Pages 1 through 56 redacted for the following reasons:
- -
Refuse - Schedule 4, Part 4, Item 4 - Deliberative process

Corridor Management & Operations Guideline

Animals (native, domestic, feral or stock) on state-controlled roads

Purpose

To provide guidance on:

- dealing with the management of animals (native, domestic, feral or stock) found or reported straying, unattended sick, injured or dead on state-controlled roads (SCRs)
- reducing the risk of exposure to crashes involving animals
- reporting of crashes involving animals
- quick recovery from crashes involving animals so that delays are reduced and the safety of road users is ensured.

To promote an appropriate balance between:

- safety
- environment
- community access to the road reserve
- transport efficiency
- costs to landowners and the Department of Transport and Main Roads (Transport and Main Roads).

Principles

Animals can behave unpredictably when startled, confused or injured. When animals are present in the SCR, the risk to road users caused by their behaviour should be managed.
Some livestock owners may at times allow their livestock to roam on the SCR. Whether intentional or not this may present an unacceptable hazard to road users.

On unfenced roads, the presence of stock is expected and warning signs should be in place.
On other roads, motorists will not necessarily expect to come upon animals; wild, domestic or stock. Factors such as the height and type of vegetation may increase the hazard. In these situations warning signs should be in place.

In all cases Transport and Main Roads' primary objectives are the safety of road users and protection of road infrastructure.

Transport and Main Roads seeks to ensure the most appropriate intervention occurs to guarantee road safety without imposing unreasonable costs on stock owners for fencing.

Application

Under Section 45 of the ***Transport Infrastructure Act 1994*** a local government may exercise powers on a SCR. However, Transport and Main Roads can impose conditions on any SCR by way of a contract with local government.

Section 100 of the ***Transport Operations (Road Use Management) Act 1995*** authorises local government to seize, remove and detain animals which have been abandoned on a road or whose presence on a road is hazardous. In some cases there are local laws that authorise local government to impound stray animals or other animals in the public interest.
Section 137 of the ***Police Powers and Responsibilities Act 2000*** authorises police, in prescribed circumstances, to seize and move an animal, or arrange for it to be moved, to another place for its safety and that of others.

Definitions

The following definitions have been taken from the ***Land Protection (Pest and Stock Route Management) Act 2002***:
"stock" means alpacas, asses, buffaloes, camels, cattle, deer, donkeys, goats, horses, llamas, mules, sheep or vicunas
"stock route" means a road or route ordinarily used for travelling stock or declared under a regulation to be a stock route.

Guidelines

Stock removal
If an animal is found or reported as a danger on the road, local government should be notified and requested to take action to remove the animal as soon as possible.

There are two levels of responsibility:
- local government, or police -removal of the animal
- Transport and Main Roads -interim management of the hazard.

If the authorities normally responsible or the owner of the animal (if relevant) is not able to take immediate action to remove the hazard to motorists, it may be appropriate that Transport and Main Roads assess the situation and take appropriate action, such as erecting warning signs for motorists.

If the animal causing the situation has escaped from property the landowner should be notified of any suspect fencing. If the fence is not repaired within a reasonable time, it should be brought to the attention of local government for appropriate action.

Should an injured animal be reported as causing a hazard on the road and local government and/or the police cannot be contacted, the following organisations may be able to assist:
- RSPCA Inspectorate Ph 07 3426 9971 or 1300 852 188
- RSPCA 24-hr call centre Ph 3426 9999
- DPI Call Centre Ph 13 25 23
- Queensland Parks and Wildlife Office, or 1300 130 372.
- RSPCA Animal Ambulance (Brisbane/Gold Coast) Ph 3246 9971 or 1300 852 188.

Process for stock removal
District offices should liaise with local government to establish processes and agreed responsibilities for removal of stray stock and animals from roads. In many cases, stock control may fall within a Road Maintenance Performance Contract (RMPC). If such a contract does not exist for a particular road then negotiation of a service agreement that involves local government removing stock may be appropriate.

Crash prevention
Crash prevention aims to reduce the risk of exposure to, and the potential severity of, crashes involving animals. The two basic approaches to crash prevention involve influencing driver behaviour and interventions to prevent animals accessing the road (for example fencing, grids).
Any contribution to the costs of signage, fencing, or some other permanent infrastructure to improve safety and reduce hazards from killed, injured or stray stock should be undertaken on the basis of a risk assessment and a cost/benefit analysis. Examples of a risk assessment methodology and an intervention decision matrix are at Appendices 1 and 2.

Influencing drivers to prevent crashes
Driver behaviour can be influenced through:
- education
- increased visibility
- information (for example, tourist information centres)
- speed zones
- appropriate warning signs

Tourist information centres should be encouraged to provide information to motorists about driving conditions.

Containment
Crash containment concerns the safe and efficient recovery from crashes involving animals. Depending upon the severity of the accident, police and emergency services (ambulance, fire service) will be in charge of the accident site and arrangements for animals involved.
Transport and Main Roads officers should ensure that they do not place themselves in dangerous situations.

Carcass removal from SCR
As part of most RMPCs, dead beasts are removed as a matter of urgency from the SCR. This inclusion should be considered by all offices.

Containment of a potential crash situation
If an animal is found or reported as a danger on the road or in danger, the situation should be reported to local government and request action be taken to remove the animal as soon as possible.

APPENDIX 1

A NATIVE AND FERAL ANIMALS ON ROAD

Native & feral animals (kangaroos, emus, pigs) incl predictability	Nil or rare	Seldom	Occasional	Regular or frequent	Mostly or always	Total Rating Score
Risk rating score	2	5	10	15	20	
TOTAL A Native and feral animals on road						

B DOMESTIC ANIMALS ON ROAD (AGISTING STOCK)

	Nil or rare	Seldom	Occasional	Regular or frequent	Mostly or always	Total Rating Score
Risk rating score	0	6	12	24	30	
TOTAL B Domestic animals on road (agisting stock)						

C DOMESTIC ANIMALS ON ROAD (TRAVELLING STOCK)

	Nil or rare	Seldom	Occasional	Regular or frequent	Mostly or always	Total Rating Score
Risk rating score	1	3	6	12	20	
TOTAL C Domestic animals on road (travelling stock)						

D TRAFFIC AND VEHICLES

	Nil or rare	Seldom	Occasional	Regular or frequent	Mostly or always	Total Rating Score
Number light vehicles/day	< 250	250-500	500-1000	10005000	>5000	[redacted]
Risk rating score	5	10	15	30	40	
Number heavy vehicles/day	< 50 per day	50 – 100	100-250	250-500	>500	[redacted]
Risk rating score	2	5	10	10	10	
Proportion of tourists (%)	<5%	5 – 15%	15 – 25%	25 – 30%	>30%	[redacted]
Risk rating score	10	20	25	30	40	
Annual reported crash history with animals	Rating equals the total number of crashes _____ x 10					
Annual no. of crashes causing hospitalisation or fatality	Rating equals the total number of crashes_____ x 50					
TOTAL D (Traffic and vehicles)						

E ENVIRONMENT OF ROAD

	Unattractive to animals		Somewhat attractive to animals	Attractive to animals	Total Rating Score	
Abutting habitat (vegetation &/or water)						
Risk rating score	**5**		**10**	**30**		
Width of road	Unsealed	<5m seal	seal 5m-9m	seal >9m	[redacted]	
Risk rating score	**30**	**15**	**7**	**0**		
Speed environment	<60kph	60-80kph	80-100kph	>100 kph	[redacted]	
Risk rating score	**0**	**10**	**20**	**40**		
General road terrain	Straight & flat	Flat & rolling	Rolling	Hilly	[redacted]	
Risk rating score	**0**	**5**	**20**	**30**		
Visibility	Excellent	Good	Reasonable	Poor	Very poor	[redacted]
Risk rating score	**0**	**5**	**10**	**30**	**40**	
					TOTAL E (Environment)	

APPENDIX 2

Intervention Decision Matrix

Transpose the rating score from Appendix 1 to the following decision matrices. Some scores will cover more than one box. The appropriate intervention is determined by the position of the lowest score. For example if the "A" and "E" ratings are high but the "D" rating is low (such as 20) then the intervention would be a sign only.

Rating score from Appendix 1: A_____ B_____ C_____ D_____ E_____

	Traffic & vehicle (D)	**Environment (E)**	**Intervention**
> 9 (If < 9, consider sign)	>15	>20	Sign
>15	>30	>30	Sign
>15	>50	>40	Consider sign visibility improvements
>15	>60	>60	• Sign regularly • Visibility improvements • Consider speed reduction

	Traffic & Vehicle (D)	**Environment (E)**	**Intervention**
>10 (If < 10, consider sign)	>15	>20	Sign
>10	>30	>30	• Sign • Consider fencing – low priority
>15	>40	>40	• Sign • fencing – medium priority
>25	>50	>50	• Sign • fencing – high priority
>25	>60	>60	• Sign risk • Fencing – very high priority
>25	>60	>60	Fence risk areas

	Traffic & Vehicle (D)	**Environment (E)**	**Intervention**
>5	>15	>20	Sign
>5	>30	>40	• Sign • Stock management plan
>10	>60	>60	• Sign • Stock management plan • Compliance & enforcement action

Hi Alex,

Apologies for late response and for being unable to attend meeting.

My three principles are:

1. Prevention and early intervention to avoid the establishment of non-frangible animal populations that can have a significant impact on the safety of road users, the economy and environment.
2. Management of non-frangible animal populations is the shared responsibility between landholders, community, industry and government.
3. Identification of non-frangible animal population in buffer management areas around sensitive assets (to account for animal mobility).

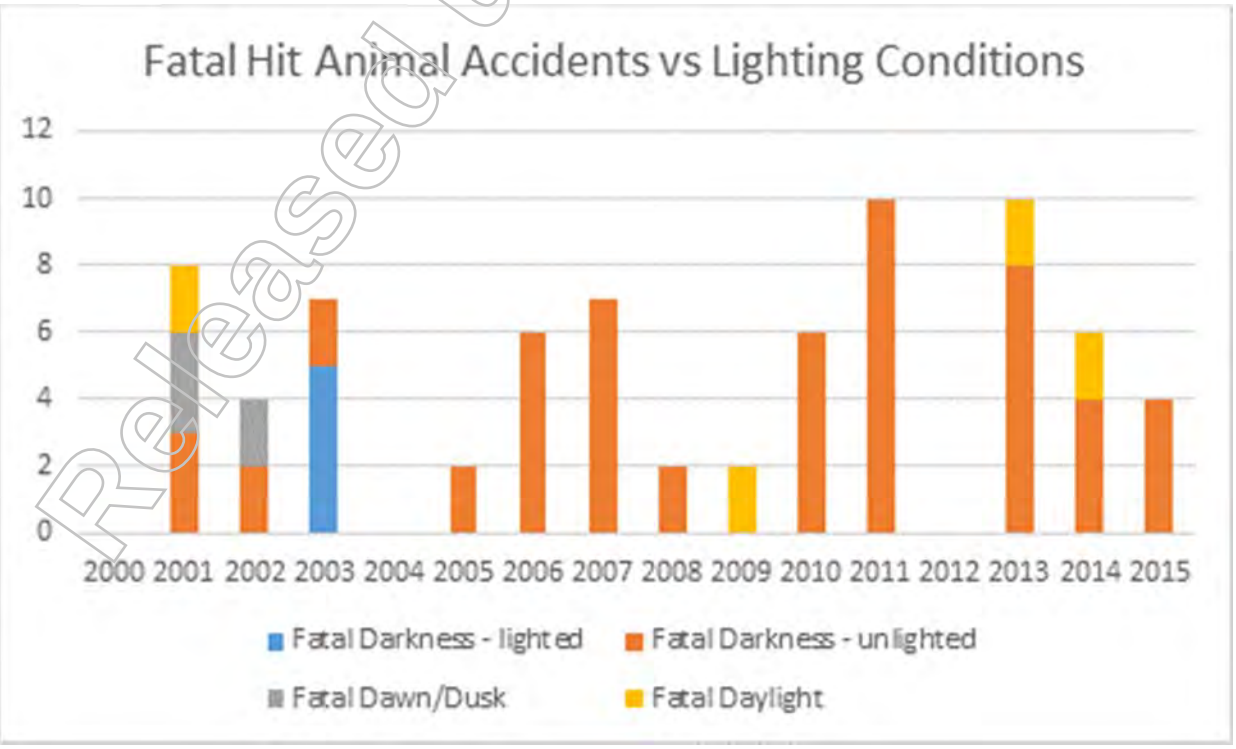
A non-frangible animal is a term that I am throwing around. Non-frangible animals are larger animals that if hit by a moving vehicle could cause significant damage to a vehicle and potentially harm occupants.

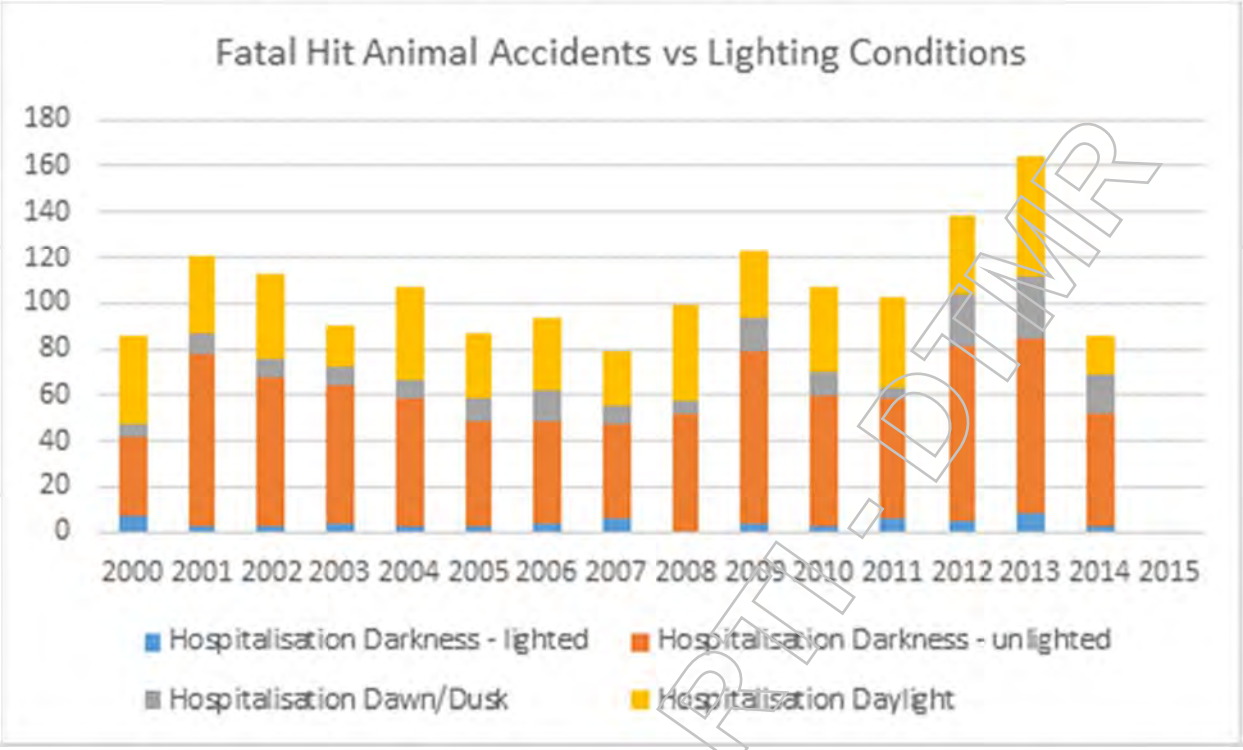
Please note: Queensland Police Services (QPS) collects accident records. TMR just processes them. If the group is moving to month by month decision making then QPS should provide data not TMR. TMR is limited to undertaking long term trend analysis but QPS might be able to provide more responsive short term data.

TMR's WebCrash data currently has a 2 year lag due to how information from QPS QPRIME database communicates with WebCrash. There are also issues how incidents involving animals are being reported between the 2 systems.

I'm also cautious with sharing information available on WebCrash as the information may be of a sensitive nature or still in litigation.

Thus far the following information has been extracted from WebCrash which indicated that night time accidents are the big issue.





Perhaps the adoption of the new Australian Pest Animal 2017 to 2027 principles of effective pest animal management might be a good way forward:

1) Prevention and early intervention to avoid the establishment of new pest animal species is generally more cost-effective than ongoing management of established populations.

2) Pest animal management is a shared responsibility between landholders, community, industry and government.

3) Management of mobile pest animals requires a coordinated approach across a range of scales and land tenures.

4) Management of established pest animals should focus on the protection of priority assets (for example, a lambing paddock or a threatened ecological community) but also usually requires a 'buffer' management area around the asset to account for pest animal mobility.

5) Pest animal management should be based on actual rather than perceived impacts and should be supported by monitoring to measure whether impact reduction targets are being achieved.

6) Best practice pest animal management balances efficacy, target specificity, safety, humaneness, community perceptions, efficiency, logistics and emergency needs.

7) Best practice pest animal management integrates a range of control techniques (including commercial use where appropriate), considers interactions between species (such as rabbits and foxes) and accounts for seasonal conditions (for example, to take advantage of pest animal congregations during drought) and animal welfare.

8) The cost of pest animal management should be borne by those who create the risk and those who benefit from its management. Governments may co-invest where there is a net public benefit from any such intervention.

Looking forward to further discussions on this matter.

Pages 66 through 356 redacted for the following reasons:
- -
Refuse - S.53 - Other access available
Refuse - Schedule 4, Part 4, Item 8 - Affecting confidential communications

State Land Pest Management Committee

AGENDA PAPER 6

DATE: 23 October 2008

TITLE Feral horse management across multi-tenured lands.

PURPOSE

1. The purpose of this report is to provide recommendations to the State Land Pest Management Committee on the management of feral horses that roam across state lands, including criteria to identify a lead agency.

BACKGROUND

2. Public safety issues associated with feral horses are present on a variety of land tenures across Queensland, and, in most cases a multi-agency management response is warranted. In March 2006, Queensland Parks and Wildlife (QPW) and Forestry Plantations Queensland (FPQ) raised the need for a whole of government approach to the management of feral horses that roam across multi-tenured lands in the Fraser Coast and Beerburrum regions.

3. The State Land Pest Management Committee (SLPMC) subsequently established a working group to provide recommendations on this issue. Representation on the working group included QPW, FPQ, Department of Main Roads (DMR), Department of Defence, Department of Natural Resources and Water, Caloundra City Council, Caboolture Shire Council and Cooloola Shire Council.

4. In December 2006 (meeting #17), the working group reported back to the SLPMC (refer **Attachment 1**). At the meeting the SLPMC agreed that there was considerable public interest in feral horse management and that adequate resources need to be dedicated to the consultation process prior to initiating any control programs. It was also agreed that the Department of Natural Resources and Water (now Biosecurity Queensland following machinery-of-government changes in mid 2007) is the lead agency for state-wide management of feral horses.

5. Cost sharing models for control work across multi-tenured lands were also discussed. However, members of the SLPMC were unable to reach unanimous agreement on the working group's recommended 'nil tenure' method for the apportionment of management costs. In particular, FPQ raised concerns with cost of control when the real impacts (and benefits) accrue to others and proposed a counter approach based on which agency has the highest risk.

6. To progress matters, the feral horse working group was requested to solve Beerburrum site arrangements as a case study. A second report (refer **Attachment 2**) detailing the preferred methodology and likely costs of feral horse control at Beerburrum was presented to the SLPMC on 15 May 2008.

7. In addition, DMR have undertaken a risk assessment on the threat of feral horses and deer to road safety on state controlled roads in a manner similar to other road safety related investments. This risk assessment indicated that the average cost of crashes involving horses and deer was estimated to be $197,057 (based upon number and type of incidents and the costs of those incidents – refer **Attachment 3)**.

8. At the SLPMC meeting of 28 August 2008, it was agreed that a small working group (comprising of representatives from Biosecurity Queensland, DMR, FPQ and QPW) meet to review previous reports, including the findings of DMR's risk assessment, and finalise guiding principles that State and Commonwealth landholding agencies can apply when considering feral horse management issues across multi-tenured lands. On 24 September 2008, the working group met and prepared this report.

KEY ISSUES

9. Feral horses are currently not a declared species under the *Land Protection (Pest and Stock Route Management) Act 2002*. As such any decision to undertake control or management activities is because of the economic, environmental and social incentives for control, and/or the economic, environmental and social threats posed by feral horses – rather than a statutory obligation.

10. Feral horses have traditionally had a wide distribution throughout western and northern Queensland with approximately 100,000 feral horses across the entire state (Mitchell et. al. 1985). Feral horse populations are present in almost all land types including both natural forested areas and commercial forestry plantations, areas of forest close to densely populated urban areas and until recently, offshore islands.

11. Feral horses have a range of adverse impacts. Economic impacts include competition with domestic stock for grazing, damage to farm infrastructure and the potential for feral horses to act as vectors of diseases and parasites. The major social impacts relate to the potential for feral horses to cause motor vehicle accidents. The potential environmental impacts of feral horses include damage to water holes and wetlands, accelerated soil erosion and overgrazing of native species.

12. Biosecurity Queensland has a number of responsibilities for pest management. The *Land Protection (Pest and Stock Route Management) Act 2002* is the primary Act relating to management of exotic, terrestrial vertebrate species. Biosecurity Queensland has initiated a pest assessment for feral horses which is currently in a draft stage. The assessment examines the economic, social and environmental costs and benefits of feral horses and the feasibility of control.

13. There are currently no specific state agency policies or operational procedures relating to how feral horses are to be managed, but generic pest control processes that include feral horses are in place. Strategies for feral horse control are considered on a case-by-case basis taking full account of the nature and extent of environmental and public safety impacts, the range of potential control options and the scope for integrated action with adjoining landholders.

14. QPW is in the process of developing a state strategy and procedural guides for managing feral horses on QPW managed lands.

15. The Department of Defence feral horse management activities are guided by the 'Management *of Feral Animals, Weeds and Overabundant Native Species on*

Defence Estate: National Guidelines'.

16. Local governments have taken action against feral horses on a small scale. Primarily these actions are conducted to reduce the risk of accidents and to reduce damage to rural infrastructure.

17. Successful management of feral horses cannot be achieved without a good understanding of their ecology. It is essential to determine their distribution and abundance, and the factors that influence distribution and abundance. This information will establish the extent of the problem and the effort needed to solve it. The suitability of control methods is dependent on a good understanding of horse ecology.

18. There are a wide range of control options for feral horse management and the selection of these should be determined on sound pest management principles including consideration of risks.

Guiding principles for feral horse management across state lands

19. Where feral horse control at individual sites requires a multi-agency response, lead agency and funding responsibilities will be negotiated on a case-by-case basis.

20. Negotiations will involve the agencies that are responsible for the affected land and will take into consideration:
    - the extent and nature of the cause of the problem,
    - the impact of the problem using both the 'nil tenure' [1] and the 'he who cares most' [2] principles.

    'Affected land' refers not just to the area where the horses are having an adverse impact (e.g. roads) but also the land from which the horses emanate.

21. The guiding principles to manage an identified feral horse issue should follow the following steps as a minimum:
    - Define the problem -- what is it, where does it occur, what are the causes, where are the sources and how critical is the issue (i.e. what are the risks of action or inaction and what are the benefits of control).
    - Apply a 'nil tenure' approach – remove all land tenure information then plot the information gained from the first step onto a map.
    - Identify key stakeholders - Once the problem has been defined spatially, the key parties can be identified by replacing the land tenure information.
    - Identify the lead agency - Once the key parties have been identified, identify the lead agency and begin negotiating lead agency responsibilities and apportionment of costs of management based on the 'he who cares the most' principle.

[1] 'Nil tenure' approach does not consider tenure boundaries in the assessment and resolution of a pest management problem. All land management agencies directly or indirectly affected by the pest are part of the project team.

[2] 'He who cares most' approach refers to the agency exposed to the greatest risk and/or receiving the most benefits from control, regardless of who manages the land. This does not remove the normal duty of care and legislative accountabilities for all of the land management agencies involved.

- Determine objectives and management options – do the benefits of control outweigh the costs (monetary and non-monetary) of control.

22. When the key parties are unable to reach an agreement a dispute resolution process will be instigated involving mediation by an agreed facilitator.

RECOMMENDATION

That the State Land Pest Management Committee:

- adopts the principles for feral horse management across state lands.

Submitted by: Feral Horse Working group

Kathryn Mahony (DMR)
Brian McCormack (FPQ)
Mark Weaver (EPA)
Chris Spurdle (BQ)
Jane Morton (BQ)

Attachment 1

U:\Biosecurity\IPandA\Mineral House

Attachment 2

U:\Biosecurity\IPandA\Mineral House

Attachment 3

U:\Biosecurity\IPandA\Mineral House

Endorsed: 23 October 2008

State Land Pest Management Committee

AGENDA PAPER

Item No 6

DATE: 2006

TITLE Feral horse management across multi-tenured lands

PURPOSE

1. To provide recommendations to the State Land Pest Management Committee on the management of feral horses that roam across multi-tenured lands, including criteria to identify a lead agency, and to provide options for managing the north coast feral horse issue.

BACKGROUND

2. At meeting 14 of the State Land Pest Management Committee, the Queensland Parks and Wildlife Service (QPWS) and DPI Forestry raised the need for a whole of Government approach to the management of feral horses that roam across multi-tenured state lands.

3. The State Land Pest Management Committee subsequently agreed to:

- sponsor a working (taskforce) group for the north coast issue that includes Mark Weaver (QPWS), Leigh Kleinschmidt (Forestry Plantations Queensland), Bruce Ollason (Department of Main Roads), Leanne Sommer (Department of Defence), a Department of Natural Resources, Mines and Water (NRMW) representative and include an invitation to Caloundra City Council, Caboolture Shire Council and Cooloola Shire Council to provide options.
- the working group providing recommendations to the State Land Pest Management Committee for agreement that include criteria used to identify and guide the identification of a lead agency for this issue that can be used in broader cases
- NRMW developing a paper about feral horse management to the Interagency Pest Management Committee
- NRMW to lead the development of Statewide policy (medium term) and possible strategy (long term)

4. The taskforce met on 13 July 2006 to discuss to discuss the north coast feral horse issue and develop lead agency criteria. Representatives from QPWS, Forestry Plantations Queensland (former DPI Forestry), Main Roads, Department of Defence, Caloundra City Council, Caboolture Shire Council, Cooloola Shire Council and NRMW attended. Following the meeting, a paper was drafted which was circulated to all parties for their comment and endorsement prior to it being submitted to the State Land Pest Management Committee.

KEY ISSUES

5. Feral horses have traditionally had a wide distribution throughout western and northern Queensland with approximately 100,000 feral horses across the entire state (Mitchell et. al. 1985). Feral horse populations are present in almost all land types including commercial forestry plantations, areas of forest close to densely populated urban areas and until recently, offshore islands.

6. Feral horses have a range of adverse impacts. Economic impacts include competition with domestic stock for grazing, damage to farm infrastructure and the potential for feral horses to act as vectors of diseases and parasites. The major social impacts relate to the potential for feral horses to cause motor vehicle accidents. The potential environmental impacts of feral horses include damage to water holes and wetlands, accelerated soil erosion and overgrazing of native species.

7. NRMW has a number of responsibilities for pest management. The *Land Protection (Pest and Stock Route Management) Act 2002* is the primary Act relating to management of exotic, terrestrial vertebrate species. Feral horses are not a declared pest under the Act. NRMW has initiated a pest assessment for feral horses which is currently in a draft stage. The assessment examines the economic, social and environmental costs and benefits of feral horses and the feasibility of control.

8. QPWS has no specific policies or operational procedures relating to how feral horses are to be managed, but a generic pest control project approval system that could include feral horses is in place. Strategies for feral horse control are considered on a case-by-case basis taking full account of the nature and extent of environmental impacts, the range of potential control options and the scope for integrated action with neighbours across estate boundaries.

9. Populations of feral horses have become established at numerous locations on QPWS protected areas and forest estates across the State. While not quantified, they are known to be causing negative ecological and social impacts. The productivity of neighbouring properties is also affected. A major feral horse control operation is currently being planned for the Carnarvon National Park.

10. The Department of Defence have actively managed feral horses on different properties throughout the state including Greenbank Training Area and Townsville Field Training Area. Such activities are guided by the *'Management of Feral Animals, Weeds and Overabundant Native Species on Defence Estate: National Guidelines'.* The Townsville and Greenbank operations are examples of extremely well-planned operations with extensive community and stakeholder consultation.

11. Local governments have taken action against feral horses on a small scale. Primarily these actions are conducted to reduce the risk of accidents and to reduce damage to rural infrastructure.

12. The presence of feral horses on state land at Beerburrum and the Fraser Coast is primarily a risk management issue. There is a risk of horses causing a vehicle accident resulting in serious injury or death to both the animal and human life. Feral horses are not having an impact on forestry production and little to no environmental damage is apparent.

13. Caloundra City Council provides an emergency response to calls from police regarding feral horses on the Bruce Highway in the vicinity of Beerburrum. A sharp increase in the number of calls was recorded in 2004/2005. From August 2004 to May 2006, response to 38 out-of-hours calls cost approximately $20,000.

14. An aerial survey was undertaken to determine horse numbers, but was not

successful due to the amount of tree cover. Meetings were convened with QPWS, DPI Forestry, NRMW, Main Roads and neighbouring local governments to discuss the issue. Council have clearly stated that they wish to see all feral horses removed from the Beerburrum forest due to the risk of injury to motorists.

15. A ground survey in January 2006 for Forestry Plantations Queensland (FPQ) estimated there to be 76 horses over 5,500 hectares in the Beerburrum forest (Sunset Downs Pty Ltd, 2006). The report is extremely comprehensive and involved significant effort in terms of the distribution and density survey.

16. Complaints from the public in relation to feral horses and their proximity to road corridors have been raised at Fraser Coast in relation to the Rainbow Beach/Tin Can Bay Road. A QPWS risk assessment and an earlier feral horse survey for Tuan/Toolara indicated that there were approximately 181 feral horses in the area. The survey was not comprehensive and the survey author notes that the survey technique used was likely to result in an underestimation of the total population size.

17. Successful management of feral horses cannot be achieved without a good understanding of their ecology. It is essential to determine their distribution and abundance, and the factors that influence distribution and abundance. This information will establish the extent of the problem and the effort needed to solve it. The suitability of control methods is dependent on a good understanding of horse ecology.

18. There are a range of management options available for reducing the risk of animals causing vehicle accidents in the Beerburrum and Fraser Coast areas. These include:

Management Options	Advantages	Disadvantages
Do nothing	Cheap. No impact on horses	Risk of accident remains
Fencing	Low impact on horses	Costly initial and ongoing maintenance costs
Signage	Low cost	Does little to reduce risk
Hazing	Low cost (per attempt). Low impact on horses	Temporary measure requiring repeated applications. Relocates problem rather than solves it
Trapping/ Mustering	Live capture. Relocation and sale possible. Able to recover some costs. Publicly acceptable. Herds taken in entirety	May need several traps and musters over range. Risk to participants. Limited market for animals. Transportation from capture point to abattoir or to holding site (possible stress). Experienced operators required
Aerial shooting	Access to most sites possible. Fast follow-up allows for humane dispatch. More able to ensure local eradication. Relatively quick operation time	Significant public opposition May be more stressful than ground shoot. Relatively costly compared to ground shoot. Dependent on weather. Skilled pilots and markspeople required
Ground shooting	Relatively low cost. Able to be selective. No need for permanent structures.	Significant public opposition Difficult to follow-up if not killed outright. Difficult to guarantee eradication in area. Diminishing returns. Carcass disposal problems. Time consuming Skilled markspeople required
Fertility Control	Humane. Non-lethal. Likely to receive public approval	Technology still being developed. On-going vaccinations are needed to ensure effectiveness. Could prove an expensive option. Any additions (births) need also be captured, and dosed.

19. The most suitable options for managing feral horses at Beerburrum and Tuan/Toolara are likely to be a combination of lure-based trapping and mustering. Prior to any activity taking place however, it is vital that the following actions are undertaken by the agency responsible:

    a) Carry out a survey in Tuan/Toolara to determine feral horse distribution and abundance;
    b) Determine what the outcome of management is for each area (e.g. eliminate risk of feral horses causing vehicle accidents at Beerburrum);
    a) Identify and cost most suitable potential management options (e.g. removal of entire herd from Beerburrum); and
    b) Initiate significant public consultation to gain support for the desired option.

20. The determination of lead agency for management of pests has been examined by the Interagency Pest Management Committee (IPMC) who proposed two models. Both are relevant to feral horse management at the state level, and at the site level in the case of Beerburrum and Tuan/Toolara.

21. The first model considers that the agency or agencies best able to deliver all pest management outcomes are described by three core components: portfolio charter, agency capacity and precedent. This recognises that the successful management of pests is a product of history, political imperative, community expectation of roles of agencies, current programs, skills and resources, relevant national and state linkages and precedent of the agency having been involved in the management of a species previously.

22. The IPMC identified NRMW as the lead agency for exotic mammals, which includes feral horses. In this context, 'lead agency' means that NRMW are responsible for coordinating the state-wide management of such species, including pest declarations.

23. The second model proposes that the lead agency should be "he who cares the most". This guiding principle can be taken to mean that when a pest is located in an area of most interest to one agency (e.g. a national park), then even if the management of this species would usually be considered the role of another agency, the agency with the greatest interest in the management of the species on the land affected should lead the response (e.g. QPWS in national parks).

24. This model leads to decisions on lead agency to be site based rather than species based. One weakness of this model is that in some cases action is required to safeguard assets that are not important to that land manager or where the impacts of the pest on the manager's land are external to that land. This is relevant to the Beerburrum/Fraser Coast feral horses as human health and safety are the biggest risks posed by the horses and the risks occur primarily on land managed by Main Roads.

25. In the case of Beerburrum and Fraser Coast it is proposed that a modified 'he who cares the most' model is the most appropriate to determine lead agency and allocate costs. The following process has been used and is appropriate in similar situations for feral horses and other pest species:

- Define the problem – what is it, where does it occur, what are the causes, where is the source and how critical is it and determine objectives and management options

- Using a 'nil tenure' approach, remove all land tenure information then plot the information gained from the first step on a map.
- Once the problem has been defined spatially, the key parties can be identified by replacing the land tenure information.
- Once the key parties have been identified, a lead agency can be identified and costs of management apportioned.

26. The lead agency for each site will be the agency with the most land affected. The lead agency may not carry out the actual control of the species and may contract it to a third party.

27. The costs of feral horse management are not insignificant, even when dealing with small populations. In addition to the direct control costs, there are often significant costs involved in public consultation. This will vary depending on the location and the level of public interest in both the feral horse population and the proposed control method/s.

28. Costs can be allocated using a range of different methods. A proportional division of costs based on land area is a common method to allocate costs. This is an appropriate method for consideration in cases such as Beerburrum and the Fraser Coast. In order to recognise the public benefit and the benefit to road maintenance authorities, it is appropriate for road maintenance agencies such as Main Roads to make a greater contribution. This can be done by allocating a greater land area to the roading corridor (e.g. a 500m buffer on either side of a road corridor) to better reflect the benefit that will be gained from feral horse control.

29. The ability and willingness of individuals and agencies to pay for the preferred option will vary from case-to-case and will require negotiation.

30. The taskforce was unable to reach unanimous agreement on the recommendations below. FPQ felt that recommendations 4 and 5 were vague and open to interpretation and offered the alternatives listed below.

RECOMMENDATIONS

That the State Land Pest Management Committee:

1. Note that feral horse management is likely to attract significant public interest and that adequate resources need to be dedicated to the consultation process prior to initiating any control programs.
2. Agree that NRMW is the lead agency for state-wide management of feral horses.
3. Note that more knowledge is required on Tuan/Toolara horses prior to any management activities occurring.
4. Agree that the lead agency for each site will be the agency with the most land affected following definition of the problem using a nil tenure approach.
5. Agree that the costs of control for feral horses at individual sites should be allocated on a proportional division of costs based on land area.

FPQ alternative recommendation 4 and 5:

4. Agree that the lead agency for each site will be negotiated between the agencies with affected lands, taking into consideration the extent and nature of the cause and impact of the problem using a 'Nil tenure' approach.
5. Agree that the costs of control for feral horses at individual sites should be allocated on a negotiated basis to be agreed at the time by the agencies involved.

References

Dobbie, W., Berman, D. and Braysher, M. 1993. Managing Vertebrate Pests – Feral Horses. Australian Government Publishing Service. Canberra.

Mitchell, J., Merrell, P. and Allen, L. 1985. Vertebrate Pests of Queensland – Prepared from results of a survey of feral animals of Queensland, 1981/1982. Stock Routes and Rural Lands Protection Board Report.

Sunset Downs Pty Ltd, 2006. Beerburrum State Forest feral Horse Management. Stage 1: Distribution and Abundance, unpublished consultants report for FPQ

State Land Pest Management Committee

AGENDA PAPER

DATE: 15 May 2008

TITLE Feral horse management across multi-tenured lands.

PURPOSE

1. To update members of the State Land Pest Management Committee ('the SLPMC') on the review of feral horse management across multi-tenured land in the Beerburrum area.

BACKGROUND

2. Public safety issues associated with feral horses is present on a variety of land tenures across Queensland, and, in most cases a multi-agency management response is warranted. In March 2006, Queensland Parks and Wildlife Service and Forestry Plantations Queensland raised the need for a whole of government approach to the management of feral horses that roam across multi-tenured lands in the Fraser Coast and Beerburrum regions.

3. The SLPMC subsequently established a working group to provide recommendations on this issue. Representation on the working group included Queensland Parks and Wildlife Service, Forestry Plantations Queensland, Department of Main Roads, Department of Defence, Department of Natural Resources and Water, Caloundra City Council, Caboolture Shire Council and Cooloola Shire Council.

4. In December 2006 (meeting #17), the working group reported back to the SLPMC. A paper was presented with a proposed funding model to determine lead agency responsibilities and allocate control cost (refer **Attachment 1**). The model applies a 'nil tenure' approach and involves the following process:
   - Define the problem – what is it, where does it occur, what are the causes, where is the sources and how critical is it.
   - Determine objectives and management options.
   - Apply a 'nil tenure' approach – remove all land tenure information then plot the information gained from the first step onto a map.
   - Once the problem has been defined spatially, the key parties can be identified by replacing the land tenure information.
   - Once the key parties have been identified, identify the lead agency and apportion costs of management.

5. At the meeting the SLPMC agreed that there was considerable public interest in feral horse management and that adequate resources need to be dedicated to the consultation process prior to initiating any control programs. It was also agreed that the Department of Natural Resources and Water (now Biosecurity

Queensland following machinery-of-government changes in mid 2007) is the lead agency for state-wide management of feral horses.

6. Cost sharing models for control work across multi-tenured lands were also discussed. However, members of the SLPMC were unable to reach unanimous agreement on the working group's recommended 'nil tenure' method for the apportionment of management costs. In particular, Forestry Plantations Queensland would not accept costs of control when the real impacts (and benefits) accrue to others and proposed a counter approach based on which agency has the highest risk.

7. To progress matters, the feral horse working group was requested to solve Beerburrum sites arrangements first.

KEY ISSUES

8. Beerburrum State Forest is between Caboolture and Caloundra, approximately 100 kilometres north of Brisbane. It is a softwood plantation forest with various aged trees. Many roads and tracks, with various amounts of use, dissect the forest.

9. A comprehensive ground survey in January 2006 for Forestry Plantations Queensland estimated there to be 76 horses over 5,500 hectares in the Beerburrum State Forest (Sunset Downs Pty Ltd, 2006). The feral horses in the forest are not having an impact on forestry production and little to no environmental damage is apparent.

10. In recent times, concerns have been raised in regards to the health and safety risks associated with the presence of feral horses. Horses are often seen on the side of the very busy Bruce Highway where it runs through the Beerburrum State Forest. The animals are also known to wander onto the highway and other local roads (including internal State forest roads) and have the potential to cause a vehicle accident resulting in damage to vehicles and/or severe injury or death to the occupants.

11. Arguably, impacts/risks associated with feral horses on Forestry Plantations Queensland (as the landholder where most of the animals reside) are confined to workplace health and safety issues associated with accidents that might occur on internal forest roads. The main impacts/risks are on other parties such as road users and/or Department of Main Roads, which might be exposed to liability issues in the event of a wandering horse causing an accident on the highway.

12. The Caloundra City Council provides an emergency response to livestock straying onto roads. An audit by Council identified a significant increase in the number of emergency call outs for stray horses on the Bruce Highway in the vicinity of Beerburrum. From August 2004 to May 2006, Council responded to 38 out-of-hours calls.

13. It is generally agreed that management of the feral horse population in the area is required. As instructed by the SLPMC, a proposed feral horse management program for Beerburrum is outlined below. The proposed program is based upon the previous findings of the working group.

14. The desired outcome of management would be to reduce feral horse populations in the Beerburrum State Forest to a level whereby there is a low risk of horses causing vehicle accidents in the area.

15. There are a range of management options available for reducing the risk of feral horses causing vehicle accidents in the Beerburrum State Forest. These include:
    - Do nothing. Accept the potential risks and liabilities of horses causing vehicle accidents.
    - Fencing: erect fences to keep horses off the road. Costly initial and ongoing maintenance costs.
    - Signage: low cost but does little to address the problem.
    - Hazing: non-lethal method involving the harassment of horses to disperse them from the area – tends to shift rather than address a problem
    - Trapping and mustering: Refer paragraph 16 below.
    - Aerial shooting – use of helicopters to shoot the animals.
    - Ground shooting. Culling by ground shooting.

16. The most suitable (and likely publicly acceptable) option for managing feral horses at Beerburrum is a combination of lure-based trapping and mustering. This involves the live capture of feral horses in the area and their relocation. Fencing important waters with electric fences may be required to control the distribution of the horses and direct them to where they can be trapped or mustered.

17. Captured horses of a suitable age and temperament (assessed by vet, RSPCA officer, and experienced horseperson) may be put up for adoption. However, while the public sale of feral horses is possible to recover some of the costs of the operation, there is generally only a limited market and most animals are likely to be transported from the capture point to the local abattoir.

18. An integral part of the operation would involve significant public consultation prior to and during the operation to ensure public understanding of the issues and support for the control.

19. Based upon similar operations in Queensland, the cost of such an operation is estimated to be approximately $100,000.

20. Based on the 'nil tenure' approach, the lead agency for any feral horse management in Beerburrum should be the agency with the most land affected, i.e. Forest Plantations Queensland. The lead agency does not necessarily have to carry out the control and may contract it out to a third party. 'Land affected' refers not just to the area where the horses are having an adverse impact (i.e. roads) but also the land where horses are emanating from and causing the problem.

21. A proportional division of costs based on land area is a common method to allocate costs. However, as per the working group's recommendations a modified 'he who cares the most' model is considered appropriate. Given the significant benefits accruing to road maintenance authorities from feral horse control, it is appropriate for road maintenance agencies such as the Department of Main Roads to make a greater contribution. This can be done by allocating a greater land area to the road corridor (e.g. a 500m buffer on either side of a road).

22. Based upon the above model, Forest Plantations Queensland would contribute towards most of the costs of control while Main Roads would also contribute. The ability and or willingness of those agencies to fund that control has yet to be determined and will require negotiation.

23. In the interim, Forest Plantations Queensland and the Department of Main Roads could identify the risk of vehicle accidents from feral horses in their risk registers (if they have not already done so).

24. Biosecurity Queensland will continue to lead the development of State-wide policy (medium term) and possible strategy (long term) for feral horses.

25. Feral horses are not a declared pest under the Act. Biosecurity Queensland has initiated a pest assessment to consider declaring feral horses a pest under the *Land Protection (Pest and Stock Route Management) Act 2002*. This pest assessment is currently in a draft stage (refer **Attachment 2**). The assessment examines the economic, social and environmental costs and benefits of feral horses and the feasibility of control.

RECOMMENDATIONS

That the State Land Pest Management Committee:

1. agree that lead agency criteria and funding model developed by the Feral Horse Working Group is an appropriate basis for discussion between the Department of Main Roads and Forest Plantations Queensland in relation to feral horse control in the Beerburrum State Forest; and
2. agree that the lead agency criteria and funding model have applications for the management of feral horses and other pest species on multi-tenured lands across Queensland.

References

Sunset Downs Pty Ltd, 2006. *Beerburrum State Forest feral Horse Management. Stage 1: Distribution and Abundance*. Unpublished consultants report for FPQ.

Submitted by: Chris Spurdle

Attachment 1

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Attachment 2

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Attachment 3

Department of Main Roads risk assessment of feral horse risks to road safety in Beerburrum

This paper summarises the findings of a risk assessment carried out by the Department of Main Roads (DMR) to evaluate feral horse risks to road safety in the Beerburrum area.

The approach adopted by DMR was to assess the issue of feral horses in the Beerburrum area in a manner similar to other road safety related investments (applied under the Safer Roads Sooner Program).

The risk assessment involved a review of recorded crashes involving horses and deer on state-controlled roads across Queensland over the last five years. The average cost of crashes involving feral deer and horses was estimated to be $197,057 (based upon number and type of incidents and the costs of those incidents – refer Table 1).

Table 1: Crashes involving horses and deer on state-controlled roads in Queensland

Types of incidents	No. of incidents	Cost per incident
Fatality	3	$2,205,030
Hospitalisation	12	$529,207
Medical treatment	12	$18,159
Minor injiury	8	$18,159
Property damage	34	$7,782
	Average crash cost	**$197,057**

In relation to Beerburrum, only a single crash involving horses has been recorded over the last five years. The incident involved three horses crossing the Bruce Highway and one of them being struck by a southbound car (there is nothing said to indicate whether these horses were feral or domestic). The crash occurred at night time and was of low severity (property damage only). However, as highlighted in Table 1 above, crash records indicate that it is not uncommon for crashes involving horses (and deer) to be more severe.

Assuming the average crash cost is $197,005 and a horse cull at Beerburrum results in a 50% crash reduction, the estimated crash cost savings for the Bruce Highway at Beerburrum is $98,503. The estimated cost of culling horses in the Beerburrum area is approximately $100,000. This gives a benefit cost ratio (BCR) of approximately 1 (0.985). If DMR were to apply the same basis for funding as is adopted by the Safer Roads Sooner and Blackspot Programs (a minimum BCR of 2), DMR funding of the horse cull would not be eligible.

DMR recognise that if the crash had been more severe and resulted in a hospitalisation or fatality, the BCR would be well over one (presuming the cull results in a ‘significant’ reduction in numbers, as expected, and is effective for at least 5 years).

The risk assessment documents the current threat posed by feral horses in the Beerburrum area to road safety and concludes that the risks are currently low. Across the state, feral horse incidents on state roads tend to be isolated incidents. Therefore, DMR sharing or contributing to the costs of horse culls will be considered on a case-by-case basis.

The Main Roads Project Manager's Risk Management Guidelines provide definitions for the different consequence and likelihood descriptors. In this instance, given there is only one recorded crash in Beerburrum in five years, DMR consider the likelihood of a vehicle colliding with a feral horse on the Bruce Highway at Beerburrum to be rare (<10% probability). However, the consequence is potentially severe (if the crash were to result in a fatality). The corresponding risk rating for this situation is ‘high’.

The guidelines recommend a risk management plan be prepared and implemented for risks assessed as high. The risk management plan may:

- reduce the likelihood of crashes involving feral horses by contributing to a cull of horses in the area; or
- accept the risk and not make a contribution.

State Land Pest Management Committee

AGENDA PAPER

DATE: 15 May 2008

TITLE Feral horse management across multi-tenured lands.

PURPOSE

1. To update members of the State Land Pest Management Committee ('the SLPMC') on the review of feral horse management across multi-tenured land in the Beerburrum area.

BACKGROUND

2. Public safety issues associated with feral horses is present on a variety of land tenures across Queensland, and, in most cases a multi-agency management response is warranted. In March 2006, Queensland Parks and Wildlife Service and Forestry Plantations Queensland raised the need for a whole of government approach to the management of feral horses that roam across multi-tenured lands in the Fraser Coast and Beerburrum regions.

3. The SLPMC subsequently established a working group to provide recommendations on this issue. Representation on the working group included Queensland Parks and Wildlife Service, Forestry Plantations Queensland, Department of Main Roads, Department of Defence, Department of Natural Resources and Water, Caloundra City Council, Caboolture Shire Council and Cooloola Shire Council.

4. In December 2006 (meeting #17), the working group reported back to the SLPMC. A paper was presented with a proposed funding model to determine lead agency responsibilities and allocate control cost (refer **Attachment 1**). The model applies a 'nil tenure' approach and involves the following process:
   - Define the problem – what is it, where does it occur, what are the causes, where is the sources and how critical is it.
   - Determine objectives and management options.
   - Apply a 'nil tenure' approach – remove all land tenure information then plot the information gained from the first step onto a map.
   - Once the problem has been defined spatially, the key parties can be identified by replacing the land tenure information.
   - Once the key parties have been identified, identify the lead agency and apportion costs of management.

5. At the meeting the SLPMC agreed that there was considerable public interest in feral horse management and that adequate resources need to be dedicated to the consultation process prior to initiating any control programs. It was also agreed that the Department of Natural Resources and Water (now Biosecurity

Queensland following machinery-of-government changes in mid 2007) is the lead agency for state-wide management of feral horses.

6. Cost sharing models for control work across multi-tenured lands were also discussed. However, members of the SLPMC were unable to reach unanimous agreement on the working group's recommended 'nil tenure' method for the apportionment of management costs. In particular, Forestry Plantations Queensland would not accept costs of control when the real impacts (and benefits) accrue to others and proposed a counter approach based on which agency has the highest risk.

7. To progress matters, the feral horse working group was requested to solve Beerburrum sites arrangements first.

KEY ISSUES

8. Beerburrum State Forest is between Caboolture and Caloundra, approximately 100 kilometres north of Brisbane. It is a softwood plantation forest with various aged trees. Many roads and tracks, with various amounts of use, dissect the forest.

9. A comprehensive ground survey in January 2006 for Forestry Plantations Queensland estimated there to be 76 horses over 5,500 hectares in the Beerburrum State Forest (Sunset Downs Pty Ltd, 2006). The feral horses in the forest are not having an impact on forestry production and little to no environmental damage is apparent.

10. In recent times, concerns have been raised in regards to the health and safety risks associated with the presence of feral horses. Horses are often seen on the side of the very busy Bruce Highway where it runs through the Beerburrum State Forest. The animals are also known to wander onto the highway and other local roads (including internal State forest roads) and have the potential to cause a vehicle accident resulting in damage to vehicles and/or severe injury or death to the occupants.

11. Arguably, impacts/risks associated with feral horses on Forestry Plantations Queensland (as the landholder where most of the animals reside) are confined to workplace health and safety issues associated with accidents that might occur on internal forest roads. The main impacts/risks are on other parties such as road users and/or Department of Main Roads, which might be exposed to liability issues in the event of a wandering horse causing an accident on the highway.

12. The Caloundra City Council provides an emergency response to livestock straying onto roads. An audit by Council identified a significant increase in the number of emergency call outs for stray horses on the Bruce Highway in the vicinity of Beerburrum. From August 2004 to May 2006, Council responded to 38 out-of-hours calls.

13. It is generally agreed that management of the feral horse population in the area is required. As instructed by the SLPMC, a proposed feral horse management program for Beerburrum is outlined below. The proposed program is based upon the previous findings of the working group.

14. The desired outcome of management would be to reduce feral horse populations in the Beerburrum State Forest to a level whereby there is a low risk of horses causing vehicle accidents in the area.

15. There are a range of management options available for reducing the risk of feral horses causing vehicle accidents in the Beerburrum State Forest. These include:
    - Do nothing. Accept the potential risks and liabilities of horses causing vehicle accidents.
    - Fencing: erect fences to keep horses off the road. Costly initial and ongoing maintenance costs.
    - Signage: low cost but does little to address the problem.
    - Hazing: non-lethal method involving the harassment of horses to disperse them from the area – tends to shift rather than address a problem
    - Trapping and mustering: Refer paragraph 16 below.
    - Aerial shooting – use of helicopters to shoot the animals.
    - Ground shooting. Culling by ground shooting.

16. The most suitable (and likely publicly acceptable) option for managing feral horses at Beerburrum is a combination of lure-based trapping and mustering. This involves the live capture of feral horses in the area and their relocation. Fencing important waters with electric fences may be required to control the distribution of the horses and direct them to where they can be trapped or mustered.

17. Captured horses of a suitable age and temperament (assessed by vet, RSPCA officer, and experienced horseperson) may be put up for adoption. However, while the public sale of feral horses is possible to recover some of the costs of the operation, there is generally only a limited market and most animals are likely to be transported from the capture point to the local abattoir.

18. An integral part of the operation would involve significant public consultation prior to and during the operation to ensure public understanding of the issues and support for the control.

19. Based upon similar operations in Queensland, the cost of such an operation is estimated to be approximately $100,000.

20. Based on the 'nil tenure' approach, the lead agency for any feral horse management in Beerburrum should be the agency with the most land affected, i.e. Forest Plantations Queensland. The lead agency does not necessarily have to carry out the control and may contract it out to a third party. 'Land affected' refers not just to the area where the horses are having an adverse impact (i.e. roads) but also the land where horses are emanating from and causing the problem.

21. A proportional division of costs based on land area is a common method to allocate costs. However, as per the working group's recommendations a modified 'he who cares the most' model is considered appropriate. Given the significant benefits accruing to road maintenance authorities from feral horse control, it is appropriate for road maintenance agencies such as the Department of Main Roads to make a greater contribution. This can be done by allocating a greater land area to the road corridor (e.g. a 500m buffer on either side of a road).

22. Based upon the above model, Forest Plantations Queensland would contribute towards most of the costs of control while Main Roads would also contribute. The ability and or willingness of those agencies to fund that control has yet to be determined and will require negotiation.

23. In the interim, Forest Plantations Queensland and the Department of Main Roads could identify the risk of vehicle accidents from feral horses in their risk registers (if they have not already done so).

24. Biosecurity Queensland will continue to lead the development of State-wide policy (medium term) and possible strategy (long term) for feral horses.

25. Feral horses are not a declared pest under the Act. Biosecurity Queensland has initiated a pest assessment to consider declaring feral horses a pest under the ***Land Protection (Pest and Stock Route Management) Act 2002***. This pest assessment is currently in a draft stage (refer **Attachment 2**). The assessment examines the economic, social and environmental costs and benefits of feral horses and the feasibility of control.

RECOMMENDATIONS

That the State Land Pest Management Committee:

1. agree that lead agency criteria and funding model developed by the Feral Horse Working Group is an appropriate basis for discussion between the Department of Main Roads and Forest Plantations Queensland in relation to feral horse control in the Beerburrum State Forest; and
2. agree that the lead agency criteria and funding model have applications for the management of feral horses and other pest species on multi-tenured lands across Queensland.

References

Sunset Downs Pty Ltd, 2006. ***Beerburrum State Forest feral Horse Management. Stage 1: Distribution and Abundance***. Unpublished consultants report for FPQ.

Submitted by: Chris Spurdle

Attachment 1

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Attachment 2

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IPandA\Mineral House

State Land Pest Management Committee

AGENDA PAPER

Item No 6

DATE: 2006

TITLE Feral horse management across multi-tenured lands

PURPOSE

1. To provide recommendations to the State Land Pest Management Committee on the management of feral horses that roam across multi-tenured lands, including criteria to identify a lead agency, and to provide options for managing the north coast feral horse issue.

BACKGROUND

2. At meeting 14 of the State Land Pest Management Committee, the Queensland Parks and Wildlife Service (QPWS) and DPI Forestry raised the need for a whole of Government approach to the management of feral horses that roam across multi-tenured state lands.

3. The State Land Pest Management Committee subsequently agreed to:

- sponsor a working (taskforce) group for the north coast issue that includes Mark Weaver (QPWS), Leigh Kleinschmidt (Forestry Plantations Queensland), Bruce Ollason (Department of Main Roads), Leanne Sommer (Department of Defence), a Department of Natural Resources, Mines and Water (NRMW) representative and include an invitation to Caloundra City Council, Caboolture Shire Council and Cooloola Shire Council to provide options.
- the working group providing recommendations to the State Land Pest Management Committee for agreement that include criteria used to identify and guide the identification of a lead agency for this issue that can be used in broader cases
- NRMW developing a paper about feral horse management to the Interagency Pest Management Committee
- NRMW to lead the development of Statewide policy (medium term) and possible strategy (long term)

4. The taskforce met on 13 July 2006 to discuss to discuss the north coast feral horse issue and develop lead agency criteria. Representatives from QPWS, Forestry Plantations Queensland (former DPI Forestry), Main Roads, Department of Defence, Caloundra City Council, Caboolture Shire Council, Cooloola Shire Council and NRMW attended. Following the meeting, a paper was drafted which was circulated to all parties for their comment and endorsement prior to it being submitted to the State Land Pest Management Committee.

KEY ISSUES

5. Feral horses have traditionally had a wide distribution throughout western and northern Queensland with approximately 100,000 feral horses across the entire state (Mitchell et. al. 1985). Feral horse populations are present in almost all land types including commercial forestry plantations, areas of forest close to densely populated urban areas and until recently, offshore islands.

6. Feral horses have a range of adverse impacts. Economic impacts include competition with domestic stock for grazing, damage to farm infrastructure and the potential for feral horses to act as vectors of diseases and parasites. The major social impacts relate to the potential for feral horses to cause motor vehicle accidents. The potential environmental impacts of feral horses include damage to water holes and wetlands, accelerated soil erosion and overgrazing of native species.

7. NRMW has a number of responsibilities for pest management. The *Land Protection (Pest and Stock Route Management) Act 2002* is the primary Act relating to management of exotic, terrestrial vertebrate species. Feral horses are not a declared pest under the Act. NRMW has initiated a pest assessment for feral horses which is currently in a draft stage. The assessment examines the economic, social and environmental costs and benefits of feral horses and the feasibility of control.

8. QPWS has no specific policies or operational procedures relating to how feral horses are to be managed, but a generic pest control project approval system that could include feral horses is in place. Strategies for feral horse control are considered on a case-by-case basis taking full account of the nature and extent of environmental impacts, the range of potential control options and the scope for integrated action with neighbours across estate boundaries.

9. Populations of feral horses have become established at numerous locations on QPWS protected areas and forest estates across the State. While not quantified, they are known to be causing negative ecological and social impacts. The productivity of neighbouring properties is also affected. A major feral horse control operation is currently being planned for the Carnarvon National Park.

10. The Department of Defence have actively managed feral horses on different properties throughout the state including Greenbank Training Area and Townsville Field Training Area. Such activities are guided by the *'Management of Feral Animals, Weeds and Overabundant Native Species on Defence Estate: National Guidelines'.* The Townsville and Greenbank operations are examples of extremely well-planned operations with extensive community and stakeholder consultation.

11. Local governments have taken action against feral horses on a small scale. Primarily these actions are conducted to reduce the risk of accidents and to reduce damage to rural infrastructure.

12. The presence of feral horses on state land at Beerburrum and the Fraser Coast is primarily a risk management issue. There is a risk of horses causing a vehicle accident resulting in serious injury or death to both the animal and human life. Feral horses are not having an impact on forestry production and little to no environmental damage is apparent.

13. Caloundra City Council provides an emergency response to calls from police regarding feral horses on the Bruce Highway in the vicinity of Beerburrum. A sharp increase in the number of calls was recorded in 2004/2005. From August 2004 to May 2006, response to 38 out-of-hours calls cost approximately $20,000.

14. An aerial survey was undertaken to determine horse numbers, but was not

successful due to the amount of tree cover. Meetings were convened with QPWS, DPI Forestry, NRMW, Main Roads and neighbouring local governments to discuss the issue. Council have clearly stated that they wish to see all feral horses removed from the Beerburrum forest due to the risk of injury to motorists.

15. A ground survey in January 2006 for Forestry Plantations Queensland (FPQ) estimated there to be 76 horses over 5,500 hectares in the Beerburrum forest (Sunset Downs Pty Ltd, 2006). The report is extremely comprehensive and involved significant effort in terms of the distribution and density survey.

16. Complaints from the public in relation to feral horses and their proximity to road corridors have been raised at Fraser Coast in relation to the Rainbow Beach/Tin Can Bay Road. A QPWS risk assessment and an earlier feral horse survey for Tuan/Toolara indicated that there were approximately 181 feral horses in the area. The survey was not comprehensive and the survey author notes that the survey technique used was likely to result in an underestimation of the total population size.

17. Successful management of feral horses cannot be achieved without a good understanding of their ecology. It is essential to determine their distribution and abundance, and the factors that influence distribution and abundance. This information will establish the extent of the problem and the effort needed to solve it. The suitability of control methods is dependent on a good understanding of horse ecology.

18. There are a range of management options available for reducing the risk of animals causing vehicle accidents in the Beerburrum and Fraser Coast areas. These include:

Management Options	Advantages	Disadvantages
Do nothing	Cheap. No impact on horses	Risk of accident remains
Fencing	Low impact on horses	Costly initial and ongoing maintenance costs
Signage	Low cost	Does little to reduce risk
Hazing	Low cost (per attempt). Low impact on horses	Temporary measure requiring repeated applications. Relocates problem rather than solves it
Trapping/ Mustering	Live capture. Relocation and sale possible. Able to recover some costs. Publicly acceptable. Herds taken in entirety	May need several traps and musters over range. Risk to participants. Limited market for animals. Transportation from capture point to abattoir or to holding site (possible stress). Experienced operators required
Aerial shooting	Access to most sites possible. Fast follow-up allows for humane dispatch. More able to ensure local eradication. Relatively quick operation time	Significant public opposition May be more stressful than ground shoot. Relatively costly compared to ground shoot. Dependent on weather. Skilled pilots and markspeople required
Ground shooting	Relatively low cost. Able to be selective. No need for permanent structures.	Significant public opposition Difficult to follow-up if not killed outright. Difficult to guarantee eradication in area. Diminishing returns. Carcass disposal problems. Time consuming Skilled markspeople required
Fertility Control	Humane. Non-lethal. Likely to receive public approval	Technology still being developed. On-going vaccinations are needed to ensure effectiveness. Could prove an expensive option. Any additions (births) need also be captured, and dosed.

19. The most suitable options for managing feral horses at Beerburrum and Tuan/Toolara are likely to be a combination of lure-based trapping and mustering. Prior to any activity taking place however, it is vital that the following actions are undertaken by the agency responsible:

    a) Carry out a survey in Tuan/Toolara to determine feral horse distribution and abundance;
    b) Determine what the outcome of management is for each area (e.g. eliminate risk of feral horses causing vehicle accidents at Beerburrum);
    a) Identify and cost most suitable potential management options (e.g. removal of entire herd from Beerburrum); and
    b) Initiate significant public consultation to gain support for the desired option.

20. The determination of lead agency for management of pests has been examined by the Interagency Pest Management Committee (IPMC) who proposed two models. Both are relevant to feral horse management at the state level, and at the site level in the case of Beerburrum and Tuan/Toolara.

21. The first model considers that the agency or agencies best able to deliver all pest management outcomes are described by three core components: portfolio charter, agency capacity and precedent. This recognises that the successful management of pests is a product of history, political imperative, community expectation of roles of agencies, current programs, skills and resources, relevant national and state linkages and precedent of the agency having been involved in the management of a species previously.

22. The IPMC identified NRMW as the lead agency for exotic mammals, which includes feral horses. In this context, 'lead agency' means that NRMW are responsible for coordinating the state-wide management of such species, including pest declarations.

23. The second model proposes that the lead agency should be "he who cares the most". This guiding principle can be taken to mean that when a pest is located in an area of most interest to one agency (e.g. a national park), then even if the management of this species would usually be considered the role of another agency, the agency with the greatest interest in the management of the species on the land affected should lead the response (e.g. QPWS in national parks).

24. This model leads to decisions on lead agency to be site based rather than species based. One weakness of this model is that in some cases action is required to safeguard assets that are not important to that land manager or where the impacts of the pest on the manager's land are external to that land. This is relevant to the Beerburrum/Fraser Coast feral horses as human health and safety are the biggest risks posed by the horses and the risks occur primarily on land managed by Main Roads.

25. In the case of Beerburrum and Fraser Coast it is proposed that a modified 'he who cares the most' model is the most appropriate to determine lead agency and allocate costs. The following process has been used and is appropriate in similar situations for feral horses and other pest species:

- Define the problem – what is it, where does it occur, what are the causes, where is the source and how critical is it and determine objectives and management options

- Using a 'nil tenure' approach, remove all land tenure information then plot the information gained from the first step on a map.
- Once the problem has been defined spatially, the key parties can be identified by replacing the land tenure information.
- Once the key parties have been identified, a lead agency can be identified and costs of management apportioned.

26. The lead agency for each site will be the agency with the most land affected. The lead agency may not carry out the actual control of the species and may contract it to a third party.

27. The costs of feral horse management are not insignificant, even when dealing with small populations. In addition to the direct control costs, there are often significant costs involved in public consultation. This will vary depending on the location and the level of public interest in both the feral horse population and the proposed control method/s.

28. Costs can be allocated using a range of different methods. A proportional division of costs based on land area is a common method to allocate costs. This is an appropriate method for consideration in cases such as Beerburrum and the Fraser Coast. In order to recognise the public benefit and the benefit to road maintenance authorities, it is appropriate for road maintenance agencies such as Main Roads to make a greater contribution. This can be done by allocating a greater land area to the roading corridor (e.g. a 500m buffer on either side of a road corridor) to better reflect the benefit that will be gained from feral horse control.

29. The ability and willingness of individuals and agencies to pay for the preferred option will vary from case-to-case and will require negotiation.

30. The taskforce was unable to reach unanimous agreement on the recommendations below. FPQ felt that recommendations 4 and 5 were vague and open to interpretation and offered the alternatives listed below.

RECOMMENDATIONS

That the State Land Pest Management Committee:

1. Note that feral horse management is likely to attract significant public interest and that adequate resources need to be dedicated to the consultation process prior to initiating any control programs.
2. Agree that NRMW is the lead agency for state-wide management of feral horses.
3. Note that more knowledge is required on Tuan/Toolara horses prior to any management activities occurring.
4. Agree that the lead agency for each site will be the agency with the most land affected following definition of the problem using a nil tenure approach.
5. Agree that the costs of control for feral horses at individual sites should be allocated on a proportional division of costs based on land area.

FPQ alternative recommendation 4 and 5:

4. Agree that the lead agency for each site will be negotiated between the agencies with affected lands, taking into consideration the extent and nature of the cause and impact of the problem using a 'Nil tenure' approach.
5. Agree that the costs of control for feral horses at individual sites should be allocated on a negotiated basis to be agreed at the time by the agencies involved.

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PEST ANIMAL RISK ASSESSMENT

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26/7/2006

Equus caballus **feral horse/brumby**

Equus caballus (Source: Land Protection Photo Library Volume 1 2000)

Summary and recommendations

Feral horse populations essentially occur on lands that are not intensively managed. Currently the main concern with horses is their potential to cause road accidents where they are living along unfenced busy roads and highways.

Whilst the feasibility of control score is marginal (Appendix 4), the scores for current and potential impacts greatly exceed the thresholds proposed for declaration (Walton 2005). It is therefore the recommendation of this author that feral horses be -----.

Introduction

1. Name and taxonomy

Species: *Equus caballus*
Synonyms: non-domestic horse, brumby, wild horse
Common names: feral horse
Order: Perissodactyla
Family: Equidae
Related species: donkey, onager, Przewalski's horse, Burchell's zebra and Grevy's zebra (after VPC 2006).

2. Description

Horses are highly adapted for fast, free movement across open grassy areas. The long bones of the legs provide leverage for locomotion and the short bones of the joints absorb concussion (Dobbie et al. 1993 quote Evans et al. 1977). They possess both monocular and binocular vision enabling a wide view of their surrounds (Dobbie et al. 1993 quote Evans et al. 1977). Although both distant and very close objects are poorly seen, any movement is readily detected. Their hearing is well developed. Their sense of smell helps them locate food, which is directed into the mouth by the pliable upper lip and then cut by the front incisors. These are angled forward, enabling the horses to graze close to the ground (Dobbie et al. 1993 quote Evans et al. 1977).

Biology

3. Life history

Gestation period: average 336 days
Young per birth: 1
Birth interval: ???? months
Weaning: ???? years
Sexual maturity: females ???? years and males ???? years
Sexual activity: ???? years
Life span: ???? years
(After Dobbie et al. 1993)

Foaling is concentrated over spring and summer (Dobbie et al. 1993 quote Dobbie and Berman 1990). Mares have a regular oestrous cycle which averages 21 days and an oestrus period of between four and a half and nine days. The mean gestation period is 336 days, with mares returning to heat within nine to 14 days of giving birth (Dobbie et al. 1993 quote Hungerford 1990). The twinning rate is very low (Dobbie et al. 1993 quote Evans et al. 1977).

4. Social organisation

Feral horses tend to form small social units, either in a harem, which consists of a dominant stallion, his mares and their offspring, or in a bachelor group, a group of from one to three males comprising mainly two to four year olds who have been forced out of their harem groups (Dobbie et al. 1993 quote McKnight 1976 and Berman and Jarman 1987). Young females experiencing first oestrus are usually ignored by the dominant stallion and tend to leave their groups (Dobbie et al. 1993 quote Berger 1986). There are instances of dispersing females remaining unattached for up to a year before forming a harem with a bachelor male or joining an existing harem (Dobbie et al. 1993 quote Keiper 1986).

Small social groups tend to come together and form large herds of 100 or more horses at watering points in the following conditions:

- When palatable feed is abundant. However the horses soon disperse back into their smaller groups when feed is scarcer and they are forced to travel further from water to graze, and
- During drought, when many horses use the few remaining watering points (Dobbie et al. 1993 quote Berman and Jarman 1987).

5. Dietary and water requirements

Horses are non-ruminant herbivores. Roughage is broken down by microbial fermentation in the caecum and large colon (Dobbie et al. 1993 quote Wagoner 1977). Unlike cattle, horses do not need to spend time ruminating, allowing them more time to be selective during grazing. Feral horses can walk up to 50 km from water to feed (Dobbie et al. 1993 quote Berman and Jarman 1988). Their mobility, teeth and digestive system make them well suited to utilising the sparsely distributed and unpredictable food and water of arid Australia (Dobbie et al. 1993).

Horses eat mainly grasses, but they will eat emergent and sub-emergent plants in swampy areas. They also eat roots, bark, buds and fruits (Dobbie et al. 1993 quote Waring 1983). Berman and Jarman (1987) conducted a study on feral horse diet around Alice Springs, reporting that horses mainly feed on short grasses, preferably oat grasses or bottlewashers (*Enneapogon spp.*). Horses are selective grazers, capable of walking long distances to locate the most palatable feed (Dobbie et al. 1993 quote Berman and Jarman 1988). This means they can obtain more grasses and higher quality grasses than cattle can, that they browse shrubs less than cattle do and that they spend more time grazing than cattle (Dobbie et al. 1993).

In central Australia, feral horses graze near drinking water if feed is plentiful (Dobbie et al. 1993 quote Berman and Jarman 1987) although as feed is depleted they are forced to

forage further from water to areas that are less intensively grazed by other herbivores (Dobbie et al. 1993 quote Berman and Jarman 1987, Dobbie and Berman 1990). They drink probably once a day in summer and every second day in winter and in central Australia spend most of their time grazing more than three kilometres from permanent water (Dobbie et al. 1993).

Harem stallions, mares and foals require reliable resources and generally favour areas surrounding permanent waterholes. Bachelor groups are more mobile and more readily occupy areas where water is less reliable, needing to maintain only their own condition for growth. They probably return to more predictable areas for food and water when they are old enough to acquire mares, or in periods of drought (Dobbie et al. 1993 quote Dobbie and Berman 1990). Horses relying solely on temporary waters are more prone to perish during drought (Dobbie et al. 1993).

6. Preferred habitat

Horses can occupy a range of habitats although they are best adapted to open grassy plains. In Australia, feral horses inhabit country ranging from semi-desert plains and rocky ranges to tropical grasslands and swamps, temperate ranges, subalpine mountains and small off-shore islands.

Feral horses are commonly found in areas of low pastoral value away from the more intensively managed areas, although they usually select the best country on which to graze. Feral horses prefer grassy flats, but often retreat to hill country to escape drought or mustering activities (Dobbie et al. 1993 quote Berman and Jarman 1987). Hill country is the hardest area in which to try and capture or control feral horses (Dobbie et al. 1993).

7. Predators and diseases

There are no known predators of feral horses, although in Australia it is possible that dingoes or wild dogs will take young animals.

Horses are susceptible to a range of diseases including African horse sickness, Borna disease, Bovine brucellosis, Contagious equine metritis, Dourine, Epizootic lymphangitis, Equine babesiosis, Equine encephalosis, Equine influenza, Equin morbillivirus pneumonia, Equine viral encephalomyelitis, Getah virus disease, Glanders, Japanese encephalitis, Louping ill and other tick-borne encephalitides, Potomac fever, Rabies, Screw-worm fly, Surra, Trichinellosis, Vesicular stomatitis and Warble-fly myiasis (Geering et al. 1995).

Significant feral horse populations do not occur close to major populations of domestic horses, which are the most likely sources of disease for feral horse herds. Therefore, feral horse herds are a potential but low risk reservoir of exotic diseases (Dobbie et al. 1993).

Distribution in Queensland

8. History of introduction

Horses were first brought into Australia with the First Fleet in 1788 (Dobbie et al. 1993). Irregular shipments followed. Mortality was high during the early voyages and only the hardiest horses survived. Initially the demand for riding horses was low and they served mainly as working farm horses, although the start of recognised racing in 1810 prompted the influx of quality thoroughbreds from England.

The first record of horses either escaping or being abandoned was made in 1804. Minimal fencing combined with infrequent musters led to the growth of feral herds of abandoned and stray stock. Feral herds were first recognised as a pest in the 1860's. As with other large utility species, many horses became redundant with the increase in mechanisation, giving rise to large unmanaged herds, particularly in extensive cattle-raising areas (Dobbie et al. 1993).

9. Distribution and abundance in Queensland

Feral horses have traditionally had a wide distribution throughout western and northern Queensland as shown in Figure 1. Mitchell et al. (1985) reported approximately 100, 000 feral horses or brumbies to inhabit Queensland. Many areas of the State reported horses running loose but there was reluctance by those interviewed to classify them as feral. The true brumby only occurs in uninhabited areas of the State, especially in the northern and western regions (Figure 1). These groups were regarded as territorial with the stallion actively defending his herd and territory from nomadic stallions. The home range of each group was usually based on permanent water and an area of 100 km^2 was regarded as the maximum home range area for each group. The favoured habitat areas appear to be open forests or scrub preferably fronting onto a river or creek. However, in the western regions, large numbers occur in the sand hill type areas and plains with low mulga scrub.

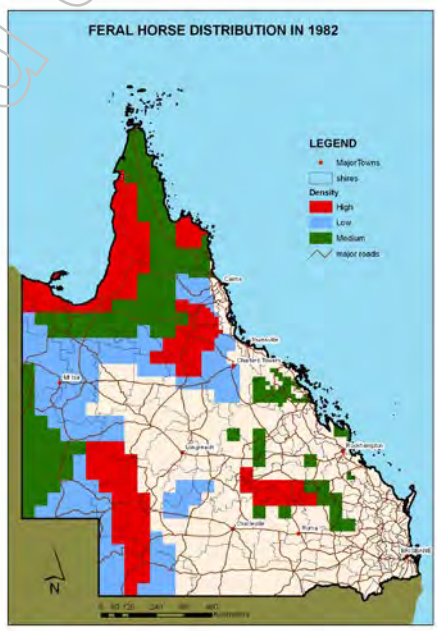

Figure 1. Queensland distribution of *Equus caballus* (Mitchell et al. 1985).

Water availability is the dominant factor affecting the distribution and abundance of brumbies, as it directly affects their cover and food availability. Brumbies are considered a pest where they occur in large numbers, but in the central and eastern regions where lower numbers occur they are sometimes considered an asset, as a source of horses for domestic purposes or for the pet meat industry (Mitchell et al. 1985).

Large numbers of brumbies have been shot in the western regions to reduce damage to fences and competition for feed and water. One station alone has shot 3, 000 brumbies because of the competition with domestic stock. A study was made in the Burke Shire on the feasibility of establishing a pet meat industry based on brumby but because of the transport costs it was considered uneconomic (Mitchell et al. 1985).

In 2000, a presence and absence survey was conducted and is shown in Figure 2. The distribution of feral horses in 2000 suggests an expansion in the feral horse distribution from 1985. However, it is important to note that this information only represents the presence of feral horses in the shire, and not the distribution within the shire.

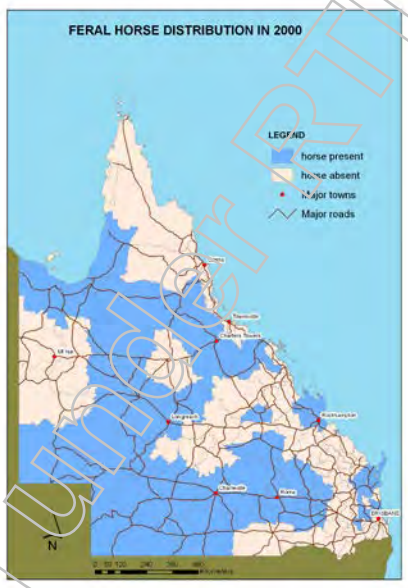

Figure 2. Queensland distribution of *Equus caballus* in 2000 (Pest Information Management - NRMW 2006).

The major difference between the distribution of feral horses between 1982 and 2000 is the presence of populations in south-east Queensland, however it should be noted that feral horse population are in just about every bit of land that is not intensively management (D. Berman pers. comm. 2006). Gatton Shire Council trapped 114 feral horses in the Murphy's Creek Ballard district in 2005, with the intention of de-stocking the area to placate residents complaints of feral horses threatening people, ruining fences and posing a danger to motorists (ABC News Online 2005).

The Queensland Parks and Wildlife Service (QPWS) has custodial management responsibilities for about 12 million hectares of land in Queensland. During the 1980s and 1990s and in conjunction with neighbours, QPWS was actively involved in the removal of feral horses from several national parks. During this period, in excess of 5000 animals were destroyed. Sixty feral horses were trapped and removed by one of the lessees on the Barakula State Forest and in 2002 a further 94 horses were controlled by

ground shooting on areas adjacent to principal access roads and the airstrip within the State Forest (Weaver 2004). More recently, 28 feral horses were removed from Fraser Island (Mark Weaver, pers. comm. 2006). Feral horse densities have also been determined for the Carnarvon National Park, with an average density of 1.5 horses/km^2 (Lundie-Jenkins et al. 2006), which equates to approximately 12 000 feral horses in the area. This population is larger enough to be both regionally and nationally significant.

Townsville and Greenbank Department of Defence operations, both actively manage feral horses. In November 2005, 977 horses were taken off the Townsville Military Training area, with a further 593 taken off in April 2006 (Alan McManus, pers. comm. 2006). Fifty-two horses have been removed from the Greenbank Military Training Area in the last two years, with as many as 40 horses remaining (Berman 2006).

Forestry Plantations Queensland (FPQ) manages 200 000 hectares of forest plantation estate. Feral horses are present in commercial forests along the Fraser Coast and at Beerburrum. The density of feral horses in the Tuan and Toolara State Forests were conducted in 2002. The number of feral horses in the area was estimated to be 181 (Crittle and Jackson 2004). The density of feral horses in the Beerburrum State Forest was found to be 1.5 km/km^2, which equates to approximately 76 feral horses in the area (Berman and Brennan 2006).

10. Distribution and abundance overseas

The ancestor of the domestic horse, the wild or woodland horse (*Equus ferus*), ranged from eastern Europe through the steppes to Mongolia, it is now confined to a small area on the border between south-western Mongolia and Sinkiang in north-western China. Principal feral populations of *Equus caballus* now occur in France, Greece, Portugal, Spain, Sri Lanka, Iran, United States of America, West Indies, Colombia, Australia, New Zealand, Hawaii, Galapagos and other oceanic islands as shown in Figure 3 (Lever 1985).

Figure 3. World-wide natural but reduced distribution of *Equus ferus* (blue) and world-wide naturalised distribution of *Equus caballus* (red) (Lever 1985).

Management

11. Current and potential impact in Australia

- Competition between feral horses and cattle – changes in pasture species composition as a result of selective grazing or differential responses by different plant species to grazing
- Competition for water
- Damage to watering points
- Fence damage
- Interrupting stock watering
- Disturbance of stock musters
- Mating with domestic mares (Dobbie et al. 1993).
- Acceleration of erosion by removal and damage of vegetation and disturbance of soil
- Restriction of the distribution of native fauna through the removal of food and shelter
- Seed dispersal of introduced species, in dung, manes and tails (Dobbie et al. 1993 quote Campbell 1989)
- Reduction in the frequency or intensity of grassfires as a result of the removal of ground fuel, with resultant increases in shrub density (Dobbie et al. 1993 quote Berman and Jarman 1988 and Berman 1991).

12. Current and potential benefits in Australia

- Pet meat
- Meat for human consumption
- Hides
- Hair
- Hearts and spleens
- Work or recreation horses
- Tourism potential
- Seed dispersal of native species, in dung, manes and tails (Dobbie et al. 1993 quote Campbell 1989)
- Complementary interactions between feral horses and other animals – under arid conditions, feral horses open soakages by pawing in sandy creek beds. This can be advantageous to other animals by making water available to wildlife and enabling cattle to use pasture not normally available to them (Dobbie et al. 1993).

13. Impact overseas

TO BE DONE

14. Control options and cost

- Trapping – at water points, using feed attractant, automated traps
- Mustering – helicopter, helicopter/horses/motorbikes, horseback/brumby running, lure mares
- Fencing – fencing-off watering points, exclusion fencing
- Shooting – helicopter, ground, pet-meat shooters

- Immobilisation and lethal injection – darting and lethal injection
- Herd relocation
- Fertility control
- Feral horse reserves
- Tourist herds
- Adoption schemes (Dobbie et al. 1993).

15. Legislative status in Australia

Under the Vertebrate Pests Committee threat categories, horses are classified an extreme threat species (VPC 2006).

Feral horses are listed as A5 animals, when running wild in agricultural and pastoral areas, in Western Australia under the *Agriculture and Related Resources Protection Act 1976*, which numbers will be reduced or controlled. In the Northern Territory, horses are declared under the Territory Parks and Wildlife Conservation Act 2000. Horses are one of seven species evaluated to be major pests in the Northern Territory (NT Government 2006). In South Australia, feral horses ???? are proclaimed under Schedule 1 of the *Animal and Plant Control Act 1986* which means that the sale or transport of the species is illegal, and/or a landholder may be obliged to control them on their properties. TO BE CONFIRMED

Under the *Rural Land Protection Act 1985*, brumbies in Queensland were declared an A2, A4 and A6[1] declared animal for the whole of the state, restricting the introduction, keeping and selling of animals. Brumbies were also required to be destroyed. In northern, north coast and western Queensland, 68, 71 and 90 % of participants in a survey involving personal interviews conducted by Mitchell et al. (1985) respectively regarded brumbies as a pest, whilst in east coast and central Queensland brumbies were not regarded as a pest by respondents 86 and 78 %.

The declaration of a species as a pest is often misunderstood and misused by the public. When the legislation was being rewritten, previous pest declarations were assessed to determine whether declaration was a tool needed for control of the species. The impact and distribution of the brumby in Queensland was basically unknown and therefore the declaration of brumbies ceased with the *Rural Lands Protection Act 1985* (Clyde McGaw, pers. comm. 2005).

Under the *Land Protection (Pest and Stock Route Management) Act 2002*, and Regulation 2003 horses are listed as not a Class 1 or Class 2 pest animal.

[1] For the purposes of the *Rural Land Protection Act 1985* a class of declared animals may be assigned to:
- Category A2 in respect of an area if those animals –
  - (i) are not vertebrate animals native to that area; and
  - (ii) are to be destroyed in that area,
- Category A4 in respect of an area if the introduction of those animals into that area is to be subject to prescribed conditions and restrictions; and
- Category A6 in respect of an area if the keeping and selling of those animals in that area is to be subject to prescribed conditions and restrictions.

Quantitative assessment

16. Introduction

A point scoring system is used to rank taxa according to their risk as pests so they can be prioritised. There are four steps: potential distribution, establishment risk, current and potential impacts and benefits, and feasibility of control. Firstly, the climate of the taxon's overseas distribution is used to predict its potential distribution in Australia. This likely distribution is used in predicting the impacts of the taxon. The remaining steps involve allocating points for each of a number of attributes relevant to a taxon's pest status. Attributes are wide ranging, including aspects of the taxon's biology, net costs to the economy, the environment and society, and management efficacy. Finally, the scores can be used to classify taxa for management action.

Two people made independent assessments providing an indication of one aspect of uncertainty. The more pessimistic assessment is described below (Sections 17-20), but the range of values is given Appendix 4.

17. Potential distribution

Using CLIMATE Version 2 and the naturalised distribution of feral horses in the world, (Figure 3), the predicted distribution of feral horses in Australia is shown in Figure 4. The climate match score is 88 206, sufficient for declaration (Appendix 1ii and Table 1). Feral horses have the potential to spread to >100% of the state (within 50% of the mean reference value; Appendix 1) covering 125 local government areas. A summary of the prediction statistics is shown in Appendix 2.

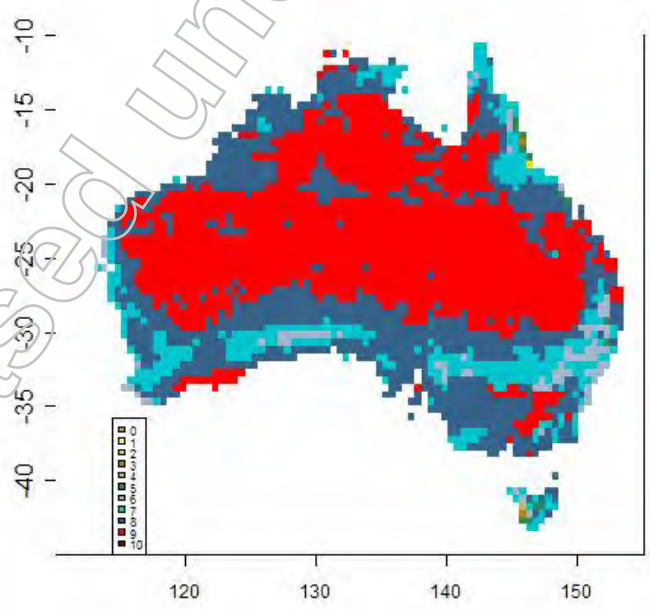

Figure 4. Potential distribution of *Equus caballus.* Key: green within 50%, grey within 40%, light blue within 30%, dark blue within 20% and red within 10% of the mean.

18. Establishment risk

Using the Bomford (2003) system, feral horses in Queensland were assessed as an extreme threat species.

19. Impact and feasibility of control

Using the Walton Species Assessment (WaSA) System, feral horses have a current net impact score of 81 and a potential net impact score of 244. The feasibility of regulation score is 46.

20. Management classification

Threshold scores, above which a species should be declared are 50, 100 and 50 respectively. Whilst the feasibility of control score is marginal (Appendix 4), the scores for current and potential impacts greatly exceed the thresholds proposed for declaration (Walton 2005). It is therefore the recommendation of this author that feral horses be -----.

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Appendices

Appendix 1. Quantitative risk assessment of pests in Queensland

When resources are limited, it is useful to rank taxa according to their risk as pests so they can be prioritised. Ranking can be done using qualitative assessment, rule sets, explicit population models or point scoring systems. The latter method is employed by the Department of Natural Resources and Mines and involves a scoresheet where points are allocated for each of a number of attributes relevant to a taxon's pest risk status. The advantage of this system is that it is transparent and so to some extent repeatable, it allows a large number of attributes to be examined together and taxa can be readily compared. While the assessment is quantitative, some attributes will be poorly known for a taxa and attribute scores will vary among assessors. Such uncertainty needs to be considered in the assessment. Pest risk assessments in the Department of Natural Resources and Mines use the Walton Species Assessment System (WaSA) (Walton 2005). The system involves five steps that are described below.

i. Establishment risk

There is a weed risk assessment (WRA; Pheloung 2001) and equivalent assessment for vertebrates (Bomford; Bomford 2003). Both provide a screening of organisms presently in captivity or proposed for import. They estimate the likelihood of a population establishing in the wild and the probable consequences. Both systems generate a score that can be compared with scores for other taxa or some threshold value determining a recommendation. Higher scores indicate a greater chance of establishment in the wild.

The WRA involves a series of 49 questions each giving a value ranging -1–5. The questions cover eight categories related to establishment risk, with greatest weight given to the occurrence of the taxa as a weed elsewhere. Other categories include biological attributes of the taxon, its history of domestication, climatic preferences, undesirable traits and potential control. A total score >6 would recommend rejection for import, <0 acceptance and 0-6 would require further evaluation.

Bomford's (2003) system is similar, scoring 11 attributes on scales ranging 0-5. Attributes cover three categories: risk to public safety, establishment risk and risk the taxon would become a pest. Again, these include biological factors, climatic preferences and potential impact. Scores in the three categories are then combined to place the taxon in one of four Vertebrate Pests Committee (VPC) categories. These categories can be used to determine restrictions for the import, movement and keeping of exotic vertebrates (Natural Resource Management Standing Committee 2004).

ii. Potential Distribution

The distribution of many plant and animal species is often well described by climatic variables such as mean annual rainfall and maximum temperature. Potential distribution can therefore be modelled by matching the climate of the taxon's overseas distribution with the climate across Australia. The resulting maps are used in impact assessment (see **iii** below). The software CLIMATE (Pheloung 1996) produces a map of the climate match for grid squares (½º blocks) within Australia. For each grid square, the 'distance' is calculated between its climate and that for meteorological stations in the taxon's

overseas distribution. The smallest value is selected and compared with a normal distribution of reference values. A close match is a value within 10% of the mean reference value whereas a poor match is a value > 80%. The software CLIMEX (Sutherst *et al*. 1998) similarly predicts a taxon's potential distribution in grid squares from climate in its overseas distribution. The taxon's response to temperature and moisture, in terms of growth and survival, is described by an 'ecoclimatic' index (EI) ranging 0-100 and indicating increasing potential for establishment. For vertebrate pests, CLIMATE is generally preferred because of fewer data requirements, a good correlation between climate match and establishment success and the high sensitivity of CLIMEX to data uncertainty (Bomford 2003).

A climate match score ranging 1-6 can be calculated for a taxon using either CLIMATE or CLIMEX, reflecting the number of grid squares it could occupy, weighted by the probability of occurrence (i.e. EI value or percentage category).

iii. Impact

Scores are given for a range of questions on the economic, environmental and social impacts and benefits of a taxon. Scores are combined using a weighting of 2:2:1 for economic, environmental and social aspects, respectively. A final net impact score is calculated by subtracting benefits from impacts. Questions cover the geographic extent and intensity of impacts and benefits. Current and potential impacts and benefits are scored separately. Little difference between current and potential impact suggests declaration will not be useful. A plot of the net impact scores for a range of plant and animal taxa in Queensland is given below.

iv. Feasibility of control

The ability to reduce pest impact is as assessed through 29 questions including socio-political, biological, financial and technical criteria. Higher scores indicate increased chance of damage mitigation. A score of >50 would generally support a declaration.

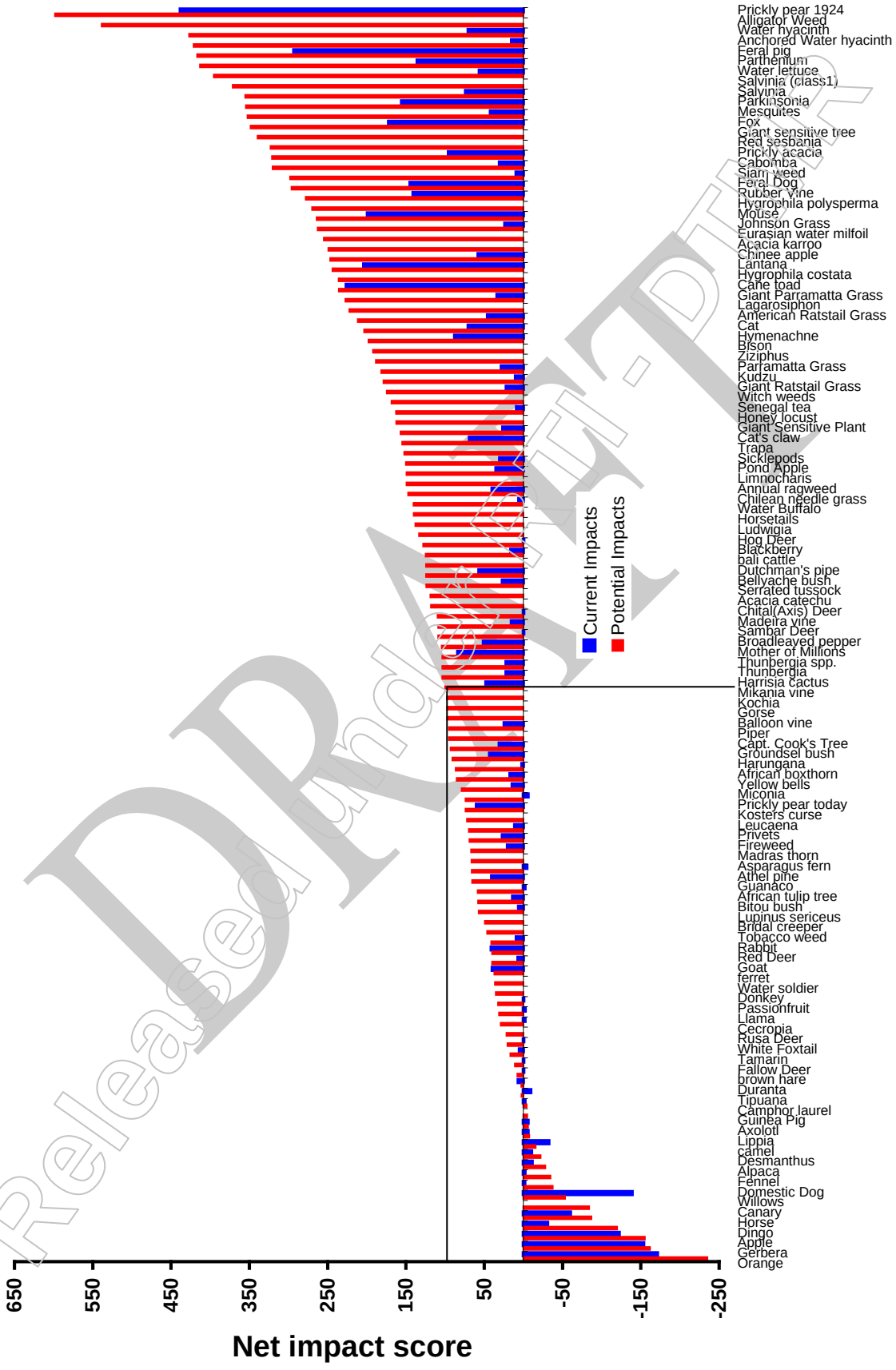
v. Management classification

Using the previous four steps, taxa can be classified into one of four categories shown in Table 1.

Table 1. Thresholds for classification of taxa using the Walton Species Assessment (WaSA). All thresholds within a column must be met for a taxon to be listed in a category. LGA, local government area.

Attribute	Class 1	Class 2	Class 3		High risk		
Establishment risk	>0 (WRA) >SERIOUS (Bomford)	>0 (WRA) >SERIOUS (Bomford)	>0 (WRA) >SERIOUS (Bomford)				
Occurrence	<10% of state or <10 LGAs	>10% of state or >10 LGAs	>10% of state or >10 LGAs				
Climate match	>3						
Current net impact		>20	>20	>20	50-100	50-100	50-100
Potential net impact	>100	>100	>100	50-100			
Environmental impact				>200	>100		
Economic impact						>100	
Social impact							>100
Feasibility of control	>50	>50	>50	>50			

Figure 1. Current and potential net impact scores (see **iii**) for taxa in Queensland. A suggested threshold for declaration of 100 is identified (see Table 1).



Appendix 2. Potential distribution – CLIMATE parameters

Climate prediction system - Analysis results for feral horses

Summarizing prediction for statistics
16 variables in analysis.
Cummulative method used. Closest Euclidian match used.

Summary of Prediction

Number of nil matches	1
Number of 1 matches	0
Number of 2 matches	1
Number of 3 matches	2
Number of 4 matches	0
Number of 5 matches	13
Number of 6 matches	83
Number of 7 matches	342
Number of 8 matches	978
Number of 9 matches	1365
Number of 10 matches	0

Appendix 3. Establishment risk

Using the Bomford (2003) system, feral horses in Queensland were considered an EXTREME threat species.

SPECIES:		*Equus caballus* - feral horse
DATE OF ASSESSMENT:		20/07/2006
LITERATURE SEARCH TYPE AND DATE:		See reference sheet
Factor	**Score**	
A1. Risk to people from individual escapees (0–2)	0	Escaped or released individuals are unlikely to make provoked attacks causing injury requiring medical attention.
A2. Risk to public safety from individual captive animals (0–2)	0	Apart from someone entering an enclosure or otherwise being in reach of a captive animal, there is nil or low risk to public safety.
Stage A. Risk posed by captive or released individuals = Sum of A 1 to 2. (0–4)	**0**	**NOT DANGEROUS**
B1. Degree of climate match between species overseas range and Australia (1–6)	6	CMI = 88206. Extreme climate match. Note - CMI score for feral horse previously reported as 2041 [3], gives a score of 4.
B2. Exotic population established overseas (0–4)	4	Exotic populations have established overseas [2]. Exotic populations established on islands larger than 50 000 square kilometres or anywhere on a continent.
B3. Taxonomic Class (0–1)	1	Mammal
B4. Non-migratory behaviour (0–1)	1	Non-migratory
B5. Diet (0–1)	1	Generalist diet includes: mainly grasses, but they will eat emergen and sub-emergent plants in swampy areas. They also eat roots, bark, buds and fruit - capable of walking long distances to locate the most palatable feed [4].
B6. Lives in disturbed habitat (0–1)	1	Can live in human-disturbed habitat including grazing and agricultural lands, forests etc
B. Probability escaped or released individuals will establish a free-living population = Sum of B 1 to 6. (1–14)	**14**	**EXTREME ESTABLISHMENT RISK - Note same result if lower score used for question B1**

C1. Taxonomic group (0–4)	2	Perissodactyla
C2. Overseas range size including current and past 300 years, natural and introduced range (0–2)	2	Overseas geographic range greater than 30 million square kilometres [2].
C3. Diet and feeding (0–3)	3	Mammal that is primarily a browser
C4. Competition with native fauna for tree hollows (0–2)	0	Does not use tree hollows
C5. Overseas environmental pest status (0–3)	1	Minor environmental pest in any country or region [2].
C6. Climate match to areas with susceptible native species or communities (0–5)	5	Species has more than 20 10% grid squares that overlap the distribution of any susceptible native species or communities. Note - CMI score for feral horse previously reported as 2041 [3], gives a score of 3.
C7. Overseas primary production pest status (0–3)	1	Minor pest of primary production in any country or region [2].
C8. Climate match to susceptible primary production (0–5)	3	TCDS = 81
C9. Spread disease (1–2)	2	Mammal that may assist in the spread of diseases or parasites already present in Australia.
C10. Harm to property (0–3)	1	$1-10 million - Damage to infrastructure ie fences, watering points etc reported as $800-$1000 per property per year [4].
C11. Harm to people (0–5)	3	Main concern with feral horses is their potential to cause road accidents where they are living along unfenced busy highways - injuries or harm moderate but unlikely to be fatal and few people at risk OR annoyance moderate or severe but few people exposed OR injuries harm or annoyance minor but many people at risk.
C. Probability an exotic species would become a pest (for birds, mammals, reptiles and amphibians) = Sum of C 1 to 11. (1–37)	**23**	**EXTREME PEST RISK - Note same result if lower score used for question C6**
A. Risk to public safety posed by captive or released individuals		
A = 0 = not dangerous; A = 1 = moderately dangerous; A ≥ 2 = highly dangerous	**0**	**Not dangerous**
B. Risk of establishing a wild population		
For birds and mammals: B < 7 = low establishment risk; B = 7-8 = moderate establishment risk; B = 9-10 = high establishment risk; B > 10 = extreme establishment risk	**14**	**Extreme establishment risk**
For reptiles and amphibians: B < 3 = low establishment risk; B = 3-4 = moderate establishment risk; B = 5-6 = high establishment risk; B > 6 = extreme establishment risk		
C. Risk of becoming a pest following establishment C < 9 = low pest risk; C = 9-14 = moderate pest risk; C = 15-19 = high pest risk; C > 19 = extreme pest risk	**23**	**Extreme pest risk**
VPC Threat Category	**EXTREME**	

Appendix 4. Impact and feasibility of control

Summary Table	Current	Potential
Economic impact score	8	27
Economic benefit score	0	0
Environmental impact score	156	424
Environmental benefit score	0	0
Social impact score	92	422
Social benefit score	13	103
Impact score	84	265
Benefit score	3	21
Total score	81	244

Declared pest animals generally have a high current score greater than 20 and/or a potential score greater than 100.

Socio-political	Operational	Financial	Technical	Comparative	Total score
50	23	71	10	39	46

Declared pest animals generally have a feasibility of regulation score greater than 50.

Pages 404 through 441 redacted for the following reasons:
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