Hill Green, 2021 additional agricultural building - rainwater calculation

Water collected from roof

Based on Building Regulations Section H3
Diagram 1 puts Drigg in 0.016 litre per second per square metre.

Roof pitch 15 degrees, so Table 1 assumes plan area. However, Hunter Plastics calculator recommends using roof width + peak height above eaves ÷ 2, hence for one side of roof area is 34' x 140', and area is 4,760 square foot, or 442.45 square metre. Rainwater per side will be 442.45 x 0.016 = 7.08 litres per second. For **whole roof, rainwater will be 14.16 litres per second**.
(Reference https://www.hunterplastics.co.uk/media/1961/rainwater-selectionpdf.pdf)

Gutters to be Hunter Stormflow 160 mm or equivalent, which can cope with 12.5 litres/second with downpipe at the centre or 6.6 L/sec with downpipe at one end. So, centre downpipes, or downpipes at both ends required.

Water carried away to River Irt via drain into local stream on Drigg Holme

Fall in pipe, based on 15 m from 1:10,000 Ordnance Survey map contours 25 m to 10 m, over a distance of 300 metres from Farm to Issue Point on map, hence a gradient of 1 in 20. From Section H3 Diagram 3, the flow rate is:-

Drain 150 mm diameter, 40 litres per second

Other buildings roof water disposed of via this drain, are marked 1, 2 and 3 on the Block Plan

Building 1. 17.5 m x 27.5 m. Basic plan area 481.25 sq m. Factored plans area 609.95 sq m.
Rainfall collected 609.95 sq m x 0.016 litre per second per square metre = 9.76 litre per second

Building 2. 12.0 m x 27.5 m. Basic plan area 330 sq m. Factored plans area 418.42 sq m.
Rainfall collected 418.42 sq m x 0.016 litre per second per square metre = 6.695 litre per second

Building 3. 12.0 m x 27.5 m. Basic plan area 330 sq m. Factored plans area 418.42 sq m.
Rainfall collected 418.42 sq m x 0.016 litre per second per square metre = 6.695 litre per second

Total from new building, plus buildings 1, 2 and 3
14.16 + 9.76 + 6.695 + 6.695 = 37.31 litres per second

Hence the 150 mm drain with a capacity of 40 litres per second is sufficient.