



# RMP INTERNSHIP : 3D Laser Scanning as Mapping Input for Sound Models

Bringing together two known technologies from different industry sectors to form an enhanced acoustic modelling capability

## Objective

RMP was commissioned to review the effectiveness and design of a proposed noise barrier to the front façade of an existing dwelling in Penicuik. Available topographical data for the site provided a limited degree of accuracy in terms of ground topography, existing building, and barrier heights. The project team proposed to undertake laser scanning to improve the noise modelling of the site. This would form the basis of an internship project for one ENU student, Bradley.


## Methodology

3D laser scanning technology was used to take a series of distance measurements with a rotating survey station (picture above). The measurements, when repeated around a site, were linked together via reference points, and used as mapping input on different modelling software. Bradley's project combined mapping input from laser scanning and acoustic input from in-situ measurements with a sound level meter.

## Output

As both technologies had never been previously combined, the project went through multiple cycles of trial and error. In the end, Bradley's project output resulted in:

- Noise map outputs including two vertical noise maps (sections) that were included in RMP's technical report for the client.
- An internal guide that clarifies:
  - Loading and refinement of point cloud in Realworks, including surfacing of contours.
  - Transfer to Sketchup, including separate outputting to AutoCAD of contours.
  - Sketchup to CadnaA, including assignation of formatted CadnaA materials.



### Bradley McDonald

Currently working towards his Bachelor of Science (Hons) in Civil Engineering from Edinburgh Napier University, Bradley joined RMP for a placement in partnership with beX (Built Environment Exchange) and HCI Skills Gateway. In addition to learning the ropes of acoustic consultancy, Bradley worked on a special case study on topographical surveying with sound modelling software with the support of RMP consultants Russell Macdonald and Scott Tunnah, and from Dr Andrew Livingstone (SCEBE).

### The Project at a Glance

- Offered funded employment for an ENU student with industry and project management experience.
- Provided consultancy and commercial experience for the University's students.
- Promoted wider University participation between beX (Built Environment Exchange), SCEBE, and RMP, and HCI Skills Gateway.
- Provided a model for future internships and building sustainable career opportunities for Edinburgh Napier students.