River Basin LIDAR - Belfast City- Notes - June 2019

River Basin LIDAR

DfI Rivers (formerly the Rivers Agency) acquired LIDAR over a ten year period to aid studies on flooding. To date approximately 17% of the land area of Northern Ireland is covered by LIDAR published as Open Data by OSNI and the Department for Infrastructure.

LIDAR

LIDAR (**LI**ght **D**etection **A**nd **R**anging) is a system which uses lasers to measure the distance between (in this case) an aircraft and the ground. The resultant cloud of distances is processed to produce a regular grid of cells (typically 1m x1m), each with a mean sea level elevation at the centre. Further processing removes, if required, vegetation cover, vehicles and buildings to produce a grid of heights which represent 'terrain'. This is 'stripped' LIDAR which is known as a Digital Terrain Model (DTM). When the data is 'unstripped', a Digital Surface Model (DSM) is created which includes the tops of vegetation cover, vehicles and buildings.

Belfast City LIDAR

The LIDAR covering Belfast City as published is owned by Cyient Europe Ltd who have kindly given permission for the Department for Infrastructure to publish the data on the portal 'OpendataNI'. The data was acquired (flown) on 18th March 2006.

Attribution Statement

The data is provided "as is" under the conditions of the Open Government Licence (http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/).

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Department for Infrastructure (Rivers),
49 Tullywiggan Road,
Loughry,
Cookstown, County Tyrone,
BT80 8SG.
Riversgis.Manager@infrastructure-ni.gov.uk

The copyright owner is:

Cyient Europe Ltd,
The Space Holborn,
235, High Holborn,
London,
WC1V 7LE.
UK.
https://www.cyient.com

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LIDAR Currency

Data covering Belfast was acquired on 18th March 2006. **There are no plans to update the data.**

LIDAR Elevation Accuracy

The elevation accuracy quoted by the industry is +-0.15m RMSE (Root mean square error). DTM accuracy is reduced in areas with tree cover and steep terrain. These figures provide a general guide. They do not define or represent the accuracy of the data provided.

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LIDAR coordinate system
Position is expressed in Irish Grid coordinates. Elevations are w.r.t. Mean Sea Level Belfast.

LIDAR data format
The data (DSM & DTM) is provided in **ESRI ASCII raster** file format, cell size of 0.5m. Example as follows.

ncols   1000   *(number of columns)*
nrows   1000   *(number of rows)*
xllcorner   282000   *(eastings in metres)*
yllcorner   398000   *(northings in metres)*
cellsize   0.5   *(in metres)*
NODATA_value -9999   *(the value in the file when there is no data)*
58.21 58.22 58.25 58.25 58.23 58.22 58.26 58.22 58.23 58.22 58.22 58.2 58.21 58.24 58.23 58.19
58.16 58.17 58.16 58.16 58.14 58.13 58.13 58.1 58.13 58.13 58.15 58.16 58.12 58.1 58.08 58.06
(list of elevations in metres)

LIDAR Coverage
The areas covered by the datasets published on OpendataNI (including Belfast City LIDAR) are shown in the following (accompanying) files.

- **River Basin LIDAR - Extents Map.pdf** - Areas by name and year
- **River Basin_LIDAR_Extents.zip** – Shapefile, Areas by name and year
- **River Basin LIDAR - Grid Index Map.pdf** – 1km square reference grid
- **River Basin_LIDAR_Grid_Index.zip** – Shapefile, 1km square reference grid

LIDAR data ~ directory structure
Belfast City LIDAR is provided in four (4) quadrant sets (NE, NW, SE, SW).
Select the area you require from the index map '**River Basin LIDAR - Extents Map.pdf**'.
Download the zip file covering the area. The files contain the following:

BelfastCityLidar_NorthWest_18032006.zip (the date quoted is the day the data was collected)
    DSM_NorthWest – Contains all the ASCII raster files covering the area
    DTM_NorthWest - Contains all the ASCII raster files covering the area
    BelfastCityLIDAR_Notes – Index maps in pdf, shp format, + these notes.

BelfastCityLidar_NorthEast_18032006.zip (the date quoted is the day the data was collected)
    DSM_NorthEast – Contains all the ASCII raster files covering the area
    DTM_NorthEast - Contains all the ASCII raster files covering the area
    BelfastCityLIDAR_Notes – Index maps in pdf, shp format, + these notes.

BelfastCityLidar_SouthWest_18032006.zip (the date quoted is the day the data was collected)
    DSM_SouthWest – Contains all the ASCII raster files covering the area
    DTM_SouthWest - Contains all the ASCII raster files covering the area
    BelfastCityLIDAR_Notes – Index maps in pdf, shp format, + these notes.

BelfastCityLidar_SouthEast_18032006.zip (the date quoted is the day the data was collected)
    DSM_SouthEast – Contains all the ASCII raster files covering the area
    DTM_SouthEast - Contains all the ASCII raster files covering the area
    BelfastCityLIDAR_Notes – Index maps in pdf, shp format, + these notes.

Department for Infrastructure, Rivers.
June 2019
END