

Rail Freight in the East:

Cost and Performance Analysis: Maps and Plots only

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Abstract

We compare the costs and performance for rail container freight travelling from Felixstowe to Nuneaton using three possible routes: (1) the existing route via Ely; (2) the proposed route from Cambridge to Oxford of East West Rail Co; (3) an alternative Freight21 study route via Cambridge and Bletchley. We find that (3) would cost £1.45bn less to build and would emit 0.5Mt of GHG less in construction than (2); and that (3) would save about 75% of the GHG emissions and at least 10% of the journey time for the current route (1). We also find that (3) outperforms (2) for passenger services between Oxford and Cambridge.

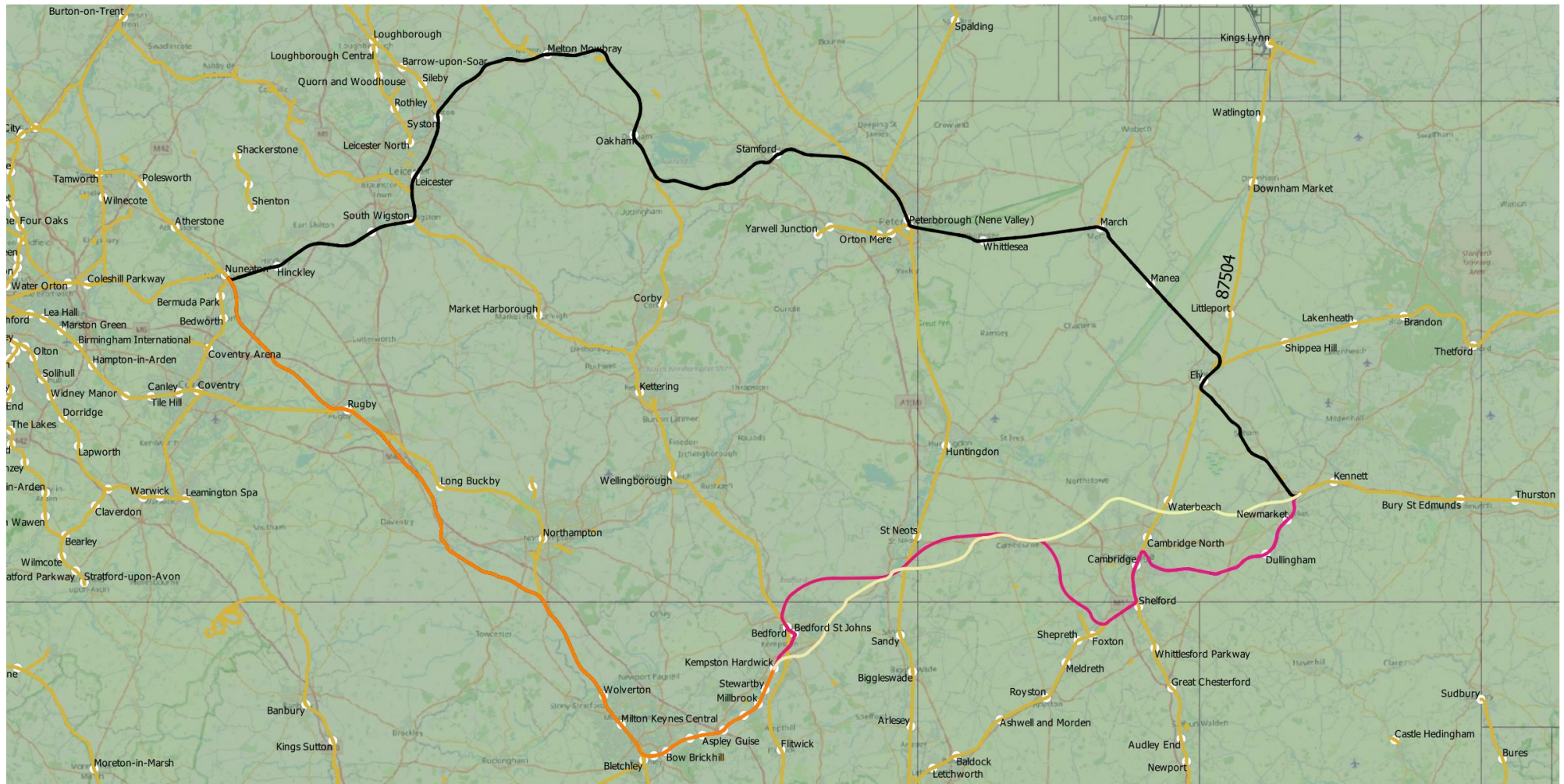


Figure 1: Three routes, via Ely in black, EWR in red, F21 in yellow

Modified existing route: Felixstowe to Nuneaton (264.51 km)
Weight 1384 tons, power = 2.50 MW, time = 169.03 minutes, work = 14.64 GJ, (13.63GJ), GHG = 4.49t, av. speed = 93.89 km/h

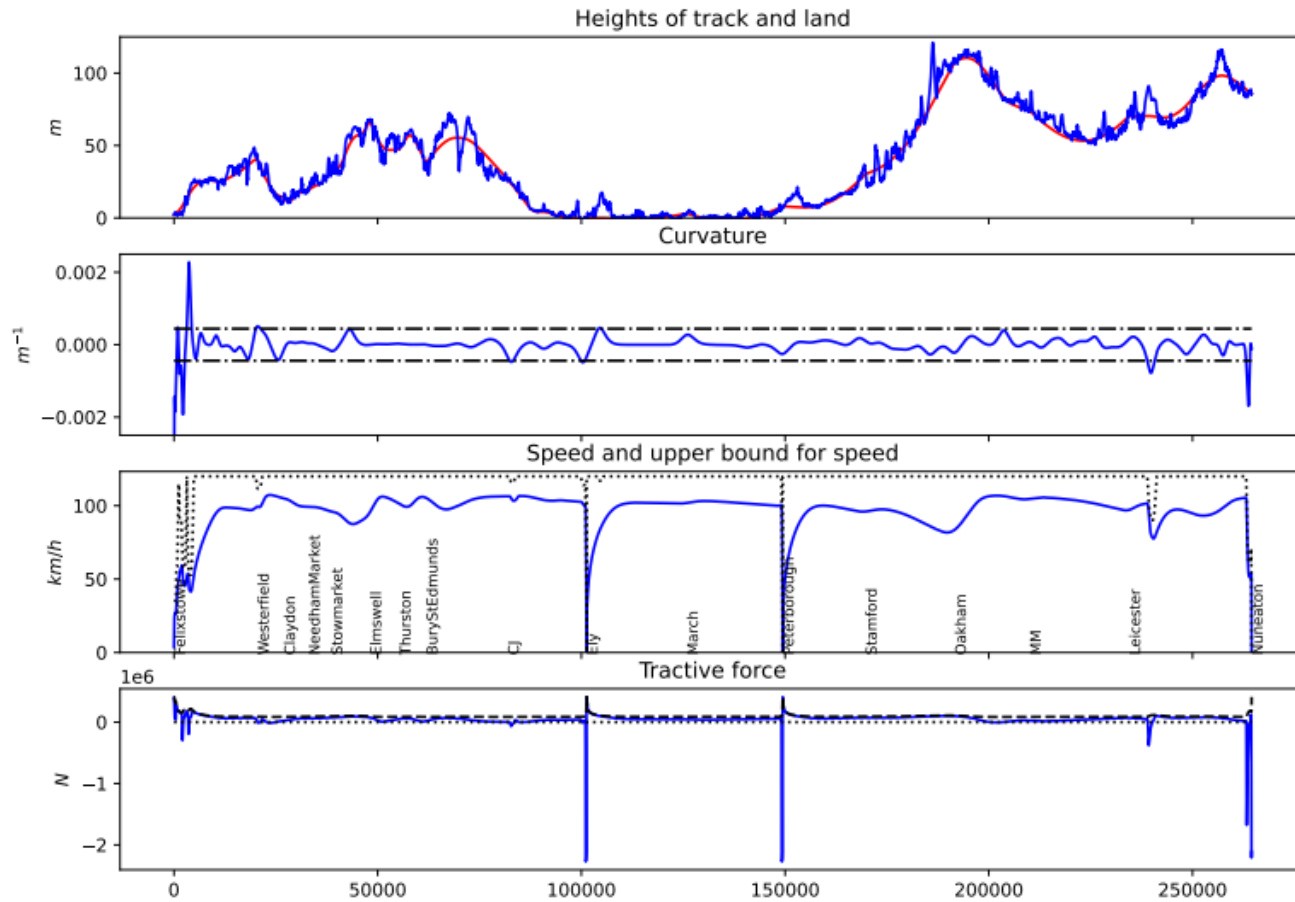


Figure 2: Ely route, Class 66, three stops, 66 TEU

Modified existing route: Felixstowe to Nuneaton (264.51 km)
Weight 1338 tons, power = 3.73 MW, time = 160.97 minutes, work = 15.65 GJ, (14.51GJ), GHG = 1.12t, av. speed = 98.59 km/h

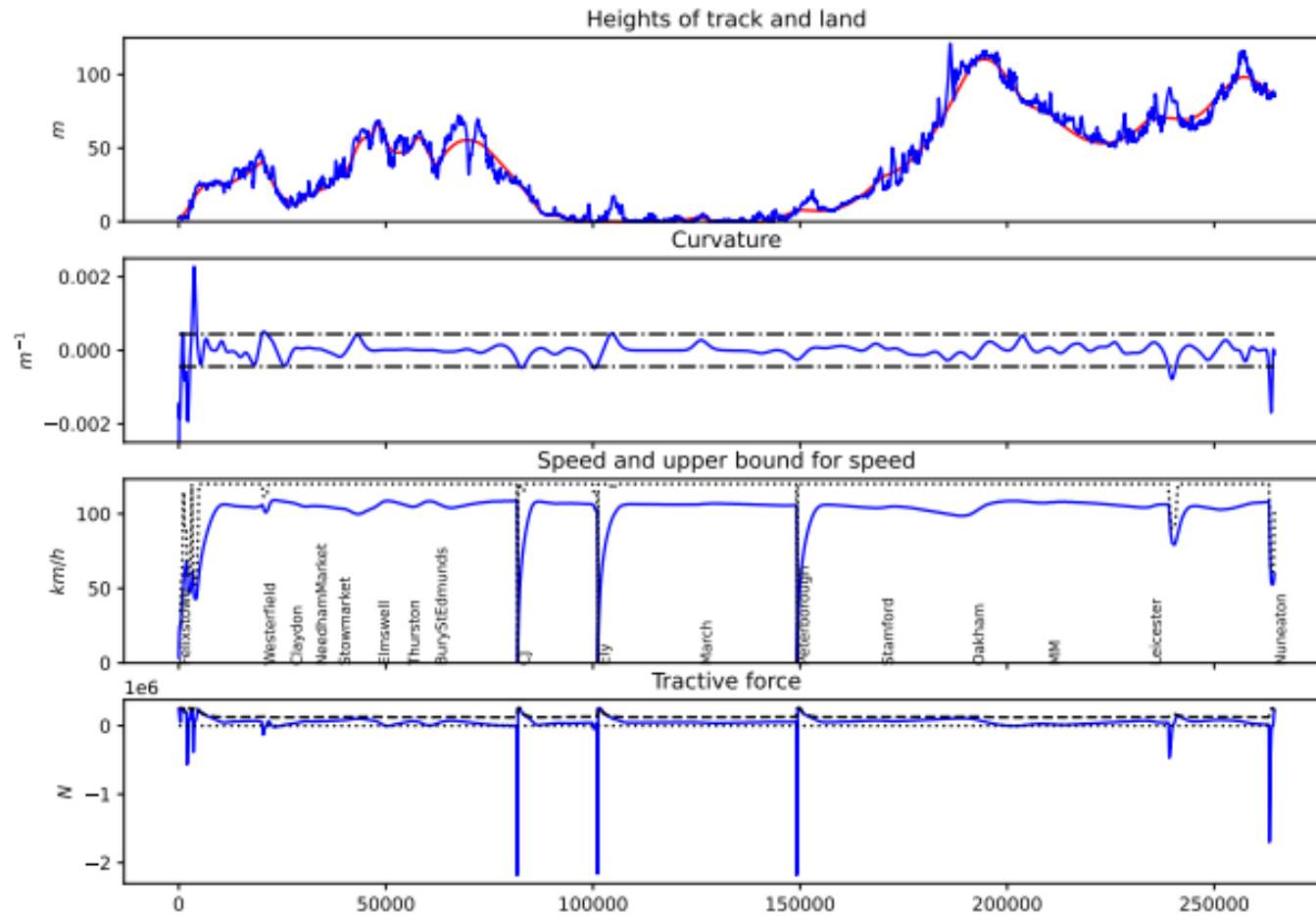


Figure 3: Ely route, Class 90, three stops, 66 TEU

EWR: Felixstowe to Nuneaton (275.29 km)
Weight 1338 tons, power = 3.73 MW, time = 167.84 minutes, work = 16.11 GJ, (14.54GJ), GHG = 1.15t, av. speed = 98.41 km/h

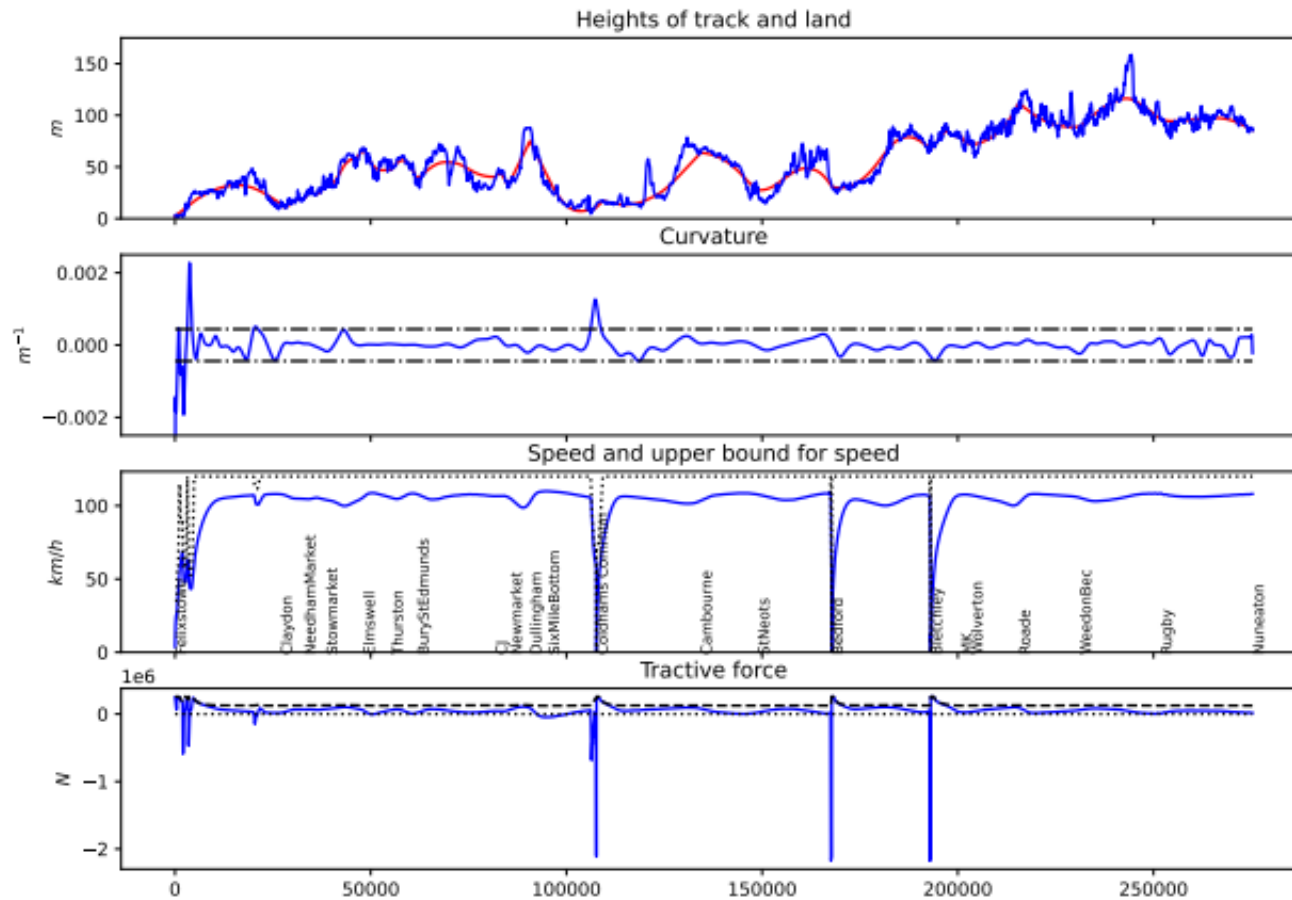


Figure 4: EWR route, Class 90, three stops, 66 TEU

Freight21: Felixstowe to Nuneaton (255.20 km)
 Weight 1338 tons, power = 3.73 MW, time = 151.60 minutes, work = 14.07 GJ, (12.42GJ), GHG = 1.01t, av. speed = 101.00 km/h

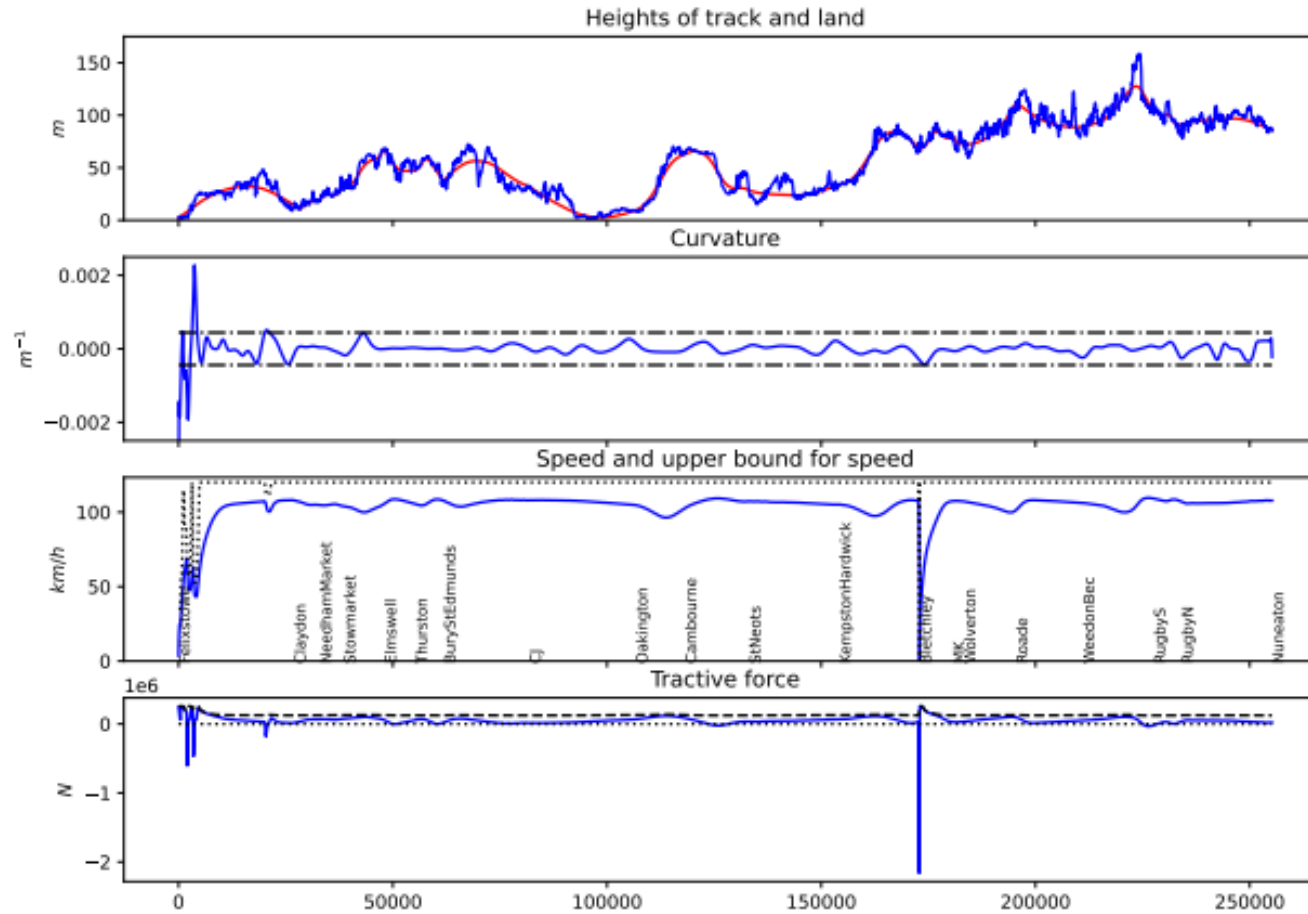


Figure 5: Freight21 route, Class 90, 1 stop, 66 TEU

EW: Oxford to HillsRoad (135.90 km)
 Weight 504 tons, power = 5.04 MW, time = 57.73 minutes, work = 7.39 GJ, (7.32GJ), GHG = 0.53t, av. speed = 141.24 km/h

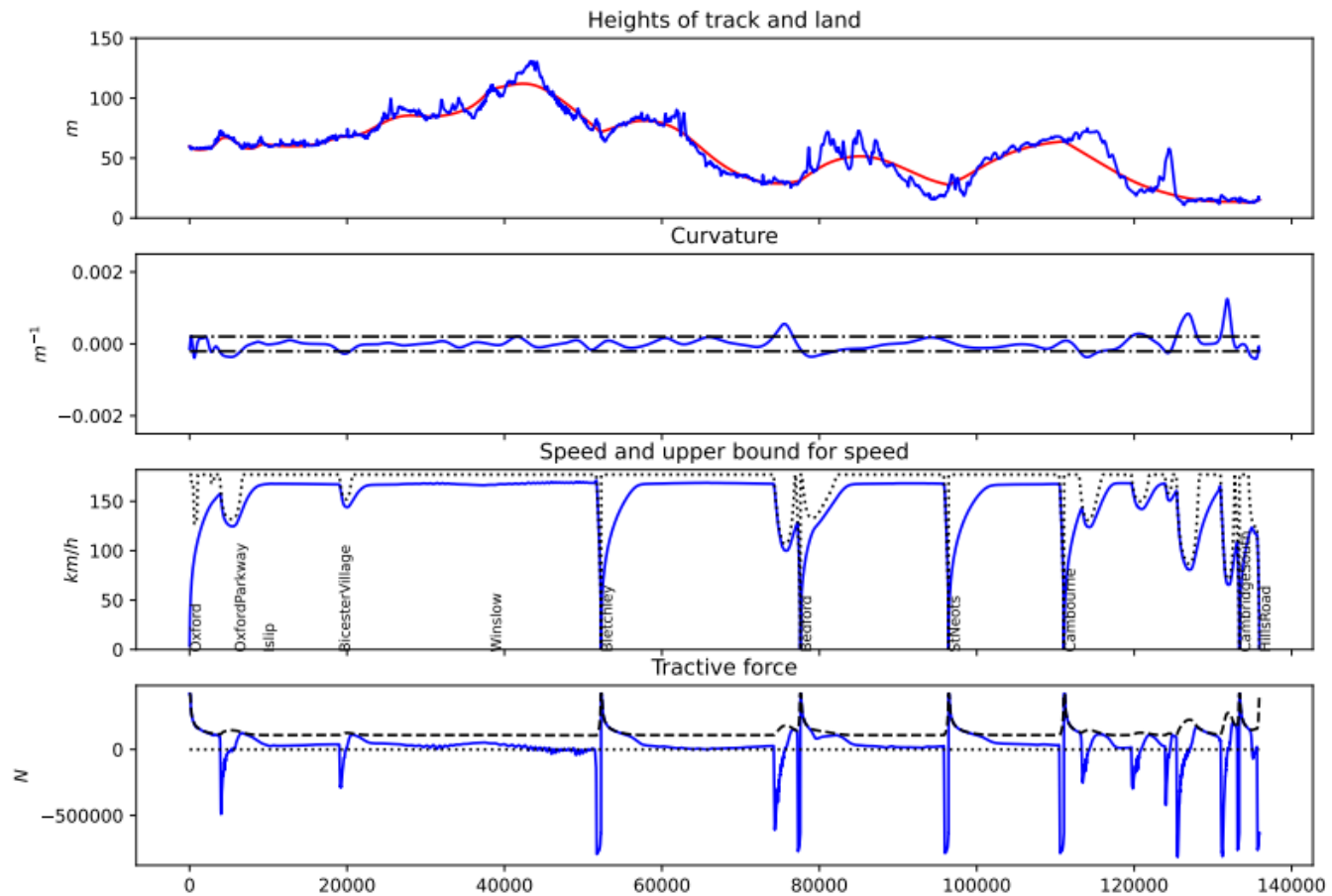


Figure 6: Passenger Train Oxford to Cambridge stopping, EWR route.

Freight21: Oxford to Cambridge (133.42 km)
 Weight 504 tons, power = 5.04 MW, time = 56.10 minutes, work = 7.51 GJ, (7.37GJ), GHG = 0.54t, av. speed = 142.68 km/h

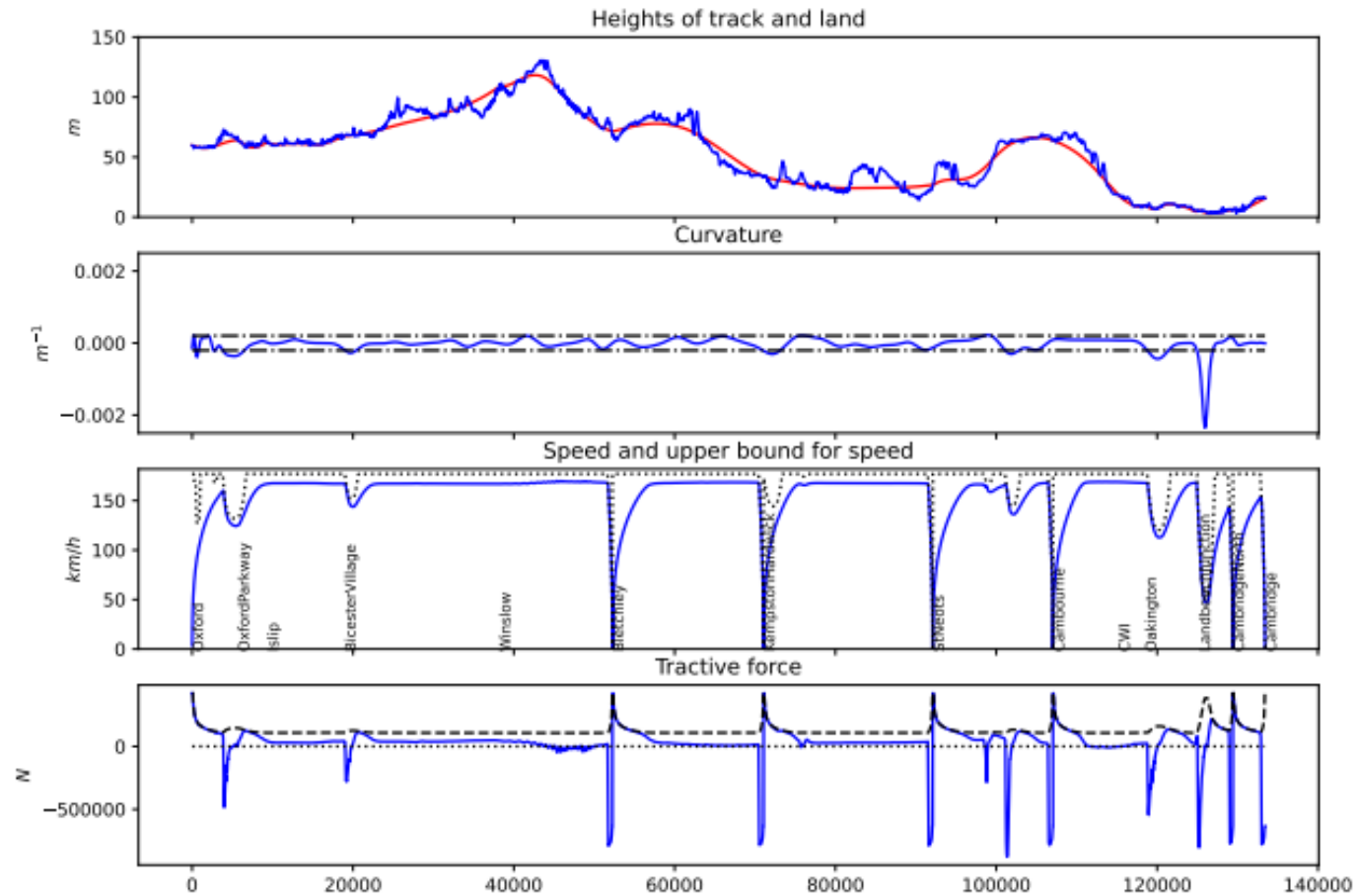


Figure 7: Passenger Train Oxford to Cambridge stopping, Freight21 route

EW: Oxford to HillsRoad (135.90 km)
Weight 504 tons, power = 5.04 MW, time = 53.37 minutes, work = 5.40 GJ, (6.11GJ), GHG = 0.39t, av. speed = 152.78 km/h

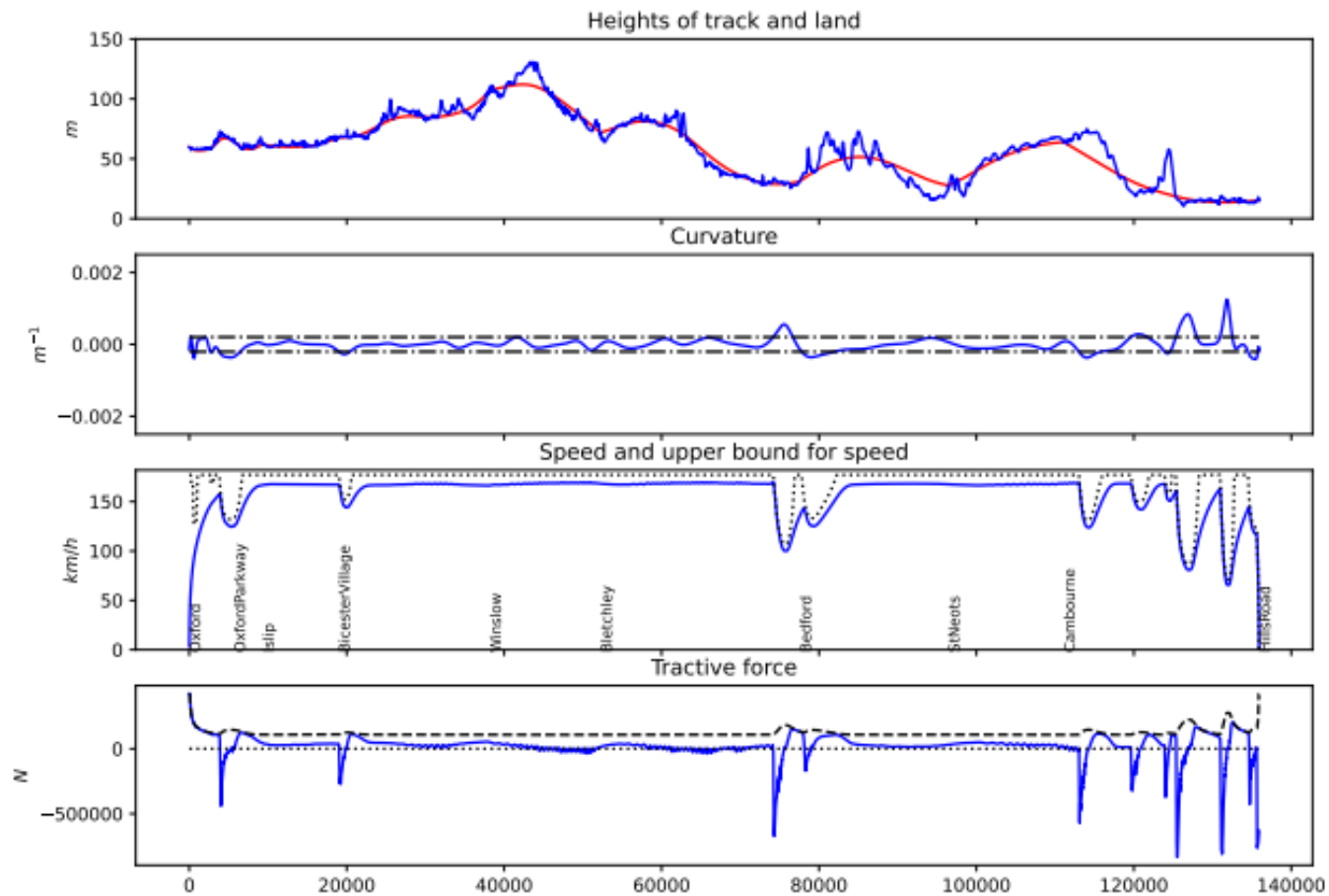


Figure 8: Passenger Train Oxford to Cambridge non-stop, EWR route

Freight21: Oxford to Cambridge (133.42 km)
 Weight 504 tons, power = 5.04 MW, time = 51.42 minutes, work = 5.23 GJ, (5.56GJ), GHG = 0.37t, av. speed = 155.70 km/h

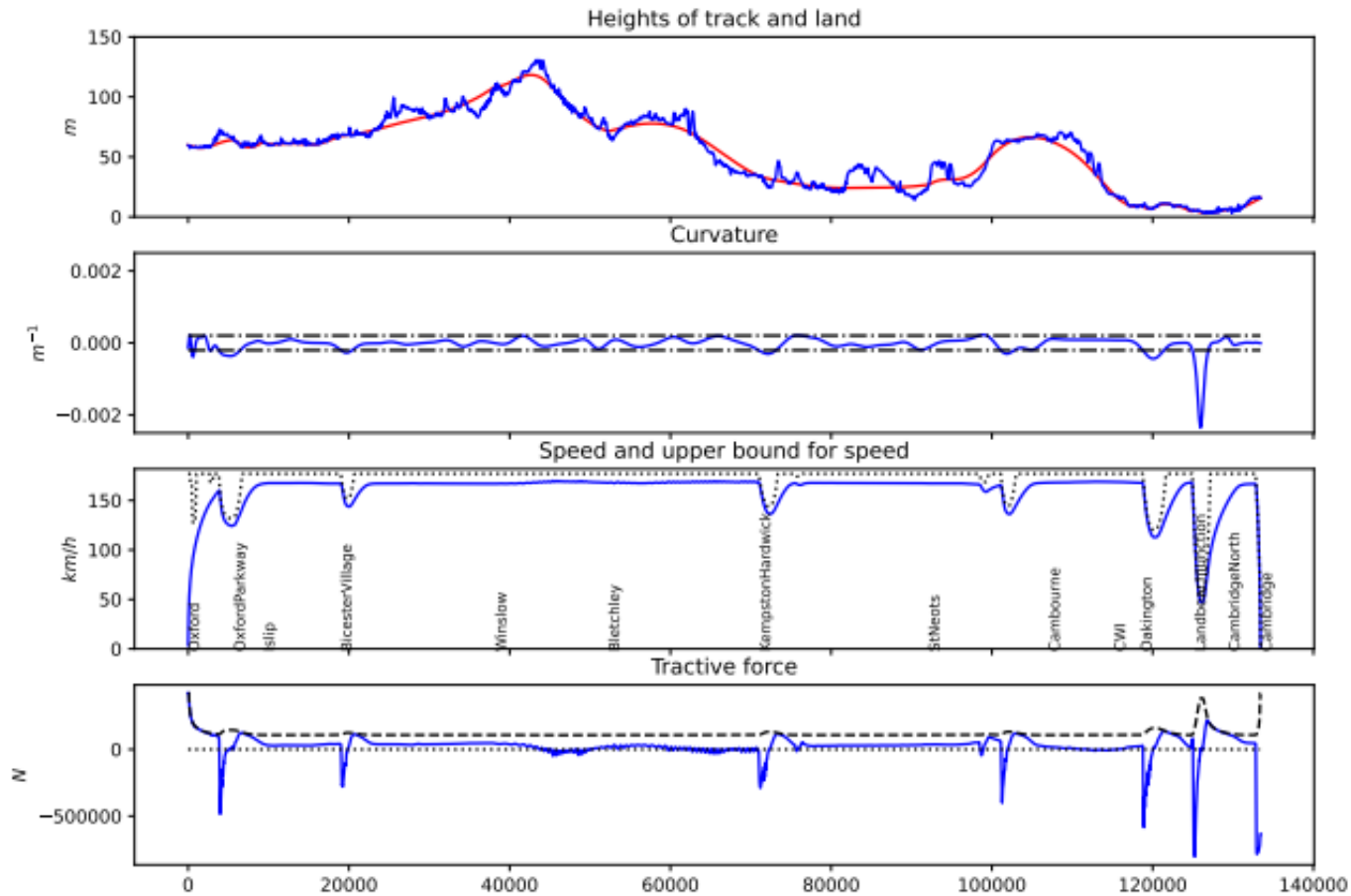


Figure 9: Passenger Train Oxford to Cambridge non-stop, Freight21 route