

HorsesLandWater

The Urban Stable Yard

A guide for stable yard owners & managers located in the Greater
Adelaide Metropolitan Area

- ✓ Improve your stable yard's environmental credentials
- ✓ Assists in preparing a property management plan
- ✓ Guides Local Government Horse Keeping Development Approval
- ✓ Tips for improving horse welfare
- ✓ Ideas for workplace safety
- ✓ Where to find services, resources, products & rebates

HorsesLandWater
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1. INTRODUCTION

Horse keeping is a meaningful and rewarding activity, which for some becomes a lifestyle all of its own. For trainers, breeders, coaches, etc, it can represent a full or part time business and is part of the economic picture of this state.

This guideline highlights good stable yard design features and practices, which will help stable managers meet responsibilities under the South Australian Natural Resources Management Act 2004 and the Development Act 1993 , and be useful as an aid to improving day to day operations, or to introduce improved practices with environmental benefit.

This guideline is also designed to assist horse owners to plan sustainable horse keeping properties with good amenities that will meet planning approval criteria and assist with applications for horse related development. Development approval is required for establishing or expanding stable yard operations.

2. HORSE KEEPING SYSTEMS

When deciding how to best manage your stable yard, first considerations are: how many horses you will be keeping and how they will be housed, exercised and fed. As more horses are kept on a given area of land, more time, money, management and facilities will be needed for it to be a successful and environmentally sustainable enterprise.

A realistic approach needs to be taken so that the horse property can be well managed within budget, time constraints, and meet your personal or business goals, so that the horses are healthy and there is no detrimental effect on the environment.

In urban environments, how to be a “good neighbour” and amenity (i.e. how good the stable yard “looks”) are also important considerations. Councils also have rules and regulations around how many horses can be kept, and depending on each region, requirements on how this is undertaken.

Horse keeping systems fall into three main types:

Low input (paddocks, no hand feeding)

- There will be fewer horses than the nutritional potential (stocking rate) of the land.
- Does not require stables/yards or a daily input of labour, apart from regular checking of stock.
- Does require pasture management throughout the year.

Medium input (paddocks, with hand feeding)

- Has the same number or marginally more horses than the nutritional potential of the land.
- Has stables/yards for routine management - e.g. horses may be stabled/yarded when the paddock cannot withstand hoof activity or paddock cover is too low or are routinely stabled at night.

High input (stables or yards)

- Has more horses housed than the nutritional potential (stocking rate) of the land.
- Uses stables/yards where horses spend the majority of their time and may only spend a few hours a day in the paddock if at all (horses will require some form of exercise/stimulation).
- High labour requirement.
- Highest cost option.

How horses are kept will depend on the type of enterprise e.g. racing, showjumpers, lifestyle, etc., council “rules” or zoning and the capabilities of the land. The information in this guideline is primarily aimed at high input horse keeping, but many aspects are also applicable to medium or low input horse keeping systems.

3. HORSE KEEPING REGULATIONS

In South Australia, the keeping of horses is regulated and a minimum standard of environmental management is required. The state government has regulations under the Development Act 1993, which determine that horse keeping is:

‘The keeping or husbandry of horses where more than one horse is kept per three hectares [7.4 acres] of land used for such purposes or where hand feeding of a horse is involved.’

Horse property owners may need to seek permission (called Development Approval) from their local council when more than one horse is kept per 3 hectares, or when associated structures, such as stables and holding yards for horses are intended to be built or expanded or where hand feeding of a horse is involved.

Each local council has its own “Development Plan” which contains the planning controls against which development applications are assessed. Many Development Plans contain specific planning controls for horse keeping.

You may need to fill out a development application if you are considering:

- keeping horses (i.e. current land use is different),
- increasing horse numbers ,
- increasing horse numbers above previous approvals, or
- putting up stables, sheds and other structures including dams, or watercourse alterations such as a stock crossing .

This guideline has a focus on keeping horses in the metropolitan and peri urban councils of the Greater Adelaide Metropolitan area – from the City of Onkaparinga to the Town of Gawler.

Planning Terminology & Requirements

To find out what your local council regulations are in relation to horse keeping:

- Visit the Department of Planning and Local Government website www.planning.sa.gov.au,
- Click on ‘Development Plans’ and then on your local council’s link. The link will take you to the appropriate Development Plan – that is, the document that guides decision making within your council and outlines what should and should not happen in those areas.
- Download the document. These are often quite large and can take a few minutes.
- Use the search feature (usually indicated by an icon depicting a small pair of binoculars) to search for the word “horse keeping” or “horse.”
- Take note of the requirements. Some councils may have no specific rules in relation to horse keeping, others will be quite extensive. Some councils may only have certain

rules that apply to certain “planning zones’ within their district. For example, horse keeping may be anticipated in some zones such as “Rural Living” but not in others such as “Residential”.

This first step will give you an idea of what your local council requires. The next step is to call or visit the council to double-check the information. You may need some assistance to navigate your way through the Development Plan to find the policies that apply to your property.

What “Zone” are my horses in?

Local councils divide up their region into zones so they can make more definitive planning decisions. An easy to identify zone is “residential” another may be “Industry”. Horse keeping is more likely to be acceptable in zones called “Rural Living” or special precincts designated for horse keeping, such as the Morphettville Racecourse Policy Area.

Confirm the name of the planning zone in which you currently, or wish to, keep horses when first making contact with council. The approval process to keep horses, build a shelter or expand a stable yard will differ according to which zone you are in.

What does the Zone allow me to do?

When talking with a Council Planning Officer, clarify what this zone means for you as a horse keeper.

Some zones state that horse keeping is an “envisaged development” e.g. the Morphettville Racecourse Policy Area within the City of Marion or the Rural Living Zone within the City of Playford. If this is the case, it is likely that the Council will approve an application for horse keeping if specific policies relating to the environmental impact and management of the activity are satisfied.

Many zones, however, will list horse keeping as “non-complying”. If this is the case, the application will only be approved under exceptional circumstances where it can be demonstrated that the activity has significant merit and will not result in any negative impacts on the environment or adjoining property owners. Importantly, if a non-complying application is refused, the applicant does not have any appeal rights.

It is important to discuss your proposal with Council Planning Officers before you lodge a Development Application so that you know what the Council’s requirements are likely to be.

What information will I have to supply?

Council Planning Officers will provide you with a copy of the relevant planning controls from the Development Plan. In addition, the Department of Planning and Local Government has a fact sheet “Guide for Applicants – Horse Keeping” which will provide guidance about what information should be submitted.

Statement of Effect

For non-complying applications for horse keeping, a more comprehensive ‘Statement of Effect’ will need to be prepared.

The Development Regulations sets out the information that must be included in a Statement of Effect:

‘The Statement of Effect must include:

- a) A description of the nature of the development and the nature of its locality.*
- b) A statement as to the provisions of the Development Plan which are relevant to the assessment of the proposed development.*
- c) An assessment of the extent to which the proposed development complies with the provisions of the Development Plan.*
- d) An assessment of the expected social, economic and environmental effects of the development on its locality.*
- e) Any other information specified by the relevant authority when it resolves to proceed with an assessment of the application (being information which the relevant authority reasonably requires in the circumstances of the particular case), and may include such other information or material as the applicant thinks fit.’*

It is essential that the Statement of Effect is of a quality and standard that assists in the assessment process. It is generally expected that the Statement of Effect will be prepared by a professional planner who is qualified to provide an expert interpretation of the Development Plan.

There are professional planners in SA who are experienced in preparing horse keeping Development Applications and Statement of Effects. The cost of preparing such a document can run into thousands dollars if complex. Costs can be significantly reduced by working closely with the professional planner, supplying as much prepared information as possible.

When purchasing a property for horse keeping, choosing a property within a suitable zone or with existing permission or demonstrated long-term continuous use, is a simpler and cheaper option.

Some council’s have zones in which horse keeping is classified as “Merit” based. This means that provided a horse property owner gives council basic information as required, and it is considered satisfactory, horse keeping is likely to be acceptable.

Existing Use Rights

The horse keeping laws changed in 1993. Properties that have been used for keeping horses prior to 1993 may not have ever received horse keeping permission from a council.

Horse owners who are looking to purchase a property will need to check with the local council, prior to purchase, what permissions have been granted for the use of the land. If evidence can be provided that horse keeping has been undertaken continuously on a certain property, then an approach can be made to the council to recognise what is known as “existing use rights”.

The council will require that evidence be provided to demonstrate that existing use rights apply. The Adelaide Hills Council, for example;

‘require a body of evidence including a statutory declaration .. to be supplied to Council which confirms that horse keeping was being undertaken on the land prior to 1st November 1973, and has continued since that time (without discontinuing for a period exceeding 2 years).

Alternatively, if the above is not available but approval has been obtained for horse keeping on the land after that date, then upon receipt of a copy of the approval, Council would be satisfied that the use is an approved one and may continue. Note, however, that any increase in the number of horses kept would require development approval.’

Applying for Development Approval

When you are ready to make an application, the council planner can outline each of the steps required. These may include putting a public notice into the local paper and also inform you on whether or not the application will need to go to the Council’s Development Assessment Panel.

The council planner or the Council’s Development Assessment Panel will then make a decision to approve the application without change, approve the application subject to certain conditions, or refuse the application.

If the application is refused, an appeal can be made to the Environment, Resources and Development (ERD) Court under certain circumstances. There is no appeal available when a non-complying application is refused.

For further information on how Development Applications are assessed, visit the Department of Planning and Local Government website and search for “assessment processes”.

Horse Keeping Codes of Practice

Metropolitan councils, including The Cities of Marion and Salisbury, Port Adelaide Enfield Council, have a Code of Practice which stable yard managers are required to adhere to.

Useful links:

Department of Planning and Local Government www.planning.sa.gov.au/
 Guide for Applicants – Horse Keeping <http://dataserver.planning.sa.gov.au/publications/745p.pdf>
 ERD Court www.courts.sa.gov.au/courts/environment/

4. DESCRIBING YOUR HORSE KEEPING ENTERPRISE

Horses are kept on public and private land, using a range of horse keeping systems run for different purposes which may be as a business, for equestrian sports or recreational benefit. To the general public, the differences between each type of enterprise are not always clear, but they will affect how horse owners interact with neighbours or seek to access public facilities with their horses or how they apply for Development Approval.

A description of the enterprise is one of the first steps in preparing a development application or a property management plan.

The description should include:

- aims of the enterprise
- professional or personal goals
- who works with you to achieve these goals – family, staff, volunteers
- an overview of income sources and budget constraints, and
- short and long term goals for the property.

In the greater Adelaide metropolitan area, horse keeping enterprises can be grouped into one of the following:

- racing stables (thoroughbred or harness racing)
- equestrian sports stables
- equestrian riding centres & related businesses
- private or public properties providing agistment services
- private horse keeping, which may include breeding, or
- government stables (Police, TAFE).

Some premises may have permanent horse keeping facilities but horses only stay very short term, such as:

- saleyards
- veterinary clinics
- transport operator holding yards, and
- overnight yards on public equestrian & show grounds.

When describing your enterprise, consider what points of difference there may be between the types of enterprises listed and how your proposal fits in.

Descriptions will include:

- purpose of the enterprise
- operating hours (hours of the day that neighbours can expect activity/noise)
- number of horses to be housed

- type of horses (e.g. ponies, foals, racehorses)
- number of staff or volunteers (staff tend to be on site for more regular hours)
- horse keeping systems (how intense? paddocks, yards, etc)
- expected number of vehicles and horse floats or trucks parked on site or on the roadways
- expected number of visitors, open days, show days or event days
- how horses will be exercised on site (horse walkers, arenas)
- requirement to access private, public or club owned facilities e.g. pools, and
- requirement to access public horse grazing areas (even informal grassed open space).

A sample daily stable routine timetable and notation of any peak periods during a week or season will further explain how an individual enterprise may operate.

It is always better to supply more information than you may consider necessary. When basic information is left out, the authorities will actively seek this out to ensure you have prepared suitable management options for contingencies. Not being open with your application is unwise and will increase the processing time.

5. PREPARING A SITE PLAN

Horse property facilities such as stables, yards and exercise areas need to be well designed and managed to avoid detrimental effects on the environment, horse health and welfare, issues with neighbours, etc.

Problems may include:

- excess odour
- excess noise
- pest plants and animals
- increased dust and/or mud, and
- pollution of water resources.

These potential issues must be taken into account when you are planning new horse facilities or upgrading existing facilities or increasing numbers of horses, because of their potential impacts.

Councils in the metropolitan area of Adelaide have quite strict requirements about how horse related buildings and infrastructure should be placed on a property. Compliance with state legislation, such as the Natural Resources Management Act, also needs to be taken into account.

The site plan, which can be hand drawn, should:

- Identify of all the horse related infrastructure, including layout & dimensions.
- State how close horse related infrastructure will be to a neighbour's boundary.
- Indicate how far from a watercourse (even if dry) that horse related infrastructure will be placed.
- Indicate how far the stable yard is from other activities that could be affected, e.g. the nearest school, hospital or tourism operation.
- Note any existing native vegetation, and detail any potential affect on it.
- Identify a permanent potable water source.
- Identify the residence; if it is at the same property where horse keeping takes place (some councils may require a residence to be on the horse keeping property).
- Indicate placement of horse related buildings on the site, such that other buildings or vegetation provide screening to neighbours and in some instances, main roads.
- Show location of any bores, dams or wells.

The site plan should also note how many horses are expected to be kept and the proposed system under which they will be maintained (how intense).

It will pay to discuss plans with neighbours and if there are any perceived issues, and aim to negotiate a solution that is reasonable and meets everyone's needs.

6. DESIGN CONSIDERATIONS FOR COMMON STABLE YARD STRUCTURES

Horses have evolved to be free-ranging, grazing, socially orientated short-flight prey animals. Horses do not cope as well when living in small yards or confined spaces, with a lack of continual grazing opportunity or environmental stimulation.

Placement in isolated confinement (a stable) often adjacent to a horse with which a social pecking order has not been established can lead to aggressive/regressive stable manners, undesirable behaviours or poor athletic performance.

Over recent years equine behavioural research has provided new findings which are making their way into mainstream to improve horse care and management. Likewise, knowledge about ways to save energy, protect water quality and other measurable ways to enhance and protect the environment have improved, and need included in stable yard designs and management routines. Horse property owners are encouraged to seek up to date best practice information for both their horses and their land. There is a great deal of information now available to assist those seeking it.

Fortunately, horses are highly adaptable animals and most will adapt adequately to live within a well designed & managed stable yard situation.

Environment Tip:

Stables and yards can be an important land management tool. Placing a horse in a stable (or yard) for part of each day aids in preserving paddock ground cover on small holdings. Stables (or yards) can also be used to keep horses off of very wet soils, therefore reducing 'pugging'.

Amenity

Amenity is how pleasing to the eye or how "good" the overall stable yard looks. A good looking stable yard is clean, tidy and is well presented at all times. For relatively small outlay the value of a property can be increased through landscaping, well maintained facilities and overall presentation.

Stables

Scientific studies outlining a recommended minimum floor size for a horse stable for use by Planners have not been undertaken. Individual stable sizes & heights, like many traditional and historic horse care practices, have been handed down over time with no real research supporting (or not), the practice. No formalised national Australian horse industry recommended standards or guidelines currently exist.

Planning regulations for most metropolitan Adelaide councils do not state a required size for a horse stable, tending to be more concerned with its position on a block. For councils that do regulate a stable size, it must be adhered to.

The City of Salisbury, for example, states that stables should have dimensions and areas of: *'3.7 metres by 3.7 metres per horse stable'*. The City of Marion has no mention of size in their regulations, but a Horse Keeping Code of Practice used by the Marion Council requires the minimum stable size to be 4.3m x 4.3 m.

Building requirements apply regardless of size – even if miniature ponies. If you want to build larger stables, it is important to check if they will be permitted.

As a very rough guide, a large horse needs enough room to be able to easily lie down, roll and get up again safely, and walk forward and around without reverting to having to pivot on its hindquarters to change direction.

As with floor sizes, a recommended industry standard for roof height has not been developed. Stable ceiling heights are frequently not specified in regulations. The City of Playford requires a minimum roof height of 2.75 metre above natural ground level.

A tall horse will need enough room to ensure injury to the poll (top of the horse's head) is avoided should it throw up its head. A higher roof allows for better circulation and exchange of air, resulting in odour reduction and improved air quality within the stable and reducing incidence of respiratory airway disease in individual horses.

Installation of in roof air-vents and skylights will increase natural light and air exchange.

Biosecurity tip:

Consider adapting rafters and cross-braces so that bats cannot roost.

Stable Floors

Horse owners traditionally prefer to use a base of sand, dirt or compacted rubble for stable floors. This is still permitted within some council areas, but decreasingly so.

Whilst considered “better” for horses legs if standing can take place on a more natural surface, cement or other impervious material meet urban building regulatory requirements, are better able to facilitate the required waste liquid & water management requirements and are more easily cleaned for biosecurity purposes.

A constructed stable floor will need to remain above the required natural ground level, avoiding a depression in the floor being formed resulting from a gathering of urine or pooled water over time. Pooling of liquids on a stable floor or an inability for urine to be effectively managed not only compromises the health of the horse, but can create an odour problem and a reason for neighbours to complain.

The Cities of Salisbury & Playford, for example, currently require stable floors be constructed of concrete 100 millimetres thick, graded to the doorway with a fall of 15 millimetres over three metres, with a concrete drainage aprons, at least 1 metre wide, provided along the front of the stables.

Commercial flooring products specifically for stables are now readily available to be placed over cement. The products are often manufactured from recycled materials. Bedding is layered over this special flooring, often in far less amounts than if being placed directly onto cement, ameliorating the initial cost.

Some authorities may require sawdust to be used in some districts, rather than straw or other bedding.

Bedding tip:

Sand may be a cheaper alternative, but is a more difficult surface to keep smell reduced to a minimum and more difficult to recycle than sawdust or straw. Consider how you are going to remove and recycle used bedding.

Stable Wall Construction (External)

Walls are required to be impervious, that is, not to allow rainwater to enter. Some councils require the walls to be constructed with masonry or concrete up to 1.2 m in height although timber, metal or similar construction up to the roof is satisfactory above that height. Walls external to the street or neighbours may be required to be solid.

There are many attractive stable designs available with external floor to roof wood panelling or other aesthetic materials. With pre-fabricated stables available for purchase on the Internet from most states of Australia it would pay to discuss horse stable requirements, including building materials, with your council before ordering a stable kit online - only to find it does not meet local council regulations.

Consider ample use of external windows to promote air flow (not draught) and provide light and visual stimulation for horses housed inside. In the same way, verandas to help manage overall stable temperature, provide shade and shelter and minimise rain entering one or more sides of the stable.

South Australian average temperature range on the Adelaide Plains is not considered cold for horses; heat is more of a potential health & welfare issue. One of the predicted issues associated with climate variability is an increase in hot days for southern Australia.

Horses are social animals, and opportunities through the use of windows and half walls both internally and externally need to be created to allow for interaction and/or visual stimulation.

Allow room for planting native vegetation against external stable walls for screening, visual amenity, habitat and to help manage internal stable temperature.

Stable Wall Construction (Internal)

Stables constructed adjacent to each other provide opportunity for horses to interact socially through an open style top half wall fitted with mesh or bars.

A closed in section of in the corner that the horses are fed will provide privacy and peace while the horse eats, reducing stress. This is especially important when a timid horse is next to a more aggressive one.

Traditionally this type of privacy area has been provided to the rear wall or corner of the stable, but it may be worth considering placement of this towards the front section. Stable hands will save time and be safer if every stable does not have to be fully entered every feed time. Horses too, may be more content and benefit from enjoying eating while watching what is happening in the stable yard rather than spinning around from time to time during a meal to 'catch the action'.

Design flexibility may see internal walls than can be removed to increase some stables to double size perhaps for foaling down or facilitate a change of use to storage.

Lining

Internal lining of stables needs to consist of a surface that will not splinter or shatter should a horse kick it. Ideally, a material such as rubber lined masonry or timber absorbs somewhat the concussion from a kick without the surface material or underlying construction breaking.

If timber is used it needs to be hard wood (e.g. jarrah), be wary though as all timbers can splinter, with splinter shards being known to enter tendons causing irreparable damage. Unlined masonry can likewise cause hairline fractures when kicked hard and tin will just crumple and bend into dangerous jagged edges.

Thick marine ply overlaid with rubber can be considered. It is strong, has a degree of flex, does not splinter and will withstand constant moisture such as found near the drinking bowl. For biosecurity purposes, the material selected must be easily cleaned.

Horses stabled for long periods may develop behavioural problems and will seek out edges to chew or grab onto with their teeth and bite and/or suck in air. If an internal stable wall is not finished flush floor to ceiling, or made of robust materials, then damage will occur.

Tip:

Consider addition of items that will help to prevent boredom, such as hanging play balls or flavoured 'licks' in the stable.

Doors

Ideally modern stable yard doors should be wide enough to allow labour saving equipment to enter, such as bobcats, quad bikes with tip trailers and manure vacuum cleaners. Allow a minimum of 1.6m.

Sliding stable doors save valuable space in busy alleyways and may feature external rails on which to hang rugs.

Consider a second doorway in the opposite wall within each stable. A second door can have the top half opened to act as a window and more importantly, may be the only exit in a stable fire or other emergency.

Stables established internally within a barn design, with individual outdoor yards coming off will already feature this double door design, but it is rare to find two stable doorways on traditional row stables. An increased cost, but has benefits around safety, access & egress, air quality improvement and social wellness of horses.

Stables contained within a larger building or 'barn' will have building exit requirements to meet fire regulations. A roller door placed at each end of the building in line with the central alleyway may be the preferred option, as they do not catch in the wind and become difficult to handle.

Regular inspections need to be made of all stables, yards, paddocks or other facilities where a horse will be housed, to ensure there are no bolts jutting out, or any sharp edges.

Additional stable design features to consider:

- Internet wireless web-cam monitoring
- Rails for hanging rugs, storage boxes, hooks for head collars
- Power outlets
- Location and reach of fire hoses, fire extinguishers, smoke alarms
- First aid kit (human)
- Hand washing basins
- Interior and exterior lighting
- Security and alarm systems
- Determine where clipping, shoeing, veterinary treatments and other similar horse activities will take place to ensure weather proof, power, good lighting. A 'utility box' or extra large stable set up for these purposes is ideal.

Yards

Well designed horse yards will have shade, shelter from prevailing winds, be well drained and have design features to reduce dust and mud. Yards need to be subject to the same

management regimes as stables, being that they are cleaned regularly and are well maintained.

Tips for designing or upgrading existing yards:

- Prepare a firm base on which to put the top layer (coarse sand or other mix), with a firm base with a slight gradient to facilitate drainage.
- Place a barrier around the base of the yard to reduce loss of fill.
- A well designed drain placed around the perimeter of the yard to allow for flow of water without blockage occurring from the yard fill or other soil.
- A roof covering at least part of the yard, fitted with a downpipe if impervious.
- At least one gate that is wide enough to permit bobcat or tractor access.
- Fencing that is safe and solid, such as steel piping (needs to be visual, no sharp edges, horses can't get caught under if roll, can't paw at and get caught up).
- Planned landscaping, to help regulate temperature, to provide screening and act as a buffer between the stable yard and neighbours.
- Consider adapting rafters and cross-braces so that bats cannot roost.
- Check council regulations for the distance a yard has to be placed from a neighbour's fence.

Stable managers often put aside a yard for confinement of very fat horses. These yards are frequently just a fenced off section of paddock. Regardless of the purpose, yards of any size still need to have ground cover to reduce dust, mud and to help filter water run-off. Another management option for weight control is use of a grazing muzzle, or agist horses off-property.

Round Yards

Round yards provide on-site options for exercising a horse and can double as a sand roll. The horse can work on a long-line or lunge rein or without any form of equipment at all. Round yards are useful for starting off very young horses or horses coming back into work after a spell.

Ideally, a roof with gutters and downpipes leading to a draining system is installed. Wet, boggy round yards can be an environmental and potential horse injury concern. Wet and slippery round yards cannot be used and reduce options for safely exercising horses.

Considerations:

- Decide on the diameter.
- Select a site that is level; prepare a slight gradient to facilitate drainage.
- Establish drains around the exterior.
- Establish a firm base e.g. crushed rubble.
- Source coarse sand or specialist commercially prepared riding arena surface for the top.
- Determine if solid panels (thick rubber is safe) or other constructed barrier will best prevent loss of surface through normal use.
- Consider garden beds to act as a screen and to capture loose sand if it drifts.

There are many companies that pre-construct round yard panels making for quick assembly and provide the stable yard owner with an option to relocate in the future if needed. Timber is a common product in the USA and UK, whereas Australians tend to commonly use steel piping.

The yard will potentially have the full body pressure of a horse applied to it, even if this is through a horse being left inside to roll and play. It is important not to compromise on building standards to reduce cost, at the expense of potential injury to the horse and increased environmental impact.

Gateways need to be wide enough at least for a bobcat, but it is even more useful if a horse float can back in. Round yards often form part of a containment area in which to teach horses to load onto trailers, or for unloading other stock onto the property (e.g. alpacas).

Isolation Stable or Yard

New horses should be isolated on arrival if possible to allow for observations to take place in relation to health, welfare and behaviour. This is part of the stable yard biosecurity plan.

Sick horses with nasal discharge, cough or other potentially transmissible symptoms/diseases need to be isolated to prevent spread to other resident horses.

Ideally a separate stable or yard is established near the property boundary for this purpose, which does not permit nose to nose contact or sharing of water troughs or other facilities with resident horses. This stable should have its own cleaning equipment, halters and feed containers.

Horse attendants should see to this horse last as part of the daily routine and not handle resident or healthy horses directly after. Hand washing facilities with disinfectant specific to this stable and an area for horse handlers to change in/out of protective overalls is ideal.

The area needs to have as many additional services as possible provided with it, ideally including a small room next door with a shower in which an attendant can wash, change,

rest and sleep in on occasion if required. Power, water, lighting, fridge for veterinary supplies and its own stable waste & veterinary medical waste storage system are other considerations - basically a mini self contained stable yard.

The area needs to be clearly signed so that visitors do not wander around patting sick then well horses, spreading infection. Preparing a biosecurity plan for your stable yard will highlight what requirements are needed.

Other Facilities:

Tack Room

A tack room is where harness and tack are kept. A room that can be kept clean and dry and within a reasonable temperature range is required, as dampness, mould and heat will ruin tack. Doors and windows should be sealed and ideally a fly screen placed on the door to reduce insects and keep rodents out. Rodents love to chew leather, gnaw on saddle soap and nest in rugs.

Ideally, a tack room:

- is located close to where horses are tacked up for work
- is located adjacent to, or have within it, the stable yard laundry facilities
- has enough space to make sure that after work, wet saddle cloths, dirty girths or boots don't have to be thrown on the ground or placed over a leather saddle
- has adequate shelving and racks for storage of regularly used equipment
- may contain wire racks and baskets which allow items to be identified quickly and don't collect dust
- has storage options for regularly used items (such as coat hooks for wet weather riding gear, wall mounted whip holders, saddle racks)
- has cupboards and drawers for lesser used items (such as spare bandages and boots)
- may have individual lockable cupboards and areas if the area is shared with others
- has power
- may have a lockable fridge if veterinary drugs are stored in that room
- racks and shelves are set to suit those who are going to use them, e.g. children will need saddle racks set at a lower height
- is designed to stay as clean as possible (i.e. is not subject to stable yard dust) - door and window seals and a floor that can be washed down
- is brightly lit, to enable tack cleaning duties and deter rodents
- is able to be aired, to reduce mould growth
- is lockable and meets other insurance requirements
- has storage for equipment that is only used seasonally (e.g. winter rugs could be stored under benches which double as seating)
- may contain a noticeboard and small desk for the stable yard diary
- may have other comforts if owners, staff or volunteers use the same room to rest or socialise, such as a kettle, chairs and a table.

Staff Room

The range of amenities provided will depend on the number of people who are expected to frequent the stables and for how long. A commercial stable will need a separate office to keep track of records and maybe to address clients in business meetings.

Toilets compliant with health laws will be required. Showers are an option, but a necessity if biosecurity is taken seriously.

When staff is employed, a room with basic cooking facilities including sink, fridge and microwave will be required. Minimal Occupational Health, Safety & Welfare requirements are to be met by law when employees or formal volunteers are on the premises.

Feed Storage & Preparation Areas

Considerations:

- The feed room needs to be located near to where the horses are housed.
- Easy truck access is required for deliveries.
- All doors to the feed room must be rodent proof – and prevent loose horses finding an extra feed!
- Grain and manufactured feed stored in rodent proof bins. One bin or compartment for each type of feed. Carefully select storage bins to avoid workplace injury issues associated with bending or lifting using poor posture. Initiate best practice workplace procedures for filling or emptying storage bins that do not have features to preserve workers health and safety.
- Power to enable the room to be well lit, as feed mixing will frequently take place when there is no daylight.
- Air temperature kept as constant as possible. Excessive heat and dampness is to be avoided.
- A waist height bench or table with rollers (to slide full buckets along and then onto the transport trolley used for feed distribution without lifting or bending).
- Fridge and cupboard for supplements.
- Water and mixing bench for wet ingredients, to separate from dry ingredients.
- A scale to weigh ingredients.
- Whiteboard to record current feeding regimes and a computer/diary for historical records and health observations.
- Shelves and storage space for cutting knives, scissors, used feed bags and spare buckets.
- Industrial type vacuum cleaner, brooms and other equipment to clean the room each day after use.

Hay Storage

Hay is ideally stored in a separate building that is weather and rodent proof. Urban stable yards are unlikely to have a large quantity of hay stored on site, as space will be at a premium. Hay stored outside will risk becoming wet and have its quality reduced. Some councils may not permit large amounts of hay to be stored outdoors.

Storing hay away from main buildings reduces the fire risk.

The bales at the bottom need to be protected from rising moisture, even on cement floors, so wooden pallets or other barriers are recommended. When stacking, leave a gap between the bales and shed walls & ceiling for air circulation. Rodent control can be placed in these gaps (provided dogs & cats do not have access). A well ventilated shed will reduce the likelihood of hay overheating and self combusting.

Power will facilitate the use of an industrial vacuum cleaner and enable lighting.

Trucks will require easy access, and in some stables a forklift could be used if bales are delivered already packaged onto wooden pallets.

Bedding storage

Bedding storage is frequently an afterthought in many stable yards. Check to see if your council has any bedding requirements, the Cities of Unley and Marion, for example, require sawdust to be used and not straw. Sawdust breaks down more easily if it gets into public watercourses.

Straw has similar storage requirements to hay.

Sawdust & shavings will need a place to be stored that does not allow rain to penetrate. These are wood products which are treated to prevent attack by insects and slow down rot. If water penetrates the wood product, the treatment leaches out and enters the watercourse. Specific health hazards to horses have not yet been identified.

Wash Bay

Wash bays can small occasional use facilities with no roof or covered bays able to cater for continuous use. The design of a wash bay is very important, as effort needs to be made to separate the 'dirty' water that results from washing the horse from clean stormwater.

A concrete drainage apron should be provided along the front of stables directing water from wash down areas onto a suitably vegetated area that can absorb all the water, or into a constructed drainage pit.

Occasional use bays can be as simple as somewhere to tie up the horse on a hardened surface, a hose and some kikuyu lawn to soak up water. Position to take into consideration a potentially hot afternoon sun (shade) and prevailing winds (shelter).

Urban stable yards, and those facilities requiring use of a wash bay on a daily basis will need to design a more robust and environmentally friendly construction. Council regulations will be quite strict on how water is to be treated.

Wash bay considerations:

- Have a cement or other hard floor, which is slightly sloped towards a separate drain for 'dirty' water.
- Rubber matting or roughened cement floor to prevent slipping.
- 'Dirty' water can be treated onsite or connected to go into the sewer system.
- Water used in the wash bay should be directed away from the entrance.
- A berm or barrier constructed to prevent water leaving the wash bay and entering "clean" water drains.
- Plan a hose system to avoid long hoses getting kinked and horses stepping on them (overhead, spiral or retracting hoses).
- Placement of taps so that leads or head collars do not get caught on them.
- Select taps and hose nozzles which prevent water wastage.
- Constant water pressure is required.
- Smooth walls or rails, as even quiet horses can kick out.
- Enough room to hold a tall horse and enable two people to work around.
- Hot and cold water or pre-mixed tepid water options.
- Plan where to hang a wire basket with cleaning shampoos etc. It may need to be outside edge of the wash bay to avoid young horses knocking themselves. Avoid having items on the ground.
- A selection of tie up rings and rings to which cross ties can be clipped.
- Lighting may be required if you expect to hose down or wash outside of daylight hours.

Crush

Many stable yards have a simple crush. This allows for horses to be restrained safely while primarily veterinary treatments and dental care take place. Most tractable horses can have most veterinary treatments undertaken without a crush.

A crush can be a dangerous place for horses and stable yard workers, so good design and horse handling skills are required. Having a crush in a stable yard might mean some trips to the veterinary clinic are not required, as adequate facilities exist for veterinary diagnostic procedures to take place e.g. radiographs or endoscopic examinations.

Large studs will have yarding systems, runs and several crushes for different purposes.

Crush considerations:

- Made of strong piping.
- Designed that each side can be opened as a gate, including front and back.
- All gates have quick release catches, which still work when horse pressure has been applied from the opposite side or above.
- Have no hinges or edges on the inner side where the horse may apply body pressure.

- Have a non slip floor (say, fixed rubber matting).
- Power and water close by.
- A clear space of at least 3 metres around, to allow for a worker safety zone.
- Located so that other horses can be easily seen, or a companion horse can be tied up nearby.

Sand Roll

Racing stables in particular use dedicated sand rolls, many equestrian stable yards will use the sand found in the riding arena or lunge ring to allow a horse to roll and relax.

Covered sand rolls allow the sand to stay dry, which is in turn, used to aid in drying off horses that have been hosed down after exercise.

Sand rolls are just a large stable or round pen design with a roof, containing smooth walls and deep sand. The entrance & exit door need to be full length as horses often buck and kick after rolling and the last thing wanted is a set of hind hooves extending out above a half door as someone walks past.

Sand roll considerations:

- A manure scoop and bin placed outside the entrance to facilitate cleaning after each use.
- Gates wide enough to allow a bob cat to move sand around, or clean out occasionally. (A truck bringing in sand needs to be able to access as close as possible to the doorway).
- A door way that can be seen through or af window to facilitate sight with other horses will reduce anxiety levels for some horses.
- External hooks for hanging up leads while horses are rolling.
- A hose located nearby to dampen sand on the occasional days that it is very dry and ‘suspends’ in the air. This will prevent dust nuisance.

There is little environmental impact from a dedicated sand roll, as horses do not live in them so build up of manure and urine, or associated drainage and dust problems are generally not an issue.

Horse Walkers & Pools

Increasingly horse walkers are being installed in commercial stables. The modern designs are very good and plenty of advice is available to support site choices and installation through the supplying company.

The walkers have rubber compound flooring, so dust or mud is not an issue. Stable yard managers may consider establishment of garden beds for amenity plantings or other mechanisms to screen the horse walker if needed.

Swimming and large wading pools are starting to be installed in commercial horse stables. These are large investment infrastructure items, which will need Council planning permission.

Riding Arenas

General purpose outdoor riding arenas for exercising horses can be any size or shape. Primarily it is a fenced area with a good surface to provide a safe area to ride, drive or train the horse. Secondary uses may include use as an area for horses to roll or to turn horses out in pairs for socialisation and play.

Enterprises established for a specific purpose, e.g. dressage sport horses, may have a size regulated by the rules of the sport (ie 20m x 60 m). Riders may want to practice in a home environment on a similar sized arena to that which will be found at a competition.

Arena considerations:

- Site the arena to keep as dry as possible. Cutting into a hill or placing on top of a waterlogged site will add cost and potentially years of heartache as water flows or seeps under
- Plan how many gates or removable fence panels are required. Tractors towing show jumping trailers, access to other buildings or boundary access to minimise visiting horse risks may help determine requirements
- Select a fence height and style early. Arenas ideally have a fence height of 1.4 m*
- Will the arena be used for a turn out yard? How will shade, shelter, water requirements be met?
- Depending on surface type, will water be needed to hose down to reduce dust? Where will this water come from? (Remember government water restrictions may apply)
- there are dust reducer solutions that can be sprayed on –designed originally for road construction I know you can buy stuff for arenas now – but not sure how good
- How will you be planning to maintain the arena, will you need tractor and harrow?
- What is the maintenance budget per year and for replacement or top up?
- Is room needed to ride around the outside of the arena, for seating or other activities?
- Consider sun and prevailing winds. Many hours can be spent riding or teaching in arenas
- To avoid additional expense later (and disappointment) investigate thoroughly what top surface will be best for your riding or training activity. It needs to have low dust and a slow break down over the years to reduce the amount of times it needs to be

topped up or replaced; to have enough 'give' to prevent concussion, but not so soft & deep it causes strain. Materials or commercial products available for delivery and the overall budget are constraints.

- Take the time to ride on or visit other arenas and speak to owners about the good and bad points. Visit in dry and very wet weather, how many horses use it, what maintenance schedule does it have?
- A perfect outdoor arena is probably yet to be achieved, but very good one is possible.
- Plan landscaping and screening plants, which may also provide a windbreak and cast some welcome shade during summer afternoons. Seating and shade for observers is always welcome.

Indoor riding arenas have the advantage of allowing horses to be exercised under cover and under lights, ideal for equestrian sports stables and riding centres on short rainy winter days. They are large, expensive constructions requiring separate approval. Consideration needs to be given to how much use they would receive to justify the cost, whether public would be able to access the facility, effect of additional traffic on neighbours, etc.

Vehicles & Floats

Pedestrian, horse and vehicular access to the site should be provided in locations that ensure safety.

Considerations:

- What type of vehicles will need access and where e.g. farriers, horse floats, trucks delivering feed, etc.
- How many vehicles and floats are required to be parked on site and do these need to be under cover or secured in any other way?
- Will loading and unloading of horses take place on or off property?
- What turning circles are required?
- What driveway set back angles and sight lines are needed to allow safe access and egress from the property?
- Is the property better served by a separate entrance gate and exit gate?
- Are there any overhanging trees or building eaves?
- Is power or water needed to be near these areas, or where will horse floats and trucks be cleaned?

Planning how to clean out horse floats is an important environmental consideration. It is not appropriate to hose out the horse float onto the street.

Clean out the horse float on site, removing manure to the manure storage bay. Most often this is just done with a broom. Disinfectant, insecticides or any other treatments can be lightly applied so that there is no liquid residue washing out.

If the float or truck is to be hosed or washed out in any way, park it on a grassed area if possible to facilitate filtration of dirty water. Frequent washing of trucks will require establishment of a facility design to separate out clean and dirty water, in the same way as a horse wash bay. Alternatively, use a commercial vehicle washing facility.

How and when floats and trucks are cleaned is important. These vehicles are a ‘weak point’ to be proactively managed as part of your stable yard biosecurity plan.

Perimeter fencing

In urban areas, there may be regulations on the type of perimeter fencing permitted. The type of enterprise will also affect fencing choice with racing stables, for example, requiring premises to be secure.

Stable Yards without residences may be required to be securely locked at night for both security and insurance requirements.

Considerations:

- Perimeter fencing must by law contain livestock (e.g. a loose horse).
- Decide who or what else you want to keep in, or out e.g. dogs.
- Fencing can be combined with screening plantings to increase amenity.
- A suitable main gate and rules about when it is opened & closed are essential.
- Does the main gate need to be wide enough, and positioned at such an angle to allow for articulated horse transport semi-trailers to enter?
- Will a car & float be required to park while a main gate is opened? If so, consider a recessed gate to allow the car & float to completely clear the main road prior to stopping to open the gate.
- Are remote controls, speaker phones or security cameras required to be fitted? If so, a power source may be required.
- Are any other access or egress gates required?
- Hardened surfaces around gate ways, as these may be heavy traffic areas.
- Will the fence form part of a biosecurity barrier between your stable yard and neighbours? If so, a double fence may be required or perimeter fencing coupled with a laneway or other barrier/buffer.
- Is the perimeter fence required to be patrolled or checked by a person in or on some sort of vehicle or on a horse?
- Is the perimeter fence to be combined with electric fencing (which should be signed to warn visitors or passers-by)?
- Materials must be solid, safe for horses and visually pleasing.

Fencing may have the additional use of displaying your address, CFS property identification and business signage. Note that some signage may require additional council permission.

7. ENVIRONMENTAL CONSIDERATIONS

Many areas of the environmental considerations are covered by regulations (air and water quality, pollution control, pest plant and animal control), but wise management of a property to create the best possible environment should be the manager's goal regardless, as it has added benefits of increasing the value and amenity of the property.

Your local Natural Resources Management Board office can assist with information and resources.

Soil Management

Horse property managers looking for ways to improve their urban horse keeping practices or applying for horse keeping permission, will need to consider how their soil is managed.

In greater Adelaide, urban stable yard locations can range from highly built up areas, such as Morphettville, to the hills of Mitcham or Golden Grove through to the northern Adelaide plains and hills around Playford and Gawler. A general understanding of the natural features of the district in which your stable yard is located will help plan day to day and seasonal horse management routines, layout of buildings and guide longer term property and land improvement decisions.

Each district has a different topographic profile, different soil types and soil depths which are affected by the average rainfall and prevailing winds. If applying for horse keeping permission, it is a requirement to describe these features and how they will impact on your proposed horse keeping enterprise.

Ground cover

It is important that there is adequate groundcover on properties to prevent the risk of soil erosion by water or wind and to reduce dust or mud which can lead to problems with horses' health, amenity and neighbour complaints. Groundcover includes living plants (pasture, natural vegetation) or dry plant residues, stones or gravel.

Soil erosion by water (i.e. rain washing soil from yards due to constant hoof traffic) can result in pollution of watercourses and drains filling up with silt. Dust increases the risk of horses getting respiratory tract infections. Steep slopes and watercourses are more susceptible to erosion.

In urban stable yards, soil erosion is most often a problem in places where horses or people congregate and bare spots develop as a result, such as near gateways, drive ways and car parks, or at feeding points.

There are various ways to prevent or reduce erosion in urban stable yards:

- Sealing the surface by paving, asphalt, cement, dolomite, gravel or other hardened surface with drainage.
- Maintaining kikuyu or other tough grass and encouraging water drainage into a garden bed.
- Well constructed and drained yards with a base underneath a top layer of sand or other mix.
- Pasture cover in small paddocks, into which horses are let out into for a few hours (these may or may not be irrigated).
- Have stable-yard rules about using pathways and hardened surfaces for general work.

Bare patches, pot holes, dust or mud indicate that the ground cover is not adequate, and there is need for a change in stable management routine or a facilities upgrade. If the groundcover levels on grazing areas are less than adequate, this may be due to one or more reasons, such as low soil fertility or unsuitable soil pH, lack of desirable plants in pastures or poor pasture management practices, such as over-grazing.

Desirable pasture plants need reasonably good soil fertility levels as well as a soil pH that is not strongly acidic and low competition from weeds. The weed sorrel, for example, is an indicator of low soil pH, and this can be corrected by the addition of lime.

Soil tests are readily available and will assist in making decisions as to what to add to the soil (such as super phosphate or lime). They will also give useful information about what the soil may be deficient in, which could affect the nutrition available for grazing animals. Your local Natural Resources Management Board can tell you who can carry out tests in your area, or where you can send soil samples.

Considerations:

- Make sure that pastures are grazed evenly and not overgrazed.
- Keep a buffer between the grazing paddock and any watercourse, or at very least use good pasture cover to prevent soil and manure run off.
- Use small grazing paddocks only for short periods of time, to keep a grass height of at least 3 cm. This could mean frequent rotation between stables, yards and a paddock or if the stable yard is fortunate enough to have them, a number of smaller paddocks.
- Manage excess manure in grazing paddocks so horses graze pastures evenly and the pasture doesn't become rank in patches.
- Rotate the position of feeding areas and troughs so they are always on well covered ground, or alternatively, provide a hardened area or “pad” on which to feed.
- Prevent or reduce fence line 'tracking' by using double fencing or by keeping more than one horse in grazing paddocks.

- Pay special attention to areas where horses congregate (gateways, along fence lines, feeding areas) as they are more likely to bare the soil there. Surfacing these areas with crushed gravel or a harder material may be required.

Be especially vigilant of ground cover levels in fragile areas (steep slopes, water courses and wet soil areas) as these can be damaged more easily by horses. Remove horses immediately when there are signs of damage to the pasture or before ground cover levels get low.

Wet Areas

With the exception of sand, most soils get very soft when the soil is wet. If horses or stable workers over use wet soil areas, this can cause:

- 'Pugging' - holes left from hooves sinking into the soil, which damages soil structure and leaves a hard compacted soil when it dries out. Vehicle tyres will do the same. Pugging can also increase water ponding after rainfall, which leads to build up of bacterial and algal growth on the ground. When this runs off, it can contribute to water pollution.
- Damage to pasture plants and root systems of grasses e.g. 'skid marks' from horses as they slide into a gate or down a slope when playing.
- Development of bare areas which are prone to soil erosion, particularly along drainage lines.

Wet soil ('water logging') is mainly an issue in stable yards in higher rainfall areas, or where poor drainage exists e.g. yards and exercise arenas. The presence of a weed called Dock is an indicator of water logged soils.

It is important that horses are kept off seasonally wet (waterlogged) areas, wet seeps and drainage lines when the soil is wet.

Identify any areas of the property that are wet much of the year, become wet in winter or after heavy rain, including drainage lines. When preparing a property management plan, mark these areas on a map and look at ways that horse and vehicle access can be restricted.

Management techniques include:

- Temporary electric fencing to cordon off wet areas.
- Permanently fencing off wet areas so that horses can easily be kept out when the soil is wet.
- Increasing stable or yard time or agist horses off property during wet periods.
- Locating feeding and watering areas well away from areas that get wet.

Investigate ways to improve the wet areas:

- If badly pugged, re-seed pasture on these areas, or surface the area if it is used for work or traffic.

- Create garden beds, add swales, plant water logging-tolerant pasture plants to slow down, absorb and disperse excess water movement.
- In some cases, water logging can be reduced by soil treatments (e.g. gypsum) or installation of additional drainage systems, but this may be costly.

Steep Slopes

Steeply sloping land needs to be carefully managed as there is usually a high risk of soil erosion. It is also usually difficult to access steep land with vehicles and machinery. Stable yards on these properties are typically cut into a hillside and have terraces or 'cut and fill' building methods.

Ideally, stables, horse shelters or associated yards should be sited on land with a slope no greater than 1-in-10 metres, however, horses can, and are, effectively managed on steep land. It is more expensive to build, there are fewer options for grazing, and pasture management and stocking rates are smaller, but never the less, many well run stable yards exist on hillsides or steeper slopes.

Steep slopes are regarded as land with an incline of 15% or more in areas up to 1,000 mm annual rainfall, and above 12% slope in areas with more than 1,000 mm rainfall. Metropolitan councils will nearly always indicate the maximum property slope on which horses may be kept.

Where horses have access to steep slopes for grazing, bare areas can quickly develop, and horses' hooves can rip up plant root systems under wet conditions. If horses start to 'track' along fence lines that run down the fall line of steep slopes, there is a high risk of soil erosion. These issues can all be managed, but it is more intensive and potentially expensive than having horses on flatter land.

Pastures may not grow as well on steeper slopes if the soil is shallow or rocky. If the slope is too steep for seeding, fertiliser spreading and weed spraying, it will be more difficult to maintain good quality pasture for horse grazing. Property managers will need to do more work by hand if the areas cannot be accessed by machinery.

Plan how to restrict horse access to steep slopes, including any sloping land that has had soil erosion problems in the past.

- Fence these areas off so horse access can be restricted.
- Only graze horses on these areas for short periods, if at all, when there is plenty of pasture cover, and the soil is not wet.
- Vegetate slopes.
- Keep a close eye on the pasture condition and remove horses if there is any sign of low ground cover or damage to pasture plants by hooves.
- Consider cross-grazing with sheep or other livestock to help manage unwanted weeds or rank grass growth.
- Consider sowing or encouraging perennial native grasses on these areas to help provide a hardwearing ground cover that will last well through summer.

Native Vegetation

Horse property owners have responsibilities under law to preserve and protect existing native vegetation, including forest, woodland, grasslands, wetlands and vegetation associated with watercourses.

Urban stable yards can also contribute to valuable habitat for our dwindling native plant and animal communities. It is important that such habitats, however small, are provided, preserved and managed.

Have a look at what is already on the property - native vegetation includes trees, shrubs and grasses- that could be habitats for animals, and keep an eye out for native animals and birds. Advice on creating or preserving habitats is available through your local council, Landcare group, Natural Resources Management Board or other natural resource management organisations or consultants that may be in your area.

Some ways to improve natural habitat in your urban stable yard include:

- planting local native species in mulched garden beds and as screening plants (check that any plants within reach of a horse are not toxic)
- leaving fallen hollow logs and erect bird nesting boxes
- providing grassed areas
- providing a water bath for birds
- expanding vegetation areas to build on any existing wildlife corridors in your district.

If you are planning to build or expand any stable yard buildings, information on how much native vegetation is to be removed and how the remaining native vegetation will be managed, forms part of the application.

Additional native vegetation can be planted to provide wind breaks, attract insect eating birds and contribute to the overall amenity of the stable yard.

Weeds

When applying for horse keeping permission or looking at ways to improve the management of your urban horse property, weeds are an important consideration. Weeds are a threat to native vegetation, reduce available grazing and detract from the amenity of a horse property. Abundant weeds in a paddock usually indicate that pasture quality is poor, and may also be an indicator of low soil fertility or acidic soil. Declared (proclaimed) pest plants need to be controlled by law.

Weeds take the place of desirable, edible and nutritious pasture plants. They may at worst be toxic to horses, or at best, be of lower feed value than pasture grasses. Over a period of time if not controlled, they take over as the dominant grasses, reducing nutrition available for grazing animals. Weeds also do environmental harm if they grow in native vegetation.

Some plants, including weeds and many common garden plants, are toxic to horses or may produce a 'positive swab' if consumed by performance horses that are subsequently tested. Take precautions to limit direct access by horses to plants that are not found in well managed pastures.

Weeds can be introduced onto the property (or exported from) through:

- hay & feed contaminated with weed seeds
- contractors coming in make deliveries or undertake other work
- seeds being carried by wind, water or birds, or
- less likely, by visiting horses who may not have been well groomed or had their hooves or boots cleaned.

It may not be possible to completely prevent weeds entering the property, but reasonable steps can be taken, and there needs to be an annual plan in place.

Considerations:

- Find out what weeds are known to occur in your district/region, and which would be a problem if they came on to your property.
- Identify weeds that are already on the property, and make sure these are actively managed or controlled.
- Isolate/quarantine new horses coming onto the property. It is good practice to isolate new horses for 10-14 days after arrival to ensure that they are not harbouring disease or other problems. It will also ensure that any seeds from unknown plants present in the horse's gut system, or residue from unknown veterinary drugs, will be eliminated. Manure is collected and stored separately as part of the waste management and quarantine program.
It should also be noted that grooming and cleaning the hooves of horses moving on and off properties will assist in preventing the unwanted transfer of pest plants or diseases, such as Phytophthora or Branched Broomrape.
- Provide a separate tying up area or yarding for horses that may be day-visitors to stable yards, away from resident stock. Ideally this is located near the property boundary.
- When buying in hay or other feed, try to ensure it is weed free, or at least that comes from a property that is known not to have a weed problem. Depending on circumstances, it may be possible to grow and cut hay on your property.
- Designate the car park, float loading/unloading area, and cleaning near the entry/exit point for the property. This will reduce the amount of weed seeds being carried through the property by contractors and visitors. It also acts as a biosecurity control point for other diseases or contaminants. Surfacing the area manages erosion and acts as a barrier for weed seeds.
- Put up signs or use other means to communicate your weed quarantine precautions to contractors, clients and visitors. Provide a cleaning down area for tools and machinery if this is determined necessary.

Water Management

Intensively used areas on horse properties such as stable yards, arenas and horse yards have a lot of hoof traffic on the ground. Unless the ground on these areas is stable or surfaced with a hard-wearing material, there may be problems with mud, dust and/or soil erosion. Soil erosion and water runoff from these areas can lead to pollution of watercourses, including public drains, dams and creeks if management regimes and facility design features are not put into place.

Horse property managers will need to work out how water will be managed over the year on the property.

Considerations:

- How much water (in kilolitres) will you need each year?
- How will you get water? (note all sources including rainfall, dams, mains supply and bores) Is there a role for recycled water or grey water to be used in the enterprise?
- How will you store water- permanent or portable tanks, or in dams?
- How will you use water – consider water saving devices, water reticulation systems, how will horses access a clean, constant fresh supply? Do you have wash bays, a horse blanket laundry, a stable yard garden which could improve the way water is used?
- How will you manage waste water and prevent it from entering storm water?

As you plan your stable yard water requirements, it is worth checking the SA Water website for any water saving tips and rebates that may be available.

Water Quality

Water quality is important for healthy horses. Some dams and bores may have a high salinity level making them unsuitable for use as horse drinking water supply. The Adelaide & Mount Lofty Ranges Natural Resources Management Board (AMLR NRM) provides a free service for horse property owners to test farm water (bore, creek, dam, farm tank) for salinity levels.

The chart below outlines the average tolerance rates of different farm animals.

Courtesy PIRSA

Animal	Salinity tolerances of livestock (mg/L of total soluble salts)		
	Maximum concentration of healthy growth	Maximum concentration to maintain condition	Maximum concentration tolerated
Sheep	6 000	13 000	***
Beef cattle	4 000	5 000	10 000
Dairy cattle	3 000	4 000	6 000
Horses	4 000	6 000	7 000
Pigs	2 000	3 000	4 000
Poultry	2 000	3 000	3 500

Approximate Conversions:

1,000mg/L = 1,785 EC 2,000mg/L = 3,570 EC 3,000mg/L = 5,355 EC
 4,000mg/L = 7,140 EC 5,000mg/L = 8,925 EC 1mg/L = 1 part per million

How much water do you need for your stable yard?

A horse may drink 25-45 litres per day in hot weather. Like people, horses will vary how much is drunk according to air temperature, water content in feed, size, age, health status and workload. Pregnant and lactating mares will drink more. Water will also be used for washing down horses after work, laundry, gardens and some may be held in reserve for fire fighting.

To find out your average rainfall, contact your local NRM office or information can be found on the Bureau of Meteorology website www.bom.gov.au or by contacting their office on Tel: (08) 8366 2600.

Stable Yard Design Features to help protect water quality

Stormwater is rain or melted hail that has flowed across land or structures. It is the name used for rainwater before it enters a watercourse, which includes drains, creeks, rivers, lakes, dams or the ocean. These water bodies are considered a resource and are valuable to our community. A certain amount will also soak into the ground and into our aquifers.

To help protect our natural resources, stable managers will need to consider how they can help protect our state's water resources to ensure that only 'clean' water, that is water that does not include any contaminants, enters the public stormwater system.

Ideally, stables, horse shelters or associated yards should be sited at least 50 metres from a watercourse.

Considerations:

- Gutters and downpipes to divert stormwater and roof water away from structures.
- 'Clean' stormwater discharged directly to the public stormwater system or to a rain water tank, and 'dirty' stormwater discharged to a pollutant treatment device (via

drains, gutters, spoon drains or bunds which can be made using a variety of materials, including earth and ground covers).

- Use of garden beds to absorb storm water, filter dust, provide wind breaks and amenity.
- Surfaced work and traffic areas.
- Defined hardened surface entrance/exit gateway for vehicles, floats & horses to reduce 'drag out'.

Ideally, in an urban stable yard, stormwater should not travel over the ground before entering a drain, as the flowing water picks up manure, fallen leaves and other contaminants on its way into the public watercourse. It is important that manure does not enter watercourses (refer to legislation: Water Quality Environment Protection Policy).

Instigating 'stable yard rules' about using pathways and areas to be used for the leading, grooming and attendance to horses reduces impact on surfaces unable to withstand heavy traffic.

Creek lines, Dams, Drainage Lines & Stock Crossing Points

When horses are allowed to frequently walk across, congregate or play and frolic through watercourses, their hooves can easily disturb the fragile ground in these areas and lead to erosion problems and disturbance of stream beds and the banks of streams & dams or erosion gullies. To a similar extent drainage lines or low lying depressions that funnel water also require consideration when keeping horses.

Where horses need to be able to cross watercourses or drainage lines on the property, crossings should be carefully sited, designed and constructed to prevent harm to the watercourse. It may be an option to use natural crossings i.e. places that have a hard base or stable base of rocks or install a culvert.

When managing a stable yard, plan to regularly remove manure. Manure left in areas or which has been allowed to build up on slopes directly running off into a watercourse can pollute the watercourses as nutrients and pathogens run off, especially during periods of heavy rain.

Research has shown that young animals, including foals on lactating mares, can affect water quality through the introduction of *Cryptosporidium* and *Giardia* from their manure. Young animals have much higher levels of these pathogens than adult stock. Careful consideration needs to be given to planning the design and layout of paddocks on properties with foals, and using rotational grazing rosters to ensure that lactating mares with foals are not left in paddocks with unprotected creek lines.

Considerations:

- Plan to fence off watercourses and riparian areas, dams, erosion gullies, etc as part of the property management plan.

- Identify drainage lines or other low lying areas where water may flow and consider how to manage these as part of the horse keeping enterprise.
- Set up a reticulated water system on the property, which feeds to water troughs rather than allowing horses to access dams and creeks.
- Manage access to and/or across watercourses. This could be through installing stock crossing points or dam entry points. Adding a gate system provides additional management options.
- Culverts are an option, although these are likely to be more expensive to construct.

In South Australia, watercourse crossings are regarded as a ‘water affecting activity’ under the Natural Resources Management Act so advice should be sought as a permit may be required.

Useful links:

www.sawater.com.au/SAWater/Environment/WWM/ (Water Wise Measures)

www.sawater.com.au/SAWater/YourHome/SaveWaterInYourHome/rebates_overview.htm

Adelaide & Mount Lofty Ranges NRM Board www.amlnrm.sa.gov.au

EPA Water Quality Environment Protection Policy www.epa.sa.gov.au/legislation.html

Pollution Prevention

Property owners applying for horse keeping permission or development approval for expansion will be required to provide information to their council on how pollution will be managed. Tips, ideas and considerations are located throughout this resource which will help applicants, or those seeking to improve their management regimes.

The types of questions that will be asked include:

- Outline any chemicals to be used, where they will be stored and how accidental spills will be contained and controlled.
- Describe how stormwater will be managed to separate clean stormwater (e.g. from roofs) from dirty stormwater (e.g. stables, manure) and what form of treatment will be provided for dirty stormwater.
- Outline how potential impacts will be managed, including manure management (i.e. frequency of disposal, how and where manure will be stored, and method of fly control).

It will be useful to review your current or proposed horse keeping enterprise to identify any other potential sources of pollution and how these will be managed.

Air Quality

Air quality refers, amongst other things, to the lack of undesirable odour or smell. There is only one council which also considers the air quality required for horses. Playford Council

requires that *'sufficient fresh air is considered for each horse without creating a draft; that stables are constructed with one square metre of ventilation area for every 13 square metres of floor area, and vents be located 2.1 metres above the finished floor level'*.

Air quality, for humans and horses on site and for neighbours is an important consideration in urban stable yard management regimes.

Odours

For people not involved with horses, it may be a challenge to accept the 'farmyard' odour that may accompany horse keeping. Not all odours are considered unsavoury in nature, with many people relishing the smell of hay, horses and stable yard garden plantings.

Manure storage smell in stable yards can be reduced or almost eliminated with good design and daily management practices (refer to Section 8: Dealing with Waste).

When applying for permission or improving the way your existing stable yard is managed, thought can be given to sources of potential air quality issues for neighbours.

The primary sources will be:

- stables, if not regularly and fully cleaned will have an odour from urine build up, &
- manure storage.

Urine when exposed to the air and oxidising can cause a pungent ammonia smell. Concentration over time can lead to localised air quality problems and respiratory distress in horses. Urine smell can be reduced or almost eliminated with good daily management practices.

Considerations:

- Use of professionally fitted rubber stable mats, avoiding urine seeping into floor cracks or pooling in micro- divots in the cement flooring.
- Selection of the best quality bedding that can be afforded, which has features of high urine absorbency and low dust particles.
- Use of enough bedding to soak up urine and removal of all urine soaked bedding each cleaning.
- Cleaning stables regularly, two or more times per day.
- Incorporating eco-friendly livestock urine deodorizer or lime dressing of urine areas into cleaning regimes.
- High absorbency livestock eco-friendly bedding product could be applied onto only the common wet spot each clean to particularly absorb any dampness from partially wet bedding or a damp floor.
- Opening stable doors or windows wide when possible to allow natural sunshine in.

- Requiring all urine in non-stable areas to be cleaned up as soon as it is produced. Cleaning regimes may include dilution with water and deodorizer applied with eco-friendly products or lime.
- Training horses to urinate on a 'special spot' (as racehorses learn to do when strappers place a horse in a straw stall & whistle to encourage urination prior to a race). Many horses can learn to do this as part of a pre-exercise routine, therefore giving the stable an opportunity to remain drier.
- Reviewing the horse's diet or health status if particular horse's urine has an extra strong smell.

Useful Link:

www.wikihow.com/Train-a-Horse-to-Urinate-on-Command

Dust

Poorly managed stable yards can be a source of dust, creating a nuisance for neighbours. Some dust particles you can see, which originate from unsurfaced saddling up areas, riding arenas, busy dirt driveways and horse paddocks that do not have ground cover.

There are also dust particles which you may not be able to see. These fine particles suspended in the air are responsible for respiratory & airway disease in horses and can affect stable hands. Sources include spores found in hay, dusts caused through making or mixing feeds and as yards are being swept or stables cleaned.

Horses walking up and down in their stables or yards repetitively will raise dust. This pattern of behaviour in a particular individual horse indicates stress and would require further investigation as to the cause (usually boredom, lack of stimulation, lack of exercise, too far from other horses, etc).

All horses moving around in a stable will raise fine particle dust which is the same dust that can cause respiratory disease. Selection of low dust bedding and ensuring that the stable design allows for frequent exchange of air through doorways, windows and panels will significantly reduce invisible dust particles suspended in air.

Good stable yard design and day to day management regimes will reduce or eliminate most visible dust found in an urban stable yard.

Considerations:

- Paving or sealing heavy traffic areas.
- Planting drought resistant grasses such as Kikuyu or installing a garden bed.
- Use of dust free product on riding arena surfaces, or installing a sprinkler system, or spraying with a commercial dust suppressant solution.
- Dampen down bedding (e.g. sawdust) after morning clean out if a low/no dust bedding is not used.

- Selection of fodder that has lower dust properties, and soaking hay prior to feeding.
- Storage of feed in sealed bins (also required to manage vermin).
- Investigate use of mechanical vacuums, blowers or other options for keeping the stable yard clean without raising dust through constant sweeping or wasting water through hosing down.

Depending on the water supply to the property, government restrictions aimed at conserving water may prohibit activities such as hosing down of driveways. This is not a viable long term option for most property owners.

Other airborne particles

Chemical sprays and related spray drift problem are unlikely to be an issue in a regular urban stable-yard. If small paddocks are involved, these will have an annual spray program, which should be carried out on days of no wind, and usually by a trained contractor. Toxic dust particles such as may emanate from a manufacturing business, are also unlikely to be found as part of normal stable yard operations.

If you are applying for council permission for horse keeping, it is important to mention these facts so that the planner assessing the application can eliminate potential air quality problems from these sources.

Pest Animals

Many animals & birds introduced into Australia which have now become pests feature in urban areas, including foxes, rabbits, rodents, starlings, sparrows and pigeons. Their harmful effects include harm to native animals and their habitats and indirect effects such as soil erosion and decline of water quality. The presence of pest animals can also reduce the value of a property.

Pests such as foxes and rabbits are declared (proclaimed) pest animals in South Australia under the Natural Resources Management Act and property owners have responsibilities to control pest animals.

Flies, mosquitoes, rats, mice and pigeons are examples of other insects, animals and birds which, in numbers, are pests which require management.

Considerations:

- Find out what pest animals are known to occur in your district, and which of these you should be prepared to control on your property. Your local Council or Natural Resources Management Board should be able to give you this information along with recommended control strategies.
- Keep an eye out for signs of the presence of pest animals on your property and identify them.

- Carry out the recommended pest animal control strategies for each type of pest animal. This may mean doing particular measures at specific times of the year, or at times when pest animal numbers reach a certain level.
- Regularly monitor pest animal activity, and modify your control programs accordingly.

Mosquitoes

Mosquitoes are annoying and can potentially transmit diseases to both humans and horses. Mosquitoes lay eggs in stagnant water, long grass and damp soil, so it is important to reduce or eliminate potential breeding grounds. Mosquitoes do not breed in moving water e.g. water aerated by a fountain and are poor flyers, so wind in the form of a stable fan will reduce airborne mosquitoes.

Considerations:

- Inspect your stable yard for potential breeding sites. These may include old tyres, damp soil behind dripping taps, water pooled in the bottom of garden pots, gutters that do not fully drain or are full of leaves and uncovered tanks.
- Clean drinking water troughs, bowls and bird baths frequently
- Tip over buckets and bowls of water that are not needed.
- Maintain drains & clean out sumps or other water control devices, checking that water does not pool. Drains are a known common breeding site for mosquitoes in stable yards.
- Check the yard for pot holes, open drains and ditches that may pool water and therefore encourage mosquitoes.
- Add a small amount (capfuls) of apple cider vinegar to water troughs and tanks, this will kill larvae.
- There is a large selection of insecticide products on the market for the reduction of flies and mosquitoes, read the label carefully before applying.

Flies

Flies typically bite horses on the lower legs and bellies. They breed in sites which include old or rotting straw or straw hay, stored manure, wet and decaying spilled grain and fermenting piles of vegetation and weeds. Day to day hygiene in the stable yard is very important to reducing fly populations.

Considerations:

- Ensure manure bins have tight fitting lids or have other fly management design features in place.
- Fans placed above a barn entrance, that direct a downward and outward air flow will keep flies from entering barn style stables.
- Composting piles are too hot for flies to breed and kill fly larvae.

- Feeds and hays that are dampened down should be covered until ready for use.
- Use fly screens in doorways of tack rooms, feed rooms and related areas where possible.
- Use a combination of low-tech fly control aids including fly paper, fly traps and fly bait stations. These are good to keep track of fly numbers. An increase in numbers may indicate that hygiene needs improving and an application of insecticide may be needed.
- Use of higher tech bug zappers and electronic devices will reduce but not eliminate flies.
- Topical solutions applied directly to horses will provide relief but do nothing to control flies breeding or to kill them.

If flies and mosquitoes are a problem in your stable yard or district, then consider horse rugs now available that are impregnated with repellent and/or patches that attach to horse's manes that contain repellent. These products will often cover both mosquitoes and flies but do not kill them or eliminate their breeding grounds.

Rats and Mice

Rodents can cause great damage to stable electric systems and building structures and equipment. They can eat or foul horse feed, chew horse rugs, leather saddles & fittings and spread disease. It is quite easy to see if rats and mice are present through their distinctive droppings and chew marks on wood or leather.

Considerations:

- Stable hygiene is very important, including cleaning up all spilled grain and removal of uneaten feed.
- Keep all grain or manufactured feed in bins with tight lids. Do not keep more feed on the property than you can store in this way. In urban stable yards with little or no extra secure storage space, regular deliveries of feed can easily be arranged (but does incur more cost).
- Store hay in a separate building to the horses. Rodents seek out the grain in the hay. It is also a good way to manage fire risk.
- Build, or inspect and repair existing buildings to reduce or eliminate any small openings that mice and rats can fit through e.g. around pipes, gaps in foundations. Steel wool is effective to plug small gaps.
- Eliminate nest sites- spring clean regularly.
- Keep grass short, trim overhanging trees.
- Compost bins must be of the closed in type or well constructed, including mesh or a cement base underneath to prevent rodents digging in from the bottom.
- Keep the bottom half of the stable door closed to prevent rodents entering, even when the horse is not present. This assumes that the door and door frame fit flush.

- Cats and dogs such as fox terriers do catch rodents, but rarely keep up with the rate at which rodents can multiply. Be careful that food and water left out for the cat or dog is not what is attracting the rodent in the first place.
- If you leave food out for other wildlife, e.g. birds, place the food on a pole and put a metal collar on the post so that rodents cannot climb up.
- Use humane traps or bait. Read the label carefully and be aware that dogs may be attracted to bait, causing serious poisoning or death. There are traps on the market where the bait can be inserted inside, so only accessible to rodents & safe for dogs & cats.
- All of the tips provided for managing mosquitoes in relation to pooling of water, apply to rodents, which use pooled water for drinking.
- Provide advice to staff or volunteer stable hands on how carcasses should be handled and disposed of to avoid further disease spread.

Foxes

Foxes are scavengers and have an impact on native wildlife, may dig up gardens or set dogs barking as they pass by. Foxes are a pest and under the Natural Resources Management Act and are required to be controlled if they are in your stable yard.

Considerations:

- Stable hygiene is very important as it removes opportunistic food for foxes.
- Avoid leaving food out for other pets or wildlife.
- Confine chooks or other small pets in a fox proof cage. Chicken wire is not fox proof. Weld mesh is preferred, with a cement floor and a lock which cannot work loose easily. Be aware that foxes can dig under or climb over wire cage walls – so construct cages appropriately.
- Avoid using blood & bone or fish products to improve garden soils where foxes are prevalent. The foxes will dig up gardens dressed with these products, looking for a carcass.
- Inspect your stable yard for anywhere that foxes can build a den, which is a hole with one entrance. Block up holes under or between sheds or stables to prevent dens being made.
- Keep your stable yard clear of rubbish or the garden from becoming overgrown.
- Apply fox repellents available from your Council or garden centre around the stable yard (follow instructions carefully).
- An effective natural way to deter foxes is by applying white pepper to areas they frequent, gateways they pass through and on their droppings.
- For persistent problems contact your Council or the Adelaide & Mount Lofty Ranges NRM Board to plan an eradication program specific for your property.

Snakes

Snakes will be attracted to stables if rodents or other food sources are present. Most snake species will often only display defensive behaviour if they feel threatened or are provoked.

If you come across a snake, and there is opportunity to leave it in the hope it may move away, this may be the best option. Alternatively, you may choose to contain the snake. This must be done from a distance with no possible chance of injury to yourself or the snake. This could be closing a door or putting a cover on the drum in which you found it. Do not provoke the snake in any way. An expert can then be called in to remove the snake.

There are a number of wildlife carers & snake rescue services that will come & collect a snake safely if it is found on your property or in your home. They will also provide advice on how to reduce snake visits with information specific to your property. Snakes are protected species and as such should not be killed.

Considerations:

- Stable hygiene is important. Keep stable yards clean and free from rodents, which are a food source for snakes.
- Mowing lawns, slashing grass and keeping gardens well maintained reduce places for snakes to hide.
- Wood piles, compost heaps and mulch should be stored away from stables.
- Keep the stable yard free from any timber, corrugated iron, old tyres and drums lying about.
- Inspect buildings for holes that snakes may enter through – same as for rodents. Close off holes, install rubber strips under doors, remember to check roofs and roof spaces. Block access to any dark, damp areas under verandas, floorboards or other hiding holes.
- Place mesh with very small holes around the base of ground level bird cages to prevent snakes or rodents entering.
- Ground level garden ponds attract snakes as frogs and insects (mosquitoes, flies) are a food source.
- If snakes persist in entering your stable yard, seek a visit from a snake removal expert who can provide advice specific to your property.
- Lay moth balls where snakes are frequenting. These are toxic for snakes, small children and dogs – so consider carefully where they are placed.
- Commercial snake repellent can be used but will be useless if no other action is taken to improve stable hygiene and keep the stable yard tidy.
- Another alternative is to lay fine netting around places snakes will seek feed, e.g. where rodents may eat fallen grain or birdseed. The netting will entangle the snake and then a professional snake catcher is called to relocate the snake. The snake will die if left out in the sun or cold, so frequent monitoring is essential.

8. DEALING WITH WASTE

Horse keeping areas need to be regularly cleaned and wastes disposed of appropriately. As part of preparing a property plan or applying for development approval, a detailed plan of how stable yard waste is to be managed will be required.

In South Australia, property owners also have responsibilities under legislation (Environmental Protection Authority's Environmental Protection (Water Quality) Policy 2003) to avoid discharging or depositing waste or pollutants into any waters, bores or on to land where it might enter the water. Horse manure is considered one of these pollutants.

Regular removal of manure prevents surface water contamination, assists with parasite control and reduces opportunities for fly breeding.

Horse manure and soiled bedding from stables and yards can pollute watercourses and other water resources via water runoff, if the waste facilities are not well sited and designed. Good waste storage and management is also important to avoid odour problems, which could offend neighbours. Apart from that, it can build up and become unsightly. Veterinary medical waste will need to be stored & disposed of separately.

Manure and bedding from sick horses should be collected last to reduce the likelihood of spreading illness to other horses. In some cases, the manure & waste from ill horses may need to be kept totally separate and disposed of separately.

Note the **City of Marion Horse Keeping Code** requirement:

'Measure should be taken to ensure that manure is:

- *collected a minimum of twice daily and as often as necessary*
- *removed from the property at least weekly.*

Manure may be removed from the premises by:

- *an industrial waste company*
- *taken to a licensed waste reception facility (receipts must be retained as proof of disposal).'*

Manure Management

A well designed manure & waste storage area is necessary at every property that has horses in yards or stables. Horse manure and soiled bedding should be stored in a manner that prevents runoff from entering the water course.

Manure storage can be a source of undesirable odour. In the scale of things, horse manure is not that bad, but when a large amount has to be collected and stored in an urban environment, a more structured management regime needs to be organised rather than hoping local gardeners will pick some up. Councils will be looking for enclosed containers

with short on-site storage periods. Councils in some metropolitan regions may require that evidence is provided that removal is done weekly.

Collection of manure and stable yard waste is a labour intensive activity. Given that urban stables are cleaned out twice or more each day, care must also be taken that the people cleaning the stable are undertaking the tasks as safely as possible.

Workplace Safety Tips:

- A regular review of the individual tasks required to collect & handle manure and stable waste should be undertaken.
- Employers or stable yard owners should look for any problems, determine measures to reduce risk and implement changes in consultation with staff, owners who may care for their own horses and/or volunteers.

An example of poor practice includes lifting heavy buckets above shoulder height for emptying into manure storage bins or having to use broken or wrong sized equipment. In the not too distant future, horse manure vacuum cleaners, which are gaining popularity for pasture cleaning, will evolve in design to be more suitable for in-stable use.

Manure & stable waste storage area considerations:

- A well designed manure bay or container. If budgets permit, consideration of a newer type of purpose built container such as Biobin™.
- A roof to prevent rain falling onto the waste and creating runoff. Some councils require this to be a tight fitting lid on an industrial bin.
Or: be located under a roof and sealed with a lid that allows manure to dry, but prevents pests and vermin access.
- Have a berm (edging) around the area, to contain any accidental leakages by liquids.
- Walls and base of impervious material. This means that the manure bay is incapable of being penetrated by water.
- Be sited away from water courses to avoid the risk of water pollution.
- Allow easy access by vehicles or other machinery which transfers the waste off-property or to another part of the property for composting.
- Consider weekly removal by a commercial contractor, Stables in the Cities of Marion & Salisbury for example, will require this. This is the choice of many racing stables who keep receipts as evidence of regular removal.
Sale of manure bags by the gate is possible, but this method is labour intensive and unreliable as a regular disposal option. Collection by a community organisation who may want horse manure, e.g. community gardens or neighbours & friends, is an option, but collection may only be occasional and useful only as a support option.
Composting, or using garden composting bins, is an option for one or two horses only.
- Spray livestock eco-friendly deodorizer around the bin as part of cleaning regimes.
- Consider landscaping & screening which incorporates fragrant trees & shrubs.

Stable yards managers should also plan to assist amenity and reduce watercourse potential pollution through keeping the immediate area footpaths or public road entrances used by the stable yard clean.

Tips:

- Clean out horse's hooves prior to leaving the stable complex.
- Ensure waste or other material is swept away from (not into) the gutter.
- Collect all manure that has been discharged onto public areas near the stable yard.

Horse floats should not be cleaned out on the street or in public car parks where manure may enter the public stormwater drain system. Horse manure from floats is disposed of in the stable yard manure bin. This may include taking manure from a horse float back to the stable yard after visiting a public area such as a beach.

Manure Management in Small Paddocks

Stable managers need to instigate a program to regularly collect manure from areas where it tends to build up, such as yards, shelters, feeding areas etc.

Options to deal with the manure, in addition to those available for stable yards, include:

- Harrowing manure in paddocks, to spread it out and break up the pads. Dragging around an old gate does this job quite well.
- In higher rainfall areas, encourage dung beetles.
- If pasture growth is uneven with rank patches, consider slashing the pasture or cutting hay from the paddock.

It is not necessary for all manure to be removed from paddocks. Manure is a natural fertiliser, and what is kept helps maintain soil fertility and therefore pasture health. The aim is to remove or manage it often enough from paddocks that build up does not occur.

There are provisions within the Local Government Act which allow for fining horse owners for leaving manure in such places as car parks at beaches. If you intend to take horses on to public land, it is a good idea to familiarise yourself with the appropriate "rules".

Useful Link:

Community Gardens

<http://communitygarden.org.au/south-australia>

Veterinary & Chemical Use

The use of chemicals needs to be carefully managed, mindful of the dangers, including run off into the watercourse. With good stable yard & grounds management, integration of building design, good hygiene and use of natural or non-chemical alternatives, chemical use can be significantly reduced.

Agricultural and chemical products include many veterinary products, fertilisers, pesticides, insecticides and fuels. Property managers need to be aware of, and comply with, regulations that apply to the storage and transport of chemicals and veterinary products. Laws with environmental provisions place a duty of care on anyone who uses or disposes of agricultural and certain veterinary chemical products and fertilisers.

Any person using or disposing of these products needs to take appropriate measures such as observing label instructions, giving consideration to prevailing weather conditions and maintaining equipment used for applying them.

The correct procedures for safe storage and transport of chemical and veterinary products are given on the container labels or on Material Safety Data Sheets (MSDS) available from retailers or manufacturers. Many urban stable yards are also work places and may have a requirement for some staff to have undertaken 'Chemcert' or equivalent training in chemical handling.

If you need more information about any product, speak to the supplier of the product and if it is appropriate, contact your Council, veterinarian, Department of Primary Industries and Resources or Natural Resources Management Board.

Disposal of Used Chemical & Veterinary Product Containers

In South Australia, there are a range of services available for the disposal of used chemical and veterinary product containers, such as 'Drum MUSTER', hazardous household waste disposal days held in various Council areas, and the hazardous household waste depot at Dry Creek.

“DrumMUSTER’ is the National program that has been set up for the collection and recycling of cleaned eligible non returnable crop production and on-farm animal health chemical containers.

Zero Waste SA with the assistance of Local Government undertakes free household hazardous waste collections to help you dispose of your unwanted chemicals in an environmentally safe way. You can also take items to the household hazardous waste depot. The Zero Waste website has information about the depot, which is located at Dry Creek and is open on the first Tuesday of every month.

The Zero Waste website also has useful information on the recycling and alternatives to chemicals.

Considerations:

- Read the labels of any veterinary or chemical products you currently have, or intend to obtain, so that you understand the correct/appropriate methods for storing, transporting, using and disposing of them.
- If you need more information about any product, contact the supplier of the product.
- Check with your local Natural Resources Management Board if there are any guidelines that apply to using particular chemical products in your area.
- Make sure you have a suitable safe, secure area to store and prepare your veterinary and chemical products e.g. chemical storage shed with concrete floor or lockable rodent-proof cupboard.
- Clearly sign any chemical storage areas.
- Before using any 'restricted' chemical products, make sure you have or obtain the necessary licence e.g. Chemcert or equivalent.
- Make sure you have the right sort of equipment for applying the product, properly calibrated and kept in good working order and including safety clothing and breathing mask.
- Always apply chemical products according to the label instructions. Consider weather conditions when applying herbicides, to avoid spray drift and other problems.

Work out an emergency response plan for chemical spills or leakage in your stable yard and have spill response equipment (e.g. absorbent material such as cat litter) located close to the storage area. This should prevent the contamination entering the storm water drain.

Veterinary medical waste

It is inevitable that there will be waste products as a result of veterinary treatments and normal husbandry (such as regular worming), in addition to chemicals such as pesticides, fertilisers etc.

Medical waste (including veterinary waste) in stable yards includes sharps, needles and veterinary use syringes. It does not include used wound dressings, bandages or wrapping.

The Environment Protection Authority (SA) has guidelines for the storage, transport and disposal of medical waste (see link below to the full guide).

Considerations:

- Store all containers of medical waste in a secure location.

- Treat any waste mixed with medical waste, as medical waste.
- The disposal of sharps should not incorporate cutting, bending or any other manipulation that could generate aerosols or splatter contaminated fluids.
- Place sharps into a suitable container that
 - is puncture-resistant, leak-proof, shatter-proof and able to withstand heavy handling ,
 - displays the universal biohazard label and has a label clearly indicating the nature of the contents,
 - has an opening which is accessible, safe to use, and designed so that it is obvious when the container is full,
 - is sealed when full or ready for disposal, and
 - can be handled without danger of the contents spilling or falling out.

Useful Links:

EPA SA Guidelines:

www.npsp.sa.gov.au/webdata/resources/files/EPA_medical_waste.pdf

Safe and Effective Use of Pesticides- a handbook for lifestyle landholders

www.epa.sa.gov.au/xstd_files/Water/Other/pesticide_lifestyle.pdf

Safe and Effective Use of Herbicides – a handbook for near water applications

www.epa.sa.gov.au/xstd_files/Water/Other/pesticide_water.pdf

PIRSA Fact Sheet- Disposal of Agricultural & Veterinary Chemicals

www.pir.sa.gov.au/_data/assets/pdf_file/0008/57806/Disposal_Fact_Sheet.pdf

Drum MUSTER www.drummuster.com.au/

ChemClear www.chemclear.com.au/

Zero Waste www.zerowaste.sa.gov.au/at-home/hazardous-waste

Hazardous Waste Depot

www.zerowaste.sa.gov.au/upload/household_hazardous_waste_depot.pdf

9. DISPOSAL OF DECEASED HORSES

When a horse suddenly dies or the owner comes to that difficult decision to end their life, there are many decisions around disposal to be made. This will be an emotional time, and have financial implications for the owner, so it is wise for stable yard managers to plan ahead to avoid poor decisions being made at a stressful and emotional time through lack of knowledge about options.

There will be logistical problems to overcome, and burial on site in the greater Adelaide region is not an option.

If the horse is insured, the company may have requirements to be fulfilled prior to euthanasia and disposal. This need to be clarified.

Discuss with your veterinarian the options for both euthanasia and disposal. Local veterinarians will know which contractors are able to undertake the disposal task and the most likely sites for burial or what other options are available and their likely costs.

If your veterinarian is from outside the district, they may need to work in collaboration with local veterinarians and contractors to ensure a smooth process from euthanasia to burial, especially as rigor mortis sets in within 2 hours. If the death occurs on public land or public agistment, local government may also become involved.

A suspicious death, perhaps due to an unknown disease or poisoning, will have a very different response in relation to disposal. Immediately advise your local veterinarian if you think the death is out of the ordinary. The veterinarian may advise the Department for Primary Industries that there is cause for further investigation. Samples for further testing could be required to be sent in. These samples are tested at no cost to the owner if a veterinarian determines it is a suspicious death.

In some circumstances, the police may become involved if an associated security breach or other suspicious activity is identified. Cordoning off and/or decontamination of the stable yard may need to take place in rare circumstances.

Euthanasia

If the option exists, a quiet area well away from family, staff or neighbour viewing will be required to quietly put down a horse. This area needs to be identified in advance and kept clear of other activities or access blockages. The selected site should allow easy access for either a vehicle and float or large equipment. Consider screens if vision needs to be obscured and have a sheet or tarpaulin available to cover the horse once it has been euthanized.

Large stable yards, as individuals or groups, may consider investing in a “sled” which can be used to slide recumbent horses along the ground on. Horses could be alive but unwell or deceased. Winches can be attached to the sled and recumbent horses more easily moved.

Options for disposal

On site burial: This will not be an option in the greater Adelaide region.

Off site burial considerations:

- Have ready details of people that will bury livestock. Make contact with a preferred contractor, advising of an euthanasia time if known.
- It is possible the owner may wish to remove the deceased horse for burial elsewhere. In this case, an ability to load the deceased horse into transport is required, or, if the horse is able to be led, the owner may choose to load the horse first onto the float, prior to euthanasia.
- Not all owners wish to be present – decide in advance whether this is their desire.
- If there is a float or covered trailer suitable for transport of a deceased horse, it is easier to roll the horse onto a tarpaulin or skid and pull the heavy tarp/skid/sled rather than attach anything directly to the horse. The horse is then taken to a pre-arranged site for burial.
- Commercial transport companies are often in a position to pick up and dispose of deceased horses. Check in advance as to their business requirements. Some companies only accept “walk on” cases.

There is no commercial opportunity to cremate a horse in South Australia

Checklist for Stable Managers:

- Discuss options for horse euthanasia and disposal with your veterinarian and clients who have horses with you.
- Make contact with any contractors or property owners in advance to find out their requirements for accepting horses for burial. Keep their numbers on file.
- If a commercial contractor is to be used, find out if any special requirements exist, including hours of business.
- Review individual horse insurance requirements.
- Pre-select a suitable quiet area away from view, as a site for euthanasia.
- Have readily available a large dark colour tarpaulins to cover a deceased horse and extras to use as screens if needed.

Useful link:

The Environmental Protection Authority has a Fact Sheet relating to on-farm disposal of carcasses. These guidelines have been compiled for use in a disaster situation like fire or drought, for large numbers of animals. The fact sheet has useful general advice, including land zoning, proximity of nearest bore and accessibility for earthmoving equipment.

www.epa.sa.gov.au/xstd_files/Waste/Information%20sheet/onfarm_disposal.pdf

10. BIOSECURITY, FIRE AND EMERGENCY PREPAREDNESS

South Australia has an Act of Parliament, The Fire and Emergency Services Act 2005, that requires that major declared emergency situations, responses and recoveries are planned for. In declared emergencies involving horses or livestock, PIRSA is the lead agency that will be called in to provide relevant coordination.

Biosecurity SA – Emergency Management has a sub-plan which requires the establishment of the Agriculture & Animal Services (AAS) Functional Service Plan. One of the key roles is to provide Animal Relief Services after major incidents, which in South Australia, is generally bushfires.

The key services provided are:

- Location, inspection and assessment of injured livestock as quickly and efficiently as possible.
- Determination and supervision of a strategy for the humane treatment of injured livestock, including euthanasia as appropriate. Supervision and liaison with relevant authorities on carcass disposal and clean up.
- Estimation of rural property losses and damage including buildings, fences, crops and fodder, to be reported in incident updates to the Minister for Agriculture, Food and Fisheries and the State Coordinator (SAPOL).

Horse property owners are responsible for preparing their own emergency response plans. These plans should cover emergency diseases and natural disasters. State Government, Local Government or community organisations such as Horse SA cannot prepare your stable yard plan for you, move horses during an emergency incident, organize float convoys or move horses on high fire danger days. The CFS can provide advice that will assist in preparing for a bushfire and putting your plan into action. Biosecurity SA can provide advice on preparing a biosecurity plan for a stable yard.

Horse SA has workshops from time to time to help you plan. Subscribe to the weekly newsletter to keep up to date (visit www.horsesa.asn.au), or visit Horse SA Bushfire Buddy website for helpful ideas.

Useful links:

Emergency Management SA

www.safecom.sa.gov.au/site/emergency_management.jsp

Biosecurity SA – Emergency Management

www.pir.sa.gov.au/biosecuritysa/emergencymanagement

Horse Biosecurity Glove box Guide

http://www.pir.sa.gov.au/__data/assets/pdf_file/0018/124326/HorseBiosecurity_Glove_boxGuide_09.pdf

Horse SA Bushfire Buddy

<http://bushfire.horsesa.asn.au/>

Horse Event Biosecurity Workbook (search under Manuals) and for online forms to fill in, go to the tool kit section

www.farmbiosecurity.com.au/toolkit.cfm

Animal Health Australia

www.animalhealthaustralia.com.au

APPENDIX I:**Environmental Sustainability Goals:
Check list for Best Practice Horse Keeping****Whole of property**

- ✓ A Property Management Plan for the management of natural resources is in place, actively used and reviewed (updated) annually.
- ✓ The number of horses on the property and the management system used has been determined by the land capability and the needs of the horse property manager.
- ✓ Approvals and permits are in place for horse keeping and property improvements.
- ✓ Horse facilities are sited and managed with consideration given to convenience and potential environmental impact, and through open communication with neighbours.
- ✓ A fire prevention program is documented and implemented throughout the year.
- ✓ An emergency response plan is documented, communicated to relevant persons and reviewed annually.
- ✓ Existing habitats are protected and enhanced for native plants and animals.
- ✓ Veterinary products and chemicals (pesticides, fertilisers etc) are stored, used, transported & disposed of according to labels, relevant legislation and recommended guidelines.
- ✓ An active program to prevent weeds entering or leaving the property is in place.
- ✓ Pest animals are identified and a pest specific control program is in place.
- ✓ A plan exists for the suitable disposal of deceased horses.

Paddock management

- ✓ All grazing areas have at least 70% (for soil susceptible to water erosion) or 50% (for soil susceptible to wind erosion) ground cover throughout the year.
- ✓ All grazing areas have quality pasture grasses and legumes with less than 10% weed species and no proclaimed plants.
- ✓ Proclaimed (declared) pest plants are identified and controlled and an active pasture weed control program is in place that is regularly monitored and reviewed.
- ✓ Horse access is restricted from seasonal wet (waterlogged) areas, wet seeps (boggy areas) and drainage lines while the soil is wet and soft.
- ✓ Horses are restricted from steep, erosion-prone slopes.
- ✓ Action is regularly taken to prevent manure build up in paddocks.
- ✓ No fence line tracking is evident.

- ✓ Horse feeding, watering and congregating areas are managed to prevent dust, mud and erosion.
- ✓ Paddock shelter and shade areas are managed to prevent dust, mud and erosion.
- ✓ Watercourses are fenced to restrict horse access.
- ✓ Stock crossings are selected and designed to prevent stream bed and bank erosion.

Intensive horse keeping

- ✓ Intensive horse areas are managed to prevent dust, mud, manure build up and stormwater/watercourse pollution.
- ✓ Horse manure and soiled bedding is stored in a manner that prevents water runoff entering or escaping from the area.
- ✓ Intensive horse keeping areas are regularly cleaned and wastes disposed of appropriately.
- ✓ Feed is stored in dry, sealed containers and is not accessible to vermin.
- ✓ Horse transport vehicles are cleaned out with waste collected and contained for disposal or recycling.
- ✓ Waste water from wash down areas does not enter watercourses or stormwater drains.

Useful Link:

HorsesLandWater www.horseslandwater.com

APPENDIX II:**CONTACTS**

Horse SA	www.horsesa.asn.au ; www.horseslandwater.com
Adelaide & Mount Lofty Ranges Natural Resources Management Board	www.amlnrm.sa.gov.au
Environment Protection Authority	www.epa.sa.gov.au
Biosecurity SA	http://www.pir.sa.gov.au/biosecuritysa
City of Adelaide	www.adelaidecitycouncil.com
City of Burnside	www.burnside.sa.gov.au
City of Campbelltown	www.campbelltown.sa.gov.au
City of Charles Sturt	www.charlessturt.sa.gov.au
Corporation of the Town of Gawler	www.gawler.sa.gov.au
City of Holdfast Bay	www.holdfast.sa.gov.au
City of Marion	www.marion.sa.gov.au
City of Mitcham	www.mitcham.sa.gov.au
City of Norwood, Payneham & St Peters	www.npsp.sa.gov.au
City of Onkaparinga	www.onkaparinga.sa.gov.au
City of Playford	www.playford.sa.gov.au
City of Port Adelaide Enfield	www.portenf.sa.gov.au
City of Prospect	www.prospect.sa.gov.au
City of Salisbury	www.salisbury.sa.gov.au
City of Tea Tree Gully	www.cttg.sa.gov.au
City of Unley	www.unley.sa.gov.au
City of Walkerville	www.walkerville.sa.gov.au
City of West Torrens	www.wtcc.sa.gov.au

APPENDIX III:**GLOSSARY OF TERMS**

Amenity	: how pleasing to the eye or how “good” the overall enterprise looks.
Berm	: an edging or barrier constructed to contain any accidental leakages by liquids.
Harness	: equipment associated with driven horses.
Pugging	: holes left from hooves sinking into the soil, which damage soil structure and leave hard compacted soil when they dry out.
Tack	: equipment associated with a ridden horse.