

- Environmental Assessments and Audits
- Marine, Estuarine and Freshwater Studies
- Water Quality
- Air Monitoring
- Environmental Hygiene and Health
- Hazardous Chemicals
- Environmental Risk Assessments
- Analytical Services

CONTAMINATED LAND ASSESSMENT

AND REMEDIAL PLAN

- LOT 1 ON RP21135

CORNER GEORGE AND WELGE STREETS, KALBAR

Prepared for:

sch4p4(6) Personal information

ENVIROTEST

May 1994

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1.0 BACKGROUND

1. A proposal (Application No. 380/684) to sub-divide Lot 1 on RP21135 Parish of Fassifern in the town of Kalbar has been lodged with the Boonah Shire Council by J.B. Goodwin, Midson & Partners, Consulting Surveyors Planners and Development Consultants.
2. This application is on behalf of sch4p4(6) Personal information and proposes to sub-divide Lot 1 on RP21135, into Lots 1 to 4 as shown in Figure 1.
3. Currently, the property is listed under the Queensland Heritage Act 1992 and also in the Contaminated Land Register as a probable contaminated site.
4. Existing heritage buildings on the site are the former Wiss Bros Store (Emporium), Cottages and Timber Storage Shed. However, the Queensland Department of Environment and Heritage has approved the proposed works subject to conditions in Schedule 1 (see Appendix 1).

The Boonah Shire Council (3 March, 1994 - see Appendix 2) also advises that contamination of the property is indicated by previous use of the land for many years by Chemical and Air Services Pty Ltd as a major retail outlet for agricultural and pastoral chemicals. As well, a significant level of chemical odour was considered to remain in the timber storage shed indicating possible chemical residues remaining.

2.0 DESCRIPTION OF EXISTING PROPERTY

2.1 Property

Lot 1 on RP21135
Original Portion 169
Parish of Fassifern, County of Churchill
Reference Volume 2597
Folio No. 179

2.2 Heritage Site - Current*

Lodgement Date	10-9-93
Authority	Department of Environment and Heritage
Reference	FI No. 601200

* see approval for proposed sub-division (Appendix 1)

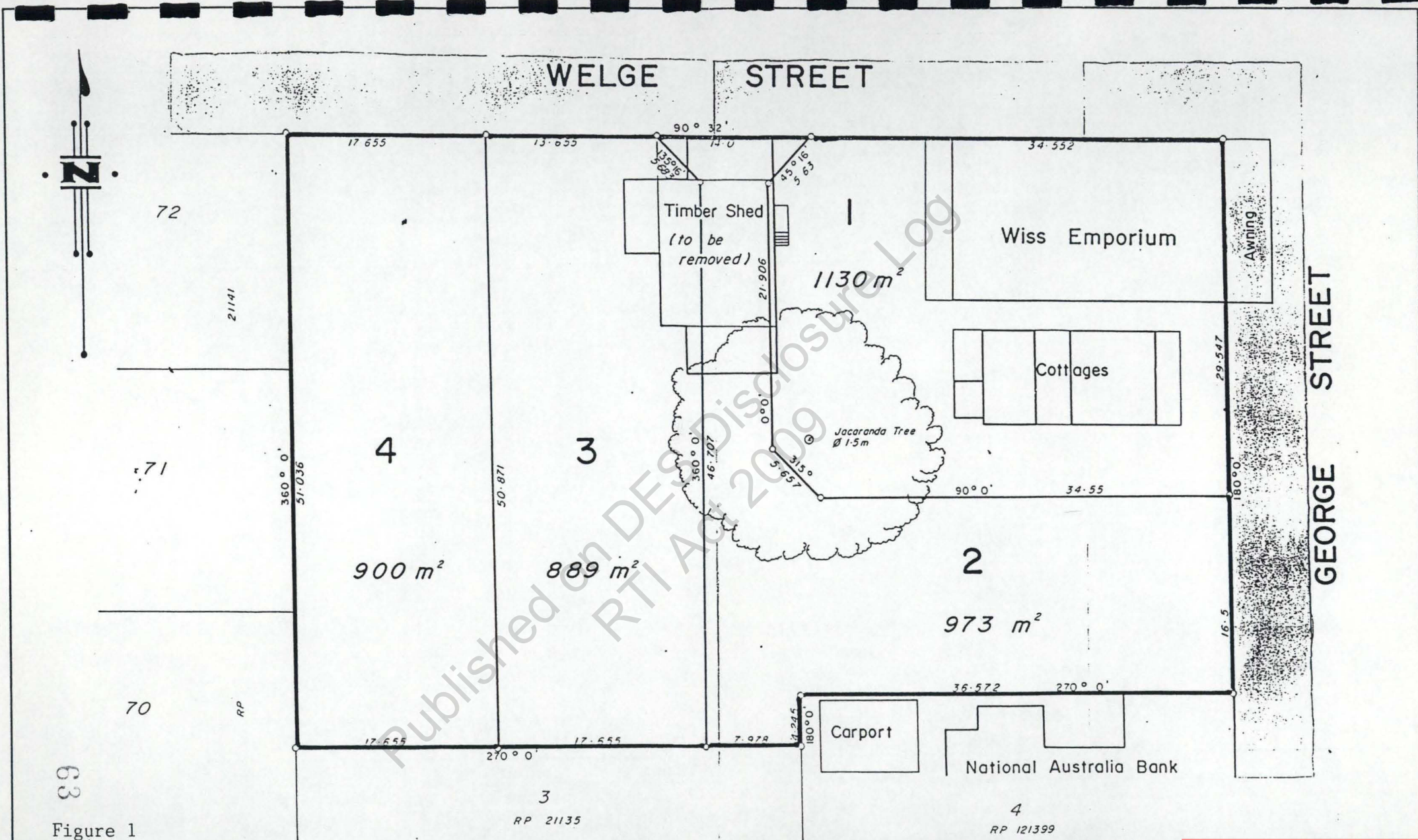


Figure 1

Areas & Distances are approximate only & are subject to survey.

Note - The property is listed under the Qld Heritage Act 1991

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REGISTERED PROPRIETORS: sch4p4(6) Personal information

sch4p4(6) Personal information

Plan of Proposed Lots 1-4 Cancelling
Lot 1 on RP 21135
Original Portion 169
Parish of Fassif County of Churchill

Surveyed		Designed	S.J.G.	7-2-94	FBK
Drawn	D.L.C.	Checked	S.J.G.	13-1-93	LBK

scale: 1:300

ref no 9324-1

AMDT

A3

2.3 Registered Proprietors

sch4p4(6) Personal information

as Joint Tenants

2.4 Current Land Use Zoning

Local business - Boonah Shire Town Plan

3.0 SCOPE OF INVESTIGATION AND REPORT

This report describes the results of a preliminary investigation of possible land contamination on the proposed sub-division Lots 2 to 4, as shown in Figure 1. It excludes the proposed Lot 1 which is to be retained as a heritage site as indicated.

The focus of the investigation is the timber storage shed, previously used for chemical storage (incl. pesticides), and surrounding soils.

Remedial recommendations for removal of this shed and other areas of the site (Lots 2 to 4) are included.

4.0 SITE LOCATION AND HISTORY

4.1 The site is located on the corner of George and Welge Streets within the centre of the town of Kalbar (Engelsburg until 1916) in the Fassifern district of south-east Queensland.

4.2 Historical notes on Kalbar and the Wiss Family, which developed the buildings on Lot 1 on RP21135, have been prepared by the Cultural Heritage Branch, Department of Environment and Heritage in April 1993 (excerpts are given in Appendix 3).

4.3 Early development of Lot 1 appears to have been limited to the operation of the Wiss store (in 1909) for farm produce and various other goods and later, residential dwellings and stables. Ownership of the property since 1951 is listed in Table 1.

4.4 Significantly, the property was used by Chemical and Air Services Pty Ltd from 1966 to about 1989 for the storage and marketing of agricultural chemicals, including pesticides. This activity is known to have involved the current timber shed at the rear of the Wiss store (emporium). A local resident who worked in the shed for about 12 years has stated that a wide range of pesticides was marketed, including hormone type herbicides, DDT (large quantities) and arsenic. Schedule 7 poisons were stored on-site.

**Table 1: Registered Ownership of Lot 1 on RP21135
Vol. 2597 Folio 179**

DATE REGISTERED	NAME
12-2-1951	sch4p4(6) Personal informati
18-6-1962	
14-7-1965	
6-7-1966	Chemical and Air Services Pty Ltd
3-11-1987	Change of name to Noble Chemicals Holdings Pty Ltd
19-12-1987	sch4p4(6) Personal information
24-8-1992	

4.5 Current use of the timber shed is for casual storage of cars, engine parts and repair work. Long grass covers most of the vacant area. Some "dumped" rubbish, eg. timber/car body is also visible among the grass.

4.6 The property is gently sloping and well drained towards Welge and George Streets where runoff enters the surface stormwater drainage for the centre of Kalbar. (There was no visible evidence of drainage "stains" from the property or likely groundwater contamination.)

5.0 INSPECTION AND SAMPLING

5.1 Inspection

The property was inspected and sampled on the 4 May, 1994, following discussions with sch4p4(6) Personal information. The physical features of the property can be characterised as:

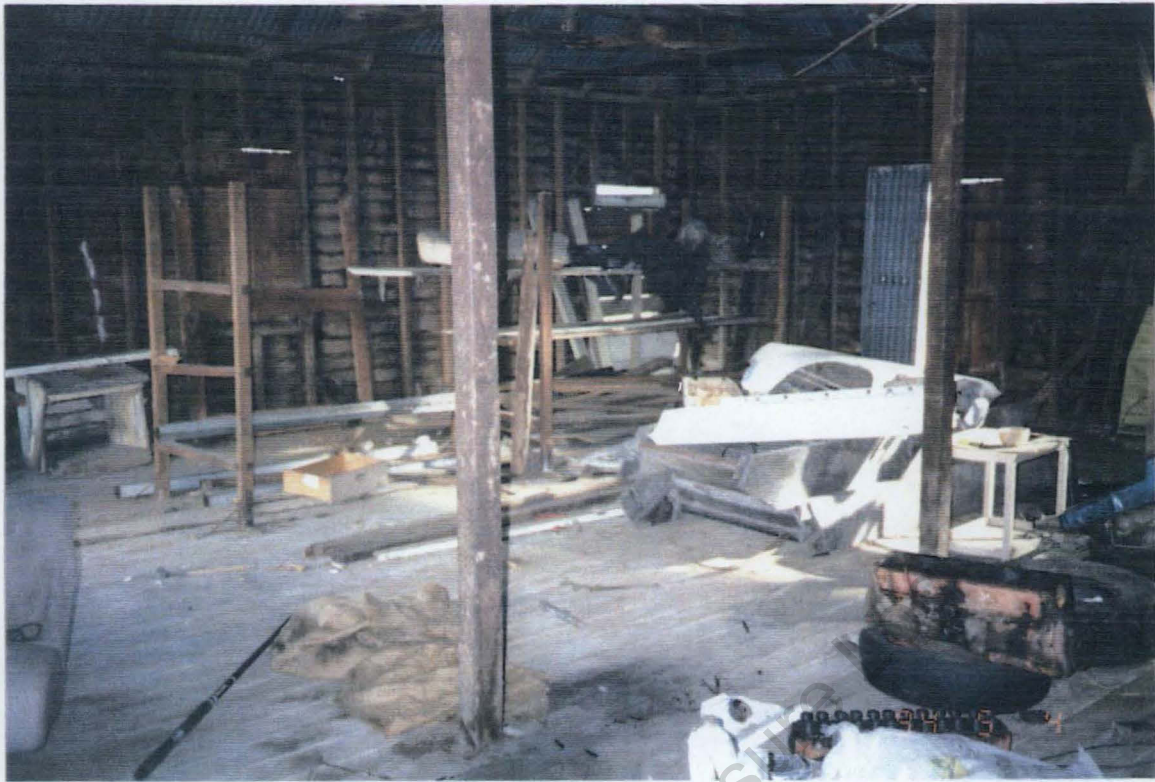
- Timber storage shed with a galvanised iron roof and a timber plank floor on wooden stumpings. Three garages or sheds were attached (see Photographs 1-10).
- The main storage shed consisted of one large area with two adjoining storage rooms. Chemicals appeared to have been stored in the main area and in at least one adjoining room (S7 Poisons Room) which showed evidence of wire mesh sealing.
- The main floor area was covered in dust, debris and motor engine parts. A chemical odour pervaded the building.



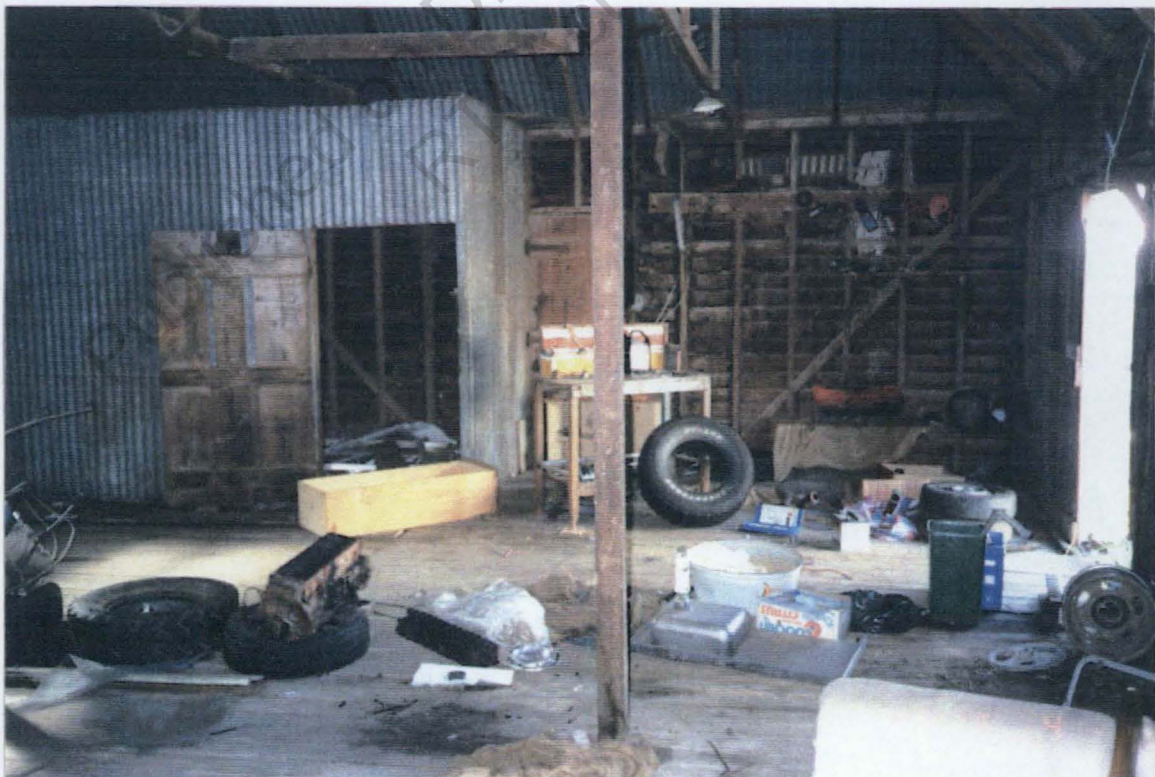
Photograph 1
Front garage
- Site 1



Photograph 2
Above Site 3 area
Note Chem-Air sign



Photograph 3
Inside main shed area



Photograph 4
Northern end of shed - "Poisons" room



Photograph 5
Rear garage - Site 4



Photograph 6
Lot 2 - Site 7



Photograph 7
North-eastern corner - timber shed



Photograph 8
Welge Street - view towards east



Photograph 9
Rear area



Photograph 10
Lot 4 - Site 9

- Some chemical residues and minor oil spills were evident in the main building and within two garages containing "old" cans.
- Large areas of Lots 3 and 4 were covered with high grass and contained a stack of timber debris, an abandoned motor car body and flattened patches where motor car bodies had previously been dumped. Near Welge Street, on Lot 3, some imported sand and gravel was abandoned on the property.
- The rear of the property (ie. Lot 4) adjoined the Kalbar SEQEB depot (closed). Physical inspection found no evidence of any chemical storage of fuel tanks near the fence line or any indications of any possible chemical spills, discharges or drainage. This also applied to the other perimeter of the property.

5.2 Sampling

Soil (and dust) sampling was designed to investigate the extent of contamination within the timber shed and in its immediate surrounds, and specific areas where physical dumping or disturbance had occurred.

A "background" soil sample was also taken from a cleared area of Lot 2 (Location 7) where there was no apparent use, "dumping" or storage of materials.

A composite dust was also taken from the floor area of the timber shed.

Site history investigations and inspection indicated that the principal chemicals of concern would be:

- the persistent organochlorine insecticides, particularly DDT
- arsenic
- lead from battery residues/fittings and possibly paint residues
- motor oil residues
- zinc from corrosion of iron sheeting and metal parts
- possible petroleum solvents used in pesticide formulation

The locations and depths of soil sampling sites are summarised in Table 2 and marked on Figure 2.

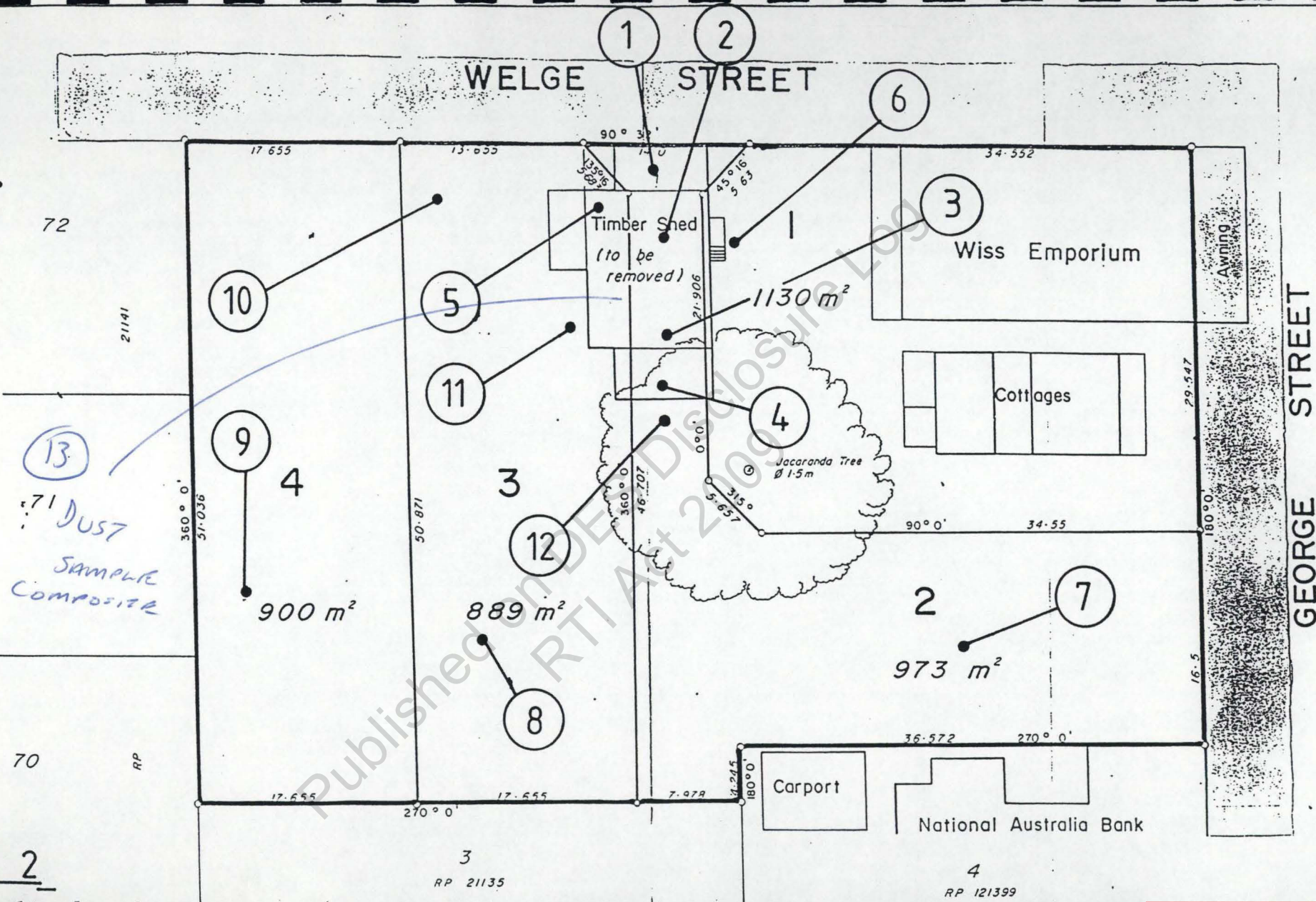
Table 2: Sampling Locations
Proposed Sub-division - Lot 1 on RP21135, Kalbar
4 May, 1994

SAMPLE I.D.	LABORATORY NO.	LOCATION	DEPTH (mm)	COMMENTS
1A	9478-1	Attached storage shed/garage (galvanised iron), outside S7 poison room	0-100	"Old" car present; "white" patch of residues, possibly from battery
1B	9478-2		300	
2A	9478-3	Inside storage shed (near S7 poison room)	0-100	Above ground timber floor removed to allow sampling of surface and sub-surface soils
2B	9478-4		300	
3A	9478-5	Inside storage shed (near old irrigation equipment/chemical storage)	0-100	As above
3B	9478-6		300	
4	9478-7	Rear attached shed	0-100	Composite soil sample - "old" car present; "white" residues and stains
5	9478-8	Under building - below corner of S7 poison room	0-100	Access via open galvanised iron garage
6	9478-9	Ground in front of old loading bay/steps	0-100	(Lot 1)
7	9478-10	Open grassed area - Lot 2	0-100	
8	9478-11	Lot 3	0-100	Cleared area in high grass near track - old stables area - scrap timber and other solid wastes nearby
9	9478-12	Lot 4	0-100	Near old car body - possible oily patches in grass
10	9478-13	Lot 3	0-100	Composite soils - building construction - soils/fine gravel and disturbed soils (building recently constructed opposite sampling site)
11	9478-14	Lot 3 - rear of shed	0-100	In long grass - near old outside toilet shed

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SAMPLE I.D.	LABORATORY NO.	LOCATION	DEPTH (mm)	COMMENTS
12	9478-15	Outside of attached shed - rear of timber storage shed	0-100	
13	9478-16	Inside timber storage shed	Composite dust from inside storage shed	Composite dust residues - floors inside building

Soils were collected by hand auger from surface soils (0-100 mm) as well as at depth (300 mm) from ground below the timber storage floor and in the front garage. The auger was washed thoroughly and dried between samples. Soil samples were placed in labelled glass bottles (acid/solvent washed) (1 litre), sealed with teflon-lined lids, and transferred to eskies for transport to the Envirotest Laboratory in Brisbane. Sub-samples were further prepared at the Envirotest Laboratory for cross-checking with other laboratories.



71 DUST
SAMPLE
COMPOSITE

FIG 2

Soil Sampling Locations

Areas & Distances are approximate only & are subject to survey.

Note: The property is listed under the Old Heritage Act 1991

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REGISTERED PROPRIETORS sch4p4(6) Personal information

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Plan of Proposed Lots 1-4 Cancelling
Lot 1 on RP 21135
Original Portion 169
Parish of Fassifern County of Churchill

Surveyed		Designed	S.J.G	7-2-94	FBK
Drawn	D.L.C	Checked	File A	13-1-93	LBK

scale: 1:300 ref no 9324-135

6.0 ANALYTICAL METHODOLOGY

Sample Preparation

Samples were prepared according to AS 1289.1-1991: Method 1: Preparation of disturbed soil samples for testing.

pH

Electrode (1:5 aqueous extract)

Conductivity

Electrode (1:5 aqueous extract)

Soil Moisture

Moisture content was determined gravimetrically and is expressed as a percentage on an oven-dried basis (105°C).

Petroleum Hydrocarbons - Fractions

Reference: Sonication extraction USEPA Method 3550

Samples were solvent extracted using sonication. Extracts were filtered over sodium sulphate and evaporated to 2 ml. Determination was by gas liquid chromatography (GLC) coupled with a flame ionisation detector (FID). GC Model: Varian 3400. Delta Chromatography software was used for data integration.

Trace Elements

Reference: USEPA Method 3050

Samples were digested with nitric acid and hydrogen peroxide. Determination was by inductively coupled plasma-mass spectrometry (ICP-MS) (VG Plasma Quad).

Aromatics (BTEX)

ALS Method Code: EP-080

Extraction: Purge and trap

Analysis: GC/MS

Pesticides

Acetone/hexane extraction, Florisil micro-column clean-up. Determination by gas liquid chromatography coupled with an electron capture detector. Delta Chromatography software was used for data integration.

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7.0 ANALYTICAL RESULTS

The results of soil (and dust) testing for quality indicators and contaminants are presented in Tables 3 to 6. Additional results for volatile aromatic compounds (BTEX) and organophosphorus insecticides are included in the Quality Assurance Section.

Table 3: pH, Conductivity and Moisture

SAMPLE I.D.	LABORATORY NO.	pH (Stand)	CONDUCTIVITY (μS/cm)	MOISTURE (%)
1A	9478-1	7.62	1760	3.5
1B	9478-2	7.73	234	5.9
2A	9478-3	7.81	2350	3.9
2B	9478-4	7.31	1940	5.8
3A	9478-5	7.10	2360	5.0
3B	9478-6	7.62	1440	7.8
4	9478-7	6.65	372	5.8
5	9478-8	8.15	51	4.5
6	9478-9	6.80	28	4.6
7	9478-10	6.50	23	7.7
8	9478-11	6.95	20	8.8
9	9478-12	6.68	71	9.5
10	9478-13	7.60	167	4.9
11	9478-14	6.02	22	6.2
12	9478-15	7.57	44	5.0
13	9478-16			4.0

**Table 4: Hydrocarbon Fractions
(mg/kg, dry weight basis)**

COMPOUND	SAMPLE I.D.							
	1A	1B	2A	2B	3A	3B	4	5
Lab No.	9478-1	9478-2	9478-3	9478-4	9478-5	9478-6	9478-7	9478-8
C ₁₀ - C ₁₄	<50	<50	<50	<50	<50	<50	<50	<50
C ₁₅ - C ₂₈	<100	<100	310	580	<100	<100	<100	<100
C ₂₉ - C ₃₆	1200	<100	660	530	<100	<100	<100	<100

COMPOUND	SAMPLE I.D.							
	6	7	8	9	10	11	12	13
Lab No.	9478-9	9478-10	9478-11	9478-12	9478-13	9478-14	9478-15	9478-16
C ₁₀ - C ₁₄	<50	<50	<50	<50	<50	<50	<50	<50
C ₁₅ - C ₂₈	<100	<100	3620	<100	<100	<100	<100	<100
C ₂₉ - C ₃₆	<100	<100	1400	<100	<100	<100	<100	<100

Table 5: Pesticide Residues (mg/kg, dry weight basis)

COMPOUND	SAMPLE I.D.					
	1A	1B	2A	2B	3A	3B
Laboratory No.	9478-1	9478-2	9478-3	9478-4	9478-5	9478-6
HCB	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
γ -HCH (Lindane)	<0.01	<0.01	0.02	<0.01	0.02	0.01
δ -HCH	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01	0.02	0.01	0.01	<0.01	<0.01
Heptachlor Epoxide	0.06	<0.01	0.03	<0.01	0.26	0.23
Total Chlordane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
α -Endosulphan	0.04	0.05	0.02	0.03	<0.01	<0.01
DDE	0.95	0.21	0.08	<0.01	1.53	1.04
Dieldrin	0.26	<0.01	<0.01	<0.01	<0.01	<0.01
β -Endosulphan	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
DDD	2.60	0.36	<0.01	<0.01	0.41	0.28
DDT	7.52	1.04	0.23	<0.01	1.76	1.84
Chlorpyriphos	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

COMPOUND	SAMPLE I.D.				
	4	5	6	7	8
Laboratory No.	9478-7	9478-8	9478-9	9478-10	9478-11
HCB	<0.01	<0.01	<0.01	<0.01	<0.01
γ -HCH (Lindane)	<0.01	0.02	<0.01	<0.01	<0.01
δ -HCH	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01	<0.01	<0.01	<0.01	0.95
Heptachlor Epoxide	<0.01	0.52	0.01	<0.01	3.10
Total Chlordane	<0.01	<0.01	<0.01	<0.01	<0.01
α -Endosulphan	<0.01	<0.01	0.04	<0.01	<0.01
DDE	0.31	0.20	1.78	0.04	0.41
Dieldrin	<0.01	0.40	<0.01	<0.01	<0.01
β -Endosulphan	<0.01	<0.01	<0.01	<0.01	<0.01
DDD	0.06	0.28	1.27	0.02	3.61
DDT	0.29	1.74	4.05	0.09	6.44
Chlorpyriphos	<0.01	<0.01	<0.01	<0.01	0.68

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Table 5 (cont)

COMPOUND	SAMPLE I.D.				
	9	10	11	12	13
Laboratory No.	9478-12	9478-13	9478-14	9478-15	9478-16
HCB	<0.01	<0.01	<0.01	<0.01	0.02
γ -HCH (Lindane)	<0.01	<0.01	<0.01	<0.01	0.21
δ -HCH	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01	0.01	<0.01	<0.01	<0.01
Aldrin	<0.01	<0.01	<0.01	<0.01	1.47
Heptachlor Epoxide	<0.01	<0.01	<0.01	<0.01	<0.01
Total Chlordane	<0.01	<0.01	<0.01	<0.01	<0.01
α -Endosulphan	<0.01	<0.01	0.03	<0.01	0.37
DDE	<0.01	0.03	0.94	0.02	43.4
Dieldrin	<0.01	<0.01	<0.01	<0.01	<0.01
β -Endosulphan	<0.01	<0.01	<0.01	<0.01	0.57
DDD	0.02	0.03	0.62	0.01	4.64
DDT	0.03	0.04	1.49	0.02	39.21
Chlorpyrifos	<0.01	<0.01	<0.01	<0.01	<0.01

Table 6: Trace Elements

SAMPLE I.D.	LABORATORY NO.	Co	Ni	Cu	Zn	As	Se	Mo	Cd	Sb	Ba	Hg	Pb
		(mg/kg, dry weight)											
1A	9478-1	22.0	55.5	38.2	1005	6.8	1.87	0.83	1.09	<0.05	170	0.1	230
1B	9478-2	17.4	36.2	25.8	252	3.1	0.85	0.32	0.74	<0.05	248	<0.05	65.1
2A	9478-3	20.1	41.4	29.2	375	71.4	2.50	0.42	0.36	<0.05	214	<0.05	221
2B	9478-4	18.3	32.8	23.7	270	48.8	1.06	0.80	0.21	<0.05	224	<0.05	233
3A	9478-5	20.6	40.0	31.0	598	134.2	3.02	0.85	1.00	<0.05	236	<0.05	398
3B	9478-6	19.8	37.4	27.0	289	57.3	2.21	0.54	0.27	<0.05	275	<0.05	351
4	9478-7	22.5	61.0	34.7	600	7.4	0.37	0.37	1.17	<0.05	159	<0.05	2160
5	9478-8	13.8	37.9	280	515	41.3	0.05	0.05	0.47	<0.05	207	<0.05	505
6	9478-9	32.9	83.1	74.0	710	51.4	2.09	0.70	1.16	<0.05	217	<0.05	357
7	9478-10	23.0	62.3	26.6	507	0.4	2.21	0.76	0.49	<0.05	246	<0.05	100
8	9478-11	29.2	59.6	39.4	335	7.0	2.37	0.28	0.39	<0.05	230	<0.05	85.1
9	9478-12	25.2	42.8	29.7	281	42.8	1.93	0.28	0.28	<0.05	244	<0.05	84.0
10	9478-13	19.6	47.8	65.8	450	11.3	<0.05	0.64	1.86	<0.05	228	<0.05	253
11	9478-14	16.4	28.5	63.7	1338	44.0	2.65	1.17	1.59	0.05	139	<0.05	1260
12	9478-15	16.9	45.7	22.5	428	4.6	0.58	0.80	0.53	<0.05	237	<0.05	120
13	9478-16	19.4	42.6	55.1	3440	170.6	0.30	1.43	2.33	0.1	266	<0.05	3360

— 60 60 200 100 20 — — 3/20 50 — 1 350

8.0 ASSESSMENT OF SOIL QUALITY AND CONTAMINATION

8.1 Soils

Soil pH ranged from slightly acidic (6.02) to alkaline (8.15). Soil salinity was low in outside soils on the property but elevated underneath the building.

As expected, organochlorine insecticide contamination, primarily DDT residues, was significant in soils below and near the building, although the rear "garage" area showed relatively low levels. Sites 1A and 1B, 3A and 3B, 5, 6 and 11 contained levels above 1 mg/kg of DDT residues. The maximum DDT level ($\approx$ 10.5 mg/kg) found, however, was isolated at Site 8 on proposed Lot 3 (see Figure 2).

At Site 3, significant DDT was also measured at 300 mm depth. (This was below an area of the building where storage of chemicals was apparent from surface residues and fittings.)

Australian and New Zealand guidelines for soil quality (ANZECC/NHMRC, 1992) suggest "background" levels of DDT in soils are up to about 1 mg/kg and the investigation level for dieldrin is 0.2 mg/kg. Values for other pesticides are not given except for some reference to Dutch "B" guidelines, which are designed primarily for groundwater protection.

Contamination of the property (and building) with various metals (eg. zinc, lead and arsenic) has also occurred in various areas.

A comparison of results in Table 6 with soil quality guidelines (ANZECC/NHMRC, 1992) in Table 7 shows lead soil levels at Sites 3, 4, 5, 6 and 11 to be above health investigation levels. This also applies to arsenic at Site 3A. Environmental investigation levels for arsenic are also exceeded at Sites 2, 5, 6, 9 and 11. Zinc contamination of the property is evident as well with soil concentrations generally above "background" levels. (Relatively high levels of zinc were found in the building "dust" which suggests chemical and/or corrosion sources from galvanised materials and paint residues.)

**Table 7: Environmental Soil Quality Guidelines
(mg/kg)**

HEAVY METALS	BACKGROUND A	ENVIRONMENTAL INVESTIGATION B	HEALTH INVESTIGATION LEVELS
Heavy Metals			
Antimony (Sb)	4 - 44	20	
Arsenic (As)	0.2 - 30	20	100
Barium (Ba)	20 - 200		
Cadmium (Cd)	0.04 - 2	3	20
Chromium (Cr)	0.5 - 110	50	
Cobalt (Co)	2 - 170		
Copper (Cu)	1 - 190	60	
Lead (Pb)	<2 - 200	300	300
Manganese (Mn)	4 - 12,600	500	
Mercury (Hg)	0.001 - 0.1	1	
Molybdenum (Mo)	<1 - 20		
Nickel (Ni)	2 - 400	60	
Tin (Sn)	1 - 25	50	
Zinc (Zn)	2 - 180	200	
Mineral Pollutants			
Boron	1 - 75	-	
Phenolic Compounds			
Phenols	0.03 - 0.5	-	
Monocyclic Aromatic Hydrocarbons (MAH)			
Benzene	0.05 - 1	1	
Toluene	0.1 - 1		
Polycyclic Aromatic Hydrocarbons (PAH)			
PAH (total)	0.95 - 5		
Chlorinated Hydrocarbons			
PCB (total)	0.02 - 0.1	1	
Pesticides			
Aldrin	<0.001 - <0.05		

HEAVY METALS	BACKGROUND A	ENVIRONMENTAL INVESTIGATION B	HEALTH INVESTIGATION LEVELS
Dieldrin	<0.005 - <0.05	0.2	
DDT	<0.001 - 0.97		
Other Chemicals			
Sulphate	35 - 1000	2000	
pH	6 - 8		

SOURCE: ANZECC/NHMRC (1992)

Interior building timber walls were "treated" with an oil.

Some cadmium levels were elevated but were not excessive. Cadmium tends to be associated with zinc but is also a significant contaminant in some superphosphate fertilisers.

Some surface contamination from petroleum oils was observed where vehicles had been "dumped" or stored in the garages. Residual fuel and motor oil contamination was found in the front garage, under the timber shed floor at Site 2, with probable petrol contamination at Site 9 (dumped vehicle area). Contamination appears to be confined to patches. At Site 2, oil contamination penetrated to 300 mm. Heavy motor oil contamination (≈ 5000 mg/kg) was also extracted from Site 8 (Lot 3).

8.2 Building Structures

"Dust" from the main timber shed floor was contaminated with relatively high levels of organochlorine insecticides (aldrin and total DDT), zinc (3440 mg/kg), lead (3360 mg/kg) and arsenic (171 mg/kg). Continual contact with this type of "dust" would be considered, at least, an excessive health risk. This type of "dust" and probably other residues within the building also have the potential to further contaminate surrounding soils.

The use of the building to maintain/store motor vehicle parts has also resulted in various oil and chemical-based spillages.

Draft guidelines for mineral oil and "petrol" contamination are 1000 mg/kg and 100 mg/kg respectively. Sites 1, 2 and 8 exceed the 1000 mg/kg value (see Table 4) while Site 9 contains ≈ 150 mg/kg of petrol-like hydrocarbons. (Petrol-like hydrocarbons were not indicated at other sites by inspection or gas chromatography.)

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9.0 QUALITY ASSURANCE

The results of additional screening tests and quality assurance through cross-checks with other laboratories are given in Appendix 4.

These are summarised below.

1. Pesticides

No organophosphorus insecticides were detected in Samples 9478-3 (Site 2A) and 9478-8 (site 5) by the Queensland Government Chemical Laboratory. Organochlorine insecticides were confirmed in both samples and results agreed with those reported by Envirotest.

2. Toxic Metals

Results for toxic metals in the same samples confirmed arsenic, lead, zinc (and copper) contamination.

3. Petroleum Hydrocarbons

No aromatic solvents or BTEX (benzene, toluene, ethyl benzene and xylenes) were detected by Australian Laboratory Services Pty Ltd in samples from four suspect areas (Sites 2A, 3A, 4 and 9).

Petrol contamination (C_6 to C_9) was indicated (≈ 150 mg/kg) in surface soil from Site 9 where a car body had been dumped. No other fuel or oil contamination was detected. This latter result agreed with the Envirotest findings.

10.0 PROPOSED SITE REMEDIAL OR MANAGEMENT PLAN

10.1 Contaminated Areas Identified

Areas recommended for clean-up can be identified as:

- the timber storage shed and attached "garages"
- soils below the timber floor up to a depth of 300 mm and also within the "garages"
- surface soils on Lot 3 to the rear of the timber shed as marked on Figure 3
- visible soil areas on Lot 4 where "car bodies" have been "dumped"
- areas of stacked timber and related "rubbish"

10.2 Removal and Disposal of Timber Shed

As proposed in the sub-division plan, the timber shed is to be removed from the property. The level of contamination in the shed is likely to present both a health hazard and a risk of further soil contamination.

It is recommended that the shed materials be dismantled and removed under controlled conditions to contain any contaminated dusts/residues. These materials should not be recycled.

In particular, floor planks should be wrapped with plastic to prevent any dispersal of "dusts".

Building materials from the shed should be disposed in a controlled landfill (and not burnt) operated by the Local Authority. The contamination present would be consistent with many materials currently disposed in controlled landfills.

It is also noted that a detailed description of the timber shed is required for heritage purposes prior to demolition (see Appendix 1, Schedule 1).

10.3 Removal and Disposal of Soil Contamination

Following removal of the shed, soils to a depth of 200 to 300 mm should be excavated from below the shed floor, probably during removal of stumpings.

Surrounding soil areas on proposed Lot 3 should be scraped to a depth of about 200 mm to remove surface contamination (see marked areas on Figure 3).

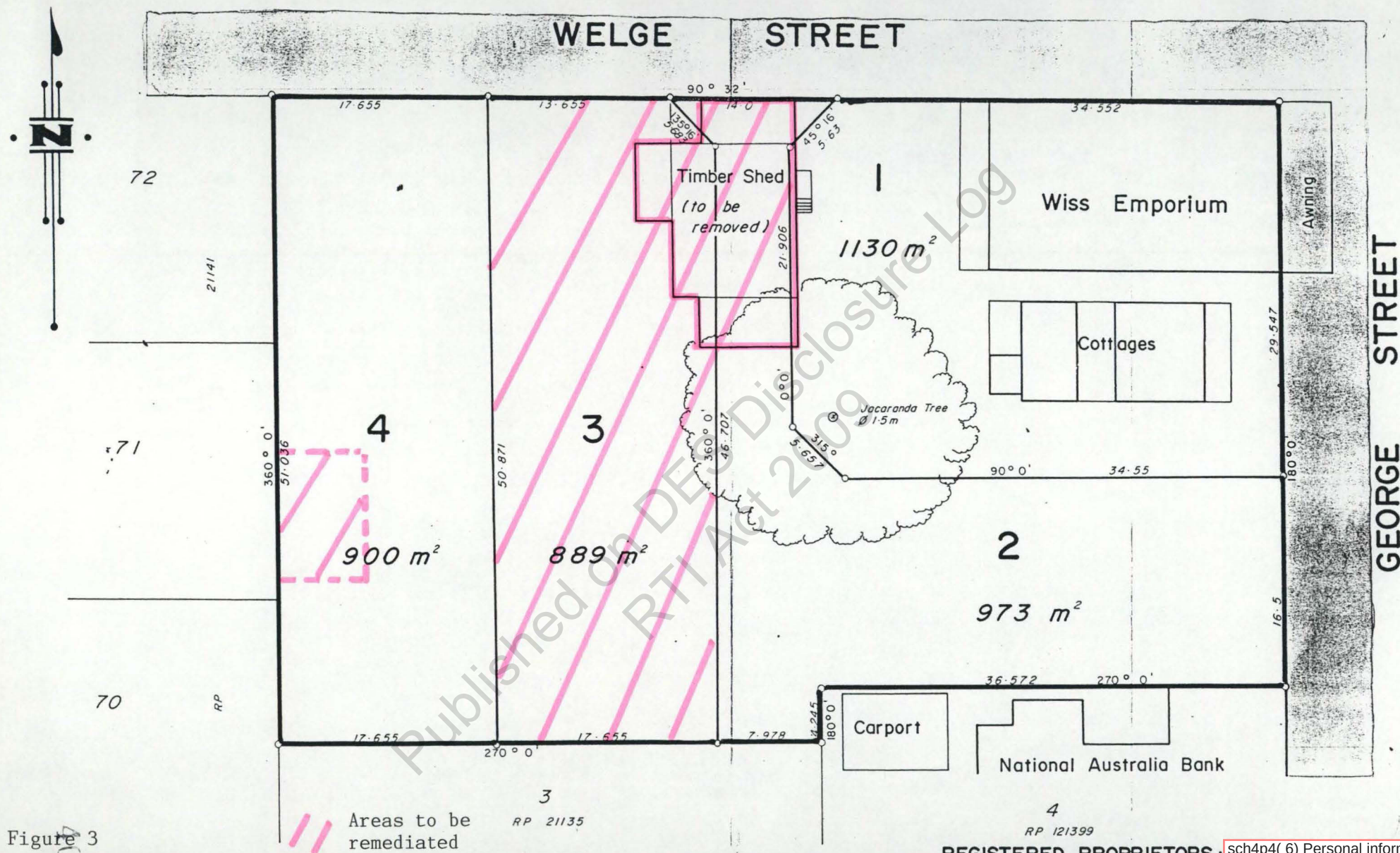


Figure 3

Areas & Distances are approximate only & are subject to survey.

Note The property is listed under the Qld Heritage Act 1991

J.B. Goodwin, Midson & Partners

consulting surveyors, planners and development consultants



Brisbane 628 Coronation Drive Toowong 4066
Ph (07)8702161 Fax (07)8703944
Kawana The Nicklin Way Warana 4575
Ph (074)931707 Fax (074)934860
Boonah 2 Park Street Boonah 4310
Ph (074)631596



member firm of the association of consulting surveyors

REGISTERED PROPRIETORS

sch4p4(6) Personal information

sch4p4(6) Personal information

Plan of Proposed Lots 1-4 Cancelling
Lot 1 on RP 21135
Original Portion 169
Parish of Fassifern County of Churchill

scale: **1:300**

ref no **9324-1**

AMDT

A3

Similarly, old car body dump sites on proposed Lot 4 should be surface scraped and soils removed.

Stockpiled soils would require removal to the Local Authority landfill for disposal.

Estimated "Soils" for Disposal

1.	Shed area	30-35 m ³	contaminated soil
2.	Lot 3	80-150 m ³	"low" contaminated soil
3.	Lot 4	5-10 m ³	"low" contaminated soil

10.4 Removal and Disposal of "Rubbish"

"Rubbish" stack(s) should be removed and disposed at the Local Authority landfill. It is critical that removal of materials does not result in further "spreading" of on-site contamination.

10.5 Construction of Roadway

The sub-division proposal includes an accessway between Lots 1 and 2. This accessway would provide a seal over sub-surface soils below most of the shed area. Excavated areas on Lot 3 would be filled with "clean" soils.

10.6 Health and Safety Plan

As part of the remedial works, a health and safety plan should be implemented to ensure workers (and the general public) do not come into abnormal contact with any residues from soils, dusts and building materials.

"Safe" work practices and personal protection should be addressed and provided for within any contracted work (see ANZECC/NHMRC, 1992 guidelines).

10.7 Validation of Remedial Works

Following remediation of the property's soils, it is recommended that several soil samples be taken from excavated and scraped areas to determine if satisfactory removal of contaminated soils has occurred. Specific sampling areas should be from the timber shed site, portions of Lots 3 and 4. Screening should cover at least lead, arsenic, zinc and organochlorine residues as well as petroleum hydrocarbons at "oiled" sites. Validation of clean-up would be reported to the Department of Environment and Heritage to have the property listed as a former site.

11.0 REFERENCE

ANZECC/NHMRC (1992). "Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites". Australian and New Zealand Environment and Conservation Council/National Health and Medical Research Council.

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APPENDIX 1

Queensland Heritage Act Approvals

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COPY

Queensland Department of Environment and Heritage

160 Ann Street • Brisbane Queensland • PO Box 155 • BRISBANE ALBERT STREET QLD 4002
Telephone (07) 227 7111 • Facsimile (07) 227 6534

Enquiries to R. Osborne
Telephone 227 6732
Your reference 9324:SJG:tlt
Our reference 601200-2

28 March 1994

J.B. Goodwin, Midson & Partners
P.O. Box 92
TOOWONG QLD 4066

Attention: sch4p4(6) Personal inform

Dear Sir

Approval for Works to Heritage Listed Property under Section
35(1) of the Queensland Heritage Act 1992.

At its meeting of Friday 25 March 1994 the Queensland Heritage Council resolved to approve the application for subdivision of land currently occupied by Wiss Bros. Store and dwelling (former), George Street, Kalbar, and for the demolition of the former bulk store building, as described in the attached notification of approval.

Please find enclosed Determination No. 295 for your records.

The Council also resolved that subject to the receipt of an accurately surveyed plan of the site showing the lots in relation to the existing buildings, the boundary of the entry in the Heritage Register for the Wiss Bros. Store and Dwelling (former), 90 George Street, Kalbar, be amended in due course to exclude lots 2, 3 and 4.

Should you have any enquiries regarding the certificate please contact Mr. Ray Osborne, Heritage Assessment Officer, Cultural Heritage Branch on (07) 227 6732.

Yours sincerely,

sch4p3(3) Prejudice the protection of an individuals right

Jon Womersley
Director
Cultural Heritage



Queensland Heritage Act 1992

Application issued under section 35 (1) of the
Queensland Heritage Act 1992 that development in relation to a registered
place be APPROVED or be APPROVED SUBJECT TO CONDITIONS.
(Reverse side of form)

OFFICE USE ONLY

295/601200-2
Reference

Applicant J.B. GOODWIN, MIDSON & PARTNERS (ATTN. sch4p4(6) Personal info)
PO BOX 92 TOOWONG Q 4066

Pursuant to Section 35(1) of the Queensland Heritage Act 1992 the Heritage Council has determined to approve your application for a certificate to undertake the following works:

Description of proposed works: SUBDIVISION OF LAND, AND THE DEMOLITION OF THE BULK
STORAGE BUILDING AS SET OUT ON DRAWING 9324 - 1 SUBMITTED BY THE
APPLICANT.

COPY

to the following registered place: (name and address of place) WISS BROTHERS STORE & DWELLING
(FORMER)

GEORGE STREET
KALBAR

Local Government Authority area: BOONAH SHIRE

in accordance with the following conditions: REFER TO SCHEDULE 1 ATTACHED

Standard conditions:

- This certificate is valid for two years from the date of issue.
- That the Heritage Council be informed when works carried out within terms of this certificate have been completed.
- All work to be carried out to the satisfaction of the Director, Heritage Branch of the Department of Environment and Heritage.

TAKE NOTICE: This application does not exempt the applicant from the need to obtain such other approvals as may be required under other legislation.

An applicant who is dissatisfied with this determination is entitled to apply for a review pursuant to Section 36 within 60 days. (A form for that purpose is enclosed.)

Special conditions:

sch4p3(3) Prejudice the protection of an individuals

Date 25 / 3 / 94

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Chairperson, Heritage Council



Queensland
Department of
Environment and Heritage

FM410-1 July 92

SCHEDULE 1

APPLICATION 295/601200-2

WISS BROTHERS STORE & DWELLING (FORMER)
GEORGE STREET
KALBAR

CONDITIONS OF APPROVAL

COPY

1. This certificate is valid for two years from the date of issue.
2. That a full measured survey of the site, with accurate boundaries of the lots in relation to the existing buildings on the site, be submitted to the Director, Cultural Heritage Branch of the Department of Environment and Heritage.
3. That for future record purposes, a comprehensive recording of the exterior and interior of the former bulk storage shed should be undertaken, prior to its demolition, in accordance with a method agreed with the Director, Cultural Heritage Branch of the Department of Environment and Heritage, and a copy of the record deposited with the Department of Environment and Heritage.

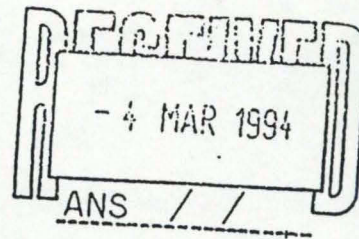
APPENDIX 2

Letter from Boonah Shire Council

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BOONAH
SHIRE
HEART OF THE SCENIC RIM



JB Goodwin, Midson & Partners
Consulting Surveyors Planners and
Development Consultants
PO Box 92
TOOWONG Q 4066

Our Ref 380/684
ICF:DL

Your Ref.....

3 March, 1994

COPY

Dear Sirs,

RE: Subdivision Proposal Application No. 380/684 - sch4p4(6) Personal information

I refer to your application of 11th February, 1994 seeking approval to subdivide Lot 1 on RP21135 Parish of Fassifern in accordance with your Proposal Plan Ref. 9324-1.

As previously advised Council has referred the application to the Cultural Heritage Branch, Department of Environment and Heritage and following advice of the Department's determination the application will be referred to Council. In order to avoid further delays when this application comes before Council, the proposal was tabled at Council's Meeting of 1st March, 1994 for preliminary consideration as to whether, in view of the previous use of the site, a Site Contamination Report may be appropriate.

I am directed to advise that the following factors known to Council indicate that Lot 1 on RP21135 Parish of Fassifern has become contaminated by the previous use of the land:-

1. The property was owned and operated for many years by Chemical and Air Services Pty Ltd as a major retail outlet for agricultural and pastoral chemicals.
2. A significant level of chemical odour remains in the timber shed situated on the land indicating the possible presence of chemical residue.
3. The Department of Environment and Heritage, Contaminated Land Unit has advised that the property is listed in the Contaminated Land Register as a probable contaminated site.

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Address Correspondence to:- The Shire Clerk, Boonah Shire Council, P.O. Box 97, Boonah, Qld. 4310
COUNCIL CHAMBERS, 70 HIGH STREET, BOONAH, QUEENSLAND.
Telephone: (074) 63 1599 Facsimile: (074) 63 2650

APPENDIX 3

Historical Notes - Kalbar and the Wiss Family

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Kalbar
and the Wiss family

Historical Notes

Cultural Heritage Branch
Department of Environment and Heritage

April 1993

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HISTORY OF KALBAR : SYNOPSIS

Kalbar is a small rural town located within the Fassifern district of southeast Queensland.

The town originated in the 1870s, following the throwing open of Fassifern Station for closer settlement, and an influx of immigrant German farmers to the Fassifern Scrub area in the 1870s, 1880s and 1890s.

There has never been an official town plan drawn of Kalbar, which until 1916 was known as Engelsburg; nor was it established as a private town. Engelsburg/Kalbar emerged organically as the centre of a small, struggling, rural community. It grew around the intersection of the principal north-south and east-west roads (now George and Edward Streets) in the heart of the Fassifern Scrub district, on land first taken up by the Rieck family in the early 1870s.

By the turn-of-the-century, Engelsburg was the principal supply and distribution point for local farmers, and was the focus for social activities. From c.1908 to the 1920s, the town experienced sustained growth: Wiss Bros and CT Bickerton, Engelsburg's principal storekeepers, erected substantial new premises and vied for local patronage; Lionel Wiss and Annie Krause subdivided the bulk of the town into residential allotments; more houses were erected in the town; two banks established branches in there; and the railway reached Engelsburg (re-named Kalbar) in 1916. These developments reflected the growing prosperity of the Fassifern Scrub district, in which the principal agricultural activities at this period were dairying and pig raising.

During the depression years of the 1930s there was limited development within Kalbar, and according to local lore, farmers were dependent on credit facilities extended by Wiss Bros and Bickerton's. The agricultural base was moving toward more vegetable cropping, following the introduction of spray irrigation. Cotton growing was virtually abandoned in the late 1930s, and by the 1940s the principal agricultural pursuits were dairying and market gardening.

After the Second World War, mechanisation in the dairy industry and in cropping led to the amalgamation of smaller dairy farms, and by the 1960s there were strong population shifts throughout the district. With improved transportation and access to larger market towns, the economic importance of Kalbar to the immediate district declined.

HISTORY OF KALBAR : CHRONOLOGY

- 1827 Captain Patrick Logan, Commandant of the Moreton Bay Penal Settlement, explored the Fassifern district
- 1841/42 John Cameron and Robert Coulsen travelled overland from northern NSW and occupied land which later become Fassifern Station
- 1842 Moreton Bay thrown open to free settlement
- 1843 John Cameron granted lease of Fassifern Station, which stretched from Warrill Creek flats in the east to the watershed of the Brisbane and Logan Rivers, and from Mt French northeast through Teviotville - run was held under annual leasehold
- 1840s to 1860s Kalbar was part of the Fassifern sheep run - dense brigalow scrub meant the area was virtually unused by Europeans until closer settlement in the 1870s
- By 1868 Fassifern, Tarome and Moogerah runs had been consolidated into one run controlled by Wienholt Brothers; Fassifern, the Wienholts' head station, was the largest of the runs, totalling 50,000 acres prior to subdivision
- 1868 Land Act - Large areas of the northern part of Fassifern run were thrown open for selection, plus limited subdivision of Tarome and Moogerah runs
- 1869 Immigration Act - paid or assisted passages, plus issue of land orders, to German and UK immigrants
- 11.11.1871 First application to select a homestead in the Fassifern Scrub area submitted by RJ Bradfield
- 1870s Principally German families moved into the Fassifern Scrub area - Krueger, Peters, Surawski, Dieckmann, Muller, Hohensee, Kubler, Schossow, Sonnenburg, Rieck, Stibbe and Engels - area known officially as Fassifern Scrub - late 1870s and early 1880s the peak years of settlement, but sustained into the 1890s - houses mostly slab and bark - farms largely self-sufficient - once the scrub was cleared, corn or maize was the principal crop, and some cotton - Ipswich the closest market town, accessed via a bridle track - land surveys of the scrub districts were not being undertaken rapidly enough to meet the demand of the largely German immigrants, who were escaping political or religious or economic repression in their homelands - for the first 50 years of closer settlement, there was little outward drift

of population from the area around Engelsburg

- 1876 Farmer August Engels is understood to have commenced trading from his home (near present Edward Street, Kalbar); Baptist Church erected on part of Charles Rieck's land
- 1877 Engels sold his farm (portion 168), retaining 4 acres on which he built a store
- July 1878 Postal receiving office established at Engels' store - known as Fassifern Scrub
- c.1879 H Welge established a store, the first Fassifern Hotel, and a butchery a little to the west of Engels' store, and here the main part of the town developed (around the intersection of what are now George and Edward Streets)
- Feb 1879 Fassifern Scrub provisional school opened in the Baptist Church
- Sept 1879 School at nearby Fassifern opened - Department of Public Instruction requested a name change for Fassifern Scrub - Engelsburg chosen, named after August Engels, who had been handling local mail through a receiving office at his store, and was secretary of the local school committee
- Nov 1879 Divisional Boards Act - Goolman Divisional Board, encompassing the Fassifern Scrub, established
- 1880 Goolman Divisional Board Rate Book recorded:
Reik, ACF, por 169, weatherboard house, slab barn;
Reik, Charles Snr, por 164, slab house, kitchen, small house & barn
No Welge listed
- 1882 Railway extended to Harrisville
- 1883 Engels' store bought by Carl Dieckmann, who erected a larger store nearby, supplying the settlers' requisites and in return taking their produce; Dieckmann also took over the postal receiving office, which was not re-named Engelsburg until this date; Methodist Church erected
- 1885 New Engelsburg state school opened
- 1887 Branch railway extended to Boonah and Munbilla; RC church erected at Engelsburg

By 1889 [QPOD] Charles Dickmann (sic), storekeeper; Carl Rabba, blacksmith; and Henry Welge, publican and storekeeper were listed in Engelsburg; Lutheran church had been erected

c.1889 Salvation Army meeting hall erected

7.7.1890 Document produced at Brisbane titles office notifying that Heinrich Welge of Fassifern had purchased resub 1 of sub 1 of por 169 (1 acre) from ACF Rieck

19.8.1890 Henry Edmund Wyman, architect, of Ipswich, called tenders for erection of a store and dwelling house at Engelsburg

15.9.1890 Document produced at Brisbane titles office notifying transfer of resub 1 of sub 1 of por 169 to Lionel Ainger Wiss and Campbell Wiss in undivided half shares

18.9.1890 The township of Engelsburg consisted of: Dieckmann's store, the Engelsburg State School, Krause's saddler's shop, W Dieckmann's cabinetmaker's and glazier's shop near his father's store; half a mile further along the direct road to the Fassifern head station, Mr Welge had a hotel and store, and next to this was Wemgartner's saddler's shop; Messrs Damm & Damm of Harrisville had a butcher's shop, and Mr Bruckner of Dugandran had a timber yard, next to T Smith's blacksmith's shop; a new store for Mr LA Wiss was being erected next door to Welge's hotel. There were two Lutheran churches in the district, a Baptist church, a Primitive Methodist church, a Catholic church, and a small Salvation Army meeting hall.

1890s Move from crops to dairying - response to government initiatives: 1. 1888 protective tariff to kept out butter from NSW & Victoria; 2. export campaign to the UK in the 1890s; commercial creameries established - replaced by the farm separator after 1900 - this meant pigs became an integral part of the dairy industry; from the 1890s to the 1930s, a typical Fassifern Scrub farm would contain a mix of dairying, pigs and maize, selling off that portion of the crop not need for pig feeding; quite a number of farms were purely dairying

By 1892 Wiss Bros were the local agents for United, Fire and Marine Insurance Co.

By 1894-95 Engelsburg supported 2 cabinetmakers; 1 carpenter; 3 blacksmiths; 1 saddler; 2 storekeepers (Wiss Bros & EW Bickerton); the Fassifern Hotel (Henry Welge); and a bacon factory run by C Duckmann (sic)

1894-97 EW Bickerton of Boonah owned former Engels' store; Wiss Bros handled the postal receiving office

1897 Official post office erected on present site

1898 Engelsburg Dairy Company established; LA Wiss acquired another 1 acre in George Street, adjoining his store

By 1900 The town of Engelsburg was well established: 2 hotels - Fassifern (Henry Welge), Royal (Hans Nielson); 3 blacksmiths (Carl Rabba, Thomas Smith and Carl Winks); 2 storekeepers (Lionel & Campbell Wiss and Christian Hogan); 2 cabinetmakers (William Dieckmann & George Eder - also an undertaker); a saddler (William Krause); a butcher (HH Damm); an auctioneer (H Dimmock & Co.); a fruiterer (John Greisbach); a carpenter (BP Krebs); a creamery - Engelsburg Dairy Company, manager Abraham Melton; and a police officer (Octavius Coles) [QPOD]

1901 Two creameries at Engelsburg; LA Wiss purchased another 2 roods in George Street, adjoining his other property

1901-03 Drought years

1902 Local Authorities Act

By 1903 Some continued growth in the town eg dressmaker, fruiterers, etc, but town appeared to be stabilising

1903 Goolman Shire Council replaced Goolman Divisional Board

Sept 1904 Lionel Ainger Wiss became sole owner of resub 1 of sub 1 of por 169 (site of Wiss Bros store and dwelling)

4.2.1905 Ipswich architect MW Haenke drew plans for a cottage for Wiss Bros, Engelsburg - not clear whether this building is part of the current store complex at Kalbar

From 1905 Limited further settlement of scrub farms

1906 Engelsburg Dairy Co. closed down - milk was now transported to Boonah factory; first Engelsburg School of Arts opened; Annie Krause acquired part of portion 164 from Carl Rieck

1907 Boonah storekeeper EW Bickerton sold his Boonah store and established his son, CT Bickerton, in a store at Engelsburg, in Edward Street; second German Baptist Church opened at Engelsburg

- 1908-20s Gradual growth of small business within the town; still only two main storekeepers: Wiss Bros and CT Bickerton
- 1909 Wiss Brothers erected a new store (present building) - this led to competition between the Bickerton and Wiss stores that was to last 40 years - both handled a great variety of goods and bought farm produce - Dutch Auction method: farmer arrived in town with drayload of produce - Bickerton and Wiss Bros buyers stood one on each side of the dray, bidding for the produce - until the 1940s, these stores employed 14-18 persons : 8 to 10 at Wiss Bros, 6 to 8 at Bickerton's; Royal Bank of Queensland established a branch at Engelsburg, in premises in Edward Street
- 1910 Bickerton's built new store cnr George and Edward Streets (formerly site of Damm's butchery) - became known as Bickerton's Corner; Lionel Wiss purchased 56 acres of portion 169 from August Rieck
- 1912 Annie Krause subdivided part of portion 164 into residential allotments, including site of later Wiss house in Ann Street - this created most of the eastern half of the early town of Engelsburg; William and Ann Streets are named after Mr & Mrs Krause
- c.1913 William H Howard established a sawmill at Engelsburg
- 1914 The 56 acres Wiss acquired in 1910 was surveyed and subdivided for the extension of the Munbilla to Mt Edwards railway via Engelsburg
- 1914-15 First listing of a builder, William Thorn, in Engelsburg; Lionel Wiss was a JP;
- 1915 Lionel Wiss sold about 10 acres of his land to the Queensland Railways Department, and it appears the Kalbar railway station was erected on part of this site
- 1916 Remainder of Wiss's land between the railway and George Street subdivided into residential allotments - this created most of the western half of the town
- 1916-17 Branch of the Commercial Bank of Australia opened in Engelsburg; 2 sawmills in the town
- 17.4.1916 Opening of extension of branch railway to Engelsburg, which was re-named Kalbar, because of anti-German feeling engendered by the First World War; Kalbar reputedly is of Aboriginal origin -

various interpretations of its meaning: 'a place of brightness'; 'star'; or 'dry or dead trees'

- Feb 1920 Fire destroyed all buildings on the southern side of Edward Street from Ann Street through to, but not including, Bickerton's store - lost were the School of Arts and the Bank of Queensland (former Royal Bank of Queensland)
- June 1920 Wiss sold part of his land in George Street, just south of his residence, to the Bank of Queensland
- 1920s & 30s Cotton grown in the scrub areas
- 1922 Bank of Queensland premises erected in George St on site of present National Australia Bank (1969), on the land acquired from LA Wiss in 1920
- 1923 New Kalbar School of Arts and Memorial Hall opened
- 1926 Kalbar District Agricultural and Pastoral Association formed
- 1927 Motion pictures became regular entertainment at Kalbar; first Kalbar show
- 1930s Fassifern Hotel moved to Mooloolaba; introduction of spray irrigation led to more intensive crop growing, especially vegetables, which meant further subdivision of farms; late 1930s, abandonment of cotton growing
- 11.1.1932 Death of Lionel Ainger Wiss
- 16.10.1937 Shire of Goolman changed name to Shire of Boonah
- 1940s Limited farm subdivision and amalgamation
- 1947 Wiss Bros sold to Holmes Bros
- 1950 Increased use of machinery enables amalgamation of small dairy farms
- 1954 Bickerton's sell to Anderson
- 1955 Kalbar State School relocated to present site
- 1960s Major shift from dairying to cattle raising and agriculture causes considerable population movement throughout Boonah Shire
- 1970 and 1980s Southern and eastward spread of Kalbar's residential area

C20th

Other long-term family businesses in Kalbar: sch4p4(6) Personal info
wheelwright; sch4p4(6) Personal information cake shop; sch4p4(6)
sch4p4(6), saddler; sch4p4(6) Personal information, tailor and
mercier; sch4p4(6) Personal information, barber, cafe (Theodora
Cafe) and boarding house; sch4p4(6) Personal information
barber and cafe (Fassifern Cafe - formerly the first Wiss Bros
store); sch4p4(6) Personal inform butcher; sch4p4(6) Personal information
sch4p4(6) Personal inform, butchers; sch4p4(6) Person, baker.

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As well as establishing one of the most important businesses in Engelsburg, Lionel Wiss was actively involved in community affairs, being a member of the School of Arts Committee, the State School Committee, a senior circuit steward of the Kalbar Methodist Church for 21 years, and a justice of the peace. He was secretary of the School of Arts Committee during the years leading up to the construction in 1906 of Engelsburg's first School of Arts building, in Edward Street. He was a highly respected and well known identity not only in the Engelsburg (Kalbar) district, but throughout West Moreton.

Lionel Wiss died on 11 January 1932, at the Oakland Private Hospital, Ipswich. He was aged 66 years, and had resided in Queensland for 45 years. At the time of his death, Wiss Bros general store was described as *one of the largest in the West Moreton, and one of the best country stores in Queensland*. At their next council meeting, the Goolman Shire Councillors stood as a mark of respect to the passing of Lionel Wiss, who had contributed significantly to the development of the district.

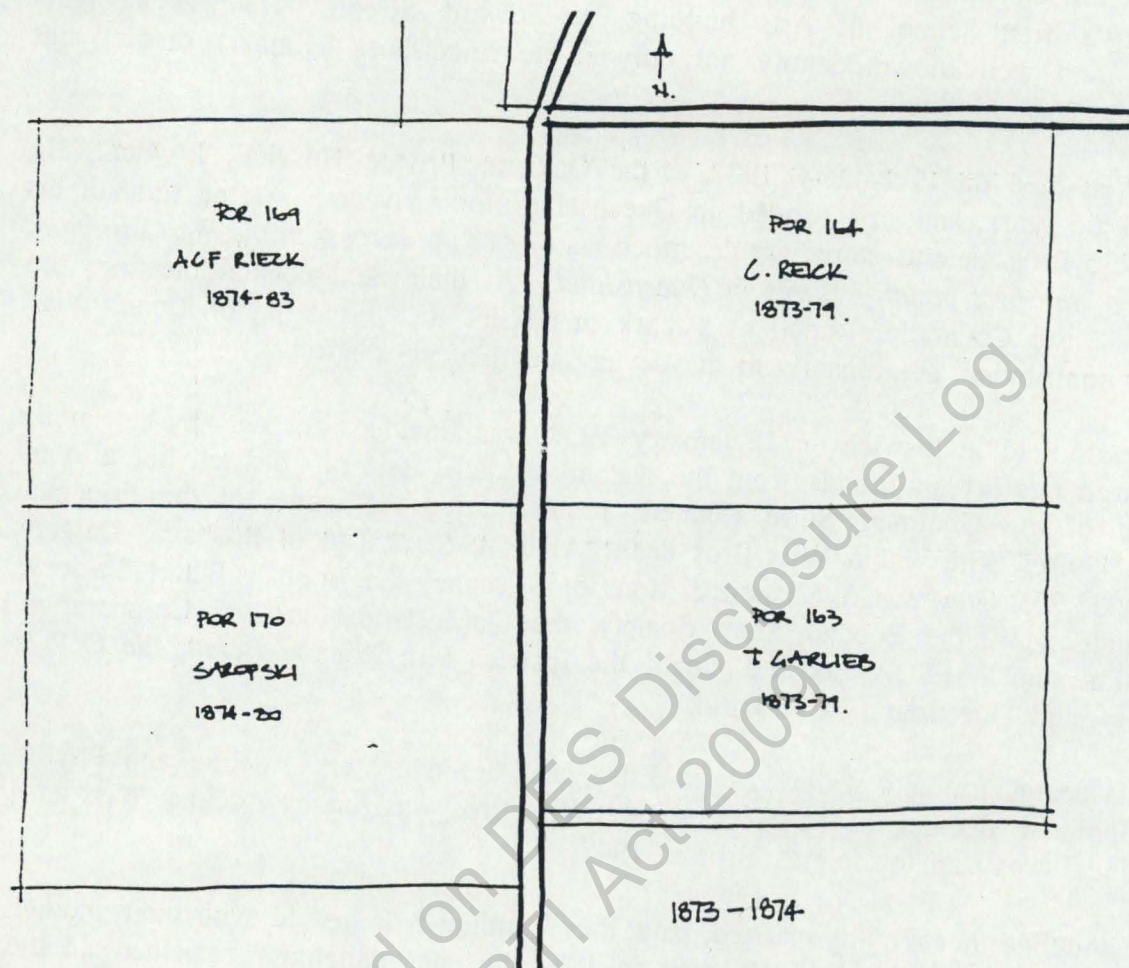
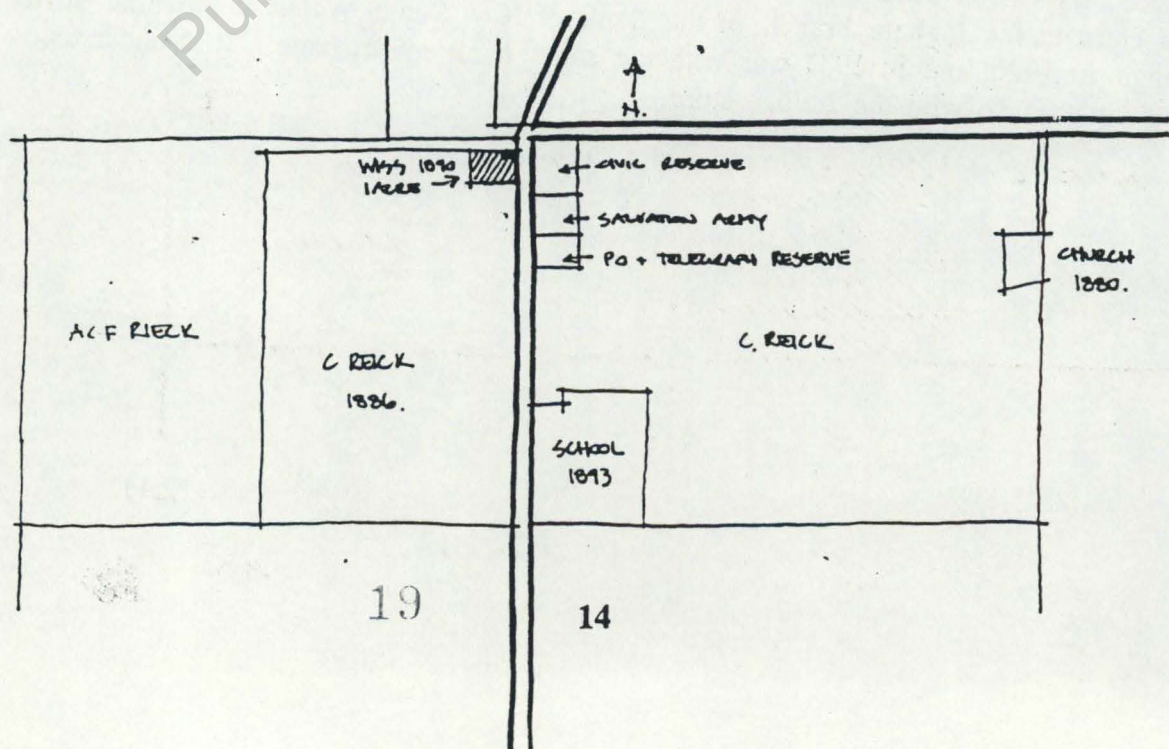
His funeral, held in Ipswich on 12 January 1932, was attended not only by his family and a large number of friends from the Kalbar-Boonah-Fassifern district, but also by members of the Goolman Shire Council; representatives of some of the principal business houses with whom Wiss Bros dealt: Allan & Stark Ltd of Brisbane, Dalgety & Co. Ltd, RM Gow & Co, Siemon & Sons of Brisbane, the Boonah Butter Factory; representatives of the Boonah Show Society, the Queensland Farmers' Co-operative Association, the PAFSOA Lodge Boonah, the Ipswich Fire Brigade Board, the Q P & A Society, and Queensland Times Ltd.

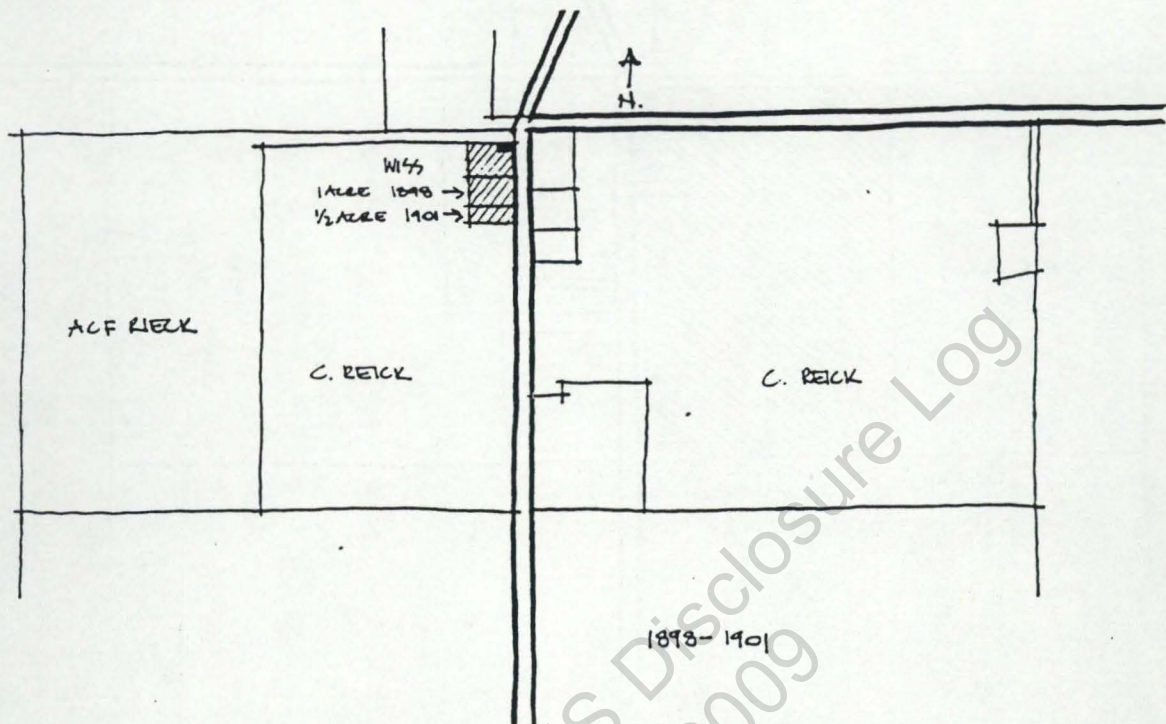
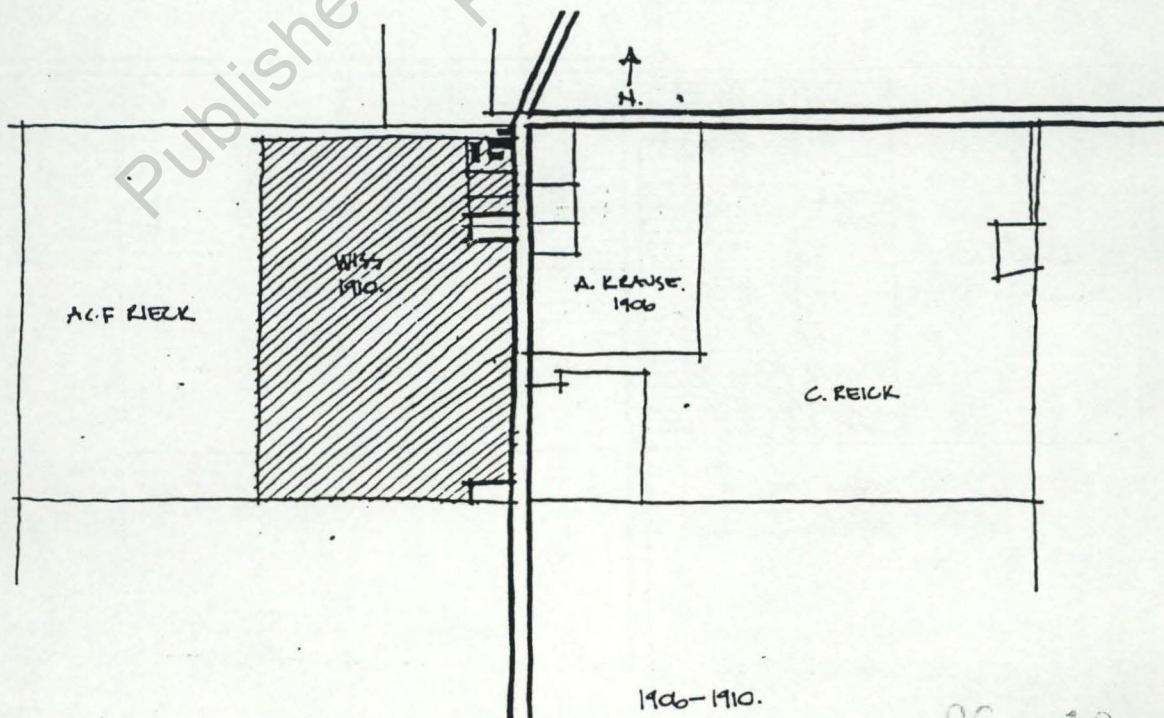
After his death, Lionel's widow, Maria Elise, and her daughters [sch4p4(6)] and [sch4p4(6)] were appointed trustees of the Wiss estate. Wiss Bros was run by [sch4p4(6) Person] until the business was sold to Holmes Bros in 1947.

Neither [sch4p4(6)] nor [sch4p4(6)] married, and they continued to reside with their mother in the family home. Maria Elise died in 1957, but her daughters remained in the house until the 1970s. [sch4p3(3) Prejud] had married Scotsman [sch4p4(6) Personal informa], an employee in her father's store, in 1919, and the [sch4p4(6) Person] lived in a house in William Street adjacent to the Wiss family home. [sch4p4(6)] is understood to have managed Wiss Bros store for [sch4p4(6)]. Lionel Wiss's only son went into banking. He was a clerk in the Ingham branch of the Bank of New South Wales at the time of his marriage in 1926, and in 1932 was with the same bank in Brisbane. It is understood he had little to do with the Kalbar store.

SCHEMATIC REPRESENTATION OF THE DEVELOPMENT OF THE TOWN OF
KALBAR AND THE LAND HOLDINGS OF THE WISS FAMILY 1873 TO 1920

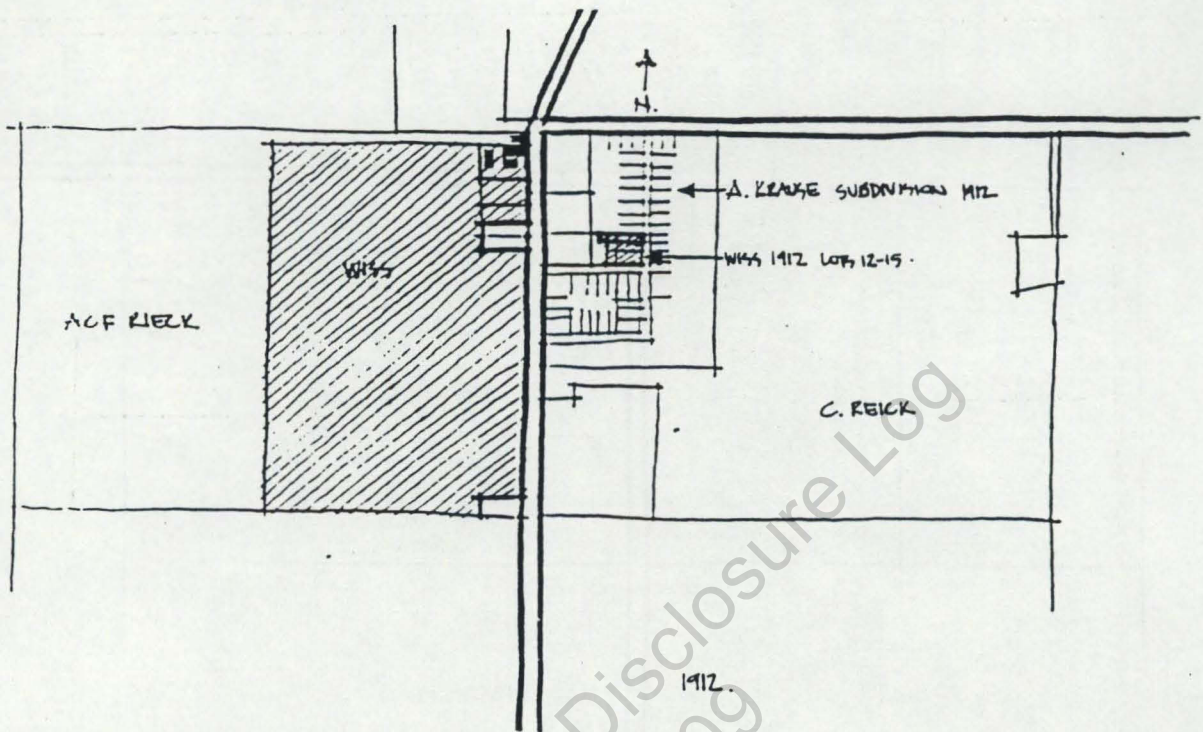
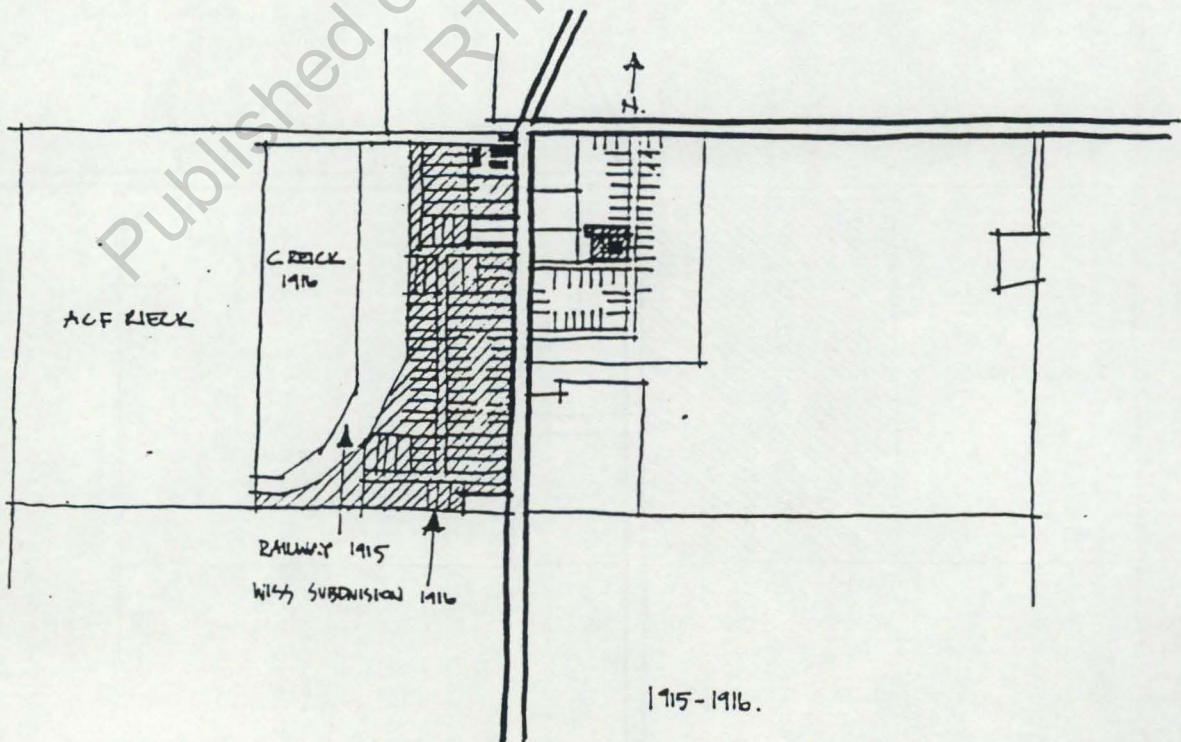
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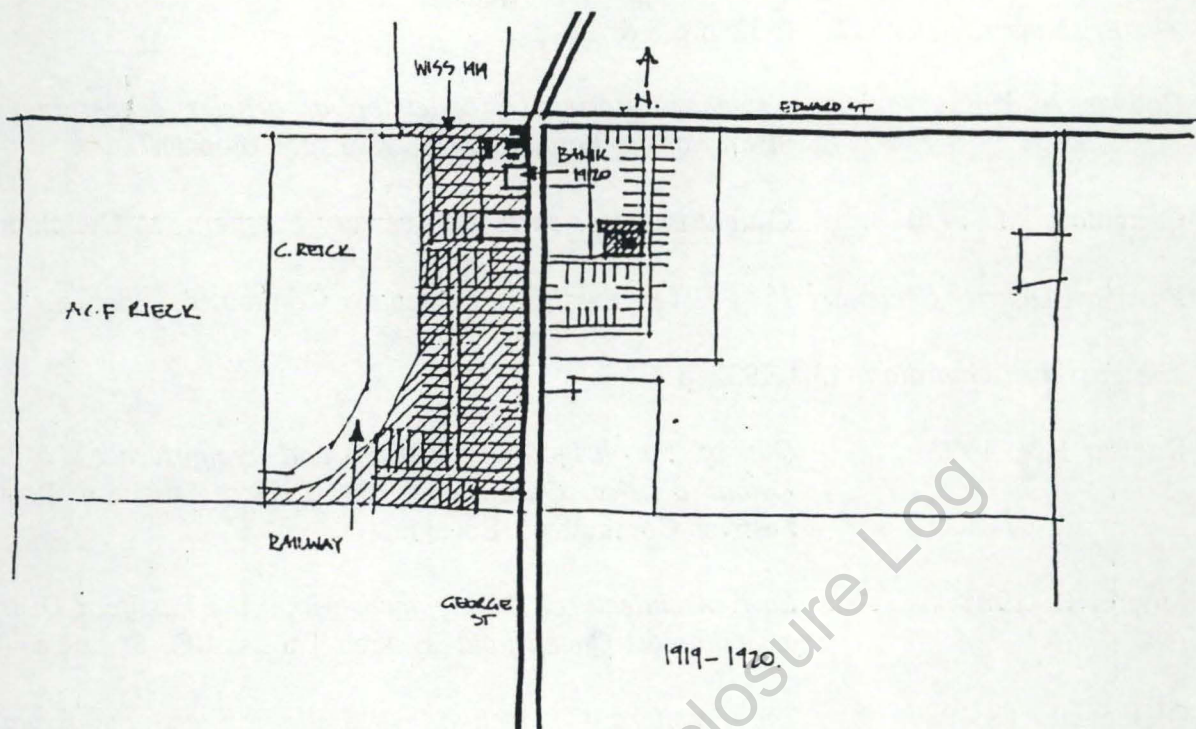




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Sources:

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APPENDIX 4

Quality Assurance Results

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QUEENSLAND HEALTH

GOVERNMENT CHEMICAL LABORATORY

20 May 1994

OFFICE GOVERNMENT CHEMICAL LABORATORY
39 Kessels Road
COOPERS PLAINS Q 4108, Australia

POSTAL PO BOX 594
ARCHERFIELD Q 4108, Australia

PHONE (07) 274 9111 International Code 61
FAX (07) 274 9119

ENQUIRIES: Mary Hodge
PHONE: (07) 274 9087
FAX: (07) 274 9008
OUR REF: 93QP2192/2193 PW/SOB:EN
YOUR REF: Envirotest Order No 121

TO: Attention sch4p4(6) Persor
Envirotest
Lot 12 Don Young Road
Mt Gravatt Research Park
NATHAN Q 4111

LABORATORY REPORT

Date Received : 13-5-94
Sample Description : Two soils in glass jars
Client Reference : Job No 9478
Reason for Submission : Analysis for organochlorine and organophosphorus pesticides

RESULT OF ANALYSIS

Number	9478-3	9478-8	Detection Limit
Organophosphorus Pesticides (mg/kg)	<0.01	<0.01	0.01
p,p-DDE (mg/kg)	0.06	0.18	0.01
o,p-DDT (mg/kg)	0.02	0.22	0.01
p,p-DDT (mg/kg)	<u>0.14</u>	<u>2.06</u>	<u>0.01</u>
Total DDT (mg/kg)	<u>0.22</u>	<u>2.46</u>	-
Dieldrin (mg/kg)	<0.01	0.60	0.01

All results were calculated on dry weight basis.

Method No: QP030

sch4p3(3) Pre

P. White
Analyst

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QUEENSLAND HEALTH

GOVERNMENT CHEMICAL LABORATORY

OFFICE GOVERNMENT CHEMICAL LABORATORY
39 Kessels Road
COOPERS PLAINS Q 4108, Australia

POSTAL PO BOX 594
ARCHERFIELD Q 4108, Australia

PHONE (07) 274 9111 International Code 61
FAX (07) 274 9119

Enquiries GRANT HASTIE

Phone (07) 274 9073

Our Ref QP2194/2196:GH:MB

Your Ref

20 May 1994

Envirotest
Lot 12 Don Young Road
Mt Gravatt Research Park
NATHAN Q 4111

ATTENTION:

sch4p4(6) Personal info

RE: One (1) soil sample labelled 9467-1 submitted for Arsenic (As) and Chromium (Cr) analysis.
Two (2) soil samples labelled 9478-3 and 9478-8 submitted for Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni) and Zinc (Zn) analysis.
Samples received 13.5.94.

Dear Sir

The samples received labelled 9467-1, 9478-3 and 9478-8 have been analysed as requested.

The samples were prepared for analysis according to AS1289.1(1991)4.6(b)(iii) and ground to a fine powder in a tungsten-carbide swing mill. The fine powder was digested according to the USEPA method 3050 and filtered through a Whatman 541 filter paper.

The resulting solution was analysed for mercury (Hg) by cold vapour atomic absorption spectroscopy, cadmium (Cd) by flame atomic absorption spectroscopy and screened for other metals by inductively coupled plasma emission spectroscopy (ICP-ES).

The heavy metal results are expressed as milligrams per kilogram (mg/kg) in the AS1289 prepared sample.

SAMPLE	9467-1	9478-3	9478-8
As (10)*	1200	50	30
Cd (1)	-	<1	<1
Cr (10)	220	30	20
Cu (5)	-	30	290
Pb (10)	-	340	440
Hg (0.2)	-	0.2	<0.2
Ni (10)	-	10	<10
Zn (10)	-	310	530

* **NOTE:** Values in parenthesis after the element symbol indicate the lower reporting limit in mg/kg.

Yours faithfully

sch4p3(3) Prejudice the protection

Grant HASTIE (Chemist)



Australian Laboratory Services
32 Shand Street
Stafford Q 4053
Ph: (07) 352 5577
Fax: (07) 352 5109
A.C.N. 009936029

ANALYTICAL REPORT

BATCH NUMBER: EN8637
CLIENT: Envirotest
ADDRESS: Lot 12 Don Young Street
Mt Gravatt Res Park
NATHAN QLD 4111
CONTACT: sch4p4(6) Personal
CLIENT ORDER No.: 123
CLIENT JOB No.: 9478
DATE RECEIVED: 16/05/94
DATE COMPLETED: 27/05/94
SAMPLE TYPE: Soil
ANALYSIS REQUESTED:
Aromatics (BTEX) - 4
Total Petroleum Hydrocarbons (TPH) by Fractions - 1
Moistures - 4
METHOD OF ANALYSIS:
BTEX
ALS Method Code: EP-080
Extraction: Purge & Trap
Analysis: GC/MS
TPH
ALS Method Code: EP-071
Extraction: Volatiles - Purge & Trap
Semivolatiles
Solids - Tumbler
Liquids - Separatory Funnel
Analysis: Volatiles - GCMS
Semivolatiles - GCFID
Moistures
ALS Method Code: EA-055

COMMENT : Samples are analysed as received.

sch4p3(3) Prejudic

Signed...

s78(B)(2)

Senior Organic Chemist



No. 825

This Laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of registration. This document shall not be reproduced except in full.

ANALYTICAL RESULTS SHEET

ALS EA-055 : MOISTURE CONTENT

BATCH No: EN8637

MATRIX: Soil

ANALYST: sch4p4(6) Per

UNITS: %

Lab I.D.	-1	-2	-3	-4	
Client I.D.	9478-3	9478-5	9478-7	9478-12	
Moisture %	9.5	7.3	9.4	26.8	

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ANALYTICAL RESULTS SHEET

ALS EP-080 : BTEX IN SOIL

QC Lot No. : VOCS410

Batch No. : EN8637

Analyst : sch4p4(6) P

Matrix : Soil

Units: mg/kg

Target Compounds	Lab I.D.	-1	-2	-3	-4	
	Client I.D.	9478-3	9478-5	9478-7	9478-12	
	LOR					
Benzene	0.20	< LOR	< LOR	< LOR	< LOR	
Toluene	0.20	< LOR	< LOR	< LOR	< LOR	
Chlorobenzene	0.20	< LOR	< LOR	< LOR	< LOR	
Ethylbenzene	0.20	< LOR	< LOR	< LOR	< LOR	
m- & p-Xylene	0.40	< LOR	< LOR	< LOR	< LOR	
o-Xylene	0.20	< LOR	< LOR	< LOR	< LOR	

COMMENTS:

1. LOR: Level Of Reporting.
2. Surrogate standards are added to every sample to monitor the method performance.
3. Results are reported on an as received basis.

BATCH QUALITY CONTROL

ALS EP-080 : BTEX IN SOIL

Batch No.: EN8637
Matrix : Soil
QC Lot No.: VOCS410

Analyst : sch4p4(6) P
Spiked Aliquot : Reagent Grade Water

BTEX COMPOUNDS	Level Of Reporting (LOR)	Blank Conc	QC SPIKE RESULTS					Control Limits		
			Spike Conc	SCS	DCS	Average Recovery	RPD	Recovery		RPD
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	%	Low	High	%
Benzene	0.20	ND	1.00	1.00	1.05	102	4	88	110	20
Toluene	0.20	ND	1.00	1.01	1.06	104	5	82	122	20
Chlorobenzene	0.20	ND	1.00	0.94	0.99	96	5	88	109	20
Ethylbenzene	0.20	ND	1.00	0.94	0.99	96	5	87	111	20
m- & p-Xylene	0.40	ND	1.00	0.92	0.94	93	2	87	110	20
o-Xylene	0.20	ND	1.00	0.91	1.04	98	14	86	112	20

ND: Compound not detected

COMMENTS:

1. Surrogate standards are added to every QC sample to monitor method performance.

ANALYTICAL RESULTS SHEET

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

BATCH No.: EN8637

ANALYST: sch4p4(6) Pe

MATRIX: Soil

UNITS: mg/kg

COMPOUND	Lab I.D.	-4				
	Client I.D.	9478-12				
	LOR					
C6 - C9	2	120				
C10 - C14	50	<LOR				
C15 - C28	100	<LOR				
C29 - C36	100	<LOR				

COMMENTS:

1. Results are reported on an as received basis
2. LOR : Level Of Reporting

BATCH QUALITY CONTROL - TPH

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

MATRIX: Soil

ANALYST: sch4p4(6) Pe
SPIKING STD: n-Alkane

Volatile Components *

COMPOUND	Level Of Reporting (LOR)	Blank conc	SOIL SPIKE RESULTS					CONTROL LIMITS		
	mg/kg	mg/kg	Spike Conc.	SCS conc	DCS conc	Av. Rec.	RPD	Recovery (%)		RPD
			mg/kg	mg/kg	mg/kg	%	%	Low	High	%
QC Lot No.: VOCS410										
Applicable to Sample EN8637 -4										
C6-C9	2	<LOR	45.00	40.10	42.00	91	5	70	130	20
C10	2	<LOR	5.00	4.50	4.50	90	0	70	130	20

Semivolatile Components

COMPOUND	Level Of Reporting (LOR)	Blank conc	SOIL SPIKE RESULTS					CONTROL LIMITS		
	mg/kg	mg/kg	Spike Conc.	SCS conc	DCS conc	Av. Rec.	RPD	Recovery (%)		RPD
			mg/kg	mg/kg	mg/kg	%	%	Low	High	%
QC Lot No.: TPHT362										
Applicable to Sample EN8637 -4										
C11-C14	50	<LOR	375	351	343	93	2	60	110	20
C15-C28	100	<LOR	195	173	167	87	4	60	110	20
C29-C36	100	<LOR	N/A	N/A	N/A	N/A	N/A	70	130	20

* Surrogate standards are added to every QC volatile spike and sample to monitor method performance.

APPENDIX 5

Certificate of Title

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DEPARTMENT OF LANDS

TITLE
CHECK SEARCH STATEMENT

PAGE 1

BRISBANE 3/05/1994 13:11

SOUTHERN REGISTRY
VOLUME: 2597 FOLIO: 179

PAID

DEALING NUMBER	DEALING TYPE	LODGMET DATE	CURRENT STATUS
AS14056V	HERITAG SITE AUTHORITY: REFERENCE:	10/09/1993	RECORDED DEP.EVIR/HERITAGE FINO. 601200

-- END OF CHECK SEARCH STATEMENT --



NOTE

Computerised Check Searches do not provide any evidence of Dealings lodged prior to the introduction of the Unregistered Dealings System.
The above information should be used only in conjunction with a search of the Register and is current only to the date and hour shown hereon.
Recorded Dealings are listed on Check Searches for 90 days after registration/cancellation.
This Statement is subject to Crown copyright and should not be photocopied or reproduced.

Certificate of Title.

a No. 196171

(C)

Reference to Previous

Volume	Folio
2320	27 28

QUEENSLAND.



No. 518189

Register Book, Vol. 2597 Folio 179

sch4p4(6) Personal information

of _____ pursuant to Memorandum
of Conveyance No. B363 produced the twelfth day of February 19 51,
registered the first day of March 19 51, is now seized _____ of an Estate
in Fee-simple, subject nevertheless to such encumbrances, liens, and interests as are by memorandum notified hereon, in All
that piece of Land situated in the County of Churchill Parish of Fassifern
City of _____ containing Three roods thirty three perches and nine tenths
of a perch
_____ more or less, as shown on the Plan hereon, and therein edged red,
Being Subdivision 1 of Resubdivision 1 of Subdivision 1 of Portion 169

on Plan Cat. No. 21135 deposited in the Office of the Registrar of Titles, Brisbane,
which said piece of Land is part of the portion marked 169 delineated in the Public Map
of the said parish deposited in the Office of the Surveyor-General, originally granted by Deed of Grant
No. 53212

Saving Always to the Crown all the rights and interests reserved to it by the said Deed of Grant.

Lat.
In Witness whereof, I have hereunto signed my name and affixed my seal, this third
day of December One thousand nine hundred and fifty one

3

Saving Always to the Crown all the rights and interests reserved to it by the said Deed of Grant.

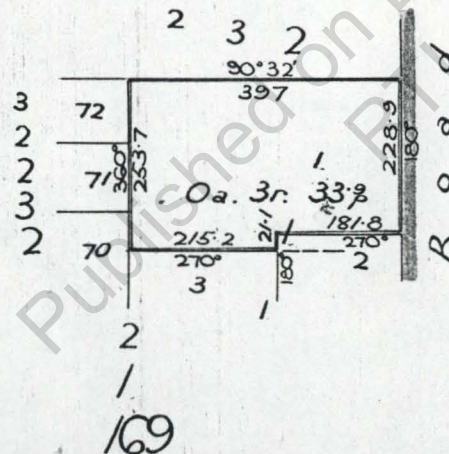
sch4p3(3) Prejudice the protection of an indi

day of December 1951, in presence of

sch4p3(3) Prejudice

Parish of Fassitern

REGISTRAR OF TITLES,



Scale, 2 chains per inch.

No. B1892 BILL OF MORTGAGE produced 16 Feb
57 at 10.00 a.m. 7 Dec 1957
 sch4p3(3) Prejudice the protection of an individuals
 sch4p3(3) Prejudice the protection of an individuals
 RELEASE Note No. B1892 endorsed on duplicate Bill of Mortgage produced to secure the payment of 10.10 a.m. 14 Oct
 REGISTRAR

Kae
1506531

PURSUANT to 18 May 62 by 9.25a
 — Archibald Graham Davidson and
 — Alice Selah Davidson his wife —
 are now SEISED of an Estate IN FEE
 SIMPLE in the WHOLE of the within Land. As joint
 tenants.

sch4p3(3) Prejudice the protection

REGISTRAR OF TITLES
 QUEENSLAND

No. 18 May 1962 at 9.25a.m., registered 18 June 1962
 from Archibald Graham Davidson and Alice Selah Davidson to
 The National Australia Bank Limited
 to secure the payment of the interest therein referred to.

sch4p3(3) Prejudice

REGISTRAR OF TITLES
 QUEENSLAND

Alan Harlett Andrews and
 — Lois Andrews — his wife —
 — as joint tenants —
 are now seised of an Estate in fee-simple in the within land.
 Transfer No. 7240591 Produced 14 July 1965 at 9.22a.m.
 Registered 15 July 1965

sch4p3(3) Prejudice the protection of a

REGISTRAR OF TITLES
 QUEENSLAND

No. 7240592 Bill of Mortgage
 to The National Bank
 Produced 14 July 1965
 Registered 15 July 1965

sch4p3(3) Prejudice

REGISTRAR OF TITLES
 QUEENSLAND

Ross Thomas Bauline
 now registered proprietors in fee simple.
 TRANSFER No. K1273338
 PRODUCED 15 Dec 1989
 RECORDED 19 DEC 1989

sch4p3(3) Pre

REGISTRAR OF TITLES

CAVEAT by Donald Ralph Bauline
 No. K2706238 PRODUCED 18 May 1990
 RECORDED 18 MAY 1990

Consent of Registered Proprietor Endorsed

REGISTRAR OF TITLES

sch4p3(3) Prej

Clifford Stanley Ryan and
 Janice Margaret Kerr — Ryan
 as joint tenants
 are now registered proprietors in fee simple.
 TRANSFER No. L160527 B
 PRODUCED 24 Aug 1992
 RECORDED 22 SEP 1992

sch4p3(3) Pre

REGISTRAR OF TITLES

BILL OF MORTGAGE to NATIONAL AUSTRALIA BANK LIMITED.
 No. L160529 F PRODUCED 24 Aug 1992
 RECORDED 22 SEP 1992

sch4p3(3) Pre

REGISTRAR OF TITLES

WRIT OF EXECUTION BY JEFFREY RUSSELL BRAIN
 AND KARIN ISABELLA BRAIN
 No. L273880 X PRODUCED 12 FEB 1993
 RECORDED 1 MAY 1993

sch4p3(3)

REGISTRAR OF TITLES

as joint tenants
now seized of an Estate in fee-simple in the within land.
Transfer No. 7240591 Produced 14 July 1965 at 9:22 a.m.
Registered 15 July 1965



sch4p3(3) Prejudice the protection

No. 240892 Bill of Mortgage
to The National Bank of Australia
Produced 14 July 1965
Registered 15 July 1965



sch4p3(3) Prejudice the protection

now seized of an Estate in fee-simple in the within land.
Transfer No. 372170 Produced 6 Sep 1966 at 11:23 a.m.
Registered 9 Sep 1966



sch4p3(3) Prejudice the protection

No. 0448243 Bill of Mortgage
to The English, Scottish & Australian Bank Limited
Produced 20 Apr 1967 at 10:15 a.m.
Registered 11 May 1967



sch4p3(3) Prejudice the protection

THE DESCRIPTION OF THE WITHIN LAND IS CONVERTED
TO LOT(S) 1
ON REGISTERED PLAN No. 21135
12 AUG 1986

sch4p3(3)

REGISTRAR OF TITLES

Noble Chemicals Holdings Pty Ltd
now registered proprietors in fee simple.
REQUEST TO CHANGE NAME NO. 3270695F
PRODUCED 3 May 1987
REGISTERED 2 DEC 1987
Subject to Mortgage

REGISTRAR OF TITLES

22 SEP 1992 REGISTRAR OF TITLES
WRIT OF EXECUTION BY SEPERU RUSSELL BRAIN
AND KARIA KAPILLA BRAIN
No. 1308880X PRODUCED 17 FEB 1993
RECORDED
1 MAY 1993
sch4p3(3)
REGISTRAR OF TITLES

note 18
2448243
20-4-67
alex 5 67
5

S 1
R 1 21135
S 1
P 169

- Environmental Assessments and Audits
- Marine, Estuarine and Freshwater Studies
- Water Quality
- Air Monitoring
- Environmental Hygiene and Health
- Hazardous Chemicals
- Environmental Risk Assessments
- Analytical Services

901239

Lot 12,
Don Young Road,
Mt. Gravatt Research Park,
Nathan, 4111
Phone: (07) 3343 6066
Fax: (07) 3343 9917



2 May, 1996

Mr Mark Paton
Chief Scientific Adviser
Contaminated Land Section
Department of Environment
P O Box 155
Brisbane Albert Street Q 4002

Your Ref: 901239

Dear Sir,

Re: Contaminated Site Assessment
Corner George and Welge Streets, Kalbar

Further to your comments of 15 April, 1996 regarding our validation report (February 1996) on the above site, I have compiled the following responses in order of your comments and/or queries:

- (i) Remediation work and validation has applied to proposed Lots 2 to 4 only of existing Lot 1 on RP21135. My clients propose only to sub-divide this portion (i.e. 2762 m²). The balance, i.e. proposed Lot 1 of area 1130 m² containing the Wiss Emporium, is not covered by the sub-division proposal or within the scope of our investigations and related remediation.

I am further advised by my clients of a more recent survey plan for proposed Lots 1 and 5 cancelling Lot 1 on RP21135 (see Attachment No. 1).

On this plan, proposed Lot 5 refers to proposed Lots 2 to 4 mentioned above.

Attachment No. 1 contains a survey description of proposed Lots 1 and 5 which should be suitable for preparation of a "restricted" SCR and clearly delineates the proposed sub-division area (Lot 5) which has been remediated.

- (ii) Additional soil sampling has been conducted near the remediated site of the timber shed (on originally proposed Lot 3), Sites 1 and 17. The latter two sites were also remediated by excavation of soils as shown in Figure 1, Envirotest (1996).

No attempt has been made to conduct sampling and tests on soils from proposed Lot 1 and other properties (old SEQEB Depot and Welge Street) abutting these three sites, as shown in Figure 2 (see Attachment No. 2).

The extent of contamination off-site and possible lateral movement onto proposed Lot 5 is unknown and outside the scope of our investigations.

Our analytical report, covering the soil sampling and testing for specific contaminants identified previously at the three sites requested, is given in Attachment No. 3.

- (iii) The whole of proposed Lot 3 was scraped to a depth of 200 mm and excavated soil removed by Contractor to Kalbar Landfill, as approved. All hydrocarbon staining was removed. Petroleum hydrocarbon testing at Sites 7 and 11 (Lot 3) and Sites 1, 14, 15 and 16 also demonstrated an absence of any significant hydrocarbon contamination.
- (iv) A diagram showing the locations of rubbish piles and car body, relevant to validation sampling is presented as Figure 2, Attachment No. 2. Note: only one external car body was present on the site at time of original investigation by Envirotest. Others are reported to have been removed previously.

Solid rubbish and other materials suitable for disposal at the Council Landfill were removed separately from our investigations and were not covered by the original remediation plan.

Results indicate no significant movement of DDT from the remediated shed area. Similarly, this is the case for the lead and zinc although some elevated soil residues exist from typical rural activities of rubbish disposal on-site, such as rusting galvanised iron, fencing, old cans and vehicle parts.

sch4p3(3) Prejudice the protection

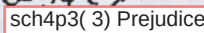
sch4p4(6) Personal information

Director, ENVIROTEST

ATTACHMENT NO. 1

**Proposed Lots 5 and 1
Cancelling Lot 1 on RP21135**

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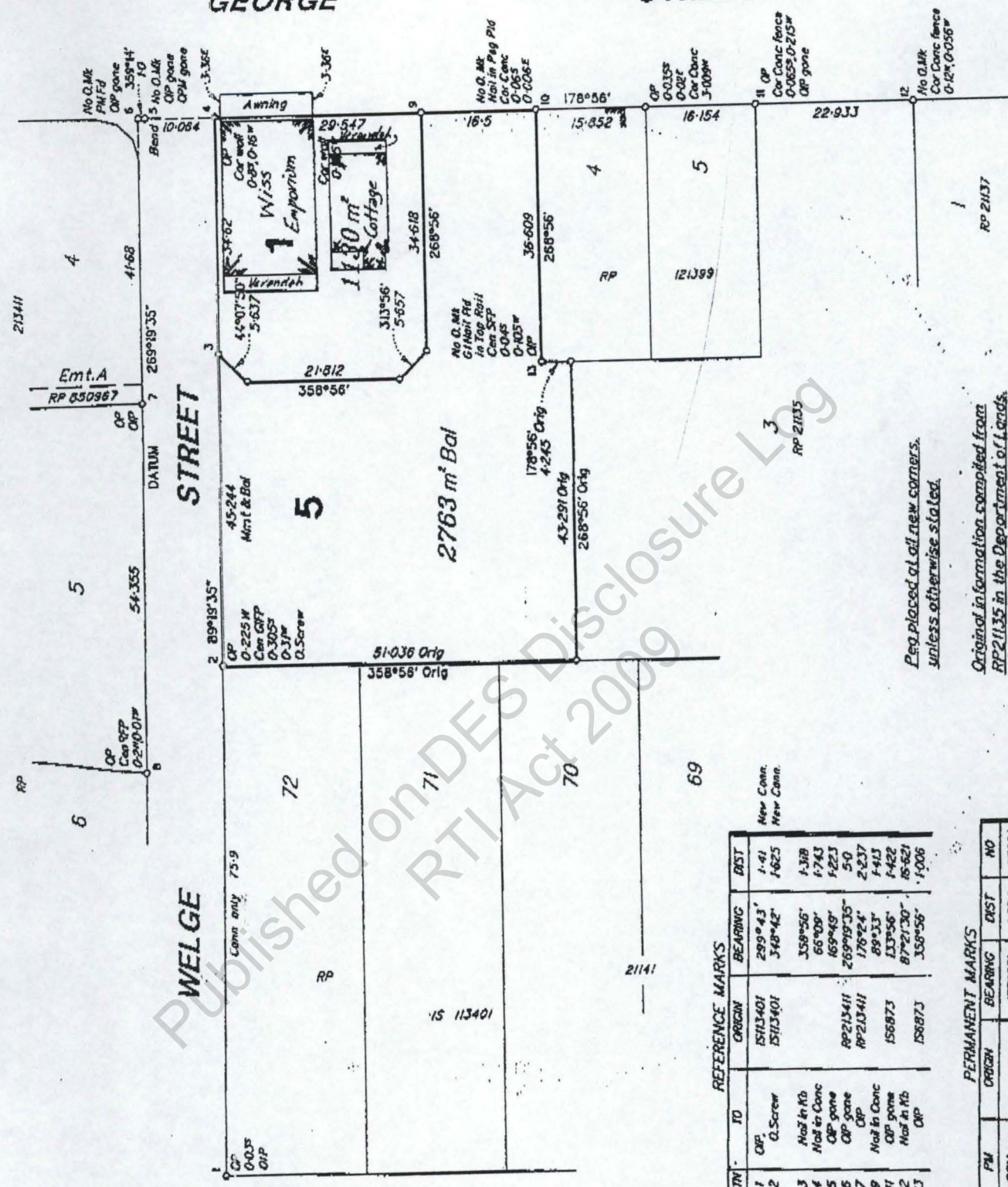
Page 74 of 135

880262 WARNING - PLAN MAY BE ROLLED - A FOLDED OR MUTILATED PLAN WILL NOT BE ACCEPTED 880262

GEORGE STREET

WELGE STREET

PURDON STREET



People placed at all new corners, unless otherwise stated.

Original information compiled from RP21135 in the Department of Lands.

STATION	TO	ORIGIN	BEARING	DIST	NO
1	OP	1513401	289°43'	1-41	1-41
2	OP	1513401	348°42'	1-625	1-625
3	OP	1513401	358°56'	1-388	1-388
4	OP	1513401	68°09'	1-743	1-743
5	OP	1513401	169°49'	1-223	1-223
6	OP	1513401	268°56'	1-50	1-50
7	OP	1513401	176°24'	2-237	2-237
8	OP	1513401	89°33'	1-413	1-413
9	OP	1513401	133°56'	1-422	1-422
10	OP	1513401	87°21'30"	1-621	1-621
11	OP	1513401	358°56'	1-006	1-006

PM	ORIGIN	BEARING	DIST	NO
5-OPM gone		177°55'	1-774	25954
6-PM Fd		134°03'	4-174	38800

WELLMER PTY. LTD., ACN 008 728 834
(Y/A J.B. Goodwin, Wilson & Partners)
I hereby certify that the General who has surveyed the land
comprised in this plan by sch4p4(6)1
(Registered Surveyor) and Stephen sch4p4(4)
(Licensed Surveyor) for whose work the company
accepts responsibility, that the plan is accurate, that
the said survey was performed in accordance with the
Surveyors Act 1992 and the Surveyors Regulation 1992
and that the said survey was completed on 8/3/1995.



PLAN OF Lots 1 & 5 Cancelling Lot 1 on RP21135				PARISH FASSIFERN COUNTY Churchill TOWN/LOCALITY KALBAR LOCAL GOVERNMENT BOONAH S.C. LANDS REGION IPSWICH MINING DISTRICT	
ORIGINAL Por. 169		NO SURVEY RECORDS DEPOSITED		PLAN 880262	
MERIDIAN RP213411	MAP REF Town Map Kolder	SCALE 1:600	ENDORSED	ARCHIVED BRISBANE	

J.B. Goodwin, Midson
& Partners
(Business name of
Hillmír Pty. Ltd.)
ACN 009 728 634

J.B. Goodwin, Midson & Partners

Consulting Surveyors Planners and Development Consultants.

27 July 1995

sch4p4(6) Personal informa

42 Bunyip St
BURLEIGH HEADS QLD 4222

Dear Sir & Madam

Re: Plan of survey 880262

Please find enclosed a copy of Dept of Lands advice indicating that plan of survey 880262 has been pre-examined by the Department and passed as correct for the purposes of registration.

When the original plan of survey has been sealed by the Boonah Shire Council we shall forward it to the department for their endorsement at that time.

Yours faithfully
J.B. Goodwin Midson & Partners

sch4p3(3) Prejudice the protection

sch4p4(6) Personal

LICENSED SURVEYOR

cc: sch4p4(6) Person

**Kalbar Realty
George Street
Queensland 4309**

628 Coronation Drive,
Toowong
P.O. Box 92 Toowong
Brisbane, 4066
Ph (07) 870 2161
Fax (07) 870 3944

A Member Firm of the
Association of
Consulting Surveyors

Originating Office
Brisbane

Our Reference
9324: SJG: see
D0463
Your Reference

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F.I.S. Aust

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L.S., M.I.S., Aust

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L.S., B.App Sc (Surv)
M.I.S., Aust

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Ph: (074) 93 1707
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2 Park Street Boonah
Ph: (074) 63 1596
18-185

STREET



STREET

WELGE

PURDON STREET

DIMENSIONS SUBJECT TO
PLAN REGISTRATION IN
THE DEPT. OF LANDS.

sch4p3(3) Prejudice t

PLAN OF Lots 1 & 5

Cancelling Lot 1 on RP21135

ORIGINAL Por. 169

NO SURVEY RECORDS DEPOSITED

PARISH **FASSIFERN**
COUNTY **Churchill**
TOWN/LOCALITY **KALBAR**
LOCAL GOVERNMENT **BOONAH S.C.**
LANDS REGION **IPSWICH**
MINING DISTRICT

MERIDIAN

MAP REF

SCALE

ENDORSED

ARCHIVED

PLAN 880262

Director 19.5.95

18-185 File A

Page 77 of 135

880262 WARNING - PLAN MAY BE ROLLED - A FOLDED OR MUTILATED PLAN WILL NOT BE ACCEPTED 880262

*Peg placed at oil new corners.
unless otherwise stated.*

PERMANENT MARKS

DAY	TO	ORIGIN	BEARING	DIST
1	DP2	15113401	299°43'	1-41
2	Q Screw	15113401	348°42"	1-625
3	Nail in Kb		358°56"	1-318
4	Nail in Conc		66°35'	6-745
5	DP gone		68°49'	1-223
6	DP gone		269°18'35"	5-0
7	DP	AP213411	176°24'	2-237
8	Nail in Conc	AP213411	89°33'	1-413
9	DP gone		133°58'	1-422
10	DP gone	156873	87°21'30"	16-621
11	Nail in Kb		359°56"	1-006
12	QCP	156873		

PM	ORIGIN	BEARING	DIST	NO
5-OPM gone		177°55'	1-774	25954
6-PM Fd		174°03'	4-174	25955

PC555

4

WITH COMPLIMENTS

J B GOODWIN, MIDSON & PARTNERS

P.O. Box 92

Teeuwonga 4066

ATTENTION: MR/MS

sch4p4(6) Personal inform

D/I FILE

RE PLANS

DP 880262

YOUR REF:

☒ PASSED subject to AMENDMENTS as discussed.

Please highlight any additional amendments carried out by yourself which this Office is not aware of.

☒ Amended ORIGINALS MUST be forwarded to this Office for ENDORSEMENT. Please phone the officer below to make an appointment for this purpose.☐ ENDORSED.☒ ENDORSED PLANS to be lodged in the Division of Titles for REGISTRATION.

sch4p3(3) Prejudice the protection of an individual

SIGNED

DATE

17/7/25

DEPARTMENT
OF LANDSIPSWICH DISTRICT
BRISBANE REGIONOffice:
4th Floor Hayden
Commonwealth
Centre
Cnr East & South
Streets
Ipswich 4305Postal:
PO Box 864
Ipswich Q 4305

K 41205

Contact
Mr L McMahonTelephone
81 00034Facsimile
31 00069

ATTACHMENT NO. 2

Figure 2 and Photographs of Site

Published on DES Disclosure Log
RTI Act 2009

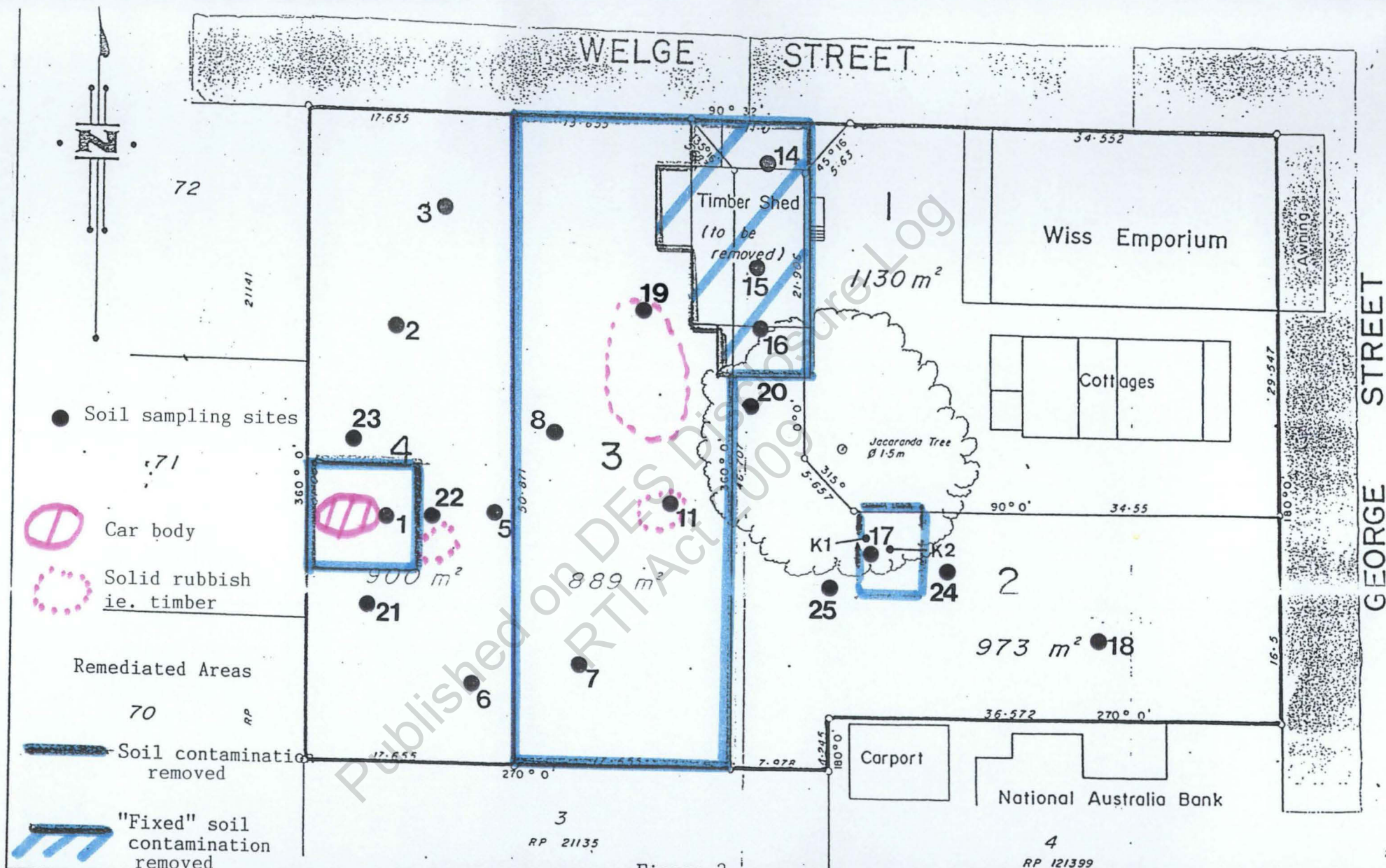


Figure 2

REGISTERED PROPRIETORS: sch4p4(6) Personal information

sch4p4(6) Personal information

Areas & Distances are approximate only & are subject to survey.

Note: The property is listed under the Old Heritage Act 1991

J.B. Goodwin, Midson & Partners

consulting surveyors, planners and development consultants



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Ph (074)631596



member firm of the association of consulting surveyors

Surveyed		Designed	S.J.G	7-2-94	FBK
Drawn	D.L.C	Checked	S.J.G	13-1-93	LBK

Plan of Proposed Lots 1-4 Cancelling
Lot 1 on RP 21135
Original Portion 169
Parish of Fassifern County of Churchill

scale: 1:300

ref no 9324-1



Photograph 1
Remediated Shed Area - Grass Regrowth
(Proposed Lot 5)



Photograph 2
Remediated Lot 3 - Grass Regrowth
(Proposed Lot 5)



Photograph 3
Wiss Emporium and Cottage
(Proposed Lot 1)

ATTACHMENT NO. 3

**Envirotest Analytical Report
(3-5-96)**

Published on DES Disclosure Log
RTI Act 2009

- Environmental Assessments and Audits
- Marine, Estuarine and Freshwater Studies
- Water Quality
- Air Monitoring
- Environmental Hygiene and Health
- Hazardous Chemicals
- Environmental Risk Assessments
- Analytical Services

Lot 12,
Don Young Road,
Mt. Gravatt Research Park,
Nathan. 4111
Phone: (07) 3343 6066
Fax: (07) 3343 9917

ANALYTICAL REPORT

Date of Report: 3 May, 1996

Job No: 95237

Client: sch4p4(6) Personal informat

Address: 42 Bunyip Street, Burleigh Heads Q 4220

Date of Receipt: 23-4-96

Description of Samples: 7 soil samples (0-100 mm) in 1L acid and solvent washed glass containers

Sampled by: sch4p4(6) Personal (Envirotest)

Analysis Requested: Lead, zinc and organochlorine insecticides

Methods of Analyses: Samples were air-dried and prepared according to AS 1289.1-1991: Method 1: Preparation of disturbed soil samples for testing 4.6b(iii)

PARAMETER	ENVIROTEST METHOD NO.	DESCRIPTION/REFERENCE
Lead, zinc	SSP-10 STE-20	Nitric acid and hydrogen peroxide digest. Determination by flame atomic absorption spectrophotometry (FAAS)
Organochlorine Insecticides	SO-30	Solvent extraction by sonication. Florisil microcolumn clean-up. Determination by GLC-ECD.

Analytical Results:

**Table 1: Lead and Zinc Concentrations in Soils
from Proposed Lot 5
cnr. George and Welge Streets, Kalbar**

Site No.	Lab No.	Zinc	Lead
		(mg/kg, dry weight)	
21	95237-4A	89	28
22	95237-5A	250	65
23	95237-6A	218	105
24	95237-2A	66	30
25	95237-3A	153	280

**Table 2: Organochlorine Insecticide Concentrations
from Proposed Lot 5
cnr. George and Welge Streets, Kalbar**

Sample Description	Site 19	Site 20
Lab No.	95237-8A	95237-9A
	(mg/kg, dry weight)	
HCB	<0.05	<0.05
Lindane	<0.05	<0.05
Heptachlor	<0.05	<0.05
Heptachlor Epoxide	<0.05	<0.05
Aldrin	<0.05	<0.05
Dieldrin	<0.05	<0.05
a-Endosulphan	<0.05	<0.05
b-Endosulphan	<0.05	<0.05
Total Chlordane	<0.05	<0.05
Total DDT	0.54	0.92
Chlorpyrifos	<0.05	<0.05

sch4p3(3) Prejudice th

sch4p4(6) Perso

ENVIROTEST

- Environmental Assessments and Audits
- Marine, Estuarine and Freshwater Studies
- Water Quality
- Air Monitoring
- Environmental Hygiene and Health
- Hazardous Chemicals
- Environmental Risk Assessments
- Analytical Services

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Mt. Gravatt Research Park,
Nathan. 4111
Phone: (07) 3343 6066
Fax: (07) 3343 9917

901239/
mb



VALIDATION REPORT

LOT 1 RP 21135

CNR GEORGE AND WELGE STREETS

KALBAR

Prepared for:

sch4p4(6) Personal information

ENVIROTEST

February 1996

1.0 BACKGROUND

A Contaminated Land Assessment Report and Remedial Plan for Lot 1 on RP 21135, cnr George and Welge Streets, Kalbar was prepared for [sch4p4(6) Personal informati] in May 1994 by Envirotest and submitted to the Contaminated Land Section of DEH for assessment.

Subsequently, a Contaminated Site Assessment was provided by Mark Paton of the Contaminated Land Section on 5 October, 1994 (DEH Ref. 901239) (see Appendix 1).

This report accepted the proposed remediation strategy with certain modifications that included:

- further extensive validation sampling on proposed Lots 2 and 4 to ensure that no residual contamination exists
- TCLP tests on shavings of the timber shed to enable the Boonah Shire Council and the Contaminated Land Section to consider options for off-site disposal

Following further negotiations between [sch4p4(6) Personal informati] their partner [s78(B)(2)] of Kalbar and the Boonah Shire Council, the Council agreed to accept contaminated waste for this site at their Kalbar Landfill, under conditions described in their letter of 29 March, 1995 and approval (5 July, 1995) (see Appendix 2).

The matter of off-site disposal was finally resolved on 21 July 1995 when approval, subject to conditions, was received from DEH, under Section 14 of the Contaminated Land Act 1991 (see Appendix 3).

This validation report describes the further sampling and validation testing of soils (and timber shavings) from the site, as part of the remediation activities, details on remediation work performed, off-site disposal of soils and additional information relevant to the site.

2.0 REMEDIAL WORK

Remediation of Lot 1 on RP 21135 involved removal of contaminated materials (shed timbers) and soils by private contractor [sch4p4(6) Perso] according to the remediation plan prepared by Envirotest. The work program can be divided into four stages:

2.1 Shed Timbers

Shed timbers and related materials (eg. stumps) were disposed in the Kalbar Landfill in an area supervised by the Boonah Shire Council. The materials were transported by contractor's truck and covered by tarpaulin.

Toxicity Characteristics Leachate Procedure (TCLP) testing of wood shavings from the timbers found leachate levels of total DDT at 20 µg/L and lead at 9.35 mg/L. The lead exceeded the guideline level of 5 mg/L (see Envirotest Report, 9 May 1995, Appendix 4).

2.2 Low Contaminated Soils - Proposed Lots 3 and 4

Approximately 160 m³ of low contaminated soil, as marked on Figure 1, was excavated ($\approx$ 200 mm depth) from the site by a front end loader/backhoe tractor. The soil was loaded into a truck, wet down, covered by tarpaulin and transported to the Kalbar Landfill for disposal, as directed by the Council.

2.3 Higher Contaminated Soil

Soils were sampled underneath the old shed and sub-sampled, subjected to mixing with 5%, 10% and 15% (w/w) and added water. These mixes were allowed to set and air dried for several days. TCLP tests for organochlorine insecticides were conducted on these mixes and the original soil sample to meet a suitable cement mix.

Contaminated soil and dusts ($\approx$ 35 m³) from under and around the shed, as marked in Figure 1, were excavated (200 mm depth) and stockpiled on plastic sheeting adjacent to the shed area (proposed Lot 3). This soil was mixed in batches with cement (10%), flyash (10%) and water to achieve a moist slurry and allowed to set as a concrete mass. A sample of the "fixed" material was taken for TCLP testing by Envirotest (see Appendix 5).

The TCLP test of the fixed soil found total DDT leachate of $< 1 \mu\text{g/L}$ which complied with the DEH requirement of $< 3 \mu\text{g/L}$. The concrete fixed mass was broken up into large lumps, loaded into a truck, covered by tarpaulin and transported by truck to the Kalbar Landfill for disposal as directed by the Council. (The plastic sheeting and residues were similarly disposed.)

2.4 Further Remediation - Proposed Lot 2

Validation testing of soil samples collected on 7-12-95 detected surface lead contamination in a new area (Site 17 - Figure 2) on proposed Lot 2. Follow-up sampling on 18-1-96 at three soil sites around Site 17 found further evidence of lead contamination. Local information suggested the contamination was likely to have originated from the "backyard" maintenance of vehicles and probable disposal of battery acids/residues.

On the 8-2-96, the contaminated area $\approx 25 \text{ m}^2$ was staked out by Envirotest (Dr Greg Miller) and soil excavated to a depth of 100-150 mm. The soil was transported off-site for disposal at the Kalbar Landfill.

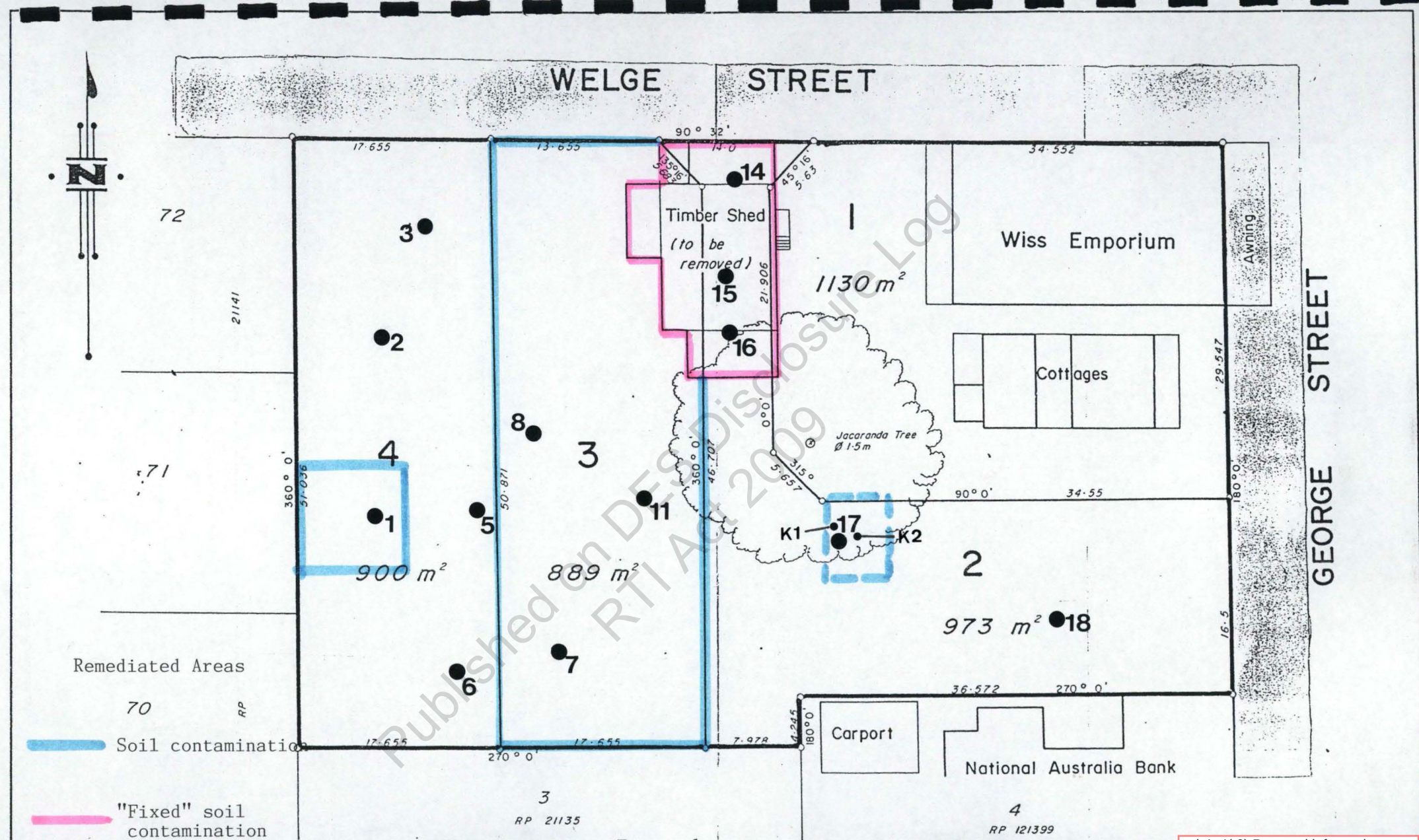


Figure 1

REGISTERED PROPRIETORS: sch4p4(6) Personal information

Areas & Distances are approximate only & are subject to survey.

Note: The property is listed under the Qld Heritage Act 1991

J.B. Goodwin, Midson & Partners

consulting surveyors, planners and development consultants



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member firm of the association of consulting surveyors

Surveyed		Designed	S.J.G	7.2.94	FBK
Drawn	D.L.C	13.1.93	Checked	S.J.G	13.1.93
					LBK

sch4p4(6) Personal information

Plan of Proposed Lots 1-4 Cancelling Lot 1 on RP 21135
Original Portion 169
Parish of Fassifern County of Churchill

scale: 1:300

ref no 9324-1

AMDT

A3

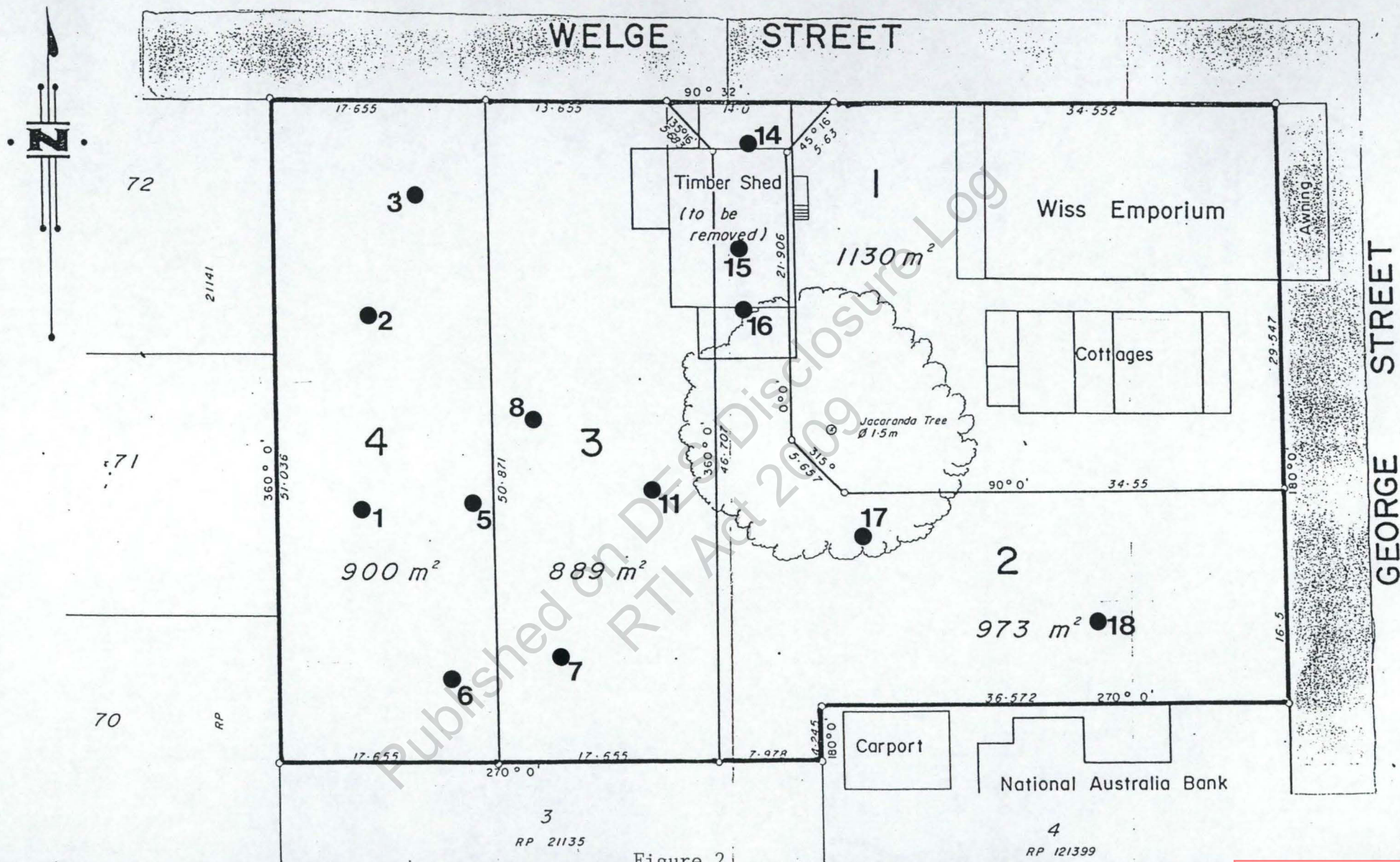


Figure 2

REGISTERED PROPRIETORS: sch4p4(6) Personal information

sch4p4(6) Personal information

AMDT

Areas & Distances are approximate only & are subject to survey.

Note: The property is listed under the Old Heritage Act 1991

J.B. Goodwin, Midson & Partners

consulting surveyors, planners and development consultants



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Plan of Proposed Lots 1-4 Cancelling Lot 1 on RP 21135
Original Portion 169
Parish of Fassifern County of Churchill

Surveyed		Designed	S.J.G	7.2.94	FBK
Drawn	D.L.C	Checked	S.J.G	13.1.93	LBK

scale: 1:300

ref no 9324-1

A3

3.0 VALIDATION SAMPLING AND TESTING

3.1 Inspection and Sampling - Lot 1 (7-12-95)

Lot 1 was inspected and soils sampled by sch4p4(6) Person Envirotest, on 7-12-95 following excavation of contaminated soils by the private contractor. Sampling sites are shown in Figure 2. The sampling program was designed to cover the known areas of contamination and also random samples from Lots 2 and 4. Sites for testing insecticides, heavy metals, arsenic and petroleum hydrocarbons were selected on previous site history and contaminants identified.

Soil samples (0-100 mm) were stored in acid and solvent washed glass bottles (1 L), sealed with teflon-lined lids, cold stored in eskies and transported to the Envirotest laboratory for analysis. A separate set of samples was collected from the "fixed" soil for TCLP testing.

4.0 RESULTS AND ASSESSMENT

The analysis of soils and a TCLP sample collected on 7-12-95 are reported in Appendix 5 (see Envirotest 9-1-96). These cover insecticides, petroleum hydrocarbons and trace elements.

4.1 Insecticides

Insecticides were tested in soils from Sites 1 to 8 and Sites 11 to 18. All residue levels were below 0.1 mg/kg (dry weight). The highest level was total DDT at 0.07 mg/kg (Site 18). Results are given in Table 1. The results demonstrate effective remediation of the site for organochlorine insecticide residues.

**Table 1: Organochlorine Insecticides - Lot 1,
cnr George and Welge Streets, Kalbar
(7-12-95)**

Sample Code	Site 1 (Lot 4)	Site 3 (Lot 4)	Site 5 (Lot 4)	Site 6 (Lot 4)	Site 7 (Lot 3)	Site 8 (Lot 3)
Laboratory No.	95237-5	95237-7	95237-8	95237-9	95237-10	95237-11
Moisture Content (%)	25.6	21.3	18.6	22.5	20.3	18.6
Units	mg/kg, dry weight basis					
Parameter						
Lindane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
α -Endosulphan	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
β -Endosulphan	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total DDT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Sample Code	Site 11 (Lot 3)	Site 14 (Lot 2)	Site 15 (Lot 2)	Site 16 (Lot 2)	Site 17 (Lot 2)	Site 18 (Lot 2)
Laboratory No.	95237-12	95237-13	95237-14	95237-15	95237-16	95237-17
Moisture Content (%)	24.5	21.9	23.5	22.0	21.0	20.1
Units	mg/kg, dry weight basis					
Parameter						
Lindane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
α -Endosulphan	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
β -Endosulphan	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total DDT	<0.05	<0.05	<0.05	<0.05	<0.05	0.07

4.2 Petroleum Hydrocarbons (by Fractions)

Results for petroleum hydrocarbon analyses of soils (after remediation) at sites known or suspected to contain petroleum hydrocarbon residues are presented in Table 2.

All levels are below draft soil quality guidelines for petroleum hydrocarbon fractions.

Draft guidelines for mineral oil and "petrol" contamination are 1000 mg/kg and 100 mg/kg respectively.

Table 2: Total Petroleum Hydrocarbons (by fractions)
- Lot 1, cnr. George and Welge Streets, Kalbar
(7-12-95)

Sample Code	Site 1 (Lot 4)	Site 7 (Lot 4)	Site 11 (Lot 3)	Site 14 (Lot 2)	Site 15 (Lot 2)	Site 16 (Lot 2)
Laboratory No.	95237-5	95237-10	95237-12	95237-13	95237-14	95237-15
Units	mg/kg, dry weight basis					
Parameter						
C ₆ - C ₉	<10	<10	<10	<10	<10	<10
C ₁₀ - C ₁₄	<10	<10	<10	<10	<10	<10
C ₁₅ - C ₂₈	<100	<100	<100	<100	<100	<100
C ₂₉ - C ₃₆	<100	<100	<100	<100	<100	<100

4.3 Trace Elements

Trace element concentrations in the soil samples are reported in Table 3. A significant level of zinc (530 mg/kg) was found at Site 1 and to a lesser extent, Site 3 (370 mg/kg). Both of these sites were influenced by previous "dumping" of metal parts/rubbish. Site 1 had been remediated by soil excavation.

Table 3: Trace Elements - Lot 1
cnr. George and Welge Streets, Kalbar
(7-12-96)

Sample Code	Site 1 (Lot 4)	Site 3 (Lot 4)	Site 5 (Lot 4)	Site 6 (Lot 4)	Site 7 (Lot 3)	Site 8 (Lot 3)
Laboratory No.	95237-5	95237-7	95237-8	95237-9	95237-10	95237-11
Units	mg/kg, dry weight basis					
Parameter						
Arsenic	18	4.2	1.9	8.6	1.1	<0.1
Cadmium	2.8	3.3	2.3	2	2.8	2.5
Chromium	25	28	23	13	13	28
Copper	35	34	36	26	31	39
Lead	43	210	220	72	14	31
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	21	25	29	33	38	32
Zinc	530	370	230	130	67	98

Sample Code	Site 11 (Lot 3)	Site 14 (Lot 2)	Site 15 (Lot 2)	Site 16 (Lot 2)	Site 17 (Lot 2)	Site 18 (Lot 2)
Laboratory No.	95237-12	95237-13	95237-14	95237-15	95237-16	95237-17
Units	mg/kg, dry weight basis					
Parameter						
Arsenic	1.5	12.2	3.1	2.1	3.9	1.4
Cadmium	2.3	2.8	2.8	2.5	1.8	2.5
Chromium	25	13	13	13	13	13
Copper	28	33	31	28	25	25
Lead	58	130	34	36	760	98
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	10	8	8	9	8	23
Zinc	120	80	67	45	240	170

Furthermore, at Site 17, an excessive level of lead (760 mg/kg) was found. (This area showed no obvious evidence of previous structures or contamination, but has been subsequently identified as a car maintenance area by former residents of the old cottage nearby.)

Other trace elements were at acceptable levels (see Table 4).

**Table 4: Environmental Soil Quality Guidelines
(mg/kg)**

HEAVY METALS	BACKGROUND A	ENVIRONMENTAL INVESTIGATION B	HEALTH INVESTIGATION LEVELS
Heavy Metals			
Antimony (Sb)	4 - 44	20	
Arsenic (As)	0.2 - 30	20	100
Barium (Ba)	20 - 200		
Cadmium (Cd)	0.04 - 2	3	20
Chromium (Cr)	0.5 - 110	50	
Cobalt (Co)	2 - 170		
Copper (Cu)	1 - 190	60	
Lead (Pb)	<2 - 200	300	300
Manganese (Mn)	4 - 12,600	500	
Mercury (Hg)	0.001 - 0.1	1	
Molybdenum (Mo)	<1 - 20		
Nickel (Ni)	2 - 400	60	
Tin (Sn)	1 - 25	50	
Zinc (Zn)	2 - 180	200	
Mineral Pollutants			
Boron	1 - 75	-	
Phenolic Compounds			
Phenols	0.03 - 0.5	-	
Monocyclic Aromatic Hydrocarbons (MAH)			
Benzene	0.05 - 1	1	
Toluene	0.1 - 1		
Polycyclic Aromatic Hydrocarbons (PAH)			
PAH (total)	0.95 - 5		

HEAVY METALS	BACKGROUND A	ENVIRONMENTAL INVESTIGATION B	HEALTH INVESTIGATION LEVELS
Chlorinated Hydrocarbons			
PCB (total)	0.02 - 0.1	1	
Pesticides			
Aldrin	<0.001 - <0.05		
Dieldrin	<0.005 - <0.05	0.2	
DDT	<0.001 - 0.97		
Other Chemicals			
Sulphate	35 - 1000	2000	
pH	6 - 8		

SOURCE: ANZECC/NHMRC (1992)

Sites 1 (zinc) and 17 (lead) were investigated further on the 18-1-96 and these areas re-sampled for testing. Results of these tests are included in Envirotest Analytical Report 95237 (1-2-96) (see Appendix 6).

Zinc levels at Site 1 were found to be acceptable, 85-150 mg/kg. However, lead levels at Sites 17 A to C ranged from 360 to 2525 mg/kg.

On the basis of these results, further remediation work was carried out in the area of Site 17.

4.4 Further Remediation - Proposed Lot 2 (8-2-96)

After excavation of the Site 17 area by private contractor (Peter Upton) to a depth of 100-150 mm, the site was re-sampled and tested for lead in soil. Results are presented in Appendix 7.

Sample K1 contained a lead level of 630 mg/kg. After sampling of K1, it was decided to scrape further soil from this area and the perimeter of the site. Another sample, K2 (0-100 mm) was collected in the excavated site, adjacent to K1. The lead level in this sample was 190 mg/kg.

Some excavation difficulty was experienced in this area with tree roots from the large jacaranda tree.

5.0 ADDITIONAL INFORMATION

5.1 Site Characteristics

The geology of the Kalbar area has been described briefly by the Queensland DPI (Powell, 1979). The area is part of a region considered by Stephens to have the greatest concentration of tertiary intrusions in Southern Queensland. Most rocks are highly weathered.

The undulating plains around Kalbar consist of the Jurassic Walloon Coal Measures and numerous tertiary hypabyssal intrusions. The rock types range from andesite and trachyte to microsyenite, dolerite and teschenite.

The Walloon Coal Measures comprise brown to green mudstones, buff, cream or gray sandstones, with some siltstones, shales, then coal seams and thin limestone beds.

Kalbar is situated among the rolling topography of the undulating plains (see Figure 3). Soils of the undulating plains tend to be dark to brown, friable to firm clay loam to light medium clay to 10-20 cm with a subsoil of brown neutral medium to heavy clay to 40-80 cm over sandy weathered rock. These types of soils dominate the Kalbar site. Any drainage from the site proceeds along kerb and open channelling and flows downslope into the local drains and creek channels of the alluvial plains drained by Warrill Creek. There was no visible evidence of any abnormal drainage "stains", soil erosion or significant siltation deposits from the site, after a period of heavy rains and local flooding.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Site inspection has found that structures and old rubbish piles and car bodies have been removed from the Kalbar site (Lot 1). Contaminated soils, including underneath the old shed, and an additional area of lead contamination have been excavated (up to 200 mm) and disposed off-site in the Kalbar Landfill by private contractor, as directed by the Boonah Shire Council.

Subsequent site testing of proposed Lots 1 to 4 has found that trace elements, petroleum hydrocarbons and insecticide residue levels are at or below acceptable levels for soil quality (environmental and health). *no further testing done on this site*

It is recommended that excavated areas on the site are filled with suitable material (free of contamination) and the site be assessed for classification as a former contaminated site.

7.0 REFERENCES

ANZECC/NHMRC (1992). "Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites". Australian and New Zealand Environment and Conservation Council/ National Health and Medical Research Council.

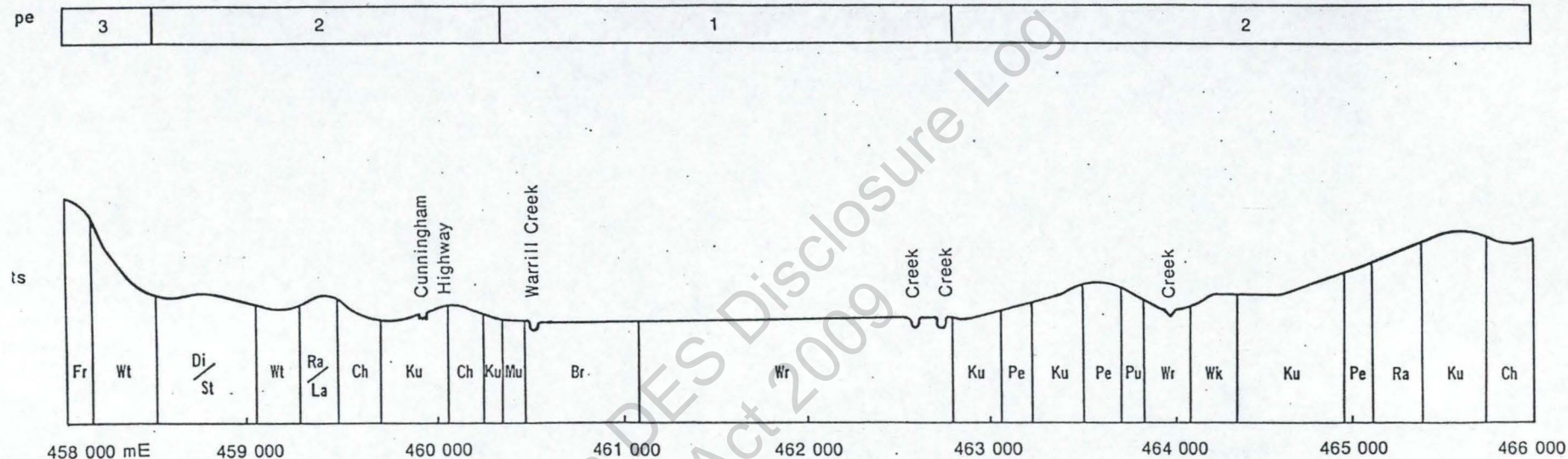
Powell, B. (1979). "Reference Area - Kalbar Area". Department of Primary Industries, Brisbane.

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Director, ENVIROTEST

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Landscape Units

1. Alluvial Plains
2. Undulating Plains
3. Low Hills

Cross-section along 6910 000 m N line.

Figure 3 Landscape – East-west Cross-section of Map Units and Landscape Units

(Source: Powell, 1979)

APPENDIX 1

**Contaminated Site Assessment
DEH (5-10-94)**

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Queensland Department of Environment and Heritage

160 Ann Street • Brisbane Queensland • PO Box 155 • BRISBANE ALBERT STREET QLD 4002
Telephone (07) 227 7111 • Facsimile (07) 227 6534

Enquiries to **Mark Paton**
Telephone **(07) 227 7000**
Your reference
Our reference **901239**

5 October 1994

sch4p4(6) Per

Envirotest
Lot 12 Don Young Road
MT GRAVATT RESEARCH PARK QLD 4111

Dear sch4p4(6) :

CONTAMINATED SITE ASSESSMENT - CORNER GEORGE AND WELGE STREETS, KALBAR

Thank you for your letter and report dated 29 June 1994 regarding the above premises being Lots 1 on RP 21135. The report has assessed and the following comments provided:

- (i) It is suggested that Lot 1 of the proposed subdivision be further investigated and remediated if necessary at this time. A detailed site history should also be reviewed to determine if any prescribed use or other activity has been conducted which may have caused contamination of the site. In the absence of any further work Lot 1 of the proposed subdivision will remain on the Contaminated Sites Register.
- (ii) The proposed remediation strategy is acceptable to the Contaminated Land Section with the following modifications:
 - (a) a further extensive validation sampling is required on the proposed Lots 2 & 4 to ensure that no residual contamination exists. These validation samples should be analysed for metals, TPH and pesticides. Samples taken should be on the basis of one per 150 m². It is suggested the car bodies, general rubbish etc. be removed and following this the property be slashed so that a clear visual observation can be made prior to sampling. Any areas such as the "old car body dump sites" (ref page 26) should be inspected for any staining of the soil surface and targeted by sampling.
 - (b) prior to the removal of the timber shed it is recommended that TCLP tests be conducted on shavings of the timber to enable the Boonah Shire Council and the Contaminated Land Section to consider options for off site disposal.
- (iii) Details of the soil type and profile, geology and hydrogeology should also be provided.

- (iv) Laboratory results sheets for all analysis performed should be included in your report, not just the quality control laboratory reports.

Should you have any queries on the above please contact me on (07) 227 7000.

Yours sincerely

sch4p3(3) Prejudice the protection of an indi

Mark Paton
Chief Scientific Advisor
Contaminated Land Section

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APPENDIX 2

**Boonah Shire Council letter (29-3-95)
and Approval for Disposal (5-7-95)**

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sch4p4(6) Personal info

42 Bunyip Street
BURLEIGH HEADS QLD 4220

380/684 P4.1.2.1/0395
Our Ref ICF:1K

Your Ref

29th March, 1995

Dear sch4p4(6) Personal info,

RE: Subdivision Proposal Application No. 380/684

I refer to your letter of 20th February, 1995 regarding the above and advise that this matter was further considered by Council at its Meeting of 28th March, 1995 and I am to advise that:-

1. Council has imposed conditions such as a security bond on approval of the subdivision based on legal advice and is unable to draw on a bank guarantee to carry out remedial work on the site but is prepared to reduce the amount of security required by the value of remedial work completed.
2. The matter of the recommended T.C.L.P. testing of the shed flooring timber and whether or not such testing should be carried out is to be resolved between the applicant's consultant (Envirotest) and the Department of Environment and Heritage Contaminated Land Section.
3. Council is prepared to accept the contaminated waste at an authorised landfill subject to the determination of (2) above and the written concurrence of Department of Environment and Heritage.
4. The cost of disposal at the nominated landfill will be five (\$5) dollars per cubic metre.
5. Council does wish to facilitate and expedite the clean up and validation of the site and completion of the subdivision.

Should you require further clarification of the steps necessary to finalise this subdivision, please contact Council's Planning Officer, Mr Chris Cooney.

Yours faithfully,

sch4p3(3) Prejudice the protection of an individuals

IC FLINT
CHIEF EXECUTIVE OFFICER

Encl.

Address Correspondence to:- The Chief Executive Officer, Boonah Shire Council, P.O. Box 97, Boonah, Qld. 4310
COUNCIL CHAMBERS, 70 HIGH STREET, BOONAH, QUEENSLAND.

Telephone: (074) 63 1599 Facsimile: (074) 63 2650



sch4p4(6) Person

Envirotest
Lot 12 Don Young Road
Mt Gravatt Research Park
NATHAN Q 4111

Our Ref 380/684 250/06
AJD:SS

Your Ref

5th July, 1995

Dear Sir,

RE: Lot 1 on RP21135 Corner George and Welge Streets, Kalbar

I wish to advise that Council is prepared to take all contaminated soil and timber from the above site into Kalbar Refuse Tip at \$5.00 per cubic metre subject to requirements of Queensland Department of Environment and Heritage and liaising with the Director of Works and Technical Services, Mr Arthur Devin.

Yours faithfully,

sch4p3(3) Prejudice the protection of an individuals rig

IC FLINT
CHIEF EXECUTIVE OFFICER

Address Correspondence to:- The Chief Executive Officer, Boonah Shire Council, P.O. Box 97, Boonah, Qld. 4310
COUNCIL CHAMBERS, 70 HIGH STREET, BOONAH, QUEENSLAND.

Telephone: (074) 63 1599 Facsimile: (074) 63 2650

APPENDIX 3

DEH Approval for Off-site Disposal
(21-7-95)

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Queensland Department of Environment and Heritage

160 Ann Street • Brisbane Queensland • PO Box 155 • BRISBANE ALBERT STREET QLD 4002
Telephone (07) 227 7111 • Facsimile (07) 227 6534

Enquiries to
Telephone
Your reference
Our reference

Mark Paton
(07) 3227 7000

901239

21 July 1995

sch4p4(6) Person

Kalbar Realty
99 George Steet
KALBAR QLD 4309

Dear sch4p4(6) Per

APPROVAL FOR OFF-SITE DISPOSAL OF CONTAMINATED SOIL OR MATERIALS

RE: Lot 1 on RP21135, Corner George and Welge Streets, Kalbar

Under Section 14 of the Contaminated Land Act 1991 approval is given for removal of 295m³ of soil contaminated with metals and DDT as described in facsimile of 21 July 1995 from Envirotest, corner of George and Welge streets, Kalbar (Lot 1 on RP21135) to be disposed to sanitary landfill under the control of the Kalbar Shire Council as follows:

1. Low Contaminated Soil: Proposed Lots 3 and 4

Approximately 160m³ of low contaminated soil to be wet down, covered by tarp and disposed at Kalbar landfill as directed by Council.

2. Higher Contaminated Soil: Shed area including underneath and dusts

Approximately 30-35m³ of contaminated soil subject to the following:

- (i) Contractor to fix soil (and dust) by mixing with cement and some flyash to inhibit leaching of insecticides/metals.
- (ii) TCLP test to be undertaken upon composite of "fixed" material (hard lumps) to confirm a level of leachate less than 0.003mg/L for DDT.
- (iii) Material is to be covered by tarp when transported to Kalbar landfill and the volume recorded.

3. Shed Materials (timber and associated construction materials)

These materials are to be wet down and covered by tarp when transported. The material is to be disposed of in the Kalbar landfill where potential leachate will be restricted as directed by Council.

Yours sincerely

[Redacted signature block]

David N Miles
Director, Waste Management Branch
Division of Environment

c.c.

[Redacted name]

Envirotest
Lot 12 Don Young Road
MT GRAVATT RESEARCH PARK QLD 4111

Mr J Brent
Boonah Shire Council
PO Box 97
BOONAH QLD 4310

Envirotest

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- Environmental Risk Assessments
- Analytical Services

Lot 12,
Don Young Road,
Mt. Gravatt Research Park,
Nathan, 4111
Phone: (07) 343 6066
Fax: (07) 343 9917

21 July, 1995

Mr Mark Paton
Chief Scientific Adviser
Contaminated Land Section
Department of Environment and Heritage
P O Box 155
Brisbane Albert Street Q 4002

Dear Sir,

Re: Supplementary Information
Remediation of Kalbar Site
Lot 1 on RP21135
cnr George and Welge Streets, Kalbar

As discussed with you, I have prepared the following details which identify the proposed materials to be removed, methods and disposal.

1.0 MATERIALS

1.1 "Rubbish"

Solid uncontaminated "rubbish" from the site has been previously removed and disposed at the Boonah Shire landfill. Any remaining "rubbish" will be separately identified and disposed by contractor under normal practices employed for commercial/industrial refuse by the Boonah Shire Council.

1.2 Contaminated Soils

The soils are to be segregated into two categories for disposal:

- 1) Low "contaminated" soil - proposed Lots 3 and 4
- 160 m³
- 2) Higher contaminated soil - shed area including underneath and dusts
- 30-35 m³

The estimated total DDT content is about 100 to 350 g.

1.3 Shed

Shed timbers, galvanised sheeting, iron mesh and stumps

$\approx 100 \text{ m}^3$

(According to TCLP test, 10-20 m^3 of timber floorings may leach up to 5 g of DDT if evenly distributed in timber.)

2.0 TREATMENT AND DISPOSAL

2.1 Rubbish

To be covered by tarp and removed from site to Kalbar landfill.

2.2 Contaminated Soils

2.2.1 Low Contamination

- To be wet down, covered by tarp and disposed at Kalbar landfill as directed by Council
- Volume to be recorded

2.2.2 Higher Contaminated Soil

- Contractor to fix soil (and dusts) by mixing with cement and some flyash to inhibit leaching of insecticides/metals.
- TCLP test to be undertaken upon composite of "fixed" material (hard lumps) to confirm acceptable level of leachate.
- Material is to be covered by tarp when transported to Kalbar landfill and volume recorded

2.3 Shed Materials

These materials are to be wet down and covered by tarp when transported. The material is to be disposed in the Kalbar landfill where leachate is restricted, as directed by Council.

Yours faithfully

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sch4p4(6) Personal info

Director, ENVIROTEST

APPENDIX 4

**Envirotest Report
(9-5-95)**

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- Environmental Assessments and Audits
- Marine, Estuarine and Freshwater Studies
- Water Quality
- Air Monitoring
- Environmental Hygiene and Health
- Hazardous Chemicals
- Environmental Risk Assessments
- Analytical Services

9 May, 1995

sch4p4(6) Personal information

42 Bunyip Street
Burleigh Heads Q 4220

TCLP Testing - Lot 1 on RP 21135
cnr George and Welge Streets, Kalbar

1.0 BACKGROUND

A TCLP test for trace elements and organochlorine insecticide residues has been conducted on a composite sample of timber shavings taken from the timber shed on the above lot. This type of testing has been recommended by the Queensland Department of Environment and Heritage in their Assessment Report (5 October, 1994) of the Envirotest Contaminated Land Assessment Report and Remedial Plan (May, 1994). This test is also intended to assist in a written determination for the disposal of the timber materials in an authorised landfill (see attached letter).

2.0 SAMPLING

Seven samples of timber shavings were collected from around the timber floors and lower walls by Envirotest on 19 December, 1994 and cold stored in labelled sterile plastic jars.

3.0 TCLP TESTING AND RESULTS

An Envirotest Analytical Report (Ref. 94243, 5 May, 1995) on the TCLP testing of the timber shavings is attached. A comparison of the results with available US-EPA toxicity regulatory levels is also included.

4.0 ASSESSMENT OF TCLP RESULTS

Lead and DDT residues were leached from the old timber shavings at significant levels. The lead level (9.35 mg/L) exceeded the US-EPA regulatory level (5.0 mg/L). This is consistent with the results of previous testing of site and building dusts and earlier Queensland practice of using lead-based paints/timber coatings and DDT treatments. In this case, however, the storage of DDT in the shed is the probable source of low residues in building dusts and these adsorbed to the cellulose of the timber.

The total DDT level was 20 µg/L which is considered excessive for leaching without landfill control.

5.0 DISPOSAL RECOMMENDATIONS

The landfill disposal of lead and pesticide-treated materials such as timber is commonly practised, without TCLP testing.

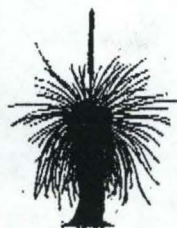
The testing in this case demonstrates that the timber materials from the shed need to be disposed properly in a local authority landfill site, as for other painted or treated timbers that are disposed.

To control any leachate, the timber materials should be buried in a clay-based pit or lined section of the local authority landfill and capped with a compact clay-containing layer (eg. 300 mm thick) to reduce permeation of water. (DDT and lead readily adsorb to clay particles.) Disposal with other commercial timber materials in a controlled area of the landfill should also be suitable, considering the relatively low volume of timber involved. (These disposal areas should, as a matter of practice, be protected from any potential acid leaching, eg. dumping of acid wastes, which can mobilise heavy metals in paint residues etc.)

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Director, ENVIROTEST



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[sch4p4(6) Personal info]

42 Bunyip Street
BURLEIGH HEADS QLD 4220

380/684 P4.1.2.1/0395

Our Ref ICF:LK

Your Ref

29th March, 1995

Dear [sch4p4(6) Personal info]

RE: Subdivision Proposal Application No. 380/684

I refer to your letter of 20th February, 1995 regarding the above and advise that this matter was further considered by Council at its Meeting of 28th March, 1995 and I am to advise that:-

1. Council has imposed conditions such as a security bond on approval of the subdivision based on legal advice and is unable to draw on a bank guarantee to carry out remedial work on the site but is prepared to reduce the amount of security required by the value of remedial work completed.
2. The matter of the recommended T.C.L.P. testing of the shed flooring timber and whether or not such testing should be carried out is to be resolved between the applicant's consultant (Envirotest) and the Department of Environment and Heritage Contaminated Land Section.
3. Council is prepared to accept the contaminated waste at an authorised landfill subject to the determination of (2) above and the written concurrence of Department of Environment and Heritage.
4. The cost of disposal at the nominated landfill will be five (\$5) dollars per cubic metre.
5. Council does wish to facilitate and expedite the clean up and validation of the site and completion of the subdivision.

Should you require further clarification of the steps necessary to finalise this subdivision, please contact Council's Planning Officer, Mr Chris Cooney.

Yours faithfully,

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[s78(B)(2)]

CHIEF EXECUTIVE OFFICER

Encl.

Address Correspondence to:- The Chief Executive Officer, Boonah Shire Council, P.O. Box 97, Boonah, Qld. 4310
COUNCIL CHAMBERS, 70 HIGH STREET, BOONAH, QUEENSLAND.

Telephone: (074) 63 1599

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- Hazardous Chemicals
- Environmental Risk Assessments
- Analytical Services

ANALYTICAL REPORT

Date of Report: 5 May, 1995

Job No: 94243

Client: sch4p4(6) Personal informati

Address: 42 Bunyip Street, Burleigh Heads, 4220

Date of Receipt: 19-12-94

Description of Samples: 7 samples of timber shavings from walls and floors (walls - W, SW, EW; floors - W annex, N, main building, small room inside) (shed, cnr George and Welge Streets, Kalbar)

Analysis Requested: TCLP extraction test for trace elements and organochlorine insecticides

Methods of Analyses:

PARAMETER	ENVIROTEST METHOD NO.	DESCRIPTION/REFERENCE
TCLP	SSP-30	Weak acid extraction (pH 4.9). Extracted in 2 L extraction vessels for 18 hours at 30 rpm, in a rotary TCLP extraction apparatus. Reference: USEPA 40CFR. Appendix 1 to Part 268.
Trace Elements	WTE-10	Determination by ICP-MS.
Organochlorine Insecticides	WO-80	Solvent extraction and Florisil column clean-up. Determination by GLC-ECD.

Analytical Results:**1. Trace Elements**

Sample Description	Composite Sample	USEPA Toxicity
Laboratory No.	94243-8	Regulatory Levels
PARAMETER	(µg/L)	
Arsenic	690	5000
Cadmium	7	1000
Chromium	7	5000
Copper	340	-
Lead	9350	5000
Mercury	<1	200
Nickel	15	-
Zinc	5420	-

2. Organochlorine Insecticides

PARAMETER	Composite Sample	USEPA Toxicity
Laboratory No.	94243-8	Regulatory Levels
Units	µg/L	µg/L
HCB	<1	130
γ-HCH (Lindane)	3	400
Heptachlor and its epoxide	<1	6
Aldrin	<1	*
Dieldrin	<1	*
Total Chlordane	<1	30
α-Endosulphan	<1	-
β-Endosulphan	<1	-
DDE	10	-
DDD	<1	-
DDT	10	-
Chlorpyrifos	<1	-

- * endrin 20 µg/L (cyclodiene insecticides)
 - no limit set

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APPENDIX 5

**Envirotest Analytical Report
(9-1-96)**

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- Marine, Estuarine and Freshwater Studies
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- Hazardous Chemicals
- Environmental Risk Assessments
- Analytical Services

Lot 12,
Don Young Road,
Mt. Gravatt Research Park,
Nathan. 4111
Phone: (07) 3343 6066
Fax: (07) 3343 9917

ANALYTICAL REPORT

Date of Report: 9 January, 1996

Job No: 95237

Client: sch4p4(6) Personal informati

Address: 42 Bunyip St, Burleigh Heads Q 4220

Date of Receipt: 8-12-95

Description of Samples: Fixed soil (concrete and flyash mix), soil samples from Lots 2, 3 and 4 in acid/solvent washed containers

Sampling Methodology: Ex: sch4p4(6) Person

Analytical Methodology:

Parameter	Envirotest Method No.	Methodology and Reference
TCLP extract	SSP-30	Weak acid extraction (pH 4.9). Extracted in 2L glass extraction vessels for 18 hours at 30 rpm, in a rotary TCLP extraction apparatus. USEPA CFR Title 40, Part 268 Appendix 1
Organochlorine Insecticides	SO-30	Solvent extraction by sonication. Florisil column clean-up. Determination by gas liquid chromatography coupled with an electron capture detector (GLC-ECD)
Trace Elements	SSP-10 STE-10	Nitric acid and hydrogen peroxide digest. USEPA 3050. Determination by ICP-MS. APHA 3120B.
Total Petroleum Hydrocarbons	SO-61	Solvent extraction by sonication. Determination by GLC-FID.

Analytical Results:

1. Organochlorine Insecticides

TCLP Extract

Sample Code	Fixed Soil (Concrete and Ash) (mg/L)	Allowable Leaching Contaminant Levels (mg/L)	
Laboratory No.	95237-19	Approved municipal landfills (unlined)	Approved municipal landfills (lined)
Parameter			
Lindane	<0.0001	0.1	0.1
Heptachlor	<0.0001	0.003	0.03
Heptachlor Epoxide	<0.0001	-	-
Aldrin	<0.0001	0.001	0.01
Dieldrin	<0.0001	0.001	0.001
α -Endosulphan	<0.0001	-	-
β -Endosulphan	<0.0001	-	-
Total DDT	<0.0005	0.003	0.03

Soil Samples

Sample Code	Site 1 (Lot 4)	Site 3 (Lot 4)	Site 5 (Lot 4)	Site 6 (Lot 4)	Site 7 (Lot 3)	Site 8 (Lot 3)
Laboratory No.	95237-5	95237-7	95237-8	95237-9	95237-10	95237-11
Moisture Content (%)	25.6	21.3	18.6	22.5	20.3	18.6
Units	mg/kg, dry weight basis					
Parameter						
Lindane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
α -Endosulphan	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
β -Endosulphan	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total DDT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Sample Code	Site 11 (Lot 3)	Site 14 (Lot 2)	Site 15 (Lot 2)	Site 16 (Lot 2)	Site 17 (Lot 2)	Site 18 (Lot 2)
Laboratory No.	95237-12	95237-13	95237-14	95237-15	95237-16	95237-17
Moisture Content (%)	24.5	21.9	23.5	22.0	21.0	20.1
Units	mg/kg, dry weight basis					
Parameter						
Lindane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor Epoxide	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
α -Endosulphan	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
β -Endosulphan	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total DDT	<0.05	<0.05	<0.05	<0.05	<0.05	0.07

95237/Envirotest

2. Trace Elements (mg/kg, dry weight basis)

Sample Code	Site 1 (Lot 4)	Site 3 (Lot 4)	Site 5 (Lot 4)	Site 6 (Lot 4)	Site 7 (Lot 3)	Site 8 (Lot 3)
Laboratory No.	95237-5	95237-7	95237-8	95237-9	95237-10	95237-11
Parameter						
Arsenic	18	4.2	1.9	8.6	1.1	<0.1
Cadmium	2.8	3.3	2.3	2	2.8	2.5
Chromium	25	28	23	13	13	28
Copper	35	34	36	26	31	39
Lead	43	210	220	72	14	31
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	21	25	29	33	38	32
Zinc	530	370	230	130	67	98

Sample Code	Site 11 (Lot 3)	Site 14 (Lot 2)	Site 15 (Lot 2)	Site 16 (Lot 2)	Site 17 (Lot 2)	Site 18 (Lot 2)
Laboratory No.	95237-12	95237-13	95237-14	95237-15	95237-16	95237-17
Parameter						
Arsenic	1.5	12.2	3.1	2.1	3.9	1.4
Cadmium	2.3	2.8	2.8	2.5	1.8	2.5
Chromium	25	13	13	13	13	13
Copper	28	33	31	28	25	25
Lead	58	130	34	36	760	98
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	10	8	8	9	8	23
Zinc	120	80	67	45	240	170

Total Petroleum Hydrocarbons (by fractions) (mg/kg, dry weight basis)

Sample Code	Site 1 (Lot 4)	Site 7 (Lot 4)	Site 11 (Lot 3)	Site 14 (Lot 2)	Site 15 (Lot 2)	Site 16 (Lot 2)
Laboratory No.	95237-5	95237-10	95237-12	95237-13	95237-14	95237-15
Parameter						
C ₆ - C ₉	<10	<10	<10	<10	<10	<10
C ₁₀ - C ₁₄	<10	<10	<10	<10	<10	<10
C ₁₅ - C ₂₈	<100	<100	<100	<100	<100	<100
C ₂₉ - C ₃₆	<100	<100	<100	<100	<100	<100

Reference:

Brisbane City Council (1994). "Liquid Industrial Waste Policy and Management Plans (Sewerable Trade Waste and Non Sewerable Liquid and Solid Hazardous Waste)".

sch4p3(3) Prejudice the

sch4p4(6) Persc
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95237/Envirotest



ANALYTICAL REPORT

PAGE 1 of 1

CONTACT: sch4p4(6) Personal
CLIENT: ENVIROTEST
ADDRESS: LOT 12 DON YOUNG STREET
MT GRAVATT RES PARK
NATHAN QLD 4111

LABORATORY: ENV BRISBANE
BATCH NUMBER: EB3059
SUB BATCH: 0
No. OF SAMPLES: 1
DATE RECEIVED: 18/12/95
DATE COMPLETED: 03/01/96

ORDER No.: 256

SAMPLE TYPE: SOIL

PROJECT:

95237-14

Method	Analysis description	Units	LOR	
EA-055	Moisture Content (dried @ 103°C)	%	0.1	26.8
EG-005T	Arsenic - Total	mg/kg	1	5
	Cadmium - Total	mg/kg	1	<1
	Copper - Total	mg/kg	1	16
	Lead - Total	mg/kg	1	6
	Zinc - Total	mg/kg	1	55

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sch4p3(3) Prejudice

COMMENTS:

Samples as received digested by USEPA method 3051. The
determination of metals. Results reported on a dry weight basis.

• This is the Final Report which supersedes any preliminary reports with this batch number.

• Results apply to sample(s) as submitted by client.

QUALITY SYSTEM



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No. 825



ANALYTICAL REPORT

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CONTACT: sch4p4(6) Personal
CLIENT: ENVIROTEST
ADDRESS: LOT 12 DON YOUNG STREET
MT GRAVATT RES PARK
NATHAN QLD 4111

LABORATORY: ENV BRISBANE
BATCH NUMBER: EB3059
SUB BATCH: 0
No. OF SAMPLES: 1
DATE RECEIVED: 18/12/95
DATE COMPLETED: 03/01/96

ORDER No.: 256

SAMPLE TYPE: QUALITY CONTROL PROJECT:

Method	Analysis description	Units	LOR	95237-14 %SPK REC	95237-14 CHK
EA-055	Moisture Content (dried @ 103°C)	%	0.1	----	26.9
EG-005T	Arsenic - Total	mg/kg	1	88.0 %	4
	Cadmium - Total	mg/kg	1	86.0 %	<1
	Copper - Total	mg/kg	1	89.0 %	16
	Lead - Total	mg/kg	1	82.0 %	6
	Zinc - Total	mg/kg	1	84.0 %	57

COMMENTS:

Results which appear on this report are routine labor checks for QUALITY CONTROL purposes.

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ANALYTICAL REPORT

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CONTACT: sch4p4(6) Personal
CLIENT: ENVIROTEST
ADDRESS: LOT 12 DON YOUNG STREET
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NATHAN QLD 4111

LABORATORY: ENV BRISBANE
BATCH NUMBER: EB3059
SUB BATCH: 1
No. OF SAMPLES: 1
DATE RECEIVED: 18/12/95
DATE COMPLETED: 03/01/96

ORDER No.: 256

SAMPLE TYPE: SOIL

PROJECT:

Method	Analysis description	Units	LOR	95237-14
EA-055	Moisture Content (dried @ 103°C)	%	0.1	26.8
EP-071-SS	TOTAL PETROLEUM HYDROCARBONS			
	C6 - C9 Fraction	mg/kg	2	<2
	C10 - C14 Fraction	mg/kg	50	<50
	C15 - C28 Fraction	mg/kg	100	<100
	C29 - C36 Fraction	mg/kg	100	<100

COMMENTS:

sch4p3(3) Prejudice the

Samples analysed on an as received basis. Results reported on a dry weight basis. Sample preparation techniques: Semivolatile - Separatory Funnel and Tumbler, Volatile - Purge & Trap. Sample analysis techniques: Semivolatile components - GC/MS; TPH - GC/FID; Volatile components - GC/MS; Pesticides - GC/ECD, GC/MS.

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ANALYTICAL REPORT

PAGE 1 of 1

CONTACT: sch4p4(6) Personal
CLIENT: ENVIROTEST
ADDRESS: LOT 12 DON YOUNG STREET
MT GRAVATT RES PARK
NATHAN QLD 4111

LABORATORY: ENV BRISBANE
BATCH NUMBER: EB3059
SUB BATCH: 2
No. OF SAMPLES: 1
DATE RECEIVED: 18/12/95
DATE COMPLETED: 03/01/96

ORDER No.: 256

SAMPLE TYPE: SOIL

PROJECT:

Method	Analysis description	Units	LOR	95237-14
EA-055	Moisture Content (dried @ 103°C)	%	0.1	26.8
EP-067A-SS	ORGANOCHLORINE PESTICIDES			
	alpha-BHC	mg/kg	0.05	<0.05
	beta- & gamma-BHC	mg/kg	0.1	<0.1
	delta-BHC	mg/kg	0.05	<0.05
	Heptachlor	mg/kg	0.05	<0.05
	Aldrin	mg/kg	0.05	<0.05
	Heptachlor epoxide	mg/kg	0.05	<0.05
	Endosulfan 1	mg/kg	0.05	<0.05
	4.4'-DDE	mg/kg	0.05	<0.05
	Dieldrin	mg/kg	0.05	<0.05
	Endrin	mg/kg	0.05	<0.05
	Endosulfan 2	mg/kg	0.05	<0.05
	4.4'-DDD	mg/kg	0.05	<0.05
	Endrin aldehyde	mg/kg	0.05	<0.05
	Endosulfan sulfate	mg/kg	0.05	<0.05
	4.4'-DDT	mg/kg	0.2	<0.2

COMMENTS:

Samples analysed on an as received basis. Results reported on a dry weight basis. Sample preparation techniques: Semivolatile - Separatory Funnel and Tumbler, Volatile - Purge & Trap. Sample analysis techniques: Semivolatile components - GC/MS; TPH - GC/FID; Volatile components - GC/MS; Pesticides - GC/ECD, GC/MS.

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ORGANICS QUALITY CONTROL REPORT

BATCH No. : EB3059

DATE BATCH RECEIVED : 18/12/95

CLIENT : Envirotest

DATE BATCH COMPLETED : 02/01/96

Method Code	Test	Matrix	QC Lot Number	Date Samples Extracted	Date Samples Analysed
EP-067	Pesticides	Soil	OCOPS380	19/12/95	02/01/96
EP-071	TPH-Volatile	Soil	VOCS937	19/12/95	21/12/95
	-Semivolatile	Soil	TPHT885	19/12/95	21/12/95

ORGF00M(60/0)

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Fax: (09) 249 2942

ALS EP-067 : PESTICIDES

QC LOT No. : OCOPS380
MATRIX: Soil

ANALYST: sch4p4(6) Person

COMPOUND	Blank Conc	Spike Level	SPIKE QC RESULTS				Control Limits		
			SCS Conc	DCS Conc	Average Rec.	RPD	Rec.		RPD
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	Low	High	%
EP-067A : ORGANOCHLORINE PESTICIDES									
alpha-BHC	<LOR	0.25	0.20	0.20	81	1	69	102	20
beta & gamma-BHC	<LOR	0.50	0.41	0.41	83	0	68	106	20
delta-BHC	<LOR	0.25	0.20	0.21	82	2	68	102	20
Heptachlor	<LOR	0.25	0.20	0.21	83	4	68	102	20
Aldrin	<LOR	0.25	0.21	0.20	82	4	71	100	20
Heptachlor epoxide	<LOR	0.25	0.21	0.21	84	0	71	100	20
Endosulfan 1	<LOR	0.25	0.21	0.20	83	2	71	102	20
4,4'-DDE	<LOR	0.25	0.21	0.20	82	2	72	100	20
Dieldrin	<LOR	0.25	0.21	0.21	83	1	70	101	20
Endrin	<LOR	0.25	0.20	0.21	81	2	68	108	20
Endosulfan 2	<LOR	0.25	0.21	0.20	82	2	67	104	20
4,4'-DDD	<LOR	0.25	0.21	0.20	82	2	71	100	20
Endrin aldehyde	<LOR	0.25	0.20	0.20	80	2	53	103	20
Endosulfan sulfate	<LOR	0.25	0.20	0.21	81	2	69	102	20
4,4'-DDT	<LOR	0.25	0.20	0.20	80	0	62	113	20
EP-067B : ORGANOPHOSPHORUS PESTICIDES									
Dichlorvos	<LOR	0.25	0.21	0.21	84	3	69	108	20
Dimethoate	<LOR	0.25	0.24	0.24	97	2	74	106	20
Diazinon	<LOR	0.25	0.21	0.20	82	3	71	104	20
Chlorpyrifos methyl	<LOR	0.25	0.21	0.21	83	3	71	106	20
Malathion	<LOR	0.25	0.25	0.24	97	5	73	111	20
Fenthion	<LOR	0.25	0.20	0.19	78	4	57	106	20
Chlorpyrifos	<LOR	0.25	0.22	0.21	87	4	70	108	20
Pirimiphos ethyl	<LOR	0.25	0.24	0.23	92	3	72	110	20
Bromophos ethyl	<LOR	0.25	N/A	N/A			73	107	20
Prothiofos	<LOR	0.25	0.21	0.21	84	2	72	107	20
Ethion	<LOR	0.25	0.22	0.22	87	0	72	112	20

COMMENTS :

- 1) The control limits are based on ALS laboratory statistical data (Method QWI-ORG/07)
- 2) * : Recovery or RPD falls outside of the recommended control limits.

BATCH QUALITY CONTROL

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

QC Lot No. : VOCS937
MATRIX: Soil

ANALYST: sch4p4(6) Perso

Volatile Components

COMPOUND	Level Of Reporting (LOR)	Blank Conc	Spike Conc	SPIKE RESULTS				Control Limits		
				SCS Conc	DCS Conc	Av. Rec.	RPD	Recovery (%)		RPD
				mg/kg	mg/kg	%	%	Low	High	%
C6-C9	2.0	<LOR	49	48.05	47.80	97	1	88	108	20
C10	2.0	<LOR	6	5.49	5.25	93	4	76	115	20

COMMENTS :

- 1) The control limits are based on ALS laboratory statistical data. (Method QWI-ORG/06)
- 2) * : Recovery or RPD falls outside of the recommended control limits.

BATCH QUALITY CONTROL

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

MATRIX: Soil

ANALYST: sch4p4(6) Pers

QC LOT No.: TPHT885

Semivolatile Components

COMPOUND	Level Of Reporting (LOR)	Blank Conc.	Spike Conc.	Spike Results				Control Limits		
				SCS	DCS	Av.	RPD	Recovery		RPD
				Conc.	Conc.	Rec.		%		
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	%	Low	High	%
C11-C14	50	<LOR	375	270	282	74	4	69	88	20
C15-C28	100	<LOR	195	165	171	86	3	86	107	20
C29-C36	100	<LOR	N/A	N/A	N/A	N/A	N/A	60	110	20

APPENDIX 6

**Envirotest Analytical Report
(1-2-96)**

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- Environmental Assessments and Audits
- Marine, Estuarine and Freshwater Studies
- Water Quality
- Air Monitoring
- Environmental Hygiene and Health
- Hazardous Chemicals
- Environmental Risk Assessments
- Analytical Services

Lot 12,
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Nathan. 4111
Phone: (07) 3343 6066
Fax: (07) 3343 9917

ANALYTICAL REPORT

Date of Report: 1 February, 1996

Job No: 95237

Client: sch4p4(6) Personal informatio

Address: 42 Bunyip St, Burleigh Heads Q 4220

Date of Receipt: 18-1-96

Description of Sample: 6 soil samples in sterile containers

Sampling Method: Ex: sch4p4(6) Pers (Envirotest)

Analytical Request: Lead and Zinc

Methods of Analyses:

Parameter	Envirotest Method No.	Methodology and Reference
Trace Elements (lead and zinc)	SSP-10 STE-30	Nitric acid and hydrogen peroxide digest. Determination by ICP.

Analytical Results:Trace Elements (µg/g. dry weight basis)

PARAMETER	Site 17 - A	Site 17 - B	Site 17 - C	Site 1 - D	Site 1 - E	Site 1 - F
Laboratory No.	95237-21	95237-22	95237-23	95237-24	95237-25	95237-26
Lead	740	2525	360	-	-	-
Zinc	-	-	-	85	150	150

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ANALYTICAL REPORT

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CONTACT: sch4p4(6) Personal inform
CLIENT: ENVIROTEST
ADDRESS: LOT 12 DON YOUNG STREET
MT GRAVATT RES PARK
NATHAN QLD 4111

LABORATORY: ENV BRISBANE
BATCH NUMBER: EB3373
SUB BATCH: 0
No. OF SAMPLES: 6
DATE RECEIVED: 24/01/96
DATE COMPLETED: 30/01/96

ORDER No.: 6916 SAMPLE TYPE: SOLUTION PROJECT: 95237

Method	Analysis description	Units	LOR	95237-21	95237-22	95237-23	95237-24
EG-005F	Lead - Filtered	mg/L	0.01	29.5	101	14.5	----
	Zinc - Filtered	mg/L	0.01	----	----	----	3.41

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CONTACT: sch4p4(6) Personal inform
CLIENT: ENVIROTEST
ADDRESS: LOT 12 DON YOUNG STREET
MT GRAVATT RES PARK
NATHAN QLD 4111

LABORATORY: ENV BRISBANE
BATCH NUMBER: EB3373
SUB BATCH: 0
No. OF SAMPLES: 6
DATE RECEIVED: 24/01/96
DATE COMPLETED: 30/01/96

ORDER No.: 6916 SAMPLE TYPE: SOLUTION PROJECT: 95237

Method	Analysis description	Units	LOR	95237-25		95237-26	
EG-005F	Lead	- Filtered	mg/L	0.01	----	----	
	Zinc	- Filtered	mg/L	0.01	6.05	6.07	

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APPENDIX 7

**Envirotest Analytical Report
(13-2-96)**

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RTI Act 2009

- Environmental Assessments and Audits
- Marine, Estuarine and Freshwater Studies
- Water Quality
- Air Monitoring
- Environmental Hygiene and Health
- Hazardous Chemicals
- Environmental Risk Assessments
- Analytical Services

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Fax: (07) 3343 9917

ANALYTICAL REPORT

Date of Report: 13 February, 1996

Job No: 95237

Client: sch4p4(6) Personal informati

Address: 42 Bunyip St, Burleigh Heads Q 4220

Date of Receipt: 18-1-96

Description of Samples: 2 soil samples in sterile containers

Sampling Methodology: Ex: sch4p4(6) Pers

Analytical Methodology:

Parameter	Envirotest Method No.	Methodology and Reference
Moisture	SPC-30	Gravimetric determination @ 105°C
Lead	SSP-10 STE-10	Nitric acid and hydrogen peroxide digest. USEPA 3050. Determination by ICP-MS. APHA 3120B.

Analytical Results:

2. Trace Elements (mg/kg, dry weight basis)

Sample Code	K1	K2
Laboratory No.	95237-27	95237-28
Moisture Content (%)	16.6	16.2
Parameter		
Lead	630	190

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