Queensland Government

Department of Infrastructure, Local Government and Planning

Our reference: SDA-0715-022637
Your reference:

1 March 2016

Central Highlands Regional Council
PO Box 21
Emerald Qld 4720
pngwira@chrc.qld.gov.au

Attention: Patterson Ngwira

Dear Sir/Madam

Information request—concurrence agency

Lot on plan	Street address
2SP252456	1443 Montrose Road, Capella – Central Highlands Regional Council

(Given under section 276 of the *Sustainable Planning Act 2009*)

The referral agency material for the development application was received by the Department of Infrastructure, Local Government and Planning under section 272 of the *Sustainable Planning Act 2009* (the act) on 3 February 2016.

The department has carried out an initial review of the application and has determined that in accordance with section 276 of the act, the following additional information is requested to complete the assessment of the application:

Item	Information requested
Railway level crossings	
1.	Provide traffic engineering information demonstrating how the proposal will comply with PO1 and PO3 of Module 19.2 – Transport Infrastructure and Network Design State Code of the State Development Assessment Provisions (SDAP). In particular, traffic information certified by a Registered Professional Engineer of Queensland (RPEQ) should be provided addressing the following: (i) the expected traffic distribution on the road network (haul routes) as a result of the proposed development, including the destinations for the material produced; (ii) identification of railway level crossing/s likely to be impacted on by development

Fitzroy/Central Regional Office
Level 2, 209 Bolsover Street
PO Box 113
Rockhampton QLD 4700

<table>
<tr><th>Item</th><th>Information requested</th></tr>
<tr><td></td><td>
generated traffic;
(iii) the expected timeframe for the commencement of the proposed development, including any stages (if relevant);
(iv) existing traffic flows (expressed as vehicles per day) over the impacted railway level crossing/s, including daily (peak hour) fluctuations, and number and percentage of heavy vehicles;
(v) the expected background traffic growth (expressed as vehicles per day) over the impacted railway level crossing/s, including daily (peak hour) fluctuations, and number and percentage of heavy vehicles. This should include background traffic growth from the commencement of the development (including any stages) to a ten year horizon;
(vi) the following data table is required to be populated and provided to allow comparative ALCAM assessments to be undertaken for each impacted railway level crossing:
<table>
<tr><th>Year</th><th>Without development (background growth)</th><th>With development</th><th>No. and dimensions/type of heavy vehicles</th></tr>
<tr><td>2016 (current scenario)</td><td></td><td></td><td></td></tr>
<tr><td>Commencement of Development</td><td></td><td></td><td></td></tr>
<tr><td>Detail any stages</td><td></td><td></td><td></td></tr>
<tr><td>Ten year design horizon</td><td></td><td></td><td></td></tr>
</table>
(vii) the expected development generated traffic (expressed as vehicles per day), including daily fluctuations (peak hour) and the number and percentage of heavy vehicles, that will pass over the impacted railway level crossing/s from the commencement of use (including any stages) to a ten year design horizon;
(viii) the maximum size and type of vehicle (including length, width, height and weight) anticipated over the railway level crossing/s as a result of the development;
(ix) demonstrate how the development generated traffic will not worsen vehicular queuing (short stacking) issues over the impacted railway level crossing/s. In particular, demonstrate that there is sufficient clearance from the railway level crossing to allow the maximum size of vehicle used in the operation to queue. The minimum clearance should be five metres from the edge running rail (of the closest railway track) as per Figure 3.2 of AS1742.7 Manual of Uniform Traffic Control Devices, Part 7: Railway plus the length of the maximum design vehicle; and
(x) confirmation of sight distances on each side of the impacted railway level crossing/s.
</td></tr>
<tr><td colspan="2">Road Impact Assessment</td></tr>
<tr><td>2.</td><td>Provide information to demonstrate how the proposed development will comply with PO4, PO5, PO6 and PO7 of Module 19.2 – Transport Infrastructure and Network Design of the SDAP, and specifically how the proposed development does not compromise the safety and efficiency of the State-controlled road.

Provide a Road Impact Assessment (RIA) to identify the impacts of the proposed development on the State-controlled road network and the relevant intersections, including any recommended measures to manage the impacts. The RIA shall address the minimum assessment criteria required for a Road Impact Assessment as defined in the Department of Transport and Main Roads' Guidelines for Assessment of Road Impacts of Development (GARID) (available at: http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications.aspx). The assessment shall provide details covering (but not limited to) the following:</td></tr>
</table>

Item	Information requested
	The Sidra files shall also include modelling at the identified stages (if any) of the development.
4.	Provide details (i.e. conceptual or preliminary drawings) for any recommended re-development of the affected intersections/access. The plans shall show the existing and proposed utilities/services in the State-controlled road reserve (including footpath, medians, crossings, roadway, services, etc). The plans are to show details of how the upgrading works (if any) will fit and operate within the State-controlled road reserve. Any proposed upgrading shall be in accordance with the Department of Transport and Main Roads' Road Planning and Design Manual.

The following advice is provided:

Item	Advice provided
Railway level crossings	
1.	Please contact Victoria Stavar of the Department of Transport and Main Roads on (07) 3066 1580 or at victoria.l.stavar@tmr.qld.gov.au once the traffic engineering information addressing Item 1 above is available. Depending on this information you may be required to include a rail safety assessment as part of the information request response. This will require comparative ALCAM (Australian Level Crossing Assessment Model) assessments to be undertaken for each impacted railway level crossing, incorporating with and without development scenarios. Each of the ALCAM assessments must be undertaken by the railway manager (Queensland Rail). The outcomes of the ALCAM assessments will identify the mitigation measures required to address any identified safety issues and will need to be identified as part of the information request response.
Pavement impact assessment	
2.	The Department of Transport and Main Roads may have road section information (AADT, HV%, roughness and road widths) to assist in preparation of the assessment in item 2.2 above. Once the haulage routes are determined, you are encouraged to please contact the Department of Transport and Main Roads (Fitzroy District / Central Queensland Region) on FitzroyDistrict@tmr.qld.gov.au or on (07) 4931 1500.
Consistent traffic assessment	
3.	Please ensure that the RIA required in item 2 above is consistent with the traffic information and forecast used in the addressing item 1 above.
Re-development of the affected intersections/access - drawings	
4.	In responding to item 4 above, please note that any plans submitted for consideration shall only be accepted as A3 in size.

Under section 278 of the act, when responding to this request you must advise whether you are supplying all of the information requested, part of the information requested, or none of the information requested. If you are supplying part or none of the information requested, you are also required to provide written notice asking the department to proceed with the assessment of the application.

The due date for receipt of this information is 6 months after the day you receive this request. If necessary you may request an extension to this period. Unless a response to this request for further information has been received from you within this period or any extension during this period, your application will lapse.

Our reference: 4017/15
Your reference: SDA-0715-022637

Attn: SARA Fitzroy & Central, RockhamptonSARA@dilgp.qld.gov.au

Response to information request—concurrence agency

(Given under section 278 of the *Sustainable Planning Act 2009*)

Lot on plan	Street address
2SP252456	1443 Montrose Road, Capella – Central Highlands Regional Council

Assessment manager reference: 4017/15

Local government area: Central Highlands Regional Council

As the applicant of the above development application, I am responding to your information request by:

☐ Enclosing all of the information requested.

☐ Enclosing part of the information requested and asking that the requesting authority proceed with the assessment of the application.

☐ Advising that I do not intend to supply any of the information requested and asking that the requesting authority proceed with the assessment of the application.

Name of applicant: Central Highlands Regional Council

Signature of applicant: _____

Date: _____

Assessment of Road Impacts of Development Proposals
Notes for Contribution Calculations (V28)

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1. General

These notes have been prepared to help Developers, their Consultants, and Main Roads staff in the assessment of the road pavement impacts of a development, and to calculate contribution amounts.

It is expected that these notes will be expanded from time to time as new issues come to light.

2. Input Information

BITUMEN ROADS REHAB. & MTCE (incl. RESEAL) COSTS

COST INPUTS		
Seal Width	Rehabilitation Costs	Annual Routine Maintenance
m	$ / km	$ / km
3.6	$115,000	$4,700
5	$160,000	$6,000
6	$195,000	$9,800
7	$230,000	$9,100
8	$260,000	$10,300
9	$295,000	$11,000
10	$325,000	$12,200
11	$360,000	$12,900
12	$390,000	$14,100
	Base year for these costs =	2007

OTHER INPUT DATA			
(a)	ESA's / HV	=	2.9 ESA's/HV (Bruce Hwy)
		=	3.2 ESA's/HV (All Other Roads)
(b)	Roughness Increase	=	3 counts per year
(c)	Terminal Roughness*	=	110 NRM (Bruce Hwy)
		=	120 NRM (All other Roads)
(d)	Inflation Rate	=	7% (grows costs up to Dev. start date)
(e)	Discount Rate	=	6% (does not include inflation)
(f)	HV Growth Rate (background traffic)	=	adopt a constant 3% for all road sections

3. Non-Applicable Roads

Some roads in Central District (District 6) have been constructed using the "low cost seal" approach or have in-service pavements that are well past their economic life. These roads generally do not lend themselves to be assessed in this manner, and will need to be considered separately.

4. Assessment periods at 5 year intervals for long term Developments

For long term developments, it is suggested that the time frames for contribution calculations be limited to a max of 5 years. This will allow more accurate and realistic estimations of both background and development generated traffic loadings for each subsequent 5 year interval as required.

5. Variations in Development Generated Traffic

Quite often the development generated traffic will vary during the construction and commissioning phases before settling down to relatively uniform levels during the production phase. Daily, weekly and monthly variations (if any) in development generated traffic should be reduced to a uniform loading over a 365 day year (ESAs/yr) to be compatible with AADT generated data.

6. Road Sections

The impacted roads are to be divided up into sections based on the following three criteria being uniform for the full length of a section:-

- construction standard (based on nominal seal width)
- present (background) traffic volumes (AADT) and
- development traffic loadings

A change in any one of these three criteria would trigger the start of a new section.

For simplicity, the 'construction standard' can be based on nominal seal widths. Relatively short lengths, (say less than 1 km) where the seal widths might narrow or widen (for example overtaking lanes, intersections and bridges) are usually not significant enough to consider changing the construction standard.

Nominal seal widths in these cases are the actual seal widths rounded up or down to the nearest metre.

7. Assess Each Lane Separately

Each lane of each road section should be assessed separately. This will normally be associated with the loaded and unloaded directions of development generated traffic.

8. Present (Background) Heavy Vehicle Annual Growth Rates

Using the AADT growth rates can be misleading as pavement life is actually related to Heavy Vehicle traffic. From historical data, annual growth rates of 3% for heavy vehicles should generally be adopted for this District.

For any significant periods of time, growth rates greater than 5% are considered unsustainable and growth rates less than 1% are not considered representative.

9. The 5% Trigger

(a) Maintenance contribution - the intent of the 5% trigger is to test the development generated traffic loadings (in ESAs/yr) against the background traffic (ESAs/yr) on a **year by year** basis for each road section. The impacts are considered insignificant when the test shows that the development generated traffic for any year falls below 5% of the background traffic level for that same year.

(b) Rehabilitation contribution – the 5% trigger is converted to time by assuming that the design life of a pavement is 20 years which gives a trigger of 1 year (5% of 20 years = 1 year). The impacts are considered insignificant when the reduced life of the pavement (due to the development generated traffic) is calculated to be less than 1 year.

10. Calculations to based on Development Start Date

The appropriate growth and inflation rates need to be applied to all input information (background traffic, maintenance and rehabilitation costs, pavement roughness and so on) to obtain updated figures as at the date that the development impacts commence.

The "remaining pavement life" to rehabilitation (without development traffic) is also based on the development start date.

11. Operational Maintenance - Basis for Calculating Contributions

Operational maintenance is an ongoing annual cost to Main Roads. For the purposes of calculating an increase in maintenance costs, it is assumed that the impacts are directly proportional to the increase in loading (ESAs) generated by the development traffic. For example, if a development generates a 10% increase in the ESA loading, the 'annual increase in maintenance costs' would be 10% of the annual maintenance costs.

The total contribution is calculated by discounting the 'annual increase in maintenance costs' for each year of the assessment period to a "present value" amount.

"Present value" relates to the start date of the development and its impacts.

12. Rehabilitation Works - Basis for Calculating Contributions

(a) Rehab. Year – Without Development

An efficient method of estimating the rehabilitation year (without development) can be obtained using the roughness criteria alone. The remaining life is estimated by calculating the difference between the 'terminal roughness' and the 'present roughness' values, and assuming that the roughness increases at a constant rate of 3 counts per year.

The "rehab. year" is obtained by adding the "remaining life" calculated above to the "year the data is based on".

Roughness data can be conveniently presented in chart form based on 1.0 km segments.

The 'present roughness' of a road section can be estimated by using the roughness data for each 1.0 km segment (that make up that road section) and calculating the average.

Each lane of a two-way road section is assumed to have the same roughness.

(b) Remaining Pavement Life (years)) – Without Development

As all calculations are based on the development start date, the "remaining life – without dev." (in years) is first obtained by subtracting the "dev. start date" from the "rehab. year" calculated in (a) above.

(c) Remaining Pavement Life (ESAs)) – Without Development

The "remaining life ESAs – without dev." is calculated the same way as design traffic using the background traffic information updated to the development start date, and the "remaining life" (years) calculated in (b) above.

(d) Reduced Pavement Life (ESAs) – With Development

The "reduce life ESAs– with dev." is obtained by subtracting the "dev. generated ESAs" from the "remaining life ESAs – without dev" calculated in (c) above

(e) Reduced Life (Years) – With Development

The "reduced life (years) – with dev". is obtained by re-arranging the design traffic formula in terms of "Y" years with the "reduced life ESAs – with dev." calculated in (d) above as an input

$$Y \text{ (years)} = \log [((i F_1)/(1+i)) +1] / \log[1+i]$$

where F_1 = ("reduced life ESAs with dev.") / ("background ESAs at dev. start date")

(f) Bring Forward Calculation

The "bring forward" costs are calculated using the "remaining life" (years) and "reduced life" (years) from (b) & (e) above.

13. Contribution Payments

Contribution payments may be calculated and made by either of the following options:-

(a) One (1) Up-front Payment

A single payment based on the 'present value of costs' (at the development start date) for the developer generated impacts over the assessment period (the method presently used)

(b) Annual Payments (subject to Main Roads agreement)

A payment at the end of each year of operation calculated from the actual quantity (tonnes) of product transported by road for the year and a "dollar per tonne" rate.

The "dollar per tonne" rate for the 5 year period needs to be calculated separately for each year with appropriate allowances for the previous year's reduced life.

Main Roads would require an advance payment to be maintained for the full assessment period.

14. Road Impact Assessment Report

To help with the review of the contribution calculations, the following should be included in the RIA Report:-

(a) ESA per HV Calculations – in an easy to follow format for all HV combinations (both loaded and unloaded conditions) that are proposed to be used by the development.

(b) Development Loadings – in the form of a schematic diagram or table, listing all the impacted roads sections (including those with less than the 5% trigger) and the associated developer generated traffic loadings (in ESAs per year).

Example and Spreadsheet Test (v.28)

The following example can be used to check spreadsheet programs for errors.

1. INPUTS – Background Traffic and Road Condition (Tab 4)

- Development Start Date = 2009
- Development Duration = 5 years
- ESA Increase Trigger = 5%
- Roughness increase Rate = 3 counts per year
- Treasury Discount Rate = 6%
- Inflation rate = 7%

ARMIS Data (2007) for Tab 4.MRD Input Data								
Road Section No.	Road No.	Road Name	Road Section	Chainages	AADT	%HV	Roughness	Seal width
1	26A	Leichhardt Hwy	Ch 88.0 – Ch. 99.0	88.0 – 99.0	645	25.41	93	7m
2			Ch. 99.0 - Banana	99.0 – 105.2	645	25.41	84	9m
3	46C	Dawson Hwy	Banana – Moura Mine	0.0 – 7.8	1305	17.42	79	9m

Standard Input Data for Tab 4.MRD Input Data (Refer to Tab 5.Input Costs for this information)			
Road Section No.	Growth Rate	ESA/HV	Terminal Roughness
1	3%	3.2	120
2	3%	3.2	120
3	3%	3.2	120

The mtce. & rehab. costs for 7m & 9m seal widths will automatically load to complete Tab 4.

2. INPUTS – Development Related (Tab 8)

(A) Development Activity

Assume the development is a quarry, which is to be established to support a specific 5 year project, and will have a licence to produce up to a max of 50,000t per year (50,000 => G4 in Tab 8). The estimated production/usage for the 5 years is as follows:-

Year	Tonnes per year	% of 50,000t (max)
1	40,000	80% (=>K7)
2	50,000	100% (=>L7)
3	30,000	60% (=M7)
4	25,000	50% (=>N7)
5	25,000	50% (=>O7)

(B) Development Generated HV Traffic

(i) Road Sections 1 & 2 - are expected to carry all (100% => G14 & G15 in Tab 8) of the annual "out-the–gate" product. The transport fleet is expected to be made up as follows:-

			LOADED		UN-LOADED	
HV Type	Payload (t)	Estimated % of "out-the-gate" Product Carted by HV Type	ESAs	ESA/t (payload)	ESAs	ESA/t (payload)
Tandem Tipper	13	30%	3.57	0.2745	0.50	0.0384
Semi Tipper	26.5	50%	4.93	0.1862	0.51	0.0194
B-Double	40	20%	6.3	0.1575	0.53	.0132

Weighted Average ESAs / tonne of product transported "out-the-gate" (Use Tab 7)

- LOADED Direction

Av. ESA/t (payload) = 30% x 0.2745 + 50% x 0.1862 + 20% x 0.1575
= 0.0823 + 0.0931 + 0.0315
Av. = 0.2069 ESAs / tonne (of product "out-the-gate")
(=> 0.2069 in I14 & I15 in Tab 8)

- UN-LOADED Direction

Av. ESA/t (payload) = 30% x 0.0384 + 50% x 0.0194 + 20% x 0.0132
= 0.0115 + 0.0097 + 0.0026
Av. = 0.0239 ESAs / tonne (of product "out-the-gate")
(=> 0.0239 in H14 & H15 in Tab 8)

(ii) Road Section 3 - is expected to carry 80% (80% => G17 in Tab 8) of the annual "out-the–gate" product. The transport fleet is expected to be made up as follows:-

			LOADED		UN-LOADED	
HV Type	Payload (t)	Estimated % of "out-the-gate" Product Carted by HV Type	ESAs	ESA/t (payload)	ESAs	ESA/t (payload)
Tandem Tipper	13	Nil				
Semi Tipper	26.5	70%	4.93	0.1860	0.50	0.0189
B-Double	40	30%	6.3	0.1575	0.53	.0133

Weighted Average ESAs / tonne of product transported "out-the-gate"

- LOADED Direction

  Av. = 0.1776 ESAs / tonne (of product "out-the-gate")

  (=> 0.1776 in I17 in Tab 8)

- UN-LOADED Direction

  Av. = 0.0176 ESAs / tonne (of product "out-the-gate")

  (=> 0.0176 in H17 in Tab 8)

RESULTS – Calculated Contribution

Total Contribution = $Rehab. + $Mtce.

= $0 + $22,353

= $22,353 (Tab 1 – Summary)

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