TERM STOP RETICULATION MANUAL

CONTENTS

INTRODUCTION

Reticulation systems have their origins in agriculture where it evolved from simply delivering water to plants to now carrying nutrient solutions and insecticides in many different applications and environments.

For over 20 years delivering termiticides through a reticulation pipe has been used as a treatment method for protection of buildings.

In the current Australian Standard AS 3660.1 - 2014 reticulation systems are acknowledged as a deemed to satisfy method - principally under section 8 “Deemed to Satisfy Requirements - Chemical Soil Barriers”

The Term stop reticulation system has been independently tested and acknowledged as meeting the deemed to satisfy requirements of AS AS 3660.1 - 2014

This guide describes the components of Termstop reticulation system and the principles of installing the system correctly.

The components developed for this system are high quality and have been tested to ensure that they will work as designed.

Every job is different, some may have difficult designs, others have difficult conditions such as soil type, this means the success of the barrier will often depend on the skills and training of the installer.

Installers must be alert to situations where an installation will not be effective. This guide highlights many, but certainly not all problem situations that may arise.

It is essential that installers are familiar and adhere to the limitations described in the specifications section of this guide.

Providing an effective barrier may mean combining or incorporating other products, or it may be necessary to refer the problem back to the builder for rectification or re-design.

Thank you for taking the time to find out about TermStop Reticulation Systems.

INSTALLER ACCREDITATION

Supplies

Accredited Installer Co.

Nominates

Supervisor.

Supervisor

Accredited Installer Company

Supervisor

A "Supervisor" is a person who is responsible for all aspects of the installation of the reticulation systems.
They are responsible for
Training of staff including being readily accessible to people working under their supervision.
Supervision of pipe laying,
Design of a system (length of 'runs' positioning of boxes etc)
Establish and monitor systems to ensure correct 'pump ups'
Records including treatment certificates

Skills:

Holds Cert 3 in Pest control or above. National Competency PRMPM05; 06; 18; 8 and 10
Is familiar with the TermStop Reticulation Installers manual
Familiar with AS 3660.1

Chemical applicator

The chemical applicator is a person responsible for 'pumping the system'. This work must be consistent with competencies PRMPM05; PRMPM06; PRMPM18; PRMPM8 and PRMPM10
Holds Certificate 3 in Pest Management or above. National Competency 5; 6; 18; 8 and 10
Has been trained in pipe installation by the supervisor
Has been trained in chemical application ("pump ups") by the supervisor.

Pipe Installer

The pipe installer prepares a site and lays pipe; installs pump up points prior to a 'pump up'
Completed pipe installation training.
Works under supervisors supervision
The pipe installer must be either an employee or a contractor, where they work under the direct supervision of the supervisor. The supervisor is available for advice and inspection of the final installation.
Where the installer is a contractor they must carry the same qualifications and equivalent PI & PL insurance as the prime contracting company

Record Keeping Traceability

We are required to be able to trace our products through to their end use.

This means we must be able to contact installers of our products in the event of a product recall or essential technical update.

It is Termstop policy not to collect installation certificates, builder details or home owners details from you.
This is a requirement and necessary for record keeping

We understand that customer lists and lists of work done is commercially valuable and sensitive information.

However, when you agree to the "Terms of Use" you are agreeing to maintain your records so that

you can trace where our products are on sold to or where they have been used if the need to trace them ever arose.

Terms of Use

Installers agree to the following terms of use for Termstop Products components and systems.

Installers shall.....

- follow Termstop Installation Guidelines for products
- comply with the BCA; relevant Australian Standards and Chemical product labels
- maintain documentation and a system which allows traceability
- only allow properly trained, licensed and accredited people to install and maintain systems
- use only components supplied by TermStop

Reticulation system overview

Term stop Reticulation is a system designed to distribute pesticides around the base of buildings to form a termite barrier in accordance with Australian Standard AS 3660.1 - 2014

Term stop Reticulation is a “Deemed to Satisfy Product” this means that the system and its components have been assessed against the performance criteria in AS 3660.1 - 2014

The pipe is placed at the base of the concrete slab, very close to the edge or even clipped on to the slab. The pipe is just under the finished ground level (FGL) or just below concrete or pavers, this allows for a perimeter treated zone.

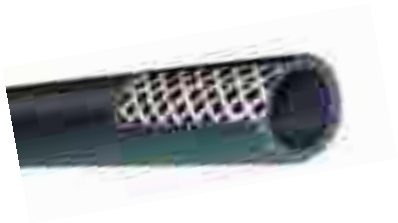
Term stop Reticulation is chemical resistant pressure pipe with emitter holes at regular spacings. The system is assembled using standard half inch fittings generally ***clamps are not necessary as the system should be pumped at relatively low pressure.*** The pipe is flexible and strong and generally does not require “elbows” for bends, however “end stops”; “connector fittings” and “valve boxes” are essential.

When a system is “charged” pesticide is pumped through the pipes at relatively low pressure, the pesticide is released from the pipe in a controlled manner and the surrounding soil absorbs the pesticide forming a barrier.

Note: Termstop Reticulation is a low pressure system.

People and companies wanting to use this system must ensure they have the appropriate training and state licences. These requirements vary from state to state.

PRODUCT SPECIFICATIONS - PIPE



- **Highly Chemical Resistant**
  Termstop reticulation pipe is a high quality chemical transfer pipe specifically engineered for use by industry and pest controllers for transfer of diluted pesticides including solvent based solutions.
  A PVC Nitrile blended compound ensures that the pipe has high levels of chemical resistance and a long service life.

- **Kink Resistant**
  Termstop Reticulation pipe has a wall thickness of 3.0mm - 3.2mm inside thickness of 12.7mm - 12.9mm .
  The pipe is a composite construction combining a strong internal transfer tube, reinforcing fabric and durable outer coating.
  This means the pipe has excellent resistance to kinking even at angles greater than 90 degrees.

- **Strong**
  Termstop Reticulation Pipe has a rated bust pressure of 8.4 MPA (1100 PSI) and a working pressure of 2.1 MPA (nearly 300PSI).
  The working pressure of this pipe far exceeds any pressures exerted in its normal service period as a reticulation line.
  Installers please note; this is not the pump up pressure for the system, refer to charging the system section for full details

- **UV Stable**
  The outer coating of the pipe is UV stabilised to protect the pipe if construction is delayed or the pipe is inadvertently exposed and yellow in colour

- **Impact Resistant**
  The pipe is strong yet flexible giving it excellent resistance to impact damage; crushing or cutting.

- **Emitting holes**
  The pipe is precision drilled with two opposing holes at 200mm centres providing a radial distribution pattern.

PRODUCT SPECIFICATIONS - PERFORATED PIPE

Reticulation Pipe Re-order Part Number

TermStop retic Kit 80
80m Drilled pipe
4 Boxes; 8 endstops;
8 Connectors / caps
8 Elbows

TermStop Retic Kit 10

10m Drilled pipe
1 Box; 2 endstops;
2 Connectors / caps
2 Elbows

Material	PVC / Nitrile Blend
Construction	Composite Layered
Hose classification	Premium
Dimensions	Pipe ID 12.50mm Pipe OD 19.00mm
Pressure	Working Pressure 2.1 Mpa / 297 PSI Burst Pressure 8.2 Mpa / 1190 PSI Average Pump Pressure 0.7 Mpa / 100 PSI *Note this data is the pipe specification* *For pump up details refer to* *Charging the System' section*
Chemical Resistance	Excellent
UV Stability	Good
Service Temperature	-10 to +80

PRODUCT SPECIFICATIONS - FEEDER PIPE

Feeder Pipe
Re-order Part Number

Feeder 10
10m Long
Total weight 12kg

Material	PVC / Nitrile Blend
Construction	Composite Layered
Hose classification	Standard
Dimensions	Pipe ID 12.50mm Pipe OD 18.00mm
Pressure	Working Pressure 2.1 Mpa / 297 PSI Burst Pressure 8.2 Mpa / 1190 PSI Average Pump Pressure 0.7 Mpa / 100 PSI *Note this data is the pipe specification. For pump up details refer to 'Charging the System' section*
Chemical Resistance	Good
UV Stability	Good
Service Temperature	-10 to +80

PRODUCT SPECIFICATIONS - FITTINGS

End Stop **Re-order Part Number** **END 20** **END 200**		**Construction**	Injection Moulded PE (Polyethylene)
		Service Temp	-10 to +80 Deg C
		Chemical Resistance	Excellent
		UV Stability	Excellent
		Packaging	Bag 20; Box 200

T Junction **Re-order Part Number** **Tjunc 20** **Tjunc 200**		**Construction**	Injection Moulded PE (Polyethylene)
		Service Temp	-10 to +80 Deg C
		Chemical Resistance	Excellent
		UV Stability	Excellent
		Packaging	Bag 20; Box 200

PRODUCT SPECIFICATIONS - FITTINGS

90 Degree elbow **Re-order Part Number** **90Elbow 20** **90Elbow 200**		**Construction**	Injection Moulded PE (Polyethylene)
		Service Temp	-10 to +80 Deg C
		Chemical Resistance	Excellent
		UV Stability	Excellent
		Packaging	Bag 20; Box 200

Male connector **Re-order Part Number** **MaleC 20** **MaleC 200**		**Construction**	Injection Moulded PE (Polyethylene)
		Service Temp	-10 to +80 Deg C
		Chemical Resistance	Excellent
		UV Stability	Excellent
		Packaging	Bag 20; Box 200

PRODUCT SPECIFICATIONS - FITTINGS

Dust Cap **Re-order Part Number** **CAP 20** **CAP 200**		**Construction**	Injection Moulded PE (Polyethylene)
		Service Temp	-10 to +80 Deg C
		Chemical Resistance	Excellent
		UV Stability	Excellent
		Packaging	Bag 20; Box 200

Female connector **Re-order Part Number** **FEMC 20** **FEMC 200**		**Construction**	Injection Moulded PE (Polyethylene)
		Service Temp	-10 to +80 Deg C
		Chemical Resistance	Excellent
		UV Stability	Excellent
		Packaging	Bag 20; Box 200

PRODUCT SPECIFICATIONS - FITTINGS

Hose Clamp **Re-order Part Number** **HoseC 20** **HoseC 200**		**Construction**	Marine Grade Stainless Steel
		Service Temp	-10 to +80 Deg C
		Chemical Resistance	Excellent
		UV Stability	Excellent
		Packaging	Bag 20; Box 200

Cobra Clamp **Re-order Part Number** **Cobra 20** **Cobra 200**		**Construction**	Marine Grade Stainless Steel
		Service Temp	-10 to +80 Deg C
		Chemical Resistance	Excellent
		UV Stability	Excellent
		Packaging	Bag 20; Box 200

PRODUCT SPECIFICATIONS - FITTINGS

Valve Box **Re-order Part Number Valve Box** **6" square box**		**Construction**	Injection Moulded PE (Polethylene)
		Service Temp	-10 to +80 Deg C
		Chemical Resistance	Excellent
		UV Stability	Excellent
		Packaging	Sold separately

Product Specifications - Fittings

Pegs **Re-order Part Number** **Pegs 20** **Pegs 200**		**Construction**	Galvanised Mild Steel
		Service Temp	-10 to +80 Deg C
		Chemical Resistance	Excellent
		UV Stability	Excellent
		Packaging	Bag 20; Box 200

Saddles **Re-order Part Number** **Clips 20** **Clips 200**		**Construction**	Galvanised Mild Steel
		Service Temp	-10 to +80 Deg C
		Chemical Resistance	Excellent
		UV Stability	Excellent
		Packaging	Bag 20; Box 200

System Assembly

Fitting a Female Connector

- Cut the end of the reticulation pipe clean and square using a sharp blade or shears
- Put the clamp on the pipe first
- Put press the barbed end of the fitting into the pipe.
- Tigten the hose clamp (if required)
- Tip: Female connectors do not have a bug cap so are more eaily contaminated

Fitting a Male Connector

- Cut the end of the reticulation pipe clean and square using a sharp blade or shears
- Put the clamp on the pipe first
- Put the dust cap on to the barbed end of the connector.
- Press the barbed end of the male connector in to the pipe.
- Tighten the hose clamp (if required)

Fitting an End Stop

- Cut the end of the reticulation pipe clean and square using a sharp blade or shears
- Put the clamp on the pipe first
- Press the barbed end of the end stop in to the pipe.
- Tighten the hose clamp (if required)

SAFETY

Term stop reticulation systems are safe to handle and install. Charging the installed system requires distribution of pesticide. Pesticides can be dangerous and their use is strictly controlled. Only people who have done specialised training (PSTM national competencies 5; 6 & 18 also known as Certificate 3) may charge the systems.

Accredited installer should develop safe work method statements (SWMS) for handling storage and application of pesticides for their own operations.
Some key risks are highlighted regarding handling and laying termstop reticulation.
Each installer is responsible for developing their own Full SWMS including handling and distributing pesticides.

Consequence or Impact of Hazard	Level of harm	A	P	U	Likelihood/Probability	Risk Rating
H-Potential death, permanent or long term disability or illness, significant detrimental environmental impact	**H**-High	1	1	2	**A**-Almost certain could happen at any time	**1**-Immediate action is required
M-Potential temporary disability or illness requiring medical attention, short term environmental impact	**M**-Medium	1	2	3	**P**-Possible risk could happen occasionally	**2**-Control the risks/ hazards a.s.a.p.
L-Potential minor injury requiring first aid or minimal environmental impact	**L**-Low	2	3	3	**U**-Unlikely may happen rarely	**3**-Control risks with routine procedures

Job Step	Hazard	Risk Score	Control Measure
Site prep & pipe laying	UV Exposure Slips falls	2 2	Correct PPE Avoid rough terrain & correct lifting procedures
Moving bulk rolls	Lifting strains	2	Correct Manual lifting procedures / mechanical assistance
Cutting Pipe	Cuts	3	Correct PPE especially Gloves
Charging System	Chemical Exposure	2	Follow separate SWMS for chemical use.

SAFE WORK METHOD STATEMENT

COMPANY DETAILS			
Company name:	**Sample Pest Control**	**Contact name:**	**Mr Sample**
ACN/ABN:	**Sample**	**Contact position:**	**Manager**
Address:	**PO Box Sample**	**Phone number:**	

PROJECT DETAILS			
Project name:	**Sample**	**Co t no**	
SWMS/JSEA developed by:	**Dat / /**	**Star ate: / Completion : / / Duration of job:**	
In consultation with:	**Da / /**	**pe of Work**	
SWMS/JSEA reviewed by:	**D / /**	Installation of c ars and physical sheet barrier	
SWMS/JSEA approved by:	**D e / /**		

Persons allocated to carry out task: (Li persons who w e work on site for contractor at any time).	**gn e: (**All per s working site are equired d fully d si WMS EA).	**tie and re nsibilities:** (List details of duties and re ibilities of specific personnel, eg, daily safety che , maintenance checks, etc).	**Qualifications / Certificates of Competency / Training / Experience required to carry out task:** (List details of qualifications, certificates, training and experience and needed to carry out the tasks required).
		Site risk assessment	Pest Technician, Red Card
		Unloading materials/tools	Pest Technician, Red Card
		Clearing debris around the work site	Pest technician, Red Card
		Layout the reticulation	

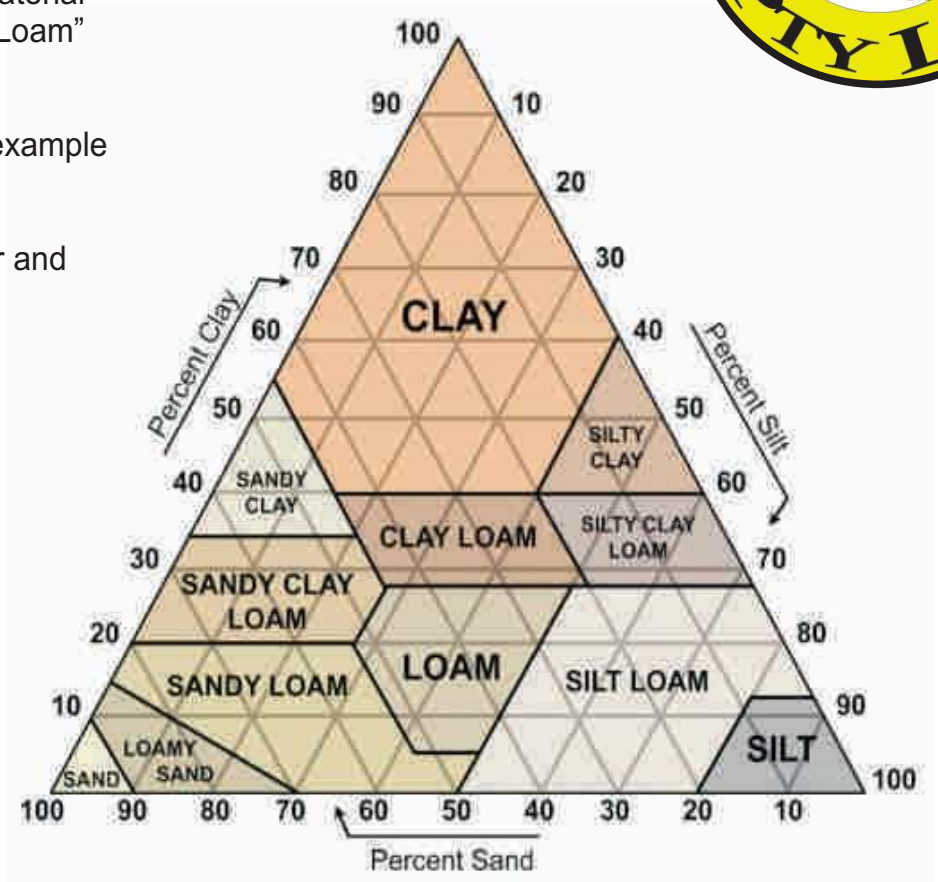
SWMS/JSEA has been read and signed by all employees on site: Site Supervisor: **Signed:** **Date: / /**

SOILS

Having the pesticide delivered into a good quality soil is essential to forming an effective barrier.

Soils are classified as either “sand” “silt” or “clay”.
Most soils are a combination of each type. The proportion of each type material determine the soil type. Note that silt soils are sometimes referred to as “Loam” soils.

The soil triangle shows the soil types according to their proportions- For example 50% clay / 50% silt is “Silty Clay”.



A simple soil test can be done by taking a handful of soil, wet it with water and squeeze it. If the sample feels gritty it has a high sand content, if it feels ‘soapy’ it has high silt and if it feels ‘sticky’ it has high clay content.

Now try the ‘rope test’ take the sample and try to roll it into a small cylindrical shape like a rope.

- **Sandy soils** will simply break up and not even form a ball.
- **Silt (loam) soil** will feel slick and only a little gritty it will form a ball but the ball will break apart easily and cannot be rolled onto a rope
- **Clay soils** feel smooth and sticky, will readily form into a strong ball and can be moulded into a rope shape.

Being able to identify a soil type is important because clay soils are very poor at absorbing the pesticide.

A clay soil must be removed and replaced with a sandy soil before application of a pesticide as come certain soil are more likely to block the holes.

PERIMETER INSTALLATIONS

Where a slab is constructed in accordance with AS 3660.1 - 2014 it is considered to be termite resistant. This means that only the perimeter and any penetrations (including joints) need to be protected.

This section of the guide shows the 3 steps to complete the work.....

1. Site Assessment & Site Preparation
Site Assessment means making sure the site is ready for work to begin.
Site Preparation means starting to plan the work and checking for design or installation issues.

2. Installation
Once the site is prepared and the layout determined the pipe can be installed.
The reticulation pipe is placed or clipped against the slab edge, then backfilled with appropriate soil up to FGL which should be just above the pipe. We strongly recommend an inspection prior to the installation of gardens, path, lawns and other landscaping and or zero boundaries to ensure this work does not breach any termite management system installed or allow termite to the property.

3. Builder Home owner Notification
AS 3660.1 - 2014 requires a" Certificate of Installation" to be given showing what work was done and what sort of maintenance is required.

Unfortunately for the installer many sites will not have landscaping done and it may not be obvious to the installer what FGL will be during construction. Therefore the home owner & builder must be given appropriate advice about adjustments that may be necessary if landscaping is going to compromise the barrier.
See the advice for landscapring in this guide, review your hand over documentation and speak to your insurer to be sure people are aware of maintence requirements for the reticulation system.
These are the issues that are specific to this property and are additional to the standard handover paperwork.

Site Preparations

- Complete any safety procedures before starting work
- Remove all contaminants from the area to be treated.
  This includes timber off cuts, building debris and form-work
- Check site for termite activity including timber on the ground; old fences; and trees.
- Check the soil on site - if inappropriate arrange for new soil.

Debris; building rubble and heavy clay soil.

Bricklayers mortar .

Building rubble

Too Wet

Site Assessment

Check out the building noting:

- position of drains, down pipes & HWS overflows
- the height of finished ground levels
- where driveways & paths will be.
- any change in levels
- any slabs or footingscast separately to the main slab

Note drain adjacent to building

Work out the "layout" of the system

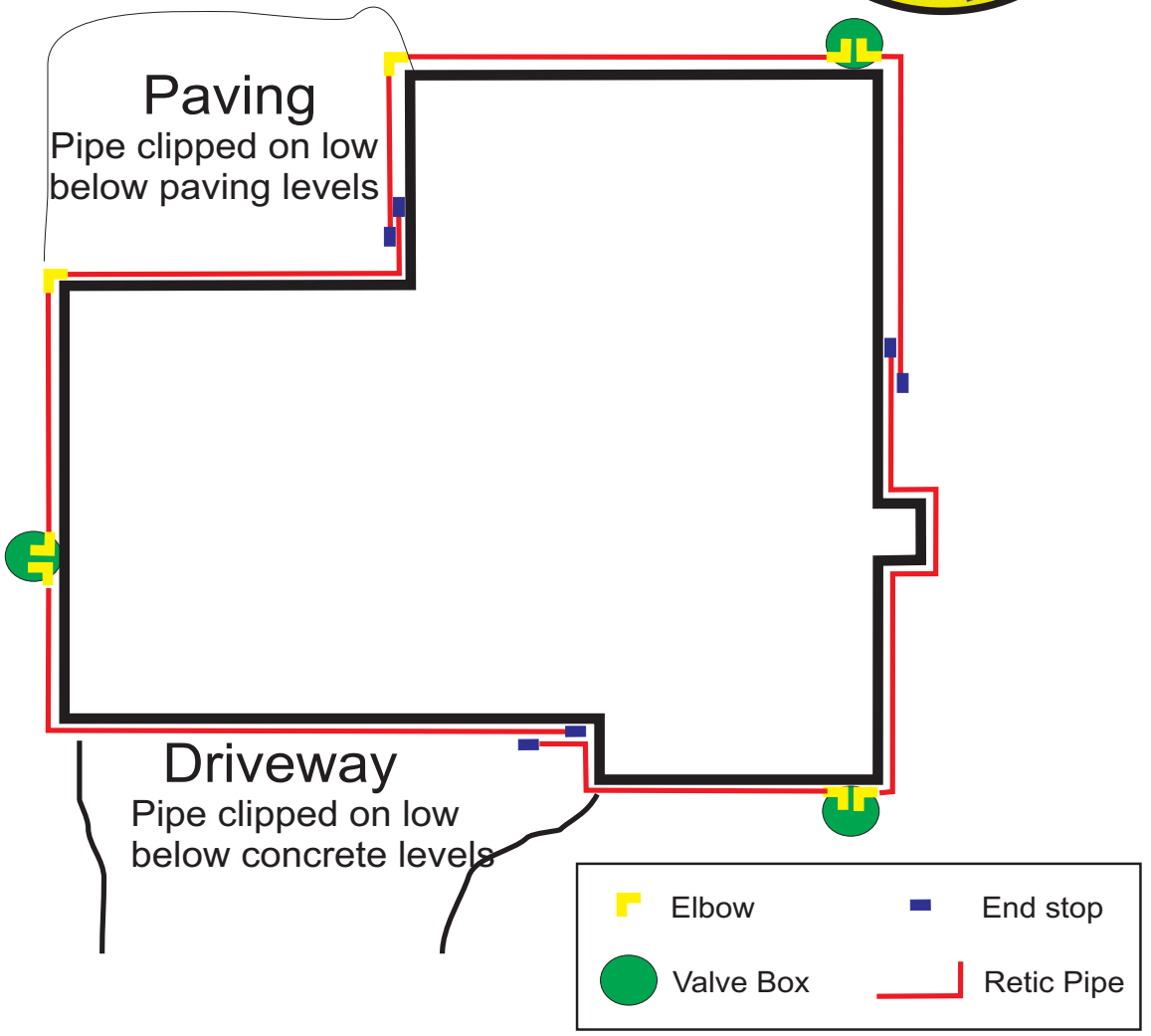
We recommend that installers use a checklist for site preparation and layouts. The checklist is a useful reminder of all the issues to deal with as well as a record of how the system is laid out. This will allow accurate drawing of "Treatment Certificates".
The form can also serve as a record of defects/issues reported to the builder.

A Layout plan determines the following:

- position of valve boxes
- length of pipe runs
- Height the pipe needs to be fixed at given the finished ground level.
- Mark any issues that need to be rectified or marked as a limitation on the certificate including zero boundaries.

SITE CHECKLIST & JOB PLAN (EXAMPLE)

		Comment
Safety Check	✓	Refer Company SWMS
Cleared debris	✓	Removed building debis Incl mortar timber and rubbish
Termite Check	✓	Checked trees, fences, timber on site, stumps.
Check drains	✓	Checked to make sure pesticide won't be pumped into drains
Check FGL	✓	Checked to make sure pipe is the correct height for the FGL
Run lengths	✓	Run length no more than 10m
Box locations	✓	Boxes are 1m away from doors and downpipes
Access	✓	Boxes can still be accessed after fences etc are built
Defects notified	✓	Identify any potential prblems with the install here. E.g. builder to ensure sand on top of pipe at driveway to avoid encasement.



KEY DIMENSIONS

These are the key dimensions to adhere to....

- **Maximum distance of pipe from slab edge 75mm**
- **Maximum height from Finished Ground level 75mm**
- **Maximum distance below hard landscaping (Concrete path driveway or pavers 75mm**
- **Maximum "run" of pipe (length from connector to end stop) 10m**
- **Maximum bend of pipe without an elbow ..... 90 degrees**
- **Pump up pressure - depending on equipment aprox 10 psi for sandy soils; max 60 psi for loams**
  Remember the best method is to do a trial pump at the job to be sure a good soaking delivery is achieved.

Caution.

Pressures above 60psi are likely to tunnell through many soils and in some instances may completely wash away the soil leaving an inneffective barrier.

Pipe Installation Equipment

HAND TOOLS - For system assembly

- Mattock
- Shovel
- Pipe Cutter
- PPE Including gloves
- Hammer
- Screw Driver (for clamps)
- Nail Gun
- Pipe
- Fittings
- Accessories