Post-Grampian top-to-WNW Caledonian ductile shear in the Grampian Highlands?

Leslie, A.G. and Campbell, S.D.G.
British Geological Survey, Murchison House, Edinburgh, EH9 3LA.

The Glendoe Hydro Scheme involves construction of an 4.6 m diameter bored tunnel, extending 8.6 km SSE-ward from Fort Augustus and the Great Glen, through mainly Grampian Group Dalradian rocks deformed in the Grampian orogeny. The great prize though is access to an 8 km long borehole driven perpendicular to regional strike through the footwall and hanging wall of the Eilrig Shear Zone. The Eilrig Shear Zone is unique in the geology of the Grampian Highland 'terrane' and is revealed as 1.5 km thick in the NW-end of the continuous tunnel section. The shear zone is a low temperature ductile (quartz-muscovite mylonite) to brittle-ductile structure. No similar structure is recorded anywhere else in the Grampian terrane, late stage Grampian structures in the southern Highlands are represented by ductile folds and crenulation fabrics. The Grampian Group lithostratigraphical succession (Corrieyairack Subgroup) in the hanging wall of this structure has experienced a typical NW-vergent Ordovician (Grampian) orogenic deformation sequence and accompanying garnet-amphibolite facies metamorphism. In stark contrast, the footwall succession (Glen Buck Pebbly Psammite Formation) comprises fluviatile to shallow marine? deposits of uncertain stratigraphical affinity and has not experienced the orogenic effects pervasive in the hanging wall. If Grampian (Ordovician) deformation is absent in the footwall of the Eilrig Shear zone then that structure represents the Grampian Orogenic Front.

The net translation on this low temperature/high level shear zone must surely be considerable (100 km+?). Is the displacement late Grampian (Ordovician) in age or Scandian (Silurian)? If the latter, what might be the relationship to the Moine Thrust Zone in the Northwest Highlands terrane across the GGF? Is the footwall succession to the ESZ comparable in any way to the 'foreland' succession in the Northwest Highlands?