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Flood damaged road infrastructure: Can a rapid response be effected within the parameters of South Africa's environmental legislation?

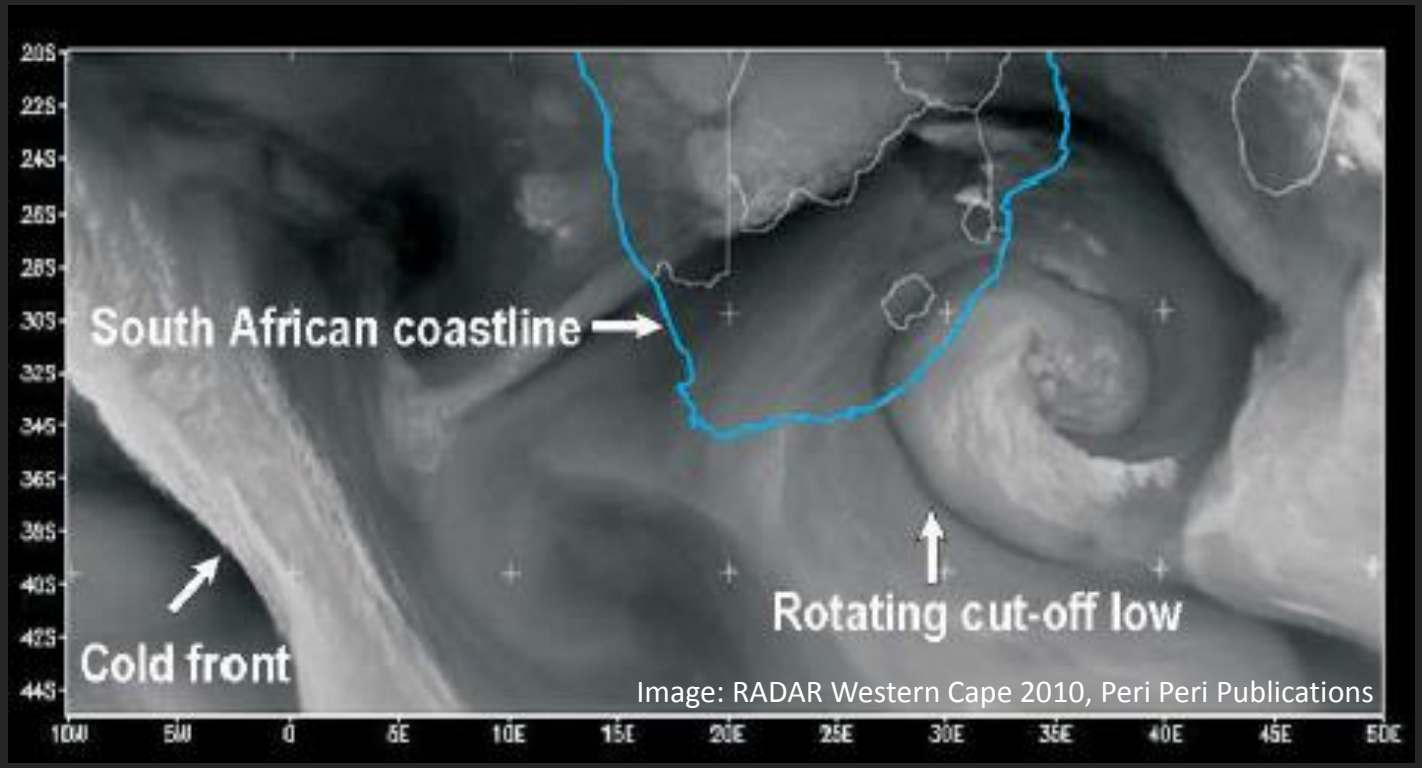
Claire Blanché
Kim White

1 WESTERN CAPE WEATHER

"Cabo das Tormentas" or Cape of Storms

Bartholomeu Dias, European Explorer (1488)

1 WESTERN CAPE WEATHER



- *A cut-off low is mid-latitude cyclone severed from the main planetary circulation, no longer attached to the westerly pressure wave, it looses momentum*
- *This system can sit for days and is typically responsible for the Cape's violent winds, heavy rains, lightening, hail and even snow*

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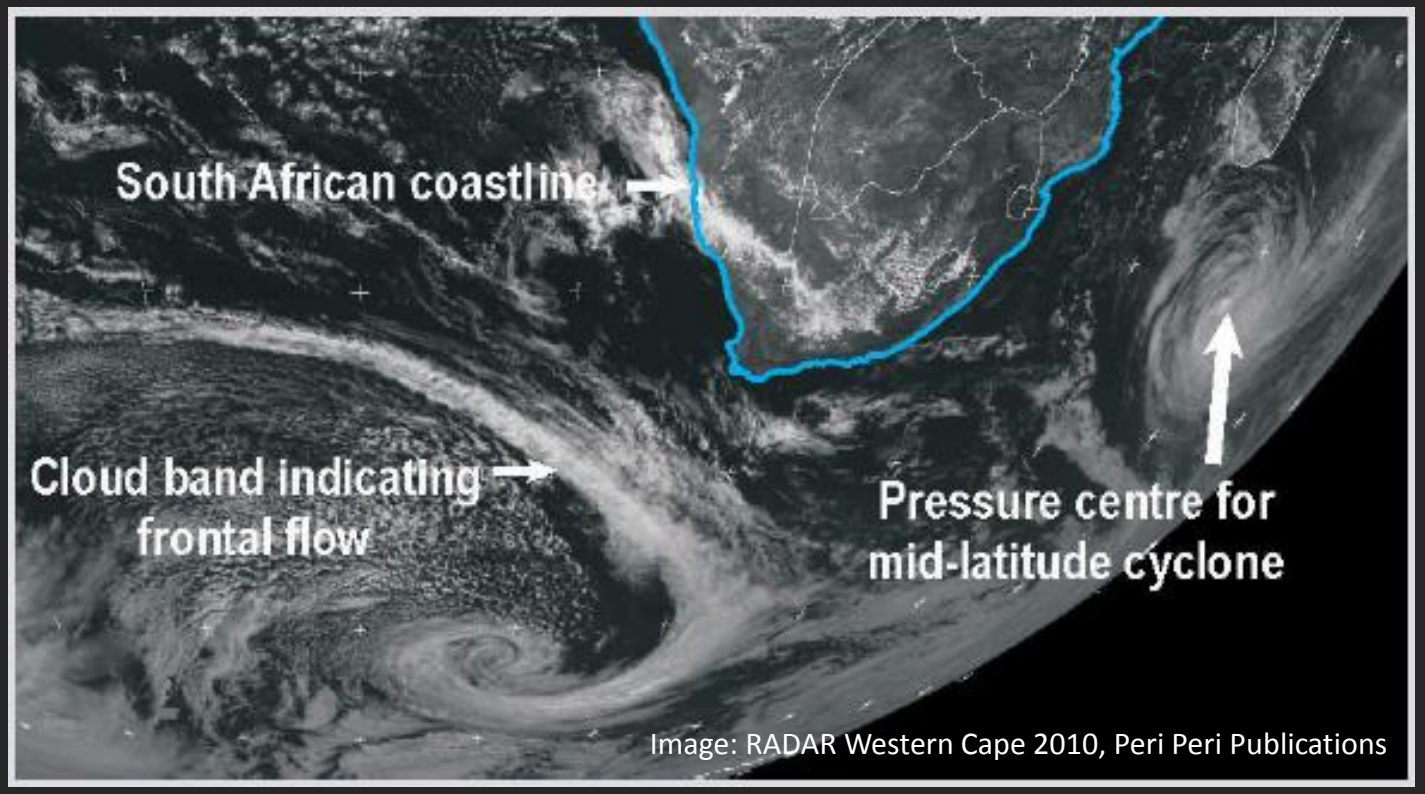

Many of the most damaging weather events in the Western Cape in recent history have reflected two or more weather systems that have occurred closely together

1 WESTERN CAPE WEATHER

Dates	Event Type	Area affected (district, municipality/ metropole)	Social impacts	Direct damage costs (R mil)	Direct damage costs * (R mil)
March 2003	Cut-off low	Cape Winelands, Eden and Overberg District	2,000 people evacuated Three deaths in Hermanus and Knysna	212.4	238.3
August 04	Two large cold fronts preceded by gale force winds and severe rain storm	City of Cape Town	20,000 informal residents flood affected	6.5	5.1
Dece 2004	Cut-off low	Cape Winelands, Eden and Overberg District	3,700 homes and 40 business premises damaged	54.9	57.9
April	Cut-off low	Cape Agulhas Municipality	Residents of Kleinbegin flood affected	8.9	8.9
Augu 6	Two cut-off low systems	Cape Winelands, Eden, Overberg and Central Karoo District	1,200 people displaced	510.5	479.2
Nove 2006	Hailstorm	Haarlem	Seven farms: 389 hectares of fruit trees damaged; 35 small traders, 194 permanent & 160 temporary workers unemployed	9.4	6.6
June	Two rainfall events: A cut-off low, followed by a mid-latitude cyclone	West Coast and Cape Winelands District	People from low cost housing, informal settlements and farms evacuated	128.3	111.3
Nove 2007	Cut-off low associated with black southeaster	Cape Winelands, Overberg, Central Karoo and Eden District	Over 300 people from low cost housing, informal settlements and farms either provided with relief or evacuated; two fatalities	957.6	830.9
May	Social violence (xenophobia)	City of Cape Town and Eden District	20,000–22, 000 foreign nationals displaced. Two to four people killed	Approx. 200	
July 2	Cut-off low and strong south easterlies	West Coast District		71.7	57.0
August 2008	Severe storm	City of Cape Town	Coastal property damaged and extensive flooding of areas with inadequate drainage	4.9	2.9
Nov mber 20 8	Cut-off low associated with black southeaster	Overberg, Cape Winelands and Eden District		996.0	791.3

** Adjusted for inflation, equivalent to 2005 values*

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mage: RADAR Western Cape 2010, Peri Peri Publications

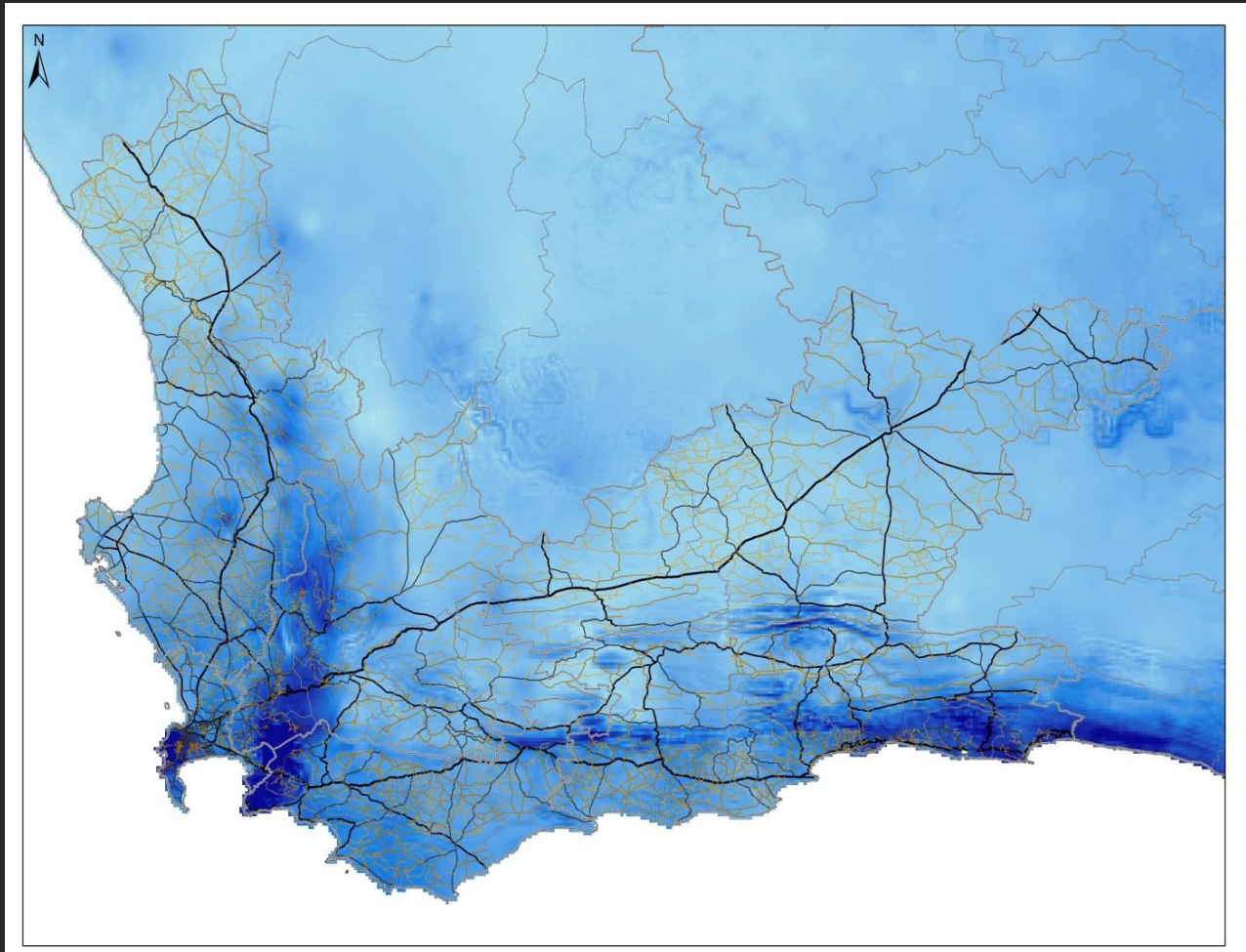
- *Between 2003 and 2008, there were 11 significant disaster (weather) events in the Western Cape (R2.5 billion)*
- *The event resulting in the highest direct damage costs was in November 2008 where a cut-off low coupled with a black southeaster resulted in R996 million worth of damage*

2 FLOODING

Expanding development and poor land management practices adjacent to rivers and along coastal belts , and increased hardened surfaces in catchments have compromised natural protective flood attenuation services

- *Flash floods: Intensive rainfall events causing sudden peak in surface flows*
- *River Floods: Prolonged rainfall events causing water levels in river channels to rise and often to top the banks*
- *Storm surges: Abnormally high coastal water levels often as result of extreme low pressure systems and strong winds*

3 ROAD INFRASTRUCTURE



Western Cape Government
Transport and Public Works

The Department of Transport and Public Works (DTPW) have a mandate to ensure a safe road network, and therefore to address flood damage

4 FLOOD DAMAGE

Typical flood damage to the gravel road network infrastructure includes:

- *Washaways of bridges and low-level causeways*

4 FLOOD DAMAGE

Typical flood damage to the gravel road network infrastructure includes:

- *Washaways and erosion of gravel road surfaces*

4 FLOOD DAMAGE

Typical flood damage to the gravel road network infrastructure includes:

- *Damage to, blockages of, and sedimentation of stormwater infrastructure such as mitre drains, pipes and culverts*

4 FLOOD DAMAGE

Typical flood damage to the gravel road network infrastructure includes:

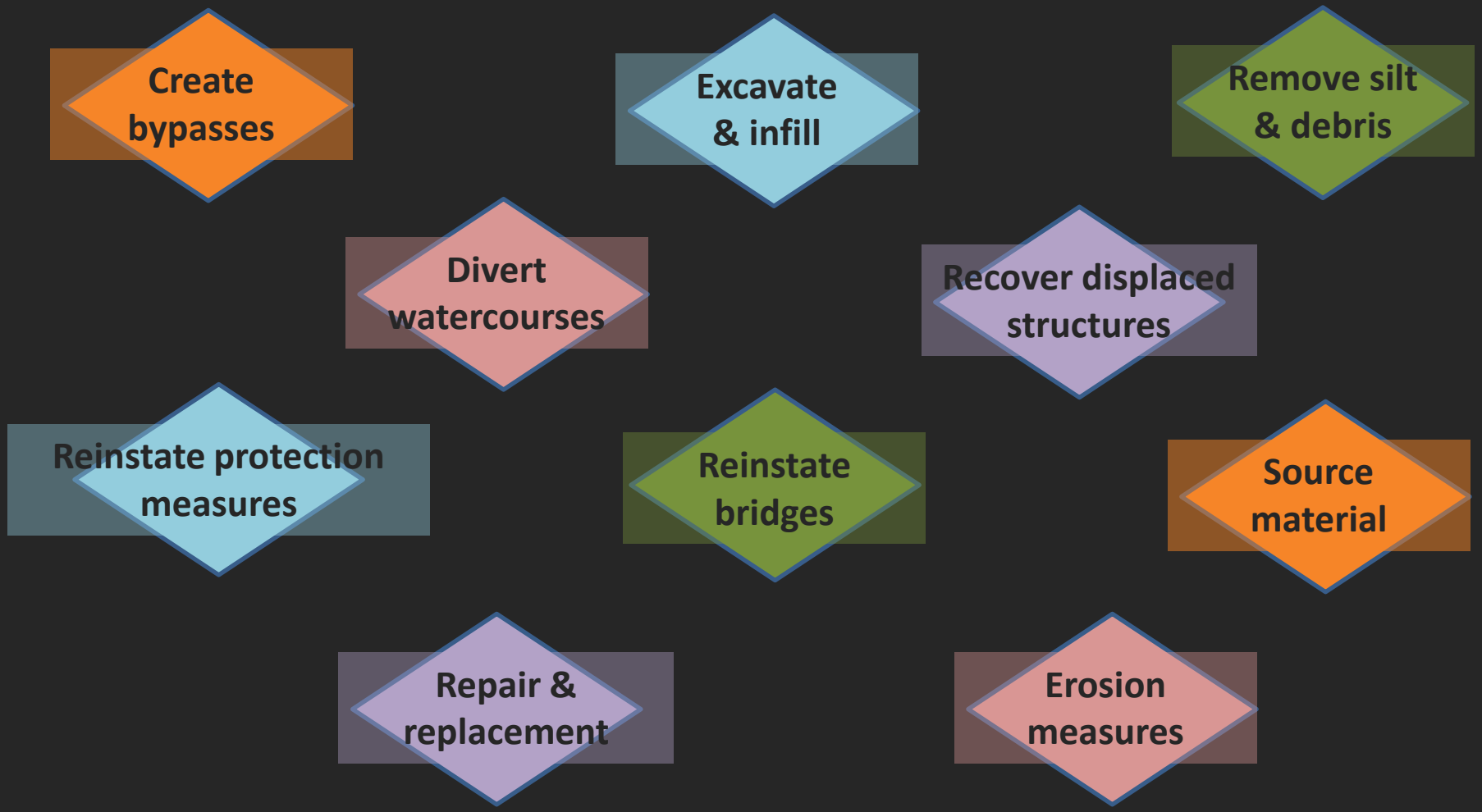
- *Slumping and slipping of road embankments or layerworks*

5 DID YOU KNOW?

- *In 2003, it cost R66.2 million for DTPW to repair 11km of damage to Kogmanskloof Pass after the Montagu Floods (Radar, 2010)*
- *In 2006 two cut-off lows resulted in flood damage to the Kaaimans River Pass, Eden. Heavy vehicles were diverted 400km via the Langkloof Road*
- *Over 60 sections of Provincial roads that failed in 2003 were damaged again in 2006 – R35.5 million in repeat repair costs (Radar, 2010)*
- *Extreme weather over 2 days in November 2013 resulted in R90 million, and the following January another event resulted in similar costs*

6 RESPONSE ACTIVITIES

- Requires rapid response to reconnect communities, re-establish commuter routes, and allow access to isolated homes



7 LEGAL REQUIREMENTS

The following legislation is typically applicable when undertaking both temporary and permanent activities in a watercourse to address and repair flood damaged transport infrastructure:

- *The National Environmental Management Act, No. 107 of 1998 (NEMA);*
- *The National Water Act, No. 36 of 1998 (NWA);*
- *The Mineral and Petroleum Resources Development Act, No. 28 of 2002 (MPRDA); and*
- *The National Heritage Resources Act, No. 25 of 1999 (NHRA).*

Authorisations or approvals pertaining to these Acts are required prior to commencing with the relevant repair work.

7.1 NEMA

- *Listed Activities such as working within or adjacent to watercourses, and clearing indigenous vegetation:*
  - *GN.R 544 & 546, Listing Notices 1 & 3*

- *Environmental Authorisation (EA) is required from the Provincial Authorities via a Basic Assessment Process, which is to include Public Participation and in some instances, specialist assessment.*

7.1 NEMA

- *The Basic Assessment process can take approximately 8 months to conclude.*

7.1 NEMA

- *Undertaking such activities in the absence of an EA is considered an offence*
  - *Section 24F(3) of NEMA if an activity commenced or continued in response to an emergency so as to protect human life, property or the environment then it can be used as defence to a charge– this is a reactive mechanism.*

7.2 NWA

- *Activities associated with flood damage work may constitute "Water Uses", and may require authorisations or licenses from DWA.*
  - *Section 21 (c) & (i)*

- *In general Water Uses must be licensed unless listed in Schedule 1, permissible under General Authorisation (GA), are existing lawful uses or if DWA waiver the need for a licence.*

7.2 NWA

- *Water uses associated with emergency flood work are typically permissible in terms of a GA, but usually require registration.*

7.3 MPRDA

- *In order to effect repairs or reinstate access, suitable gravel may be necessary to this is not always available from commercial sources, and in some instances cannot be delivered due to flood damage.*
- *Should borrow pits be necessary then DTPW are required to submit an Environmental Management Programme (EMPr) to DMR for approval (Section 106(2) exempts Organs of State from obtaining a license).*
- *The EMPr process requires approximately 50-80 weeks to conclude.*

7.4 NHRA

- *Earth-moving activities may be required (e.g. cut and fill operations). Such activities have the potential to impact on resources of cultural or heritage value. In terms of the NHRA, certain activities require authorisation from Heritage Western Cape (HWC) in the Western Cape:*
  - *Section 38 of the NHRA*
- *Required to submit a Notice of Intent to Develop to HWC, and await further instruction on required studies.*

7 LEGAL REQUIREMENTS

The average periods for compliance with mentioned legislation applicable to the repair of flood damaged road infrastructure located within or adjacent to watercourses are as follows:

Applicable legislation	Average period based on experience
NEMA	1 year (EA)
NWA	2 years (Water Use License)
MPRDA	1 year (EMPr Approval)
NHRA	1 year (HIA Approval)

8 COMPLIANCE TO DATE

- *DTPW have, in recent years, appointed Consultants to undertake the Basic Assessment Process for proposed flood damage work in an attempt to remain compliant with NEMA.*

CONSTRAINT:

Contributes towards delays in realising a rapid response to flood damaged road infrastructure

Some areas still hindered by restricted access as a result of floods experienced more than three years ago

- *Structures have been designed to remain below the NEMA thresholds*

CONSTRAINT:

This may compromise the integrity of a structure, and may reduce its potential for future flood resistance

8 COMPLIANCE TO DATE

- *DTPW have embarked on a process to develop Maintenance Management Plans (MMPs) for structures where flood repair work is likely to only trigger Listing Notice 1, 18 of NEMA*
- *This Listed Activity pertains to the infilling or depositing of material within a watercourse, but excludes maintenance activities undertaken in accordance with an approved maintenance plan.*
- *The MMP typically describes potential impacts associated with the maintenance activity, as well as possible mitigation options.*
- *This has been useful where culverts need to be repaired*

CONSTRAINTS:

<u>The MMP is for a single structure for a single event only</u>:

It's a fairly tedious tasks satisfying the Authorisations as they typically call for notification of the scheduled maintenance, the appointment of an ECO, an audit and reporting process –when dealing with the sheer number of structures on any given gravel road. Validity = 2-3 years

8 COMPLIANCE TO DATE

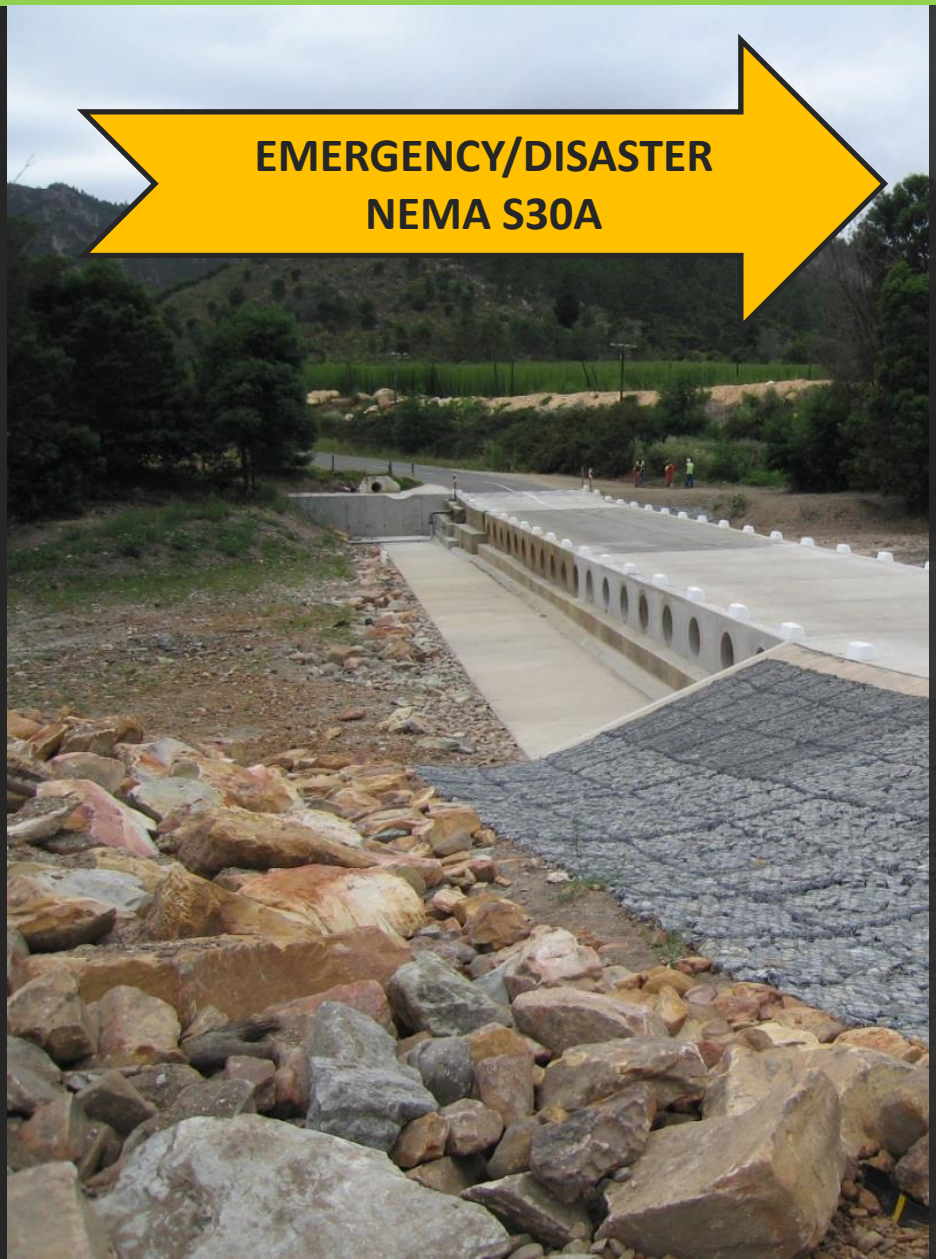
- *Significant flood events between 15-17 November 2013 and 5-10 January 2014 resulted in the Premier declaring a Provincial State of Disaster.*
- *This allowed for the release of funding and resources.*
- *DTPW made a plea in terms of the Disaster Management Act 57 of 2002, arguing that all other licenses, approvals and authorisations should be relaxed, and in some instances fast-tracked.*
- *All parties indicated that this request could not be accommodated, but suggested Directives be issued, or where possible license requirements waivered (NWA: in the instance where other legislation satisfies the requirements)*

8 COMPLIANCE TO DATE

WHAT ABOUT NWA, MPRDA, & NHRA?

- *Until recently these have largely been neglected resulting in illegal water uses, and illegal mining.*

9 GETTING PROACTIVE



- *Reinstating access and ensuring safety to road users following disasters and/or inclement weather*

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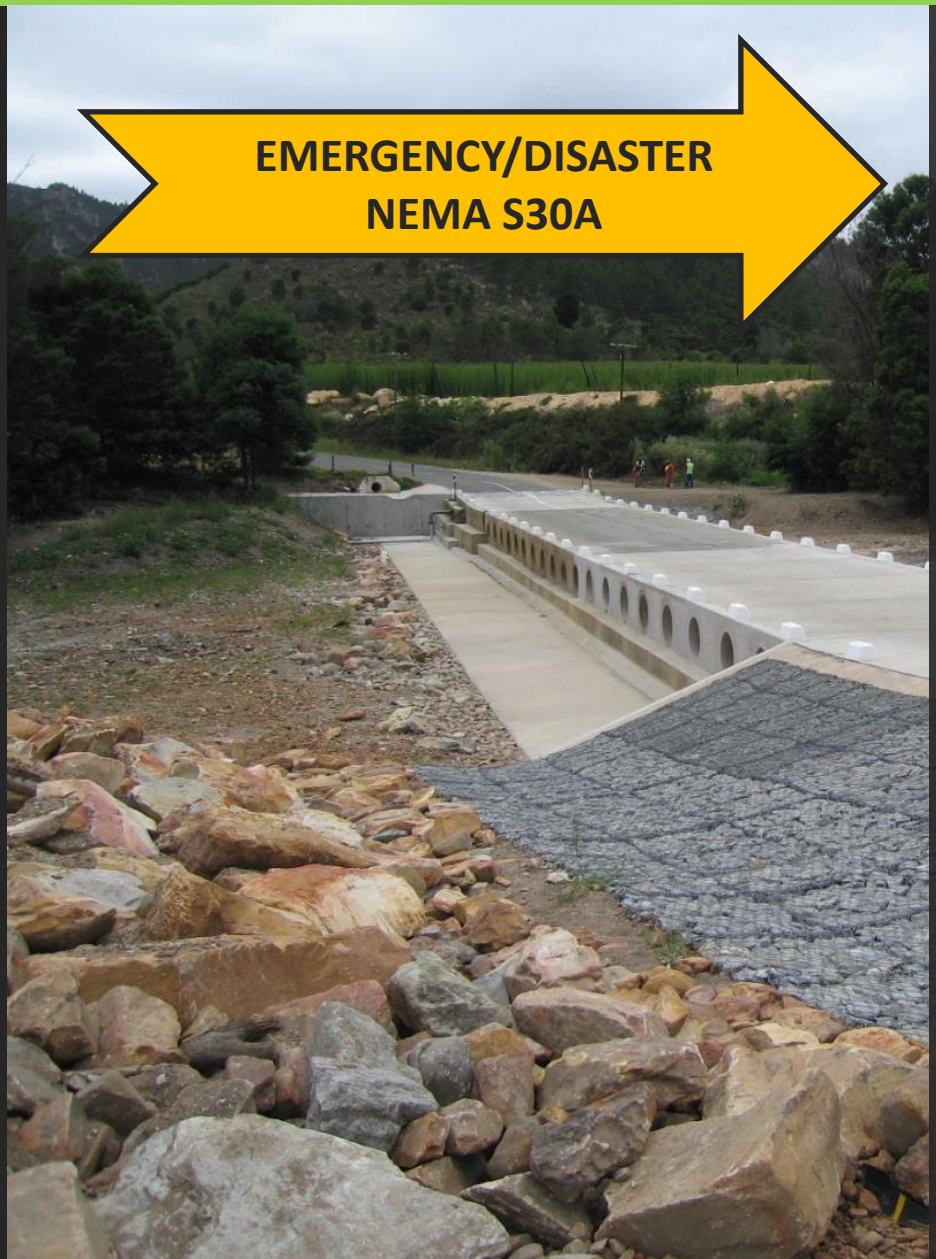

- *Reinstating access and ensuring safety to road users following disasters and/or inclement weather*

S30A is will come into effect on 18 December 2014. This Section allows the competent authority to direct a person to carry out a listed activity without an EA in order to prevent or contain an emergency situation.

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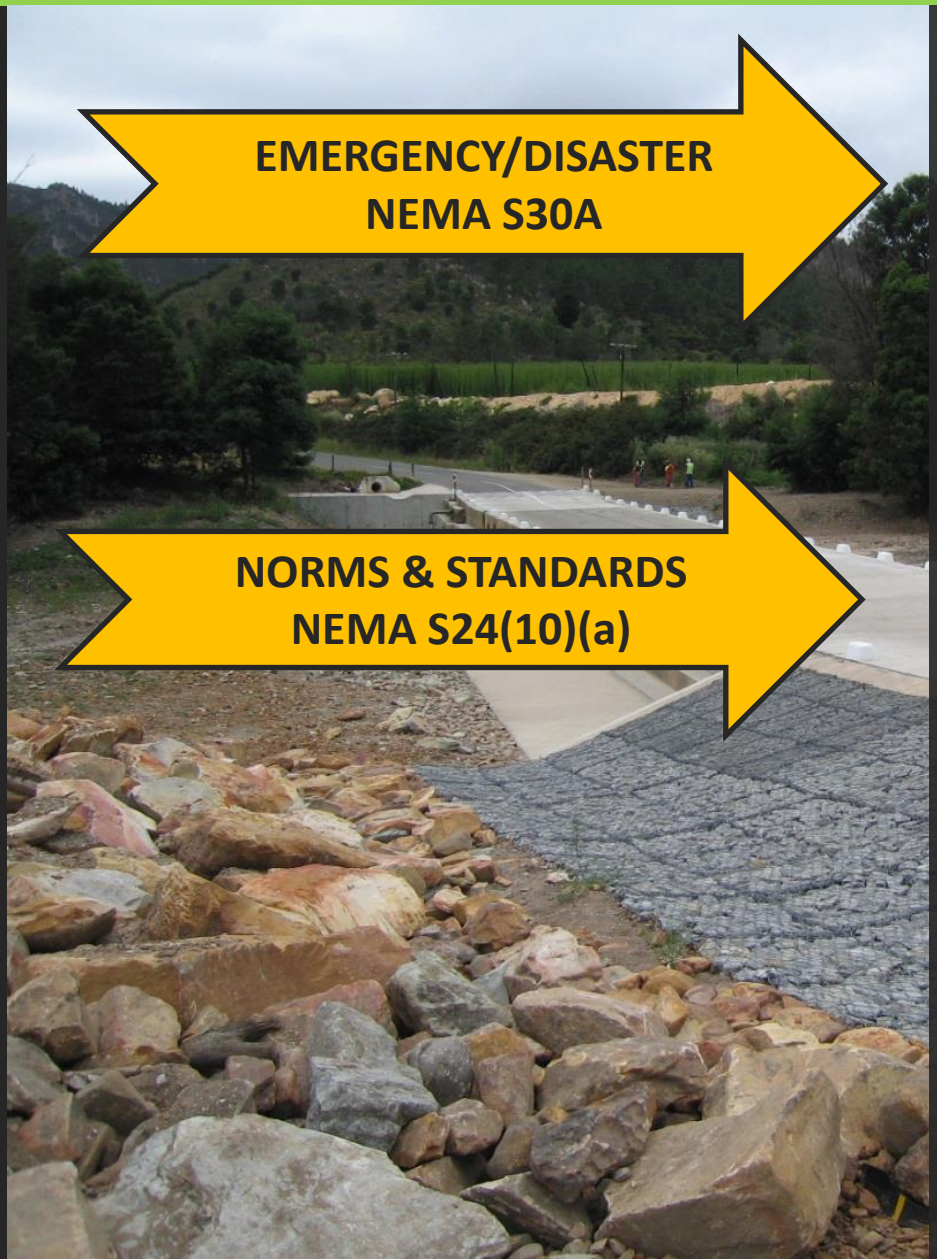

- *Reinstating access and ensuring safety to road users following disasters and/or inclement weather*
- *Undertaking preventative protection works to improve the infrastructure's ability to cope during high intensity rainfall events*

S24(10)a states that Minister must develop N&S for activities that can commence without an EA

9 GETTING PROACTIVE

- *Reinstating access and ensuring safety to road users following disasters and/or inclement weather*
- *Undertaking preventative protection works to improve the infrastructure's ability to cope during high intensity rainfall events*
- *Undertaking maintenance activities to the gravel road network to prevent potential future flood damage*

9 GETTING PROACTIVE

- *Standard Operational Agreement between DEADP, DWA(WC) & HWC was signed in June 2014.*
- *This agreement allows for an concurrent process and a single integrated EA*
- *Perhaps this is the first step towards enabling a more streamlined approach and a rapid response to flood damaged road infrastructure?*

THANK YOU

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