Natural Disasters

Fact Sheet

Culverts Restoration

transport.nsw.gov.au

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Background:

Transport for NSW (TfNSW) is responsible for assessing damage and proposed restoration for culverts that are impacted by a Natural Disaster. This damage can range from loss of scour rock right through to the complete loss of the culvert structure. Often the restoration works are simple and will be fully funded under the NSW Natural Disaster Essential Public Asset Restoration Guidelines 2018. However, in some cases the repair method for the culvert is impacted by engineering and/or environmental constraints, resulting in other factors contributing tos an overall 'best' solution.

Some common culvert Natural Disaster Recovery damage repair methods are:

- **Repair** of existing culvert and headwalls – (***Fully covered*** *by Grant program)*
  - Removing debris from culverts and/or headwalls (including jetting of the culvert)
  - Internal lining of existing culvert to alleviate cracking or displacement at joints
  - Minor patch repairs of concrete culverts
  - Reinstating headwalls and/or scour protection, including new scour protection at culvert inlets and outlets where damage has caused undermining to the structure
  - Box out and replacement of pavement above culvert where sinkholes have occurred
  - Replace missing or damaged culvert segments

- **Full replacement** of culvert, like for like – (***Fully covered*** *by Grant program)*
  - Site inspection or report highlighting that existing culvert is damaged beyond repair and should be replaced. Removal of existing culvert and replacement can be approved, (e.g., a three-cell 900mm pipe culvert with an effective area or capacity of 1.9m^2 can only be replaced by a culvert with the same capacity. Use of modern culvert materials is possible if the existing culvert material type is no longer available or technically sound, e.g., corrugated iron culvert replaced with reinforce concrete box culvert of same effective area or capacity.

- **Upgrade** of the existing damaged culvert – (***Partly covered*** *by Grant program, with council contribution)*
  - As per example 3 on pg. 47 of the NSW Natural Disaster Essential Public Asset Restoration Guidelines: Increasing the size, length and/or number of culverts. Council should produce two estimates: one for replacing the existing culvert and one for upgrading the culvert. The difference in cost is then contributed by Council.

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Example of a Combined Funding Solution

During a Natural Disaster, a culvert has failed, and, because of the failure, the roadway above has been damaged. In this situation it has been confirmed that the natural disaster was a large contributor to the failure and council records for the culvert confirm that the failed culvert was inspected and maintained regularly. The site has been deemed eligible for disaster recovery restoration.

The local Council has decided it would like to rebuild the roadway and extend the length of the culverts to include a shared pathway to improve pedestrian amenity. The addition of the shared walkway amounts to Betterment of the asset. Betterment is not like-for-like and the part of the asset that amounts to betterment will require a contribution from Council and/or other funding programs.

Note: With any damage, TfNSW requires pre-disaster event condition evidence (photos, inspection reports, asset register etc.) to prove that the culvert was damaged as a direct result of the disaster event and not just as a result of poor design, lack of maintenance or general age of the asset being beyond design life. In these cases, it is expected that council would make a contribution to the 'betterment' of the asset.

Example where Betterment may be eligible for Disaster Recovery restoration:

The entire length of a three cell 600mm diameter culvert has been damaged as a result of flood waters. The original three cell 600mm diameter culvert was designed to Q20 flood immunity. The current engineering standard for this location stipulates that Q50 flood immunity should be provided with four cells to comply.

The replacement of the three cells of the 600mm diameter culvert does not meet the current engineering standards, hence replacing the damaged culverts with four cells of 600mm as stipulated in Q50 is eligible for Disaster Recovery Funding.

An exception to the example above would arise if it is evident the council should have enhanced the damaged asset prior to the eligible disaster to meet current engineering standards. In this instance, the council would be required to contribute the amount of funding it should have spent prior to the disaster, to enhance the asset.

Further information, with other examples, can be found in the '*NSW Natural Disaster Essential Public Asset Restoration Guidelines – Appendix E'*.

Contact us

If you have any questions or would like more information on Natural Disaster Recovery, please contact the Local Government Team in our regional offices.

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