Soil Conservation Service

SITE INVESTIGATION

Former Livestock Market Centre, Gunnedah

NSW Trade and Investment, Crown Lands

prepared by

Soil Conservation Service

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DRAFT REPORT

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1 INTRODUCTION

The Soil Conservation Service was engaged by NSW Trade & Investment, Crown Lands (Regional Projects West) to conduct a site investigation for the Former Livestock Market Centre, Gunnedah. The site, located at 1 Kamilaroi Highway, Gunnedah (Lots 684 & 685 in DP 728405, Lot 644 in DP 755503 and part Lot 7030 in DP 1029309) operated as part of the former 'Jones Berry Agencies' Livestock (Pig) Marketing Centre for a period of time.

A previous site investigation conducted by Mitchel Hanlon Consulting (on behalf of Dougherty Pastoral Company) identified two areas of faecal coliform contamination and recommended further investigation to assess the identified 'hotspots'. This study was undertaken to reassess the previous results and also to satisfy council requirements.

1.1 Scope

The scope of the site investigation for the Former Livestock Market Centre, 1 Kamilaroi Highway, Gunnedah included:

- Site inspection and excavation of two soil test pits (to a depth of 1.5 metres) within 1 metre of existing hole locations as identified by Figure 5 on Page 23 of the Mitchel Hanlon report.
- Collect soil samples from each test pit at 0.2 metres and 1.5 metres and submit to the laboratory for analysis.
- Test four soil samples for *E. Coli* and faecal coliforms (report as CFU/100g).
- Written report with methodology, results of laboratory analysis, interpretation of laboratory analysis and discussion.

2 PREVIOUS STUDIES

A previous study was conducted on this site by Mitchel Hanlon Consulting to assess the site soil condition and determine the likelihood or presence of any soil contamination. The Mitchel Hanlon report was prepared to accompany an application to Gunnedah Shire Council and the NSW Department of Planning seeking the site to be rezoned from its current 'SP2 Infrastructure' and REI Public Recreation'zoning and was also required to conform to the requirements of the appropriate NSW EPA and ANZECC guidelines.

Mitchel Hanlon Consulting reported that the laboratory results obtained indicate that the site is not impacted by concentrations of heavy metals or other metalloids (arsenic, barium,

cadmium, copper, chromium, lead, zinc and mercury), total petroleum hydrocarbons (TPH), organochlorides and organophosphates (OC/OP), polychlorinated biphenyls (PCB) or polynuclear/cyclic aromatic Hydrocarbons (PAH) in excess of the relevant thresholds. However, it was determined that the site contained two areas of faecal coliform contamination (identified as TP 5 and TP7A). The results report by Mitchel Hanlon and the threshold criteria (based on the NSW EPA, 2000) for *E. coli* and faecal coliforms are listed in Table 1.

Table 1. The *E. coli*, faecal coliforms threshold report by Mitchel Halan.

Analyte	Max	Mean	Threshold
E. coli	<200 CFU/100g	<200 CFU/100g	<200 CFU/100g
Faecal coliforms	17,000 CFU/100g	1,287.50 CFU/100g	1,000 CFU/100g

3 SITE INSPECTION

An inspection of the site (Former Livestock Market Centre, 1 Kamilaroi Highway, Gunnedah) was conducted by Stephen Young (Soil Conservation Service) on the 27 June 2013. During the inspection site characteristics were recorded and two soil test pits (TP) were excavated (Figure 1, Figure 2, Figure 3, and Table 2).

Figure 1. Location of TP21

Figure 2. Location of TP22.

The location of previous test pits (TP 5 and TP7A) was identified on-site and the test pits were excavated within 1 metre of the previous test pit. The test pits were excavated with a CAT 301.4C excavator. Soil samples were collected at depths of 0.2 metres and 1.5 metres in sterile jars. The four samples collected were sent to the Sonic Food and Water Testing,

Singleton for analysis on the 28 June 2013 having been kept cool during transport to the laboratory.

Table 2. Soil test pit descriptions and locations.

Test Pit	TP21	TP22
Location	1 m upslope from TP7A	1 m upslope from TP5
Horizon	0-0.05 m – A horizon loam topsoil, gravelly	0-0.2 m – A horizon loam topsoil, hardset
	0.05-0.3 m – B horizon (subsoil) clay	0.2-0.4 m – A_2 horizon bleached material
	0.3-1.5 m – B horizon (subsoil) sandy clay	0.4-1.5 m – B horizon (subsoil) reddish brown clay, strong structure, equipment refusal

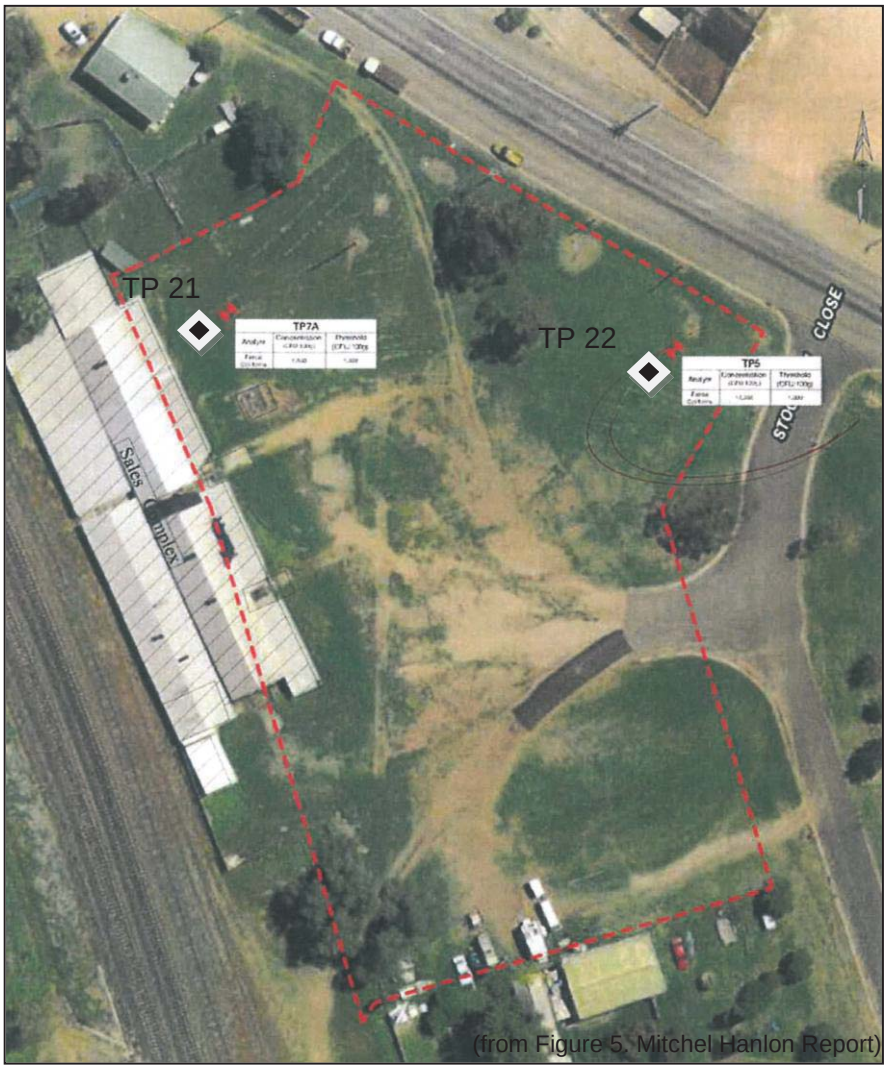

Figure 3. Location of soil test pits (TP).

4 LABORATORY ANALYSIS

The samples collected were analysed by the NATA Accredited laboratory, Sonic Food and Water Testing (Douglass Hanly Moir Pathology Pty Ltd), NATA Accreditation Number 4034 (this laboratory is believed to be the same laboratory that conducted the initial tests). The samples were analysed for *E. coli* and faecal coliform. The faecal coliform count of soil was determined by the Sonic In-house most probable number method (WT19-2008) and the *E. coli* Count in Soils by Sonic In-house most probable number method (WT19-2008).

The results of the laboratory analysis reported in the Sonic Food and Water Testing-Microbiological Final Report-Certificate of Analysis W1309367 are summarised in Table 3. The results on the analysis were all less than 200 colony forming units (CFU) per 100 grams.

Table 3. Summary of the microbiological report (W1309367) Sonic Food and Water Testing.

Sample	Faecal coliform count (CFU/100 g)	*E. coli* count (CFU/100 g)
TP21 1.5M	<200	<200
TP22 0.2M	<200	<200
TP22 1.5M	<200	<200
TP21 0.2M	<200	<200

CFU/100 g – colony forming units per 100 grams

5 THRESHOLD ASSESSMENT CRITERIA

The Mitchel Hanlon report utilised the *Environmental Guidelines: Use and Disposal of Biosolids Products* (NSW EPA 200) as the threshold for *E. coli* and faecal coliforms. The microbiological standards for the stabilisation of Grade A Biosolids are present in Table 4. The assessment criteria as colony forming units (CFU) per 100 grams are also listed. The threshold of less than 100,000 colony forming units per 100 grams (<100,000 CFU/100 g) is equivalent to less than 1000 most probable number per gram (<1,000 MPN per gram).

Table 4. Stabilisation Grade A Biosolids Microbiological Standards (NSW EPA 2000, Table 3.5).

Parameter	Standard	Criteria
E. coli	<100 MPN per gram (dry weight)	<10,000 CFU per 100 grams
Faecal coliforms	<1,000 MPN per gram (dry weight)	<100,000 CFU per 100 grams

6 DISCUSSION AND CONCLUSIONS

The results of all samples tested (TP21 1.5M, TP22 0.2M, TP22 1.5M and TP21 0.2M) for both *E. Coli* and faecal coliforms were all less than the NSW EPA (2000) standard of less than100,000 colony forming units per 100 grams (<100,000 CFU/100 g). These results indicate that these samples are not contaminated with either *E. coli* or faecal coliforms. Thus, no further investigation is considered to be required.

7 REFERENCES

NSW EPA (2000) Environmental Guidelines: Use and Disposal of Biosolids Products, Environment Protection Authority, Sydney.

Mitchel Hanlon Consulting Pty Ltd, Preliminary Site Investigation and Baseline Assessment for the Former Livestock (Pig) Market Centre, prepared for Dougherty Pastoral Company, Yamba, NSW.

8 APPENDICES

Sonic Food and Water Testing-Microbiological Final Report-Certificate of Analysis W1309367.