

Australian Jockey Club
Stables and Training Facilities
Environmental and Residential
Amenity, Odour Management Plan

ISSUE 2 | September 2010

Arup
Arup Pty Ltd ABN 18 000 966 165

Arup
Level 10
201 Kent Street
Sydney
NSW 2000
Australia
arup.com.au



This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 220880

ARUP

Document Verification

ARUP

Job title		Stables and Training Facilities		Job number		220880	
Document title		Environmental and Residential Amenity, Odour Management Plan				File reference	
Document ref		220880					
Revision	Date	Filename					
Draft 1	13/09/10	Description	First draft				
			Prepared by	Checked by	Approved by		
		Name	SBH	BC	NH		
		Signature					
Issue	17/09/10	Filename	Odour Management Plan-issue 160910.docx				
		Description	Issue				
			Prepared by	Checked by	Approved by		
		Name	SBH	BTC	NH		
		Signature					
Issue 2	17/09/10	Filename	Odour Management Plan-issue2_170910.docx				
		Description	Issue 2				
			Prepared by	Checked by	Approved by		
		Name	SBH	BTC	NH		
		Signature					
		Filename					
		Description					
			Prepared by	Checked by	Approved by		
		Name					
		Signature					
Issue Document Verification with Document ☒							

Contents

	Page
1 Executive Summary	1
2 Introduction	3
2.1 Project Description	3
2.2 Existing condition – Odour and dust	4
3 Statutory Requirements	4
3.1 Protection of the Environment Operation Act 1997 (POEO Act) and Regulations	5
3.2 DECCW Technical Framework - Assessment and Management of Odour from Stationary Sources in NSW	5
3.3 Royal Randwick Racecourse Development Control Plan 2007	5
4 Odour Assessment	7
4.1 Potential odour and dust sources	7
4.2 Potential odour emissions	8
4.3 Dust generation	11
5 Management measures	12
6 Recommendations	13
7 Conclusion	14

1 Executive Summary

This report has been produced in response to the Director General's Part 3A Environmental and Residential Amenity, Odour Management Plan Planning requirements MP 10-0098 for the construction of the new Stables and Training Facilities on the Eastern side of the Royal Randwick Racecourse.

It addresses DGR 6 of the *Project Application for the construction of a New Stable Facility (App N° MP_100098)* in regards to odour and dust;

- *DGR 6. Environmental and Residential Amenity*
 - *The EA must address any likely solar access, acoustic privacy, visual privacy, view loss, odour and dust issue and identify mitigation measures necessary to achieve a high level of environmental and nearby residential amenity*
 - *The EA shall address the siting of the development in relation to existing significant landscaping onsite and provide a site tree survey and arborist report*
 - *The EA shall address the degree of intensification of the existing use and the impact on surrounding residential uses including (but not limited to) any changes to hours of operation, increased patron capacity, types and frequency of non-race day functions / events*
- *Appendix B Plans and Documents required to accompany the Application*

18. Odour Assessment and Odour Management Plan

Odour Assessment and Odour Management Plan – prepared by a suitable professional person/body in accordance with Department of Environment Climate Change and Water guidelines identifying all odour sources associated with the proposed development and addressing the collection, storage and disposal of manure and include details of odour control and management practices.

This report incorporates an Odour Assessment and Odour Management Plan in accordance with DECCW guidelines identifying all odour sources associated with the proposed development addressing the collection, storage and disposal of manure and includes details of odour control and management practices.

The DGRs do not include specific requirements for odour assessment. This odour assessment report covers the applicable considerations of a Level 1 odour impact assessment under the *DECCW Technical Framework and Technical Notes for the Assessment and Management of Odour from Stationary Sources in NSW*.

In conclusion this report has reviewed the impacts of Odour on the neighbouring properties and makes the following recommendations;

Odour

The management of horse manure and stabling waste is to be continued in a similar way to the existing, with the majority of wastes removed from site each day for use in composting or horticulture;

- A horse stabling waste storage area is to be constructed in the vicinity of the stables, with horse manure and bedding waste preferably stored in this area prior to removal from the site each day in a covered truck;
- A horse stabling waste storage area is to be constructed with a concrete footing and enclosed with walls on at least 3 sides, to a height of approximately 2m and dimensions approximately 5m x 5m, to give capacity of holding up to 2 days of waste (approximately 44 m³);
- An odour complaints management system is to be maintained for the facility during operation to meet the requirements of Section 11 of the *DECCW Technical Notes: Assessment and management of odour from stationary sources in NSW (DECC 2006)*. The management system should include;
 - a hotline for receiving complaints about the activity;
 - a system for recording complaints and dealing with them (e.g. complaints register);
 - records of complaints and operator's responses or actions, readily accessible to the community and regulatory authorities; and
 - an ability to provide feedback to the community where required (for example, a newsletter or meetings with affected residences).
- Maintaining and expanding upon the existing vegetative buffer surrounding the stabling facility from nearby Wansey and Alison Roads. Any removal of vegetation should be offset with new plantings where possible;
- Manure and stable bedding to be kept in enclosed bins and/or an enclosed area prior to removal;
- Waste to be handled, stored and removed from site in accordance with the Waste Management Plan;
- If for whatever reason waste is not removed for a day, the waste area is to be kept covered to reduce potential for odour emissions.

Dust

- Surfaces to be sealed or vegetated wherever possible;
- Unsealed training facilities and tracks are to be hosed down under windy and dry conditions;
- Equipment for dust suppression to be on site at all times;
- Dirt tracked onto access routes are to be cleaned as soon as possible; and Access roads used by vehicles and horses are to be kept clean.

2 Introduction

A redevelopment of the Stabling and Training Facilities at the Royal Randwick Racecourse is proposed. This proposal requires an Odour Assessment and Odour Management Plan to be completed in accordance with the *DECCW Technical Framework and Technical Notes for the Assessment and Management of Odour from Stationary Sources in NSW* (the guidelines) identifying all odour sources associated with the proposed development and addressing the collection, storage and disposal of manure including details of odour control and management practices.

2.1 Project Description

The proposed Stables and Training Facility will combine existing stabling capacity with that which currently exists off site. The new stabling facility will accommodate approximately 600 horses in 6 separate stabling blocks of approximately 100 horses each, an increase over the existing 520 horses kept onsite. Dormitory style accommodation for 60 people is also proposed within the stable blocks at high level. The dormitory facilities are to be primarily used by the trainers and handlers of horses.

This consolidation of stabling will see the offsite stabling and on site stabling co-located in a single precinct. The precinct will incorporate all stabling and horse care functions for the racecourse including equine pool, horse walkers, bull ring and sub grade connections to the infield.

The site overlay in Figure 1 shows the precincts location on site adjacent to the intersection of Alison and Wansey Roads, Randwick.

Figure 1 Stables and Training Facility Location



2.2 Existing condition – Odour and dust

A large volume of organic wastes are currently generated on the site by the extensive horse stabling facilities, which can have an odour impact on neighbouring land uses if not correctly managed. Current arrangements onsite are for the removal of all stable bedding waste, inclusive of sawdust, straw and manure waste from stable facilities for use by Elf Mushrooms (Beckhart Pty Limited). The current bedding and manure waste production from the Stabling facilities on the Royal Randwick site is generated from approximately 520 horses.

Odour generation from the existing condition is managed effectively by a stringent cleaning and waste removal strategy for the stabling, with all manure and bedding waste from stables removed from site each day. Residential areas on Alison and Wansey Roads are within 40 metres of the existing stabling facility and complaints in regards to odour are rare. The existing condition in terms of odour is expected to be similar to that of the proposal (520 horses stabled currently compared with 600 horses to be stabled under the proposal).

Dust generation is actively managed under the current site condition. The existing large areas of unpaved surfaces (training tracks, pathways and stabling area) and the movement of horses over unpaved surfaces can generate dust impacts. This potential is managed by dust suppression through spraying of surfaces and minimising ground disturbance from vehicles. The current dust suppression activities on the site are to be continued for the proposed stabling and training facility. Dust emissions from the proposal are expected to be improved over the current condition (see Section 4.3).

3 Statutory Requirements

This report has been produced in response to the Director Generals Part 3a Planning requirements MP 10-0098 for the construction of the new Stables and Training Facilities on the Eastern side of the Royal Randwick Racecourse.

It addresses DGR 6 and Appendix B of the *Project Application for the construction of a New Stable Facility (App N° MP_100098)* in regards to odour and dust;

- DGR 6. Environmental and Residential Amenity
 - *The EA must address any likely solar access, acoustic privacy, visual privacy, view loss, odour and dust issue and identify mitigation measures necessary to achieve a high level of environmental and nearby residential amenity*
 - *The EA shall address the siting of the development in relation to existing significant landscaping onsite and provide a site tree survey and arborist report*
 - *The EA shall address the degree of intensification of the existing use and the impact on surrounding residential uses including (but not limited to) any changes to hours of operation, increased patron capacity, types and frequency of non-race day functions / events*
- Appendix B Plans and Documents required to accompany the Application

18. Odour Assessment and Odour Management Plan

Odour Assessment and Odour Management Plan – prepared by a suitable professional person/body in accordance with DECCW guidelines

identifying all odour sources associated with the proposed development and addressing the collection, storage and disposal of manure and include details of odour control and management practices.

3.1 Protection of the Environment Operation Act 1997 (POEO Act) and Regulations

The POEO Act allows for licensed activities to be required to meet conditions designed to prevent or minimise odour. The legislation includes the concept of ‘offensive odour’ and it is an offence for scheduled activities to emit ‘offensive odour’. Although the stabling facility does not require a licence under the act, the conditions of approval require that the facility does not emit an offensive odour as defined by the POEO Act. The facility will be required to comply with this condition, but it will be enforced by the Department of Planning (DoP) rather than DECCW who enforce licensed premises only.

Offensive odour is defined under the POEO Act as

“an odour:

- a) that, by reason of its strength, nature, duration, character or quality, or the time at which it is emitted, or any other circumstances:*
 - i) harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or*
 - ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or*
- b) that is of a strength, nature, duration, character or quality prescribed by the regulations or that is emitted at a time, or in other circumstances, prescribed by the regulations.”*

In addition, it is an offence for any person to undertake an activity in such a manner as to cause air pollution, which includes odour.

3.2 DECCW Technical Framework - Assessment and Management of Odour from Stationary Sources in NSW

The NSW DECCW *Technical Framework - Assessment and Management of Odour from Stationary Sources in NSW 2006* provides a policy framework for assessing and managing activities that emit odour and offers guidance on dealing with odour issues to industry, consent authorities, planners, environmental regulators and odour specialists.

The technical notes associated with the framework and guidance from the DECCW in modifying assessment criteria for suitability to horse stabling has been used to complete this odour assessment.

3.3 Royal Randwick Racecourse Development Control Plan 2007

The Royal Randwick Racecourse Development Control Plan (DCP) is applicable to the area to be covered by this Odour Management Plan.

The Royal Randwick Racecourse DCP contains planning provisions for traffic management, precinct specific uses and development within the Royal Randwick Racecourse.

The applicable section of the DCP in regards to waste and odour is provided in Part 3.7 of this DCP;

Environmental Sustainability

Performance Criteria (a):

(iv) Clean and efficient operational practices that:

- *ensure waste minimisation and recycling*
- *provide space for the separation and recycling of wastes*
- *provide synergies with neighbouring uses in terms of products and waste.*

The DCP calls for the general pattern of land use to be maintained across the site. The site of the proposed stabling and training facility is wholly located in the Bulls Ring Precinct as described in the DCP, which is reserved for stabling and training uses.

4 Odour Assessment

The equivalent of a Level 1 odour assessment has been undertaken for the proposed Stables and training facilities on the Royal Randwick site. A Level 1 odour assessment is a screening-level technique based on generic parameters for the type of activity and the site. It may be used to assess site suitability and odour mitigation measures for new or modified activities but excludes detailed dispersion modelling or monitoring of odour emissions.

The Stables and training facilities are assessed as being a 'diffuse source' of odour. Horses and stabling are not included in the guidance of the DECCW technical framework¹, and the calculation of odour using a Level 1 odour assessment for a diffuse source isn't possible under the current guidelines. Applicable requirements of an odour assessment as described by the guidelines are covered in this screening assessment including;

- Potential odour sources;
- Location of emission sources;
- Operating hours and times when intermittent odour-generating activities are likely to occur;
- All nearby receptors potentially affected by odour generating activities;
- Weather conditions (prevailing winds, inversions and katabatic drift);
- Site features (topography, vegetation, built form and surrounding land uses);
- Likely odour impacts;
- Mitigation measures;
- Mitigation measures available if surrounding land use changes.

4.1 Potential odour and dust sources

Potential odour sources from the proposal are the following:

- The stabling facility and the 600 horses stabled;
- Collected manure and horse bedding (required to be stored nearby to stables prior to removal from site);
- Transportation of horse manure and horse bedding from site;
- Treatment of horse manure and horse bedding on site.

Potential dust generation activities from the proposal include:

- The cleaning of stabling facilities;
- The training and movement of horses over unsealed areas, such as the training track and unsealed roads and pathways;
- Dust generation from unsealed surfaces due to wind and vehicle movements.

¹ DECCW 2008. Assessment and management of odour from stationary sources in NSW Technical Framework

4.2 Potential odour emissions

A Level 2 or Level 3 odour assessment under the DECCW technical framework (including odour sampling and modelling of air quality and odour dispersion) has not been undertaken as the potential increase in odour emissions from the site is expected to be insignificant. No change in land use is proposed for the site and odour impact is expected to be suitably addressed by incorporating the waste management and odour mitigation measures in Section 5.

The odour criteria for ground level concentrations at residential receivers is assessed at the strictest odour assessment criteria (Level 2.0) as shown in the Odour Assessment Criteria supplied in the DECCW Technical Framework²

Table 1 Odour Assessment Criteria

Population of affected community	Odour assessment criteria (OU)
Rural single residence (≤ 2)	7.0
~ 10	6.0
~ 30	5.0
~ 125	4.0
~ 500	3.0
Urban area (≥ 2000) and/or schools and hospitals	2.0

4.2.1 Manure and stable bedding waste

The key contributor to potential odour emissions from the proposal will be from the significant quantities of horse manure and stable bedding waste (composed of straw, wood shavings and horse wastes) that are generated from the stabling area each week.

This waste volume is estimated in Table 2 below:

Table 2 Stabling waste estimation

	N° Horses	Waste per horse	Total weight	Volume waste (with bedding)	Total volume	
		kg/day	tonnes/ day	m ³ /horse/ day	m ³ / day	m ³ / week

² DECCW 2008. Assessment and management of odour from stationary sources in NSW Technical Framework

Current	520	56	30 ³	0.036	18.5	129.7
Proposed	600	56	35	0.036	21.4	149.6

Waste estimates have been generated based on current known volumes of waste generated from the 520 horses stabled on the site, and the estimates for horse waste found from *A Guide for Bay Area Horse Keepers*⁴, which states that 'on average, a 1,000 pound (lb) horse can generate 8-10 tons of manure a year.'

Current volumes of waste leaving the site each week from horse stabling is in the order of 30 tonnes a day. Waste generation from the proposed stabling is estimated at approximately 35 tonnes a day, inclusive of stabling and manure wastes.

Additional waste is to be generated from the development of dormitory style accommodation on the site, predominantly for the use of trainers, handlers and other stabling personnel (see Table 3). The waste to be generated from accommodation, when handled and stored correctly, is assessed to be of minor concern in regards to odour impact to nearby residences.

Table 3 Accommodation waste estimation

Type of Premises	Nº residents	Waste Source ⁵	Waste Type	L/day	kg/day
Residential	60	Boarding house, Guest house	General Waste		
			40 L / occupant / week	2400	315
			Recyclables		
			20 L / occupant / week	1200	157

4.2.2 Proposed waste management strategy

A waste management strategy for the proposed stabling and training facility is provided as part of the response to DGR 6 of the Project Application. Key components of the waste management strategy are described below:

- The management of horse manure and stabling waste is to be continued in a similar way to the existing, with the majority of wastes removed from site each day for use in composting or horticulture;
- A horse stabling waste storage area is to be constructed in the vicinity of the stables, with horse manure and bedding waste preferably stored in this area prior to removal from the site each day in a covered truck;
- A horse stabling waste storage area is to be constructed with a concrete footing and enclosed with walls on at least 3 sides, to a height of approximately 2m and dimensions approximately 5m x 5m, to give capacity of holding up to 2 days of waste (approximately 44 m³).

³ Organics recycling group, Niel Wilson *pers comm*. 13/09/10

⁴ Horse Manure Management, *A Guide for Bay Area Horse Keepers*, 2003

⁵ City of Sydney Council 2005. Policy for Waste Minimisation in New Developments Appendix B

4.2.3 Local topography

The local topography is generally beneficial in the reduction in odour impact to nearby residences on Alison Road and Wansey Road.

The local topography of the area is undulating, with the stabling facility to be constructed at the base of a natural basin. The site falls approximately 6m below Wansey Road and approximately 3m below the level of Alison Road. The location of the stabling facility at the base of a slope of gradient greater than 10% classifies it as high relief.⁶ This terrain factor of high relief is considered the most beneficial in reducing odour impact to nearby receivers by the DECCW guidelines.

Build form of the site can also have impact on odour pathways and level of impact. No significant built form will shield the site from the roadway and residences, as is the case in the existing condition. The installation of a screen of another form (such as stands of trees and shrubs) will be beneficial and is discussed in Section 5.

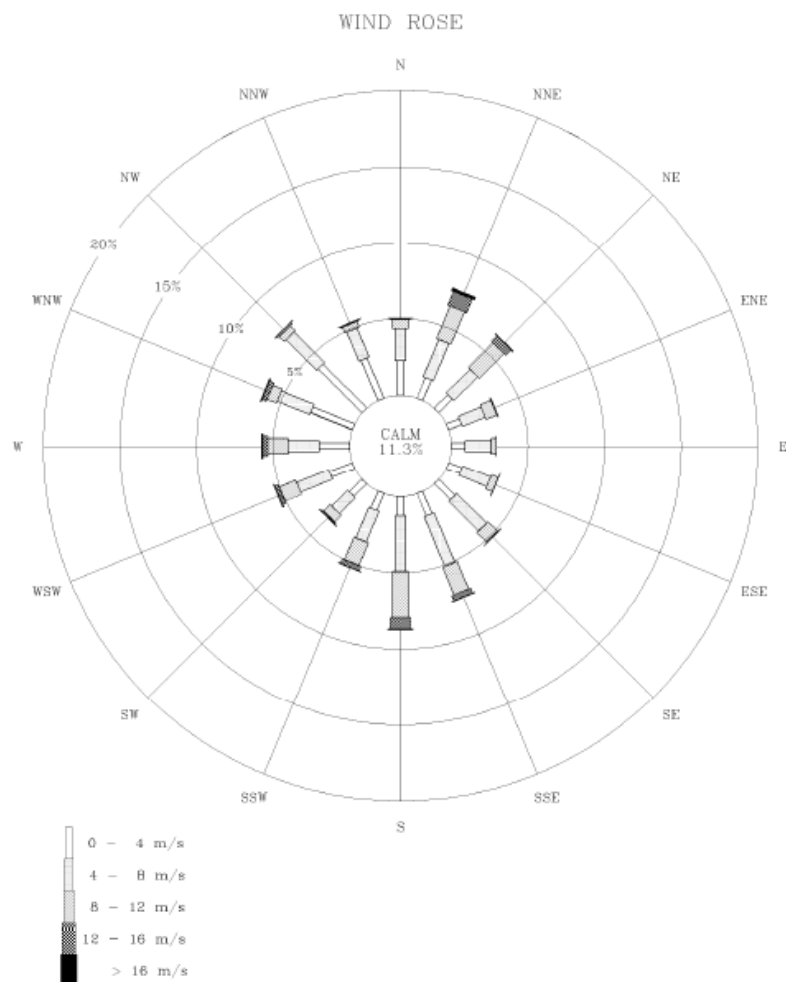
4.2.4 Weather conditions

The prevailing wind directions for the site have been inferred from Bureau of Meteorology yearly data for the nearest applicable weather station (Sydney Airport) see Figure 2.

The prevailing wind conditions for the site from Figure 1 indicate that wind frequency and direction from the north, north east and from the south are the most frequent. A southerly wind direction would yield the greatest potential for odour impact to residences on Alison Road, while winds from the north- north east would have an opposite effect. No wind direction is deemed to be dominant for the area and wind direction is assessed to be a minor consideration as a result of this odour screening assessment.

Figure 2 Prevailing wind conditions

⁶ DECCW 2006. Assessment and management of odour from stationary sources in NSW Technical notes



Sydney International Airport (#947670)
1986-2007: Anemometer corrected to 10 m Open Country
Source: NCDC EarthInfo

4.2.5 Cumulative Impacts

Cumulative impacts from the new development are deemed insignificant. The surrounding land uses to Alison Road and Wansey Road are residential and urban areas, with minimal odour sources. Air quality impacts are generated from the existing road network, and these emissions will not be altered due to the proposal. Any odour impact from the new stabling facility will replace already existing odour impact from the current facility, and not be an additional source.

4.3 Dust generation

Potential dust generation from the proposal is likely to be reduced over the existing condition (see Section 2.2) due to the following changes;

- Under existing conditions up to 100 horses are brought into the site each day via vehicle, which can generate a dust impact on unsealed surfaces.

This existing requirement is removed by the proposed stabling of all 600 horses on the site;

- The proposal includes sealed resilient surfaces on tracks to be used by horses in and around the stabling facility;
- There will be less unsealed surface and cinder track capable of dust generation;
- A sealed tunnel from the stabling facility to the racecourse infield is to be constructed for the movement of horses.

Potential dust sources will remain, some of the potential sources include;

- Wind blown dust from unsealed surfaces around the facility, both within and outside the stables;
- Movement of horses across unsealed surfaces;
- Removal and handling of horse manures and bedding.

Management measures suggested for dust are included within Section 5.

5 Management measures

No odour limits can be applied for diffuse sources as a result of a Level 1 odour assessment, however outcome based conditions with a focus on the implementation of best management practices are required where there is potential for odour impact to the surrounding community. There is potential for impacts as the stabling facility will be within small distance from nearby residences.

Management measures for odour to be applied on the site are to include;

- An odour complaints management system is to be maintained for the facility during operation to meet the requirements of Section 11 of the *DECCW Technical Notes: Assessment and management of odour from stationary sources in NSW (DECC 2006)*. The management system should include;
 - a hotline for receiving complaints about the activity;
 - a system for recording complaints and dealing with them (e.g. complaints register);
 - records of complaints and operator's responses or actions, readily accessible to the community and regulatory authorities; and
 - an ability to provide feedback to the community where required (for example, a newsletter or meetings with affected residences).
- Maintaining and expanding upon the existing vegetative buffer surrounding the stabling facility from nearby Wansey and Alison Roads. Any removal of vegetation should be offset with new plantings where possible;
- Manure and stable bedding to be kept in enclosed bins and/or an enclosed area prior to removal;
- Waste to be handled, stored and removed from site in accordance with the Waste Management Plan;

- If for whatever reason waste is not removed for a day, the waste area is to be kept covered to reduce potential for odour emissions.

The following mitigation measures are to be adopted for management of emission of dust from training of horses, vehicles, plant and equipment:

- Surfaces to be sealed or vegetated wherever possible;
- Unsealed training facilities and tracks are to be hosed down under windy and dry conditions;
- Equipment for dust suppression to be on site at all times;
- Dirt tracked onto access routes are to be cleaned as soon as possible; and
- Access roads used by vehicles and horses are to be kept clean.

6 Recommendations

Recommendations for the Stabling and Training Facility in regards to odour and dust are:

Odour

- The management of horse manure and stabling waste is to be continued in a similar way to the existing, with the majority of wastes removed from site each day for use in composting or horticulture;
- A horse stabling waste storage area is to be constructed in the vicinity of the stables, with horse manure and bedding waste preferably stored in this area prior to removal from the site each day in a covered truck;
- A horse stabling waste storage area is to be constructed with a concrete footing and enclosed with walls on at least 3 sides, to a height of approximately 2m and dimensions approximately 5m x 5m, to give capacity of holding up to 2 days of waste (approximately 44 m³);
- An odour complaints management system is to be maintained for the facility during operation to meet the requirements of Section 11 of the *DECCW Technical Notes: Assessment and management of odour from stationary sources in NSW (DECC 2006)*. The management system should include;
 - a hotline for receiving complaints about the activity;
 - a system for recording complaints and dealing with them (e.g. complaints register);
 - records of complaints and operator's responses or actions, readily accessible to the community and regulatory authorities; and
 - an ability to provide feedback to the community where required (for example, a newsletter or meetings with affected residences).
- Maintaining and expanding upon the existing vegetative buffer surrounding the stabling facility from nearby Wansey and Alison Roads. Any removal of vegetation should be offset with new plantings where possible;
- Manure and stable bedding to be kept in enclosed bins and/or an enclosed area prior to removal;

- Waste to be handled, stored and removed from site in accordance with the Waste Management Plan;
- If for whatever reason waste is not removed for a day, the waste area is to be kept covered to reduce potential for odour emissions.

Dust

- Surfaces to be sealed or vegetated wherever possible;
- Unsealed training facilities and tracks are to be hosed down under windy and dry conditions;
- Equipment for dust suppression to be on site at all times;
- Dirt tracked onto access routes are to be cleaned as soon as possible; and
- Access roads used by vehicles and horses are to be kept clean.

7 Conclusion

The odour and dust impacts from the proposed Stabling and Training facility are assessed to be acceptable where the recommendations in Section 6 are implemented on the site. The waste and therefore potential odour generation from the site is expected to be marginally increased over the existing condition.

This Odour Management Plan meets the requirements of DGR 6 in response to odour and dust.