Option 1 - Dredging

Option Overview
Dredging is the process of removing material from the bed and banks of a river channel to increase its flow capacity. The flood risk management benefits of removing the material have been considered and the depth and extent of dredging required to suitably protect the village from flooding have been calculated for the Water of Ruchill, River Earn and River Lednock.

Assessment & Results
Dredging the river bed by a depth of one metre for a total of approximately 2.5km would reduce flood water levels by the following amounts in a 1 in 200 year flood:

<table>
<thead>
<tr>
<th>Watercourse</th>
<th>Average water level reduction (1 in 200 year flood)</th>
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<tbody>
<tr>
<td>Water of Ruchill</td>
<td>190mm</td>
</tr>
<tr>
<td>River Earn</td>
<td>200mm</td>
</tr>
<tr>
<td>River Lednock</td>
<td>60mm</td>
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This means that removing 1m of river bed material from the river reaches indicated in figure 7, would not prevent flooding for the 1 in 200 year event. Therefore, further measures would be required in addition to with the dredging to make it a viable option.

Option Cost and Benefits
It is estimated that an initial dredging operation for the Water of Ruchill, River Earn and River Lednock to a depth of 5 metres would cost £34.9 million. It is also estimated that interim operations would also be required to maintain river bed levels costing approximately £0.95 million every 5 years.

The dredging option has therefore been discounted as a viable Flood Risk Management Option for the Comrie and Dalginross Flood Protection Scheme on technical and environmental grounds discussed above.

Advantages
- Would eliminate the need for any defences through the village for the 1 in 200 year event.
- Dredged material could be used in other applications.

Disadvantages
- Significant depths of dredging (approximately 5 m) would be required to alleviate flooding for the 1 in 200 year flood event. It is not feasible to dredge a river channel to this depth.
- This level of dredging required would create river instability and cause river banks and structures to collapse.
- The Bridge of Ross, Dalginross and Lednock bridges would all be severely undermined by such a dredging operation and would likely need to be replaced.

- The removal of river bed and bank material to the required 5 metres would mean that all bankside and channel vegetation would be removed. This would have a negative impact on the local landscape and also on local ecology.
- The noise and disruption caused by the removal and disposal of the required volume of material would likely be unacceptable to the local community.
- Restriction on the disposal of river material and the likely volumes would make this option impracticable.
- Very significant adverse environmental impacts would result if this option was implemented.