Flooding at Kiltartan – Nov 2009

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David Murray [david.murray@duolog.com]
091-632894/086-8097223

Kiltartan is a very unique geological environment which contains the combining and re-emergence of two underground river systems as well as an underground sink to Coole lake. Most of the water in the Slieve Aughty drainage system runs through this area. This document describes some of the effects of the Nov 2009 floods and highlights concerns to ensure that adequate flood handling measures are put in place during construction of the new N18 Gort-Oranmore road.

Kiltartan Environment

Three main rivers drain the Slieve Aughty uplands (Owenshree, Boleyneendorrish and Beagh). On reaching the limestone they tend to flow to the southwest for a short distance before sinking. Most of the groundwater that sinks focuses on the Coole Lough area, and from there water flows entirely underground in a northwesterly direction, via a single major conduit system, up to 25 m in diameter, discharging to a group of large springs located in the intertidal zone at Kinvara, some 10-15 km distant (Drew, 2001; Drew and Daly, 1993).

Of these rivers, the main waterflow is through the Boleyneendorrish and Beagh rivers. This can be seen in the diagram on the following page

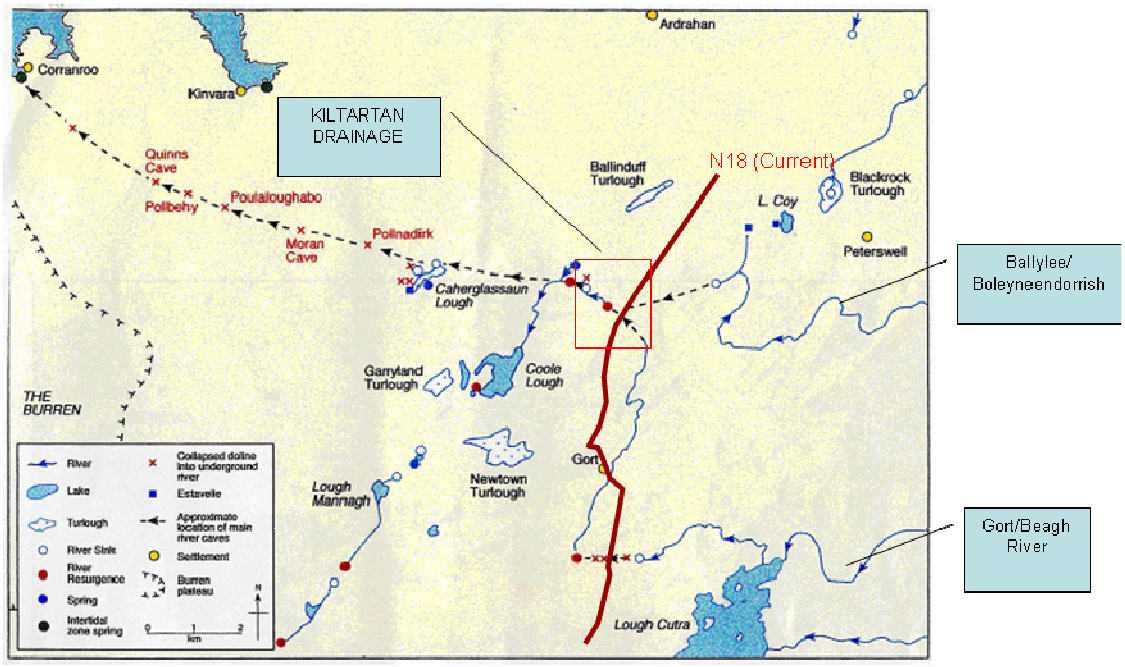
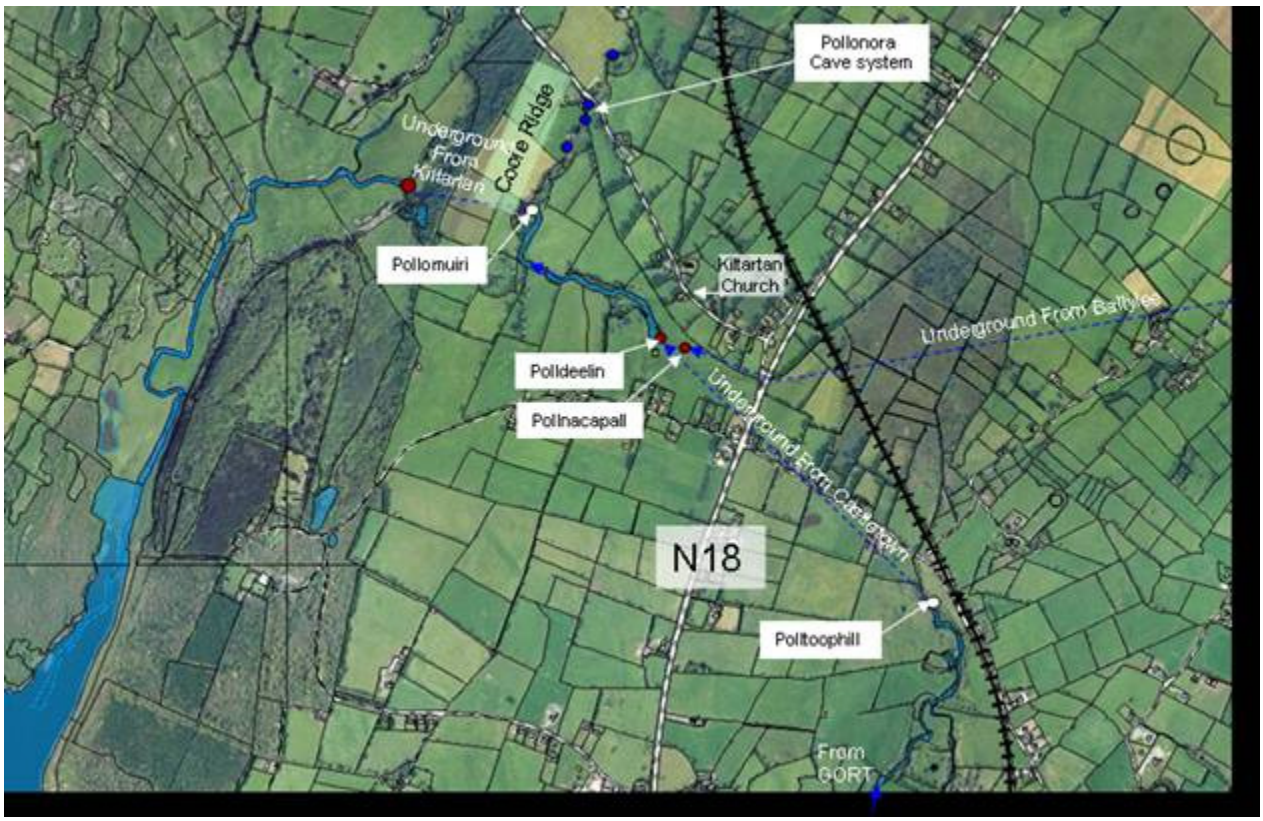


Figure 1 : Slieve Aughty Drainage

The area of Kiltartan is of considerable interest in the Slieve Aughty drainage mechanics. The Ballylee river flows underground, under the N18 to rise South of Kiltartan Church in a karst feature called Pollnacapall. The Gort river sinks at Castletown in Polltoophill and rises close to Pollnacapall in the Polldeelin rise.

Kiltartan/Corker/Raheen area is home to >20 families, many of which suffered severe distress during the Nov 2009 flooding. It also has substantial farmland and several businesses and a church.



The area where these two rivers rise south of Kiltartan church is more or less land locked. There is one sink hole very close to Tommy Murrays house (labeled Pollomuiri on the diagram). This flows under Coole ridge into Coole river which runs unobstructed into Coole Lake.

If the volume of water pouring in from the 2 rivers exceeds the draining limits of the sink hole, the water levels in Kiltartan will rise until the water finds another channel.

The main concerns is that this document are

1. The building of the new N18 doesn't effect the underground channel from Kiltartan to Coole, running under Coole basin.
2. Overflows running overland from Kiltartan to Coole must be taken into consideration the route is directly across the N18 at Raheen.

Flooding Issues

Flooding is a serious issue in the area. There is no surface outlet to Galway Bay and the dimensions of the major conduits are fixed therefore there is a limit to what the underground system can take. Thus, during periods of heavy rainfall, the water backs up and floods the area upstream of the swallow holes (Drew and Daly, 1993).

The main issue with flooding occurs when the Slieve Aughty mountains are saturated and have heavy rains. When this happens the Kiltartan River can rise 20 to 30 ft in places and for most winters, it can handle the levels of rain water. Where a much higher than average rainfall occurs, the drainage takes on a different dynamic.

In the Nov 2009 floods, the amount of water in the Ballylee river far exceed the capacity of the ballylee-pollnacappal underground channel which resulted in rising floodwaters in Ballylee. It also resulted in overground flows through Deerpark and into Castletown.

This resulted in 2 rivers 'competing' for drainage at Polltoophill in Castletown.

- The Ballylee/Bolynedorish overflow through Deerpark
- The Gort river (via Beagh river) also swollen by Slieve Aughty drainage (via Beagh river) which was already at extreme levels

This 'competition' lead to a significant water back-up at Castletown which eventually resulted in severe flooding in Castletown and an eventual outflow across the N18 at Kiltartan. This is highlighted in the picture below; and can be viewed online here.
http://www.youtube.com/watch?v=QDteF83q0RU

The resulting flow into Kiltartan was therefore composed of 3 sources:

- Underground from Ballylee (At maximum flow)
- Underground from Castletown (At maximum flow)
- Overflow across N18 from Castletown

This sink hole at Kiltartan (Pollomuiri) wasn't capable of handling this level of flow and the Kiltartan water levels rose until an overflow developed at Corker (Beside Eugene Nolan's house) flowing northward.

Corker Overflow

The water flowing from Kiltartan to Corker was substantial. It was very fast, deep (Truck drivers reported 4ft in places) and wide 80m . This can be seen here :
http://www.youtube.com/watch?v=sxUKsLJPsVA
The following are a few photographs of this flow

The flow of water was from Eugene Nolan's driveway to Tom Nolan's driveway, >80 M. This flow also occurred during the 1995 floods although not as severe as Nov 2009.

There was also an **additional flow** from Kiltartan to Corker through an underground channel. The Pollonora holes, opposite Tom Nolan's house in Corker, channeled a substantial amount of water underground from Kiltartan to Corker, where it rose again 200m away, behind John Nolan's house. Therefore the complete overflow of water from Kiltartan to Corker was indeed substantial.

This combined overflow flows through Raheen, south of Melvilles house where it flows into the Coole Lake basin.

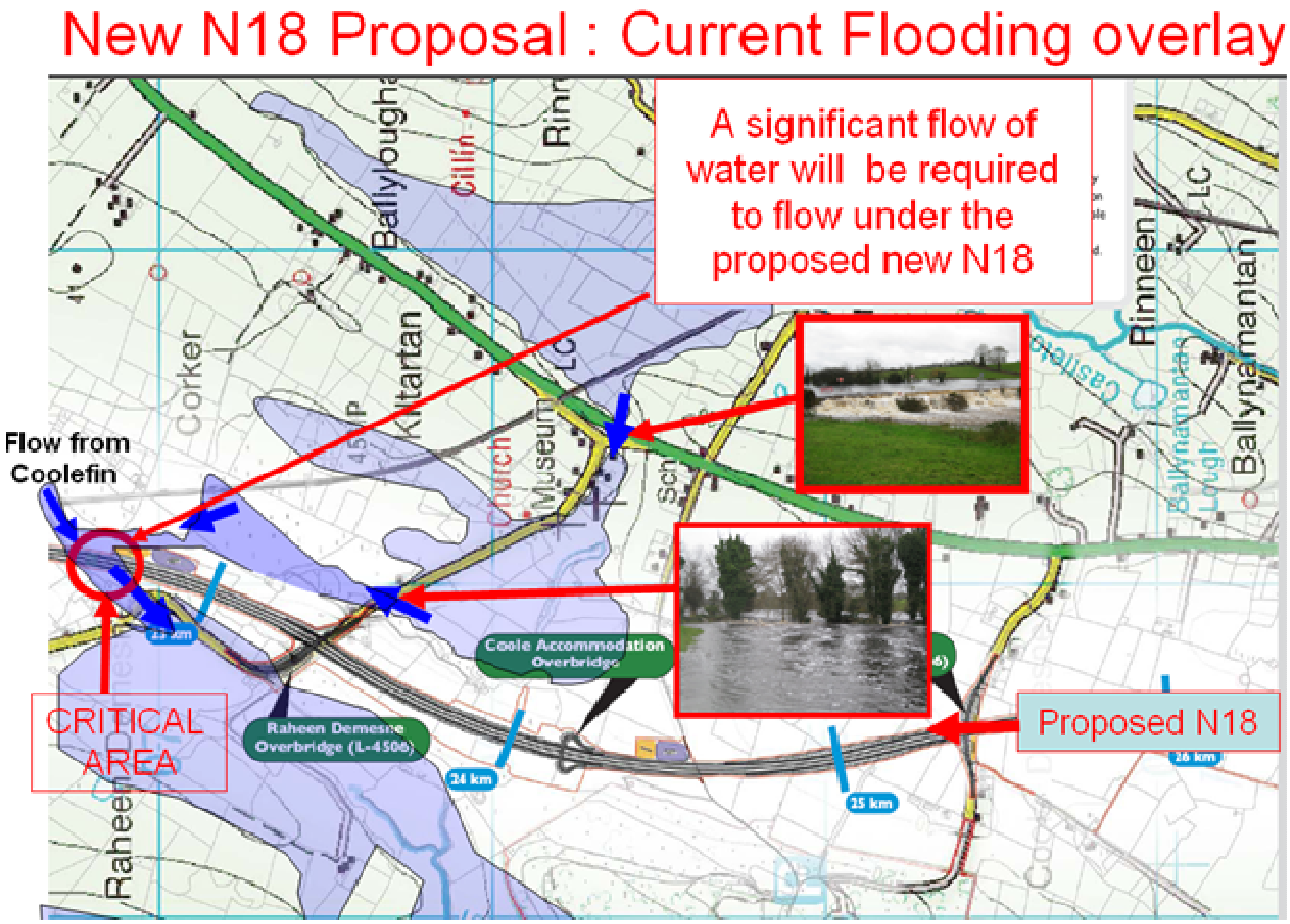
The Nov 2009 flooding caused severe distress to 20+ families in the area. Many families were marooned and did not have access to their houses or farms by roads. For at least 10 families, water levels rose flooding driveways, pump houses, septic tanks, lawns, playgrounds and in some cases to floor level. It completely flooded the local church and with the flows of water, it caused significant road damage in the area.

Impact on New N18 Gort-Oranmore Development

The main issue highlighted in this document is the fact that the new N18 Gort-Oranmore road cuts across this overflow. The overflow of water described herein, must have a sufficient route under the new N18 or it will otherwise have devastating impact on the lands and residents of this area – effectively creating a dam in Kiltartan/Corker. Flood measures such as permeable foundations are not adequate for managing the dynamic overflow described herein.

While there is a provision for a flood culvert in Raheen, this has been designed to drain a normally occurring winter flow from the Coolefin Turlough and is not placed correctly for the current route of the Kiltartan-Corker overflow.

The route of water was walked through by Tony Collins, David Murray (Kiltartan Resident) and John Nolan (Corker resident) on Thu 17th Nov 2009.



The sizing and positioning of the flood culverts at Raheen must include flows from;

- Coolefin Turlough
- Overground overflows from Kiltartan to Corker
- Underground flows from Kiltartan->Corker via the Pollonora holes.

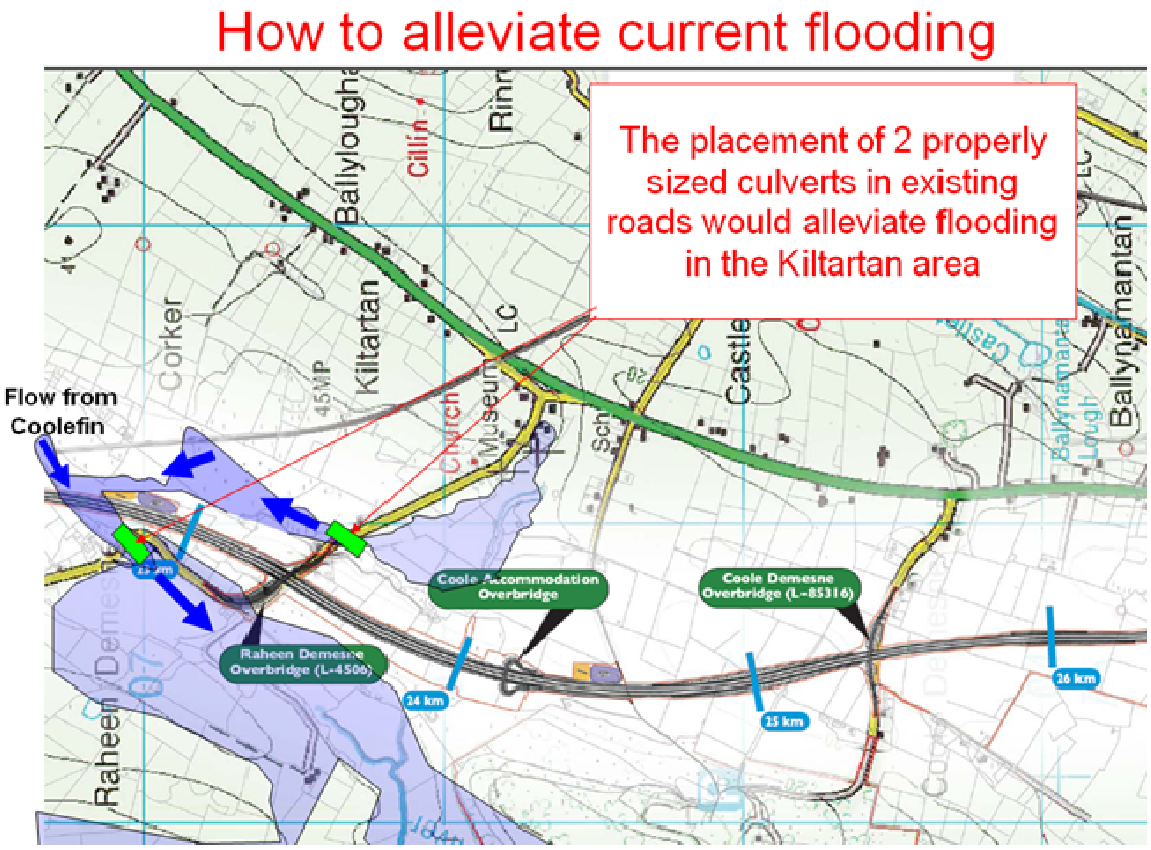
Flooding prevention in Kiltartan/Raheen

Part of the immediate relief work during the Nov 2009 flooding involved uncovering a culvert on the existing N18 at Kiltartan.

While this means that Castletown may not reach the same level again, it also means that the overflows into into Kiltartan/Corker may be increased.

The picture on the left shows the uncovering of the culvert in Kiltartan.

After the 1995 floods, the road at at Kiltartan were raised buy 1-2 ft as it was intended to allow marooned residents to pass. 2 small pipes (1ft) were included to allow water to pass through. However the dynamics of the water in this area were not fully understood and it effectively 'raised the lip of the basin', leading to worse flooding and also not solving the problem – there was still 3-4 ft of water flowing across the road at Eugene Nolan's house in Nov 2009.



Properly sized and placed culverts would allow water to flow eliminating buildup of hazardous flooding levels. One beside Eugene Nolan's house in Corker and an upgrade to existing culverts at Raheen. These culverts would be needed **in addition to** culverts on the new N18. As this route will be modified during new N18 development, it could make sense to include these modifications.

Conclusion

This document has outlined the main draining characteristics of the South Galway Slieve Aughty region focusing on flooding dynamics around the Kiltartan, Gort area. In particular it focuses on the significant and multiple flows of water in to the Kiltartan/Corker/Raheen Area and how both 1995 and 2009 winter flooding causes substantial overflows from Kiltartan through Corker and Raheen into Coole Lake. This flooding caused severe distress for the locals many of whom were isolated and had flooding come up to floor level of their houses.

The concerns have been raised in regard to building of the new N17 to ensure that this overflow can be handled with properly sized and placed flood culverts. An addition proposal has been presented which would alleviate flooding in the Kiltartan area through the placement of culverts on the existing roads through Kiltartan/Raheen.

As the construction of the new N17 progresses, it may be more feasible to put proper culverts in place on new and existing roads to alleviate flooding concerns for the future in Kiltartan.