Tasmania

Department of Primary Industries, Water and Environment

ENVIRONMENT PROTECTION NOTICE NO. 690/1

Issued under the Environmental Management and Pollution Control Act 1994

Issued to: Copping Refuse Disposal Site Joint Authority
143 Nelson Road
Mount Nelson TAS. 7007
ABN 8792 8486 460

Activity: Waste Depot
Refuse disposal at Copping Lots 1,2,3, & 4, Plan of Survey Registered Number 126073
Carlton TAS 7190

I, Dr. Frank Cattell, Director of Environmental Management, am satisfied that in accordance with Section 44(1)(d) of the *Environmental Management and Pollution Control Act* 1994 (EMPCA) it is desirable to vary Development/Use Permit Number 46/98 issued to the Copping Refuse Disposal Site Joint Authority in relation to this activity by the Sorell Council on December 20th , 1999, and to cause this environment protection notice to be issued for that purpose.

GROUNDS

The grounds upon which this notice is issued are that:
It is necessary to vary conditions of Permit 46/98 issued on 20th December 1999 on the site:

(a) To regulate disposal of Low Level Contaminated Soil within the confines of the Copping Waste Depot;

(b) To regulate disposal of quarantine waste within the confines of the Copping Waste Depot;

(c) To increase the volume of waste permitted to be disposed of within the confines of the Copping Waste Depot;

(d) To update some conditions to take into account current best practice environmental management; and

(e) To clarify the wording of some conditions.

The further grounds upon which this notice is issued are listed in Schedule 2

DEFINITIONS

Definitions of terms used in this notice are as specified in Schedule 1 of the Permit. Any amendment or variation to those definitions of terms is contained in Schedule 1 of this notice.

REQUIREMENTS

In accordance with s.44(3) of the EMPCA, the permit holder is required by this notice to comply with the conditions contained in Schedule 3 to this notice, which prevail over the terms of the Permit to the extent of any inconsistency.

PENALTIES

If a person bound by an environment protection notice contravenes a requirement of the notice that person is guilty of an offence and is liable on summary conviction to a penalty not exceeding $50,000 or in the case of a body corporate $100,000.

This notice takes effect on the date on which it is served upon you.
You may appeal to the Appeal Tribunal against this notice, or against any requirement contained in the notice, within 14 days of that date, by writing to:

The Chairperson
Resource Management and Planning Appeal Tribunal
GPO Box 2036
Hobart Tas 7001

DR. FRANK CATTELL

DIRECTOR OF ENVIRONMENTAL MANAGEMENT

SCHEDULE 1

Definitions of Terms

'Activity (or activities)' means one or more environmentally relevant activity or activities (as defined in section 3 of the EMPCA) to which this permit relates;

'Best Practice Environmental Management' or 'BPEM' has the meaning described in section 4 of the EMPCA;

'DPEMP' means the 'Development Proposal and Environmental Management Plan for the Refuse Disposal Facility at Copping, Tasmania, June 1998, prepared by Woodward Clyde, submitted to the Director by the Sorell Council in September 1998 and received by the Director in on 1 April 1999.

'EMPCA' means the *Environmental Management and Pollution Control Act* 1994;

'Environmental nuisance' has the meaning given in section 3 of the EMPCA;

'HDPE Roll Out Liner' means a portable liner constructed from HDPE material that can be manually rolled over the waste;

'Environmental harm' has the meaning given in section 5 of the EMPCA;

'Controlled waste' has the meaning described in the EMPCA and further prescribed in the Environmental Management and Pollution Control (Waste Management) Regulations, 2000;

'Low Level Contaminated Soil' (LLCS) has the meaning assigned to it in Bulletin No. 105 'Classification and Management of Contaminated Soil for Disposal' as may be amended and published by the Director from time to time.

'LUPAA' means the *Land Use Planning and Approvals Act* 1993;

'Planning authority' means a municipality (Council);

'Pollutant' has the meaning given in section 3 of the EMPCA;

'Inert waste' is defined as soil, rock, concrete, bitumen or similar non-putrescible material that:

(a) Is not contaminated by other waste; and

(b) Does not contain contaminant levels exceeding limits set by the Director.

'Person responsible' for the activity' means any person who is or was responsible for the environmentally relevant activity (or activities) for which this permit is issued and includes the officers, employees, agents and assigns of that person, and includes a body corporate;

'State Policy' means a Tasmanian Sustainable Development Policy made under Part 2 of the *State Policies and Projects Act* 1993;

'The Board' means the Board of Environmental Management and Pollution Control established under section 12 of the EMPCA;

'The Director' means the Director of Environmental Management holding office under section 18 of the EMPCA and includes a person authorised in writing by the Director of Environmental Management to exercise the relevant power or function on the Director's behalf;

'**The land**' means the land on which the activity (or activities) to which this permit relates may be carried out, situated at and known as the Copping Waste Depot, Carlton, in the State of Tasmania. The land, includes:

(a) Buildings and other structures permanently fixed to the land; and

(b) Land covered with water; and

(c) Water covering land; and

(d) Any estate, interest, easement, servitude, privilege or right in or over land

SCHEDULE 2

SUMMARY OF GROUNDS FOR ISSUING THIS ENVIRONMENT PROTECTION NOTICE

The following table provides the grounds for varying the Conditions in Permit reference No 46/98 (waste disposal activity).

Condition in Schedule 3 of this EPN	Condition in Permit No: 46/98	Grounds
Schedule 2 Maximum quantities	Schedule 2 Maximum quantities	**Varied condition.** Maximum quantities altered to take into account the design of the landfill and lack of groundwater contamination
E1 (a) (b) ii	E1 (a) (b) ii	**Varied condition.** Altered to clarify the meaning of the condition
E1 (p)	Nil	**New condition.** To ensure that monitoring well infrastructure is not damaged by water erosion
E1 (q)	Nil	**New Condition.** To ensure design specifications are produced and submitted to the Director before construction of any additional waste cells
E2 (d)	E2 (d)	**Varied condition.** Altered to clarify the meaning of the condition
E2 (e)	Nil	**New condition.** To provide a maximum size of the uncapped area of the landfill to ensure minimal surface water infiltration and lower opportunities for disease vectors
E2 (f)	Nil	**New condition.** To ensure leachate irrigated over cell does not flow or accumulate in areas adjacent to the perimeter road thereby increasing the probability of environmental harm occurring
E3 (e)	E3 (e)	**Varied condition.** Altered to clarify the meaning of the condition
E4 (a), (b)	Nil	**New Condition.** To ensure that rill erosion does not continue to occur along the sides of the main perimeter drain, and to ensure a build up of sediments does not occur within the drain

Condition in Schedule 3 of this EPN	Condition in Permit No: 46/98	Grounds
E5	Nil	**New condition.** To ensure that fences surrounding leachate dam (s) are maintained and mammals are excluded from the confines of the fence
G6	G6	**Replacement condition.** Varied to reflect current terminology and practices
G7 (j)	G7 (j)	**Varied condition.** Explains the requirements for cell capping with respect to Best Practice Environmental Management
G8 (j)	G8 (j)	**Varied condition**. Altered from regularly to weekly to ensure litter is picked up within a defined timeframe from all areas of the waste depot including surface water drains
G8 (f)	G8 (f)	**Varied condition.** To allow the use of a HDPE roll-out liner for daily waste cover instead of using dolerite-based cover. This provides greater volume for waste in the active cell and decreases the potential for surface water infiltration and potential for environmental harm
H1 (a), (b), (c), (d), (e), (f), (g)	H1 (a), (b), (c)	**Replacement condition.** To allow the acceptance of Low level Contaminated Soil (LLCS) as defined in DPIWE Bulletin 105; Classification and Management of Contaminated Soil for Disposal under conditions that will ensure that the waste is properly managed and will not cause environmental harm
H2 (a), (b), (c)	H2 (a), (b), (c), (d), (e)	**Varied condition.** To allow the disposal of tyres, providing that they are not whole tyres, thereby minimising landfill instability and landfill gas accumulation
M2 (h)	Nil	**New condition.** To be able to track/chart analyte levels. This will bring monitoring in line with current Best Practice Environmental standards
R3	Nil	**New condition.** To ensure that revegetation and anti-erosion measures are carried out thereby meeting Best Practice Environmental standards

SCHEDULE 3

Maximum Quantities

The maximum amount of waste that can be received by the, Copping Refuse Disposal Site Joint Authority excluding clean fill, is 104,000 tonnes per year.

(Annual permit and inspection fees are derived from this figure)

General Conditions

G1 The activity (or activities) on the land must be conducted in accordance with the requirements of the *Environmental Management and Pollution Control Act 1994* and Regulations thereunder and in accordance with the requirements of any relevant State Policies. These conditions must not be construed as an exemption from any of those requirements.

G2 None of the following changes may take place in relation to the activity (or activities) authorised by this permit without a new permit from the relevant planning authority, or, in the event that a new permit is not necessary under the relevant planning scheme, without the prior written approval of the Director of Environmental Management -

(1) a change to a process used in the course of carrying out the activity which might cause or increase the emission of a "pollutant" or otherwise result in "environmental harm", as those expressions are defined in the *EMPCA*; or

(2) the construction, installation, alteration, operation or removal of any structure or equipment used in the course of carrying out the activity which might cause or increase the emission of a "pollutant" or otherwise result in "environmental harm", as those expressions are defined in the *EMPCA*.

(3) a change in the nature of materials dealt with or used in the course of carrying out the activity (or activities) which might cause or increase the emission of a "pollutant", or otherwise result in "environmental harm".

G3 A copy of the conditions attached to this permit, the DPEMP, and any associated documents referred to in the conditions must always be held in a location that is known and accessible to the responsible person. All persons, who at any time, may be responsible for the activity (or activities) carried out

on the land, including sub contractors, must be familiar with the conditions attached to this permit as may be relevant to their work.

G4 The land must be developed and used, and the activity (or activities) on the land must be carried out and monitored, in accordance with prescriptions set down in the DPEMP, and in accordance with the principles of Best Practice Environmental Management, unless otherwise specified in the conditions attached to this permit or an environment protection notice issued in relation to this permit.

G5 Notification of incidents:

a) If an incident causing or threatening serious or material environmental harm from pollution occurs in the course of the activity (or activities) to which this document relates, then the person responsible for the activity (or activities) must:

(i) immediately take all practicable action to minimise any adverse environmental effects from the incident, and,

(ii) as soon as reasonably practicable, but not later than 24 hours, after becoming aware of the incident, notify the Director of the incident by a telephone call to the 24-hour emergency telephone number 1800 005 171; and

(iii) not later than 24 hours after becoming aware of the incident, provide a report to the Director by facsimile to 0362 333 800, or by hand delivery, outlining the nature of the incident, the circumstances in which it occurred and the action taken to deal with the incident (This report must be provided irrespective of whether the person responsible for the activity has reasonable grounds for believing that the incident has already come to the notice of the Director or any officer engaged in the administration or enforcement of EMPCA); and

b) If a pollutant is released as the result of an emergency, accident or malfunction in relation to the activity (or activities) to which this document relates and serious or material environmental harm from pollution is <u>not</u> caused nor threatened, then the person responsible for the activity must:

(i) immediately take all practicable action to minimise any adverse environmental effects from the incident, and,

(ii) as soon as reasonably practicable, but not later than 24 hours, after becoming aware of the release, notify the Director of the release by facsimile to 0362 333 800, or by hand delivery;

c) Any notification given by a person in compliance with this condition will not be used in evidence against the person in proceedings for an offence or for the imposition of a penalty (other than proceedings in respect of the making of a false or misleading statement).

G6 Annual review and Review of the DPEMP/EMP:

a) The person responsible for the activity must provide an annual review to be submitted to the Director by December 31 of each year of the operations of the waste depot. The review should include details of the performance of the site and include, but not be limited to, details of volume and mass disposed, density achieved, complaints received, leachate volume and maximum height levels attained within the leachate dam(s), irrigation application of leachate, testing, trends in analyte levels over time, monitoring and any other relevant information

b) The DP&EMP/EMP must be critically reviewed by the person responsible for the activity by 30 September 2006 and at 5 yearly intervals thereafter. The person responsible for the activity must submit a written report of the review to the Director within 3 months of the end of the review period. For the period of the review, each report shall include an evaluation of the environmental performance of the site with respect to the environmental controls detailed in the DP&EMP and the conditions of this permit. The report should also provide a review of the monitoring program as specified in this permit, general compliance with the DP&EMP and a summary of complaints received and actions taken for the complaints.

G7 Landfilling and capping:

a) The permit holder must prepare environmental management plans for the activity, as supplements to the DPEMP, which provide comprehensive plans, and design, construction, maintenance, quality assurance, monitoring and testing specifications for the landfill development.

b) The permit holder must submit the environmental management plans referred to in condition G7 a) to the Director for written approval.

c) Any alteration to the plans and design, construction, maintenance, quality assurance, monitoring and testing specifications for the landfill development that relates to the environmental performance of the landfill must have prior written approval from the Director.

d) Landfill design and construction must be in accordance with the comprehensive plans, and design, construction, maintenance, quality assurance, monitoring and testing specifications referred to in conditions G7 b) and G7 c).

e) Landfilling at the Copping waste depot must be confined to the area within the Stage 1 footprint described as cells 1 to 9 as defined in Figures 14A to 14I in the DPEMP.

f) Six months prior to the planned construction of each cell, a comprehensive review must be conducted by the permit holder of landfilling operations

and leachate management (excluding the first cell), groundwater and surface water management, groundwater hydraulics, associated monitoring programs and results, and any other relevant matter, and a report submitted to the Director for written approval before commencement of the planned construction.

g) Final landfill contours must be consistent with, and not exceed the contour profiles shown in Figure 20 of the DPEMP, including rehabilitation capping and cover, unless otherwise specified by the Director in writing.

h) Final landfill slope gradients must be according to the prescriptions given in Figure 18 of the DPEMP.

i) Each successive landfilling lift must not exceed 2 m, including cover material.

j) On reaching the final lift of compacted waste, and after subsidence and consolidation of waste has occurred, the waste must be progressively capped according to the following sequence:

(i) A layer comprising compacted clay with a maximum *in situ* permeability of 1 x 10^{-9} m/s on flat areas and 1 x 10^{-8} m/s on sloping areas, defined as greater than 8%, to a depth of 600 mm, or deployment of a Bentonite liner or other liner type approved by the Director;

(ii) A minimum 300 mm deep course drainage layer; and

(iii) A final 1 m thick layer of topsoil. The proportion of clean fill and top soil within the final 1 m of topsoil may vary providing that a minimum of 500 mm of good quality topsoil is provided for revegetation.

k) Annual volumetric and compaction surveys of the landfill, commencing one year from the date of the commencement of waste disposal, must be carried out and the results of the survey shall be provided to the Director within 14 days of Council's receipt of the results.

l) A minimum level of waste compaction of 850 kg/m^3 must be achieved.

G8 The site must be operated in accordance with the following:

a) The hours of operation for general tipping must be between 8.00 am and 6.00 pm on weekdays and 9.00 am and 6.00 pm on weekends. The site must not operate on Christmas Day or Good Friday.

b) Council may allow disposal of waste on the site outside the normal operating hours for contractors with special needs and under specific arrangements.

c) No machinery may be operated on the site outside the hours listed in (a) above unless such machinery is operated to satisfy the requirements of (b) above.

d) A person or persons whose duties shall include directing of traffic on the site to disposal and recycling areas and the supervision of the dumping of waste must attend the site while the site is open for disposal.

e) Machinery capable of spreading, compacting and covering the waste must be kept on site at all times. A person capable of operating the machinery shall be available for an adequate period of time to spread, compact and cover all waste deposited on a daily basis.

f) At the end of each day of operation, refuse filling areas must be compacted and covered with:

(i) clean fill, clay or other suitable low permeability material to a minimum depth of 150 mm, or covered to a depth as determined by the Director; or

(ii) An HDPE roll-out liner which must cover all waste and be adequately secured to the ground to prevent movement by high winds or animals.

g) Adequate volumes of suitable cover material to cover the active face shall be stockpiled adjacent to the active face at all times.

h) The active tipping face must not exceed 10 m in width, and access to the tipping face shall be kept as small as practicable.

i) Litter fences must be employed around and close to active landfilling areas.

j) Litter must be cleared at least weekly from inactive areas of the waste depot, litter control fences and access roads within a one half kilometre radius of the Waste Depot boundary

Litter must be prevented from depositing in wetland areas and the Carlton River tributary.

k) Inspections of the areas specified in j), for the purpose of litter management, must be carried out on a weekly basis.

l) Vermin proof fencing must be installed and maintained around active landfill areas.

m) The lighting of fires at the waste depot is not permitted.

n) Fires occurring at the waste depot must be extinguished as soon as possible using all practical means available.

G9 Recycling and recovery of waste materials:

a) Specific clean and secure hard stand areas shall be set aside at the landfill site for the segregation and collection of green waste, scrap metal and white goods (i.e. refrigerators, washing machines, dishwashers etc).

b) Green organic waste stockpiles must be kept free from contamination and heavy wood (such as tree trunks, thick branches and stumps) and shall be mulched on a regular basis and the mulch may be used for rehabilitation of the waste depot or for commercial sale.

c) Green organic waste stockpiles shall not exceed 500 m^3 in size or 250 tonnes in weight prior to mulching.

d) All recycling and collection areas shall be adequately signposted.

e) All recycling and collection areas shall be kept in a neat and orderly state, with appropriate access.

f) Composting activities may be permitted on the site with the prior written approval of the Director.

G10 If permanent cessation of operations on the land is planned then the Director must be notified of the planned cessation of operations at least 6 months prior to the planned date of cessation, and a detailed landfill closure plan must be prepared and submitted to the Director in accordance with condition R2.

Controlled Waste Conditions

H1 Controlled waste acceptance at the waste depot.

a) Where there is doubt concerning the classification of waste as controlled waste, then clarification must be sought from the Director.

b) No controlled waste is to be accepted for disposal at the waste depot without the prior written approval of the Director, with the exception of the following low level controlled wastes:

(i) Animal effluent and residues not exceeding 20 tonnes over one week;

(ii) Asbestos waste;

(iii) Scrap tyres (in accordance with condition H2 of the permit);

(iv) Suitably treated and dried sewage sludge including grit, silt and screening provided that total and leachable concentration values do not exceed those specified for Low Level Contaminated Soil in DPIWE Bulletin 105; Classification and Management of Contaminated Soil for Disposal.

(v) Medical waste such as sharps in an approved sealed sharps container, but not infectious or cytotoxic waste; and

(vi) Quarantine waste, subject to Quarantine Service of the Department of Primary Industry Water and Environment approval.

c) All waste must be appropriately packaged and/or treated prior to disposal (if required) and adequate safety precautions are to be in place prior to handling the wastes for disposal.

d) Subject to prior written approval from the Director, the following controlled wastes may be received:

(i) Low Level Contaminated Soil.

e) Low level controlled waste referred to in H1 (b) with the exception of whole tyres and Low level Contaminated Soil must be disposed of on receipt and

(i) Be covered immediately with a minimum of 300 mm of compacted clay soil to minimise surface water infiltration or,

(ii) Be covered with a HDPE liner cover; and be disposed of to a bunded segregated section (called the low level contaminated soil segregation cell - LLCSSC) of the active cell

f) The following information must be provided in writing to the Director in relation to controlled waste (proposed for disposal), other than controlled waste referred to in H1 (b), prior to the removal of the material from the

waste generator's premises, and prior to any agreement being entered into for disposal:

(i) Quantity of waste;

(ii) Composition of waste;

(iii) Proposed method of disposal (secure landfill cell, chemical immobilisation etc.);

(iv) The waste generator; and

(v) The proposed waste transporter

g) A record of **all** controlled waste disposed of at the waste depot must be kept and provided to the Director quarterly. This record must include:

(i) The actual quantity of waste disposed;
(ii) The composition and description of the waste;
(iii) The waste generator;
(iv) The specific location of the waste in the landfill (DGPS coordinates), including cell and lift number (if appropriate); and date of disposal.

H2 Tyres must be disposed of in accordance with the following:

a) No more than 200 tyres may be stored on the land unless the location is approved by the Director and such storage may only occur as an interim measure while awaiting removal to a site authorised to receive tyres for storage and reprocessing, or disposal.

b) Scrap tyres must be stored on a clean, hard stand area that has all weather access, and is secure.

c) Tyres, other than motorcycle, passenger, light truck and truck tyres, may only be disposed of at the waste depot where no other approved disposal option exists. Earthmoving vehicle tyres must be individually buried and be filled completely, to remove any voids, with an inert and non-degradable material such as soil or sand.

H3 Hazardous waste, transported for fee or reward, must not be received at the waste depot unless delivered to the site by a waste transporter approved by the Director and in possession of a valid and relevant Waste Transport Business Environment Protection Notice. This condition does not include small quantities of hazardous waste delivered in domestic waste.

Hazardous Waste Recycling Conditions

H4 (a) Any used motor vehicle lead acid batteries received at the waste depot must be stored in a facility that conforms to Australian Standard 3780.

b) Any waste oil contained in suitable, sealed containers, and used motor vehicle lead acid batteries received at the waste depot must be placed in a dedicated and appropriately designed receival area. The receival area must contain a bunded containment area, constructed of suitable impervious materials.

c) Any waste oil accumulated in the bunded containment area must be emptied into a used oil storage tank on a regular basis.

d) The used oil storage tank must conform with the following requirements:

(i) The tank must be of suitable volume (eg 200 – 500 Litres) to store the volumes of used oil that are likely to be received on a regular basis (eg 4 weeks storage);

(ii) The tank must be placed in a suitable bunded containment area, constructed of suitable impervious materials, designed to contain not less than 110% of the volume of the storage tank.

(iii) Storage areas must be designed in accordance with relevant Australian Standards (AS1940) and the requirements of the relevant Dangerous Goods legislation.

(iv) The storage tank must be covered by to prevent ingress of rainwater into the bunded area.

(v) The bunded area must contain appropriate valves to allow drainage and recovery of materials in the bund. These valves must contain suitable locking mechanisms such that the valves can only be operated by authorised personnel.

(vi) The storage tank must be secure when not in attendance.

e) Only operators or contractors authorised by the Sorell Council shall be permitted to empty used oil into the used oil storage tank and handle lead acid batteries for storage purposes.

H5 Landfill gas

a) A landfill gas management plan must be submitted to the Director for approval prior to 31 December 2002. The management plan must include:

i) details of volumes produced and gas quality per landfill cell;

ii) design and installation of gas recovery systems;

iii) an investigation of potential re-use options; and

iv) contingencies should re-use options prove not viable in the short term.

b) A landfill gas management system, approved in writing by the Director, must be in operation by 31 December 2004.

Effluent Disposal Conditions

E1 Unless otherwise approved or required in writing by the Director, the following minimum level of groundwater protection measures must be incorporated into the landfill design:

a) An engineered leachate barrier, approved in writing by the Director, must be used to line the base of the landfill area to contain leachate within the landfill. An engineered clay leachate barrier shall consist of a minimum of 650 mm of compacted clay soil and have a maximum permeability of 1 x 10^{-9} metres/second over the depth of the liner. Alternative liner systems, such as synthetic liners with an equivalent or better performance, will be considered by the Director for approval.

b) A permanent leachate pond as described in the DPEMP, must be constructed before commencement of landfilling and must:

(i) be designed and constructed, as a minimum standard, to Australian Standards for an appropriate dam of this type;

(ii) include a liner consisting of a minimum thickness of one metre of compacted clay soil, with a maximum permeability of 1 x 10^{-9} metres/second over the depth of the liner. Alternative liner systems, such as synthetic liners with an equivalent or better performance, will be considered by the Director for approval; and

(iii) be designed with an ability to deal with an inflow of water and leachate resulting from a 24 hr, 1 in 20 year storm event impacting on uncapped and active cells and with sufficient storage capacity for seasonally predictable leachate inflows.

c) Construction of the landfill engineered leachate barrier and leachate pond liner shall include:

(i) stabilisation of the sub-base surface where soft soil layers are known to exist;

(ii) installation using successive layers of compacted clay of 150 – 200 mm thick. Pre-compacted clay soil should not exceed 200 - 250 mm in thickness;

(iii) installation using pre-compacted clay clod size of 25 mm or less;

(iv) a uniform distribution of moisture in the pre-compacted clay, or the liner, maintained throughout construction;

(v) compaction of clay carried out at "wet of optimum" moisture content (2 – 3% greater than optimum) and to at least 95% of maximum dry density, as determined using soil compaction and density test method AS 1289.5.1.1, or method AS 1289.5.2.1, or an equivalent method approved by the Director in writing;

(vi) compaction using a non vibratory type sheep's foot roller;

(vii) completion of a cell liner without prolonged interruption, otherwise scarification, compaction and permeability testing of the top 300 mm must be carried out; and

(viii) protection of the liner during construction carried out using "proof rolling", covering with plastic, or other suitable means.

d) Prior to placement of the landfill engineered leachate barrier and leachate pond, topsoil shall be removed and the surface of the underlying hard soil layer must be scarified to a depth of 300 mm and uniformly recompacted.

e) A minimum of two metre distance must be maintained between the groundwater table at maximum predictable height or peak and the bottom of the landfill base and the leachate pond liners.

f) The surface of the leachate barrier must contain a leachate drainage system connected to a leachate containment pond. The leachate drainage system must include:

(i) a slope gradient towards leachate collection drains of 1:25 to 1:50 on the landfill base;

(ii) leachate collection drain placement of no greater distance that 15 m apart;

(iii) leachate collection drain pipes consisting of a minimum diameter of 15 cm;

(iv) leachate collection drain pipes placed below the surface of the liner, surrounded with geofabric, surrounded with a minimum of 150 mm depth of 4 mm washed stone (not limestone or dolomite; minimal 0.074 mm fraction) that is mounded to a height of 300 mm above the liner level and covered with geofabric;

(v) access points to all leachate drains to permit cleaning by jet water, and other sewer line cleaning equipment;

(vi) maintenance of a minimum of 650 mm of compacted clay depth under all drains within the clay leachate barrier;

(vii) placement of leachate collection drains in a branched 'herring bone' pattern connecting into a main leachate drain in the active cell;

(viii) sufficient capacity to control any volumes of leachate and stormwater that may be reasonably expected to be produced during a 1 in 20 year stormwater event of 24 hours duration;

(ix) antiseep collars on all leachate collection pipes that penetrate the liner consisting of a minimum of 1.0 m compacted clay in all directions, or an alternative antiseep collar approved, in writing, by the Director; and

(x) the insulation of all leachate transfer pipes, outside the lined cell, by surrounding with 600 mm of compacted clay, or by double casing to provide adequate protection from damage.

g) A 300 mm thick drainage liner blanket shall be installed on the clay landfill leachate barrier, containing no greater than 5% 0.074 or less fraction (P200), consisting of sand on the barrier base and pea gravel on the barrier sides.

h) The clay leachate barrier shall be kept in optimum condition. Maintenance of the clay leachate barrier shall include the:

(i) maintenance of the optimum moisture content of the liner by irrigation of the liner blanket, ensuring that the sand within at least the lower 100 - 200 mm of the blanket remains moist;

(ii) covering of the liner blanket with compacted refuse to a 1 m depth as soon as practicably possible;

(iii) prevention of vehicles traversing the prepared liner or liner blanket, including compactors and earth moving vehicles, during normal landfill operations; and

(iv) minimisation of any unnecessary vehicle movement over the prepared liner or liner blanket <u>at any other time</u> to prevent disturbance of the prepared surfaces.

i) Advance preparation of the leachate barrier shall be limited to sufficient landfill area for 12 months landfilling.

j) A minimum level of investigation of clay soil used for the engineered leachate barrier and leachate pond liner construction shall include quality testing of representative samples of each distinct clay type to determine the:

(i) dry density/moisture content relation using soil compaction and density test method AS 1289.5.1.1, or method AS 1289.5.2.1, or an equivalent method approved by the Director in writing;

(ii) permeability potentially achievable, at maximum dry density and the optimum moisture level, using soil classification test AS 1289.6.7.1, or an equivalent method approved by the Director in writing; and

(iii) Atterberg limits, to evaluate shrinkage, plasticity, and liquid soil properties.

k) Quality control during landfill base liner construction shall include:

(i) soil compaction assessment by determination of moisture and density, using a current AS 1289.5 method, or an equivalent method approved by the Director in writing, of samples taken from each successive clay layer, at evenly spaced grid points, at a frequency of 12 per hectare;

(ii) permeability testing, using AS1289.6.7.1 method, or an equivalent method approved by the Director in writing, on undisturbed samples from each successive clay layer over evenly spaced grid points, at a minimum frequency of 5 per hectare;

(iii) permeability testing of the completed liner, using AS1547-1994 Percolation Test, or an equivalent method approved by the Director in writing, over evenly spaced grid points, at a minimum frequency of 5 per hectare;

(iv) a protocol to assure that the clay to be used in the liner comes from a clay borrow area that has been appropriately clay quality tested;

(v) a record of all clays used in liner construction including classification according to clay source, colour, clay description, and deposition in the clay liner; and

(vi) inspection of each truck load of imported material to confirm clay quality and to meet conditions E1k)(iv) and E1k)(v).

l) A qualified and certified engineer with appropriate experience shall supervise liner installation and quality control. The engineer shall be directly responsible for:

(i) the supervision of all technical staff involved;

(ii) 'signing off' of all quality control testing; and

(iii) the complete documentation of all relevant activities including engineering, construction and quality assurance activities.

m) A person, with sound knowledge and experience in clay compaction shall be present during any liner construction process, and shall be

capable of advising field crew, and properly conducting quality control tests and sampling in the field.

n) Best Practice Environmental Management must be maintained at all stages of construction of the engineered leachate barrier, leachate collection system, and management of leachate from the waste depot.

o) A landfill leachate barrier engineering report must be forwarded to the Director within one month of completion of construction of a barrier section. The report shall include, but not be limited to, detailed reporting of management undertaken in accordance with Condition n), and details of results obtained in accordance with Conditions E1 j), E1 k) and E1 l).

p) Monitoring well infrastructure must be maintained to ensure the infrastructure is not damaged.

q) All waste cells constructed after the date of this notice, must be designed by a qualified and experienced engineer in landfill design. Written design specifications, including diagrams and maps must be submitted to the Director before construction commences.

E2 Leachate management:

a) Any internal berms built within a cell, for the purpose of leachate and stormwater separation, are to be:

(i) designed to prevent leachate penetration between the berm-liner interface, and leachate migration through the berm;

(ii) placed on the liner directly down slope and not over any branched leachate drains;

(iii) placed over main leachate drains in a manner that maintains drain integrity; and

(iv) removed, only when necessary, in a manner that will not damage any leachate drain.

b) Leachate discharge from the leachate pond(s) must be prevented from reaching any surface water or groundwater, or from discharging across any boundary of the site.

c) As weather permits, leachate must be regularly managed to minimise leachate volume contained in the leachate pond by irrigation over uncapped leachate barrier lined areas of landfill, or by treatment at an approved waste water treatment facility capable of treating the leachate, or disposed of in an alternative manner approved in writing by the Director.

d) Leachate irrigation occurring over uncapped leachate barrier lined areas (including active and unfilled areas) of the landfill must not:

(i) Exceed 10% of the through flow volume capacity of the leachate collection system; or

(ii) Saturate the irrigation area causing surface flow; or

(iii) Take place during periods of precipitation.

e) The uncapped area of the landfill defined in G7 (j) is not to exceed 0.5 hectares in size.

f) The size of the dedicated irrigation area, cell two stage two and cell three must not be less than 20,000 m^2 and no irrigated leachate is to flow along the surface of the ground or accumulate along the edge of the cell adjacent to the perimeter road.

E3 All stormwater runoff from disturbed areas on the land which contain sediment or discoloration which may cause environmental harm must be collected in settling dams by means of catch drains. Settling dams must be designed and maintained in accordance with the following:

a) sediment settling dams must be designed to successfully mitigate sediment loss, which would result from a 1 in 20 year, 24 hr period, storm event;

b) sediment settling dams must be cleaned out regularly such that no more than one third of the depth of the dam contains sediment;

c) sediment settling dams must contain a stable engineered spillway;

d) any deliberate, intentional discharge from sediment settling dams must have the prior written approval of the Director;

e) All drains that discharge into or via stormwater settling dams must contain sediment control measures to the satisfaction of the Director; and

f) discharge by overflow or irrigation from the sediment settling dams or trunk drains onto nearby adjacent properties must be undertaken with the prior approval of the landowner.

g) In the event that a stormwater sediment pond becomes contaminated with leachate measures must be immediately undertaken to remediate the contamination and prevent the stormwater from discharging by overflow or irrigation (refer to Condition M2 c) also). Contaminated stormwater may be transferred to the leachate pond providing the pond has adequate available capacity, or be removed to an approved Waste Water Treatment Plant.

E4 a) Measures must be undertaken to prevent the rill erosion on the bank of of the main perimeter rain which surrounds the disposal site.

b) Any sediment build up within this drain must be removed, and measures taken to minimise further sediment deposition.

E5 All fences surrounding leachate ponds or water containment areas must be maintained in such a way as to exclude native and domestic mammals from the area surrounded by the fence.

Rehabilitation Conditions

R1 Progressive rehabilitation must be conducted in accordance with the following:

(a) Rehabilitation must commence, on a progressive basis, immediately after completion of filling and capping of a final lift of each cell.

(b) Rehabilitation must include planting or seeding with appropriate shallow root native species endemic to the locality.

R2 No less than two months prior to the commencement of site closure and final rehabilitation:

a) A site closure and final rehabilitation plan for the waste depot must be submitted to the Director for approval, in accordance with the Division's contemporaneous guidelines for the rehabilitation of waste depots, and any other written requirement of the Director.

b) Site closure and final rehabilitation work on the site must not take place without the Director's written approval of the site closure and final rehabilitation plan referred to in sub-paragraph R2 a). Suitable materials may be stockpiled on the site for rehabilitation purposes prior to approval.

c) Site closure and final rehabilitation must be carried out on the site in accordance with the site closure and final rehabilitation plan approved in writing by the Director.

R3 Revegetation and other measures must be undertaken to minimise erosion of areas devoid of vegetation and soil cover outside the active landfilling cell, including cell 3 which is used for leachate irrigation. Works are to commence within three months of the date of this notice. Revegetation is to be with native species appropriate to the area.

SCHEDULE 3

Monitoring Conditions

M1 All samples required to be obtained by these permit conditions must be subject to the following:

a) all samples shall be tested in a laboratory accredited by the National Association of Testing Authorities (NATA) for the specified test, or a laboratory approved in writing by the Director;

b) all samples shall be collected and analysed in accordance with the relevant Australian Standards or other standard(s) approved by the Director;

c) all records of sampling and analysis (including an estimate of flow of effluent/water at the time of sampling) shall be retained for at least 3 years after the date of sampling and made available for public inspection upon request; and

d) the results, including the records described in (c), of all sampling and analysis shall be forwarded to the Director within 14 days of being received by the responsible person. This may be forwarded to the Director in electronic form in an approved format.

M2 Monitoring and frequency of monitoring:

a) Unless otherwise directed in writing by the Director, monitoring point locations must be from:
   i) groundwater bores located as shown on Figure 1 (a) of this schedule;
   ii) surface water sampling points as shown on Figure 1 (b) of this schedule;
   iii) the leachate pond/s; and
   iv) stormwater sediment ponds.

b) Unless otherwise directed in writing by the Director, monitoring and the frequency of monitoring, must be conducted in accordance with Table 1, 'Surface Water and Leachate Monitoring', and Table 2, 'Groundwater Monitoring'. Stormwater sediment pond monitoring must be conducted in accordance with Table 1, Group 1.

c) If the permit holder reasonably suspects that a stormwater sediment pond has become or is being contaminated with leachate, monitoring of the stormwater sediment pond and any outflow must be immediately conducted in accordance with Table 1, Goup1, or as otherwise directed in writing by the Director.

d) Surface water monitoring of the Carlton River Tributary and groundwater monitoring in all monitoring bores, must commence at least 3 months from the date of issue of this permit by the planning authority.

e) Leachate monitoring, must commence at least 3 months from the date of commencement of waste disposal.

f) A report, or copy of the operations manual, detailing all monitoring and sampling procedures and methods, including sample handling (as well as chain of custody) and detailed descriptions of sampling points, shall be submitted to the Director no later than four weeks prior to the commencement of monitoring, in accordance with d) above.

g) The above sampling and monitoring regime must be reviewed by a qualified water quality specialist following each 12 month period of monitoring conducted in accordance with M2 a), b), c) d) and e) above, and a report submitted to the Director within 3 months of conclusion of the 12 month monitoring period. The outcome of the monitoring will be used as a basis for a review of the monitoring program.

h) Monitoring results and interpretation, including analyte trend lines must be included in the annual review prepared in G6.

An interpretation of monitoring results, including a trend line (chart) for selected chemical parameters, must be submitted with all monitoring results. The interpretation is to be conducted by a qualified water specialist.

M3 Groundwater Bore details:

a) All groundwater bores must have an installation and development record which includes, at least, the following:
- description of materials used for construction;
- initial field water parameters (conductivity, TDS, pH, and Temperature);
- details of slot screens installed, and to what depth;
- depth of gravel packing;
- depth of bentonite cap;
- details of bore development during pumping (removal of drilling contamination);
- aquifer levels; and
- detailed geological log.

b) Sampling of all bores must be recorded on a pre-drafted recording sheet which includes, at least, the following:
- standing water level;
- bore volume (purging should be 3 times the bore volume);
- time for purging;
- sampling time and number; and

- field water parameters (such as conductivity, TDS, pH, and water temperature).

c) Bore and piezometer placement must be carried out in consultation with and under supervision of a professional person with suitable expertise in hydrogeology.

Table 1 SURFACE WATER AND LEACHATE MONITORING

	MONITORING PARAMETERS	FREQUENCY
Group 1	pH	Quarterly
	Conductivity	Quarterly
	TDS	Quarterly
	Redox potential (Eh)	Quarterly
	Total Suspended Solids	Quarterly
	Alkalinity (as CaCO3)	Quarterly
	Total Nitrogen	Quarterly
	Ammonia	Quarterly
	Nitrate	Quarterly
	Nitrite	Quarterly
	Total phosphorus	Quarterly
	Orthophosphate	Quarterly
	DOC	Quarterly
	COD	Quarterly
	E. coli	Quarterly
	Total CN (as CN)	Quarterly
Group 2	Total Iron & dissolved iron (Fe)	6 monthly
	Aluminium (Al)	6 monthly
	Copper (Cu)	6 monthly
	Zinc (Zn)	6 monthly
	Chromium (Cr)	6 monthly
	Manganese (Mn)	6 monthly
	Nickel (Ni)	6 monthly
	Lead (Pb)	6 monthly
	Cadmium (Cd)	6 monthly

	MONITORING PARAMETERS	FREQUENCY
Group 3	Chloride	6 monthly
	Sulphate	6 monthly
	Sodium (Na)	6 monthly
	Potassium (K)	6 monthly
	Magnesium (Mg)	6 monthly
Group 4	Arsenic (As)	Yearly
	Mercury (Hg)	Yearly
	Selenium (Se)	Yearly
	TPH and BTEX[1]	Yearly
	polynuclear aromatic hydrocarbons[1]	Yearly
	organophosphate pesticides[2]	Yearly
	organochlorine pesticides[2]	Yearly
	poly chlorinated biphenyls[2]	Yearly

Table 2 GROUNDWATER MONITORING

	MONITORING PARAMETERS	FREQUENCY
	bore depth	6 monthly
	ground water depth	6 monthly
	static hydraulic head	6 monthly
Group 1	pH	Quarterly
	Conductivity	Quarterly
	TDS	Quarterly
	Redox potential (Eh)	Quarterly
	Total Nitrogen	Quarterly
	Ammonia	Quarterly
	Nitrate	Quarterly
	Nitrite	Quarterly
	Total phosphorus	Quarterly
	Orthophosphate	Quarterly
	DOC	Quarterly
	COD	Quarterly
	Total CN (as CN)	Quarterly
Group 2	Total Iron & dissolved iron (Fe)	6 monthly
	Copper (Cu)	6 monthly
	Zinc (Zn)	6 monthly
	Chromium (Cr)	6 monthly
	Manganese (Mn)	6 monthly
	Nickel (Ni)	6 monthly
	Lead (Pb)	6 monthly
	Cadmium (Cd)	6 monthly
Group 3	Chloride	6 monthly
	Sulphate	6 monthly

	MONITORING PARAMETERS	FREQUENCY
	Sodium (Na)	6 monthly
	Potassium (K)	6 monthly
	Magnesium (Mg)	6 monthly
Group 4	Arsenic (As)	Yearly
	Mercury (Hg)	Yearly
	Selenium (Se)	Yearly
	TPH and BTEX[1]	Yearly
	polynuclear aromatic hydrocarbons[1]	Yearly
	organophosphate pesticides[2]	Yearly
	organochlorine pesticides[2]	Yearly
	poly chlorinated biphenyls[2]	Yearly

Notes for Tables 1 and 2

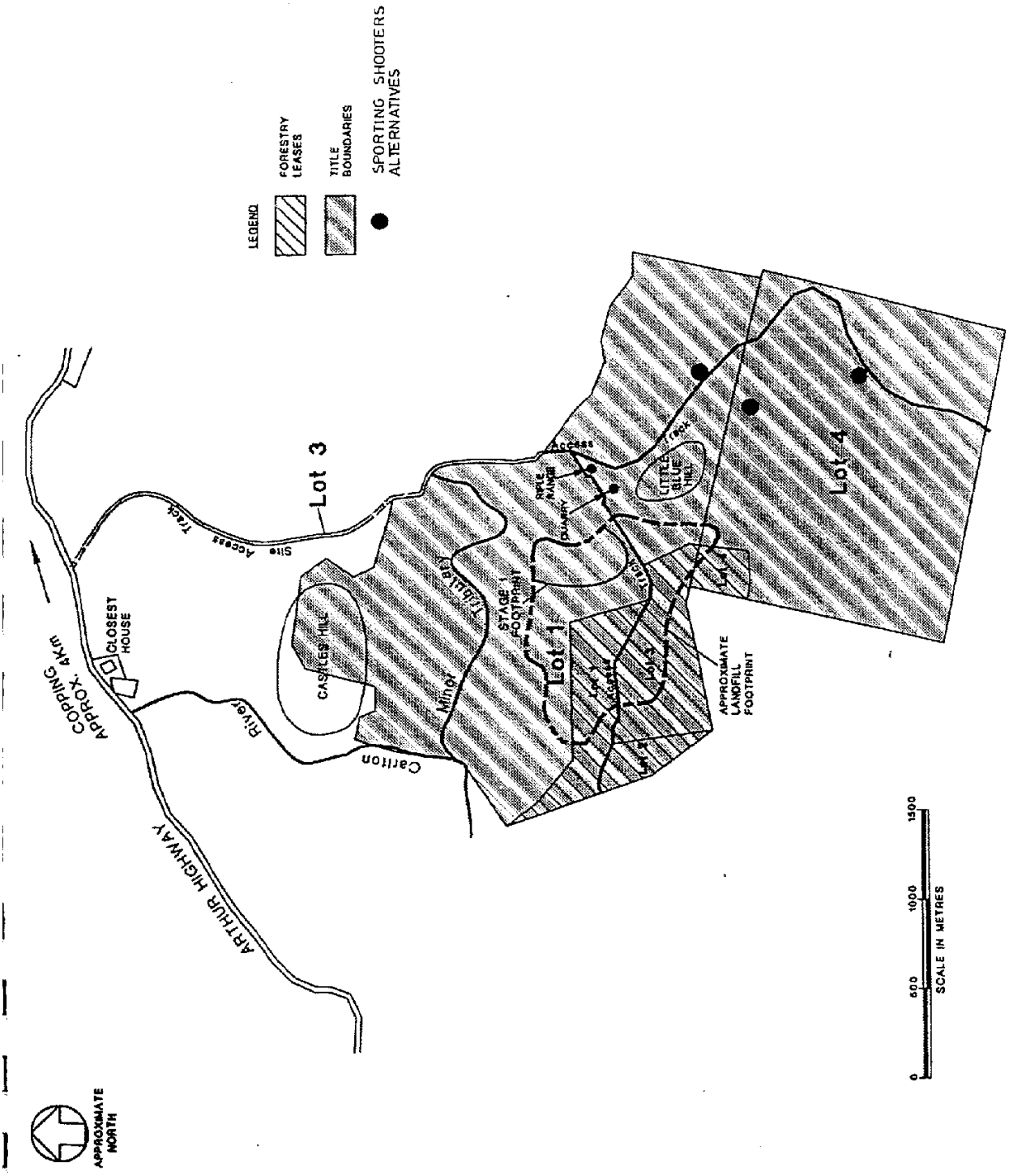
[1] minimum requirements for screening of volatile organics:

- It is recommended that either USEPA method 8260 or APHA method 6210 or a modified version thereof approved by the Director be used for determination of this range of organics.
- An alternative method or combination of methods may be employed for the determination of the majority of analytes within each chemical class included in APHA method 6210 and USEPA method 8270, including BTEX and volatile halohydrocarbons.
- Analytical results should be quantitative and the method detection limits at least those of USEPA method 8260 or APHA method 6210.

[2] minimum requirements for screening of semi volatile organics:

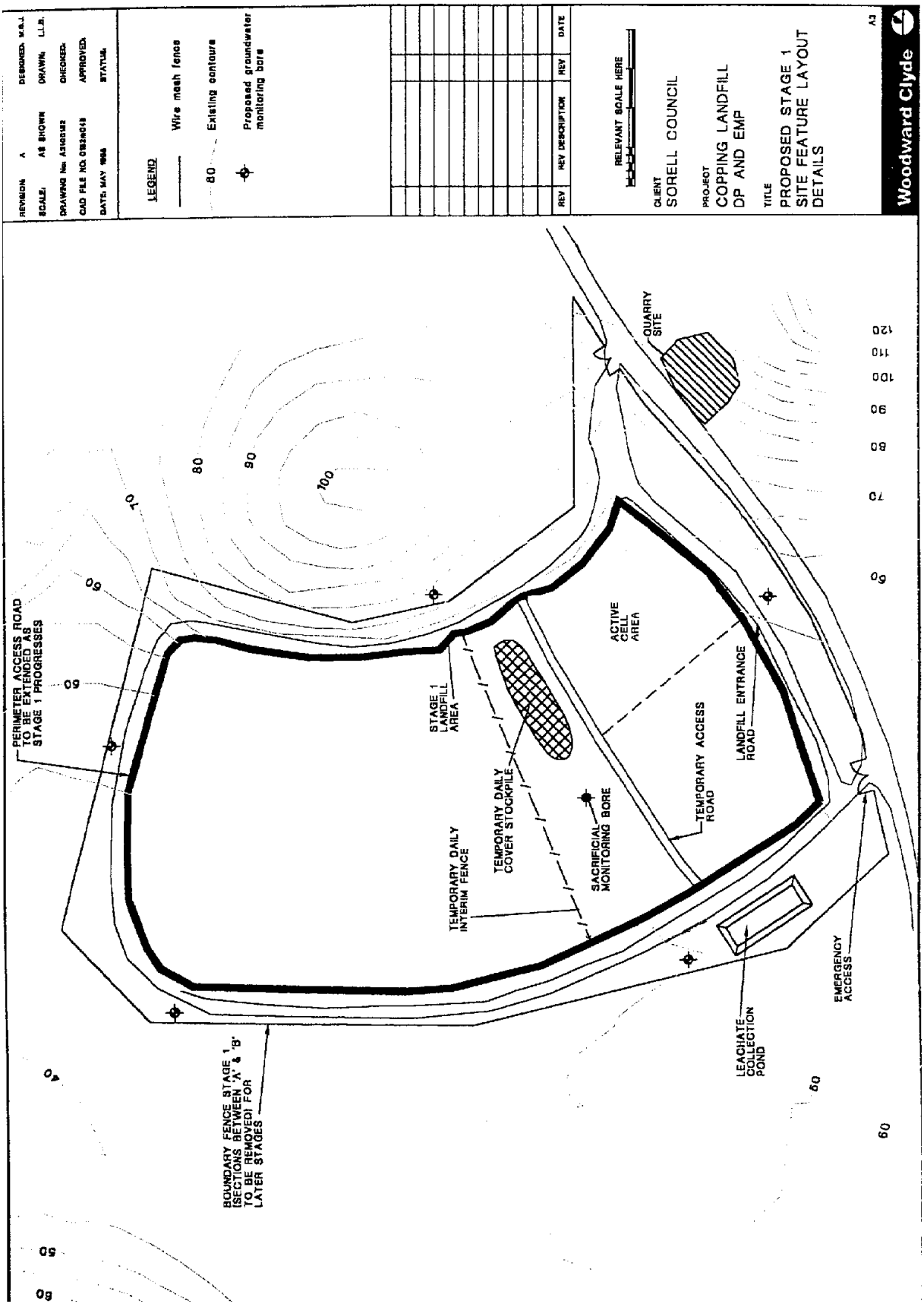
- It is recommended that either USEPA method 8270 or APHA method 6410, or a modified version thereof approved by the Director be used for determination of this range of organics.
- An alternative method or combination of methods for the determination of the majority of analytes within each chemical class included in APHA method 6410 and USEPA method 8270, including polynuclear aromatic hydrocarbons (PAH), phthalates, phenolics, organochlorine pesticides (OC), poly chlorinated biphenyls (PCB).
- Analytical results should be quantitative and the method detection limits required are at least those of USEPA method 8270 or APHA method 6410.

Director of Environmental Management: Date of Issue:



SCHEDULE 1 Figure 1: Lot 1,2,3 and 4, stage 1 footprint(After Figure 6b of *Woodward-Clyde DPEMP, 1998*).

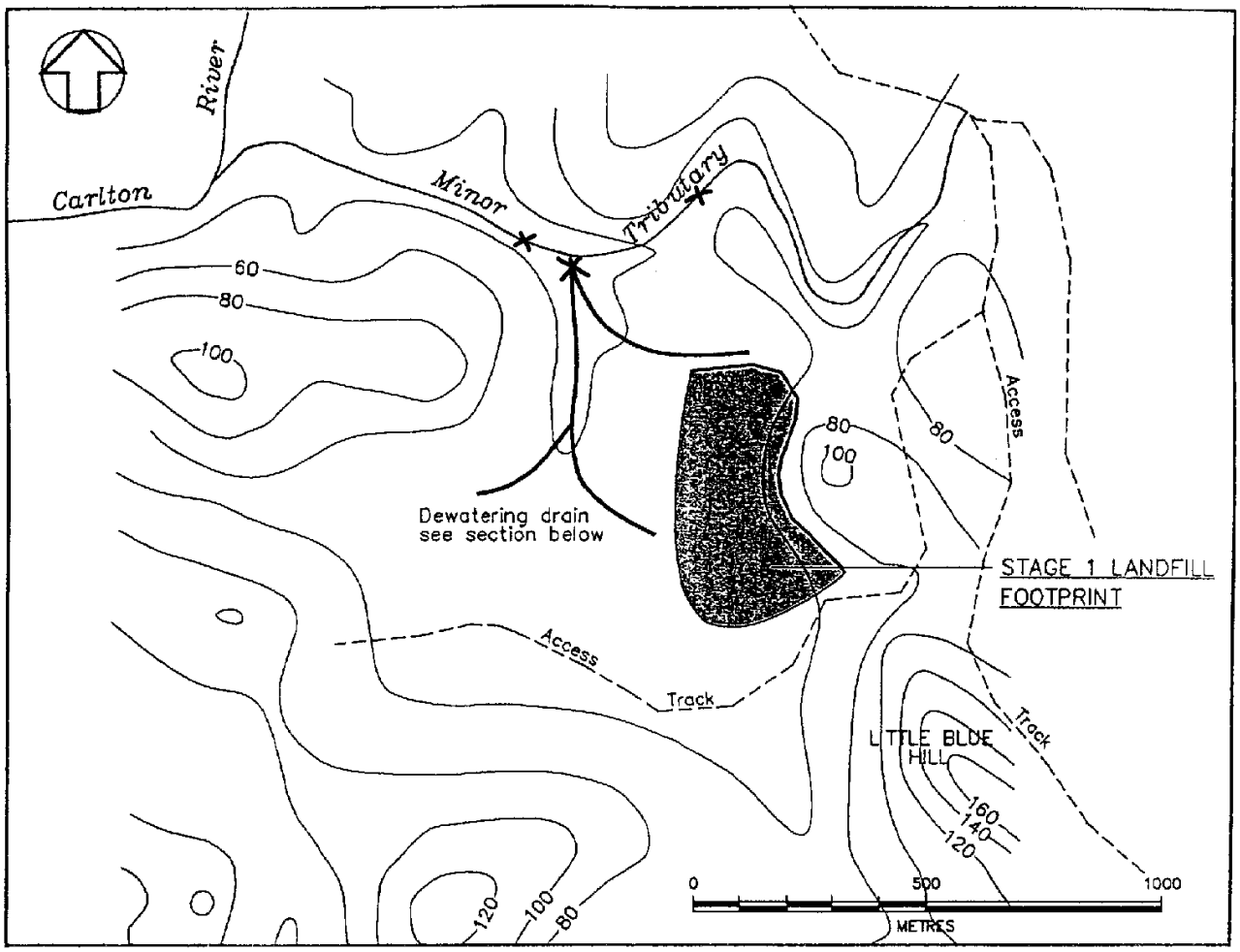
Director of Environmental Management: Date of Issue:



Director of Environmental Management: Date of Issue:

Schedule 3 Figure 1(a): Bore hole placement (After Figure 13 of *Woodward-Clyde DPEMP, 1998*).

Director of Environmental Management: Date of Issue:



Schedule 3 Figure 1(b):Surface water monitoring points (marked by crosses) for dewatering drain and Minor Tributary, (After Figure 13b of *Woodward-Clyde DPEMP, 1998*).

SCHEDULE 4

(Extract of 'Summary of Commitments' from the DPEMP)

Unless otherwise specified in the conditions attached to this permit, or in an environment protection notice issued in relation to this permit, the person responsible for the activity must comply with the commitments stipulated in the DPEMP.