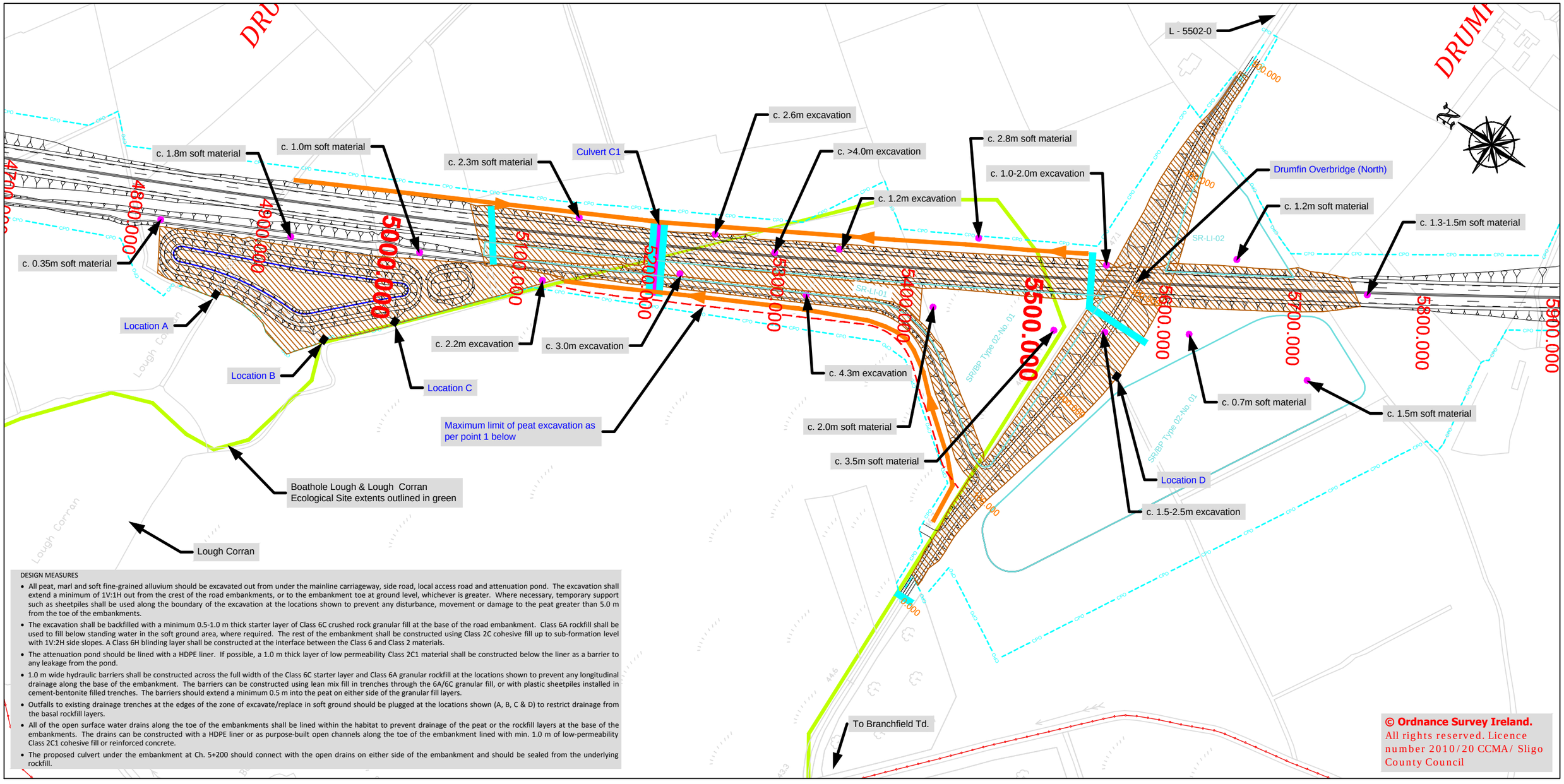
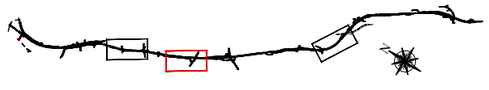


DESIGN MEASURES

- All peat, marl and soft fine-grained alluvium should be excavated out from under the mainline carriageway, side road, local access road and attenuation pond. The excavation shall extend a minimum of 1V:1H out from the crest of the road embankments, or to the embankment toe at ground level, whichever is greater. Where necessary, temporary support such as sheetpiles shall be used along the boundary of the excavation at the locations shown to prevent any disturbance, movement or damage to the peat greater than 5.0 m from the toe of the embankments.
- The excavation shall be backfilled with a minimum 0.5-1.0 m thick starter layer of Class 6C crushed rock granular fill at the base of the road embankment. Class 6A rockfill shall be used to fill below standing water in the soft ground area, where required. The rest of the embankment shall be constructed using Class 2C cohesive fill up to sub-formation level with 1V:2H side slopes. A Class 6H blinding layer shall be constructed at the interface between the Class 6 and Class 2 materials.
- The attenuation pond should be lined with a HDPE liner. If possible, a 1.0 m thick layer of low permeability Class 2C1 material shall be constructed below the liner as a barrier to any leakage from the pond.
- 1.0 m wide hydraulic barriers shall be constructed across the full width of the Class 6C starter layer and Class 6A granular rockfill at the locations shown to prevent any longitudinal drainage along the base of the embankment. The barriers can be constructed using lean mix fill in trenches through the 6A/6C granular fill, or with plastic sheetpiles installed in cement-bentonite filled trenches. The barriers should extend a minimum 0.5 m into the peat on either side of the granular fill layers.
- Outfalls to existing drainage trenches at the edges of the zone of excavate/replace in soft ground should be plugged at the locations shown (A, B, C & D) to restrict drainage from the basal rockfill layers.
- All of the open surface water drains along the toe of the embankments shall be lined within the habitat to prevent drainage of the peat or the rockfill layers at the base of the embankments. The drains can be constructed with a HDPE liner or as purpose-built open channels along the toe of the embankment lined with min. 1.0 m of low-permeability Class 2C1 cohesive fill or reinforced concrete.
- The proposed culvert under the embankment at Ch. 5+200 should connect with the open drains on either side of the embankment and should be sealed from the underlying rockfill.

Legend

- Indicative outline of excavate/replace;
- Drainage layer at base of embankment;
- Temporary support such as Sheet piles at 2m off embankment, also indicative of LMA;
- Spoil Repository/Borrow Pit;
- Existing surface water flow;
- Proposed Open Drain;
- Proposed Culvert;
- Hydraulic Barrier;
- Blocked Drainage Outlet;
- Townland Boundary;
- CPO Boundary;
- Land Made Available (LMA);
- LACKAGH Townland Names;
- 8,300.000 Design Chainage;
- Constructed Wetland;



NOTE:
All proposed road levels indicated are based on a Design prepared for Phase 3 and 4 of the NRA PMG and may be revised at the Detailed Design Stage.
Modifications may be made to avail of oppurtunities to improve the design in the light of experience on the ground or other innovations provided this has no significant adverse environmental effects.

An Roinn Iompair Turasóireachta agus Spóirt
Department of Transport, Tourism and Sport

NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

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Date	By	Revision

Project N4 Collooney to Castlebaldwin *Proposed Road Development*

Title Specific Design Mitigation: Boathole Lough & Lough Corran

Scales (@A3)	*Date*	*Job No.*	*Figure No.:*
1:3,000	December 2013	SO/01/150	Fig.: 4.8.2
Design AGL Ltd.	*Design Team Review* FM	*Approved* AS	