

ROAD DETERIORATION PRESERVATION FUNDING FOR EXTRACTIVE INDUSTRIES

Extractive Industries within the Shire of Capel create a concentration of heavy vehicles accessing local roads to traverse from the site entrance to the closest arterial main road. This concentration of heavy vehicles causes considerable road damage to the local roads and the cost of the deterioration must be passed on to the Extractive Industry as they are the source of the heavy traffic.

The Shire of Capel Extractive Industries Local Laws 3.1(5)(q) require the licensee to enter into an agreement with the local government by which it agrees to pay any extraordinary expenses incurred by the local government in repairing damage caused to thoroughfares in the district by heavy or extraordinary traffic conducted by or on behalf of the licensee under the Licence.

In order to provide a consistent and transparent process the Shire have reviewed the agreement to include a formula that can be applied to roads that are adjacent to the Extractive Industry Site and would make up the main route in and out of the site.

The damage to roads can be measured by Pavement damage and Surface damage. The surface refers to the bitumen, asphalt or gravel surface and the pavement is the material underneath which carries the load.

Pavement Damage

To determine the life expectancy of a road, data on the stiffness of the sub grade and the thickness of the base need to be collected or estimated. The Californian Bearing Ratio (CBR) value is the standard measure for soil stiffness. CBR tests are sometimes done before road construction to help design the road base thickness. In the absence of test results, the CBR values can be assumed from the following table.

Table 11.2 *Typical presumptive design CBR values*

Type of subgrade	Typical CBR values	
	Well drained	Poorly drained
Highly plastic clay, silt	5	2-3
Silty clay, sandy clay	6-7	4-5
Sand	15-20	

Source: Austroads (1992), Table 5.5.

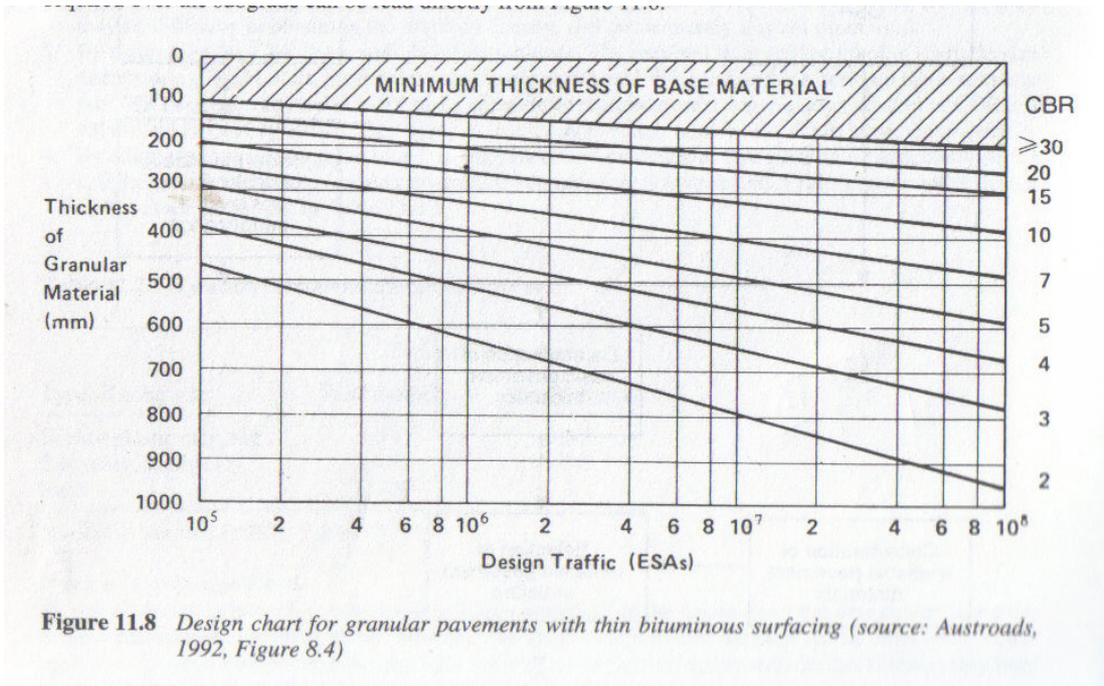
Roads within the Shire of Capel built on sandy soils would generally have a sub-grade CBR value of 15.

The pavement thickness of the road in most cases can be determined from the Shires records.

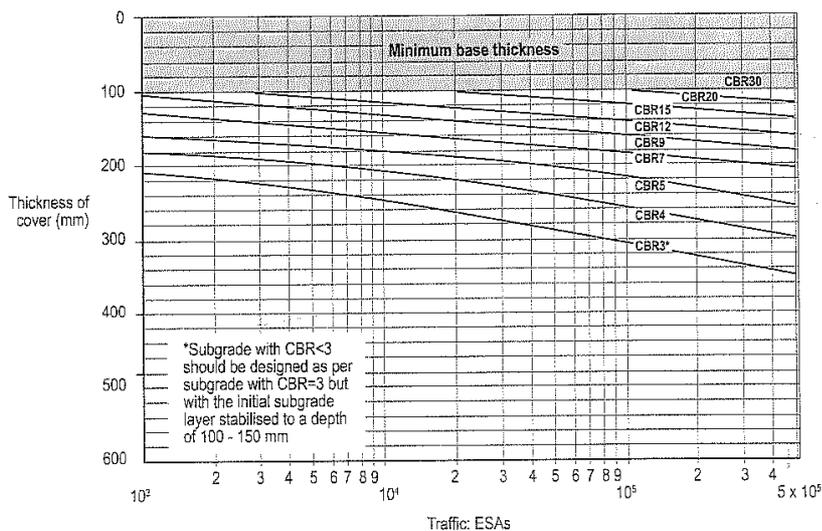
If the Extractive Industry Licence holder is not satisfied with the data provided by the Shire for CBR value or pavement thickness, a pavement investigation shall be performed at the Licence holder's expense to determine the actual CBR value and pavement thickness.

Once the CBR value and the pavement thickness have been established, the design traffic expressed in Equivalent Standard Axles (ESAs) can be determined from the Design Traffic Chart (Figure 11.8).

Sealed Roads



Unsealed Roads



By using the design chart for Sealed Roads, it can be determined that a pavement thickness of 200mm sitting on a sub grade of 15 CBR would give a design traffic of 1,000,000 ESAs (Equivalent Standard Axles).

By using the design chart for Unsealed Roads, it can be determined that a pavement thickness of 100mm sitting on a sub grade of 15 CBR would give a design traffic of 100,000 ESAs (Equivalent Standard Axles).

The design life of a road pavement is expressed in the number of ESAs passing before the pavement requires reconstruction. This refers to the condition of the pavement and not the surface.

The next stage in the process is to calculate the number of ESAs which will be attributable to the Extractive Industry. The different axle configurations for different trucks and their combined ESAs can be determined from the following tables.

ESAs for Typical Axle Configurations				
		mass for 1 ESA (t)	legal mass (t)	ESA for legal mass
Single Steer	Single Axle with Single Tyres (SAST)	5.4	6	1.52
Twin Steer	Tandem axle with Single Tyres (TAST)	10.66	11	2.06
Single	Single Axle with Dual Tyres (SADT)	8.16	9	1.48
Tandem	Tandem axle with Dual Tyres (TADT)	13.76	16.5	2.07
Triaxle	Tri-axle with Dual Tyres (TRDT)	18.45	20	2.21

Six Wheeler Tipper		Loaded	
R1-2		Mass (tonnes)	ESA
	SAST	6	1.52
	TADT	16.5	2.07
	Total	22.5	3.59
	Payload (tonnes)	13.5	
	Vehicle mass (tonnes)	9	

Eight Wheeler Tipper		Loaded	
R2-2		Mass (tonnes)	ESA
	TAST	11	2.06
	TADT	16.5	2.07
	Total	27.5	4.13
	Payload (tonnes)	16	
	Vehicle mass (tonnes)	11.5	

Semi Tipper		Loaded	
19m Semi Trailer - 1A-2-3 Configuration		Mass (tonnes)	ESA
	SAST	6	1.52
	TADT	16.5	2.07
	TRDT	20	2.21
	Total	42.5	5.8
	Payload (tonnes)	27.00	
	Vehicle mass (tonnes)	15.50	

If we can calculate the number of trips that each truck type will complete in a 12 month period, then multiply it with the ESA for that truck type, we can calculate the total ESAs with which the extractive industry will contribute to the roads wear over a 12 month period.

The number of trips which each truck would complete in a 12 month period can also be calculated or checked, against an annual volumetric survey of the Extractive Industry which is required annually under the Shire of Capel Extractive Industries Local Law 3.1(5)(p) which requires the licensee to furnish to the local government a surveyors certificate each year, prior to the renewal fee being payable, to certify the quantity of material extracted and that material has not been extracted below the final contour levels outlined within the approved excavation programme.

Once the annual ESAs have been calculated for the Extractive Industry, the amount of ESAs can be divided into the Design Traffic ESAs for the road to give a percentage of deterioration which is attributable to the extractive industry for the 12 month period.

The current cost of road reconstruction will be determined by the Shire based on recent actual costs, but if these costs prove to be unacceptable to the applicant, an independent cost assessment can be forwarded at the applicant's expense for consideration. Once the reconstruction costs are established for each route, The Construction Industry Output Price Index shall be applied to the cost to determine any price escalation annually.

When the percentage of deterioration has been established, the percentage can be applied to the cost of reconstructing the road at the current values and the value of deterioration can be calculated.

This represents the amount which the Shire would be looking to recover from the Extractive Industries Licence holder to offset the additional damage to the road pavement that is directly attributable to the operation of the EIL.

Surface Damage

Road maintenance costs will be calculated from the actual costs to the Shire for the previous 12 month period compared to the average costs to the Shire for a 12 month period where no Extractive Industry was utilizing the road.

The difference between the actual costs and the average costs will be deemed the responsibility of the Extractive Industry Licence holders using that road and will be apportioned by annual ESAs.

Therefore the contributions for the pavement damage/surface damage of a road by an Extractive Industries Licence holder would be made up of the costs of the pavement damage and the costs of the surface damage.

Routes for calculation

The roads used to calculate the contribution shall be the local roads used to access the extraction site from the closest main road. Where there are several routes used to access the main roads, the shortest route shall be used to calculate the contributions.

Payments

Once an agreement has been signed by the Licensee and the Shire, the Licensee should commence collection of road contributions per ton of material sold. The annual ESAs from the extraction site will be calculated at the end of each year from the annual survey and applied to the agreed formula to calculate the Licensee's pavement damage contribution. As the Licensee will be aware of the agreed formula and the quantity of material leaving the site, their financial liability will be known at all stages.

Surface Damage costs will be sourced directly from the Shires records for the year and only costs above the agreed average for the road will be invoiced to the Licensee. If more than one extractive industry share the road for access, the costs will be apportioned by comparing ESAs.

Funds Allocation

The monies collected for surface damage shall be reinstated back into the Shire road maintenance account. The pavement damage funding shall be deposited into a trust account specifically for the reconstruction of the particular road/s that the agreement relates to. As a road under the agreement deteriorates to a point requiring premature reconstruction, funds from the trust account will be used to contribute towards the costs of reconstruction.

Benefits

This agreement will have benefits to the Extractive Industry Licensee, The Shire and the Community.

The benefits to the Extractive Industry Licensee will be:

- Demonstration to the community of willingness to accept responsibility for road damage from heavy haulage.
- Ongoing improvement of damaged roads due to increased funding.
- Reductions in truck maintenance and driver fatigue due to improved road conditions.

The benefits to the Shire will be:

- Increased capacity to maintain roads due to increased funding.
- Ability to plan and budget for road reconstruction of badly damaged roads under agreement.
- Demonstration that Extractive Industries are having a minimal impact on the local communities funds.

The benefits to the community will be:

- Ongoing improvement of damaged roads due to increased funding.
- Ratepayers will no longer be subsidising extractive industries for road damage.
- Allow more ratepayers funds to go towards improving other local roads.
- The local road network will remain viable into the future.

**NOTE: THE PARTICULARS OF THIS BROCHURE ARE SUPPLIED FOR INFORMATION ONLY.
VERIFICATION OF THE INFORMATION CONTAINED HEREIN IS RECOMMENDED.**

ROAD DETERIORATION PRESERVATION FUNDING AGREEMENT

I, _____ representing _____ agree to pay the amounts invoiced to the extractive industry by The Shire of Capel which will be calculated annually using the formulas set down in the attached brochure.

The details used to calculate the pavement damage costs are as follows;

Road used for assessment _____

Length of road (m) _____

CBR value of road _____

Pavement Thickness of road _____

Design Traffic of road (ESAs) _____

Cost of reconstructing road (\$) _____

Construction Industry Output Price Index to be applied annually.

The details used to calculate the surface damage costs are;

Average road maintenance costs for road before EIL (\$) _____

Construction Industry Output Price Index to be applied annually.

Signature of Licensee _____ Date _____

I confirm that the above figures are correct and will be used in future annual calculations.

Signature of Authorised Shire Officer _____

Name of Shire Officer _____ Date _____