

A 70 m STRANDLINE IN THE VALE OF PICKERING - REAL OR IMAGINED?

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In a recent note, Fairburn (2023) has challenged the view of Eddey *et al* (2022) that evidence for a 70 m strandline in the Vale of Pickering is 'weak and contested'. He seeks to show that such a strandline is not only demonstrable but is the product of a 40 m lake elevated by post-MIS 6 glacio-isostatic rebound. His views as set out in Fairburn (2023) and Fairburn (2022) are themselves contestable on several grounds, such as the nature of the strandline evidence, the age of a possible pre-Devensian glaciation, and the rebound of 30 m.

The writer confesses to proposing two-stage Devensian glaciation along the east coast and the former occurrence of two separate lacustrine phases (Straw, 1979) and, over 40 years later, still holds that view regarding the two advances (Straw, 2008, 2016, 2019). He had appreciated that a 70 m lake as suggested by early workers rested solely on the grounds of approximate accordance of heights on the Hutton Buscel terrace in the east and on the Howardian Hills in the west (Kendall, 1902). By 2019 however, he had concluded that a 70 m lake could not have existed during MIS 2 because appropriate situations at the west end of the Vale did not exist, a view confirmed by Eddey *et al* (2022).

Eddey *et al* (2017, 2022) regard all the glacial features at the east end as within MIS 2, but it has been argued by the writer (Straw, 2019) that MIS 2 deposits lie east of and do not include the Hutton Buscel/Wykeham Moraine feature. That is reiterated here, but it must also be remembered that this feature relates closely to Forge valley and other channels of the Devensian upper Derwent meltwater system and should not be treated as an individual feature. Fairburn and Bateman (2021) and Fairburn (2019) interpret the Hutton Buscel terrace as a coalesced group of alluvial fans constructed by streams flowing south off the Jurassic dip slope into a 70 m lake. Undoubtedly the valleys of these streams yielded some sediment

to the terrace, but the bulk of its material came from and through Forge Valley leading to its formation as a kame terrace (Kendall, 1902; Straw, 1979, 2019; Eddey *et al*, 2017; Eddey *et al*, 2022). Incidentally, Forge Valley was used a second time, in MIS 2, when the Ayton/Seamer gravels were deposited east of the terrace mound (Straw, 1979, 2019).

Fairburn also claims the Sherburn Sands along the south side of the vale as evidence for a 70 m lake, despite Bateman and Evans' (2017) detailed description of the deposits at East Heslerton. Bateman and Evans demonstrate the Sands' origin as a conjoint group of subaerial fans incorporating some aeolian material (overlying low-level lacustrine deposits) and state explicitly that they are not lacustrine. Similar gully-fed fans occur along the Chalk escarpment in north Lincolnshire (Straw, 1963). Yet Fairburn (2023) claims them to be 70 m strandline features, disputing also Eddey *et al* (2022)'s mapping of the scarp face. Linking the postulated Hutton Buscel fans with the scarp foot fans is speculative, as is the claim that they represent the 70 m shoreline. It is possible that the concept of a 70 m lake is influencing interpretation of features approximating to that height, and it is unwise to use the boundaries between superficials and bedrocks as lake indicators.

Fairburn's claim (2022, 2023) that the Hutton Buscel fans relate to a MIS 6 lake is also questionable, because it rests on a single IRSL age estimate of 156 +/- 12 ka from a sand lens within poorly-sorted, rounded gravels exposed in a small section in a cutting for a farm track, and may not have been ideal for analysis. In ascribing a 70 m lake to MIS 6, Fairburn fails to discuss the relevance of probable MIS 8 glacial deposits within the Vale (Powell, 2017; Powell *et al*, 2016) and omits any discussion of a possible MIS 4 age for the Hutton Buscel terrace as mooted by Straw in a long discussion of the Vale lakes (Straw, 2019, pp. 214-216), which omission also occurred in Fairburn

and Bateman (2021) and Eddey *et al.*, (2022).

Fairburn compounds the issue by claiming that the 70 m lake strandline was formed at 40 m OD in MIS 6 time, and subsequently uplifted by 30 m by glacio-isostasy, and he refers to Vale of York strandlines to argue the point, claiming synchronous flooding. But Lake Pickering and Lake Humber were separate entities, the link of the Kirkham gorge between the two of necessity retaining a gradient, to allow erosion of the gorge. The attempt to use Vale of York shorelines to establish the age of those in the Vale of Pickering is not demonstrated clearly and remains speculative.

Fairburn (2023) regards a 70 m strandline as ‘firmly identified’, but this is not merited on the evidence presented, and is but one of several categorical statements that are made but not substantiated. The Hutton Buscel terrace is the oldest glacial feature in the eastern Vale, but it is also clear that it is an integral part of the Devensian meltwater system along the east coast, which rules out formation during either MIS 8 or MIS 6. Standing above and beyond MIS 2 glacial deposits, it is possible to suggest a MIS 4 age without too much speculation (Straw, 2019). Overall, Fairburn’s stance regarding a 70 m lake is misleading, and Eddey *et al.*’s comment ‘weak and contested’ would seem more than justified.

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