

# The Search for Polish Resistant Aggregates

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1. Background
2. What is PSV?
3. Macrotexture vs. Microtexture
4. Finding a high PSV stone
5. Conclusions



# 1. Background

- Skid resistance testing was introduced into New Zealand in the 1990's
- Chip aggregate sources having varying susceptibility to polishing stresses
- NZTA specifying higher PSV chip for new projects (high 60's into the 70's).
- South Island needs to import Glenbrook Melter Aggregate (GMA) from Auckland to meet the polishing resistance requirements



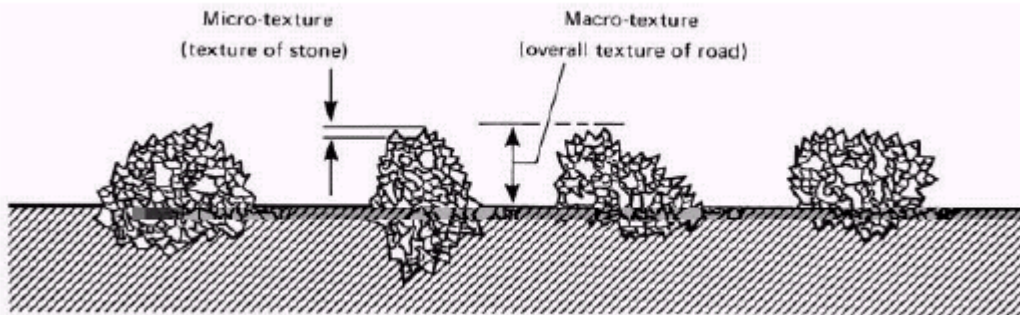
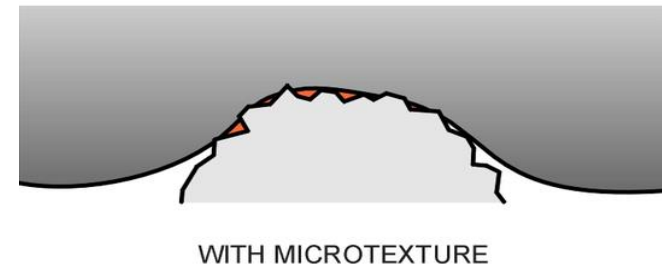
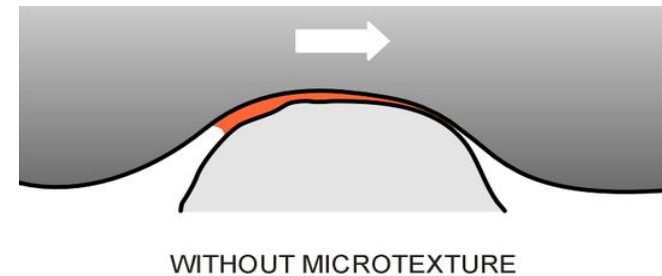
## 2. What is Polished Stone Value

- The *Polished Stone Value (PSV)* of an aggregate gives a measure of skid resistance by investigating its resistance to polishing



# 3. Macro Texture vs Micro Texture

- Microtexture - angularity of the road surface asperities
- Macrotexture - dimensions of the asperities
- Surface must be both rough (macrotexture) and harsh (microtexture)



## 4. Finding a high PSV Stone

- Focusing on the South Island
- NZ geology
- What makes a good PSV stone
- Potential areas of interest
- Location analysis
- Model



- Greywacke main aggregate type
- Hard rock and alluvial

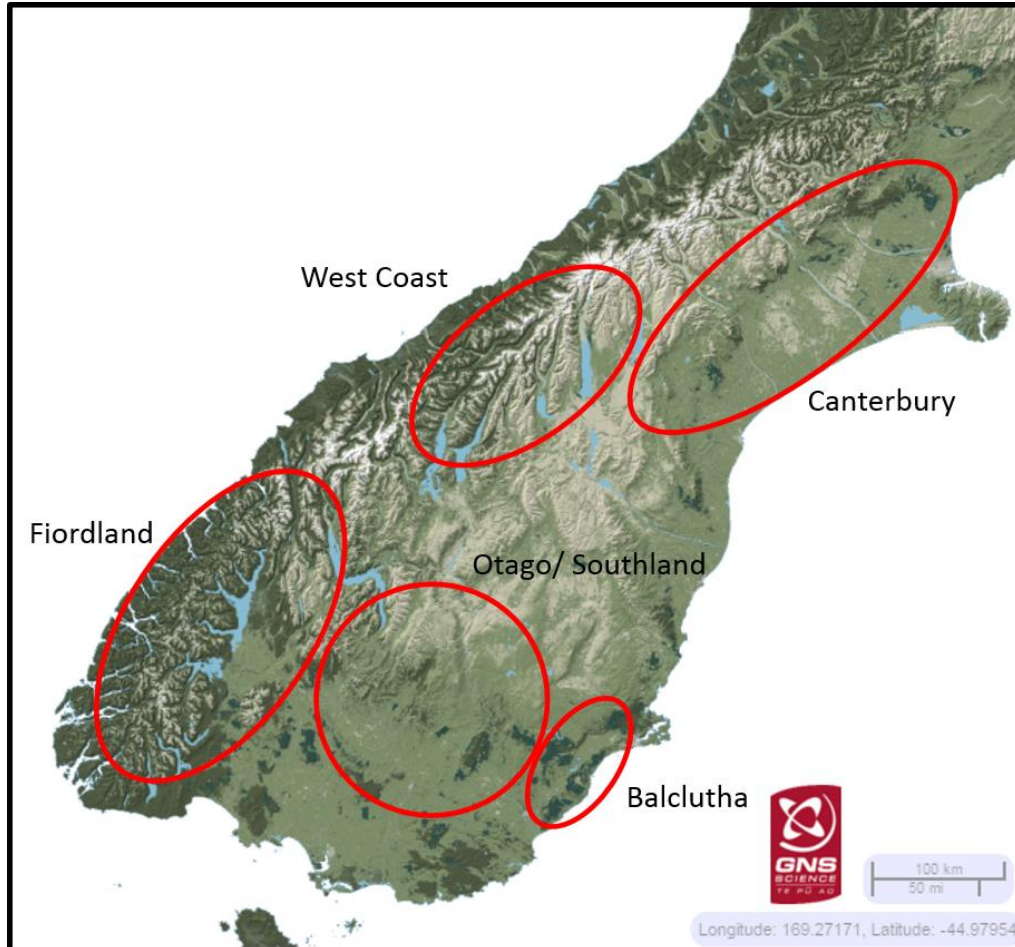
Rock Type	Typical Rocks Used as Aggregates	Resistance to Polishing
<b>Igneous</b> or <b>Volcanic</b>	Basalt, Granites Andesite, Dacite	Reasonably high, however may not last as long on the road.
<b>Metamorphic</b>	Quartzites, Gneiss and Hornfels	Generally low, low to medium grade rocks will perform better than high grade.
<b>Sedimentary</b>	Greywacke, Limestone	Generally the best resistance for natural rock, coarse sandstones provide more resistance on the road.
<b>Synthetic Rock</b>	GMA and Calcined Bauxite	High resistance

# What makes a good PSV stone

Factor	Description
Macrotexture	Rough
Microtexture	Harsh
PSV value	Over 60, anything above 64 is ideal
LAA value	13-20
Weathering	Quality Index of AA or BA
Crushing	Less than 10% fines under a load of 230kN
Geology	Coarse grained sedimentary rock, low to medium grade metamorphic rock or a coarse grained igneous rock.

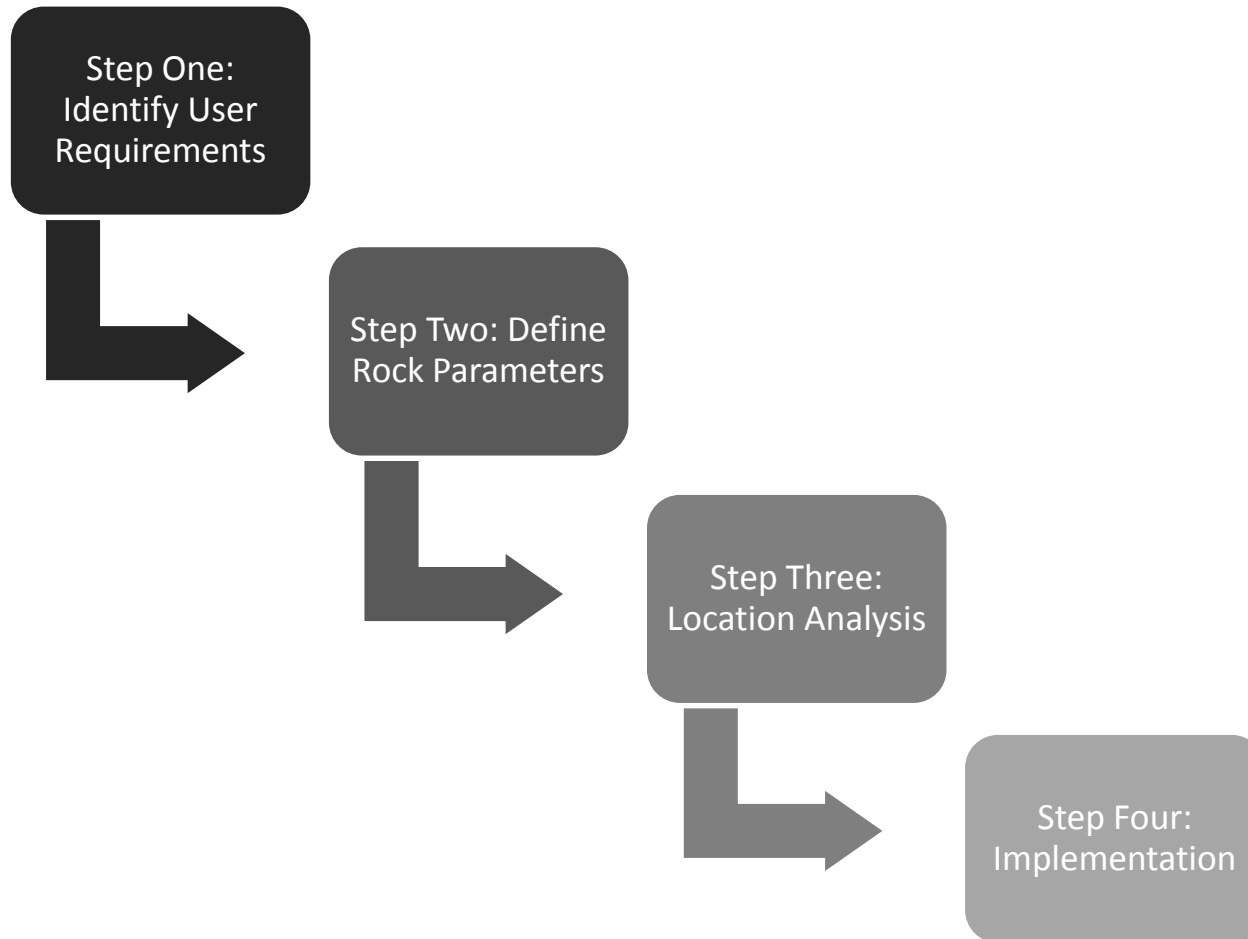


# Potential Areas of Interest



- Road and site accessibility
- Testing abilities
- Development potential
- Risk and safety of the site
- Crushing plant proximity
- Conservation
- Utilities and services





- High PSV stone is requested more
- Complicated set of criteria required
- Number of potential areas in the SI
- Number of logistical factors to consider