Guideline

Rest Areas and Stopping Places – Location, Design and Facilities

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1 Introduction

The provision of rest areas for motorists and heavy vehicle drivers is recognised as an integral part of a holistic approach to the management of driver fatigue on Queensland roads. Fatigue is recognised as one of the ‘Fatal Five’ and considered a major contributor to the road toll across the country.

All drivers are vulnerable to fatigue. In particular professional truck drivers who spend a large amount of time on the road undertaking long journeys have legal requirements to stop and rest under fatigue management legislation.

In late 2008 the Queensland Government, in line with national practice, introduced strengthened fatigue management legislation involving stronger requirements for professional drivers of fatigue regulated heavy vehicles1 (generally those over 12 tonne gross mass) requiring them by law to stop and rest during journeys in order to contribute to a reduction in fatigue-related incidents on the road network.

As a result, the demand for rest areas increased substantially and Transport and Main Roads (TMR) commenced a program of works aimed at delivering a more effective network of heavy vehicle rest areas and motorist rest areas across the State Controlled Road Network (SCRN).

The program represents the commencement of a multi-stage, strategic approach to the provision of facilities for both heavy vehicle drivers and motorists across the state, and ultimately intends to ensure that suitable opportunities to stop and rest are available across the SCRN at locations that are generally no more than 80 km, or one hour drive time, from each other wherever possible.

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1 The definition of a fatigue regulated heavy vehicle is described in s39J of the Transport Operations Road Use Management Act 1995. A recreational vehicle is not a fatigue regulated vehicle.
2 Principles supporting rest opportunities

As part of the department’s commitment to improving safety outcomes through fatigue management, the following overarching principles should be considered whenever assessing the need for rest areas on the road network.

2.1 Drivers require regular opportunities to stop and rest

In order for drivers to be able to stop and rest, it is important to ensure that opportunities are made available that allow drivers to stop and rest regularly and safely. This is particularly important for long-distance drivers and professional heavy vehicle drivers who spend significant amounts of time ‘behind the wheel’.

To achieve this, consideration of rest opportunities and the potential need for TMR-provided rest areas, must be considered in all aspects of road planning and design activities.

This is particularly important during the production of Fatigue Management Plans and Corridor Studies, but is also a vital component of new construction or upgrade activities where opportunities to enhance safety outcomes can be achieved in a cost effective manner as part of individual road projects.

2.2 Rest opportunities should be no more than 80 km or one hour drive time apart

To be effective, rest areas need to be provided before drivers become tired and are involved in an accident. Due to human nature, fatigue can occur at any time and experience indicates that provision of rest areas at roughly one hour intervals provides sufficient opportunities for motorists of all types an opportunity to stop and rest as and when they require.

The SCRN is a large and decentralised network servicing all areas of the Queensland community. To ensure all motorists have adequate rest opportunities, regardless of their origins or destinations, it is important that locations where they can pull off the main roadway into a relatively quiet and safe parking area are provided at regular intervals of approximately one hour’s travel time.

On average, and given usual road conditions, the availability of rest opportunities at a preferred distance of 80 km apart meets the needs of both motorists and drivers of heavy vehicles, providing for a drive time of approximately 1 hour between each rest opportunity.

To achieve this, TMR will examine the network in order to identify ‘gaps’ on the network in order to prioritise where rest areas are required to ensure that rest opportunities, provided by either TMR or other organisations, are generally available at distances of no more than 80 km or one hour drive time apart.

2.3 Rest opportunities may be provided by TMR, civic, or commercial operations

Local governments and community groups understand the importance of road safety, and many provide rest areas that are accessible from the road network. These sites often provide scenic locations that not only provide park-like features such as swings and BBQs, but also promote the local region through provision of tourist information, etc. For motorists, areas are often provided within town centres that are also suitable places where they can stop and rest while on a journey.

Commercial operations, including roadside service centres, also often provide sites that, while primarily intended to support their business, can also be utilised as areas for effective fatigue management for drivers.
To ensure that value for money is achieved, TMR will ensure that it does not construct sites that conflict or compete with either commercial or civic sites that are accessible from the network. This means that TMR rest areas will generally not be constructed near civic sites that support local towns or communities, or where they provide competition to genuine and easily accessible commercial operations.

Predominantly, TMR-provided sites will be ‘mid-block’ (i.e.: between towns, etc.), and provide enhanced facilities at locations where other organisations do not already do so or where the provision of a TMR site may enhance the fatigue outcomes of a commercial or civic site (e.g.: Driver Reviver sites within towns, etc.).

2.4 Rest opportunities should be supplemented by stopping bays

To supplement formal rest areas, several stopping bays in each direction should be provided in-between each rest opportunity. Provision of an increased number of bays is highly desirable, particularly on higher-volume roads or those that carry significant amounts of freight or tourist traffic.

Stopping bays are intended for stops of no more than 15-30 minutes unless otherwise signed, and provide regular opportunities for drivers to stop, check their vehicle or loads, complete work diaries if required, or take a short break to refresh before continuing their journey.

As a minimum these bays should cater for 1-2 of the largest vehicle types operating on that road, and should be located at appropriate safe locations in accordance with traffic patterns on the route.

Safe separation from traffic should be provided, preferably with at least 1 metre of line-marking, along with adequate acceleration and deceleration tapers. Comfort facilities are not strictly required, however the provision of bins is a desired minimum where possible. On higher volume routes, consideration should also be given to sheltered tables and chairs where they can be safely deployed.

Use of enforcement bays may be appropriate as informal stopping bays, however it should be remembered that these sites will be unavailable when in use by Transport Inspectors or Police when conducting traffic operations.

2.5 TMR rest areas are provided for fatigue management purposes

Rest areas are provided, designed, and maintained primarily for fatigue management purposes, however may also provide extra facilities such as tourist and travel services if appropriate. The availability of these services will enhance the effectiveness of the site to contribute to fatigue outcomes, they should be considered wherever they can safely and economically be installed.

The decision to build a new rest area, or upgrade an existing one, should be focussed on ensuring that the best fatigue outcomes are achieved for road users.

2.6 TMR rest areas should be all-weather accessible

Wherever practical, TMR-provided sites should be accessible during all weather conditions affecting the road which they service.

Generally this means they should be compacted earth, gravel, or sealed wherever possible and located where they will remain available during localised flooding events, etc.

2.7 TMR rest areas should support emergency management operations

Wherever practical or required, TMR-provided rest areas should be designed and built to support potential emergency management operations that may occur in the local area. These may include
flooding, fires, or other significant events which cause the closure of roads and leads to the need for vehicles to stop and either wait in the rest area, or turn around and return to their home base.

This will generally mean ensuring that both rest area and stopping bay sites are of adequate size or design that as a minimum will allow the largest vehicle able to access the road the ability to perform a ‘U-turn’ movement, either within the rest area, or in a controlled movement utilising the roadway, in order to return in the former direction of travel.

In strategic locations, particularly where flooding events are known to cut roads, rest areas should be designed with enough all weather capacity to safely hold an appropriately expected number of vehicles or to provide sites where emergency services can establish local coordination or support centres if required.

Consideration may also be given to potential use of the site as a supply distribution point for communities cut off during emergency events.

2.8 TMR rest areas are not free camping areas

It is common practice for community groups and local councils to encourage tourists to stay in the local area for extended periods of time and this supports local economies, however rest areas are not intended for this purpose.

Provision of rest areas, where camping2 may be permissible, should not conflict with commercial accommodation facilities, in particular, caravan parks or other local accommodation.

Where it is considered appropriate for safety reasons, overnight stays in motorist rest areas may be permitted at some sites. At these sites a maximum length-of-stay of 20 hours must be enforced and signage permitting camping must be erected. If signage is not present, camping is not permitted.

It is important to remember that should a rest area be heavily occupied by those enjoying free camping opportunities it is then unavailable for use by motorists suffering genuine fatigue. An inability to stop and rest as and when required may contribute to accidents that could otherwise have been avoided.

This is particularly important for rest areas dedicated to heavy vehicles, as many of these drivers have a legislative requirement to undertake defined rest stops throughout their work cycle.

*Figure 1 – Heavy vehicles rest area and stopping bay, Burke Development Rd*

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2 Camping is defined in the *Transport Infrastructure (State Controlled Roads) Regulation 2006*
3 TMR Rest Area Strategy

As part of an integrated road safety strategy, TMR is committed to ensuring all drivers are provided with adequate opportunity to meet fatigue needs when driving on the Queensland road network, and encourages local governments and community groups to also provide rest areas on local roads to complement those on the SCRN.

Over recent years, TMR has implemented an accelerated capital investment program to construct a significant number of new rest areas, and continues to source appropriate funding to support an on-going program to deliver new and upgraded rest areas across the state.

3.1 Aim

The TMR Rest Area strategy aims to reduce fatigue-related incidents on the state controlled road network by ensuring all drivers are provided with locations at which they can stop and rest if tired or fatigued while on their journey.

The importance of providing adequate rest areas on the SCRN is well understood and there continues to be a focus on increasing both the quantity and quality of rest opportunities for all drivers as part of an integrated approach to fatigue management.

3.2 Objectives

The objectives of this strategy are to:

- Promote responsible and effective fatigue management by all drivers accessing the Queensland state controlled road network.
- Provide motorists with access to opportunities allowing them to safely stop and rest before they are tired or fatigued during long journeys.
- Provide professional heavy vehicle drivers with access to opportunities to stop and rest, and meet fatigue management requirements
- Encourage local governments, community groups, and commercial operations to provide appropriate facilities to support driver needs.
- Provide for rest areas at locations where in-town, commercial or community-based facilities are not available.
- Encourage the consideration of rest areas as an integral infrastructure-based component of fatigue management in all aspects of road planning, design and maintenance.

3.3 The strategy

Meeting the needs of the diverse and decentralised Queensland road network requires a multi-stage approach in order to deliver an effective network of rest opportunities across the state.

Three basic strategic actions will provide the foundation for an on-going process in support of improvement of the Queensland rest area network.

- **Step 1: Provide regular rest opportunities**
  
  Ensure all motorists and heavy vehicle drivers have an opportunity to stop and rest during long journeys on the SCRN at locations that are preferably no more than 80 km, or one hour apart.
• Step 2: Provide appropriate facilities at rest areas
  Invest in strategic upgrading of existing rest areas to ensure available capacity and level of facilities provided matches the level of use the site receives.

• Step 3: Protect future provision of rest areas
  Embed provision of rest area facilities into all aspects of road planning, design and maintenance.

3.3.1 Provide regular rest opportunities

TMR aims to ensure that rest opportunities are available to drivers at distances that are preferably no greater than 80 km or one hour driver time apart.

Whilst motorists have a greater level of opportunity due to the availability of towns, service centres and other roadside facilities, drivers of fatigue regulated heavy vehicles are presented with difficulties due to the size of their vehicles. As such, it is important to separate motorist and fatigue regulated heavy vehicle needs when assessing the requirement for provision of formal rest areas.

The following tasks should be undertaken in order to assess the need for new rest areas across the network. Separate assessments should be undertaken for motorists and fatigue regulated heavy vehicles, however where they result in similar needs, dual-use locations may be considered:

• Examine the SCRN to identify road segments where gaps greater than 80 km or one hour drive time exist between rest areas. Utilisation of network mapping can be an effective tool to clearly communicate the locations of these sites.

• Examine gaps to identify level of need. Undertake a detailed study of gaps to assess AADT, crash history, accessibility to towns/commercial services, etc. Consult with regional officers to confirm and produce detailed information.

• Identify if new sites are required, and if so the number of sites, broad locations, and site types (motorist, HV, large, small, etc.).

• Undertake consultation with regional officers, industry representatives and operators, and examine route-based data (AADT, etc.) to provide initial prioritisation of sites. Primary prioritisation indicators include a combination of AADT, expected usage/need, and fatigue-related crash data on the route.

• Distribute prioritisation outcomes to regions and corporate groups for consideration in future funding submissions.

• Establish/identify funding program(s) to deliver identified sites as funding becomes available.

• Monitor delivery progress over the life of program.

3.3.2 Provide appropriate facilities at rest areas

Each rest area is different, and requires consideration of the level of facilities that are appropriate at that particular site. Some are located on busy highways and need to be larger, others are in remote areas but provide a vital service in terms of facilities, while others are adjacent to commercial operations. To ensure appropriate facilities and site size are achieved, the following actions should be undertaken:

• Implement standards defining required ‘service levels’ of rest area types for both motorists and heavy vehicles. TMR has identified a range of rest area types for this purpose.
• Undertake a network-wide audit to confirm and enhance data held in corporate systems and update corporate systems to ensure consistency with on-the-ground results.
• Compare sites against defined standards and identify where service level gaps exist.
• Identify remedial actions required for deficient sites.
• Undertake consultation with regional officers, industry representatives and operators, and examine route-based data (AADT, etc.) to provide initial prioritisation of sites.
• Develop a prioritised program of future works that will support the development of new sites and the upgrading of existing sites to required standards.
• Distribute prioritised program to regional officers and corporate groups for consideration in future funding submissions, construction programs, and maintenance programs as available.
• Establish/identify current funding program(s) able to deliver new/upgraded sites from available funding streams.
• Monitor delivery progress over life of program.

3.3.3 Protect future provision of rest areas

To ensure ongoing support of rest areas and fatigue-related facilities on the SCRN, it is important to embed consideration of such facilities within all facets of road planning, design and construction. This can be achieved through delivery of effective policies and guidelines within TMR.

• Review existing policies in order to deliver a focussed rest area policy.
• Support Rest Area Policy with detailed guidelines for regional officers to guide standards of delivery.
• Ensure consistency with corporate documents and publicly available information.
• Ensure consideration of rest areas is included in all appropriate guidelines and manuals within the department that guide road planning or design.
• Ensure consideration of rest areas are considered in all strategic analyses, including route assessments, as part of forecast needs and fatigue amelioration recommendations.

3.4 Where do we put them?

Poor placement of a rest area may actively discourage use by drivers. The initial planning of rest area locations should consider the long term strategy, rather than focussing on the microscopic details of individual rest areas. Initial investigations should identify a ‘zone’ in which a rest area is needed rather than specifying a precise location. This then allows for flexibility during construction in order to provide the best site possible given available constraints.

At the broader level of rest area planning, it is important to identify all stopping opportunities along the route. Locations of stopping opportunities along the route include rest areas, towns, commercial service centres, large service stations, and other stopping areas such as heavy vehicle stopping bays. Examining these assists in finding sections of the route where new rest areas or improvements will complement existing stopping opportunities.

Factors that need to be taken into consideration in relation to spacing of rest areas include:

• Locations of existing stopping opportunities
- AADT (Annual Average Daily Traffic)
- Current and predicted/known traffic growth potential
- Existing usage patterns of sites in the vicinity
- Crash zones or known safety issues along the route
- Composition of traffic
- Vehicle types permissible on the route
- Future projects or works
- Bypassing of existing stopping opportunities
- Regional planning schemes, local council requirements, and known issues such as native title, or wildlife conservation considerations
- Local demand and freight movement patterns

The spacing of rest areas should be considered in light of the traffic volume and type of traffic, while also taking into account the distance to existing rest areas, towns, and commercial service centres. Other considerations include the distance of the area from common origins or destinations as they relate to regulated driving hours and required rest periods.

The spacing of rest areas should also consider the benefits and safety of locating rest areas on both sides of the road where there are high traffic volumes on divided carriageways.

Figure 2 – Signage at key locations can assist motorists plan their breaks
4 Standards and types of rest areas

4.1 What is a rest opportunity?

A rest opportunity is a location that is accessible from the roadway in which a driver can safely stop their vehicle, without blocking the flow of traffic, and rest for a period of time suitable for meeting their fatigue needs.

Ideally these sites provide a reasonably quiet location with adequate separation from the road, and appropriate facilities to allow drivers to achieve effective rest.

For motorists, including tourism travellers, there are many types of opportunities available on the road network. These include town centres and tourism locations, commercial centres such as service stations and locations such as historical villages provided by local governments as well as locations provided by TMR. Heavy vehicle drivers however, rely more heavily on TMR-provided sites.

4.2 Formal rest area network

The formal rest area network includes rest areas provided by TMR and other organisations. These include motorist rest areas, Driver Reviver locations, heavy vehicle rest areas and dual-use rest areas for both motorists and heavy vehicle drivers.

They are provided specifically for the purpose of rest and short term breaks, and are published in the Guide to Queensland Roads. These sites are intended to supplement locally-provided facilities and commercial opportunities where available.

All sites adjacent to the roadside must comply with departmental design and safety standards. Within these requirements, rest areas should provide:

- Adequate parking for the types and number of vehicles using the area. As a minimum, rest areas must provide 4-6 parking bays per vehicle type accessing the site.
- Reasonably quiet and restful environment that is separated, and preferably screened, from the road.
- Sealed or paved surface wherever possible.
- Safe access for the entrance and exit of the site, with adequate room for manoeuvring safely within the site.
- Signage in advance and at the site to inform and guide drivers.
- Sheltered tables and benches, rubbish bins and shade (natural or artificial).
- Facilities such as lighting, water supply and toilets, are preferred where available.
- Additional facilities such as play areas for children, barbeque facilities, scenic outlooks, tourist information boards, etc., can also be provided as appropriate.
- Provision of disabled access to the site and facilities where appropriate.
- If the site is dual-access, clear separation between motorists and heavy vehicles in order to reduce vehicle interaction.

In addition, if the site caters for heavy vehicles it should also provide:

- Separation between short and long term parking areas to allow drivers on ‘long breaks’ to sleep without disturbance.
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• Possible separation between types of heavy vehicles such as those carrying livestock or dangerous goods.
• Nose-to-tail parking for heavy vehicles to allow for effective rest with reduced near-cabin noise issues.
• Significant shade, particularly in western areas subject to high summer temperatures.
• Sufficient parking bays and manoeuvring room designed for the largest combination permitted use of the route.

4.2.1 Driver Reviver sites

Driver Reviver sites are a community-based road safety initiative of TMR and the Queensland Police Service and are operated by volunteers. The initiative is aimed at encouraging motorists to take a break and ‘stop, revive and survive’ and enjoy complimentary tea or coffee and a snack which is provided by a national sponsor.

During peak travel periods of the year, designated rest areas provide additional facilities in support of the Driver Reviver initiative on major tourism routes. If a site is intended to be used for Driver Reviver activities, it should be built to accommodate peak traffic numbers, particularly during school holiday periods, and be fully serviced. In general, Driver Reviver sites will be ‘Type A’ facilities.

4.2.2 Stopping places

To supplement formal rest areas, stopping bays in each direction should be provided in-between each rest opportunity. Provision of an increased number of bays is highly desirable, particularly on higher-volume roads or those that carry significant amounts of freight or tourist traffic.

Stopping bays are intended for stops of no more than 15-30 minutes unless otherwise signed, and provide regular opportunities for drivers to stop, check their vehicle or loads, complete work diaries if required, or take a short break to refresh before continuing their journey.

As a minimum these bays should cater for 1-2 of the largest vehicle types operating on that road, and should be located at appropriate, safe locations in accordance with traffic patterns on the route.

Safe separation from traffic should be provided, preferably with at least 1 metre of line-marking as a minimum, along with adequate acceleration and deceleration tapers. Facilities are not strictly required however the provision of bins is a desired minimum where possible. On higher volume routes, consideration should also be given to sheltered tables and chairs where they can be safely deployed.

Use of enforcement bays may be appropriate as informal stopping bays, however it should be remembered that these sites will be unavailable when in use by Transport Inspectors or Police when conducting traffic operations.

4.3 Informal rest opportunities

There are many locations on the SCRN that are not intended for use as stopping places or rest areas, but that are sometimes used informally by drivers for fatigue breaks when necessary.

These sites are usually located immediately adjacent to the roadway, and are generally only suitable for short-term stops (up to 30 minutes as a maximum). Many of these sites do not have facilities of any kind, and many are unsealed areas that are not available during wet weather.

While these sites do not form a part of the formal rest area and stopping bay network, TMR acknowledges the use of informal sites for fatigue management purposes, and that these areas may
provide road users access to an increased number of short-term rest opportunities where formal sites may not be immediately available.

For safety reasons, TMR sometimes marks the location of these sites with coloured reflective markers to ensure that, whilst these sites are not supported, drivers have adequate warning of their location to safety decelerate and avoid sudden braking.

TMR does not provide support for the condition or the accessibility of these sites.

4.3.1 Interception sites

Interception sites are areas adjacent to the road that are provided for the weighing and inspection of vehicles and any other enforcement activities required by appropriate officials.

Heavy vehicles and motorists are able to use these sites for short stops when the site is not being used for official purposes. These sites are not intended to be used for prolonged periods, or for overnight stops and are not available when Transport Inspectors or Police are undertaking operations at the site.

4.3.2 Informal heavy vehicle stopping place

There are many informal or unplanned areas adjacent to the roadway used by heavy vehicles. These are generally visible as unsealed ‘patches’ on the side of the road. It is preferable that drivers utilise formal rest areas and stopping places, but it is also recognised that schedules or other unforeseen circumstances may impact on the driver’s ability to access formal sites.

In recognition that these sites will continue to be used, a safety initiative was introduced to provide a series of coloured delineators, visible both day and night, that are placed on guide posts on the approaches to these informal sites.

The intent is to clearly identify these informal stopping opportunities, specifically for heavy vehicle drivers, by providing advance notice that a stopping place is a short distance ahead. While not encouraged on roads with high traffic volumes, high vehicle speeds, or where access and egress to the site could be dangerous, coloured delineators may be provided to ensure drivers are able to stop in a predictable way when they need to take short breaks at informal sites.

TMR does not provide support for the condition or the accessibility of these sites.

4.4 Commercial rest opportunities

Across the SCRN, commercial enterprises, local communities or community groups may provide access to locations or facilities that are appropriate for use in support of driver fatigue management.

Sites such as major Service Centres/Stations, fruit stalls, bakeries, tourist information centres, etc., provide a mixture of parking areas, access to fuel and food, and often access to facilities such as toilets and other services for customers. These sites can often be utilised, particularly by motorists, for fatigue breaks providing drivers the opportunity to ‘stretch their legs’ and access amenities as required.

While commercial establishments such as these do not generally offer the same type of environment for rest that exist at community provided amenities, they offer superior services for facilities (petrol, food, toilets, showers, etc.) particularly for motorists, and should be considered when developing fatigue management plans.

4.5 Towns as rest opportunities

Towns situated along the SCRN provide road users with access to both commercial and civic facilities within their boundaries. They can provide motorists with parking opportunities, either in on-road parking
Standards and types of rest areas

bays, or in adjacent off road areas, such as parking areas, parks, tourist/information sites and scenic stops, so drivers can take necessary rest breaks and access facilities such as toilets, food and drinks, amongst other things.

Towns may also provide parking opportunities for heavy vehicle drivers to access the same facilities. However, it is acknowledged that the opportunity for heavy vehicle drivers to access these areas may be limited in some towns by the adoption of time limits or other restrictions either under the Queensland Road Rules, by local council by-laws or for safety requirements such as those for dangerous goods.

The ability of towns to provide suitable stopping places and rest areas for motorists and heavy vehicle drivers is recognised as an integral part of a strategic approach to managing driver fatigue and should be taken into consideration by TMR when planning for the location of TMR rest area facilities along the state road network.

4.6 Types of rest areas

In order to ensure consistency when developing or upgrading rest areas, definitions have been developed that will allow officers to design new sites to standards that meet identified needs. These standards will also allow officers to assess existing sites against desired standards and develop upgrade programs.

The functional requirements of rest areas differ according to location, vehicle mix, and desired user type. Traffic volumes at each location will determine capacity requirements, however rest areas can generally be categorised as follows:

- **Type A**  
  Sites providing extensive facilities supporting all potential motorist types including those wishing to utilise the site for limited camping opportunities (for motorist sites). These sites are generally ‘mid-block’ and do not conflict with commercial or civic sites within the area.

- **Type B**  
  Sites focussed on providing an appropriate number of parking bays with facilities intended to cater for short to medium term rest periods in support of achieving rest during journeys. These sites represent the standard site provided by TMR, do not conflict with commercial or civic sites, and provide a standard level of fatigue-related facilities on the SCRN.

- **Type C**  
  Sites providing locations with an adequate number of parking bays at which motorists can safely stop away from the roadway in order to rest. Facilities may be minimal, potentially including only hardstand areas, bins and shade. These sites are provided where fatigue-related facilities are required without the need to provide a greater level of facilities. These sites may include those that are adjacent to commercial or civic facilities, or support roads with low vehicle numbers for the appropriate vehicle type.

Due to the differing functional requirements of heavy vehicle drivers and other vehicle types, it is important to differentiate between motorists and the needs of heavy vehicle drivers who may also be impacted by fatigue management legislation requirements.

4.7 Standards for rest areas

The following table defines the desired standards and facilities for each rest area type. Specific requirements for each component shall be in accordance with TMR design standards and requirements.
or as appropriate for each individual site (further detail is provided in the ‘Design’ section of this document).

<table>
<thead>
<tr>
<th></th>
<th>Heavy vehicle</th>
<th>Motorist</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type A</td>
<td>Type B</td>
</tr>
<tr>
<td>All-weather seal</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Separation for vehicle types</td>
<td>Yes</td>
<td>Desirable</td>
</tr>
<tr>
<td>Separation for long term/short term visitors</td>
<td>Yes</td>
<td>Desirable</td>
</tr>
<tr>
<td>Bins</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Natural shade/trees (where available)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Tables/chairs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Shelters/artificial shade</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Toilets</td>
<td>Yes</td>
<td>Desirable</td>
</tr>
<tr>
<td>Lighting</td>
<td>Yes</td>
<td>Desirable</td>
</tr>
<tr>
<td>Separation from road</td>
<td>Well separated and screened with vegetation, mounding, barrier, etc.</td>
<td>Separated and screened where possible</td>
</tr>
<tr>
<td>On-road signage</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>BBQ</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Playground</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Private camping allowed (20 hr max)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Caravan dump point provided</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
4.8 Minimum rest area standards

It is desired that the following broad design and facility components be applied to all rest areas as a minimum standard for all vehicle types.

- **Compacted earth or gravel seal**
  All-weather seal is the preferred standard, however gravel seal or well-compacted earth should be provided as a minimum. It is important to ensure that where possible, all-weather access is achieved even on unsealed sites.

- **Bins**
  Provision of appropriately sized bins (preferably with lids) ensures containment of litter within rest areas. These bins should be clearly visible, easily accessible and serviced regularly.

- **Natural shade**
  Wherever possible the maximum number of natural shade trees should be provided. Where these cannot be retained during construction works, replacement of shade trees is required. This is particularly important in hotter western areas of Queensland, and at heavy vehicle rest areas where larger, taller trees ensure drivers can rest comfortably over longer periods of time when they have no access to air conditioning.

- **Tables, chairs and shelters**
  A standard 6-seater ‘BBQ-style’ table/chair set covered by a solid roof providing shelter from both sun and rain is the minimum standard required for all rest areas. The number and size of shelters is dependent on expected usage of the rest area. Where natural shade is not available, it is important to provide larger areas of artificial shade that is available at all times of day, and shade-providing walls may be required for shelters where trees are not available.

- **Separation from roadway**
  All rest areas should be separated from the roadway for both safety and amenity reasons. It is preferable that separation include a nature strip that provides screening from the road by way of trees, earth mounds, or sound barriers to ensure that effective rest can be achieved. As an absolute minimum where a nature strip is not possible, separation should be clearly indicated by adequate and visible line-marking, and fencing if appropriate for safety.

- **Advance signage**
  Minimum signage should include those provided at the entrance to the site, those at least 300-500m before the entrance to allow safe deceleration, and further signage at appropriate distances before the site as appropriate (e.g.: 1 km, 2 km, 5 km, 10 km). Signs should indicate facilities available, and may be complimented by road safety messages such as “Survive This Drive”. It is also recommended to provide ‘Next Rest Area’ signage on roadways and exit points to allow drivers to plan their next stop.

- **Capacity**
  To be a ‘Rest Area’, a site must provide a minimum of three to five appropriately-sized bays for the vehicle type required, along with adequate room to allow turn-around manoeuvres by trucks, caravans and trailers if required. The number of bays required should be determined according to the AADT of the road which the site services.
Figure 3 – “The Glen” heavy vehicle and motorist rest area, New England Highway
5 Strategic planning

5.1 Strategic planning of rest areas

In light of an increased focus on achieving road safety outcomes through fatigue management, TMR has reviewed the standard approach and policies for the provision of heavy vehicle rest areas.

A review of industry needs and national practice has resulted in a consolidation of policy-based standard spacing which is currently being used to determine the broad strategic needs for heavy vehicle and motorist rest areas at the state-wide level.

As an overall goal, drivers should be provided with an adequate opportunity to rest at intervals of generally no more than 80 km or one hour drive time apart as appropriate, with stopping places and opportunities available in-between to provide for short stops to check loads, complete work diaries, or to take rest breaks.

This spacing standard ensures that no matter the origin or destination of the driver, they will have access to a location into which they can safely pull off the road, park the vehicle, and rest for the necessary amount of time before continuing their journey.

When assessing requirements to meet this standard at a network or route level, consideration must be given not only to existing traffic movements, but also to natural traffic growth. It is also important to consider redirected traffic from other sources such as changes in supply chains, tourism or industry needs, or changes and improvements to the network itself.

Consideration should be given to reserving or acquiring land required to allow the flexibility of upgrading existing or creating new rest areas in the future. It is desirable for rest area designs to be as flexible as possible to allow for future expansion. This can be particularly important where budgetary constraints exist and staged design options would allow for future expansion. It is also important to consider rest area needs when undertaking major infrastructure changes, such as bypass projects, that have potential to modify or remove existing rest opportunities.

Queensland has adopted a multi-stage approach to establishing, and subsequently supporting, an effective rest area network.

1. Ensure rest areas are located at intervals of no more than around 80 km or one hour drive time apart across the state controlled road network.

A strategic analysis of the state controlled network, based on a standard of 80 km spacing, producing a map identifying locations where rest areas should be ideally located should be undertaken. This approach can be used as the cornerstone of a strategic program to improve rest area accessibility in terms of location.

2. Invest in strategic upgrading of rest areas to ensure available capacity and level of facilities provided matches the level of use the site receives.

Detailed route-by-route analysis identifies locations where new or upgraded facilities may be required. This process considers information from internal and external sources, resulting in an overall prioritised approach to support investment decisions.
3. Embed consideration of rest area needs in all aspects of road planning, design and maintenance, in support of achieving improved safety outcomes.

The inclusion of rest areas as part of departmental design standards, in particular as part of major projects, is considered a fundamental component of ensuring on-going provision and maintenance of rest areas. This is achieved through strengthening policy and continuing inclusion of rest areas in design guides, such as their current inclusion in the *Road Planning and Design Manual*, and importantly, in strategic documents such as individual link strategies.

5.2 Determining network-level locations

In order to commence a strategic program of works to increase the availability of rest areas throughout the state, TMR has produced a map identifying locations where rest areas may be needed. This map is the principal tool used to identify broad locations for new rest areas for the program. It is based on the 80 km spacing requirement and intends only to identify locations near which sites are required to cover the network to that standard. It does not assess the quality of existing sites, but instead identifies locations where there are ‘gaps’ (e.g.: one site needed between Cloncurry and Julia Creek).

This map is the first stage in the strategic approach TMR has adopted to provide rest areas across the state controlled network, and guides the current program of works. Further more detailed analysis is planned in order to ‘audit’ existing sites against desired standards to identify deficiencies for future, targeted, upgrade programs.

Once this process has identified the gaps in the state provided network, other considerations can be examined to refine a final list of prioritised sites. While it is desirable to construct rest areas in all identified gaps, realistically a prioritised approach is prudent. In determining how best to proceed, the following considerations may be appropriate:

- The gap analysis map showing geospatial representation of existing rest areas against the current departmental specifications, indicating in a visual sense, routes of concern.
- Examination of historical incidents as reported by Queensland Police via "WebCrash", in order to identify ‘hot spots’ where fatigue is indicated as a major significant issue.
- Consultation with local knowledge experts within the departmental regional staff.
- Consultation with industry, including ‘road trips’ whereby departmental staff accompany drivers on actual journey’s across the state, identifying and recording formal and informal sites that drivers actually use as opposed to those that are recorded in corporate systems.
- Confirmation of level-of-service and functionality requirements through consultation with stakeholders and users of each site.
- Where available, and to support funding bids, route level Cost Benefit Analysis (CBA) to identify benefits that may arise from ensuring rest areas are provided along routes of particular importance, such as intra-state connector routes, and those that supply inter-modal (rail/port) and inter-state connections.
- At the local level, a route-by-route analysis may be appropriate, bringing together both stages of the assessment, local knowledge, and industry advice to input to a detailed link strategy that supports effective fatigue management.
5.3 **Strategically assessing needs**

5.3.1 **Ensure that rest opportunities are located at intervals of no more than around 80 km or one hour drive time apart across the state controlled road network**

An effective approach to determining the need for rest areas along particular routes is to perform a multi-step route level assessment. This approach results in a prioritised list of sites along that route that can be used to support a strategic investment program aimed at improving available facilities over time.

This process contains a series of tasks, including:

- Examining locations of existing rest opportunities, for both motorists and heavy vehicle drivers, to compile a list of known locations. This should include TMR sites, local government sites and commercial operations that provide rest opportunities. This list of sites can then be compared to known gaps to identify areas of higher priority.

- Existing sites that need upgrading to meet amenity requirements can be identified.

- Requirements can then be matched to available funding streams to create a program of works to be rolled out on the network in a prioritised manner.

The resultant findings of this approach can be defined in three stages:

- **Step 1** is focused on provision of new rest areas to fill identified ‘gaps’ (distance >80 km) on the route where no other formal rest opportunity exists (this includes commercial facilities). These will be new sites.

- **Step 2** considers existing sites that require the provision of facilities in order to provide access to facilities such as toilets, tables, shelter, etc.

- **Step 3** removes facilities that are commercially provided from consideration to indicate gaps that may exist were no commercial operations are in place. At this stage, co-location with commercial operations could realistically be considered if appropriate and where there are no issues relating to competition with commercial operations.

Utilising this approach, sites requiring attention can be examined according to their level of need, and could also be included in corridor studies and management plans as appropriate.

It is important to remember that this first examination of the network is focused on providing sites, and basic facilities, at the desired spacing on the network. While the new sites will be constructed to fulfil the local needs, this process does not consider capacity, access, amenity, or level-of-service issues of existing sites — it only considers that they exist.

The process described here addresses stage one of TMR’s strategic approach to providing effective rest areas on the network. Further, more detailed analysis (as described later) is required to determine upgrade needs for existing sites as part of stage two of the departmental strategy.

5.3.2 **Invest in strategic upgrading of rest areas to ensure available capacity and level of facilities provided matches the level of use the site receives**

Where adequate numbers of rest areas are present on a route, an analysis of the level of service provided by existing sites is important in order to determine a strategic upgrade program to ensure that sites meet the requirements of the network.

Achieving this strategic goal requires more detailed examination of existing rest areas, including a comparison of existing sites and facilities against desired standards for that location. This is often more
effectively performed at the regional or route level rather than at the whole-of-network level, and
requires a more hand-on approach than the desktop method which is more suited to stage one.

A suitable approach is to undertake a physical audit of the route or region to determine whether existing
sites are adequate for current or expected usage when compared to the required standards and types
of rest areas described in these guidelines.

Information from this audit should be incorporated into appropriate planning processes such as route
and transport studies. This will ensure rest area needs are captured in funding proposals. A prioritisation
process similar to that for new rest areas can also be undertaken to determine the most appropriate
approach to developing a program of works that will upgrade deficient rest areas to meet the standards
required of them.

5.3.3 Embed consideration of rest area needs in all aspects of road planning, design and
maintenance, in support of achieving improved safety outcomes

The provision of rest areas for heavy vehicle drivers, and motorists alike is an intrinsic component of
managing the road network. Research has shown that there are significant safety benefits achievable
when drivers manage fatigue effectively. The importance of providing suitable and accessible roadside
areas where drivers can stop and rest cannot be understated.

As part of an overall safety strategy, consideration of rest area locations should be part of all road
design and maintenance activities. Within TMR, rest area standards and requirements are being
developed in order to be included within the Road Planning & Design Manual, Transport Studies and
route planning activities.

5.4 Prioritisation of funding

Determination of whether or not identified needs are funded will be determined against the requirements
of individual funding streams. Currently, there are more than six federal and state funding sources that
support rest areas. These include the federal Nation Building Fund, state-based programs including
Safer Roads Sooner, Camera Detected Offences, and fatigue management funding as well as through
specific programs such as the national Heavy Vehicle Safety & Productivity Program.

Each funding stream will have its own approach to prioritisation of individual rest areas dependant on
the focus of that program. For example, federally-based streams generally focus only on rest areas on
the National Network (formerly Auslink) while state-based funding prioritises the Other State Controlled
Roads (OSCR) network. Other programs may have specific requirements, such as prioritisation based
on fatigue zones or crash statistics, or alternative focus areas that will affect the final selection of rest
area sites appropriate for that program.

Ultimately however, the creation or upgrading of any rest area has potential to provide positive fatigue
related outcomes. All programs should be assessed in consideration of state-wide needs balanced
against desired outcomes of the funding stream.

If a detailed and prioritised forward program of potential works has been developed that identifies the
rest area needs at the Regional level, there will be a greater opportunity to access funding streams as
they become available for both new rest areas and upgrade needs.

5.5 Managing delivery programs

Once funding is secured and strategic locations are determined, a pro-active approach to establishing
and managing delivery programs will ensure outcomes are achieved.
TMR has implemented a delivery program championed by a state-wide group who has responsibility for delivery of the rest area program. This group coordinates state-wide delivery of the rest area program once funding sources have been secured. Other stakeholders include:

- National and State Fund Managers
- Regional Directors & TMR Staff
- Local Governments and Transport Industry representatives
- Motorist and tourism groups
- Local road safety groups
6 Regional planning

6.1 Determining route-level locations

High-level strategic analysis of the network will identify broad locations at which establishment of new rest areas is desirable however there are many local factors that will influence the final on-the-ground placement of the site itself.

At the route level it is important to consider all relevant issues that may impact on the effectiveness of each rest area and its purpose of supporting fatigue outcomes.

6.2 Consideration of local issues

The final actual location of a rest area site can be identified based on preferences of features that the local conditions naturally provide such as grade, natural shade, availability of utilities, and the geometric and environmental constraints of the site as well as accompany road configurations. The following lists some factors that assist in identifying preferable rest area locations.

- Rest areas should be located within safe access to the road, while also providing sufficient separation for both safety and rest purposes. Separation is a key element in providing effective rest, and screening from the road corridor should be provided, particularly for areas used at night, to allow drivers to sleep without disturbance from headlights moving along the adjacent roadway.

- Better utilisation can be expected from sites with clear visibility of facilities, and adequate internal signage. At the same time maintaining sufficient separation from the road as to facilitate rest often provided through screening using vegetation, continues to be important.

- Straight sections of road with good sight distances are preferred. This will enable heavy vehicles improved access and egress when leaving or re-entering traffic flow. Heavy vehicle drivers prefer rest areas located at tops of hills with up-grade access into the rest area and a down-grade egress. If this cannot be achieved, the grade when re-entering the road should be as flat as possible.

- Flat areas are highly important for heavy vehicle parking in rest areas. Long haul heavy vehicle drivers who take long rest breaks need a level surface in order to enable sleeping in the heavy vehicle cabin without disturbance through discomfort.

- Heavy vehicle drivers require stopping and rest opportunities on the approach to and departure from urban centres such as Brisbane and major towns. This enables heavy vehicle drivers to check loads and security, and to rest on the approach to these towns so that they arrive at unloading facilities or depots at the appropriate time and adequately rested to participate in necessary unloading activities.

- Areas that provide shade are highly desirable for rest areas. Shade is important for drivers travelling in summer months, particularly in the hotter western areas of the state. Natural shade is preferred as it can be utilised to protect the vehicle itself from the heat of the day. As such, as much vegetation as possible should be retained when designing/constructing sites.

- When choosing a site, close proximity to utilities such as water, sewerage, and electricity is desirable, as this reduces the cost of building and operating the rest area, as well as improving the quality of services for drivers.
In more remote areas, the use of composting toilets and water tanks is becoming more common in order to provide facilities at lower expense. For safety purposes, solar lighting is also being used in many rural/remote Queensland areas.

Lighting for security or safety may be provided where appropriate. Availability will depend on access to services, however in remote areas solar lighting is being used successfully. Lighting should be maintained at a safe level, but should not be so bright that it would disturb sleep. For example, flag lighting, maintained at a level suitable for pedestrians and located only around available facilities may be appropriate in many circumstances.

Potential locations for rest areas should undertake environmental assessments as required to ensure environmental impacts are minimised.

It is important to consider proximity of the site to domestic homes or developments, institutions, or businesses in the area. Particularly in rural settings and locations where noise can travel unimpeded for long distances, it has been known for the arrival and departure of heavy vehicles on a site to cause disturbances to homes a kilometre or more away. Conversely, a local activity, such as a feed lot or piggery, can cause noise at night that may disturb the driver’s ability to rest effectively.

You will also need to consult the Significant Environmental Areas Policy. The Significant Environmental Areas (SEAs) Policy ensures areas with significant ecological/environmental values, unique environmental character/features or special conservation characteristics within government supported transport corridors or assets, are appropriately managed and given consideration in all aspects of TMR business. The purpose of the SEA Policy is to ensure the long term protection or improvement of the values or characteristics of the SEA. This may require special management or atypical maintenance practices to ensure the long-term viability of the SEA.

Other local considerations or constraints such as native title issues, size of available corridor, regional planning requirements and local council issues will also impact on the final location of a site within the required general area.

### 6.3 Provision of facilities

A consistent approach should be adopted in the provision of rest area facilities. Results of a survey of heavy vehicle drivers and industry showed that toilets, shade, tables and chairs, and rubbish bins are considered the most desirable features at rest areas. In order to minimise life cycle cost, rest area facilities should be durable, low maintenance, vandal resistant and not portable.

- **Toilets** – Toilets are considered important facilities, and it is suggested that they be included at as many rest area sites as appropriate. Where sewers are located in close proximity to the rest area, toilets should be connected to the sewerage system. In the majority of cases where a sewer is not available, the selection of toilet type and toilet designs requires knowledge of estimated rest area usage. For example, composting toilets should not be used for high volume roads where rest area usage is significant. Good toilet designs should include facilities that are durable and vandal resistant. Simplicity and durability of design enables easy maintenance. The selection of toilets for rest areas should aim to minimise the whole of life cost.
  - Where high usage rest areas are not located in close proximity to sewers, septic tank systems and aerated wastewater treatment system (AWTS) can be installed to treat...
wastewater to the required level of effluent quality for discharge. Special attention must be given for sensitive land use if effluent needs to be discharged for land applications.

− The selection and design of rest area toilets should take into consideration the ongoing maintenance of the facility required.

− Ventilated toilet designs should be used to minimise odour problems. The roof of a toilet structure can be designed such that it maximises natural lighting for energy savings and provides good ventilation.

− It should always be remembered that toilets require a higher level of ongoing maintenance than other facilities such as water, shade, etc.

• **Water supply** – If town water is available at the rest area site, it should be provided for use. Potable water should be provided where practicable for hand washing, with appropriate signage used where the water is not suitable for drinking. As a preferred minimum standard, a tank should be supplied where there is capacity to collect water, for example where a shelter-shed is provided.

• **Bins** – Rubbish bins are essential facilities in rest areas. Bins should be enclosed with lids to deter pests and to avoid rubbish being scattered by wind.

• **Lighting** - Lighting is useful at rest areas for a number of reasons. The most obvious is that of enhanced personal safety of rest area users. Not only will lighting aid security to those using the site, but it will act as a beacon to improve the visibility of the rest area from the road. This will promote its use and also improve the perceived safety of users as they know they are visible to passers-by. Lower level lighting should be provided in designated parking areas to allow drivers the opportunity to take long sleep breaks. This is particularly important for heavy vehicle drivers.

• **Sheltered tables and seats** – Sheltered tables and seats provide facilities for drivers to take rest and meal breaks. They should be designed to be vandal resistant and minimise life cycle cost. Location of tables and seats should also consider shade at different times of the day.

• **Safety and crime prevention through design** – The design of safe built environments improves safety and security in rest areas. Some design issues to consider include site layout design for easy identification of pedestrian corridors and destinations, establish clear sightlines through sensitive location of site features, and maximise the opportunities for natural light and pathways illuminated by lighting at night. A clear sight distance provides a perception of safety and adequate space.
Figure 4 – Well-placed and designed facilities enhance fatigue management outcomes
7 Designing rest areas

The aim of this section of the guide is to promote good practices for rest area design and upgrade activities. It is not intended to provide detailed design or technical information that may apply to specific sites, but rather present considerations that should be addressed during the design and construction of rest areas, and examples of a range of options that may be of use.

Every rest area will have a particular set of requirements defined by its location, road type and usage, and many other local requirements. The importance of the knowledge and experience of local TMR officers, industry, and road users cannot be overstated, and each area should be carefully considered and include appropriate public consultation to ensure all needs are met.

Nevertheless, TMR has developed basic best practice designs upon which local design and engineering officers can base initial designs before moving to more detailed design phases when developing new and upgraded sites.

7.1 Rest area best practice design

There are many factors that need to be addressed in the development of a successful rest area. In order to ensure these are covered and integrated into a coherent approach, it is important that an overall concept is prepared. Urban designers can assist in preparing this concept design and should be involved in the whole design process.

Rest areas are designated locations within the road corridor that are accessible to drivers to allow them to take rest breaks, counter the effects of fatigue, and meet their fatigue management requirements. Appropriate rest areas enable drivers to increase the frequency, duration and quality of rest breaks, and these considerations should be the primary focus of the design process.

Rest areas also provide places for heavy vehicle drivers to check their loads and vehicles, and fill in work diaries. Rest areas are not break-down or decoupling pads and should be used primarily for the purpose of enhancing fatigue management, and improving road safety outcomes. If there is a need for decoupling or other freight-related activities to occur, they should be clearly separated, preferably at a different location where the sleep of resting drivers will not be disturbed by excessive activity.

It should be remembered that, for heavy vehicle drivers, rest areas can potentially be considered a working area, and workplace health and safety considerations may apply. Driver safety, including safe access to amenities, is an important consideration during the design phase of construction.

The provision of a combined motorist and heavy vehicle rest area is sometimes appropriate to allow greater use of shared amenities and greater economies of scale. Motorists and heavy vehicle rest area users can share the facilities in combined rest areas. Wherever possible the motorist and heavy vehicle parking areas should be segregated to avoid internal traffic conflicts, and to minimise disturbance between the two types of vehicle groups.

It is accepted that rest areas for heavy vehicle drivers have differing requirements to those provided for general motorists. Heavy vehicle rest areas should be primarily designed to allow heavy vehicle drivers to achieve adequate rest and overcome fatigue ahead of continuing their journey. If rest areas are overly noisy, poorly serviced, or are inaccessible to large vehicles, they will not fulfil their purpose. Good planning and design requires an integration of the strategic planning and the detailed design aspects of rest areas and the often long distance routes they service.
Locating and designing a rest area requires a collaborative approach involving road designers, urban designers, drivers, and industry representatives in the development of the details for each specific site.

### 7.2 Rest area layout

The final design of a rest area will be strongly influenced by the local conditions and the route on which it is placed. There is no single ‘template’ design for rest areas, however there are common features. The most important consideration when designing a rest area is to ensure safety of movement within the site and to minimise potential conflicts between vehicle and pedestrian movements.

- The circulation of vehicles in the rest area should minimise internal traffic conflicts. For example, good rest area layout design should ensure uni-directional flow of vehicles entering, parking and exiting the rest area. Rest areas should be designed so that reverse parking manoeuvring of heavy vehicles is not required.

- A landscape buffer zone is essential to separate the road from the rest area and provide a more restful space. Seven or eight metres is a desirable minimum width for this zone however may not be achievable in situations with limited corridor space. Nevertheless, to maximise safety, the rest area should not be hidden from view. To provide a perception of security it should be laid out so it can be seen from the road. Ground cover combined with clear trunk trees can help provide both views and a feeling of separation.

- In combined rest areas, heavy vehicle parking spaces should be separated from other vehicles to prevent traffic conflict during manoeuvring. The separation of motorist and heavy vehicle parking spaces reduces disturbance of heavy vehicle drivers’ rest by holiday or other travellers. Landscaped areas or sound absorbing walls can be used for separation.

- In combined rest areas, amenities should be located within convenient access to both motorist and heavy vehicle drivers and passengers. For example, toilets should be located in-between the motorist and heavy vehicle parking areas or at a location that does not require motorists to enter the heavy vehicle parking area of the site.

- In combined areas, special consideration of ensuring safe interactions between general motorist passengers, particularly children, and heavy vehicles is paramount. In particular, placement of access points to roads and amenities requires special consideration.

- Use of ‘front-to-rear’ or ‘nose-to-tail’ parking for heavy vehicle bays allows heavy vehicles of various sizes to make the best use of the space available and also provides easy manoeuvring in the rest area. It is also the most effective design layout for achieving effective rest as it minimises in-cabin noise impacts for drivers when using their sleeper cabs. This type of parking layout is also favoured by the heavy vehicle industry.

- Benefits may be obtained by dividing the heavy vehicle parking area into smaller parts. This may provide different parking areas for short term and long term heavy vehicle parking in order to minimise disturbance to those who require long rest breaks.

- It is important to cater for all expected vehicle types, and where possible separate them within the rest area. For motorists, it is important to provide an adequate number of larger bays for caravans and RVs. When providing heavy vehicle spaces in rest areas, it is important to accommodate the largest size of heavy vehicle using the route, such as B-doubles.
• The length of vehicles may also require consideration. Heavy vehicles can be up to 53.5 meters in length or sometimes longer so may require either a lot of room or a straight drive through situation which is not impeded by other vehicles such as caravans blocking their ability to move.

7.3 Separation of vehicle types

Separation of vehicle types should be considered where interactions between them could have safety implications. As a rule, motorists should be separated from heavy vehicles wherever possible, particularly in highly trafficked areas where vehicle interactions may be intensified. This is particularly important in areas where children may have access to areas in which heavy vehicle manoeuvres might occur.

Even amongst heavy vehicles, livestock and refrigerated vehicles are known to cause disturbance to drivers of other vehicle types, and where possible and practicable, should be provided with separated areas to park so as to minimise noise related impacts on other drivers attempting to achieve effective rest.

Dangerous goods vehicles may also need to be considered on routes where these vehicles are common. Due to safety requirements they may not be able to stop at the same rest area as other heavy vehicles. For example, an explosives vehicle must not stop near a fuel tanker, and will need to proceed to the next available rest area, or a dangerous goods vehicle must not park within 15 meters of a building or a concentration of people, and is also restricted to 8 meters from another vehicle which is a placard load. This may be particularly important on significant freight routes such as the Peak Downs Highway which are known to support mining operations which require significant numbers of this type of movement.

7.4 Access and egress

Access into and egress from rest areas are important design aspects for consideration. Access and egress must provide an adequate level of safety for vehicles entering or leaving the rest area and re-entering the traffic flow, and the application and requirements will vary greatly from site to site depending on reasons such as:

• Grade – Heavy vehicle drivers prefer rest areas located at tops of hills with upgrade access into the rest area and a down grade exit. Uphill exits are very undesirable for trucks and may lead to trucks stopping on the road shoulder nearby, instead of using the rest area.

• Sight distance to entrance and exit of rest area – Principles of intersection design as defined in the TMR Road Planning and Design Manual must be applied. Intersections ‘At Grade’ conditions should apply to roadside rest area access points. Impacts of sight distance, design vehicle turning paths, and interference to through traffic by decelerating and accelerating vehicles should be considered at each site.

• Access arrangement – On dual carriageway roads, left in/left out rest area access is always recommended for both motorists and heavy vehicles. This means that rest area facilities should be duplicated (one rest area on each side of the road). Such pairs of rest areas do not have to be directly opposite each other and in some cases may be staggered to achieve improved safety outcomes. Where duplication is not possible, appropriate intersection design should be applied as per the TMR Road Planning & Design Manual.

• Acceleration and deceleration lanes – Where required, adequate acceleration and deceleration lanes should be provided at the exit and entrance of rest areas. Acceleration lanes
are provided to enable entering traffic to accelerate to the design speed of the through roadway. Locating rest areas at the top of crests also assist vehicles to decelerate and accelerate when entering and leaving the rest area and reduces the length of acceleration and deceleration lanes. When designing a rest area that might be utilised by heavy vehicles, it is recommended to design ingress and egress to a standard suitable for the largest combination vehicle utilising the route. The TMR Road Planning & Design Manual and the Austroads Geometric Design for Trucks guide provide acceleration lane and grade requirements for trucks.

- **Turning radii** – Access into and out of the rest area should consider the turning radii of motorists and the largest type of heavy vehicle to be accessing the site.
- **Sealed access** – Access into the rest area should be sealed to enable safe entry and exit. On unsealed roads, access points should conform to the conditions of the roadway.
- **Internal pavement and seal design** – All pavement and seal should be constructed to cater for the largest and heaviest vehicles that are anticipated to utilise the site. Where gravel or compacted earth is provided, it should be of sufficient quality to remain accessible in wet weather without causing vehicles to become bogged.

### 7.5 Environmental considerations in design

Environmental concerns are becoming increasingly important in all aspects of network construction and management. Wherever possible, rest areas should be designed to minimise environmental impacts. Particularly in rural and remote areas, the use of composting toilet facilities and solar lighting can be effective in ensuring environmental concerns are addressed.

Other design elements that can impact on environmental outcomes include:

- **Run-off treatment** – Rest areas with high usage may create a considerable amount of gross pollutants. Parked vehicles may cause oil and grease on pavements over time. Where rest areas are located close to sensitive environmental areas such as recreational watercourse, sensitive aquatic environments and National Parks reserves, stormwater treatment measures should be incorporated in rest area design and drainage design. Grass swales or vegetative strips between the rest area and roadway may also provide natural stormwater treatment for road runoff.
- **Heritage** – Heritage significance of particular rest area locations should be protected or, if possible, incorporated in the design and theme of rest area.
- **Native Title** – Native title is an on-going consideration for many road projects. Wherever possible, a level of flexibility should be undertaken in the planning process to ensure that consideration of the needs of traditional land owners is taken into account.

### 7.6 Aesthetics

Aesthetics must be addressed early on in the location and design of the rest area. It is insufficient to employ landscape designers to prepare a planting plan at the end of the design process. It is particularly important to plan landscaping and provision of trees and plants in the context of adequate shade provision, protection from noise, and screening from traffic on adjacent roads.

- **Landscape design** – Rest areas should be aesthetically pleasant to encourage their use. The attractiveness of rest areas can be achieved through good landscape design, as well as providing local identity and a landmark along the route. In order to achieve an attractive
outcome, it is desirable to engage an urban design consultant or landscape architect to provide advice on the design of rest areas to ensure rest area facilities are integrated with the site and that the natural environment of the rest area is preserved.

- **Natural noise mounds** – For rest areas that are located close to highly trafficked roads, noise mounds planted with trees and medium height shrubs may aid to screen out noise generated from road traffic.

7.7 **Comfort**

- **Shade** – Where safe, trees can provide natural shade in rest areas, which is preferred by industry. In particular, larger trees can protect vehicles from direct sunlight. Advance planting of trees at potential locations of rest areas as part of a route planning strategy can provide natural shade opportunities once the rest area is in operation.

- **Flat surface** – a level surface in a rest area is desirable. Long distance drivers who take long rest breaks need a level place to enable effective sleeping within the vehicle or heavy vehicle cabin.

- **Quiet environment** - Rest areas require a reasonably quiet and restful environment for drivers to use for rest or sleep. The parking area is best located to screen out both noise and headlight glare from passing vehicles. Heavy vehicle parking spaces should be separated from motorist parking area to minimise interruptions.

7.8 **Signposting**

Sufficient advance signposting should be provided to enable drivers with adequate time to decide to use a particular rest area. Signs for dedicated heavy vehicle rest areas should not show the facilities available in order to minimise use by motorists and tourist traffic. The MUTCD (Main Roads, 1999) gives appropriate advance signs located at 500 m, 300 m and 200 m before a rest area (depending on the speed environment), and at the turn-off to the facility in accordance with current Australian Standards.

In addition, advance warning signs are desired at:

- 10 km – indicate type of rest area
- 2 km – indicate type of rest area and the distance to the next rest area
- 1 km – indicate upcoming rest area

As a further safety measure, a “Fasten Seat Belts” sign should also be placed adjacent to the exit points of all rest areas.
Designing rest areas

**TRUCK PARKING AREA**

ALL NOISE TO BE KEPT TO A MINIMUM

NO REFRIGERATION MOTORS BETWEEN 9pm-6am
NO NON EMERGENCY VEHICLE MAINTENANCE
NO CROSS LOADING OF STOCK OR MATERIALS
PLEASE OBSERVE APPROPRIATE HEALTH PRACTICES

**Rest Area**

**GATTON BYPASS**

**REST AREA**

**No. 780**

400 m ON LEFT

**GATTON BYPASS**

**REST AREA**

**No. 780**

2 km ON LEFT

Typical Layout for All Vehicle Rest Area Signs with Heavy Vehicle Parking
When establishing a site, the minimum types of signage that may be required include:

<table>
<thead>
<tr>
<th>Location (km)</th>
<th>L/R</th>
<th>Sign number</th>
<th>Sign description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 km before site</td>
<td>L</td>
<td>G7-1-2</td>
<td>S12 Symbol &amp; S13 Symbol, 1 km on left</td>
</tr>
<tr>
<td>At site entrance</td>
<td>L</td>
<td>G7-4-2 (L)</td>
<td>S12 Symbol &amp; S13 Symbol with left arrow</td>
</tr>
<tr>
<td>Upon entering</td>
<td>L</td>
<td>TC1297</td>
<td>Heavy Vehicle Parking Only</td>
</tr>
<tr>
<td>Upon exiting</td>
<td>R</td>
<td>G9-Q09</td>
<td>Fasten Seat belts</td>
</tr>
<tr>
<td>Upon exiting</td>
<td>R</td>
<td>R1-2</td>
<td>Giveway Sign</td>
</tr>
<tr>
<td>Inside</td>
<td></td>
<td>TC1417</td>
<td>No Overnight Stays by Other than Heavy Vehicles</td>
</tr>
<tr>
<td>Facing exit of</td>
<td>R</td>
<td>TC9510</td>
<td>Next (S12 Symbol) (Left and right arrows with km)</td>
</tr>
<tr>
<td>At site entrance</td>
<td>R</td>
<td>G7-4-2 ®</td>
<td>S12 Symbol &amp; S13 Symbol with right arrow</td>
</tr>
<tr>
<td>1 km before site</td>
<td>R</td>
<td>G7-2-2</td>
<td>S12 Symbol &amp; S13 Symbol, 1 km on right</td>
</tr>
</tbody>
</table>

Other signs that may prove useful include:

- **TC1297**
  Heavy Vehicle Parking Only

- **TC1577**
  Information sign – next rest area

- **TC1603**
  Service sign – Truck parking area

- **TC1154**
  Heavy Vehicles only
  No camping by other vehicles.
7.9 **Duplication of sites**

On dual carriageways rest areas should be duplicated to allow motorists travelling in either direction access to a rest opportunity. On single carriageways, the need for duplication of rest area sites should be dependent on the volume of traffic and the type of vehicles using the route and the availability of safe turn-in opportunities at the site.

Where vehicle types utilising the road would have difficulty crossing into a rest area or movements across a road would interfere with the normal flow of traffic causing safety concerns, the need for duplication is dramatically increased. Duplication of sites may also reduce the need for safety treatments such as protected right turn lanes on the road itself, and can be an economical solution.

A ‘left-in left-out’ design, duplicated on both sides of a road, has the potential to provide surety of safety through the minimisation of turning manoeuvres by large vehicles and provide more space for drivers without excessive costs in associated road works.

7.10 **Local road conditions and topography**

Topography such as deep gullies, rolling hills or high cuttings should be considered inappropriate when selecting rest area sites. Not only are deceleration and acceleration issues particularly important for heavy vehicles, but it is just as important to ensure that the rest area itself is flat enough to ensure that a large multi-trailer vehicle can park on a level surface.

Where surfaces are not level, it can be difficult for drivers to achieve effective rest or sleep as their bedding in the vehicle will be at an angle. Ensuring that the site is level also reduces the potential risk of roll-over or other safety incidents.

Where the access or egress points are rough or damaged, vehicles will have difficulty entering and exiting the site, causing safety concerns not only for the drivers, but also for other road users.

7.11 **Noise and amenity impacts**

Impacts due to noise and community amenity are a major influence in the design, construction and placement of the majority of road-related projects. Noise in particular should be a strong consideration in the design of heavy vehicle rest areas in order to ensure drivers are provided the best opportunities available to achieve optimum rest or sleep, and to ensure that members of the public in adjacent land are not inconvenienced through excessive noise generated due to heavy vehicle movements or from equipment such as refrigeration units.

The physical design of a rest area can have significant noise impacts on users of the area. For example, herringbone designs – where vehicles bays are configured in a side-by-side format – can produce less desirable outcomes for fatigue management. Despite these formats being efficient in the use of space, and therefore less expensive to construct, the noise generated by vehicles starting and stopping in close proximity to each other (in particular close to the cabin of sleeping drivers in adjacent bays), can cause sleep disturbance.
Nose-to-tail configurations produce less noise impacts for drivers, and are generally preferred by industry, as there are generally less ‘peak’ noise events (stopping, starting, etc.) occurring immediately adjacent to the cab of a resting driver. It is important when considering nose-to-tail configurations, to also determine appropriate lead-in and lead-out distances between bays. This may significantly increase the required length of a rest area, although the desired rest outcomes will be improved.

As a general rule however, trees and shrubbery are an effective way of providing noise-dampening within a rest area, and the retention of screening vegetation is highly recommended throughout the site and between the roadway and the rest area proper.

7.12 Vehicle types utilising the route

The type of vehicle expected to utilise the rest area can have significant impacts on design requirements. Given the generous access arrangements available to the freight industry in Queensland, the presence of large and heavy high productivity vehicles, often with three or more trailers in various combinations, is a common occurrence – particularly on major long-haul routes in central, western and northern areas of the state.

These vehicles require special consideration, predominantly due to the sheer size of the vehicles, and their resultant limits on manoeuvrability, and particularly in areas where there are significant levels of tourist traffic that may interact with these larger vehicles.

As an example, if a planned rest area is located on a significant western livestock route, it is likely that there will be significant numbers of triple road train combinations. This would result in a need to consider an increase in the physical size of rest areas along the route, and there may be a need to consider whether access to animal spelling yards will be required in order for drivers to meet not only their own fatigue management requirements, but also the welfare requirements of the animals they are transporting.

In the case where there is a mix of vehicle types, including livestock, refrigerated, and general freight vehicles, separation of vehicle types may be appropriate to ensure adequate rest is achieved without disturbance from the various types of noise generated by specific vehicle types.

In addition, if the route is a tourist route, consideration of a separated area for use by ‘grey nomads’ and other motorists is strongly advised, particularly in areas where children will be present. From an operational point of view, it is recognised that while tourists may ‘settle down’ for the night, trucks will continue to come and go making it important to ensure that all throughways are clear.

Large multi-combination vehicles cannot simply reverse out of a rest area, so it is important to ensure that adequate safe manoeuvring room is available for these vehicles without being blocked by cars, motorhomes, or tents, etc.

Where vehicle mix is an issue, clear line marking and signage should be erected to direct vehicles to an appropriate area within the site, and consideration of lighting is advised to minimise safety conflicts.

7.13 Shade and shelter to enhance rest

The provision of adequate shade is of particular importance in order to provide drivers protection on hot days so that they can rest comfortably and safely. Attempts to rest, particularly during the summer months in western Queensland, can often be difficult if there is no shade under which to park the vehicle in order to reduce the effects of direct sunlight.
It is recommended to allow as much natural shade as possible when developing a rest area, preferably through retention of trees and shrubbery that allow as many shadowed areas on the site as safely possible.

Of course, this is not always possible in areas where the local landscape does not include adequate trees or shrubbery. In these cases, special consideration should be given to adequate provision of artificial shade areas such as shelter sheds and the like – particularly in areas of the state prone to high-heat days.

*Figure 6 – This shelter shed at Waverley Creek provides all-day shade through use of internal walks*

### 7.14 Resilient networks

As Queensland experiences extreme weather conditions in many areas across the state, rest areas should be accessible during all weather conditions affecting the road which they service. Generally this means they should be sealed wherever possible and located where they will remain available during localised flooding etc.

This will generally mean ensuring that both rest area and stopping bay sites are of adequate size or design that as a minimum will allow the largest vehicle able to access the road the ability to perform a ‘U-turn’ movement, either within the rest area, or in a controlled movement utilising the roadway, in order to return in the former direction of travel.

Where ever practical, rest areas should be designed and built to support potential emergency management operations that may occur in the local area. These may include responses to flooding, fires, or other significant events which cause the closure of roads that leads to the need for vehicles to stop and either wait in the area, or turn around and return to their home base.
In strategic locations, particularly where flooding events are known to cut roads, rest areas should be designed with enough sealed capacity to safely hold an appropriately expected number of vehicles or to provide sites where emergency services can establish local coordination or support centres if required.

Consideration may also be given to potential use of the site as a supply distribution point for communities cut off during emergency events. An example of this is the ‘Critters Camp’ rest area south of Normanton which is intended to operate as a rest area during normal operation, but as a supply and distribution point when the Norman river floods.

7.15 Rest area safety

Rest areas should be designed to ensure the safe movement of all users potentially accessing the site. Internal movements should be managed or directed to ensure they are at a safe level and that the potential for conflict between all users is minimised.

Interaction between vehicles and pedestrians, in particular when accessing facilities provided, should be minimised, and any necessary interaction should occur at a very low speed. The placement of facilities has become an important consideration in order to achieve these safety goals.

This is vitally important when deciding on placement of facilities and parking bays in dual-use areas where there is potential for very large trucks and pedestrians (including children) to interact. When designing for pedestrian/vehicle interactions, the following should be considered:

- Parking areas should be located immediately adjacent to facilities.
- Access roadways should not be located between facilities and car parking areas.
- Roadways designed for vehicle acceleration or deceleration between the highway and the rest areas should not intersect with a location or path a pedestrian is likely to utilise.
- Clear lines of sight, particularly around facilities and pedestrian access points, should be achieved.
- At very large or busy facilities it may be necessary to implement formal pedestrian facilities (marked crossings, etc.) in accordance with appropriate design and safety standards.

7.16 Standard rural Queensland design

In many areas of rural Queensland, a simple and consistent design can be applied to roads with medium to low AADT levels. It should be remembered that these sites are generally also key freight routes for high productivity vehicles such as B-triples or BAB Quad vehicles where the preferred design will be required to reduce the need to turn or manoeuvre vehicles. As such, a ‘left-in, left-out’ design is preferable so that the vehicle can move through the site without the necessity to turn the vehicle.

Given adequate size, sites of this design can service both heavy vehicles and motorists, thus minimising on-going maintenance costs of facilities. They are also able to be expanded to meet future demands of the road, particularly if there is further depth available in the corridor on which additional separated sections can be added.

Following are examples of a template design that may be appropriate for a small or medium heavy vehicle rest area.
Figure 7 – Rural rest area 14 km north of Surat on Carnarvon Highway provides shade, shelter, table and water

Figure 8 – Environment providing for a medium number of heavy vehicles with basic facilities

For more remote areas, a simpler design utilising a single bay may be appropriate where usage levels are quite low, yet combination types potentially large.
7.17 Shared heavy vehicle and motorist rest areas

On higher use roads, there is a greater need to separate vehicle types within a rest area to ensure that heavy vehicle drivers are provided with appropriate opportunities to rest whilst not inconveniencing general motorists, or having their own rest interrupted.

The following dual rest area is a popular spot on the Bruce Highway north of Gin Gin. It provides shade, shelter, tables, water, and toilets. It is accessible for all motorists, and also can be used by transport inspectors during operations as it contains an off-road weigh pad.

The site is located only 1 km from a 24 hour roadhouse operation, thus also providing the opportunity for access to food and fuel. The design allows for ease of manoeuvrability for larger vehicles (nose-to-tail parking), separates motorists from heavy vehicles, provides good shade, and a high level of facilities suitable for the high number of road users utilising the site.

Facilities such as toilets are shared, with the main loop nearest the road being the truck parking area. Cars and caravans are directed to the back of the site with a more scenic outlook, and to avoid pedestrian contact with manoeuvring heavy vehicles.
The following site can be used as a basic design for a medium-sized dual rest area that provides high-level facilities to both motorists and heavy vehicle drivers on high-level routes across the network.

This site provides for short-term truck parking adjacent to the roadway, short term car parking with direct access to facilities that do not interfere with truck movements, and long term truck parking at the rear so drivers can rest more effectively.

*Figure 10 – Rest area in a medium volume and mixed traffic location*

*Figure 11 – Environment providing for both heavy vehicles and tourist traffic*
Expansion of existing motorist sites to include areas for heavy vehicles can also be an effective way of minimising on-going maintenance costs. The following design has been developed to create a new heavy vehicle rest area adjacent to an existing motorist rest area. This design provides a high level of facilities and large vehicle capacity.

*Figure 12 – Dual-use rest area design. Whilst expensive, it could be staged or duplicated to reduce costs*

Similar sites could potentially be constructed utilising a staged approach over a period of years. Other options such as duplication of the rest area on the opposite side of the corridor could also be effective in reducing costs through providing access to shared facilities and minimising safety treatments on the road itself that may be required with a non-duplicated design.

7.18 **Dedicated rural and remote heavy vehicle rest area**

The following dedicated heavy vehicle rest area is designed for use in a rural or remote area where lower usage is experienced. It utilises the duplication of sites on both sides of the corridor to minimise turning manoeuvres required of vehicles, which, on this section of road, are likely to include large multi-trailer combinations. This design is an economical and effective approach for more remote areas.
Figure 13 – Simple duplicated rest area designs can remove the need for expensive turning lanes

7.19 Utilising local towns and facilities

Many smaller towns along major freight routes encourage drivers to stop and rest in order to increase patronage to local shops and services. These can be convenient for drivers, and are generally managed and maintained by either local councils or local community groups such as Lions or Rotary groups.

Regions are encouraged to engage with local councils as the provision of facilities within towns can effectively supplement the mid-block availability of rest areas that TMR predominantly provide.

Figure 14 – Utilising towns can provide a cost-effective way to provide enhanced facilities and support local economies
The pictures above show examples of local councils providing facilities. At Eidsvold (left), the local council provides clean and accessible toilets adjacent to the highway and access to town facilities. At Capella (right), the local council actively invites drivers to utilise any facilities in the town, including showers, toilets, and café.

7.20 **Utilising commercial facilities**

An effective way to minimise on-going costs and provide drivers with enhanced facilities such as access to food, water and shelter in a secure environment, is through co-placement of rest areas with commercial operations.

This design was proposed to allow for effective sleep and utilisation of existing land. This method also reduces the cost of implementation as the entry/exit to the site is via the existing service station thus eliminating the need to provide these facilities specifically for the rest area.

*Figure 15 – Locating rest areas adjacent to service centres offers access to food, fuel, etc., where separation if sufficient*

7.21 **Use of old road alignments**

One of the most economical approaches to creating a large and long heavy vehicle rest area at a vastly reduced cost is the use of segments of old road alignments that would otherwise not be utilised.

These sites are often very long, are fully sealed, provide adequate shoulder space for installation of facilities, and are sufficiently close to the newly constructed road corridor that they are convenient and require little in the way of construction cost to establish safe ingress and egress points. However due to the long/thin nature of these sites internal traffic control may be an issue and may limit their use to a single direction of travel only.
**Figure 16 – Old road alignment used to provide a rest area on the Burnett Highway south of Eidsvold**

This example of utilisation of an old road alignment is at Colinton on the D'Aguilar Hwy west of Kilcoy. It provides a significant area for nose-to-tail parking, safe access to tables, shelters and toilets and is located opposite a roadside service station to provide access to food and services. Due to the existing old alignment a simple spray seal surface was all that was needed, making this an effective and economical solution.

**Figure 17 – An economical reseal of an old alignment provides a new rest area with a large capacity**
8 Maintenance of heavy vehicle rest areas

Maintenance plays an important role in ensuring rest areas remain functional and attractive to drivers of all types. Whilst sometimes expensive, on-going maintenance is an important consideration when designing rest areas. It is important to ensure that facilities are low-maintenance where possible, yet do not compromise the level of amenity available to drivers.

Important maintenance considerations for rest areas include:

- Toilet maintenance – cleaning, waste disposal, routine repairs of damages caused by vandalism
- Litter collection
- Landscaping maintenance
- Maintenance of fixtures
- Pavement

Rest areas should be designed to serve their purpose in an appropriate way and to minimise whole of life cost. For example, when selecting the type of rest area toilets, consideration should be given to whole of life costing, including operation and maintenance costs. Although composting toilets have low start-up cost, maintenance cost of pumping out sewage from composting toilets is relatively high. In high usage rest areas, the provision of flushing toilets connected to a treatment plant or to a nearby sewerage system will offer a relatively lower whole of life cost as compared to composting toilets.

Appropriate training of maintenance operators should be in place and adequate to maintain the attractiveness of rest areas.

In all cases, rest areas should be maintained throughout their life to be safe, functional and complimentary to the road environment of which they are a part.