

Background

Grants Road is split into two sections based on the different pavement loading encountered.

- SECTION A is the section loaded by both Hansons Central Coast Sands Quarry and the Grants Road Sand Quarry. This is the section from Wisemans Ferry Road to the intersection of Reservoir Road, from which Hanson trucks exit. This section is 1940m long.
- SECTION B is the section loaded by Grants Road Sand Quarry and not the Hanson Central Coast Sands Quarry. This is the section between Reservoir Road and Grants Road Sand Quarry. This section is 660m long.

Total Length of Road (m)	2600
Width of Road (m)	6
SECTION A - Length of Road (m)	1940
SECTION A - Area of Road (sqm)	11640
SECTION B - Length of Road (m)	660
SECTION B - Area of Road (sqm)	3960

Indicative Road Treatment Costs

Treatment Type	Cost
Reconstruction - to current design (sqm)	\$ 80.00
Reconstruction - to 20yr design life under increased loading (sqm)	\$ 100.00
Reseal (sqm)	\$ 15.00
Ongoing Maintenance per year	\$ 10,000.00

Treatment Costs for Grants Road	Cost
SECTION A - Reconstruction - to current design	\$ 931,200.00
SECTION A - Reconstruction to 20yr design life under increased loading	\$ 1,164,000.00
SECTION A - Reseal	\$ 174,600.00
SECTION A - Ongoing Maintenance	\$ 7,461.54
SECTION B - Reconstruction - to current design	\$ 316,800.00
SECTION B - Reconstruction to 20yr design life under increased loading	\$ 316,800.00
SECTION B - Reseal	\$ 59,400.00
SECTION B - Ongoing Maintenance	\$ 2,538.46

* 20 yr design life met at the current rate (\$80/sqm) and assumed future loading

Design ESAs	ESA
Current Pavement	2200000
Fully Loaded Truck and Dog	7.1
Average Hanson Truck	5.6
Unloaded Quarry Truck	1.1
All other Heavy Vehicles not associated with quarries	2.1

* 2.2×10^6

Current Design ESAs	ESA	
Current Hanson Quarry ESA/yr	80946.1	* 33.1 trucks in/out average per day over year
Current Grants Road Sand Quarry ESA/yr	14755.5	* 4.93 trucks in/out average per day over year
Current Other HV ESA/yr	79670.0	* Based on number of HVs measured in Council traffic count minus quarry generated HVs
Total Current ESA	175371.6	

Future Design ESAs	ESA	
Future Hanson Quarry ESA	80946.1	* Same as current
Future Grants Road Sand Quarry ESA	32025.1	* Assume operating at 125,000 tonne a year averaged out over the next 20-30yr period
Future Other HV ESA	79670.0	* Same as current
Total Future ESA	192641.2	

SECTION A - COSTS

Current Pavement Costs

What is the pavement life under <u>current</u> loading in years?	12.54
What is the pavement life under <u>future</u> loading in years?	11.42
Therefore under the future loading Council is shortfalled the following amount of years of pavement -	1.12
How much money is the current pavement worth (in terms of the construction cost)?	\$ 931,200.00
What % reduction in life of pavement has occurred due to the increased loading?	8.96%
Therefore due to the increased loading leading to reduced pavement life, the Quarries are required to compensate 8.96% of initial cost for the current pavement, which equates to -	\$ 83,478.84

Hanson Sands Quarry Compensation for Reduced Pavement Life

Hanson Sands Quarry will repay the following proportional to its average yearly output as compensation for the reduced life of the current pavement -

\$ 59,490.67

Hanson Sands Quarry is estimated to have a life of 20 years - thus will repay \$59,490.67 over 20 years, which equates to the following per a year -

\$ 2,974.53

Grants Road Sands Quarry Compensation for Reduced Pavement Life

Grants Road Sands Quarry will repay the following proportional to its average yearly output as compensation for the reduced life of the current pavement -

\$ 23,988.17

Grants Road Sands Quarry will be operational over the period of its major project approval of 30 years - thus will repay \$23,988.17 over 30 years, which equates to the following per a year -

\$ 799.61

Future Pavement Costs

What does the current pavement cost council a year?	\$	74,229.99	
What is the future pavement costs per a year?	\$	66,930.00	*Assume \$100sqm for a pavement with 20 year design life. For the increased loading but only replacing road every 20 years, the cost is approximately the same per a year
What is proportional increase in ESA over the existing ESAs?			9.85%
Therefore given the quarries increase the loading by 9.72% from current levels - they shall contribute 9.72% of total cost a year	\$	6,590.89	

Hanson Sands Quarry Compensation for Future Pavement

The Hanson Quarry shall pay the following for the cost of the new pavement increase in cost per year -	\$	4,696.96
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Grants Road Sand Quarry Compensation for Future Pavement

The Grants Road Sand Quarry shall pay the following for the cost of the new pavement increase in cost per year -	\$	1,893.93
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Total Maintenance Contributions SECTION A

The Hanson Quarry shall pay the following for SECTION A per a year (indexed at CPI) -	\$	7,671.49
The Grants Road Sand Quarry shall pay the following for SECTION A per a year (indexed at CPI) -	\$	2,693.54

SECTION B - COSTS

What is the pavement life under the <i>current</i> loading in years?	23.30
What is the pavement life under the <i>future</i> loading in years?	19.70
Therefore under the future loading Council is shortfalled the following amount of years of pavement -	3.60

How much money is the current pavement worth (in terms of the construction cost)?	\$ 376,200.00
What % reduction in life of pavement will occur due to the increased loading?	15.46%
Therefore due to the increased loading leading to reduced pavement life, the Quarry is required to compensate 15.46% of initial cost for the current pavement	\$ 58,160.52

Based on an operational life of 30 years (as stipulated in this development consent) the Quarry can repay this each year at the following rate a year

	\$ 1,938.68
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What does the current pavement cost council a year?	\$ 18,685.22
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What is the future pavement costs per a year?	\$ 21,638.33
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*Note \$80sqm for reconstruction should give approximately 20 year design life

The Quarry shall pay for the cost of the new pavement increase in cost per a year plus the compensation for reduced life of current pavement

	\$ 4,891.79
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Total Maintenance Contributions

HANSON QUARRY	\$ 7,671.49
GRANTS ROAD SAND QUARRY	\$ 7,585.33