

Flooding and road pavements

Flooding and Queensland roads

Main Roads is custodian of Queensland's largest built community asset – the state-controlled road network, comprising around 33,500km of roads and 6,500 bridges and major culverts. The network is essential for connecting communities, industry and business.

Flooding can cause extensive damage to roads and property. For the safety of all road users, and to protect the road asset, road closures are necessary while flood waters cover roads.

Once the flood water recedes, Main Roads progressively inspects affected roads, bridges and culverts to make sure they are safe, can be re-opened to traffic, and take loads of various sizes.



Saturated pavements damaged by heavy loads

Designing road pavements

Road pavements are designed to match the prevailing conditions and available local materials across Queensland. For example, in western Queensland there is low average rainfall and relatively low traffic volumes. Here, road design concepts give priority to keeping moisture out of the lower quality paving materials that are available in these areas. However, in wetter areas with higher traffic volumes, design details and available materials are used to cope with higher moisture content.

Saturated roads

When a road is inundated, especially for a long time, the materials in the road pavement become saturated. This reduces the strength of the road pavement material.

Main Roads undertakes inspections and testing to re-open roads as soon as possible after inundation. In its custodial role, the department balances protection of the road asset with community and industry access.

Roads that have been saturated must be carefully managed. To do this, road closures, load restrictions and traffic management are the only options available.



Load restrictions

Once road pavements are saturated, it takes time for moisture to drain from the material and for full-strength properties to return. Restricting the loads on roads during this 'dry-back' period is essential to preserving this important community asset.

Based on technical data, reducing the load by 20% reduces the impact on the road pavement materials by about 50%.

Experience shows that a single trip by a fully-loaded transport vehicle may cause permanent failure of the road pavement material, leading to expensive repairs and affecting accessibility to the road network.

The local Main Roads Regional/District Director will progressively lift load restrictions according to the local conditions. The stages include:

- » 5 tonne limit to allow access for local residents and emergency services vehicles
- » 80% of the legal axle loads on transport vehicles as shown in the table
- » removal of load restrictions.

Axle Group	Legal Load	80% Load
Steer axle	varies	no reduction
Single 4 tyre	9.0 t	7.2 t
Tandem 8 tyre	16.5 t	13.2 t
Tri 12 tyre	20.0 t	16.0 t

Reference: Transport Operations (Road Use Management - Mass, Dimensions and Loading) Regulation 2005

The Regional/District Director, in making these decisions, relies on specialist advice based on measurement and analysis of road surface movements under test loading of the pavement. This technique models the 'dry-back' process of the road pavement material and allows the decision to be made about when it is safe to remove the load restrictions and open the road fully to all road users.

MainRoads

Connecting Queensland

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Road closures

While flood waters cover the road, road closures are essential for road user safety and to avoid damage to roads and bridges. Sometimes road closures are extended after the water recedes. This can be due to:

- » sections being eroded or washed-out
- » flood debris on roads and bridges
- » damage to bridges and culverts which may compromise road user safety.

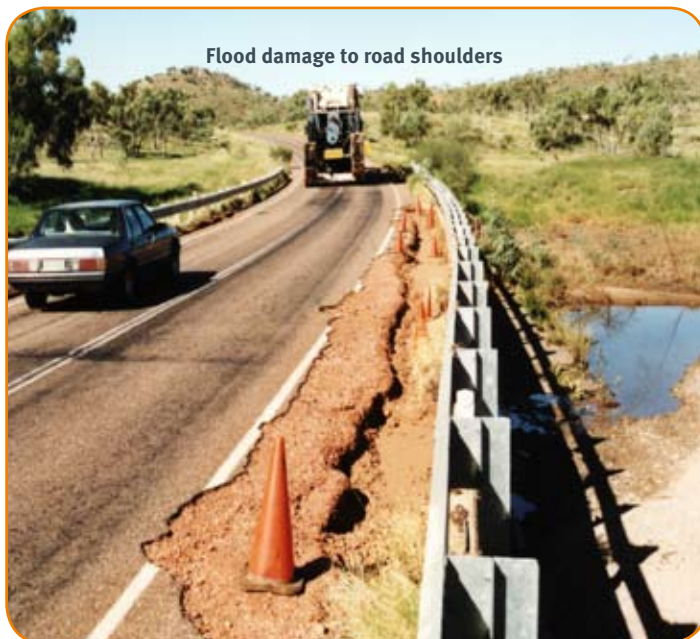
At all times, safety is the number one priority of Main Roads. The department will endeavour to minimise the duration of road closures. However, the length of a closure depends on the time needed to:

- » inspect and assess the roads and bridges to ensure they are safe
- » remove flood debris
- » make the necessary repairs or build temporary sidetracks.

Traffic management

Managing traffic on saturated road pavements as the roads 'dry-back' is important for the safety of road users and for the life of the road asset. Traffic management measures used include:

- » using signage to encourage loaded vehicles to travel safely in the middle of the road where possible
- » restricting the use of heavy load permits.



Public support

Main Roads understands the impact flooding has on communities and industry, and seeks your assistance in preserving Queensland's road asset following flooding.

Main Roads assures you that we carefully manage road closures and load restrictions to avoid permanent damage of saturated roads and to minimise disruptions to road users.

All road users are urged to follow advice provided on road closures and load restrictions, drive safely to match the conditions, obey road signs and speed limits, and look out for roadworkers as they go about their job. In doing so, everyone will play a part in looking after this important community asset.

Contact

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