Queensland Hunter
Gas Pipeline

Appendix H

Air quality assessment

HEGGIES

REPORT 10-5693-R1

Revision 4

Queensland - Hunter Gas Pipeline

Preliminary Air Quality / Dust Management Plan

PREPARED FOR

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Queensland - Hunter Gas Pipeline

Preliminary Air Quality / Dust Management Plan

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TABLE OF CONTENTS

1 INTRODUCTION

Heggies Pty Ltd (Heggies) has been commissioned by Manidis Roberts to assess the potential for air quality impacts during construction of the proposed Queensland Hunter Gas Pipeline (QHGP). The Air Quality Assessment takes the form of a Preliminary Construction Dust Management Plan (DMP) and is prepared as part of the environmental assessment process.

The QHGP will run from Wallumbilla in south central Queensland to the Newcastle area in NSW, travelling a total of 825 km in length.

The pipeline will comprise a single high pressure pipeline constructed from high strength steel with a nominal diameter of 500 mm and buried to a minimum depth of 750 mm (depending on land use). The right of way (ROW) during construction will 30 m in width.

The study area for this assessment includes the pipeline route corridor within NSW only, from the Queensland/NSW border to the Newcastle area.

1.1 Construction Overview

Construction will require a number of procedures to be undertaken consecutively as follows:

1. Survey and fencing;
2. Set up temporary facilities;
3. Clear and grade of the right of way;
4. Trenching;
5. Pipe stringing and bending;
6. Pipe welding and inspection;
7. Joint coating
8. Pipe placement (lowering and laying)
9. Backfilling and compaction; and
10. Hydro-testing and reinstatement .

The suite of activities is referred to as a spread. Blasting is also required in areas of rock, including the Liverpool ranges and the northern Hunter Valley. It is currently planned that two pipeline construction spreads will be operating simultaneously over the total length of the pipeline.

One spread will construct the northern portion of the pipeline, including the Queensland section, and another will construct the more populous southern length of the pipeline in NSW. Additional small teams will be required for areas involving specialised construction techniques, including horizontal directional drilling and above ground facility installation.

Each crew works at the rate of about 3-4 km per day depending on the terrain (i.e. if there are more trees or the ground is very rocky progress may be slower). To enable the crews to work safely and efficiently there is often a delay between the arrival dates of each crew. Typically it will take up to 12 weeks for all the crews to pass through an area and complete their tasks.

Aspects of the construction program which have the potential to impact on air quality are summarised in **Table 1**.

Table 1 Construction Characteristics

Construction Element	Details
Width of vegetation clearing	30m
Depth of trench to provide the minimum depth of cover required under AS 2885.	Generally 1250 mm Deep Cultivated Areas 1700-2500 mm Road Crossings – 1700 mm River Crossings 2500 mm
Construction Hours	07:00-18:00/ 7 Days a Week/ 28 days on and 9 days off (unless specified)
Construction Duration	8 months
Refuelling	Mobile fuel truck and construction depot
Time between clear and grade and reinstatement	Up to 4 Months

Equipment expected to be used in construction will be as follows:

- Dozers;
- Loaders;
- Excavators;
- Graders;
- Sideboom tractors;
- Trucks;
- Padding Machines;
- Wheel ditching machines;
- Welding units; and
- Crew vehicles.

1.2 Limitations

The scope of this report is limited to an assessment of the potential for dust and particulate emissions from construction activities associated with the laying of the pipeline, and details management practices to assist in controlling adverse impacts.

The report does not assess operational air quality / odour impact of fugitive gas releases (planned or emergency) from main line values (MLV) or compressor stations.

Air emissions from the pipe coating plant, including particulate from blasting / cleaning and volatiles from pipe coating have not been addressed.

Similarly the report does not consider the occupational air quality issues associated with the welding fumes during pipe laying and exposure to respirable dust or crystalline silica during hard rock drilling.

2 OBJECTIVES

The specific objectives of this DMP are as follows:

- To assist in ensuring that standards of air quality during the construction works comply with all relevant statutory guidelines;
- To minimise the air quality impacts on surrounding residences;
- To maintain reasonable levels of amenity for surrounding residences, in terms of nuisance dust impacts;
- To define the roles, responsibilities, and the tasks to be performed, in regard to the control and monitoring of emissions affecting air quality; and
- To assist in responding quickly and effectively to issues and complaints.

3 EXISTING ENVIRONMENT

As indicated in **Section 1** the QHGP will run from Wallumbilla in south central Queensland to the Newcastle area in NSW, travelling through a series of urban, rural and semi-rural areas. Travelling north from Newcastle, the pipeline will cross the Hunter region of NSW, across the Liverpool Ranges and will pass by rural townships of Scone, Werris Creek, Gunnedah, Boggabri, Narrabri and Moree.

The ambient air quality environment will vary across the route according to each region and land use, ranging from that typical of an urban environment (Newcastle City), areas impacted by mining activities (Hunter, Narrabri, Boggabri) and remote rural locations where the main existing sources of air pollution will be dust storms, unsealed roads, exposed dry areas, bushfires and agricultural activities.

The meteorological environment is also likely to vary considerably along the QHGP route, and temporal and spatial variations can be expected as the pipeline construction spreads progress.

In many of the rural areas, the ambient air quality will largely be influenced by prevailing conditions; for example dust storms during high winds and dust suppression during precipitation.

Local prevailing conditions can be monitored by site personnel, in accordance with **Section 6** to identify, manage and respond to unfavourable site specific wind conditions.

4 AIR QUALITY CRITERIA

The following sections reference the relevant air quality goals for pollutants most likely to be generated during construction phase of the QHGP. As outlined in **Section 5**, emissions have been estimated (based on worse case operational scenarios) for activities likely to be occurring during construction. The emission estimates are presented to determine the relative contribution of each activity to dust generation during construction and are presented as total mass (kg) generated per day. It is not the intention of this report to assess compliance with the air quality goals, rather to indicate what mitigation measures can be put in place to ensure compliance with the goals and to minimise nuisance dust and health impacts.

The emission estimates cannot and should not be compared to the Air Quality Goals presented in the following sections, which are presented in mass concentrations (µg/m^3) and gravimetric fallout rates (g/m^2/month). It is an oversimplification to compare the emission rates to the Air Quality Goals as the extent to which dust will accumulate or disperse in the atmosphere is dependent on the degree of vertical and horizontal motion within the atmosphere. The wind speed determines both the distance of downwind transport and the rate of dilution as a result of plume 'stretching'. The generation of mechanical turbulence is similarly a function of the wind speed, in combination with the surface roughness and determines the vertical mixing. The wind direction, and the variability in wind direction, determines the general path the dust will follow, and the extent of crosswind spreading.

The resulting dust concentration and deposition levels, resulting from the emission estimates, therefore fluctuate in response to shifts in the wind field, changes in atmospheric stability and concurrent variations in the vertical mixing depth.

4.1 Introduction

In common usage, the terms "dust" and "particulates" are often used interchangeably. The term "particulate matter" refers to a category of airborne particles, typically less than 30 microns (µm) in diameter and ranging down to 0.1 micron. Some particles are large enough to be seen as dust, others are so small they can only be detected with an electron microscope. Nuisance dust is generally considered to be greater than 30 µm. Particles less than 30 µm are generally referred to as Total Suspended Particulate (TSP) while particles less than 10 µm and 2.5 µm are referred to as PM_{10} and $PM_{2.5}$ respectively.

4.2 Nuisance Impacts of Fugitive Emissions

Nuisance impacts of dust emissions refer to dust deposition or dust fallout.

In New South Wales, the Department of Environment and Climate Change (NSW DECC) sets dust deposition limits in the *Approved Methods for the Modelling and Assessment of Air Pollutants* (2005).

Table 2 presents the NSW DECC impact assessment goals for nuisance dust, showing the allowable increase in dust deposition levels over the ambient (background) level which would be acceptable so that dust nuisance could be avoided.

Table 2 NSW DECC and VIC EPA Goals for Allowable Dust Deposition

Averaging Period	Maximum Increase in Deposited Dust Level	Maximum Total Deposited Dust Level
Annual	2 g/m^2/month	4 g/m^2/month

4.3 Goals Applicable to Total Suspended Particulate (TSP)

The annual goal for Total Suspended Particulate (or TSP) is given as 90 µg/m^3, as recommended by the National Health and Medical Research Council (NHMRC) at their 92nd session in October 1981. It was developed before the more recent results of epidemiological studies suggested a relationship between health impacts and exposure to PM_{10} concentrations.

4.4 Goals Applicable to Particulate Matter Less than 10 Microns (PM_{10})

Emissions of PM_{10} and $PM_{2.5}$ are considered important pollutants in terms of impact due to their ability to penetrate the respiratory system. In the case of the $PM_{2.5}$ category, recent health research has shown that this penetration can occur deep into the lungs. Potential adverse health impacts associated with exposure to PM_{10} and $PM_{2.5}$ include increased mortality from cardiovascular and respiratory diseases, chronic obstructive pulmonary disease and heart disease, and reduced lung capacity in asthmatic children.

One of the difficulties in dealing with air quality goals governing fine particles such as PM_{10} and $PM_{2.5}$ is that the medical community has not yet been able to establish a threshold value (for either PM_{10} or $PM_{2.5}$) below which there are no adverse health impacts.

The NSW DECC PM_{10} impact assessment goals, as expressed in their document "*Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales*", are:

- 24-hour maximum of 50 µg/m^3; and
- Annual average of 30 µg/m^3.

The 24-hour PM_{10} reporting goal of 50 µg/m^3 is numerically identical to the equivalent National Environment Protection Measure (NEPM) reporting goal except that the NEPM reporting standard allows for five exceedances per year. These NEPM goals were developed by the National Environmental Protection Council (NEPC) in 1998 to be achieved within 10 years of commencement.

4.5 Goals Applicable to Particulate Matter Less than 2.5 Microns ($PM_{2.5}$)

In December 2000, the NEPC initiated a review to determine whether a new ambient air quality standard for particulates 2.5µm or less in aerodynamic diameter ($PM_{2.5}$) was needed in Australia and the feasibility of developing such a standard. The review found that:

- there are health effects associated with fine particles;
- the health effects observed overseas are supported by Australian studies; and
- fine particle standards have been set in Canada and the USA and an interim guideline proposed for New Zealand.

The review concluded that there is sufficient community concern regarding $PM_{2.5}$ to consider it an entity separate from PM_{10}.

As such, in July 2003 a variation to the Ambient Air Quality NEPM was made to extend its coverage to $PM_{2.5.}$ This document references the goals for $PM_{2.5}$ as:

- 24-hour maximum of 25µg/m^3;and
- Annual average of 8µg/m^3.

5 EMISSIONS ESTIMATION

5.1 Heavy Vehicle Exhaust Emissions

Truck and heavy plant movements will be required during construction, with an estimated 50 truck movements required per day, per spread to deliver pipe to the construction ROW.

Heavy construction plant movements, and the associated emissions, will be distributed spatially and temporally along the site on a daily basis. Although it is possible that the truck movements would be concentrated within a couple of hours per day (i.e. delivery of pipe sections at start of the day) this volume of heavy vehicle traffic is not expected to generate sufficient vehicle exhaust emissions to compromise air quality goals.

Accordingly, it is not anticipated that truck and heavy plant movements would impact significantly on the local airshed's capability to achieve the air quality goals associated with vehicle emissions (principally particulate, NO_2, SO_2 and hydrocarbons). Additionally, the low sulphur content of Australian diesel is expected to ensure air quality goals for sulphur dioxide (SO_2) would be met at the nearest sensitive receivers.

However, good practice management practices for vehicle emissions are outlined in **Section 6.1**.

5.2 Dust and Particulate Matter

The principal emissions from construction activities will be therefore be dust and particulate matter from onsite construction activities occurring during dry conditions.

The following activities are those identified as a specific potential source of dust generation during construction:

- Vegetation clearing and earthmoving during site preparation, excavation, trenching, backfilling;
- Stockpiling of excavated material - topsoil and overburden;
- Movement of vehicles / construction machinery, both within and in/out of the construction site;
- Use of the Padding Machine;
- Graders working at each work site;
- Wind erosion from exposed ground and stockpiles; and
- Blasting at hard rock areas.

To guide specific management and mitigation controls, the daily emissions of dust and particulate matter from typical construction scenarios have been estimated using documented emissions estimation techniques (National Pollution Inventory and USE EPA AP42 documentation).

It is noted that construction equipment and activities may be subject to change; however it is useful to determine the likely relative contribution of various sources to the overall dust generation expected at the site.

The following assumptions have therefore been used to develop a typical construction scenario:

- It is noted that the construction hours are planned to be 11 hours/day. For the purposes of emissions estimation, it is assumed that all equipment is operated for 10 hours/day.

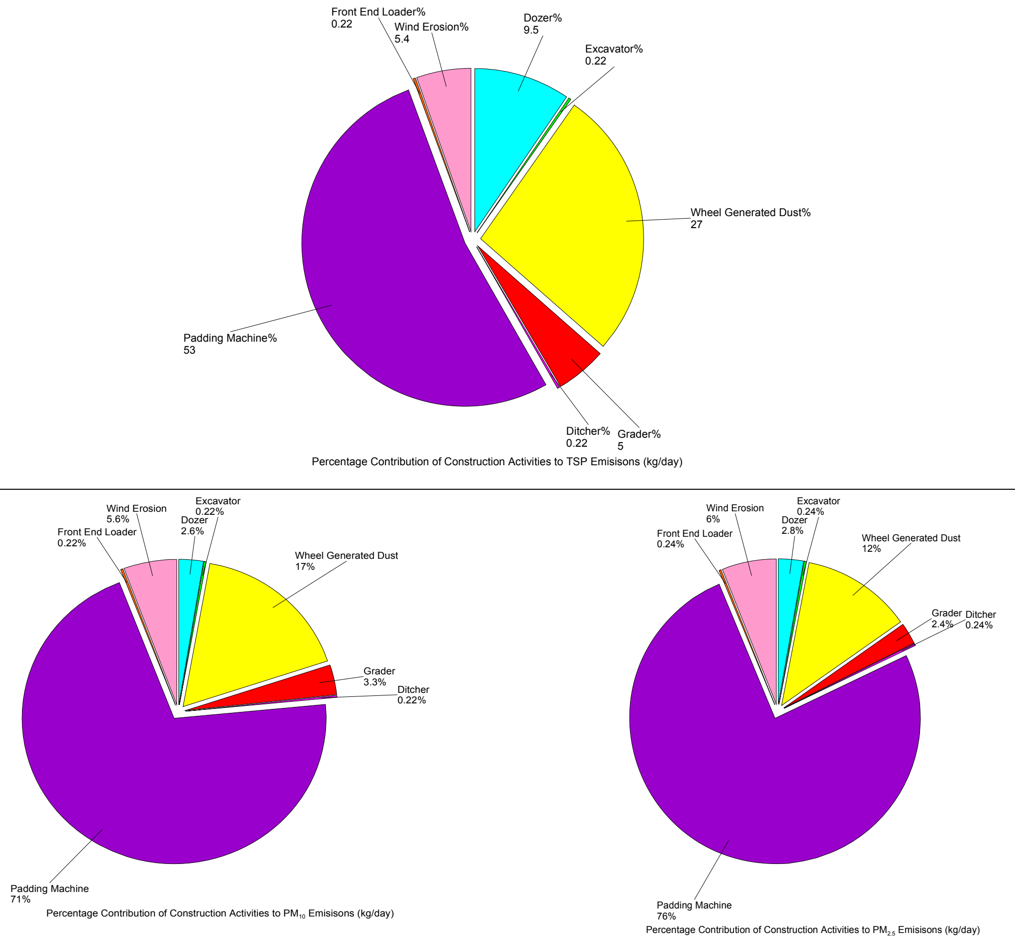
- While construction will proceed at a rate of 3-4 km per day, for the purpose of estimating quantities of excavated materials, typical areas of disturbance and throughput (tonnes/hour) for equipment operations, a daily pipeline length of 1000 m is assumed. A 1 km length is considered to be a reasonable "length of influence" for air quality impacts at any one point along the route.
- Excavation will occur to a depth of 1250 mm.
- Vegetation stripping will occur to a width of 30 m.
- Emissions from the Padding Machine have been represented as three separate sources, namely, conveyor, screen and unloading.
- The total area of disturbance assumed for open ground wind erosion is assumed as 3 ha (1000 m x 30 m). It is noted that vegetation stripping is likely to continue while previous work sections remain un-rehabilitated, however a total exposed area of 3 ha exposed to wind erosion continuously is considered conservative. It is noted that wind erosion will only occur at certain wind speeds, depending on the threshold friction velocity of the material.
- Wheel generated dust has been estimated based on a distance travelled of 5 km (5 movements along a 1000 m work site) for each hour of the 10 hour working day.
- Emissions from the grader are estimated based on a distance travelled of 5 km (5 movements along a 1000 m work site) for 5 hours of the day.
- Emissions from blasting are estimated using an assumed blast area of 50 m^2 and a blast hole depth of 1250 mm (trench depth) and a total of 10 holes drilled per blast.

A summary of the estimated emissions is presented in **Table 3** and **Figure 1**.

Table 3 Estimated Emissions from Construction Activities

Activity	TSP Emissions (kg/day)	PM_{10} Emissions (kg/day)	$PM_{2.5}$ Emissions (kg/day)
Dozer	51	7	1
Excavator / Ditcher / FEL	1.2	0.6	0.1
Wheel Generated Dust	143	44	4.4
Grader	27	9	0.9
Padding Machine	281	181	27.1
Wind Erosion	29	14	2.2
Blasting	189	98	10.2

Figure 1 Estimated Construction Phase Emissions - % Contribution



While construction equipment and timing of activities may be subject to change, the above analysis is useful to determine the relative contribution of various sources to the overall dust expected at the site.

It is clear from **Figure 1** that certain activities have greater potential for dust generation, including dozer, wheel generated dust, and use of the padding machine. It is noted that emissions from the padding machine may have been over estimated through the use of a combined emission factor for screening, conveying and unloading.

As indicated in **Table 3** blasting is also an activity with a significant potential for dust generation. Blasting has not been included in the analysis presented in **Figure 1** as this activity will only occur in limited sections of the pipeline route where igneous rocks intersect with the pipeline route.

In summary, activities with the greatest potential for dust generation are:

- Blasting;
- Use of the dozer;
- Wind Erosion;
- Use of the Padding Machine; and
- Wheel generated dust from vehicles travelling on exposed ground.

The following management practices and mitigation measures have been outlined accordingly.

6 MANAGEMENT SAFEGUARDS AND MITIGATION MEASURES

Dust management safeguards and mitigation measures should be instigated in areas where nuisance dust, particulate or gaseous pollutants may adversely impact on populated areas or sensitive vegetation communities.

6.1 Vehicle Exhaust Emissions

- Trucks and construction plant entering the site should be well maintained in accordance with the manufacturer's specification to comply with all relevant regulations. Fines may be imposed on vehicles which do not comply with smoke emission standards. Vehicles with smoky exhausts (more than 10 seconds) shall be stood down for maintenance.
- Unnecessary idling for trucks and plant should be avoided with engines turned off during periods of inactivity.
- Delivery of pipe sections should be planned and coordinated to avoid congestion and excessive truck queuing / idling of trucks.
- Trips and trip distances should be controlled and reduced where possible.

6.2 Vehicle Entrainment

Vehicles travelling over paved or unpaved surfaces tend to pick up and drop surface particles and expose them to air currents caused by the turbulent shear between the wheels and the surface. These resuspended dust particles are also entrained in the turbulent wake left behind vehicles. Loads carried by trucks are another potential problem, as fugitive dust emissions can result from wind erosion or spillages. Dirt track-out can also be a problem on paved surfaces surrounding the work areas.

The following general management practices should be instigated for all sections of the route.

- All vehicles on site shall be confined to a designated route with a speed limit of 20 km/h strictly enforced.
- Trips and trip distances should be controlled and reduced where possible.
- Any dirt that has been tracked onto sealed roads shall be cleaned as soon as practicable.
- Spoil trucks will be immediately covered after being loaded and tailgates will be effectively sealed prior to leaving the ROW or other construction sites.

When conditions are excessively dusty and windy, and dust can be seen leaving the works corridor and blowing in the direction of populated areas, further controls should be considered. Where a suitable source of water is available (rain water / bore water) the use of a water truck (for water spraying of travel routes) should be considered.

6.3 Dozer

Emissions from dozers are often significant, particularly during dry and windy conditions. It is currently anticipated that dozers would be used in vegetation stripping and topsoil clearing.

In areas where dust may impact on populated areas, mitigation measures to consider include:

- Modify working practices by limiting the dozer daily working hours.
- Modify working practices by limiting the use of the dozer during periods of high winds, particularly when blowing in the direction of populated areas.
- Limiting the clearing of vegetation and topsoil to the designated footprint required for pipeline construction.

When conditions are excessively dusty and dust can be seen leaving the site and blowing in the direction of populated areas, the application of water spraying can be considered if working practices cannot be modified / ceased.

6.4 Padding Machine

Emissions from use of the padding machine have been estimated using the combined emissions factors for screening, conveying and unloading. It is noted that emissions from this source may have therefore been over-estimated. It is therefore recommended that when the pipeline approaches populated areas, dust emissions should be monitored and if deemed significant, controlled as follows, particularly during dry and windy conditions.

- Modify working practices by limiting the use of these machines during periods of high winds.
- Emissions from conveyor can be effectively controlled through enclosure / installation of a wind break.
- Emissions from the screen can be effectively controlled with wind breaks and or water sprays (should a suitable water source be available).
- Emissions from the backfilling can be effectively controlled by increasing the moisture content of the soil / backfill through addition of moisture. This will be achieved if water spraying is conducted at the screening point.

6.5 Blasting

Emissions from blasting can be significant and the most effective controls are often work practice controls. Wetting / water spraying of the blast area may have limited control but may be required from an occupational health and safety perspective during drilling.

Where blast emissions have the potential to impact on populated areas, blasting should be conducted at appropriate times. Blasting should not occur during windy periods and should not occur during the early morning where temperature inversions may limit the extent of dispersion.

6.6 Wind Erosion

Wind erosion from exposed surfaces should be controlled as part of the best practice environmental management of the site. Wind erosion from exposed ground should be limited by avoiding unnecessary vegetation clearing and ensure progressive rehabilitation occurs as the pipeline construction proceeds, in accordance with the weed management and restoration procedures.

Wind erosion from temporary stockpiles can be limited by minimising the number of stockpiles on site and minimising the number of work faces on stockpiles. As material is removed or added to stockpiles, the area should be compacted to promote particle cohesion.

6.7 General

The following general measures should be adhered to at all times.

- Under no circumstances should any material be burnt on site.
- Silt and other materials will be removed from around erosion control structures following any significant rain event to ensure deposits do not become a dust source.

6.8 Dust Impacts on Vegetation and Livestock

The management and mitigation measures described above are generally for populated areas where dusts impact may be seen on residences, schools, places of worship etc. In addition, as the pipeline passes through rural and non-populated areas, dust impacts on livestock and sensitive vegetation communities are considered.

Dust can have both physical and chemical effects on plants. Physical effects include blockage and damage to stomata, shading and abrasion of leaf surface or cuticle. The chemical effects of dust, working either directly on the plant surface or by changing the chemistry of the soil, are likely to be more important than any physical effects. Changes in soil chemistry may have long-term effects on species competition and community structure.

Thus, the impact of dust on vegetation is dependent on the rate of dust deposition and the chemical composition of the dust. There have been very few recent studies conducted regarding the vegetative health impacts of dust deposition. Farmer (1993) summarised results from studies of vegetation exposed to dust deposition from nearby limestone quarries, cement plants, and other sources such as roads and coal quarries and concluded that dust may affect photosynthesis, respiration, transpiration and allow the penetration of phytotoxic pollutants. Flow on effects include reduced productivity and changes in floral and faunal community structure.

Yang (1988) noted that dust deposition levels of 0.75 to 1.5 $g/m^2/day$ (i.e. 22 to 45 $g/m^2/month$) would not result in adverse effects on plant production. Decreased respiration rates were noted to occur for cereals when cement dust deposition rates exceeded 7 $g/m^2/day$ (Environment Canada, 1998).

Areas of high ecological value or agricultural resources may be more sensitive to dusts than other areas. However, there is no single minimum dust deposition rate at which impacts were experienced due to the different chemical composition of dusts studied and the variety of plant species studied.

There is little published literature regarding the impacts of dust deposition relative to wool yield and quality. Some studies have suggested that a relationship exists between wool value and dust content and that dust can affect wool quality after events such as dust storms and from other natural sources. However, this relationship has never been quantified. Further, a recent study has shown that dust content of wool is in fact a heritable trait (Schlink, 2003) and that sheep may be bred to produce better quality wool that is less susceptible to adverse effects from dust.

Mentor Consulting (1993), as quoted in Hunt (2003), undertook grazing trials in NSW with dairy cattle. The trails were designed to determine the impact of coal mine dust contamination of pasture on pasture intake, grazing behavior and milk production of dairy cattle. Coal dust added to a pasture equivalent to 8 $g/m^2/day$ had no effect on pasture palatability or cattle production. Hunt (2003) cites a study by Marek and Hais (1970) which investigated dust inhalation and ingestion of contaminated pastures by dairy cattle. According to this study, production levels were reduced by about 10% when deposition levels reached 48 to 96 $g/m^2/month$ but not detectable at lower dust deposition rates.

The above documented levels are orders of magnitude higher than the NSW DECC criterion for nuisance dust impacts and based on the scale and nature of activities for the pipeline construction, significant impacts on vegetation and livestock are unlikely to occur.

7 MONITORING, RESPONSIBILITIES AND COMPLAINTS HANDING

7.1 Monitoring

Given the short term duration of the construction spreads, ambient air monitoring is not deemed necessary for the pipeline route construction.

However, daily visual checks should be undertaken to ensure the operational safeguards referred to in **Section 6** are being adhered to by construction staff and contractors.

7.2 Responsibilities and Accountabilities

An organisational structure for the management of environmental control and reporting procedures will be implemented. The Site Environmental Representative (ER) will oversee the environmental management of the project, liaise as necessary with other on-site personnel and report directly to the Project Manager (PM).

The purpose of this structure is to ensure the following:

- The environmental procedures are effectively implemented and have the intended outcome, that is, no off-site nuisance or other effects due to air pollution are experienced; and
- Non-compliance with any of the desired environmental outcomes will be reported promptly and corrective action will be taken to mitigate any impacts.

Many of the dust-control procedures will be implemented as required and compliance checked by daily visual inspection. All site personnel and subcontractors will undergo appropriate induction training courses and individual responsibilities for ensuring that procedures are adhered to will be clearly defined.

The management and reporting of environmental aspects of construction activities will be the responsibility of the ER, with specific tasks delegated to on-site personnel. Simple daily visual checks will be made by on-site personnel for most parameters and reported on the Environmental Inspection Report. Any non-conformances shall be reported immediately to the PM.

7.3 Complaints Handling

Complaints shall be handled in accordance with the community consultation and involvement plan.

Complaints handling shall consider the following:

- Complainant details;
- Time/date/ambient conditions of complaint;
- Site activities being undertaken at the time of the complaint;
- Possible external causes; and
- Possible causes and corrective action taken.

The corrective action may involve supplementary monitoring to identify the source of the non-conformance, and/or may involve modification of construction techniques or programme to avoid any recurrence or minimise its adverse effects.

8 CONCLUSIONS AND RECOMMENDATIONS

A Construction Dust Management Plan (DMP) has been prepared for the proposed Queensland Hunter Gas Pipeline.

The objectives of this DMP are to ensure that standards of air quality during the construction works comply with all relevant statutory guidelines and that air quality impacts on surrounding sensitive receptors are minimal.

During dry conditions, a number of on site construction activities have the potential to generate dust, including blasting, earthworks involving the dozer, wind erosion, trenching and backfilling (Padding Machine) and wheel generated dust.

Specific management practices, operational controls and mitigation measures are outlined to minimise dust and air quality impacts with an organisational structure for the management of environmental control and reporting procedures to be implemented.

It is anticipated that Dust and Air Quality impacts during construction can largely be controlled provided the safeguards outlined in this DMP are adhered to at all times.

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