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# Long Term Pavement Performance – Site Maintenance

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1.0

Site Maintenance Form

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The New Zealand Transport Agency (NZTA) wishes to improve its management of the long-term performance of the state highway network. Various initiatives are in place to support this objective and these need to be underpinned by a fundamental understanding of in-service pavement behaviour. Such an understanding is being developed by monitoring some calibration sites around the country in detail.



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## OVERVIEW

The NZ Transport Agency (NZTA) wishes to improve its management of the long-term performance of the state highway network. Various initiatives are in place to support this objective and these need to be underpinned by a fundamental understanding of in-service pavement behaviour. Such an understanding is being developed by monitoring some calibration sites around the country in detail. There are 63 calibration sites in New Zealand on the state highway network. Currently we are collecting the following information on the calibration sites:

- Inventory data, including surface and pavement information – from regional RAMM databases
- Annual manual condition survey data from the calibration survey contractor including roughness, rutting, texture and visual rating;
- FWD survey data; and,
- Maintenance history data submitted directly to the New Zealand Transport Agency.

Falling Weight Deflectometer data was collected annually from 2002 until 2006 and then the testing frequency was reduced and has since only been tested in 2012.

A calibration database system for NZTA Calibration Sections has already been developed to process and host calibration survey data including roughness, rutting and visual condition rating etc. Whilst the calibration survey data is collected centrally by National Office, NZTA requires the maintenance data to be captured by network outcomes contractor. Much has already been learned from the data we have collected from the sections and it reemphasises the importance of robust data. Based on experience during the past years we have realised the need for assistance to network consultants regarding the provision of maintenance records on the calibration sections. For this reason, a specific maintenance database has been developed. The two main objectives of the database are to:

- Ensure that any maintenance is recorded according to a consistent process and format.
- Emphasise the importance of diligent management of the calibration sections. E.g. if a site is sterilised, only emergency maintenance is allowed on it.

# MAINTENANCE DETAILS FORM (TEMPLATE)

NZTA LTPP Sites Maintenance Details Form is designed for contractors to capture the maintenance data on site efficiently. The focus of the form is to record all the information, which are collected during construction or maintenance. The filled forms will be submitted to Martin Gribble at the NZTA National Office annually. Maintenance data delivered to NZTA would be the maintenance that is done within NZTA Financial year period (i.e. 1st July – 30th June) and the consultants are requested to deliver it by the 1st August (in accordance with SHDOM Annual Planner).

*You will use this form to fill in the details of one maintenance work done on one site. Therefore, if there are two different maintenance works done on a site (e.g. repaired potholes and flushed old patch) then you will have 2 forms to fill in.*

This form contains 5 sections. The following is to assist you how to use this form:

- **Maintenance Header Information**  
You have to provide the site location correctly and the contractor (company) who has done the maintenance work. Please ensure that you select the correct Region and NMM Area. The overall maintenance description could be pothole patching, normal maintenance etc. The overall failure description could be potholes etc.  
You must fill in all *required* fields in this section (\* = required).
- **Maintenance Details**  
In this section, you will provide the details of the maintenance. Some of the fields require you to use a lookup list to choose a correct code. This is to ensure the codes used are consistent. You have to provide a detailed description of what have been done on the site specified in the Maintenance Header section.  
You must fill in all *required* fields in this section (\* = required).
- **Maintenance Details - Attached Electronic Files**  
Electronic image files (photos) taken during maintenance and other related electronic files will need to be delivered as part of providing the maintenance data to NZTA. Therefore, the names of the electronic files (and meaningful descriptions) have to be recorded in this section.
- **Pavement Layer (Additional Information)**  
If there is pavement layer information taken during the maintenance or construction on the site specified in the Maintenance Header section, then fill in this section. Otherwise, ignore this section.
- **Penetration Test (Additional Information)**  
If a penetration test is done during the maintenance on the site specified in the Maintenance Header section, then fill in this section. If there are more than one test is done, then you can make a copy of this section only to fill in. Otherwise, ignore this section.

# MAINTENANCE DETAILS FORM

Provided By	
Contractors Name	
Person Name	
Date	

Maintenance Header Information						
Region* <i>(circle one)</i>	Auckland   Hamilton   Christchurch   Napier   Wanganui   Wellington   Dunedin					
NMM Area* <i>(circle one)</i>	Northland   Auckland   West Waikato   Central Waikato   East Waikato   Rotorua   Bay of Plenty West   Bay of Plenty East   Gisborne   Hawkes Bay   Taranaki   Manawatu-Wanganui   Wellington   Marlborough   Nelson Tasman   West Coast North   West Coast South   North Canterbury   Christchurch   South Canterbury   Coastal Otago   Central Otago   Milford Sound   Southland					
SH*		RS*		From RP(m)*		To RP (m)*
Overall Maintenance Description *						
Overall Failure Description *						
Contractor Name *						
Contract No/Instruction No						

\*Required Information

Maintenance Details	
Start (m) *	
End (m) *	
Width (m) *	
Depth (mm)	
Offset (distance from the edge seal of 'increasing' road direction in <b>m</b> )	
Maintenance Description *	









# LOOKUP\_1

Financial Year	Unit	Cost Group
2001/02	Each	Bridge Maintenance
2002/03	m	Drainage
2003/04	m <sup>2</sup>	Environment
2004/05	m <sup>3</sup>	Lighting
2005/06		Minor Structure
2006/07		Other
2007/08		Pavement
2008/09		Shoulder
2009/10		Surfacing
2010/11		Traffic Facility
2011/12		Verge
2012/13		
2013/14		
2014/15		
2015/16		
2016/17		

Activity	Description
BARRIER	Guardrail and barrier maintenance
BRIDGE	Bridge maintenance
BURN	Burn excess binder
CONCPAVE	Concrete pavement repairs
DIGOUTS	Digouts (all pavements)
EDGEPOST	Edge marker post maintenance
EMERGENCY	Emergency work
ENVCLEAN	Environmental clean up

Activity	Description
FILLCRK	Fill cracks
LEVEL	Minor levelling
LIGHTMAINT	Maintain highway lighting
MARKING	Road marking maintenance
POSDRAIN	Positive drainage
POTFILL	Pot-hole repairs
RECHIP	Re-chip surfacing
SEALCRK	Seal cracks
SERVCOVER	Service cover adjustment
SHLDMAINT	Shoulder maintenance
SIGNALS	Traffic signal maintenance
SIGNMAINT	Sign and sight rail maintenance
STAB	In situ stabilisation
SURFOPEN	Surface openings
SURFREP	Surfacing defect repairs
SWCIMP	Surface water channel improvements
SWCMAINT	Surface water channel maintenance
SWSTRUCT	Stormwater structure maintenance
UNKNOWN	Unknown activity
UNSEALED	Maintain unsealed pavements
VEGETATION	Vegetation control and maintenance
WALLS	Retaining wall maintenance

## LOOKUP\_2

Fault	Description
ABUT	Uneven abutment join
ACCIDENT	Vehicle accident
AGGLOSS	Aggregate loss
ALLIGCRK	Alligator cracking
BLEED	Bleeding
BLOCKED	Blocked
BROKEN	Broken
CHEMCNTRL	Chemical control
CLEAN	Clean (wash)
CLEAR	Clear rubbish
CLEARVEGE	Clear vegetation
COLLAPSE	Collapse
CORRODE	Corroded
CORRUG	Corrugation
CRACK	Concrete cracking
CULCLEAN	Clean culvert
CULINAD	Inadequate culvert
CULNEW	Construct a new culvert
CULREPAIR	Repair culvert
DEBRIS	Remove debris
DECKRENEW	Renew decking
DECKREP	Deck repair
DEFORM	Deformation
DEPRESS	Depression
DETRITUS	Clear detritus
DRAININAD	Inadequate drainage

Fault	Description
EDGEBRK	Edge break
EDGERUT	Edge rutting
FLOOD	Flood
FLUSH	Flushing
FOUNDAT	Foundation maintenance
GRAFITTI	Graffiti
DRASSMOW	Mow the grass
HIGHSHLD	High shoulder
HOLES	Pot-holes
HYDROSEED	Hydroseed
ICE/FROST	Ice/frost
INAD	Inadequate
ISOCRK	Isolated crack
JOINT	Joint cracking
LITTER	Clear litter
LOWSHLD	Low shoulder
MISSING	Missing
NONSTD	Remove nonstandard sign
PAINT	Paint
POLISHED	Polished surface
RAILS	Side rail maintenance
REALIGN	Realign
REMOVE	Remove
RENEW	Renew
REPLACE	Replace (remove existing)
RPMMISS	Missing raised pavement markers
RPMRENEW	Renew raised pavement markers
RUTTING	Wheelpath rutting

Fault	Description
SATPAVE	Saturated pavement
SCAB	Scabbing
SCOUR	Scouring
SERVICE	Utility services maintenance
SHAPE	Reshape cross-section
SHEAR	Shear failure
SLIP	Landslip
SLIPCRK	Slippage crack
SNOW	Snowfall
SOFTSHLD	Soft shoulder
SPALL	Spalling
SPILLAGE	Spillage
STRIP	Stripping
STRUCTMEM	Maintain structural members
SWCNEW	Construct new SWC
TEXTURE	Loss of texture
TRENCH	Trench settlement
UNEVEN	Uneven surface
UNKNOWN	Unknown fault
UPGRADE	Upgrade
VEGECNTRL	Vegetation control
VEGEPLANT	Plant vegetation

## LOOKUP\_3

Layer/Subgrade	Material Type	Material Description
Layer	125OL	125OLAY/150CE
Layer	300 L/	300L/100 OLAY
Layer	300 LI	300 LIME/100 CE
Layer	AP100	All passing 100mm sieve
Layer	AP150	All passing 150mm sieve
Layer	AP20	All passing 20mm sieve
Layer	AP30	All passing 30mm sieve
Layer	AP40	All passing 40mm sieve
Layer	AP65	All passing 65mm sieve
Layer	AP7	All passing 7mm sieve
Layer	AP75	All passing 75mm sieve
Layer	B/C	Unknown base course
Layer	BOLDER	Boulders –uncrushed random
Layer	COMP	Composite of difference recycle
Layer	CR	Crusher run
Layer	DEAUL	DEFAULT ENTRY
Layer	DIGOUT	DIGOUT
Layer	FABRIC	Fabric
Layer	FILTER	Filter cloth
Layer	GAP100	Graded all passing 100mm sieve
Layer	GAP150	Graded all passing 150mm sieve
Layer	GAP20	Graded all passing 20mm sieve
Layer	GAP65	Graded all passing 65mm sieve
Layer	GAP7	Graded all passing 7mm sieve
Layer	GRIT	
Layer	LIME	Lime Rock

Layer/Subgrade	Material Type	Material Description
Layer	LIME/C	LIME/CEMENT
Layer	M3	M3 Specification
Layer	M4	M4 Specification
Layer	M5	M5 Specification
Layer	NOT KN	NOT KNOWN
Layer	PM01	300 L/200 C
Layer	PM02	300 Lime/100 OL
Layer	ROCK	
Layer	ROP300	Run of Pit – Graded Max 300mm
Layer	ROP500	Run of pit – Graded Max 500mm
Layer	ROR300	Run of River – Graded Max 300mm
Layer	ROR500	Run of River – Graded Max 500mm
Layer	RR	River Run
Layer	S	S
Layer	SAP100	Scoria all passing 100mm sieve
Layer	SAP150	Scoria all passing 150mm sieve
Layer	SAP20	Scoria all passing 20mm sieve
Layer	SAP40	Scoria all passing 40mm sieve
Layer	SAP65	Scoria all passing 65mm sieve
Layer	SAP7	Scoria all passing 7mm sieve
Layer	SEALS	Old seals
Layer	STRIP	Quarry Strippings - Ungraded
Subgrade	BEDROCK	
Subgrade	BOULDERS	
Subgrade	CLAY	
Subgrade	GRAVEL	
Subgrade	ORGANIC	
Subgrade	ROCK	

Layer/Subgrade	Material Type	Material Description
Subgrade	SAND	
Subgrade	SILT	
Subgrade	UNKNOWN	