Response to Natural England concerns.

1. Further information on the proposed sediment control measures to be employed during the construction phase. Drawing HB127276/SK111 indicates that sedimats/filtration barriers will only partially span the river – it is therefore not clear how they will prevent released sediment travelling further downstream. This is in the context where in-channel works and tracking of the vehicles/equipment across the river has the potential to promote significant release of sediment. Natural England advise that a suitable sediment management plan should be submitted in advance of any approval being issued;

- The sedimats/straw bales are to be installed immediately downstream of the working area to trap large and small sediment particles emanating from the works. It was felt that the installation of the straw bales, in particular, across the whole river width would cause the flow to be retarded to such an extent that it would back up and inundate the works causing a lot more sediment to be discharged into the watercourse. In addition the river is subject to flood and if the sediment control measures are present across the whole river width then there is the chance that they will be swept away, so contaminating the downstream area or causing the water to back up and inundate the works, resulting in the scenario described above. There is also the potential risk that the floodwater may overtop the existing flood protection and enter into the adjacent land, with disastrous consequences. By allowing a central channel without any sediment control then we are trying to mitigate the above scenarios. Finally it is our intention to:
    a) Install a silt buster type facility so that all water emanating from the dry working area is treated to remove as much of the sediment as possible. The discharge point from this facility will be immediately upstream of the straw bales/sedimats so, in the unlikely event that the treatment has not removed all sediment, the discharge water passes through a second 'treatment' before being released downstream of the works;
    b) Appoint an independent Ecological Clerk of Works (ECoW); one of whose functions is to monitor sediment control. If the ECoW feels that the sediment discharge is higher than expected and that the risk of flooding/inundation is low in comparison then they have the authority to amend/increase the sediment control measures.
- Where works are to be undertaken outside the dry area contained within the dumpy bags then rubber mats are to be laid on the steam bed with steel plates on top. Vehicles are only allowed to track across the steel plates. This should prevent vehicles from disturbing the underlying stream bed. In addition vehicles of a maximum weight of less than 3 tonnes shall only be permitted to work in this area. Again sedimats/straw bales will be positioned downstream of the works to capture any disturbed sediment. Finally the works will be monitored by the ECoW and the working method adapted, if necessary, based on their recommendations.
- Finally a sediment management plan was submitted as part of the Planning Application (see Ref 6. – Method Statement for EA consent application V4 – 11 3 15). This will be modified to include the above requirements

2. Further information on the measures to be adopted to separate the concrete slab from the gravel bed to ensure that concrete does not leach into the water table;

- Any concreting will be carried out within the dry area formed by the dumpy bags. Should a dry environment prove impossible to achieve then a pump will be installed to remove any water from the working area. As the water pumped from the site could have a higher pH value than is acceptable then it will be treated by a silt buster type facility to lower the pH to satisfactory levels before being returned to the river downstream of the works. No concreting works will be undertaken where water is present or under flood conditions. The ECoW is to monitor water treatment and pollution control.

3. Provision of a detailed scheme of post implementation monitoring to ensure that passage for all fish species (including lamprey, which are particularly vulnerable to physical barriers to migration) is maintained once works have been completed. This is in the context where the Environment Agency have advised that, over time, there is a high likelihood of a scour hole developing on the downstream side of the structure. The monitoring must be linked to an appropriate scheme for remedial action if it is shown that the fish passage is compromised. Monitoring must be for the lifetime of the structure.

- It is understood a condition of gaining Environmental Agency consent that Northumberland County Council has to agree to undertake regular monitoring/maintenance of the area affected by the works in perpetuity. It is proposed that monitoring will be annual topographical surveys that are also carried out after every major flood event to record changes in the thalweg and changes in sediment deposition and scour. Futhermore, at the same time as the topographical survey, the make-up the sediment will be surveyed by a Wolman Pebble count or similar means. It is anticipated that due to the highly dynamic geomorphic nature of the river, adaptive management of the proposals may be required over time, and the monitoring information and knowledge of the sediment make-up will help inform the decision process.

  Northumberland County Council will be liable for maintaining the constructed apron and also the soft engineering works upstream of the bridge. Fish passage is of prime concern for the Council and to this end a statement has been made in support of the planning application. As the Highway Authority, and a responsible body, the Council will undertake any works to repair any scour holes immediately downstream of the steel piles in a timely manner (dependent upon gaining approvals from any appropriate bodies/landowners to undertake the works). This declaration has already been communicated to the River Tweed Commission – see enclosed document. However this declaration is dependent upon gaining Environment Agency approval for the scheme.

4. Upon receipt of the additional information, your Authority will need to be [sic] assess whether there would be an adverse effect on the integrity of the SAC (either alone or in-combination with other plans or projects). If there is an adverse effect (or adverse effect that cannot be ruled out) then consideration will need to be given to alternative solutions.

- Northumberland County Council commissioned an independent consultant to undertake a series of sediment management scenarios; these ranged from do nothing to various sediment removal options. The various options were tested against a 1 in 200 year flood event. The report recommended the following solution:

  The result of the modelling component of this study indicated that the best strategy for reducing scour risk around the Westnewton Bridge is to reduce the height of the sediment accumulations around the bridge. This scenario will significantly reduce the flood risk and there will be minimal damage to habitats as it is confined to a relatively short section of the channel.

In addition the sediment management report recommended that

> It is therefore recommended that, because of the special qualities of the College Burn and the River Glen, the above sediment management strategy is combined with a strategy for implementing soft engineering options. This combination of actions will reduce the risk of flooding, reduce the risk of large mobilisation of the sediments, reduce excessive bank erosion rates and to further enhance the range of habitats.

> By carrying out the soft engineering works upstream of the bridge there will be added insurance to the sediment management works by reducing the flood peaks before they reach the bridge, even in the larges [sic] flood events, and improving the bankside and riparian habitats with protection on the downstream ecology. This strategy will enable the College Burn to maintain its characteristic of a mobile gravel bed river but the flood risk will be reduced, habitats will not be compromised and downstream ecology will not be impacted.

This solution was taken forward to detailed design. Once the detailed design was completed then the Council commissioned a second consultant to carry out a review of the proposed solution with respect to the Water Framework Directive (the report was submitted as part of the Planning Application Ref 3 – Westnewton Bridge Modelling and Design _WFD compliance assessment).

The conclusions from the report indicate that:

> Following the assessment presented in this document it was concluded that no detrimental impacts to quality elements or the capability to achieve good ecological potential are to be expected from proposed works. No further assessment is required.
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> The assessment presented in this report demonstrates that the proposed works are compliant with the WFD and contribute towards the delivery of water body objectives in the College Burn (GB102021072940). The nearest downstream water body (River Glen from College Burn to River Till -GB102021072950) has been assessed as receiving no detrimental impacts from upstream works with the potential to compromise the delivery of its WFD objectives. No further assessment of impacts from this scheme is, therefore, deemed necessary.