

ELECTRICAL MASTER PLAN: (DIRECTOR ENGINEERING SERVICES)

Purpose of report

To submit a report to council regarding the Langeberg Electrical Master plan that was recently updated.

Background

An electricity master plan is a long-term planning document that investigates the current infrastructure and status of the electrical network, which forms the basis for future planning and network upgrade recommendations.

The Langeberg Municipality procured the services of a consultant through a competitive bidding process to update the electrical master plan. The funding was from the Western Cape Government by means of a grant.

The Electrical Master Plan was done per town / area. The following sections provide an executive summary for each town / area.

Robertson (Main)

This section deals with the electrical infrastructure in the Robertson supply area of Langeberg Municipality. The current notified maximum demand is 36MVA with recent maximum demand peaking at 36.18MVA. Application has been made to increase NMD to 38MVA. The load growth is forecasted at 1.85% per year based on historical average with several developments planned and applications already submitted indicating that the revised NMD of 38MVA might be exceeded by 2024.

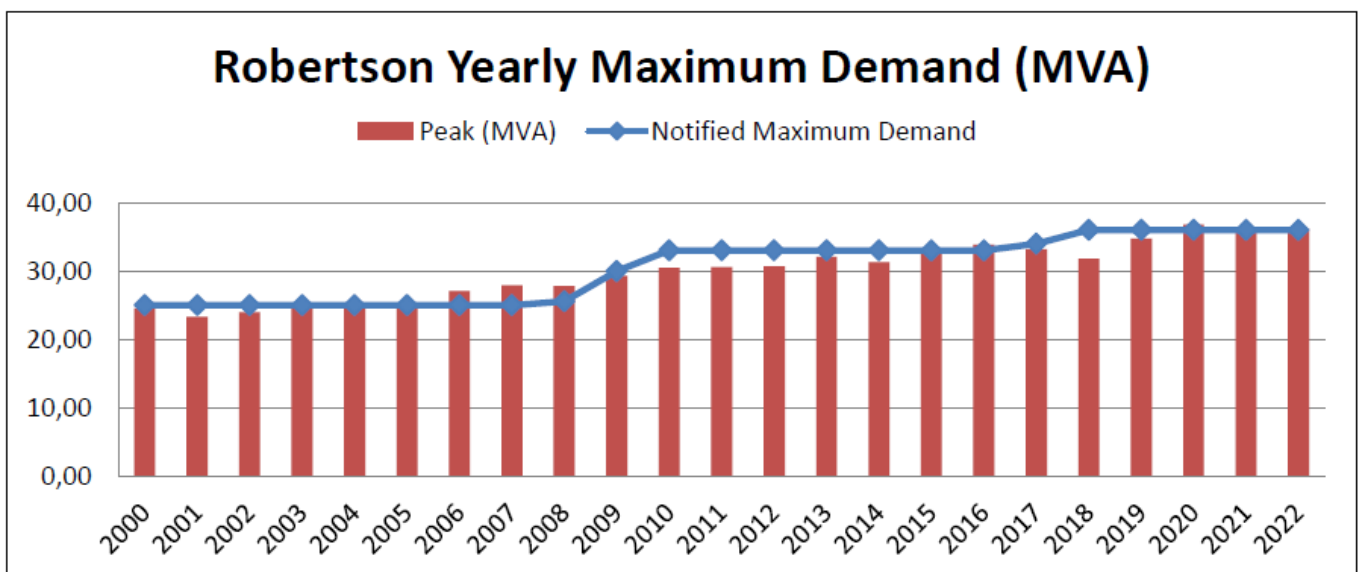
The impact of the load growth and new developments on the existing infrastructure was determined and recommendations were made on how to make sure that the electricity supply for the whole area remains reliable and of an acceptable quality.

Major proposed capital projects include the replacement of the main substation power transformers and associated works that have exceeded their useful life. Furthermore, some 11kV switching stations require switchgear upgrades.

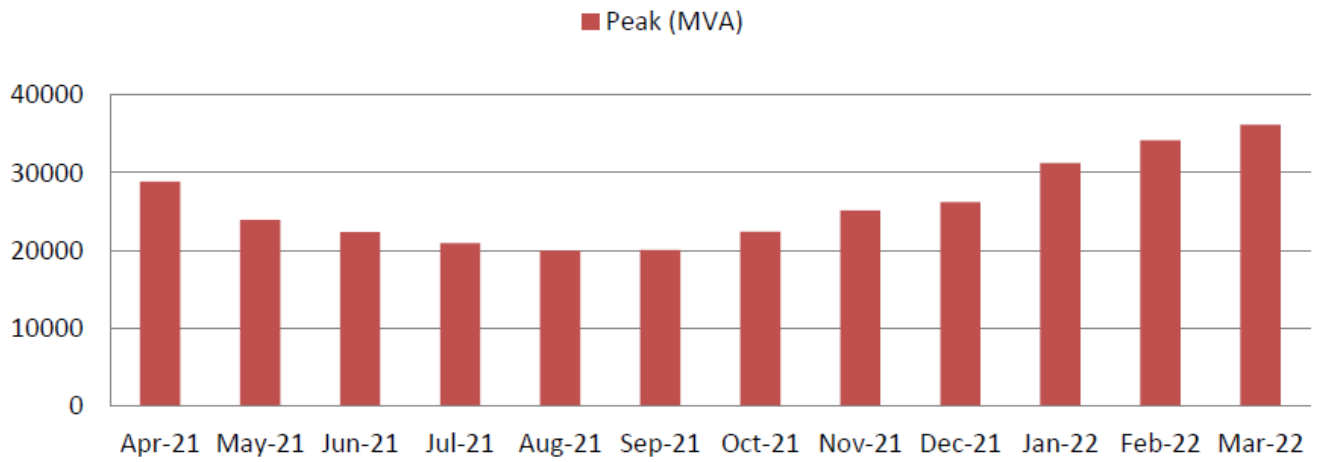
Service delivery, demand side management initiatives, assessment of asset condition and economic development and alternative sources of energy are also discussed.

The projects completed to date have been updated as applicable.

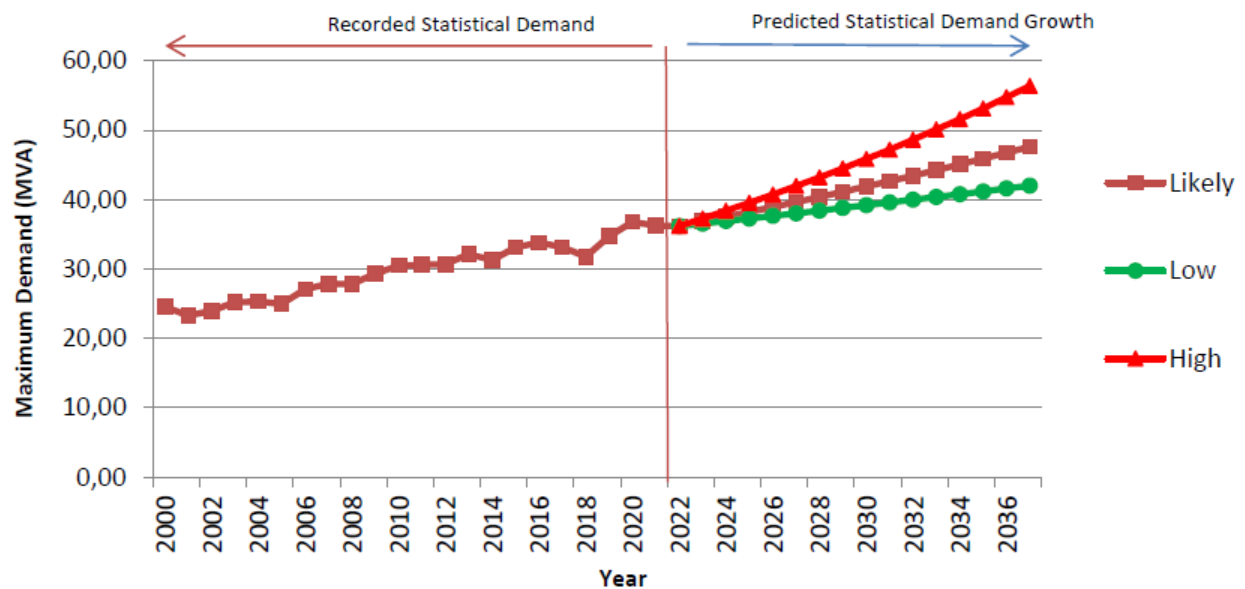
The following graphs provides a summary of the most important aspects of the master plan:



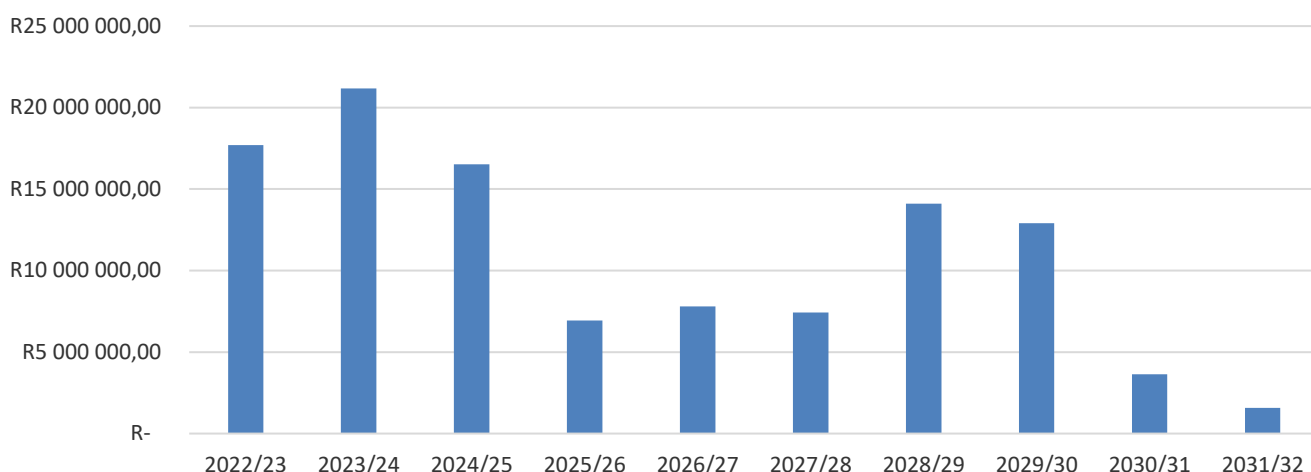
Robertson - 12 Month Maximum Demand (MVA)



Robertson Maximum Demand Forecast



Robertson - Capital Projects and Masterplan Recommendation Upgrades



Robertson (Noree)

This section deals with the electrical infrastructure in the Noree supply area of Langeberg Municipality. The current notified maximum demand is 6MVA with recent maximum demand peaking at 5.38MVA. The load growth is forecasted at 2.38% per year based on historical average with some minor developments planned indicating that the NMD might be exceeded by 2024.

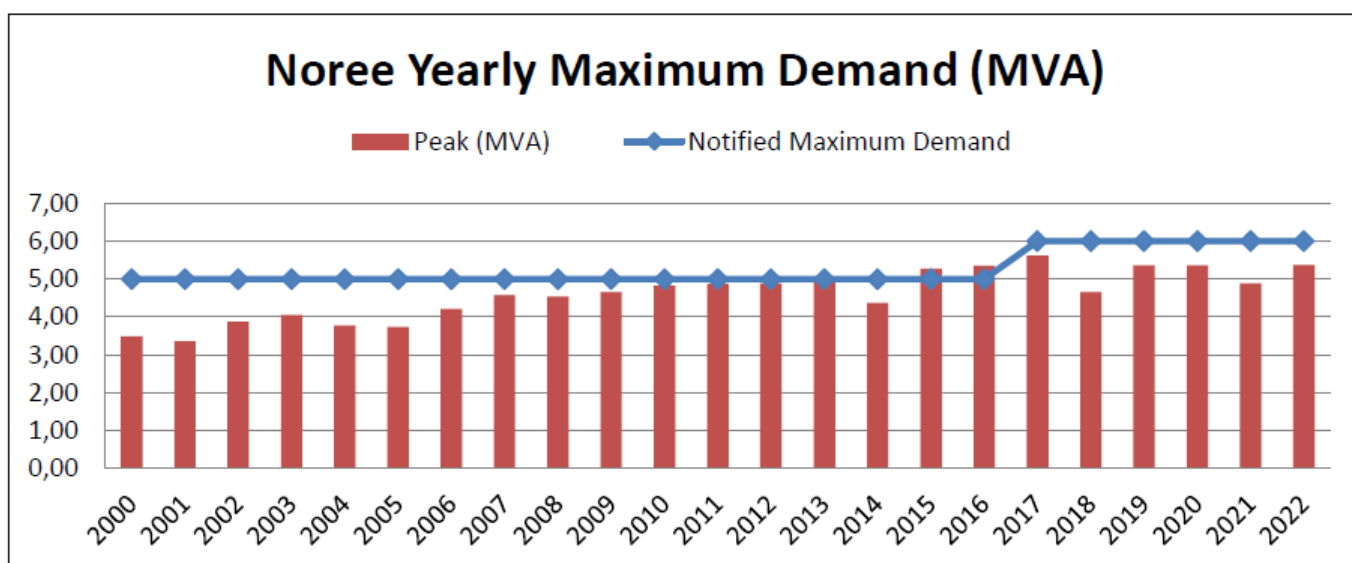
The impact of the load growth and new developments on the existing infrastructure was determined and recommendations were made on how to make sure that the electricity supply for the whole area remains reliable and of an acceptable quality.

Major proposed capital projects are the addition of a second 66/11kV transformer and associated works to provide spare and redundant capacity.

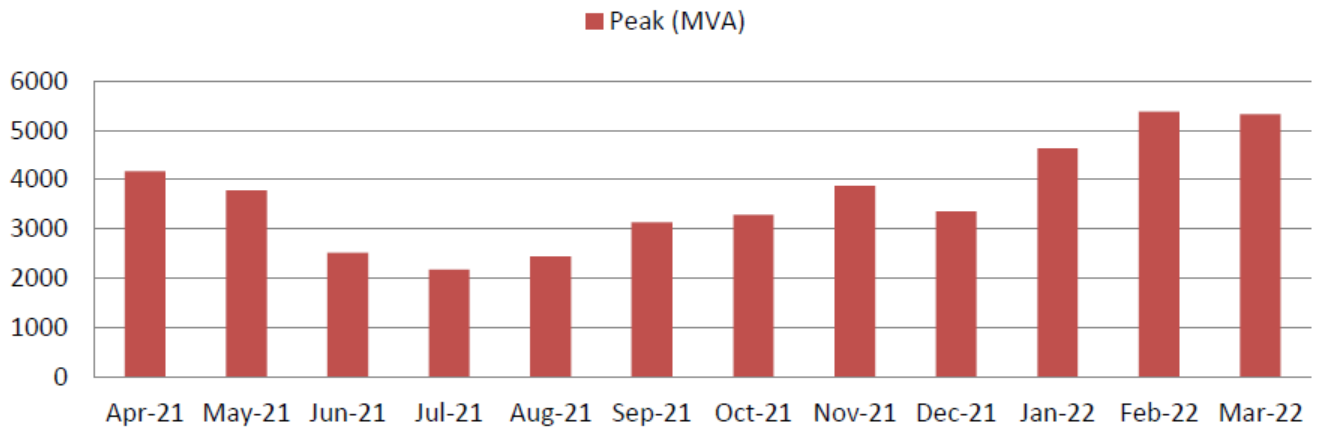
Service delivery, demand side management initiatives, assessment of asset condition and economic development and alternative sources of energy are also discussed.

The projects completed to date have been updated as applicable.

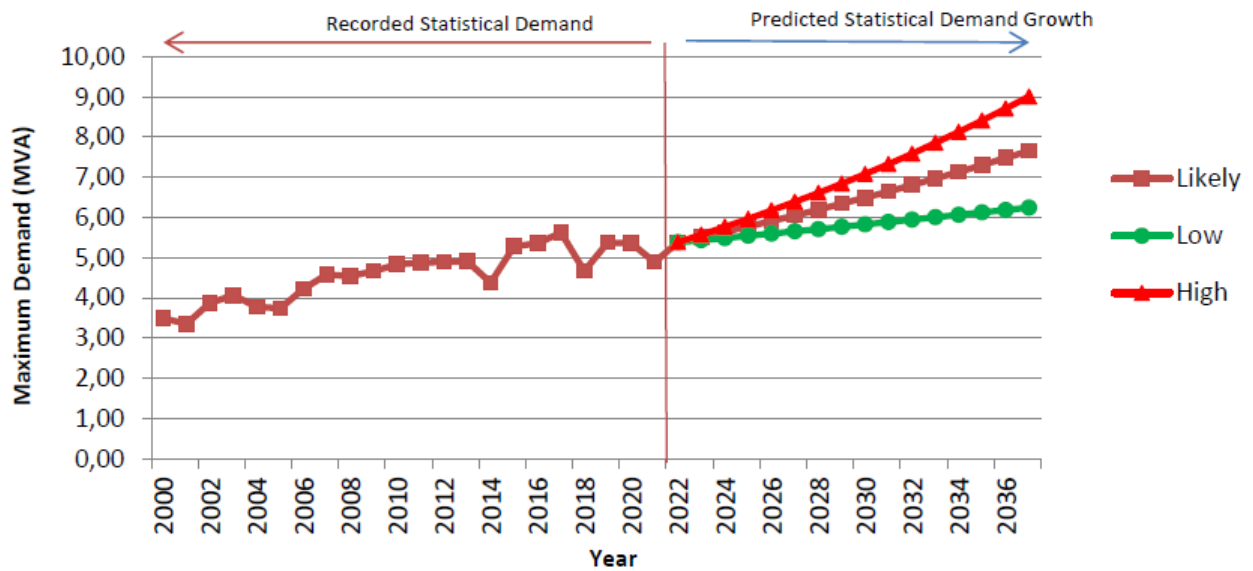
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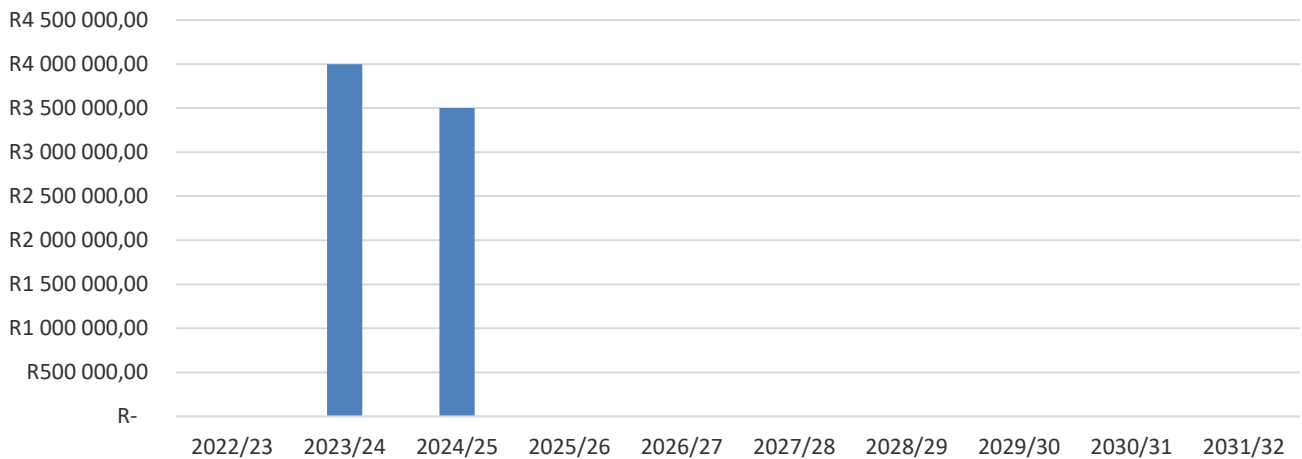
Noree - 12 Month Maximum Demand (MVA)



Noree Maximum Demand Forecast



Noree - Capital Projects and Masterplan Recommendation Upgrades



McGregor

This section deals with the electrical infrastructure in the McGregor supply area of Langeberg Municipality. The current notified maximum demand is 3.7MVA with recent maximum demand peaking at 2.68MVA. The load growth is forecasted at 3.86% per year based on historical average with some minor developments planned indicating that the NMD might be exceeded by 2027.

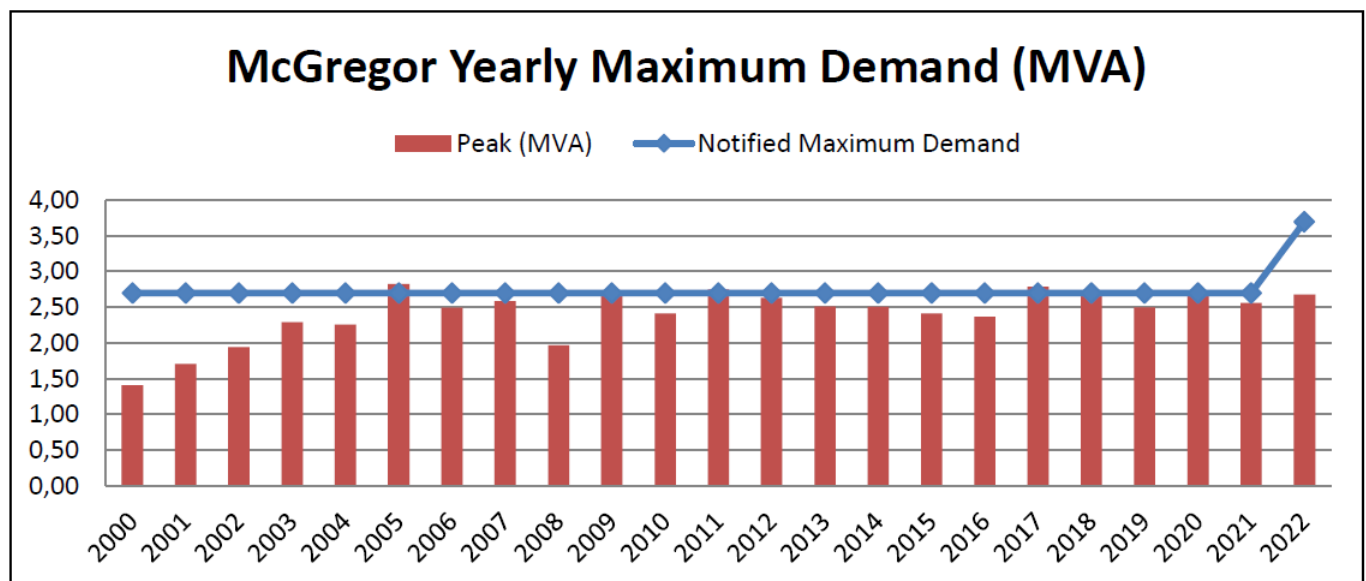
The impact of the load growth and new developments on the existing infrastructure was determined and recommendations were made on how to make sure that the electricity supply for the whole area remains reliable and of an acceptable quality.

Major proposed capital projects are the addition of a second 132/11kV transformer and associated works to provide spare and redundant capacity. Furthermore, several 11kV overhead lines are earmarked for upgrading.

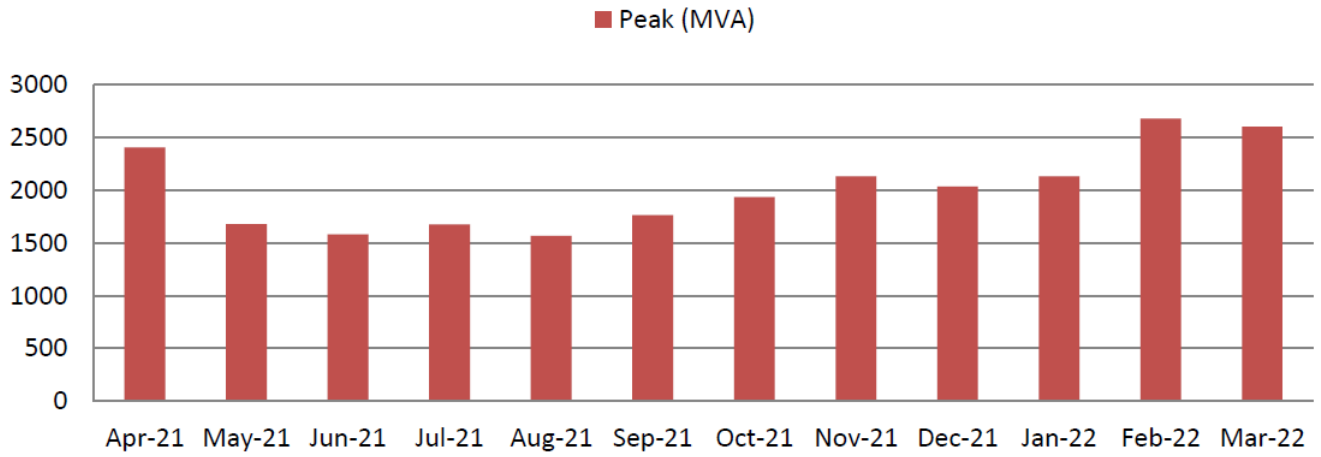
Service delivery, demand side management initiatives, assessment of asset condition and economic development and alternative sources of energy are also discussed.

The projects completed to date have been updated as applicable.

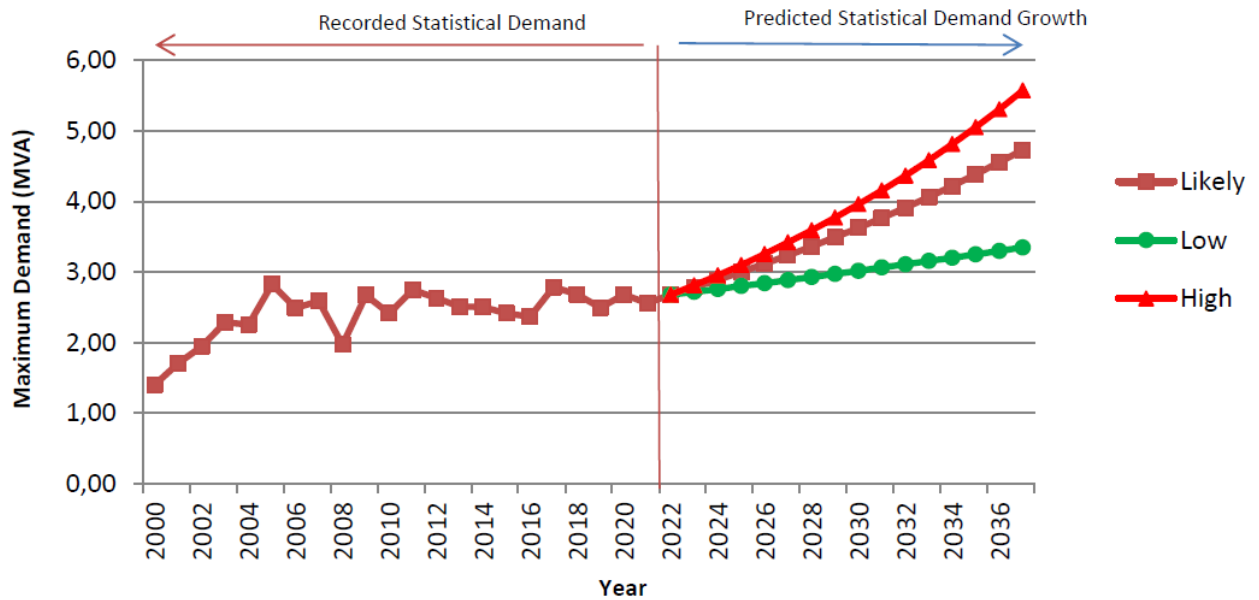
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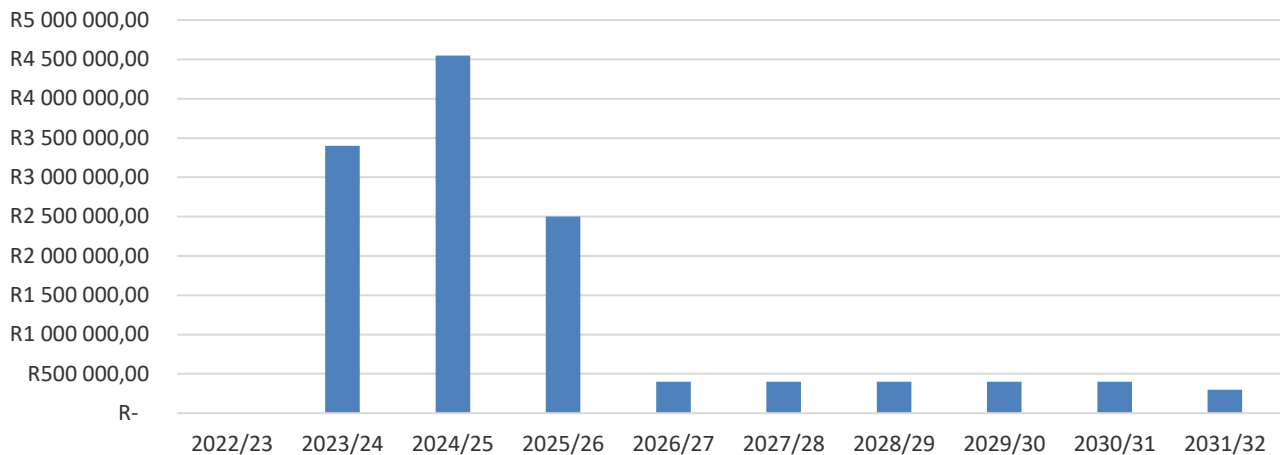
McGregor - 12 Month Maximum Demand (MVA)



McGregor Maximum Demand Forecast



McGregor - Capital Projects and Masterplan Recommendation Upgrades



Ashton

This section deals with the electrical infrastructure in the Ashton supply area of Langeberg Municipality. The current notified maximum demand is 10.5MVA which was decreased from 12MVA due to decline in demand. The recent maximum demand peaked at 9.4MVA. The load growth is forecasted at 1.26% per year based on historical average. Several housing developments are planned and should they take off the NMD might be exceeded by 2026.

The impact of the load growth and new developments on the existing infrastructure was determined and recommendations were made on how to make sure that the electricity supply for the whole area remains reliable and of an acceptable quality.

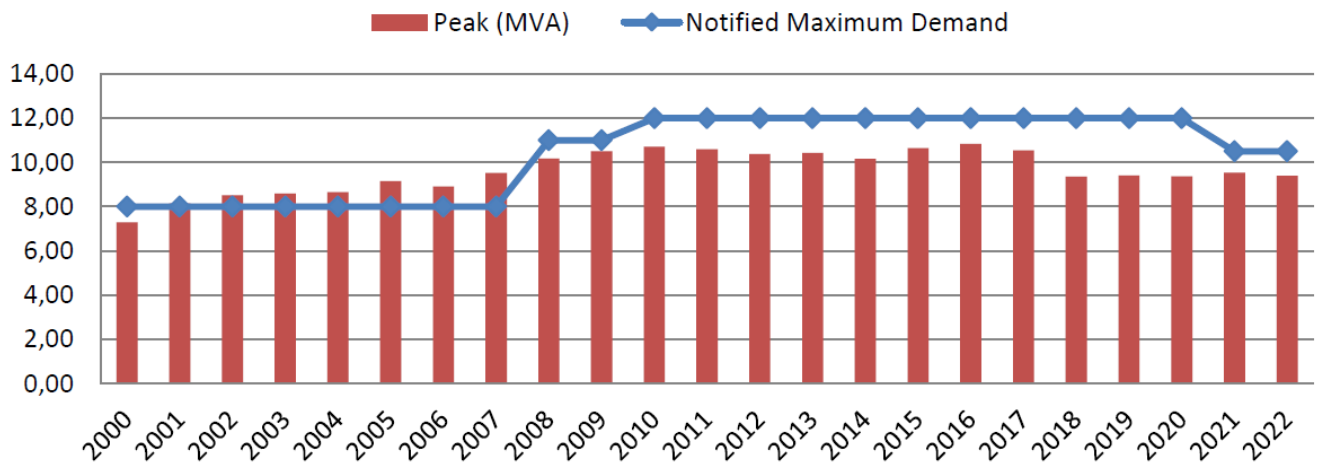
Proposed capital projects are the replacement of 11kV switchgear in the main switching station. Furthermore, several 11kV overhead lines are earmarked for upgrading to underground cables.

Service delivery, demand side management initiatives, assessment of asset condition and economic development and alternative sources of energy are also discussed.

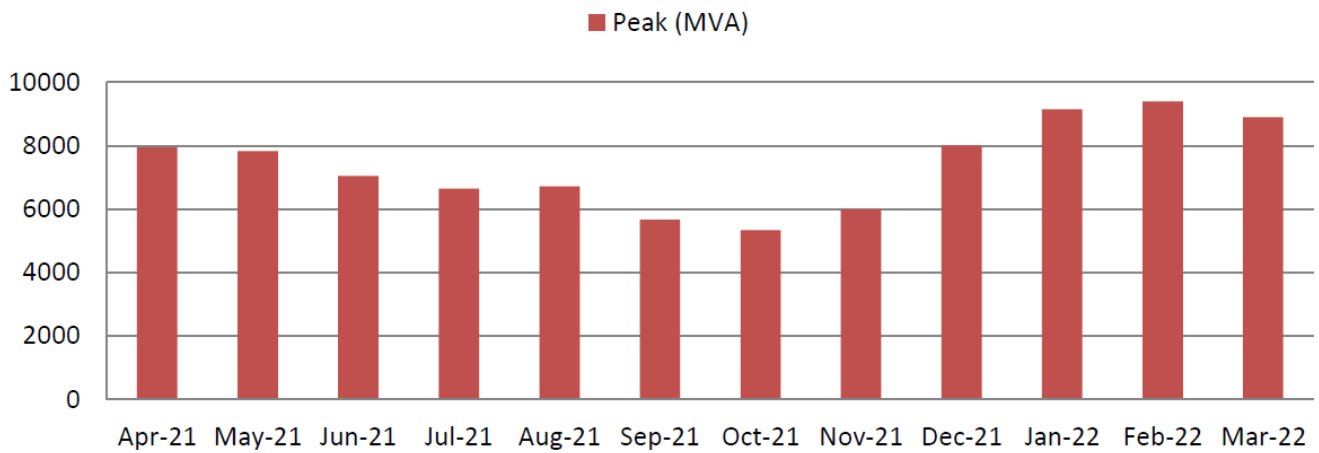
The projects completed to date have been updated as applicable.

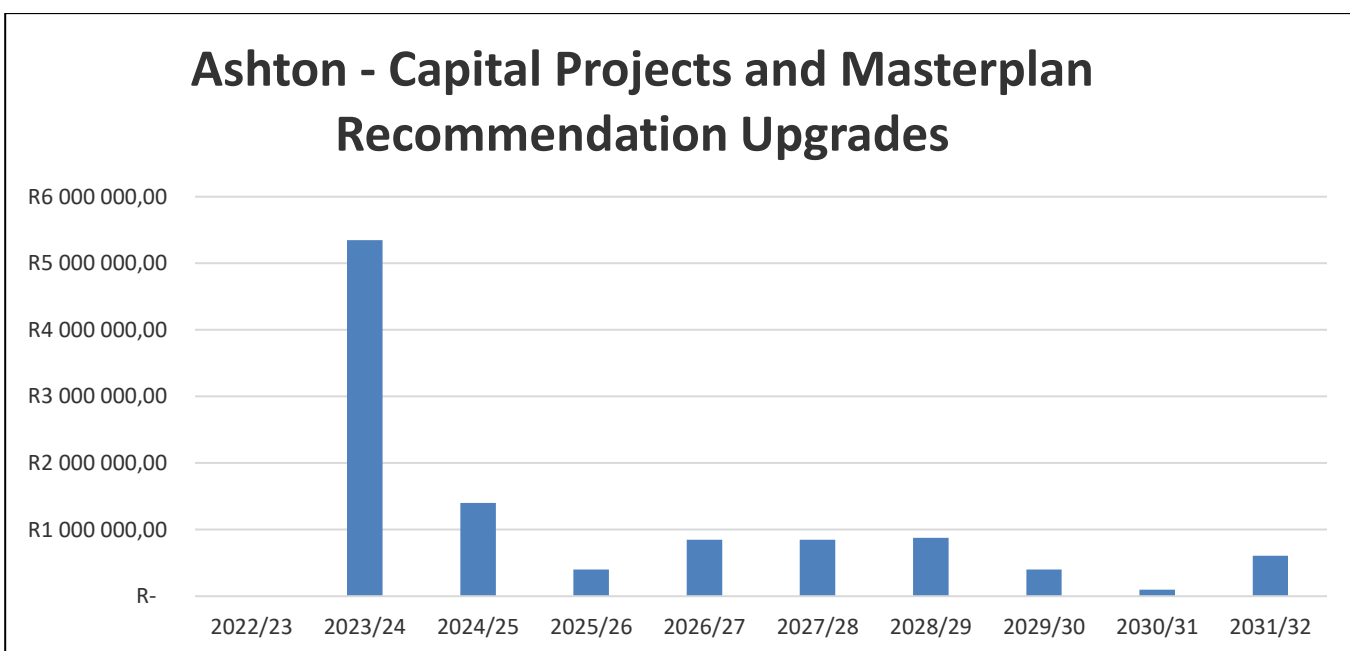
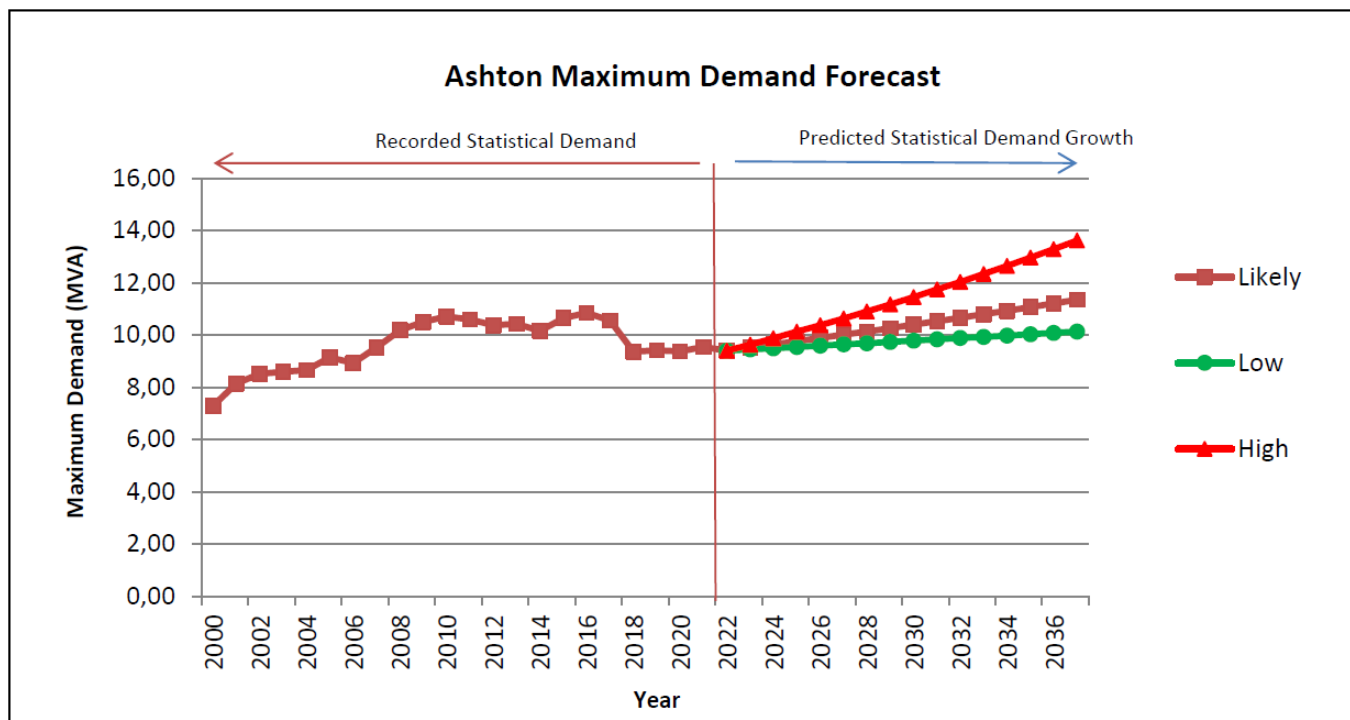
The following graphs provides a summary of the most important aspects of the master plan:

Ashton Yearly Maximum Demand (MVA)



Ashton - 12 Month Maximum Demand (MVA)





Bonnievale

This section deals with the electrical infrastructure in the Bonnievale supply area of Langeberg Municipality. The current notified maximum demand is 11.5MVA with recent maximum demand peaking at 10.6MVA. The load growth is forecasted at 2.7% per year based on historical average with some minor developments planned indicating that the NMD might be exceeded by 2026.

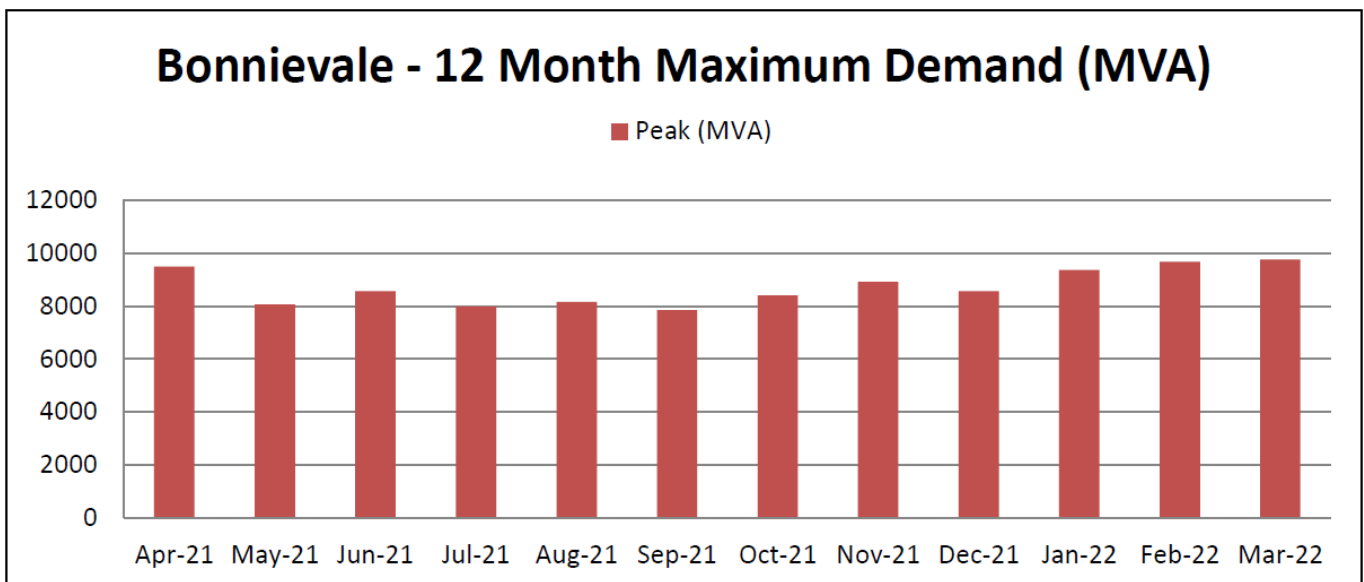
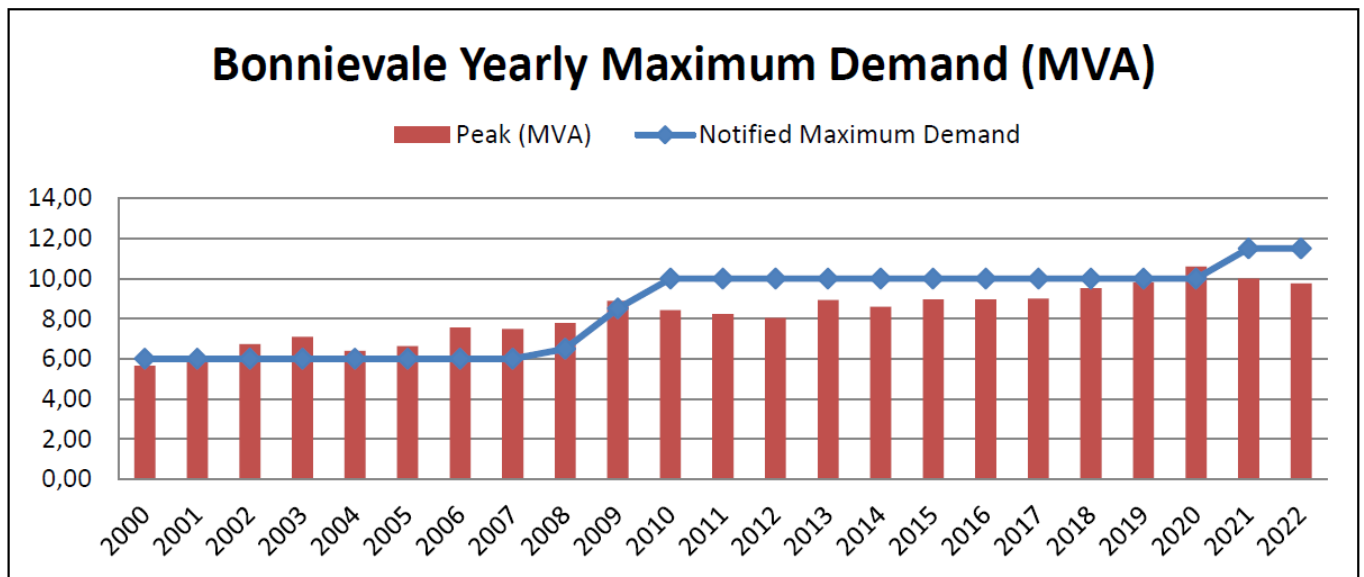
The impact of the load growth and new developments on the existing infrastructure was determined and recommendations were made on how to make sure that the electricity supply for the whole area remains reliable and of an acceptable quality.

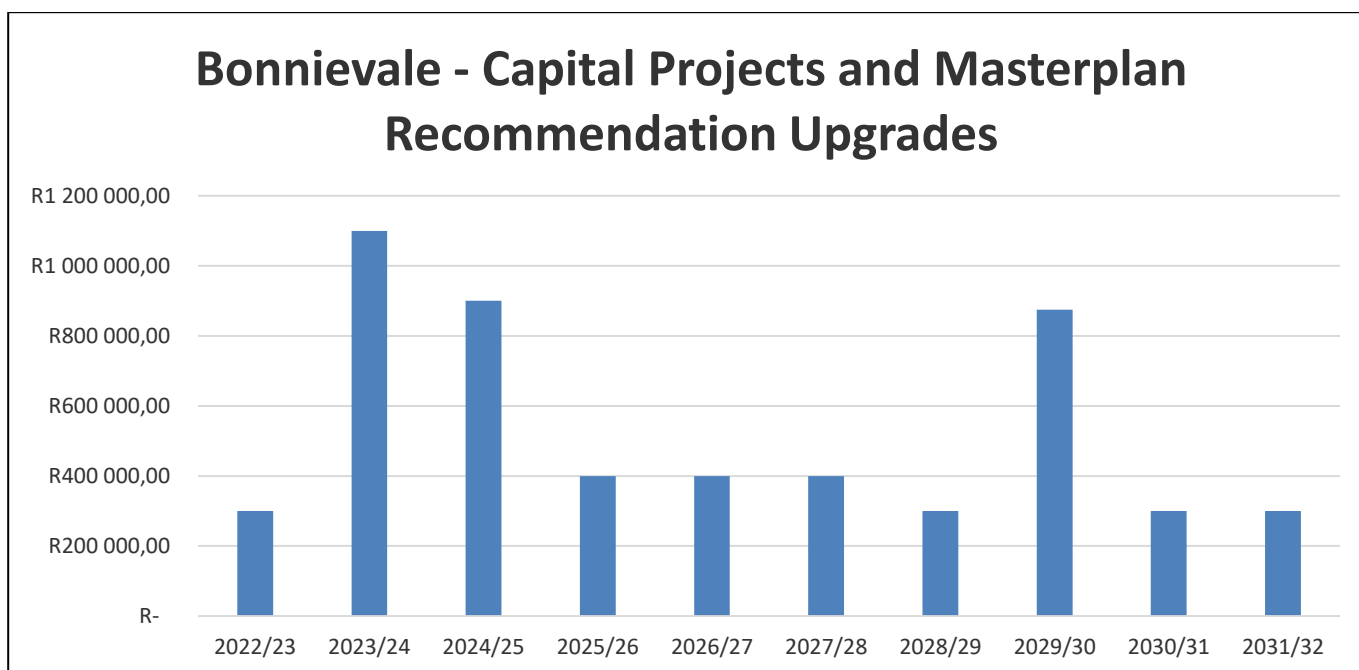
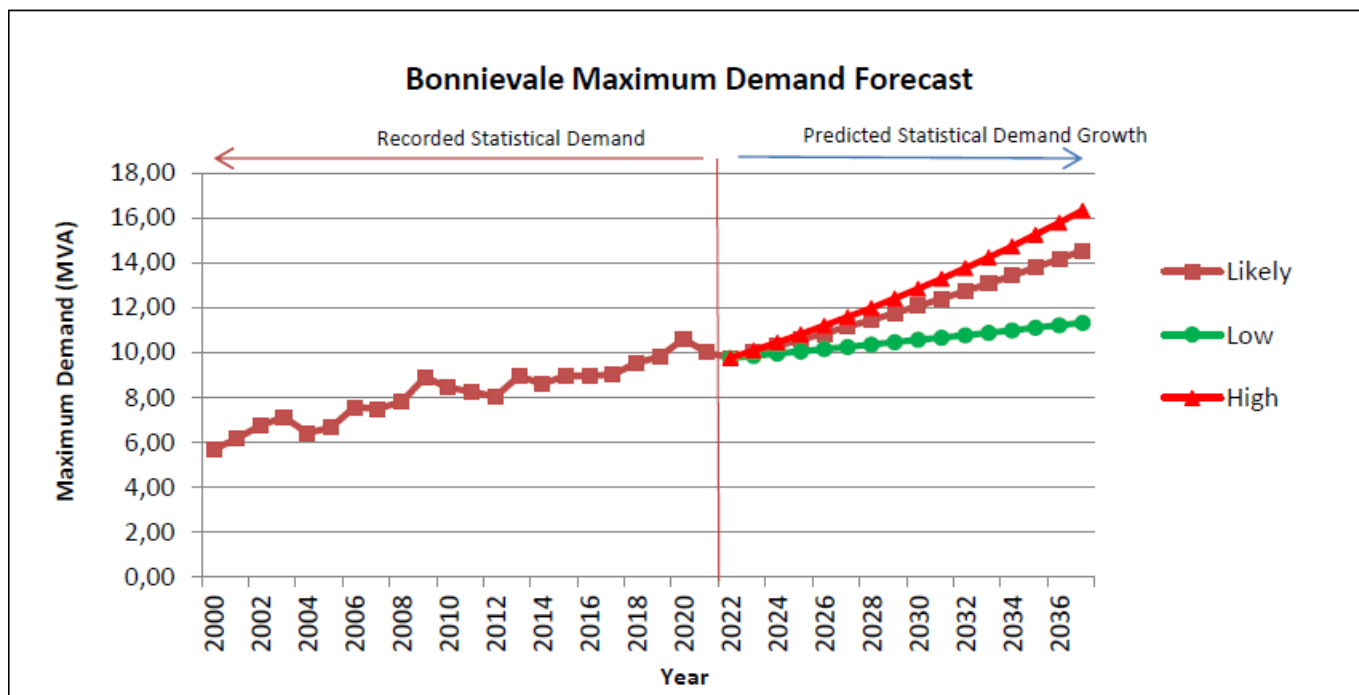
No major capital projects are currently proposed, several smaller upgrades are recommended.

Service delivery, demand side management initiatives, assessment of asset condition and economic development and alternative sources of energy are also discussed.

The projects completed to date have been updated as applicable.

The following graphs provides a summary of the most important aspects of the master plan:





Montagu

This section deals with the electrical infrastructure in the Montagu supply area of Langeberg Municipality. The current notified maximum demand is 9MVA with recent maximum demand peaking at 8.2MVA. Application has been made to increase NMD to 10MVA. The load growth is forecasted at 2.29% per year based on historical average with some minor developments planned indicating that the NMD might be exceeded by 2025.

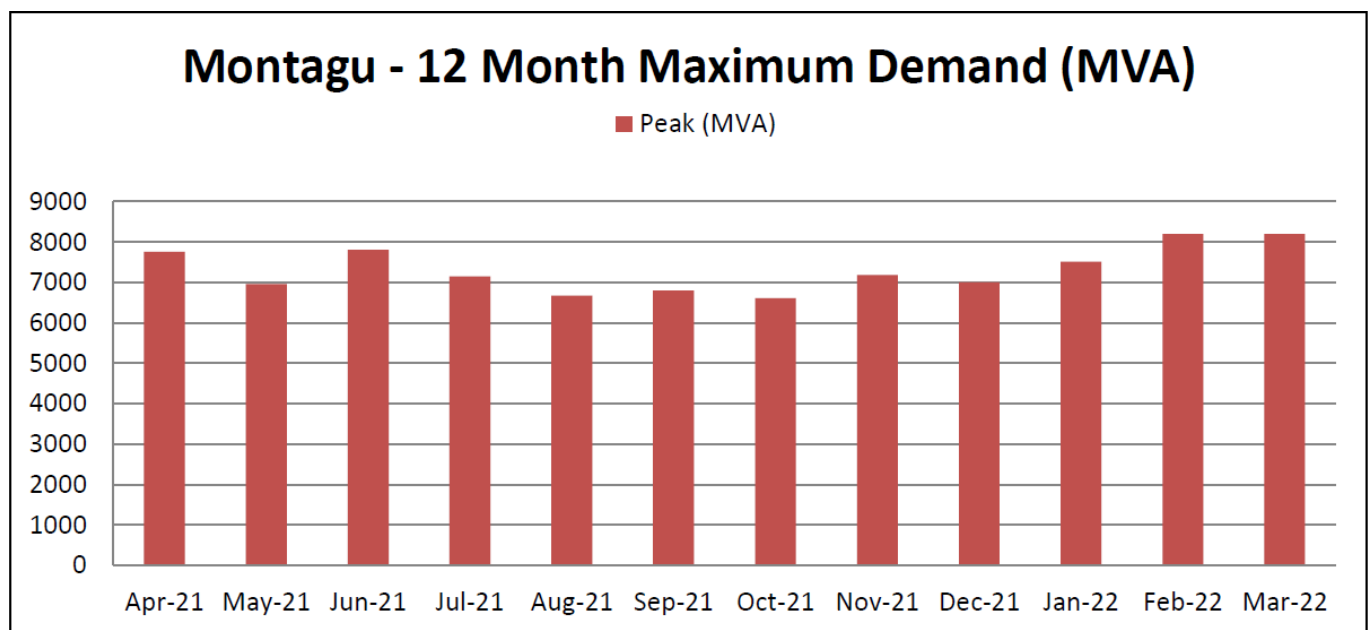
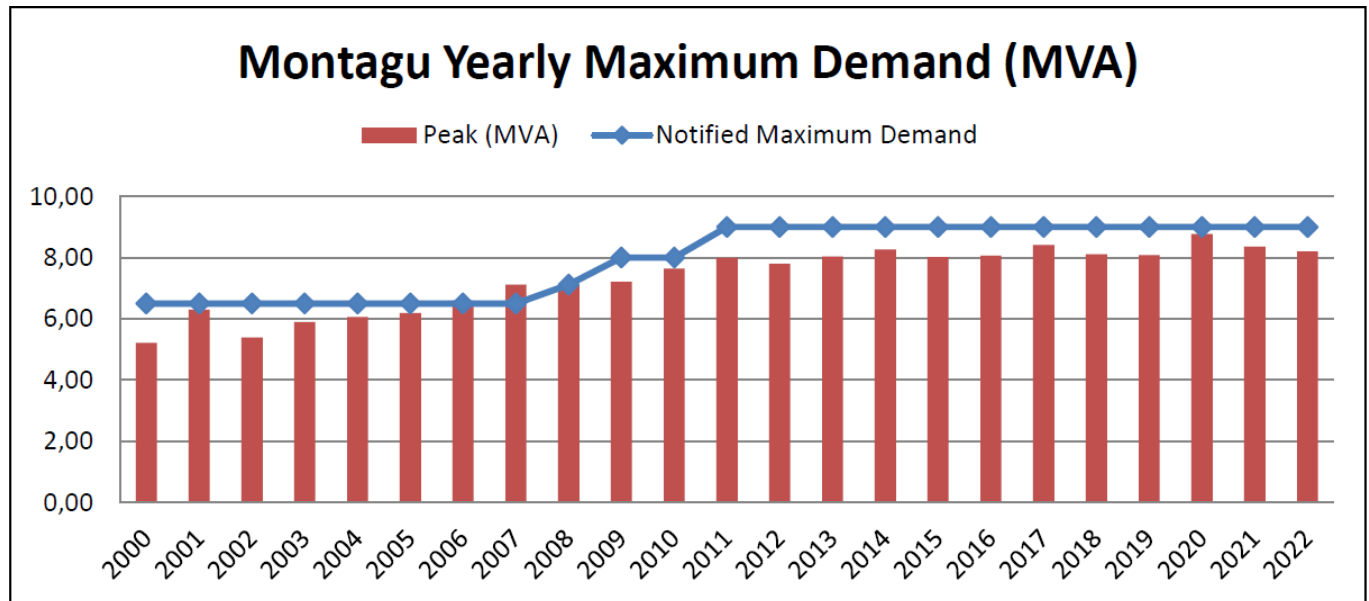
The impact of the load growth and new developments on the existing infrastructure was determined and recommendations were made on how to make sure that the electricity supply for the whole area remains reliable and of an acceptable quality.

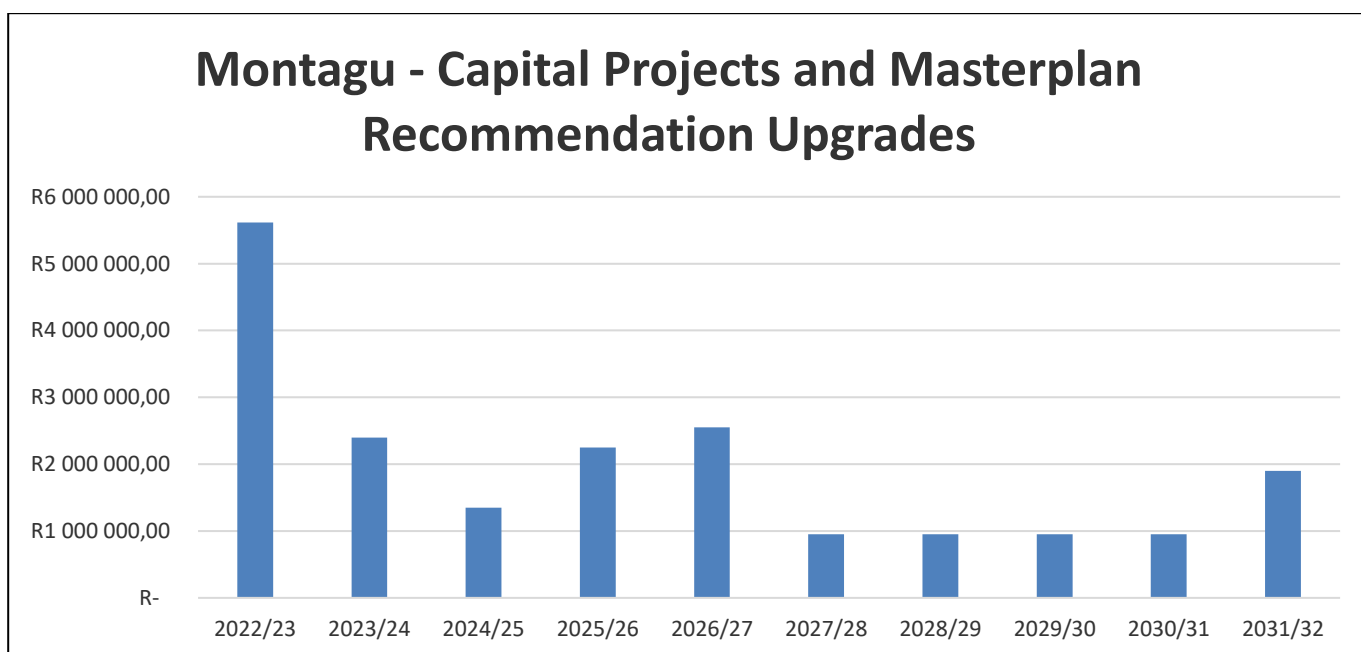
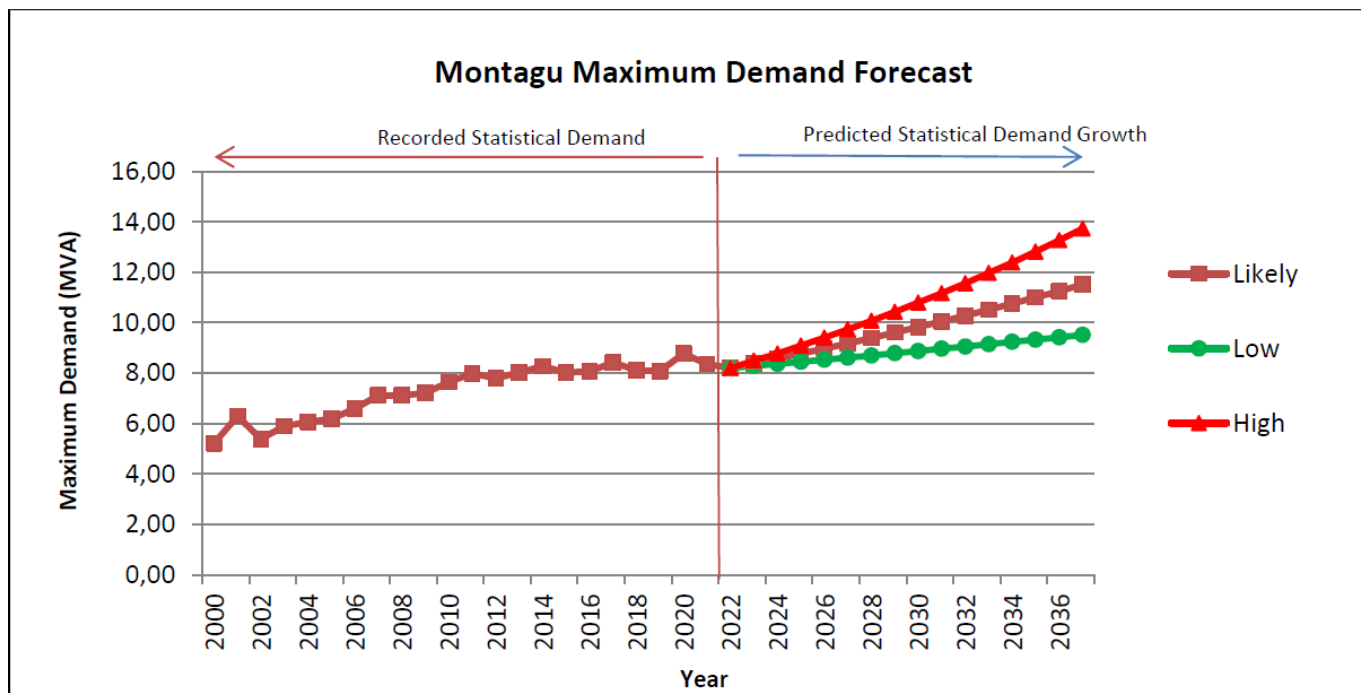
No major capital projects are currently proposed, several smaller upgrades are recommended.

Service delivery, demand side management initiatives, assessment of asset condition and economic development and alternative sources of energy are also discussed.

The projects completed to date have been updated as applicable.

The following graphs provides a summary of the most important aspects of the master plan:





Recommendation

- That the Council take note of the updated Electrical Master Plan.
- That the updated Electrical Master Plan be published on the Langeberg Municipality's website.