

# RMG GEOTECHNICAL CONSULTANTS



TR 61/04

## Victoria Highway Gravel Search (Ch 185.8-219.1km)

*For Department of Infrastructure, Planning and Environment*

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Cover Photo: Victoria Highway facing east along Escarpment Creek

## **OVERVIEW: VICTORIA HIGHWAY GRAVEL SEARCH, CH 185.8 TO 219.1KM**

Due to the size of the area to be covered and the number of gravel pit areas contained it was not deemed mandatory to land at gravel pit areas but to map the access and GPS pit location for the follow up ground traverse as stated in the fee proposal for Phase 1 of the project. Time limitations would not have allowed for the aerial reconnaissance of all the gravel areas for the purpose of sampling and mapping so the emphasis was to ensure the total area and all pits were covered, GPS co-ordinates were taken of gravel pit areas and access locations for the proposed 4WD traverse into the gravel areas. Unfortunately the follow up 4WD traverses were not possible into all gravel pit and stockpile areas where access tracks were overgrown and impassable due to terrain conditions including washouts and creeks.

Further liaison with P&W, OEH & AAPA is required prior to any further fieldwork being carried out.

Further discussion with Jerry Jones (Fitzroy Stn) & Milton Jones (Coolibah Stn) to gain local knowledge in regard to possible sources of both potential blending material for the river gravels and potential pavement gravels.

Thick grassy undergrowth made locating some existing gravel areas east of the Victoria River difficult.

West of the Victoria River Roadhouse gravel sources in the area are generally limited to the lower footslope and terrace areas along the Fitzroy & Stokes Ranges with a considerable haul distance from the Stokes Range area of Sites 19 & 20. Most sources along the Fitzroy Range have either been close to exhausted or are covered by an AAPA Avoidance Area.

Further investigation is required into the potential use of suitable cutting material as a binder for river gravels.

## 1.0 INTRODUCTION

The Department of Infrastructure, Planning and Environment (DIPE) is proposing to re-sheet the Victoria Highway from Ch185.8 to 219.1km. The construction would include raising the grade line along the section of the highway where wet season flooding closes the highway to traffic for long periods of time. The four bridges are also to be constructed along this section of the Victoria Highway. This will require the sourcing of approximately 75 000 compacted cubic meters of sealed basecourse quality material. Material should conform to the current DIPE specification for sealed basecourse material.

Phase 1 of the investigation (described in this report) included a reconnaissance of all existing gravel pits and potential areas accessible by 4WD within an economic haul distance of the project. This was followed up with an aerial helicopter reconnaissance to locate all potential gravel areas within a 10km corridor either side of the highway. Potential gravel areas were mapped using a Garmin GPSmap60 followed by a further reconnaissance by 4WD to locate the potential areas found during the aerial survey.

It should be noted that the majority of gravel pits located are contained within the boundaries of the Gregory National Park. There are a number of AAPA exclusion zones along a 1km wide corridor along this section of the highway. These areas were not entered.

In reference to the DIPE Roadworks master Specification Requirements, Chapter 1; Miscellaneous Provisions, all new gravel pit areas should conform to the following;

- not within sight of road traffic
- not within 125meters of a road
- maximum area 1 hectare
- maximum depth 2 meters
- not within 25 meters of a water course
- leave 25-meter wide natural vegetation strips between pits.

Any proposed new pit areas shall need to be cleared of environmental, cultural and heritage concerns prior to pushing up of gravel pit areas. Authority for gravel extraction shall be applied for from the following bodies,

- Aboriginal Areas Protection Authority (AAPA)
- Office of Environment and Heritage (OEH)
- Conservation and Natural Resources Division

## 2.0 SCOPE OF WORK

The scope of work “as discussed in the brief” on Phase 1 of this investigation consisted of the following:

- Locate suitable areas for investigation in conjunction with DIPE Roads Project staff to obtain knowledge of local existing gravel pit areas and proposed new areas for investigation.
- Check past geotechnical reports, topographic maps and geological maps for information relevant to potential gravel areas.
- Check past AAPA clearances.
- Authority for gravel extraction shall be applied for from the following bodies,
  - Aboriginal Areas Protection Authority (AAPA)
  - Office of Environment and Heritage (OEH)
  - Conservation and Natural Resources Division
- Assess all existing gravel pits located in the area containing sealed basecourse quality material.
- Photography of all pit areas and relevant site conditions.
- Survey and mapping of all pit areas and prepare suitable plans.
- Laboratory testing of selected samples retrieved from potential pit areas for proposed pavement material, comprising of the following,
  - Particle Size Distribution (AS1289 3.6.1)
  - Plastic Limit (AS1289 3.1.1)
  - Liquid Limit (AS1289 3.2.1)
  - Linear Shrinkage (AS1289 3.3.1)
  - Plastic Index (AS1289 3.4.1)
  - Maximum Modified Dry Density (AS1289 5.2.1)
  - Californian Bearing Ratio at 100% (basecourse),
  - MMDD 4-day soak (AS1289 6.1.1).
- Analysis of laboratory test results and field data.
- Production of a letter report for Phase 1 describing the investigation and presenting the findings of the fieldwork, laboratory testing and containing all other information relevant to the investigation. This letter report shall be appended to the Phase 2 report.

### **3.0 INVESTIGATION METHODS**

The following materials search was carried out by Murray Gray (RMG Geotechnical Consultants), and Lisa Noetzel (DIPE) between Tuesday September 23 and Saturday September 27, 2004.

This investigation entailed an initial one-day 4WD reconnaissance followed by a one-day aerial reconnaissance of all existing gravel pits, stockpiles and roads located in the area of investigation. Access tracks to gravel pit areas and existing stockpiles were mapped by GPS from the helicopter for a follow up ground traverse by 4WD.

One bulk sample was taken from the existing stockpiles (2) located approximately 3.2km south of the Coolibah turn off and 0.5km LHS. This material was sampled for laboratory testing to ascertain the quality of existing stockpiled material for use as a possible potential basecourse material for the pavement construction. This material is thought to be indicative of material to be found at Site 19 & Site 20 with varying percentages of oversize material.

A large bulk sample of the river gravel was obtained from the Site RG 7. This material was obtained for future possible blending trials should a suitable blending material be located to improve the plastic properties of the screened river gravel. Oversize material from this sample will be crushed to minus 20mm and blended back into the screened sample at the required percentage to ascertain the PSD properties of the crushed product.

Samples taken were subjected to the relevant laboratory classification tests. Lintin Geotechnical is a NATA registered laboratory and they carried out all laboratory testing. Laboratory test results are contained in Appendix A,

Digital photos were taken of all existing gravel pit areas and other relevant features and are contained in Appendix D,

A summary of GPS information for gravel areas and access locations is contained in Appendix C of this report. The GPS used was a hand held Garmin GPSmap 60C and the accuracy of the readings are expected to be within 20m. The datum used for all GPS readings given in this report is WGS84. Survey of gravel pit areas was also carried out using the above-mentioned GPS. Due to a broken speedometer cable during the investigation all chainages and distances given in this report were calculated using the GPS data and therefore, are subject to considerable error. These chainages and distances should be used as a guide only.

A summary of all gravel pit data is contained in Figure 5 of this report.

### **4.0 RESULTS**

#### **4.1 SUMMARY OF INVESTIGATION SITES AND LABORATORY TEST RESULTS**

**TABLE 1: SUMMARY OF INVESTIGATION SITES AND LABORATORY TEST RESULTS**

## VICTORIA HIGHWAY - Ch 185.8km to 219.1km GRAVEL SEARCH

PIT No.	LOCATION	TR No.	GRAVEL TYPE / QUANTITY	LANDFORM	CLEARANCE S	ADVANTAGES	CONSTRAINTS	COMMENTS
IP2, IP3, IP4 & Innes. Nth.	Innesvale Plateau	TR09/92 TR16/91 TR 17/90	Innesvale Plateau & Station Road Gravel Deposits, Pea gravels	Plateau	Area within Gregory Park	Innesvale north plateau holds deposits of laterite Pea gravel. 300-450 depth est.	Access to plateau 18km from Vic Hwy. Access track eroded and needs repair.	IP2,3&4 Depleted
Site 19A	Ch161.0km, 0.15km LHS	TR 24/90	Sandstone gravel (GP-GM)	Gently sloping, scattered educ's.	Area outside Gregory Park	Estimated PI 4-7, angular subangular		Area not located, fenced off
Site 17A	Ch161.05km, 6.3km LHS	TR 24/90	No samples taken	Lower hill slope, terrace	Area outside Gregory Park	Area may be possible to extend. Further investigate	Access impassable during the wet. Creek crossings	Large pit area, by air only, fenced off
Site 1	Ch 168.1km, 4.5km RHS	TR 26/87	Innesvale Plateau, shallow deposit Pea gravel	Flat area on top of a mesa, lightly timbered	Area within Gregory Park	CBR 90 @ 100% MMDD,	Variable PI 4-18%, PSD outside Class 4, excess fines	Some deposits remain in area
Site 2	Ch 174.23km, 4.27km LHS	TR 26/87	silty clayey gravel (Siltstone) Est.11800m <sup>3</sup> bank, excluding o'size	Gently sloping ground on top of a ridge, lightly timbered	Area within Gregory Park	Impassable wet season	Variable PI 0-12%, PSD marginal to outside Class 4, CBR 19 @ 100% MMDD	Area has not been used, access along wet season Ck.
Site 15	Ch 179.48km, 0.25km RHS	TR 15/90	Footslope outwash colluvium sandstone, Estimated Quantity 3400m <sup>3</sup> bank	Terrace, gently sloping	Area within Gregory Park	PI 3%, CBR 80-140 @ 100% MMDD (GP-GM)	Estimated 10-30% material >40mm	Not located, grassy undergrowth to 1.5m. Located and GPS from the air.
Site 3	Ch 180.40km, 0.70km LHS	TR 26/87 TR 15/90	Laterised sandstone 'outwash colluvium'. Estimated Quantity 7900m <sup>3</sup> bank, excluding o'size	Gently sloping river terrace, lightly timbered	Area within Gregory Park	Estimated 15% material >40mm (GM-GC to SC)	Variable PI 0-18%, PSD outside to within Class 4, CBR 40&85 @ 100% MMDD	Not located, grassy undergrowth to 1.5m. Area north side of Sullivans Ck, 250m south Vic Hwy
Site 3A	Ch 180.40km, 0.50km LHS		Alluvial gravel & sand (GW-GP)	Sullivans Creek	Area within Gregory Park	Possible blending with Site 3	PSD generally conform to Class 3&4, non plastic, CBR 50	Not located, grassy undergrowth to 1.5m.
Site 4	Ch 185.0km, 0.30km RHS	TR 26/87	Laterite/Sandstone gravel.	Low terrace, base of steeper footslopes, lightly timbered	Area within Gregory Park	PI 0-4%, Estimated 10% material >40mm	PSD marginal to outside Class 4, CBR 35 @ 100% MMDD	Existing pits depleted, possible small quantities for maintenance material.
EC 1	Ch 184.5km, 0.6km RHS (Escarpment Ck)	TR16/91	Colluvial sandy silty gravel - Siltstone	Open Woodland, hillslope	Not obtained at time of report	Gap graded marginal Class 2 & 3, PI 5%, LS 2.0%, CBR @ 100% = 70%	Small area less than 1 hectare, 25-30% >40mm. Lack of med to coarse sand.	Not located, grassy undergrowth to 1.5m.
EC 2	Ch 184.5km, 0.05km LHS (Escarpment Ck)	TR16/91	River gravel, cobblely sandy gravel some silt, siltstone, sandstone minor basalt, schist & chert (GW)	Confluence of Sullivan and Escarpment Cks.	Not obtained at time of report	Similar appearance to the Victoria River shingle gravels	25-30% >40mm, similar to the Victoria River shingle gravels	River gravel deposit not accessed., refer RG 2&7
Site 5	Ch 188.19km, 850m RHS	TR 26/87 TR 15/90	Laterite gravel some sandstone (GM-GC). Est. Quantity 7600m <sup>3</sup> bank, excluding o'size	Gently sloping terrace, lightly timbered	Area within Gregory Park	PSD marginal Class 2, CBR 120&180 @ 100% MMDD, estimated 10% material >40mm, Possible blending material for river gravels	PI 13-14%, increases with depth.	Area located was northeast of the original Site 5. Investigate further for original Site 5 pit for use as a possible blending material for river gravels.
RG 2 Stockpile	Ch 202.91km, 50m LHS	TR 01/92 TR 23/96	Vic River shingle gravel taken from Site RG 2. Estimated Quantity 0m <sup>3</sup>	Stockpile	N/A	Large quantity of river gravel available, generally -37.5mm screened material conforms to type 2 PSD.	20-40% Oversize retained on the 37.5mm sieve, non plastic, requires blending of plastic material or another form of stabilisation	No longer present



**TABLE 1: SUMMARY OF INVESTIGATION SITES AND LABORATORY TEST RESULTS**

Sheet 2 of 3

## VICTORIA HIGHWAY - Ch 185.8km to 219.1km GRAVEL SEARCH

PIT No.	LOCATION	TR No.	GRAVEL TYPE / QUANTITY	LANDFORM	CLEARANCES	ADVANTAGES	CONSTRAINTS	COMMENTS
Site 6	Ch 205.85km, 1.30km LHS	TR 26/87 TR 23/90	Sandstone and ironstone nodules. (SM to GP-GM) Depleted	Gently sloping, low scrub, Joe Creek	Area within Gregory Park	PI 0-4%, estimated 5-10% material >40mm	PSD outside to marginal Class 4, CBR 35 @ 100% MMDD, PI increases with depth	Joes Creek Roadside stop, materials exhausted
Site 16	Ch 215.19km, 1.6km RHS (Coolibah)	TR 40/90	Colluvial laterite/sandstone (GM) Estimated Quantity 17000m <sup>3</sup>	Coolibah Plateau	Existing pits on top of Coolibah Plateau, potential to expand this area	Good source for basecourse quality material although non plastic. CBR >110	Estimated volumes contain between 5 - 40% material >40mm, generally non plastic.	Access to the top of plateau eroded and requires repairs before access can be obtained to the pit areas. Further investigation required to ascertain remaining quantity and quality of gravel.
Site 17	Ch 215.19km, 1.25km RHS (Coolibah)	TR 40/90	Colluvial laterite/sandstone (GM) Estimated Quantity 4600m <sup>3</sup>	Coolibah Plateau		Good source for basecourse quality material although non plastic. CBR >150	Estimated volumes contain between 5 - 40% material >40mm, generally non plastic.	
Site 18	Ch 215.19km, 3.0km RHS (Coolibah)	TR 40/90	Colluvial laterite/sandstone (GM) Estimated Quantity 5100m <sup>3</sup>	Coolibah Plateau		Good source for basecourse quality material although non plastic. CBR >160	Estimated volumes contain between 5 - 40% material >40mm, generally non plastic.	
Site 26	Ch 215.19km, 1.75km RHS (Coolibah)	TR 40/90	Alluvial laterite/sandstone (GM) Estimated Quantity 6000m <sup>3</sup>	Coolibah Plateau		Good source for basecourse quality material although non plastic. CBR >110	Estimated volumes contain between 5 - 40% material >40mm, generally non plastic.	
Existing Stockpiles (2)	Ch 215.19km, 3.90km LHS then 650m LHS, south Coolibah turnoff		Sandstone and ironstone nodules. (SM to GP-GM)	Foot slope Stokes Range,	Area outside Gregory Park	PI 0-4%, estimated 10-20% material >40mm		Stockpile sampled for lab testing. Possibly extend area if test results ok to the south southeast
RG 2	Ch 202.3km, 0.60km RHS	TR 25/90 TR 15/91	Vic River shingle gravel. Estimated Quantity 18800m <sup>3</sup>	Riverbed	Authority certificate obtained	Large quantity of river gravel available, generally -37.5mm screened material conforms to type 2 PSD.	20-30% Oversize retained on the 37.5mm sieve, non plastic, requires blending of plastic material or another form of stabilisation, CBR 35-60	Large quantity still available in this area, requires blending material as mentioned below.
RG 7A	Ch 214.5km, 8.0km RHS	TR 15/91 TR 01/92	Vic River shingle gravel. Estimated Quantity 15361m <sup>3</sup>	Riverbed	Authority certificate obtained	Large quantity of river gravel available, generally -37.5mm screened material conforms to type 2 PSD.	20-40% Oversize retained on the 37.5mm sieve, non plastic, requires blending of plastic material or another form of stabilisation	Large bulk sample taken for laboratory, best source for sealed basecourse with the right material to blend to increase PI and mechanical stabilisation
RG 7B	Ch 214.5km, 8.5km RHS	TR 15/91 TR 01/92	Vic River shingle gravel. Estimated Quantity 67365m <sup>3</sup>	Riverbed	Authority certificate obtained			
Site 19	Ch 217.5km, 5.9km LHS	TR 40/90	Alluvial buried river gravel/ironstone nodules (GM) Estimated Quantity 10500m <sup>3</sup>	Deposit alongside creek, Stockpile, overgrown with scrub	Not obtained at time of report	Potential source for B/C quality material although non plastic. CBR >140	Estimated volumes contain between 0 - 60% material >40mm, generally non plastic.	As with Sites 20, 20A & 20 Stockpiles below
Site 20	Ch 219.51km, 14.5km LHS	TR 40/90	Colluvial laterite/sandstone (GM) Estimated Quantity 12700m <sup>3</sup>	Extension to existing pit area	Not obtained at time of report	Potential source for B/C quality material although non plastic. CBR >190	Estimated volumes contain between 5 - 20% material >40mm, generally non plastic.	Area located by air, unable to reach \$WD due to Sandy Ck and feeder creeks cutting off access. Existing pits revegetated, possible source good quantity B/C. Further Investigate lower foot slopes along Stokes Range north of this area
Site 20A	Ch 219.51km, 14.5km LHS	TR 40/90	Colluvial laterite/sandstone (GM) Estimated Quantity 1800m <sup>3</sup>	80m south Site 20	Not obtained at time of report	Potential source for B/C quality material PI 3-7, CBR 70&150	Estimated volumes contain between 5 - 20% material >40mm.	
Site 20 Stockpiles	Ch 219.51km, 14.5km LHS	TR 40/90	Colluvial laterite/sandstone (GM) Estimated Quantity 16600m <sup>3</sup>	Stockpile, overgrown with scrub	Not obtained at time of report	Marginal Class 2&3 after screening, gap graded	Variation throughout stockpiles PI range 0 to 14%	

**TABLE 1: SUMMARY OF INVESTIGATION SITES AND LABORATORY TEST RESULTS**

Sheet 3 of 3

## VICTORIA HIGHWAY - Ch 185.8km to 219.1km GRAVEL SEARCH

PIT No.	LOCATION	TR No.	GRAVEL TYPE / QUANTITY	LANDFORM	CLEARANCES	ADVANTAGES	CONSTRAINTS	COMMENTS
Site 19	Ch 217.5km, 5.9km LHS	TR 40/90	Alluvial buried river gravel/ironstone nodules (GM) Estimated Quantity 10500m <sup>3</sup>	Deposit alongside creek, Stockpile, overgrown with scrub	Not obtained at time of report	Potential source for B/C quality material although non plastic. CBR >140	Estimated volumes contain between 0 - 60% material >40mm, generally non plastic.	As with Sites 20, 20A & 20 Stockpiles below
Site 20	Ch 219.51km, 14.5km LHS	TR 40/90	Colluvial laterite/sandstone (GM) Estimated Quantity 12700m <sup>3</sup>	Extension to existing pit area	Not obtained at time of report	Potential source for B/C quality material although non plastic. CBR >190	Estimated volumes contain between 5 - 20% material >40mm, generally non plastic.	Area located by air, unable to reach \$WD due to Sandy Ck and feeder creeks cutting off access. Existing pits revegetated, possible source good quantity B/C. Further Investigate lower foot slopes along Stokes Range north of this area
Site 20A	Ch 219.51km, 14.5km LHS	TR 40/90	Colluvial laterite/sandstone (GM) Estimated Quantity 1800m <sup>3</sup>	80m south Site 20	Not obtained at time of report	Potential source for B/C quality material PI 3-7. CBR 70&150	Estimated volumes contain between 5 - 20% material >40mm.	
Site 20 Stockpiles	Ch 219.51km, 14.5km LHS	TR 40/90	Colluvial laterite/sandstone (GM) Estimated Quantity 16600m <sup>3</sup>	Stockpile, overgrown with scrub	Not obtained at time of report	Marginal Class 2&3 after screening, gap graded	Variation throughout stockpiles PI range 0 to 14%	
RG 8	Ch 224.8km (Jack Brumby Ck) 9.0km RHS	TR 01/92		Riverbed			Require blending material for plasticity & crushing/screening	Sit not visited.
Sites 7 & 7A	Ch 229.05km, 2.20km LHS	TR 26/87	7 Dolomitic siltstone gravel & 7A Dolomitic siltstone gravel/calcrete. Estimated Quantity (7) 2100m <sup>3</sup> , (7A) 13300m <sup>3</sup> bank, ex o/s	7 Colluvial outwash fan at base of steeper slope, 7A gently sloping, low scrub	Vicinity of AAPA Avoidance Area 18	PSD marginal to within Class 2, Estimated 10% material >40mm in 7 & Little to no material >40mm in 7A	Variable PI 0-14%, , CBR 40 @ 100% MMDD	Area could not be found, between 2 knolls Fitzroy Ranges, not utilised yet, Aboriginal significance possibly
Site 8	Ch 233.89km, 8.2km LHS	TR 26/87	Laterite/sandstone (GM) Estimated Quantity 12800m <sup>3</sup>	Gently sloping, lightly timbered, low scrub	Authority certificate obtained	PSD marginal to within Class 2,	Gap graded, variable PI 0-9%, 20% material >40mm, CBR 40 @ 100%MMDD	Area has not been utilised, good source for sub base/subgrade, possible area for basecourse, further investigate
Site 8A	Ch 233.89km, 11.0km LHS	TR 40/90	Colluvial laterite/sandstone (GM) Estimated Quantity 2700m <sup>3</sup>	Flat top hillock	Authority certificate obtained	Potential source for B/C quality material although non plastic. CBR >200	Gap graded, PI increases with depth, screen material >40mm.	
Site 9	Ch 240.2km along old Hwy, 2.5km RHS	TR 26/87	Chert gravel Estimated Quantity 3700m <sup>3</sup> stockpiled	Stockpile, overgrown with scrub	Area outside Gregory Park	Non plastic	PSD doesn't fit any Class envelope, CBR 30 @ 100%MMDD	Did not visit area.
Site13	Ch 241km +/-1.0km RHS	TR 26/87	Chert-talus gravel (Hillwash) Estimated Quantity 2000-500m <sup>3</sup>	Flank of low ridge	Area outside Gregory Park	Blend with river gravels.	PI 23, requires screening	Did not visit area.
Site10	Ch 250.25km along old Hwy, 13.0km RHS	TR 26/87	Chert gravel Estimated Quantity 3400m <sup>3</sup> stockpiled	Stockpile, overgrown with scrub	Area outside Gregory Park	Non plastic, CBR >190 @ 100%MMDD	PSD Class 4	Did not visit area.
Site11	Ch 250.25km along old Hwy, 0.70km RHS	TR 26/87	Chert gravel Estimated Quantity 10200m <sup>3</sup> stockpiled	Stockpile, overgrown with scrub	Area outside Gregory Park	Non plastic, CBR >190 @ 100%MMDD	PSD Class 4	Did not visit area.
Site12	Ch 250.25km along old Hwy, 0.50km RHS	TR 26/87	Chert gravel Estimated Quantity 1300m <sup>3</sup> stockpiled	Stockpile, overgrown with scrub	Area outside Gregory Park	PSD Class 2, Non plastic, CBR >190 @ 100%MMDD	Small volume, non plastic	Did not visit area.
Site14	Ch 267km LHS	TR 26/87	Hillwash/Alluvial Estimated Quantity 1000m <sup>3</sup>	Gently sloping, timbered	Area outside Gregory Park		Gap graded, PI 19-28, requires screening	Did not visit area.

#### **4.1.1 SITE 1, INNESVALE SOUTH**

Site 1 is located within the Gregory National Park. Access to the Innesvale South plateau is gained along the Innesvale Plateau track located 13.6km west of PRP 18, Menngen (Innesvale) Station road turn off, on the Victoria Highway at Chainage 167.33km. The Innesvale track runs north from the Victoria Highway to the top of the plateau where a Telstra Repeater Tower is located at approximately Ch 6.0km from the Victoria Highway.

This is the smallest of the four gravel pit areas on the southern plateau, located along the Innesvale access track 1.3km south of the Telstra Repeater Tower at chainage 4.7km. Site 1 contained a shallow deposit of laterite Pea gravel. Materials from this area are generally sandy silty gravel, fine to medium gravel, fine sand. Max size 40mm., Nominal size 10 to 20mm. Estimated PI: 0 - 4 to 4 - 7. Sub rounded to rounded medium strength gravel. Light brown. GM-GM/GC. Loose to medium dense.

This material overlies a dense Ferricrete generally found at depths of around 300 to 450mm. Some outcropping Ferricrete is evident in the area.

A small quantity of gravel has been extracted from this location in the past where an existing pit of approximately 70x30meters is evident. This area could be extended to the north / northeast where a small reserve of gravel could be obtained although obtaining clearance for further extraction from the Innesvale area within the Gregory National Park would be difficult due to the large volume of reserves that have previously been utilised from this plateau.

Reference to this area can be found within the following DIPE Technical Report - TR26/87.

#### **4.1.2 SITE IP 2, INNESVALE SOUTH**

Site IP 2 is located within the Gregory National Park. Access to the Innesvale South plateau is gained along the Innesvale Plateau track located 13.6km west of PRP 18, Menngen (Innesvale) Station road turn off, on the Victoria Highway at Chainage 167.33km. The Innesvale track runs north from the Victoria Highway to the top of the plateau where a Telstra Repeater Tower is located at approximately Ch 6.0km from the Victoria Highway.

This gravel pit is located approximately 1.4km north of the Telstra Repeater Tower where gravel reserves have been depleted.

Reference to this area can be found within the following DIPE Technical Reports - TR17/90, TR16/91 & TR09/92.

#### **4.1.3 SITE IP 3, INNESVALE SOUTH**

Site IP 3 is located within the Gregory National Park. Access to the Innesvale South plateau is gained along the Innesvale Plateau track located 13.6km west of PRP 18, Menngen (Innesvale) Station road turn off, on the Victoria Highway at Chainage 167.33km. The Innesvale track runs north from the Victoria Highway to the top of the plateau where a Telstra Repeater Tower is located at approximately Ch 6.0km from the Victoria Highway.

This gravel pit is located approximately 2.7km north of the Telstra Repeater Tower where gravel reserves were depleted during construction work carried out on the Victoria Highway east of chainage 152km prior to 1992.

Reference to this area can be found within the following DIPE Technical Reports - TR17/90, TR16/91 & TR09/92.

#### **4.1.4 SITE IP 4, INNESVALE SOUTH**

Site IP 4 is located within the Gregory National Park. Access to the Innesvale South plateau is gained along the Innesvale Plateau track located 13.6km west of PRP 18, Menngen (Innesvale) Station road turn off, on the Victoria Highway at Chainage 167.33km. The Innesvale track runs north from the Victoria Highway to the top of the plateau where a Telstra Repeater Tower is located at approximately Ch 6.0km from the Victoria Highway.

This is the largest of the four gravel pit areas on the southern plateau, located 0.8km southeast of the Telstra Repeater Tower where gravel reserves have been depleted. Site IP 4 contained a shallow deposit of laterite Pea gravel. Materials from this area are generally sandy silty gravel, fine to medium gravel, fine sand. Max size 25mm., Nominal size 10 to 15mm. Estimated PI: 0 to 4. Sub rounded to rounded medium strength gravel. Light brown. GM. Loose to medium dense

This material overlies a dense Ferricrete generally found at depths of around 300 to 450mm. Some outcropping Ferricrete is evident in the area.

Reference to this area can be found within the following DIPE Technical Reports - TR17/90, TR16/91 & TR09/92.

#### **4.1.5 SITE INNESVALE NORTH**

Innesvale North is located outside the Gregory National Park boundary. Access to the Innesvale North plateau is gained along Menngen (Innesvale) Station road located at PRP 18. Chainage 153.73km. The turn off for the north plateau is located at Ch 17.2km from the Victoria Highway on the LHS. The access track to the plateau gravel pit area is approximately Ch 2.5km west of the station road.

At the time of this investigation the access track has been fenced off to limit access to the area. The access track was impassable due to deep erosion channels cut into the track. Repair work on the access road to the top of the plateau would need to be carried out before any further reserves could be removed from this area.

This is a relatively new gravel pit area (In regard to the south plateau) on the northern plateau. This gravel pit contains a shallow deposit of laterite Pea gravel. Materials from this area are generally sandy silty gravel, fine to medium gravel, fine sand. Max size 20mm., Nominal size 10 to 20mm. Estimated PI: 0 - 4 to 4 - 7. Sub rounded to rounded medium strength gravel. Orange-red brown. GM to GM/GC. Loose to medium dense.

Prior laboratory testing on this material show that the PSD is a fit to marginal DIPE Specification Class 2 gravel. Plasticity ranged from non-plastic to PI 12%, LS 0.5 to 6.0%. CBR testing carried out at 100% MMDD returned results that ranged from 90 to >200.

This pit area is located outside the Gregory National Park boundary.

Reference to this area can be found within the following DIPE Technical Reports - TR17/90, TR16/91 & TR09/92.

#### **4.1.6 SITE 17A**

Site 17A is located outside the Gregory National Park boundary. Access to Site 17A is located 7.3km west of PRP 18, Menngen (Innesvale) Station road turn off, on the Victoria Highway at Chainage 161.03km, LHS. A Telstra Optical Fibre Regeneration Hut is located here on the LHS of the Victoria Highway where the access to the pit area runs from the front western corner of the compound. At the time of this investigation access to this area has been fenced off to restrict access to this area by 4WD. Aerial reconnaissance showed that a large pit area has been utilised on the lower footslope / terrace terrain in this area. Access to this area would become impassable during the wet season months.

#### **4.1.7 SITE 2**

Site 2 is located within the Gregory National Park. Access to Site 2 is located 20.5km west of PRP 18, Menngen (Innesvale) Station road turn off, on the Victoria Highway at Chainage 174.23km, LHS. The access track on the LHS of the Victoria Highway would become impassable during the wet season. This pit area could not be located by either 4WD or helicopter and it is possible that the source has not been utilised due to the 4.27km access track crossing at Sullivan Creek and the access track generally follows a feeder creek running into Sullivan Creek that would flood during the wet season months.

Material encountered in this area was Colluvial siltstone gravel & cobbles. Prior laboratory testing on this material show that the PSD is marginal DIPE Specification Class 4 gravel. Plasticity ranged from non-plastic to PI 12%, LS 1.0 to 5.5%. CBR testing carried out returned results of 11 @ 95% MMDD & 19 at 100% MMDD.

Because of the low CBR and variable Plasticity Index, this material is not suitable for use as pavement material.

Site 2A was marked by GPS in the area along the same access track at Ch 4.65km where a possible small gravel deposit may have been utilised on lower hillslope / terrace terrain. This area would only be justified for use if the deposits from Site 2 were suitable for use as pavement material in sufficient quantities to warrant the construction of an access track along the existing wet season watercourse.

Reference to this area can be found within the following DIPE Technical Report - TR26/87.

#### **4.1.8**            **SITE 15**

Site 15 is located within the Gregory National Park. Access to Site 15 is located 25.75km west of PRP 18, Menngen (Innesvale) Station road turn off, on the Victoria Highway at Chainage 179.48km, LHS. The access track on the LHS of the Victoria Highway could not be located by 4WD but was located in the helicopter and GPS co-ordinates were taken. The pit area is located approximately 250 meters from the Victoria Highway but due to time constraints the area was unable to be located as it was obscured by thick grassy undergrowth throughout the area.

Material encountered in this area was sandstone 'outwash colluvium'. Prior laboratory testing on this material show that the PSD is marginal DIPE Specification Class 4 to Class 1 gravel. PI 3, LS 1.0 to 1.5%. CBR testing carried out returned results ranging from 80 to 140 at 100% MMDD.

This area may have been depleted of gravel reserves over the years while being used for maintenance gravel.

Reference to this area can be found within the following DIPE Technical Report – TR15/90.

#### **4.1.9**            **SITE 3**

Site 3 is located within the Gregory National Park. Access to Site 3 is located 27.67km west of PRP 18, Menngen (Innesvale) Station road turn off, on the Victoria Highway at Chainage 180.40km, LHS. The access track on the LHS of the Victoria Highway could not be located by 4WD but the gravel pit area was located in the helicopter and GPS co-ordinates were taken. The pit area is located approximately 250 meters from the Victoria Highway but due to time constraints the area was unable to be located as it was obscured by thick grassy undergrowth throughout the area.

Material encountered in this area was laterised sandstone 'outwash colluvium'. Prior laboratory testing on this material show that material from this area generally do not conform to the DIPE specification for sealed basecourse material. Blending trials with Site 3 material and material from Sullivan Creek (river gravel) south of this pit area have been conducted. Laboratory test results show the blended materials failed to conform to the DIPE specification for sealed basecourse material.

Proposed gravel areas on the south side of Sullivans Creek in this area could not be located by helicopter. It is possible that these reserves have not been utilised.

Reference to this area can be found within the following DIPE Technical Reports - TR17/90, TR26/87 & TR15/90.

#### **4.1.10**            **SITE 4**

Site 4 is located within the Gregory National Park. Access to Site 4 is located 31.27km west of PRP 18, Menngen (Innesvale) Station road turn off, on the Victoria Highway at Chainage 185.00km, RHS. The access track on the RHS is also an access to a Telstra Repeater Tower. Site 4 is located 1.1km from the Victoria Highway with a second pit area located a further 600 meters @ 162<sup>0</sup> from the first pit area. This area could not be accessed by 4WD as the access track has become overgrown and erosion channels across the access track make it impassable.

Site 4 is located on the lower footslope on the eastern side of the Telstra tower. The first pit covers an approximate area of 1700m<sup>2</sup> where material has been extracted. Reserves in the pit area are colluvium laterised sandstone gravel with cobbles.

Prior laboratory test results are not available for this gravel pit area. Reserves in the first pit area have been depleted and this old gravel area needs to be revegetated to minimise the erosion in the area. Access to the second pit area was not possible due to a large washout cutting the access track. Revegetation along the access track would indicate that this area has not been worked for quite a few years.

Access to this area during the wet season would be restricted with a Creek crossing cutting across the access track.

Reference to this area can be found within the following DIPE Technical Report - TR26/87.

#### **4.1.11**            **ESCARPMENT CREEK SITE EC 2**

Site EC 2 is located within the Gregory National Park. Site EC 2 is located at the confluence of Escarpment Creek & Sullivan Creek and is a source of river gravel similar to the Victoria River deposits. This non-plastic gravel would require blending with a binder to improve cohesion. No attempt was made to access this site.

Reference to this area can be found within the following DIPE Technical Report – TR16/91.

#### **4.1.12**            **SITE 5**

Site 5 is located within the Gregory National Park. Access to Site 5 is located 34.46km west of PRP 18, Menngen (Innesvale) Station road turn off, on the Victoria Highway at Chainage 188.19km, RHS. The pit area is located 850 meters northwest of the Victoria Highway.

Prior laboratory test results are not available for this gravel pit area. Reserves in this pit area generally have been depleted with a possibility of some small quantities of gravel remaining in the area.

Reference to this area can be found within the following DIPE Technical Reports - TR26/87 & TR15/90.

#### **4.1.13            SITE 6 - JOE CREEK**

Site 6 is located within the Gregory National Park. Access to Site 6 is located 10.60km west of PRP 20, Victoria River Bridge east abutment, on the Victoria Highway at Chainage 204.20km, LHS. The access track on the LHS is also the access to the Joe Creek roadside stop. The pit area is located 1.6km from the Victoria Highway where gravel reserves have been depleted in the area.

Reference to this area can be found within the following DIPE Technical Reports - TR17/90 & TR15/91.

#### **4.1.14            VICTORIA RIVER - SITE RG 2**

Site RG 2 is located within the Gregory National Park. Aerial reconnaissance over the deposit RG 2 showed that this large deposit has remained relatively untouched. Material extracted from this area would require screening and the addition of material to improve the cohesion of the predominantly non-plastic material before it could be used as sealed basecourse material.

This area has been cleared for gravel extraction by AAPA.

Reference to this area can be found within the following DIPE Technical Reports – TR25/90 & TR15/90.

#### **4.1.15            EXISTING PIT (1)**

Existing Pit (1) is located outside the Gregory National Park. Access to Existing Pit (1) is located 15.10km west of PRP 20, Victoria River Bridge east abutment, on the Victoria Highway at Chainage 208.69km, LHS. The pit area is located 2.7km southwest of the Victoria Highway. This pit would have been utilised as a Fill or subgrade material in the past and gravel reserves have been depleted in this pit.

A shallow deposit of laterised sandstone gravel & cobbles is evident along the upslope areas along this access track to this pit area. This area may provide some shallow reserves of potential pavement material with screening of oversize material. Further investigation and test pits are required to confirm both the quality and quantity of reserves in this area.

Access to this site would be impassable during the wet season months with a creek crossing that would restrict access.



#### **4.1.16 VICTORIA RIVER - SITE RG 7**

Site RG 7 is located outside the Gregory National Park. Aerial reconnaissance over the deposit RG 7 showed that this large deposit has remained relatively untouched. Access to this site is gained along the Coolibah Station Crocodile Farm road where the river access track intersects at the Crocodile Farm gate.

A large bulk sample of the river gravel was obtained from an existing costean; this material was obtained for future possible future blending trials should a suitable blending material be located to improve the cohesion of the screened river gravel. Oversize material from this sample will be crushed to minus 20mm and blended back into the screened sample at the required percentage to ascertain the PSD properties of the crushed product.

Reference to this area can be found within the following DIPE Technical Reports – TR15/91 & TR01/92.

#### **4.1.17 COOLIBAH PLATEAU PITS, SITES 16, 17, 18 & 26**

The Coolibah Plateau pits are located outside the Gregory National Park. Access to the Coolabah Plateau pit area is located 21.60km west of PRP 20, Victoria River Bridge east abutment, on the Victoria Highway at Chainage 215.19km, RHS. Coolibah Station turn-off. The access track is located 325 meters inside the Coolibah Station access road gate on the RHS, running up to the top of the plateau along the southern face. The access road has been eroded to the extent that the area is not accessible by 4WD. The haul road scouring would need to be repaired to make this site accessible.

An aerial reconnaissance was carried out on the plateau where shallow reserves of laterite Pea gravel could be extracted from this area. Limited prior laboratory test results have shown the material encountered was non-plastic with CBR values >110.

This area is originally mentioned in the AAPA authority certificate as being located within Avoidance Area 19 and it is not known whether clearance has since been granted for the extraction of gravel reserves on the Coolibah Plateau.

Reference to this area can be found within the following DIPE Technical Report – TR40/90.

#### **4.1.18 EXISTING STOCKPILES (2)**

These Existing Stockpiles (2) are located outside the Gregory National Park. Access to the Existing Stockpiles (2) is located south of the Victoria Highway at the Coolabah Station turn off, 21.60km west of PRP 20, Victoria River Bridge east abutment, on the Victoria Highway at Chainage 215.19km. The pit area is located 3.9km south of the Victoria Highway along the station fence line. At 3.9km the access to the pit area is 650 meters LHS. The existing stockpiles have revegetated with shrubs and saplings. The area is located on the lower foot slope area of Stokes Range.

The existing pit area is estimated at 8500m<sup>2</sup> and contains laterised sandstone gravel & cobbles. Est. MPS 150-300mm, Nom. 40-75, PI 0-4, CBR >100. An estimated reserve in this pit area is 3000m<sup>3</sup> not taking into account the oversize material estimated at 10-20% and loss due to the removal of the vegetation. This area could be extended if laboratory testing on a bulk sample taken from the stockpile return results that conform to the DIPE specification for sealed basecourse.

Laboratory tests carried out on the bulk sample taken comprised the following,

- Particle Size Distribution (AS1289 3.6.1)
- Plastic Limit (AS1289 3.1.1)
- Liquid Limit (AS1289 3.2.1)
- Linear Shrinkage (AS1289 3.3.1)
- Plastic Index (AS1289 3.4.1)
- Maximum Modified Dry Density (AS1289 5.2.1)
- Californian Bearing Ratio at 100% (basecourse)  
MMDD 4-day soak (AS1289 6.1.1),

Access to this area during the wet season months would be difficult because there are a number of watercourses, which cross the access track to the stockpile area.

Laboratory test results from the bulk sample taken are presented in Tables 2&3.

#### **4.1.19            EXISTING STOCKPILES (3&4)**

These Existing Stockpiles (3&4) are located outside the Gregory National Park. These existing stockpiles are located on top of a plateau on the Stokes Range where it appears that a dozer has pushed up two stockpile areas of laterised sandstone gravel & cobbles. The existing stockpiles have revegetated.

This area has not been utilised due to the difficulty in accessing this location where it appears that the dozer has been the only machinery on the plateau with no existing access track to the area. The estimated cost of building an access road to the top of Stokes Range would cost in excess of \$1M due to difficult terrain and erosion protection measures required for the construction of the road.

#### **4.1.20            SITE 19**

Site 19 is located outside the Gregory National Park. This area was located during the aerial reconnaissance where existing stockpiles were evident and GPS co-ordinates were taken. Site 19 could not be accessed by 4WD as Sandy Creek and feeder creeks have cut access to the area. This area holds promise for use as a source of sealed basecourse gravel. Material extracted from this area would require screening to remove the oversize material. Sampling and laboratory testing will need to be carried out to ascertain the properties of the existing stockpiled material. This area has promise as a potential sealed basecourse source that could be extended, although a site visit is needed to confirm the potential.

Reference to this area can be found within the following DIPE Technical Report – TR40/90.

**4.1.21**      **SITE 20**

Site 20 is located outside the Gregory National Park. Access to Site 20 is located 1.42km west of PRP 22, Fitzroy Station turn off, on the Victoria Highway at Chainage 219.51km. The pit area is located 14.5km south of the Victoria Highway along the station fence line. The existing stockpiles in this area have revegetated with shrubs and saplings. The area is located on the lower foot slope area of Stokes Range.

This area was located during the aerial reconnaissance where existing stockpiles were evident and GPS co-ordinates were taken. Site 20 could not be accessed by 4WD as Sandy Creek and feeder creeks have cut access to the area. This area holds promise for use as a source of sealed basecourse gravel. Material extracted from this area would require screening to remove the oversize material. Sampling and laboratory testing will need to be carried out to ascertain the properties of the existing stockpiled material. This area has promise as a potential sealed basecourse source that could be extended, although a site visit is needed to confirm the potential. An alternative access to this area may be able to be located along the access track to Site 7.

Reference to this area can be found within the following DIPE Technical Report – TR40/90.

**4.1.22**      **SITE 7**

Site 7 is located outside the Gregory National Park. Both aerial and ground reconnaissance was unable to locate any sign of a gravel pit area in this vicinity. According to TR26/87, Site 7 is located just outside AAPA avoidance area 18 and the area does not look to have been utilised. Located between knolls in the Fitzroy Range the area may have some significance in regard to aboriginal culture.

Reference to this area can be found within the following DIPE Technical Report – TR26/87.

**4.1.23**      **SITES 8 & 8A**

Site 8 & 8A are located outside the Gregory National Park. Access to Site 8 & 8A is located 15.80km west of PRP 22, Fitzroy Station turn off, on the Victoria Highway at Chainage 233.89km. The pit area is located 8.82km south of the Victoria Highway along the station fence line. This area was found and as yet has not been utilised.

Prior laboratory testing on this material show that the PSD is a fit to marginal DIPE Specification Class 4 to marginal Class2 gravel. Plasticity ranged from non-plastic to PI 9%, LS 0.0 to 2.5%. CBR testing carried out at 100% MMDD returned results of 60. This area holds promise for use as a source of sub base gravel. Material extracted from this area would require screening to remove the oversize material.

Further investigation of this site is required to locate Site 8A where TR40/90 states that a small quantity of material suitable for use as sealed basecourse is located. It may be possible this area could be extended.

Reference to this area can be found within the following DIPE Technical Report – TR26/87 & TR40/90.

## 5.0 REFERENCES

Technical Report 26/87

Victoria Highway, 124 to 280 KM

(Delamere Road to Timber Creek) Materials Reconnaissance

By Ted Warren & Associates

Technical Report 02/88

Victoria Highway, 124 to 468 KM - Pavement Material Options

By Berndt Weber

Technical Report 15/90

Victoria Highway CH: 185.5 KM. to 193.0 KM

Gravel Sites Evaluation

By Ted Warren & Associates

Technical Report 17/90

Victoria Highway Upgrading

Gravel Search on Innesvale Plateau

By Dames & Moore

Technical Report 23/90

Victoria Highway CH. 203.8 KM

Site 6 Gravel Re-evaluation

By Ted Warren & Associates

Technical Report 24/90

Victoria Highway, Potential Gravel Source Areas, Chainage 102 to 152 KM

By Department of Transport & Works (Gordon Halstead)

Technical Report 25/90

Victoria River Gravel Deposits, Materials Search

By Acer Vaughan Pty/Ltd

Technical Report 40/90

Victoria Highway: Joe Creek to Skull Creek, Pavement Materials Search

By Ted Warren & Associates

Technical Report 15/91

Victoria Highway Upgrading, Chainage 208.6 to 239.4 KM

Victoria River Gravel Deposits, Preliminary Materials Investigation

By Acer Vaughan Pty/Ltd

Technical Report 16/91

Victoria Highway Upgrading, Chainage 151.9 to 185.5 KM

Victoria River Gravel Deposits, Preliminary Materials Investigation

By Acer Vaughan Pty/Ltd

Technical Report 09/92  
Victoria Highway, Chainage 152 to 185 KM  
Gravel Sources (Innesvale Plateau Deposits)  
By Dames & Moore

Technical Report 16/91  
Victoria Highway Upgrading, Chainage 151.9 to 185.5 KM  
Preliminary Materials Investigation  
By Acer Vaughan Pty/Ltd

Technical Report 23/96  
Victoria Highway, Chainage 193 to 208 KM, (Victoria River Bridge to Lost Creek)  
Pavement Materials and Subgrade Investigation  
By Ullman & Nolan Geotechnic Pty/Ltd

**Table 2: Summary of Laboratory Test Results Victoria River Gravel Search Bulk Samples,**

Sample Location & Depth (mm)	ATTERBERGS			PSD Data			Compaction Data		CBR / % relative compaction MMDD
	LL	PI	LS	%Gravel	% Sand	% Fines	MMDD (t/m <sup>3</sup> )	% OMC	
Existing Stockpile (2)	17%	2%	1.0%	65	23	12	2.23	7.3	240 @ 100% MMDD
Vic. River Loam (Coolibah)	30%	15%	8.0%	1	41	58	-	-	-

**Table 3: Comparison of Victoria River Gravel Search Bulk Samples PSD Results to D.I.P.E Specification, PSD Class 2&3**

Sieve Size (mm)	Existing Stockpile(2) % Passing	Vic. River Loam (Coolibah) % Passing	D.I.P.E CLASS 2 PSD % Passing	D.I.P.E CLASS 3 PSD % Passing	D.I.P.E SELECT FILL PSD % Passing
75.0	100				100
37.5	86		100		
19.0	70		70-100	100	
9.5	54		50-80	70-100	30-100
4.75	42	100	35-65	50-80	
2.36	35	99	25-50	35-65	15-65
0.425	30	98	10-30	15-35	
0.075	12	58	4-16	6-20	5-25
<b>PI x % &lt; 0.425mm</b>	60	1470	<b>180max</b>	<b>400max</b>	--

# APPENDIX C

## GPS INFORMATION VICTORIA HIGHWAY GRAVEL SEARCH AREA

## Waypoint List

Datum : WGS 84

Waypoint File : VICTORIA HIGHWAY GRAVEL SEARCH CH185.8 - 229.1

2/12/2004 6:52:42 PM

Num	Zone	Easting	Northing	Description
28	52L	753023	8285846	Access Site 17A
29	52L	744525	8296747	Access to Innesvale North Plateau
57	52L	711397	8277665	Coolibah Plateau Gravel pit area
59	52L	711937	8275531	Coolibah Station turn-off
60	52L	736081	8274271	Escarpment Creek, Site EC2
62	52L	716366	8274219	Site Existing Pit (1)
64	52L	718269	8275609	Existing Pit 1 turn-off
65	52L	733177	8274784	Northeast Site 5
66	52L	736807	8275108	Site 4
67	52L	737284	8275468	Site 4
68	52L	737644	8273854	East of Site 4, south side of Victoria Hwy.
69	52L	742150	8274205	Site 15, south side of Victoria Hwy
70	52L	752575	8284281	Site 17A, south side of Victoria Hwy.
71	52L	752808	8283982	Site 17A, south side of Victoria Hwy.
72	52L	712310	8273368	Exhausted scrape
73	52L	716669	8268757	Existing Stockpiles (3), Top of plateau
74	52L	714632	8270313	Existing Stockpile 4, Top of plateau
75	52L	713051	8271942	Existing stockpiles (2), south of the Coolibah Stn turnoff.
91	52L	741840	8296314	Innesvale Plateau North gravel pit area
92	52L	747438	8283085	Access turn-off to Innesvale Plateau (south)
98	52L	697880	8258312	Site 8
102	52L	728455	8272572	PRP18 Victoria Hwy Ch193.59, Vic River Bridge east abut.
103	52L	757942	8288666	PRP18 Victoria Hwy Ch153.73, Innesvale Stn. turn-off
104	52L	709199	8274489	PRP22 Victoria Hwy Ch218.09km, Fitzroy Stn. turn-off
112	52L	709621	8278708	Site RG7
114	52L	719783	8274065	Ross Christie (DIPE Kath.) Wpt.1
115	52L	709346	8264102	Ross Christie (DIPE Kath.) Wpt.4
116	52L	708935	8264100	Ross Christie (DIPE Kath.) Wpt.5
121	52L	746678	8286744	Site 1
123	52L	749363	8276121	Site 2A
124	52L	746970	8289515	Site IP2
125	52L	747651	8290125	Site IP3
126	52L	747631	8287533	Site IP4
127	52L	726658	8276881	Site RG1, area not cleared
128	52L	722542	8275840	Site RG2
129	52L	741951	8274316	Site 15 turn-off
130	52L	711333	8269483	Possible Site 19, located by air
131	52L	709727	8264080	Site 20, located by air
132	52L	707966	8274084	Site 20 turn-off
133	52L	740125	8273591	Site 3
134	52L	736387	8274351	Site 4 turn-off
135	52L	731547	8273963	Site 5
136	52L	733334	8273967	Site 5 turn-off
137	52L	722860	8273766	Site 6, Joes Creek roadside stop
138	52L	701647	8269855	Site 7, area not located
139	52L	700383	8270398	Site 7 turn-off (alternative access to Site 20?)
143	52L	696682	8266035	Site 8 turn-off
144	52L	692544	8263662	25-NOV-04 12:18:37
145	52L	694114	8264385	25-NOV-04 12:19:46
148	52L	736496	8275221	Telstra Tower Site west of Site 4 pits