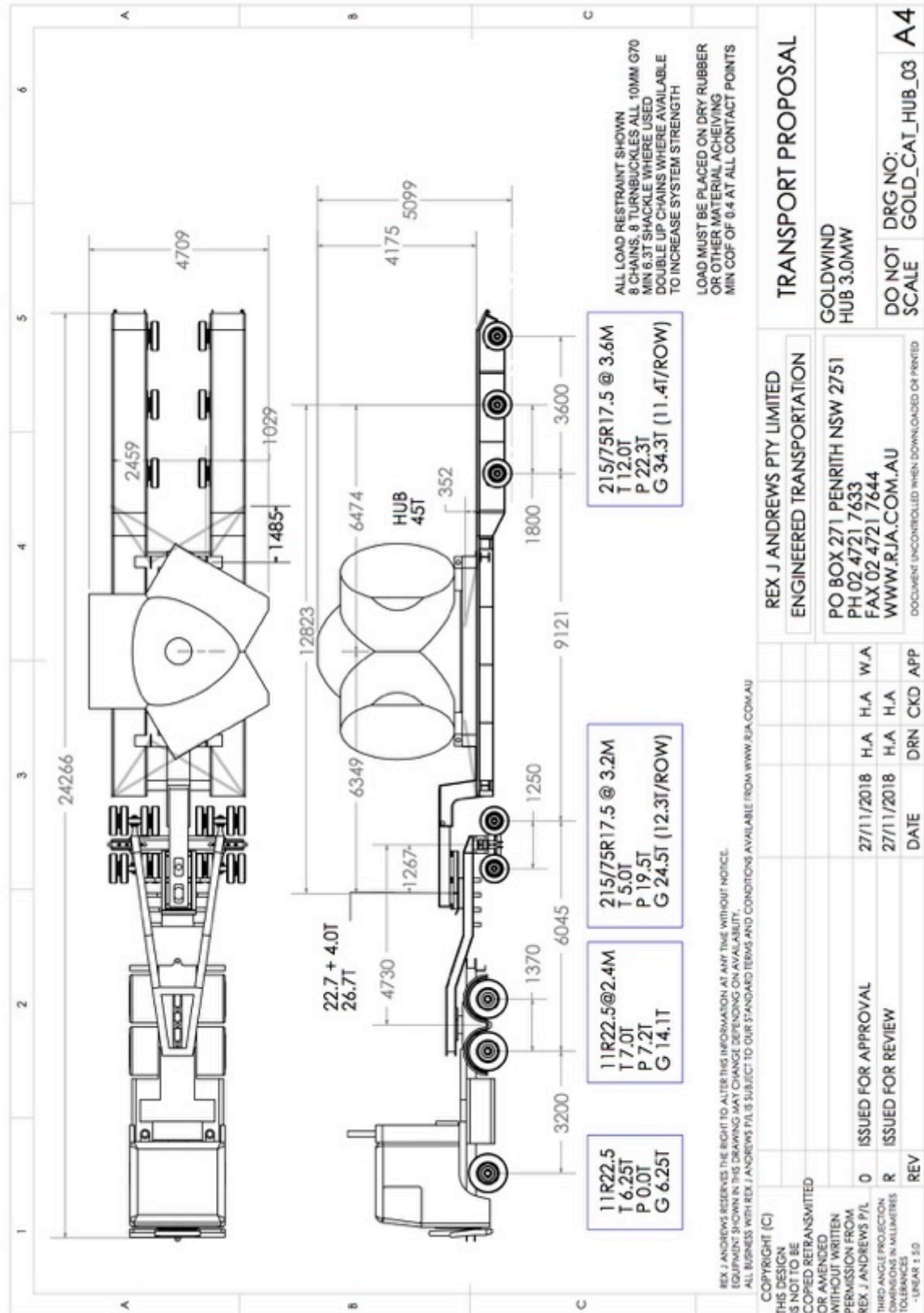
Blade diagram:



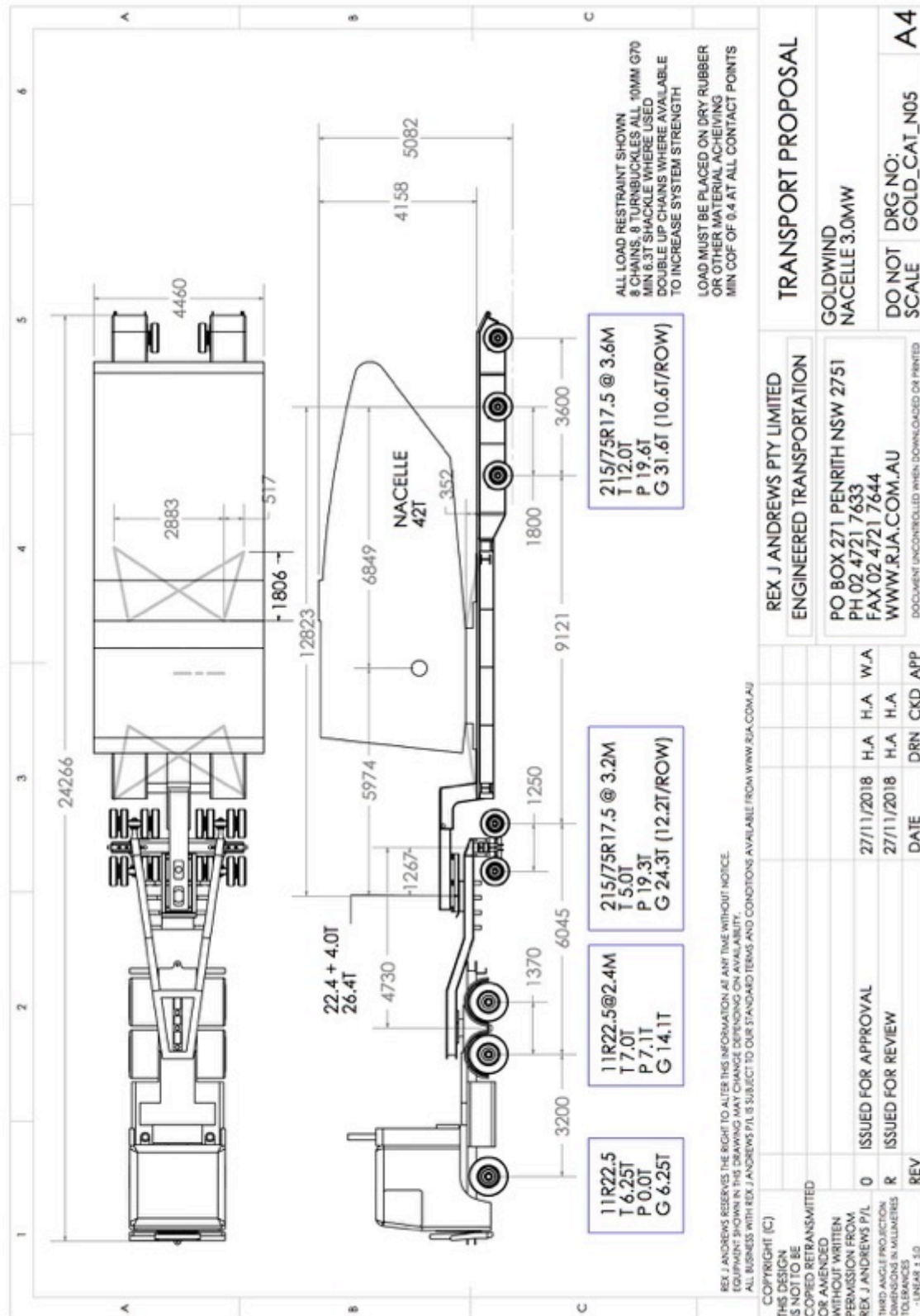
Generator trailer:



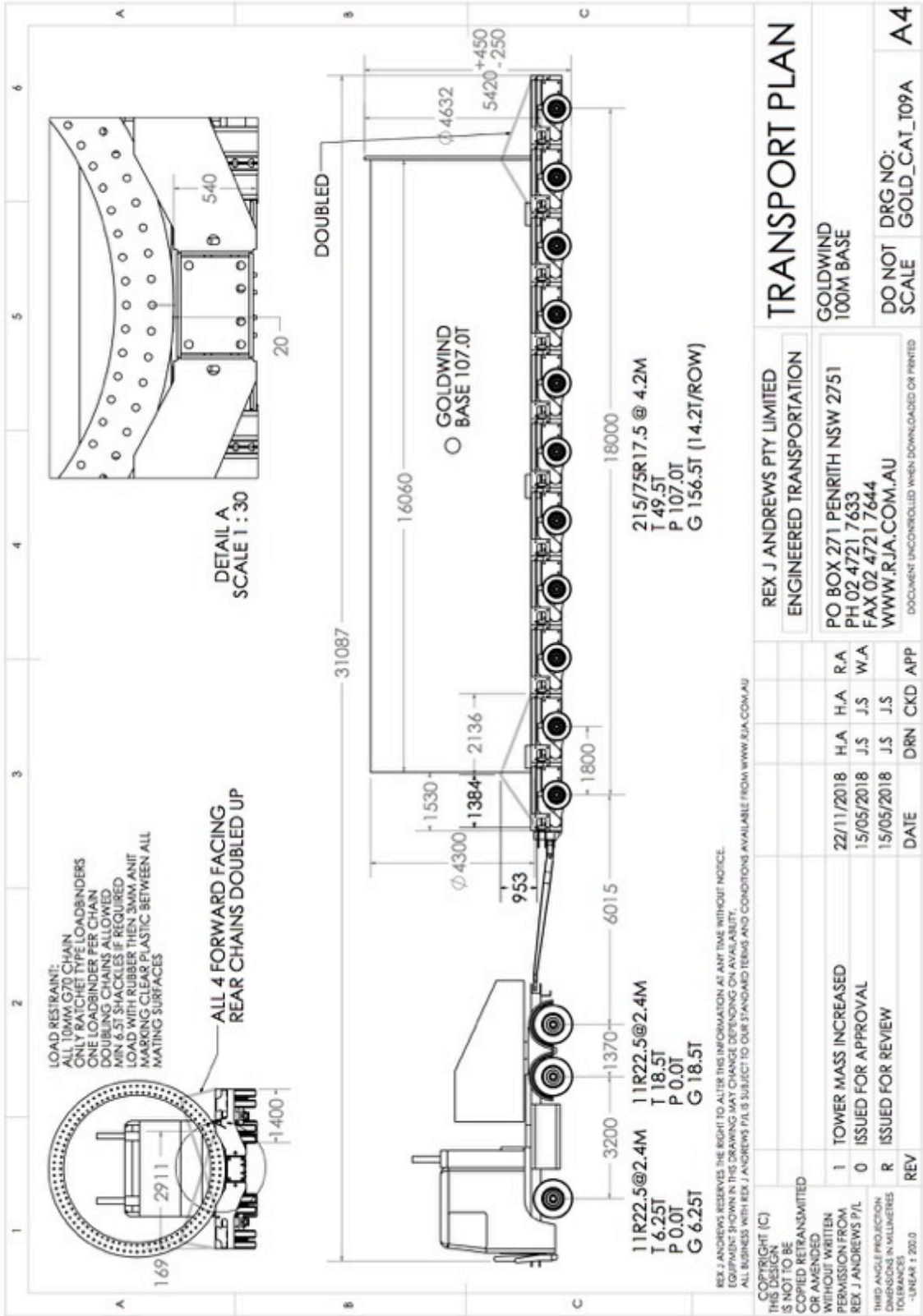
Hub trailer:

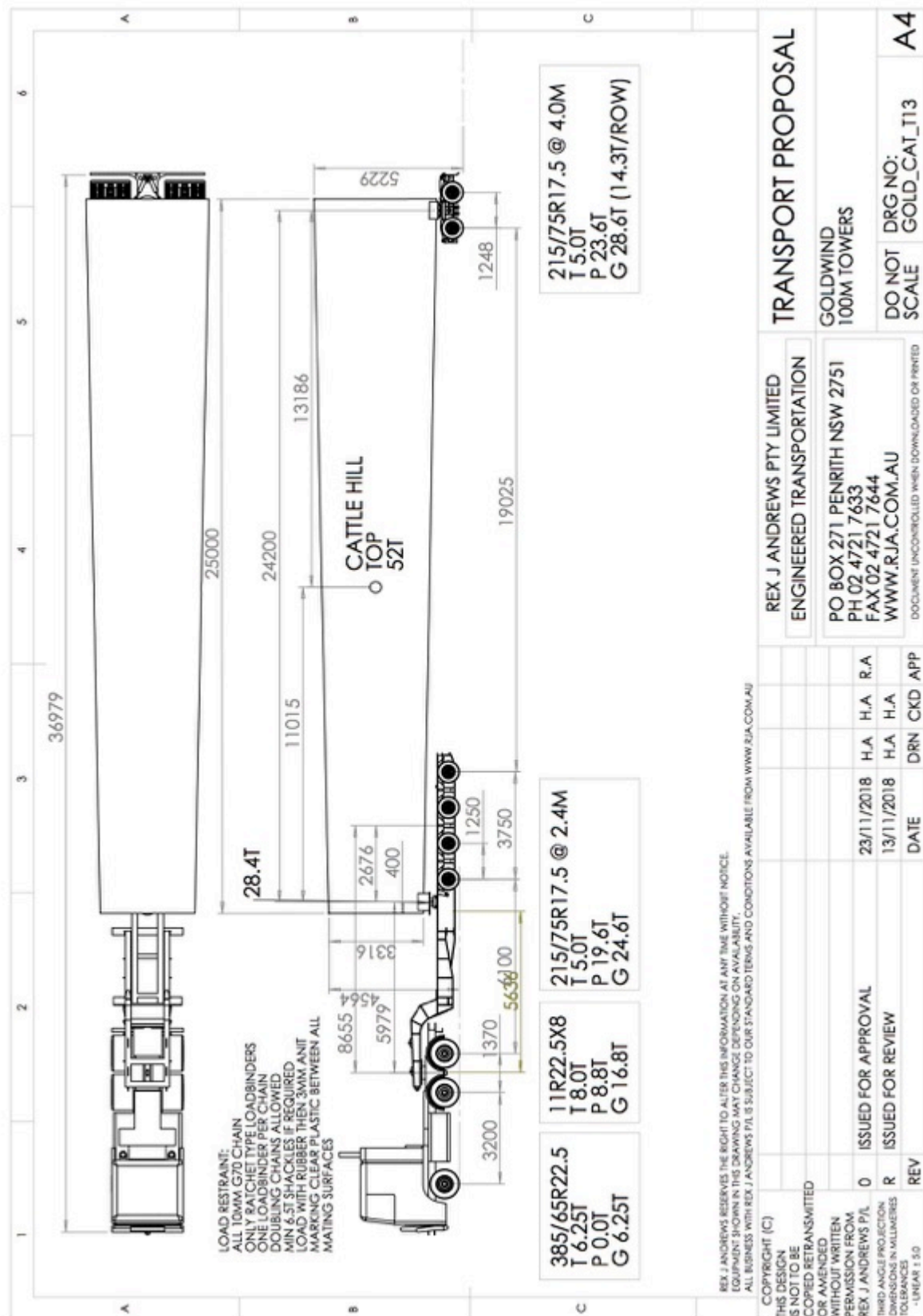


Nacelle trailer:



Tower trailer examples:



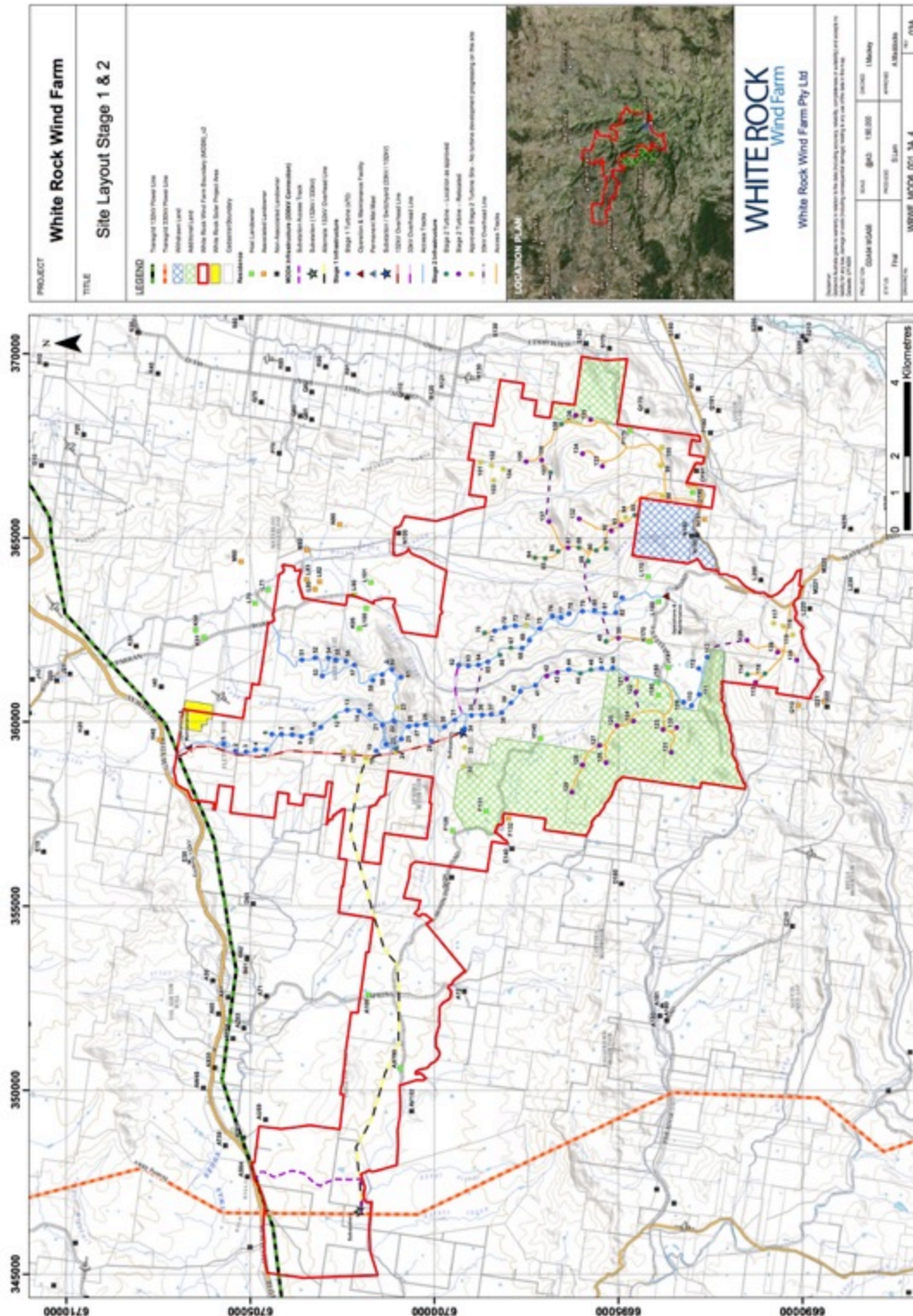


6.0 Site Location.

The White Rock wind farm stage 2 is located approx. 480 Kilometres North of Newcastle and 20 Kilometres West of Glen Innes, in the New England tablelands NSW.



7.0 Turbine Layout and site access routes.



8.0 Port of Import.

The wind turbine equipment will be imported from various countries, and will arrive on ships into the Port of Newcastle. The client may alternately source local towers. The ideal berth for these shipments is the Mayfield #4 Berth. This facility has a hardstand storage area of roughly 100,000 s/q meters, adjacent to the berth.

Access from the storage to the Public roads, is via a port operated road onto Selwyn Street. There will need to be a small amount of road modifications within the port.

Image 1: Port overview.

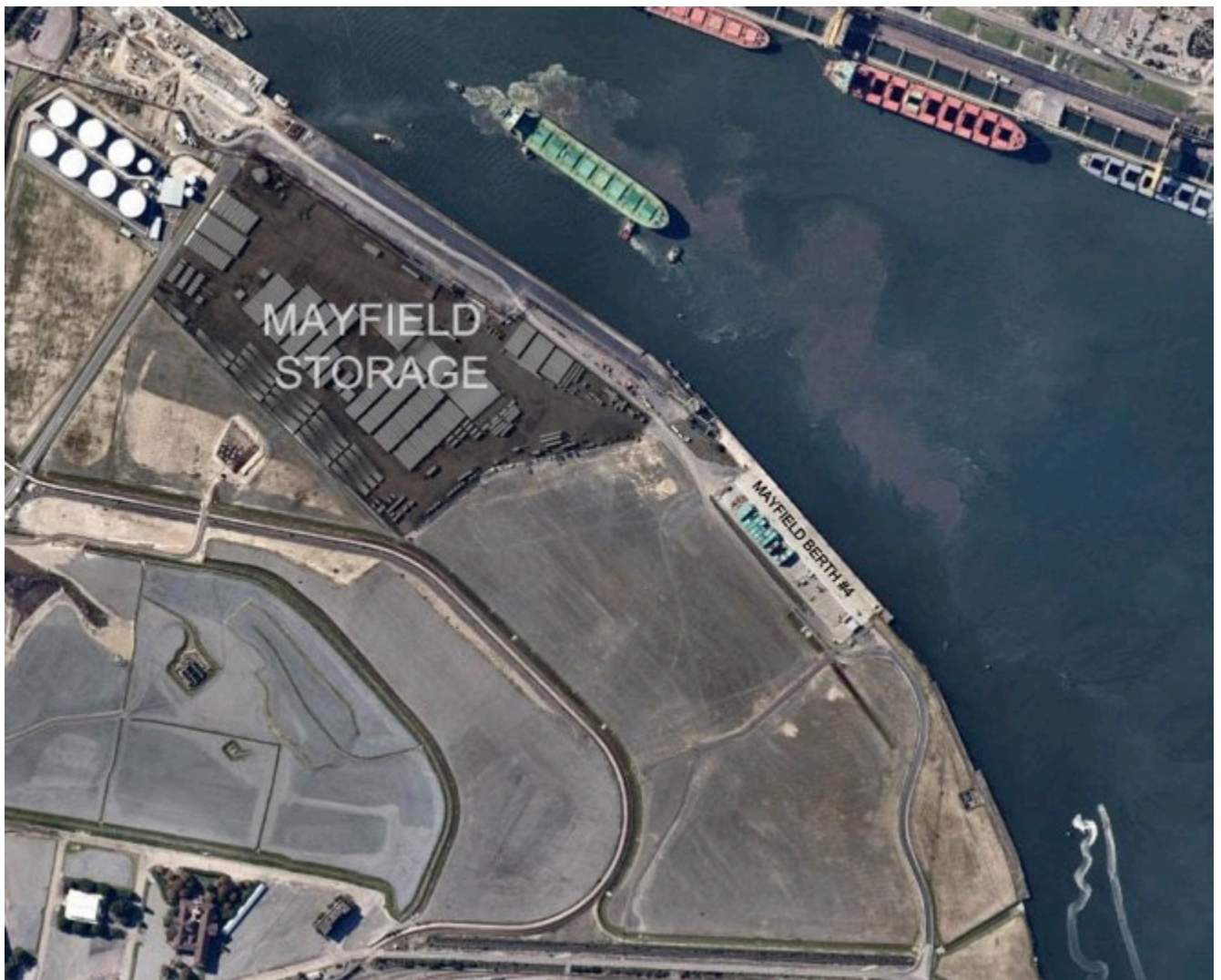


Image 2: Mayfield #4 Berth



Image 3: Mayfield #4 Port storage area.



Image 4: Mayfield #4 Port storage area.



9.0 Transport Summary.

We have based this study on the turbine components, and towers entering Australia via the Port of Newcastle. The following shows the preferred route for the blades, and the main route for all other components.

BLADE ROUTE FROM PORT OF NEWCASTLE TO WHITE ROCK: (513.0 kilometres): After completing this route survey, we believe the following is the most suitable option.

This route took us via Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, (Muswellbrook bypass via Bengalla Road, Wybong Road, Kayuga Road, Ivermein Street, Dartbrook mine access Road), New England Highway, Scott Road, Murray Street, New England Highway, Ben Lomond Road, Maybole Road, Kelleys Road.

GPS Link: <https://goo.gl/maps/fee1qLV92A52>

COMPONENT ROUTE FROM PORT OF NEWCASTLE TO WHITE ROCK: (471.0 kilometres): After completing this route survey, we believe the following is the most suitable option.

This route took us via Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, (Muswellbrook bypass via Bell Street, Victoria Street, Market Street), New England Highway, Scott Road, Murray Street, New England Highway, Ben Lomond Road, Maybole Road, Kelleys Road.

GPS Link: <https://goo.gl/maps/PGAx8eAuNXR2>

10.0 Route Survey: Blade route – Newcastle Port to White Rock windfarm stage 2

KEY	
MODIFICATIONS REQUIRED	
MINOR WORKS OR CAUTION	
PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
Index					
0.0	Mayfield	Mayfield #4 berth onto Selwyn Street GPS link: https://goo.gl/maps/atLwPYKuNdm	70.0 metres clearance	Right hand turn	Both options will require the fence to be relocated on the left hand side. Some hardstand will need to be added to the exit of the corner for both blades. Additionally the 82 metre blade will require hardstand on the left hand entry to the corner.
0.4	Mayfield	Selwyn Street rail crossing GPS link: https://goo.gl/maps/AmohE54hKSz	9.0 Metres wide	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
1.3	Mayfield	Selwyn Street onto George Street GPS link: https://goo.gl/maps/gXeHvBtCp4D2	70.0 metres clearance	Right hand turn	The sign on the inside of the corner will need to be made removable for both options.
1.4	Mayfield	George Street onto Industrial Drive https://goo.gl/maps/s4ayrsuoA3D2	70.0 metres clearance	Moderate right hand turn	Load to travel across to the correct side to the correct side. The traffic signal in the middle of the intersection will need to be relocated for the 82 metre but not for the 76 metre. Both blades will require hardstand to be placed on the south side of the intersection.
4.9	Mayfield	Industrial Drive under traffic signals GPS link: https://goo.gl/maps/YmqhiS2iR582	5.4 Metres clearance	Travel directly ahead	The lowest traffic signal on route is at the intersection of Steel River Blvd. Trucks that exceed 5.2 metres will need to travel in the right hand lane.
5.5	Mayfield West	Industrial Drive onto Maitland Road GPS link: https://goo.gl/maps/Kn49dhWG2qG2	70.0 metres clearance	Moderate right hand turn	Both blades will need to cross to the incorrect side 150 metres prior to the intersection, then return to the correct side 120 metres past the intersection. The concrete median strip will need to be reduced in height, and have a gentle slope.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
13.9	Hexham	New England Highway under gantry GPS link: https://goo.gl/maps/YTMoFe7Aick	5.95 metres high	Travel directly ahead	This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.8 metres should not be exceeded.
17.4	Tarro	New England Highway onto John Renshaw Drive GPS link: https://goo.gl/maps/SRDr5JigkBg	12.0 metres in width	Left hand merge	No problems with this section of road.
18.4	Beresfield	John Renshaw Drive GPS link: https://goo.gl/maps/N19vJih1Fgr	9.0 metres in width	Travel directly ahead	No problems with this section of road.
28.7	Buchanan	John Renshaw Drive onto the Hunter Expressway GPS link: https://goo.gl/maps/1STJ1PfQI9E2	65.0 metres clearance	Right hand turn	Both blade types will need to cross to the incorrect side than down the off-ramp onto the incorrect side of the expressway. Approx 600 metres along the expressway there is a break in the road, which will allow the blades to cross back to the correct side of the expressway. Traffic control and or police will be required to perform this procedure.
58.9	Branxton	The Hunter Expressway onto The New England Highway GPS link: https://goo.gl/maps/7rauNuxzqjg	12.0 Metres wide	Travel directly ahead	No problems with this section of road.
67.3	Whittingham	The New England Highway onto the Golden Highway GPS link: https://goo.gl/maps/nAnfkYfeUn42	12.0 Metres wide	Left Hand turn	The NSW Government is currently upgrading this intersection. The intersection in its current form has a number of signs that would need to be made removable, but no modifications are required on the existing corner. At this stage the data that is available for the upgrades shows that the section of road that we would need to access does not change considerably. However it is recommended that you monitor the progress of the upgrades, and that any changes are thoroughly looked at.
67.4	Whittingham	Golden Highway GPS link: https://goo.gl/maps/R86RFuPnmFU2	115.0 x 9.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
77.3	Whittingham	Golden Highway intersection with the Putty Road GPS link: https://goo.gl/maps/7hQdEmK1EgE2	85.0 metres clearance	Left hand turn	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable.
77.4	Mount Thorley	Golden Highway GPS link: https://goo.gl/maps/zGvdupDuixx	100.0 x 10.0 metres	Parking Bay	Suitable parking for Fatigue breaks.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
80.8	Mount Thorley	Golden Highway intersection with the Putty Road GPS link: https://goo.gl/maps/VyA42n1CqZx	85.0 metres clearance	Right hand turn	Blades to cross from the incorrect side and cross back to the correct side approx. 500 metres west of the intersection.
98.0	Warkworth	Golden Highway GPS link: https://goo.gl/maps/Y6V6EXaCwxq	100.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
107.0	Jerrys Plains	Golden Highway through Jerrys Plains village GPS link: https://goo.gl/maps/WqSCRsJ8ZGt	75.0 metres clearance	Dogleg	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable and some hardstand added for both blade types.
126.0	Ogilvy	Golden Highway GPS link: https://goo.gl/maps/58Tj9ojs7CC2	6% gradient	Travel directly ahead	This section of road has a steep mountain range that will require additional pull trucks to assist loads that exceed 80T gross weight. Additionally the NSW Government is currently upgrading this section of road. It is recommended that you monitor the progress of the upgrades, and that any changes are thoroughly looked at.
141.9	Denman	Golden Highway onto Denman Road GPS link: https://goo.gl/maps/sf4PNnycxB32	65.0 metres clearance	Right hand turn	The blades will travel around the corner from correct side onto the correct side. The existing corner will require hardstand to be added and signs made removable for both options.
149.0	Muswellbrook	Denman Road onto Bengalla Road GPS link: https://goo.gl/maps/CJYMtSMTttJ2	68.0 metres clearance	Left hand turn	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable and some hardstand added to the inside of the corner for both options.
158.5	Muswellbrook	Bengalla Road onto Wybong Road GPS link: https://goo.gl/maps/vibQtvHkxXE2	70.0 metres clearance	Right hand turn	Blades to cross from the correct side to the correct side. Some signs will need to be made removable for both options.
168.1	Muswellbrook	Wybong Road onto Kayuga Road GPS link: https://goo.gl/maps/xVcKUT1isJ2	40.0 metres clearance	Left hand turn	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be relocated or made removable. Permission will be required from the landowner to travel over the private land. This will require removal and realigning the fence, and adding hardstand. The amount of hardstand will alter between blade types.
173.3	Muswellbrook	Kayuga Road onto Ivermein Street GPS link: https://goo.gl/maps/JpTfmcsZ6Sk	85.0 metres clearance	Travel directly ahead	No problems with this section of road.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
174.0	Muswellbrook	Ivermein Street onto Dartbrook mine access Road GPS link: https://goo.gl/maps/ddtMHadCmXXK32	50.0 metres clearance	Right hand turn	Blades to cross from the correct side to the correct side. Some signs will need to be made removable and some hardstand added to the inside and outside of the corner. Additionally a pipe will need to be extended on the inside of the corner. Same for both blade types.
174.8	Muswellbrook	Dartbrook Road GPS link: https://goo.gl/maps/u9v5XtSV7Jt	60.0 metres clearance	Right hand turn	Blades to cross from the correct side to the correct side, but cut across the inside of the corner. Some signs will need to be made removable and some hardstand added to the inside of the corner. Hardstand size will be slightly less for the 76 meter blade.
177.0	Muswellbrook	Dartbrook Road onto New England Highway GPS link: https://goo.gl/maps/twTsmUKaED82	60.0 metres clearance	Left hand turn	Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable on the corner and some hardstand added. Same for both blade types.
194.0	Scone	Rail crossing over the New England GPS link: https://goo.gl/maps/hQfQRRrmx5n	7.0 metres wide	Drive directly ahead	Rail approval to be carried in vehicles that require this clearance. Likely to cross with caution, no escort required.
240.8	Murrurundi	New England highway (Township) GPS link: https://goo.gl/maps/Sj3ixAkhujt		Parking Bay	Suitable parking for Fatigue breaks.
245.4	Murrurundi Hill	New England highway Nowlands Gap GPS link: https://goo.gl/maps/R5yufobPeMG2		Parking Bay (small)	Emergency parking only.
251.3	Willow Tree	New England highway GPS link: https://goo.gl/maps/XLTg7CRV7EU2		KANKOOL WEIGHBRIDGE	It is likely that the towers and defiantly the blades will not fit into this facility. We have engineered documentation showing correct weights for all loads.
257.9	Willow Tree Township	New England highway GPS link: https://goo.gl/maps/gw38qmvVfTC2		Parking Bay	Suitable parking for Fatigue breaks.
259.5	Willow Ttree Truck Stop N	New England highway GPS link: https://goo.gl/maps/RRdPVHupGCs		Parking Bay (small)	Suitable parking for Fatigue breaks for small loads only.
276.4	Wallabadah	New England highway GPS link: https://goo.gl/maps/QWCyeHQSohS2		Parking Bay (side of road)	Suitable parking for Fatigue breaks.
281.8	Goono Goono	New England highway GPS link: https://goo.gl/maps/im4QhUfW24D2		Parking Bay	Emergency parking only. Incorrect side of the road

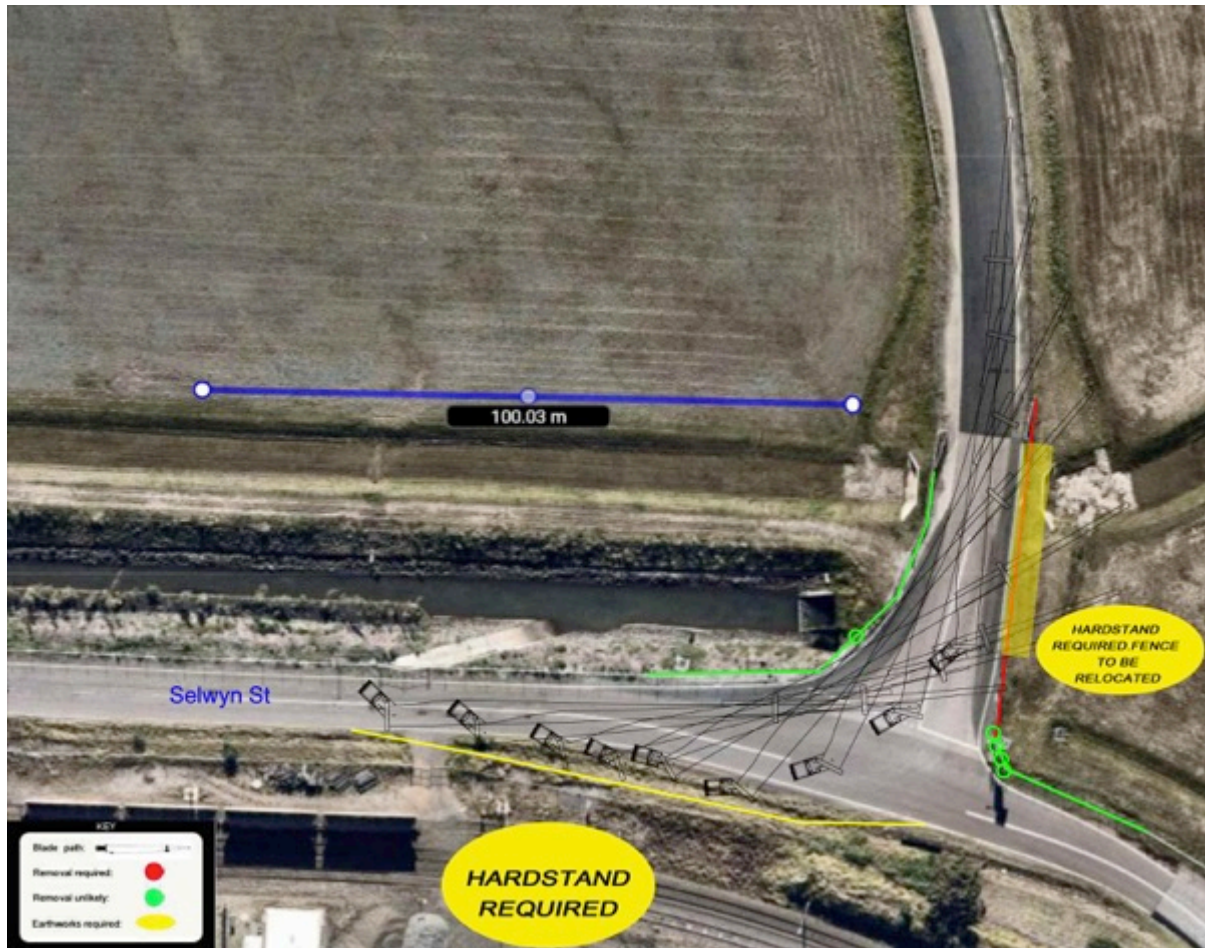
KM index	Location	Section of road	Critical Measurement	Procedure	Notes
319.0	Tamworth	Standard roundabout on the New England GPS link: https://goo.gl/maps/3J9dCHxtYim	66.0 metres clearance	Drive directly ahead	The worst of the roundabouts have delineators at approx. 800mm high, and small shrubs at a similar height. These signs may need to be relocated or made removable. Additionally the tail swing will travel close to the roundabout warning signs, these will also need to be made removable. Same for both blade types.
321.0	Tamworth	New England Highway onto the heavy vehicle bypass at Scott Road. GPS link: https://goo.gl/maps/BXdwaSjL5Bw	66.0 metres clearance	Loads to cut across the wrong side of the roundabout from correct side to correct side	Two options are given for each blade type. The only option for both blades would be option 2, which requires acquisition of the vacant block to the north. This would also require a light pole to be removed or relocated.
322.7	Tamworth	Scott Road onto Murray Street GPS link: https://goo.gl/maps/nix2oREeh6H2	66.0 metres clearance	Drive directly ahead	Both blades swept path will travel over the edge of the roundabout. To do this 2 palm trees will need to be removed. Alternatively the light pole on the rear overhang could be relocated to allow the trailer to stay to the left.
323.0	Tamworth	Murray Street onto New England Highway GPS link: https://goo.gl/maps/45dffqHmUcs	66.0 metres clearance	Loads to cut across the wrong side of the roundabout from correct side to correct side. But travel through the incorrect side of the roundabout.	This intersection will require the 2 median strips to be hardstand, and several signs made removable. Lesser amount of work is required for the 76 metre blade.
331.6	East Tamworth	New England highway GPS link: https://goo.gl/maps/9cpBrT5qUAU2		Parking Bay	Suitable parking for Fatigue breaks.
342.8	Moonbi	New England highway GPS link: https://goo.gl/maps/E3TL2KkEctG2		Parking Bay	Suitable parking for Fatigue breaks.
355.0	Moonbi range	New England highway GPS link: https://goo.gl/maps/rwJQaAYkLTQ2		Parking Bay	Suitable parking for Fatigue breaks.
403.7	Uralla	New England highway GPS link: https://goo.gl/maps/NpEeAEcV3jr		Parking Bay	Suitable parking for Fatigue breaks.
424.4	Saumarez	New England highway GPS link: https://goo.gl/maps/625byaWW5un		Parking Bay	Suitable parking for Fatigue breaks.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
428.0	Armidale	Roundabouts GPS link: https://goo.gl/maps/TyVgxMW5xs	66.0 metres clearance	Drive directly ahead	The worst of the roundabouts has a sharp crest; it would be recommended that trailers with hydraulic lift be used to clear this crest. Additionally the tail swing will travel close to the roundabout warning signs, these will also need to be made removable. Same for both blade types.
432.0	Armidale	Queen Elizabeth Drive over the New England Highway GPS link: https://goo.gl/maps/H3Ju4i63a3p	5.6 metres height clearance	Travel under overhead bridge structure	Bridge structure has a minimum height clearance of 5.6 metres. All loads can pass under this structure unrestricted.
439.7	Armidale	New England highway GPS link: https://goo.gl/maps/irj5p9HveH52		Parking Bay	Suitable parking for Fatigue breaks.
447.5	Tilbuster	New England highway GPS link: https://goo.gl/maps/JAs8bVDKSJo		Emergency Parking bay	Suitable parking for Fatigue breaks.
459.0	Black Mountain	New England highway GPS link: https://goo.gl/maps/E5XRgUYekfA2		Parking Bay (blades)	Suitable parking for Fatigue breaks.
466.3	Guyra	New England highway GPS link: https://goo.gl/maps/5L9toSM6mz12		Parking Bay (small)	Emergency parking only.
473.4	Guyra	Town Centre New England highway GPS link: https://goo.gl/maps/Zz7GGnpLTVp		Parking Bay	Suitable parking for Fatigue breaks.
481.2	Ben Lomond	New England highway onto Ben Lomond Road GPS link: https://goo.gl/maps/12E37v5z3JS2	64.0 metres clearance	Veer to the left	This corner has a moderate crest; it would be recommended that trailers with hydraulic lift be used to clear this crest. Additionally the inside of the corner will need to be realigned, and filled with hardstand. This would allow the large blades to travel through the corner. Same for both blade types.
481.2 to 493.8	Ben Lomond	Ben Lomond Road to Maybole Road GPS link: https://goo.gl/maps/UnxoJzHxDXA2	64.0 metres clearance	Travel directly ahead	This section of road has had a 60.0 metre blade traverse the route okay. However these larger blades may require sections of the road to be surveyed, and the crests checked for vertical clearance.

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
493.8 to 512.4	Ben Lomond	Maybole Road to Kelleys Road GPS link: https://goo.gl/maps/ch9QuvcbfX32	64.0 metres clearance	Left hand turn	This section of road has had a 60.0 metre blade traverse the route okay. However these larger blades may require sections of the road to be surveyed, and the crests checked for vertical clearance. Additionally the road will need to be made suitable for all weather travel. Slightly less work for a 76-metre blade.
512.4	White Rock	Maybole Road onto Kelleys Road GPS link: https://goo.gl/maps/3CX5JsWmrYu	64.0 metres clearance	Travel directly ahead	This corner will need to be widened, and removal of trees is likely. The 82-metre blade will require hardstand on both sides of the corner.
513.0	White Rock	Kelleys Road into White Rock windfarm GPS link: https://goo.gl/maps/tiwooW1RBp82	64.0 metres clearance	Travel directly ahead	This section of road has had a 60.0 metre blade traverse the route okay. However these larger blades may require sections of the road to be surveyed, and the crests checked for vertical clearance.

0.0 Km's: Mayfield #4 onto Selwyn Street at Mayfield.

Image 1: (82 Metre blade)



PROCEDURE: Right hand turn.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/afLwPYKuNdm>

COMMENTS: Some hardstand will need to be added to the left entry and exit of the corner. Some signs will need to be relocated and or made removable and some fence will need to be relocated.

A spotter will need to keep the driver informed throughout the procedure. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Yes moderate amounts of work are required.

Image 2: (76 Metre blade)



PROCEDURE: Right hand turn.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/afLwPYKuNdm>

COMMENTS: Some fill will need to be added to the left exit of the corner. Some signs will need to be relocated and or made removable and some fence will need to be relocated.

A spotter will need to keep the driver informed throughout the procedure. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Yes moderate amounts of work are required.

0.4 Km's: Rail crossing over Selwyn Street at Mayfield.



PROCEDURE: Travel directly ahead over the crossing.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/864FhMSaF9P2>

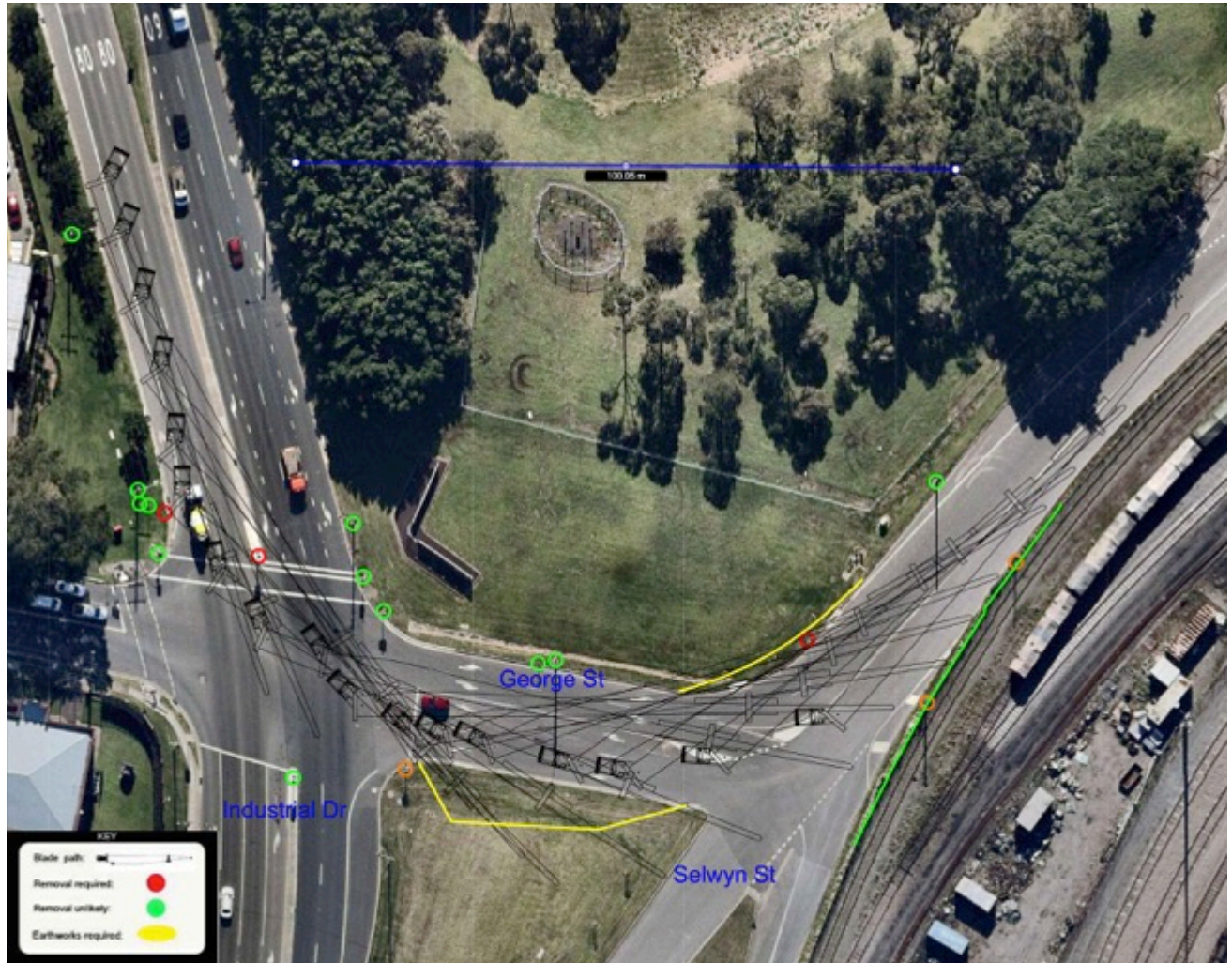
COMMENTS: Large width clearance and good ground clearance over this crossing.

Police and escorts to control local traffic either side of the crossing. ARTC approval will need to be obtained to travel over this crossing. Likely to cross with caution, no escort required.

ROAD MODIFICATIONS: No works required.

1.3 Km's: Selwyn Street onto Industrial Drive, via George Street at Mayfield.

Image 1: (82 Metre blade)



PROCEDURE: Right hand turn from Selwyn Street through George Street and onto Industrial Drive.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/brPRAckLr572>

COMMENTS: The first right hand turn through George Street will need a sign made removable. Entering Industrial Drive the loads will cross from the correct side to the correct side. The traffic signal in the centre median will need to be relocated. Some hardstand will need to be placed on the south side of the intersection.

ROAD MODIFICATIONS: Yes, large amounts of works are required.

Image 2: (76 Metre blade)



PROCEDURE: Right hand turn from Selwyn Street through George Street and onto Industrial Drive.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/brPRAckLr572>

COMMENTS: The first right hand turn through George Street will need a sign made removable. Entering Industrial Drive the loads will cross from the correct side to the incorrect side before travelling over the centre median and returning to the correct side. Some hardstand will need to be placed on the south side of the intersection.

ROAD MODIFICATIONS: Yes, moderate amounts of works are required.

4.9 Km's: Standard overhanging Traffic signals Mayfield to Hunter Expressway.



PROCEDURE: Overhanging signals while travelling through the intersection.

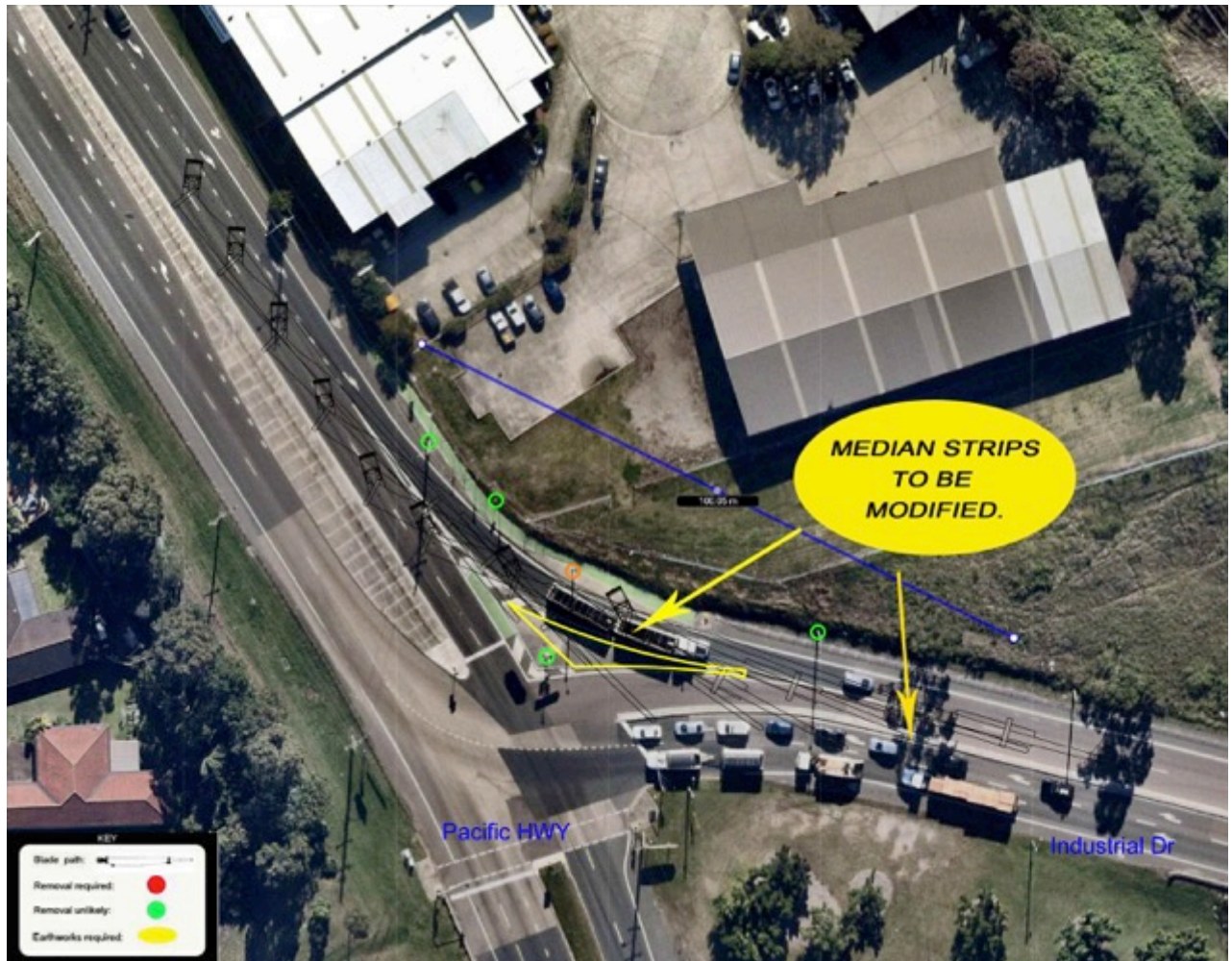
GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/5DpD3b7KnT72>

COMMENTS: The lowest traffic signal on route has 5.4 metres clearance. This signal is on the corner of Steel River Blvd at Mayfield West. Loads with an overall height of 5.3 or higher, can avoid this signal by travelling in the centre lane. Loads to slow down while doing this manoeuvre. All other signals exceed 5.6 metres high on this section of road.

ROAD MODIFICATIONS: No works are required.

5.5 Km's: Industrial Drive onto Maitland Road at Mayfield West.

Image 1: (76 & 82 Metre blade)



PROCEDURE: Right hand turn from Industrial Drive onto Maitland Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/Kn49dhWG2qG2>

COMMENTS: The loads will need to cross to the incorrect side of the intersection, before crossing back over 200 metres to the north. The centre median strip will need to be modified so the trucks can cross over safely.

Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Yes moderate amounts of works are required.

13.9 Km's: Lowest structure (Bridge or Sign) between Mayfield and the Hunter Expressway.

Image 1:



PROCEDURE: Travel directly ahead in the centre lane.

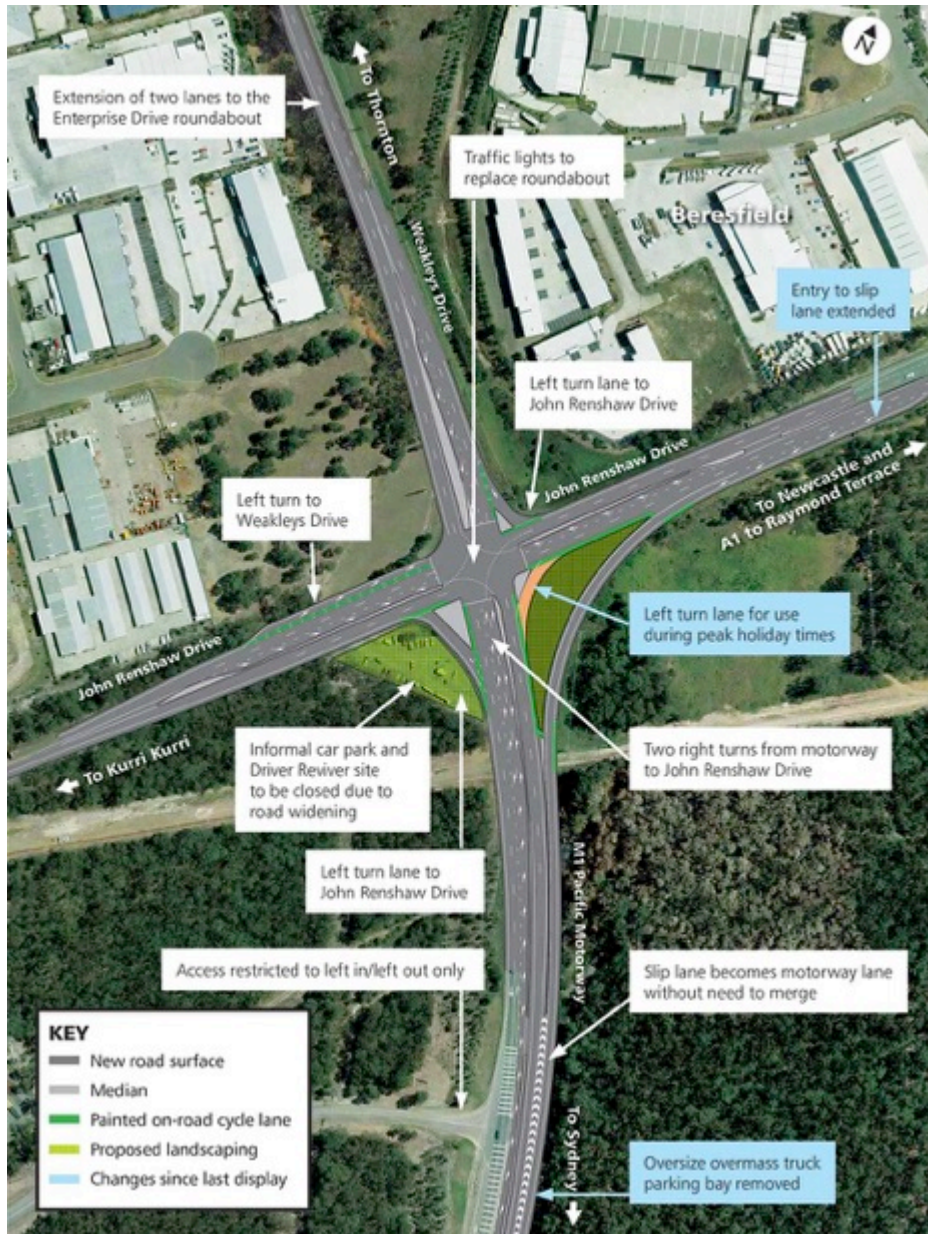
GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/YTMoFe7Aick>

COMMENTS: This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.8 metres should not be exceeded.

ROAD MODIFICATIONS: No works are required.

18.4 Km's: Intersection of John Renshaw Drive and M1 at Beresfield.

Image 1: (76 & 82 Metre blade)



PROCEDURE: Travel directly ahead in the centre lane.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/MYSBciVvcwB2>

COMMENTS: The roundabout has been demolished. The new intersection has 2 lanes directly ahead with a width clearance of 9.0 metres. Once the new traffic lights are installed, there will need to be a height check done.

ROAD MODIFICATIONS: New traffic signals to be measured.

28.7 Km's: John Renshaw Drive onto the Hunter Expressway at Buchanan.

Image 1: (76 & 82 Metre blade)



PROCEDURE: Right hand turn onto the incorrect side of the Motorway, before crossing back onto the correct side at the crossover bay.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/cEnuC5th1p52>

COMMENTS: Cross to the incorrect side then down the off-ramp onto the incorrect side of the expressway. Approx 600 metres along the expressway there is a break in the road, which will allow the blades to cross back to the correct side of the expressway. Traffic control and or police will be required to perform this procedure.

ROAD MODIFICATIONS: No works required.

67.3 Km's: New England Highway onto Golden Highway at Whittingham.

Image 1: (76 & 82 Metre blade)

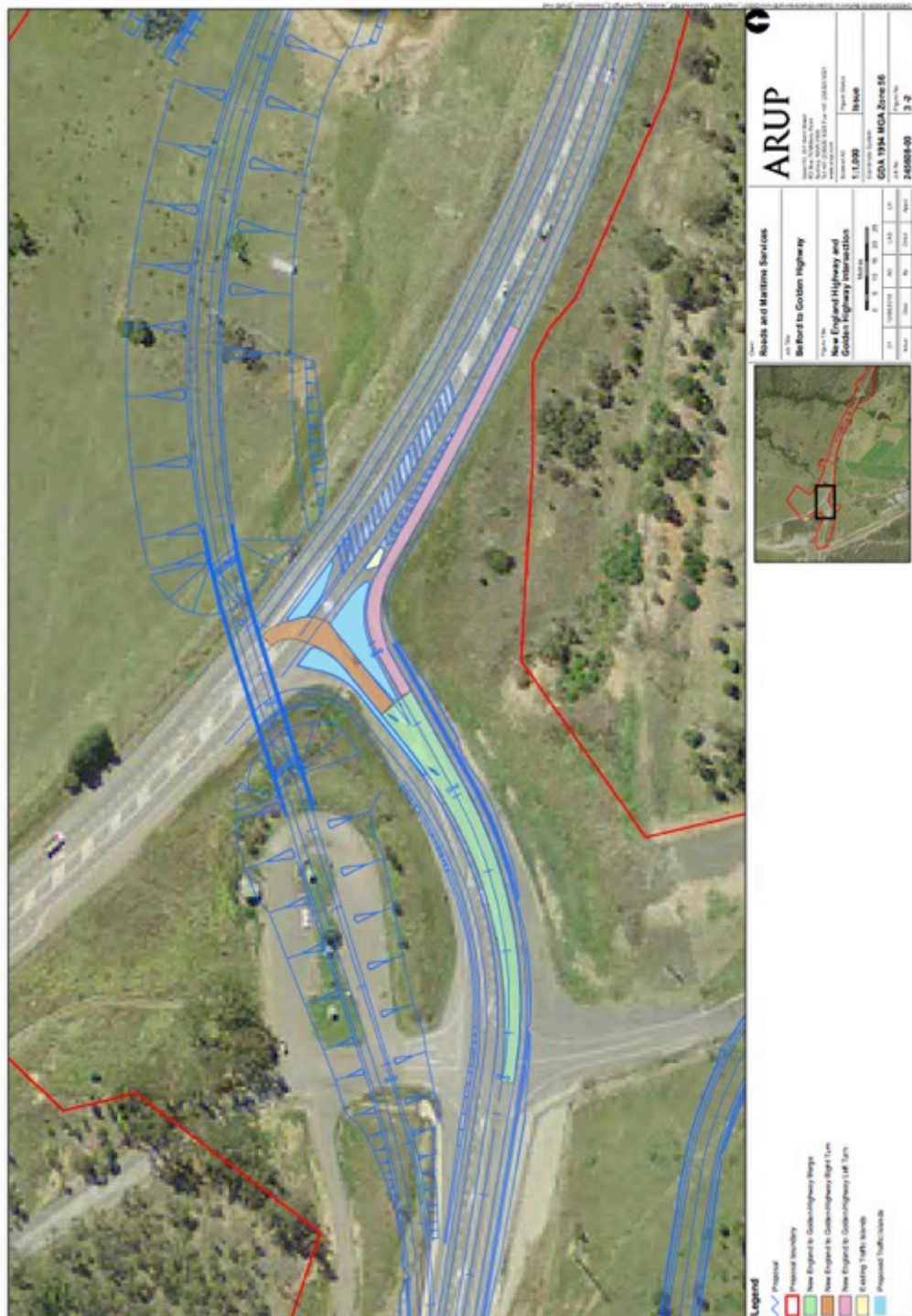


Image 2:



PROCEDURE: Left hand turn from the New England Highway onto the Golden Highway.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/GZ3VbkLrKf42>

COMMENTS: Loads to turn from the incorrect side to the incorrect side. The signs in the center median will need to be made removable.

ROAD MODIFICATIONS: NOTE: This intersection is currently in line to be upgraded. The details on image 1 shows that the changes should not affect the swept path, however it is recommended that this is monitored.

77.3 Km's: Golden Highway intersection with Putty Road at Whittingham.

Image 1: (76 & 82 Metre blade)



PROCEDURE: Left hand turn from the Golden Highway at the intersection of the Putty Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/esuS6TUUwQ92>

COMMENTS: Loads to turn from the incorrect side to the incorrect side. The signs in the center median will need to be made removable. Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

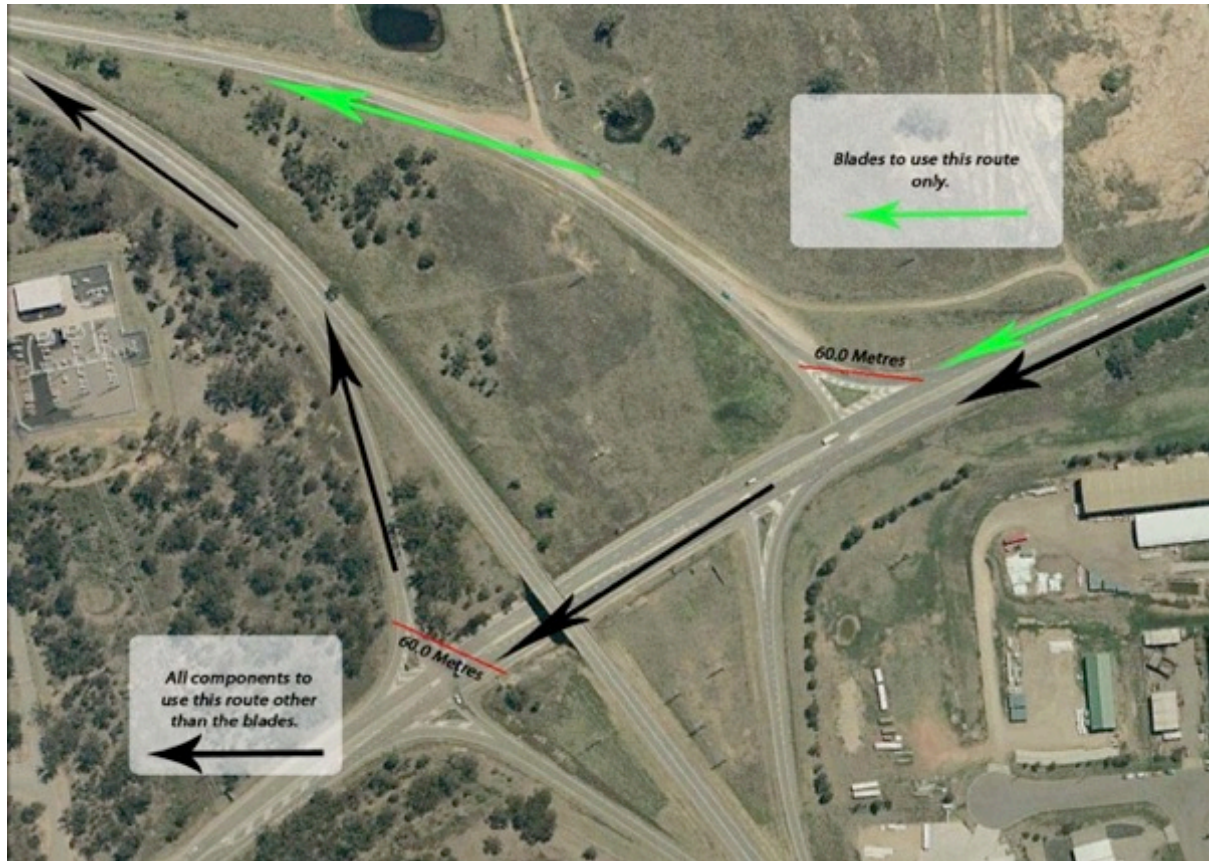
ROAD MODIFICATIONS: Small amounts of work are required.

80.8 Km's: Golden Highway intersection with Putty Road at Mount Thorley.

Image 1: (76 and 82 Metre blade)



Image 2:



PROCEDURE: Right hand turn from the Putty Road onto the Golden Highway.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/Qj4tjSSjN932>

COMMENTS: Loads to turn from the incorrect side to the incorrect side. Blades to cross to the incorrect side prior to the intersection, and return to the correct side when the lanes remerge. Spotter to keep the driver informed throughout the procedure.

Police and escorts to control local traffic either side of the intersection.

NOTE: Towers and general loads will travel under the overpass and stay on the correct side of the road. The overpass is 5.6 in the center of the road. Loads that exceed 5.6 high will need to take the blade detour.

ROAD MODIFICATIONS: No works required.

107.0 Km's: Golden Highway through Jerrys Plains.

Image 1: (76 & 82 Metre blade)

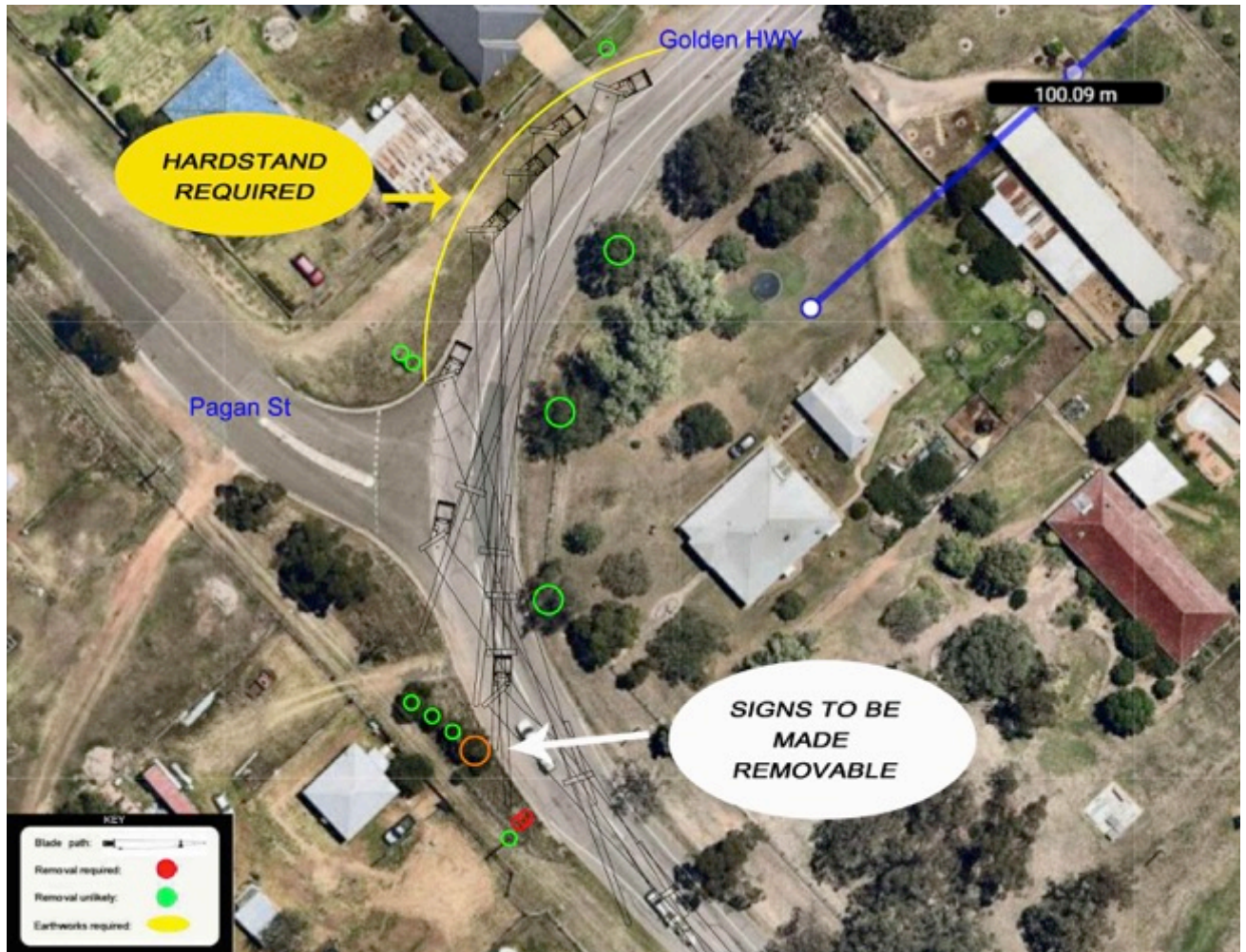


Image 2:



PROCEDURE: Left and right hand turn through the village.

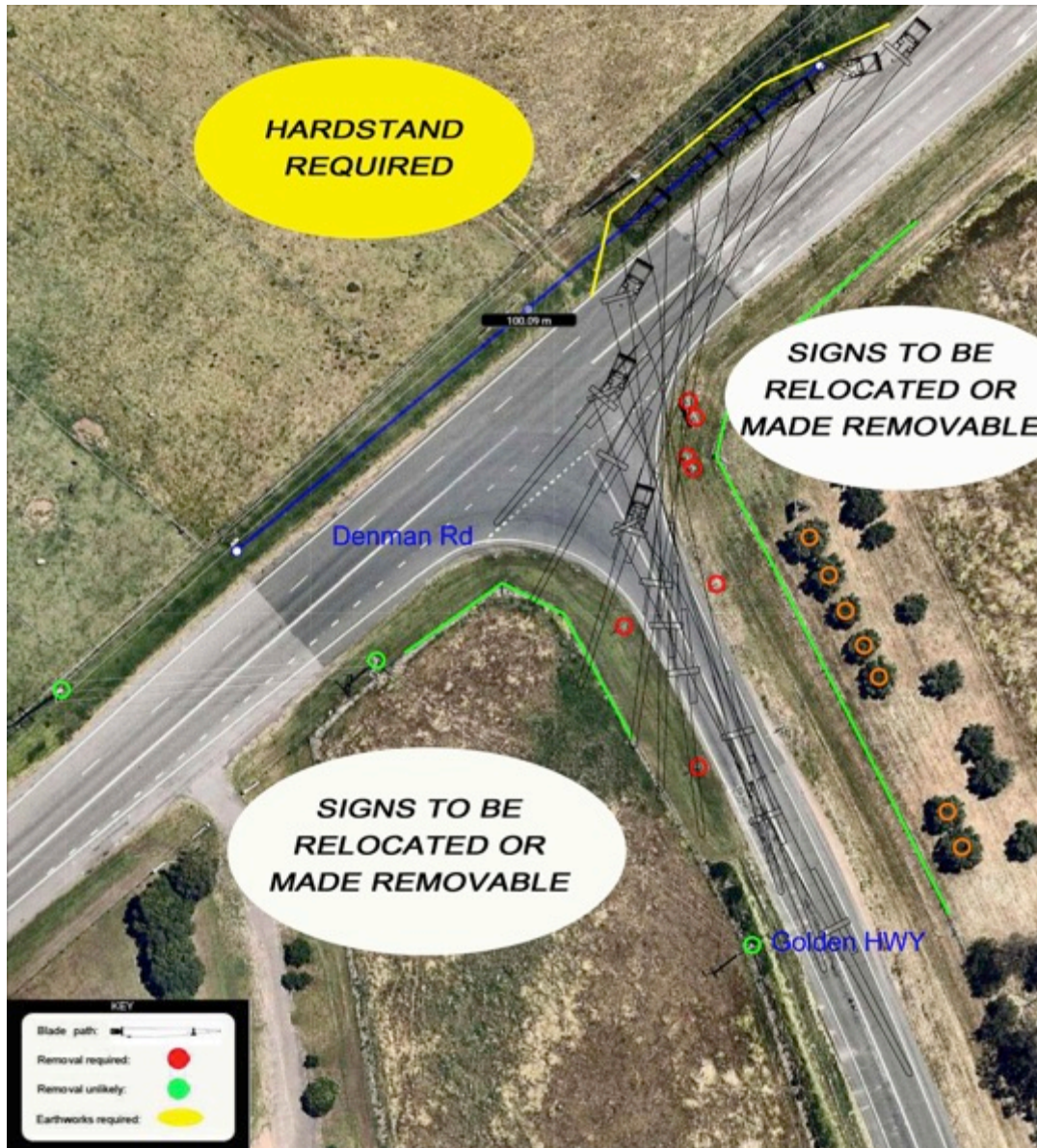
GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/Ys3yKZ6vQs62>

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable and some hardstand added, additionally some trees will need to be trimmed/removed. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

141.9 Km's: Golden Highway intersection with Denman Road at Denman.

Image 1: (82 Metre blade)



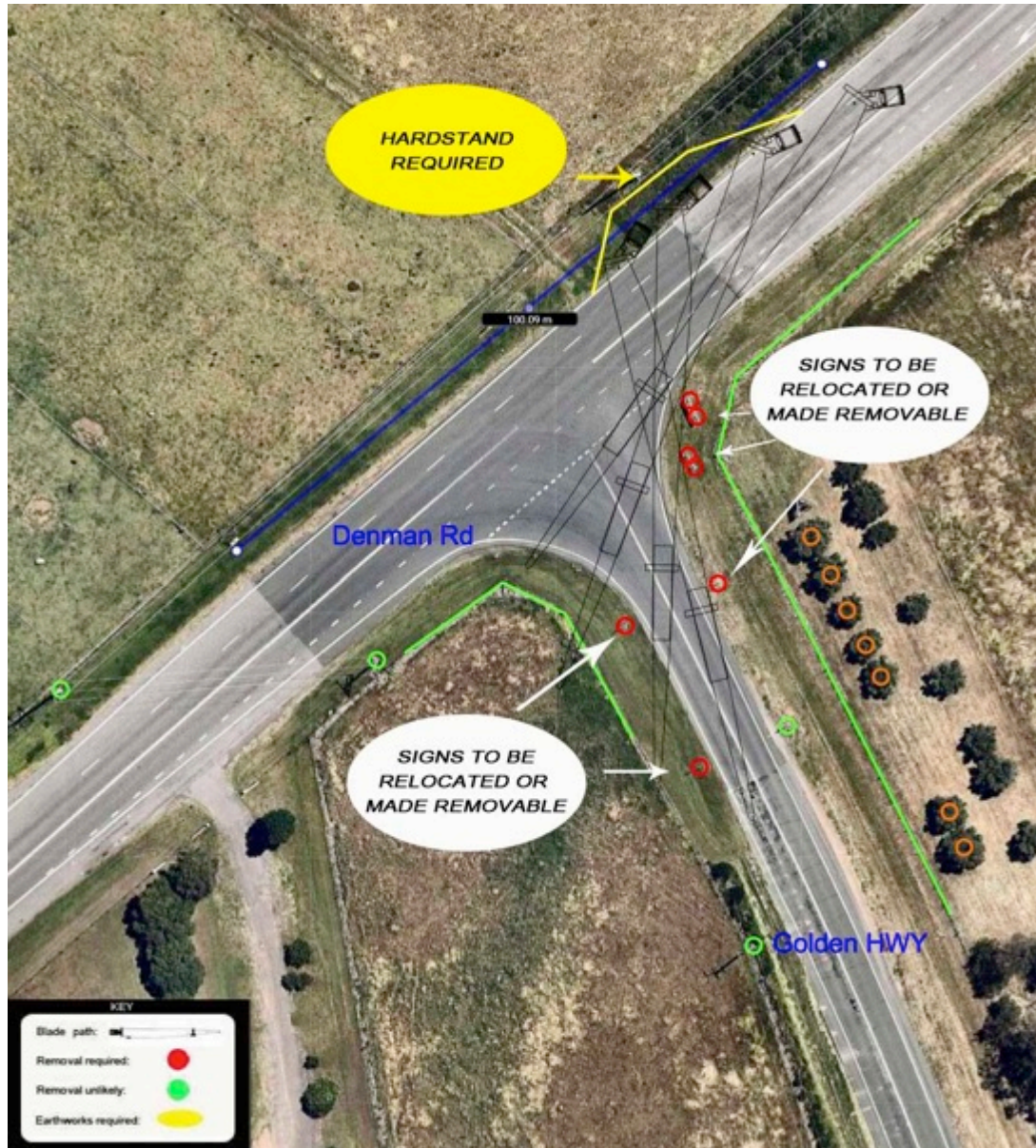
PROCEDURE: Right hand turn from the Golden Highway at the intersection of Denman Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/T4m46bBNuro>

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable and some hardstand added to the outside of both turns. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

Image 2: (76 Metre blade)



PROCEDURE: Right hand turn from the Golden Highway at the intersection of Denman Road.

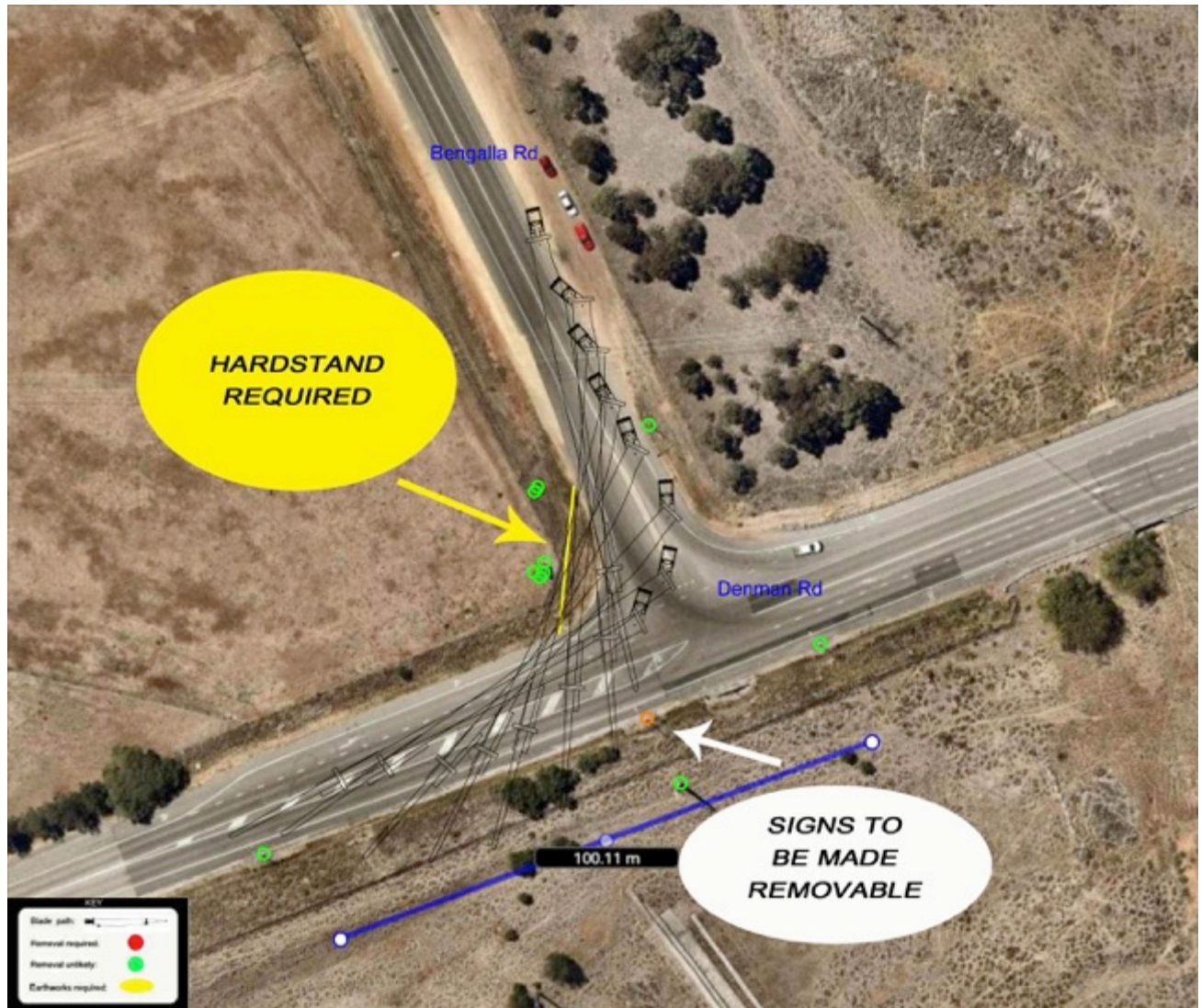
GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/T4m46bBNuro>

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable and some hardstand added to the outside exit to the corner. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

149.0 Km's: Denman Road onto Bengalla Road at Muswellbrook.

Image 1: (82 Metre blade)



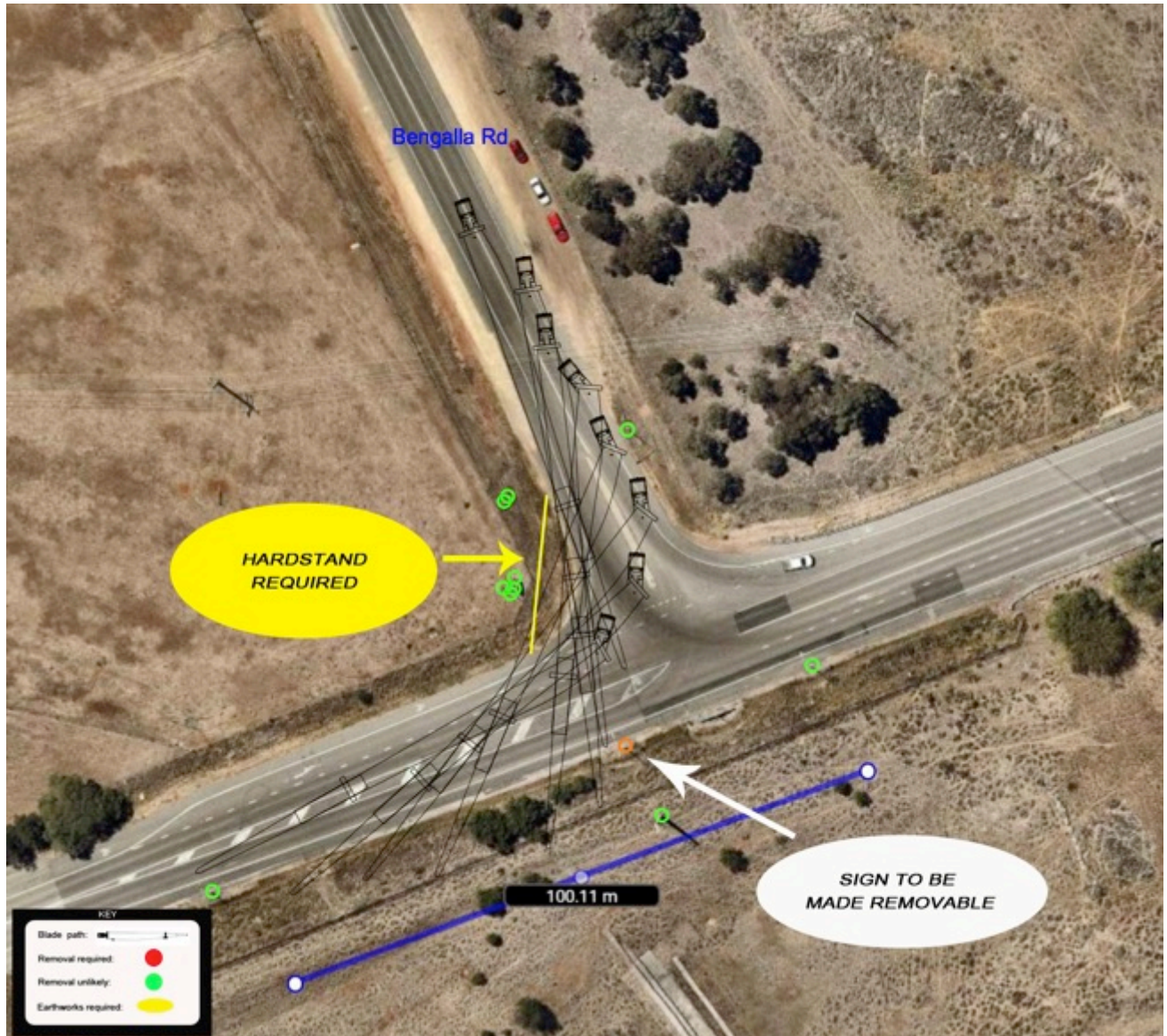
PROCEDURE: Left hand turn from Denman Road onto Bengalla Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/CJYMtSMTttJ2>

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable and some hardstand added to the inside of the corner. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

Image 2: (76 Metre blade)



PROCEDURE: Left hand turn from Denman Road onto Bengalla Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/CJYMtSMTttJ2>

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable and some hardstand added to the inside of the corner. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

158.5 Km's: Bengalla Road onto Wybong Road at Muswellbrook.

Image 1: (82 Metre blade)



PROCEDURE: Right hand turn from Bengalla Road onto Wybong Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/vibQtvHkxXE2>

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Small amounts of work are required.

Image 2: (76 Metre blade)



PROCEDURE: Right hand turn from Bengalla Road onto Wybong Road.

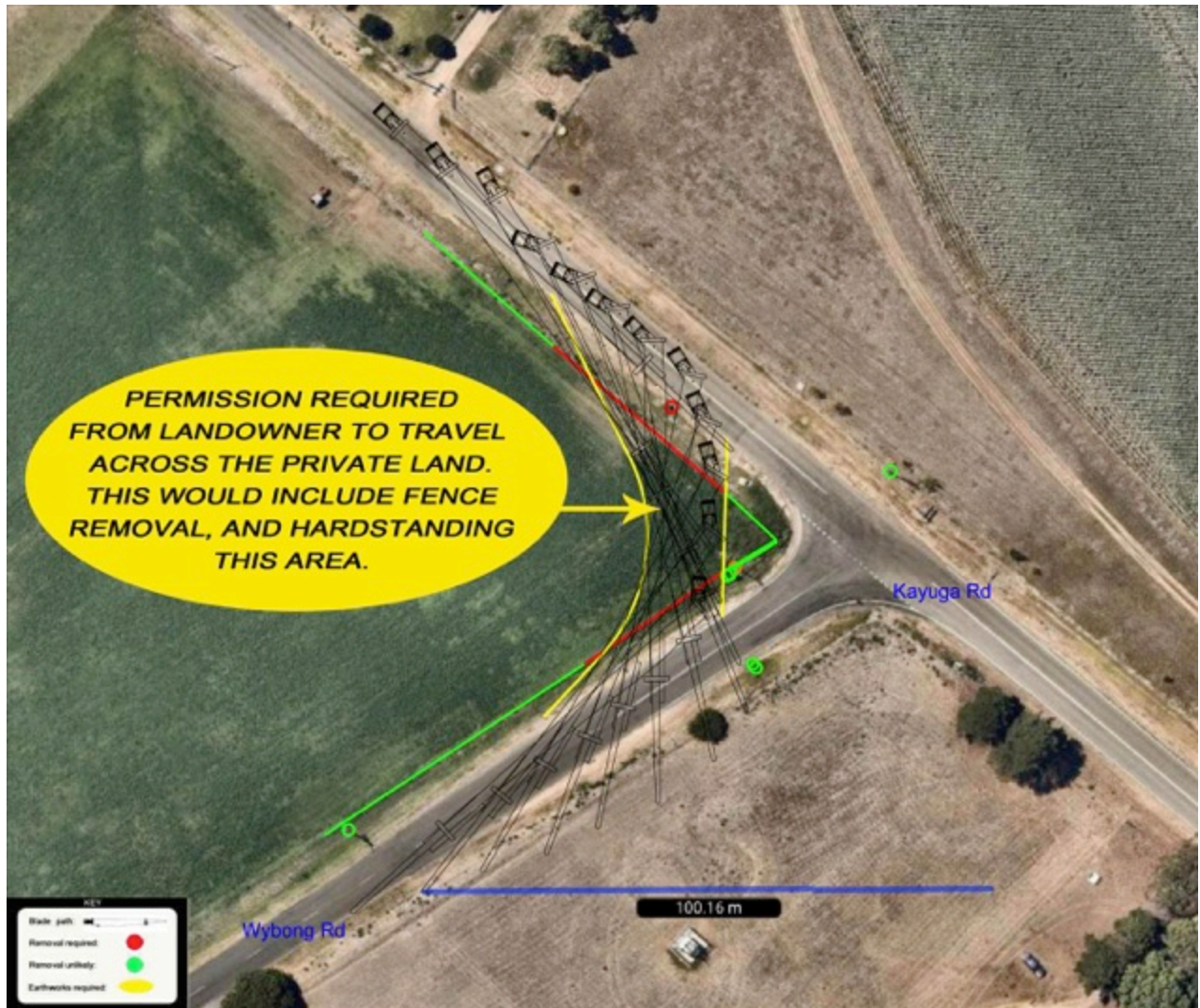
GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/vibQtvHkxXE2>

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Small amounts of work are required.

168.1 Km's: Wybong Road onto Kayuga Road at Muswellbrook.

Image 1: Option 1 (82 Metre blade)



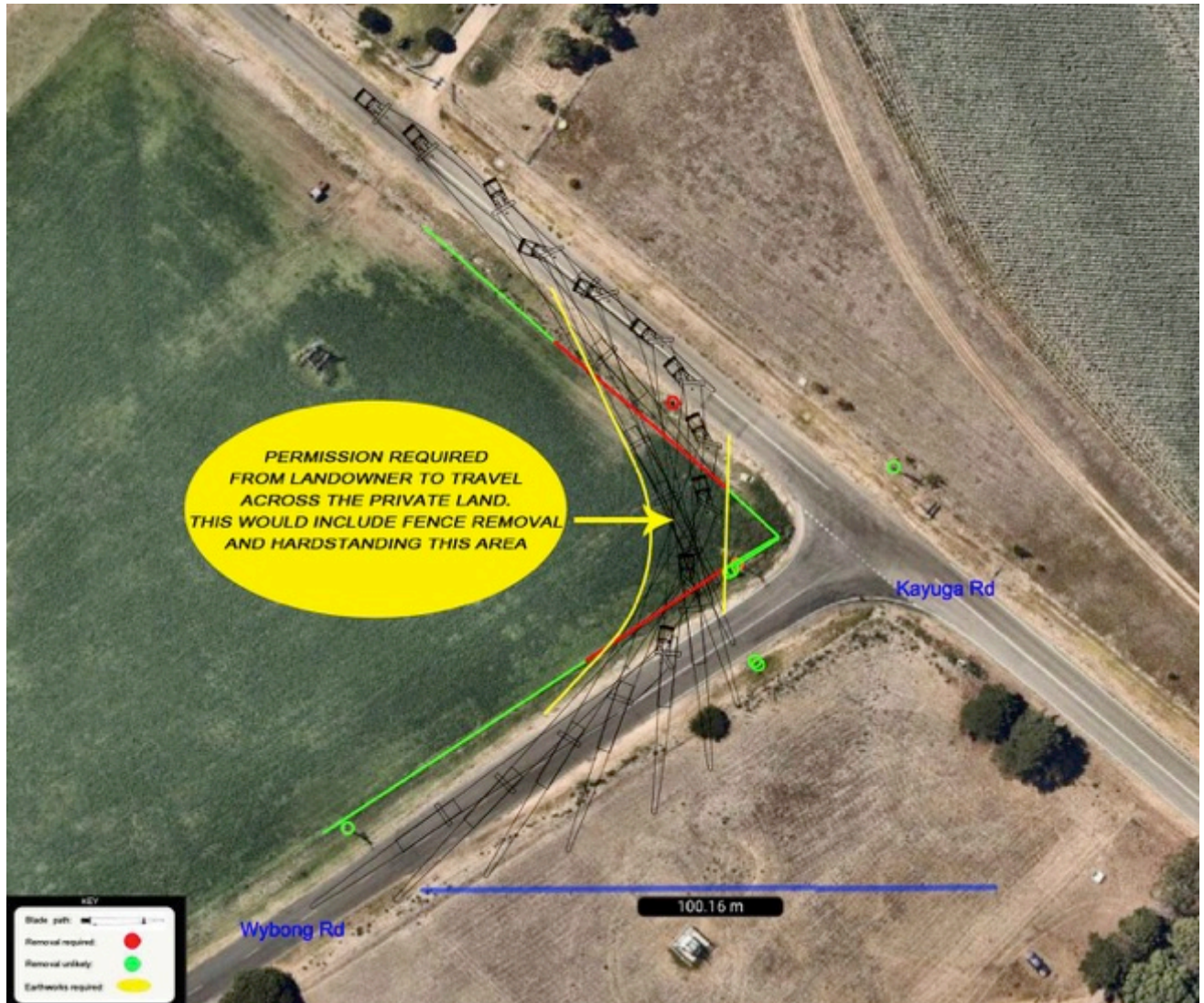
PROCEDURE: Left hand turn from Wybong Road onto Kayuga Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/xVscKUT1isJ2>

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some signs will be required from the landowner to travel over the private land. This will require removal and realigning the fence, and adding hardstand. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Large amounts of work are required.

Image 2: Option 1 (76 Metre blade)



PROCEDURE: Left hand turn from Wybong Road onto Kayuga Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/xVscKUT1isJ2>

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some signs will be required. Permission will be required from the landowner to travel over the private land. This will require removal and realigning the fence, and adding hardstand. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Large amounts of work are required.

Image 3: Option 2 (82 Metre blade)



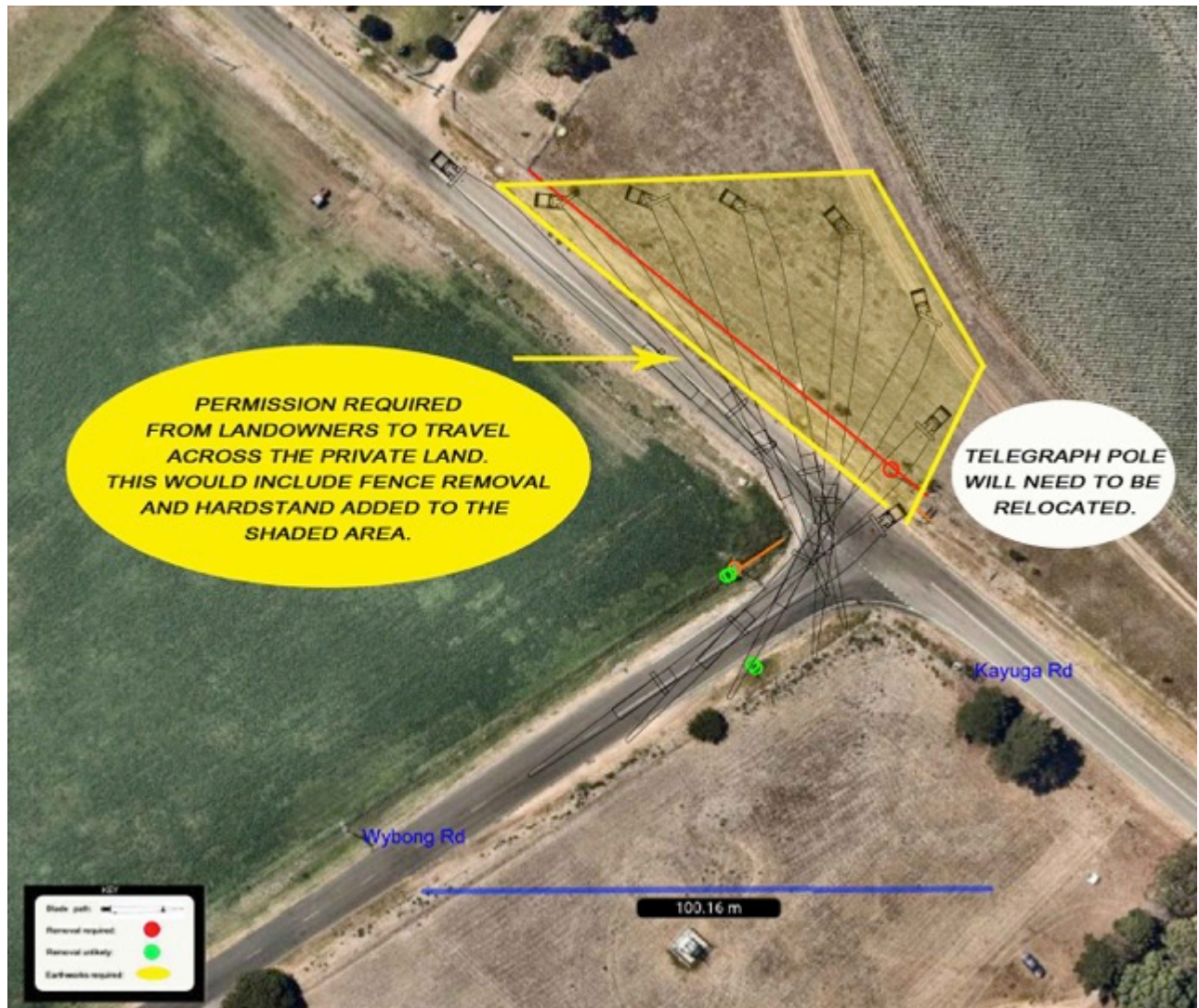
PROCEDURE: Left hand turn from Wybong Road onto Kayuga Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/xVscKUT1isJ2>

COMMENTS: Blades to cross from the incorrect side to the incorrect side. A telegraph pole will need to be relocated and some signs will need to be relocated or made removable. Permission will be required from the landowner to travel over the private land to the north of the intersection. This will require removal and realigning the fence, and adding hardstand. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Large amounts of work are required.

Image 4: Option 2 (76 Metre blade)



PROCEDURE: Left hand turn from Wybong Road onto Kayuga Road.

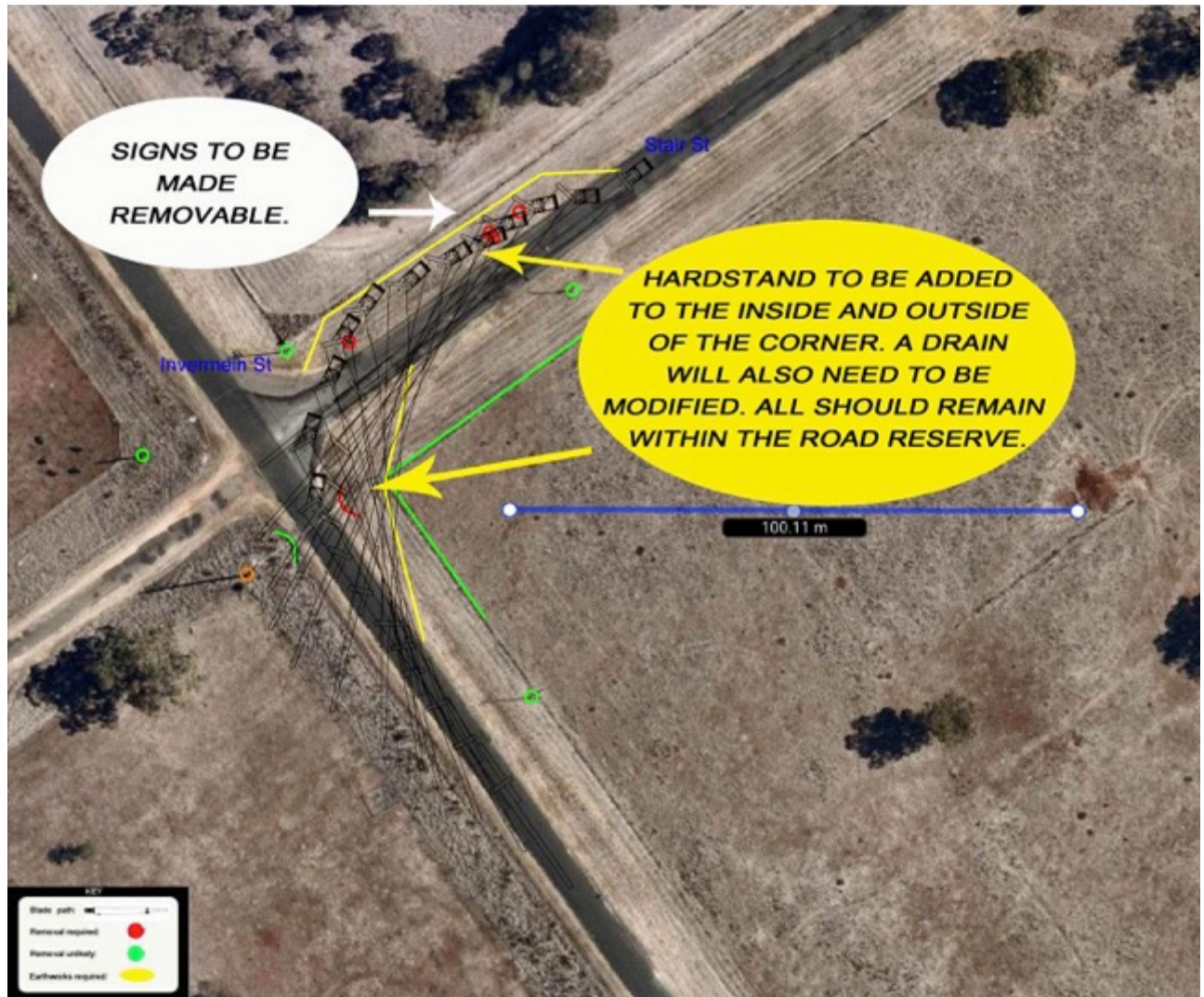
GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/xVscKUT1isJ2>

COMMENTS: Blades to cross from the incorrect side to the incorrect side. A telegraph pole will need to be relocated and some signs will need to be relocated or made removable. Permission will be required from the landowner to travel over the private land to the north of the intersection. This will require removal and realigning the fence, and adding hardstand. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Large amounts of work are required.

174.0 Km's: Ivermein Street onto Dartbrook access Road at Muswellbrook.

Image 1: (82 Metre blade)



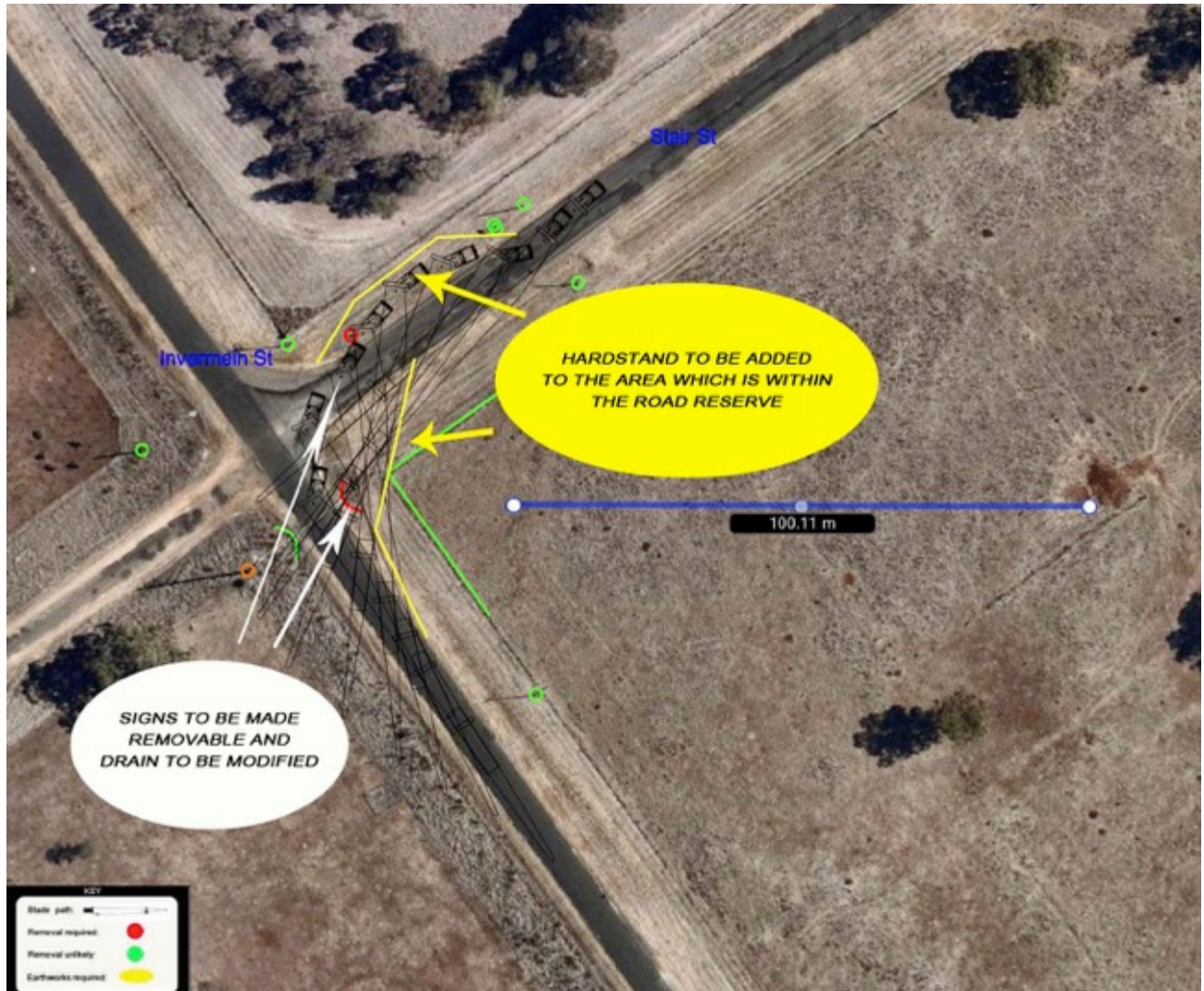
PROCEDURE: Right hand turn from Ivermain Street onto the Dartbrook mine access Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/ddMHa4CmXK32>

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable and some hardstand added to the inside and outside of the corner. Additionally a pipe will need to be extended on the inside of the corner. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

Image 2: (76 Metre blade)



PROCEDURE: Right hand turn from Ivermain Street onto the Dartbrook mine access Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/ddMHa4CmXK32>

COMMENTS: Blades to cross from the correct side to the correct side. Some signs will need to be made removable and some hardstand added to the inside and outside of the corner. Additionally a pipe will need to be extended on the inside of the corner. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

174.8 Km's: Dartbrook access Road at Muswellbrook.

Image 1: (82 Metre blade)



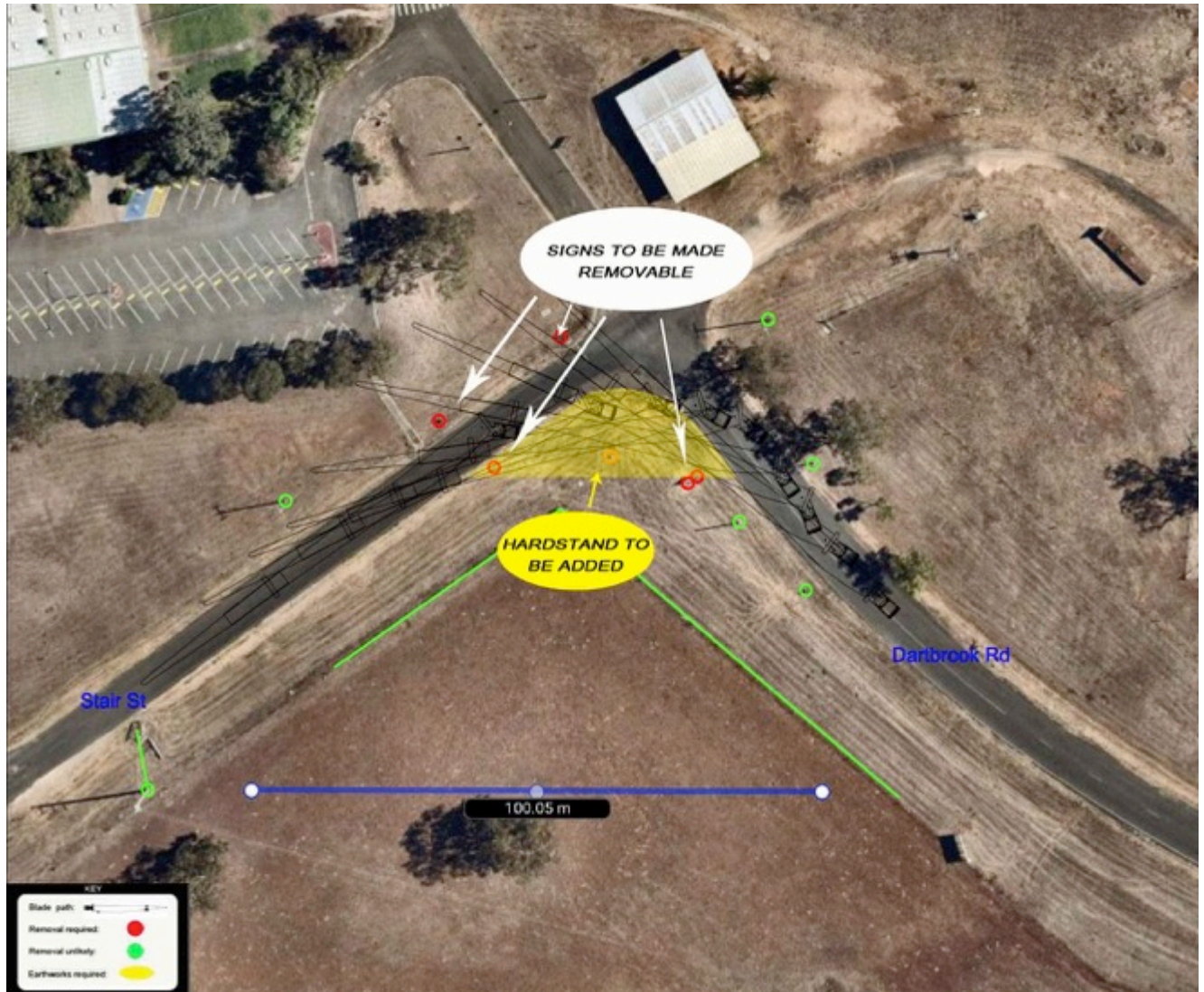
PROCEDURE: Right hand turn on the Dartbrook mine access Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/u9vSXiSV7Jt>

COMMENTS: Blades to cross from the correct side to the correct side, but cut across the inside of the corner. Some signs will need to be made removable and some hardstand added to the inside of the corner. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

Image 2: (76 Metre blade)



PROCEDURE: Right hand turn on the Dartbrook mine access Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/u9vSXiSV7Jt>

COMMENTS: Blades to cross from the correct side to the correct side, but cut across the inside of the corner. Some signs will need to be made removable and some hardstand added to the inside of the corner. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

174.8 Km's: Dartbrook access Road onto the New England Highway at Muswellbrook.

Image 1: (82 Metre blade)



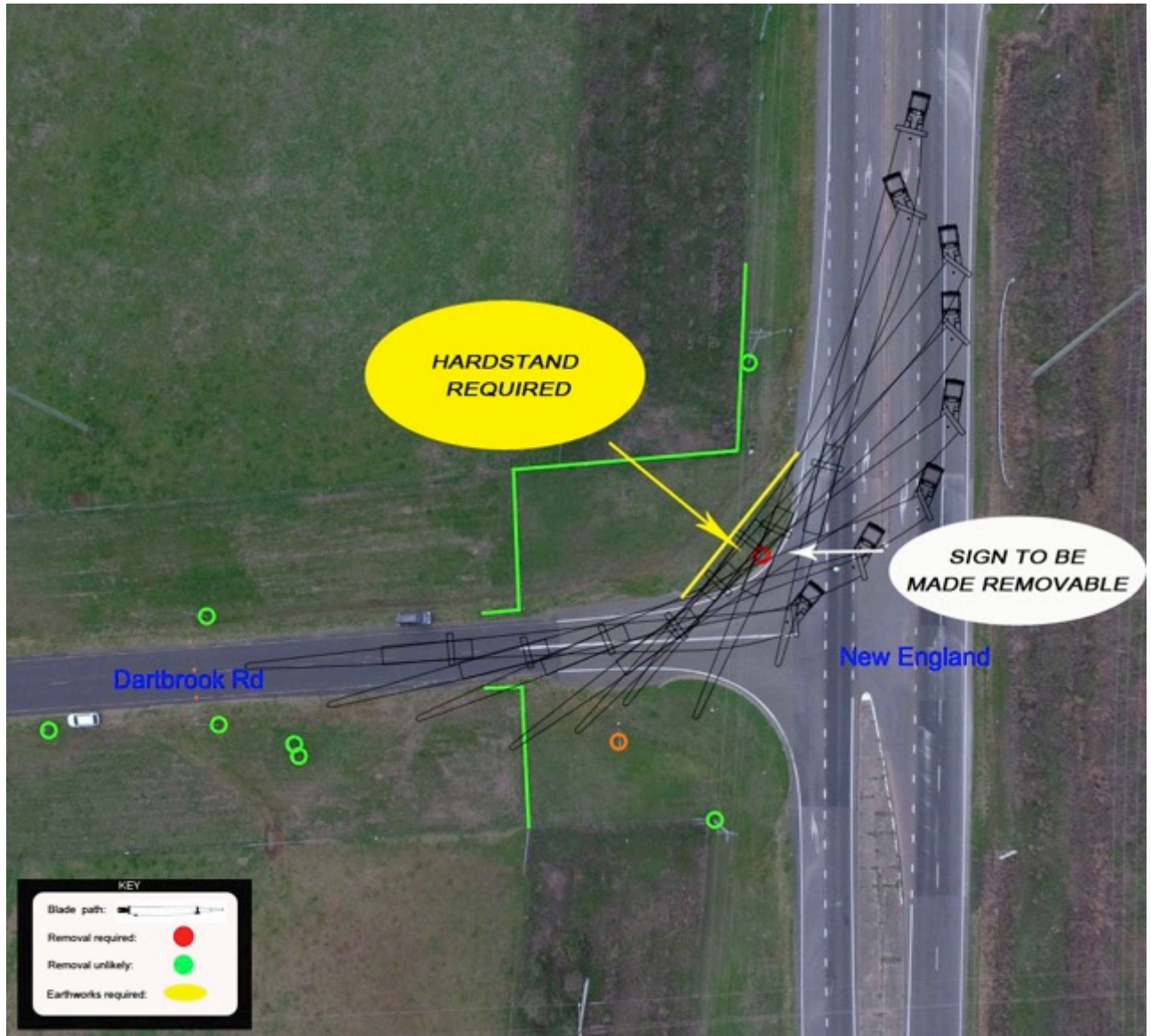
PROCEDURE: Left hand turn from the Dartbrook mine access Road onto the New England Highway.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/twTsmUKaED82>

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable on the corner and some hardstand added. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

Image 2: (76 Metre blade)



PROCEDURE: Left hand turn from the Dartbrook mine access Road onto the New England Highway.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/twTsmUKaED82>

COMMENTS: Blades to cross from the incorrect side to the incorrect side. Some signs will need to be made removable on the corner and some hardstand added. Police and escorts to control local traffic either side of the intersection.

ROAD MODIFICATIONS: Moderate amounts of work are required.

319.0 Km's: Standard Roundabout on the New England Highway at Tamworth.

Image 1: (82 Metre blade)



PROCEDURE: Loads to travel straight ahead through roundabouts, on the following intersections. (Jack Smyth Drive, Greg Norman Drive, Calala Lane and Kurrawan Street).

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/3J9dCHxtYim>

COMMENTS: The worst of the roundabouts have delineators at approx. 800mm high, and small shrubs at a similar height. These signs may need to be relocated or made removable. Additionally the tail swing will travel close to the roundabout warning signs, these will also need to be made removable.

ROAD MODIFICATIONS: Small amounts of work are required.

Image 1: (76 Metre blade)



PROCEDURE: Loads to travel straight ahead through roundabouts, on the following intersections. (Jack Smyth Drive, Greg Norman Drive, Calala Lane and Kurrawan Street).

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/3J9dCHxtYim>

COMMENTS: The worst of the roundabouts have delineators at approx. 800mm high, and small shrubs at a similar height. These signs may need to be relocated or made removable. Additionally the tail swing will travel close to the roundabout warning signs, these will also need to be made removable.

ROAD MODIFICATIONS: Small amounts of work are required.

321.0 Km's: New England Highway onto Scott Road at Tamworth.

Image 1: (82 Metre blade option 1)



PROCEDURE: Loads to cut across the wrong side of the roundabout from correct side to correct side.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/BXdwaSiLSBw>

COMMENTS: The swept path for this option will require the blade to travel through the landowners boundaries on the inside of the corner and would require a light pole to be removed and a telegraph pole to be removed. Additionally more hardstand would be required on the centre median strip and some signs made removable.

ROAD MODIFICATIONS: Extreme amounts of work are required.

Image 2: (82 Metre blade option 2)



PROCEDURE: Loads to cut across the wrong side of the roundabout from correct side to correct side with the prime mover travelling into the vacant block on the exit of the corner.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/BXdwaSiLSBw>

COMMENTS: The swept path for this option will require the blade to travel through the landowners boundaries on the top of the corner and would require a light pole to be removed. Additionally hardstand would be required on the centre median strip as well as the landowners boundaries and some signs made removable.

ROAD MODIFICATIONS: Large amounts of work are required.

Image 3: (76 Metre blade option 1)



PROCEDURE: Loads to cut across the wrong side of the roundabout from correct side to correct side.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/BXdwaSiLSBw>

COMMENTS: The swept path for this option will require the blade to travel through the landowners boundaries on the inside of the corner and would require a light pole to be removed and a telegraph pole to be removed. Additionally more hardstand would be required on the centre median strip and some signs made removable.

ROAD MODIFICATIONS: Extreme amounts of work are required.

Image 4: (76 Metre blade option 2)



PROCEDURE: Loads to cut across the wrong side of the roundabout from correct side to correct side with the prime mover travelling into the vacant block on the exit of the corner.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/BXdwaSiLSBw>

COMMENTS: The swept path for this option will require the blade to travel through the landowners boundaries on the top of the corner and would require a light pole to be removed. Additionally hardstand would be required on the centre median strip as well as the landowners boundaries and some signs made removable.

ROAD MODIFICATIONS: Large amounts of work are required.

322.7 Km's: Scott Road onto Murray Street at Tamworth.
Image 1: (82 Metre blade)



PROCEDURE: Loads to travel through the roundabout on the correct side.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/nix2oREeh6H2>

COMMENTS: The blades swept path will travel over the edge of the roundabout. To do this 2 palm trees will need to be removed. Alternatively the light pole on the rear overhang could be relocated to allow the trailer to stay to the left.

ROAD MODIFICATIONS: Large amounts of work are required.

Image 2: (76 Metre blade)



PROCEDURE: Loads to travel through the roundabout on the correct side.

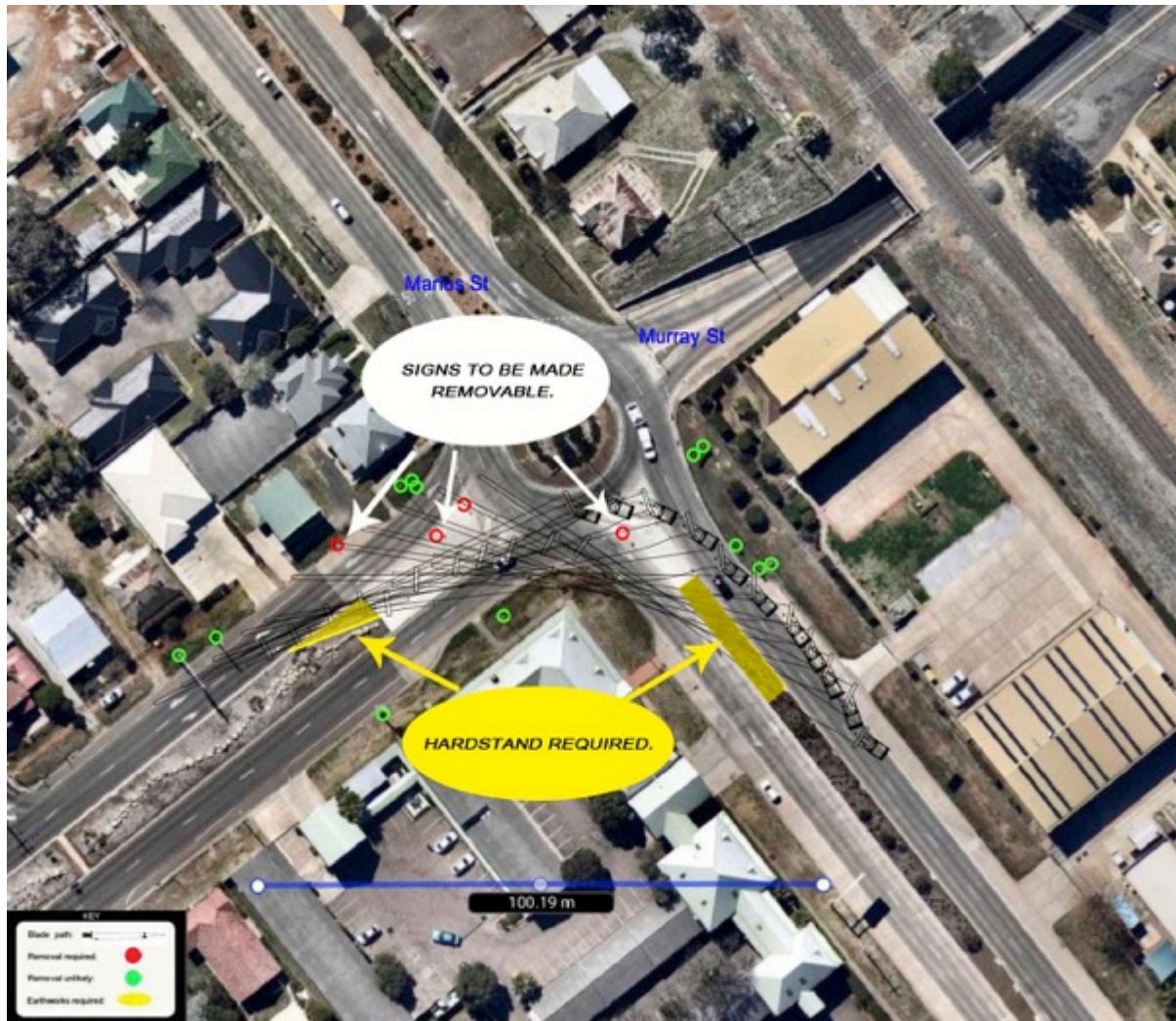
GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/nix2oREeh6H2>

COMMENTS: The blades swept path will travel over the edge of the roundabout. To do this 2 palm trees will need to be removed. Alternatively the light pole on the rear overhang could be relocated to allow the trailer to stay to the left.

ROAD MODIFICATIONS: Large amounts of work are required.

323.0 Km's: Murray Street onto New England Highway at Tamworth.

Image 1: (82 Metre blade)



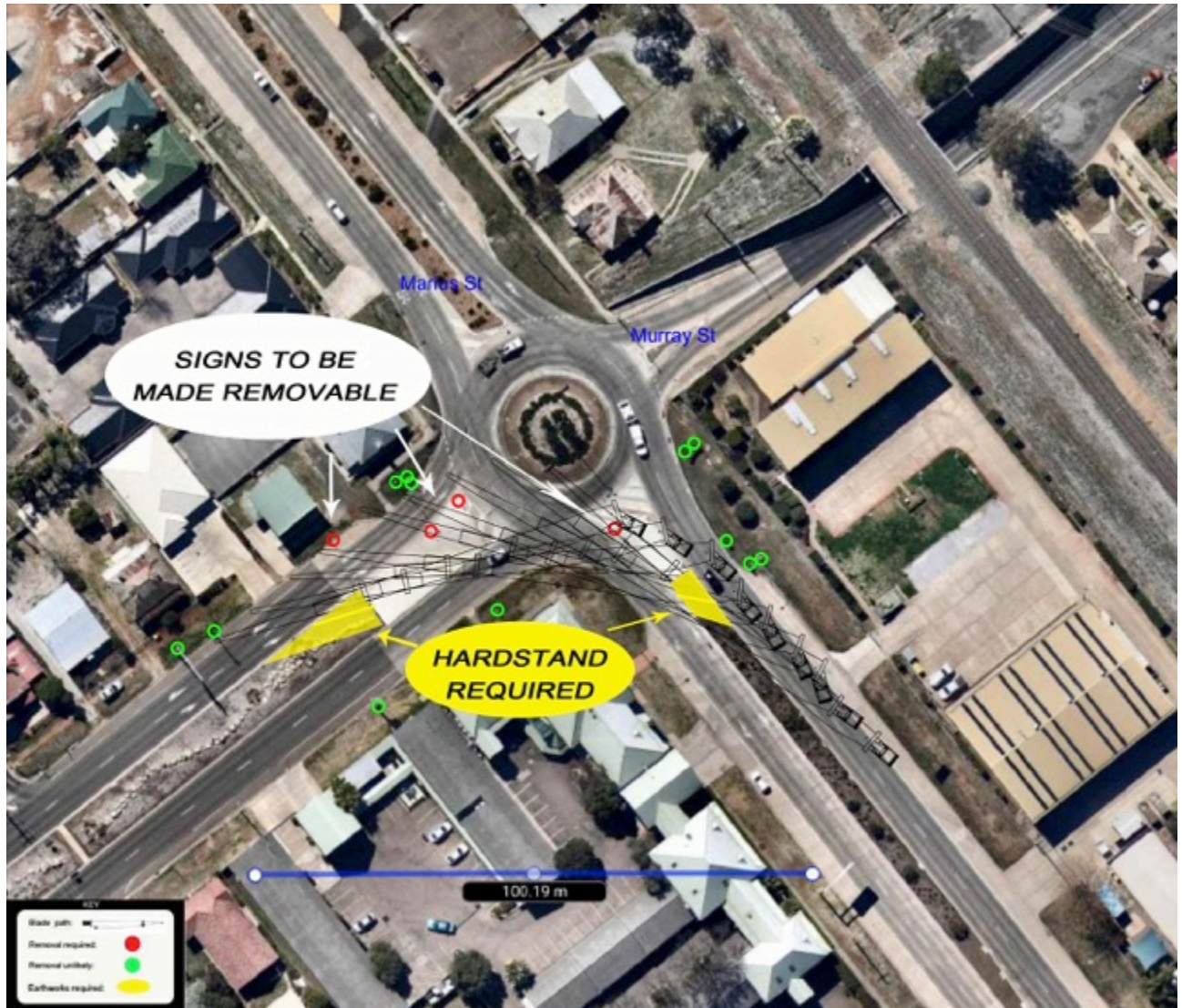
PROCEDURE: Loads to cut across the wrong side of the roundabout from correct side to correct side.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/45dffqHmUcs>

COMMENTS: This intersection will require the 2 median strips to be hardstand, and several signs made removable.

ROAD MODIFICATIONS: Large amounts of work are required.

Image 2: (76 Metre blade)



PROCEDURE: Loads to cut across the wrong side of the roundabout from correct side to correct side.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/45dffqHmUcs>

COMMENTS: This intersection will require the 2 median strips to be hardstand, and several signs made removable.

ROAD MODIFICATIONS: Large amounts of work are required.

428.0 Km's: Roundabouts through Armidale

Image 1: (82 and 76 Metre blade)



Image 2: (82 and 76 Metre blade)



PROCEDURE: Loads to travel straight ahead through roundabouts, on the following intersections. (Uralla Road & New England Highway).

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/TyVgxMWr5xs>

COMMENTS: The worst of the roundabouts has a sharp crest; it would be recommended that trailers with hydraulic lift are used to clear this crest. Additionally the tail swing will travel close to the roundabout warning signs, these will also need to be made removable.

ROAD MODIFICATIONS: Small amounts of work are required.

481.2 Km's: New England Highway onto Ben Lomond Road.
Image 1: (82 and 76 Metre blade)

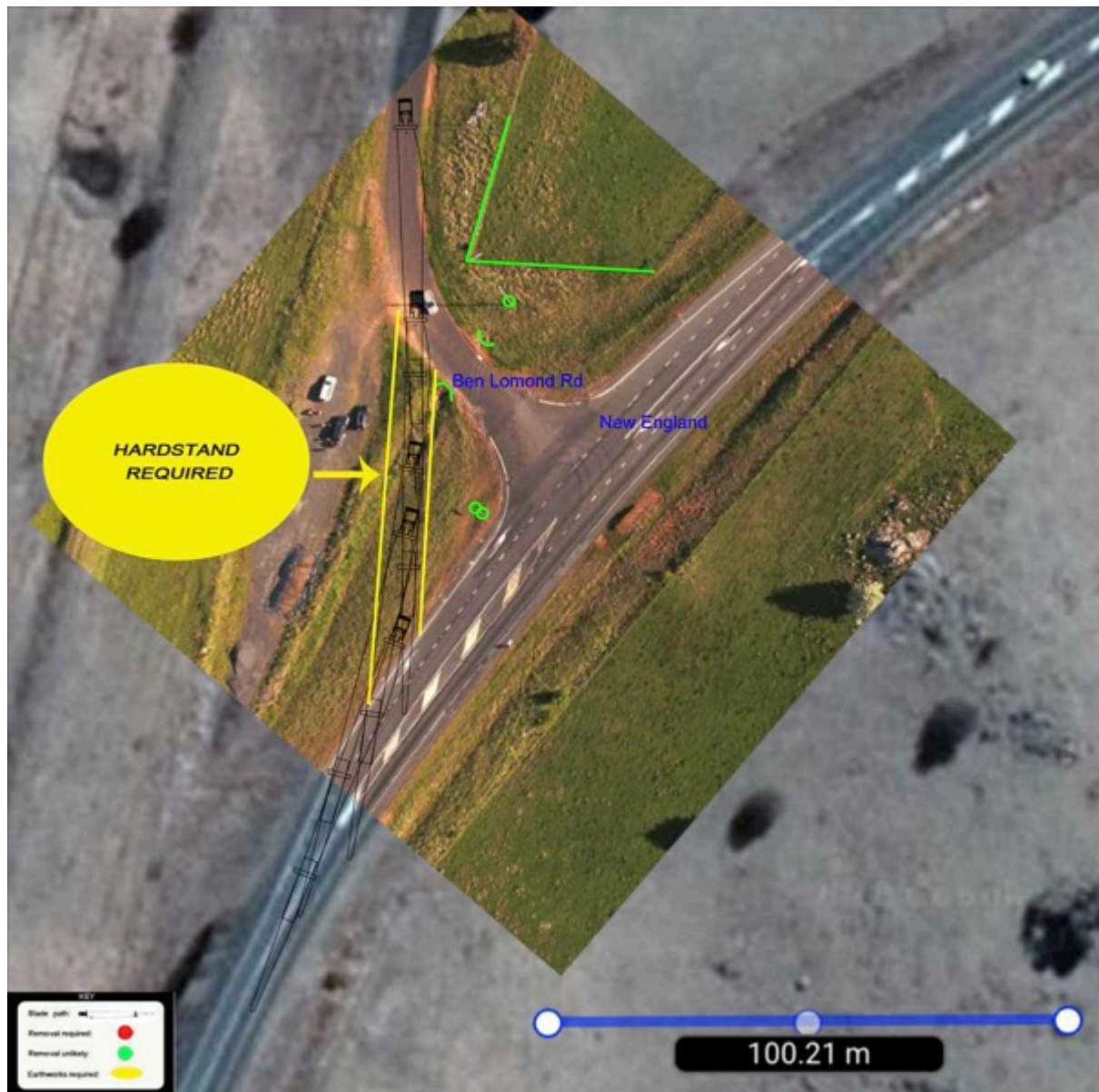


Image 2:



PROCEDURE: Loads to veer to the left through an upgraded hardstand area.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/tZE37c5z3JS2>

COMMENTS: This corner has a moderate crest; it would be recommended that trailers with hydraulic lift be used to clear this crest. Additionally the inside of the corner will need to be realigned, and filled with hardstand. This would allow the large blades to travel through the corner.

ROAD MODIFICATIONS: Large amounts of work are required.

493.8 to 512.4 Km's: Maybole road (typical tight corner).
Image 1: (82 Metre blade)

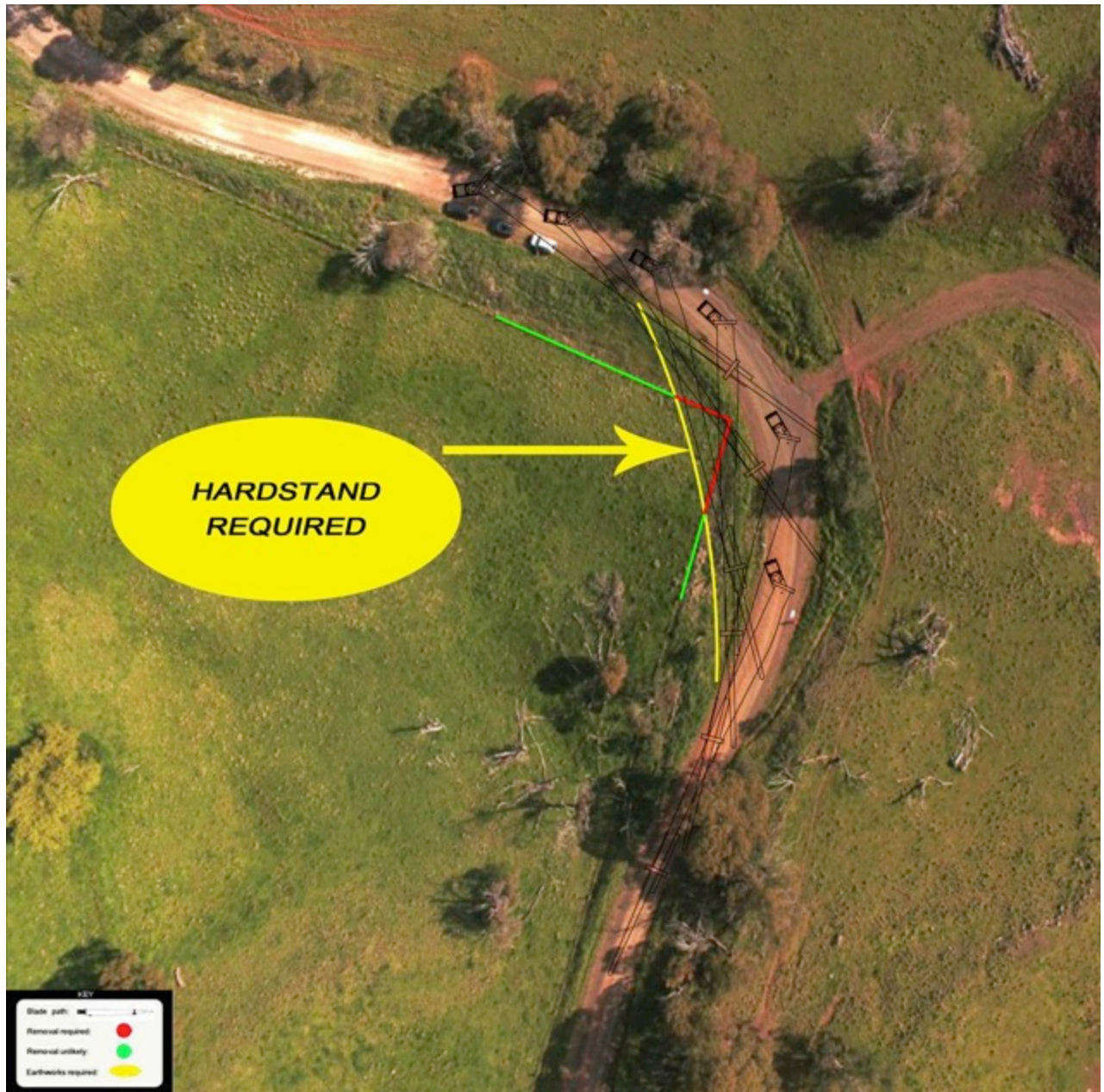
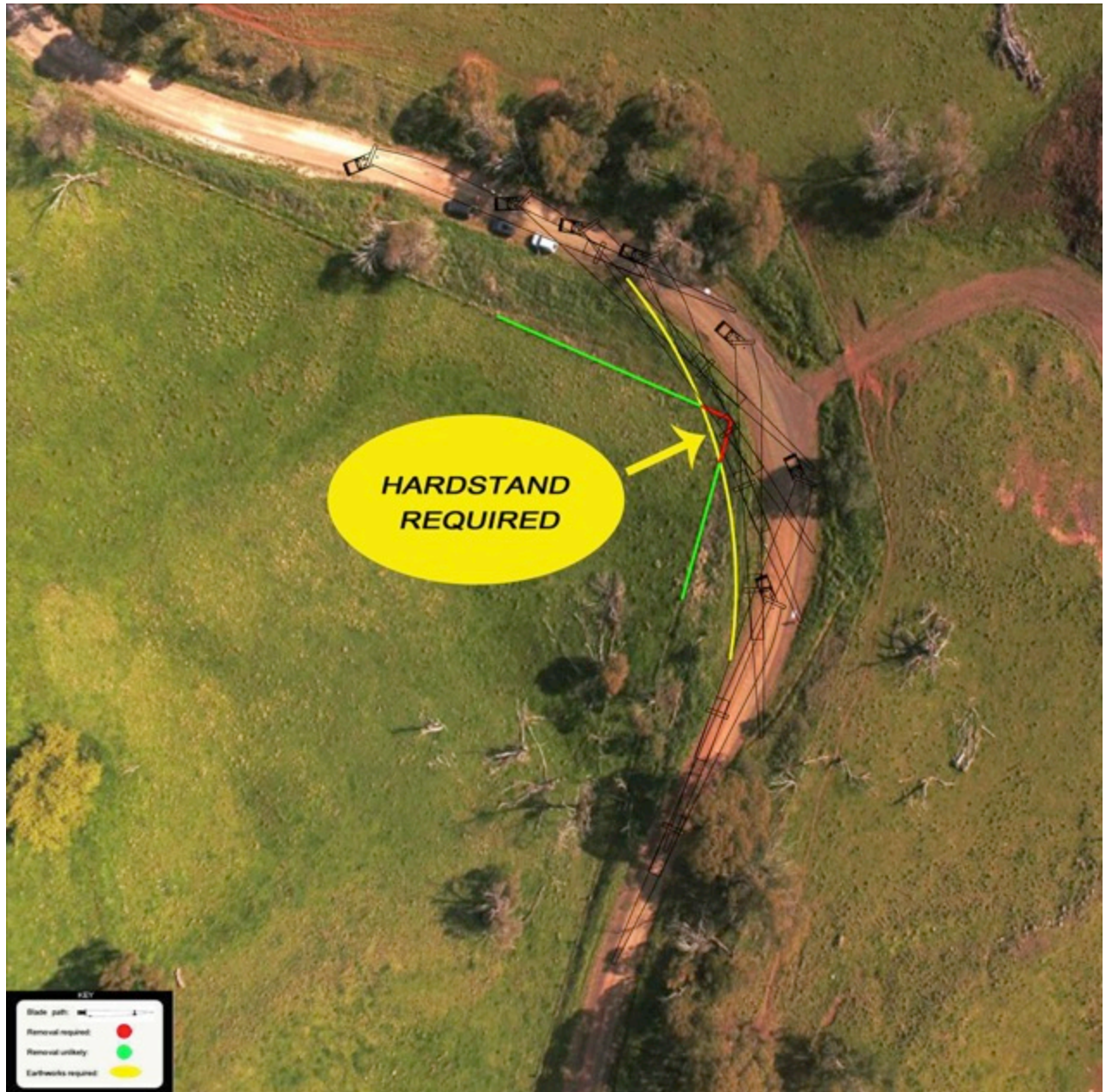


Image 2: (76 Metre blade)



PROCEDURE: Maybole Road.

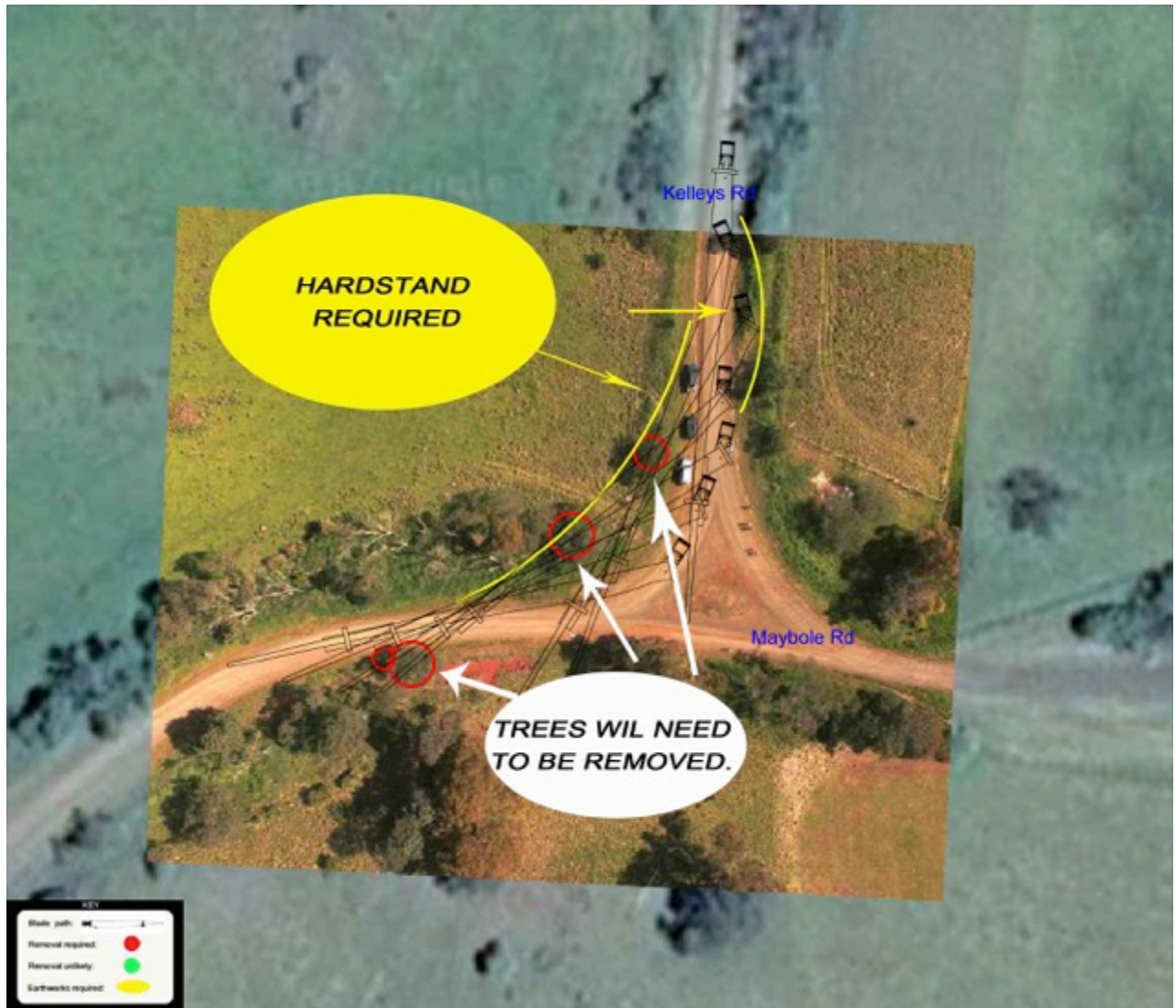
GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/oh9QuvcbfX32>

COMMENTS: Maybole Road has several tight corners and narrow sections of road. A complete analysis of this road would be required to work out the extent of the works. The vertical curve will also need to be checked on all sections of Maybole road. Additionally the road should be made suitable for all weather conditions.

ROAD MODIFICATIONS: Large amounts of work are required.

512.4 Km's: Maybole road onto Kellys Road

Image 1: (82 Metre blade)



PROCEDURE: Maybole Road onto Kellys Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/3CXSJsWmrYu>

COMMENTS: This corner will need to be widened, and removal of trees is likely.

ROAD MODIFICATIONS: Large amounts of work are required.

Image 2: (76 Metre blade)



PROCEDURE: Maybole Road onto Kellys Road.

GPS LINK FOR SECTION OF ROAD: <https://goo.gl/maps/3CXsJsWmrYu>

COMMENTS: This corner will need to be widened, and removal of trees is likely.

ROAD MODIFICATIONS: Large amounts of work are required.

11.0 Conclusion:

After studying all options and undertaking a route survey, the minimum blade length that could fit through the proposed route from Newcastle Port without further works or modifications is 65 metres.

With a large amount of works a blade of 76 metres can travel on the proposed route. With additional works, a 82 metre blade could traverse the route subject to additional studies at key locations prior to the start of construction. Use of hydraulic lifting trailers and/or blade transporters could also be used at key locations to reduce the amount of road works, if required.

Additionally, we looked at the possibility of using Brisbane Port for the deliveries, but we came across as many hurdles as Newcastle, and the route would likely require more work.

Following are some points that would need to be taken into account while submitting planning documents.

PORT:

The port has an excellent Break bulk berth that runs at approximately 60% berth occupancy.

The berth has axle and crane loadings well above what is required for this project.

The storage area is asphalt hardstand with a current area of 100,000 s/q metres available, all level. It is adjacent to the port, and within 300 metres of the berth, all within the Port grounds. No local roads need to be used during the discharge.

Access to the local roads from the port is while require some upgrades, including adding hardstand and relocating fences.

NEWCASTLE:

The intersection of George Street and Industrial Drive at Mayfield looks to be the most difficult corner. Relocation of the traffic signal in the centre of the intersection would be necessary to allow the 82 metre blade to traverse the bend. The 76 metre blade may fit around the corner without relocating the traffic light, using a large grassed area to the south of the intersection to allow the blade a direct path through the existing traffic lights.

The corner from Industrial Drive onto Maitland Road will require the centre median strips to be lowered while the blade traverses the corner on the incorrect side of the road for both blade options.

HUNTER EXPRESSWAY:

The blades will not make it around the roundabout from John Renshaw Drive onto the Hunter Expressway. The largest blade that could make the turn on the correct side without further works is 65 metres in length. For blades over 65 metres traffic control/Police would be required to block the eastbound lanes of the Hunter expressway while the blades travel down the incorrect side before crossing over at the centre crossover point.

NEW ENGLAND HIGHWAY ONTO THE GOLDEN HIGHWAY:

This corner is currently in the design stage of modifications. The existing corner would need only a small amount of works to allow the blades a suitable swept path. It is recommended that the project keep a close eye on any potential changes that may affect the blades swept path around the corner.

THE GOLDEN HIGHWAY:

Several corners would need to have a moderate amount of modifications. Additionally the blades will need to travel onto the incorrect side of the Golden Highway for approx. 400 metres. This will require the police escorts to hold all eastbound traffic on the Golden Highway. Roadwork's are programed to take place on this route over the next few years, so it is recommended that the client discuss upcoming road projects with Transport NSW.

MUSWELLBROOK:

After reviewing all options we had at Muswellbrook we believe the following routes are the best options.

BLADES VIA: New England Highway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Kayuga Road, Ivermein Street, Dartbrook Mine access Road, New England Highway.

This route will require a large amount of upgrades; these include large amounts of hard standing, relocating of power poles and approvals from Muswellbrook Shire Council, Private landowners and Dartbrook Mine.

ALTERNATE POSSABILITY FOR 76 & 82 METRE BLADES AT MUSWELLBROOK:

If a 76 or 82-metre blade were required and approvals from private landowners became a hurdle, then the only other way of travelling through Muswellbrook would be to gain approvals to use a blade lifter. This would require setting up laydown areas on each side of the town.

REMAINING COMPONENTS VIA: New England Highway, Bell Street, Market Street, Victoria Street, New England Highway.

Approval required from Muswellbrook Shire Council and rail.

SCONE:

A town bypass is currently under construction. The final design looks suitable for the swept path of the components.

TAMWORTH:

After reviewing all options we had at Tamworth we would recommend the following route as the best option for blades up to 82 metres. Both blades will not fit through Tamworth without gaining access over or purchasing a block of land on the intersection of New England Highway and Scott Road. If this cannot be achieved, then a blade lifter could potentially be used if fitted prior to Tamworth and removed after Tamworth.

VIA: New England Highway, Scott Road, Murray Street, Marius Street, New England Highway

New England Highway into Scott Road: This corner in its current form would allow a blade of 66 metres in length. Access over or purchase of a block of land to the north of the intersection would be required to travel around this corner with both blades. Alternatively, a blade lifter could be used.

Scott Road onto Murray Street: This roundabout in its current form would allow a blade of 69 Metres in length. A blade of 76 or 82 metres could be possible but either a palm tree needs to be removed, or a light pole relocated. Alternatively, a blade lifter could be used.

Murray Street into New England Highway: This corner in its current form would allow a blade of 69 Metres in length. A blade of 76 or 82 metres could be possible but a large amount of hardstand would be required.

ALTERNATE POSSIBILTY FOR 76 and 82 METRE BLADES AT TAMWORTH:

If the problems within the existing route through Tamworth could not be overcome, then the option of a blade lifter could be an option. Use of a blade lifter on the main route through town may require assessment of and modification to overhead utilities on the corners where appropriate.

A possible alternate route at Tamworth is to use New England Highway, Whitehouse Lane, Marsden Park Road, O'Briens Lane, Nundle Road, New England Highway. This route would need approval to travel over the Peel River Bridge as it has a weight restriction to stop trucks taking a short cut around Tamworth. There may be other alternate routes on this side of Tamworth that could be looked at if the bridge became a problem to cross. Use of alternate routes would be subject to further review and discussion with relevant authorities prior to the start of construction.

A laydown area would be required on the south and north of town to install and uninstall the blade lifter.

ARMIDALE:

Roundabouts would need a small amount of work. Check vertical curve to determine if hydraulic trailers are required.

BEN LOMOND AND MAYBOLE ROAD:

- The entire route has several Crests and dips that would need to be surveyed. This would allow us to determine if the largest trailers have adequate clearance to pass over them without the need for additional road works.
- Several trees on this route will need to be pruned and possibly removed.
- Ben Lomond Road has an adequate road surface being asphalt all the way, however Maybole Road is mainly gravel and will need to be upgraded in sections to allow all weather travel, and to give traction on any inclines or declines.
- Several sections of road will need to be widened depending on the specifics of the trailer used for transportation.

KELLYS ROAD:

- This road has a number of Crests and dips that would need to be surveyed. This would allow us to determine if the largest trailers have adequate clearance to pass over them without the need for additional road works.
- A number of trees on this route will need to be pruned and possibly removed.
- Several sections of road will need to be widened depending on the specifics of the trailer used for transportation.

BRIDGE CROSSINGS:

This route has been used in the past for towers up to 80T. Further investigations would be required if item mass exceeds this. Additionally, the Muswellbrook bypass for the blades would need to be assessed.

OVERHEAD STRUCTURES:

The lowest structure on this route is the Liddell overpass. This bridge is 5.2 metres in the centre carriageway and 5.3 metres in the far-right lane. Loads that exceed 5.2 metres in overall height will need to bypass the bridge via the Golden Highway. A maximum height of 5.5 metres than would be the lowest structure that cannot be avoided. This structure is the Queen Elizabeth overpass at Armidale.

OVERHEAD WIRES:

This route would need to be assessed to handle a loaded height of up to 5.5 metres. It is likely that there are wires that will need to be raised.

RAIL ASSETS:

There are a number of rail crossings on route that will require approval from authorities before loads can be approved to cross.

FLOODWAYS:

There are multiple floodways on the access roads that will need to be raised and widened. These floodways vary considerably, and some would need extensive works, where others would only need minor upgrades. Each floodway should be assessed on its own merit.

CRESTS:

There are number of crests on this route that will need to be surveyed. Hydraulic lift trailers could overcome these obstacles without the need for additional road works.

PAVEMENT:

The Pavement up to Maybole Road is of suitable highway grade. Some sections of Ben Lomond Road has a light covering of asphalt that may lift with continuous use. Maybole and Kellys Road may need to be upgraded to all weather use.

ROADWORKS:

Roadworks are likely to be continuous on any route within NSW, as this is common practice. Some roads will just have general maintenance, and resealing, while other sections will have complete realignment. It is recommended that the project discuss any major works well in advance with the authorities.

12.0 References:

RMS 2008 Version 2: Operating Conditions: Specific permits for oversize and overmass vehicles and loads

Rex Andrews Engineered Transportation Pty. Ltd.

Goldwind Australia

Epuron

Route Survey LL258 REV00.

Google Earth/Maps

Nearmaps

NHVAS Maintenance Management (NHVAS21193)

NHVAS Basic Fatigue Management (NHVAS21193)

Disclaimer: This route study is a guide only; government approvals would be required before these routes could be deemed suitable for transporting the components over the listed routes.

This study was undertaken using data supplied by Rex J Andrews P/L. Equipment and swept paths might vary if using transport methodology other than the data supplied by Rex J Andrews.



Our Ref: DOC18/778938-8

Your Ref: MP 10_0160

Mr Tim Stuckey
Senior Environmental Assessment Officer
Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Dear Mr Stuckey

Re: MP 10_0160 White Rock Wind Farm Proposed Modification – Response to Submissions

Thank you for your email 11 October 2018 seeking comments from the Office of Environment and Heritage (OEH) on the Response to Submissions on the White Rock Wind Farm Modification 6 (Mod 6). I appreciate the opportunity to provide input.

The OEH has reviewed the Response to Submissions (RtS), and the relevant information supporting the Mod 6 application, including the revised Biodiversity Assessment Report (BAR), the revised Bird and Bat Strike impact assessment, and the proposed substation and access track preliminary biodiversity assessment.

While the deficiencies outlined in our letter dated March 22 have been rectified, our subsequent review of the amended BAR has revealed several additional omissions and inconsistencies with the requirements of the Framework for Biodiversity Assessment (FBA). The key deficiencies are in relation to the assessment of candidate 'species credit' species and these are discussed in detail in **Attachment 1** to this letter.

Generally, where threatened species surveys have been undertaken to assess the extent of impact of Stage 2 of the wind farm, the survey methods and sampling effort appear to be inconsistent with the requirements of the OEH threatened species survey guidelines specified at Section 6.6.1.5 of the FBA.

In summary, we recommend:

1. For all 'species credit' species for which habitat occurs on site, provide a detailed description of the survey methodologies adopted, demonstrating the fulfilment of the requirements of the appropriate survey guidelines and the FBA.
2. If the surveys undertaken to date for the candidate 'species credit' species are confirmed to be inadequate or inconsistent with the guidelines and the FBA (including whether surveys were undertaken outside of the suitable timeframes listed in the Threatened Species Profile Database), additional assessment will be required to satisfy the FBA.

3. The FBA provides three options to determine whether a 'species credit' species is present or not, and we recommend that each of these options be considered by the applicant to determine a preferred way forward should time constraints limit the ability to perform surveys in suitable months.

Rather than conducting additional surveys that meet the requirements of the published guidelines, other options include - assume presence of the species (an offset will be required), or engage the services of a OEH Chief Executive endorsed species expert to prepare an expert report that confirms that suitable habitat is absent (and therefore no further assessment or offset is required), or, that identifies suitable habitat in which the species is likely to be present (for which an offset will be required). The OEH can assist in the selection of appropriate experts.

4. It is preferable for the revised assessment to determine the presence of candidate 'species credit' species prior to the determination of the modification application. This would allow the biodiversity credit requirement to be established and included as a condition of consent to the modification.
5. Should 'species credit' species be determined to occupy the site, either following survey, assumed presence or by an expert, the Biodiversity Credit Calculator will need to be re-run to determine the appropriate 'species credit' offset requirement.
6. In relation to the proposed substation and access track, every effort should be made to ensure that the design and construction of the proposed substation and access road avoids native vegetation, and/or areas of threatened species habitat.
7. Where avoidance is not possible, and areas of native vegetation and/or threatened species habitat will be affected by the substation and access road, an assessment of these areas will be required in accordance with the FBA, prior to determination. Potentially, an offset may be required to counter the loss of native vegetation and/or threatened species habitat as a result of the construction works.
8. In relation to the scarred tree observed by ngh during the substation biodiversity assessment, every effort is to be made to avoid damaging the scarred tree.
9. However, if the scarred tree is likely to be affected by the proposed substation and access track, an expert in the identification of Aboriginal scarred trees should be engaged to determine if the scar is of Aboriginal origin. The relevant Aboriginal stakeholders should also be consulted in the determination of the origin of the scar, and should it be necessary, to assess the significance of the Aboriginal object.

Our recommendations are discussed in more detail in **Attachment 1**.

If you have any further questions about this issue, I can be contacted on 6659 8254 or at nicky.owner@environment.nsw.gov.au.

Yours sincerely



5 November 2018

NICKY OWNER
A/Senior Team Leader Planning, North East Branch
Conservation and Regional Delivery

Enclosure: Attachment 1 – Detailed OEH Comments of the proposed White Rock Wind Farm – Modification 6.

Attachment 1: Detailed OEH Comments – White Rock Wind Farm – Modification 6

Stage 2 Proposal:

It is our understanding that Modification 6 (Mod 6) includes the following key components in relation to Stage 2 of the Wind Farm proposal:

- Reducing turbines from 49 to 48.
- Relocation of 20 stage 2 turbines to new locations not included in the original approval.
- Minor changes at 9 turbine locations.
- Increasing turbine dimensions (max RSA - 200m; hub height 130m; turbine diameter 170m).
- Increasing native veg clearing extent - from 28 to 90 hectares (an increase of 62 hectares), required for turbine siting, access track, substation and powerline modifications (mod 6).

The OEH has reviewed the Response to Submissions (RtS), and the relevant information supporting the Mod 6 application, including the revised Biodiversity Assessment Report (BAR), the revised Bird and Bat Strike impact assessment, and the proposed substation and access track preliminary biodiversity assessment.

Stage 2 - Biodiversity Assessment Report

The purpose of the BAR is to assess the impact of native vegetation removal resulting from Stage 2 works, and to quantify the number of biodiversity credits to be retired to offset the impact of the development. The BAR is to be prepared in accordance with the requirements of the Framework for Biodiversity Assessment (FBA).

While many of the deficiencies outlined in our letter dated 22 March 2018 (our ref - DOC18/74075) have been rectified, our subsequent review of the amended BAR has revealed several additional omissions and inconsistencies with the requirements of the FBA. The key deficiencies are in relation to the assessment of candidate 'species credit' species and these are discussed below.

Based on the justification contained within the BAR, we agree it is unlikely that suitable habitat occurs within the stage 2 wind farm site for McKies Stringybark (absence of granitic soils), *Prasophyllum* sp. Wybong (unlikely habitat), black-throated finch (presumed extinct), pale-headed snake (elevation and climatic factors) and booroolong frog (elevation, climatic and disease factors). Furthermore, narrow goodenia is no longer listed as threatened, and therefore does not require further assessment.

However, based on the discussion included within the BAR, there appears to be habitat present (including marginal habitat) within the impact area for the following 'species credit' species:

- Koala,
- Regent honeyeater,
- Austral toadflax (*Thesium australe*),
- Bluegrass (*Dichanthium setosum*) (unable to withstand further loss),
- Hawkweed (*Picris evae*) (unable to withstand further loss),
- Narrow-leaved black peppermint (*E. nicholii*) (unable to withstand further loss),
- *Callistemon pungens* (unable to withstand further loss)
- Silky swainson pea (*Swainsona sericea*)

As such, these species are the candidate species for the purposes of the FBA, and therefore, require assessment under Step 3 of Section 6.5 of the FBA.

In addition, the justification used to exclude the small snake orchid (*Diuris pedunculata*) from the list of candidate species is erroneous. While the BAR references Quinn *et al.* (1995) which states that the species is confined to 50 and 900m altitude, a number of occurrences of *D. pedunculata* discovered since the 1995 Quinn publication, including two *D. pedunculata* Saving Our Species sites, occur at an altitude of 1300m. It is understood that the windfarm site has an elevation in the vicinity of 1100m.

The small snake orchid is also associated with three of the vegetation community types occurring within the wind farm site, including black sallee–snow gum grassy woodland, ribbon gum–mountain gum–snow gum grassy open forest/woodland and silvertop stringybark – mountain gum grassy open forest. As per the Threatened Species Profile Database, the species is known to occur in low condition vegetation and, along with Austral toadflax, bluegrass, hawkweed, narrow leaved black peppermint and *C. pungens*, is unable to withstand further loss in the Border Rivers–Gwydir catchment area.

Based on these facts, the small snake orchid also requires assessment under Step 3 of Section 6.5 of the FBA.

In determining whether a candidate ‘species credit’ species utilises the wind farm site, Section 6.5.1.9 of the FBA specifies that:

‘An assessor must establish whether any species that remains a candidate is present on the development site, or is likely to use the potential habitat on the development site by either:

- (a) Assuming it is present (development sites only) or*
- (b) Undertaking a threatened species survey in accordance with Section 6.6, or*
- (c) Obtaining an expert report in accordance with Subsection 6.6.2.*

Generally, where threatened species surveys have been undertaken to assess the extent of impact of Stage 2 of the wind farm, the survey methods and sampling effort appear to be inconsistent with the requirements of the OEH threatened species survey guidelines specified at Section 6.6.1.5 of the FBA. The appropriate guidelines are the ‘NSW Guide to Surveying Threatened Plants’, and the ‘Threatened Biodiversity Survey and Assessment: Guidelines for Development and Activities’.

Furthermore, inappropriate justification has been provided for excluding several candidate species from the need for survey, or, for minimal survey effort, such as the assumption that a significant impact is unlikely on the species concerned. This assumption is irrelevant in the application of the FBA.

These deficiencies are further discussed below in relation to the candidate ‘species credit’ species:

1. Koala:

The site contains one preferred koala feed tree species, (*Eucalyptus viminalis*), and two secondary feed tree species, snow gum (*E. pauciflora*) and yellow box (*E. melliodora*).

The RtS report states ‘the proposed action may result in clearing up to 82 hectares of critical habitat’. (The OEH assumes ‘critical habitat’ in this context means suitable koala habitat.) Despite this, the BAR states ‘due to the size of the survey area, random inspections of koala feed trees for scats and activity were undertaken, as well as inspections for scats and other koala evidence where primary and secondary feed trees were located within biometric plot surveys’. The size of the survey area should not be used to justify limiting the scope or extent of the survey effort.

Also, it appears the assessor has not used a combination of spotlighting, call playback sampling and application of a standardised koala scat search method (e.g. spot assessment technique) as recommended in the OEH assessment guidelines.

Furthermore, the level of survey effort completed for incidental koala scat searches has not been detailed in the BAR (e.g. number of koala feed trees searched, and number of person hours

completed). Consequently, we cannot determine the adequacy of survey effort applied to this sampling technique. Therefore, the assessor's conclusion that koalas are absent from the site is not adequately supported by the survey undertaken.

2. Regent honeyeater:

The BAR explains that two song meters were set for three days recording at dawn and dusk and that four transect surveys as well as opportunistic surveys were undertaken to detect the regent honeyeater. Additionally, the BAR refers to additional work undertaken by Brett Lane and Associates (BLA) as part of their bird census surveys. There is no detail provided within the BAR regarding the scope of the BLA work.

A lack of observations resulting from inadequate survey effort, without use of the range of appropriate detection techniques, and an absence of historic records for regent honeyeaters in the locality does not necessarily mean that regent honeyeaters do not utilise the habitats of the Stage 2 windfarm site.

3. Flora:

According to the BAR, targeted searches were carried out for bluegrass, Austral toadflax, hawkweed, silky swainson pea, narrow-leaved black peppermint and *Callistemon pungens*.

The BAR states '*The surveys comprised parallel transects at a distance of approximately 10m (depending on vegetation density), covering as much of the vegetation patch as was accessible*'.

However, Figure 4-1 contained within the BAR illustrates targeted flora survey tracks which do not appear to reflect the methodology outlined above, and which appears to be inconsistent with the sampling description provided in text and the requirements of the '*NSW Guide to Surveying Threatened Plants*'.

Recommendations:

1. For all 'species credit' species for which habitat occurs on site, provide a detailed description of the survey methodologies adopted, demonstrating the fulfilment of the requirements of the appropriate survey guidelines and the FBA.
2. Limitations to the surveys and reporting should be specified in the BAR, along with justification of deviations from appropriate sampling methods, survey effort and survey timing. This should include an explanation of site accessibility issues.
3. If the surveys undertaken to date for those species listed previously are confirmed to be inadequate or inconsistent with the guidelines and the FBA (including whether surveys were undertaken outside of the suitable timeframes listed in the Threatened Species Profile Database), additional assessment will be required to satisfy the FBA.
4. However, as outlined above, the FBA provides three options to determine whether a species credit species is present or not, and we recommend that each of these options be considered by the applicant to determine a preferred way forward should time constraints limit the ability to perform surveys in suitable months.

Rather than conducting additional surveys that meet the requirements of the published guidelines, other options include assume presence of the species (an offset will be required), or engage the services of a OEH Chief Executive endorsed species expert to prepare an expert report that confirms that suitable habitat is absent (and therefore no further assessment or offset is required), or, that identifies suitable habitat in which the species is likely to be present (for which an offset will be required). The OEH can assist in the selection of appropriate experts.

5. It is preferable for the revised assessment to determine the presence of candidate 'species credit' species prior to the determination of the modification application. This would allow the

biodiversity credit requirement to be established and included as a condition of consent to the modification.

6. Should supplementary surveys be selected as a way forward, potential habitat for all 'species credit' species should be mapped and used to guide the location of targeted surveys.
7. It is a requirement of the FBA (refer to Table 20) for a map illustrating the location of survey transects to be provided as part of the BAR. A map should also be provided to illustrate the location of transects for each species targeted. These maps should be derived from initial mapping of the areas identified as potential habitat for the relevant species and used to determine the field survey plan.
8. Targeted surveys for the koala must include spotlighting, call playback and targeted scat searches as per the threatened species survey guidelines.
9. Targeted surveys for the regent honeyeater should use a mix of area search and point count methods within suitable habitat to increase the likelihood for the detection of this species. Areas including yellow box (*E. melliodora*) and mistletoe (*Amyema*) species should be targeted. The assessor needs to quantify the survey effort (e.g. person hours for each sampling method).
10. Given the regent honeyeater forages over large areas each day, it may take several visits to record its presence. In addition, due to the regent honeyeater being a seasonal migrant, this should be considered in the timing of the survey and listed as a constraint of species detection during the field assessment.
11. The survey for regent honeyeaters would be best undertaken when key food resources on site are flowering.
12. Targeted surveys for candidate flora species should include parallel field traverses at appropriate spacing, within areas of suitable habitat (suitable habitat includes 'sub-optimal' and 'marginal' habitat).
13. Should 'species credit' species be determined to occupy the site, either following survey, assumed presence or by an expert, the Biodiversity Credit Calculator will need to be re-run to determine the appropriate 'species credit' offset requirement.

Bird and bat strike.

We have reviewed the updated bird and bat strike impact assessment prepared by Brett Lane and Associates (August 2018).

It appears that the assessment undertaken incorporates appropriate responses to the recommendations contained in our earlier correspondence (DOC18/74075, dated 22 March 2018).

As such, the bird and bat impact assessment is now considered satisfactory.

Proposed substation and access track:

We have reviewed the results of ngh's inspection of the proposed substation site and access road, dated 14 May 2018, which forms Appendix 6 of the Response to Submission Report.

Recommendations:

14. Every effort should be made to ensure that the design and construction of the proposed substation and access road avoids native vegetation, and/or areas of threatened species habitat.

15. Where avoidance is not possible, and areas of native vegetation and/or threatened species habitat will be affected by the substation and access road, an assessment of these areas will be required in accordance with the FBA, prior to approval. Potentially, an offset may be required to counter the loss of native vegetation and/or threatened species habitat as a result of the construction works.

Scarred tree:

We note that ngh has observed a scarred tree within the area examined in relation to the proposed substation and access road.

Recommendation:

16. Every effort is to be made to avoid damaging the scarred tree.
17. However, if the scarred tree is likely to be affected by the proposed substation and access track, an expert in the identification of Aboriginal scarred trees should be engaged to determine if the scar is of Aboriginal origin. The relevant Aboriginal stakeholders should also be consulted in the determination of the origin of the scar, and should it be necessary, to assess the significance of the Aboriginal object.

Adrian Maddocks

From: Tim Stuckey <Tim.Stuckey@planning.nsw.gov.au>
Sent: Tuesday, 13 November 2018 4:32 PM
To: Adrian Maddocks
Cc: Phillipa Duncan
Subject: FW: MP10_0160 - White Rock Wind Farm Proposed Modification - Response to Submissions

Good afternoon Adrian,

Please see RMS's advice on the White Rock MOD 6 RTS below.

If you could please ensure the recommendations included are addressed in the supplementary traffic assessment report being prepared by Rex J Andrews.

Regards

Tim Stuckey

Senior Environmental Assessment Officer
Resource and Energy Assessments
Department of Planning and Environment
320 Pitt Street | GPO Box 39 SYDNEY NSW 2001
Phone: 02 9274 6319
Email: tim.stuckey@planning.nsw.gov.au

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From: JAMIESON Beth <Beth.JAMIESON@rms.nsw.gov.au>
Sent: Thursday, 8 November 2018 3:27 PM
To: Tim Stuckey <Tim.Stuckey@planning.nsw.gov.au>
Subject: RE: MP10_0160 - White Rock Wind Farm Proposed Modification - Response to Submissions

Dear Tim

Reference is made to your email of 11 October 2018 concerning White Rock Wind Farm's (MP10_0160) Response to Submissions and discussions with you on 29 October 2018.

The Environmental Assessment dated January 2018 indicated that approval was being sought to use blades up to 85m. This will increase the length of loads being transported along the New England and Gwydir Highways. Previously these routes were only assessed for 60m blades.

Response to Submissions states a detailed route assessment will be undertaken after the size of the turbines is known and before construction commences. It has been suggested that a specialised blade transporter might be used to overcome constraints.

At this time it is unknown if larger blades can use the proposed route or what the impacts on road infrastructure and safety will be. Limited information is available about the suitability of a blade transporter such as the FTV 300 over long distances and in 100km/h speed environments.

It is recommended a review of the Stage 1 Transport Route Assessment be undertaken using a couple of scenarios, prior to deciding to use longer blades, to guarantee the route can be traversed safely. The

assessment should include horizontal and vertical swept paths at key intersections, accesses and squeeze points for the proposed haulage vehicles.

It is noted the proponent wants to reserve the right to use the junction of Gwydir Highway and Ilparran Road for the delivery of the second transformer. Minor works were undertaken in Stage 1 to permit this with agreed traffic control measures. The existing junction will require upgrading to Austroads standards if it is used for construction or operational purposes. The CTAMP should include an approved Traffic Control Plan (TCP) that can be installed for emergency purposes only.

Regards

With thanks,

Beth Jamieson

Administrative Assistant
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From: Tim Stuckey [<mailto:Tim.Stuckey@planning.nsw.gov.au>]
Sent: Thursday, 11 October 2018 5:30 PM
Subject: White Rock Wind Farm Proposed Modification - Response to Submissions

Good afternoon,

White Rock Wind Farm Pty Ltd has submitted its response to the issues raised in submissions on the proposed modification for the White Rock Wind project (MP 10_0160).

The Response to Submissions document (and associated appendices) can be viewed on the Department's [Major Projects website](#).

It would be greatly appreciated if you could review this information and send any further comments to the Department (via reply email) by Friday 26 October 2018.

Kind regards,

Tim Stuckey

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