

Before Independent Commissioners

In Waikato District Council

Under the Resource Management Act 1991 (the Act)

In the matter of McPherson Quarry

Statement of evidence of Johan Kristoffer Hansson regarding Traffic

Dated 13 November 2020

1 Executive summary

- 1.1 My evidence relates to the resource consent application for McPherson quarry to continue and expand the current operations of the McPherson Quarry ('**Proposal**').
- 1.2 My evidence is specific to the matters of Transport and Traffic Engineering based on my 13 years' experience in the field. I also rely on my Bachelor of Science (Social Science) and Master in Civil Engineering Studies (Transportation) qualifications.
- 1.3 I am familiar with the site and surrounding area. I was the author of the Traffic Impact Assessment (TIA) for the McPherson Quarry that was part of the resource consent and Assessment of Environment Effects (AEE). In addition, I have worked on general projects on the SH2 corridor between Pokeno and Mangatarata on behalf of Waka Kotahi New Zealand Transport Agency.
- 1.4 In preparing this evidence, I have read the submissions that support, oppose or have a neutral standpoint to the proposal.
- 1.5 In summary, in terms of Traffic and Safety:

Over the last 11.5 months (1/11/19-21/10/20) the quarry has been operating for 258 days with an average of 120 daily truck movements (60 inbound and 60 outbound). These vehicle numbers represent approx. 280,000-300,000 tonnes over the 11.5 month period.

- The McPherson quarry seek resource consent for their quarry operation and for the extraction of 490,000 tonnes per annum. In addition, they seek resource consent for importing clean fill on trucks that are arriving to site the be loaded with quarry material.
- A quarry extraction yield of 490,000 tonnes annually is estimated to have a total of 164 daily truck movements (82 inbound and 82 outbound). This is an increase of 44 (22 inbound and 22 outbound) truck movements in comparison with the truck movement to and from the site over the last 11.5 months.
- Between 1st January 2013 and 1 May 2020 there were 7 crashes recorded within 250m radius of the SH2/McPherson Road Intersection. None of these recorded crashed related to vehicle movement to and from the McPherson Road.
- The TIA concludes that the existing intersection is not desirable and have some shortfall in comparison with Austroads Design guidance including:
 - i The Safe Intersection Sight Distance (SISD) to the east has a shortfall of approximately 14 metres.

- ii Approach Sight Distance (ASD) for westbound traffic is approximately 100 meters, which is shorter in comparison to the 151m stopping distance for a car travelling 90km/h and a driver reaction time of 2.5s.
- iii The existing traffic volumes at the McPherson Road/SH2 intersection are sufficient to warrant a channelised right turn (CHR) treatment and auxiliary lane (AUL) treatment. The existing intersection has neither.

1.6 To address the intersection deficiencies the following mitigation measures are suggested and has been agreed with the Waka Kotahi New Zealand Transport Agency.

- Modification to the existing roadside environment are undertaken to provide at least 151m forward visibility for westbound traffic to safely observe and respond to right turning traffic from McPherson Road onto SH2;
- A 42 m right turn bay on SH2 to be provided: and
- A left-turn auxiliary lane to be provided on McPherson Road between Graham Bridge and the SH2/McPherson Road Intersection.

1.7 I have read the Section 42a report) and WDC suggested consent conditions 20,21 and 40-50 (Appendix L). I agree with WDC suggested consent conditions and I believe that they are appropriate for the proposed development, with the exception of the comments relating to the timing stated in conditions 42 and 45 as outlined in the evidence of Ms Lonnberg-Shaw.

1.8 In conclusion, I support the project from a traffic perspective and believe that the proposed mitigation measures are appropriate.

2 Code of conduct

2.1 Although this matter is not before the Environment Court, I have read and am familiar with the Code of Conduct for Expert Witnesses in the current Environment Court Practice Note (2014). I have complied with the Code of Conduct in the preparation of this evidence and will follow the Code when presenting evidence to the Commissioners. My qualifications as an expert are set out below. I confirm that the matters addressed in this statement of evidence are within my area of expertise, except where I rely on the opinion or evidence of other witnesses, as stated. I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

3 Qualifications and experience

3.1 My full name is Johan Kristoffer Hansson.

- 3.2 I am the Transportation and Design Work Group manager for WSP in Tauranga and have been employed by WSP (previously Opus) for 10 years. I have practised in the field of civil engineering for 13 years, concentrating in the area of Transportation Planning and Transportation Engineering.
- 3.3 My relevant tertiary qualification includes a Bachelor of Science (Honours) (Social Science) from Kingston University of London (2007). I also have a Master in Civil Engineering Studies (Transportation) from the University of Auckland University (2018).
- 3.4 Over the last 13 years, I have been responsible for undertaking transport assessments, intersection traffic modelling, transportation economics, writing business cases, project management and peer reviewing traffic impact assessments on behalf of Waka Kotahi and a number of District Councils.
- 3.5 In my current role as the Transportation and Design Work Group Manager in Tauranga, I am regularly providing guidance and formal reviews of reports (including Traffic Impact Statements, Integrated Transport Assessments, intersection analysis and design) produced by members of my team.
- 3.6 My evidence relates to the McPherson Quarry Resource Consent application (**Proposal**).

4 Background

- 4.1 McPherson quarry is located on McPherson Road within the Waikato District Council (WDC). McPherson Road intersect with SH2 approximately 3km east of the SH1/SH2 interchange. As such, WDC is the controlling authority with Waka Kotahi being an affected party.
- 4.2 The McPherson Road/SH2 intersection is a priority controlled “T” Intersection with traffic movements on SH2 having priority. At this location SH2 is formed with one through lane in each direction of approximately 3.5m width and a shoulder of 2-2.5m on both side of the carriage way. No right turn bay is provided for traffic turning from SH2 into McPherson Road.
- 4.3 Graham Bridge is located 135m south of the McPherson Road intersection and is formed with one lane in each direction and narrow shoulders. The posted speed limit on SH2 is 90km/h
- 4.4 The quarry has been operating for just over 60 years with the current owner been operating the quarry since August 2009. Over the last 5 years the quarry has

transported an average 270,000 tonnes per annum with the largest tonnage transported in 2017 (333,000) The intention with the resource consent is to formalise the existing operation for quarry extraction and seek resource consent for expanding the quarry operation to extract a maximum of 490,000 tonnes per annum.

- 4.5 Based on recent information provided by McPherson's Quarry, truck arrivals to the site is fairly evenly distributed over the operating hours of the quarry. Diagrams provided in Appendix A show the distribution of truck arrivals over the month of the year, days in the week and hours of the day. Based on the truck arrival information the assumption of a consistent movement of trucks throughout the day is considered to be valid.

5 Involvement with the Project

- 5.1 I am familiar with the area that the Project covers. Over recent years I have been involved in various work on the State Highway 2 corridor between Pokeno and Mangatarata. I was responsible for the overall corridor economic evaluation between Pokeno and Mangatarata including in depth traffic analysis and safety review.
- 5.2 I was the author of the McPherson Quarry Traffic Impact Assessment (AEE) technical report (August 2018) that formed part of the AEE lodged in support of the Project. This report considered the traffic effects of the proposal to formalise and expand the quarry for resource consent purposes.
- 5.3 A Traffic Impact Assessment was prepared as part of the AEE in support of the project. The transport assessment provides advice on the likely trip generation to and from the proposed development, access requirements to the site and the expected impacts on the local network performance. The transport assessment concluded that the adverse traffic effects identified from the proposed development could be mitigated by the following mitigation measures:
- A. Modification to the existing roadside environment to provide at least 151m forward visibility for westbound traffic to safely observe and respond to right turning traffic from McPherson Road onto SH2;
 - B. A 42 m right turn bay on SH2: and
 - C. A left-turn auxiliary lane on McPherson Road between Graham Bridge and the SH2/McPherson Road Intersection.
- 5.4 The proposed mitigation measures were developed in consultation with Waka Kotahi NZ Transport Agency and were agreed to be appropriate mitigation measures for the proposal, taking into consideration the current and potential future function of the frontage road.

5.5 This evidence identifies the submissions which relate to traffic and transportation issues and sets out to address those concerns. The following submissions contain a reference to traffic and transportation related issues that are addressed in my evidence:

- i. Waka Kotahi NZ Transport Agency;
- ii. Spencer/McKinstry;
- iii. Pinnacle Hill Residents;
- iv. Scott;
- v. Bray Family Trust;
- vi. Clotworthy;
- vii. Cowan;
- viii. Duggan/James;
- ix. Joubert;
- x. McCort;
- xi. Aker/Johns;
- xii. Baker/West; and
- xiii. Phillips et. al.

5.6 I consider that these submissions can be categorised by subject as follows:

1. Request for clarification of traffic evidence to support 50/50 split on SH2;
2. Increase in traffic due to clean fill activities;
3. Increase traffic on Pinnacle Hill Road; and
4. Safety issues at SH2 intersection.

A technical response to each of these identified subjects are discussed further below.

6 Traffic Evidence to support 50/50 split on SH2

6.1 The traffic impact assessment dated (August 2018) assumed a 50/50 split between left and right turning traffic.

6.2 Recent information provided by the McPherson's Quarry (based on their client base and a revised assumption as to the location of most projects) is that the existing directional split is likely a 70/30 split in favour towards SH1 and Pokeno. This is because most projects over recent years have been based in Pokeno and Pukekohe.

6.3 Development in Pokeno and Pukehohe is anticipated to continue in the future, which will generate truck movements to and from the west. However, it should also be noted that there are a number of larger earthwork transport projects proposed on SH2, which potentially could increase trip generation to and from the east.

- 6.4 The right turn out movement from McPherson Road is considered the most critical movement from a safety perspective because:
- The existing sight distances towards the east is shorter in comparison with sight distances towards the west;
 - The existing approach stop distances for westbound traffic is shorter in comparison with approach stop distances for eastbound traffic.
- 6.5 It is acknowledged that the right turn in movement from SH2 to McPherson also has some safety challenges because there is not sufficient room (without the proposed mitigation measures) for a vehicle to pass a truck waiting to turn right.
- 6.6 The proposed and agreed mitigation measures reduce the safety risk for all movements within the intersection. The proposed mitigation measures are still considered appropriate with an updated 70/30 directional split towards SH1.

7 Increase in traffic due to clean fill activities (Backloading)

- 7.1 The intention with the clean fill operation is that the trucks exporting quarry material have the option to import clean fill to the quarry site on the trip in and transport quarry products on the trip out. The ability to backload means the clean fill operation will increase the efficiency by maximising the amount of material transported to and from the quarry. However, it is recognised that this efficiency is not always possible and will potentially generate new trips to and from the site that is a risk.
- 7.2 I consider that this risk can be appropriately mitigated by the imposition of a daily maximum and general daily average vehicle movements, as proposed in WDC suggested condition 48.

8 Increased heavy traffic on Pinnacle Hill Road

- 8.1 It is not proposed that the development will generate additional heavy vehicle movements on Pinnacle Hill Road (as this is not a haulage route for McPherson Quarry clients) therefore this outcome has not been included within the resource application and the traffic impact assessment.
- 8.2 It is recognised that Pinnacle Hill Road provides access to Paparata Road and alternative access to SH1 via Mill Road. However, any potential Heavy Vehicle trips for the quarry operations to and from SH 1 north of Bombay will use McPherson Road and the State Highway Network.

9 Safety issues at SH2 intersection.

- 9.1 The crash history included in the Transport Assessment included 6 crashes within 250m radius of the SH2/McPherson Rd intersection between 1 Jan 2013 and 1 May 2018. All crashes involved single vehicles, with no vehicle to vehicle crashes recorded. Hence, none of the recorded crashes related to movement to and from McPherson Road intersection.
- 9.2 Since the Transport Assessment was submitted, an additional seventh crash has been recorded within 250 metres of the intersection. This serious crash was a head on collision between a vehicle travelling eastbound and a vehicle travelling westbound. The crash occurred 22:48PM on a Friday night. Based on the crash report it can be assumed that this crash was not related to quarry traffic coming to and or going from McPherson Road.
- 9.3 The Transport Assessment includes a safety assessment for the existing intersection with and without the proposed development.
- 9.4 The safety assessment concludes that the existing intersection is not desirable and have some shortfall in comparison with Austroads design guidance including:
- The Safe Intersection Sight Distance (SISD) to the east has a shortfall of approximately 14 metres.
 - Approach Sight Distance (ASD) for westbound traffic is approximately 100 meters, which is shorter in comparison of the 151m stopping distance for a car travelling 90km/h and a driver reaction time of 2.5s.
 - The existing volumes at the McPherson Road/SH2 intersection warrants a channelised right turn (CHR) treatment and auxiliary lane (AUL) treatment, where the existing intersection has neither.
- 9.5 To address the intersection deficiencies the following mitigation measures are suggested.
- Modification to the existing roadside environment are undertaken to provide at least 151m forward visibility for westbound traffic to safety observe and respond to right turning traffic from McPherson Road onto SH2;
 - A 42 m right turn bay on SH2 is provided: and
 - A left-turn auxiliary lane is provided on McPherson Road between Graham Bridge and the SH2/McPherson Road Intersection.

9.6 These mitigation measures have been approved by the Waka Kotahi New Zealand Transport Agency as an affected party and owner of the State Highway network.

10 Section 42a report

10.1 I have read the Section 42a report including the Traffic Review prepared by Gray Matter (Appendix F) and WDC suggested consent conditions 20,21 and 40-50 (Appendix L).

- I agree with WDC proposed consent conditions and I believe that they are appropriate for the proposed expansion of the quarry. This is with the exception of the comments relating to the timing stated in conditions 42 and 45 as outlined in the evidence of Ms Lonnberg-Shaw.
- WDC suggested conditions 40-45 aligns with my recommendation set out in the McPherson Quarry Traffic Impact Assessment (AEE) technical report (August 2018). These suggested conditions have also been approved by Waka Kotahi.
- I agree with the recommendation and suggested conditions set out in the Traffic Review prepared by Gray Matter with the exception of the installation of the on-site weigh bridge. However, McPherson quarry should continue to keep records of approximate volumes and tonnage extracted at the quarry as set out in WDC suggested condition 49.

11 Conclusion

11.1 From a traffic and road safety perspective, I support the proposal and WDC suggested conditions 20,21 and 40-50 that are related to traffic and safety of the proposed development. This is with the exception of the comments relating to the timing stated in conditions 42 and 45 as outlined in the evidence of Ms Lonnberg-Shaw, which I support.

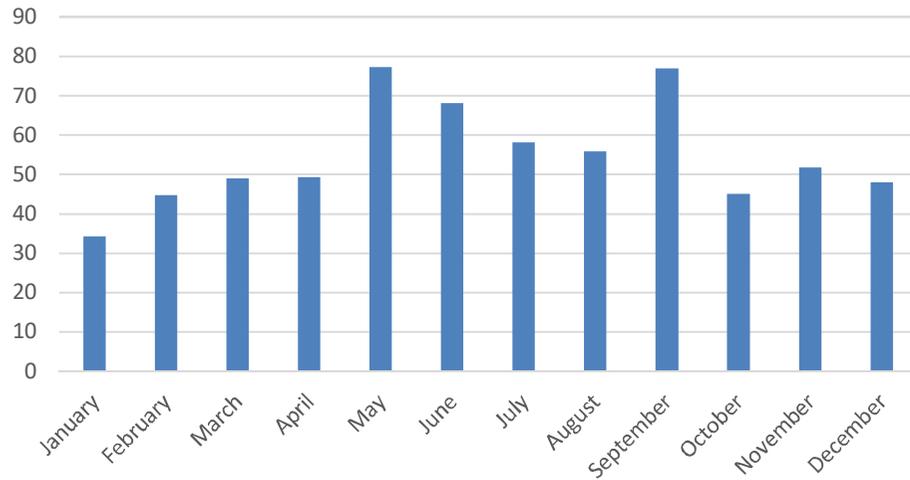


Johan Kristoffer Hansson

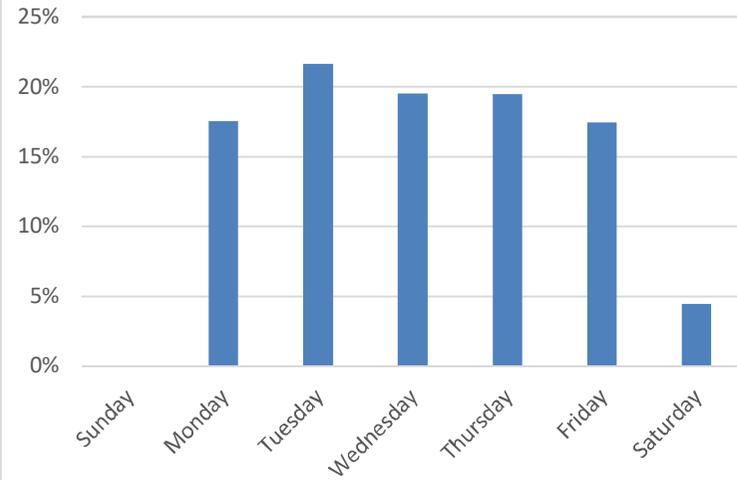
13 November 2020

Annexure 1 – Truck Arrival Diagrams (1/11/2019-20/10/20)

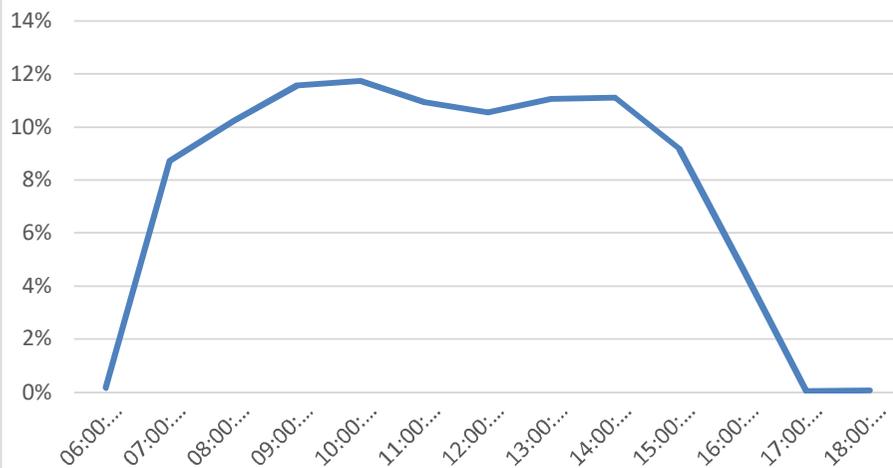
Average daily arrivals by month



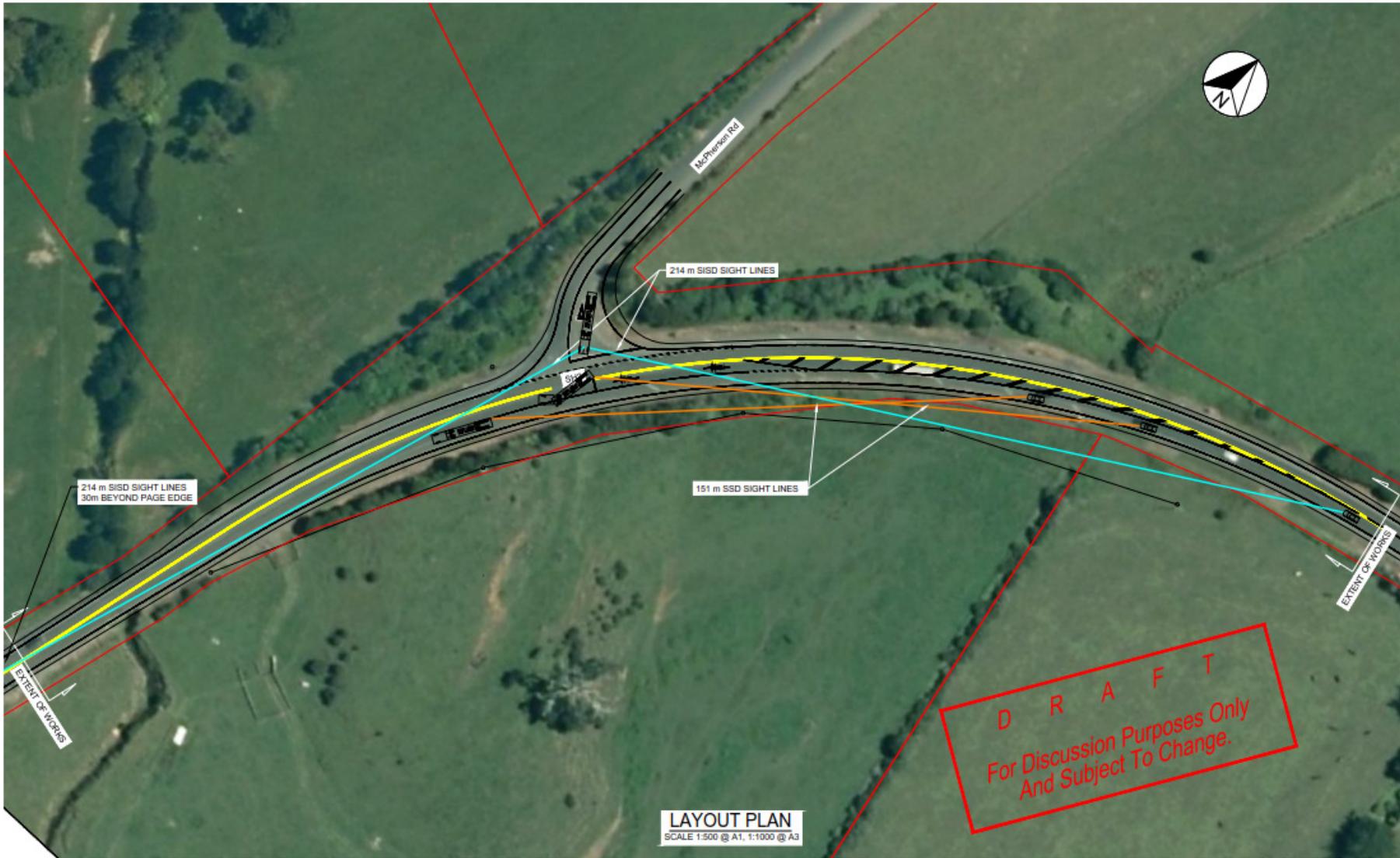
Quarry arrivals by day of the week



Quarry arrivals by hour of the day

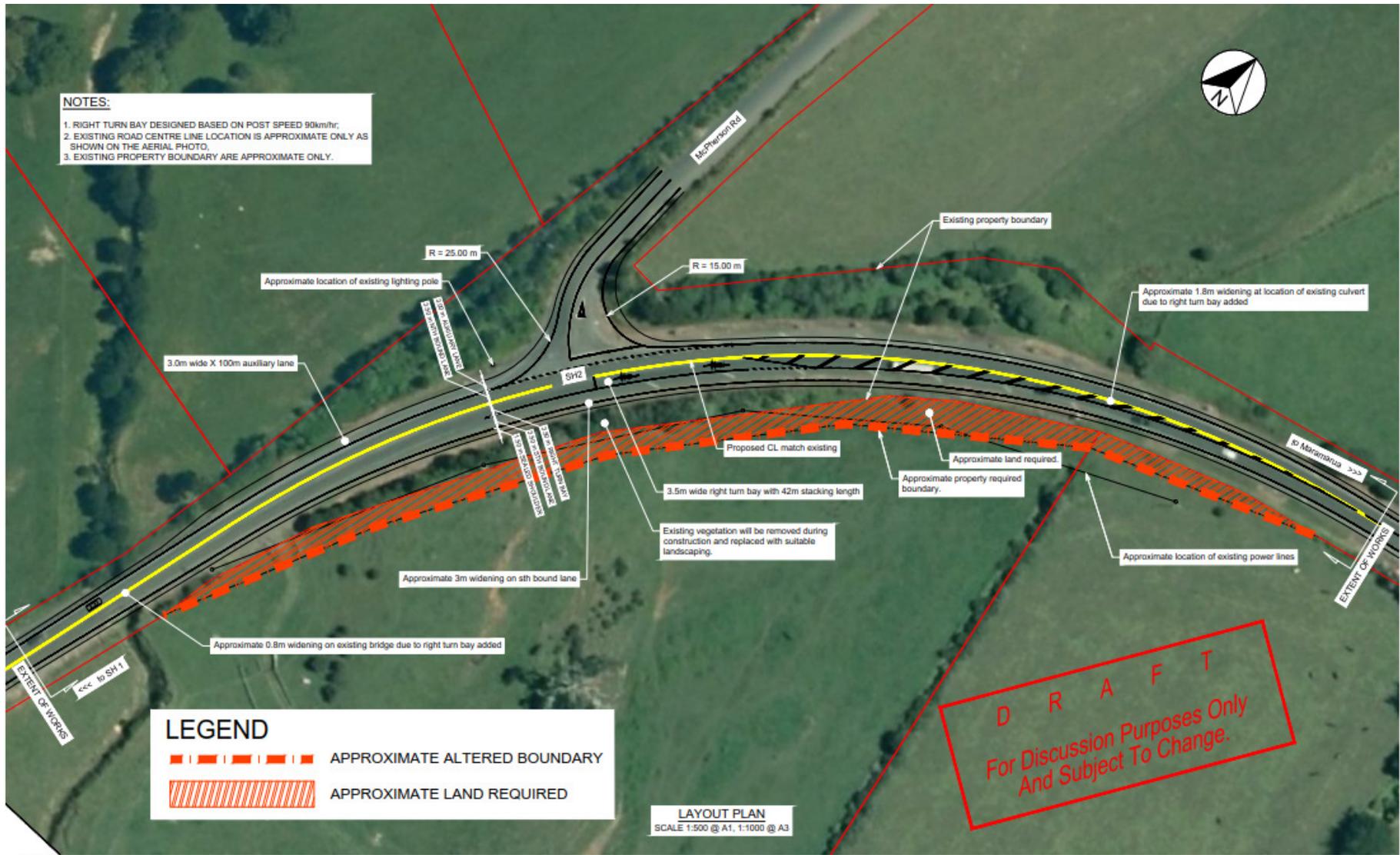


Annexure 2: Sightlines and mitigation measures



Plot Date: 14 Aug 2018 @ 9:50 AM Path: G:\2008032019_30 Fenceout sand extraction\Traffic\McPherson Quarry RTBACAD-3-2019-30 RIGHT TURN BAY PLAN-SIGHT LINE \$K002.dwg \$K002

**MCPHERSON ROAD - SH2 JUNCTION
SIGHT LINES FOR RIGHT TURN BAY**



Plot Date: 14 Aug 2018 @ 9:27 AM Path: C:\230000\26019_30_Ferrous sand extraction\Traffic\Highway Quay RTB1-26019.00 RIGHT TURN BAY PLAN\26021.dwg 26021

**MCPHERSON ROAD - SH2 JUNCTION
RIGHT TURN BAY DESIGN**