Towards a National Road Classification

Research into Recommendation 6

To consult with National Parks, State Forests and Indigenous Lands authorities to gauge their requirements for attribution of lower order roads for possible inclusion into a national classification, or in a separate attribute field in such a classification.

Executive Summary

An online survey was created where respondents were asked numerous questions relating to whether the vehicle track classification they use contains additional information, such as surface type or condition or whether considering such information would meet their future needs. A cross-section of 60 respondents were contacted throughout Australia & New Zealand, of which 35 responded to the survey; including representatives from Emergency Service Organisations (including police, Rural Fire Service (RFS) and State Emergency Service (SES), National parks, State Forest, Catchment Management, as well as other map users.

The major finding from this survey indicated that fundamentally the existing PSMA two vehicle track categories are adequate and require no drastic change, given it meets or exceeds the needs of the majority of users at present. Furthermore, there was no unanimous response from users in support of including any stand-out variable, with the exception of surface which is currently catered for as an attribute in the PSMA model. This further supports the need for no major changes. Refer to page 6 for Recommendations.

Background

The majority of roads in Australia, particularly in relation to geographic area covered, fall into the lower categories of local roads and vehicle tracks; therefore, further differentiation between these roads is desirable to provide enhanced specific depiction. The PSMA classification is not too simplistic in this respective, in that it makes allowances for differentiation between lower order roads. For example, the PSMA classification has two ‘local road’ categories and two ‘vehicle track’ categories. The question is, however, whether further differentiation of these categories is necessary? Increasingly, information on these roads is being recorded with a greater degree of attribution by jurisdictions, to further differentiate roads into sub-categories to aid interpretation.

Methodology

An online survey, hosted through the Office of Spatial Data Management (OSDM) website was developed that asked specific questions relating to vehicle track classifications (Refer to Appendix 1 for the complete survey). A cross-section of respondents throughout Australia and New Zealand were targeted in the survey including representatives from Emergency Service Organisations (including police, Rural Fire Service (RFS) and State Emergency Service (SES), National parks, State Forest, Catchment Management, as well as other map users, such as special interest groups and 4WD clubs.

Results & Analysis

A total of 60 respondents were contacted, of which 35 responded to the survey, representing 58% survey completion. To aid in analysis these different respondents were grouped into three broad user groups; Emergency Management (EM), resource management and recreation. Of those that responded to the survey there were ten each from the resource and recreation sector and 15 from EM (refer to Appendix 3 for organisations approached).

This section will report on only the significant survey results. Refer to Appendix 2 for graphical display of all survey results.

Satisfaction with Two Vehicle Track Categories

Respondents were asked whether the following vehicle tracks classification would meet their needs, without directly identifying that this was the existing PSMA classification:

- **Vehicle Track 2WD -** *Unimproved roads which are generally only passable in two wheel drive vehicles during fair weather and are used predominantly by local traffic.*
- **Vehicle Track 4WD -** *Unimproved roads which are generally only passable with four wheel drive vehicles.*

The results shown in Figure 1 highlight that 63% of those surveyed found this detail of classification met or exceeded their needs. However, around one third of respondents did indicate that this classification only 'Partially Meets' their needs. Interestingly, no one indicated that this classification was 'not satisfactory'. This finding highlights that the PSMA classification has an adequate number of vehicle track classifications to meet the majority of users, without requiring further differentiation, which was speculated in the feasibility report. Clearly, however, not all users' needs will be met but, as identified in the initial paper, it is not practicable for one hierarchy classification to be 'all things to all people'.

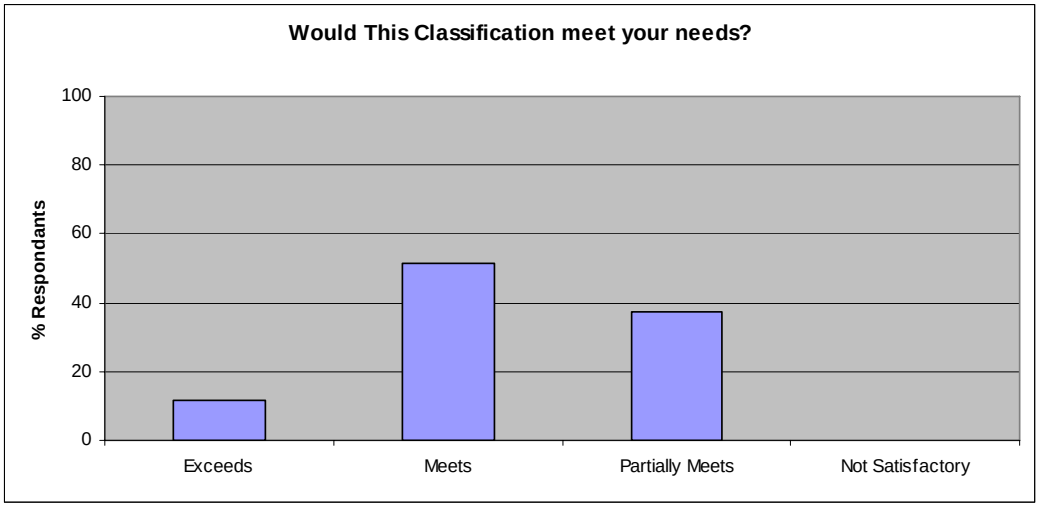


Figure 1 – Survey response to the question: Would this classification meet your needs?

Further investigation by the different user groups (EM, resource and recreation) reveals that the resource sector are less satisfied than the other groups with the highest proportion (70%) of 'Partially Meets' (refer to Question 1 Appendix 2 for graph). This is likely attributed to the diverse nature of work carried out by the resource sector which may require more complex and varied vehicle track classification to adequately cater for specific activities, such as the categorisation of temporary logging tracks, maintenance of fire trails etc.

Classification Comparison

Respondents were also asked whether they use a different number of vehicle track categories to that highlighted earlier. The results indicate a virtual even split, with half indicating that they did use a different number of vehicle track categories, while the other half used the same number as the PSMA classification. Having half of the respondents, with a varied number of categories, supports the anecdotal evidence that no consistent national classification is being used ubiquitously throughout these sectors.

When asked by how much their vehicle track classification categories differ, 35% indicated that they use more vehicle tack categories than the PSMA classification. These respondents were mainly from the resource sector and, as discussed previously, likely require additional differentiation based on a diversity of needs. While there was variation in the number of categories, the majority of respondents indicated no difference, which supports the findings discussed previously relating to satisfaction with the assignment of two vehicle track categories.

Additional Vehicle Track Considerations

Respondents were asked numerous questions relating to whether the vehicle track classification they use contains additional information (refer to Appendix 1 for complete survey) on the following:

- Vehicle considerations (Vehicle Weights, Clearance, Type)
- Timing considerations (Time of day, rainfall, season, dry/wet season)
- Surface Type (Sealed/unsealed, graded/ungraded)
- Construction (Naturally formed, constructed)
- Surface Condition (Boggy, corrugation, potholes, etc)
- Width (Lane, vehicle type, actual width)

Respondents were also asked if they currently did not include such considerations, would doing so in the future meet their needs.

Surface Type

In general, the results indicated that very few of these considerations were being applied in a universal manner by users at present (refer to Appendix 2 for all results). The major exception being surface (sealed/unsealed) determination in which 89% of users currently considered surface type information (Appendix 2 - Question 6A), This result is not surprising given many road hierarchy classifications use surface as a key determinate of vehicle tracks, whereby sealed roads are often automatically excluded as a possible vehicle track. The PSMA classification already caters for sealed/unsealed surface type as a separate attribute, so this finding highlights this requirement is already being met. However, only 17% of users, who currently did not consider such information, thought it would meet their future needs (Appendix 2 - Question 6B).

Surface Construction

Responses also revealed that construction considerations were being applied, but to a lesser degree (51%)(Appendix 2 - Question 7A), whereas only 37% of users, who currently did not consider such information, thought it would meet their future needs (Appendix 2 - Question 7B). This survey question was attempting to differentiate vehicle tracks based on the amount of construction having been applied; addressing the reality that some vehicle tracks (typically of a lower classification) may be naturally formed through repeated use, having never had any road construction, such as grading/drainage work etc. When interpreting

the results it is possible that respondents mistakenly related their response to this question based on the earlier surface type question, despite this question seeking to obtain different information.

Nevertheless, it appears that considerations of the degree of construction could be included as a potential variable, or at the least, expanded on in the PSMA definition of vehicle tracks to help differentiate between variation in the quality of construction. The existing PSMA vehicle track categories are defined as 'unimproved' whether this adequately encompasses this consideration or could be enhanced with better terminology warrants deliberation by the RWG.

One benefit of potentially including this consideration is that unlike other measures of surface (such as materials or surface condition) it is relatively easy with field validation to determine the degree of construction in a consistent manner and such determination does not fluctuate significantly over time (i.e. once a road has had some form of construction (grading etc) applied, this remains for a considerable period of time).

Rainfall

A notable proportion (57%) of users did indicate the use of rainfall considerations when dealing with vehicle tracks (Appendix 2 - Question 5A), whereas only 31% of users, who currently did not consider such information, thought it would meet their future needs (Appendix 2 - Question 5B). These findings were spread across the three different user group categories. The current PSMA 2WD vehicle track definition includes considerations of 'fair weather' which for all intents and purposes encapsulates concerns regarding trafficability during rainfall. However, what may not be adequately addressed are those roads that are impassable for extended periods after significant rainfall, even by 4WD vehicles. Many unsealed roads in Australia on 'black soil' exhibit this characteristic and require extended drying time before becoming trafficable. Whether such roads warrant differentiation into a separate category, and the existing definition needs refining to better cater to such types of vehicle track may deserve additional discussion by the RWG.

It should also be highlighted, that the majority of users (69%) who did not currently require information on rainfall stated that including such information would not meet their needs. Therefore, the overall result in regards to this question tends to suggest there is not overwhelming support for a need to include such information, in which case the current PSMA classification and its definition for dealing with rainfall, through the use of 'fair weather' in the definition, appears adequate at present.

Width

Width is not currently including in the PSMA classification, neither as an additional attribute nor within the definition of the various hierarchy classes. However, it is included in other road classification hierarchies as was evident by user responses showing a small proportion use such information in their vehicle track classification, particularly vehicle type considerations (40%) (Appendix 2 - Question 9Ai). Notably, however, the result is more significant when compared across the different user groups. 53% of EM were found to currently collect this type of information and 71% of EM users who do not currently use this information, want to (In total across all groups 31% of users, who currently did not consider width information, thought it would meet their future needs (Appendix 2 - Question 9B). Understandably, EM have a desire to know about width restrictions, as it may limit the type of vehicle that can gain access to a particular location in an emergency. Unfortunately, EM users did not express strong preference for one width measure over another, making it difficult to clearly determine how best to adapt the PSMA classification to better meet their needs. Further investigation would be needed if the RWG were to decide to incorporate such considerations. However, given

this requirement seems limited predominately to the EM sector it more than likely does not permit inclusion into a national classification.

Reclaimable Roads

Respondents were introduced to the concept of reclaimable roads (see Appendix 1 for definition) and asked whether they used a classification that caters to such roads. The majority of respondents (71%) across all user groups did not indicate they currently considered such roads (Appendix 2 - Question 10A). Furthermore only 36% of users, who currently did not consider reclaimable road information, thought it would meet their future needs (Appendix 2 - Question 10B). Surprisingly, a similar proportion of users indicated this information was superfluous, a finding which is contrary to anecdotal evidence that has suggested the EM and resource sector would benefit from such information. One could speculate that this observed reluctance to identify reclaimable roads is due to perceived concerns that information on these roads may get into the public domain and subsequently become accessible to recreational users, which would be undesirable from the custodian's perspective. Further investigation may be needed to determine whether such factors are influencing responses or whether there is a genuine apathy towards reclaimable roads.

Discussion & Conclusion

As identified earlier, a total of 60 respondents were contacted of which 35 responded to the survey representing 58% survey completion. While these are typical response figures, GA were somewhat disappointed by the response rate given each of the prospective respondents were targeted (with direct phone call) and were identified as key personnel within jurisdictions that in many cases were qualified to express the position of their state or region. However, GA feels the results still do give a good indication of national sentiments, as those participating in the survey were spread across Australia and from diverse users groups - the only caveat to this being the slight over representation of EM respondents which should be noted when interpreting the results.

The major finding from this survey indicated that fundamentally the existing PSMA two vehicle track categories are adequate and require no drastic change, given it meets or exceeds the needs of the majority of users at present. Furthermore, there was no unanimous response from users in support of including any stand-out variable, with the exception of surface which is currently catered for as an attribute in the PSMA model. This further supports the need for no major changes.

As highlighted in the analysis of results, there were some variables, namely surface construction and to a lesser extent rainfall and width, that were currently applied to some degree, to better differentiate vehicle track type categories. However, these variables were not relevant to the majority and subsequently do not warrant inclusion into a national classification at this stage. In many cases these additional considerations related to addressing the specific operational needs of a niche user group subset. Were such variables to be incorporated, it would only satisfy a minority of users, which is not the aim of a national classification hierarchy.

At the end of the survey participants were given opportunity to raise any other issues they may have. Notably, several respondents supported the need to enhance vehicle track classifications but expressed concerns regarding the difficulty of ongoing maintenance associated with any potential improvements. In many instances these users could identify the benefit in considering certain factors, such as width or construction, into vehicle track considerations, but the practicality of keeping such information up-to-date at a national level was unattainable at present.

Recommendations

In light of these concerns and the broader survey results the following is recommended:

Recommendation 1

Road construction was found to be the considerations that received the most support in a broad national sense. The ICSM RWG acknowledges that in light of ongoing maintenance concerns this consideration could not simply be included as additional attribute into the existing model. Nevertheless, an alternative recommendation is to examine the existing PSMA vehicle track definitions and assess whether certain terminology within these definitions, namely the use of the word ‘unimproved’ be reviewed for potentially more suitable additional phrasing that better articulates the intended meaning.

Recommendation 2

These survey results reflect current sentiments relating to vehicle track classification. However, spatial information needs are constantly evolving with user needs likely to differ in the future. Therefore, it is recommended that the ICSM be committed to undertake similar follow-up research in the next 2-5 years to gauge any emerging changes in user requirements.

Acknowledgements

Many thanks to all survey participants from their willingness to be involved. Thanks also to Ben Searle from the Office of Spatial Data Management (OSDM) for his assistance in providing access to use the OSDM website to host the survey as well as Gavin Arnold from website technical support – also thanks to Andrew Beer GA marketing director for advice on survey design elements.

Appendix 1

Complete Survey

PART A

Following is an example of how Vehicle Track classifications can be assigned within a functional hierarchy.

- National or State Highway

- Arterial Road

- Sub-Arterial Road

- Collector Road

- Local Road

- Vehicle Track 2WD - Unimproved roads which are generally only passable in two wheel drive vehicles during fair weather and are used predominantly by local traffic.

- Vehicle Track 4WD - Unimproved roads which are generally only passable with four wheel drive vehicles.

Question1: Would this classification of Vehicle Tracks satisfy your needs?

- ○ Exceeds
- ○ Meets
- ○ Partially Meets
- ○ Not Satisfactory

*

Question 2: Do you use a different number of Vehicle Track categories to the above example?

- ○ Yes (Go to Question 3A)
- ○ No (Go to Question 4A)
- ○ N/A (Go to Question 4A)

*

Question 3A: By how many categories does it differ?

- ○ + 3 More Categories
- ○ + 2 More Categories
- ○ + 1 More Category
- ○ - 1 Less Category
- ○ - 2 Less Categories

Question 3B: Please list the cateogories you use:

Question 4A: Do you use any of the following information in your Vehicle Track classifications?

4A i) Vehicle Weights
(Heavy Vehicle, Light Vehicle)

- ○ Yes
- ○ No

*

4A ii) Vehicle Clearance
(High Clearance, High Clearance 4WD, Long Wheel-base, Short Wheel-base)

- ○ Yes
- ○ No

*

4A iii) Vehicle Type
(4WD High/Low Range, 4WD High Range only, All-Wheel-Drive, 2WD)

- ○ Yes
- ○ No

*

4A iv) Other
(Please Specify)

Question 4B: If you answered 'No' to any in Question 4Ai-iii), would including any information described in 4A meet your needs?

- ◉ Yes (please specify which ones below)
- ○ No

Question 5A: Do you use any of the following information in your Vehicle Track classifications?

5A i) Time of Day
(Night Closure)

- ○ Yes
- ○ No

*

5A ii) Rainfall
(Wet Weather, Dry Weather only)

- ○ Yes
- ○ No

*

5A iii) Season
(Summer, Winter)

- ○ Yes
- ○ No

*

5A iv) Dry/Wet Season
(Seasonal Flooding)

- ○ Yes
- ○ No

*

5A v) Other
(Please Specify)

Question 5B: If you answered 'No' to any in Question 5A i-iv), would including any information described in 5A meet your needs?

- ◉ Yes (Please Specify which ones below)
- ○ No

Question 6A: Do you use any of the following information in your Vehicle Track classifications?

6A i)
(Sealed [Paved], Unsealed [Unpaved])

- ○ Yes
- ○ No

*

6A ii)
(Graded, Ungraded)

- ○ Yes
- ○ No

*

6A iii) Other
(Please Specify)

Question 7A: Do you use any of the following information in your Vehicle Track classifications?

7A i) Naturally Formed
(Sand, Rock, Mud, Clay)

- ○ Yes
- ○ No

*

7A ii) Constructed
(Bitumen, Gravel, Local Materials, Bulldust)

- ○ Yes
- ○ No

*

7A iii) Other
(Please Specify)

Question 7B: If you answered 'No' to any in Question 7A i-iii), would including any information described in 7A meet your needs?

- ○ Yes (Please Specify which ones below)
- ○ No

Question 8A: Do you use any information on Surface Condition in your Vehicle Track classifications, such as?

8A i) Boggy

- ○ Yes
- ○ No

*

8A ii) Bulldust

- ○ Yes
- ○ No

*

8A iii) Corrugation

- ○ Yes
- ○ No

*

8A iv) Loose Surface

- ○ Yes
- ○ No

*

8A v) Potholes

- ○ Yes
- ○ No

*

8 vi) Rough

- ○ Yes
- ○ No

*

8 vii) Rutting

- ○ Yes
- ○ No

*

8 viii) Slippery

- ○ Yes
- ○ No

*

8 ix) Washouts

- ○ Yes
- ○ No

*

Question 8B: If you answered 'No' to any options in question 8A above, would including any information listed in 8A i-ix) meet your needs?

- ○ Yes (Please Specify which ones below)
- ○ No

Question 9A: Do you use any of the following information in your Vehicle Track classifications?

9A i) Lane

(One Lane, Two Lanes, Three or more)

- ○ Yes
- ○ No

*

9A ii) Vehicle Type
(Pedestrian, Motorbike, Car or 4WD, Truck, Bus)

- ○ Yes
- ○ No

*

9A iii) Actual Width
(<1m, 1-2m, 2-5m, 5-10m, +10m)

- ○ Yes
- ○ No

*

9A iv) Other
(Please Specify)

Question 9B: If you answered 'No' to any in Question 9A i-iii), would including any information described in 9A meet your needs?

- ○ Yes (Please Specify which ones below)
- ○ No

*

A reclaimable road is defined as a previously trafficable road of some construction that is currently abandonded, disused, or revegetated, that could be reinstated with some maintenance.

Question 10A: Does the Vehicle Track classification you use provide information on reclaimable roads?

- ○ Yes
- ○ No

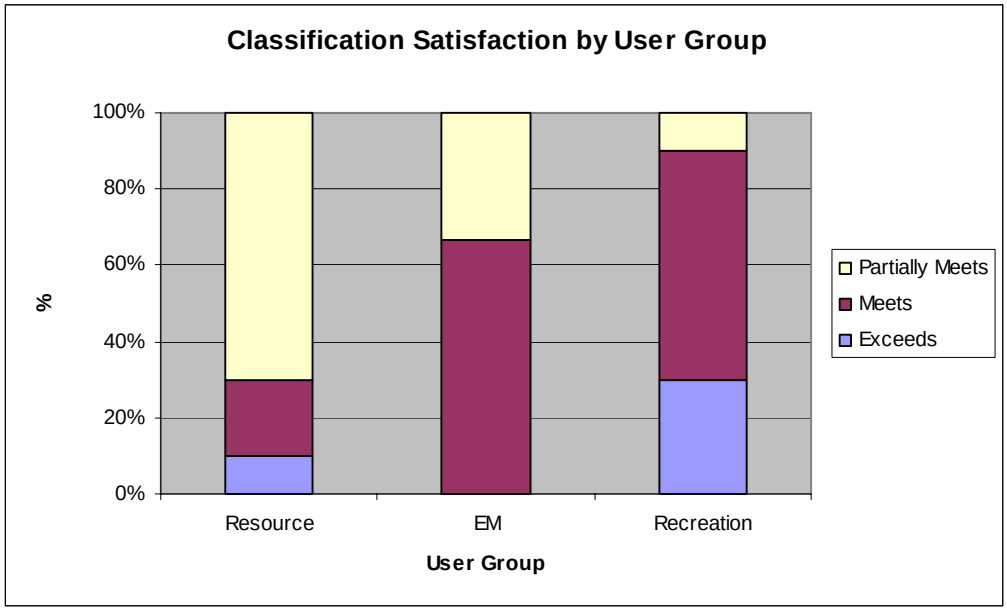
*

Question 10B: If you answered 'No' in question 10A, would including this as a category of Vehicle Track meet your needs?

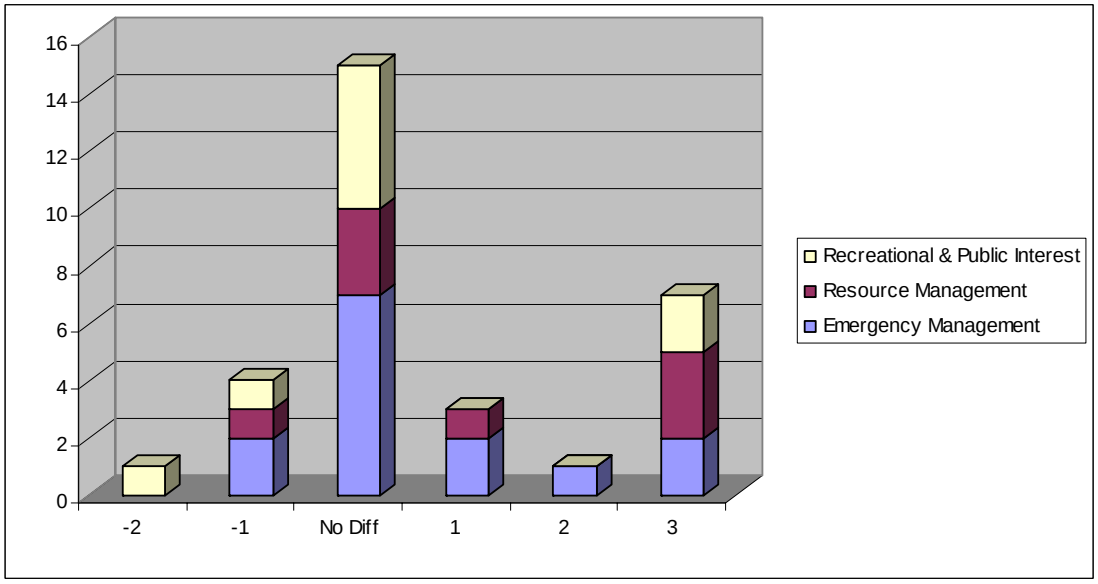
- ○ Yes
- ○ No

Appendix 2 - Survey results

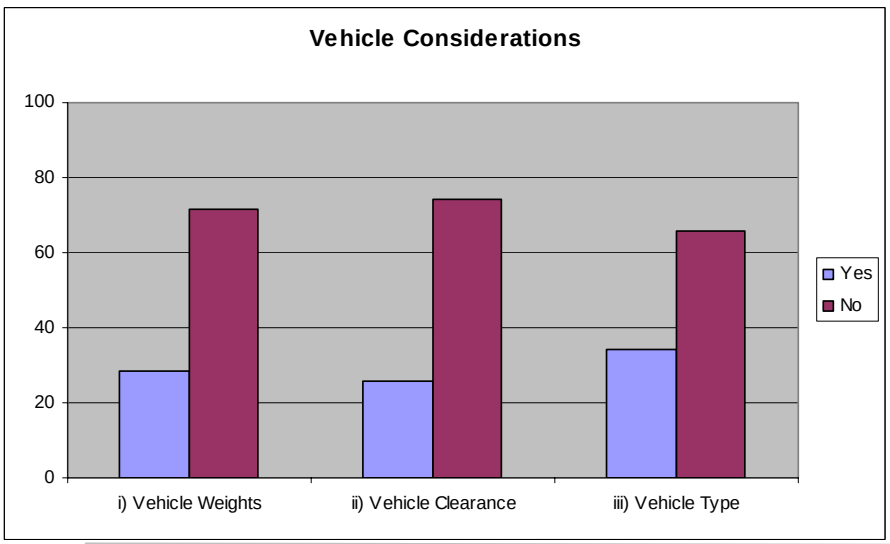
Question 1: By User Group



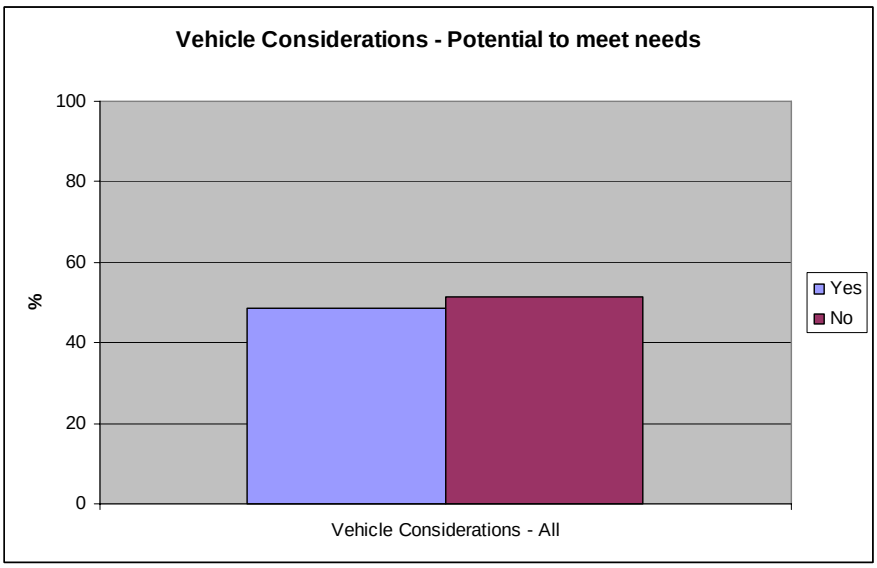
Question 3A: By how many categories does it differ? – By User Group



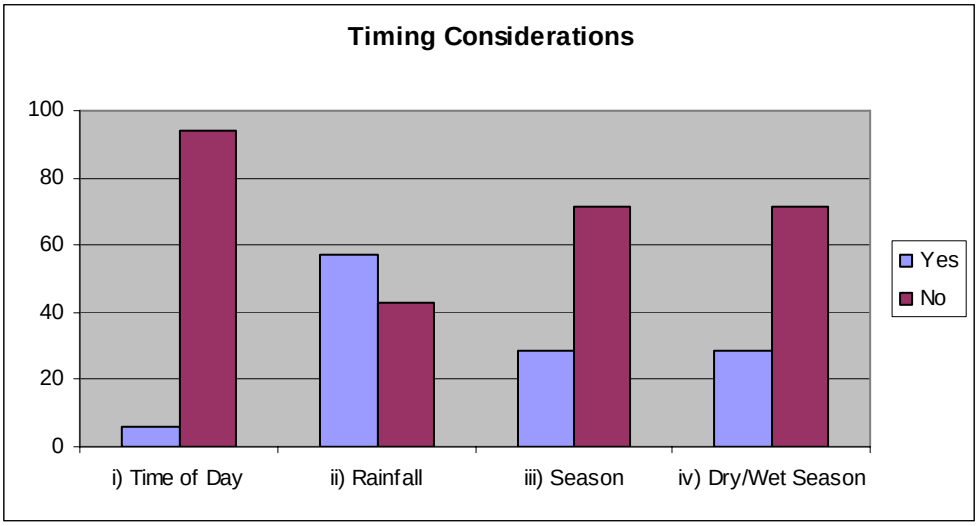
Question 4A: Vehicle Considerations (currently in use)



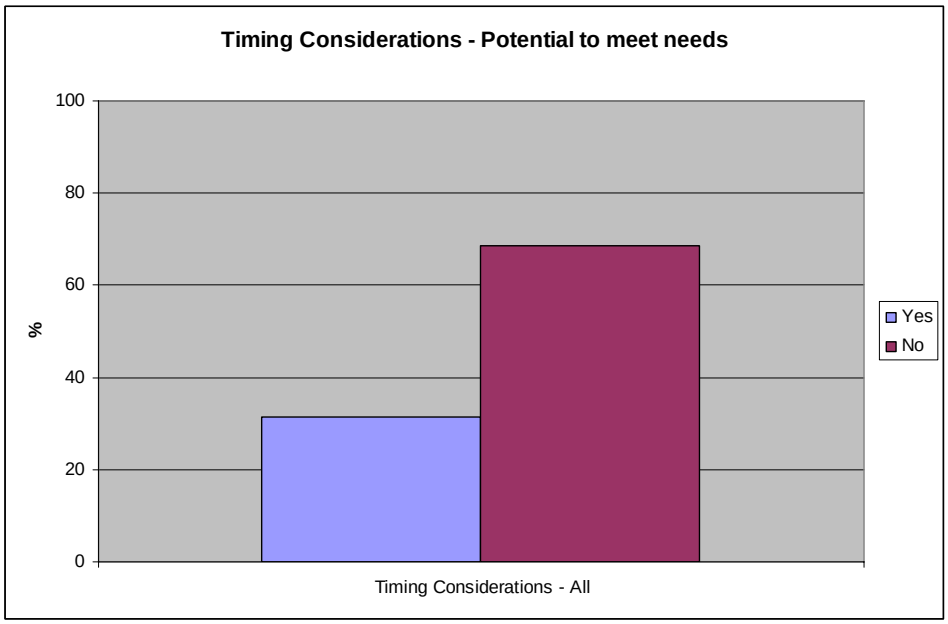
Question 4B: Vehicle Considerations (potential to meet needs)



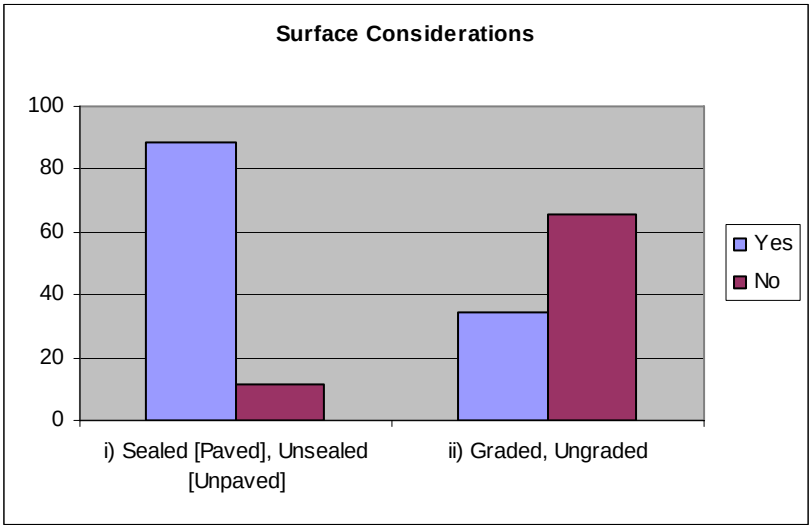
Question 5A: Timing Considerations (currently in use)



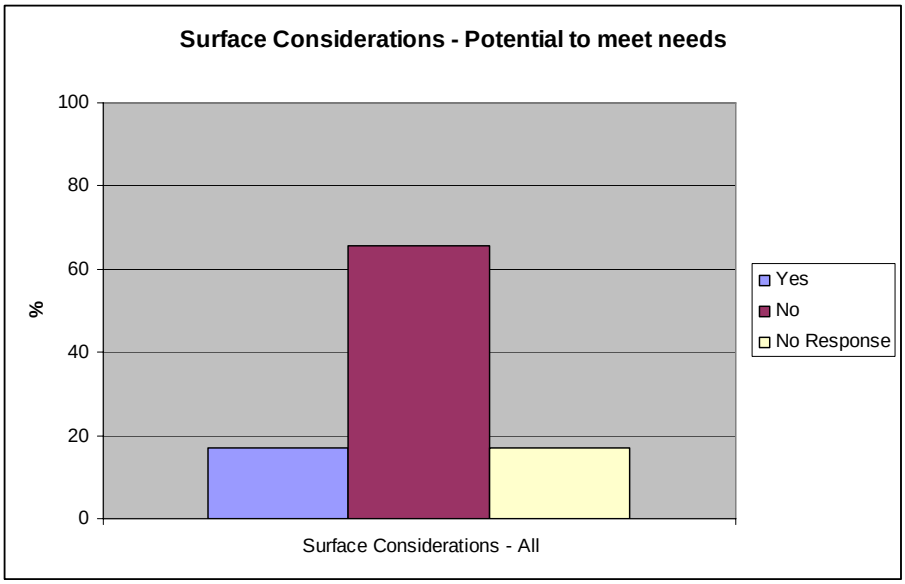
Question 5B: Timing Considerations (potential to meet needs)



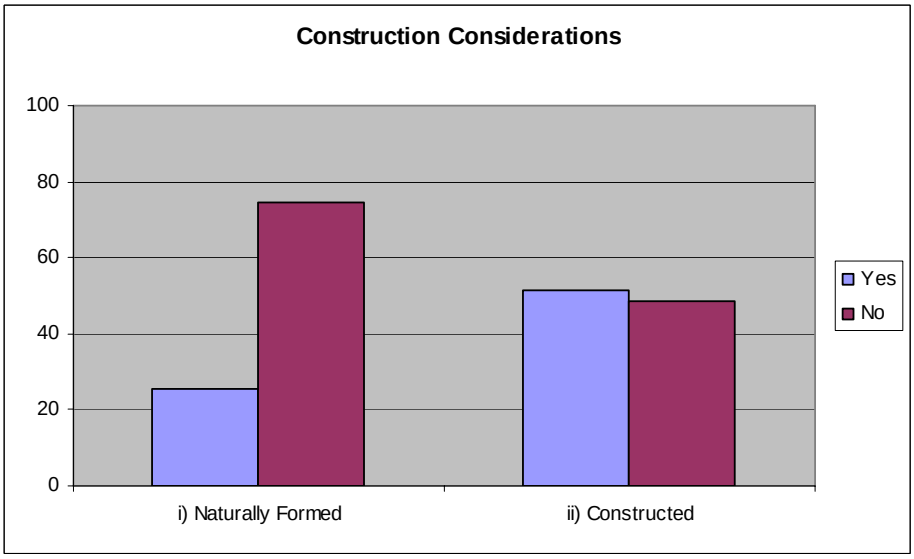
Question 6A: Surface Considerations (currently in use)



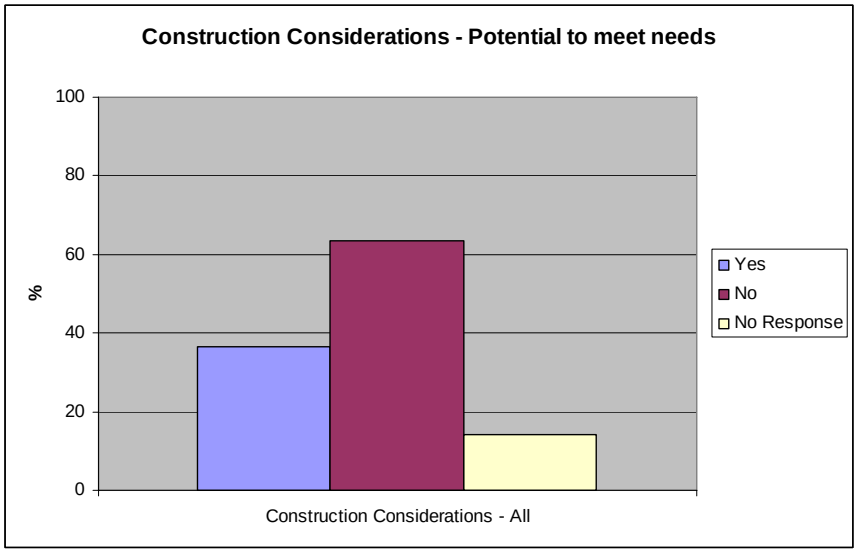
Question 6B: Surface Considerations (potential to meet needs)



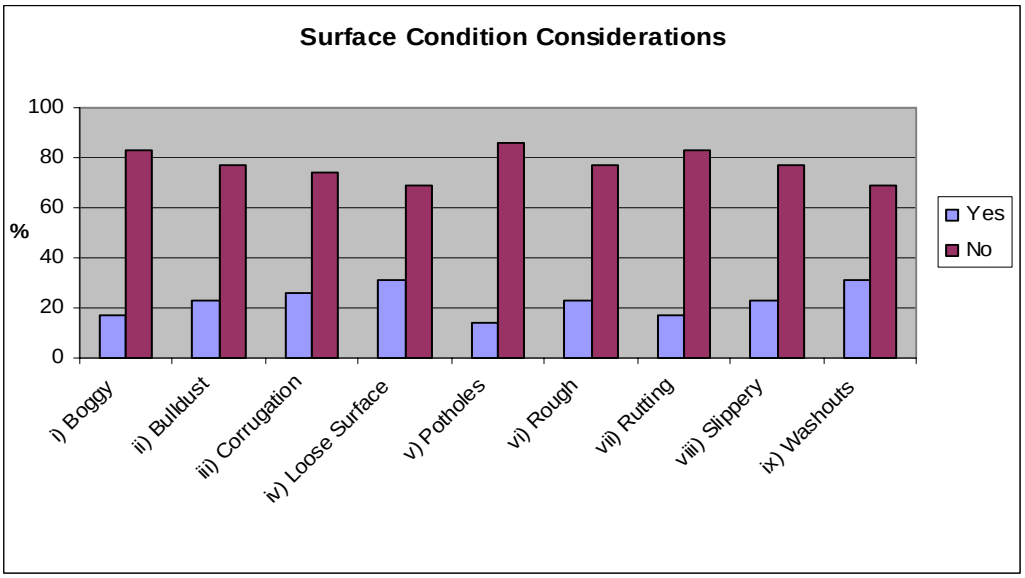
Question 7A: Construction Considerations (currently in use)



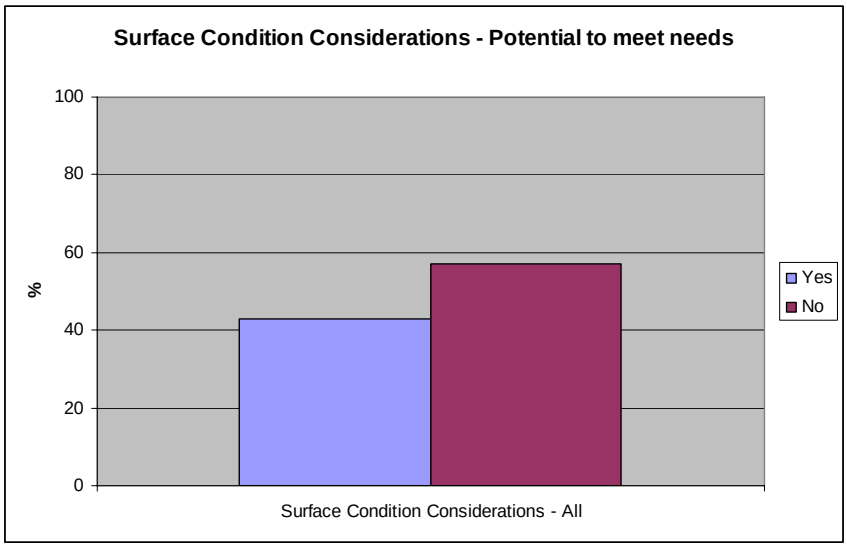
Question 7B: Construction Considerations (potential to meet needs)



Question 8A: Surface Condition Considerations (currently in use)

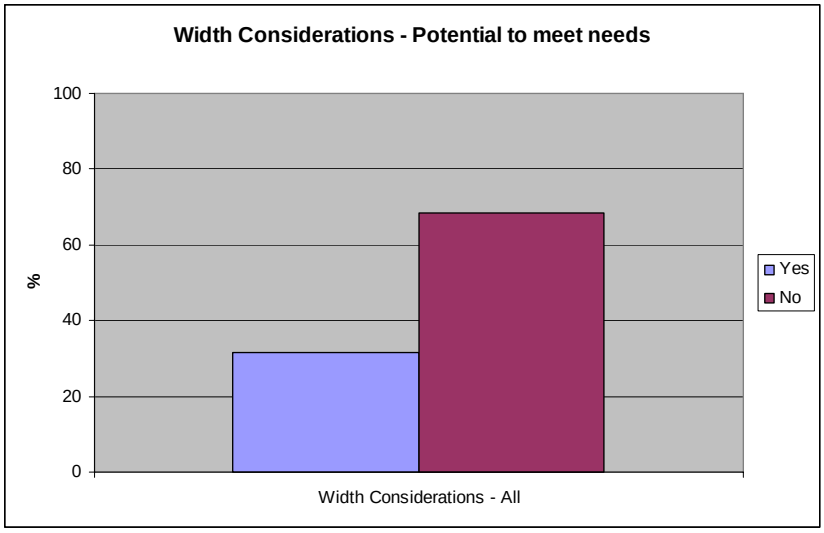


Question 8B: Surface Condition Considerations (potential to meet needs)

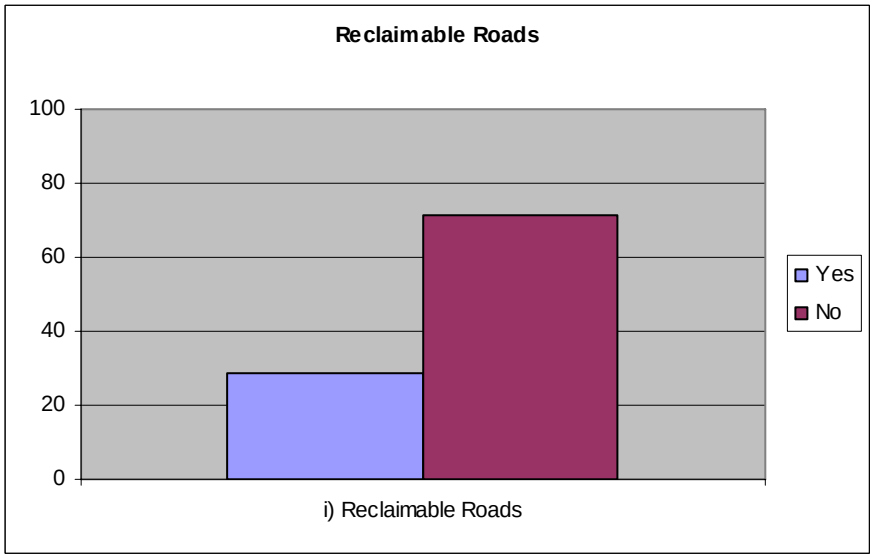


Question 9A: Width Considerations (currently in use)

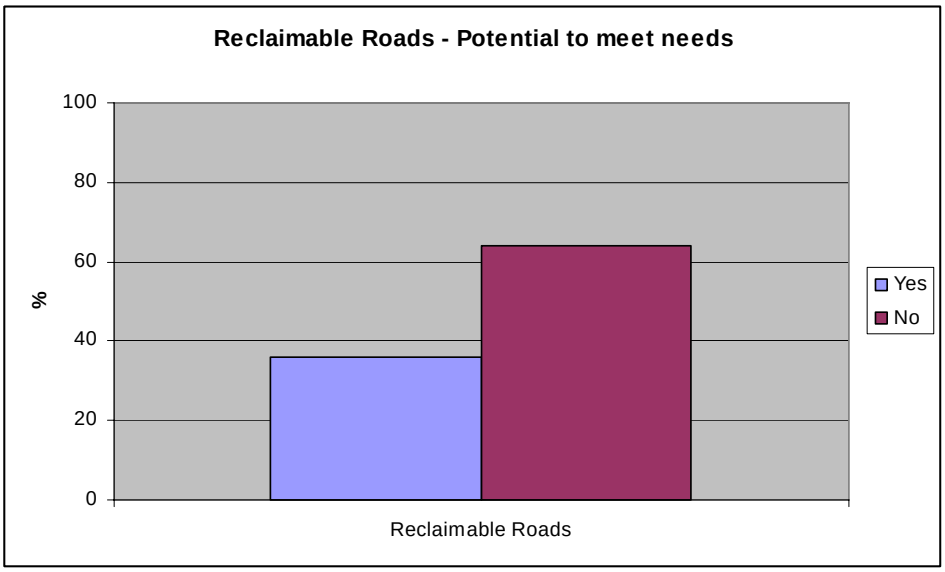
Question 9B: Width Considerations (potential to meet needs)



Question 10A: Reclaimable Roads (currently in use)



Question 10B: Reclaimable Roads (potential to meet needs)



Appendix 3

Organisations approached for the survey

1. ACT Emergency Services Agency
2. ACT Rural Fire Service
3. ACT State Emergency Service
4. Australian Federal Police
5. Commercial Mapping Businesses
6. Environment Australia
7. NSW Bushwalkers Wilderness Rescue Squad
8. NSW Department of Lands
9. NSW Forests
10. NSW Four Wheel Drive Club
11. NSW Kosciusko National Park
12. NSW National Parks & Wildlife Service
13. NSW Rural Fire Service
14. NT Police Search & Rescue
15. NZ Department of Conservation
16. NZ Land Information New Zealand
17. NZ New Topo Maps Org
18. NZ Police
19. Off Road Motorcycle Club
20. Outback Tour Operator
21. QLD Atherton Tablelands GIS
22. QLD Department of Emergency Services
23. QLD Department of Natural Resources & Water
24. QLD Fire & Rescue Service
25. QLD Rural Fire Service
26. QLD State Emergency Service
27. Recreational 4WD User
28. Royal Automobile Association of South Australia
29. Royal Automobile Club of Western Australia
30. SA Country Fire Authority
31. SA Department of Traffic, Energy and Infrastructure
32. SA Minnipa Agricultural Centre
33. SA National Parks West Region
34. SA PIRSA Forestry
35. SA Police
36. SA Police
37. Sydney Catchment Authority
38. TAS Department of Primary Industries & Water
39. TAS Department of Tourism, Arts & Environment
40. TAS State Emergency Service
41. VIC Country Fire Authority
42. VIC DSE
43. VIC Forests
44. VIC Parks
45. VIC State Emergency Service
46. WA Department of Environment & Conservation
47. WA Department of Food & Agriculture
48. WA Fire & Emergency Services Authority