**MRes mini project: Task\_9:**

Create a document that lists each of the stages involved in generating and summarising the accessibility surface.

Put in a table with headings 'Task', 'R' and 'GEE'. For each task note whether it's possible in R and/or GEE and make notes of packages, functions we're using to undertake the task.

Setup (to do)

Download/install packages

Downloads and installs all packages needed to generate and summarise accessibility surface.

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| **Task** | **Package(s)** | **Function(s)** | **GEE** |
| Download/install packages | "sf",  "mapview", "googledrive", "osmdata",  "ggplot2",  "raster",  "gdistance", "fasterize",  "remotes",  "rgdal",  "stars",  "geojsonio" |  | Does **not** require GEE |

Download, install, connect to and initialise “rgee” package

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| **Task** | **Package(s)** | **Function(s)** | **GEE** |
| Download/install “rgee” package |  | “remotes::install\_github  ("r-spatial/rgee")” | Does **not** require GEE |
| Connect to GEE using “rgee”  (Only need to run once) | “rgee” | “ee\_install()” | **Performed using GEE** |
| Initialise “rgee” | “rgee”,  "googledrive" | “ee\_initialize  (drive = TRUE)” | **Performed using GEE** |

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| **Task** | **Package(s)** | **Function(s)** | **R** | **GEE** |
| Setup (to do) |  |  | Executed within R | Does **not** require GEE |
| Download/install packages | "sf",  "mapview", "googledrive", "osmdata",  "ggplot2",  "raster",  "gdistance", "fasterize",  "remotes",  "rgdal",  "stars",  "geojsonio" |  | Executed within R | Does **not** require GEE |
| Download/install “rgee” package | “remotes”,  “rgee” | “install\_github("r-spatial/rgee")” | Executed within R (downloaded from GitHub) | Does **not** require GEE |
| Connect to GEE using “rgee” | “rgee” | “ee\_install()” | Executed within R | **Performed using GEE** |
| Initialise “rgee” | “rgee”,  "googledrive" | “ee\_initialize  (drive = TRUE)” | Executed within R (requires googledrive credentials) | **Performed using GEE** |
| Define area of interest (aoi) using coordinates (WGS84) |  |  | Executed within R (requires coordinate data) | Does **not** require GEE |
| Transform aoi into polygon | “rgee” | “ee$Geometry$  Polygon()” | Executed within R | **Performed using GEE** |
| Read in Landsat 8 (LS8) Tier 1 dataset | “rgee” | “ee$Image  Collection()” | Executed within R | **Performed using GEE** |
| Filter LS8 data by aoi |  | “ls8$filter  Bounds(aoi)” |  | **Performed using GEE** |
| Filter LS8 data by collection date |  | spatialFiltered$  filterDate('2018-06-01', '2018-09-30') | Executed within R | **Performed using GEE** |
| Create and apply cloud mask  (generate function) |  |  | Executed within R | **Performed using GEE** |
| Calculate median NDVI per pixel |  |  |  | **Performed using GEE** |
| Clip to aoi |  | “clip()” | Executed within R | **Performed using GEE** |
| These data are saved as in image within GEE: Convert data to raster (saved as .tif in temporary folder within googledrive or GCS) |  | “ee\_as\_raster()” | Executed within R | **Performed using GEE** |
| Download/store raster (.tif) in local folder |  | “writeRaster” | Executed within R | **Performed using GEE** |
| Define bounding box (using aoi coordinates) and download OpenStreetMap (OSM) road data |  |  | Executed within R (OSM road data downloaded from OSM) | Does **not** require GEE |
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