



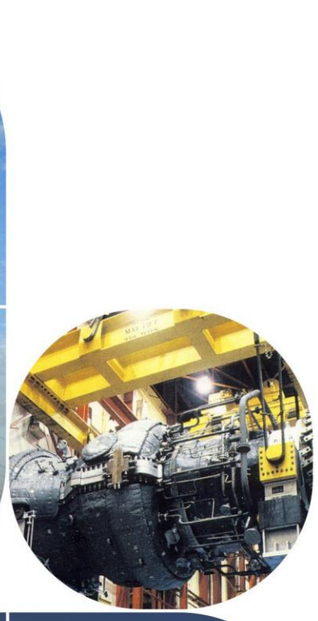

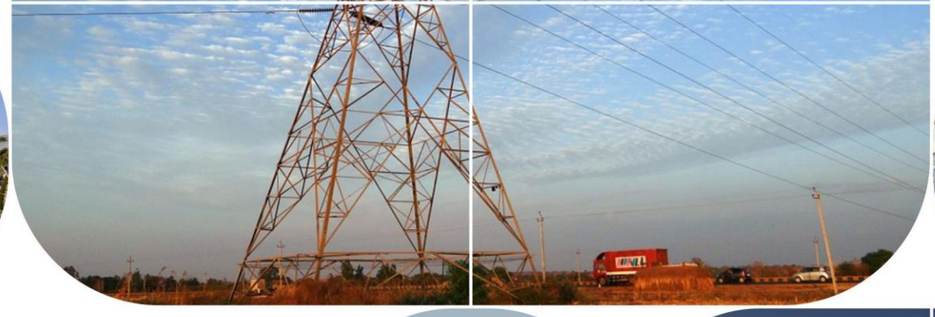


APPENDIX A

Utilisation Mapping Assumptions

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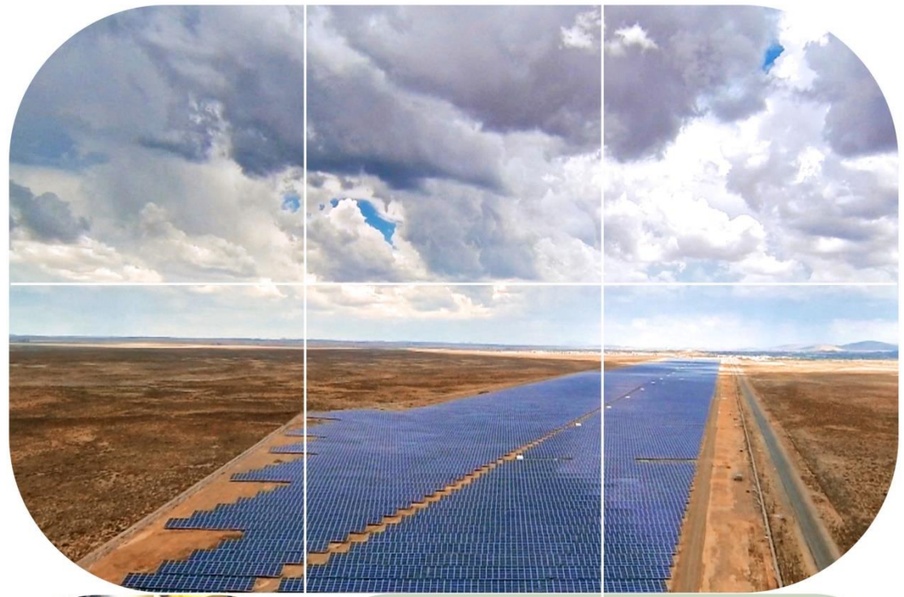


APPENDIX A. UTILISATION MAPPING ASSUMPTIONS

A.1 Introduction

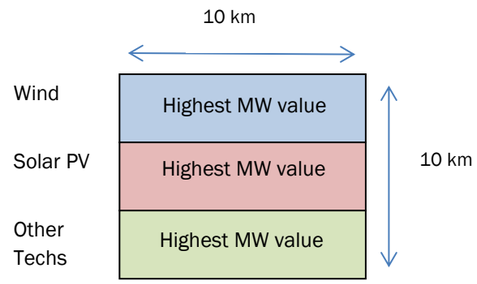
The following document describes the assumptions used in developing the utilisation mapping outputs in Chapter 2 Section 4, in particular the development of the spatial generation layer, spatial load layer and the aggregation of these layers to produce the spatial utilisation layer.

A.2 Spatial Energy Generation Layer

As described in Section 4.1, the spatial generation layer consisted of three data inputs including information gathered through industry consultation, a review of active renewable energy environmental impact assessment applications and the evacuation capacity of the REDZs based on density thresholds. The three sources of data were in turn merged to produce a single spatial generation layer. The following process was followed to minimise the risk of double counting when quantifying the overall generation potential of an individual 10 km x 10km gird cell across the three data sources

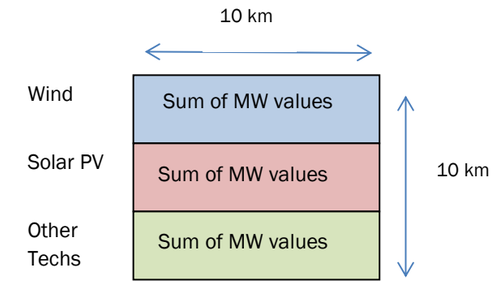
A.2.1 Step 1: Industry consultation data

Based on the inputs by developers, the data captured for each cell 10km x 10km cell (including MW value and technology type) was categorised according to three technology categories including 'wind', 'solar PV' and 'all other technologies'. In the event where multiple selections of the same cell for the same technology type were made by developers only the selection of the highest MW value was retained.



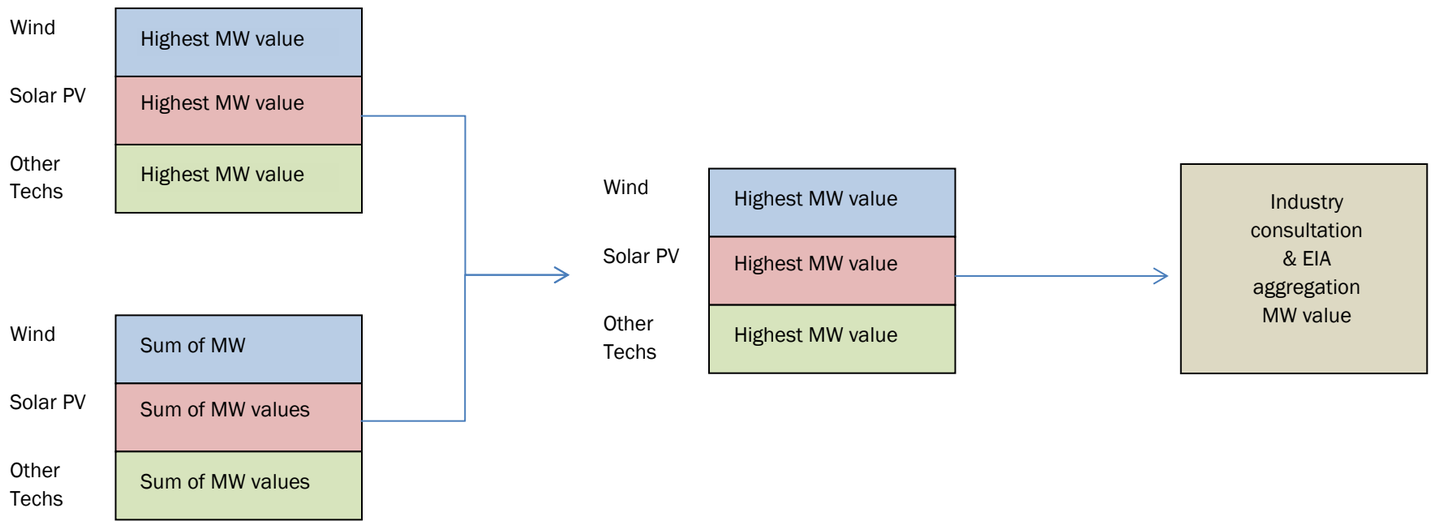
A.2.2 Step 2 Environmental Impact Assessments (EIAs)

A review of all active renewable energy application was undertaken. The spatial location and MW value for each application was recorded in the context of the 10km by 10km grid cells. The applications for each cell were organised according to three categories of technology type including 'wind', 'solar PV' and 'all other technologies'. Where more than one application for the same technology type was present within the same grid cell, the MW of the different applications were summed.



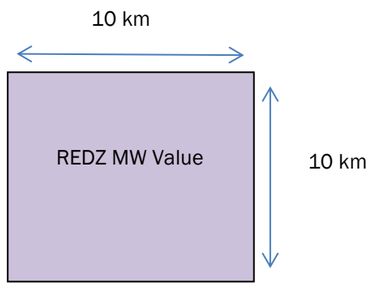
A.2.3 Step 3: Aggregation of industry consultation and EIA cells

The grid cells values from Step 1 and Step 2 were then amalgamated to produce a single representative value for each technology category for each grid cell. In the instance where both cells contained a value for the same technology, only the highest MW value for that technology was retained. Once merged, the MW value of the technology types (wind, solar PV and other techs) where then summed to produce a renewable energy MW value for each cell.



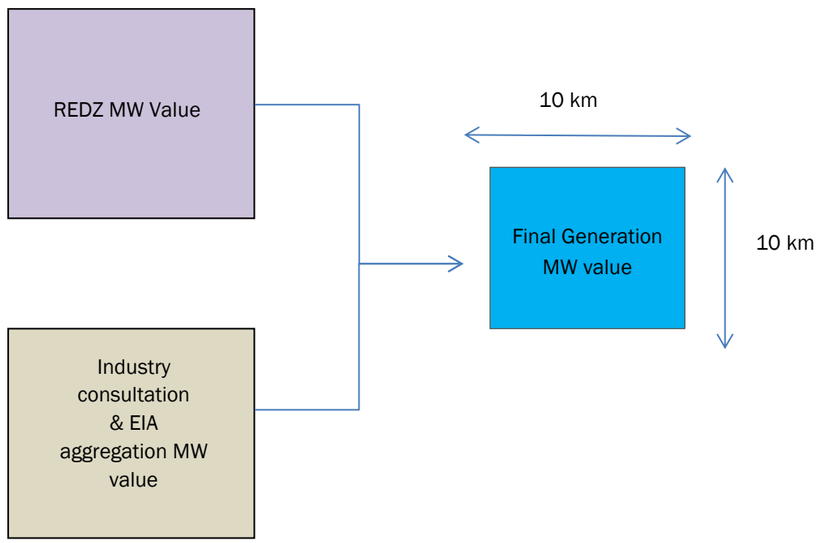
A.2.4 Step 4: REDZ

A MW value was produced for each 10km x 10km grid cell intersecting with the REDZs. The MW value of each cell was calculated according the evacuation capacity of each REDZ as determined through the wind and solar SEA.



A.2.5 Step 5: Aggregation of REDZ with industry consultation and EIA aggregation

This step in the process involved identifying cells where a MW value is present for both the REDZ layer from Step 4 and Industry consultation and EIA aggregated layer from Step 3. Where a MW value is present in the same cell for both layers, the cell with the highest MW value was carried forward in the aggregation process.



A.2.6 Step 6: Converting MW to score

The final generation MW value of each cell was then converted to a score ranging from 1-11 according to 50 MW increments.

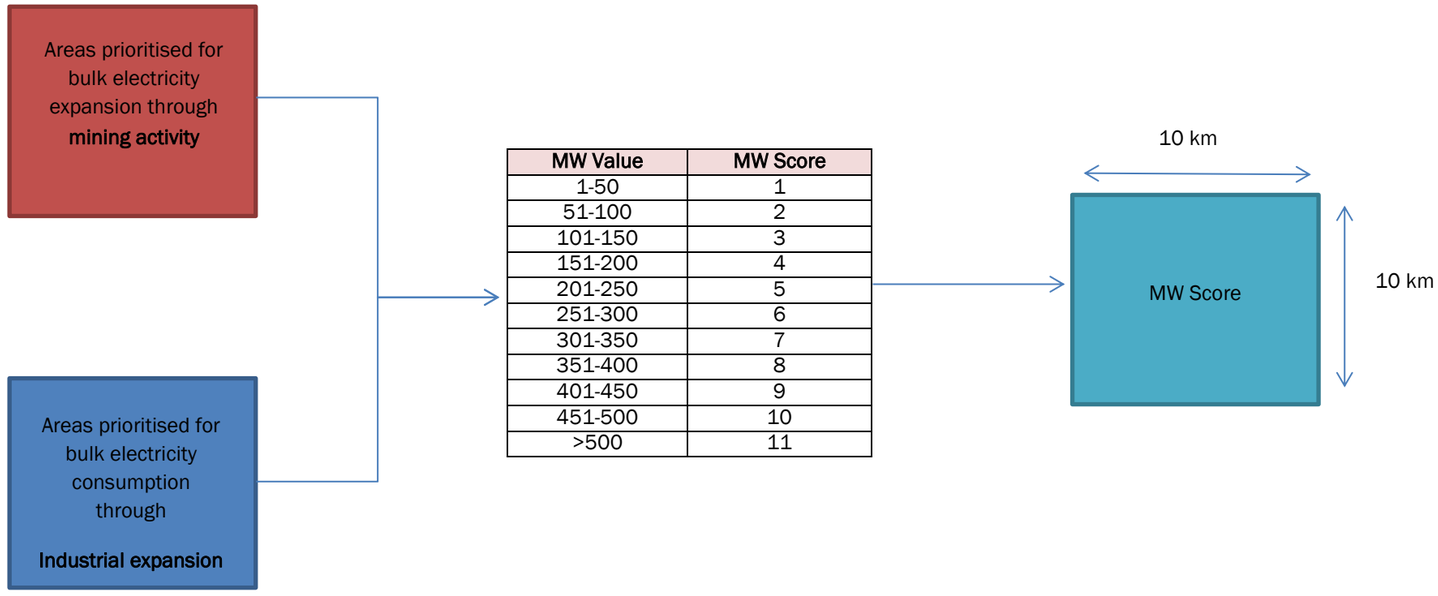
MW Value	MW Score
1-50	1
51-100	2
101-150	3
151-200	4
201-250	5
251-300	6
301-350	7
351-400	8
401-450	9
451-500	10
>500	11

A.3 Spatial Electricity Demand Layer

As described in Section 4.1, the spatial electricity demand layer consisted of three data inputs including information gathered through industry consultation, a review of municipality spatial development frameworks and national scale strategic development plans and goals. The three sources of data were in turn merged to produce a single spatial demand layer. The following process was followed to minimise the risk of double counting when quantifying demand across the three datasets at a 10 km x 10km grid cell resolution.

A.3.1 Step 1: Spatial Development Framework review

Spatial development frameworks of municipalities inside and immediately adjacent to the Eskom Preliminary Corridors were reviewed. The reviewed identified areas (10 km by 10 km) where, according to the most recent plans, areas have identified for energy intensive development. Two categories of energy intensive development were considered, namely heavy industrial expansion and mining related activity. Based on the scale and nature of development proposed in each area, the power requirements in MW for each 10 km by 10km grid cell were estimated. Where a grid cell catered for both mining activity and industrial expansion the MW for both activities where summed. MW values for each grid cell were then converted into a MW score.



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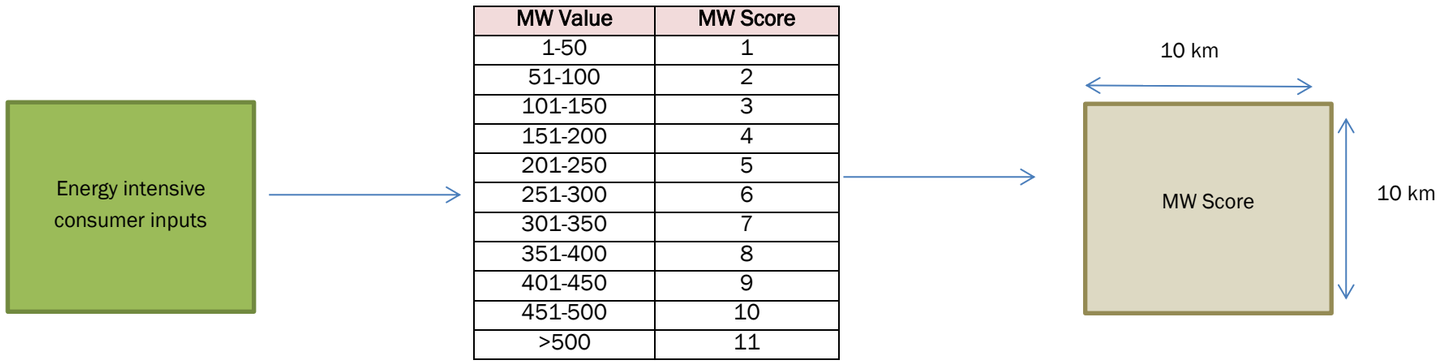
A.3.2 Step 2: Industry consultation data

Inputs from energy intensive consumer at a 10 km by 10 km grid cell resolution was captured through a survey. Inputs to each grid cell were converted into a total MW score.



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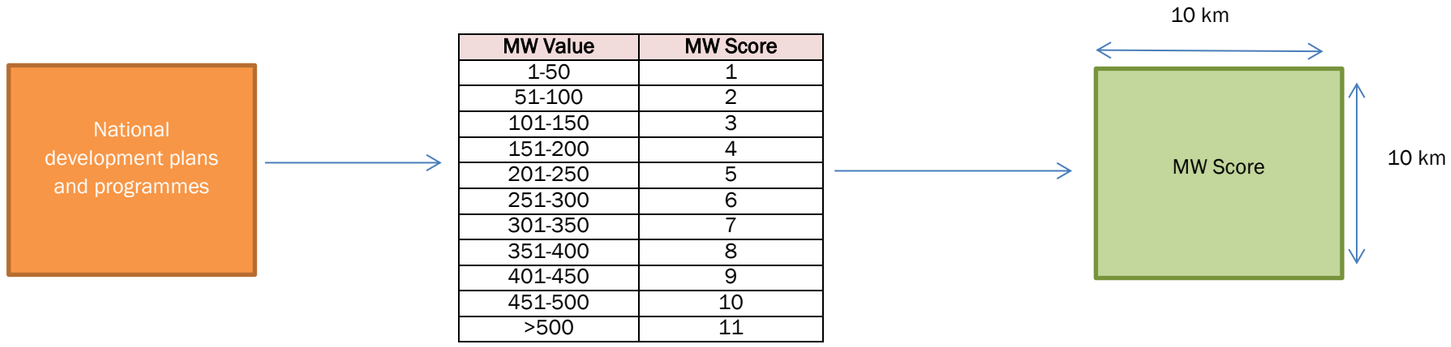
A.3.3 Step 3: National scale strategic development plans

Consultation with government and a review of national policies, plans and programmes involving infrastructure development was undertaken and used to inform the spatially future energy intensive development. The position of future development was referenced in the context of 10 km by 10 km grid cells. The power demands of each development was sourced and where unavailable was estimated by the Eskom Transmission Development team in the context of the nature and scale of the proposed development. The combined MW value for each grid cell was then combined into a Total MW Score.



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A.3.4 Step 4: Combined MW Score for electricity demand

The MW score for each 10 km by 10 km grid cell for the three data inputs was thereafter totalled for produce an aggregate MW score in the context of electricity demand.