Case: Path planning in complex terrain



Problem

You want to fly from the takeoff location at St. Olavs Hospital to the church at Byneset, as indicated on the map above. Find the best path that can be flown safely. Extra credit will be given for minimizing battery usage.

You are free to use any tool or method, but you are encouraged to use programming or a combination of programming and hand calculations. Elevation data for the area pictured above, as well as a python script for reading this data, is provided together with this document.

Specifications

Drone characteristics:

- Battery used per km: 3%. Assume that you start with 100%.
- Maximum climb/descent angle possible on flight path: 8 degrees.

Regulatory constraints:

Do not fly more than 120m above ground level.

Other considerations:

• At any point during the flight, something might go wrong and the vehicle will start circling around the current position with a radius of 100m.