Close to Triangular – The nine-point challenge

Here are the coordinates of nine points. It is possible to draw a triangle so that the shortest distance from each point to the triangle is at most one unit.

(0, 0)
(8, 2)
(7, 8)
(170, 180)
(340, 360)
(2001, 1000)
(1500, 750)
(3000, 2000)
(4002, 2000)

Can you find a suitable triangle?

Is there more than one possibility?

Record how you arrived at your solution, ready to present to the rest of the class.