TRAFFIC MANAGEMENT REPORT

PARLIAMENT DRIVE

ROAD SAFETY ASSESSMENT

FINAL

Consulting Engineers

R D Gossip Pty Ltd Pty Ltd
2 Lawry Place
Macquarie ACT 2614
Australia
Telephone :+61 2 6251 6313
Facsimile :+61 2 6253 1989
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Prepared by:

Paul Ferrari MIEAust
Principal Engineer

Checked by:

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Martin Gordon

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1 PREAMBLE

1.1 Introduction

1.1.1 Parliament Drive surrounds Parliament House and links the House to the local road network at Commonwealth Avenue, Federation Mall, Kings Avenue and Melbourne Avenue.

1.1.2 Since originally constructed, Parliament Drive has operated as a two way circulating road.

1.1.3 In August 2006 the operation of the road was changed to primarily a one way system circulating in an anti-clockwise direction.

1.1.4 This report assesses utilisation of the revised traffic scheme by motorists following some twelve months of the new arrangement, and recommends a number of adjustments which are warranted.

1.2 General Description

1.2.1 Generally the pavement width is 10m, with the straight sections past the Senate and House of Representatives sides linemarked as two traffic lanes with provision for parking at various places along the left kerb area. Generally the road is flat. The speed limit is 50 km/h.

1.2.2 The road follows a rectangular path consisting of straight sections joined by 90 degree bends. Speed humps have been constructed on either side of these bends. These provide a positive constraint intended to reduce the speed of travel around the corners.

1.2.3 Parking control of the left side kerb space is provided by signs sometimes supplemented with linemarking. Where there is no linemarking associated with kerb use, the low usage of the kerb for parking in most places leaves a very wide pavement width apparently available for moving traffic.

1.2.4 Along the Senate and House of Representatives sides, the parking regime has been specified to prevent parking at particular times. On the approaches to the underground car park entrances, parking is not permitted in the morning and on the departure sides, parking is not permitted during the afternoons. This appears to be intended to allow cars entering the carparks in the morning to be able to queue along the kerb before entry. In the afternoon the intention appears to be to allow vehicles exiting the carparks to be able to do so unhindered alongside the kerb providing for easy merging with circulating traffic.

1.2.5 The simplified one way traffic system applies for most of the length of Parliament Drive except for the short sections between Commonwealth and Kings Avenues. In those locations there is two way access from those roads towards the Forecourt public underground car park which is also accessed from Federation Mall

1.2.6 Following introduction of the one way system, a number of concerns have been raised. A primary concern is the number of vehicles which circulate the wrong way around the road system. Other concerns are about the conflicts occurring at various locations particularly around the entrances and exits of the carparks, the extent of passenger pick up and set down activities contrary to the signage and the delays being experienced particularly on the Melbourne Avenue approach.

1.3 Traffic Review

1.3.1 Several staff working at Parliament House provided written comments of incidents and observations. This review included an assessment of those comments.

1.3.2 We were also provided with a copy of a draft post implementation review report prepared by Hughes Trueman.

1.3.3 Operation of the traffic system was observed on two days during a sitting week on 5th and 6th December 2006. Observations were made from 7.30 am to 9 am and 4.30 pm to 6 pm.

1.3.4 This report documents the observations and from them some recommendations are made regarding adjustments to the system.

2 ISSUES

2.1 Overview

2.1.1` There is a significant degree of non-conforming driver behaviour occurring.

2.1.2 The issues can be categorised as

- Traffic making incorrect direction choices;
- Inappropriate set down and pick up behaviour; and
- Miscellaneous deficiencies that impede efficient traffic flow

2.1.3 The incorrect direction choices lead to dangerous situations with vehicles travelling significant distances against the direction of traffic. The wide and open nature of much of Parliament Drive exacerbates this by not providing immediate visual clues about the direction of the traffic flow to a motorist who has chosen to travel in the wrong direction.

2.1.4 The open width also encourages travel at speed and several vehicles were observed travelling at well in excess of the speed limit.

2.1.5 Although no serious accidents have resulted to date, as far as we are aware, the potential exists for such an outcome. The scope for incorrect choices needs to be eliminated or at least reduced.

2.1.6 Inappropriate kerb side activities at times cause congestion and hence inconvenience to other road users but also at times give rise to dangerous situations and should also be addressed.

2.1.7 A number of the traffic control devices used in this road network do not comply with Australian, Austroads and ACT standards. These non compliances are inappropriate and may contribute to reduced consistency of driver behaviour. In either case any non compliant applications should be rectified.

2.2 Incorrect Direction Choices

2.2.1 Incorrect direction choices are being made at almost all of the intersection points including

1. Kings Avenue / Parliament Drive;
2. Melbourne Avenue / Parliament Drive;
3. The three staff car park exits

2.2.2 At Kings Avenue and Melbourne Avenue motorists are advised about the restriction on wrong way entry by linemarking and signage. As motorists regularly turned the wrong way onto Parliament Drive contrary to the signage when the new scheme was implemented, temporary reflective posts have been erected providing a strong vertical element to the restriction on entry. The temporary reflective posts have achieved the desired outcome.

2.2.3 During the site investigation, the temporary posts were removed for a period in both the morning and evening peak periods on the second day of observations. With the posts removed, drivers were observed to drive past the signs and linemarking at both the Kings Avenue and Melbourne Avenue intersections to enter Parliament Drive in the wrong direction.

2.2.4 The conclusion from this is that the current traffic control devices preventing wrong way entry onto Parliament Drive need to be modified and need to have a physical vertical element as a final deterrent to motorists who have not interpreted the signage properly.

2.2.5 Additionally the direction signage is not adequately conveying the available options to motorists and could be significantly improved.

2.2.6 This is more than an issue of advising of permitted directions from particular lanes at intersections.

2.2.7 The problem of incorrect choices may be resulting from motorists not knowing what their options are to reach particular destinations as there is no destination signage provided on any of the approaches to Parliament House. Given the complexities of routes caused by the imposition of the one way system, the requirement for comprehensive site destination advice is significantly increased.

2.2.8 For example a motorist unfamiliar with the detailed configuration of the road system, travelling south on Federation Mall towards Parliament House and (say) wanting to find the House of Representatives entrance could, prior to the one way system, turn in either direction at Parliament Drive and circulate the site until the destination was found. With the one way arrangement a turn to the left at the top of Federation Mall (towards the House of Representatives side) results in the vehicle being diverted down Kings Avenue and away from Parliament House altogether. The motorist is given no warning of that outcome.

2.2.9 The existing signage does not provide any destination information. It is likely that this is a key factor in motorists wanting to travel against the one way system and seems an unusual omission at a site which is presumably the focus of significant numbers of visitors unfamiliar with the site including tourists, diplomats, lobbyists and other business visitors.

2.2.10 The other locations where incorrect direction choices are being made are at the exits to the staff carparks and the exits from the three wing entrance roads (Ministerial Wing, Senate and House of Representatives entrances). The appropriate direction to be taken at the staff car park exits is signed by left turn only signs, one way signs and pavement markings.

2.2.11 The bollarded exits to each of the slip roads feature signage directing motorists to only exit left out of these restricted driveways. Even though it is unlikely that drivers unfamiliar with the traffic arrangement would be driving out of these exits, during the relatively short time of our site inspection, one driver was observed turning out of the Ministerial wing exit road the wrong way.

2.2.12 Incorrect choices at these exit points appear to be simply an absent minded decision perhaps where drivers have their attention on other matters. This may also reflect the presence of interstate visiting staff. Whatever the reason, the practice appears to continue to occur.

2.2.13 The practice leads to dangerous outcomes similar to the incorrect choices at the intersections and, as at those locations, corrective action is required to physically enforce the adoption of the appropriate direction.

2.2.14 This suggests that physical directional barriers need to be added at each of the exit points to reinforce the appropriate direction of travel. Such barriers should where possible prevent inappropriate turns or at least make them physically difficult.

2.2.15 Bicycle riders also have been observed riding the wrong way around Parliament Drive. It is possible that this is a deliberate choice of the bicycle riders to avoid having to circulate around the whole site.

2.2.16 On Parliament Drive between Kings Avenue and Federation Mall and between Commonwealth Avenue and Federation Mall, where Parliament Drive carries two way traffic, the existing single line does not provide a visual cue that these sections are two way. Since drivers normally associate double barrier lines with two way traffic, replacing the single line with a double line would provide a useful cue that these sections of road are two way.

2.3 Kerb Usage

2.3.1 The parking kerb usage scheme that seeks to have drop off and set down activities take place in different locations depending on whether it is morning or night is not working.

2.3.2 The reason is not clear. It could be because the signage is unique and misread or is easily interpreted opposite to its intent. Perhaps it is just that motorists and passengers are unaware of the requirements.

2.3.3 In any case there appears to be little justification for the current complexity.

2.3.4 The requirement to provide an entry queue lane and an exit acceleration lane is not evident. Parliament Drive by observation carries less traffic than the capacity of a single traffic lane. If the available road width was clearly utilised as a kerbside lane for stopping activities and two circulating lanes for traffic, including traffic entering or leaving the traffic stream, there would be better clarity and order than with the present system.

2.3.5 It would even be appropriate to promote the right lane as the usual through traffic lane leaving the centre of the three lanes for slowly circulating traffic (sightseers, drivers looking to collect passengers, drivers entering or exiting the traffic stream. etc).

2.3.6 This would avoid the need to use the kerbside lanes as entry and exit queuing space and so avoid the need for the special time based parking restrictions. Consequently the drop off and set down zones could apply at all times instead of at differing times during the day.

2.3.7 There are some areas where passenger pickups and set downs are continuing to occur inappropriately such as at the foot of the stairs in front of the Ministerial Wing and at the bus stop areas in front of the Senate and House of Representatives.

2.3.8 Observations suggest that this might be explained by passengers unfamiliar with the area waiting to be picked up where it is easy for them to describe to a driver.

2.3.9 In the area in front of the Ministerial Wing, this pick up and drop off activity is not acceptable as it is occurring within the intersection with Melbourne Avenue adding to the inefficiencies and general congestion there during peak times in particular. In that location significant action is warranted to prevent it occurring.

2.3.10 Conversely where the activity is occurring in front of the Senate and House of Representatives, the areas are signed and used as bus stops. The short term car pick up and set down activity is not in itself inherently dangerous in this location provided it does not occur when a bus also is using that kerb space. On that basis, while some action is warranted to regularise the use of the kerb space, significant preventative action is less warranted.

2.3.11 Improvements to signage may be sufficient to prevent these areas being used as pick up and drop of areas particularly if there is an obvious and readily accessible alternative area. Additional enforcement might assist in that regard but would only influence the people who are regularly dropped off and picked up and then only if the enforcement carried actual penalties rather than warnings from Protective Services staff.

2.3.12 In front of the Ministerial Wing the consequences of pick ups and set downs are significant and should be prevented. The tendency to do this would be reduced if the intersection was changed to traffic signal control. If the intersection continues as a T intersection or is converted to a roundabout, it appears that provision of a physical barrier behind the kerb is the only way this practice will be prevented.

2.4 Traffic Flow at the Intersection with Melbourne Avenue

2.4.1 Generally traffic flows through the one way system with little difficulty with one notable exception.

2.4.2 The intersection of Parliament Drive with Melbourne Avenue does not function efficiently.

2.4.3 Currently the intersection operates as a standard T intersection with traffic on Parliament Drive having priority over traffic on Melbourne Avenue. This results in the development of significant queues in Melbourne Avenue even though the volume of traffic on Parliament Drive is not heavy.

2.4.4 Currently the through lane on Parliament Drive across the top of the intersection is very wide encouraging vehicles travelling straight through the intersection on Parliament Drive to do so at speed. Additionally a driver waiting to enter from Melbourne Avenue looks almost directly at cars approaching in the right lane of Parliament Drive before those vehicles are moved to the left by the Form One Lane linemarking.

2.4.5 This can be intimidating for drivers waiting to turn out of Melbourne Avenue, making it more difficult for them to judge what an approaching motorist is intending to do. That results in usable merging gaps not being utilised and adds to the build up of a queue on the Melbourne Avenue approach.

2.4.6 Several consequences arise from this.

2.4.7 Drivers queuing in Melbourne Avenue become impatient and tend to take risks picking shorter gaps than appropriate. This increases the probability of accidents.

2.4.8 This is compounded by traffic flows being interrupted by pedestrians using the pedestrian crossing. There is potential for a driver whose attention has been focussed on vehicles approaching along Parliament Drive to accelerate and turn into a gap in that traffic, to then be confronted by a pedestrian on the eastern crossing.

2.4.9 Additionally special arrangements are regularly required to clear traffic to provide priority for special vehicles.

2.4.10 Particularly during the morning peak period, the entrance to the staff carparks off Melbourne Avenue becomes blocked leading to queues of southbound vehicles in Melbourne Avenue which occasionally extend back to Parliament Drive resulting in a situation where Melbourne Avenue is blocked in both directions. This could be a security concern.

2.4.11 We did not see any evidence of problems reported earlier of vehicles doing u-turns and otherwise manoeuvring within the intersection. It is concluded that this problem may have been a transitional problem which is no longer occurring.

2.4.12 Some alteration is required to the layout of the intersection to improve its efficiency.

2.4.13 Altering priority at the intersection to give traffic on Melbourne Avenue priority over traffic on Parliament Drive would overcome the queuing delays in Melbourne Avenue. However they would probably be replaced by similar delays on Parliament Drive.

2.4.14 Pedestrian safety might also be compromised because drivers turning out of Melbourne Avenue might do so at some speed (having right of way) and consequently approach the eastern pedestrian crossing too quickly. This is already a problem at the moment with drivers having to confront the possibility of pedestrians on the crossing after focussing on the traffic approaching from the opposite direction.

2.4.15 The reverse priority option does not achieve any particular advantage and is not recommended.

2.5 Speed Humps

2.5.1 Speed humps have been constructed on either side of each of the four main right angle bends on Parliament Drive. Their purpose is not immediately evident although they are clearly effective in reducing travel speeds around the right angle bends,

2.5.2 However, the humps on the departure sides of each of the bends have become redundant since Parliament Drive has become a one way system. Now when vehicles reach these departure side humps their speed has already been reduced. These humps do not appear to serve any useful purpose and could be removed.

2.5.3 It is difficult to provide an accurate estimate of cost to remove the departure side humps because it would be dependant on the extent of reconstruction required for the road pavement once each hump is removed. An approximate estimate is $80,000 ($20,000 per hump).

2.5.4 Excessive travel speeds on Parliament Drive were not identified as a prevalent problem that requires positive control. The changes proposed in this report, particularly those that restrict the apparent road width to one through lane, one internal ‘circulating’ lane and a kerb parking/cycle lane can be expected to have a limiting effect on traffic and is likely to result in slightly reduced vehicle speeds.

2.5.5 If speed is found to be an issue in the future then consideration could be given to constructing some additional speed humps along both the Senate and House of Representatives legs of Parliament Drive. Based on recent construction prices in Canberra, each hump could be expected to cost in the range of $50,000 to $70,000 or up to $100,000 if a zebra crossing and associated lighting is required to conform with the ACT specification for new 12 metre long flat top speed humps.

2.6 Lighting

2.6.1 Concern has been expressed by Parliament House staff about lighting levels on Parliament Drive particularly in the vicinity of the pedestrian crossings near the Parliament Drive / Melbourne Avenue intersection.

2.6.2 A lighting consultant was engaged to assess the lighting levels in relation to the relevant Australian Standards.

2.6.3 The lighting levels on the crossings themselves complied with AS 1158.4-1987 (Pedestrian Crossings). The lighting levels measured varied between 53 lux and 126 lux on the SE side

and 90 lux to 19 lux on the NW side (a minimum level of 45 lux is required). The reason the NW side readings were down is because the flood light No. 994 was not working. All 7 other flood lights were working.

2.6.4 The lights at the intersection appear to be old 250 watt mercury vapour lights and the lighting level at the intersection does not comply with Category V3 as required by AS 1158.4- 1987, Clause 2.2.1.

2.6.5 The present post top lights along Parliament Drive produce quite a lot of glare to motorists. These types of light are more suited to foot paths than to roads.

2.6.6 Modifications to, and maintenance of, the lighting are detailed in the next section.

2.7 Miscellaneous Issues

2.7.1 A number of other locations require some modification

2.7.2 At each of the intersections along Parliament Drive and Federation Mall, Stop signs have been installed. Measurement at each location revealed that the Australian Standard conditions warranting provision of a Stop sign are not met.

2.7.3 The Australian Standard Stop sign warrant is based on a lack of sight distance between vehicles approaching an intersection point. Use of Stop signs where there is adequate sight distance is not appropriate as it leads to disregard of the requirement at that location and adds to non compliance with regulatory signs in general.

2.7.4 This appears to be the case at a number of locations around Parliament House where drivers frequently are observed to drive past Stop signs without stopping.

2.7.5 The literature does not support the notion that the provision of Stop signs where there is adequate sight distance results in increased awareness of drivers to potential conflicts.

2.7.6 Where Stop sign warrants are not met, the signs should be replaced with Give Way signs.

2.7.7 There is a noticeable lack of pavement arrows approaching intersection points particularly around carpark entrance points. Pavement arrows quite effectively provide allowable direction of travel clues to drivers.

2.7.8 At, and approaching, carpark exit points, pavement arrows on each of the available lanes can be expected to provide effective advice to drivers who might otherwise turn in the wrong direction out of a car park. For example adjacent pavement arrows on both the through traffic lanes on Parliament Drive immediately before the underground staff car park exits would convey a very clear and unambiguous message to someone who has turned, or is about to turn, the wrong way out of the carpark.

2.7.9 A particular problem exists at the exit to the Forecourt public car park at the intersection with Federation Mall (western side). The existing pavement arrow on the right turn lane of the exit has the potential to direct traffic onto the wrong side of the two way section of Parliament Drive towards Commonwealth Avenue. This is exaggerated because a driver waiting at the Stop line in the right turn lane at the exit is faced with a barrier line in the centre of the road into which the driver is turning.

2.7.10 During the site observations a driver was seen to make that incorrect lane choice and head towards the Commonwealth Avenue ramp on the wrong side of the two way section of road.

2.7.11 The addition of pavement arrows on the Federation Mall pavement at the intersection with the public car park exit combined with a shortening of the barrier line and addition of a turn line would provide clear directions to drivers.

2.7.12 At the intersection between Parliament Drive and the Commonwealth Avenue ramp, vehicles approaching on Commonwealth Avenue have the one marked lane whether turning left or right. The arrangement would be more efficient if the left turn and right turn approaches to that intersection on Commonwealth Avenue were separated by a small splitter island. This would allow left turning vehicles to turn without being delayed by right turning vehicles giving way to traffic on Parliament Drive.

2.7.13 At the intersection between Parliament Drive and Kings Avenue, traffic travelling from Federation Mall towards Kings Avenue is required to turn left at Kings Avenue and has priority over traffic circulating on Parliament Drive wanting to turn right at Kings Avenue. It would be consistent with the nature of Parliament Drive to provide priority to the vehicles turning right onto Kings Avenue over those turning left.

2.7.14 Provision of signing to implement that reversing of the existing priority would assist in making drivers aware that they are required to turn left and cannot proceed straight through the intersection to continue around Parliament Drive (the wrong way).

2.7.15 Each of the right angle bends on Parliament Drive has raised concrete speed humps. The Australian Standard specifies that the approach edges of these speed humps should have painted yellow “piano key” markings.

2.7.16 Existing zebra pedestrian crossings have been provided with sub standard linemarking. They are considerably smaller than standard, reducing the visual impact of the crossing for approaching drivers and should be standardised as soon as possible.

3 POSSIBLE MODIFICATIONS

3.1 Delineation of Traffic Flow Direction

3.1.1 A number of measures should be taken to emphasise the direction of flow.

3.1.2 At each of the intersection locations (Kings Avenue and Melbourne Avenue) the existing pavement linemarking that delineates the barrier to traffic should be replaced with concrete kerb. This provides a definite vertical element to the barrier and cannot be breached without making drivers aware of their mistake.

3.1.3 Similarly at the staff carpark exits and at the exits to the entrance wing driveways, kerb delineation should be shaped to direct vehicles to turn in the direction of the traffic flow. In those locations where the expectation is that drivers are more likely to be aware of local layouts, road pavement flaps might prove sufficient. If not then they should be replaced by fixed kerb in the longer term.

3.2 Signage

3.2.1 A comprehensive destination signage scheme identifying key Parliament Destinations should be developed and implemented at each of the road approaches to Parliament Drive.

3.2.2 Additionally some signs in areas used by pedestrians are mounted too low and should be raised to the standard height to avoid injuring pedestrians.

3.3 Kerb Parking

3.3.1 The existing kerb lane should be physically restricted by linemarking and other measures for use as a parking lane plus a bicycle only lane.

3.3.2 This should include the construction of kerb blisters at suitable locations including at either side of the staff car park entrances and exits. These blisters would incorporate the direction delineation required at those exit points and make it difficult for motorists to turn the wrong way. As mentioned in section 3.1.3, consideration could be given to implementing some of these blisters using flexible road pavement flaps in the first instance.

3.3.3 The existing parking restriction signage should be simplified to a standard format. This is likely to be much more readily interpreted by motorists unfamiliar with the area.

3.3.4 Any revision to the parking scheme should incorporate clear identification for both passengers and drivers of areas designated for passenger pickup including taxis and buses.

3.3.5 At the foot of the stairs at the Melbourne Avenue intersection, in the first instance it would be appropriate to provide a sign facing pedestrians approaching the kerb from the stairs directing passengers to pick up areas on either sides of the intersection beyond the carpark entries and exits.

3.3.6 Additionally, an appropriately designed fence should be erected to provide a physical barrier to pick up and set down activities in this location if the intersection either remains as a T intersection or is converted to a roundabout.

3.3.7 This is not an option for the kerb areas in front of the Senate and House of Representatives since the kerb areas there are bus stop zones.

3.3.8 Delineation of the kerb lane as parking space will overcome the existing conflicts between vehicles re-entering the traffic flow from the kerb and vehicles wanting to turn into the underground carparks.

3.3.9 Vehicles that have been stopped at the kerb will be aware that they are moving out into the traffic stream compared with the current situation where they are inclined to see themselves as in the traffic flow even when adjacent to the kerb.

3.3.10 Clearly defining the kerb space as parking area will have the added benefit of visually narrowing the pavement width of the circulating roadway, which should be conducive of slower travel speeds generally.

3.4 Melbourne Avenue / Parliament Drive Intersection

3.4.1 Modifications could be made to the existing intersection to improve its efficiency. Alternatively the existing intersection could be modified to a roundabout configuration or traffic signals could be installed.

3.4.2 These options are discussed and comparatively assessed in Section 4.

3.5 Lighting Changes

3.5.1 The lamp in light No. 994 (on the NW side of the NE crossing) needs to be replaced. Given the apparent age of the lights, it would be appropriate to replace all eight lamps and this is recommended.

3.5.2 The tree branches around lights No's. 994 & 991 should be trimmed well clear of the flood lights.

3.5.3 Since the lighting level at the intersection does not comply with the relevant Australian code, the two road lights at the intersection should be replaced with new 250 watt metal halide aeroscreen lights (luminaires).

3.5.4 AS 1158.4-1987, Clause 2.2.1 requires that the road lighting on either side of a pedestrian crossing should be Category A3 (V3 in the latest AS/NZS 1158) for not less than three (3) spans. Hence 3 of the post top lights along Parliament Drive, on both sides of the pedestrian crossings, should be replaced with 250 watt metal halide aeroscreen lights @ 10.5m mounting heights on 4.5m out reaches (subject to a detailed design).

3.5.5 These lighting modifications would not be required if the intersection is converted to traffic signal control.

3.5.6 Consideration should be given to replacing all of the existing post top lights along Parliament Drive with normal road lighting luminaires of a type that are acceptable to the Parliament House architects. It is recommended that they be 250 watt aerosceen luminaires @ 10.5m mounting heights & approx 50m spacing (subject to a detailed design).

3.6 Pavement Surface

3.6.1 The existing road pavement is exhibiting signs of wear including cracking and oxidation. It is likely that a reseal of the pavement would be scheduled in the near future as a preventative maintenance measure.

3.6.2 To implement many of the changes recommended in this report, eradication of existing line marking is required. It would be useful to combine resurfacing of the pavement with implementation of the new works to provide clarity to the new linemarking in difficult lighting conditions, particularly when the pavement is wet.

3.6.3 In some locations such as the exit / entries of the staff car parks there is insufficient space to construct islands to direct vehicle paths. Where that is an issue, coloured pavement marking could be used effectively.

3.7 Miscellaneous Modifications

3.7.1 In addition to those modifications already discussed in this section, there are several other detailed adjustments and additions which are required at particular locations.

3.7.2 These are discussed earlier in this report, are detailed on drawing MNW 060555 Sheet 1 and include:

- Provision of pavement arrows in a number of locations;
- Replace all Stop signs with Give Way ;
- provision of additional One Way signs at a number of turning points;
- Linemarking adjustment at the exit to the Forecourt public car park;
- Standardising the linemarking of the speed humps and pedestrian crossings;
- Altering priority at the Parliament Drive/Kings Avenue intersection;
- Providing a free left turn at the Parliament Drive / Commonwealth Avenue intersection;
- Painting Form One Lane on the pavement at merge points;
- Painting Keep Clear markings on Melbourne Avenue at the entrance to the car parks;
- Painting edge lines where Parliament Drive turns through a right angle onto Federation Mall;
- Re-align the barrier line on the Link Road; and
- On Parliament Drive between Kings Avenue and Federation Mall and between Commonwealth Avenue and Federation Mall, replace the existing single line with double barrier line to provide additional visual cues that these sections carry two way traffic;

4 MELBOURNE AVENUE / PARLIAMENT DRIVE

4.1 Re-configured T Intersection

4.1.1 Modifications to the intersection are detailed on Drawing MNW 06055 Sheet 2.

4.1.2 These modifications are expected to cost of the order of $226,000 inclusive of GST.

4.1.3 The through lane through the top of the intersection is very wide and encourages through traffic to travel more quickly than appropriate through the intersection.

4.1.4 It would be sensible to reduce that lane width considerably. This can be achieved by the kerb island blisters at the passenger pick up and drop off areas, the provision of a bicycle lane through the intersection and the widening of the area blocking wrong way entry onto Parliament Drive.

4.1.5 This narrowing of the through lane and provision of the pedestrian crossings on raised speed humps will slow the speed of vehicles approaching the intersection on Parliament Drive. In turn this should make more obvious the available gaps for vehicles wanting to turn right onto Parliament Drive from Melbourne Avenue.

4.1.6 Additionally these vehicles will be able to turn onto a lane informally protected from use by through vehicles on Parliament Drive starting at the intersection and before the pedestrian crossing. This should make it easier for vehicles to enter from Melbourne Avenue, reducing the length of queues and reducing delays for the Melbourne Avenue traffic.

4.1.7 The revised layout includes provision of raised pedestrian crossings at the existing marked zebra crossings. This would significantly improve the conspicuity of pedestrians crossing at the crossing points and reduce the tendency of drivers, turning right onto Parliament Drive, not seeing pedestrians early enough because their attention has been on the traffic approaching on Parliament Drive.

4.1.8 However the presence of the raised crossing on the departure side of the intersection will slow the acceleration of vehicles turning right onto Parliament Drive reducing the merging opportunities and consequently reducing the efficiency improvements aimed at reducing the queuing on the Melbourne Avenue approach.

4.1.9 These modifications would not provide any improvement over the existing layout to discourage the not infrequent practice of vehicles turning right out of the Ministerial Wing car park to travel the 20 metres or so against the traffic flow to turn left onto Melbourne Avenue. There is no need for such risky movements because exiting the other Ministerial Wing exit point allows vehicles to turn onto Melbourne Avenue legally.

4.1.10 The need to provide standard merge tapers on the Parliament Drive approach to the intersection results in the loss of some kerb drop off and set down parking spaces.

4.1.11 The reconfiguration of the intersection in Melbourne Avenue should include provision to prevent queuing across the carpark entrances to keep them open to traffic and to avoid Melbourne Avenue being blocked in both directions.

4.1.12 These modifications should improve operation of the intersection and would be the least expensive of the three options.

4.1.13 However the layout would continue to provide priority to the traffic on Parliament Drive over the traffic on Melbourne Avenue and delays could be expected to continue on that approach, particularly in the morning peak.

4.1.14 A further disadvantage of this layout is that provision of the taper on the Parliament Drive approach would remove the existing pick-up and set down spaces between the Ministerial Wing sliproad exit and the entry/exit to the Ministerial Wing underground carpark.

4.2 Roundabout

4.2.1 A possible roundabout layout is detailed on Drawing MNW 06055 Sheet 3.

4.2.2 Conversion of the intersection to a roundabout configuration is expected to cost of the order of $355,000 inclusive of GST. This price excludes any water or fibre optic cable relocations that might be found to be required at final design stage.

4.2.3 This layout requires considerable modification to the bounds of the existing intersection. The roundabout needs to be of sufficient size to cater for the turning movements of buses and coaches around the central island.

4.2.4 The location of the intersection is constrained by the location of the stairs leading towards the Ministerial Wing entrance. This results in the intersection boundaries extending further along Melbourne Avenue. This has a number of undesirable consequences.

4.2.5 The natural ground level falls away from the edge of Parliament Drive towards the car park areas. The roundabout pavement would require significant fill in the existing landscaped areas currently shielding the carparks from the intersection.

4.2.6 As well the revised layout would extend across two significant service mains (telecommunications and water) that run parallel to the Parliament Drive verge.

4.2.7 To provide a roundabout that meets all geometrical requirements would result in extensive intrusion of the intersection boundary towards the carparks. As a compromise, the design provided features a smaller than desirable roundabout. The main compromise is that this layout provides less than ideal deflection of the through traffic on Parliament Drive encouraging that traffic to negotiate the intersection at higher than desirable speeds.

4.2.8 Even so the layout still crosses the service mains.

4.2.9 Additionally a roundabout would result in significant reduction in pedestrian amenity in the movement from the carparks off Melbourne Avenue to the closest staff entrance into Parliament House.

4.2.10 The existing pedestrian crossings would need to be relocated away from their current locations and further away from the Ministerial Wing carpark entrances. This would require alterations to the existing paths from the carpark to the Parliament Drive kerb through the landscaped garden beds and would take pedestrians further away from their movement desire lines which are towards the Ministerial Wing steps. It would be difficult to ensure that the connecting path met grade limitations required by disabled access standards.

4.2.11 The added inconvenience for pedestrians moving from the staff car park to the Ministerial Wing entrance might encourage pedestrians to attempt to cross through the middle of the roundabout. Although not observed during site visits, it is reported that there is some tendency for pedestrians to cut across the middle of the intersection with the existing arrangement. With

a roundabout in place this would appear to some pedestrians as being reasonably safe. In reality it would involve greater risks than at the present.

4.2.12 Some form of barrier fencing along the kerb at the foot of the Ministerial Wing stairs would be necessary to prevent such pedestrian movements.

4.2.13 The roundabout layout could be quite effective in preventing vehicles turning left from Melbourne Avenue onto Parliament Drive in the wrong direction. The layout could also effectively prevent the illegal movement of vehicles turning right out of the Ministerial Wing carpark to turn left onto Melbourne Avenue.

4.2.14 This layout would effectively remove the queuing of vehicles in the Melbourne Avenue approach, because it would provide priority to that movement. However it would result instead in queuing on the Parliament Drive approach delaying all vehicles on that approach in both the morning and afternoon peak periods. Clearly this would include all vehicles exiting from the Ministerial Wing entrance driveway as well as vehicles circulating on Parliament Drive.

4.2.15 Consequences of this include the potential to make the use of Parliament Drive more attractive as a through route causing problems elsewhere on Parliament Drive.

4.3 Traffic Signals

4.3.1 A possible traffic signal layout is detailed on Drawing MNW06055 Sheet 4.

4.3.2 Installation of traffic signals at this intersection is expected to cost of the order of $260,000 inclusive of GST.

4.3.3 Providing traffic signals in this location would require less modification to the existing kerbed edges of the intersection than either of the two alternative layouts.

4.3.4 The layout provides for two approach lanes on Parliament Drive, one for right turning traffic and one for through traffic and a single lane approach on Melbourne Avenue.

4.3.5 The only significant alteration to kerbs are a small blister island to make a left turn from Melbourne Avenue physically difficult and an extension of the kerb past the bottom of the Ministerial Wing access stairs to discourage cars stopping here to pick up or drop off passengers. If that practice continues then a barrier fence would need to be added.

4.3.6 Signalised control of this intersection has the significant advantage over the other alternatives that it provides the means of sharing priority through the intersection between both the conflicting traffic movements. The result would be balanced queuing in both Melbourne Avenue and Parliament Drive. In addition to providing a better level of service to all traffic at this intersection, it would also eliminate the need to provide direct intervention to avoid VIP vehicles being delayed.

4.3.7 Signals also provide by far the best control and safety for pedestrians provided pedestrians are sufficiently patient to cross only when the signals indicate. Given the moderate volumes of traffic on both approaches it should be possible to use short signal phases to reduce the average delay for the pedestrians to encourage them to use the signals.

4.3.8 Signals could be provided which are in sympathy with the aesthetics of the area. Since there are limited movements through the intersection and lights only need to face two approaches, the number of signal pedestals and lanterns are minimal. It might be desirable to have

permanent red lights facing the traffic that might consider exiting the Ministerial Wing carpark in the wrong direction.

4.3.9 Additionally new styles of signals are available to provide improved aesthetics. Stainless steel signal hardware has recently been installed at the crossing of Bunda Street at the Canberra Centre.

4.3.10 This hardware could be adopted for use in the Parliament House precinct providing an architectural link with other external features of Parliament House and its surrounds.

Stainless Steel traffic signal hardware used on Bunda Street at the Canberra Centre.

4.4 Summary Comparison of Intersection Control Options

4.4.1 The T intersection layout requires significant permanent kerb modifications, raised pedestrian crossing facilities and signage. While this would improve efficiency of the intersection, it will not resolve the problems associated with the existing layout, particularly those associated with the Parliament Drive traffic always having priority over the Melbourne Avenue traffic.

4.4.2 Provision of a roundabout would require significant alteration to the boundaries of the existing intersection, would increase difficulties and risks for pedestrians and would not resolve the priority problems because it would simply provide priority to the other (Melbourne Avenue) traffic stream.

4.4.3 The traffic signal alternative provides the most effective traffic control solution, resolves the problem of sharing priority between both traffic streams and provides a controlled and managed facility for pedestrians.

4.4.4 Overall it is recommended that the intersection be converted to traffic signal control.

5 RECOMMENDATIONS

5.1 Stage 1 Improvements

5.1.1 Modify the Melbourne Avenue intersection. Ideally this should be by installing traffic signals (see Drawing MNW 06055 Sheet 4) but if that option is not adopted then the existing intersection should be modified to constrain the available road space for Parliament Drive through movements and increase merging opportunities for traffic entering from Melbourne Avenue (see Drawing MNW 06055 Sheet 2);

5.1.2 Note that the following improvements have been detailed on Drawing MNW 06055 Sheet 1;

5.1.3 Reconfigure the Kings Avenue / Parliament Drive intersection to alter priority to Parliament Drive vehicles turning right and Improve delineation of the barriers preventing wrong way entry to Parliament Drive at this intersection by construction of fixed concrete kerbing (cost estimated to be $25,000 inclusive of GST);

5.1.4 Replace linemarking on Parliament Drive to constrain traffic and encourage, where possible, use of the outside lane by vehicles not looking to stop or enter a car park (cost estimated to be $30,000 inclusive of GST);

5.1.5 Provide additional pavement arrows at intersections, carpark entrances and on the through road carriageways to reinforce directional instructions (cost estimated to be $4,000 inclusive of GST);

5.1.6 Improve delineation of vehicle exit paths from car parks. This could be attempted by installing flexible road pavement flaps at a cost of $5,000 inclusive of GST but this approach is not recommended. The most appropriate approach is to construct fixed concrete kerbing (cost estimated to be $100,000 inclusive of GST);

5.1.7 Construct blister islands at entrances and exits to bollarded driveways (cost estimated to be $50,000 inclusive of GST);

5.1.8 Alter the linemarking at the exit to the public car park to prevent vehicles being directed into the opposing traffic lane (cost estimated to be $4,000 inclusive of GST);

5.1.9 Standardise traffic control devices including the zebra pedestrian crossings, speed humps and the replacement of Stop signs with Give Way signs (cost estimated to be $20,000 inclusive of GST);

5.1.10 Reconfigure the Parliament Drive / Commonwealth Avenue intersection (cost estimated to be $6,000 inclusive of GST);

5.1.11 Standardise kerbside parking restrictions in place of the existing non-standard time based restrictions (cost estimated to be $1500 inclusive of GST);

5.1.12 If traffic signals are not installed at the Melbourne Avenue / Parliament Drive intersection, provide a fence barrier along the kerb in front of the Ministerial Wing (cost estimated to be $30,000 inclusive of GST);

5.1.13 Provide signage to direct passengers waiting to be picked up to appropriate waiting areas (cost estimated to be $2,000 inclusive of GST);

5.1.14 Replace the 8 lamps at the pedestrian crossing floodlights and trim foliage back from the lights (cost estimated to be $1,800 inclusive of GST); and

5.1.15 Co-ordinate new works with a pavement reseal to provide clarity to the new line markings and to adequately remove all signs of previous line marking (costing outside the scope of this study).

5.2 Stage 2 Improvements

5.2.1 Develop and implement a Parliament House destination sign scheme (costing outside the scope of this study);

5.2.2 Replace the existing street luminaires either side of the pedestrian crossings (cost estimated to be $16,000 inclusive of GST).

5.3 Longer Term Considerations

5.3.1 Replace all existing street lighting with more appropriate lighting forms (s3.5.5) (costing outside the scope of this study)

ATTACHMENT A

PHOTOGRAPHS

Photograph 1 – Melbourne Avenue/Parliament Drive intersection

Photograph 2 – Queuing on Melbourne Avenue blocking the staff car park entrance

Photograph 3 – Non standard pedestrian crossings with reduced conspicuity for drivers

Photograph 4 –Direction signage at underground staff carpark exit

Photograph 5 – Misleading linemarking at public car park exit

Photograph 6 – Lack of pavement arrows to assist motorists with available options

Photograph 7 – Commonwealth Avenue approach to Parliament Drive where motorists turning left are required to stop unnecessarily

Photograph 8 – Approach to Kings Avenue. Report recommends reversing priority on this approach

Photograph 9 – Wide open road space (Senate side) encouraging high travel speeds

Photograph 10 – Motorised landscape machine travelling the wrong way on Parliament Drive six months after the one way scheme was implemented

ATTACHMENT B

SKETCH DRAWINGS

PROVIDE KERB BLISTERS TO DEFINE ENDS OF PARALLEL PARKING BAYS AND TO MAKE IT DIFFICULT FOR DRIVERS TO TURN THE WRONG WAY ONTO PARLIAMENT DRIVE

PROVIDE PEDESTRIAN SIGNAGE WITH DIRECTIONS TO TAXI RANK AND PICK UP AND SET DOWN AREAS

WIDEN VERGE PAVING. IF DRIVERS CONTINUE TO STOP AT BOTTOM OF STAIRS SUFFICIENT PAVED WIDTH WILL BE AVAILABLE FOR THE PROVISION OF A PEDESTRIAN BARRIER FENCE

INSUFFICIENT WIDTH FOR KERBED ISLAND TO PREVENT WRONG TURN. ROAD SURFACE COULD BE PAINTED WITH A COLOURED SURFACE COATING

PARLIAMENT DRIVE

PARLIAMENT DRIVE

PERMANENT RED SIGNALS COULD BE PROVIDED TO DISCOURAGE DRIVERS INADVERTENTLY OR INTENTIONALLY TRAVELLING THE WRONG WAY

REMOVE EXISTING ZEBRA CROSSINGS AND SIGNALISE EXISTING INTERSECTION. NEW CONDUITS REQUIRED AROUND ALL LEGS OF THE INTERSECTION

PROPOSED TRAFFIC SIGNAL CONTROLLER LOCATION

MELBOURNE AVENUE

UNDERGROUND SERVICES:

THERE ARE A NUMBER OF STREETLIGHT CABLES AND ASSOCIATED PITS WITHIN THE INTERSECTION AREA. FOR CLARITY ONLY CONDUITS CROSSING UNDER THE ROAD PAVEMENT ARE SHOWN.

FOR CLARITY VERGE IRRIGATION PIPES AND CONDUITS ARE NOT SHOWN.

PAINT "KEEP CLEAR" PAVEMENT MESSAGE TO PREVENT STORED VEHICLES BLOCKING CARPARK ACCESS / EGRESS

KEEP

CLEAR

GATE

R5-40(R)

R5-40(L)

POWER SUPPLY TO SIGNAL CONTROLLER SHOULD BE ABLE TO BE DRAWN FROM EXISTING LOW VOLTATE POINT OF ENTRY BOX

LEGEND

- EXISTING LINEMARKING (TO BE RETAINED)
- APPLY NEW LINEMARKING
- NEW KERB
- NEW CONCRETE PAVING TO MATCH EXISTING
- NEW COLOURED ROAD SURFACE TREATMENT
- NEW TRAFFIC SIGNAL HARDWARE (HARDWARE COULD BE STAINLESS STEEL SIMILAR TO POSTS AND LANTERNS ADJACENT TO THE CANBERRA CENTRE)

AMENDMENTS		
AMENDMENT	APPROVAL	DATE

DRAWING STAGE - LATEST DATE INDICATES DRAWING STATUS

Conceptual Design: 28/06/07	Final Sketch Plan: --/--/--	Final Design:
For tendering purposes only: --/--/--	Issued for construction: --/--/--	W.A.E.: --/--/--

Scale

0m 5m 10m

SCALE: A1 1:200, A3 1:400

Design Agent

Consulting Engineers

Designed by MG

Drawn by RM

Checked by MG

Approved by MG

Client

Project Officer: RODNEY BRAY

PARLIAMENT OF AUSTRALIA
PARLIAMENT HOUSE CANBERRA
DEPARTMENT OF PARLIAMENTARY SERVICES

Project

PARLIAMENT DRIVE
ROAD SAFETY ASSESSMENT

Drg. No. MNW 06055

Drawing Title

PARLIAMENT DRIVE / MELBOURNE AV
TRAFFIC SIGNAL OPTION

Scale 1:200 @ A1

Date 30/08/07

Sheet 4

Revision 0

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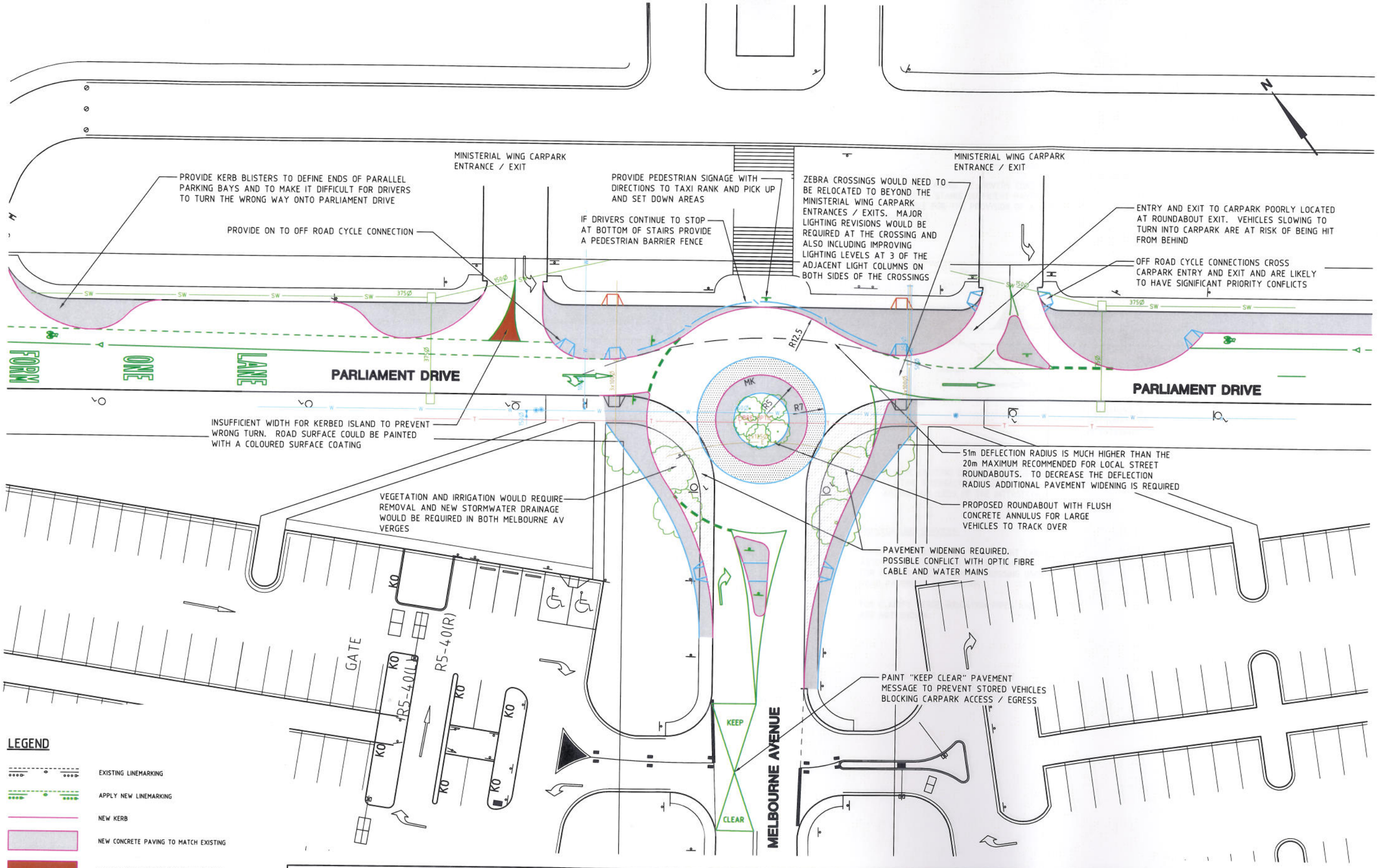

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Scale

0m 5m 10m

SCALE: A1 1:200, A3 1:400

Design Agent

Consulting Engineers

Designed by MG
Drawn by RM
Checked by MG
Approved by PF

Client

Project Officer: RODNEY BRAY

PARLIAMENT OF AUSTRALIA
PARLIAMENT HOUSE CANBERRA
DEPARTMENT OF PARLIAMENTARY SERVICES

Project

PARLIAMENT DRIVE
ROAD SAFETY ASSESSMENT

Drg. No. MNW 06055

Drawing Title

PARLIAMENT DRIVE / MELBOURNE AV ROUNDABOUT OPTION

Scale 1:200 @ A1
Date 30/08/07
Sheet 3
Revision 0

300mm ON ORIGINAL

PROVIDE KERB BLISTERS TO DEFINE ENDS OF PARALLEL PARKING BAYS AND TO MAKE IT DIFFICULT FOR DRIVERS TO TURN THE WRONG WAY ONTO PARLIAMENT DRIVE

LOSS OF PARALLEL PARKING DUE TO RE-ALIGNED CYCLE AND VEHICLE LANES

PROVIDE PEDESTRIAN SIGNAGE WITH DIRECTIONS TO TAXI RANK AND PICK UP AND SET DOWN AREAS

PROVIDE 12m LONG FLAT TOP SPEED HUMP AND ASSOCIATED STORMWATER DRAINAGE WORKS AT ZEBRA CROSSING

WIDEN VERGE PAVING AND PROVIDE PEDESTRIAN BARRIER FENCE TO PREVENT PICK UP AND SET DOWN AT BASE OF STAIRS

INSUFFICIENT WIDTH FOR KERBED ISLAND TO PREVENT WRONG TURN. ROAD SURFACE COULD BE PAINTED WITH A COLOURED SURFACE COATING

PARLIAMENT DRIVE

REPLACE 3 POST TOP LIGHT COLUMNS ON BOTH SIDES OF ZEBRA CROSSINGS TO IMPROVE LIGHTING LEVELS ON CROSSING APPROACHES. NEW LIGHT COLUMNS MAY REQUIRE 10.5m COLUMN WITH 4.5m OUTREACH ARMS

REPLACE ALL LAMPS WITHIN PEDESTRIAN CROSSING FLOODLIGHTS

PROPOSED REDUCTION IN PAVEMENT WIDTH AND SMALL BLISTER NOSE RADIUS MAKES IT VERY DIFFICULT FOR MELBOURNE AV VEHICLES TO TURN LEFT

REPLACE LUMINAIRES ON EXISTING 10.5m HIGH STREETLIGHT COLUMNS

PROVIDE 12m LONG FLAT TOP SPEED HUMP AND ASSOCIATED STORMWATER DRAINAGE WORKS AT ZEBRA CROSSING

INFORMAL LANE ALIGNMENT ALLOWS MELBOURNE AVENUE VEHICLES TO TURN RIGHT WHILE THOUGH TRAFFIC ON PARLIAMENT DRIVE PASSES IN LEFT LANE

MELBOURNE AVENUE

PAINT "KEEP CLEAR" PAVEMENT MESSAGE TO PREVENT STORED VEHICLES BLOCKING CARPARK ACCESS / EGRESS

KEEP

CLEAR

GATE

R5-40(R)

R5-40(L)

KO

LEGEND

- EXISTING LINEMARKING (TO BE RETAINED)
- APPLY NEW LINEMARKING
- NEW KERB
- NEW CONCRETE PAVING TO MATCH EXISTING
- NEW COLOURED ROAD SURFACE TREATMENT

AMENDMENTS		
AMENDMENT	APPROVAL	DATE

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Scale

0m 5m 10m

SCALE: A1 1:200, A3 1:400

Design Agent

Consulting Engineers

Designed by MG
Drawn by RM
Checked by MG
Approved by MG

Client

Project Officer: RODNEY BRAY

PARLIAMENT OF AUSTRALIA
PARLIAMENT HOUSE CANBERRA
DEPARTMENT OF PARLIAMENTARY SERVICES

Project

PARLIAMENT DRIVE
ROAD SAFETY ASSESSMENT

Drg. No. MNW 06055

Drawing Title

PARLIAMENT DRIVE / MELBOURNE AV
RE-CONFIGURED T INTERSECTION

Scale 1:200 @ A1
Date 30/08/07
Sheet 2
Revision 0

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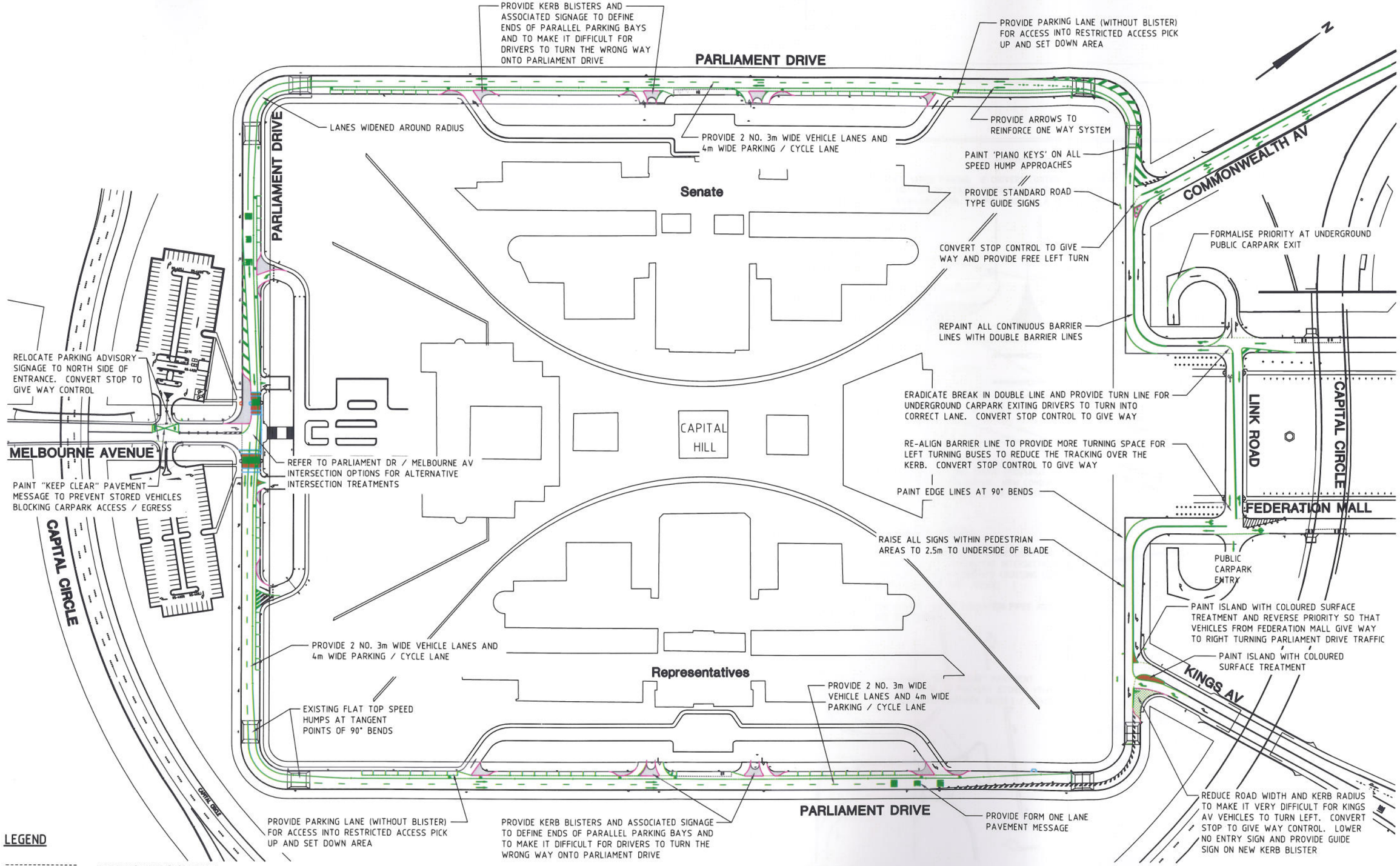

LEGEND

- EXISTING LINEMARKING (TO BE RETAINED)
- APPLY NEW LINEMARKING
- NEW KERB
- NEW CONCRETE PAVING TO MATCH EXISTING
- NEW COLOURED ROAD SURFACE TREATMENT

AMENDMENTS		
AMENDMENT	APPROVAL	DATE

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For tendering purposes only: --/--/--	Issued for construction: --/--/--	W.A.E.: --/--/--

Scale

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SCALE: A1 1:1000, A3 1:2000

Design Agent

Consulting Engineers

Designed by	MG
Drawn by	RM
Checked by	MG
Approved by	MG

Client

Project Officer: RODNEY BRAY

PARLIAMENT OF AUSTRALIA
PARLIAMENT HOUSE CANBERRA
DEPARTMENT OF PARLIAMENTARY SERVICES

Project

PARLIAMENT DRIVE ROAD SAFETY ASSESSMENT

Drg. No. MNW 06055

Drawing Title

PARLIAMENT DRIVE GENERAL ARRANGEMENT PLAN

Scale 1:1000 @ A1	Sheet	Revision
Date 30/08/07	1	0

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