Olifants Management Model (OMM) Programme

Intermediate Business Case Report #1 – High Value

Main Report: Version 4.0

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Abbreviations

AACE	Association for the Advancement of Cost Engineering
AADD	Average Annual Daily Demand
AAP	Anglo American Platinum
AFDB	African Development Bank
ARM	African Rainbow Minerals
BCR	Benefit Cost Ratio
BOQ	Bill of Quantities
CAPEX	Capital Expenditure
CBA	Cost Benefit Analysis
CEO	Chief Executive Officer
cEPC	Constructability and Construction Strategy Development, Engineering, Procurement and Construction
CFO	Chief Financial Officer
CMA	Catchment Management Agency
COC	Centre of Competence
COE	Centre of Excellence
COO	Chief Operations Officer
CPI	Consumer Price Index
CSI	Corporate Social Investment
CSO	Chief Socio-Economic Development Officer
CSR	Concept Study Report
CUC	Commercial Users Consortium
DBSA	Development Bank of South Africa

DFI	Development Finance Institution
DG	Director General
DHS	Department of Human Settlements
DORA	Division of Revenue Act
DRDLR	Department of Rural Development and Land Reform
DSCR	Debt Services Cover Ratio
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
ECA	Export Credit Agency
ED	Enterprise Development
EPC	Engineering, Procurement and Construction
EPCm	Engineering, Procurement (equipment or servides for and on behalf of owner) and Construction Management
EW	Early Works
FID	Financial Investment Decision
FINCOM	Finance Committee of the Association
FTE	Full-time Equivalent
GDP	Gross Domestic Product
GN	Government Notice
GRC&L	Governance, Risk, Compliance and Legal
HPSP	High-Performing Schools Programme
HR	Human Resource
HoT	Heads of Terms for an OMM Framework Agreement
IB	Irrigation Board
IBC	Intermediate Business Case
IDC	International Development Corporation

IM	Information Management
IFC	International Finance Corporation
IRR	Institutional Reform and Realignment
ISA	Infrastructure South Africa
IT	Information Technology
ITA	Income Tax Act
JWF	Joint Water Forum
LLCR	Loan Life Cover Ratio
LNW	Lepelle Northern Water
LWUA	Lebalelo Water User Association
MANCOM	Management Committee of the Association established in terms of the Constitution
MIGA	Multilateral International Guarantee Agency
MISA	Municipal Infrastructure Support Agent
MLA	Multilateral Lending Agencies
MLM	Mogalakwena Local Municipality
MoI	Memorandum of Intent
MoU	Memorandum of Understanding
MPRDA	Minerals and Petroleum Resources Development Act, 2002
MPRRA	Minerals and Petroleum Royalty Act, 2008
MTEF	Medium-Term Expenditure Funding
MW	Main Works
ND	Nominal Diameter
NEC	New Engineering Contract
NEMA	National Environmental Management Act, 1998
NGO	Non-Government Organisation

NPV	Nett Present Value
NT	National Treasury
NWA	National Water Act, 1998
NWIB	National Water Infrastructure Branch
NWRS2	National Water Resources Strategy 2 Reference to Master Plan
O&M	Operations and Maintenance
OMM	Olifants Management Model
OPEX	Operating Expenditure
OPSCOM	Operations Committee of the Association
ORP	Operational Readiness Plan
ORS	Olifants River System
ORWRDP	Olifants River Water Resources Development Project
PAJA	Promotion of Administrative Justice Act, 2000
PEGAC	Premier's Employment Growth Advisory Council
PEP	Project Execution Plan
PFMA	Public Finance Management Act
P&Gs	Preliminary and General costs
PIC	Public Investment Corporation
PIM	Project Investment Plan
PMC	Project Management Contractor
PMU	Project Management Unit
POs	Purchase Orders
POP	Procurement Operating Plan
PPGI	Public-Private Growth Initiative
PPP	Public-Private Partnership

PR	Public Relations
RBIG	Regional Bulk Infrastructure Grant
RFI	Request for Information
RFP	Request for Proposal
RID	Record of Implementation Decisions
RoA	Return on Asset
RoI	Return on Investment
SADC	Southern African Development Communities
SANS	South African National Standards
SARS	South African Revenue Services
SCM	Supply Chain Management
SDG	Sustainable Development Goal
SDM	Sekhukhune District Municipality
SECOM	Social and Ethics Committee of the Association
SED	Socio-Economic Development
SEIA	Socio-Economic Impact Assessment
SEIFSA	Steel and Engineering Industries Federation of Southern Africa
SIB	Stay-in-business
SLP	Social Labour Plan
SPV	Special Purpose Vehicle
STEERCOM	OMM Programme Steering Committee of the Association
SWAM	System Water Availability Model
TCTA	Trans-Caledon Tunnel Authority
TGP	Total Guaranteed Package
TOM	Target Operating Model

VAT	Value Added Tax
WBS	Work Breakdown Structure
WSA	Water Services Authority
WS Act	Water Service Act, 1997
WTW	Water Treatment Works
WUL	Water Use License

Key Definitions

Commercial Users or Members	Mines and other industrial water users who have confirmed their interest in becoming members of the Association that require water which is not provided by a Water Service Authority and can be provided through the OMM Programme;
Institutional Members	Government entities such as DWS and the Water Service Authorities, that in accordance with the HoT, represent Government as a members of the Association.
LWUA	Lebalelo Water User Association, a Water User Association established in terms of Chapter 8 of the National Water Act, 1998.
Association / Transformed Association	LWUA or a transformed LWUA as applicable. The transformed Association will be established pursuant to the rebranding of the current LWUA as per the agreements in the HoT.
OMM Programme	The scope of the OMM Programme is to: 1. Abstract water from De Hoop Dam, Flag Boshielo Dam and Havercroft weir; 2. Re-sequence the construction of ORWRDP bulk raw water infrastructure to meet revised water needs: ▪ commence construction with Phase 2B & 2B+ and 2F whilst deferring Phase 2D and 2E until needed; ▪ construct a new pump station between Steelpoort pump station and Mooihoek reservoir; and ▪ construct potable water infrastructure for defined areas in the Northern and Eastern Limb with construction to be fast tracked where existing bulk water infrastructure is already in place. 3. Establish a resourcing partnership through the Association to: ▪ construct, operate and maintain the defined bulk water infrastructure (including the Flag Boshielo and De Hoop Dams);

	▪ construct potable water infrastructure in the defined areas in the Northern and Eastern Limb; and ▪ provide operational support to WSA(where required); 4. Implement a socio-economic development (SED) plan to prepare communities to participate in the OMM Programme spend to develop skills, create jobs and change behaviour. The SED programme is to focus on potable water, sanitation services, connectivity, education and enterprise development.
ORWRDP	The Olifants River Water Resource Development Project, a DWS project conceptualised in the late 1990's aimed to address the raw water needs of the middle Olifants River catchment area in the Limpopo Province.
Bulk Water Supply	Means the supply of bulk raw water and bulk potable water up the the command reservoirs and inclusive of the required Water Treatment Works.
Water Reticulation	Means the final distribution of potable water from the bulk command resreviors to yard connections within the defined communities including pressure tanks and booster pumping if required.
Finance Committee (FINCOM)	Means the Finance Committee, which is constituted as a sub-committee of the Management Committee (MANCOM) of the Association. The Committee will exercise its authority under delegation (Section 9.3 and 9.4 of the Members' Agreement) from and is accountable to the MANCOM for its performance
Management Committee (MANCOM)	Means the Management Committee of the Association established in terms of its Constitution. The MANCOM shall consist of five (5) members duly elected in accordance with the Association's Constitution and Members' Agreement and the Chief Executive Officer (CEO) appointed in accordance with clause 16 of the Association's Constitution.
Operations Committee (OPSCOM)	Means the Operations Committee, which is responsible for the day-to-day operational activities of the Association.
OMM Programme Steering Committee (STEERCOM)	Means the OMM Programme Steering Committee, which is constituted as a sub-committee of the Management Committee (MANCOM) of the Association. The Committee will exercise its authority under delegation (Section 9.3 and 9.4 of the Members' Agreement) from and is accountable to the MANCOM for its performance.
Social and Ethics Committee (SECOM)	Means the Social and Ethics Committee, which is constituted as a sub-committee of the Management Committee (MANCOM) of the Association. The Committee will exercise its authority under delegation from and is accountable to the MANCOM for its performance.

Foreword

Developing a business case is vital to any infrastructure project and ultimately to the prosperity and well-being of any business, country and its citizens. The business case is a planning and development tool for projects and an aid to effective decision-making.

The Five Case Model (5CM)[1] for business cases looks at a project from five perspectives (each of which forms an individual 'case') asking:

- Is the project strategically necessary? **Strategic Case**

  Providing the rationale for the project, describes its fit with wider policy/strategy, sets the project's scope and boundaries, describes clear project objectives, summarises all applicable risks (environmental, legislative and social risks) and opportunities and identifies the outcomes expected. In other words, it should clearly express the 'strategic need' for the project.
- Is the project economically and socially desirable? **Economic Case**

  Demonstrates that a wide range of options for developing the project have been considered and refined to a shortlist, and eventually a 'preferred option' using the cost-benefit analysis.
- Is the project commercially viable? **Commercial Case**

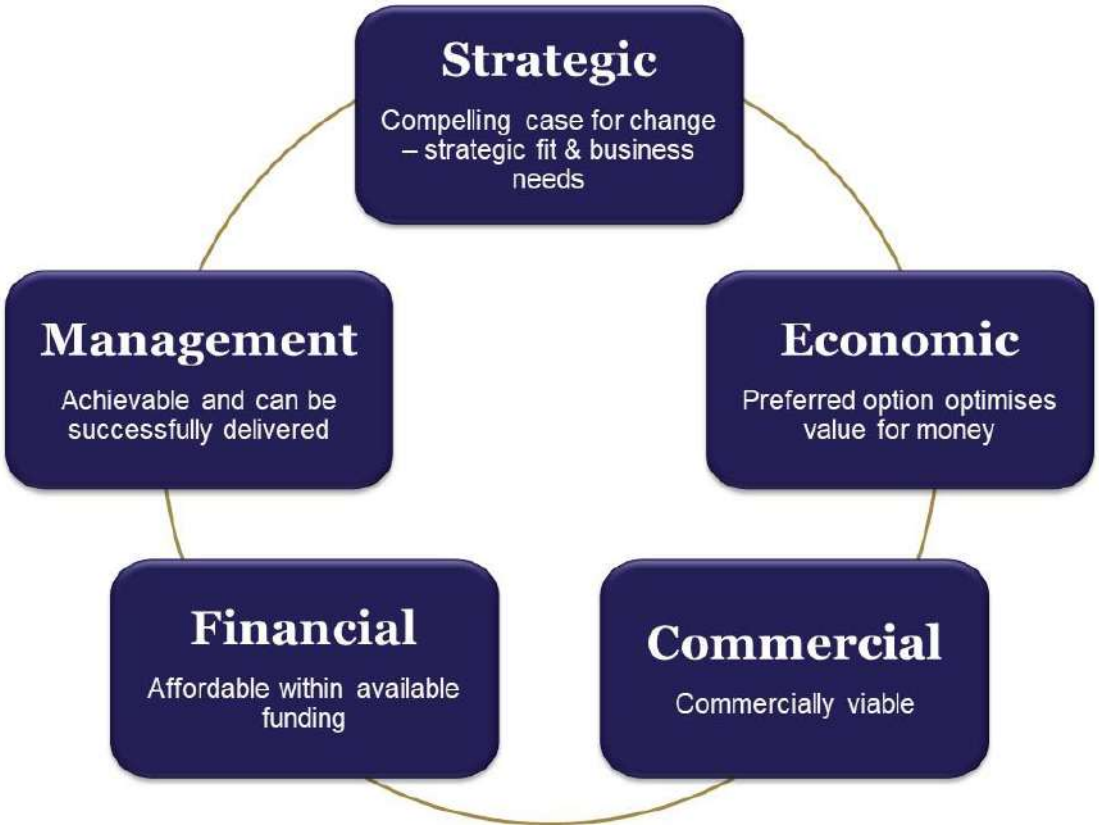
  Demonstrates that the project is commercially viable. It sets out the proposed contractual structure, allocation of risk and the procurement strategy.
- Is it affordable? **Financial Case**

  Demonstrates that capital investment and operating costs are affordable and that sufficient allowance has been made for risk management, monitoring and unexpected events. This also includes any expected income which the parties may earn from the project.
- Can it be practically delivered? **Management Case**

  Describes the project delivery team and demonstrates it has the right skills and experience, appropriate governance and a realistic project delivery plan. This should include plans for stakeholder engagement, risk management and benefit realisation.

1 *Infrastructure Business Case: International Guidance, July 2020*

Figure 1: Five case model



The above ensures a flexible and structured approach which enables thorough assessment of proposals, helps justify the expenditure of money and promotes communication with stakeholders, lenders and investors.

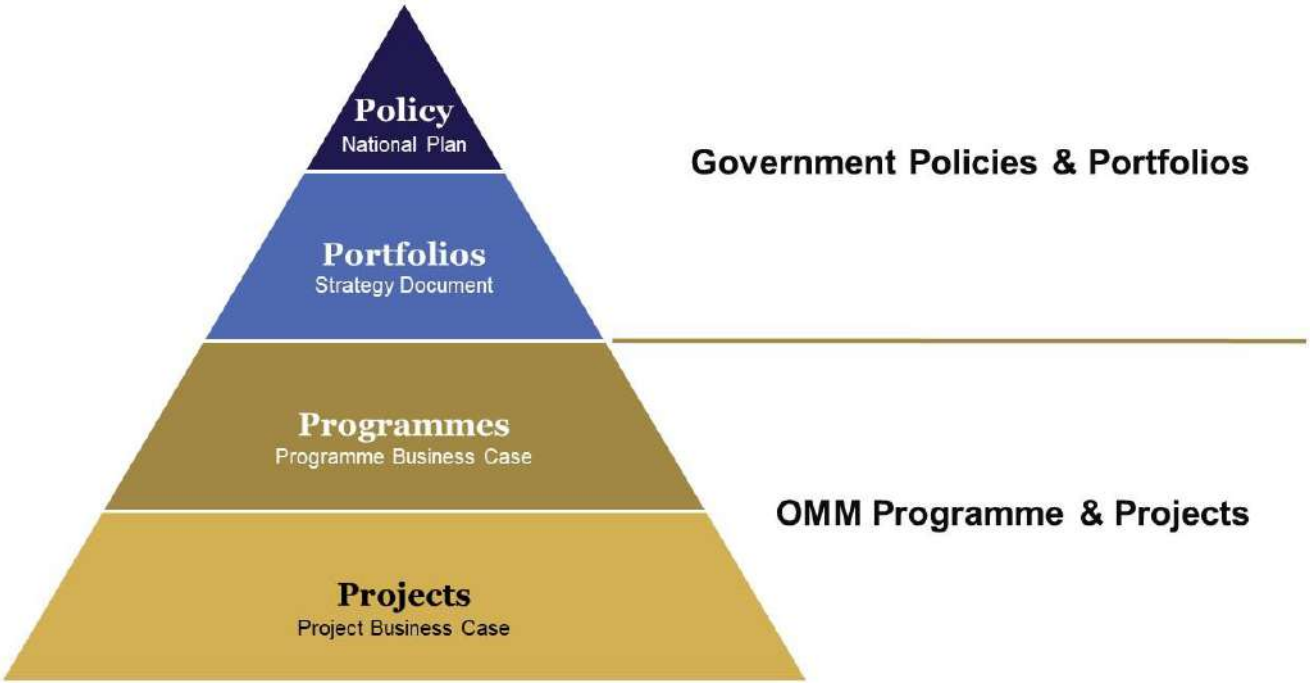
"Cases" can be read as stand-alone documents, but are also all interconnected creating an integrated business case proposal for the programme or project. The integrated business cases are developed through three stages:

- Early Business Case (EBC)
- Intermediate Business Case (IBC)
- Full Business Case (FBC)

At each stage, each component case is revisited to check its conclusions and decisions in the event of new information and analysis as the project develops.

National Treasury (NT), Infrastructure South Africa (ISA) and other key stakeholders have adopted the 5CM as a standard for Programme and Project Business Cases. The Department of Water and Sanitation (DWS) and other key infrastructure departments are aligning to this standard and due to involvement of DWS in this programme it was agreed that the OMM Programme will also conform to the 5CM format principles as part of the Association's stage gate project implementation model methodology and reports. This alignment will also provide other Association Members further comfort that best practice is applied to the overall OMM Programme without impacting their governance requirements.

Figure 2: The delivery pyramid

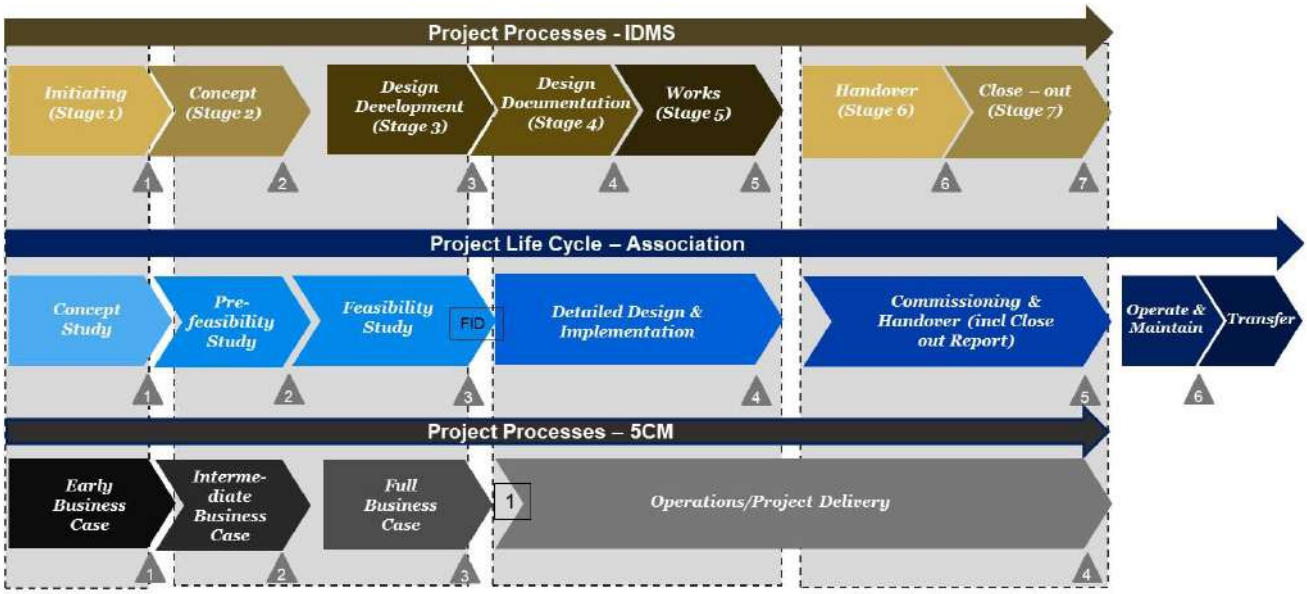


It is good practice for a project to agree a scoping, assurance and approval plan with the approving authority (in this case the Association's Management Committee) at the outset, mapping the project's journey through the assurance and approval process. As per the Association's Programme/Project Implementation Policy, this is a progressive process, involving a number of stages and reviews, to ensure any issues are dealt with early and that there are 'no surprises' at the final approval point. The following steps are an example of the type of approach that could be agreed:

- **Concept Study Phase / Early Business Case stage:** Approving that there is a strategic need to develop a project, that the shortlist of options identified represents a sensible response to the strategic need and the commitment of resources to prepare the Intermediate Business Case;
- **Pre-feasibility Study Phase / Intermediate Business Case stage:** Approving the 'preferred option' as the option which offers the best solution from an economic, social and financial perspective and the commencement of procurement; and
- **Feasibility Study Phase / Full Business Case stage:** Approving the results of the procurement process, signing of a formal contract with the 'preferred bidder' and releasing of funding to deliver the project.

The OMM Programme, will follow the Association's approved stage gate project implementation model that is based on international good practices. The Association's model can be directly integrated with the Five Case Model requirements, and is also well aligned the Governments Infrastructure Delivery Management System as illustrated below.

Figure 3: Mapping of the Association's project life cycle to IDMS and 5CM



1 Full Business Case report will align with FID (Final Investment Decision) requirements, linked to the commercial strategies for the specific project.

The OMM Programme consists of new projects as well as the continuation of some existing projects that are in different stages of development, as defined in the stage gate project implementation model and therefore have already passed through certain approval gates. Those justifications and approval aspects of the individual projects are not repeated in this report but will be tested through due diligence investigations before the OMM Programme will proceed with its implementation.

In support of this document the specific requirements for an Intermediate Business Case, are highlighted for the reader:

- Review the options/concepts produced by the Early Business Case;
- Establish the potential value for money of each option and identify a preferred solution;
- Set out the commercial viability and affordability of the programme/project;
- Identify the expected resources and management arrangements; and
- Identify how the project will be procured.

The following steps are to be followed to complete the Intermediate Business Case:

- Strategic case
  - Reconsider the Strategic Case and reconfirm the strategic need, where relevant
- Economic case
  - Preparing the economic analysis for short-list options
  - Undertaking a qualitative benefits & risk analysis
  - Selecting a preferred option and undertake sensitivity analysis
  - Reviewing the Environmental and Social Impact Assessment (ESIA), technical studies and other studies
  - Conducting a preferred options workshop with key stakeholders
- Commercial case

- Developing a contractual structure for the preferred option and allocating risk
- Drafting project specification and Heads of Terms
- Undertaking market engagement
- Drafting the procurement plan and engaging with funders

- Financial case
  - Update capital requirements and project delivery budget
  - Confirming financing sources
  - Building the financial model
  - Testing affordability
- Management Case
  - Finalising delivery, management and governance structure
  - Drafting section on use of consultants and contractors
  - Developing project plan and assurance and approvals plan
  - Conducting a Successful Delivery Workshop
- The above guidelines are applied in this programme IBC Report #1. As was approved by the OMM Programme Steering Committee and aligned to the OMM Programme objectives to accelerate the supply of water to communities and maximise the use available designs, data and infrastructure, the following should be noted for IBC Report #1:
- Due to the advanced stage of Phase 2B & 2B+ project as well as the Water Treatment Works projects at Mokopane and Sekuruwe in the Northern Limb, it is confirmed that the preferred option has already been chosen based on completed feasibility studies, the economic case and required analysis will therefore only be documented for the preferred option;
- This IBC focuses on the 2B & 2B+ project as well as the Water Treatment Works projects at Mokopane and Sekuruwe in the Northern Limb, however the project is part of a greater programme business case, therefore to provide full context, programme level information is also included in this IBC where relevant;
- Selection of the preferred option for the programme energy supply solution.

IBC Report #2 will consider the remainder of the projects included in the OMM Programme and targeted for the third quarter of 2023. This report will also include the full business case definition for Phases 2B & 2B+ and the WTWs, together with a FID approval request will be issued to the Association's Members for their action before 30 October 2023. To enable the acceleration of certain projects, the FBC will only be issued once all projects in the OMM Programme reaches the rquired state of development.

Executive Summary

A high-level overview of the key OMM Programme changes between the Early Business Case (issued in April 2022) and the Intermediate Business Case Report #1, are summarised below in terms of scope, costs and schedule:

- Cost effective Energy Solution was developed and addionally included;
- SE2 project was included;
- Partially completed detailed design information was included for Phases 2B & 2B+ and two (2) Water Treatment Works in the Northern Limb;
- Escalated and better definition of estimates for Phases 2B & 2B+ and two (2) Water Treatment Works in the Northern Limb;
- The projected construction timelines were updated with market inlelligence;
- An enhanced financial model was developed that will meet financiers requirements.

From the 5 key aspects of this Intermediate Business Case Report #1, it is evident that the OMM Programme opted for the most viable project solutions for Phases 2B & 2B+, Water Treatment Works in the Mogalakwena district and associated electrical infrastructure for the detailed projects. This is aligned with the OMM Programme objectives. The solutions meet the objectives of the Association and its members, and is aligned to the required accuracy level for a Pre-feasibility Study Report. The OMM Programme also further updated all other OMM Programme related data in this report with the latest and most accurate information available. The projects not developed to Pre-feasibility Study level (although information updates were provided) will be addressed in IBC Report #2 targeted for the third quarter of 2023. Based on the details contained in this IBC Report #1, the OMM Programme will notify the Association's Members, aligned with the "Roll-Over" concept already approved, that the OMM Programme is proceeding into the Bankable Feasibility Phase for the following projects:

- Phases 2B & 2B+;
- Water Treatment Works in the Mogalakwena district at Mokopane and Sekuruwe; and
- Associated electrical infrastructure for the network.

Strategic Case Summary

Problem Statement

The Department of Water and Sanitation (DWS) conceptualised in the late 1990's the Olifants River Water Resource Development Project (ORWRDP) to address the water needs of the middle Olifants River catchment area in the Limpopo Province. The aim of the project was to release pressure off Flag Boshielo Dam, the key regional source of water in the area, to provide water to the water-stressed city of Polokwane, and, in doing so, free up water for the water-stressed Mogalakwena municipal area.

The ORWRDP has only partially been implemented over the past two decades placing increasing pressure on DWS to meet social and industry expansion water needs. Additionally, potable water infrastructure development has been very slow in the Eastern Limb despite bulk raw water having been available since 2002 through the Lebalelo Water User Association scheme. The delivery of potable water services in the Northern Limb area of Mogalakwena has also been hindered due to delays in the ORWRDP implementation.

Levels of social unrest and incidences of asset destruction have increased due to the slow progress in delivery of water services to communities together with unmet expectations of job creation from mines. This has resulted in vandalism of water infrastructure and mining operations being disrupted, particularly in the Eastern Limb.

Government has also had funding constraints with competing priorities for water and other infrastructure services. The outbreak of the Covid-19 pandemic has placed additional financial and organisational pressure on DWS to fast-track water supply to communities to prevent the spread of the disease.

There is also currently a regional economic expansion opportunity to take advantage of a favourable commodity cycle.

The original ORWRDP plan, from a technical, financial and socio-economic perspective, was no longer optimal neither was it fit-for-purpose and was amendment in the OMM Programme for the following reasons:

1. The ORWRDP plan did not include the construction of a raw water pipeline from Pruissen to Mokopane and Sekuruwe which is required to meet social and commercial users' requirements;
2. Flag Boshielo Dam is already over allocated and Northern Limb water supply phases would place additional pressure on the system. This pressure could be released through augmentation strategies and the abstraction of water from De Hoop Dam to meet Eastern Limb requirements allowing water from Flag Boshielo Dam to support the Northern Limb requirements;
3. The ORWRDP plan to construct Phase 2D and 2E before phase 2F in the Eastern Limb, will provide no additional water to the water stressed Polokwane area. The construction of Phase 2F, before these two phases, would however significantly accelerate the provision of additional water to Polokwane;
4. The Association's water scheme infrastructure remains under-utilised and, with some minor modifications, can be used to link the De Hoop Dam to Polokwane;
5. Technical specifications have not been revised to account for the reduced dam yields (De Hoop Dam and Flag Boshielo Dam) highlighting concerns over estimated cost; and
6. The synchronisation of bulk raw water infrastructure development with potable water infrastructure development is part of the OMM Programme. This is a critical consideration in delivering potable water and requires an integrated approach.

Addressing the pressing social and commercial needs Government and Commercial Members agreed to collaborate by entering into a joint venture arrangement. In terms of this arrangement the Association, has been tasked with financing, building, operating, maintaining and managing the development of a defined OMM Programme for the accelerated delivery of bulk raw and potable water services in the region. The implementing entity for this OMM Programme is Lebalelo Water User Association (Association) which is in the process of being transformed and rebranded.

The Government consisting of the National Department of Water and Sanitation together with the affected WSA as the institutional members and the commercial members will have equal interest in the transformed Association on a 50:50 basis.

OMM Programme alignment with the National Water Resource Strategy

The National Water Resource Strategy (NWRS) is currently the legal instrument for implementing or operationalizing the National Water Act (Act 36 of 1998)(NWA) and it is thus binding on all authorities and institutions implementing the Act. It is the primary mechanism to manage water across all sectors towards achieving the national government's development objectives. The NWRS-1 was published in 2004 and the second edition (NWRS-2) was published in 2013 and was the blueprint for water resources management in South Africa. The National Water Resource Strategy 3 builds on the National Water Resources Strategy editions 1 and 2, and the revision of the strategy, as prescribed in the NWA, has been undertaken with the purpose being to:

Facilitate the proper management of the nation's water resources; Provide a framework for the protection, use, development, conservation, management and control of water resources for the country as a whole; Provide a framework within which water will be managed at local, regional or catchment level, in defined water management areas; Provide a framework for strengthening the regulation of the water and sanitation sector; Provide information about all aspects of water resource management; Identify water-related development opportunities and constraints; Provide opportunities for the implementation of innovative technologies and solutions.

The purpose of the third edition of the National Water Resource Strategy (NWRS-3) is to ensure the protection and management of water resources to enable equitable and sustainable access to water and sanitation services in support of socio-economic growth and development for the well-being of current and future generations in South Africa. The NWRS-3 is a strategy for all sectors and stakeholders who use and impact upon South Africa's water resources and it responds to the NWA by outlining strategic objectives and actions which are then carried forward for resourcing and implementation in the National Water and Sanitation Master Plan (NW&SMP).

OMM Programme Fit with Wider Policies and Strategies

The OMM Programme envisages a collaborative treatment of the relevant water acts to give effect to section 27 of the Constitution of the Republic of South Africa, 1996 (which addresses access to water) in managing water within a circular economy. The development of the OMM Programme is required to be socially, environmentally, and economically sustainable. The OMM Programme aims to provide for co-operative, environmental governance by establishing principles for decision-making on matters affecting the environment. Sustainable development requires the integration of social, economic, and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations.

OMM Programme Objectives

Considering water resource availability and the regional water needs, as agreed between the members of the Association, the OMM Programme aims to achieve the following key objectives:

1. Accelerate the implementation of the ORWRDP and social water supply to water stressed areas;
2. Revisit and optimise the current available technical design to ensure the most cost effective solution;
3. Operational efficiency optimisation through economy of scale of similar systems by integrating existing Government and Association bulk raw water infrastructure into the Association as a single operating entity for the total network;
4. Improve potable water service delivery through supporting existing potable Water Services Authorities;
5. Develop skills in the Water Sector not only through the construction activities, but as part of ongoing operational activities (executed by the Association and WSAs) as well as through ongoing SED activities in the region of operations;
6. Improve social harmony in the region through the provisioning of social water, the creation of jobs and socio-economic development;
7. Bulk and Potable water infrastructure capex to be shared between all members to secure an integrated funding approach with all members sharing funding repayment risks;
8. Sustainability of the OMM Programme by fully mandating and equipping the Association to implement, manage, operate and maintain the OMM Programme;
9. Strict adherence to regulatory requirements; and
10. Be a model water infrastructure pilot programme for the country through collaboration (between the Government and the private sector) and the provision of strong governance over the programme by implementing the OMM Programme based on internationally proven project execution principles and standards.

OMM Programme Scope

The scope of the OMM Programme is to:

1. Abstract the scheme water primarily from De Hoop Dam, Flag Boshielo Dam and Havercroft Weir on the Olifants River;
2. Re-sequence the construction of ORWRDP bulk raw water infrastructure to meet revised water needs;
3. Commence construction with Phases 2B & 2B+ followed by Phase 2F (revised and updated to meet current requirements) whilst deferring Phase 2D and 2E until needed;
4. Construct a new pump station between Steelpoort pump station and Mooihoek reservoir, Phase 2H;
5. Construct potable water infrastructure for defined areas in the Northern and Eastern Limb with construction to be fast tracked where existing bulk water infrastructure is already available;
6. Establish a resourcing partnership through the Association to:
    a. Support construction, operations and maintenance of the defined bulk water infrastructure (including the De Hoop and Flag Boshielo Dams);
    b. Provide operational support to Water Services Authorities, where required;
7. Implement a socio-economic development (SED) plan to prepare communities to participate in the OMM Programme spend to develop skills, create jobs and change behaviour. The SED programme will primarily focus on potable water, sanitation services, connectivity, education and enterprise development.

Risks and Opportunities

The OMM Programme has the prospect of realising some significant opportunities not only regionally but also at a National level. These include:

1. Social harmony in the region through the provisioning of potable water, job creation (these are jobs created during the programme role out which would be identified as being temporary and then there is the additional opportunity for the creation of permanent jobs for operations, on completion of construction and commissioning) and socio-economic development;
2. Behavioural change to water conservation and payment for services;
3. Increased collaboration between stakeholders to develop high impact socio-economic projects;
4. Development of skills in the water sector;
5. Establishment of a predictable cost-effective water tariff to assist large scale economic investment; and
6. Provision of water infrastructure to assist the industrialisation of the region.

In order to realise these opportunities the potential risks surrounding the OMM Programme are actively managed. Potential key risks can be summarised as follows:

1. Political and institutional alignment across all spheres of Government;
2. Changes and dynamics in key stakeholder leadership;
3. Communities' willingness to allow construction activities to commence;
4. Organizations beyond the local communities seeking participation in the construction activities;
5. Ramping up and the capacity of Construction Industry given the scale of the OMM Programme;
6. The impact on affordability of tariffs given the escalating cost of power sourced from Eskom;
7. The unstable energy supply from Eskom makes provision for alternative energy as a fundamental requirement in the OMM Programme;
8. Long lead times to address environmental and other regulations;

9. Commercial members who signed letters of commitment for capacity to be acquired in the infrastructure for the Study Phase do not sign final Off-take Agreements prior FID;
10. Ability of municipalities (Water Service Authorities (WSAs)) to pay for the bulk water;
11. A culture of non-payment for services; and
12. An increase in water usage against planned availability.

Major construction, financing and operational risks would be borne by the Association in terms of water supply agreements signed with Members.

Outcomes Expected

Three strategic outcomes are expected with the outcomes structured under three horizons. These outcomes will be monitored through the baselining and measurement of specific Sustainable Development Goals.

- **Horizon 1:** Stabilisation of operations and the provision of a social license to operate through a series of impactful initiatives to prepare communities for participation in the OMM Programme;
- **Horizon 2:** Successful implementation of the defined OMM Programme to provide much needed water and in doing so building a trusted platform for socio-economic development (SED) in the region. This to be done through the expansion of the Association's role to build, operate and maintain, bulk water infrastructure as well as building potable water infrastructure. This will include the establishment of a sustainable SED collaboration forum to align members around common socio-economic development initiatives and infrastructure to foster social harmony; and
- **Horizon 3:** Catalyse the creation of game changing businesses / initiatives to drive exponential socio-economic growth in the region through the identification and development of high socio-economic impact opportunities in the region.

A Benefit Analysis on the impact of the OMM Programme concluded the following:

1. Increased education levels, greater job opportunities, and a reduction in poverty levels.
2. Growth in local businesses and increased employment in local communities.
3. Improved living conditions of employees and a decrease in housing expenses, freeing up money for food, education, and health care.
4. Improved health leads to improved education outcomes for learners, and improved job opportunities.
5. Communities could see an increase in disposable income that can then be spent on other necessities such as food, electricity, and transportation to work.
6. Time savings in water collection could lead to improved school and work attendance, along with economic growth.

Economic Case Summary

As part of the Early Business Case Report a wide range of technical and execution options for developing the OMM Programme was considered and refined. This IBC Report builds further on the concepts with specific focus on the scope components that can accelerate the supply of water to communities and members, by exploiting available designs and infrastructure developed in the past. To this extent specific detail is provided for identified accelerated solutions such as Phases 2B & 2B+ raw water pipelines, Water Treatment Works in the Mogalakwena district, upgrading of existing potable water infrastructure in the Eastern Limb and associated electrical infrastructure for these detailed projects. Although the final scoping for the other mandated OMM Projects will only be completed in June 2023 as per the overall study plan, general updates are provided as part of this report. The above mentioned accelerated scope works include AACE level 3 capital cost estimates and integrated financial modelling as part of the finalisation of the selected scope solutions. The evaluation results

clearly showed the potential of an accelerated approach, addressing the revised water needs in the region and the viability of providing an equitable solution to all members.

The water resource availability was verified and a report developed by the Joint Water Forum, indicated that sufficient levels of water are forecasted to supply the OMM Programme required design capacities from the respective dams:

- For the scenario with releases for the Environmental Water Release 7 downstream of Flag Boshielo Dam, the supply potential at Flag Boshielo Dam is 43 million m^3/a (118 Ml/d) and at De Hoop Dam 74 million m^3/a (218 Ml/d).
- For the scenario without releases for the Environmental Water Release 7 downstream of Flag Boshielo Dam, the supply potential at Flag Boshielo Dam is 47 million m^3/a (129 Ml/d) and at De Hoop Dam 84 million m^3/a (230 Ml/d). Note again that in this case the EWR would still be fully supplied at all other sites in the ORS, specifically the key EWR Site 16 located in the Kruger National Park.

The peak Association Members' demands in 2040 (matching the Joint Water Forum assessment period of 2020 to 2040) will be 92 Ml/d and 135Ml/d from Flag Boshielo and De Hoop Dams respectively.

Phases 2B & 2B+ is designed to a sufficient level of detail to proceed with the commercial processes to appoint a construction contractor. The Phases 2B & 2B+ project provides for the delivery of raw water from Flag Boshielo Dam (on the Olifants River) northwards. Delivery is via a new steel pipeline from Flag Boshielo to Pruissen (2B), and from Pruissen to Sekuruwe (2B+) including, three associated new pump stations at Flag Boshielo Dam, Malgas and Doornfontein respectively. The primary objective of the project is to feed bulk raw water to two Water Treatment Works (from which potable water can be provided to communities), and the mines in the Northern Limb. Partial completed designs was available for the sections from Flag Boshielo to Piet-se-Kop and will be directly utilised as the basis to appoint an EPC Contractor to be ready to start construction in January 2024. The section from Piet-se-Kop to Sekuruwe was already constructed by the Mogalakwena Local Municipality. Condition assessment will be performed on this section of the pipeline, refurbishment and upgrades implemented as required in parallel with the construction of the new pipeline section. The total scope from Flag Boshielo to Sekuruwe will be commissioned as a single integrated network.

Two new WTWs will be constructed in the Northern Limb to deliver potable water to communities from the new 2B & 2B+ pipeline. The WTW will be located at Mokopane (28Ml/d) and Sekuruwe (21Ml/d). Previously commissioned and partially completed detail designs will be used as basis to accelerate the execution of these projects in parallel with the construction of 2B & 2B+ pipelines. This will enable immediate distribution of potable water to communities as soon as the bulk raw water is available.

As an alternative to full reliance on Eskom electricity supply, alternative solutions were defined for both the Northern and Eastern Limb that will be more economical over the repayment period for members, but also remove load shedding concerns and meeting schedule requirements. The ESKOM electricity emission factor for South Africa (2021) was 1.06kg CO2 emitted/kWh. This selected energy solution will reduce the Association's CO2 emissions associated with Bulk Raw Water Supply by 69%, supporting the OMM Programme Sustainable Development Goals (SDG).

Linked to the OMM Programme objectives to fully integrate and utilise available data, designs and infrastructure, the current Association project, Southern Extension 2, to supply water from Phase 2C at Spitskop to Booysendal Platinum Mine, is included into the OMM Programme to exploit integration opportunities of common project management systems and sharing of information.

The OMM Programme solution will assist in alleviating socio-economic challenges in the region where up to 55% of households do not have access to piped potable (tap) water inside a yard. Even though households have access to piped potable water, people are reverting to alternative water sources due to intermittent supply

disruptions, water shortages, leakages and other issues. The OMM Programme caters for the supply of potable water to more than 380 000 people and the available capital saved through the optimisation of the Eastern Limb bulk raw water supply can be effectively applied to the overdue potable water supply to communities in the region.

Furthermore, up to 42% of people in the Limpopo Province, and even higher in the areas targeted by the OMM Programme, are unemployed. In addition, 57% of the youth (aged between 15 and 34 years) within Limpopo are unemployed. The socio-economic development aspects of the OMM Programme will greatly alleviate this problem in the region. The economic impact assessment revealed that the OMM Programme would likely result in 16,300 jobs being created in Limpopo Province linked to the construction spend with a further 9,000 jobs linked to the ongoing operational spend. Low-income groups would receive approximately 30% of the additional household income of R3.1 billion linked to annual capital expenditure over a 7-year period and 39% of the additional household income of R2.4 billion linked of the annual operational spend over a 28-year period in the Province.

The CBA for the provision of water infrastructure yielded positive results and therefore the OMM Programme presents an economically viable investment opportunity. The opportunity costs associated with the OMM Programme referred to the impact of a lack of adequate water supply to Commercial users and the surrounding communities, with the impacts on mining companies especially trickling down to other areas of society and the economy. South Africa's current economic climate hinders the government and private sector's ability to obtain funding to address the above issues in the short-term. Elevated levels of inflation, interest rates and the exchange rate will also increase the cost of financing large infrastructure investments. This will likely weigh down on the pace at which new potable and bulk water infrastructure will be rolled out within the respective communities. Furthermore, government inefficiencies and the lack of access to bulk water means that businesses will have to use their own capital to provide the needed infrastructure for their operations. Therefore, the OMM Programme remains the most efficient way to ensure timely provision of adequate water supply in these areas.

Completion of the OMM Programme will help address the many inequalities in water access in Limpopo and will provide benefits to Commercial users and local communities. Access to adequate water supply will bring about direct benefits such as employment opportunities, as well as indirect opportunities from social investment initiatives implemented by mining firms operating in the respective communities. Other benefits include improved school attendance from better health, with learners being able to focus on schooling and attaining higher levels of education. Lastly, there are benefits from saving on costs and time associated with finding alternative sources of water supply. The above benefits are in line with the social development objectives set out by the OMM Programme.

The NPV, BCR and IRR all suggest that the investment project over the 28-year period is economically viable as it is expected to yield positive returns:

- **NPV** – Based on the calculations run, the OMM programmes' NPV is positive, which means that the total quantifiable benefits of the project outweigh the quantifiable costs over the period of analysis. This results in a gain of about R12.5 billion. This amount is not a surplus per annum but rather the overall gains made over the 28-year period (2023–2050). This would mean that, on average, there is a gain of approximately R448 million **(R12.5 billion over 28 years)** per annum due to the provision of potable and bulk water infrastructure.
- **BCR – The BCR for the OMM Programme is 1.27**, indicating that for each rand spent on the provision of potable and bulk raw water, there is an expected R1.27 return. This means that the OMM Programme is considered efficient.
- **IRR – The IRR for the OMM Programme is 16%**, which is greater than the social discount rate of 8%, making the programme economically viable.

The extent of the infrastructure development across the Limpopo Province and its associated capital and operational spend represents a significant opportunity for socio-economic development in the region. The SED strategy is setup to respond directly to strategic risks associated with the OMM Programme and to this end, timely engagement with communities SED projects should be initiated in advance of construction to effect buy-in. As part of the education SED focus, the objective is to create a High-Performing Schools Programme (HPSP) that equips the youth in the OMM Programme area to be agents of change for their communities and to shape their future towards sustainable careers. A pilot project was implemented at Kwata Primary School located in Ga-Phala in Sekhukhune District. The holistic programme allowed the PMU team to develop a blueprint for roll-out to other pre-identified schools. Following approval of the pilot project, the SED activities will commence with the implementation of an additional 6 HPSP projects in the Flag Boshielo and Sekuruwe areas (to support the Phase 2B & 2B+ implementation) and the SE2 area.

The scope and economic evaluation results presented in the Economic Case clearly showed the potential of an accelerated approach, addressing the revised water needs in the region and the viability of providing an equitable solution to all members.

The details presented is fully aligned with the “Roll-Over” concept already approved, and the OMM Programme is proceeding to finalise the required detail designs and contractor identification for:

- Phases 2B & 2B+;
- Water Treatment Works in the Mogalakwena district at Mokopane and Sekuruwe; and
- Associated electrical infrastructure for the network.

IBC Report #2 will consider the remainder of the projects included in the OMM Programme and is targeted for issue in the third quarter of 2023.

The Cost Benefit Analysis for the provision of water infrastructure, based on well developed designs, cost estimates and schedules, yielded positive results, with all three measurements used suggesting that the OMM Programme presents an economically viable investment opportunity.

Commercial Case Summary

The commercial dimension of this business case demonstrates that the preferred contracting options selected will result in a viable procurement and a well-structured contract for the members. Different commercial and procurement strategy options based on the preferred technical options were evaluated and the most viable strategies were selected for the different projects. The selected strategies are driven by and addresses key project development and execution elements such as:

- Appropriate allocation of risk
- Consolidation of interfaces and liabilities (Contractual wraps)
- Cost certainty
- Quality and schedule integrity
- Socio-economic delivery

The allocation and management of risk is the core of the legal and commercial relationship established by a project’s contract. In selecting the commercial and procurement strategies, the team ensured that the allocations are fair and sustainable through the life of the specific project. The party holding a risk should proactively drive the risk to avoid additional time and cost. The relationship between the parties should ensure that the risk holding party can count on the co-operation of the other party to assist in identifying and resolving issues as they arise for each identified risk. With this in mind, the New Engineering Contact (NEC 3), built around procedures for

sensible risk allocation and ensuring that when risks do emerge that the parties collaborate to deal with them quickly and decisively, was selected as Form of Contract in support of the strategy.

The specific details of the form of contract and pricing options was considered for every project in light of the anticipated complexity and scope of works. The selection is supported by a contractual structure which promotes collaborative approach and also fair and equitable risk allocations to the party best suited to mitigate and potentially minimise the risk.

The strategies address all of the above in a considered and balanced approach, as well as looking at market feedback, policy positions, the complexity and available level of design definition. For the Bulk Water Projects as well as the Primary and Secondary Water Reticulation Projects (not very complex and easy to obtain high levels of definition prior to bidding) within the OMM Programme, the NEC3, Option A, EPC fixed price lump sum was selected. This strategy for the respective projects allocates the risk for engineering & design, procurement and construction to the Contractor, while the risk for funding and operations in this project will remain with the Association. This allows for the consolidated wrap of liabilities in complex high value projects.

For the Potable Water Reticulation projects, the contracting option will be Engineering and Construction Short Contract (ECSC) Option B, given the multiplicity of contracts and the lower value, and repetitive nature of the works. This format is well suited for less complex packages and presents an opportunity to drive local contractor participation. These contractors do not have the funding capacity for other contract types and therefore the Association will keep the majority of the project risks. The NEC3 ECSC contract is a simplified and less cumbersome form of contracting that will be more easily managed by the contractors. As the number of yard & meter units will depend on the existing end users at the time of installation, a re-measurable contract is considered more suitable. The appointed contractors will be compensated and paid for the number of units installed. This will ensure that the OMM Programme only pays for the actual installed units, reducing the risk that might be priced into the works by the Contractor, and simultaneously ensures that the Contractor is not out of pocket for the actual work that was done.

The Refurbishment and/or Upgrade Projects, integrating existing infrastructure into the overall OMM Programme scope, the applied contracting strategy will be based on the NEC 3 ECSC Option B. The extent of refurbishment and upgrades that will become necessary during this phase of the OMM Programme are not well-defined at the beginning of the project and therefore a re-measurable pricing option was selected. This will compensate for the uncertainty in quantities of works to be completed and ensure that the contractors don't include too much risk in their pricing, whilst also ensuring that the Association can have some certainty of costs to be incurred. The price per typical designed unit or component to be installed will be agreed when the contract is awarded. Local Exempted Micro Enterprise (EME) contractors will also be considered for these projects especially in areas where they have to work closely with the municipalities and WSAs.

To manage these different contracting strategies and in an attempt to attain consistency of standards, coordinated efficiencies and a centralised technical/engineering command centre for the main scope components/projects within the OMM Programme, the decision to appoint Programme Management Consultants (PMC)s was made. The PMCs will provide professional technical services for the identified projects on a NEC3 Target Price, Option C contract basis in order to manage valid changes in scope with a ceiling budget.

Over and above the scope specific pricing strategies, to minimise risk as described in previous paragraphs, the tenderers will also be requested in their Requests for Proposals (RFP) to provide, as part of the tender documentation, a detailed priced risk profile associated with their bid. This information will place the OMM Programme in a position to evaluate each component of the risk profile and agree between the Association and the Consultant/Contractor, as to who is in the best position to manage the specific risk item and allocate the required responsibility and funding to the identified risk owner.

The PMU supported by the PMCs, will oversee the contractual nexus, pricing, and scope constructs in the strategies.

The Long Lead (LL) items will be identified during the EPC bidding processes, where the EPC bidder will present the procurement strategy (timing, pricing and source of supply) for those identified pieces of equipment. The proposed LL procurement strategy will feature in the evaluation process with a view to aligning with the financing arrangements in place as well as potential markets risks associated with the supply. To protect the projects against delays in critical and LL items the successful Contractor will be required to be ready to place these identified orders within the first 30 days after contract award.

As per the OMM Programme Procurement Policy and Procedure, a two stage market engagement approach will be used. The first step is the Request for Information (RFI) process whereby the proposals of interested tenderers are considered against technical qualification criteria resulting in a short list of tenderers invited to participate in the the Request for Proposal (RFP).

Key Executive Phase Readiness Activities

The Study Phase contracts were implemented as per the approved Association Contracting Plan as defined in the Early Business Case Report.

In terms of next phase readiness, the Association has solicited the market in terms of an RFI on 22 February 2023 to qualify the market for contractors to engineer, procure and construct of the 2B & 2B+ pipeline and associated three pump stations. The RFI covered the following areas of bidder capacity: technical capability and past project experience, financial capability and strength to finance the project, proposed project team with proper qualifications and sufficient experience, along with other administrative requirements. The RFP in terms of NEC3 ECC Option A (fixed price lump sum based on an Activity Schedule) will be issued to the shortlisted tenderers by mid-April 2023 with a return date by mid-July 2023. It is intended that the contract will be awarded by latest December 2023.

An RFI to qualify the market based on the NEC3 ECC Option A (fixed price lump sum contract based on an Activity Schedule) for the Sekuruwe and Mokopane water treatment works will also be issued in early April 2023, followed by an RFP process and planned construction start date of January 2024 for a 24-month construction period.

The, 2F, 2H, Bulk Potable Water Supply including the remainder of the water treatment works, and Potable Water Reticulation pacakages, will be launched into the market on an RFI and RFP basis as they progress with the design and specification work, which are all forecasted to be within the next 12 months from the date of this IBC.

Financial Case Summary

Under the OMM Programme, the financing of all new infrastructure will be contributed in equal portions by the Commercial and Institutional Members respectively (i.e. a 50:50 ratio). The first of these projects include Phases 2B and 2B+, the Northern Limb Water Treatment Works and the associated Northern Limb Energy solution integrated into the two main projects, with an estimated combined capital cost R10.66 bn (nominal, before SED spend and funding costs).

Contributions from the Commercial Members are anticipated to be raised in the form of external senior debt (project finance) injected into the transformed Association through securitising the long-term offtake agreements with the Commercial Members. Contributions from the Institutional Members are expected to be in the form of Government contributions and grants. The 50:50 apportionment of costs will also be applied to the associated fees and Association transformation costs. However, the Commercial Members will be solely responsible (i.e.

100:0 ratio) for the costs associated with the external funding raised (e.g. arranging and underwriting fees, commitment fees, debt service during construction, etc.). The implication of this arrangement is that, when considering the total expenditure during construction for the new projects (i.e. including the costs incurred during construction associated with the external debt financing), the ratio of contribution by the Commercial Members will be higher than 50%.

Given the capital requirements of the OMM Programme, external debt providers (Development Finance Institutions ("DFIs"), Multilateral Lending Agencies ("MLAs"), Government, Commercial Lenders and Export Credit Agencies ("ECAs") are expected to participate in the senior debt financing required by the Commercial Members to fund their 50% contribution to the total OMM Programme capital expenditure requirements. The preliminary financing strategy of the Commercial Members is to maximise gearing and obtain long-dated debt tenors from the senior debt providers. This is expected to improve tariff efficiency and affordability from a Commercial Member offtake perspective. Long-dated debt tenors are considered feasible given the long useful lives of the infrastructure as well as proposed 25-year offtake agreements with the Commercial Members. The funding is expected to be based on limited recourse financing principles where the senior lenders are expected to place reliance on the OMM Programme cash flows underpinned by long term, take-or-pay offtake agreements with the Commercial Members.

The Institutional Members' 50% portion of the required OMM Programme capital expenditure is expected to be funded through Government funding mechanisms (e.g. budget allocations, grants and other reserves).

The OMM Programme's operational expenditure will be reviewed and updated on an annual basis as part of the Association's budgeting process and will be tabled and approved by the Members annually, while providing a three-year outlook. Through the governance structure of the OMM Programme, there will be continued oversight and monitoring of expenditure to ensure that costs are adequately and efficiently mapped, managed, and controlled, taking into consideration the forecasted daily volume of water required by each Member. The OMM Programme's operating costs will largely relate to the operations and maintenance of the bulk raw water infrastructure, bulk potable water infrastructure and potable reticulation water infrastructure.

The OMM Programme is envisaged as a cost recovery model (i.e. revenue is directly linked to the underlying OMM Programme costs, reserve requirements and debt service where applicable). The revenue for the OMM Programme will be generated through a combination of fixed and demand-dependent water tariffs invoiced to the Institutional and Commercial Members.

Existing infrastructure that was previously funded by Institutional and Commercial Members since inception to 2021 will also be contributed into the OMM Programme. The previously funded infrastructure includes Phase 1A (Raising of the Flag Boshielo Dam wall), Phase 2A (building of De Hoop Dam), Phase 2C (the pipeline from De Hoop Dam to Steelpoort), and Phase 2H (the existing Association infrastructure, including Southern Extension and Southern Extension 2). This existing infrastructure has provisionally been valued at c. R7.4 bn on a depreciated replacement value basis as at 31 December 2023. As part of the commercial construct of the OMM Programme, Institutional and Commercial Members who previously contributed towards the existing infrastructure will receive capital credits to compensate them for their previous capital contributions, proportionate to their nominal historic contributions. The capital credit mechanism will reduce the effective annual contributions for these Members by taking into account the recognised depreciated replacement value of the existing infrastructure while assuming a 4% nominal annual return on the assets over a period of 25 years. This will function in a manner similar to an amortising loan with a 4% interest rate per annum and a 25-year tenor, repaid on an amortising profile, and equates to R504m per annum. These capital credits will form part of the fixed operating cost contributions.

Credit Risk and Mitigants

A key consideration from a prospective capital provider's perspective will be the Commercial and Institutional Members' ability to service their ongoing payment obligations under the proposed offtake agreements.

The majority of the water volume allocated to the Commercial Members in the OMM Programme is expected to be taken up mostly by large listed public mining companies in South Africa with substantial balance sheets underpinned by cash generative operations and backed by 25 year take-or-pay offtake commitments. Approximately 80% of the allocated Commercial Member water capacity is expected to be taken up by mining companies in the Platinum Group Metals (PGMs) sector, with the balance being taken up by non-PGM miners and and Non-Mining Members. Short and medium term offtake options will also be provided to offtakers not able to commit to the full 25-year offtake period to facilitate wider participation in the OMM Programme. These short-term offtakers will, however, not become Members of the OMM Programme and will have no voting rights, and the level of reliance on shorter dated and smaller offtakers will be limited so as not to negatively impact the overall credit risk of the OMM Programme.

The Institutional Members are currently funded through revenues generated from services delivered to their customers (residential and commercial) as well as Government grants and subsidies. Based on the analysis performed, there is a relatively high government grant dependency at a municipal level which may impact their ability to generate revenue growth from exchange transactions (i.e. revenue from services rendered). In addition, significant non-revenue water levels were noted by DWS which are expected to impact these municipalities' ability to sustainably generate revenue from additional water volumes while servicing the associated cost base. It is expected that DWS, through the Funding Agreement[2], will service the fixed costs (fixed operating expenses, maintenance costs and asset replacement reserve contributions) allocated to the Institutional Member over the life of the OMM Programme. This reduces the credit risk exposure to respective municipalities to only the variable costs component. To further mitigate the Institutional Member credit risk and ensure long-term financial sustainability of the OMM Programme, credit enhancements, improved water revenue recovery at municipal level, additional government support and other contractual strategies should be explored.

In addition, the following reserve accounts will be created:

- **Debt service** – is expected to be equal to 6-12 months' projected debt service obligations as required by prospective lenders. The DSRA is expected to be funded during construction as part of the overall OMM Programme costs, and will be for the account of the Commercial Members;
- **Liquidity** – to ensure that funds are available for unexpected costs or revenue shortfalls, the liquidity reserve will be funded through adjustments to the annual contributions from both the Commercial and Institutional Members (an additional cost item included in the calculation of annual contributions); and
- **Asset replacement** – key to de-risking the ability of the OMM Programme to incur major lifecycle costs for the replacement / refurbishment of equipment and other assets. The asset replacement reserve account will be funded on a continuous basis through an additional annual contribution from all Members.

Tax Considerations

Income Tax

The Association, which was established by Law, is approved by SARS for the purposes of section 10(1)(cA)(i) of the Income Tax Act (ITA). All its receipts and accruals are thus exempt from Income Tax. The Association is also exempt from paying dividends tax, capital gains tax and donations tax.

The Association is currently primarily funded by its members, i.e. water users licensed to receive a water allocation from the water scheme. Members pay water tariffs, calculated with reference to its water allocation per the licence granted. The income tax exemption granted to the Association applies to all income streams

[2] ***Source:*** *Funding Agreement entered between DWS and the Association*

irrespective of the nature of the receipt. The section 10(1)(cA)(i) approval as initially granted on 24 April 2022, was confirmed by SARS on 17 February 2023.

In addition, SARS approved the Association for the purposes of section 18A(1)(a) of the Income Tax Act. With effect from 17 February 2023 the Association may thus issue section 18A donation receipts for donations of cash or property in kind made by third party donors to the Association in respect of qualifying SED projects.

The potential reclassification of the Association for income tax purposes and the appropriate notifications and or application to SARS, will be considered once the mandate, function and powers of the Association has been finalised by the Minister of the Department of Water & Sanitation.

Value Added Tax

The Association is a registered vendor for Value Added Tax (VAT) purposes, and is not currently for VAT purposes regarded as either a “welfare organisation” that conducts welfae activities or a “designated entity” in respect of grant funding

The capacity in which the Association is engaged by the Government in the OMM Programme will determine whether the standard or zero rate will, for VAT purposes, apply to the supply or deemed supply of services.

Should the transformed Association, due to an extension of its powers, be reclassified for tax purposes as a water service provider, the Association will likely constitute a “designated entity” whose services and deemed services to Government will be subject to 15% of VAT.

Affordibility

Commercial Members

The Commercial Members will pay for their portion of the fixed and variable operating and maintenance costs and the full external debt service obligations through their water tariff. Given the high proportion of fixed costs and debt service in the OMM Programme, the effective cost of water per Member is very sensitive to the water volumes.

The cost of water received from the OMM Programme will be an operating cost from a Commercial Member perspective, and as part of the tax consequences, this cost will be tax deductible and provide an element of tax saving to the Member.

Institutional Members

From an Institutional Member perspective, in 2030, the implied weighted average real cost for bulk potable water is calculated after adjusting for the capital credits applicable to the Institutional Members through DWS. This cost, however, excludes the O&M costs related to the reticulation of the potable water. The anticipated cost for reticulating the bulk potable water will need to be further understood as the Studies Phase progresses.

Annual cost contributions per Member are considered to be high compared to the current cost of delivering bulk raw water by the Association, largely due to the capital cost element and associated debt service by the Commercial Members. These indicative costs will need to be tested with the Members to ensure that they can be accepted, giving due consideration to the strategic importance of the OMM Programme and the Members’ commitments to not only securing their own water supplies over the long-term, but also uplifting the communities in and around the OMM Programme footprint.

As part of preparing the Final Business Case, it will be important to undertake various scenario and sensitivity testing on the key drivers of value for the OMM Programme, using the financial model. This will help to highlight

the primary areas of risk from a financial / commercial perspective, and allow the OMM Programme management team to determine the necessary mitigants. It will also be important to understand the added cost of delivering reticulated water, and incorporate formal feedback from the prospective financiers following receipt of their indicative term sheets as part of the formal fundraising process, to verify the proposed capital structure and indicative financing terms applied to date.

Management Case Summary

A Project Management Unit (PMU) was established as a department within the Association's operational and management structures to act as the Owner's Team Representatives and will be responsible, via the Association's management and governance structures, to develop and execute the OMM Programme.

The OMM Programme capacitated the PMU with sufficient capabilities to affect the design, build, financing, operation and maintenance of the OMM Programme and will as far as possible, mitigate identified risks through strategies, plans and designs that will be developed during the pre-feasibility stage and remaining residual risk profiles will be transferred to the project risk register for management.

The established OMM Programme Steering Committee will guide the development of the OMM Programme and were incorporated into the well-established and functioning Governance structures of the Association. The Governance structures includes processes to monitor OMM Programme risks including stakeholder management and engagement.

The OMM Programme implementation methodology is based on the application of internationally proven and accepted good project practices aligned to the Association members' capital investment governance processes. To this extent a stage gate project implementation model is utilised and each phase are developed to demonstrate progressive elaboration of the details associated with scope, schedule and costs. This includes a comprehensive benefits realisation methodology and process.

A roll over strategy between the Pre-feasibility and Feasibility phases was agreed as part of the Concept Phase approval which provides the project team the right to carry on with Feasibility Phase study work if the required criteria are fulfilled. This IBC Report #1 provides evidence of compliance and the OMM Programme is proceeding to finalise the required detail designs and contractor identification for:

- Phases 2B & 2B+;
- Water Treatment Works in the Mogalakwena district at Mokopane and Sekuruwe; and
- Associated electrical infrastructure for the network.

As part of the implementation strategy, the OMM Programme plan provides for the appointment of three Main Consultants. The Bulk Water Supply Consultant (ZNJV) was appointed in December 2022. This consultant will also provide supporting general programme scope coordination and programme integration. The other Main Consultant will be appointed to execute the feasibility studies for the Potable Water Reticulation scopes in the Eastern and Northern Limbs respectively. The consultants will appoint specialist consultants to support the work as required.

The effects or outcomes of the OMM Programme implementation strategy and tracking of benefit realisation will be quantified through KPIs which can be assessed by the Association through a number of economic and other tracking variables.

The PMU will have ownership of the project controls environment and it will be managed and reported on centrally through the use of transparent information defined from an integrated control environment. The project control

environment will be multi-layered and the execution of the project controls within the respective consultant and contractor scopes will also be the responsibility of the consultants and contractors. The project controls environment will ensure transparency of information, promote good governance, reduce risk and facilitate the integration of information during the various phases of the projects (studies and execution).

Quality assurance on the OMM Programme will primarily focus on the processes utilised in the project to efficiently generate quality project deliverables in line with the Quality Management Policy. This will follow the international accepted 4 system quality management process in line with ISO 9000 approach which recognizes Plan-Do-Check-Act as the operating principle of ISO's management system standards. The intent is for continuous improvement which ideally operates in a never-ending loop.

OMM Programme assurance and compliance processes will be supported by PricewaterhouseCoopers (PWC) that has been appointed to provide the OMM Programme with an independent internal assurance function as the final layer of assurance, reporting directly to the OMM Programme Sponsor.

Construction security will be led by the OMM Programme Security Consultant. During the project phases the contractor will remain responsible for their onsite security, however to ensure that there is a consolidated and integrated solution in place, the OMM Programme will provide the main contractor with guideline requirements to streamline the processes.

The operational security strategy is based on the 6D philosophy. The philosophy is most suited for the securing and protecting of linear infrastructure installations. This operational approach has been successfully applied and implemented on existing Association infrastructure with great success. The international standards would refer to it as a 5D approach however in the South African landscape we have added a 6th arm to the approach which will be referred to as diplomacy and stakeholder engagement. A stakeholder implementation and communication plan was developed. The plan focus on the following areas:

1. Key institutional stakeholders that are critical to the success of the project but who are not yet committed nor supportive of the project;
2. Key commercial users that have not yet committed to participating in the project through the signing and honouring of commitment letters;
3. SED stakeholders that can contribute through donations or in-kind towards the SED component of the project; and
4. New potential off-takers that can form part of the project and contribute financially.

Communication and engagement mediums for these stakeholders have been identified and will be implemented throughout the project duration.

The management dimension of the business case demonstrated arrangements that are put in place for the delivery, monitoring and evaluation of the OMM Programme, including feedback into the organisation's strategic and governance bodies. It is also clearly indicated that the OMM Programme will be managed in accordance with best international and local good practice, subjected to independent assurance and that the necessary arrangements are in place for change and contract management, benefits realisation and risk management. The OMM Programme is ready to move to the next stages of development and will enable the Association to deliver against its purpose of 'Improving Lives Through Water'.

Introduction

In April 2022 the OMM Programme EBC was completed and submitted to ISA for review, which was subsequently approved by ISA. The OMM Programme preparation activities are continuing, however the funding application for the Phase 2B & 2B+ and Water Treatment Works (WTW) projects within the programme is being accelerated and therefore the associated project preparation activities are currently prioritised. This IBC provides focus on the 2B & 2B+ and WTW projects, however other relevant OMM programme information updates are included in the various sections. The Infrastructure Business Case: International Guidance is applied in this project IBC, however it should be noted:

- Due to the advanced stage of the 2B & 2B+ and the WTW projects in the Mogalakwena region, it is confirmed that the preferred option has already been chosen, the economic case and required analysis will therefore be documented for the preferred option only;
- This IBC Report #1, provide information on all programme developments since the EBC with specific detail focus on the 2B & 2B+ and the WTW projects in an attempt to accelerate water supply to communities; and
- IBC Report #2, targeted for the third quarter of 2023 will provide final scoping definition (Pre-feasibility level definition) for the remainder of the projects in the OMM Programme.

In the context of infrastructure development, a programme is a series of coordinated activities designed to pursue a common long-term goal. It is the overarching structure under which a number of related individual projects can be coordinated and delivered . For this reason, the programme view will be detailed where relevant to the project business case.

1. Strategic Case

The purpose of the strategic business case is to make the proposition for change and to demonstrate how it provides strategic fit. A clear understanding of the rationale, drivers and objectives for the spending proposal must be provided, including the existing arrangements, business needs, potential scope, benefits, risks, constraints and associated dependencies.

1.1 Strategic Context

1.1.1 Lebalelo Water User Association Organisational Overview

In the 1990s, discussions began between mining companies and various governmental departments at national and provincial level to source bulk water for mining activities along the Eastern Limb Bushveld Igneous Complex in Limpopo Province as well as water supply points for conversion to potable water for surrounding communities.

The position at the time was that there was no bulk water available for industrial/mining ventures. The then Department of Water Affairs and Forestry (DWAF) considered the building of a new dam (Rooipoort Dam) on the Olifants River but eventually built the De Hoop Dam on the Steelpoort River.

However, as an interim solution the unutilised portion of the bulk water allocation of the Arabie Irrigation Scheme (a water infrastructure scheme drawing water from the Arabie Dam, later re-named the Flag Boshielo Dam) was temporarily allocated for the mining industry for seven years conditional on the Association constructing infrastructure to support the irrigation scheme.

Around 2007, the dam wall of the Flag Boshielo Dam was raised by 5m to increase the yield of the dam (ORWRDP Phase 1). The members of the Association agreed to fund the project on a loan basis as per the agreement between DWAF and the Association. Once the project had been completed the temporary licence for irrigation water reverted back to the Department of Agriculture and the Association acquired a new water use licence from DWAF (now DWS).

The Association was established in February 2002 in terms of Chapter 8 of the National Water Act, 1998 (NWA) as a water user association. The Association's Constitution and the Member's Agreement were gazetted in Government Notice no. 89 of 1 February 2002 which provided the Association with a mandate to provide bulk water to its members. The Association constructed the original scheme in 2002 and the Southern Extension in 2007. The Association supplies bulk water directly to the mining industry who use bulk water for their operations whilst also providing off-take points for the appointed Water Services Authority to take and treat water to potable water standard and supply to its constituency. The Association operates from Havercroft, Modubeng, Limpopo Province, with infrastructure spanning 110km and intersecting over 105 separate communities, in the Sekhukhune District Municipality.

Following an Annual General Meeting held in September 2022, where the Study Phase of the OMM Programme and transformation of the Association was approved, the key Water User Association establishment agreements were updated which included the Association's Constitution and Members Agreement. A letter of proposal has been lodged with the Mpumalanga Regional Office of the DWS, for referral to Head Office DWS and ultimately for decision by the Minister of Water and Sanitation.

It is the Minister's legislative prerogative to approve the Association's amended Constitution. Furthermore, the amended Constitution and Members' Agreement are currently circulating amongst the current and potential future member companies for final signature. The Association's membership is anticipated to grow to the following:

Current Members

1. African Rainbow Minerals (ARM);
   - Modikwa mine (Joint venture with Anglo American Platinum)
   - Two Rivers mine (Joint venture with Implats)
2. Anglo American Platinum (AAP);
   - Mogalakwena mine
   - Mototolo mine
   - Der Brochen
   - Twickenham
3. Corridor Resources;
   - Black Chrome mine (with the Sail Group)
4. Department of Water and Sanitation (DWS);
5. Impala Platinum;
   - Marula mine
6. Northam Platinum;
   - Booysendal mine
7. Samancor including Tubatse Alloys; and
   - Tweefontein mine
   - Lanex smelter
   - Winterveld mine
   - Lwala mine
   - Tubatse Alloys smelter

New and Potential Members

1. Assore;
   - Dwarsrivier
2. Bushveld Minerals;
3. Cheetah Chrome; (previously Dilokong mine)
4. Glencore-Merafe;
   - Lion smelter
5. Ivanplats;
   - Platreef mine
6. Tameng Mining and Exploration;
   - Tameng mine
7. Sefateng
   - Sefateng Chrome mine
8. Kadoma;
9. Vanadium Resources;
   - Steelpoortdrift Vanadium Mine
   - Processing plant
10. Sylvania;
11. Zijin Platinum
    - Nkwe mine

12. Fetakgomo Tubatse Industrial Park;
13. Sibanye Stillwater; and
    - Akanani mine
14. Others in the region can be added or removed from time to time.

1.1.2 DWS Organisational Overview

The Department of Water and Sanitation (DWS) is a national government department that acts as the custodian of South Africa's water resources. It is primarily responsible for the formulation and implementation of policy governing this sector. DWS is mandated to promote effective and efficient water resources management to ensure sustainable economic and social development. DWS also needs to ensure that all South Africans have access to potable water and dignified sanitation services.

The Vision and Mission of DWS are as follow:

Vision

Equitable and sustainable water and sanitation that support socio-economic growth and development of the well-being of current and future generations.

Mission

To ensure the universal access of all South Africans to equitable water resources and sustainable water and sanitation services, by:

- Protecting, developing, conserving, managing and regulating water resources;
- Managing, regulating and providing efficient and effective water and sanitation services;
- Providing strategic leadership and evidence-based policy direction to a coordinated water and sanitation sector for improved sector performance and service delivery;
- Building the skills and capabilities of the sector and enhancing information management to inform decision making; and
- Enhancing communication and stakeholder partnerships with communities and sector constituencies to advance the national development agenda.

The Department draws its mandate from the following legislation:

The National Water Act, 1998 (NWA)

The NWA seeks to ensure that the country's water resources are protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all people. The NWA assigns the national government as the public trustee of the water resources. Acting through the Minister of Water and Sanitation, it has the power to regulate the allocation, use, flow and control of all water in the Republic. It also identifies the need to establish suitable institutions in order to achieve its purpose. In addition, it provides for the development of the National Water Resources Strategy (NWRS) which must be regularly reviewed and the requirement of each Catchment Management Agency (CMA) to develop a catchment management strategy for the water resources within its jurisdiction.

The NWA is currently being reviewed to ensure alignment to the current sector needs and policy transformations. The Minister of DWS has set up a panel of experts that will be overseeing the revision. This revision allows Lebalelo to prepare for inputs into the policy changes needed for it to expand in terms of its growth strategy.

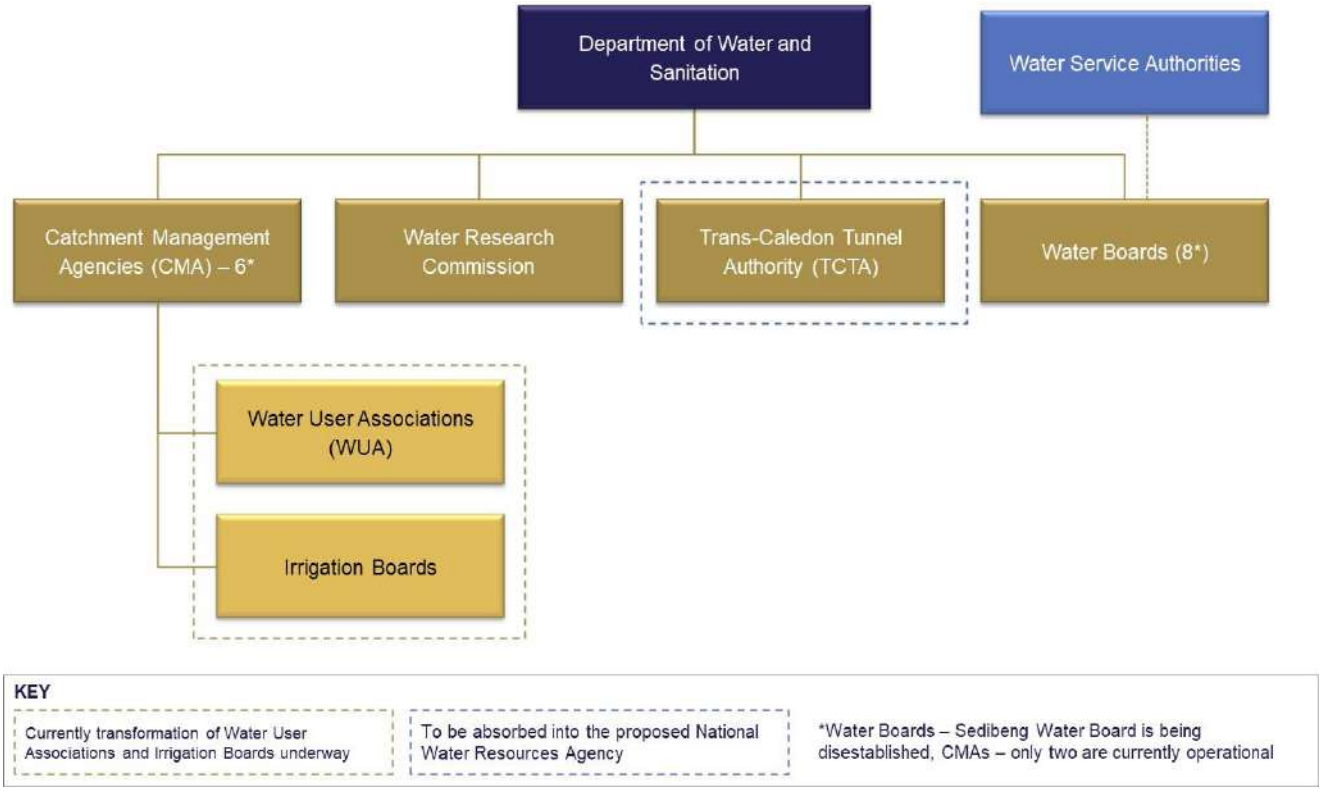
The Water Service Act, 1997 (WS Act)

The overall objective of the WS Act is to provide a framework regarding municipalities' role as Water Services Authorities (WSA), and to look after the interests of consumers. It also provides clarity regarding the role of other water services institutions, especially water services providers and water boards. The WS Act prescribes the legislative duty of municipalities as WSA to supply water and sanitation according to national norms and standards. In addition, it regulates Water boards as important water service providers. It acknowledges that although municipalities have authority to administer water supply services and sanitation services, all government spheres are required to works towards this objective, within the limits of physical and financial feasibility.

The institutional arrangement governing water consists of several complex institutional arrangements between DWS and its local institutions. The figure below shows the institutions reporting directly to DWS and those linked to DWS through the water services provision function. The Water Services Act is currently being reviewed. The intention is to provide powers to the Minister to take decisive actions against municipalities failing to provide basic water services. The Act is still going through internal review and has not been published yet for public consultation.

The Association's Growth Strategy's states that one of its long-term goals is to support municipalities with water and wastewater bulk provisioning. To enable this there needs to be a review of the current role of a water user association and should be amended in especially the National Water Act and referred to in the Water Services Act.

Figure 4: Structure of DWS and local institutions



Comments invited by 29 October 2022 on the National Water Resources Strategy published in GG 47133 NN2327 on 29 July 2022. The National Water Resources Strategy (NWRS) is currently the legal instrument for implementing or operationalizing the National Water Act (Act 36 of 1998) and it is thus binding on all authorities

and institutions implementing the Act. It is the primary mechanism to manage water across all sectors towards achieving national government's development objectives. The NWRS-1 was published in 2004 and the second edition (NWRS-2) was published in 2013 and was the blueprint for water resources management in South Africa. The National Water Resource Strategy 3 builds on the National Water Resources Strategy editions 1 and 2, and the revision of the strategy, as prescribed in the NWA, has been undertaken with the purpose being to:

- Facilitate the proper management of the nation's water resources;
- Provide a framework for the protection, use, development, conservation, management and control of water resources for the country as a whole;
- Provide a framework within which water will be managed at local, regional or catchment level, in defined water management areas;
- Provide a framework for strengthening the regulation of the water and sanitation sector; Provide information about all aspects of water resource management;
- Identify water-related development opportunities and constraints;
- Provide opportunities for the implementation of innovative technologies and solutions.

The purpose of the third edition of the National Water Resource Strategy (NWRS-3) is to ensure the protection and management of water resources to enable equitable and sustainable access to water and sanitation services in support of socio-economic growth and development for the well-being of current and future generations in South Africa. The NWRS-3 is a strategy for all sectors and stakeholders who use and impact upon South Africa's water resources and it responds to the NWA by outlining strategic objectives and actions which are then carried forward for resourcing and implementation in the National Water and Sanitation Master Plan (NW&SMP).

Other legislative processes initiated by the Department was as follow:

- Comments were invited by 3 November 2022 on Revision of National Pricing Strategy;
- The strategy for Water Use Charges was published in GG 47197 NN2350 on 5 August 2022;
- Withdrawal of Intention to disestablish Lebalelo Water User Association was published in GG 46991 NN2557 on 30 September 2022; and
- Comments was invited by 15 December 2022 on the National Water Resource Agency Limited Bill published in GG46917 NN2508 on 16 September 2022. The Bill provides for the incorporation and establishment of the South African National Water Resources Infrastructure Agency Limited as a state-owned company and major public entity owned and controlled by the State to administer, fund, finance, provide, operate, maintain and provide advisory services in respect of national water resources infrastructure in accordance with the Constitution, and applicable legislation and national policy; to provide for the transfer of assets and certain liabilities to the South African National Water Resources Infrastructure Agency Limited from the Department of Water and Sanitation and from the Trans-Caledon Tunnel Authority; to provide for the disestablishment of the Trans-Caledon Tunnel Authority; and to provide for matters connected therewith.

DWS has embarked on a process to transform its water boards, irrigation boards and water user associations. In terms of water boards, there are currently eight water boards reporting to the Department. Previously there was nine, but the Minister took a decision to disestablish Sedibeng Water Board. The operational area of Sedibeng will now be split between Magalies Water and Bloem Water. The Minister of Water and Sanitation has also embarked on a process to reassess the functions of water boards to ensure the sustainability thereof. This includes looking at their areas of operations and customer base and potential revenue areas. This process will determine if there is a need to amalgamate some of the water boards to form regional water boards so that they can operate more efficiently and cover every part of the country. DWS with its water boards are in the process of conducting due diligence studies to determine which course of action to implement.

1.1.3 Involved Water Service Authorities Overview

In terms of section 3(1) of the WS Act, everyone has a right of access to basic water supply and basic sanitation. Section 3(2) of the WS Act, places a responsible on each water services authority to take reasonable measures to realise these rights.

The WS Act regulates, among other things, the supply of water by water services institutions and water services intermediaries; the rights of access to basic water supply and basic sanitation; the setting of national standards and of norms and standards for water tariffs; water services development plans; the establishment and disestablishment of water boards and water services committees and their powers and duties.[3]

The WS Act translates the constitutional human rights of access to basic water supply and basic sanitation into a firm regulatory regime and places a duty on all spheres of Government to ensure that such water and sanitation services are provided to the public in a manner which is efficient, equitable and sustainable. It is against this backdrop that the provisions and objectives of the Water Services Act must be considered.

An obligation is placed on "water services institutions" to take reasonable measures to realise the rights of access to basic water supply and basic sanitation. The term "water services institution" is an umbrella concept used in the Water Services Act and defined as meaning the following categories of institutions:

- Water services authorities (WSA), which are municipalities responsible for ensuring access to water services, like the Sekhukhune District Municipality (SDM), Capricorn District Municipality, Polokwane Local Municipality (PLM) and Mogalakwena Local Municipality;
- Water Services Providers, defined to mean a person who provides "water services" to consumers or to another water services institution, but excluding a "water services intermediary";
- Water boards, which are organs of state established or regarded as having been established in terms of the Water Services Act to provide water services to other water services institutions within their service areas such as the Northern Lepelle Water Board which supports the WSA of SDM and PLM.

Four (4) WSA, Sekhukhune District Municipality (SDM), Capricorn District Municipality (CDM), Polokwane Local Municipality (PLM) and Mogalakwena Local Municipality (MLM), will be directly involved in the OMM Programme. Capricorn District Municipality on a small scale with only a few communities potentially within the OMM Programme mandate and PLM receiving water through the new Lepelle Northern Water Board (LNW) pipeline. The two main areas where the OMM Programme will be operating in is the Sekhukhune District Municipality, mostly the Fetakgomo-Tubatse Municipality in the Eastern Limb, and the Mogalakwena Municipality in the Northern Limb.

Sekhukhune is one of the 5 districts of Limpopo province of South Africa. The total population of the district has grown by an average rate of 1.4% per annum. The unemployment rate has continued to grow over the years, increasing to between 60% and 70% in 2021 in the impacted areas of the OMM Programme. According to a 2019 survey by the Sekhukhune District Municipality, approximately 87 settlements and villages indicated they receive no water supply, with only 112 indicating they have regular or daily supply of water. In addition, only 64% of households indicated they have access to safe drinking water.

Mogalakwena Local Municipality is located in the Waterberg District Municipality of Limpopo province, South Africa. The seat of Mogalakwena Local Municipality is located in Mokopane. The municipality's total population has grown at a steady rate over the last decade by an average rate of 0.8% per annum. The total unemployment rate has continued to grow over the years to 42.1% in 2021. Waterberg District's draft 2020/2021 annual report cited water service backlogs of 25% for the Mogalakwena municipality.

[3] *Preamble and section 2 of the Water Services Act.*

Key characteristics of the impacted areas:

1. Both MLM and SDM (OMM Programme will be mostly implemented within the Fetakgomo-Tubatse Municipality of the Sekhukhune district) are characterised by rich endowments in minerals, agriculture and tourism attractions on one hand, and elevated levels of poverty and unemployment on the other;
2. Most of the SED indicators on the municipalities, while showing a gap to the national average, are comparable to that of the Limpopo province;
3. The demographics of the population in the demarcated areas are largely similar to those of the municipalities in which they are located; and
4. Key areas for development are education, piped potable water and sanitation, and opportunities for employment and economic activity to raise household incomes.

1.1.4 ORWRDP Water Scheme

Parallel to the Association construction its network and delivering bulk water to its members, the DWS also commenced discussions in 1999 with all interested and affected parties for the establishment of the Olifants River Water Resource Development Project (ORWRDP).

This project envisaged Phase 1 (which was the raising of Flag Boshielo Dam – which the Association funded, and some water infrastructure for Polokwane) and Phase 2A (which was the building of the De Hoop Dam) built by DWS. Thereafter Phases 2B, C, D, E, F, G, H & I were also proposed. These various phases envisage the balancing of water utilisation in the Middle Olifants catchment and transferring of certain water use licences out of the Flag Boshielo Dam and transferring such licenced use into the De Hoop Dam for industrial, agriculture and community/social users.

The scheme was premised on the basis that the commercial users would pay a systems tariff based on a capital unit charge whilst community/social users would pay a Return on Investment (ROI) charge partly funded from the fiscus.

The various phases of the ORWRDP (i.e. B, B+, C, D, E, F) are pipeline projects delivering raw water to different areas where after the raw water would be treated for potable water and reticulated to the communities, funded by loans and other contributions backed by off take agreements from the commercial users, namely the mines. Within the ORWRDP it is envisaged that Phase 2H proposes the incorporation of the Association's infrastructure into the ORWRDP.

DWS has, to date, completed the construction of the De Hoop Dam (ORWRDP Phase 2A) and the bulk water pipeline from De Hoop Dam to Steelpoort (ORWRDP Phase 2C) including the Steelpoort pump station. Planning has commenced for most of the ORWRDP Phases and detail design for the 2B & 2B+ and 2D projects but not taken further due to funding constraints.

The mandate of Water Services Authorities (WSAs) such as Sekhukhune District Municipality (SDM) and Mogalakwena Local Municipalities (MLM) is potable water services delivery. Potable water infrastructure development in the Eastern Limb has been very slow despite the availability of the Association's bulk raw water scheme supply connections since 2002. There are three areas currently being serviced with potable water in the Eastern Limb, one being Burgersfort from the Mooihoek Water Treatment Works (WTW), a second potable line running west from the Mooihoek WTW and the Jane Furse potable line from the Ga-Malekana WTW.

Potable water service delivery in the Northern Limb area of Mogalakwena is being limited as the Doorndraai Dam is the only resource. Water supply is hampered as there is currently no bulk raw water infrastructure in place from Flag Boshielo Dam to these areas.

1.2 Strategic Background

The Olifants River Water Resources Development Project (ORWRDP) was conceptualised by DWS to address the bulk water needs of the Limpopo Province to facilitate economic development in the region and the delivery of bulk raw water to the Water Services Authorities to treat and supply potable water to their respective communities. The Associations bulk raw water supply scheme was the first pipeline infrastructure built in the area and needed to be supported and eventually incorporated into a larger ORWRDP supply scheme.

In September 2004, the National Water Resource Strategy (NWRS) recognised the need of the Government to manage water resources in an integrated way, and in co-operation with all relevant government institutions, the private sector, water users and other interested and affected persons, and of the contribution that integrated water resources management can make to eradicating poverty and addressing gender issues. The NWRS also recognised that successful water resources management would therefore depend on co-operation amongst all spheres of government, and the active involvement of water users and other organisations and stakeholders.

On 31 October 2018, DWS published the National Water and Sanitation Master Plan (Master Plan) which dovetails the top priority issues confronting the water and sanitation sector and sought to rally all water sector stakeholders in South Africa to work together in order to ensure that the country gets ahead of the curve of both current and future challenges. The Master Plan was officially launched by the then Minister of Water and Sanitation on 28 November 2019. The Master Plan also makes a commitment that DWS will work in conjunction with other government departments and agencies, the private sector and civil society to ensure that the crisis in the water and sanitation sector is addressed with the aim of attaining a water secure future with reliable and safe water and sanitation services for all, and that these contribute towards meeting the national development objectives.

Pursuant to the current economic challenges in the country, it is recognised that the government has budgetary constraints which impact on DWS's ability to execute on its mandate to supply bulk raw water and for the Water Services Authorities, to supply potable water. The particular concerned areas are in the Eastern Limb, where the lack of water services to communities together with unmet expectations of job creation from mines resulted in incidences of social unrest which have impacted on communities' access to potable water and mines and other commercial operations' ability to safely operate. There have also been increasing levels of vandalism on DWS and the Association pipelines as well as municipal infrastructure.

The DWS ORWRDP Phase 2 Project has been designated a strategic integrated project in terms of Section 7(1) of the Infrastructure Development Act, 2014 and therefore is of significant importance to South Africa.

The ORWRDP Phase 2 has only partially been implemented over the past two decades placing increasing pressure on DWS to meet social and industry expansion water needs. Additionally, potable water infrastructure development has been very slow in the Eastern limb despite bulk raw water having been available since 2002 through the Association’s Scheme. The delivery of potable water services in the Northern limb area of Mogalakwena has also been hindered due to delays in the ORWRDP implementation. The current ORWRDP plan, from a technical, financial and socio-economic perspective, is also no longer optimal nor fit-for-purpose.

There is also currently a regional economic expansion opportunity to take advantage of a favourable commodity cycles. The current cycle is in a downward trend and it is important to ensure that the water supply systems are ready to support the next upswing in the cycle.

In order to address the issues relating to the supply of bulk water in the region, DWS and Commercial Users (CUC), through the Association, have had numerous engagements on how they could collaborate and cooperate to assist accelerating:

1. Bulk raw water delivery in the region;
2. Potable water service delivery in the region; and
3. Socio-economic development in the region.

To deliver on these targets and with a general objective of “Improving Lives through Water” (it is an ongoing positive aspiration not an end game), a Memorandum of Intent (MoI) was signed between CUC and DWS to establish structures for the commencement of the Olifants Management Model Programme initiative in June 2021. DWS and the CUC agreed that the best vehicle for the OMM Programme initiative would be a water user association. Following further evaluation processes it was agreed that the most effective way forward is transforming the current Association. The transformed water user association, will be tasked with financing, building, operating, maintaining and managing the development of a defined programme for the accelerated delivery of bulk raw and potable water services to address pressing social and commercial needs in identified areas of the Middle Olifants River Catchment, namely the Northern and Eastern Limbs of the Bushveld Igneous Complex.

In October 2021, formal agreement was reached on the way forward, between Government and the CUC in a ministerial meeting where it was re-confirmed that the current Association would be transformed and renamed as it is best positioned to meet the intent of the MoI. The transformed water user association with a 50/50 representation between Government (Institutional Members) and CUC (Commercial Members), will implement the potable and raw water infrastructure of the defined programme on the back of the negotiated agreement between the parties.

The next step in this transformation process was to finalise the agreement between DWS and the Association detailing the operating methodologies and sphere of influence as well as the steps required and timelines for implementation.

Between November 2021 and January 2022, the DWS and the Association held various negotiations as to the way forward in relation to the transformation of the current Association, the governance of the transformed water user association and the implementation of the OMM Programme. The negotiations culminated in the conclusion of the Heads of Terms for an OMM Framework Agreement (HoT). The objective of the HoT was to provide a summary of the key positions taken by the parties in relation to these various negotiations in order to establish the terms of engagement for the OMM Programme and the transformation of the Association. The HoT highlights the following key principles:

1. Each Party is to contribute equally (50:50) towards the capital expenditure of the bulk raw water and potable water infrastructure defined in the OMM Programme. Each party is to be responsible for the operational expenditure associated with its offtake of the water (both bulk raw water and potable water);
2. Funding is based on an equitable and fair basis recognizing all bulk infrastructure already constructed;
3. The governance structure is unique in it protects both parties’ interest in a collaborative structure with strong governance principles; and
4. The socio-economic development principles are designed to maximize the benefit of the local communities, develop skills and enterprises with the objective to grow the local economy.

The HoT was jointly prepared by the Parties with the intention being that the document encapsulate the principles agreed through the negotiations. The HoT set out how the parties could collaborate and cooperate to accelerate the regional bulk raw water delivery, potable water service delivery, socio-economic development (SED) and develop a collaborative integrated water services model to address technical, financial, SED and institutional arrangements.

With the HoT as reference, further engagements between the Parties have culminated in several agreements associated with the transformation of the Association and formal commencement of the OMM Programme including funding commitments has been finalised:

Water User Association establishment agreements currently circulating for final member signatures:

1. Amended Constitution;
2. Members Agreement;
3. Resourcing Agreement;
4. Offtake Agreements; and
5. Operations and Maintenance Agreement.

In support of the above agreements in which DWS is a member participant, DWS and the Association have also signed the following agreements in support of the Institutional formal processes:

1. DWS/LWUA Implementation Agreement – fully signed in December 2022;
2. DWS/LWUA Funding Agreement – fully signed in March 2023; and
3. DWS/LWUA/ZNJV Cession Agreement – fully signed in March 2023.

1.2.1 Launching the OMM Programme

The signing of the MoI and HoT as well as the development of the Early Business Case Report, paved the way for the OMM Programme's official launch as well as the sod-turning and community launch.

The OMM Programme was officially launched by the Minister of Water and Sanitation Mr. Senzo Mchunu on the 9th of May 2022 at the Cullinan Hotel in Cape Town, which coincided with the 2022 Investing in African Mining Indaba. The event was attended by senior politicians and officials from Government as well as senior executives and officials from mining companies.

Figure 5: OMM Programme launch in Cape Town

At the event, Minister Mchunu re-iterated the significance of the OMM Programme as it brings Government and the private sector together in line with resolutions from the 2022 Water and Sanitation Summit. Chairperson of the Association and Executive Head of Projects at Anglo American Platinum, Mr. Prakashim Moodliar, confirmed the OMM Programme's alignment with the president's call for public-private collaboration to deliver on large basic infrastructure projects.

The community launch of the OMM Programme took place on the 27th of October 2022 at the Ga-Malekana Tribal Authority outside Steelpoort, in the Fetakgomo Tubatse Local Municipality in Limpopo. This was followed by the official sod-turning at the Spitskop Pump Station in Steelpoort and signalled the start of the construction of the OMM Programme's bulk raw water infrastructure.

Figure 6: OMM Programme sod turning at Spitskop Pump Station in Steelpoort, Limpopo

The community launch and sod-turning events were hosted in collaboration with the Department of Water and Sanitation and attended by traditional leaders from across Sekhukhune and Mogalakwena, senior politicians and officials from Government and executives from OMM Programme-affiliated commercial water users.

At the event, Minister Mchunu recognised the OMM Programme as a milestone in South Africa's democracy and a new era in water service delivery. Chairperson Moodliar confirmed that significant strides made since the signing of the MoI and HoT had allowed for the accelerated commencement of construction of the first phase of the OMM Programme and was a result of the public and private sectors working together well.

1.3 Transforming the Lebalelo Water User Association

The transformed Water User Association will be tasked with financing, building, operating, maintaining and managing the development of a defined programme for the accelerated delivery of bulk raw water services and potable water infrastructure to address pressing social and commercial needs in defined areas in the Middle Olifants River Catchment, namely the Northern and Eastern Limbs of the Bushveld Igneous Complex.

The mission of the Association will be that it shall, within the legal framework of the National Water Act, 1998 (NWA) and taking cognisance of the prescribed health standards, strive towards making bulk raw water and potable water infrastructure available to all members and other stakeholders in a cost-effective, efficient, sustainable and responsible manner.

The Association's main priority will be to implement the water resource projects in the region underpinned by compliance with good governance and agreements using engineering principles, philosophies, procedures and standards reasonably employed by the private sector and water utilities in accordance with prevailing international standards under comparable circumstances. The main Association activities will include the full business case development up to Final Investment Decision (FID), procurement of financing, design, construction supervision, construction, operation and maintenance of this defined programme delivering bulk raw and potable water infrastructure in the Eastern Limb and the Northern Limb of the middle Olifants River catchment area (further referred to in this document as the OMM Programme).

The Association shall also assume responsibility for the preparation of all relevant applications and amendments to documents for the obtaining of all necessary permits/authorisations/relevant legislative approvals as well as the relevant funding to implement the OMM Programme.

The Government, also referred to as Institutional Members, current members of the Association and the other commercial users will form the Association's membership as 50% partners. The 50% Institutional membership will be represented in the governance bodies by different Institutional groups/departments lead by DWS and supported by other government departments and the WSAs.

To deliver its purpose, which is "Improving Lives through Water", the Association will target strategic objective horizons, with the goal of becoming a key strategic water management partner for both the public and private sector whilst simultaneously catalysing the creation of sustainable socio-economic development in the region in which it operates.

Horizon 1

Create a stable operating base and social license to operate by:

1. Transforming and rebranding the Association;
2. Integrating new members and employees into the Association;
3. Deploying open and transparent internationally acceptable good governance practices;
4. Creating a trusted brand with restored trust in communities; and
5. Achieving operational excellence on existing transferred infrastructure.

Horizon 2

Successfully implement the OMM Programme and in the process build a trusted platform for socio-economic development (SED) in the region through the expansion of the Association's role to build, operate and maintain, bulk infrastructure and building potable water infrastructure. Establish a sustainable SED collaboration forum to align members around common socio-economic development initiatives and infrastructure to foster social harmony.

Horizon 3

Catalyse the creation of game changing businesses and initiatives to drive exponential socio-economic growth in the region through the identification and development of high socio-economic impact opportunities in the region.

The establishment of the transformed Association in terms of the HoT will be executed in parallel with the water infrastructure programme study phases, with the current Association (Lebalelo Water User Association) as the legally operating entity during this period. Also, during this interim phase (that is, prior to the establishment of the transformed Association), the Association's Management Committee has established the appropriate governance sub-committee under the Association named the OMM Programme Steering Committee, with a

Terms of Reference and a Charter including relevant delegations of authority through the Association's Management Committee to facilitate efficient management of the OMM Programme. The OMM Programme Steering Committee with its associated support committees will provide dedicated steer and governance support to the OMM Programme through a delegation of authority that will be aligned with the principles as agreed in the MoI, HoT and associated Agreements.

While the OMM Programme Steering Committee will be under Association, the OMM Programme Steering Committee has 50:50 representation between Government and current and prospective commercial users with decisions made on consensus basis. For the sake of clarity, the OMM Programme Steering Committee shall only last for as long as the interim process shall be in existence. Once the transformed water user association is established, the OMM Programme Steering Committee shall cease to exist and the transformed association's governance processes will take effect, including but not limited to the setting up of a OMM Programme Steering Committee under the transformed water user association's governance structures.

To ensure continuity, there will be mutual members within the Association's Management Committee and the OMM Programme Steering Committee and members of the OMM Programme Steering Committee will also form part of the OMM Programme Steering Committee once the transformed water user association is established.

1.3.1 Rebranding the Association

At a strategic workshop session held in August 2019 with the Management Committee of the Association (MANCOM), internationally recognised marketing and branding expert Jeremy Sampson made a presentation dealing with brand value and brand finance. At this session it was identified that the Association had a reputational and a strategic risk in respect of its branding, namely its name and logo.

In September 2019 the Association wrote to its Intellectual Property (IP) and Trademark Attorneys, Webber Wentzel, regarding the possible registration and protection of Association IP of the current name of Lebalelo Water User Association and its logo.

On 19 September 2019 the Attorneys responded that for a Trademark to qualify for registration in South Africa, it must satisfy the following two minimum requirements:

- It must possess intrinsic characteristics which render It capable of distinguishing the goods and/or services in relation to which the mark is used or proposed to be used for the same and/or similar goods and services of others; and
- It must not conflict with prior registrations and or applications.

The Attorneys concluded that in terms of the inherent registrability of Lebalelo Water User Association trademark that Lebalelo is used by a number of people in the area. The trademark is therefore not capable of distinguishing the goods or services of others.

In respect of a search on the logo, the Attorneys found a company had registered a logo very similar to the Association's logo. Therefore, the registration of the Association's logo would be problematic and, in order to protect the Association's IP and trademark, it should embark on a rebranding exercise.

Following the submission of the "Proposal for the Integrated solution for ORWRDP and potable water service delivery" to the DWS on 24 June 2020 and progress on the Memorandum of Intent (MoI) this matter was considered by Members of FINCOM who resolved to recommend to MANCOM that work commence on reviewing the Association's branding commencing with its name and logo. This matter was approved at MANCOM on 25 March 2021.

The MoI was signed on 12 July 2021 followed by several meetings and negotiations with DWS from October to January 2022. This led to the signing of the Heads of Terms for an OMM Framework Agreement (HoT) on 23 March 2022.

Following the launch of the OMM Programme on the 9th of May 2022, the time had come to commence the renaming and rebranding of the Association in support of the transformation processes and in line with its objective of becoming a transformed water user association.

As the renamed and rebranded Water User Association will be responsible for the implementation of the OMM Programme, the new brand must be representative of the collaboration between the public and private sectors as well as the Association's expanding role.

On 14 July 2022 the CEO of the Association sent out a general notice to all members and employees regarding the rebranding of the Association and requested proposals for a new name.

Several names were proposed and these names were then tested for registrability in terms of the relevant legislation and for acceptability by employees and the general public.

At a meeting held on 25 August 2022, and based on the findings from the abovementioned process, MANCOM resolved to propose the following names to the Minister of Water and Sanitation:

- Obalule Water User Association (Sepedi for Olifants River).
- Merung Water User Association (Sepedi for Bushveld).
- Badirammogo Water User Association (Sepedi for Working Together).

The Association's preference is the **Badirammogo Water User Association** especially as it has a meaning that resonates with the central purpose of the Association – being "collaboration".

As part of the renaming and rebranding process, and also part of a greater Transformation Strategy, a Brand Development Strategy was finalised towards the end of 2022.

The rebranding of the Association is in line not only with the purpose, vision and values of the Association (as well as its three-staged strategy) but also with specific primary and secondary Sustainable Development Goals (SDGs) and associated targets, as identified in the Association's Sustainable Development Policy. It also aligns with the Department of Water and Sanitation's Transformation Charter for Water User Associations.

The rebranding process considers the Association's historical legacy (both the positives and the negatives) as it aims to enhance buy-in from all stakeholders and create a brand that everyone can be proud of and unite behind. Not only should it take cognisance of the public-private collaboration, it should also not forget its history which includes social unrest, violence and damage to property as a result of tensions and frustrations within communities in the areas in which the Association operates. The new brand provides an opportunity to demonstrate the real change and transformation that has commenced and will continue within the transformed Association.

The Brand Development Strategy provides a plan for the systematic development of the transformed Association's brand in alignment with its business strategy and assists to:

- Align the new brand with its purpose, vision and values;
- Communicate the brand consistently and effectively;
- Position the brand competitively; and

- 'Show the Change' within the organisation to both external and internal stakeholders.

The Brand Development Strategy is split into two distinct stages and made up of six parts. Stage 1: Brand Essentials sees the development of the Brand Core, Brand Name and Brand Messaging (which are included as part of the Brand Development Strategy document), and once approved by the various committees it will inform the development of Stage 2: Brand Identity and Implementation, which focuses on developing and documenting the visual identity of the brand and rolling out of the new brand across the transformed Association.

Stage 1: Brand Essentials, sees the development of the following:

- Part 1: Brand Core – this is a high-level explanation of the brand's core principles and encompasses the transformed Association's purpose, vision, mission, objectives and values.
- Part 2: Brand Name – this includes a shortlist of the possible names for the transformed Association; and
- Part 3: Brand Messaging (or Verbal Identity) – this is how the transformed Association will speak about itself, how it describes its products and services, how it communicates with stakeholders, etc. and includes aspects such as personality, voice and tone, brand tagline, value proposition and messaging pillars.

Stage 2: Brand Identity and Implementation, sees the development of the following:

- Part 4: Visual Identity – this is the brand's visual expression, including its logo, typography, colours, imagery and other elements (such as iconography, illustration, etc.);
- Part 5: Brand Style Guideline – this documents the overall brand identity (from brand purpose to visual identity) and presents it in a toolkit format for ease of understanding and application; and
- Part 6: Brand Implementation – this is the rolling out of brand assets across the transformed Association in a tactical, measurable and manageable way.

To date, Stage 1 has been completed as well as Part 4 (Visual Identity, the first part of Stage 2). Once the name of the transformed Association has been confirmed by the Minister of Water and Sanitation, and MANCOM has approved the Visual Identity, the Brand Style Guideline and all visual identity assets will be completed prior to the implementation and launch of the new brand.

1.4 The Case for Change

The OMM Programme aims to develop an alternative solution to enable accelerated delivery of bulk raw and potable water services to address pressing social and commercial needs to the agreed areas in the Northern and Eastern Limbs of the Bushveld Igneous Complex, i.e. the OMM Programme.

1.4.1 Existing Projects and Water Supply Activities

1.4.1.1 DWS and WSAs

The ORWRDP phase 2, executed by DWS and its implementation agents, was located in the Olifants River catchment area, incorporating the Steelpoort River catchment area and extends into the Mogalakwena and Sand River catchments (sub-phase B). Sub-phases C, D, E and F cover a bulk distribution system from the De Hoop Dam that will ultimately link with the existing Olifants-Sand Transfer Scheme at Olifantspoort to supply Polokwane with water.

The status of the ORWRDP with regards to the existing plan for the outstanding phases before the acceptance of the OMM Programme, are set out in the table below below:

Table 1: ORWRDP phase status

Phase 1	Raising of the Flag Boshielo Dam – completed.
Phase 2A	Construction of the De Hoop Dam – completed.
Phase 2B & 2B+	Construction of a bulk raw water pipeline from Flag Boshielo to Sekuruwe – planning and design completed. Construction of the pipeline section from Piet-se-Kop to Sekuruwe completed, but not commissioned or preserved.
Phase 2C	Construction of pipeline from De Hoop Dam to Steelpoort, including pump station – construction completed.
Phase 2D	Construction of pipeline from Steelpoort to Mooihoek – construction was scheduled for FY 20/21, but not achieved.
Phase 2E	Construction of pipeline from Mooihoek to Clapham – design and planning was scheduled to commence in FY 20/21, but not achieved.
Phase 2F	Construction of pipeline from Clapham to Olifantspoort – design and planning was scheduled to commence in FY 20/21, but not achieved.
Phase 2G	Decision taken that Phase 2G, a parallel pipeline to Phase 2B, will no longer be required within the timeframe of the OMM Programme.
Phase 2H	Incorporation of the Association's water scheme into the ORWRDP scheme.
Phase 2I	Water storage electricity supply system concept completed but excluded from the OMM Programme scope of work.

As part of the WSAs Water Supply Master Plans, potable water studies and designs was concluded and available for incorporation directly into the OMM Programme. These include Water Treatment Works at Mokopane and Sekuruwe in the Northern Limb with associated bulk potable water distribution to command reservoirs. The OMM Programme is actively in the process to confirm further scopes of work, covered within the OMM Programme mandate, with the WSA. These activities will be governed through Water Technical Committees with each of the WSAs, acting as subcommittees of the OMM Programme Steering Committee.

1.4.1.2 Association Bulk Water Scheme

The Association was established in terms of chapter 8 of the National Water Act, 1998 (NWA) to provide a vehicle to abstract bulk water from the Olifants River and to supply such water to the different categories of water users.

For purposes of the bulk water resources a licence was issued to the Association to abstract water from the Olifants River. Licence B191/2/250/1 was issued to the Association for a total volume of 16,000,000 m³ per annum on 6 January 2004. In addition to this aforementioned quantity, the Association is also authorised to supply 3,880,000 m³ raw water per annum via its scheme on behalf of the DWS to be treated to potable water for local communities for domestic use. Because the Association financed the raising of the Flag Boshielo Dam, an additional licence numbered B191/2/250/1 for a total volume of 1,015,000 m³ per annum was issued to Association which represents the lawful water use entitlements for properties inundated through the raising of the dam.

The Olifants River Water Management Area (WMA) is divided into four sub-catchments namely the Upper Olifants, Middle Olifants, Steelpoort and Lower Olifants sub-catchments. The Flag Boshielo Dam and Havercroft

Weir are located in the Middle Olifants sub-catchment, and the De Hoop Dam is located in the Steelpoort sub-area.

Flag Boshielo Dam was originally constructed to mainly supply water for irrigation, domestic use and the transfer of water to Polokwane for domestic use. To alleviate the water demand on the resource resulting not only in a water deficit, but also in a lack of an allocation supporting the Ecological Reserve and providing for the expected future growth in the region, especially regarding mining, the yield of the system was increased by raising Flag Boshielo Dam. The members of the Association agreed to fund and participate in the raising of the Flag Boshielo Dam wall, to secure its licenced abstraction allocation. Furthermore, in terms of Phase 2A of the Olifants River Water Resource Development Project (ORWRDP), the DWS agreed to build and fund the De Hoop Dam. The De Hoop Dam was completed in 2014 and together with the Flag Boshielo Dam proportionally contribute to the ecological Reserve of the system and increase the assurance of supply to the Association and its members located within the area. The yield of the De Hoop Dam also makes allowance for downstream domestic requirements.

To achieve the strategic goal as set forth by the DWS within the Olifants Water Management Area Integrated Strategic Perspective, a portion of the water allocation licenced to the Association ought to be transferred to the De Hoop Dam to facilitate the use of the water by certain members of the Association (mines) located within the Steelpoort sub-area. This transfer of a portion of the lawful allocation to be abstracted at De Hoop Dam instead of Flag Boshielo Dam will alleviate the pressure on the Flag Boshielo Dam. The De Hoop Dam was constructed post the Association's licence approval.

The application was submitted to the Department with a request that in order to give effect to the transfer of some of the allocation to the De Hoop Dam, that Licence No B191/2/250/1 dated 6 January 2004 be amended to allow for the abstraction of 9 508 250 m3/a from the De Hoop Dam (Steelpoort River – Steelpoort sub-area) and 6 491 750m3/a from Havercroft Weir (Olifants River – Middle Olifants sub-area). The total licenced abstraction volume of 16 000 000m3/a will remain unchanged.

The transfer of a portion of Association's authorised abstraction from the Olifants River (Havercroft Weir) to the Steelpoort River (De Hoop Dam) does not change the existing lawful allocation from the system, only the abstraction point. Both abstraction allocations are located within the Olifants River WMA.

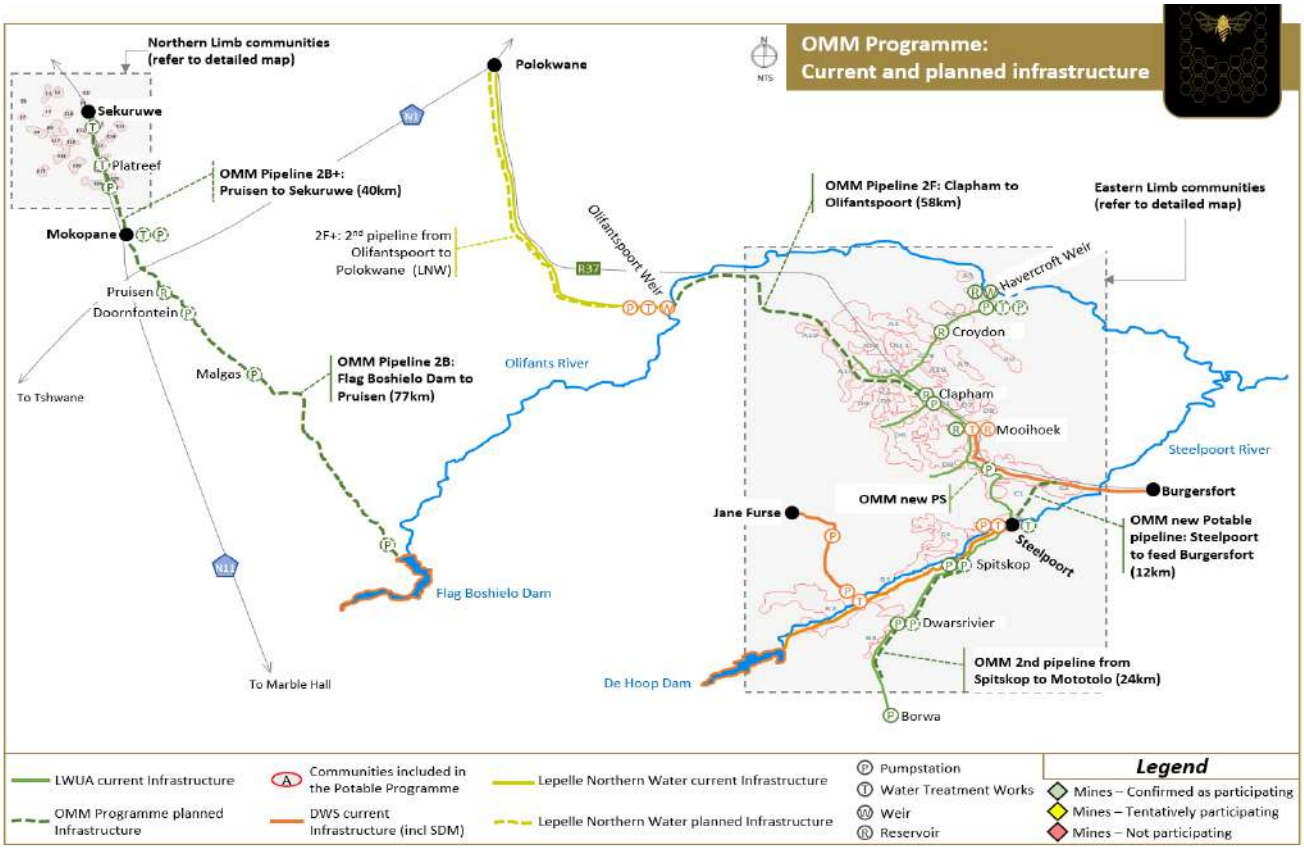
On 17 October 2022 the WULA Manager / WUAAAC Chairperson Mr Stanford Macevele accepted the water use licence application technical report and informed the Association that its application had met all the requirements and indicated the Department would therefore make a decision based on the submitted information. On 9 January 2023 the Association received a copy of the amended Water User Licence signed off by the Deputy Director General Mr C X Zwane on 22 December 2022.

The Association's scheme currently comprises a 110 km pipeline from the Havercroft weir in the Olifants River as well as a desiltation plant, pump stations and storage reservoirs passing along the various mines to Mototolo in the south supplying bulk water to Association members. The scheme intersects with over 105 separate communities along the pipeline network.

With the recent expansion of mines in the Southern end of the Eastern Limb, the Association is in the process of building a second pipeline alongside the existing Southern Extension to increase capacity. The Southern Extension 2 (SE2) capital project (from Spitskop to Mototolo) is currently in the execution phase with the phase 1 in construction and phase 2 ready to place construction tenders.

Figure 7 below, illustrates the completed infrastructure in the area to date, with the Association assets indicated in red and the DWS assets indicated in orange. The expansion plans are indicated in the dotted orange. The Associatiopn's pipeline is now some 20 years old of its expected 50 years average useful life.

Figure 7: Current Association and DWS assets and the OMM Programme plan



1.4.2 Identifying Business and Social Needs

Stakeholder discussions have identified the key issues that are considered in developing an alternative solution:

1. Communities around the mines and pipelines are water-stressed with limited or no access to potable water with socio-economic conditions continuing to deteriorate as communities grow. Polokwane is also water-stressed, having a current water shortage of approximately 30Mℓ/d, whilst Mogalakwena is severely water-stressed with a current shortage of approximately 20Mℓ/d and growing;
2. Levels of social unrest and incidences of asset destruction have increased due to the slow progress in delivery of water services to communities together with unmet expectations of job creation from mines. This has resulted in vandalism of water infrastructure and mining operations being disrupted;
3. Socio-economic development opportunities have also not been unlocked due to the lack of access to potable water. Studies have shown that access to water has positive effects on health, early childhood development, education and workforce productivity;
4. Commercial users require bulk water at a transparent, predictable, cost-effective tariff to maintain and expand operations;
5. Government has funding constraints and competing priorities for water and other infrastructure services. Government wishes to leverage constrained funding by combining private sector funding e.g. co-funding and financing mechanisms are required to access Regional Bulk Infrastructure Grants (RBIG) for municipalities to fund potable water infrastructure;
6. The outbreak of Covid-19 has placed additional financial and organisational pressure on DWS to fast-track water supply to communities to prevent the spread of the disease.

The current ORWRDP plan is no longer optimal and fit-for-purpose and therefor requires amendment for the following reasons:

1. The ORWRDP plan does not include the construction of a pipeline from Pruissen to Mokopane and Sekuruwe which is required to meet social and commercial users' requirements;
2. Flag Boshielo Dam is already over allocated and a pipeline to Mokopane and Sekuruwe would place additional pressure on the system. This pressure could be released through augmentation strategies and the abstraction of water from De Hoop Dam to meet Eastern Limb requirements allowing water from Flag Boshielo Dam to support the Northern Limb requirements;
3. The Association's scheme infrastructure remains under-utilised and, with some minor modifications, can be used to link the De Hoop Dam to Polokwane;
4. Technical specifications have not been revised to account for the reduced dam yields (De Hoop Dam and Flag Boshielo Dam) highlighting concerns over estimated cost; and
5. The synchronisation of bulk raw water infrastructure development with potable water infrastructure development has not occurred. This is critical to deliver potable water and requires an integrated approach.

1.4.3 Spending Objectives

Considering water resource availability, the already described aspects, the regional water needs, as agreed between the members of the Association and issues, SMART (Specific, Measurable, Achievable, Relevant, Time-bound) spending objectives were formulated for the OMM Programme as part of an alternative solution for the current ORWRDP with the inclusion of potable water supply to communities:

The spending objectives are summarised below:

Table 2: Spending objectives

	Objective	SMART outputs	Measure
1	Accelerate the implementation of the ORWRDP and social water supply to water stressed areas.	Utilise the available data, designs and "dry" infrastructure already paid for, to its maximum to accelerate timelines and reduce costs associated with programme implementation.	Create working group with the DWS Infrastructure division and Technical Working Committee with the WSA to identify available infrastructure, design and data that can be included directly into the OMM Programme implementation plans. This approach will prevent rework, saving both cost and schedule for the corresponding projects. Accelerated target dates are reflected in the OMM Programme Implementation Schedule.
2	Revisit and optimise the current available technical design to ensure the most cost-effective solution.	The ORWRDP technical design and implementation concepts, completed a number of years ago, can be optimised through resequencing, deferral of scope	OMM Programme approved scope confirmed the deferral of Phase 2D, 2E and 2G for bulk raw water distribution through optimised utilisation of existing infrastructure.

	Objective	SMART outputs	Measure
		and the application of the latest technologies aligned to the required key resource availabilities (water and electricity).	Renewable energy options to secure sustainable electricity supply and potentially reduce electricity cost are investigated and reported on as part of this report.
3	Operational efficiency optimisation through economy of scale of similar systems by integrating existing Government and Association bulk raw water infrastructure into the Association as a single operating entity for the total network.	Pool existing Government and Association bulk water infrastructure assets into the Association to manage and operate these assets together with the new OMM Programme structure as a single integrated system exploiting economies of scale. These assets would earn a prescribed return on asset (RoA) with members receiving recognition for their previous capital contributions associated with the pooled infrastructure through a capital credit mechanism to reduce their water tariffs.	Key Association Establishment Agreements, including the Constitution, Members Agreement, Resourcing Agreement and Operating and Maintenance Agreement reflects the integrated system approach. The Financial Model caters for recognition for pooled infrastructure as per the agreements.
4.	Improve potable water service delivery through supporting existing WSAs.	Establish a resourcing partnership through the Association, to provide operational support to WSA, where required.	Resourcing Agreement to be signed by all Members.
5.	Bulk and Potable water infrastructure capex to be shared between all members to secure an integrated funding approach with all members sharing funding repayment risks. The OMM Programme will also target extended repayment tenure to minimise cash flow impact on members.	Bulk raw and potable water infrastructure capex to be shared on a 50/50 basis between Institutional and Commercial Members with a target effective repayment tenure (including possible refinancing) of 25 years to minimise cash flow impact on members.	Cost sharing for bulk and potable water on 50/50 basis between Institutional and Commercial Members reflected in the Association's establishment agreements, such as the Constitution and Members Agreement. Funding applications will include a target effective repayment tenure (including possible refinancing) of up to 25 years.
6.	Improve social harmony in the region through the provisioning of social water, the creation of jobs and socio-economic development.	Bulk water for the total social water allocation will be treated to potable water quality, conveyed to command reservoirs for reticulation into the communities. Potable water can then be further	More than 85Ml/day of potable water will be made available in the command reservoirs and from there reticulated to 380 000 people in the communities on a yard connection basis.

	Objective	SMART outputs	Measure
		distributed to communities by the OMM Programme and WSAs. Consultants and contractors appointed on the project will cater for labour training linked to targets for local community development and employment. Local training and enterprise development as part of the Association's SED activities.	Local training and utilisation of local labour forms part of the implementation contracts requirements and is a key component in the bid scoring evaluation process prior to contract award. SED targets are reflected in the Economic Case of this Report. In total the OMM Programme targets the creation of ~42,000 jobs (direct, indirect and induced) in the Limpopo province. An ongoing, focused and sustainable skills development fund and training platform is created as part of the Association's SED activities and will be manged through the SED Committee supported by the SED Collaboration Forum. The SED Forum will be the vehicle to enable self-funded future SED programmes.
7.	Sustainability of the OMM Programme by fully mandating and equipping the Association to implement, manage, operate and maintain the OMM Programme.	Establish a resourcing partnership through the Association, to support construction, operations and maintenance of the defined bulk water infrastructure (including De Hoop and Flag Boshielo Dams). Provision of funds through the Membership Agreements. Operating and Maintenance Agreement with DWS regarding defined Government infrastructure.	Agreements to be signed by all applicable parties
8.	Strict adherence to the regulatory requirements.	Fully compliant policies and procedures approved by the Association's governance committees.	Independent compliance and assurance audits.

	Objective	SMART outputs	Measure
9.	Develop skills in the Water Sector not only through the construction activities, but as part of ongoing operational activities (executed by the Association and WSAs) as well as through ongoing SED activities in the region of operations.	Skills development in the wider Water Sector through establishing a resourcing partnership between members.	Resourcing Agreement will be signed by all Association Members as part of the Association's establishment agreements. The OMM Programme should meet the implementation target dates and supply water on a yard connection to approximately 380 000 people in the communities.
10.	Be a model water infrastructure pilot programme for the country through collaboration and the provision of strong governance over the programme by implementing the OMM Programme based on internationally proven project execution principles and standards.	Building on the Association's proven and tested governance processes, the governance structures will be updated include processes to monitor the effective implementation of OMM Programme considering best practises and requirements of the Association Members.	Governance processes are reflected in the Association's Committee Charters, Terms of Reference, Policies and Procedures. Quarterly independent audits will be conducted as part of the Association's Assurance and Compliance activities.

1.5 Main Anticipated Opportunity Costs and Benefits

The benefits associated with the OMM Programme targets are:

1. Provide a holistic integrated solution to the ORWRDP inclusive of potable water service;
2. Relieve pressure on the already over-allocated Flag Boshielo Dam;
3. Accelerate provisioning of water to distressed areas and communities;
4. Assist in addressing social unrest, unlock economic potential and create jobs in the region;
5. Accelerate the provisioning of bulk raw water for economic expansion to take advantage of favourable commodity cycles and industrialisation of the region;
6. Use capital more efficiently by fully utilising existing infrastructure (the Association's scheme is currently operating at 30% of its capacity) and the revised specifications will be a better fit for the purpose (i.e. the primary objective of the OMM Programme and the ORWRDP);
7. The transformed Association through an amended Constitution and Members Agreement will give effect to community centric approach underpinned by cost control and funding leverage through private and public sector funding robust programme management and cost containment; and
8. Align with and support the DWS Master Plan November 2018;
9. Align with and support the DWS National Water Resource Strategy 3, June 2022.

Besides providing much needed potable water to communities, this would also assist in unlocking the enormous strategic mineral and industrialisation potential of the region to capitalise on the global transition to cleaner energy opportunity. This is in line with the President's call for 'a new social compact among all role-players to restructure

the economy and achieve inclusive growth'. The development of this much needed water infrastructure would align with the development of the region into a renewable energy technology manufacturing hub.

Given the countries and the region's endowment of critical raw materials to develop this emerging market sector, the water infrastructure development is a key enabler to create regional employment through the infrastructure programmes, mining expansion and manufacturing of renewable energy technology. This aligns with the industrialisation objectives of the country.

A Benefit Analysis on the impact of the OMM Programme concluded the following:

Table 3: Opportunity costs associated with growth, productivity and health impacts

Factor	Impact	Cost
A lack of adequate water infrastructure forces companies to expand both their own water supply and that of the surrounding communities, creating various opportunity costs that hinder social and economic development.	Impact on companies and communities related to company growth, local and national economic growth, and socio-economic development of surrounding communities.	Non-quantified costs of companies using their own money to build water supply infrastructure for both themselves and surrounding communities to ensure continued operations.
The opportunity cost of companies having to spend money on upgrading their water supply instead of upskilling employees leads to a lack of skilled labour, specifically skilled water engineers.	Companies need to import skilled labour from outside the communities, usually at a higher cost than sourcing local labourers. As a result, these communities also do not benefit from increased work opportunities.	There are operational costs associated with hiring more experienced labourers outside the local communities. There are also costs associated with upskilling local workers and providing bursaries to community members to develop the needed skills.
A lack of access to clean potable water results in inadequate sanitation, leading to expensive health treatment costs and lost productivity by companies.	Companies lose productive working hours due to lower employee productivity, while employees could see their salaries decrease for non-working hours due to illness. Community members also experience increasing health costs.	Loss in productivity for companies which negatively impact profits, and decreased salaries and disposable incomes of employees and individuals in surrounding communities.

Table 4: Benefits associated with positive social and health impacts

Factor	Impact	Benefit
Social investments by mining companies in education.	Investment in education by mining companies leads to upskilling of employees and community members.	Increased education levels, greater job opportunities, and a reduction in poverty levels.

Factor	Impact	Benefit
Social investments by mining companies – increased local procurement.	Increased local procurement by mining companies can lead to increased business and employment opportunities.	Growth in local businesses and increased employment in local communities.
Social investments by mining companies in employee housing.	Provision of adequate housing for employees frees up disposable income.	Improved living conditions of employees and a decrease in housing expenses, freeing up money for food, education, and health care.
Health benefits from improved access to potable water also leads to improved education in the affected communities.	Health risks negatively affect education attainment.	Improved health leads to improved education outcomes for learners, and improved job opportunities.
Community members could save costs and time associated with finding alternative sources of water supply – buying clean potable water.	Residents are forced to buy water, often at a premium.	Communities could see an increase in disposable income that can then be spent on other necessities such as food, electricity, and transportation to work.
Community members could save costs and time associated with finding alternative sources of water supply - walking long distances to collect water.	Households need to walk long distances to collect water, leading to less time spent on other vital activities such as schooling.	Time savings in water collection could lead to improved school and work attendance, along with economic growth.

1.6 Main Opportunities and Risks

Detailed in the previous sections, the OMM Programme has the prospect of realising some significant opportunities not only regionally but also at a National level. These include:

1. Social harmony in the region through the provisioning of potable water, job creation (these are jobs created during the programme role out which would be identified as being temporary and then there is the additional opportunity for the creation of permanent jobs for operations, on completion of construction and commissioning) and socio-economic development;
2. Behavioural change to water conservation and payment for services;
3. Increased collaboration between stakeholders to develop high impact socio-economic projects;
4. Development of skills in the water sector;
5. Establishment of a predictable cost-effective water tariff to assist large scale economic investment; and
6. Provision of water infrastructure to assist the industrialisation of the region.

In order to realise these opportunities the potential risks surrounding the OMM Programme are actively managed. As part of the integrated risk management process the OMM Programme Risk Management Policy and Procedure are followed with planned risk workshops where, risk ratings are discussed, risk owners and risk managers are identified to develop and implement the risk management plans. A detailed Risk Register are

included in Attachment K. The Risk Register for the OMM Programme makes provision for the identification and integration of specific projects that shall have their own risk registers as they progress. The key issue is that risks identified and recorded in the OMM Programme will encapsulate the risk registers for all projects that are being planned, are in execution, are being commissioned and are handed over for operations.

Potential key risks can be summarised as follows:

1. Political and institutional alignment across all spheres of Government;
2. Changes and dynamics in key stakeholder leadership;
3. Communities' willingness to allow construction activities to commence;
4. Organizations beyond the local communities seeking participation in the construction activities;
5. Ramping up and the capacity of Construction Industry given the scale of the OMM Programme;
6. The impact on affordability of tariffs given the escalating cost of power sourced from Eskom;
7. The unstable energy supply from Eskom makes provision for alternative energy as a fundamental
8. requirement in the OMM Programme.
9. Long lead times to address environmental and other regulations;
10. Commercial members who signed letters of commitment for capacity to be acquired in the infrastructure for the Study Phase do not sign final Off-take Agreements prior to FID;
11. Ability of municipalities (Water Service Authorities (WSAs)) to pay for the bulk water;
12. A culture of non-payment for services; and
13. An increase in water usage against planned availability.

Major construction, financing and operational risks would be borne by the Association in terms of water supply agreements signed with Members.

The OMM Programme Risk Register has been updated, following a recent workshop and is available in Attachment K.

The table below is an extract of the most prominent risks from the OMM Programme Risk Register:

Table 5: OMM Programme risk overview

	Risk	Consequence
1	**Strategic Business:** Institutional and commercial members may not be in a position to fund its contribution given impact of credit rating downgrading, other priority capital allocations and commodity cycles for the mining sector.	• Commercial and Institutional Members may be required to cross subsidise each other's contractual commitments. • Higher financing costs and compliance requirements due to sovereign risk and source of funding.
2	**Technical Business:** Insufficient availability of water to augment Flag Boshielo and De Hoop Dams due to climate change, illegal abstraction and environmental requirements may impact the viability of the OMM Programme and regulator may deny water permits.	• Concerns over adequate water availability may result in the feasibility study not being bankable. • Infrastructure design specifications may be misaligned to resource availability which will adversely impact on build cost. • Social and commercial water commitments not being met.

	Risk	Consequence
		• Water permit may not be forthcoming.
3	**Socio Economic / Communities:** The legacy of inadequate stakeholder engagement, communication, access and participation combined with complex community dynamics and high levels of unmet expectations, could lead to increased community unrest compromising the programme's ability to execute and delays.	• Unrest incidents could threaten the safety of contractors and community members. • Social unrest which could further delay completion of the OMM Programme. • Disaffected communities may threaten the safety of, or prevent service providers from surveying the site to demarcate area battery limits (farm boundaries, community boundaries, mines spheres of influence and municipal boundaries).
4	**Technical / Strategic / Business:** ESKOM will be unable to deliver a reliable supply of power to its customers over the next 6-8 years as much needed backlog maintenance is done and technical commissioning issues on its new plants are resolved. In addition, the cost increases requested are in excess of CPI making the cost of electricity over the long term extremely expensive.	• Disruption of water service delivery. • Significant escalation in OPEX costs. • Planning to include alternate energy solutions, increased capital cost.
5	**Socio Economic / Communities:** Alignment and meeting expectations for local labour, especially for potable water infrastructure (build out to stands).	• Delays and disruption due to unmet local expectations compromising the timeline and/or leading to additional costs.
6	**Finance External:** Credit risk profile of country and programme may make it more difficult to source funding and lead to high financing costs compromising the viability of the OMM Programme.	• Sourcing of funding will become more difficult. • Cost of financing likely to increase. • May compromise the viability of the scheme.
7	**Finance:** Members may not be in a position to fund their portion of the capital required for the OMM Programme, leading to additional funding required from private institutions and/or members.	• Inability to obtain adequate funding will lead to delays, cash flow pressure on the Association and could compromise the OMM Programme.
9	**Finance / Commercial Sustainability:** Communities unable to pay for potable water.	• Municipal institutions may not be able to pay LNW and the Association for provision of water services. • Inability to sustain O&M structures and services. • Loan payment defaults to funding institutions.
10	**Socio Economic / Communities:** Political pronouncements, positioning and messaging will continue to build community expectations which are unlikely to be met, resulting in dissatisfaction and disruption from the community which could lead to delays, damage and additional costs.	• Community disruptions could lead to delays, damage and additional costs. • Migration of unemployed people to construction areas, leading to access and safety issues.

	Risk	Consequence
11	**Strategic Business:** Institutions may not fully align and commit to the OMM Programme.	• Delays could result from inadequate or delayed commitment from local, provincial and national institutions/ authorities, compromising our ability to provide access to potable water.
12	**Socio Economic / Communities:** The OMM Programme only addresses the provision of access to potable water without addressing sanitation.	• Community health and safety issues which will place further drain on community health services and economic productivity.
13	**Technical / Business:** The construction industry has shrunk and will need to ramp-up to cater for the volume of work required in the OMM Programme, especially with regards commodities for piping and pumps, which might lead to delays and cost increase.	• Delays and price increases while the industry ramps-up to requirements. • Quality control will need to be managed.
14	**Environment / Business:** Climate changes could result in severe weather-related incidents and/or changes to the water resource profile, leading to delays, price increases and/or compromising the viability of the OMM Programme.	• Delays, price increases and/or viability of the OMM Programme.
15	**Legal / Business:** Changes to laws, regulations and legal regimes/ frameworks could lead to significant delays and price increases to provide bulk and potable water to the stakeholder consumption base.	• Delays and price increases to comply with new regulations.
16	**Technical / Business:** The high volume of pipes and pumps required could lead to shortages in the supply of critical materials and commodities used in fabrication of supplies, leading to delays and price increases.	• Delays and additional costs.

1.7 Constraints and Dependencies

1.7.1 OMM Programme Agreements and Approvals

The OMM Programme is based on the following key agreements, approvals and stage gates:

1. A Memorandum of Intent (MoI) was signed between the Department of Water and Sanitation (DWS) and the Association and its current and intended new commercial members to give intent to the OMM Programme;
2. Ministerial agreement was reached to establish the transformed Association to build and manage the OMM Programme;

3. The Association was appointed as legal entity to represent the transformed water user association during the establishment period;
4. The Association's current and potential new commercial members signed letters of commitment for capacity to be acquired in the infrastructure and to fund the OMM Programme development studies (Early Business Case, Intermediate Business Case and Full Business Case Studies);
5. Approval of the OMM Programme stage gates of:
    c. Concept Study / 5 Case Model Early Business Case;
    d. Pre-feasibility Study / 5 Case Model Intermediate Business Case;
    e. Feasibility Study/ 5 Case Model Full Business Case; and
    f. Financial Investment Decision (FID).
6. The Association's Constitution and Members' Agreement are to be amended to incorporate:
    a. potable water infrastructure implementation and support;
    b. expand its geographical area to include all areas of the OMM Programme scope;
    c. change the primary abstraction point from Havercroft weir to three points namely Flag Boshielo Dam, Havercroft Weir and De Hoop Dam; and
    d. add an abstraction point from Flag Boshielo Dam to provide water for the ORWRDP in the Northern Limb.
7. Key enablement agreements between the Association and DWS include:
    a. Implementation Agreement;
    b. Funding Agreement; and
    c. Operating and Maintenance Agreement
8. Study phase and implementation contracts concluded:
    a. Zutari-Ndodana Joint Venture – Main study phase consultant for bulk water supply Study Phase;
    b. Infraburo – Engineering Consultant for the implementation of Southern Extension 2 project;
    c. Esor Construction – Construction contractor for Southern Extension 2 project; and
    d. Element Consulting Engineers and KBK MWM – Scoping study for potable water distribution in the Sekuruwe region; and
9. Several specialist consultants supporting the Project Management Unit activities;
10. Contracts still to be concluded:
    a. Scoping study for potable water distribution in the Sekhukhune District;
    b. Study Phase consultants for potable water reticulation;
    c. EPC contracts for project implementation;
    d. Project Management Consultants for oversight and day to day management of the EPC contracts and;
    e. Specialist consultants supporting the Project Management Unit as and when required.

1.7.2 Alignment With Existing National Policies, Regulations and Strategies

As the public trustee of South Africa's water resources, the National Government, acting through the Minister of Water and Sanitation, must ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner, for the benefit of all persons and in accordance with its constitutional mandate.

Chapter 7 of the National Water Act, 1998 (NWA) deals with catchment management agencies. The preamble to this chapter provides for the progressive establishment by the Minister of Water and Sanitation of catchment management agencies. The purpose of establishing these agencies is to delegate water resource management to the regional or catchment level and to involve local communities, within the framework of the NWRS.

The OMM Programme largely falls within the Olifants water management area. The Olifants water management area was established in terms of the NWA and constitutes a management unit in the NWRS within which a catchment management agency will conduct the protection, use, development, conservation, management and control of water resources. A Catchment Management Agency for the Olifants Catchment has not been established as yet. However in terms of Government Gazette 48017 of 10 February 2023 Number 3029, the Minister of Water and Sanitation has given notice of the proposed establishment of the Limpopo Olifants Catchment Agency through the reconfiguration and realignment of the Limpopo and Olifants Water Management areas. In this regard, in terms of the National Water Resources Strategy 3 (NWRS-3) Table A.2 refers to the revised (2020) water management area boundary descriptions; Water management area (number & current names) a boundary description as the Limpopo-Olifants. This includes major rivers include the Limpopo, Crocodile, Marico, Matlabas, Mokolo, Lephalale, Mogalakwena, Sand, Nzhelele, Mutale, Luvuvhu, Elands, Wilge, Steelpoort, Olifants and Letaba. Primary drainage regions A and B. Table A. 3: sets out the details of amendments to Water Management Areas boundaries Water Management Area Boundary Proposed Boundary Amendment 1. Limpopo-Olifants. The Limpopo and Olifants WMAs are amalgamated into a single WMA. The Association falls squarely within the newly designated Limpopo Olifants Water Management Area. The area of operation of the Scheme is set out in the amended Constitution and the principal functions and purpose of conveying bulk water through a piped system and appurtenances to its Members.

The NWA defines a “water management institution” to include a catchment management agency as well as a water user association. In this regard, although water user associations are water management institutions, their primary purpose, unlike catchment management agencies, is not water management. They operate at a restricted and localised level. A water user association may exercise management powers and duties only if and to the extent that these have been assigned or delegated to it by the Minister of Water and Sanitation.

The Minister of Water and Sanitation establishes and disestablishes water user associations according to procedures set out in chapter 8 of the NWA. A water user association would usually be established following a proposal to the Minister of Water and Sanitation by an interested person. However, such an association may also be established on the Minister of Water and Sanitation’s initiative. The functions of a water user association depend on its approved constitution, which can be expected to conform to a large extent to the model constitution in schedule 5 of the NWA, which also makes detailed provisions for the management and operation thereof. Although water user associations must operate within the framework of national policy and standards, particularly the NWRS, the Minister of Water and Sanitation may exercise control over them by giving them directives or by temporarily taking over their functions under particular circumstances.

In addition to the NWA, the Water Services Act, 1997 (WS Act) provides for the rights of access to basic water supply and basic sanitation; the setting of national standards and of norms and standards for tariffs; the provision for water services development plans and a regulatory framework for water services institutions and water services intermediaries as well as provision for the establishment and disestablishment of water boards and water services committees and their powers and duties. The WS Act also provides for the monitoring of water services and intervention by the Minister of Water and Sanitation, or by the relevant province; the provision of financial assistance to water services institutions; the provision of certain general powers of the Minister of Water and Sanitation; the gathering of information in a national information system and the distribution of that information.

The OMM Programme envisages a collaborative treatment of the abovementioned acts to give effect to section 27 of the Constitution of the Republic of South Africa, 1996 (which addresses access to water) in managing water within a circular economy. The development of the OMM Programme is required to be socially, environmentally, and economically sustainable. The OMM Programme aims to provide for co-operative, environmental governance by establishing principles for decision-making on matters affecting the environment. Sustainable development requires the integration of social, economic, and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations.

Against this background, during the Early Business Case development phase for the OMM Programme, various activities have been undertaken to consider the structure to transform the current Association into the transformed

Association. The legal viability of the structure thereof has also been assessed. This, amongst others, included the formulation of commitment letters and memoranda of understanding with key stakeholders to elucidate the strategy and ensure buy-in from these critical stakeholders at inception.

A Regulatory Report has been undertaken to confirm that:

1. The current Association will be used as vehicle to establish the transformed water user association;
2. the current Association's mandate can be extended to cater for the transformed water user association, by amendment of the Association's Constitution and Members' Agreement through the approval of 80% of the Association's members and the approval and gazetting by the Minister of Water and Sanitation of the amended Constitution;
3. various authorisations need to be obtained and/or amended to implement the OMM Programme;
4. a Water User Association, through its objectives, may be considered a water services provider (subject to approval from the relevant Water Services Authorities) having jurisdiction in the area in question;
5. it is also apparent that the OMM Programme does not fall within the meaning of a PPP, at either a national or municipal level; and
6. having regard to the constraints regarding acquiring state assets the principle of pooling assets would be appropriate and the prudent approach would be for the parties to enter into operations and maintenance agreements to manage the assets going forward.

1.7.2.1 Alignment with the National Infrastructure Plan 2050, Phase I

The National Infrastructure Plan 2050 (NIP 2050) Phase I, was published in the Government Gazette of 11 March 2022. The goal of the NIP 2050 is to create a foundation for achieving the National Development Plan's (NDP) vision of inclusive growth. Prepared by Infrastructure South Africa (ISA), the NIP 2050 offers a strategic vision and plan that link top NDP objectives to actionable steps and intermediate outcomes.

In the NIP 2050, Government highlights that: "Infrastructure development is critical to attaining South Africa's long-term economic and social goals. In the context of a developing country seeking significant structural change, the public sector must lead this effort. Infrastructure delivery will be one of the most significant contributors to South Africa's transition from a historically closed minerals economy to one that is globally and regionally integrated, low carbon, inclusive and promoting of dynamism in the industries of the future."

It is further envisaged that infrastructure development projects will contribute significantly to the goals of the NDP. The NDP anticipates, amongst others, universal and reliable access to water of an acceptable quality and quantity in support of a strong, inclusive economy and a healthy environment by 2030, a commitment that must be sustained thereafter. This will be supported by an efficient, resilient, well-managed, and sustainable integrated national bulk water supply system that responds to the economic needs of the country.

Strategic elements and conditions, as referenced in the NIP 2050, in relation to water infrastructure, targeting to ensure that the water sector delivers on South Africa's 2050 vision were considered in the development of the OMM Programme proposal and included in the strategic way forward as reflected in the table below:

Table 6: NIP 2050 in relation to water infrastructure

	NIP 2050	OMM Programme
1. The institutions involved in managing water are effective.	• Executive leadership in DWS, the water boards and other institutions managing water will be stabilised and appointed based on capability. • The National Water Resources Infrastructure Agency will be operational and robust. • There will be an infusion of management capability into the sector, resulting in the turnaround of municipal water businesses (financial and technical performance), financial viability (revenues matches expenses), reduction in non-revenue water and water losses, and management of demand. There will be a particular focus on the top 12 municipalities accounting for 65% of urban water demand. • Irrigation systems will be rehabilitated and maintained, and water use efficiencies improved.	• The Association, a successful and well-established operating and project implementation entity, will be transformed into the Association to implement the integrated OMM Programme. • The established OMM Programme Steering Committee with representation from both Institutional and Commercial members, will guide the development of the OMM Programme and will be incorporated into the well-established and functioning governance structures of the Association. • The governance structures will include processes to monitor the OMM Programme risks including stakeholder management and engagement. • As part of the infusion of management capability into the water sector, the Association will provide guidance and support to Water Service Authorities (WSAs) as and when requested in support of the effective supply of potable water to the defined communities.
2. Water resource planning capacity must be proactive, robust and responsive.	• Water resources planning must be proactive, programmatic and well-resourced, informing strategy and implementation. • Data informing planning must be comprehensive and up to date. • Planning must be done with recognition of the local characteristics, complexity and interconnectedness of major water systems. • There should be cross-sectoral cooperation to optimise national water use.	• With support from the mines and in close cooperation with DWS and the Association, analyses of the capabilities and behaviour of the Olifants River System (additional to what the DWS had done), were performed by the Joint Water Forum (JWF). This was done in close liaison with the DWS, with the full outcomes also shared with the DWS. • The analyses indicated that the OMM Programme solution would enable sufficient water to be made available at an acceptable assurance to meet all existing and future water requirements from the Olifants River System together with growth in the Mogalakwena and Polokwane areas until 2050.
3. Decision-making must be accountable and	• Institutional accountabilities and mandates must be aligned for effective decision- making.	• The OMM Programme implementation methodology will be based on the application of international proven and accepted good project practices aligned

	NIP 2050	OMM Programme
institutions effective.	• There must be accountability for building water security and resilience in each major water system and at the municipal level. • Decision-making must be transparent and water users should be able to provide inputs into the decision-making processes. • Institutional mandates and roles and responsibilities should be clearly defined. • Leadership in key institutions – government (national, provincial, municipal), regulators, Trans-Caledon Tunnel Authority (TCTA), water infrastructure agency, water boards, water service providers, water user associations and other irrigation institutions – must be capable and stable. • Management must be effective, and human resources capability must match roles and responsibilities. • Revenue sources must be sufficient and sustainable. • Institutions must become soundly governed, open and transparent. • Institutions must regularly achieve clean audits.	to the Association members' capital investment governance processes. • To this extent the Association will adopt an industry acceptable gated framework to execute each indicated phase with its associated purpose, technical details, project management outputs, business and stakeholder key outputs, and outcomes. • An integrated and independent project controls environment will be established during the Study phases to ensure transparency of information, promote good governance, reduce risk and facilitate integration of information during the studies. • The populating of the organisational structures will maximise the utilisation of the experience on offer from the Association members. • The effects or outcomes of the OMM Programme implementation strategy and tracking of benefit realisation will be quantified through KPIs which can be assessed by the Association through a number of economic and other tracking variables. • Also refer to item 1: The institutions involved in managing water are effective.
4. Capacity to finance and deliver water projects must be robust, with the private sector being used effectively, and the water sector must become financially sustainable.	• Financing and implementation arrangements must be clear for all priority projects and execution capacity must be robust. • Privates sector capacity must be effectively used to contribute skills and financing and to improve sector efficiencies. • Revenues from tariffs, together with secure and predictable government budgets, must be sufficient to finance and fund the necessary capital expenditure and meet efficient operating costs. • Robust procedures must be in place to review, set and approve tariffs in the water sector through the full value chain.	• Establishment of the Association will result in the joint funding of the integrated OMM Programme on a 50/50 basis between Government and the commercial sector, specifically relating to capital expenditure. • It is envisaged that the OMM Programme capital requirements will be financed using a combination of external debt and annual contributions from Institutional and Commercial members. • Contributions towards operating expenses will be based on two elements namely a fixed cost component (take or pay based on capacity required) and a variable component based on usage.

	NIP 2050	OMM Programme
	• Conditions must be created for the increased use of commercial finance in the sector.	• The funding structure will be further developed and affordability further assessed during the Studies Phase.
5. Existing water infrastructure must be rehabilitated and maintained and water use efficiencies improved.	• Institutions involved in managing water infrastructure must pay as much attention to the maintenance and rehabilitation of existing infrastructure as to the creation of new infrastructure. • Water leakages must be addressed. • Asset management best practices must be implemented. • Effective use must be made of the private sector to increase institutional capacity to operate and maintain infrastructure. • Non-revenue water must be significantly reduced and overall water use efficiency improved. • Irrigation water use efficiencies must be improved where appropriate, especially in water-stressed systems	• The OMM Programme will • optimise the utilisation of existing dams (i.e. Flag Boshielo and De Hoop) and infrastructure in the defined area; • Improve potable water service delivery through support to existing Water Services Authorities; • Develop skills in the water sector through establishing a resourcing partnership between Institutional and Commercial members; • SED programmes are aimed at behavioural change towards water conservation and payment for services; • Opportunity exists to use treated sanitation water for agricultural use (second use of water)
6. Ecological infrastructure must be protected.	• Institutional responsibilities must be clarified for the protection of key natural ecosystems supplying the major share of South Africa's water. • Reserve requirements should be enforced and resource quality objectives implemented. • Financing mechanisms to support ecosystem protection and rehabilitation must be established.	• The development of the OMM Programme will be socially, environmentally, and economically sustainable. • The OMM Programme aims to provide for co-operative, environmental governance by establishing principles for decision-making on matters affecting the environment. • The integration of social, economic, and environmental factors in the planning, implementation and evaluation of decisions will ensure that the OMM Programme serves present and future generations.
7. Regulatory oversight and licensing regime must become robust.	• Local government and national legislation should be aligned. • The water allocation and licensing processes must become just, equitable, predictable and stable. • Sufficient professional and administrative capacity must be created and maintained for the sector's important economic	• This will not be directly influenced by the OMM Programme, but effective regulatory oversight and licensing regime will be required in support of effective implementation.

	NIP 2050	OMM Programme
	regulation and licensing functions. • Regulatory and licensing administrative processes must be effective and efficient.	
8. Roles and responsibilities must be aligned and consultation meaningful.	• Roles and responsibilities of all role players should be well aligned, from the line department, catchment management agencies (CMAs), regulator, TCTA, National Water Infrastructure Agency, water boards, water user associations, water services providers, private sector and social partners. • The consultative processes must be deep and meaningful.	• The Association Management Committee will establish appropriate governance sub-committees with Terms of Reference and Charters with relevant delegations of authority to facilitate efficient management of the OMM Programme. • The OMM Programme Steering Committee and associated supporting specialist panels will have equal representation between Institutional and Commercial members, with decisions made on consensus basis. • A Project Management Unit (PMU) will be established as a department within the Association's operational and management structures to act as the Owner's Team Representatives and will be responsible, via the Association's management and governance structures, to develop and execute the OMM Programme. • Detailed job profiles with roles and responsibilities will be developed for all organisational structures and approved by the appropriate governance structures. • The Social Economic Development (SED) programme is directed to ensure structured consultative processes with all stakeholders.

The NIP 2050 and the NDP should be read in conjunction with the National Water and Sanitation Master Plan. The National Water and Sanitation Master Plan identified key elements necessary to achieve the NDP vision: resilient and fit-for-use water supply; universal water and sanitation provision; equitable sharing and allocation of water resources; effective infrastructure management, operation and maintenance; and a reduction in future water demand, protecting and restoring ecological infrastructure, and addressing declining water quality.

The manner in which the OMM Programme is expected to address the key considerations from the National Water and Sanitation Master Plan is addressed in the next section in this report. However, we acknowledge that the National Water and Sanitation Master Plan is currently being updated, but in support of the timely issue of the first OMM Programme Intermediate Business Case Report, the 31 October 2018 Water Master Plan (as published by the Departments of Human Settlement and Water and Sanitation) will be referenced. Any updates that influence the OMM Programme will be considered and addressed in the second OMM Programme Intermediate Business Case Report that will be issued after the Pre-Feasibility Phase of the OMM Programme.

1.7.2.2 Alignment with the National Infrastructure Plan 2050, Phase II

Water Master Plan

On 31 October 2018, the Departments of Human Settlement and Water and Sanitation published the Water Master Plan which dovetails the top priority issues confronting the water and sanitation sector and seeks to rally all water sector stakeholders in South Africa to work together in order to ensure that the country gets ahead of the curve in relation to both current and future challenges, this document has now been strengthened by the publication of the National Water Resource Strategy 3. The Association comprises various stakeholders and is best placed to respond to the Water Master Plan and easily bring together all the stakeholders to work together with Government to confront the challenges facing the water and sanitation sector within the Bushveld Igneous Complex.

The Water Master Plan unequivocally admits that South Africa is facing a water crisis caused by insufficient water infrastructure maintenance and investment, recurrent droughts driven by climatic variation, inequities in access to water and sanitation, deteriorating water quality, and a lack of skilled water engineers. This crisis is already having significant impacts on economic growth and on the well-being of everyone in South Africa. The OMM Programme intends to build, operate and maintain bulk and potable water infrastructure in the Eastern and Northern Limbs of the Limpopo Province. Without placing more emphasis on what the OMM Programme seeks to achieve, it is clear from the on-set that OMM Programme would address the water crisis caused by insufficient water infrastructure maintenance and investment identified in the Water Master Plan. If the OMM Programme is completed and becomes operational, it would go a long way to address inequities in access to water in the Limpopo Province and assisting Government in meeting the goals and key drivers identified in the Water Master Plan. The manner in which the OMM Programme is expected to address the key considerations from the Water Master Plan is illustrated in the table below:

Table 7: Water Master Plan considerations

Water Master Plan page	Water Master Plan description	Association ties with the Water Master Plan
Volume 1, Page 7	The Water Master Plan is based on five key objectives that define a 'new normal' for water and sanitation management in South Africa: • resilient and fit-for-use water supply; • universal water and sanitation provision; • equitable sharing and allocation of water resources; • effective infrastructure management, operation and maintenance; and • reduction in future water demand.	These five objectives enable the achievement of the National Development Plan's (NDP) Vision for 2030, of affordable and reliable access to sufficient and safe water and hygienic sanitation for socio-economic growth and well-being, with due regard to the environment. The Association has identified that those communities surrounding mines have increased in Limpopo Province and do not have reliable access to potable water and other basic services. This simply means that some of the five key objectives of the Water Master Plan are yet to be achieved in Limpopo Province. It further means than there is no resilient and fit-for-use water supply; equitable sharing and allocation of water resources; effective infrastructure management, operation and maintenance and there is high water demand. The OMM

Water Master Plan page	Water Master Plan description	Association ties with the Water Master Plan
		Programme, targeting an integrated potable and bulk raw water solution, strongly linked to SED in the region is an ideal vehicle for Government to achieve these objectives in the middle Olifants River area of the Limpopo Province. The Association has done all the necessary foundational studies as reflected in this report, and it has the necessary experience required to get the project of this magnitude right and help Government achieve the objectives set out in the Water Master Plan. As agreed between Government and CUC, the a transformed Association (future Association) is best placed to assist Government as it has operated in the Limpopo Province for many years and it already has an existing infrastructure on the ground and all that needs to be done is to expand the infrastructure.
Volume 1, page 12	According to the Water Master Plan, to balance requirements and supply, South Africa will need to reduce water demand, as well as increase supply for a growing population and economy. On the supply side, there is a need to optimise the water mix which is currently strongly dominated by surface water, with some groundwater and return flows to a water mix that includes increased groundwater use, re-use of effluent from waste water treatment plants, water reclamation, as well as desalination and treated acid mine drainage.	The OMM Programme would accelerate potable and raw water delivery to stressed communities in the Northern and Eastern Limb by maximising the utilisation of available water studies, data and existing under-utilised infrastructure. Although the Association is primarily reliant on surface water, it would immediately release pressure on the already over-allocated Flag Boshielo Dam as it would abstract water primarily from De Hoop Dam. Furthermore, The Association might consider abstracting groundwater from boreholes (borehole bridging in Eastern Limb as interim strategy) and this is in line with the need to optimize the water mix on the supply side. As part of the OMM Programme SED activities, low maintenance sanitation works, localised in the communities will be considered. The water will be treated to irrigation standard for agricultural use. This secondary use of water will reduce overall water demand and create the opportunity for agricultural enterprise development close to the communities.

Water Master Plan page	Water Master Plan description	Association ties with the Water Master Plan
Volume 1, Page 20	According to the Water Master Plan, the failure of some municipalities to provide reliable water and sanitation services is largely due to the lack of technical skills, institutional capacity and funding to operate, maintain and manage water and waste water infrastructure assets properly. Further contributors towards the poor reliability of water and sanitation services are the limited budget allocated by some municipalities for operations and maintenance relative to that allocated to new capital works, poor revenue management, and the failure of municipalities to employ appropriately qualified technical staff. In addition, the national infrastructure grant funding mechanisms incentivise the building of new infrastructure, rather than the maintenance of existing infrastructure.	The objectives of the OMM Programme include providing a reliable supply of water delivered safely, cost effectively and at the right quality. To address some of the failures identified in page 20 of the Water Master Plan, the Association will conduct investigations and evaluations of available data and infrastructure in the targeted areas and develop integrated solutions to enable accelerated supply to communities and users through proper operations, maintenance and governance structures. Included in the agreement between Government and CUC is a Resourcing Agreement in which members of the Association will make available infrastructure and resources to the Association of which one key aspect is training and development targeting not only Association direct employees, but also municipality and water service provider employees to enable effective operation, maintenance and management water and wastewater infrastructure. Furthermore, the Association could support the capacity building within the relevant municipalities and Water Service Providers. The OMM Programme will also seek to leverage the national infrastructure grant funding mechanisms by requesting NT to ring-fence grants specifically for the operations and maintenance of the Association funded water infrastructure. This will help to reduce the overall funding requirement for the OMM Programme.
Volume 1, Page 22 and 23	The Water Master Plan acknowledges that the national capacity to operate, maintain and manage water supply and sanitation services requires urgent attention. Some of the key actions it identifies are to deliver services to achieve (100%) universal water services provision (Municipal Water Supply Projects by 2030) and operation and maintenance of water resources and services infrastructure by 2050. According to the Water Master Plan Government needs to consider investigating and	The OMM Programme will be a suitable vehicle to be used as a steppingstone towards delivery of services to achieve (100%) universal water services provision. This cannot be achieved overnight and the OMM Programme will assist to expedite the achievement of this goal in Limpopo Province.

Water Master Plan page	Water Master Plan description	Association ties with the Water Master Plan
	promoting alternative service delivery models such as BOTT (build**,** operate**,** train and transfer), management contracts and concessions.	
Volume 1, Page 41	The Water Master Plan seeks to create effective water sector institutions, DWS as the leader of the water and sanitation sector, will lead a process, with other sector partners, to simplify and streamline the currently complex institutional arrangements in the sector. This includes developing and implementing long-term plan for the turn-around of water supply and sanitation services in the country based on a sector-wide approach, that recognise DWS as the regulator of water and sanitation provision that includes the development of centralised programmes to obtain economies of scale and to ensure impact (e.g. driving municipal non-revenue-water improvements, and assessing the cost-effectiveness and appropriated systems for desalination).	The integrated potable and bulk raw water supply, included into the OMM Programme, offers a simplified institutional arrangement and a long-term water supply plan with economies of scale and the required resource development commitments that supports Government's objective for the turn-around of water supply as envisaged in the Water Master Plan. As part of the OMM Programme SED activities, low maintenance sanitation works, situated in the communities, will be considered.
Volume 1, Page 47	One of the key challenges to financial health in water and sanitation was that the private sector participation is not optimized.	The Association is the vehicle that enables partnership between the Government and the private sector in the region. The OMM Programme will allow for Government and the commercial users in the region to contribute towards the capital expenditure and bulk raw water operating expenditure on a 50:50 basis, developing the culture of collaboration between Government and the private sector in resolving these key issues faced by the country.
The role of Private Sector and Public Private Partnership Structures		
Volume 1, Page 50 and 51	The Water Master Plan identifies the need to achieve financial sustainability, the need for costs to decrease and that revenue needs to increase. According to the Water Master Plan, Water and sanitation infrastructure is capital intensive and the sector is faced with increasing	The OMM Programme is expected to deliver financial sustainability by: • seeking to optimise the cost associated with water supply in the region; • establish behavioural changes in the surrounding communities to encourage a payment culture for services provided;

Water Master Plan page	Water Master Plan description	Association ties with the Water Master Plan
	funding needs whilst fiscal funding is limited. The Water Master Plan further identifies the need to assess appropriate funding options from Transfers – Public Sector Focus, Revenue – User Focus, Loans – Private Sector Focus or a combined approach / Blended funding. Furthermore the Water Master Plan seeks to increase loan funding. It identifies this aspect as one of the drivers that will play a key role to maintain positive cash flows and affordable service. Most importantly, it states that the loan funding can be increased through the private sector and simplified Public Private Partnership Structures (**PPP Structures**).	• obtaining long-term funding commitments from private sector players in the region; • obtaining long-term, limited recourse debt financing that better matches the cash generating profile of the OMM Programme to improve overall affordability; and • incorporating a joint contribution mechanism by both Government and the commercial users which is directly determined with reference to the underlying cost base of the OMM Programme.
Volume 1, Page 59	Again, according to the Water Master Plan, of critical importance is the issue of financial sustainability. Currently the sector is not financially sustainable and increases more than inflationary targets will be required to address the historic undervaluation of water and sanitation services. High levels of debt at municipal level reverberate up the value chain, impacting on the financial sustainability of all institutions in the water sector, exacerbated by poor revenue collection by Government itself. There are five legs to the financial sustainability issue that must be addressed and one of the five is: roll out of ring-fenced institutional models to increase private sector investment.	The transformed Association through an amended Constitution and Members Agreement will give effect to community centric approach underpinned by cost control an funding leverage through private and public sector funding robust programme management and cost containment. The model applied for the OMM Programme will be used as a pilot in the industry and is expected to be a model which can be replicated in other regions in South Africa. The contributions by Government and the commercial users will be based on a 20-year forecast of ongoing operating and maintenance costs, and debt service, allowing for upfront planning and reserving which will help to smooth the anticipated profile of major maintenance expenditure over the life of the OMM Programme. This in turn will allow the annual contributions to increase in line with inflation annually and reduce the risk of excessive ad hoc tariff adjustments.
Volume 2, Page 1-2	The Water Master Plan, makes a commitment that DWS will work in conjunction with other government departments and agencies, the private sector and civil society to ensure that the	The establishment of the OMM Programme is a step towards achieving Government objectives as articulated in the Water Master Plan.

Water Master Plan page	Water Master Plan description	Association ties with the Water Master Plan
	crisis in the water and sanitation sector is addressed with the aim of attaining a water secure future with reliable and safe water and sanitation services for all, and that these contribute towards meeting national development objectives.	The Water Master Plan furthermore commits to support similar projects like the OMM Programme as the OMM Programme seeks to bring reliable water supply services to the mines and communities surrounding the mines in the Eastern and Northern Limbs of the Bushveld Igneous Complex.
Role of private sector in addressing water quality challenges		
Volume 2, Page 7-2; 7-3 and 11-1.	Most of the country's water resources are negatively impacted by a combination of wastewater discharges and run-off from land-based activities. Major impacting sources include agricultural drainage and wash-off (irrigation return-flows, fertilisers, pesticides and runoff from feedlots); urban wash-off and effluent return-flows (bacteriological contamination, salts and nutrients); industries (chemical substances); mining (acids, salts, metals and radioactivity); and areas with insufficient sanitation services (microbial contamination). The quality of groundwater is impacted on by mining activities, leachate from landfills, human settlements and intrusion of sea water. As the economy and technologies develop, the pressures to stay abreast of new forms of pollution increase, and monitoring and /or further investigation to improve our understanding of these pollutants and their impacts will be critical. There are five priority water quality issues that will be addressed through a strategic, adaptive and action-oriented water quality management programme. These five priority issues are: eutrophication; salinisation; acid mine drainage and acidification; sedimentation; and urban runoff pollution. These priority water quality challenges all have multi-sectoral characteristics and will need strategic regulatory collaboration and partnerships between DWS and various other state institutions across all three spheres of government, the private	The OMM Programme will provide an integrated solution for potable and bulk raw water supply. Through the Association, the private sector wll therefor contribute towards the provisioning of potable water and sanitation. The Association will build infrastructure to abstract and treat water to potable standards, thus improving the water quality. The OMM Programme further targets the secondary use of water through the development of low maintenance, sanitation works within the communities. The water will be treated to irrigation standard for agricultural use. The water sector is inter-sectoral and multi-disciplinary in nature. At an inter-sectoral level, it links with agriculture, health, education, local government, mining, forestry, industry and environment. Its multi-disciplinary nature covers a range of responsibilities, including policy and regulation, planning and management, capital works design, construction, operation and maintenance, ecological, water quality and social analysis, financial management, all across both urban and rural environments. These responsibilities are allocated to a number of water sector institutions, mostly within the public sector such as water services authorities, water services providers, water boards, catchment management agencies and water user associations, but the private sector and civil society also play a role. The drafters of the Water Master Plan clearly had projects like the OMM

Water Master Plan page	Water Master Plan description	Association ties with the Water Master Plan
	sector and organised civil society. From these, although it is not directly related or link to what the OMM Programme seeks to achieve, the Water Master Plan acknowledges the private sector's role to resolve water challenges in South Africa. Historically, water quality management has been the sole mandate of the then DWS. However, there are other government departments whose mandates have a profound impact on water quality, most critically, the then Departments of Environmental Affairs, the then Mineral Resources, the then Agriculture, Forestry and Fisheries, Health, the then Human Settlements, Education, Cooperative Government and Traditional Affairs, National Treasury (NT), Trade and Industry, together with provincial counterparts where relevant, and municipalities/WSAs. Water quality management is, therefore, a government-wide task, to be implemented under strong leadership of the DWS, with both the private sector and civil society playing a role.	Programme in mind when they kept on making reference to the role of the private sector. Through DWS, the blue and green drop standard will require municipalities / WSA to monitor, maintain and report the water quality on a continuous basis. The Association, through the resourcing agreement, will support this initiative through skill transfer and training initiatives.
Volume 2, Page 11-5 and 11-6	The South African water sector has experienced major sectoral, regulatory and institutional reform since 1994. These have had significant impact on the governance, operations and management of water sector institutions and engagement with water users, and on the capabilities and expertise required. The capacity gaps are present at various levels – environmental, institutional and human skills. Environmental and institutional capacity gaps are a result of a multiple factors beyond the control of the water sector. One of the human skills capacity gaps that were noted are that the experienced professionals are leaving public institutions to work in the private sector and in foreign countries due partly to the inability of public sector institutions to attract and retain such staff.	The establishment of the Association and associated Resourcing Agreement will guarantee access to experienced professionals within the private sector for management, operations and maintenance of the Association infrastructure. SED is an integral part of the OMM Programme. Through the SED initiatives, the required education programmes will be identified to address critical skill shortages in the defined OMM Programme areas.

Water Master Plan page	Water Master Plan description	Association ties with the Water Master Plan
Volume 2, Page 11-7 and 11-8	The Water Master Plan makes a commitment that a detailed assessment of sector skills and capacity building needs will be concluded after approval of the plan which includes establishing partnerships with private sector and international development partners for skills development and institutional capacity building. Assess opportunities for private public partnerships throughout the water and sanitation business value chain.	Part of the establishment of the Association is a Resourcing Agreement in which members will share available infrastructure and resources to the Association. A key aspect within the resourcing agreement is the training and development of Association employees, municipality and water service provider employees to enable effective operation, maintenance and management water and wastewater infrastructure. One of the SED initiatives will focus on enterprise development within the OMM Programme area.
Volume 2, Page 12-11	The ability to raise capital funding from the open market is constrained due to limited capacity in the water and sanitation sector to access funding. The capacity constraint is underpinned by lack of resources, low credit ratings, non-ring fencing of revenues at municipal level and current structures which generally does not create an enabling environment to mobilise private sector funding.	The Association will be a ring-fenced vehicle that is expected to unlock funding on a project finance / limited recourse basis. The commitment from the commercial users supplements Government's ability to service debt and provides additional security in the form of committed offtake backed by substantial balance sheets.
Funding (PPP Structures)		
Volume 2, Page 12-12	The concept of private sector participation (PSP) is largely applied in the sector e.g. where private funding is mobilised to fund public infrastructure, private contractors are appointed to implement public infrastructure or operate and maintain infrastructure on behalf of Government etc. However, limited cases of formal PPPs have been implemented in the sector where the private sector assumes more risk and payment is performance based. PPP's have proven to provide successful funding and implementation structures, but expensive and overly cumbersome to setup and in certain cases, the public sector lacks the expertise to structure PPPs. According to the Water Master Plan, two large water concessions have been implemented successfully, one at	The agreement reached between Government and commercial user members to establish the transformed Association is evidence of the willingness of the private sector to work with Government and commit to the development of water infrastructure in the region. The ring-fenced nature of the OMM Programme, combined with committed long-term offtake backed by large commercial users and substantial contributions in the form of previous capital projects and development spend, is expected to encourage investment by external funders.

Water Master Plan page	Water Master Plan description	Association ties with the Water Master Plan
	Nelspruit (the Mbombela Concession) and one at Ballito (the Dolphin Coast Concession). Private sector indicates clear appetite for large scale investment in the sector, but bankable projects are not clearly identifiable for increased participation. Lack of ring-fencing at municipal level reduces bankability and the sector's institutional structure review needs to consider funders' needs to identify bankable projects.	
Volume 2, Page 12-17	The Water Master Plan agrees that an inclusive approach between all spheres of the public sector and private sector is pivotal to address the funding gap. It requires disciplined and intentional action from the entire water supply chain, individual end-users and role-players such as funders, contractors and service providers. The funding gap does not indicate the shortfall in funding but quantifies the extent to which expectations exceed current financial capacity.	The Association institutional model addresses the need for an inclusive approach. The OMM Programme will develop Bankable Feasibility Studies for all projects, taking into consideration the views from technical experts, the local commercial users and Government. During this process various funding mechanisms will be considered to ensure that value for money is achieved.
Volume 2, Page 12-19	The Water Master Plan further acknowledges that the loan funding will be unlocked if cost efficiencies and revenue challenges are addressed as creditworthy entities within the sector will increase. It states that this can be done by creating an enabling environment and investment friendly sector for private sector participation and also combining implementation, service provision, management contract, operation and maintenance and building on existing fund models known to funders.	The transformed Association through an amended Constitution and Members Agreement will give effect to community centric approach underpinned by cost control an funding leverage through private and public sector funding robust programme management and cost containment would ensure that Government operates and maintains the water resources and services infrastructure by 2050 as required by the Water Master Plan through the Association. Please refer to Page 12-12 for additional detail.
Volume 2, Page 12-32 and Page 12-34	The Water Master Plan also acknowledges that one of the key drivers to financial sustainability is to increase fiscal transfers and Government support for funding structures. The Water Master Plan also identifies loan funding as one of the key drivers and states that loans form an integral part of the funding solution to	The partnership between Institutional and Commercial users is not defined as a PPP. The above parties are members within the Association. As indicated above (Volume 1, Page 50 and 51), the OMM Programme is expected to deliver financial sustainability by:

Water Master Plan page	Water Master Plan description	Association ties with the Water Master Plan
	address cash flow mismatches between timing of infrastructure development needs or management interventions required versus revenue which is received over a longer-term. The need for loan funding creates an opportunity to mobilise sizable private sector participation. There are many degrees of private sector participation in the water sector from something as simple as outsourcing meter readings through to letting a long-term concession involving capital investment and direct contact with customers. The Water Master Plan goes further to list a number of funding structure options that could be considered in addition to typical loans. According to the Water Master Plan, PPPs have been viewed with suspicion in the past, largely on ideological grounds, but the growing crisis in the sector is beginning to encourage decision-makers to see private sector participation as a pragmatic and beneficial response. However, PPP contracts need to be carefully designed, competitively procured and diligently supervised, with suitable sanctions if agreed service levels are not maintained. The longer the contract period, and the larger the private sector investment, the longer they take to prepare, the greater the need for good advice and skills (technical, financial and legal), and the thicker the contract document becomes to be managed. PPPs are overly cumbersome and expensive to enter into and NT needs to consider a simplified PPP approach on smaller scale which is specific the sector's guidelines and rules. The sector needs funding solutions for large mega projects but also a renewed focus on smaller projects which could even be structured as a community involvement project.	• seeking to optimise the cost associated with water supply in the region; • establish behavioural changes in the surrounding communities to encourage a payment culture of for services provided; • obtaining long-term funding commitments from private sector players in the region; • obtaining long-term, limited recourse debt financing that better matches the cash generating profile of the OMM Programme to improve overall affordability; and • incorporating a joint contribution mechanism by both Government and the commercial users which is directly determined with reference to the underlying cost base of the OMM Programme.

National Water Resource Strategy 3 (NWRS 3)

In a statement on the Cabinet Meeting of 23 February 2022, Cabinet had approved the publishing of the NWRS-3 for public comment. The draft strategy was preceded by a three-year review of the NWRS-2 which was approved by Cabinet in 2013. The review identified areas of success and areas that remain a challenge. The

strategy proposes a strengthened integrated water quality management. It provides for innovative and appropriate technology on water and sanitation. It introduces stricter minimum requirement for the wastewater treatment. The strategy also responds to the National Climate Change Response Strategy. Cabinet concluded that water remains one of the key drivers in the socio-economic development of the country and it makes a significant contribution to the economic recovery programme of government. The comment period closed on 29 October 2022.

NWRS is currently the legal instrument for implementing or operationalizing the National Water Act (Act 36 of 1998) and it is thus binding on all authorities and institutions implementing the Act. It is the primary mechanism to manage water across all sectors towards achieving national government's development objectives. The NWRS-1 was published in 2004 and the second edition (NWRS-2) was published in 2013 and was the blueprint for water resources management in South Africa. The National Water Resource Strategy 3 builds on the National Water Resources Strategy editions 1 and 2, and the revision of the strategy, as prescribed in the NWA, has been undertaken with the purpose being to: Facilitate the proper management of the nation's water resources; Provide a framework for the protection, use, development, conservation, management and control of water resources for the country as a whole; Provide a framework within which water will be managed at local, regional or catchment level, in defined water management areas; Provide a framework for strengthening the regulation of the water and sanitation sector; Provide information about all aspects of water resource management; Identify water-related development opportunities and constraints; Provide opportunities for the implementation of innovative technologies and solutions.

The purpose of the third edition of the National Water Resource Strategy (NWRS-3) is to ensure the protection and management of water resources to enable equitable and sustainable access to water and sanitation services in support of socio-economic growth and development for the well-being of current and future generations in South Africa. The NWRS-3 is a strategy for all sectors and stakeholders who use and impact upon South Africa's water resources and it responds to the NWA by outlining strategic objectives and actions which are then carried forward for resourcing and implementation in the National Water and Sanitation Master Plan (NW&SMP).

Table 8: NWRS and Association ties

National Water Resource Strategy	NWRS description	Association ties with the NWRS
Introduction 1, Page 31	The NWRS focuses on new areas including the NWRS-3 builds on the NWRS-2 and the following key areas are new: • Alignment with the Global Sustainable Development Goals (SDGs), Africa's Agenda 2063; • National Water Security Framework Version 5.0, the DWS Strategic Plan (2020 to 2025); • Forward looking in terms of the possible consolidation of the National Water Act (NWA); and • Water Services Act (WSA) into one proposed new Water and Sanitation Act. • Greater focus and content included on Integrated Water Quality Management and setting of stricter	Many of the new areas flow directly through the founding documentation of the Association, not the least being the Association's Constitution, Members Agreement, the off-take agreements to mention only three agreements.

National Water Resource Strategy	NWRS description	Association ties with the NWRS
	minimum requirements for WWTW effluent discharges. • Support for technological advances in new knowledge and real time data acquisition for Water. • Resources Management (WRM). • Improved audit compliance of self-regulating water and sanitation sector institutions as per their water use authorisation conditions. • Alignment with the National Water and Sanitation Master Plan (NW&SMP) as the "execution arm" of the NWRS-3 (i.e. time lines, responsibilities, budgets per Strategic Action).	
Content 3, Page 41	The principles and values underpinning the achievement of the DWS vision, and the implementation of its mission are as follows: • **Principle 1:** Promoting and maintaining high standards of professional ethics. • **Principle 2:** Utilising resources efficiently and effectively. For example, to proactively focus on turning ideas into cutting edge, best in class and "outside the box" approaches and solutions. • **Principle 3:** Providing services impartially, fairly, equitably and without bias. • **Principle 4:** Responding to people's needs; citizens are encouraged to participate in policy-making. • **Principle 5:** Rendering an accountable, transparent, and development-oriented public administration.	These principles and values resonate with the Association and are incorporated into its policies and procedures to strengthen Association Governance.
Content 3, Page 46	The strategy contains various key strategic objectives and strategic actions for the implementation of the NWRS-3 and these are carried forward for resourcing and execution within the National Water and Sanitation Master Plan (NW&SMP). Examples of these are;	The Associations objectives and intent are underpinned by these strategic objectives and strategic actions and give support to the Department in achieving delivery on these.

National Water Resource Strategy	NWRS description	Association ties with the NWRS
	• **The Redistributing water for transformation.** To allocate water so that historically disadvantaged and indigent South Africans enjoy equitable access to basic water supply and sanitation services, water for productive economic purposes, and reap the benefits from water use to prosper socially and economically. • **Managing effective services.** To ensure the delivery of services for economic and human development and elimination of backlogs while progressively improving levels of service and achieving optimal development and use of infrastructure. • **Creating effective water sector institutions.** To provide for the establishment and transformation of institutions to assist the DWS in giving effect to its core mandate – the development, protection, conservation and allocation of water resources, and regulation of water and sanitation services and water use. Institutional arrangements entail the establishment, development, strategic alignment and performance monitoring and evaluation of all water and sanitation institutions and role-players. • **Building capacity for action.** To ensure that sufficient capacity is created in the water and sanitation sector to implement and sustain the execution of water and sanitation policy and legislation, and give effect to the provisions of the proposed Water and Sanitation Act. • **Ensuring financial sustainability.** To ensure that the necessary financial resources are in place, together with the necessary systems, structures and processes to enable the implementation and progress monitoring of the NWRS-3. • **Enhancing research, development and innovation.** To ensure that research, development and innovation are undertaken in order to provide effective and efficient water and sanitation management solutions	

National Water Resource Strategy	NWRS description	Association ties with the NWRS
	that respond to the needs for water security and sustainable sanitation for communities, productive use, and strategic water use and ecosystem services.	

1.7.3 Other Dependencies

In addition to the Regulatory Report, various memoranda were considered dealing with:

1. Water User Licenses (WULs): the abstraction points and the new and amended WULs required (including the surrender and amendment and consolidation of the Havercroft WUL);
2. Claiming Servitudes under the NWA: this is necessary in light of the multitude of pipeline infrastructure and securing the right to own, operate and maintain this for the term of the OMM Programme;
3. On 30 September 2022 the Minister of Water and Sanitation published Government Gazette Number 46991 wherein he gave notice of the withdrawal of the intention to disestablish the Association which was Gazetted in October 2016 and other ancillary provisions. The Government Notice set out the following reasons for the withdrawal:
    - The Association has heeded Government's call for increasing private sector involvement in the implementation of infrastructure projects and proposed an alternative solution that will support the accelerated completion of the ORWRDP. The proposal considers the acceleration of bulk and potable water delivery in the ORWRDP. This is in line with the Presidents' call for 'a new social compact among all role-players to restructure the economy and achieve inclusive growth.'
    - The proposal identifies potable water service delivery as being hampered by the lagging development of bulk raw water infrastructure in the Northern Limb of the ORWRDP project. The Association propose to support the existing potable water service authorities and developing and operating potable water infrastructure in defined areas of the Northern and Eastern Limb to address immediate and long-terms social water needs.
    - The proposal aims to pool the existing Government and Association water infrastructure assets by reaching agreement on the management and operation of these assets. These assets would earn a prescribed return on assets (ROA) with Government and contributing commercial members receiving recognition for their previous capital contributions through a capital credit mechanism to reduce their water tariffs.'
4. Asset Identification and Treatment: the list of existing assets affected or new assets to be developed to carry out the OMM Programme;
5. The use of municipal CAPEX and OPEX to fund the OMM Programme: the application of funds earmarked by NT for municipal CAPEX and OPEX for water and redirecting same to the project is limited. The confirmation by Senior Counsel that, the designated municipalities may authorise a water user association to charge the commercial consumers directly for the water supplied to them; Association's claims against the designated municipalities may not be secured by an agreement that national Government pay their allocations directly to the Association; and the allocations the municipalities receive from national Government may however be used in a variety of ways to secure the Association's claims against the designated municipalities. This is also discussed in the Financial Business Case as it impacts the financial model; and
6. Tax implications: to determine whether the Association will qualify as a "water services provider" as defined in the IT Act and if so, whether Section 10(1)(cA) should cease applying to the Association, with the exemption in Section 10(1)(t)(ix) then automatically applying to the Association. The implication of this is that any donations to the Association should then be subject to donations tax at 20%. Further

considerations in respect of the Value-Added Tax Act, 1991 (VAT Act) in light of the fact that the Association is not exempt from VAT.

Over and above the legal and regulatory dependencies, the following key schedule dependencies were identified (provide detailed implementation plans for the OMM Programme as a whole and to be reflected elsewhere in the report):

1. Public consultation;
2. Environmental impact assessment;
3. Environmental applications / authorisations;
4. Asset condition assessment of current infrastructure;
5. Land acquisition;
6. Water use license approval;
7. Long lead times of special materials such as steel pipes and imported equipment; and
8. Availability of required services such as electricity supply.

1.8 Strategic Case Conclusion

The content from the strategic case clearly describes the rationale for the OMM Programme and that it fits with wider government and commercial water user policies, strategies and needs. The case for change to execute an accelerated OMM Programme, as an alternative to the ORWRDP including the addition of potable water supply infrastructure for identified communities into the scope together with the establishment of the Association as implementation vehicle was clearly defined. The Association's operating boundaries, including the high priority drive for socio-economic development in the region is also included into the OMM Programme objectives and final agreement to implement this intent was reached with all members of the Association.

Three strategic outcomes are expected, with the outcomes structured under three horizons. These outcomes will be monitored through the baselining and measurement of specific Sustainable Development Goals.

- **Horizon 1:** Stabilisation of operations and the provision of a social license to operate through a series of impactful initiatives to prepare communities for meaningful participation in the OMM Programme;
- **Horizon 2:** Successful implementation of the defined OMM Programme to provide much needed water and in doing so building a trusted platform for SED in the region. This to be done through the expansion of the Association's role to build, operate and maintain, bulk infrastructure and build potable water infrastructure. This will include the establishment of a sustainable SED collaboration forum to align members around common socio-economic development initiatives and infrastructure to foster social harmony; and
- **Horizon 3:** Catalyse the creation of game changing businesses and initiatives to drive exponential socio-economic growth in the region through the identification and development of high socio-economic impact opportunities in the region.

A Benefit Analysis on the impact of the OMM Programme concluded the following:

1. Increased education levels, greater job opportunities, and a reduction in poverty levels;
2. Growth in local businesses and increased employment in local communities;
3. Improved living conditions of employees and a decrease in housing expenses, freeing up money for food, education, and health care;
4. Improved health leads to improved education outcomes for learners, and improved job opportunities.

5. Communities could see an increase in disposable income that can then be spent on other necessities such as food, electricity, and transportation to work; and
6. Time savings in water collection could lead to improved school and work attendance, along with economic growth.

2. Economic Case

The purpose of the economic dimension of the business case is to identify the proposal that delivers best social value to society, including wider social and environmental effects. The way forward as described in the Strategic Business Case dimension were considered as basis to define critical success factors, linked to the spending objectives, to appraise potential OMM Programme implementation options and identify the optimal concept solution framework. This concept framework was further developed to concept level detail in support of the estimate, schedule and economic modelling.

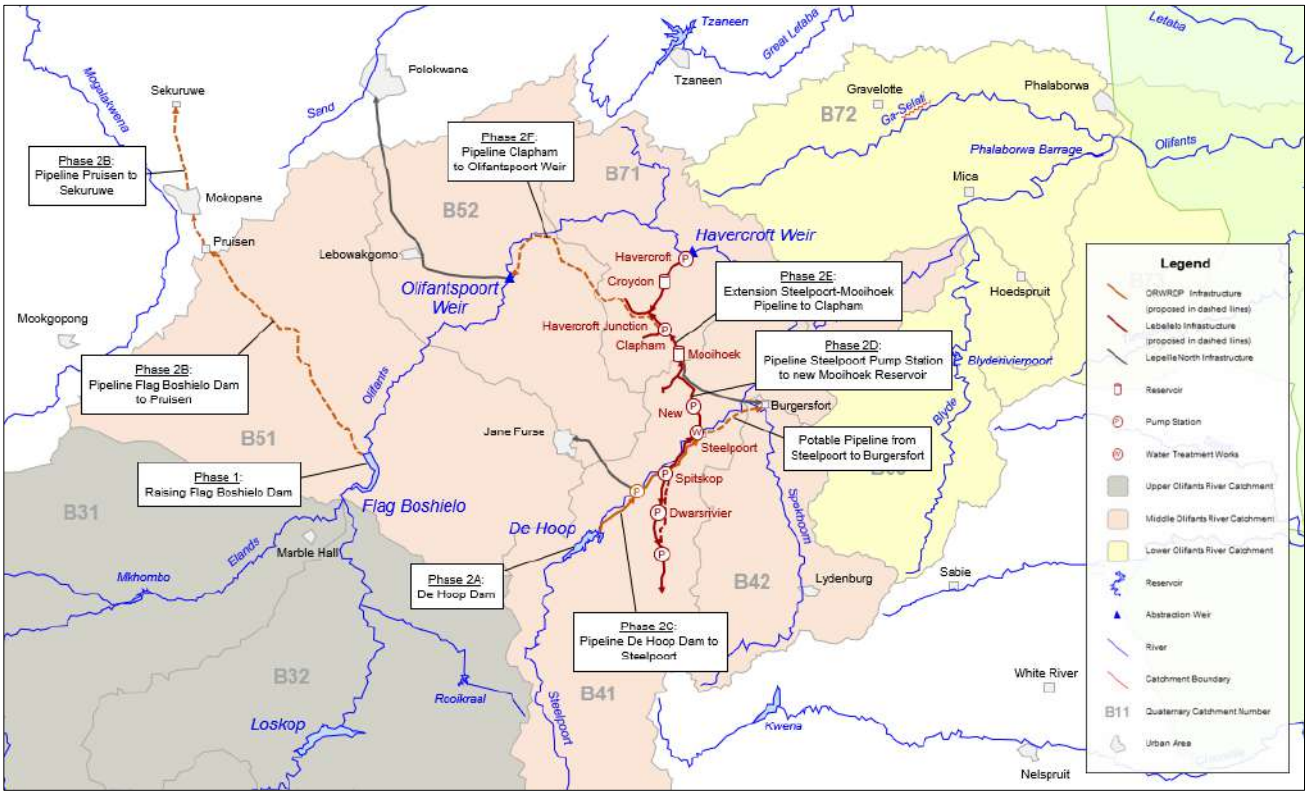
2.1 Introduction

The mission of the Association will be that it shall, within the legal framework of the National Water Act, 1998 (NWA) and Water Services Act, 1997 (WS Act), consider the prescribed health standards, strive towards making bulk raw water and potable water available to all members and other stakeholders in a cost effective, efficient, sustainable and responsible manner.

2.2 Water Resources

The most critical factor in developing a water supply solution for the region is ensuring the medium- and long-term availability of water resources from the Olifants River System (ORS). With support from the mines and in close cooperation with DWS and the Association, further analyses of the capabilities and behaviour of the Olifants River System (additional to what the DWS had done previously), were performed by the Joint Water Forum (JWF). This was done in close liaison with the DWS, with the full outcomes shared and approved by the DWS. A map of the area is shown below, including the various existing and planned phases of the Olifants River Water Resource Development Project (ORWRDP) and other key water conveyance infrastructure.

Figure 8: Map with existing and planned sub-phases of the ORWRDP



2.2.1 Earlier Studies

Various analyses and studies have been undertaken to quantify the yield benefit of the ORWRDP, resulting from the raising of Flag Boshielo Dam on the Olifants River and the commissioning of De Hoop Dam on the Steelpoort River. Recent studies, however, have shown a significant potential reduction in this benefit. This was attributed mainly to the implementation of the Ecological Water Requirement (EWR) and updating of the hydrology of the Olifants River catchment. Given existing Water Use Licences (WULs) from Flag Boshielo Dam, this suggested limited scope for additional water to be allocated (licenced) for social and industrial (mining) use, particularly from Flag Boshielo Dam for users in the Mokopane/Sekuruwe area – resulting in serious concern for commercial water users in the system.

Within this context the Joint Water Forum (JWF) identified the need to be able to communicate the risks associated with water supply to mining developments within the ORS, to their potential investors and financiers, to consider participation in further phases of the ORWRDP. Subsequently, at a meeting between the DWS and JWF in 2019 it was resolved that the JWF would undertake some further analyses of the ORS. It was agreed that the JWF would undertake this work in close liaison with the DWS and, where applicable, may serve as input to the future updating of the Reconciliation Strategy for the ORS by the DWS. The analyses included, amongst other, dynamic water resource system analyses to assess the performance of the system over a planning period of approximately 20 years, from 2020 to 2040, based on the following:

- Extensive refinements of the ORS water resource systems model, including updates in modelled excess mine water flows in the upper Olifants River catchment.
- The latest available water requirement projection information, both for the ORWRDP and other major users in the ORS.
- The planned implementation of the EWR.

- Operation of Witbank, Middelburg, Flag Boshielo and De Hoop Dams as one system, with the same water use assurance of supply criteria applied to the respective user groups, resulting in a balanced allocation of water resources across the Upper and Middle ORS.

2.2.2 Current System Status

Based on the results of the dynamic system analyses undertaken by the JWF in 2019 and 2020, the following was concluded:

- Implementation of ORWRDP Sub-phases 2F, 2D and 2E, significantly increases the utilisation of De Hoop Dam for water supply of commercial users in the Middle ORS and for transferring water to Olifantspoort Weir and supply to the Polokwane area.
- This, in turn, improves the availability of water in Flag Boshielo Dam for supply to the Mokopane/Sekuruwe area via ORWRDP Sub-phase 2B.
- As a result, all present-day and projected commercial and non-commercial users in the ORS will be supplied at an acceptable assurance, up to point where additional resources are required to augment this supply.
- On this basis and assuming implementation of the EWR, Witbank Dam users would require augmentation from 2026, followed by Middelburg Dam users in 2031. Flag Boshielo and De Hoop Dam users would only require augmentation from 2032.
- Postponing or cancelling the release of the EWR from Flag Boshielo Dam would, however, have a significant impact on the performance of the ORS, as follows:
    - There would be no need for implementing the planned ORWRDP Sub-phases 2F, 2D nor 2E by the end of the planning period in 2040.
    - The need for augmenting Middelburg Dam users would be deferred from 2031 to 2035, while no augmentation would be required for Flag Boshielo nor De Hoop Dam users by 2040.
    - Augmentation of Witbank Dam users would, however, remain unchanged at 2026.

Note that in this case, the EWR would still be fully supplied at all other sites in the ORS, specifically the key EWR Site 16 located in the Kruger National Park. This would be achieved by additional releases from De Hoop Dam, spillages from Flag Boshielo Dam and contributing flows from downstream tributaries. The river flow in the reach between Flag Boshielo Dam and the Steelpoort confluence would however be affected.

These findings are summarised graphically below, as system water balances for the ORS over the 20-year planning period from 2020 to 2040. These are shown for two scenarios, namely with and without the EWR downstream of Flag Boshielo Dam.

Figure 9: ORS water balance (with Flag Boshielo EWR & ORWRDP Sub-phase 2F at 70 Mℓ/d)

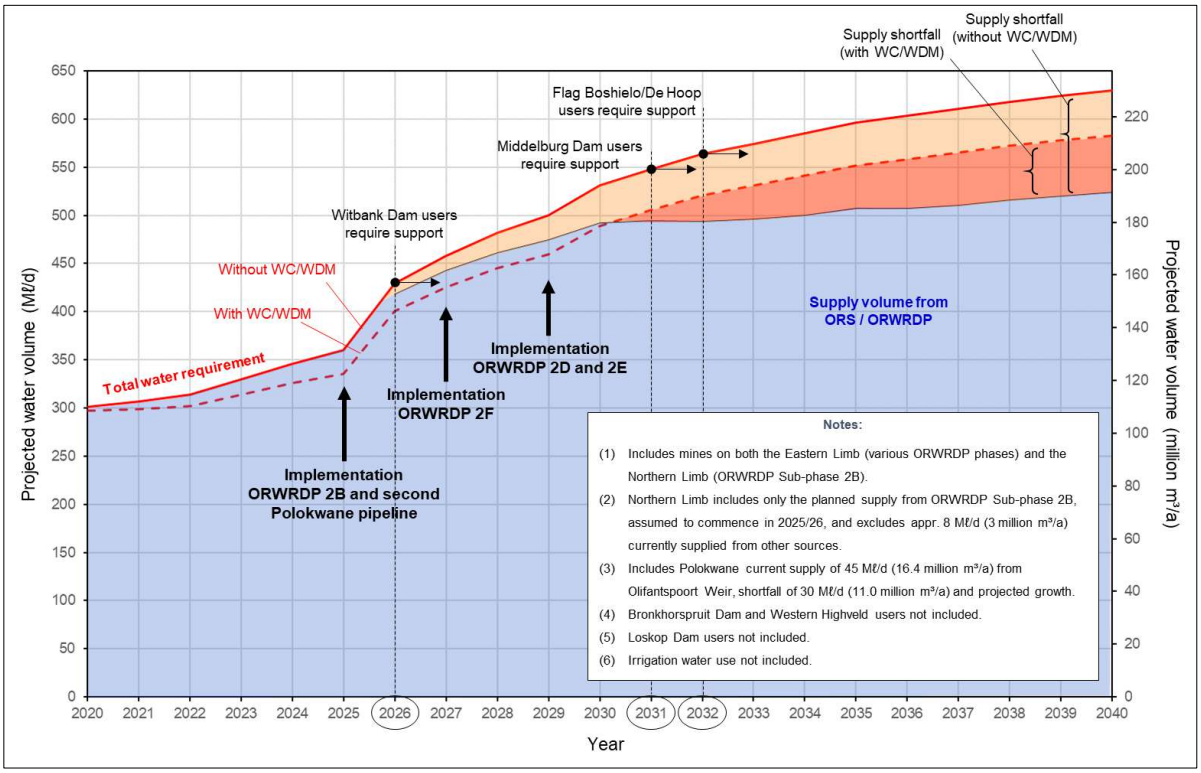
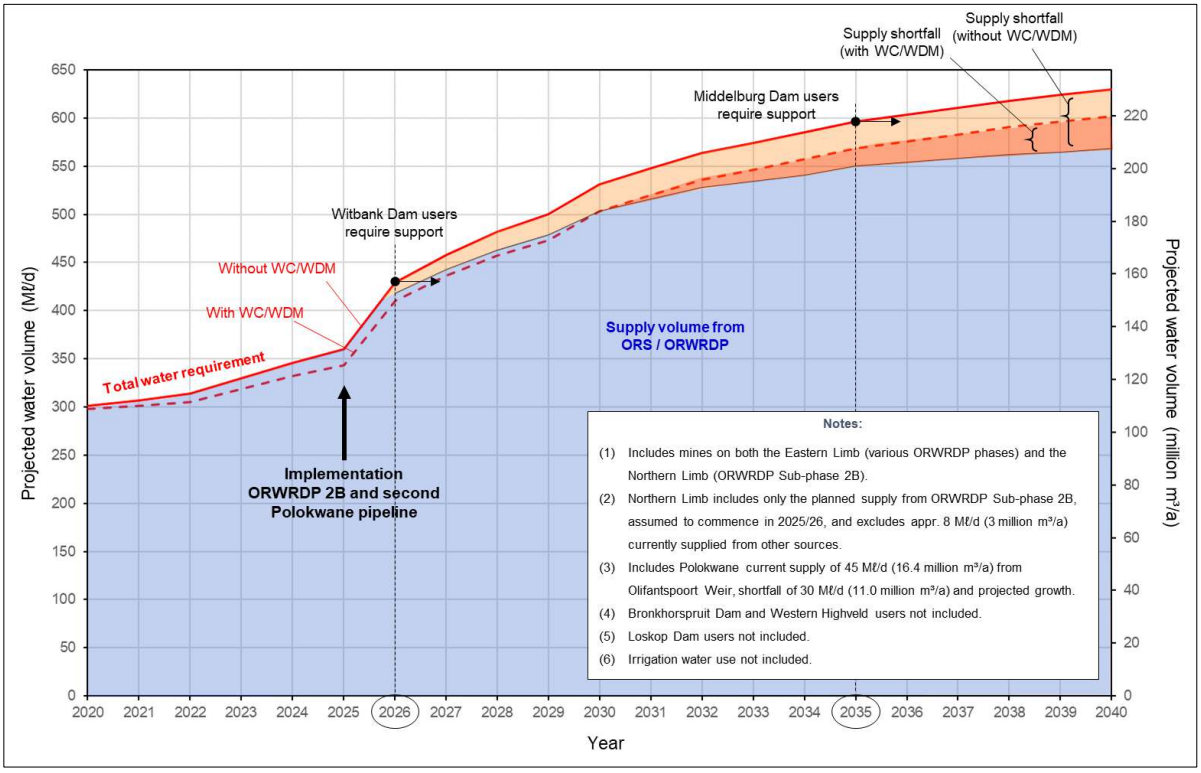


Figure 10: ORS water balance (without Flag Boshielo EWR & ORWRDP Sub-phase 2F at 70 Mℓ/d)



Finally, the outcomes of the analyses presented above were used to determine the total supply potential at Flag Boshielo and De Hoop Dams. This was achieved by quantifying the volume of water supplied from each dam, up to the time at which augmentation is first required. Note that as such, this water volume does not represent the yield of each dam independently, but rather the availability of water at that point considering the inter-connected nature of the system. In particular this includes the support of Flag Boshielo and De Hoop Dams from Witbank and Middelburg, in order to achieve a balanced allocation of water resources for the Upper and Middle ORS (as mentioned earlier). The results are as follows:

- For the scenario with releases for the EWR downstream of Flag Boshielo Dam, the supply potential at Flag Boshielo Dam is 43 million m³/a (118 Ml/d) and at De Hoop Dam 74 million m³/a (218 Ml/d).
- For the scenario without releases for the EWR downstream of Flag Boshielo Dam, the supply potential at Flag Boshielo Dam is 47 million m³/a (129 Ml/d) and at De Hoop Dam 84 million m³/a (230 Ml/d). Note again that in this case the EWR would still be fully supplied at all other sites in the ORS, specifically the key EWR Site 16 located in the Kruger National Park.

Figure 11: Flag Boshielo Dam projected water supply volumes (million m³/a)

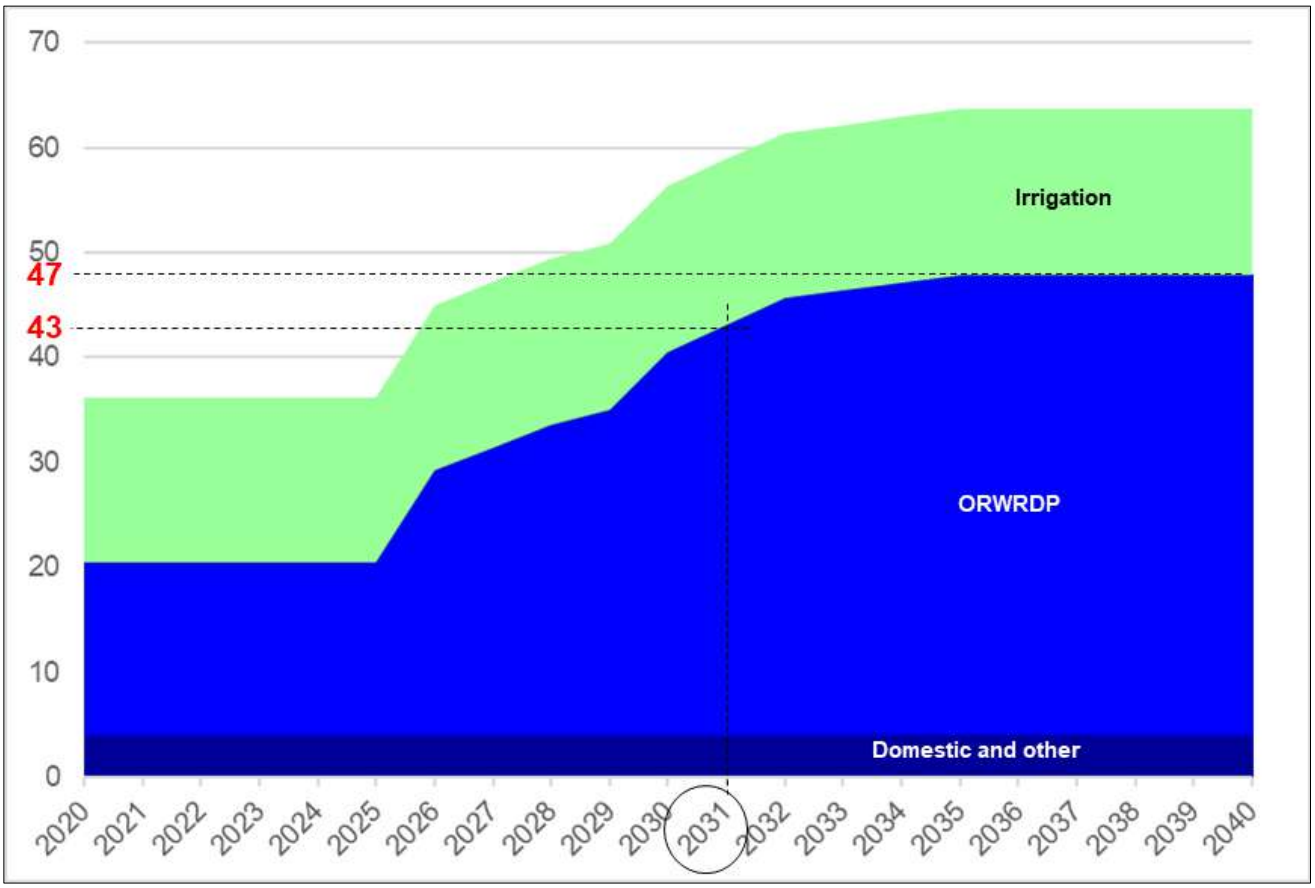


Figure 12: Flag Boshielo Dam projected water demand as per the OMM Programme design basis (Ml/d)

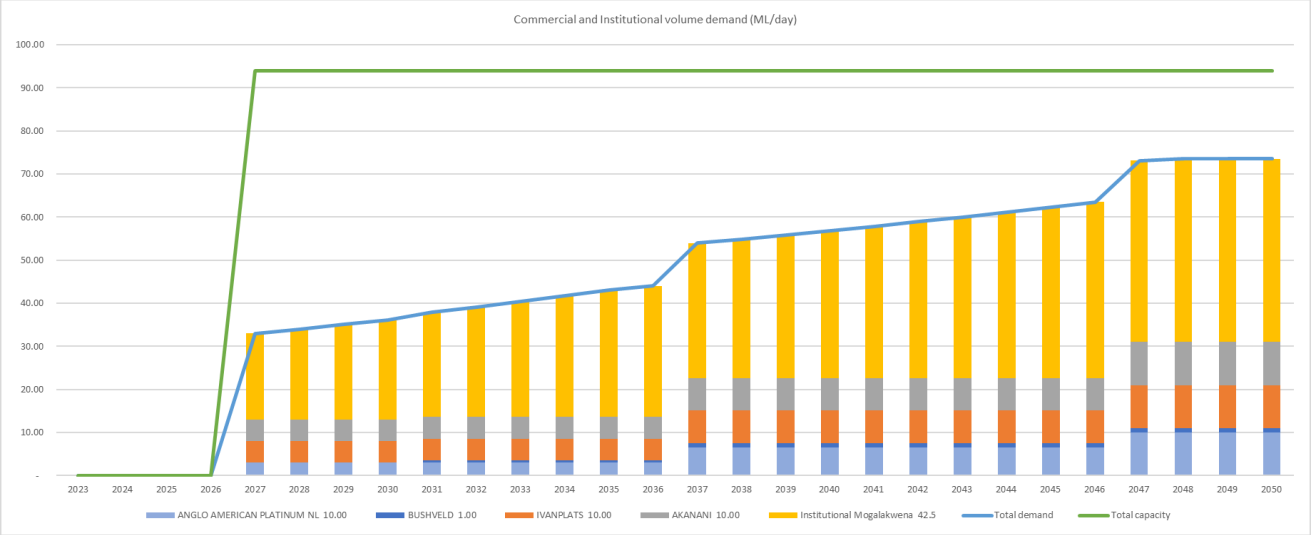


Figure 13: De Hoop Dam projected water supply volumes (million m³/a)

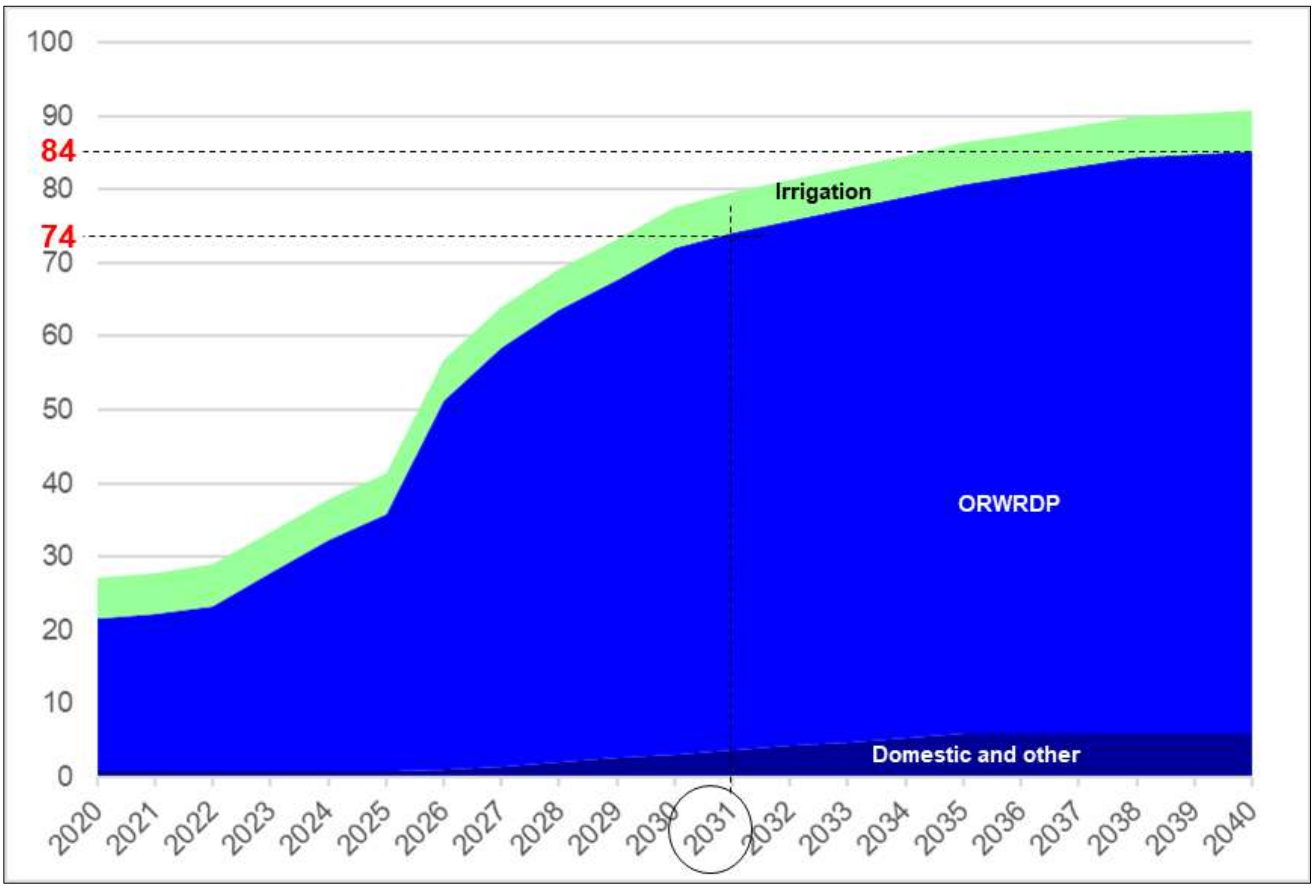
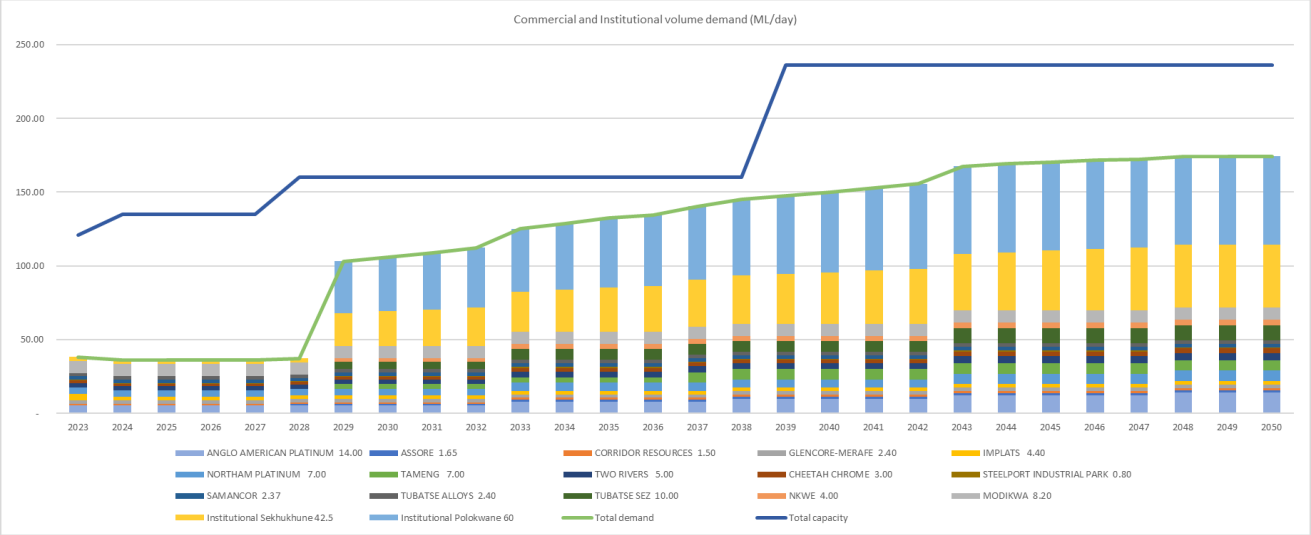


Figure 14: De Hoop Dam projected water demand as per the OMM Programme design basis (Ml/d)



It is important to interpret the above results with consideration of the following:

- Infrastructure conveyance capacities and timing as selected in the dynamic analysis.
- The latest available water requirement projection information, both for the OMM Programme and other major users in the ORS.
- Balanced allocation of water resources across the Upper and Middle ORS, including support of Flag Boshielo and De Hoop Dams from Witbank and Middelburg.
- Augmentation of supply to Witbank and Middelburg Dam users as required. For this purpose, projected surplus yield from the Komati River System may be considered as a possible source. This surplus will develop as a result of the planned decommissioning of Eskom power stations in the Komati supply area.
- Loskop Dam is excluded from the balanced allocation of water resources in the ORS described above. The motivation for this approach is that, with the implementation of the EWR and without a commensurate reduction in allocations, Loskop Dam is significantly over-abstracted.
- The excess mine water volumes available in the Upper ORS as assumed for the dynamic analysis of the system.
- For the scenario with EWR releases from Flag Boshielo Dam, the shortfall in water supply potential may be met by a combination of augmentation from the Komati and the implementation of water conservation and water demand management (WCWDM) initiatives.

2.2.3 Way Forward

As a way forward, the following should be considered:

- Further dynamic system analyses should be undertaken based on the latest information on system water requirements and timing of augmentation requirements over a 25-year planning horizon. This will further improve the confidence that sufficient water at an acceptable assurance can be supplied to all users over this period.
- It is well recognised, however, that the actual decisions on how the system is to be managed, augmented and operated fully resides with the DWS.

2.3 Critical Success Factors

The long term success of the OMM Programme will be underpinned by a number of critical factors including:

1. Political support and approval for the OMM Programme;
2. Political and institutional alignment;
3. Effective and timely community consultation processes and red zone analysis;
4. Timely and appropriate stakeholder management and communication;
5. Compliance with all relevant regulatory requirements;
6. Transformation and rebranding of the Association as the OMM Programme implementing entity;
7. Fully mandating and equipping the Association to implement, manage, operate and maintain the defined OMM Programme scope;
8. Successful integration of new members and employees into the organisation;
9. Adherence to open and transparent internationally acceptable governance processes;
10. Timely decision making;
11. Adoption of internationally acceptable project execution policy, principles, standards and procedures;
12. Study information to be shared between Association members to optimise technical design and cost;
13. Development of a solution to reduce electricity cost escalation;
14. Allocation of risk to members best able to mitigate the risk;
15. Timely preparation of communities to participate in opportunities arising from the OMM Programme spend;
16. Ability of the construction sector to ramp up for the OMM Programme;
17. Timely payment by members of their funding commitments;
18. Skills development programmes in the water services sector;
19. Provision of support to WSA to ensure water services delivered in line with required regulatory standards;
20. Alignment of Government SED and water services plan and programme with the OMM SED Programme.

2.3.1 OMM Programme Objectives

Considering water resource availability and the regional water needs, as agreed between the members of the Association, the OMM Programme, aims to achieve the following key objectives:

1. Accelerate the implementation of the ORWRDP and social water supply to water stressed areas;
2. Revisit and optimise the current available technical design to ensure the most cost effective solution;
3. Operational efficiency optimisation through economy of scale of similar systems by integrating existing Government and Association bulk raw water infrastructure into the Association as a single operating entity for the total network;
4. Improve potable water service delivery through supporting existing potable Water Services Authorities;
5. Develop skills in the Water Sector not only through the construction activities, but as part of ongoing operational activities (executed by the Association and WSAs) as well as through ongoing SED activities in the region of operations;
6. Improve social harmony in the region through the provisioning of social water, the creation of jobs and socio-economic development;

7. Bulk and Potable water infrastructure capex to be shared between all members to secure an integrated funding approach with all members sharing funding repayment risks;
8. Sustainability of the OMM Programme by fully mandating and equipping the Association to implement, manage, operate and maintain the OMM Programme;
9. Strict adherence to regulatory requirements; and
10. Be a model water infrastructure pilot programme for the country through collaboration (between the Government and the private sector) and the provision of strong governance over the programme by implementing the OMM Programme based on internationally proven project execution principles and standards.

Based on the above, detailed SMART objectives were formulated for the OMM Programme:

1. Accelerate the implementation of the ORWRDP and social water supply to water stressed areas;
2. Utilise the available infrastructure to its maximum for a cost-effective water supply solution;
    a. Pooling existing Government and Association bulk raw water infrastructure assets with the Association to manage and operate these assets; and
    b. These assets would earn a prescribed return on asset (RoA) with Government and contributing commercial members receiving recognition for their previous capital contributions through a capital credit mechanism to reduce their water tariffs;
3. Re-sequence the technical design to optimise spend and community water provision impact through deferral of Phase 2D and 2E and investigation into renewable energy options to reduce electricity cost;
4. Improve potable water service delivery through supporting existing WSAs;
5. Bulk and Potable water infrastructure capex to be shared on a 50/50 basis between Government and Commercial Users with capex repaid over a 25 year period to minimise cash flow impact on members;
6. Develop skills in the water sector through establishing a resourcing partnership between Government and CUC members
7. Improve social harmony in the region through the provisioning of social water, the creation of jobs and socio-economic development;
8. Procurement policy and a SED Collaboration Forum (by way of the transformation of the existing OMM Social and Ethics Committee) to be used to self-fund SED programmes;
9. Social Labour Plans could be utilised by Commercial Users to fund their portion of the Capex and SED contributions;
10. Mining royalties could be utilised by Government to fund their portion of CAPEX, OPEX and SED contributions; and
11. Be a model water infrastructure pilot programme for the country through collaboration and the provision of strong governance over the programme by implementing the OMM Programme based on internationally proven project execution principles and standards with an integrated, open, transparent and independent project controls environment that meet the Association member's governance requirements.

2.4 Execution Strategy

It is the strategy of the OMM Programme to develop the programme of projects by following the development process as mandated and by obtaining specialist development, engineering, procurement and construction management skills in the market.

These skills will be obtained through the appointment of Study Phase Main Consultants supported by Specialist Consultants that will complement the skills of the PMU. The Study Phase Main Consultants and Specialist Consultants will be responsible to design the technical aspects of the project, provide necessary skills and

knowledge through the use of their internal processes and software systems to achieve and deliver the scope of the OMM Programme.

The OMM Programme plan provides for the appointment of three Main Consultants. The Bulk Water Supply Consultant (ZNJV) was appointed in December 2022. This consultant will also provide support, general programme scope coordination and programme integration. The other Main Consultants will be appointed to execute the feasibility studies for the Potable Water Reticulation scopes in the Eastern and Northern Limbs respectively. These consultants will appoint specialist consultants to support the work as required. All anticipated specialist consultant and subcontracts required during the Study Phases, will be identified up front by the Main Consultants, fully compliant with the OMM Programme Procurement Policy and Procedure, and submitted to the PMU as part of a Contracts List for PMU approval.

The OMM Project Management Unit (PMU) will act as an owner's team representative of the Association. The PMU, as a delegated authority from the Association, will ensure that the overall project objectives as set out in this document as well as all supporting referenced information, are achieved without harm and within budget, time and quality targets.

A Project Execution Plan (PEP) will be developed for each phase and serves as the execution statement for the PMU and, as the project develops and detail is elaborated prior to the final investment decision and notice to proceed, will be continuously updated and adjusted as project information, overall execution methods, commercial and contractual engagements obtain the level of certainty and readiness for project approval to commence detail design and project implementation.

To ensure design and project management continuity on the OMM Programme it is the objective during Study Phases, forming part of the Bankable Feasibility Study, that the Main Consultants, in the form of a Project Management Consultants (PMC) will conduct and/or manage the multi-disciplined designs as appropriate to the construction contracting methodology agreed for the execution phase. The intent is that the Main Consultants manage the detail design, construction and handover of the associated works for and on behalf of the PMU subject to acceptable performance during the Study Phase monitored against pre-agreed Key Performance Indicators (KPIs).

For the programme execution phases, managed by the PMC, the EPC Lump Sum modality has been selected, for the Bulk Water Supply scopes as well as Primary and Secondary Potable Water Reticulation projects and for the final Potable Water Reticulation projects onto yard connections the contracting option will be Engineering and Construction Short Contract (ECSC) Option B, as this best addresses the requirements of all stakeholders in current market conditions.

Inclusive of the design required to achieve the objectives as set out in the project charter, the Main Consultants, as required, will define the procurement package methodologies, procurement package dictionaries and procurement packages by using a risk informed process to achieve an acceptable risk rating as agreed with the PMU.

The prepared procurement packages will be executed for and on behalf of the OMM Programme PMU procurement and commercial team who will perform hold point approvals and an oversight role.

The Main Consultants, as required, together with the procurement and commercial team of the PMU, will contractually manage the defined outcomes and deliverables as per contract including equipment specifications and standards. The identified construction companies and original equipment manufacturers must be engaged as early as possible during the basic design and later detail design phases.

Appropriate project and engineering controls are put in place to both manage change related to engineering clarifications and impacts, as well as the impact realized to the project related to scope, cost, time and risk.

Therefore, the change management process that will be adopted during the execution of the project, the OMM Programme will align to the Contract and Project Control policy and change management procedure – that includes all knowledge/discipline areas.

The objectives and deliverables for the phase of the project are to have a defined project scope, with defined cost, time and risk provisions, adequate resources identified and association commercial documentation ready to issue to the market once financial close (FID) is obtained.

2.5 Scope Overview

The critical success factors and wider OMM Programme objectives can be and abridged into the following 5 items directly related to scope selection:

1. Fastest supply of water to communities
2. Lowest investment capital
3. Maximum use of available infrastructure and data
4. Optimal use of available water resource
5. Open and transparent commercial and governance processes

The already approved and partially implemented ORWRDP remained the starting point and reference for the evaluation of the different alternatives and modifications considered. With specific reference to the above scoping success factors and as was detailed in the Early Business Case Report, the outcome of the concept evaluation process for the preferred solution is as follows:

1. Abstracting the scheme water primarily from De Hoop Dam, Flag Boshielo Dam and Havercroft Weir on the Olifants River;
2. Re-sequencing the construction of ORWRDP, commencing with Phases 2B & 2B+ in parallel with Phase 2F, while deferring Phases 2D and 2E to optimise capital expenditure. Constructing a gravitational potable pipeline from Steelpoort Water Treatment Works (WTW) to Burgersfort will enable deferring the construction of Phase 2D and to reduce operating expenditure (OPEX) costs. Phases 2D and 2E can be deferred until needed when the full capacity of the current Association infrastructure is reached;
3. Supporting WSAs by developing potable water infrastructure in defined areas in the Northern and Eastern Limb to address immediate and long-term social water needs;
4. Constructing six new infrastructure projects as part of the OMM Programme, namely
    a. Bulk raw water: Phases 2B & 2B+ – steel pipeline from Flag Boshielo Dam to Sekuruwe Water Treatment Works (WTW) in the Northern Limb;
    b. Bulk raw water: Phase 2F – steel pipeline from Clapham pump station to Olifantspoort weir;
    c. Bulk raw water: Phase 2H – new pump station between Steelpoort pump station and Mooihoek reservoir;
    d. Bulk Potable Water and Reticulation in the Eastern Limb: potable pipelines, reservoirs, water treatment works, pump stations and associated infrastructure, reticulation network and yard connections in defined areas surrounding the Commercial Members in the Eastern Limb; and
    e. Bulk Potable Water and Reticulation in the Northern Limb: potable pipelines, reservoirs, water treatment works, pump stations and associated infrastructure, reticulation network and yard connections in defined areas surrounding the Commercial Members the Northern Limb.

f. The current Association project, Southern Extension 2, to supply water from Phase 2C at Spitskop to Mototolo Mine, linked to the OMM Programme objectives to fully integrate and utilise available data, designs and infrastructure, is included into the OMM Programme to exploit integration opportunities of common project management systems and sharing of information.

5. Pooling existing Government and Association water infrastructure assets by reaching agreement on the management and operation of these assets. These assets would earn a prescribed return on asset (RoA) with Government and contributing commercial members receiving recognition for their previous capital contributions through a capital credit mechanism to reduce their water tariffs;
6. Establish the transformed Water User Association to implement on behalf its members and operate agreed assets on an arms-length basis through the Association. All existing raw water infrastructure (including dams) will earn a RoA for the entities that invested and developed it.
7. All the members of Association are required to enter into a 25-year contract with the Association to finance, build, operate, maintain, manage and transfer the development of the OMM Programme.
8. The assets will be transferred to DWS or the applicable WSA at conclusion of construction. The Association will Operate and Maintain bulk water infrastructure on behalf of the asset owner;
9. The Association is a non-profit institution with tax exemptions status and benefits. Hence, the Association will recoup the investment, financing and operating costs through a cost recovery user charge with no profit included;
10. The Association will apply in principle the ORWRDP financing and water allocation principles agreed in 2008 between Government and commercial users for the bulk raw water component of the project;
11. In respect of bulk water:
    a. The repayment of capital expenditure would be split 50:50 between Institutional and Commercial Members and charged on a take or pay basis. The same 50:50 principle will be applied to the fixed operational and maintenance expenditure; and
    b. Variable operational and maintenance expenditure has been allocated based on members' actual usage in any given period.
12. In respect of potable water reticulation mandated areas:
    a. The repayment of capital expenditure, would be split 50:50 between Institutional and Commercial Members; and
    b. The WSAs will operate and maintain the potable reticulation infrastructure for their costs and recover through tariffs based on actual use.
13. Part of the resourcing partnership between Institutional and Commercial Members is to support the Association, the WSAs and other aspects of the OMM Programme. In this sense and to secure a fully integrated water solution and management system, the Association will support and manage the De Hoop and Flag Boshielo Dam operations.
14. The Association will establish a predictable and efficient water tariff over the prescribed contract period for Institutional and Commercial Members, in the defined areas of collaboration. This will be implemented effectively from July 2023;
15. The Association will obtain timely access to funding at an efficient financing cost based on the quality of Institutional and Commercial Members offtake agreements and the availability of inhouse construction and operational capability; and
16. A socio-economic development plan will be implemented as part of the OMM Programme to focus on three outcomes namely the acceleration of:
    a. Potable water to communities to address the pressing water needs in the region;
    b. Creation of jobs, skills development and use of local skills through the associated OMM Programme spend; and
    c. Enterprise development.
17. The combination of these three outcomes will establish a platform for enhancing stability and sustained socio-economic development in the region. Timely community engagement and community readiness programmes are planned to ensure inclusive participation in the OMM Programme.

2.5.1 Technical Design Overview

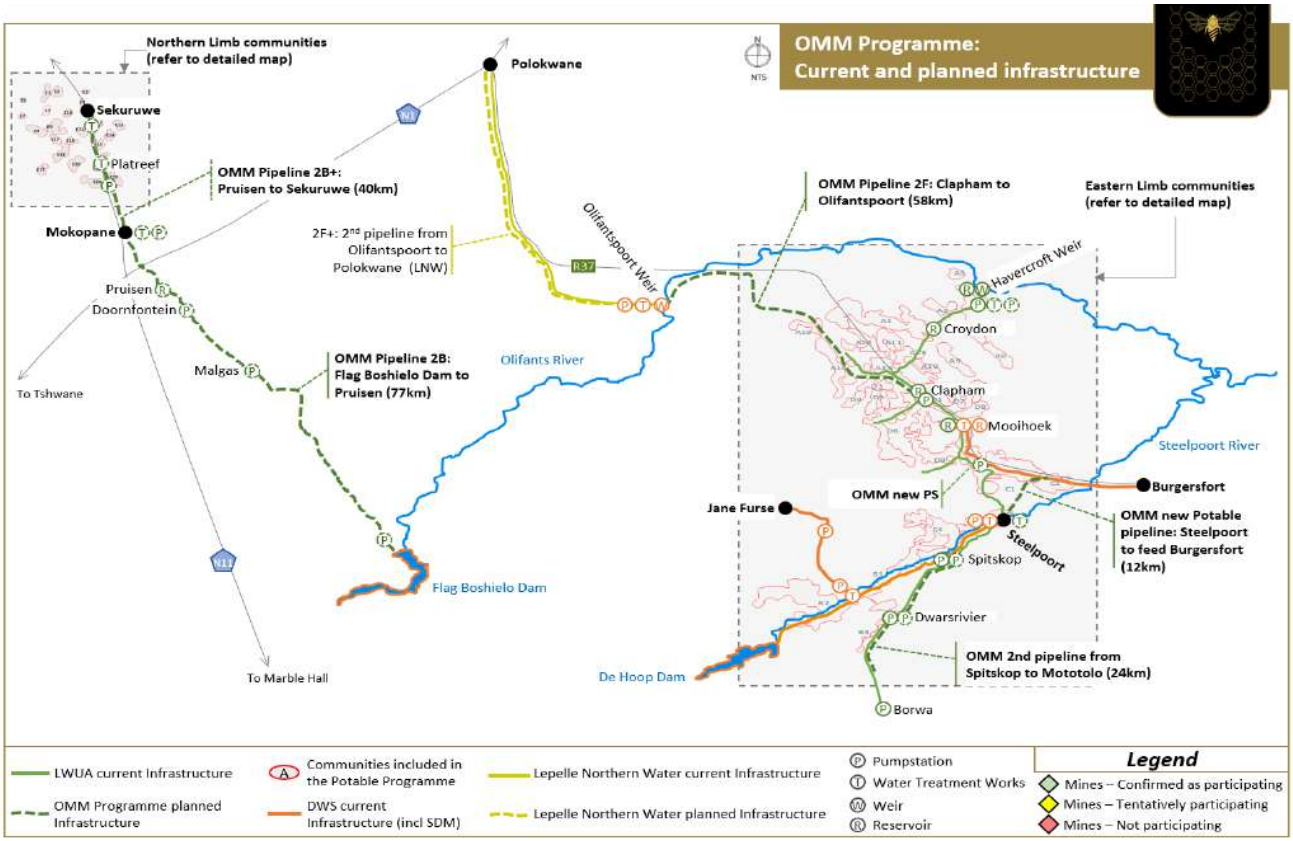
The OMM Programme, from a technical perspective, is a series of design and construction activities of several capital projects in such a way as to maximise the use of current DWS and Association assets, as well as to deliver new assets in the most efficient manner. Together these component projects make up the infrastructure OMM Programme. The individual projects are not technically overly complex in themselves, but the large footprint, diversity of contractors that will be utilised, and the construction coordination activities result in a large and complex programme.

The following six infrastructure projects were identified and included in the OMM Programme:

1. **Bulk raw water Phase 2B & 2B+:** steel pipeline from Flag Boshielo Dam to Pruissen (2B), and from Pruissen to Sekuruwe (2B+) in the northern limb. This will include three new pump stations;
2. **Bulk raw water Phase 2F:** new steel pipeline from Clapham pump station to Olifantspoort weir;
3. **Bulk raw water Phase 2H**: new pump station between Steelpoort pump station and Mooihoek reservoir;
4. **Potable water to the Eastern Limb:** potable water pipelines, reservoirs, one new and two expansions of existing water treatment works, pump stations and associated infrastructure, reticulation network and yard connections in defined areas surrounding the Commercial in the Eastern Limb;
5. **Potable water to the Northern Limb:** potable water pipelines, reservoirs, two new water treatment works at Mokopane and Sekuruwe, pump stations and associated infrastructure, reticulation network and yard connections in defined areas surrounding the Commercial Members in the Northern Limb; and
6. The current Association project, **Southern Extension 2**, to supply water from Phase 2C at Spitskop to Booysendal Platinum Mine, linked to the OMM Programme objectives to fully integrate and utilise available data, designs and infrastructure, is included into the OMM Programme to exploit integration opportunities of common project management systems and sharing of information.

Figure 15 Below provides a schematic overview of the OMM Programme Master Plan, showing the relative positions of the new infrastructure to be delivered under the Association mandate, as well as key existing infrastructure pertinent to the OMM Programme.

Figure 15: OMM Programme Master Plan: Schematic overview



The OMM Programme Master Plan overview above demonstrates the following key elements of delivery:

1. The transfer of raw water from the Steelpoort River from the De Hoop Dam in the south to the Olifants River in the north via **new steel pipeline 2F**. This project is also key to enable raw water to be delivered to Polokwane via a new potable water pipeline to be implemented by Lepelle Northern Water (LNW). The OMM Programme and the LNW delivery will be synchronised to ensure efficiency of timing;
2. This northwards delivery **(Phase 2H)** is primarily enabled via the current DWS pump station at Steelpoort, and **new pump station** between Steelpoort and Mooihoek reservoir;
3. The transfer of raw water from the Flag Boshielo Dam on the Olifants River northwards to Sekuruwe via **new steel pipelines Phases 2B & 2B+** as well as three intermediary pump stations;
4. All raw water phases will make provision for 10% extra capacity for emerging industrial users for empowerment and social water expansion in future.
5. Provision of **potable water to communities in the Eastern Limb**, including its associated new intermediary pump stations and new water treatment works at Havercroft (10Ml/d) and Spitskop (21Ml/d), upgrading, if required, of three existing water treatment works at Ga-Malekana near Steelbridge, Mooihoek and Steelpoort respectively, and community yard connections' reticulation. A potable water connection between Steelpoort WTW (4Ml/day) and the Burgersfort existing pipeline from Mooihoek will be constructed. This approach will reduce current operating costs and make additional water in the Mooihoek region available for reticulation; and
6. Provision of **potable water to communities in the Northern Limb**, new Water Treatment Works near Mokopane and Sekuruwe, and yard connections' reticulation which will utilise raw water from Phases 2B & 2B+.

Figure 16 and Figure 17 provide more detail of the bulk raw water projects and the community areas to be included in the potable water projects in the Eastern Limb and Northern Limb areas respectively.

Figure 16: OMM Programme Master Plan: Eastern Limb overview

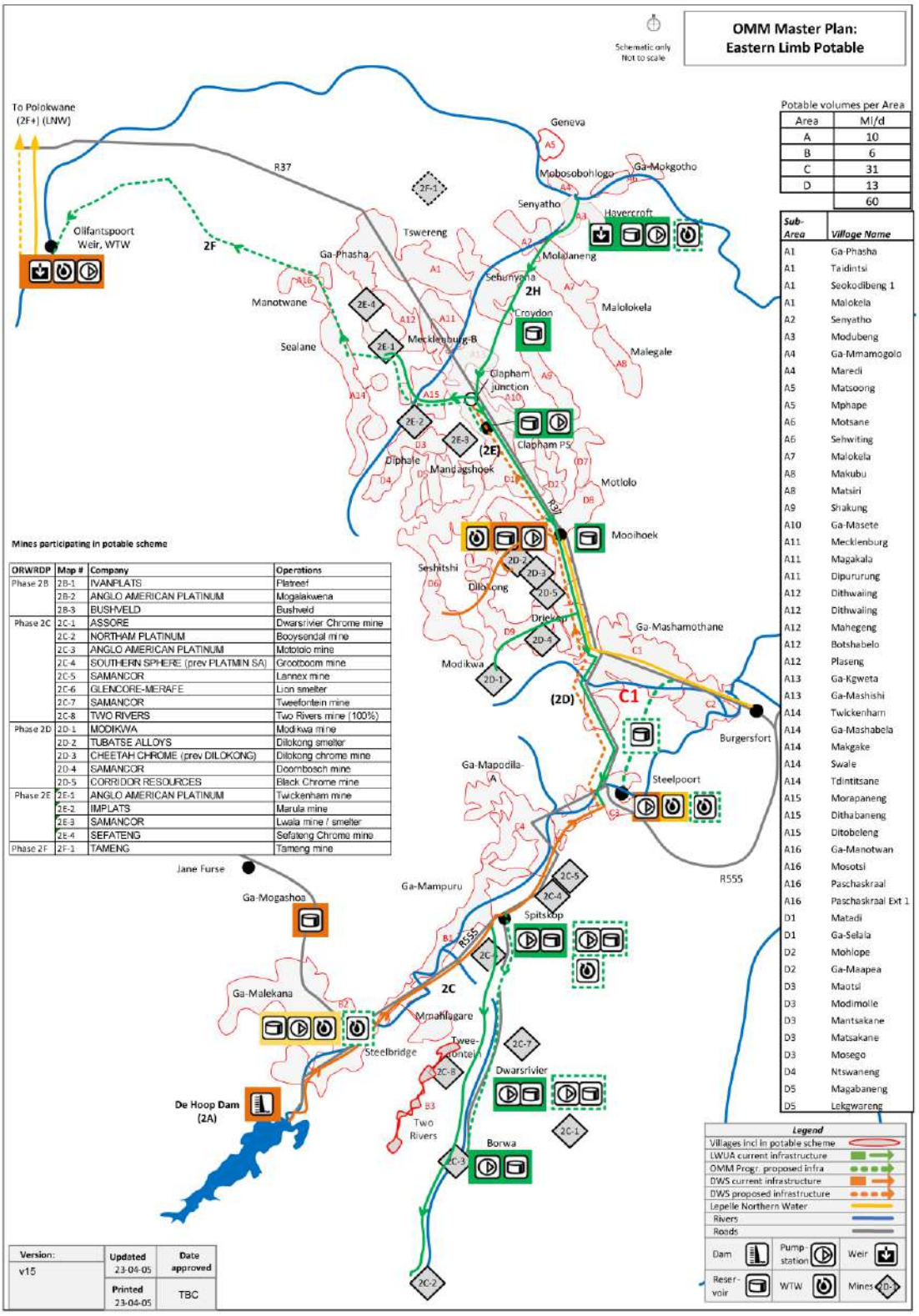
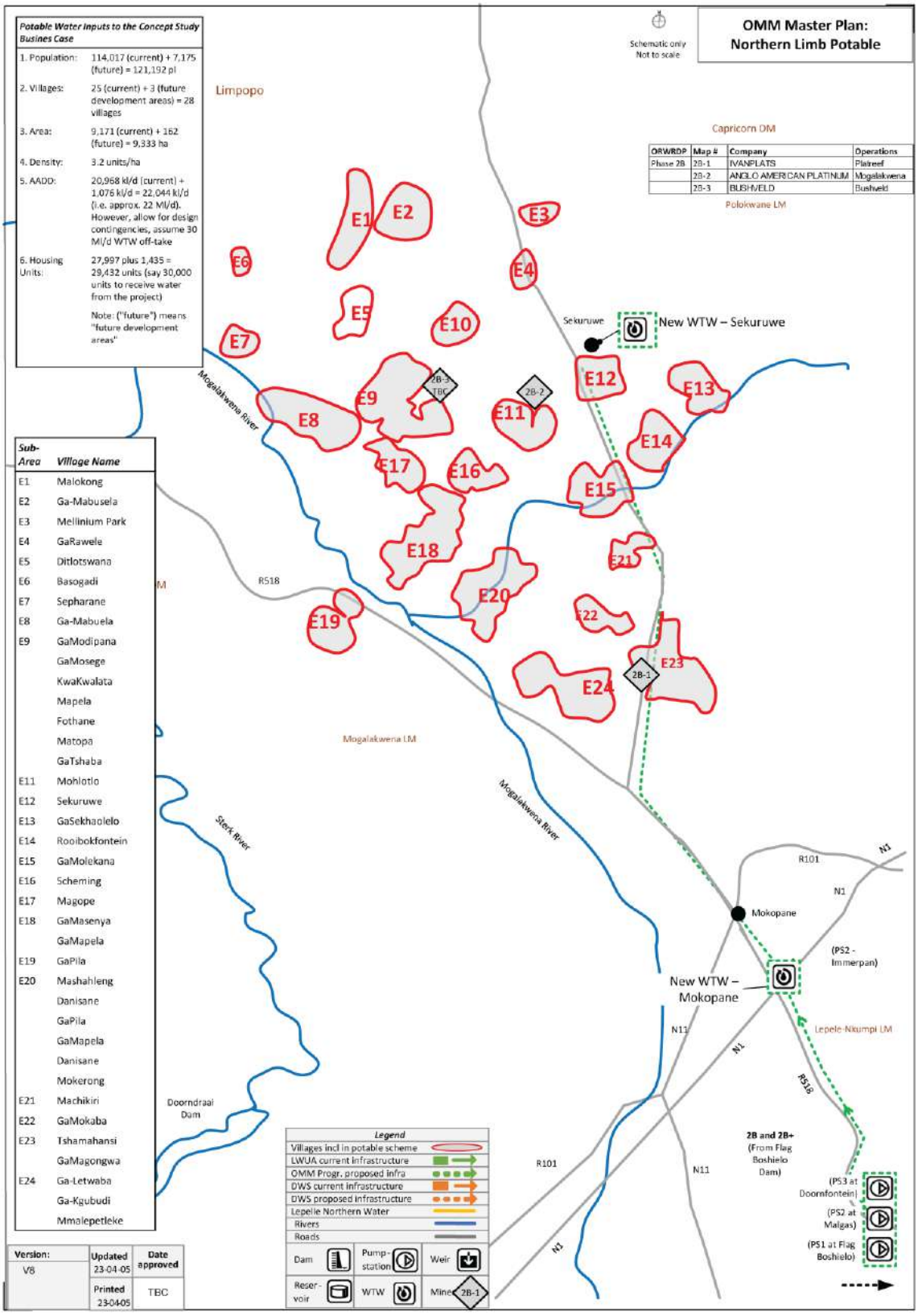


Figure 17: OMM Programme Master Plan: Northern Limb overview



2.5.1.1 Project 1: Bulk Raw Water Project Phase 2B & 2B+

Benefits:

The bulk raw water Phases 2B & 2B+ project provides for the delivery of raw water from Flag Boshielo Dam (on the Olifants River) northwards. Delivery is via a new steel pipeline from Flag Boshielo to Pruissen (2B), and from Pruissen to Sekuruwe (2B+), and three associated new pump stations.

The primary objective of the project is to feed bulk raw water northwards from the Flag Boshielo Dam to two Water Treatment Works (from which potable water can be provided to communities), and the mines in the Northern Limb. This project is key to providing water to Mokopane and a number of water stressed communities in the Northern Limb.

Scope:

The project scope includes 121km of new steel pipeline, with varying diameters of 750mm to 1,400 mm, with a design capacity of 95 Ml/d (can potentially debottlenecked to 144 Ml/d for future expansion); and three new associated pump stations at Flag Boshielo Dam, Malgas and Doornfontein respectively.

Two new WTW will be constructed under separate projects to deliver potable water to communities from the new pipeline, at Mokopane and Sekuruwe under the Northern Limb Potable Water projects (refer to Project 5 in the paragraphs below). The delivery of these projects will be synchronised with Project 2B & 2B+.

The concept study assumption to utilise Eskom for purposes of providing electrical power to the three new pump stations was revised and standalone renewable energy with battery support will be provided to the pump stations as part of an off-grid integrated design.

2.5.1.2 Project 2: Bulk Raw Water Project Phase 2F

Benefits:

The bulk raw water Phase 2F project provides for the delivery of bulk raw water from De Hoop Dam as well as the current Havercroft Pump Station to the Olifantspoort weir. The project will utilise, over and above the current Havercroft connection to Clapham, the current pipeline from Steelpoort to Mooihoek reservoir (i.e. reverse the current water flow in a south to north direction), and then gravity feed from the Mooihoek reservoir to Clapham to connect the new 2F pipeline feeding water from De Hoop Dam to the system. The 2F new pipeline will commence at Clapham pump station, allowing water from Mooihoek to Clapham pump station as well as water from Havercroft, and continue to Olifantspoort weir. The Clapham pump station link to the Twickenham aquifer and Motse River will be maintained.

This project is a key link in relieving capacity constraints on the Olifants River by pumping water that originated in the Steelpoort River from the De Hoop Dam northwards, in order to eventually supply Polokwane via the new potable water pipeline to be delivered by Lepelle Northern Water (LNW) in a synchronised fashion.

The project assumes that ORWRDP phases 2D and 2E will not be required in the medium term.

Scope:

The project scope includes 58km of new steel pipeline, with varying diameters of 700mm to 1,200 mm, and with a design capacity of 85 Ml/d.

Phase 2F will include the construction of a new 5.5 km line from the Clapham pump station towards Clapham junction, and construction of further new pipeline from the Clapham junction to the Olifantspoort weir (52 km), i.e. a total length of new pipeline of 58 km.

In order for the raw water from De Hoop Dam via the Phase 2C pipeline to reach the Mooihoek reservoir, the current DWS pumps at the Steelpoort pump station will be re-commissioned since they have been out of use for a number of years, and a new pump station constructed under the OMM Programme between Steelpoort and Mooihoek (refer to Project 3 in the paragraphs below).

2.5.1.3 Project 3: New Pump Station Between Steelpoort and Mooihoek Phase 2H

Benefits:

The project provides for a new pump station and re-commissioning of pumps at the DWS Steelpoort pump station to facilitate the pumping of raw water from the Steelpoort River (from the De Hoop Dam) northwards up to the existing Mooihoek reservoir. This then facilitates gravity feed of raw water to Olifantspoort weir under phase 2F and onwards to Polokwane via the new potable water pipeline by Lepelle Northern Water.

The new pump station will be situated between Steelpoort and the current Mooihoek reservoir (three alternative positions will be investigated in IBC Report #2). The primary objective of the project is to augment the supply of bulk raw water to Mooihoek reservoir through reverse pumping water in a northerly direction from Steelpoort utilising the current pipeline. This project is key to increasing the supply of bulk raw water to the new 2F pipeline and thus deferring ORWRDP phases 2D and 2E.

Scope:

The project scope includes a new pump station between Steelpoort and Mooihoek reservoir, the pump station's associated reservoir, electrical supply, and re-commissioning of the relevant current DWS Steelpoort pumps, with a combined system capacity (including the Havercroft connection) to supply 70 Ml/d to phase 2F.

The ultimate required capacity of the pump station itself will depend on whether to include capacity for the possible future ORWRDP phases 2D and 2E or not. This will be confirmed in IBC Report #2.

The DWS pumps at Steelpoort pump station have been out of commission for a number of years, hence a condition assessment will be included in the pre-feasibility stage to assess what refurbishment, if any, may be required. Depending on the condition of the DWS pumps and the current Association pipeline, the capacity of the new pump station will be adjusted accordingly to augment the DWS pumps to ensure at least 70 Ml/d to phase 2F. Current capacity of the Association pipeline to flow in a northerly direction is assumed to be between 22 Ml/d and 26 Ml/d. Depending on the available water from the Flag Boshielo Dam, the Havercroft Pump station and pipeline to Clapham will be utilized to augment the supply to Polokwane through the 2F pipeline. This will defer the building of ORWRDP phase 2D and 2E further.

Energy supply will be supplied to the pump station utilising a combination of Eskom supply, renewable energy in the form of Solar panels and a Battery Energy Storage System (BESS). Study evaluations have shown that this approach will not only be more economical over the repayment period for members, but also remove load shedding concerns and meeting schedule requirements.

2.5.1.4 Project 4: Potable Water – Eastern Limb

Benefits:

The Potable Water Eastern Limb projects are made up of bulk potable water supply and internal network reticulation projects for the supply of potable water to communities along the Eastern Limb of the Bushveld Igneous Complex, designated as Areas A, B, C and D in the OMM Programme Master Plan.

The primary objective of the project is to provide potable water to approximately 250,000 people, as well as the routing of an additional 4 Ml/d water towards the town of Burgersfort.

This project sets out to serve communities generally along the pipeline routes and close participating Members' infrastructure.

This constitutes a significant investment into the communities by augmenting the supply of potable water ordinarily to be delivered by the relevant Water Services Authorities (WSA).

Scope:

The level of service provided will be yard connections with a demand of 63 l/person/day (AADD).

The project includes the construction of new bulk potable pipelines of 513 km, reticulation potable pipelines of 1,326 km, new pump stations, new water treatment works at Havercroft (10Ml/d) and Spitskop (21Ml/d), upgrading, if required, of three existing water treatment works at Ga-Malekana near Steelbridge, Mooihoek and Steelpoort respectively, local reservoirs and yard connections to approximately 52 000 households (250,000 people).

The scope assumes the refurbishment of some infrastructure assumed to be in acceptable condition (35% of bulk and 15% of reticulation infrastructure). The condition of this infrastructure will however be verified in future phases to validate the assumption.

2.5.1.5 Project 5: Potable Water – Northern Limb

Benefits:

The Potable Water Northern Limb project is a bulk and internal network reticulation project for the supply of potable water to community areas along the Northern Limb of the Bushveld Igneous Complex, designated as Area E in the OMM Programme Master Plan.

The primary objective of the project is to provide potable water to approximately 130,000 people. Consequently, this project sets out to serve the communities generally situated along the route of Phases 2B & 2B+ pipeline project and the communities surrounding the commercial users in the area between Mokopane and Sekuruwe.

This constitutes a significant investment into the communities by augmenting the supply of potable water ordinarily to be delivered by the relevant Water Services Authorities (WSA).

Scope:

The level of service provided will be yard connections with a demand of 63 l/person/day (AADD).

The project includes the construction of new bulk potable pipelines of 163 km, reticulation potable pipelines of 664 km, new pump stations, two new water treatment works at Mokopane of 28Ml/d and Sekuruwe of 21 Ml/d, reservoirs, water towers and yard connections to approximately 26 700 households (130,000 people).

The scope assumes the refurbishment of some infrastructure assumed to be in acceptable condition (35% of bulk and 15% of reticulation infrastructure). The condition of this infrastructure will however be verified in future phases to validate the assumption.

2.5.1.6 Project 6: Bulk Raw Water – Southern Extension 2 Phases 1 and 2

Benefits:

The Southern Extension 2 network, parallel to the existing Southern Extension 1 pipeline, will increase the network capacity in supplying various mines between Mooihoek and Spitskop up to Mototolo and Booysensdal

Mines. The increased capacity through the SE2 network will supply the Two Rivers Mine's new concentrator plant next to the Dwarsrivier Pump Station, named the Merensky Concentrator Plant, the Lion Smelter, and the Mototolo Mine of Anglo Platinum. Extra capacity will also be made available to the Kadoma Industrial Park and the Fetakgomo-Tubatse Industrial Park (FTIP) in future.

Scope:

The new SE2 scheme comprises of the following infrastructure:

- Phase 1:
  - New Spitskop 2 Pump Station next to the existing Spitskop 1 Pump station. Water will be abstracted from the existing Phase 2C pipeline;
  - A new 500mm diameter pipeline from the Spitskop 2 Pump Station up to the new Dwarsrivier 2 Reservoir; and
  - A new 10 Mega- litre, Dwarsrivier 2 Reservoir
- Phase 2:
  - A new Dwarsrivier 2 Pump Station next to the existing Dwarsrivier 1 Pump Station; and
  - A new 300mm diameter pipeline from the new Dwarsrivier 2 Pump Station up to the existing Mototolo Dam.

2.5.2 Integrated OMM Programme Implementation Approach

Considering the critical success factors related to the OMM Programme schedule and the selected technical design options a high level implementation approach was developed:

1. Implement bulk raw water phases 2B & 2B+, Flag Boshielo Dam to Sekuruwe, with maximum use of available design data;
2. Implement Northern Limb potable water as per the HoT in parallel to accelerate water to communities;
3. Implement Eastern Limb potable water along the current Association network utilising available network capacity and WSA designs (Eastern Limb potable water phase 1);
   a. Refurbishment of existing bulk potable infrastructure in two (2) key communities of the OMM Programme, with the intent to provide reticulation (to a yard connection) as separate projects namely:
      i. Lebalelo Central: Mooihoek and Ga-Maroga communities (close to the DWS / Association Mooihoek complex and Tubatse Alloy Smelter, Dilokong Chrome Mine, Samancor Lwala Mine and Sail Group Black Chrome Mine) – potential to serve 15 000 people based on the separate reticulation scope; and
      ii. Ga-Malekana / De Hoop communities (near Steelbridge and Jane Furse) – potential to serve 24 000 people on the separate reticulation scope.
4. Implement bulk raw water phases 2F, a pipeline directly from Clapham pump station to Olifantspoort weir;
5. Implement the reverse flow of the current network feeding the system from De Hoop Dam ; and
6. Implement the remainder of the agreed potable water scope in the Eastern Limb (Eastern Limb potable water phase 2).

2.5.3 OMM Programme Schedule

Based on a OMM Programme study phase kick-off of 1 October 2022 the following completion targets are estimated:

1. Southern Extension 2 – Construction commenced in October 2022 and complete Phase 1 September 2023 and Phase 2 August 2024
2. Bulk raw water phases 2B & 2B+ – Construction to commence January 2024 and complete between Q1 2026 to Q2 2026
3. Northern Limb Water Treatment Works – Construction to commence Q1 2024 and complete between Q1 2026 to Q2 2026
4. Reverse flow of Association network – Construction to commence Q1 2025 and complete between Q4 2026 to Q2 2027
5. Bulk raw water phases 2F – Construction to commence Q1 2025 and complete between Q1 2028 to Q2 2028
6. Eastern Limb Phase 1 potable water (accelerated scopes) – Construction to commence January 2024 and complete between Q2 2027 to Q4 2027
7. Northern Limb potable water – Construction to commence Q1 2025 and complete between Q1 2030 to Q3 2030
8. Eastern Limb Phase 2 Potable water – Including WTWs with construction to commence Q1 2025 and complete between Q4 2029 to Q2 2030

Notes:

1. Although overall completion date targets are indicated for the potable water supply in the respective regions, it is important to understand that subsections within villages will be completed and handed over on an ongoing basis during the construction period.
2. All construction commencement dates are subject to funding approval

Attachment F contains basis for the schedule and key planning assumptions.

2.6 Southern Extension 2 Project

2.6.1 Technical Solution and Project Description

The current Southern Extension (SE) bulk raw water scheme, further in the document referred to as SE1, is supplying various mines between Mooihoek and Spitskop by means of a gravity pipeline that is fed from the Mooihoek bulk raw water storage dam. From Spitskop water is pumped to Mototolo and Booysensdal Mines by making use of the Spitskop pump station and two booster pump stations at Dwarsrivier and Borwa. SE1 system was constructed in 2012.

The existing SE1 water supply scheme is fully utilised due to the water allocation of the Mototolo and Booysensdal Mines. In order to supply the Two Rivers Mine's new concentrator plant next to the Dwarsrivier Pump Station, named the Merensky Concentrator Plant, with water by the September 2023 for commissioning of the new plant, the SE2 Project was initiated late 2019. All potential and existing water users along the pipeline were contacted to allow participation in the construction of a second water supply scheme, SE2, parallel to the existing SE1 pipeline. Other entities along the pipeline route such as the Lion Smelter, and the Mototolo Mine of Anglo Platinum showed interest in taking part in the development of the SE2 Project. The SE2 water scheme will be supplied with water from the Phase 2C pipeline that is fed from the De Hoop Dam in the Steelpoort River and not from the existing Association network as is the case with the SE1 scheme. The SE1 scheme will in future also be switched over to the Phase 2C pipeline as part of the OMM Programme.

The SE2 Project, as the first OMM Programme project in construction, comprises of the following infrastructure but also include non-infrastructural components such as SED. The SE2 scheme was divided into two phases after the Feasibility Stage due to the urgency of water supply to Two Rivers Mine, while the second portion to Mototolo will only be required at a later stage.

The new SE2 scheme comprises of the following infrastructure:

Phase 1:

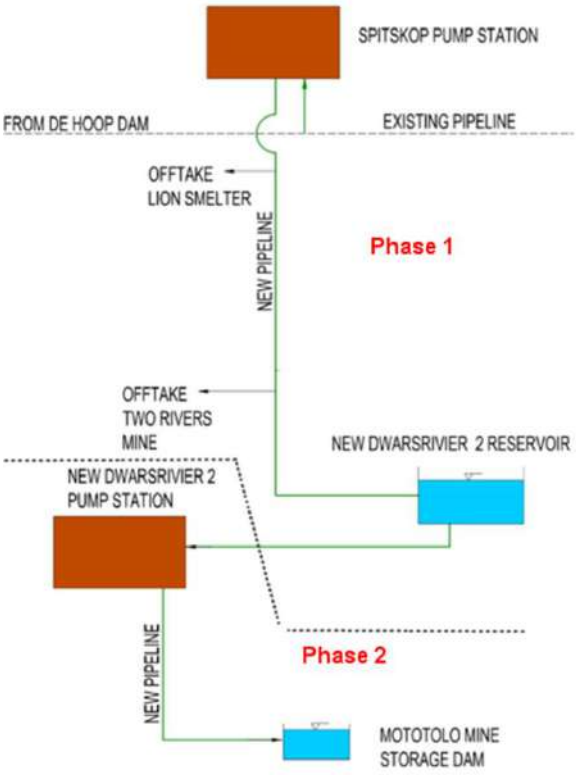
1. New Spitskop 2 Pump Station next to the existing Spitskop 1 Pump station. Water will be abstracted from the existing Phase 2C pipeline that link the De Hoop Dam to the existing Pump Station at Steelpoort;
2. A new 500mm diameter pipeline will be constructed from the Spitskop 2 Pump Station up to the new Dwarsrivier 2 Reservoir. The Lion Smelter and the Two Rivers Mine will abstract water from this pipeline; and
3. A new 10 Mega- litre, Dwarsrivier 2 Reservoir will be constructed near the Dwarsrivier 2 Pump Station. The position of this reservoir has the added advantage that water can gravitate back to the Lion Smelter, Dwarsrivier Mine and the Two River's Mine abstraction points. The reservoir will also provide water for the new Dwarsrivier 2 Pump Station.

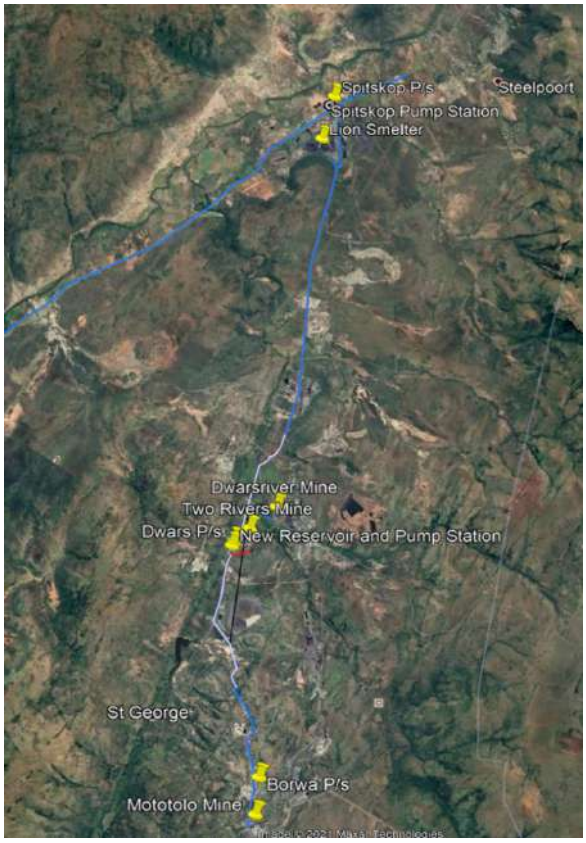
Phase 2:

1. A new Dwarsrivier 2 Pump Station next to the existing Dwarsrivier 1 Pump Station. Water will pumped from the new Dwarsrivier Pump Station to the existing Mototolo Dam at the Mototolo Mine; and
2. A new 300mm diameter pipeline will be constructed from the new Dwarsrivier 2 Pump Station up to the existing Mototolo Dam.

The following schematic layout provides an overview of the components of the SE2 scheme.

Figure 18: SE2 schematic layout





2.6.2 Project Implementation Approach

A Lead Consultant, **Infraburo Civil and Structural Consulting Engineers** as the Lead Consultant for the SE2 project (Phases 1 and 2) was appointed on the ECSA Reimbursable Contract which was later converted into a Fixed Price. The Lead Consultant is responsible to coordinate the full scope of professional services which include, Inception, Concept and Viability (preliminary design), Detail Design Development, Documentation and Procurement, Contract Administration and Inspection and Close-Out. In performing their task Infraburo appointed the following professional services:

- **Buro Tech Consulting Engineers** for Electrical, Electronic and HVAC design.
- **Less Holland Muter** as Geo Technical Specialist.
- **Deltaplan** as surveyors.
- **Alta van Dyk Environmental** for Water License Application and Environmental Plan
- **Nnete** for Pipe Manufacturing Tender Document and Tender Adjudication
- **C2D Engineering** for Pump Station optimisation and Surge Analysis
- **Isinyithi** for Cathodic Protection and Alternating Current Interference Mitigation
- **DACLC** for HAZOP facilitation
- **Bakanda Investments** in collaboration with Diphororo Development for Social Economic Development Plan and on-site social management during construction
- **Sharp Consulting** for Fire Plans and Fire Protection Services
- **Inawora** in collaboration with Areyeng for Health and Safety aspects and control during construction.
- **APSIS** for the quality inspection of pipe and special fittings manufacturing

To allow for an accelerated implementation of the first section up to Dwarsrivier in support of the 2 Rivers Mine's Processing Plant start-up by September 2023, the SE2 project was divided into 2 phases.

The construction portion of the project was further divided into 4 main contracting scopes with the contracts based on the General Conditions of Contract (GCC) of the South African Institution of Civil Engineering (SAICE):

- The construction of the new Spitskop 2 Pump Station and the pipeline between the pump station and the new Dwarsrivier 2 Reservoir - Contract awarded to ESOR Construction following a competitive bid process;
- The construction of the new concrete Dwarsrivier 2 Reservoir - Contract awarded to ESOR Construction following a competitive bid process;
- Manufacture and supply of coated and lined steel pipeline – Contract awarded to Hall Longmore following a competitive bid process; and
- Manufacture and supply of precast concrete air valve chambers – Contract awarded to CoreSlab following a competitive bid process.

Phase 2 construction will be implemented as a single contract and contract appointment is targeted for June 2023. Other key aspects to be highlighted are:

1. All tenders included a local content requirement as per the OMM Procurement Policy and Procedure, and the scoring was done on the percentage local content as part of the tender adjudication process;
2. Social issues were workshopped with the relevant social managers of the mines along the project to ensure that their current methodologies with local communities are also used where applicable;
3. A local Vendor Database was developed with application of local vendors and companies that provided their information; and
4. Action is taken where some individuals and groups try to stop construction work. The OMM Programme security consultant is assisting to prevent any escalation of differences between the contractor and these individuals and groups.

The SE2 Project is controlled as per the OMM Programme Project Control principles as detailed in the Management Case of this report.

2.6.3 Implementation Schedule

The table below reflects the implementation schedule for Phase 1 and Phase 2 with the status completion of each activity.

Table 9: Implementation schedule for Phase 1 & 2

Activity	Phase 1		Phase 2	
	Status	Completion Date	Status	Completion Date
Environmental Investigation and Approval of DFFE	Complete	16 Aug 2022	Complete	16 Aug 2022
Geotechnical Investigation and Reporting	Complete	Aug 2021	Complete	Aug 2021
Geographical Survey	Complete	Oct 2021	Complete	Oct 2021
Social Economic Development Plan	Complete	Sep 2022	Complete	Sep 2022
Health and Safety	Ongoing	N/A	Ongoing	N/A
Inception Report	Complete	23 April 2021	Complete	23 April 2021
Prelim Design and Feasibility Study	Complete	19 Oct 2021	Complete	19 Oct 2021
Design	Complete	Jul 2022	Ongoing	Apr 2023
Documentation and Procurement (Note 4)	Complete	14 Sep 2022	Ongoing	June 2023
Appointment of the Construction Contractor	Complete	N/A	Not started	July 2023
Construction	Ongoing	Nov 2023	Not started	Aug 2024
Practical completion	Target	28 Sep 2023	Not started	Jul 2024

Activity	Phase 1		Phase 2	
	Status	Completion Date	Status	Completion Date
Final Completion	Target	Nov 2023	Not started	Aug 2024

2.7 Phases 2B & 2B+ Detail Scope

A key objective of the OMM Programme is to maximise the use of available data, designs and infrastructure already paid for by Members. Phases 2B & 2B+ were previously developed up to completion of Detail Design (see Attachments B1 and B2 Detail Design Reports for Phases 2B & 2B+ respectively). Due to the advanced stage of the Phases 2B & 2B+ project development, it is confirmed from the reports that the preferred option has already been chosen based on the completed detail design. The Economic Case and further analysis will therefore only be documented for the preferred option.

2.7.1 Phase 2B Scope

Phase 2B comprises a ±71 km long, DN 1200 raw water rising main from Flag Boshielo Dam to a terminal reservoir at Pruissen, near Mokopane. Along the route, three pump stations will be required; one at the Flag Boshielo Dam, the second in the vicinity of Immerpan (on the Farm Malgas), and the third near Pruissen (on the Farm Doornfontein).

Two balancing dams will be constructed, one each at the second and third pump stations (Malgas and Doornfontein).

The Phase 2B design scope thus consists of:

- Flag Boshielo pump station, located close to the Flag Boshielo Dam wall;
- Approximately 42.5 km of DN 1200 steel rising main from Flag Boshielo pump station to Malgas balancing dam;
- Malgas balancing dam, Malgas pump station;
- Approximately 22 km of DN 1200 steel rising main from Malgas pump station to Doornfontein balancing dam;
- Doornfontein balancing dam, Doornfontein pump station;
- Approximately 6.5 km of DN 1200 steel rising main from Doornfontein pump station to Pruissen reservoir; and
- Pruissen terminal reservoir.

The initial average annual daily demand (AADD) for which the pump stations were designed for was 137 ML/day (50 Mm^3/annum). OMM Programme has since developed a revised business case aimed at reducing the capital expenditure of the scheme. This business case sees the total AADD required for the bulk pipeline being reduced to 94 ML/day, split in two for commercial/industrial off take: 47 ML/day and Social off take (rural and urban): 47 ML/day.

The key infrastructure locations for Phase 2B are shown in Figure 19, where the Phase 2B scope is indicated in blue. Figure 20 shows a simplified schematic of the entire Phase 2B system.

Figure 19: Phase 2B locality plan (key infrastructure locations)

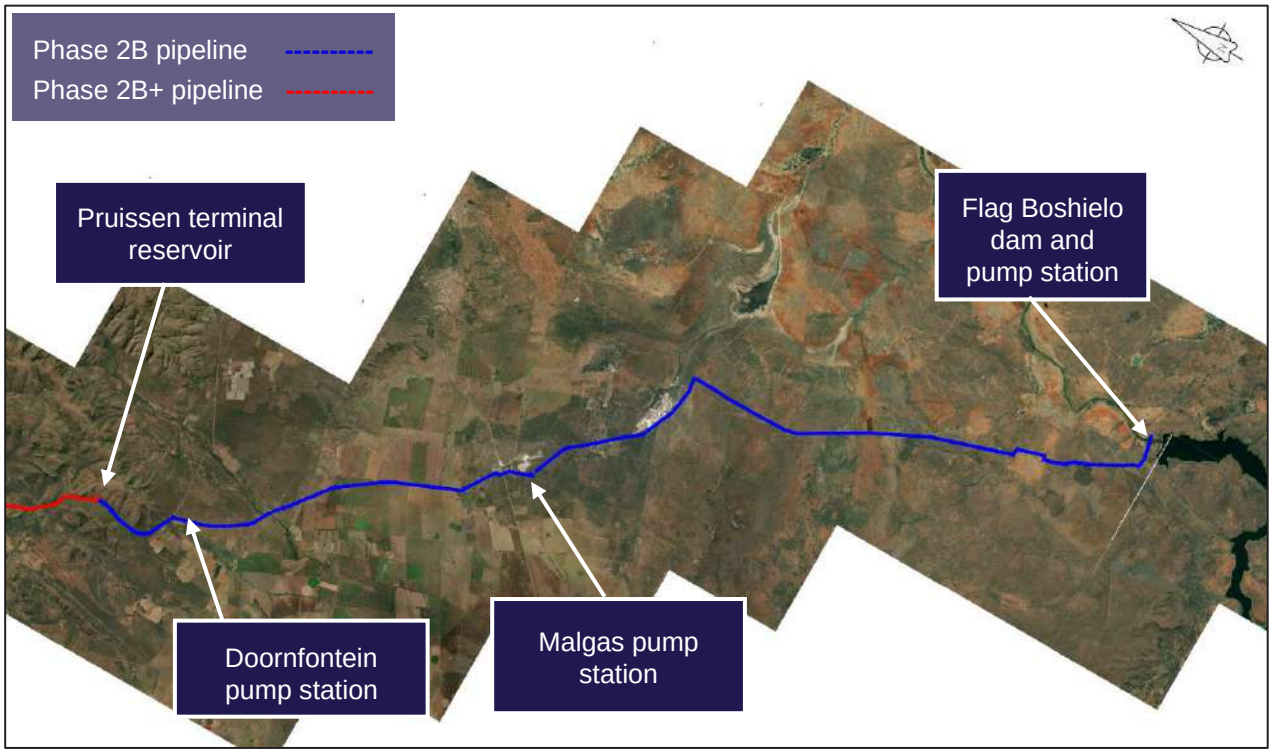
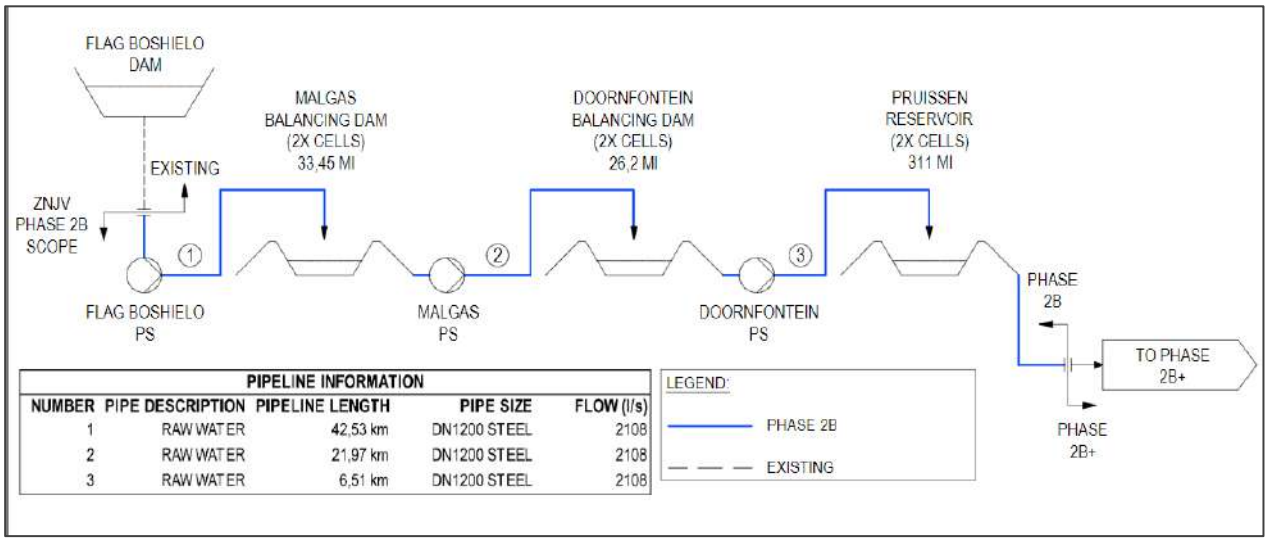


Figure 20: Schematic of Phase 2B infrastructure



The designs of all the infrastructure listed above as part of the scope were completed by ZNJV in 2016. The designs were completed to the point of being tender ready (i.e., for the procurement of contractors to commence). The remaining scope to complete the Bankable Feasibility Phase for the project includes all the actions required to update all documentation templates (including drawing title blocks) to ensure that the tender package is complete and ready for procurement to commence.

The following actions will form part of the scope:

(a) Update detail design drawings and documentation templates

All tender drawings and documentation will need to be copied to the new project templates. This will include updating the title blocks of all drawings.

(b) Review pipeline routes

The pipeline routes indicated in the 2016 designs will be reviewed to determine whether there have been any changes or developments that may render the routes unfeasible. Examples of such changes include, but are not limited to:

- Expansion of rural settlements along the pipeline route;
- Mining activities that may have encroached onto the servitude or are being planned. Bulk services that may have encroached into the servitude or are being planned; and
- Topographical changes due to erosion or changes in river/stream alignments.

The review of the pipeline routes will be based on the most recent aerial imagery that is available to ZNJV (most likely Google Earth or Bing images), as well as the findings from the recently completed site visit.

(c) Confirm status of all wayleave applications

The pipeline route between Flag Boshielo Dam and Pruissen crosses several roads, including the R518 and R519. A portion of the route runs parallel to existing powerlines and crosses an existing railway line near Immerpan. Furthermore, the pipe crosses the Olifants River directly downstream of Flag Boshielo Dam. The status of all wayleave applications will need to be confirmed and the necessary actions identified as part of the scope of the project.

(d) Compile complete tender package.

A complete pack of tender documents (incl. tender drawings, bills of quantities, project specifications, tender and contract data, and tender evaluation report) for the Phase 2B scope will be compiled by ZNJV to allow procurement of contractors to commence.

2.7.2 Phase 2B+ Scope

Phase 2B+ scope consists of a bulk raw water gravity pipeline from Pruissen Reservoir to the Sekuruwe WTW, which includes a branch towards the Mokopane WTW. Along the raw water pipeline, there are two commercial user offtakes that will supply water to mines north of Mokopane.

Approximately 26 km of DN 1 000 steel pipeline from Piet-se-Kop Reservoir to an elevated steel tank close to the Sekuruwe WTW has already been constructed, although the majority of the pipeline has never been commissioned. Currently, the first 3.5 km of the pipeline is being used to temporarily convey potable water from Piet-se-Kop Reservoir towards Tshamahansi, where it is connected to an existing potable pipeline supplying Tshamahansi Reservoir.

The remainder of the Phase 2B+ scope consists of:

- Approximately 13.5 km of DN 1400 steel gravity pipeline from Pruissen Reservoir to the Mokopane WTW branch;
- Approximately 9.6 km of DN 1100 steel gravity pipeline from the Mokopane WTW branch to the Piet-se Kop tie-in point; and

- Approximately 2.5 km of DN 1100 steel gravity pipeline from the Mokopane WTW branch to the WTW, and approximately 0.4 km of DN 700 steel gravity pipeline to connect the existing DN 1000 raw water pipeline to the Sekuruwe WTW.

These pipes are required to complete the raw water system from Pruissen to Sekuruwe, allowing water to be supplied to both commercial users and residential users (via the water treatment works and downstream potable networks).

The key infrastructure locations for Phase 2B+ are shown in Figure 21, where the Phase 2B+ scope is indicated in red. Figure 22 shows a simplified schematic of the entire 2B+ system, where the outstanding pipes (i.e., the scope to be completed as part of this project) are indicated in blue.

Figure 21: Phase 2B+ locality plan (key infrastructure locations)

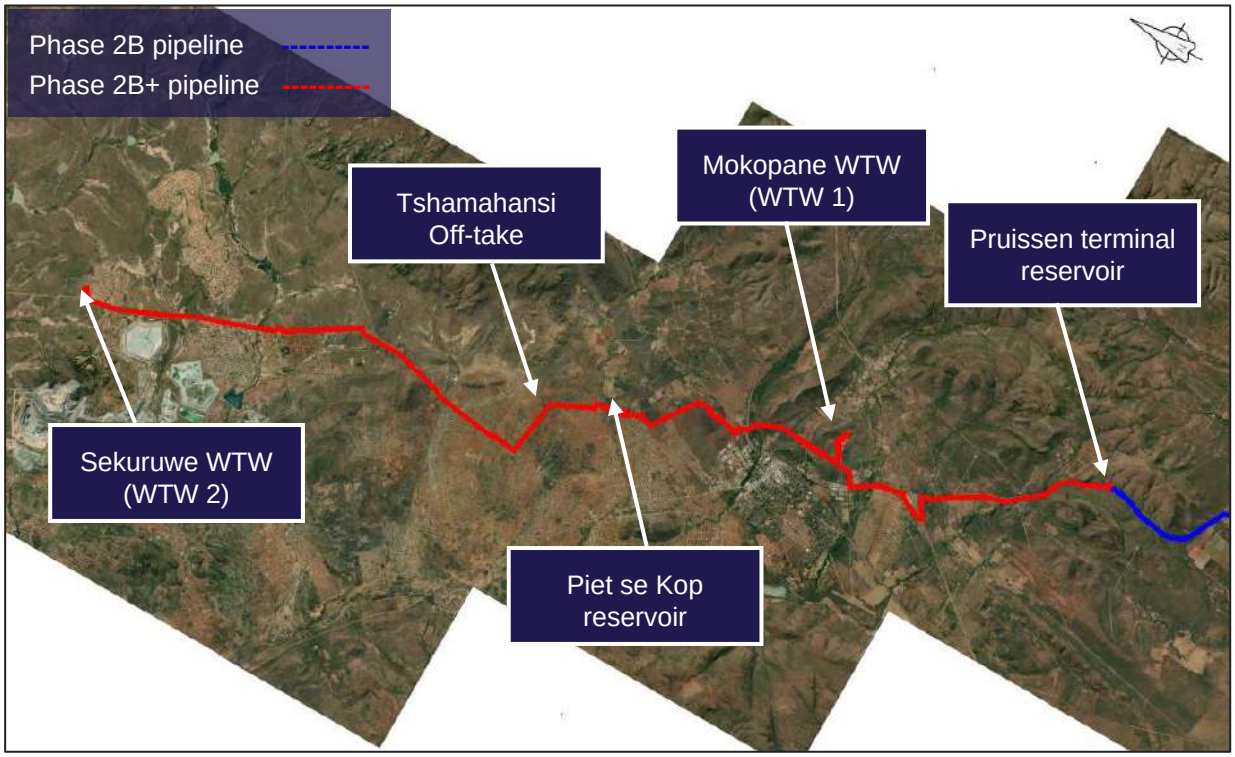
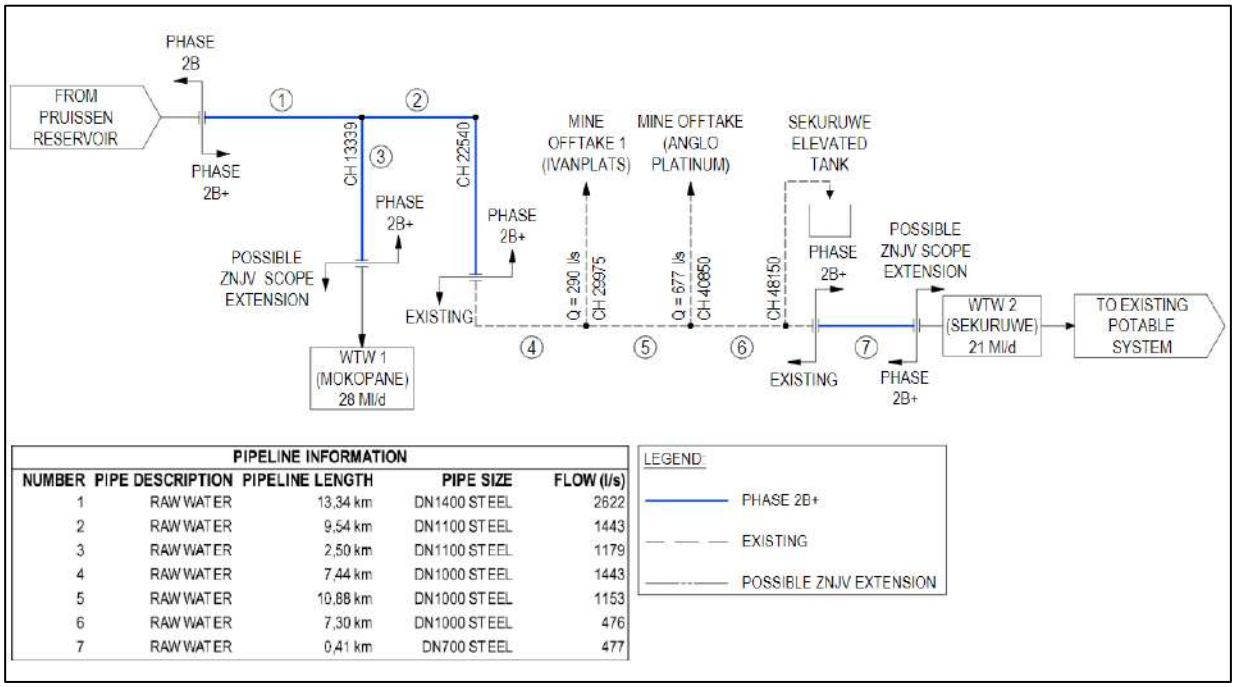


Figure 22: Schematic of 2B+ infrastructure



PIPELINE INFORMATION

NUMBER	PIPE DESCRIPTION	PIPELINE LENGTH	PIPE SIZE	FLOW (l/s)
1	RAW WATER	13,34 km	DN1400 STEEL	2622
2	RAW WATER	9,54 km	DN1100 STEEL	1443
3	RAW WATER	2,50 km	DN1100 STEEL	1179
4	RAW WATER	7,44 km	DN1000 STEEL	1443
5	RAW WATER	10,88 km	DN1000 STEEL	1153
6	RAW WATER	7,30 km	DN1000 STEEL	476
7	RAW WATER	0,41 km	DN700 STEEL	477

2.7.3 Electricity Supply Options

The pumping of large volumes of water has a high energy demand. Up to 30% of the water tariff (excluding capital repayment) is made up of the electricity cost component. The intent of the alternative energy supply investigation is to reduce overall energy costs by comparing capital investment into renewable energy against power purchase tariffs and also to improve reliability and more cost escalation predictability of energy sources. Historically, ESKOM was a cheap option, but with the long transmission lines and higher voltages, the connection charges almost double the cost per kWh. The area indicated above in the locality plans are rural with very little to no ESKOM grid penetration. ESKOM is no longer reliable, with continuous load shedding and power failures experienced the past couple of years. ESKOM tariff increases over the past years were very unpredictable and excessive in some cases. Lastly, ESKOM's electricity is not "clean", with >80% of its generation still coming from coal based sources with a high CO2 footprint and not supporting the Association's sustainable development goals.

As an alternative to ESKOM supply, there are many commercial renewable energy alternatives on the market that can compete with ESKOM's tariffs over the long term and is 'greener', supporting the OMM Programme's sustainable development goals. Some of the technology options considered are:

1. Solar PV (Ground-based) - fixed-tilt structure or a single-axis tracker;
2. Solar PV (Floating) - to be placed on bodies of water;
3. Wind generation;
4. Reciprocating engines (gas or diesel generators);
5. Hydrogen fuel cells;
6. Hydroelectric power; and
7. Battery Energy Storage Systems (BESS) – Using either Lithium ion (LiFe), Vanadium Redox Flow or Sodium Sulphur (NaS).

Refer to Section 2.9 on the Energy Solution Investigation for the OMM Programme scope for an in-depth evaluation of the applicability of each technology for each pump station in the scheme. The result from the investigation indicated that the most cost effective energy solution for the Northern Limb is distributed solar energy supply at each pump station supported by battery systems to enable the required pumping durations per day in relation to the system water demand curve. The capital cost associated with this energy solution triggered further investigation into the pump station configuration with potential delaying of equipment installation as needed in the future to meet water demands or alternative operating scenarios for the pump stations to optimal utilize the installed equipment.

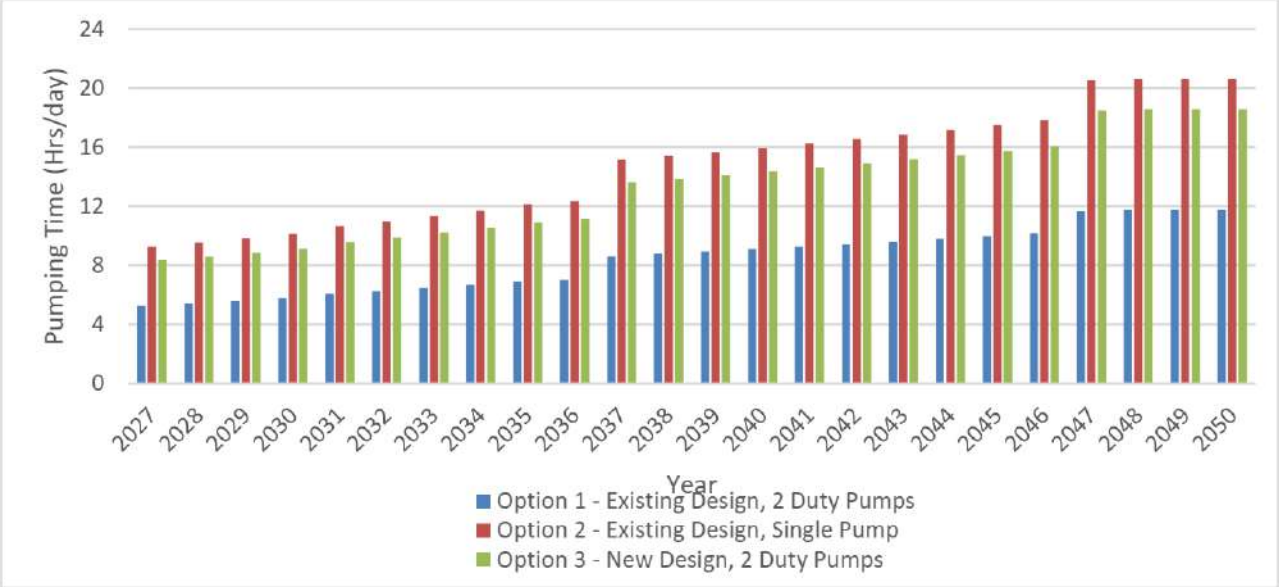
The following three pumping alternatives were considered:

1. Implementing the existing design of two duty pumps and one standby pump. The Average Annual Daily Demand (AADD) as per the demand curve is accommodated by simply reducing the pumping hours of both pumps;
2. Implementing the existing design, but initially only having one duty pump in operation and one standby pump. In addition, the pumps would have to be provided with and controlled by variable speed drives (VSDs) to ensure that the duty pump operates within its acceptable operating range (AOR). An additional duty pump is to be added to the pump set once the demand from the Pruissen reservoir can no longer be met with a single duty pump; and
3. Resizing and redesign all the pump station with smaller pumps in a two duty / one standby arrangement. The pumps will be sized to deliver 95 ML/d (design capacity) and will have their pumping hours reduced in the initial years of the project when the demand will initially be lower.

During the design development of Phase 2B the pump stations were optimised by considering and balancing the following requirements:

- Optimum system design based on Life Cycle Cost analysis linked to a maximum design flow of 2.1 m/s;
- Standardisation of the main mechanical and electrical components between pump stations to reduce critical spare requirements and operational and maintenance effort and cost; and
- The locations of the pump stations were carefully chosen such that the three pump stations would have similar duty points and would allow for identical pumping arrangements.

Figure 23: Required time for pumping based on the AADD



The combined pump equipment and electricity supply configuration that will be selected to go forward with will be the option that is the most cost effective considering delayed capital spending on pumping equipment or electrical equipment versus the required energy cost associated with operating the pump stations over the design life of the water scheme.

2.7.3.1 Electricity Supply Option Preferred Solution

While Options 2 and 3 would have lower pump equipment capital costs and require less energy to run, their longer pumping times would need more energy storage solutions to be incorporated into the design which add capital costs significantly higher than the potential savings in delayed pumping equipment, making Option 1 the preferred solution.

Considering the average annual daily demand and the guarantee life of the energy storage system this option can be further optimized. The most cost effective solution (from a Life Cycle Cost perspective) is to maximise pumping capacity during the day with solar, utilizing maximum water design velocity in the system and minimizing the size of the energy storage system for as long as possible. From the average annual daily demand curves it can be seen that up to 2040 (see Figure 23) the system only requires 9 hours per day of pumping at max capacity of which 6 hours of energy on average will be supplied by the solar system and only 3 hours energy storage required to support the system. After 2040 the required pumping durations will increase with associated energy demand. At that time, the already installed energy storage system will be close to end of design life and will require upgrades and/or replacement. Considering the current rate of advancement made with energy storage solutions associated with renewable energy the chance is very good that new and more effective solutions will be available for implementation at that stage.

The final selected Energy solution for the Northern Limb bulk raw water supply network is as follows:

Table 10: Northern Limb energy solution

Northern Limb		Flag Boshielo	Malgas	Doornfontein	Total
Pump Station	MWp	6.140	6.400	6.140	**18.680**
Total Pumping hours (2040)	Hrs/day	9.00	9.00	9.00	
Solar PV Sun availability	Hrs/day	6.00	6.00	6.00	
Battery capacity required	Hrs/day	3.00	3.00	3.00	
Total power demand	**MWh/day**	**55.26**	**57.60**	**55.26**	**168.120**
Recommend PV install (x1.66 for battery charging)	MWp	10.23	10.66	10.23	**31.121**
Additional auxiliary battery capacity	MWh	4.50	4.50	4.50	**13.500**
Recommend battery installation	MWh	22.92	23.70	22.92	**69.540**
Substation (Power Factor = 0.66)	MVA	9.30	9.70	9.30	**28.303**

Northern Limb		Flag Boshielo	Malgas	Doornfontein	Total
Emergency Mobile Diesel Generator	MW	1.00	1.00	1.00	**1.000**

2.7.4 Project Implementation Approach

The contracting approach to implement the scope will follow the NEC3, Option A, EPC fixed price lump sum, because it allocates the Risk for Engineering & Design, Procurement and Construction to the contractor, while the Risk for Funding and Operations in this project will sit with the owner. This allows for the consolidated wrap of liabilities in complex high value projects. Two sperate EPC contracts will be placed. One for the piping and pump stations ccope and one for the renewable energy solution. A separate contract will also be place for the condition assessment and refurbishment/upgrade of the already installed Phase 2B+ sections. Scheduling will be such that systems are simultaneously commissioned and the integrated system performance tested. These different contracts will be integrated by a Project management consultant (PMC) supporting the PMU. Any subcontractors will be contracted and managed directly by the EPC contractors. The long lead items will be identified during the bidding process and orders will be placed by the Owner in collaboration with the EPC Contractors to ensure that the items purchased will arrive on site as close to date of installation and commissioning as possible. The risk for free issue items remain with the EPC to ensure items are to specification and fit for purpose. For more information, refer to the Commercial Case.

2.7.5 Implementation Schedule

Key early start implementation dates are as follows:

Table 11: Northern Limb implementation schedule

1. Piping and pump station	
EPC contracts award	November 2023
Long lead order placement	December 2023
Construction commencement	January 2024
Start of commissioning	January 2026
Integrated performance test	June 2026
2. Renewable energy solution	
EPC contracts award	November 2023
Long lead order placement	December 2023
Construction commencement	January 2024
Start of commissioning	January 2026

Integrated performance test	June 2026
3. Phase 2B+ refurbishment / upgrade	
Condition assessment	June 2023
EPC contracts award	November 2023
Construction commencement	January 2024
Start of commissioning	January 2026
Integrated performance test	June 2026

2.8 Bulk Potable Water Supply

The bulk potable water supply scope is defined as the water infrastructure components starting from the inlet to the Water Treatment Works, upgrading the raw water to potable water quality, up to the command reservoir from where reticulation to communities will commence.

2.8.1 Water Treatment Works

The new Water Treatment Work (WTW) projects associated with the bulk potable water supply will be designed to deliver water treatment capacity of 80 Ml/day out of the available 94 Ml/day potable water allocated for social water. Aligned to a key OMM Programme objective to maximise the use of available data, designs and infrastructure, two completed WTW preliminary designs, followed by partially completed detail designs, performed by Zutari for the Mogalakwena Local Municipality, prior to the projects been stopped due to funding availability, were identified for incorporation into the OMM Programme bulk potable water supply scope for the Northern Limb. To complete the available detail designs and build on the experience and knowledge of the designers involved in the projects, the contract with ZNJV was expanded to include this scope to finalise these designs and perform the required project and commercial activities up to Full Business Case for the units.

2.8.1.1 Northern Limb

In 2007 the Feasibility Study of the Olifants River Water Resources Development Project (ORWRDP) for Mogalakwena Local Municipality was completed and the Mogalakwena Water Master Plan was adopted. The Mogalakwena Water Master Plan established the need for a number of geographically distinct Water Treatment Works, namely: a Mokopane WTW and a Sekuruwe WTW, which will treat the water from Flag Boshielo Dam to cater for the more rural constituencies of the municipality close to Mokopane and north of the Sekuruwe WTW.

2.8.1.1.1 Selected Solution

Two options for supplying potable water were considered related to the placement of the treatment facility in relation to the bulk supply scheme. The first was to develop one facility at the Farm Pruissen and the alternative was to provide two facilities within the two water distribution areas. The first option would imply that two pipelines would be required from Pruissen, both potable and raw water, as both are needed by the water users. This was reviewed and deemed to be too costly, and the saving provided by developing one treatment facility would be less than the cost of the two pipelines.

The Sekuruwe and Mokopane WTWs are new plants which will be constructed on greenfield sites. Zutari, a member of the ZNJV, commenced the design of these plants under a separate appointment for the Mogalakwena District Municipality (MDM). Unfortunately, the MDM was placed under administration before the design and procurement documentation could be completed, however the design was very far advanced and almost complete. The existing designs will be used to expedite the procurement process and accelerated water supply to communities.

The preliminary designs of the Mokopane WTW and the Sekuruwe WTW were developed and summarised in Attachments B3 and B4: “Concept & Viability Report: Water Treatment Works at Mokopane & Sekuruwe” issued in May 2016 .

The original designs for the two works were 98Ml/d for Mokopane and 42Ml/d for Sekuruwe to be implemented in three and two phases respectively. However, the OMM Programme have an allocation of 47 Ml/d from the Flag Boshielo Dam for potable water for the Northern Limb. As a result and to prevent the cost associated with redesign, the capacities for the Mokopane WTW and the Sekuruwe WTW have been limited to 28Ml/d and 21Ml/d matching the Phase 1 designs of the two WTWs respectively.

Mokopane WTW

The design of the Mokopane WTW was largely complete when Zutari was instructed to stop work on the project. This design will be prepared as a reference design for the OMM Programme EPC Tender. The WTW is located on a hill south-east of the town of Mokopane and is located such that flow to the works can flow from the farm Pruissen to the WTW by gravity, and that the WTW can supply the respective supply reservoirs to Mokopane by gravity. The design utilises direct filtration to reduce the area of the facility, while also keeping the operational requirements of the works as simple as possible.

The design capacity of the works was previously 98Ml/d to be constructed in three phases of 28Ml/d (Phase 1A), 21Ml/d (Phase 1B) and 49Ml/d (Phase 2). The OMM Programme instructed the design consultant that the Mokopane WTW capacity must be reduced to 28Ml/d thus equating to Phase 1A only. This capacity will be achieved by operating the plant over 24-hours daily with sufficient redundancy that if any individual process unit were to fail a spare unit would be available to ensure that the flow is met. All redundant infrastructure due to the reduction in plant capacity will be removed or reduced in the design accordingly.

Sekuruwe WTW

The design of the Sekuruwe WTW was also largely complete when Zutari was instructed to stop work on the project. The WTW is located on a portion of land immediately North of the town of Sekuruwe and is located such that raw water can flow to the works by gravity, however the water would need to be pumped to the respective command reservoirs.

The design capacity of the works was previously 42Ml/d to be constructed in two phases of 21Ml/d (Phase 1A) and 21Ml/d (Phase 1B). The OMM Programme have instructed the design consultant that the Sekuruwe WTW capacity be reduced to 21Ml/d thus equating to Phase 1A only. This capacity will be achieved by operating the plant over 24-hours daily with sufficient redundancy that if any individual process unit were to fail a spare unit would be available to ensure that the flow is met.

2.8.1.1.2 Project Implementation Approach

The WTWs will be implemented as NEC3 Option A EPC contracts. To ensure continuity of design the current design consultant will be given the opportunity to bid for the PMC role. Before submission into the market for EPC contracts the current detail designs will be completed and WTW supporting infrastructure for each plant will be scaled back to match requirements for Phases 1A respectively.

The required environmental and water use license processes have not commenced for the two WTWs sites of Mokopane and Sekuruwe. The only work that was undertaken was an application that was submitted to the Limpopo Department of Economic Development, Environment and Tourism (LEDET) to enquire if a Waste Management License would be required. The Department confirmed that the waste to be generated by the WTW will not be classified as hazardous waste and therefore a Waste Management License will not be required. All regulatory requirements will be completed prior to appointing the successful EPC Contractor.

2.8.1.1.3 Implementation Schedule

As part of the OMM Programme's objectives to accelerate the supply of water to communities in the defined region, the target is set to match the construction schedule of the Mokopane and the Sekuruwe Plants with the schedule of the bulk raw water supply through the Phase 2B&2B+ pipeline & pump stations. The available treated water will then be tied in to existing command reservoirs and reticulation systems currently not fully utilised, while the remainder of the potable water reticulation scope is completed. The actual anticipated timelines are as follows:

Table 12: Anticipated timelines

Milestone	Date
Kick-off	February 2023
Full Business Case Report and Final Funding Submission	Sep 2023
Ready to start Construction	January 2024
Construction duration	24 months
Completion	December 2025

Note: Dates are based on the assumption that regulatory requirements such as Environmental Assessments and regulatory licenses together with land acquisition can be completed in parallel with detail design.

2.8.1.2 Eastern Limb

Potable water infrastructure development in the Eastern Limb has been very slow despite the availability of the Association's bulk raw water scheme supply connections since 2002. There are four areas currently being serviced with potable water in the Eastern Limb, one being communities south of the Olifantspoort WTW, two; Burgersfort from the Mooihoek Water Treatment Works (WTW) together with a second potable line running west from the Mooihoek WTW, three; the Steelpoort WTW and four; the Jane Furse potable line from the Ga-Malekana WTW.

The OMM Programme is mandated to support the treatment of an additional 42.5 Ml/d by refurbishing and/or expanding existing WTWs and building new WTWs.

2.8.1.2.1 Selected Solution

The Eastern Limb WTWs will be supplied with bulk raw water via respective pipelines from the De Hoop Dam with the exception of the WTW along the line for Hovercraft to Clapham which would receive feed water from the Havercroft abstraction works on the Olifants River downstream of the Flag Boshielo Dam. The water sources will be characterised and a suitable treatment process determined if not aligned with the current Northern Limb WTW designs.

Where water quality data is not sufficient for the water sources for each of the plants, an allowance was made to validate the water quality data by allowing for targeted water quality testing. This would be limited to three samples from each of the water sources. It is further assumed that the topographical and geotechnical conditions on the respective sites would be relatively straight forward and would not require any earth retaining structures, piling, major soil reconditioning, etc.

It is anticipated that the process and mechanical designs for the WTWs fed from the De Hoop Dam and Olifants River abstraction works would be similar across the plants, and only specific local requirements would differ, such as pumping head, location of equipment, etc. the same design concepts from the Northern Limb can be utilized for the Eastern Limb new WTW facilities. Similarly, the electrical design within the plant would be similar, however the power supply to each site would be unique. This approach will optimize design costs through repeatability as well as future operating costs and spare holding.

Other aspects such as specifications would likely already be able to leverage the efforts made in preparing and finalising specifications and tender documentation on the Northern Limb WTWs and this efficiency has been allowed for in the estimate.

The civil and structural design for each plant would be similar in concept, but unique in detail. The Mooihoek WTW, Spitskop WTW and Ga'Malekana WTW are existing facilities operated by Lepelle Northern Water. In collaboration with Lepelle Northern Water and the WSA, condition assessments will be performed at these WTW and upgrades implemented as required.

Discussions with DWS indicated that approximately 30Ml/d new WTWs will be required, with the remainder of the water allocation integrated into the existing WTW. The Options Framework approach was used to select the most optimal option for the Eastern Limb WTW site locations and capacities. The first area investigated was the region south of the Lepelle Northern Water Olifants Poort WTWs close to the existing Association operating facility at Havercroft. The following options were analysed for a WTW downstream of the Havercroft Abstraction Works:

Table 13: Analysis of options downstream of the Havercroft Abstraction Works

	Croydon	Havercroft
Capital		Higher level of integration with existing infrastructure
Operations		Optimize use of existing operational personnel Lower pumping costs
Technical complexity	Steep slope	
Electrical supply	Not available	Eskom available
Construction access	New access required	Use existing
Security	Upgrade required	Integrated with existing operating facility

	Croydon	Havercroft
Proximity to end users	No differentiation	No differentiation
Social dynamics with end users	No differentiation	No differentiation
EIA	Basic Environmental Assessment	Basic Environmental Assessment
Land & Rights	Sufficient land available for establishment of WTP and future expansion	Sufficient land available for establishment of WTP and future expansion
Regulatory obligations	No Potable Water License	Partial Potable Water License available - can be extended

The location close to the Havercroft Pump Station is the selected site taking advantage of integration opportunities with the existing Association facilities. This new facility supplied from the Flag Boshielo Dam will service District A as represented on the OMM Programme Scope Map. The design capacity of the facility will be 10 Ml/d from where the potable water will be pumped to the respective command reservoirs. As with the treatment facilities in the Northern Limb, the capacity of the treatment plant will be achieved by operating the plant over 24-hours daily. Sufficient redundancy will be allowed for such that if any individual process unit were to fail a spare unit would be available to ensure that the flow is met.

The next area identified that will require additional WTWs is between Mooihoek and Ga-Malekana. This includes the industrial and residential expansions in the Steelpoort area such as the Kadoma Industrial Park, Fetakgomo Tubatse Industrial Park (Special Economic Zone), Steelpoort residential expansions and surrounding communities:

Table 14: Analysis of additional WTWs between Mooihoek and Ga-Malekana

	Ga-Malekana (10 Ml/d) & Steelpoort (10 Ml/d)	Spitskop (20 Ml/d)	Ga-Malekana (10 Ml/d) & Spitskop (10 Ml/d)
Capital	Standalone facilities duplication of support infrastructure	Economy of scale	Standalone facilities - duplication of support infrastructure
Operations	New operating facilities	Integration with Spitskop pump station	1. New operating facility for Ga-Malekana 2. Integration with Spitskop pump station
Technical complexity	New 10 Ml/d designs	Repeat of Sekuruwe Design	New 10 Ml/d designs
Electrical supply	1. Eskom available 2. Limited supply at Steelpoort	Eskom available	Eskom available at Spitskop

	Ga-Malekana (10 Ml/d) & Steelpoort (10 Ml/d)	Spitskop (20 Ml/d)	Ga-Malekana (10 Ml/d) & Spitskop (10 Ml/d)
Construction access	1. New access to be established 2. Potential clash in servitudes with other contractors expanding Ga-Malekana WTW 3. Steel bridge poses a access issue for Ga-Malekana	Use existing i.e. use Southern Extension-2 project access	1. New access to be established for Ga-Malekana 2. Potential clash in servitudes with other contractors expanding Ga-Malekana WTW 3. Steel bridge poses a access issue for Ga-Malekana
Security	New security sites	Integrate with existing	New security site at Ga-Malekana Integrate with existing at Spitskop
Proximity to end users	Far from high demand potential users in Spitskop	WTW halfway between Steelpoort and Ga-Malekana with large demands potentially at Kadoma Industrial Park and Fetakgomo Tubatse Industrial Park	1. Spitskop WTW close to large demands potentially at Kadoma Industrial Park and Fetakgomo-Tubatse Industrial Park 2. Close to Ga-Malekana communities
Social dynamics with end users	Construction within community boundaries	Construction distant from communities	Construction within community boundaries for Ga-Malekana
EIA	Basic Environmental Assessment	Basic Environmental Assessment	Basic Environmental Assessment
Land & Rights	Land not available at Steelpoort for expansion	Sufficient land available next to Spitskop Pump Station	Sufficient land available
Regulatory obligations	Existing Potable Water Licenses can be expanded for both the WTWs	No Potable Water License	Ga-Malekana can be expanded New Potable Water License required for Spitskop

From the three options that were considered for supplying potable water between Mooihoek and Ga-Malakane related to the placement of treatment facilities in relation to the bulk supply scheme the option to develop a 20 Ml/d treatment facility in the vicinity of the Spitskop Pump Station would be the preferred solution. This option is the most centrally located and exploit integration opportunities with the existing Association pump station. This selection also open the opportunity to re-use the already completed design performed for the Sekuruwe WTW in the Northern Limb

This new facility will service District B & C as represented on the OMM Programme scope map. The design capacity of the facility will be 21 Ml/d (repeat design of the Sekuruwe WTW) and due to the location of the facility, raw water will be gravitated to the facility from De Hoop Dam. This treatment facility will leverage the advantages and efficiencies that have been pointed out in the Options Framework above. As with the treatment facilities in the Northern Limb, the capacity of the treatment plant will be achieved by operating the plant over 24-hours daily. Sufficient redundancy will be allowed for such that if any individual process unit were to fail a spare unit would be available to ensure that the flow is met.

2.8.1.2.2 Project Implementation Approach

The OMM Programme wants to standardise on all plants in terms of the equipment and treatment technologies used. As a result the specifications developed for the Northern Limb WTWs will be utilised to produce the Eastern Limb WTW specifications more efficiently. The WTW be implemented as NEC3 Option A EPC contracts. To ensure continuity of design, the current design consultant will be given the opportunity to bid for the PMC role. Environmental and regulatory permits still needs to be obtained and it is assumed that this can be completed together with land acquisition in parallel with detail design.

2.8.1.2.3 Implementation Schedule

New WTWs in the Eastern Limb will follow the planning associated with the non-accelerated OMM Programme scopes with the Full Business Case Report targeted for June 2024.

Table 15: Implementation milestones

Milestone	Date
Scoping Complete (Pre-Feasibility Study)	June 2023
Full Business Case Report and Final Funding Submission	June to September 2024
Commence with Construction	January 2025
Construction duration	30 months
Completion	June 2027

2.8.2 Potable Water Bulk Distribution and Reservoirs

Potable water bulk distribution and reservoir scoping will be completed as part of the remainder of the OMM Programme Pre-Feasibility Study Phase covering the total mandated scope. However, some opportunities have been identified in the Northern and Eastern Limbs for accelerated implementation through refurbishment and upgrade of existing underutilized bulk potable infrastructure in the regions.

2.8.2.1 Northern Limb

2.8.2.1.1 Accelerated Solution

The Northern Limb potable water supply project sets out to serve communities along the pipeline route of project 2B+, as well as to the water stressed community of the Mogalakwena Local Municipality (MLM). A large number of boreholes have been sunk in the MLM area to assist the verge communities and others with potable water, however the drought conditions that have been persisting in the past indicated that the reliance on boreholes are rather seasonal, and not a permanent solution. Thus, an accelerated approach to the implementation of the OMM Programme potable water solutions will alleviate the plight of the verge communities. The use of any current existing and general reticulation network which will aid in fast tracking construction and therefore, potable water supply to the identified communities.

The Engineering Consultants designing and implementing extensive scopes for the Mogalakwena Local Municipality in the Sekuruwe region as well as supporting the municipality with the Mogalakwena Municipality Water Master Plan development were identified. Linked to the available design data and not fully utilized, but available infrastructure in the region, the intent, following approval of the WSA, is to complete a scoping study for bulk potable water distribution and reticulation as part of the OMM Programme Pre-Feasibility Study Phase utilizing the knowledge and experience of the identified consultants.

A condition assessment of the existing infrastructure will be done to confirm the amount of work that is to be executed to achieve successful integration with the new WTWs and required new potable water distribution designs for effective bulk potable water supply in the identified communities. The scoping study will also include the condition assessment of the portions of the current municipal rising main pipeline that are relevant to OMM Programme mandate, from "Piet se Kop" near Mokopane to the Sekuruwe WTW.

The project sets out to serve people in 46 rural communities as illustrated in the table below over and above augmenting water to the town of Mokopane.

Table 16: Community names and estimated populations

Community Name (as per Mogalakwena Water Master Plan)	Estimated population
Mzumbana South	5688
Mzumbana North	5688
Masodi	10631
Mmalepetleke	3663
Sekgoboko	5411
Kgubudi	7988
Magongoa	1840
Tshamahanzi	17467
Sekuruwe	3645
Mohloto Ga-Puka	3493
Mohloto Ge-Sekhaolelo	5341
Malekana	6737
Machikiri	3584
Ramorulana	1379
Mabuela	3397
Mmahlongo	1138
Masoge	667
Kwakwalate	610
Mabusela	1531
Mesopetania	3297
Phafola	3449
Ga-Tshaba	1280
Matopa	1029

Community Name (as per Mogalakwena Water Master Plan)	Estimated population
Fothane	502
Masoge	634
Maala Pherikise	737
Scheming	4217
Hans	2468
Lelaka	307
Ga-Choekoe	851
Seema	553
Matlou	3375
Sterkwater Mountainview	1526
Ga-Pila	4251
Masahleng	3148
Danisane	3393
Masenya	733
Mabusela Sandsloot	2686
Leslelo	166
Millenium Park	1928
Witrivier	4940
Basogadi	917
Malakong	1 134
Rooiwal	2 054
Ditlotswane	1 058
Sepharane	1 396
Total Estimated Population & Households (2020 Figures)	**141 927**

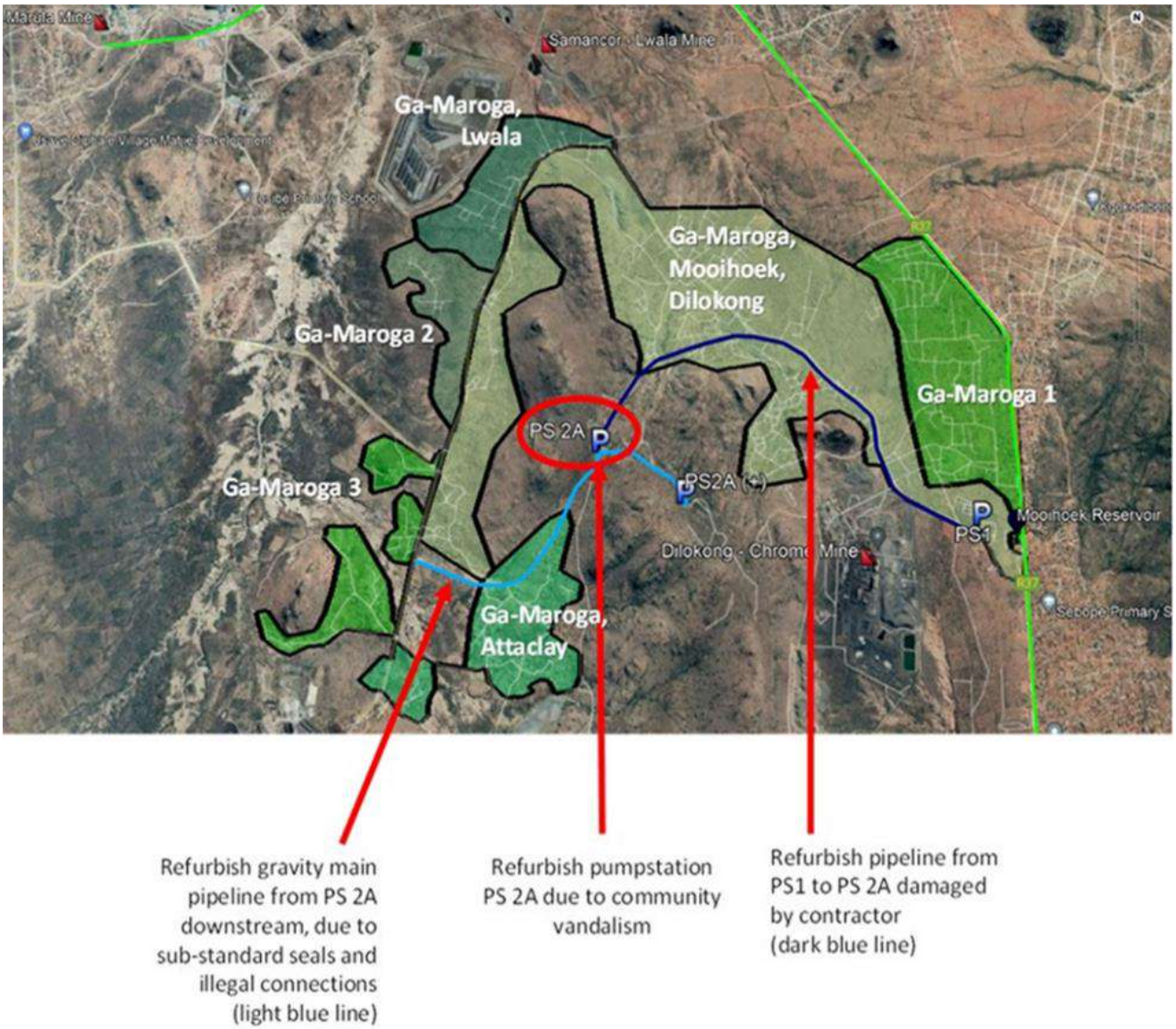
2.8.2.2 Eastern Limb

2.8.2.2.1 Accelerated Solution

Bulk raw water is currently available in the Eastern Limb linked to the Phase 2C pipeline and the Association's network. Three areas with underutilized, vandalised or "dry" infrastructure were identified for accelerated bulk potable water supply. The following specific projects have been identified to allow for the accelerated supply of potable water in the Eastern Limb:

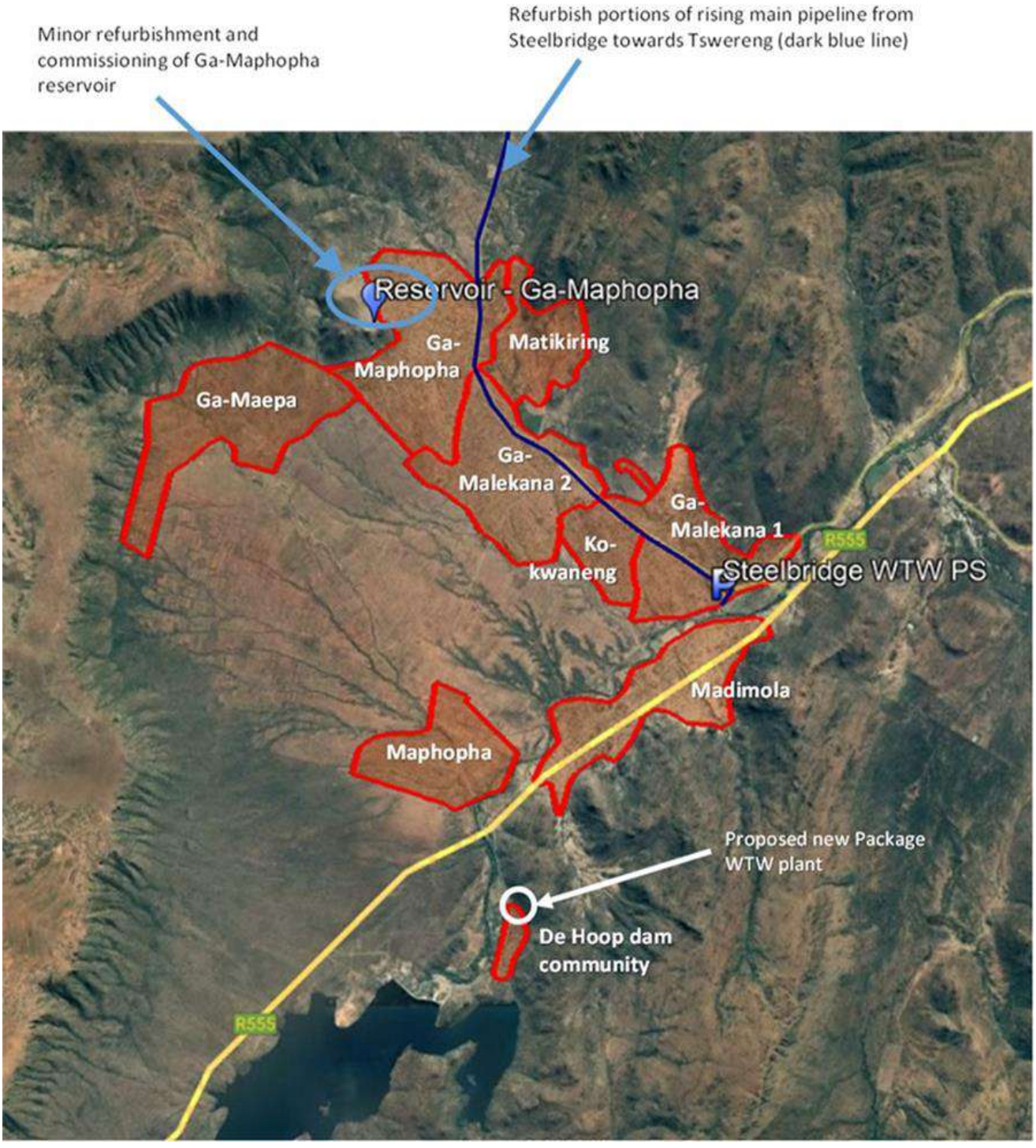
1. Refurbishment of existing bulk potable infrastructure in two (2) key communities of the OMM Programme, with the intent to provide reticulation (to a yard connection) as separate projects namely:
   a. Lebalelo Central: Mooihoek and Ga-Maroga communities (close to the DWS / Association Mooihoek complex and Tubatse Alloy Smelter, Dilokong Chrome Mine, Samancor Lwala Mine and Sail Group Black Chrome Mine) – potential to serve 15 000 people based on the separate reticulation scope;

Figure 24: Lebalelo Central: Mooihoek and Ga-Maroga communities



   b. Ga-Malekana / De Hoop communities (near Steelbridge and Jane Furse) – potential to serve 24 000 people on the separate reticulation scope.

Figure 25: Ga-Malekana / De Hoop communities



2. The Jane Furse pipeline refurbishment which is an extension of the potable bulk water supply line for Project 2 above. Although not included in the OMM Programme funding mandate, the refurbishment of the line will be extended all the way to Jane Furse, but that section of the scope will be fully funded by DWS through RBIG funding.

These potable water systems will be integrated with existing Water Treatment Works at Mooihoek and Ga-Malakane respectively currently operated by Lepelle Northern Water for the WSA. To ensure sufficient supply capacity, in collaboration with Lepelle Northern Water and the WSA, condition assessments will be performed at the WTW and upgrades implemented as required.

2.8.2.2.2 Project Implementation Approach

The timelines for the implementation of the bulk potable water supply projects in the Northern Limb is as follows:

Table 17: Implementation milestones

Milestone	Date
Kick-off	April 2023
Condition Assessment Completed	May 2023
Refurbishment design and estimate	Aug 2023
Commencement of refurbishment scope	Jan 2024
Construction duration	18 months
Completion	June 2025

2.9 Energy Solution

The pumping of large volumes of water has a high energy demand. Up to 30% of the water tariff (excluding capital repayment) is made up of the electricity cost component. The intent of the alternative energy supply investigation is to reduce overall energy costs by comparing capital investment into renewable energy against ESKOM and PPI power purchase tariffs as well as to improve reliability of current supply with ongoing high levels of Load Shedding. The solution should also be more cost effective and provide better escalation predictability of energy supply.

Historically, ESKOM was a cheap option, and most of the Eastern Limb's existing infrastructure is connected to ESKOM. However, the Northern limb are mostly rural with very little to no ESKOM grid penetration. ESKOM is no longer reliable, with continuous load shedding and power failures experienced the past couple of years. ESKOM tariff increases over the past years were very unpredictable and excessive in some cases. Lastly, ESKOM's electricity is not "clean", with >80% of its generation still coming from coal based sources with a high CO2 footprint and not supporting the Association's Sustainable Development Goals.

As an alternative to ESKOM supply, there are many commercial renewable energy alternatives on the market that can compete with ESKOM's tariffs over the long term and is more 'green', supporting the OMM Programme's Sustainable Development Goals. For the purpose of the OMM Programme, the following options have been considered:

1. **Wind** – The wind resource was analysed using World Atlas for South Africa (WASA) data which provides an estimate of the wind speed at 100m above ground (typical wind turbine height);
2. **Solar PV** – The solar resource was analysed using SolarGIS Prospect, which provides an estimate of the annual irradiation and temperature for each site . There appears to be land in the vicinity of each site to facilitate a ground mount or floating solar PV (i.e. Flag Boshielo and Havercroft). Solar PV is easily coupled with storage mediums i.e. Li-Ion BESS;

3. **The Battery Energy Storage System (BESS)** – The sizing is based on the load required to be supplied, energy output time duration, land availability, environmental conditions, and lifespan. It is expected that all sites will have sufficient space for BESS systems in close proximity. This makes BESS systems suitable technology for consideration in distributed strategy i.e. installed at each pump station;
4. **Hydrogen fuel cells** – The hydrogen industry in South Africa is still in its infancy with few commercialised systems and technology providers – i.e. pilot programme currently underway with Anglo Mogalakwena haul truck vehicles. There is a global drive for green hydrogen production, however the timelines for maturity of commercialised hydrogen power systems is likely 7 – 10 years in South Africa and no largescale systems have yet been installed. The cost for hydrogen fuel cells is high when compared to traditional hybrid systems which are established technology for these applications;
5. **Hydroelectric** – The hydroelectric potential of the Flag Boshielo and De Hoop Dams and their downstream rivers – Olifants River and Steelpoort River were assessed at a very high-level. The region is subject to very low flow rates, which makes the hydroelectric generation potential very low, i.e. ≤ 1.1MW for De Hoop and ≤ 0.74 MW for Flag Boshielo when using the P50 average daily flow rates. Given the complexity, capital cost and the low estimated potential associated with installation of hydropower at the dams or run-of-river schemes, hydropower is not considered a feasible source of generation; and
6. **Diesel or Natural Gas Reciprocating Generator** – Albeit not 100% green Diesel and Gas generators are a very well-established generation source and often used in remote sites. These generators are reliable, fast acting, and allow for pump stations to operate during loadshedding times, as well as provide black starts. The fuel supply costs, storage, security, and supply remain risks which require proactive planning and risk mitigation. The operations and maintenance schedules, costs, and logistics are some weaknesses of the solution. These generators have additional functionality when implemented as an additional energy source for hybrid solutions, typically with solar PV and BESS for reduced fuel consumption. These generators are therefore considered suitable for inclusion as a supplementary technology.

These alternative solutions can be applied in different configurations and/or combinations within the network that can be categorised into 3 main formations:

1. **Distributed system** – comprises of energy generation and/or storage systems collocated at each of the pump station sites. This strategy can be further categorised into an off-grid solution;
2. **Centralised system** – makes use of an energy generation and/or storage facility which is not located in the same region as all of the pump stations. The electricity is supplied to the various pump stations using electricity distribution infrastructure owned by Eskom (known as wheeling); and
3. **Hybrid system** – combines multiple energy sources offering a wide range of functionality dependent on the pump station requirements. Hybrid systems can be applied as solutions for pump stations that are centralised or distributed, and off-grid or with grid backup. The technology mix within hybrid systems can also be optimised for specific applications and load profiles and hence the hybrid solution to be a highly capable technology for consideration.

An energy option evaluation was commissioned (see Attachment B7 – Generation SWOT Analysis) and based on a Levelised Cost of Energy (LCOE) the proposed Alternative Energy options that can be effectively integrated into the OMM Programme Water Distribution Network electricity supply network is Solar PV and Battery Energy Storage System (BESS).

A site with a solar resource exceeding 1900 kWh/m2/annum is considered to be good for the installation of solar PV. The solar resource for all of the sites assessed in this study exceed 2000 kWh/m^2/annum and therefore solar PV is considered to be very well suited for this application. Combined with Battery Storage, the pump scheme can operate during the off-peak hours and/or when the son does not shine.

A partially bespoke offgrid energy solution is being considered for the OMM Programme given the high cost of access to the Eskom network. This is still however not the most cost effective option available as sharing the energy infrastructure across mines, agri, commercial users and municipalities could significantly reduce the cost of energy infrastructure for all in this geographic energy demand centre. This is currently not achievable due to regulatory constraints and excessive wheeling charges. Sharing of energy and water infrastructure would optimise the cost for end users. This opportunity of sharing energy infrastructure costs will continue to be explored in the interim to reduce the overall OMM Programme cost

2.9.1 Northern Limb Preferred Solution

The raw water network and associated pump station in the Northern Limb are not close to any ESKOM electricity supply network. Providing access to the ESKOM electricity distribution network has turned out to be very costly and will not meet the required project timelines. Providing a separate Centralised Solution for the Northern Limb sites without grid connection is therefore also not feasible and only off-grid options was considered. Guided by the recommendations from the energy option evaluation study, individual Hybrid (Solar PV + BESS (Li-ion)) systems for each of the Northern Limb sites would be most cost effective compared to new ESKOM grid connections or the base-case (diesel generation only). The Hybrid (Solar + BESS (Li-ion)) + emergency diesel generator system has the lowest NPV (Net Present Value) and LCOE for a distributed off-grid system.

From the average annual daily demand curves it can be seen that up to 2040 the system only require 9 hours per day of pumping at max capacity of which 6 hours of energy on average will be supplied by the solar system and only 3 hours energy storage required to support the system. After 2040 the required pumping durations will increase with associated energy demand. At that time, the already installed energy storage system will be close to end of design life and will require upgrades and/or replacement. Considering the current rate of advancement made with energy storage solutions associated with renewable energy the chance is very good that new and more effective solutions will be available for implementation at that stage.

The final selected energy solution for the Northern Limb bulk raw water supply network is as follows:

Table 18: Northern Limb final energy solution

Pump Station		Flag Boshielo	Malgas	Doornfontein	Total
Power Demand	MWp	6.140	6.400	6.140	18.680
Total Pumping hours (2040)	Hrs/day	9.00	9.00	9.00	
Solar PV Sun availability	Hrs/day	6.00	6.00	6.00	
Battery capacity required	Hrs/day	3.00	3.00	3.00	
Total power demand	**MWh/day**	**55.26**	**57.60**	**55.26**	**168.120**
Recommend PV install (x1.66 for battery charging)	MWp	10.23	10.66	10.23	31.121
Additional auxiliary battery capacity	MWh	4.50	4.50	4.50	13.500
Recommend battery installation	MWh	22.92	23.70	22.92	69.540

Pump Station		Flag Boshielo	Malgas	Doornfontein	Total
Emergency Mobile Diesel Generator	MW	1.00	1.00	1.00	1.000

2.9.2 Eastern Limb Preferred Solution

Unlike the Northern Limb, the Eastern Limb has access to ESKOM grid connections with current pump stations operation 100% on ESKOM supplied electricity. However, ESKOM is no longer reliable, with continuous load shedding and power failures experienced the past couple of years together with high annual escalation in electricity tariffs has led to investigating alternative more reliable and predictable energy solutions. The Eastern Limb assessment has indicated the most cost-effective solution is a distributed strategy for the with grid connected, smaller solar PV + BESS (Li-ion) solutions at each pump station to offset the Eskom peak tariff. ESKOM off-peak tariff where available without the additional costs associated with long distance grid connections, still remains the most cost effective electricity supply option.

The final selected energy solution for the Eastern Limb bulk raw water supply network is as follows:

Table 19: Eastern Limb final energy solution

Pump Station		Havercroft	Clapham	Spitskop	Dwarsrivier	Borwa	New
Power Demand	MW	4.2	1.0	1.6	1.6	0.6	1.6
ESKOM Connection	MVA	8.0	2.0	1.5	1.3	0.8	New
Total Pumping hours	Hrs/day	12	12	19	12	12	19
Solar PV Sun availability	Hrs/day	6	6	6	6	6	6
Battery capacity is required	Hrs/day	6	6	13	6	6	13
Total power demand	**MWh/ day**	**50.4**	**12.0**	**30.4**	**19.2**	**7.2**	**30.4**
Recommend PV install	MWp	4.2	1.0	1.6	1.6	0.6	1.6
Recommend Battery install	MWh	16.8	4.0	6.4	6.4	2.4	6.4

2.9.3 Project Implementation Approach

The energy solution projects will be implemented concurrently to the pipeline and pump-station projects, deploying specialised EPC contractors in the field of renewable energy. The contracting approach to implement the scope will follow the NEC3, Option A, EPC fixed price lump sum, because it allocates the Risk for Engineering & Design, Procurement and Construction to the contractor, while the Risk for Funding and Operations in this project will sit with the owner. This allows for the consolidated wrap of liabilities in complex high value projects. Any subcontractors will be contracted and managed by the EPC contractor. The long lead items will be identified

during the bidding process and orders will be placed by the Association in collaboration with the EPC to ensure that the items purchased will arrive on site as close to date of installation and commissioning as possible. The risk for free issue items remain with the EPC to ensure items are to specification and fit for purpose.

Solar PV footprints will vary between 2 hectares and 14 hectares and land will be purchased next to the current and future pump stations. Where large suction reservoirs are available floating the Solar PV may also be considered.

2.9.4 Implementation Schedule

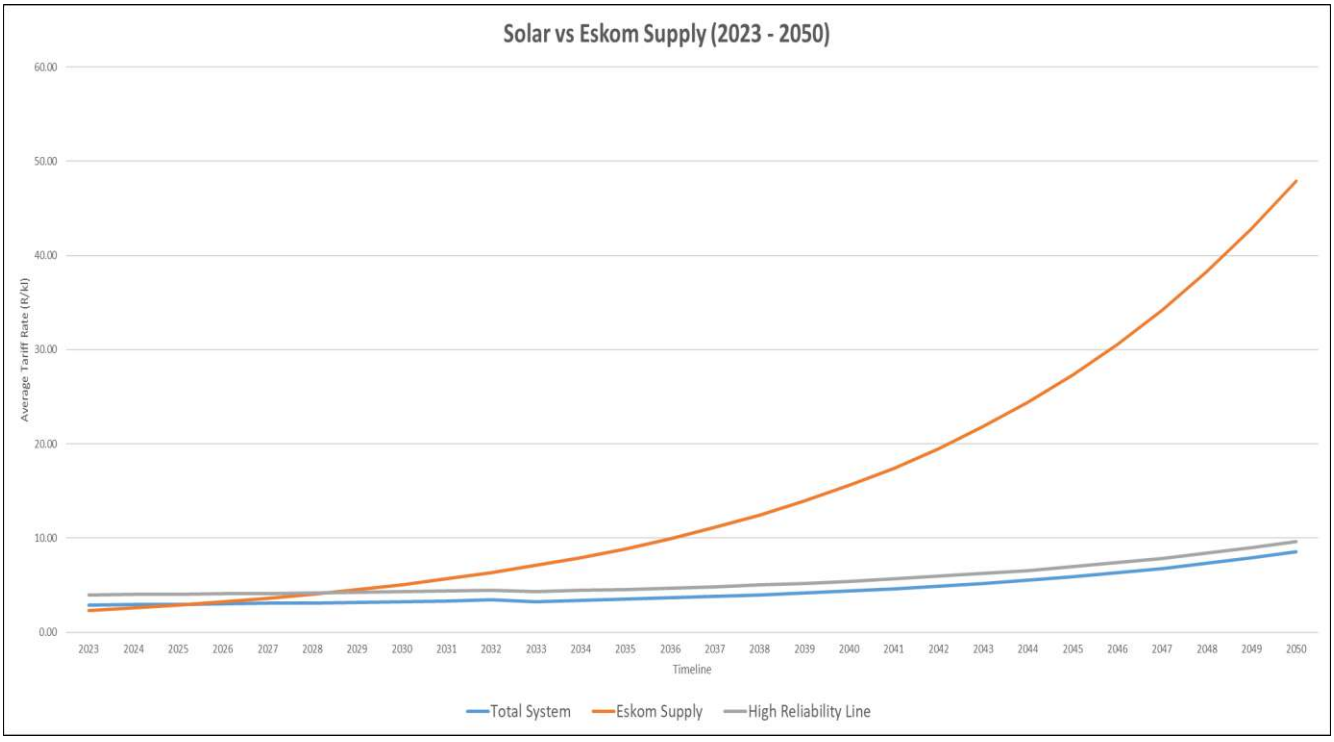
The execution of these renewable energy solutions, considering the size can be executed in parallel to Bulk Raw Water Projects in the Northern Limb and Eastern Limb respectively.

Table 20: Implementation schedule

Renewable energy solution	
EPC contracts award	November 2023
Long lead order placement	December 2023
Construction commencement	January 2024
Start of commissioning	January 2026
Integrated performance test	June 2026

2.9.5 Total System Tariff Rates

Figure 26: Solar vs Eskom supply (2023 – 2050)



The implementation of the Solar PV panels (including BESS for the Northern Limb and excluding BESS for the Eastern Limb) for the total system were compared against the Eskom electricity supply and the High Reliability Supply (PV Panels including BESS at the Eastern Limb). As per the graph, the cumulative average tariff rate to implement the PV panels including BESS is more cost-effective than electricity supply from Eskom (taking into consideration that Eskom will require capital investment of infrastructure for the Northern Limb). The high reliability line is observed as the most expensive solution, however the most reliable to circumvent the impact of intermittent electricity supply from Eskom (load shedding).

The ESKOM electricity emission factor for South Africa (2021) was 1.06kg CO_2 emitted/kWh. This selected energy solution will reduce the Association's CO_2 emissions associated with Bulk Raw Water Supply by 69%, supporting the OMM Programme Sustainable Development Goals (SDG).

Table 21: CO2 saving

Pump Station	Annual Demand [MWh] 2040	ESKOM Replacement	Saving on CO2 [MT CO2/annum]
Flag Boshielo	21 024	100%	22.29
Malgas	21 024	100%	22.29
Doornfontein	21 024	100%	22.29

Pump Station	Annual Demand [MWh] 2040	ESKOM Replacement	Saving on CO2 [MT CO2/annum]
Sub Total NL	**63 072**		**66.86**
Havercroft	18 396	34%	6.63
Clapham	4 380	34%	1.58
Spitskop 1&2	11 096	34%	4.00
Dwarsrivier 1&2	7 008	34%	2.53
Barwa	2 628	34%	0.95
New Pump Station	11 096	34%	4.00
Sub Total EL	**54 604**		**19.68**
TOTAL CO2 Saving			**86.54**

2.9.5.1 Assumptions

The total energy system was calculated using the weighted average of the pump station electricity demand and calculated tariff rate. The cost for Solar PV field fully installed was estimated with the assumption of the solar PV sun average availability at 6 hours per day over the year. The total capital cost included costs associated with land acquisition, site specialist studies, backup emergency generators, management fees and contingency.

The annual repayment was done over 10 years at a 12.5% interest rate. As previously indicated the Northern Limb power supply was only designed to cater for electricity supply up to 2040. To allow for future capital spent to upgrade the system post 2040 matching the water demand curve, a 10 year capital payback period was selected for the renewable energy solution to enable additional future capital loans without increasing the anticipated water tariff.

The average all-inclusive Eskom rate (kWh, kVA, subsidies and admin fees) assumed was based on Ruraflex tariff structure. In addition, the capital cost required by ESKOM for infrastructure within the Northern Limb was assumed from their latest Cost Estimate Letter. The Eskom electricity supply was escalated at 11.9% (7% above CPI).

An average pump power efficiency factor of 1.54kl/kW was used across the total system.

2.10 Further Technical Studies

2.10.1 Hydraulic Model

As potential new members want to join the Association, an urgent short-term requirement to assess its critical scheme conveyance capacity capabilities and constraints has developed. Such a model will require the hydraulic analysis of the entire system in a holistic manner. The approach will focus on the steady state performance of the system which will inform the Association on the overall scheme capacity and associated constraints over a discreet time domain. Compilation of the hydraulic model requires the accurate definition of all the systems boundary conditions. The current focus is therefore on sourcing information on pipeline diameters, materials and internal linings, pump station performance data and reservoir levels and inlet controls. Once this information is

collated to an acceptable level of detail, the hydraulic model will be compiled with elevation data extracted from available public domain platforms. Critical boundary condition levels will be based on more accurate information.

The steady state performance of the model will be compared to system performance under known operating conditions to achieve an acceptable level of confidence in the system calibration and results.

With the model calibrated, a variety of 'what-if' scenarios will be defined in consultation with the Association and analysed. Based on the findings, critical capacity constraints and bottlenecks will be identified and specific system limitations and potential mitigating measures identified.

2.10.2 Condition Assessments / Refurbishment of Existing Scope

A number of in structure systems/components, already constructed, but in different forms of utilisation will be transferred into the OMM Programme scope for integration into the Association. As part of the OMM Programme economic model, Members contributing capital towards such infrastructure will receive credit against the future water tariff. In order to make sure that the infrastructure can be integrated a consultants was appointed to perform a condition assessment of the involved infrastructure and determine a scope of work to refurbish, if required, and upgrade or adapt the infrastructure, especially the safety, security and operating systems to match the current Association Operating and Maintenance Model. The first two infrastructure components that will be integrated into the Association will be the Phase 2C pipeline from De Hoop Dam to Steelpoort and the constructed Phase 2B+ pipeline between Piet-se-Kop and Sekuruwe. The latter will be refurbished, upgraded and adapted as required to be commissioned together with the new construction section of Phase 2B & 2B+ between Flag Boshielo Dam and Piet-se-Kop. The next systems to be taken over by the Association will be the Flag Boshielo and De Hoop Dams. Current available potable water infrastructure condition assessment for refurbishment and integration into the final system designs will be identified as part of the Pre-Feasibility Phase scoping following agreement with the WSAs.

2.10.3 Optic Fibre

Connectivity between infrastructure and network components for effective remote operations of the integrated linear network over vast distances is essential. To enable the most cost effective connection between components it was agreed to install optic fibre sleeves along the newly constructed pipelines to enable the use of an integrated optic fibre network. The largest cost associated with the installation of such a network is the trenching and civil works. With the trenching already available as part of the pipe network installation, costs associated with the optic fibre sleeve is almost insignificant and relates to the costs of the PVC sleeve only.

The Association does not intend to install its own network, but will rent in the service from established Internet Providers in the region. The same service providers will also be utilised to provide connectivity to schools and communities along the pipeline network.

2.11 Environmental Regulatory Requirements

The full detail OMM Programme Environmental Regulatory Execution Plan is presented in Attachment D1.

2.11.1 Environmental Authorisations

The following Environmental Authorisations was granted in support of the Phase 2B, Phase 2B+ and Phase F of the development:

- Phase 2B - DEAT 12/12/20/553 dated 16 October 2006, EMPR Amendment, Sub-Phase 2B dated 2016 – valid Environmental Authorisation. DFFE approved the proposal to amend the Environmental Management Programme Report (EMPr) on 29 February 2016;
- Phase 2B+ - issued to the Mogalakwena Local Municipality - LEDET 12/1/9/1-W120 dated 6 February 2017 – valid for 10 years – activities must commence before 6 February 2027; and
- Phase 2F - DFFE: 14/12/16/3/3/1/1626/AM1 dated 16 May 2022 - Valid Environmental Authorisation until 2 May 2027.

The following Environmental Authorisations require amendments:

- Phase 2B - DEAT 12/12/20/553 dated 16 October 2006 – Change of Implementing agent TCTA to Association;
- Phase 2B+ - LEDET 12/1/9/1-W120 dated 6 February 2017 – Move authorisation from Mogalakwena Local Municipality to the Association; and
- Phase 2B+ - LEDET 12/1/9/1-W141 dated 16 November 2017 – Split the authorisation as to move the two (2) Water Treatment Works (WTW) from Mogalakwena Local Municipality to the Association.

The following new Environmental Authorisations are required:

- Phase 2B - New WTW at Mokopane and Sekuruwe, scour discharge, borrow pits;
- Phase 2B+ - Scour discharge and silt management, borrow pits; and
- Phase 2F – Construction of pipelines, WTW at Havercroft and Spitskop, Upgrade of WTW at Ga-Malekana, Steelpoort and Mooihoek if required, scour discharge and sedimentation ponds, discharge of silt, borrow pits.

2.11.2 Water Use Authorisations

The following Water Use Authorisations was granted in support of the Phase 2B, Phase 2B+ and Phase F of the development:

- Scheme – Abstraction Licence – B191/2/250/1 dated 22 December 2022 and B191/2/250/1 dated 5 June 2007;
- Association – Activities within regulated zone of wetland / watercourses and water storage – B191/2/250/1 dated 22 December 2022; and
- Association – General Authorisation – Activities within regulated zone of wetland / watercourses – 27/2/2/B741/28/2 dated 12 October 2021 and 27/2/2/B571/13/3 dated 2 November 2021.

The following Water Use Authorisations are required:

- Phase 2B – river crossings, activities within the regulated zone of wetland areas, water abstraction, water storage and scour discharge;
- Phase 2B+ - river crossings, activities within the regulated zone of wetland areas, water abstraction, water storage, scour discharge and water treatment works silt management; and
- Phase 2F - river crossings, activities within the regulated zone of wetland areas, water abstraction, water storage, scour discharge and sedimentation ponds.

2.11.3 Dam Safety Permits

Dam Safety permits will be required for:

- Phase 2B – Storage Pruissen Reservoir; and

- Phase 2B+ - Storage Reservoir.

The following additional Environmental Permits might be required:

- Heritage Permits; and
- Biodiversity Protected Tree Permits.

2.11.4 Third Party Contractor Permits

The following additional non-environmental Third Party Contractor Permit might be required:

- Letter of Good Standing;
- Vehicle Licence;
- Certificate of Roadworthiness;
- Abnormal Loads Exemption permits;
- Remote Pilot Licences;
- Operation of Lifting Equipment Certificate of Training; and
- Personal Operating Licences.

2.11.5 Other Environmental Legislation

- National Legislation
  - National Environmental Management: Biodiversity Act (No 10 of 2004);
  - National Environmental Management: Waste Act (No 59 of 2008);
  - National Heritage Resources Act (No 25 of 1999);
  - National Road Traffic Act (No 93 of 1996);
  - Occupational Health and Safety Act (No 85 of 1993) and the Construction Regulations of 2014;
  - Hazardous Substances Act (No 15 of 1973);
  - Explosives Act (No 26 of 1956);
  - Basic Conditions of Employment Act (No 75 of 1997);
  - Promotion of Administrative Justice Act (No 3 of 2000);
  - Extension of Tenure Act (No 62 0f 1997);
  - Prevention of Illegal Eviction and Unlawful Occupation of Land Act (No 19 of 1998);
  - Development Facilitation Act (No 67 of 1995);
  - Municipal Structures Act (No 117 of 1998);
  - Traditional Leadership and Governance Framework Amendment Act (No 23 of 2009);
  - Local Government: Municipal Systems Act (No 32 of 2000); and
  - Legislation Pertaining to Relocation.
- Provincial Legislation
  - Limpopo Environmental management Act, 2003 (Act No. 7 of 2003); and
  - Limpopo Provincial Heritage Regulations (No. 103 of 2003).
- Local By-Laws
  - Lepelle – Nkumpi Local Municipality;
    - Noise Abatement and Prevention of Noise Bylaw
    - Refuse Removal Bylaw
  - Mookgophong Local Municipality;
    - By-laws relating to Water Supply
  - Ephraim Mogale Local Municipality;

- Waste Management By-law

2.11.6 Recommended Permitting Scenario

The recommended Permitting Scenario is as follows:

- Application 1: The undertaking of a Regulation 29 Amendment on Approved Environmental Authorisation 12/12/20/553 dated 16 October 2006;
- Application 2: The undertaking of a Regulation 29 Amendment on Approved Environmental Authorisation 12/1/9/1-W120 – 6 February 2017;
- Application 3: The undertaking of a Regulation 29 Amendment on Approved Environmental Authorisation 12/1/9/1-W141 dated 16 November 2017;
- Application 4: The undertaking of a Basic Assessment Process for New Environmental Authorisation (DMRE) - 6 Applications – 6 sites – Borrow Pit areas only;
- Application 5: The undertaking of a Scoping and Environmental Impact Assessment Process for New Environmental Authorisation (DFFE) – Listing 1 and Listing 2 Activities whilst including Listing 3 Activities;
- Application 6: The undertaking of a Water Use Licence Amendment and Consolidation on Approved Water Use Licence B191/2/250/1 dated 22 December 2022 and Temporary Licence B191/2/250/1 dated 27 July 2002; and
- Application 7: The undertaking of a Water Use Licence Application for New Water Use Licence (DWS).

2.12 Social Aspects

2.12.1 Community Areas Affected

The construction of Sub-phase 2B impacts the following community areas:

- Ward 13, 15 and 16 of Ephraim Mogale Local Municipality (EMLM) in Sekhukhune District Municipality (SDM);
- Ward 3 of Mookgophong Local Municipality (MLM) in the Waterberg District Municipality (WDM);
- Ward 9 of Lepelle Nkumpi Local Municipality (LNLM) of Capricorn District Municipality (CDM); and
- In Mookgophong Local Municipality ward 3 if affected. The land is mostly privately owned by commercial farmers and the Republic of South Africa.

The construction of Phase 2F impact three local municipalities from two district municipalities, namely:

- Sekhukhune District Municipality – Greater Tubatse Local Municipality (GTLM) and Fetakgomo Local Municipality (FLM) – wards 2, 3, 5, 7, 9, 10, 11 and 18; and
- Capricorn District Municipality - Lepelle Nkumpi Local Municipality (LNLM).

The Phase 2F area is dominated by tribal land. The main settlements along the route are Ditobeleng, Ga-Mashabela, Sealane, Manotwane, Ga-Selepe and Maroteng. The route traverses' extensive areas occupied by subsistence cultivation. 15 traditional authorities exists under the leadership of 15 Kgoši; namely, Kgoši Maroga, Kgoši Mafolo, Kgoši Selala, Kgoši Mashishi, Kgoši Manyaka, Kgošigadi Manyaka, Kgošigadi Kgwete, Kgošigadi Ntwampe, Kgoši Mashabela, Kgoši Nkosi, Kgoši Phasha, Kgošigadi Maesela, Kgoši Selepe, Kgoši Phasha and Kgoši Mphahlele.

2.12.2 Categories of Stakeholders and Their Interest in the Project

Initial stakeholder engagement was undertaken in 2015 and 2016. The main categories of stakeholders identified include the following:

Table 22: Categories of stakeholders identified and their interest in the project.

Stakeholder category	Impact of interest in the project
Landowners and residents:	
Commercial farmers	• Construction may impact on farming activities (e.g. dismantling of fences may lead to loss of livestock/ game) • May request off-takes from pipeline to supply water to farms
Mines	• Construction may interfere with mining activities/ mine infrastructure • Mines are intended as major beneficiaries of Sub-Phases 2C, D, & F of the project
Residents of townships & other residential areas	• The project may require the relocation of some households, or loss of some household assets (e.g. agricultural plots) • Construction activities (noise, traffic, etc.) may disrupt daily activities • Residents are intended as chief beneficiaries of water for domestic purposes (nearly 60% of households will benefit) • Employment opportunities during construction
Traditional Authorities	• May request off-takes from pipeline to supply water to community, and for farming practises • The project may require the relocation of some households, or loss of some household assets (e.g. agricultural plots)
Local authorities: District municipalities Local municipalities	• The project should be accommodated in municipal Spatial Development Frameworks (SDFs) • Ward councillors sometimes act as chief points of contact between project personnel and local communities • Enterprise development and socio-economic development initiatives associated with the project need to take into account municipal Integrated Development Plan (IDP) priorities • Responsible for establishing the water treatment and reticulation infrastructure to ensure that water from the pipeline is supplied to communities
Government departments & agencies:	
Department of Water & Sanitation (DWS)	• Responsible for issuing water use licences for any aspect of the project impacting on water bodies • Also the proponent for ORWRDP-2. Assumes liability associated with environmental non-compliance during construction and operational phases. May appoint an entity to operate the system on their behalf.
Department of Environmental Affairs (national & provincial)	• Responsible for auditing compliance of the project with conditions specified in the Revised Record of Decision
Department of Rural Development & Land Reform	• The Land Claims Commission is responsible for evaluating and processing land claims. Land claims have been lodged on several properties that will be affected by the project

Stakeholder category	Impact of interest in the project
(DRDLA), Provincial Land Reform Office (PLRO) & Land Claims Commission	• The PLRO is responsible for implementing the Department's Land Redistribution for Agricultural Development (LRAD) programme
Department of Labour	• Responsible for ensuring that employment practices and conditions on the project conform to labour legislation
Department of Agriculture (provincial)	• Responsible for providing agricultural extension and support services to communities who have received farms through the LRAD programme administered by the PLRO) • Would also support livelihood restoration programmes implemented as part of the resettlement programme, insofar as this programme is agriculturally based
Provincial House of Traditional leaders	• Includes representatives of Traditional Authorities affected by the project. Responsible for representing the interests of Traditional Authorities and traditional affairs at provincial level
South African National Roads Agency (SANRAL) and Limpopo Roads Agency	• Grants wayleave applications for pipeline servitudes, where these fall within road reserves
Other stakeholders: Farmers' associations, SAPS, etc.	• Inform of the project and consult on an as-required basis

2.12.3 Engagement Prior to Construction Commencement and Regulatory Approval Process Commencement

Stakeholders will be notified of the commencement of certain activities as well as activities that still require environmental authorisation by the following means:

- Notification Letters and the distribution of a Background Information Document;
- Site Notices;
- Newspaper Advertisements;
- Focus Group Meetings / Community meetings; and
- Placement of documentation supporting a Regulatory Approval process within the public domain.

2.12.3.1Meeting with Tribal Authorities

Prior to the commencement of any activities, the following Tribal Authorities will be consulted:

- Mapela Traditional Council;
- Mokopane Traditional Council; and
- Ga-Malekana Traditional Council.

Meetings will include meetings with the respective Headman / Headwoman (Kgoro's) of each village.

2.12.3.2Meetings with the Communities at Large

Prior to the commencement of any activities, meetings will be held with the communities at large in support of:

- Activities that will already commence based on existing approvals in place; and
- Activities that will be subject to a Regulatory Approval process and the associated timeframe.

Stakeholder engagement will have the following main objectives:

- Informing stakeholders of project and stakeholder engagement process;
- Informing stakeholders of pre-construction activities that may affect them;
- Informing stakeholders of the nature of the project;
- Updating stakeholders on general project progress;
- Informing stakeholders if persons in their constituencies/ areas of jurisdiction will be directly affected;
- Informing individual stakeholders if they will be directly affected;
- Informing stakeholders of land acquisition, resettlement and/or compensation processes;
- Informing stakeholders of opportunities to provide input/ feedback; and
- Sign-off on rehabilitation/ compensation/ resettlement.

2.12.4 Heritage

Based on the Heritage study conducted, the following heritage resource will be affected by the sub-phase 2B pipeline.

Table 23: Heritage sites along the 2B pipeline servitude

Site designation	Farm	Co-ordinates	Site Type	Age
2B Site 1	Brakfontein 152	S24° 28' 30.9" E29° 12' 37.4"	Historical Buildings	Post modern
2B BP05 W01	Koppieskraal 475/1	S24 20 22.7 E29 46 47.3	MSA scatter	MSA
2B BP13 C06	Kromdraai 129/2	S24 23 32.4 E29 08 40.6		
2B SPB15 C08	Roode Bult 128	S24 23 06.7 E29 08 14.4		
2B SPB16 C09	Doornfontein	S24 19 53.5 E29 06 15.5		
2B BP13 C07	Kromdraai 129/2	S24 23 26.3 E29 08 45.3	Grave/Cemetery	1971
2B SPB1 C10	Gaasterland 677	S24 44 55.8 E29 23 40.6	MSA site	MSA

Site designation	Farm	Co-ordinates	Site Type	Age
2B SPB1 W04	Gaasterland 677	S24 44 48.8 E29 23 51.1	MSA site	Recent modern
2B SPB4 C11	Weltevreden 646/2	S24 40 10.2 E29 21 57.7	MSA site	Recent modern

Based on the Heritage study conducted, the following heritage resource will be affected by the 2F pipeline.

Table 24: Heritage features identified on the 2F pipeline routes.

Site designation	Farm	Co-ordinates	Age
2EF SPF9 C24	Koppieskraal 475/1	S24 20 19.6 E29 46 30.0	
2EF SPF9 C25	Koppieskraal 475/1	S24 20 17.9 E29 46 22.6	
2EF SPF9 C26	Koppieskraal 475/1	S24 20 08.6 E29 46 35.8	
2EF SPF9 W11	Koppieskraal 475/1	S24 20 22.7 E29 46 47.3	
2EF SPF4 W12	Twickenham 114	S24 24 21.5 E29 59 30.2	1903-2013
2EF SPF4 C41	Twickenham 114	S24 40 48.2 E30 12 13.1	1999-2005
2EF SPF6 C27	Brakfontein 464	S24 21 11.1 E29 54 32.2	Recent modern
2EF SPF6 C28	Brakfontein 464	S24 21 11.1 E29 54 32.2	1895?
2EF SPF6 C29	Brakfontein 464	S24 21 11.1 E29 54 32.2	Historical
2EF SPF6 C30	Brakfontein 464	S24 21 11.1 E29 54 32.2	Historical

Site designation	Farm	Co-ordinates	Age
2EF SPF6 C31	Brakfontein 464	S24 21 11.1 E29 54 32.2	Historical
2EF SPF6 C33	Brakfontein 464	S24 21 03.6 E29 54 38.7	1990
2EF SPF6 C34	Brakfontein 464	S24 21 04.0 E29 54 39.2	Recent modern
2EF SPF6 C35	Brakfontein 464	S24 21 03.4 E29 54 38.9	1950
2EF SPF6 C38	Brakfontein 464	S24 21 03.0 E29 54 39.9	1975-1990
2EF SPF6 C32	Brakfontein 464	S24 21 05.8 E29 54 37.7	Recent modern
2EF SPF6 C36	Brakfontein 464	S24 21 03.2 E29 54 39.8	Recent modern
2EF SPF6 C37	Brakfontein 464	S24 21 03.2 E29 54 40.0	Recent modern

The position of known sites will be shown on the final profiles. Such areas shall be marked as no-go areas. Care will need to be taken as not to disturb these areas as far as practically possible.

If human remains are uncovered during the course of archaeological work the excavations affecting the burial must be stopped. SAHRA should then be consulted and depending on the situation, the remains are either covered and left in situ, exposed (but not removed) and studied in situ, or fully excavated and studied with the consent and participation of the interested parties. It is, therefore, advisable that if it is foreseen that any archaeological research will uncover human remains an agreement with the interested parties and a permit for burials be obtained beforehand.

For human remains inadvertently discovered in other situations, all activities affecting the burial must be stopped and the discovery must be reported to SAPS and SAHRA and the status of the remains must be ascertained. If the remains are forensic in nature (younger than 60yrs and perceived to be a victim of crime) recovery by the Provincial Forensic Pathology Services in conjunction with SAPS is mandated. If the remains are of cultural, historical or archaeological origin recovery will be facilitated by SAHRA by means of a Rescue Permit.

The Association will appoint a suitably accredited archaeologist on a watching brief to monitor construction activities.

At the onset of construction all graves that might be affected should be clearly demarcated and if possible, fenced off to protect them from any accidental damage, whether they are earmarked for relocation, or not.

The relocation of burial sites must take place as advised in the EMP reports from the archaeologist, after due public participation, in terms of section 36 of the National Heritage Resources Act, 1999, to accommodate the wishes of the next of kin and descendants. Graves over 60 years old are protected by legislation and permits from South African Heritage Resources Agency (SAHRA) are required for relocation which may be granted only after a 60-day public participation process. The SAHRA Limpopo office has requested that a SAHRA official be present during the relocation of graves.

Should the decision be taken to propose the relocation of the affected graves, a suitably accredited and experienced service provider must be appointed to undertake the relocation. Please note that grave relocation is dependent on permission for the action by the close relatives and interested and affected parties from the community, and the requirement is that the developer must assist this community to fulfil their cultural and religious requirement during the process. All provisions as stipulated in section 36 of the National Heritage Resources Act (Act No 25 of 1999) must be adhered to.

2.13 Land Acquisition / Relocation & Resettlement

2.13.1 Approach

The fundamental approach to land and rights acquisition is to view and deal with registered landowners and those with informal and unregistered rights on an equal footing, as both are affected parties whose rights are involuntarily removed. This approach forms the overarching framework for the following operational objectives:

- Management and maintenance of sound relationships with affected parties;
- Adherence to the legal framework for administrative justice and expropriation;
- Application of a just and equitable compensation regime for acquired land and rights;
- Recognition of informal and unregistered rights; and
- Application of local and international good practices as a guide where appropriate for relocation, resettlement, and compensation of the affected parties.

The process for the acquisition of land and rights occurs in the following five phases:

- Preparatory phase;
- Consultation phase;
- Valuation phase;
- Acquisition phase; and
- Close-out phase.

2.13.2 Preparatory Phase

During this Phase, an outline of the project scheme in cadastral format is compiled to identify project footprint properties.

- Copies of all deeds of transfer, servitude, and other deeds office information;
- Names of third parties with registered rights over footprint properties (such as bondholders, lessees, and tenants); and
- Identification of parties with informal and unregistered rights to land.

This information defines the purchase line for the land and rights.

Once this information has been gathered, an Asset and Baseline Infrastructure Survey is compiled to identify all the assets (under and above the ground) that the project will impact and informs the determination of compensation to landowners/land users and mitigation measures.

2.13.3 Consultation Phase

The stakeholder identification process for this project comprised the following steps in an effort to identify directly affected landowner that may require relocation and resettlement and where land need to be acquired:

- A deed search to identify title deed holders of affected properties;
- Review of the stakeholder database developed during the public participation process for the EIA;
- Contacting the relevant local municipalities and, with the assistance of ward councilors of affected municipal wards, identifying additional stakeholders not brought to light through the two preceding steps; and
- A "s*nowball*" process whereby stakeholders identified other stakeholders of whom they were aware, and who they believed could be affected by or have an interest in the project.

Acquisition of land and rights is an administrative process governed primarily by administrative law. The Promotion of Administrative Justice Act (PAJA), in the case of private landowners and the Interim Protection of Land Rights Act (IPILRA), in the case of persons living on State Land (land-users), provides the legislative framework governing consultative processes with affected parties.

During pre-construction consultation activities, landowners and households who will be directly affected by construction activities (e.g. whose properties will be assessed, or whose daily lives will be disrupted by construction) will be informed of this impact prior to construction commencing.

With certain groups of stakeholders, however, such information first be conveyed at a community or leadership level before engaging individual affected households. This would particularly be the case with Traditional Authorities and communally owned areas; here, parties to be involved first would include municipal ward councilors and tribal or community leaders.

Once the affected parties are identified, the next step is to obtain the necessary representative mandates from parties who desire to appoint other persons (representatives) to act on their behalf during the land and rights acquisition process. This ensures that the Land and Rights (L&R) team that consultations/negotiations are always carried out with rightful parties.

These consultation activities will be staggered across project phases, with all relevant stakeholders along a particular route portion being contacted before construction of that section commences. Also see section 5.6 – Stakeholder Identification and Assessment along adjoining route sections, where construction is scheduled to commence at a later date, will be made aware of the overall construction schedule and of the fact that they will be contacted when construction in their area is about to commence. This will avoid situations where stakeholders construed the fact that they are not being contacted, while some other stakeholders are, as an indication that they are being excluded from the process.

In terms of PAJA, an Information Pack will be prepared by the Association to:

- Provide adequate notice of the nature and purpose of the administrative action (i.e., expropriation, acquisition):
  - depiction of the expropriation area, shown on the map attached to the notice;
  - contemplated dates of expropriation and possession.
- Allow the affected parties to review the information and the justification for administrative action; and

- Allow the affected parties a reasonable opportunity to make representations.

The consultation process will as a minimum allow for the following:

- Resolution with the Traditional Authorities
  - exploratory meeting/s with the Traditional Authority (TA) with jurisdiction over the subject land to formally introduce the project and obtain buy-in. This process may take several interactions and iterations between the parties. Once there is a mutual understanding regarding the way forward, processes for holding the meeting to obtain the Land Rights Holders Resolution ("Community Resolution") can proceed.
- Community Resolution
  - This process starts with the Department of Rural Development, Land Reform and Rural Development (DALRRD) assigning an official/s ("project coordinator") to oversee community resolution processes, followed by the parties (Land and Rights (L&R) unit and DALRRD) agreeing on the date for the holding of the Community Resolution meeting; and
  - Acquisition of land and rights is effected through the signing of the Community Resolution authorising implementation of the project and acquisition of the required land and rights, and the signing of respective Agreements with the TA (for the whole servitude corridor) and individually impacted land-users (for household plots).

2.13.4 Land and Rights Valuation

Valuation is undertaken in line with the principles set out in the Expropriation Act, 63 of 1975 ("Market value") and the Property Valuation Act, 17 of 2014. Market Value is compensation paid in respect of the expropriation of privately owned land, including land held by State Owned Entities (SOEs), Communal Property Associations (CPAs), and municipal authorities.

Stakeholders affected by of land acquisition, resettlement and/or compensation processes will be consulted prior to construction through two related processes:

- Acquisition of land for the project servitudes; and
- Relocation of and/or compensation for assets and livelihood resources that will be displaced by the project.

Stakeholders will be involved in these two processes will be a subset of the stakeholders involved in Specific Objectives. There may be some households or landowners who will be affected by construction activities (e.g. through disruption of their daily movement patterns or the need to access their properties), but who will not lose any assets and will not need to be relocated.

Stakeholders who will lose assets or need to be relocated will have to be informed by the Stakeholder Liaison team that they will be involved in the land acquisition or resettlement/ compensation process, and that they will be contacted by the relevant specialists undertaking these processes.

The following permitting requirements in terms of land-related laws are being considered for obtaining rights and access to the required land sections. Security of tenure is fundamentally important for any large-scale infrastructure project.

- That it owns the land required for the OMM Programme through registered title deeds; or
- That it has obtained notarial leases together with evidence that the leases have been registered or are capable of registration against the title deed(s); or
- That it has obtained servitudes together with evidence that the servitudes have been registered or are capable of registration against the title deed(s); or
- That it has secured an option to lease, buy or enter into a servitude agreement exercisable at the Association instance and unconditional in all significant respects, to acquire such secure real rights.

In case of municipal land to be utilised for the OMM Programme, the Association needs to obtain the relevant agreements in terms of municipal related laws for:

- Municipal public private partnership; or
- Grant by a municipality or a municipal entity of rights to use, control or manage capital assets.

Amongst others, key legislation to consider during the planning and acquisition process include:

- National Water Act, 1998 (NWA) in relation to the registration of servitudes;
- Deeds Registries Act, 1937;
- Public Finance Management Act, 1999 (PFMA);
- Local Government Municipal Finance Management Act, 2003 (MFMA);
- Municipal Asset Transfer Regulations published in terms of the MFMA (GNR. 878 of 22 August 2008, Government Gazette No. 31346);
- Spatial Planning and Land Use Management Act, 2013 (SPLUMA); and
- Minerals and Petroleum Resources Development Act No.28 of 2002 (MPRDA) if the pipeline passes through a mining area.

The valuation will consist of the following steps:

- Market Research Report
  - A valuer conducts market research of the broad area around the subject properties to understand trends in the local property market. The research informs the processes for determining comparative land values for properties in the subject area.
- Valuation Report
  - The valuation report contains offers of compensation for land and/or rights to be acquired from the affected parties.

2.13.5 Acquisition Phase

Acquisition could consist of the following:

- Acquisition of Private land (Expropriation
  - Expropriation is undertaken in terms of the Expropriation Act where 25% of the market value (per hectare) is compensation for full land take areas and permanent servitudes. For temporary servitudes, compensation is set at 10% of the land value per annum for the duration of time that land is not available to the landowner.
  - Ownership of the expropriated land and rights will vest with the Association.
- Acquisition of State land (Communal Land)
  - The Department of Agriculture Land Reform and Rural Development (DALRRD) must approve all disposals of Communal Land before registration of transfer/cession in the Deeds Registries Office can occur;
  - Upon receipt of a signed Community Resolution and L&R Agreements, the Minister responsible for DALRRD will consider the matter. When satisfied with the acquisition processes, they will issue the requisite documentation to enable the transfer/cession of acquired land and/or rights;
  - Expropriation can also be undertaken through Government Gazette where the information pack (together with any other relevant information, e.g., acquisition maps) is sent to external legal counsel to effect expropriation through publication in the government gazette;

- Preferably, State-owned Land -- other than that held by CPAs, municipal authorities and SOEs -- is acquired by negotiated agreement (L&R Agreement).

2.13.6 Close-Out

As soon as possible after the expropriation of land and/or rights situated on the host property, the Deeds Registries Office is sent notification to that effect, in accordance with the provisions of sections 31 and 32, Deeds Registries Act, 37 of 1947. The Deeds Registries Office then makes an endorsement on the title deed of the property concerned, noting the expropriation.

A copy of the notice of expropriation is sent to the municipal authority under whose jurisdiction the expropriated land falls to enable the municipality to make the necessary amendments to its rates and tax billing information.

Installation of above-ground project infrastructure, such as pump stations and operator staff housing, amongst others, may require an application for the re-zoning of the subject land to the relevant municipality in terms of the Spatial Land Use Management Act, 16 of 2013.

2.13.7 Ownership Transfer

- Private Land
  - After completion of construction and followed by confirmation of the “As-Built Survey”, a professional land surveyor is appointed to undertake field survey work and, ultimately, produce survey diagrams for approval by the relevant Surveyor-General Office;
  - Upon approval of the surveyor general diagrams, the L&R unit instructs the conveyancing attorneys to undertake processes for the transfer/cession of acquired land and rights through the relevant Deeds Registries Office.
- State Land
  - DALRRD is responsible for performing tasks precedent to registration with the Deeds Registries Office of land and rights acquired from Communal Land;
  - Upon finalisation of DALRRD processes, followed by the Minister issuing the requisite documentation, ownership transfer processes can take place through the Deeds Office.

2.14 Economic Analysis

2.14.1 Economic Cost Benefit Analysis

The aim of this section is to provide an analysis on both bulk and potable water to show the different impact the two water provision systems can have and the importance of adequate water infrastructure development. Mining and other industrial companies use bulk raw water for commercial purposes, while potable water infrastructure development meets the demand for clean water for consumption by residents in the relevant communities.

The cost benefit analysis on the impact of the OMM Programme concluded the following:

Table 25: Opportunity costs associated with growth, productivity and health impacts

Factor	Impact	Cost
A lack of adequate water infrastructure forces companies to expand both their own water	Impact on companies and communities related to company growth, local and national	Non-quantified costs of companies using their own money to build water supply infrastructure

Factor	Impact	Cost
supply and that of the surrounding communities, creating various opportunity costs that hinder social and economic development.	economic growth, and socio-economic development of surrounding communities.	for both themselves and surrounding communities to ensure continued operations.
The opportunity cost of companies having to spend money on upgrading their water supply instead of upskilling employees leads to a lack of skilled labour, specifically skilled water engineers.	Companies need to import skilled labour from outside the communities, usually at a higher cost than sourcing local labourers. As a result, these communities also do not benefit from increased work opportunities.	There are operational costs associated with hiring more experienced labourers outside the local communities. There are also costs associated with upskilling local workers and providing bursaries to community members to develop the needed skills.
A lack of access to clean potable water results in inadequate sanitation, leading to expensive health treatment costs and lost productivity by companies.	Companies lose productive working hours due to lower employee productivity, while employees could see their salaries decrease for non-working hours due to illness. Community members also experience increasing health costs.	Loss in productivity for companies which negatively impact profits, and decreased salaries and disposable incomes of employees and individuals in surrounding communities.

The opportunity costs referred to the impact of a lack of adequate water supply on Commercial users and the surrounding communities, with the impacts on mining companies especially trickling down to other areas of society and the economy. South Africa's current economic climate hinders the government and private sector's ability to obtain funding to address the above issues in the short-term. Elevated levels of inflation, interest rates and the exchange rate will also increase the cost of financing large infrastructure investments. This will likely weigh down on the pace at which new potable and bulk water infrastructure will be rolled out within the respective communities. Furthermore, government inefficiencies and the lack of access to bulk water means that businesses will have to use their own capital to provide the needed infrastructure for their operations. Therefore, the OMM Programme remains the most efficient way to ensure timely provision of adequate water supply in these areas.

Table 26: Benefits associated with positive social and health impacts

Factor	Impact	Benefit
Social investments by mining companies in education.	Investment in education by mining companies leads to upskilling of employees and community members.	Increased education levels, greater job opportunities, and a reduction in poverty levels.
Social investments by mining companies – increased local procurement.	Increased local procurement by mining companies can lead to increased business and employment opportunities.	Growth in local businesses and increased employment in local communities.
Social investments by mining companies in employee housing.	Provision of adequate housing for employees frees up disposable income.	Improved living conditions of employees and a decrease in housing expenses, freeing up money for food, education, and health care.

Factor	Impact	Benefit
Health benefits from improved access to potable water also leads to improved education in the affected communities.	Health risks negatively affect education attainment.	Improved health leads to improved education outcomes for learners, and improved job opportunities.
Community members could save costs and time associated with finding alternative sources of water supply – buying clean potable water.	Residents are forced to buy water, often at a premium.	Communities could see an increase in disposable income that can then be spent on other necessities such as food, electricity, and transportation to work.
Community members could save costs and time associated with finding alternative sources of water supply - walking long distances to collect water.	Households need to walk long distances to collect water, leading to less time spent on other vital activities such as schooling.	Time savings in water collection could lead to improved school and work attendance, along with economic growth.

Completion of the OMM Programme will help address the many inequalities in water access in Limpopo and will provide benefits to Commercial users and local communities. Access to adequate water supply will bring about direct benefits such as employment opportunities, as well as indirect opportunities from social investment initiatives implemented by mining firms operating in the respective communities. Other benefits include improved school attendance from better health, with learners being able to focus on schooling and attaining higher levels of education. Lastly, there are benefits from saving on costs and time associated with finding alternative sources of water supply. The above benefits are in line with the social development objectives set out by the OMM Programme.

2.14.2 Economic Viability of the OMM Programme

In analysing the viability of the OMM Programme, we considered the results of the NPV, IRR and BCR. The analysis only focused on the new and existing infrastructure, excluding deferred infrastructure projects from the calculations, namely ORWRDP Phase 2D and 2E.

Table 27: Viability analysis

Measurement tool	Criteria for a viable investment	Results
Net Present Value (NPV) (R million)	Must be > 0	R12 530 million Yes
Internal Rate of Return (IRR)	Larger than social discount rate of 8%	Yes – 16%
Benefit Cost Ratio (BCR)	Must be > 1	Yes – 1.27
Payback period (years)	n/a	10

Sources: *Calculations using transformed LWUA financial model data, CBA manual for South Africa, Statistics South Africa and SARB*

The NPV, BCR and IRR all suggest that the investment project over the 28-year period is economically viable as it is expected to yield positive returns. The above table is explained in more detail below:

- **NPV** – Based on the calculations run, the OMM Programme's NPV is positive, which means that the total quantifiable benefits of the project outweigh the quantifiable costs over the period of analysis. This results in a gain of about R12.5 billion. This amount is not a surplus per annum but rather the overall gains made over the 28-year period (2023–2050). This would mean that, on average, there is a gain of approximately R448 million (R12.5 billion / 28 years) per annum due to the provision of potable and bulk water infrastructure.
- **BCR** – The BCR for the OMM Programme is 1.27, indicating that for each rand spent on the provision of potable and bulk raw water, there is an expected R1.27 return. This means that the OMM Programme is considered efficient.
- **IRR** – The IRR for the OMM Programme is 16%, which is greater than the social discount rate of 8%, making the OMM Programme economically viable.

Therefore, the CBA for the provision of water infrastructure yielded positive results, with all three measurements used suggesting that the OMM Programme presents an economically viable investment opportunity.

2.14.3 Sustainability of the Cost Benefits Associated with the OMM Programme

The Water Master Plan (dated 31 October 2018, as published by the Departments of Human Settlement and Water and Sanitation) unequivocally admits that South Africa is facing a water crisis caused by insufficient water infrastructure maintenance and investment, recurrent droughts driven by climatic variation, inequities in access to water and sanitation, deteriorating water quality, and a lack of skilled water engineers. This crisis is already having significant impacts on economic growth and on the well-being of everyone in South Africa. The OMM Programme will address the water crisis caused by insufficient water infrastructure maintenance and investment identified in the Water Master Plan. When the OMM Programme is completed and becomes operational, it would go a long way to address inequities in access to water in the Limpopo Province and assist the Government in meeting the goals and key drivers identified in the Water Master Plan.

Demographic overview of Limpopo Province

Up to 55% of households in Limpopo Province do not have access to piped potable (tap) water inside a yard. Even though households have access to piped potable water, people are reverting to alternative water sources due to intermittent supply disruptions, water shortages, leakages and other issues. The OMM Programme caters for the supply of potable water to more than 380 000 people and the available capital saved through the optimisation of the Eastern Limb bulk raw water supply can be effectively applied to the overdue potable water supply to communities in the region.

Furthermore, up to 42% of people in the Limpopo Province, and even higher in the areas targeted by the OMM Programme, are unemployed. In addition, 57% of the youth (aged between 15 and 34 years) within Limpopo are unemployed. The socio-economic development aspects of the OMM Programme will greatly alleviate this problem in the region.

The economic impact assessment revealed that the OMM Programme would likely result in 16,300 jobs being created in Limpopo Province linked to the construction spend with a further 9,000 jobs linked to the ongoing operational spend. Low-income groups would receive approximately 30% of the additional household income of R3.1 billion linked to annual capital expenditure over a 7-year period and 39% of the additional household income of R2.4 billion linked of the annual operational spend over a 28-year period in the Province.

Sustainable development is one of the key underlying concepts that forms part of the Association's mission, vision and strategy. For sustainable development to be achieved, it is crucial to harmonize three core elements: economic growth, social inclusion and environmental protection. These elements are interconnected and all are crucial for the well-being of individuals and societies. Therefore, the United Nations adopted 17 Sustainable Development Goals in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.

The Association identified key primary and secondary SDGs based on the Association's purpose of "Improving lives through water", and vision to be "a strategic water management partner and catalyst for the creation of sustainable socio-economic development in the region in which we operate". The primary SDGs are instrumental impact goals that correlate directly with the Association's strategy and the secondary SDGs are impact goals of interest that correlate to some degree with the Association's startegy:

Table 28: Primary and secondary SDGs

Primary SDGs	Secondary SDGs
SDG 6: Clean water and sanitation	SDG 4: Quality education
SDG 8: Decent work and economic growth	SDG 12: Responsible consumption and production
SDG 9: Industry, innovation and infrastructure	SDG 16: Peace, justice and strong institution
SDG 17: Partnership for the goals	

Below are the relevant SDGs and referenced global targets*, the high level OMM Programme targets, and the specific principles of conduct that the Association needs to adhere to in order to contribute to achieving these targets through their core business activities.

Table 29: Relevant SDGs and referenced global targets

SDGs and global targets	High level OMM Programme Targets	Main Principles of Conduct
SDG 6: Clean Water and Sanitation Ensure availability and sustainable management of water and sanitation for all. **Targets*:** 6.1; 6.4; 6.5; and 6.b	• Responsible handling of resources and infrastructure • Effective management of the De Hoop and Flag Boshielo Dams • Commercial and social water supply • Deliver fresh water to communities (drinking and small scale food production) • Potable water on yard connection basis in agreed communities • Treated sanitation water for agricultural use (second use of water) • Low maintenance small scale sanitation works located close to communities	• Optimise the utilisation of existing dams and infrastructure; • Accelerate the implementation of the ORWRDP and social water supply to water stressed areas; • Focus on where maximum impact can be created in the interim with the resource limitations

SDGs and global targets	High level OMM Programme Targets	Main Principles of Conduct
SDG 9: Industry, Innovation and Infrastructure Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. **Targets*:** 9.1; 9.4; and 9.a	• R25 billion infrastructure project with associated economic growth in the region • Responsible handling of resources and infrastructure • Effective management of the De Hoop and Flag Boshielo Dams • Commercial and social water supply • Enterprise development and regional collaboration to advance new business and use of technology •	• Optimise the utilisation of existing dams and infrastructure; • Sustainability of the OMM Programme by fully mandating and equipping the Association to implement, manage, operate and maintain the OMM Programme;
SDG 8: Decent Work and Economic Growth Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. **Targets*:** 8.4 8.5	• R25 billion iInfrastructure project with associated economic growth in the region • Direct and indirect job creation • Enterprise development • Youth entrepreneurship and development programme • Support economic growth in the region through commercial and social water supply • Training and education	• Be a model water infrastructure pilot programme for the country through collaboration and the provision of strong governance over the OMM Programme by implementing the OMM Programme based on internationally proven project execution principles and standards.
SDG 17: Partnerships for the goals Strengthen the means of implementation and revitalize the global partnership for sustainable development. **Targets*:** 17.g 17.h	• The Association is a 50/50 partnership between Government and a commercial water user consortium in the defined OMM Programme region • Community engagement is key to the OMM Programme and the Association's operational activities • Appreciation of traditional leadership	• Improve potable water service delivery through supporting existing potable Water Services Authorities; • Develop skills in the water sector through establishing a resourcing partnership between Government and CUC members; • Improve social harmony in the region through the provisioning of social water, the creation of jobs and socio-economic development; • Be a model water infrastructure pilot programme for the country through collaboration and the provision of strong governance over the OMM Programme by implementing the OMM Programme based on internationally proven project execution principles and standards.

SDGs and global targets	High level OMM Programme Targets	Main Principles of Conduct
SDG 12: Responsible Consumption and Production Ensure sustainable consumption and production patterns **Targets*:** 12.2	• SED behaviour programmes (water conservation and payment for services) • Renewable energy supply to the Association	• Optimise the utilisation of existing dams and infrastructure;
SDG 16: Peace, Justice and Strong Institutions Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels. **Targets*:** 16.3; 16.a; and 16.b	• The Association governance structure, policies and procedures • Open and transparent commercial processes • Project implementation based on successful employed international best practices	• Strict adherence to regulatory requirements
SDG 4: Quality Education Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. **Targets*:** 4.1; 4.4; and 4.6	• ECD (early childhood development) programme • Schools development programme • Youth entrepreneurship and development programme • WiFi and interconnectivity at communities • Educator training	• Focus on creating High-Performing Schools (inclusive of ECD centres) to equip youth to be agents of change for their communities and shape their future. This will commence with a proof of concept at pilot schools in the OMM Programme area close to the current Association's operational head quarters.

2.15 Socio-Economic Development Plan

2.15.1 SED Strategy

The extent of the infrastructure development across the Limpopo Province and its associated capital and operational spend represents a significant opportunity for socio-economic development in the region. The poverty rate in Limpopo is higher than South Africa's average. The number of people living below the lower-bound poverty

line (LBPL) in Limpopo was 3.3 million persons (as at 2020) which is 56.1% of the Province's population compared to 38.8% which is South Africa's average. Poverty rates and unemployment increased during 2020-2021 particularly due to the negative impacts of the COVID-19 pandemic, with job losses and business closures across the country. In 2021, only 73.7% of households had access to a water supply. In addition, less than a quarter of households have flush toilets, compared to 95.2% in the Western Cape and 88.1% in Gauteng. Pit latrines were also most common in the Limpopo province, compared to other provinces in South Africa. The expected socio-economic development outcomes linked to the infrastructure development are:

- Provision of basic water services;
- Timely preparation of communities to participate in SED opportunities;
- Job and opportunity creation;
- Revisioning of communities;
- Youth leadership development;
- Behavioural change towards conservation and payment for services;
- Improved relationship with Government and Business; and
- Safe environment and peaceful and thriving communities.

The SED strategy has been developed to respond directly to strategic risks associated with the OMM Programme and to this end, timely engagement with communities SED projects should be initiated in advance of construction to effect buy-in. There are seven strategic risks that the SED strategy mitigates and responds to which have been summarised below.

- Communities prevent on-site access to contractors – Community engagement & participation
- Communities unable to participate in program spend – Opportunity access & skills development
- Damage to infrastructure – Community buffer strategy
- Expectation management given limited funding – SED prioritisation & collaboration model
- Lebalelo brand used to undermine the OMM Programme – Rebranding the Association
- Water wastage and services not being paid – Behavioural change through education & technology
- SDG indicators not reflecting favourable change – Localised impact assessments

In view of this, an approach of having SED projects initiated in advance of construction so as to provide safe access for contractors has been adopted for implementation. Five priority themes have been identified to steer SED activities and maximise impact, namely:

- Potable water provision, in line with the core mandate of the provision of potable water to communities in the defined areas;
- Sanitation and reuse addressing wastewater treatment and usage;
- Connectivity which focuses on broadband installation and provisioning;
- Education focusing on all aspects of skills development, youth leadership and behavioural change programmes; and
- Enterprise development targeting the establishment and expansion of businesses focused on regional agriculture (5Ml water allocation), Tourism (dam development) and renewable energy.

As part of the education SED focus, the objective is to create a High-Performing Schools Programme (HPSP) that equips the youth in the OMM Programme area to be agents of change for their communities and to shape their future towards sustainable careers. An HPSP pilot project was designed and implemented at Kwata Primary School in Ga-Phala in the Sekhukhune District; it contained focused initiatives to address multiple levers that contribute to a 'high-performing school' and that also responded to the abovementioned SED themes viz. enterprise development, connectivity, potable water and sanitation. The holistic pilot project allowed for the development of a blueprint for roll out to other pre-identified schools. The guiding principles of the HPSP blueprint is to enhance technology and upgrade existing infrastructure at the schools to:

- Improve school performance through technology-based teacher aids such electronic media and "Connect Schools" software
- Running dedicated teacher development and training programs, linked to the technology options to be implemented
- Maximise local design and supply of material and equipment during the construction phase
- Maximise local construction labour including supervision from the direct nearby community during the construction phase
- Utilise a single repeatable design for rollout at multiple schools (pilot project will be the first)
- Apply best practices and innovative designs to optimise cost and minimise maintenance through an ergonomic design of infrastructure ensuring optimised use of water and electricity
- Community and parental involvement throughout the process to ensure ownership and future support from within the community
- Skills development within the community directly related to maintenance and security activities associated with the school

Community engagement and regular dialogue will be essential for the OMM Programme to succeed as well as implementing timely community readiness programmes to allow for inclusive participation. The SED implementation plans during the Study phase involves:

- Establishing a strong governance structure over the SED activities, budget and spend;
- Recruitment of organisational SED capability;
- Continued development of baseline studies, surveys and community risk assessments;
- Regular and timely engagement with communities across a number of levels;
- Development of school and community level behavioural programmes;
- Creation of jobs during the various phases of the OMM Programme through procurement policy and other strategies;
- Establishment of self-funding skills and enterprise development structures using procurement policy; and
- Formation of an SED Collaboration Forum to explore ways in which members and others can collaborate around common themes to accelerate SED in the region. The SED Collaboration Forum will act as an enabler of the Association's Social and Ethics governance committee's (SECOM) SED mandate by aligning stakeholders towards a common vision and goal

Based on the Association revised strategy, greater focus will be placed on ensuring close collaboration with the communities residing in the Eastern and Northern Limb and to research, measure and monitor socio-economic development impacts of Association's activities.

Socio-economic development opportunities in the region have not been unlocked due to the lack of access to potable water. The studies have shown that access to water has positive effects on health, early childhood development, education and workforce productivity. The economic impact assessment revealed that the OMM Programme would likely result in 14,750 jobs being created in Limpopo Province linked to the construction spend with a further 9,580 jobs linked to the ongoing operational spend. Low income groups would receive approximately 30% of the annual capital spend (over a 6 year period) and 39% of the annual operational spend (over a 27 year period) in the Province. This is without any specific SED intervention on the part of the OMM Programme. It is the intention of the Association to fully maximise the SED opportunities arising from the OMM Programme.

2.15.2 SE2, Phase 2B & 2B+ and Northern Limb WTW Roll-out Plan

The OMM Programme will sign a MoU with each Traditional Authority to ensure the doorstep communities within the area of operations are well informed of the construction and SED activities and opportunities e.g. the upgrade of schools and provision of clinics. This will be specified in a customised information pack that will complement the MoU.

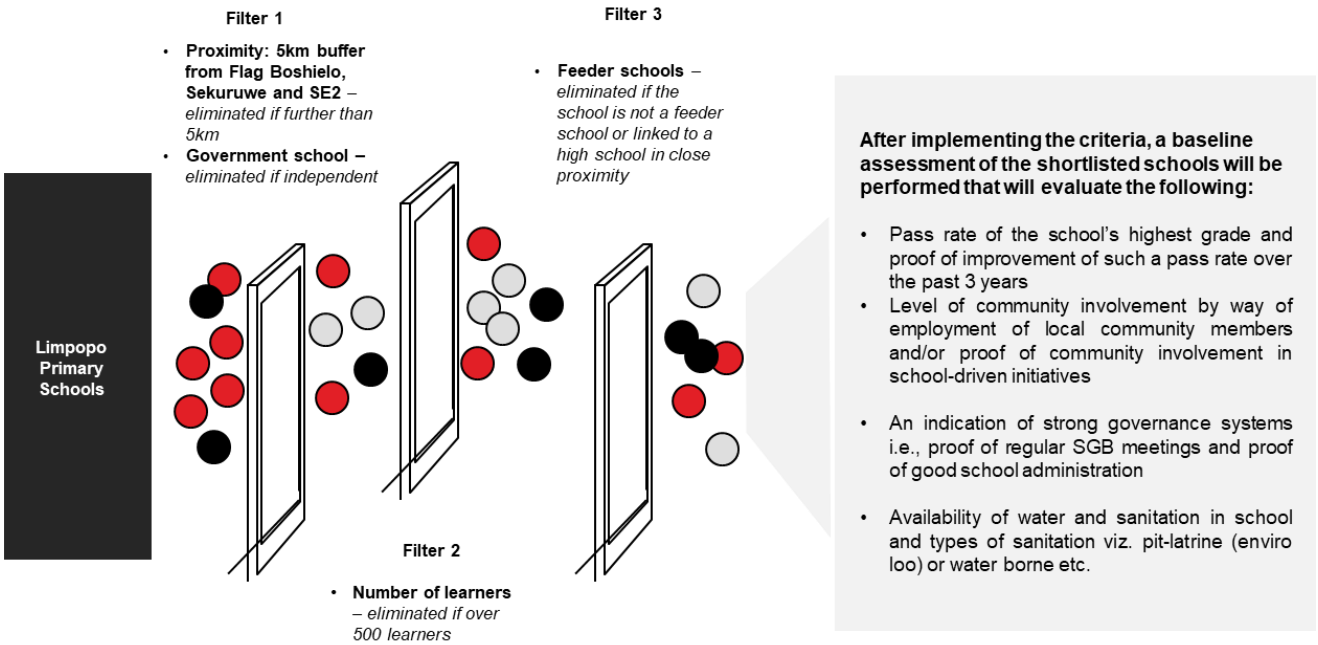
SED projects identified for immediate roll out on the OMM Programme relate to the transformed Association's High-Performing School Programme (HPSP) which equip the youth in the OMM Programme area to be agents of change for their communities and to shape their future towards sustainable careers. Multiple levers contribute to a 'high-performing school', which include:

- Providing the required school facilities and equipment;
- Ensuring full support from Leadership in schools and communities;
- Providing appropriate levels of teaching;
- Addressing indirect issues to allow pupils the ability to learn; and
- Involving parents to ensure support at home.

A series of initiatives were implemented at the pilot school, Kwata Primary School located in Ga-Phala in Sekhukhune District to design the concept of the programme. While education was a core focus, it also responded to the other SED themes namely Enterprise Development, connectivity, potable water and sanitation.

The HPSP roll out is closely aligned to the phased construction roll out of the OMM Programme as SED projects are to be initiated in advance of construction. The aim is to implement the HPSP at an additional six primary schools within the OMM Programme area around SE2, Flag Boshielo and Sekuruwe areas. Given that there are 3 859 schools in Limpopo province, a set of criteria was developed to support the identification process of the six selected schools. The criteria and filtering process for the shortlisting of the schools is outlined as follows:

Figure 27: HPSP selection process



Once the schools have been selected through this process, a baseline study will be performed to assess performance improvements through the HPSP.

A total of 21 primary schools were identified within a 5km radius of the SE2, Sekuruwe and Flag Boshielo areas with six schools (two in SE2, three in Sekuruwe and one in Flag Boshielo) being selected on the basis of the pre-defined criteria.

2.15.3 Funding Structure

The OMM Programme will specifically fund high impact projects that meet its SED strategic criteria of community empowerment, programme alignment, spatial alignment and sustainability. The approach has been to first pilot the concept and replicate and scale on the basis of project success. High impact SED projects for the region will be presented to the Collaboration Forum for wider collaboration. The evaluation criteria to assess the SED impact of initiatives and whether they are pursued as part of the OMM SED programme or if they require wider collaboration is as follows:

- **Community empowerment:** Opportunities are created that enable surrounding communities to participate and that will have a subsequent socio-economic impact on the region
- **OMM Programme alignment:** The initiative is aligned to the OMM Programme's objective of the accelerated delivery of bulk raw and potable water services and Association's purpose of improving lives through water
- **Spatial alignment:** The initiative is within the OMM Programme area and surrounding communities
- **Sustainability:** There will be a sustainable and prolonged impact in the region through the implementation of the initiative

The funding mechanism for the OMM Programme SED projects will be through a combination of the OMM SED programme budget, determined to be 1% of the OMM Programme spend, and collaboration between OMM Programme members, other commercial users, collaboration partners and donor funders. Based on the completed pilot school project, feedback received and lessons learned, the upgrades to a school is budgeted at R3 to R3.5 million and the establishment of a clinic on the school premises, the estimate is R1.5 million.

Budgets for other SED projects will be prepared once the scope of the projects have been approved and funding for the implementation of the SED strategy will be allocated in the cost estimates.

2.16 Economic Case Conclusion

The scope and economic evaluation results presented in this Economic Case clearly showed the potential of an accelerated approach, addressing the revised water needs in the region and the viability of providing an equitable solution to all members.

The details presented is fully aligned with the "Roll-Over" concept already approved, and the OMM Programme is proceeding to finalise the required detail designs and contractor identification for:

- Phases 2B & 2B+;
- Water Treatment Works in the Mogalakwena district at Mokopane and Sekuruwe; and
- Associated electrical infrastructure for the network.

IBC Report #2 will consider the remainder of the projects included in the OMM Programme and is targeted for issue in the third quarter of 2023.

Completion of the OMM Programme will help address the many inequalities in water access in Limpopo and will provide benefits to Commercial users and local communities. Access to adequate water supply will bring about direct benefits such as employment opportunities, as well as indirect opportunities from social investment

initiatives implemented by mining firms operating in the respective communities. Other benefits include improved school attendance from better health, with learners being able to focus on schooling and attaining higher levels of education.

The Economic Vibility Analysis of the OMM Programme has show:

- Net Present Value (NPV) of R12.53 billion
- Internal Rate of Return of 16%; and
- Benefit Cost Ratio of 1.27

Therefore, the CBA for the provision of water infrastructure, based on well developed designs, cost estimates and schedules, yielded positive results, with all three measurements used suggesting that the OMM Programme presents an economically viable investment opportunity.

3. Commercial Case

The purpose of the commercial dimension of the business case is to demonstrate that the preferred contracting option will result in a viable procurement and a well-structured deal for the parties. A clear understanding of the services, outputs, milestones and potential risks in the design, build, funding, and operational phases of the project needs to be provided to assess the best risk allocation between the public and private sectors reflected in the charging mechanism and contractual arrangements.

3.1 Background and Introduction

This section discusses the Commercial Case for the OMM Programme. The Commercial Case is grounded on the format of contract being the suite of NEC 3 contracts with various pricing options being considered.

The PMU will act as an Owner's team representative of the Association. In this document, the reference to "Owner" can also be interpreted as "Employer" or "Client" as referred to in the different contract descriptions. The PMU, as the delegated authority from the Association, will ensure that the overall project objectives as set out in this document as well as all supporting referenced information, are achieved without harm and within budget, time, and quality targets.

The OMM Programme, from a technical perspective, is a series of design and construction activities of several capital projects in such a way as to maximise the use of current DWS and Association assets, as well as to deliver new assets in the most efficient manner. Together, these component projects make up the infrastructure OMM Programme. The individual projects are not technically complex in themselves, but the large footprint, diversity of contractors that will be utilised, and the construction coordination activities result in a large and complex programme.

The following six infrastructure projects were identified and included in the OMM Programme:

Table 30: Infrastructure projects

	Scope	Description
1	Bulk raw water Phase 2B & 2B+	A steel pipeline from Flag Boshielo Dam to Pruissen (2B), and from Pruissen to Sekuruwe (2B+) in the northern limb. This will include three new pump stations.
2	Bulk raw water Phase 2F	A new steel pipeline from Clapham pump station to Olifantspoort weir for augmenting water Supply to Polokwane.
3	Bulk raw water	A new pump station between Steelpoort pump station and Mooihoek reservoir to enable reverse flow.

	Scope	Description
4	Potable water reticulation to the Eastern Limb	Potable water pipelines, reservoirs, one new and two expansions of existing water treatment works, pump stations and associated infrastructure, reticulation network and yard connections in defined areas surrounding the Commercial Members in the Eastern Limb.
5	Potable water reticulation to the Northern Limb	Potable water pipelines, reservoirs, two new water treatment works at Mokopane and Sekuruwe, pump stations and associated infrastructure, reticulation network and yard connections in defined areas surrounding the Commercial Members in the Northern Limb.
6	The Association project	Southern Extension 2, to supply water from Phase 2C at Spitskop to Booysendal Platinum Mine, linked to the OMM Programme objectives to fully integrate and utilise available data, designs and infrastructure, is included into the OMM Programme to exploit integration opportunities of common project management systems and sharing of information.

The Commercial Case is grounded on the format of contract being the suite of NEC 3 contracts with various pricing options being considered. This strategy enables the appropriate allocation of risk and commensurate pricing between the contracting parties.

It is the strategy of the OMM Programme to develop the programme of projects by following the development process as mandated, and by obtaining specialist development, engineering, procurement and construction management skills in the market.

These skills will be obtained through the appointment of study phase main Consultants supported by specialist Consultants that will complement the skills of the OMM Project Management Unit (PMU). The study phase main Consultants and specialist Consultants will design the technical aspects of the project, provide necessary skills and knowledge through the use of their internal processes and software systems to achieve and deliver the scope of the OMM Programme.

The OMM Programme plan for the Pre-Feasibility and Bankable Feasibility Phase (Study Phase) provides for the appointment of three Main Consultants. The Bulk Water Supply Consultant, Zutari-Ndodana Joint Venture (ZNJV), was appointed in December 2022. This Consultant will also support general programme scope coordination and programme integration. Two other main Consultants will be appointed to execute the Study Phase for the Potable Water Reticulation scopes in the Eastern and Northern Limbs respectively. The main Consultants may appoint specialist Consultants to support the work as required. The main Consultants will identify all the anticipated specialist Consultants and other subcontracts required during the Study Phase, fully compliant with the OMM Programme Procurement Policy and Procedure, and submitted to the PMU as part of a contracts list for PMU approval.

The main Consultants who performed the Study Phase as per scope/project allocation, will also be considered to manage the multi-disciplined execution phase of the respective scopes/projects in the form of a Project Management Consultant (PMC). This is to ensure design and project implementation intentions continuity on the programme from Study Phase into the Execution Phase. The intent is that the main Consultants manage the detail design, construction, and handover of the associated works for and on behalf of the PMU, subject to acceptable performance during the Study Phase monitored against pre-agreed Key Performance Indicators (KPIs).

3.2 Form of Contract

Over the years, industry norms in relation to risk allocation across the most common types of construction and engineering projects have emerged. This has led to the development of a number of international standard form contracts. The most commonly used standard forms in Africa are FIDIC, NEC and (in Sub-Saharan Africa) JBCC and GCC. Using an industry recognised set of terms makes the procurement process more efficient and competitive.

The Association decided to utilise the suite of NEC 3 contracts with various pricing options for the OMM Programme. The NEC3 requires a different mindset from its users. The NEC3, much more so than the FIDIC and other forms of contract, relies on the parties conducting themselves in accordance with principles of good faith. NEC3 promotes a more collaborative approach and ensures better project administration from both Parties.

3.2.1 The New Engineering Contract

The New Engineering Contract (NEC) is a form of contract created by the Institution of Civil Engineers (ICE) in London. The NEC3 suite of documents is designed to:[4]

1. Stimulate good management of the relationship between contracting parties and as a result good management of the project;
2. Be applicable to a wide variety of commercial situations, types of works and different types of locations; and
3. Be clear, simple and written in plain English using language and a structure which is straightforward and easy to understand.

The NEC3 can be used for:

1. Engineering and construction work containing any or all of the traditional disciplines such as civil, electrical, mechanical and building work;
2. Whether the Contractor has full design responsibility, some design responsibility or no design responsibility; and
3. Options for types of contract such as competitive tender, target contracts, cost reimbursable contracts and management contracts.

The NEC suite of documents comprises of the following contract formats[5]:

Table 31: NEC contract types and applicability

Contract type	Applicability
Engineering and Construction Contract (ECC) or Black Book:	The ECC is the main construction contract within the NEC3 family and includes pricing strategy options. The ECC may be used in any sector including civil, building, nuclear, oil & gas etc. This form of contract is suitable for Engineering by the Employer or Engineering by the Contractor contracting strategies

4 www.neccontract.com
5 www.neccontract.com

Contract type	Applicability
The Engineering and Construction Subcontract Contract (ECS)	This form of contract is used for Subcontracted works to the main contractor under the ECC. There is very little difference between the ECC and the ECS, other than the names of the parties being changed (contractor and subcontractor) and some of the timescales for contractual responses are altered to take into account the timescales required in the ECC contract.
The Engineering and Construction Short Contract (ECSC)	The short form of the ECC contract and most suitable when the contract is considered "low risk" (not necessarily low value) on a project with little change expected. This contract is still between the Employer and Contractor but does not use all of the processes of the ECC making it simpler and easier to manage and administer.
The Engineering and Construction Short Subcontract (ECSS)	Allows the Contractor to sub-let a simpler lower risk contract down the line to a subcontractor. It is back-to-back with the ECSC but is frequently used as subcontract when the main contract is under the ECS.
The Professional Services Contract (PSC)	For appointment of professional Consultants for consulting works which may include design, contract administration, project management etc.
The Professional Services Short Contract (PSSC)	The short form of the PSC for the appointment of a small team to manage an ECC contract on the Employer's behalf. e.g. the Project Manager and Supervisor. It is frequently used as a subcontract to the PSC for design work.
Framework Contract (FC)	Contracting parties enter into a "framework" of which work packages will then be let during the life of that framework. Any individual projects will then be awarded using one of the other contracts within the suite, meaning that the parties follow the headline clauses within the framework contract (which is a fairly slim contract) and then the individual clauses within the chosen contract for that package.
Term Service Contract (TSC) & Term Service Short Contract (TSSC)	Suitable for operational or maintenance projects. This contract is not generally used for constructing new works but can include some amount of betterment. There is also a "Term Service Short Contract" for projects of relatively low risk.
Supply Contract/Short Supply Contract (SC/SSC)	For the supply of goods to a project excluding site installation. The SC puts extra contractual requirements on suppliers during the procurement/manufacture period. Suitable for big bespoke items i.e. designed and manufactured specifically for that contract. A short version of the contract, the Short Supply Contract (SSC) is suitable for run of the mill / commoditised items.
Adjudicator's Contract (AC)	If there is a dispute between the parties on a project then the Adjudicator will follow the clauses within this contract in order to come to a decision.

The philosophy of NEC is for the Consultant/Contractor to be compensated for any changes in the project at his actual defined cost plus an agreed fee. Therefore valuations of all changes to a project shall be calculated based on the actual defined cost plus agreed fee of the work done. The defined cost and the fee to be applied is agreed upon between the Association and the Consultant/Contractor when the contract is signed, therefore also reducing the risk of disputes between the parties in respect of the cost incurred in respect of changes to a project.

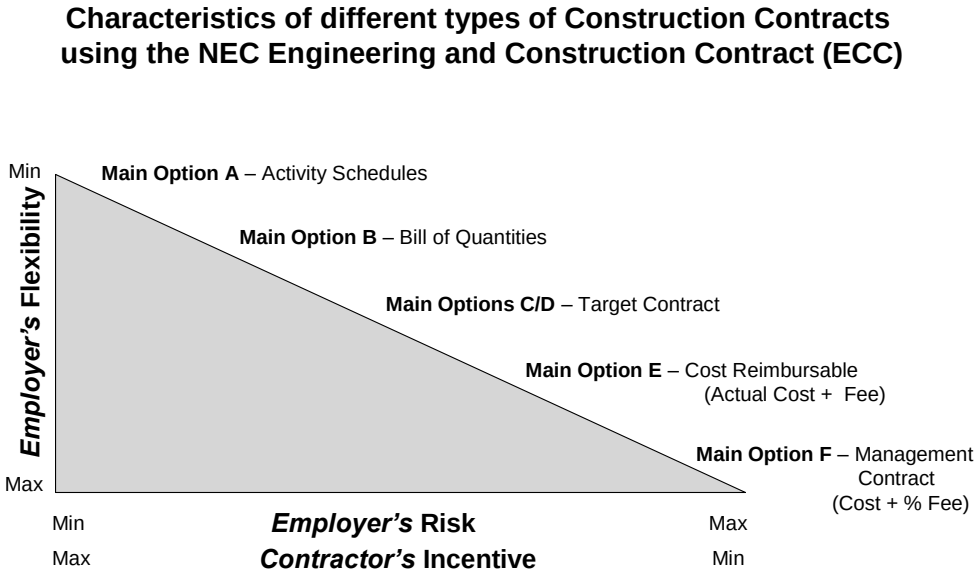
3.2.1.1 Pricing Strategies Utilised Under the NEC

The NEC provides for six different pricing strategies dependant on the option chosen in the contract. One pricing option must be selected for each contract:

- **Option A** – a priced contract with Activity Schedule, being a a lump sum contract, under which the Contractor is entitled to be paid for completed activities;
- **Option B** – this a priced contract with a Bill of Quantities. This form of contract is a remeasurement contract, based on a contracted Bill of Quantities. The Contractor is entitled to be paid for the quantity of work completed, by reference to Bill of Quantities rates;
- **Option C** – a target contract with an Activity Schedule. This is a cost plus contract subject to a pain/gain share mechanism in reference to an agreed target cost (built up from an Activity Schedule).
- **Option D** – similar to option C, this is a target contract with a Bill of Quantities. A cost-plus contract subject to a pain/gain share mechanism with reference to an agreed target cost (built up from a Bill of Quantities);
- **Option E** – a cost reimbursable contract - cost plus contract; and
- **Option F** – a management contract where the Contractor is paid the cost that it pays to its subcontractors plus a pre-agreed fee.

If a cost-reimbursable strategy applies, the Consultant/Contractor receives payment for all his actual defined costs plus a fee thereon. If a re-measured pricing option is applicable to the contract, the final quantities for work done must be measured and agreed between the parties for final account purposes. The standard method of measurement to be utilised in re-measured contracts must be indicated within the contract document. If a lump sum or activity schedule strategy applies, the payments due to the Consultant/Contractor would not be adjusted unless there is a change to the scope. If a target cost strategy applies, the difference between the target cost and the actual cost is apportioned between the Employer and the Contractor on an agreed basis. If a time-based strategy applies, the Contractor is paid monthly for a specified period. The image below shows how high-level risks would typically be allocated in the various pricing options of the NEC3 suite of contracts.

Figure 28: Characteristics of NEC construction contracts



Source: *https:neccontract.com*

3.2.1.2 Salient Features of the NEC Form of Contract

The NEC creates the conditions needed for successful project delivery. It is the only standard contract built around proven best practice in project management and a collaborative approach to risk management. It is a worldwide benchmark in the procurement of capital works, services and supplies that has supported the delivery of thousands of projects worldwide since its launch in 1993. It can be used in any economic sector and any jurisdiction. The contract was first developed in the construction sector under the leadership of the Institution of Civil Engineers, one of the world's most respected professional bodies. Over the last three decades its use has spread into sectors as diverse as oil & gas, facilities management, telecoms and pharmaceuticals.

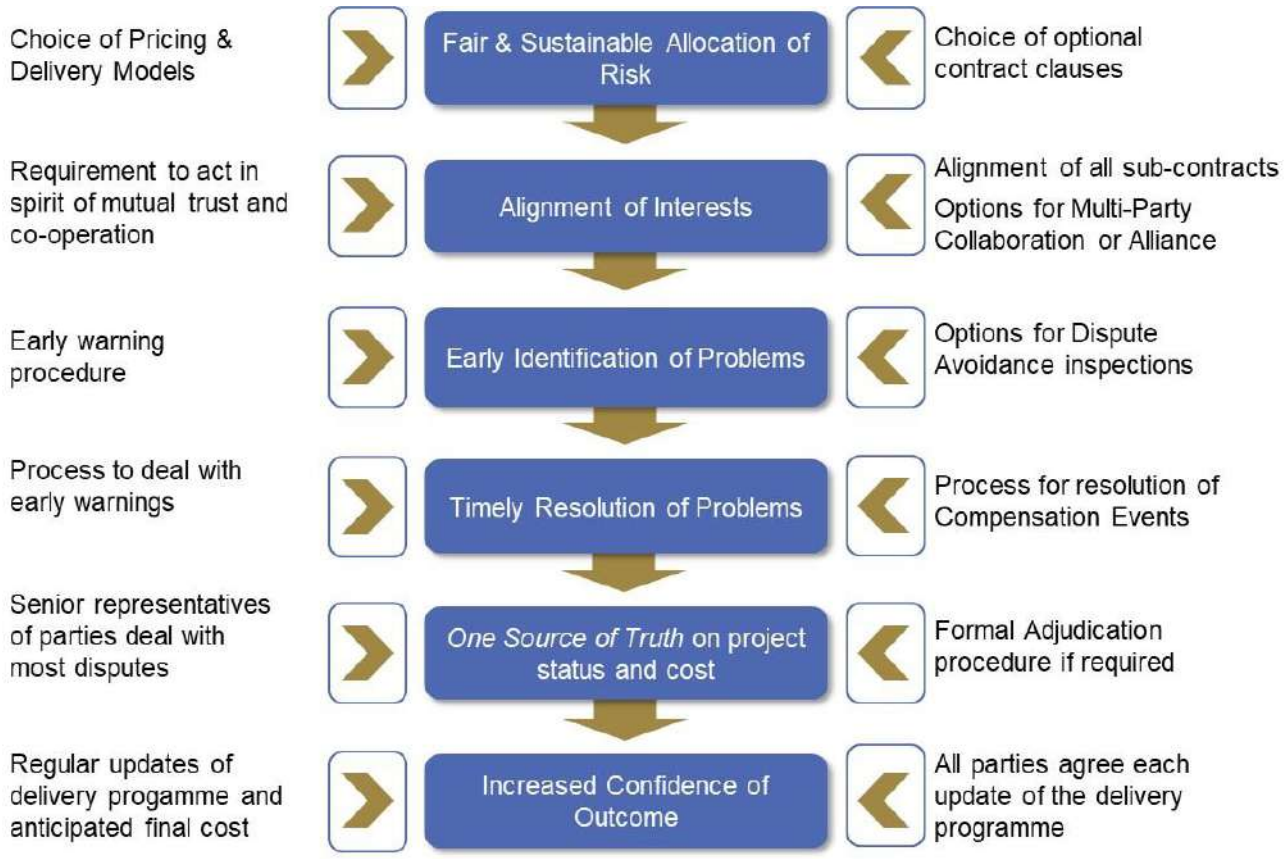
NEC is unique as it is the only standard contract whose development has been led by project practitioners. Their insight means that the of use of NEC stimulates good management of the relationships within the project and the work the parties deliver together.

The allocation and management of risk is the core of the legal and commercial relationship established by a project's contract. This allocation must be fair and sustainable through the life of the project. The party holding a risk should also be able to count on the co-operation of the other party to identify and resolve issues as they arise. The NEC is therefore built around procedures for sensible risk allocation and ensuring that when risks do emerge the parties collaborate to deal with them quickly and decisively.

The NEC can be used anywhere in the world. It is written in plain English, supporting ease of use and translation. Optional Y Clauses allow specific provisions of which legal system will be incorporated into contracts. The contracting parties are also able to incorporate additional clauses tailored to each project in using Z Clauses.

The NEC3 has thus been identified as the preferred contracting mechanism for the OMM Programme. The advantages of using the NEC3 suite of contracts is further demonstrated in the illustration below.

Figure 29: Advantages of using NEC3 suite



Source: *https:neccontract.com*

3.3 OMM Programme Contract Strategies

The key factors that are considered when developing / refining the contracting strategy for each project within the OMM Programme include:

- The Association's objectives and how this relates to the execution model and socio-economic development (SED) expenditure through the construction phase;
- The Association's applicable policies and procedures;
- The specific legislation and regulatory environment that will apply to the project.;Political environment and level of Government intervention e.g., policy, tariffs, labour laws;
- Transport and logistics operations across the vast footprint of the project;
- The technical landscape of the works e.g., location, ground conditions, technology requirements, automation, and interface requirements etc.;
- Timelines for practical completion and sequencing of the projects against the expectations of commercial and community-based users;
- Management capacity and capabilities of the PMU;
- Internal and external stakeholders that will be affecting the construction of the project e.g., current operations, trade unions, communities, and the construction forums;
- Contractor, consultant and supplier capacity and capabilities in the country and the province given the state of the construction industry;

- Training requirements that will be imposed on the Consultants and Contractors;
- Preferential procurement requirements such as local content, supplier development etc.;
- Required SED monitory contributions;
- Risks and equitable apportionment amongst the various parties; and
- Health and safety requirements.

A contracting strategy is developed for each project within the OMM Programme and meeting the targets of affordability, risk transfer and value for money. These aspects are key to deliver the overall OMM Programme or project that is durable and resilient over any debt repayment term.

Allocation and management of risk is the core of the legal and commercial relationship established by the OMM Programme or project's contracts. This allocation must be fair and sustainable through the life of the OMM Programme or project. The party holding a risk should also be able to count on the co-operation of the other party to identify and resolve issues as they arise.

Projects within the OMM Programme should allocate risks to the party best placed to manage them. This judgement normally flows from an assessment of a project's complexity and size. Complexity creates more risks, while size increases the financial impact of a risk being realised. In both cases, contractors or consultants will normally expect to demand a higher price for taking on higher levels of risk. At higher levels of complexity, it may however not be possible to price risks. For larger projects, contractors and their subcontractors may lack the financial strength to accept their share of project risk. In these circumstances both sides are likely to be better served by a pooling of risk and reward or alternatively the Association accepting that it should hold the risk.

3.3.1 Pre-feasibility and Bankable Feasibility Study Phases

The OMM Programme scope is subdivided into three main categories in terms of the OMM Programme Work Breakdown Structure (WBS), being the Bulk Raw Water, the Bulk Potable Water and Potable Reticulation.

As per the approved OMM Programme Contracting Plan, the Study Phase contract for the Bulk Raw and some Potable Water projects, was awarded to ZNJV. ZNJV was involved with the ORWRDP since 2009 and aligned with the OMM Programme objective to maximise the use of available data and designs it was agreed to take over the active ORWRDP contract from DWS through a Cession Agreement. As part of the cession, considering the level of data and work packages available from the Consultant, the contract was converted to a fixed price contract and modified the existing FIDIC contract into a hybrid contract that incorporated many NEC3 terms and references with regard to contract management.

Additional Consultants will be appointed to perform the Study Phase of the Potable Reticulation Projects for the Northern and Eastern Limbs respectively. In order to accelerate the scoping phases for the remaining projects, the OMM Programme has identified Consultants with previous experience and design information for the impacted regions that will be used for scoping the respective projects. Based on good performance, it is further anticipated that the same Consultants may be utilised for the remainder of the study phase up to Full Business Case development. These Consultants will be appointed on NEC3 Professional Service Contracts. The pricing basis will be determined after determining the level of scope definition available for pricing by the Consultants.

Specialist studies such as the Energy Solution was executed by a different consultant, identified through a competitive bid process and appointed on a NEC3 PSC Option C contract.

PMU specialist support services contracts during the study phase are established through a number of NEC3 Short Form Professional Service Contracts and include:

- C2D Engineering (Pty) Ltd - Specialist Technical Services

- Pangea Professional Services (Pty) Ltd - Project Control and Contract Management Services
- Cortac Projects (Pty) Ltd - Security Services
- Alta van Dyk Oxidane (Pty) Ltd - Environmental, Stakeholder and Regulatory Services
- Allen and Overy - Legal Services
- Other consultants that are added from time to time as required.

PWC is appointed for general project management, project controls and technical specialist services based on the PWC Master Service Level Agreement.

3.3.2 Execution Phase Contracting Strategy Selection

The typical contracting strategies which are ordinarily considered in the development of capital projects could be any one of the permutations outlined below, with focal attention being given to the allocation and management of risk which is at the core of the legal and commercial relationship. The below acronyms are for use only in this section.

Table 32: Acronyms

Contract commercial strategy options	Definition
EPC – Engineer, Procure & Construct	This strategy is focused on combining each activity and transferring the risk to a single company.
EPCM – Engineer, Procure (equipment or servides for and on behalf of owner) & Construction management	This strategy is focused on combining the activities of engineering and procurement while only managing construction. The client will own the construction contract.
E,P and C – Engineering, Procurement, and Construction by separate entities	This strategy is focused on separating each activity and is typically used in long term public projects where the use of concurrent engineering, procurement and construction is not common.
PEpC – Procure, Engineer, procure (top up) & Construction	This strategy is focused on applying Procurement Strategies up front followed by Engineering, tactical procurement and construction activities.
cEPC – constructability and sconstruction strategy development, Engineer, Procure & Constructe	This strategy is focused on applying Construction and Constructability Strategies up front followed by Engineering, Procurement and Construction activities.
EP – Engineer & Procure	This strategy is focused on applying a strategy to drive a linkage between Engineering and Procurement with the owner or third party doing the Construction.
EC – Engineer & Construct	This strategy is focused on applying a strategy to drive a linkage between Engineering and Construction with the owner or third party doing the Procurement.
E – Engineering	This strategy is focused on the front end design and deed analysis and separates the decision for selecting an alternate

Contract commercial strategy options	Definition
	strategy till more analysis is done. This strategy requires that the Engineering deliverables be of sufficient detail to allow competition for selection of an alternate strategy later in the project.

In landing on the most appropriate contracting strategy for execution project scopes within the OMM Programme, a detailed analysis of the risks and benefits of the EPC and EPCm strategy was conducted and summarised in the table below:

Table 33: Risks and benefits comparison of EPC, EPCm, and E&P strategies

Scope / Task / Issue	EPC (Engineering, Procurement and Construction)	EPCm (Engineering, Procurement and Construction Management)	E & P (Engineering, Procurement)
Equipment Supply Contracts	Negotiated & Signed solely between EPC contractor & Supplier	Negotiated & signed between Owner and Supplier /with EPCm contractor's advise and assistance	Negotiated & signed between Owner and Supplier /with EPCm contractors advise and assistance
On-Site Construction Contracts	Negotiated & Signed solely between EPC contractor & Supplier	Negotiated & signed between Owner and Contractor /with EPCm contractor's advise and assistance	Negotiated & signed between Owner and Supplier /with EPCm contractor's advise and assistance
Supplier Selection	Suppliers chosen solely by EPC contractor with limited input from Owner	Suppliers chosen by mutual agreement of Owner and EPCm contractor	Suppliers chosen by mutual agreement of Owner and EPCm contractor
Scope of Supply	Total, Engineering, Procurement and Construction, which provides a liability wrap for the associated scope. A pre – requisite for an EPC strategy is a well defined scope, which inherently limits the amount of change mitigation what could be an expensive change environment.	Engineer, Procurement (Equipment & Services) on a for and on behalf of basis. This does not consolidate project liability for the owner and exposes the owner to "pass through" equipment and construction costs. This does however allow the owner flexibility a to effect change and commence with less project definition.	Engineer, Procurement (Equipment) on a for and on behalf of basis. This does not consolidate project liability for the owner and exposes the owner to "pass through" equipment and construction costs. This does however allow the owner flexibility a to effect change and commence with less project definition.
Equipment Supply Warranties	Consolidated under the EPC contractor, providing a single point of liability. Warranties negotiated by Suppliers & EPC contractor and issued to EPC Contractor directly.	Does not provide a consolidated warranty regime. Warranties are negotiated individually with each supplier by Owner with EPCm contractor's advice. Issued directly to Owner from the suppliers and contractors	Does not provide a consolidated warranty regime. Warranties are negotiated individually with each supplier by Owner with EP contractor's advice. Issued directly to Owner from the suppliers and contractors
Process Warranties	Consolidated under the EPC contractor, providing a single point of liability.	Does not provide a consolidated warranty regime. Warranties negotiated individually	Does not provide a consolidated warranty regime. Warranties negotiated individually

Scope / Task / Issue	EPC (Engineering, Procurement and Construction)	EPCm (Engineering, Procurement and Construction Management)	E & P (Engineering, Procurement)
	Warranty to Owner from EPC contractor is negotiated separately between Owner and EPC Contractor and issued to Owner by EPC Contractor (Usually in the form of a performance Bond)	with each supplier by Owner with EPCm contractor's advice. Issued directly to Owner from the suppliers and contractors (Usually in the form of a Performance Bond)	with each supplier by Owner with EP contractor's advice. Issued directly to Owner from the suppliers and contractors (Usually in the form of a Performance Bond)
Construction Site Safety (General Liability Insurance, Workman's Compensation, Accident, etc.)	Site Safety solely the responsibility of the EPC contractor and sub contractors; in accordance with Contractual Agreements	Site safety is monitored by EPCm contractor but site safety is the legal responsibility of Owner and Sub Contractors; in accordance with Contractual Agreements.	Site safety is monitored by Owner and Sub Contractors; in accordance with Contractual Agreements.
Permitting (Environmental, Construction, etc.)	Permitting is the responsibility of the EPC contractor with the exception of permits that are required by law to be issued in the name of the Owner of the project	Permits are issued by the Owner directly with EPCm contractor assisting in filing the necessary paperwork	Permits are issued by the Owner directly
Project Budget Cost Overruns	The cost risks for a project are borne by the EPC contractor. Any cost overruns, for equipment and/or services within the EPC contractor's scope of supply, are for their own account and can not be passed onto Owner unless "change conditions" occur or contractual agreements to the contrary	The cost risks for a project are borne by the Owner. Any cost overruns, for equipment and/or services are for the Owner account (with the exception of fixed price supply contracts) i.e. Final equipment pricing bids / on site cost higher than originally budgeted.	The cost risks for a project are borne by the Owner. Any cost overruns, for equipment are for the Owner account (with the exception of fixed price supply contracts) i.e. Final equipment pricing bids / on site cost higher than originally budgeted.
Project Budget Cost Savings	The cost risks for a project are borne by the EPC contractor. Any cost savings, for equipment and/or services within the EPC contractor's scope of supply, are for their own account and are not passed onto	The cost risks for a project are borne by the Owner. Any cost savings, for equipment and/or services are for the Owner account ie. Equipment/Services bids are returned lower than budgeted.	The cost risks for a project are borne by the Owner. Any cost savings, for equipment are for the Owner account ie. Equipment bids are returned lower than budgeted.

Scope / Task / Issue	EPC (Engineering, Procurement and Construction)	EPCm (Engineering, Procurement and Construction Management)	E & P (Engineering, Procurement)
	Owner unless contractual agreements to the contrary		
Project Day-to-Day Expenses	The day-to-day expenses for the project, within the EPC contractor's scope of supply are borne by the EPC contractor.	The day-to-day expenses for the project are borne by the Owner but are managed and administered by the EPCm contractor (up to pre-determined quantities, without Owner's need for intervention). Usually a small fund is established by Owner for day-to-day expenses	The day-to-day expenses for the project are borne by the Owner but are managed and administered by the EP contractor (up to pre-determined quantities. without Owner's need for intervention). Usually a small fund is established by Owner for day-to-day expenses
Project Financing	Consolidated liability profile preferred. Project Financing is usually accomplished through Irrevocable Letter of Credit (with partial payments) from Owner to EPC Contractor. This requires Owner to have all financing in place at the onset of the Project so as to secure letter of credit (LC).	Fragment liability profile not preferred by financiers - Project Financing can be any combination of down payments, open accounts, and Irrevocable Letters of Credit from Owner to suppliers / contractors; whatever method is negotiated during contract negotiations.. This allows Owner to have partial financing in place.	Fragment liability profile not preferred by financiers - Project Financing can be any combination of down payments, open accounts, and Irrevocable Letters of Credit from Owner to suppliers; whatever method is negotiated during contract negotiations. This allows Owner to have partial financing in place.

In developing procurement and contracting strategies the risk associated with the prospective scopes were evaluated. On the basis of good risk management practices, the execution party in the best position to manage a particular risk is allocated the management responsibility. Based on this approach and considering the risks and benefits of EPC versus EPCM strategies as defined in the above table, market feedback, policy positions, the complexity and available level of design definition of the Bulk Water Projects as well as the Primary and Secondary Water Reticulation Projects (not very complex and easy to obtain high levels of definition prior to bidding) within the OMM Programme, the NEC3, Option A, EPC fixed price lump sum was selected. This strategy for the respective projects allocates the risk for engineering & design, procurement and construction to the Contractor, while the risk for funding and operations in this project will remain with the Association. This allows for the consolidated wrap of liabilities in complex high value projects. Any subcontractors will also be contracted and managed directly by the EPC Contractor. All the intended contracts will be awarded on a competitive tendering basis.

The existing Southern extension project under the Association has been incorporated into the OMM Programme. The construction Works are being done under the GCC framework and the Employer's Agent Contract is under the CESA framework.

The following table illustrates the pricing risk allocation in an EPC contract:

Table 34: Pricing risk allocation

Risk Allocation: Design	Association	Contractors	Shared
Cost overrun caused by design		x	
Construction delay caused by design		x	
Operating inefficiencies caused by design		x	
Obtaining land ownership and warranting good title to land	x		
Relocation of people / livelihoods restoration	x		
Obtaining Planning Permission and other consents			x
Risk Allocation: Construction	**Association**	**Contractors**	**Shared**
Construction problems cause time overrun		x	
Contractor becomes insolvent		x	
Delay or restricts site access by others	x		
Force Majeure causes delay	x		
Force Majeure causes cost overrun		x	

Facility never satisfies handover requirement		x	
Private Sector partner abandons construction due to Business Forums*		x	
Risk Allocation: Finance	**Association**	**Contractors**	**Shared**
Inflation rate changes	x		x
Private Sector partner's costs are higher than budgeted		x	
Change in tax legislation / rates		x	
Discriminatory or project-specific change in law	x		
Public Sector partner changes performance standards	x		
Private Sector partner found guilty of corrupt practices		x	

Over and above the scope specific pricing strategy to minimise risk as described in previous sections, the tenderers will also be requested in their Requests for Proposals (RFP) to provide, as part of the tender documentation, a detailed priced risk profile associated with their bid. This information will place the OMM Programme in a position to evaluate each component of the risk profile and agree between the OMM Programme and Consultant/Contractor, as to who is in the best position to manage the specific risk item and allocate the required responsibility and funding to the identified risk owner.

A similar approach as described above has shaped the development of the contracting and execution strategies for all projects within the OMM Programme as summarised in the graphic below:

Table 35: Pricing risk allocation

OMM Programme - Project IBC Contracting Strategy									
WBS		**Pre-feasibility**	2	**Feasibility**	3	**Detail Design & Implementation**	4	**Commissioning**	5	**Operations**
Bulk Raw Water Northern Limb		**Advisory Serices (PWC - Cost Reimbursable)**		**Assurance Serices (PWC - Cost NEC PSC Opt E)**						**Association**
		Assurance Serices (PWC - Cost Reimbursable)	OMM PMU (LWUA + Specialist Suppport Services)	**OMM PMU (LWUA + Specialist Suppport Services)**						
					PMC Services NEC - PSC - Option C (Target Price) - Competative Bid					Association
	Resevoir			Main Consultant - Cost Reimbursable (FIDIC White) - ZNJV - Existing Contract	EPC NEC - ECC - Option A (Lump Sum) - Competative Bid					Association
	Pipelines									
	Pump stations									
	Support Infra Structure									
	Energy			Consulting Engineer Engineer NEC PSC Option C or Integrate with Main Consultant	EPC NEC - ECC - Option A (Lump Sum) - Competative Bid					
Bulk Raw Water Eastern Limb	Resevoir			Main Consultant - Cost Reimbursable (FIDIC White) - ZNJV - Existing Contract	EPC NEC - ECC - Option A (Lump Sum) - Competative Bid					
	Pipelines									
	Pump stations									
	Support Infra Structure									
	Energy			Consulting Engineer Engineer NEC PSC Option C or I Integrate with Main Consultant	EPC NEC - ECC - Option A (Lump Sum) - Competative Bid					
Bulk Potable Northern Limb	Command Res			Main Consultant - Cost Reimbursable (FIDIC White) - ZNJV - Existing Contract	EPC NEC - ECC - Option A (Lump Sum) - Competative Bid					Association / DWS
	Water treatment Wk.				EPC NEC - ECC - Option A (Lump Sum) - Competative Bid					
	Pipelines									
	Pump stations				EPC NEC - ECC - Option A (Lump Sum) - Competative Bid					
	Support Infra Structure									
	Energy			Consulting Engineer Engineer NEC PSC Option C or I Integrate with Main Consultant	EPC NEC - ECC - Option A (Lump Sum) - Competative Bid					

Bulk Potable Eastern Limb	Command Res			Main Consultant - Cost Reimbursable (FIDIC White) - ZNJV - Existing Contract		EPC NEC - ECC - Option A (Lump Sum) - Competative Bid	
	Water treatment Wk.					EPC NEC - ECC - Option A (Lump Sum) - Competative Bid	
	Pipelines					EPC NEC - ECC - Option A (Lump Sum) - Competative Bid	
	Pump stations						
	Support Infra Structure						
	Energy			Consulting Engineer Engineer NEC PSC Option C or I Integrate with Main Consultant		EPC NEC - ECC - Option A (Lump Sum) - Competative Bid	
Potable Reticulation Northern Limb	Primary			Consultant 2	Consultant ?	EPC NEC - ECC - Option A (Lump Sum) - Competative Bid	Water Service Authority
	Secondary						
	Yard & Meter Inst					NEC 3 - SCC - Option B Local EME Contractor - Competative Bid	
	Local Resevoir					EPC NEC - ECC - Option A (Lump Sum) - Competative Bid	
Potable Reticulation Eastern Limb	Primary			Consultant 3	Consultant ?	EPC NEC - ECC - Option A (Lump Sum) - Competative Bid	
	Secondary						
	Yard					NEC 3 - SCC - Option B Local EME Contractor - Competative Bid	
	Local Resevoir					EPC NEC - ECC - Option A (Lump Sum) - Competative Bid	
Refurb / Upgrade	Bulk Raw Water			Consultant 4	Consultant ?	NEC 3 - SCC - Option B Local EME Contractor	Association
	Bulk Potable Water					NEC 3 - SCC - Option B Local EME Contractor	Association / DWS
	Potable Water Reticulation NL			Consultant 5	Consultant ?	NEC 3 - SCC - Option B Local EME Contractor	Water Service Authority
	Potable Water Reticulation EL			Consultant 6	Consultant ?	NEC 3 - SCC - Option B Local EME Contractor	

In the projects for Reticulation the contracting option will be Engineering and Construction Short Contract (ECSC) Option B, given the multiplicity of contracts and the lower value, and repetitive nature of the works. This format is well suited for less complex packages and presents an opportunity to drive local contractor participation. These contractors do not have the funding capacity for other contract types and therefore the Association will keep the majority of the project risks. The NEC3 SCC contract is a simplified and less cumbersome form of contracting that will be more easily managed by the Contractors. As the number of yard & meter units will depend on the existing end users at the time of installation, a re-measurable contract is considered more suitable. The appointed Contractors will then be compensated and paid for the number of units installed. This will ensure that the OMM Programme only pays for the actual installed units, reduce the risk that might be priced into the works by the Contractor, and simultaneously ensures that the Contractor is not out of pocket for the actual work that was done.

The Refurbishment and/or Upgrade Projects, integrating existing infrastructure into the overall OMM Programme scope, contracting strategy will be based on NEC 3 SCC Option B. The extent of refurbishment and upgrades that will become necessary during this phase of the OMM Programme will not be well-defined, and a different pricing option was thus elected, being re-measurable. This will compensate for the uncertainty in quantities of works to be completed and ensure that the Contractors don't include too much risk in their pricing, whilst also ensuring that the Association can have some sort of indication of costs to be incurred. The price per unit to be installed will be agreed when the contract is awarded. Local Exempted Micro Enterprise (EME) contractors will also be considered for these projects especially in areas where they have to work closely with the municipalities or WSAs.

To manage these different contracting strategies and in an attempt to attain consistency of standards, coordinated efficiencies and a centralised technical/engineering command center for the main scope components/projects within the OMM Programme, the decision to appoint Programme Management Consultant (PMC)s was made. The PMC will provide professional technical services for the identified work packages on a NEC3 Target Price, Option C contract basis in order to manage valid changes in scope with a ceiling budget.

The PMU supported by the PMCs will oversee the contractual nexus, pricing, and scope constructs in the strategies.

3.3.3 Long Lead Procurement Items

The Long Lead (LL) items will be identified during the EPC bidding processes, where the EPC bidder will present the procurement strategy (timing, pricing and source of supply) for those identified pieces of equipment. The proposed LL procurement strategy will feature in the evaluation process with a view to aligning with the financing arrangements in place as well as potential markets risks associated with the supply. To protect the project against delays in critical and LL items the successful bidder will be required to be ready to place these identified orders within the first 30 days after contract award.

3.4 Contractual Framework

The NEC3 ECC Terms and Conditions are included in Annexure E1. The NEC3 is drafted around three main objectives:

1. Stimulus to good project management;
2. Clarity; and
3. Flexibility.

It is drafted on a relational contracting basis, based on the belief that collaborative working across the entire supply chain optimises the likely project outcomes when compared with a typically fragmented and non-integrated approach to designing and constructing projects. The NEC3 contracts are accordingly designed to encourage collaboration and teamwork, rather than a confrontational approach to the management of a contract.

The first clause in every contract requires the parties to the contract, and any project / services / supply manager appointed in accordance with the contract, to "act as stated in the contract and in a spirit of mutual trust and cooperation". The NEC3 contracts provide effective control of change, speedy agreement of time, quality and cost impacts of change, improved early forecasting of end costs, greater accuracy of end date forecasts, early warning of risks and potential change, and quick dispute resolution mechanisms. They also contain clear procedures with clear time limits for actions to be taken, which: are designed to reduce financial and decision-making chains and make use of risk and value management tools.

The structure of the ECC Contract includes:

- Core Clause Provisions;
- Main Option clauses;
- Dispute Resolution;
- Secondary Option Clauses;
- Schedule of Cost Components;
- Shorter Schedule of Cost Components; and
- Contract Data.

In the administration of Contract, the NEC General conditions of the Contract will be also extended by the owner in order to address amongst others, specific requests, owner policies and processes. These additional clauses will be added to contract packages and termed as Z-Clauses. These clauses are crucial to ensure that the special requirements not covered by the NEC contract are also considered / incorporated.

During procurement, the Z-Clauses will be compiled in two parts addressing amending of the General conditions (i.e. the Core clauses and secondary clauses) and additional ones covering client specific requirements.

3.4.1 Market Engagement

3.4.1.1 Current South African Market and Market Interest

The South African construction sector is a key driver for employment and socio-economic development of the country. Even though the government reported numerous budgets to various construction sectors, the South African construction industry is currently facing challenges brought on by the ongoing energy crisis, rising inflation, supply chain disruptions, rising in construction material prices and skill shortages. According to Statistics South Africa the average construction materials price index rose by 12.3% in 2022 and for various reasons and challenges 94 companies in the construction sector went into compulsory or voluntary liquidation in 2022, up from 71 in 2021.

Despite the abovementioned challenges there are still various construction companies operating nationally in South Africa who are demonstrating strong performance in project exection and delivery. Due to the nature of the OMM Programme most of the identified projects will have to be executed by Contractors that has the ability to design and construct mega projects, which reduces the number of Contractors eligible to tendering for the works. The Potable Reticulation projects will be set-up in such a way to enable smaller local Contractors to tender for the works.

The intend is to firstly source possible Contractors through an RFI process from local and national registered Construction companies. International Construction companies will only be considered if none could be sourced nationally.

Based on the response to the already issued RFI for the constructions of the 2B and 2B+ project it is clear that various well known national Construction companies that can manage mega projects are interesting in tendering for the OMM Programme's projects and that the bidder community is large enough to provide competitive bids for OMM Programme as 6 bid responses were received.

Similarly huge interest was shown by Consultants in responding to the already issued RFI for conducting study phase work for the Potable distribution works. A total of 10 responses were received.

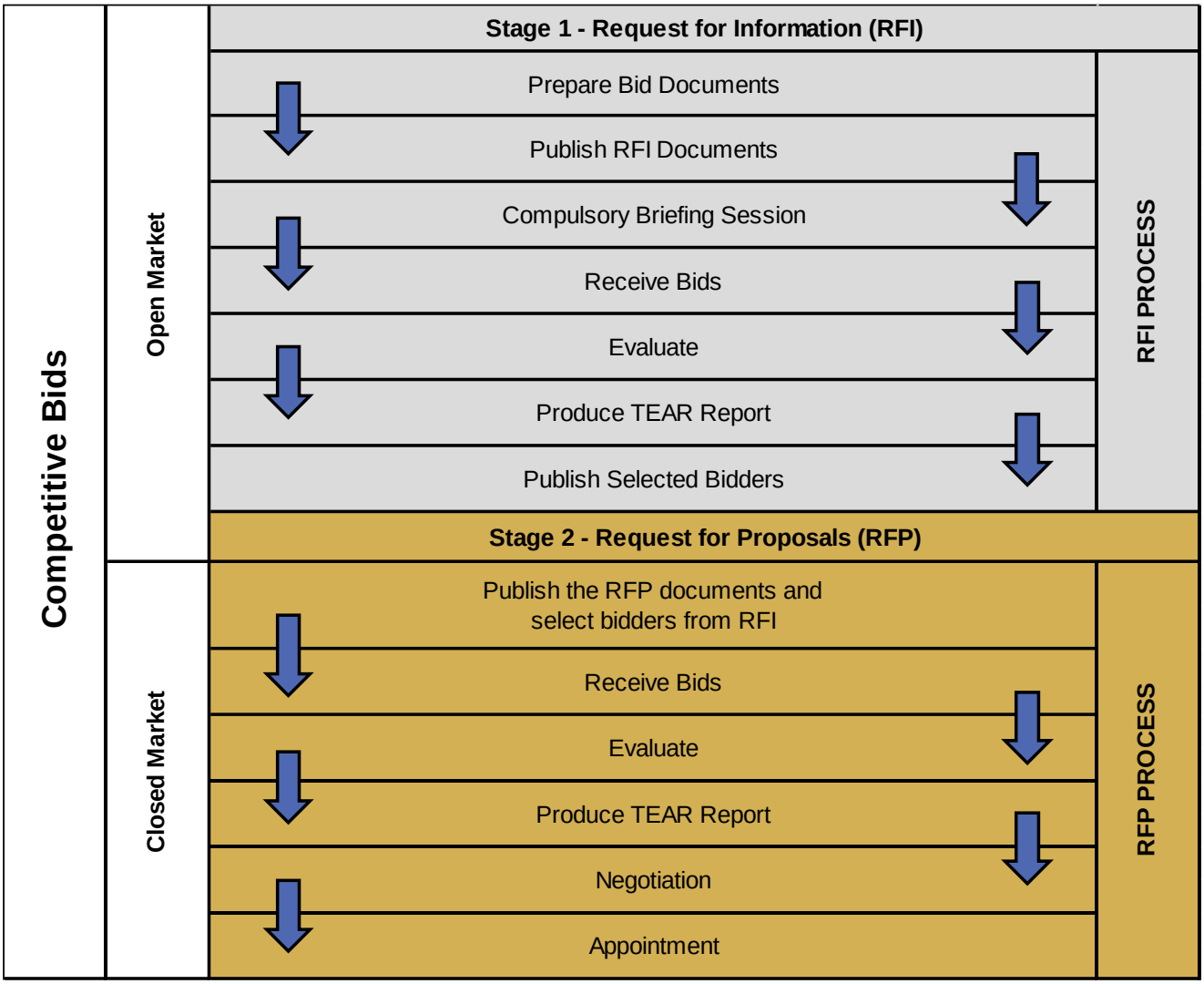
The above shows that the market is interested in participating in the OMM Programme and with the right risk mitigations and support from the Association and its members Consultants and Contractors can successfully participate in the OMM Programme.

3.4.1.2 Market Engagement Strategy and Plan

In terms of the Association's Procurement Policy which provides for transparent, equitable and cost-effective procurement (see Attachment A3), the OMM Programme will approach the market in a 2-stage process, as detailed in the image below. The first stage will be an RFI to shortlist Consultants/Contractors and followed by the second stage RFP to procure the projects that make up the OMM Programme. The Request for Information (RFI) will pre-select the market for all contracts and will precede the Request For Proposal (RFP) package which will be developed for each defined work package. The RFP will comprise of:

- Letter of Invitation;
- Instruction to Tenderers;
- Contract Data Part 1 – Terms & Conditions – Main Pricing Option; and
- Contract Data Part 2 - Data from Contractor.

Figure 30: Competitive bids process



3.4.2 Preferential Procurement Goals

Considering the need to participate meaningfully in the socio-economic transformation of South Africa, the association has identified specific procurement principles that will address business and wealth creation imperatives with its dedicated procurement philosophy and also in line with best practice. The procurement goals will also be extended to meet localisation of content and production.

To this end, the Association is committed to setting specific preferential procurement goals that promote fairness and improve transparency to ensure that participating companies do not feel prejudiced. Specific goals will be set and applicable criteria set to evaluate for any procurement exercise.

The Association's specific preferential goals, in line with policy, will include amongst the others as a minimum:

1. BEE participation;
2. Local content and local production;

3. Skills sourcing;
4. Improved participation of designated groups; e.g. Black Woman owned and youth owned Enterprises; and
5. Participation of Fund creation for Enterprise development.

3.4.2.1 BEE Participation

The Association is committed to achieving its B-BBEE objectives, throughout the implementation of the whole OMM Programme. Tenderers will be requested to demonstrate its full compliance to the Pre-Qualification (Eligibility Criteria) requirements by supplying a valid B-BBEE Certificate: The minimum Broad-Based Black Economic Empowerment (B-BBEE or BEE) criteria requirement is a level 4 and above contributor in line with the Association's procurement policy which will be issued to the prospective Tenderers. Joint Ventures will be allowed to demonstrate eligibility through separate member companies, if the JV is not yet incorporated. Furthermore, an appointed Contractor may not subcontract more than 25% of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level of contributor than the person concerned, unless the contract is subcontracted to an Exempted Micro Enterprise (EME) that has the capability and ability to execute the subcontract.

In line with policy, the increase in B-BBEE procurement will be achieved through the application of several strategic interventions, which may include but are not limited to:

- Setting of weightings for B-BBEE for supplier selection initiatives;
- Developing a database for B-BBEE enterprises which will be updated regularly;
- Demanding B-BBEE accreditation of suppliers, where applicable; and
- Negotiating B-BBEE commitment and development plans with suppliers where appropriate.

3.4.2.2 Local Content and Local Production

The Association will promote local production and local content as evaluation criteria where appropriate.

Preference for purchases to be sourced within project area, and if not available within the project's district, then provincially and ultimately nationally. Only when resources could not be obtainable nationally, then these could be procured or sourced internationally (outside the borders of South Africa).

Proposals for the establishment of local assembly areas could be considered if it demonstrates the support to achieving the OMM Programme objectives by improving availability timeously and curbing out necessary delays.

3.4.2.3 Skills Sourcing

Professional skills preference to be given to local entities as specified above. All labour will be sourced internally in line with Association's applicable policies including the SED and stakeholder-agreed processes during EIA and/or Stakeholder engagement platforms.

3.4.2.4 Improved Participation of Designated Groups

The Association will actively promote the increase in procurement from B-BBEE enterprises (EMEs and QSEs) and SMMEs. Businesses will be evaluated technical and otherwise, but additional points will be attracted by enterprises owned by women or youth. Enterprises that do not qualify after a technical evaluation, could further get opportunities through the enterprise development training, where applicable.

3.4.2.5 Participation of Fund Creation for Enterprise Development

The Association recognises the critical importance of local skills development and enterprise development in the region in which it operates. To assist in the achievement of these goals, the Association is in the process of establishing accredited local skills and enterprise supplier databases for use by successful tenderers to the sourcing process for implementation. The Association will set its preferential procurement targets, and these are intended to be included in contracts following analysis of registrants to these databases. The intent is for a Skills Development Fund (SDF) and Enterprise Development Fund (EDF) to be established to assist in giving effect to developing local skills and enterprises in the area. Successful tenderer(s) to this sourcing process will be required to pay a contribution of 1% of the awarded contract value to the establishment of the EDF.

The Association will also welcome any initiatives the tenderers may propose on additional skills, enterprise, and socio-economic development models included in the tenderer's RFP submission for consideration.

3.4.2.6 Measurement Criterion of the Preferential Goals

The table below contains the OMM Programme's proposed preferential goals score.

Table 36: Proposed preferential goals score

1 B-BBEE Participation Evaluation:

Description	Maximum Score	Bidders Score
B-BBEE Status Level	**7**	
Level 1 - 135% procurement	**7**	
Level 2 - 125% procurement	**6**	
Level 3 - 110% procurement	**5**	
Level 4 - 100% procurement	***4***	
Below Level 4	**0**	
Non-Compliant contributor	**Disqualified**	
MINIMUM THRESHOLD	**4**	

2 Local Content and local production:

Description	Maximum Score	Bidders Score
Local Content (Including Production Plants and / or Assembly Plants)	**10**	
Demonstrate a spent of 100% of Locally Available Plant, Material and Equipment	**10**	
Demonstrate a spent of between 75- 100% of Available Plant, Material and Equipment	**8**	
Demonstrate a spent of between 50- 75% of Available Plant, Material and Equipment	**6**	
Demonstrate a spent of between 50-30% of Available Plant, Material and Equipment	**4**	
Demonstrate a spent of below 30% of Available Plant, Material and Equipment	**0**	
MINIMUM THRESHOLD	**4**	

3 Skills Sourcing

Description	Maximum Score	Bidders Score
Professional skills in line with availability of the Skills set	**10**	
Appointment of local resources - 100% Professionals	**10**	
Appointment of local resources - between 75- 100% Professionals	**8**	
Appointment of local resources - between 50- 75% Professionals	**6**	
Appointment of local resources - between 50-30% Professionals	**4**	
Appointment of local resources - below 30% Professionals	**0**	
MINIMUM THRESHOLD	**4**	

4 Description	Maximum Score	Bidders Score
Improved participation of designated groups	**15**	
Allocate at least 5 % of fees value towards either black owned or Black woman Owned or Youth Owned Enterprises (EMEs or QSEs)	5	
1 point for every 1% value of goods above 5 % value of work to a maximum of 15%.	15	

5 Description	Maximum Score	Bidders Score
Bonus Points - Bidder's Proposal	**5**	
Exceeding Minimum Threshold of LWUA Policies	5	
In line with Minimum Threshold of LWUA Policies	3	
Below minimum Threshold of LWUA Policies	1	
No Proposal	0	

Key considerations on the preferential goals include:

- Any specific goal for which a point may be awarded will be clearly specified in the invitation to submit a tender;
- Any goals contemplated shall be measurable, quantifiable and monitored for compliance, and
- Bidder's proposal could earn additional points.

3.5 Key Executive Phase Readiness Activities

The OMM Programme has solicited the market in terms of an RFI on 22 February 2023 to qualify the market for Contractors to engineer, procure and construct the 2B & 2B+ pipeline and three pump stations. The RFI covered the following areas of bidder capacity: technical capability and past project experience, financial capability and strength to finance the project, proposed project team with proper qualifications and sufficient experience, along with other administrative requirements. After closure of the RFI on 13 March 2023, and following a further round of clarifications to allow tenderers to amplify their responses, four out of six tenderers that responded have qualified to make it through to the RFP stage. Bids will be requested from the four qualifying tenderers to ensure a competitive bidding process. The RFP in terms of NEC3 ECC Option A(fixed price lump sum based on an Activity Schedule) will be issued to the shortlisted tenderers by mid- April 2023 with a return date by mid-August 2023. It is intended that the contract will be awarded by latest December 2023. It is forecast that construction will begin in January 2024 on these parts of the pipeline with a construction period of at least 24 months.

It is further forecast that an RFI to qualify the market based on NEC3 ECC Option A (fixed price lump sum contract based on an Activity Schedule) for the Sekuruwe and Mokopane water treatment works will also be issued in early April 2023, followed by an RFP process and planned construction start date of January 2024 for a 24-month construction period. The rest of the water treatment packages is forecast to be completed for procurement by July 2024.

The, 2F, 2H, Bulk Potable Water Supply, and Potable Water Reticulation packages , will also be launched into the market on an RFI and RFP basis as they progress with the design and specification work, which are all forecasted to be within the next 12 months from the date of this IBC.

3.6 Conclusion

The Commercial Case demonstrated that the preferred contracting options selected will result in a viable procurement and a well-structured deal for the parties. Commercial and procurement strategy options were evaluated and strategies selected for the different projects. The selected strategies are driven by and addresses key project development and execution elements such as:

- Appropriate allocation of risk
- Consolidation of interfaces and liabilities (Contractual wraps)
- Cost certainty
- Quality and schedule integrity
- Socio-economic delivery

The allocation and management of risk is the core of the legal and commercial relationship established by a project's contract. In selecting the commercial and procurement strategies, the team ensured that the allocations

are fair and sustainable through the life of the specific projects. The party holding a risk should also be able to count on the co-operation of the other party to identify and resolve issues as they arise. With this in mind the the New Engineering Contact (NEC 3), built around procedures for sensible risk allocation and ensuring that when risks do emerge the parties collaborate to deal with them quickly and decisively, was selected as form of contract in support of the strategies.

The specific details of the form of contract and pricing options was considered for every project in light of the anticipated complexity and scope of works. The selection is supported by a contractual structure which promotes collaborative approach and also fair and equitable risk allocations to the party best suited to mitigate and potentially minimise the risk. The following startgies were selecte:

- Bulk Water Projects, Primary and Secondary Water Reticulation Projects – NEC3, Option A, EPC fixed price lump sum;
- Potable Water Reticulation – NEC3 SCC Option B, Unit Rates re-measurable; and
- The Refurbishment and/or Upgrade Projects – NEC 3 SCC Option B Unit Rate re-measurable.

The overall strategy also makes provision for the appointment of Programme Management Consultants (PMCs) to provide professional technical services for the identified work packages on a Target Price, Option C contract basis in order to manage valid changes in scope with a ceiling budget. The PMU, supported by the PMCs will oversee the contractual nexus, pricing, and scope constructs in the strategies following the methodologies as detailed in the Management Case. These management levels include:

- Assurance through Project implementation by the Project Managers;
- The project control in collaboration with the Consultant and Contractors to ensure that the project remains on schedule, with the allocated cost and the appropriate quality; and
- Lastly, the assurance where final confirmation that processes and procedures are adhered to.

4. Financial Case

The purpose of the financial dimension of the business case is to demonstrate the affordability, sustainability and funding approach of the selected options, including illustrating the support of the various stakeholders and off-takers. The capital structure, revenue, operating costs and whole life costs of the OMM Programme were considered in order to present the forecasted balance sheet, cash flow and income statement.

4.1 Introduction

The OMM Programme includes several phased projects and will build upon a network of existing Association and DWS infrastructure to support the delivery of bulk and potable reticulation water in the region. The first of these projects include Phases 2B and 2B+, the Northern Limb Water Treatment Works and the associated Northern Limb Energy solution integrated into the two main projects, with an estimated combined capital cost R10.66 bn (nominal, before SED spend and funding costs).

To assess the associated cost, affordability, financial sustainability and financing options of the OMM Programme, and specifically for Phases 2B and 2B+ and the related Water Treatment Works, we considered the estimated capital and operational cost requirements of both the new projects and the existing infrastructure, the capital structure for the OMM Programme, prospective sources of funding and informal feedback obtained from a subset of the prospective financiers, proposed revenue and reserving mechanisms as well as credit and payment risk considerations and mitigants given the envisaged Commercial and Institutional Member offtakes.

This Financial Case sets out the current understanding of and aspects related to the above key considerations.

4.2 Implementation Strategy

It is the strategy of the OMM Programme to develop the programme of projects by following the development process as mandated and by obtaining specialist development, engineering, procurement and construction management skills in the market.

These skills will be obtained through the appointment of Study Phase Main Consultants supported by Specialist Consultants that will complement the skills of the PMU. The Study Phase Main Consultants and Specialist Consultants will be responsible to design the technical aspects of the project, provide necessary skills and knowledge through the use of their internal processes and software systems to achieve and deliver the scope of the OMM Programme.

The OMM Programme plan provides for the appointment of three Main Consultants. The Bulk Water Supply Consultant (ZNJV) was appointed in December 2022. This consultant will also provide support, general programme scope coordination and programme integration. The other Main Consultants will be appointed to execute the feasibility studies for the Potable Water Reticulation scopes in the Eastern and Northern Limbs respectively. These consultants will appoint specialist consultants to support the work as required. All anticipated specialist consultant and subcontracts required during the Study Phases, will be identified up front by the Main Consultants, fully compliant with the OMM Programme Procurement Policy and Procedure, and submitted to the PMU as part of a Contracts List for PMU approval.

The OMM Project Management Unit (PMU) will act as an owner's team representative of the Association. The PMU, as a delegated authority from the Association, will ensure that the overall project objectives as set out in this document as well as all supporting referenced information, are achieved without harm and within budget, time and quality targets.

A Project Execution Plan (PEP) will be developed for each phase and serves as the execution statement for the PMU and, as the project develops and detail is elaborated prior to the final investment decision and notice to proceed, will be continuously updated and adjusted as project information, overall execution methods, commercial and contractual engagements obtain the level of certainty and readiness for project approval to commence detail design and project implementation.

To ensure design and project management continuity on the OMM Programme, it is the objective during Study Phases, forming part of the Bankable Feasibility Study, that the Main Consultants, in the form of a Project Management Consultants (PMC) will conduct and/or manage the multi-disciplined designs as appropriate to the construction contracting methodology agreed for the execution phase. The intent is that the Main Consultants manage the detail design, construction and handover of the associated works for and on behalf of the PMU subject to acceptable performance during the Study Phase monitored against pre-agreed Key Performance Indicators (KPIs).

For the OMM Programme execution phases, managed by the PMC, the EPC Lump Sum modality has been selected, as this best addresses the requirements of all stakeholders in current market conditions. The contractual arrangement presents the lenders with a consolidated liability wrap which drives the single point of accountability through to commissioning of the facility. Based on inputs from preliminary engagements with Lenders the preferred contracting format will be NEC 3, ECC Option A, Lump Sum (Fixed Price) Engineering Procurement and Construction (EPC).

Inclusive of the design required to achieve the objectives as set out in the project charter, the Main Consultants, as required, will define the procurement package methodologies, procurement package dictionaries and procurement packages by using a risk informed process to achieve an acceptable risk rating as agreed with the PMU.

The prepared procurement packages will be executed for and on behalf of the OMM Programme PMU procurement and commercial team who will perform hold point approvals and an oversight role.

The Main Consultants, as required, together with the procurement and commercial team of the PMU, will contractually manage the defined outcomes and deliverables as per contract including equipment specifications and standards. The identified construction companies and original equipment manufacturers must be engaged as early as possible during the basic design and later detail design phases.

Appropriate project and engineering controls are put in place to both manage change related to engineering clarifications and impacts, as well as the impact realized to the project related to scope, cost, time and risk.

Therefore, the change management process that will be adopted during the execution of the project, the OMM Programme, will align to the Contract and project control policy and change management procedure – that includes all knowledge/discipline areas.

The objectives and deliverables for the phase of the project are to have a defined project scope, with defined cost, time and risk provisions, adequate resources identified and association commercial documentation ready to issue to the market once financial close (FID) is obtained.

4.3 Market Sounding

As part of developing an understanding of the funding considerations as well as formulating a high-level funding approach for the OMM Programme, a market sounding process was conducted with a selection of prospective financiers. The feedback obtained during the market sounding process was used to further refine the proposed OMM Programme commercial and capital structures and risk profile to enhance overall bankability.

The objective of the market sounding process conducted was to facilitate an open and informal conversation with prospective providers of external debt financing in order to understand:

1. their interest and appetite to participate in the funding process for the OMM Programme;
2. their initial view on the proposed commercial structure and key risk considerations;
3. their high level credit requirements; and
4. to further inform and refine the design of the commercial and risk mitigation elements driving the commercial and funding solution of the OMM Programme.

A non-exhaustive list of prospective providers of external financing were identified, covering various categories including:

1. local commercial banks;
2. infrastructure / pension funds;
3. local development finance institutions; and
4. international development finance institutions and multilateral lending agencies.

A pre-defined set of questions was developed to allow for the feedback from the prospective debt providers to be standardised and aggregated with the intention of developing a holistic overview of current market sentiment on key commercial, technical and funding considerations relevant to the OMM Programme.

Table 37: Key takeaways / considerations from the market sounding process

Key takeaways	Workstream consideration and response
Anticipated tenors: • Most interviewees acknowledged that longer-dated tenors will be required to enhance the affordability of the bulk water tariffs. 15-20 year tenors seem possible, acknowledging that the ultimate debt tenors achieved will be influenced by the lives-of-mines of the Commercial Members.	• The feedback has been considered in the capital structure and loan tenor applied in the financial model.
Debt covenants: • Funding covenants need to be carefully considered given the nature of the OMM Programme – The OMM Programme operates on a cost-recovery model and there are no equity distributions, meaning that typical funding debt service cover ratios of e.g. 1.2-	• Additional reserve accounts and credit enhancements may be required in order to mitigate this risk of having revenue equal to the cost base (limited operational free cash contingency).

Key takeaways	Workstream consideration and response
1.3x would result in a significant build-up of cash on hand over time.	
Drawdown schedule: • To the extent cash is available from Institutional Members it could be drawn down first (ahead of the senior debt) in order to de-risk the OMM Programme from an external lenders' perspective and reduce the level of interest accrued/paid during the construction period.	• The extent of funding available and the anticipated timing of drawdowns is being evaluated through continued engagement with DWS and the Infrastructure Fund.
EPC contract: • The EPC contract should be a fixed price, date certain agreement backed by a robust security package and penalty regime for non-performance. The risk of potential variation orders needs to be managed closely throughout the planning, contracting and execution phases.	• The market sounding feedback was provided to the technical and commercial streams on the OMM Programme and the requirements are built into the procurement / contracting design and commercial structure of the OMM Programme.
Municipal payment risk: • Reliable payment for bulk water by the various municipalities will be critical to ensuring the operational sustainability of the OMM Programme, particularly in terms of funding ongoing operating and maintenance expenditure to ensure that service delivery is maintained throughout the life of the OMM Programme.	• The financial and commercial workstreams are actively engaging with DWS and the Infrastructure Fund to reduce the risk of municipal non-payment to an acceptable level.
Commercial payment risk: • Reliable payment by the participating Commercial Members will be critical to ensuring the operational sustainability of the OMM Programme, particularly in terms of funding ongoing operating and maintenance expenditure to ensure that service delivery is maintained throughout the life of the OMM Programme, and servicing the external debt.	• Commercial Members will likely be required to provide guarantees for their proportionate share of the annual costs and debt service obligations of the OMM Programme. • The offtake agreements are to be structured on the basis that there will be recourse to entities of substance in order to pay down the debt and prepay fixed costs in the event of termination.
Member changes: • Given the diversity of Members participating in the OMM Programme and the duration of the OMM Programme, a level of flexibly is required to allow changes in the Member and offtake composition but without reducing the overall credit quality of the OMM Programme.	• Potential changes in Members have been catered for in the draft Offtake agreement, allowing for water capacity to be taken up by either existing Members or new Members who will assume the same obligations towards the OMM Programme.
Offtake mechanism: • Take-or-pay offtake agreements are required from the Commercial Members to serve as an underpin for the external debt service.	• The take or pay principles have been incorporated in the draft offtake agreements which will be signed by Members committing to the OMM Programme.

Key takeaways	Workstream consideration and response
Institutional Member tariff affordability and water volume ramp up: • The ability of the municipalities to pass on the tariffs of the OMM Programme, including their own operating margins, to their customer base needs to be carefully considered. • Given the fixed cost components of the OMM Programme make up a large proportion of the total costs annually, the offtake volume ramp up (particularly for the municipalities) needs to be carefully considered as the effective water tariff per Ml is expected to be higher during the early years of operation while the volumes are still being ramped up.	• There is ongoing engagement with DWS and the Infrastructure Fund to understand and unpack the municipalities' ability to sustainably buy water from the OMM Programme and sell it to their commercial and residential customers. • DWS is expected to be responsible for covering the fixed cost component of the annual contributions on behalf of the Institutional Members.
Commodity risk: • Given the anticipated concentration risk on the PGM mining sector, the forecast commodity price cycles should be analysed over the long-term to understand the levels at which the risk of non-payment by the Commercial Members increases.	• As part of the credit profiles analysis to be performed on the Commercial Members, the commodity price cycles will be analysed to understand the sensitivity to changes in commodity prices which will inform the potential risk non-payment.
Substitutability of the OMM Programme: • The ability of Members to obtain water from sources other than the OMM Programme needs to be understood and analysed.	• This principle is being considered by the technical workstream. • Limitations on the number of Water Use Licences in the region should be explored and contractual undertakings should be agreed that would protect the long-term sustainability of the OMM Programme.
Annual budgeting: • Budgets, and accordingly tariffs / annual contributions, need to be adjusted annually to ensure that all forecast costs and debt service can be recovered.	• This insight is being considered by the commercial team and will form part of the annual budgeting process to set the water tariffs for the following year. The OMM Programme will follow an annual budgeting process to set the water tariffs for the following year that will ensure a full debt service and cost recovery from Members while also providing a rolling three-year forecast to aid in planning.
Ongoing creditworthiness: • Systems should be put in place to monitor the financial health of the offtakers on an ongoing basis throughout the debt service period, to provide "early warnings" for potential default.	• This insight is being considered by the finance team and will be evaluated further with the lender group. • Key metrics and monitoring systems will be further developed with the lender group and Members.
Governance: • Strong governance principles should be maintained throughout the OMM Programme	

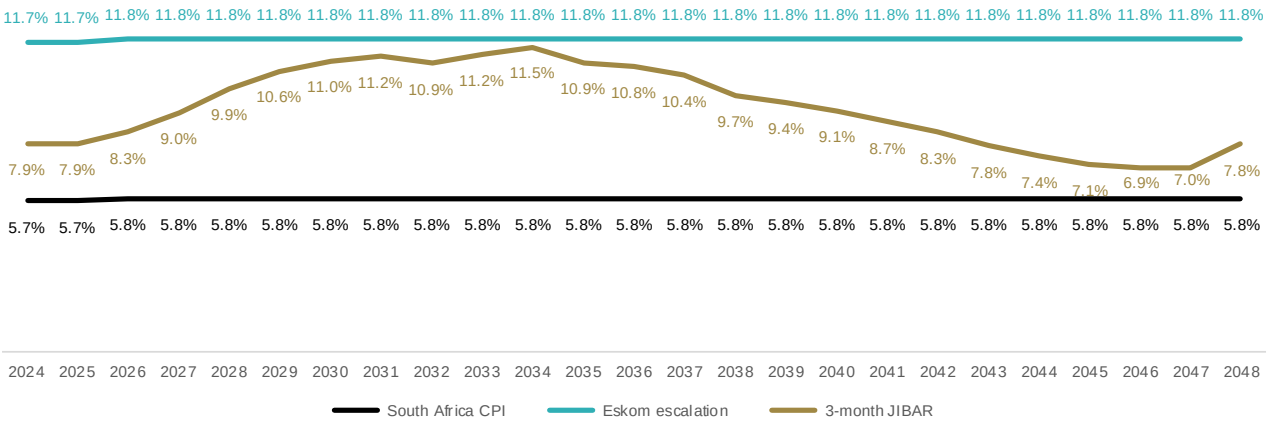
Key takeaways	Workstream consideration and response
life, driven by a capable and experienced management team. Procurement rules should be strictly adhered to.	• Strong governance frameworks are included in the overarching principles from the OMM Programme's Constitution.
Water supply: • The risk of non-supply through, for example, pipeline damage, draught, etc. should be allocated to ensure that the debt service obligations can be maintained even under adverse conditions.	• This principle is being detailed in the offtake agreement to ensure that the ongoing costs and debt service can be met during adverse water availability conditions.
Costs overruns: • The Member's agreement should clearly define the commitments towards funding cost overruns during construction.	• Funding responsibilities are addressed in the Funding Agreement and draft Members Agreement. • Contingencies have been built into the total OMM Programme cost, and the fixed price EPC contracting regime will further mitigate this risk.
Reserving: • Reserve accounts should be pre-funded and / or increased over time to allow for future major maintenance / replacement cycles, liquidity constraints due to non-payment by Members, etc.	• Reserve accounts for debt service, operational liquidity and asset replacements have been built into the financial model.

Attachment H3 provides further information on the market sounding exercise.

4.4 Macro-Economic Assumptions

The OMM Programme's financial forecasts are driven by key macro-economic factors which include the South African Consumer Price Index ("CPI") and the Johannesburg Interbank Average Rate ("JIBAR"). The forecast electricity purchases in the Eastern Limb are linked to a forecast Eskom escalation rate, at CPI plus 7%. CPI and the Eskom escalation rate drive the operational cost assumptions, which in turn drive the tariff rates and annual contributions set for the Members. The forecast curves applied in the financial model are illustrated in the overleaf figure:

Figure 31: Forecast 3-month JIBAR, South African CPI and Eskom escalation



4.5 Capital Requirements

If the current Capital Estimate is compared with the EBC reported capital estimate the following key points can be highlighted:

1. Escalating the EBC reported Real Capital Estimate from the previous base date of October 2021 to the new base date of January 2023 for all projects based on published indices. This resulted in an overall increased of 0.72% per month;
2. Utilising updated estimates from a class 5 to a class 3 for Phase 2B & 2B+ and Water Treatment Works and adjusting the cost estimate for the Eastern Limb potable distribution and reticulation works to utilise existing infrastructure. This resulted in an overall decrease of the estimated costs;
3. Comparing the same scope components the Real Capital Estimate has decreased in a realistic percentage;
4. Two additional scopes are added into the current estimate:
   a. Southern Extension 2 Project is integrated into the OMM Programme, but is already funded by certain Association Members and is kept as a separate line item.
   b. Energy Solution in which an operating cost (electricity tariff payments to ESKOM) is partial offset by introducing reneweable energy solutions into the electricity supply mix. The capital for the Energy Solution is also kept separate as it will be recovered through the combine electricity tariff that will form part of the fixed and variable operating costs in the financial model. The Business Case for this solution is fully described in the Economic Case of this report.

4.5.1 Pre-feasibility and Feasibility Study Costs

The budget for the Study Phases, developed during the Concept Study and approved by the Steering Committee, were not revised with escalation and no further approvals are required to continue with the Study Phase. These indicative study costs will be confirmed by the OMM Programme Steering Committee.

4.5.2 OMM Programme Contingencies

Following the compilation of the Intermediate Business Case Estimate, contingency for the OMM Programme was determined relative to the level of development on the project and is an allowance for the uncertainty and risk that the owners of the project must accept. The determination of contingency for projects in the concept phase is the most problematic of the project life-cycle phases, as the levels of uncertainty are highest at the earliest part of the process. High uncertainty levels are a function of the very low level of design, which leads to low definition in the estimates and schedule, and because the many paths and options to the eventual execution method and strategy, as well as the final scope, have not been analysed and distilled through an assessment and selection process. To determine contingency for projects developed to a feasibility phase (Projects Phases 2B & 2B+ and Water Treatment Plants) it is based on more certainty levels as the level of design is more certain and therefore the estimate and schedule definition is more accurate. On a continuum, current practices on contingency determination vary between not including a specific contingency at all, to adding a high-level contingency of between 25% and 100%. Within this scale are processes that employ parametric and even stochastic methods to determine a specific contingency amount. The PMU determined that a detailed deterministic or stochastic process will not be appropriate for this OMM Programme for the following reasons:

- The level of information available, i.e. the factors used in the determination of quantities, rates assumed from various sources, and parameters applied, for a parametric determination is not sufficient; and
- A stochastic, and even a deterministic parametric process may understate the level of uncertainty, and therefore understate the contingency required and/or imply an unrealistic level of confidence in the total of the estimate.

Within the cost estimate of each project the Engineering consultants allowed for construction contingencies. This results in a net contingency on the full capital expenditure before applying any programme contingencies.

The overall OMM Programme contingency has been calculated by first reviewing each project based on the provided estimate details, then applying a percentage for each project from the above-mentioned contingency range of 20% to 40%.

Each project's contingency level was chosen according to the expected uncertainty levels and assumed risk, therefore the percent varies between 20% and the maximum level of 40%, with the exception of Energy Solution projects which was fixed at 15% due to current and future high market demand which should ensure lower prices.

4.6 Capital Structure

Under the OMM Programme, the financing of all new infrastructure, including Phases 2B and 2B+ and the related Northern Limb Water Treatment Works and Energy solution, will be contributed in equal portions by the Commercial and Institutional Members respectively (i.e. a 50:50 ratio). Contributions from the Commercial Members are anticipated to be raised in the form of external senior debt (project finance) injected into the transformed Association through securitising the long-term offtake agreements with the Commercial Members. Contributions from the Institutional Members are expected to be in the form of Government contributions and grants.

The 50:50 apportionment of costs will also be applied to the associated fees and Association transformation costs. However, the Commercial Members will be solely responsible (i.e. 100:0 ratio) for the costs associated with the external funding raised (e.g. arranging and underwriting fees, commitment fees, debt service during construction, etc.). The implication of this arrangement is that, when considering the total expenditure during construction for the new projects (i.e. including the costs incurred during construction associated with the external debt financing), the ratio of contribution by the Commercial Members will be higher than 50%.

In addition to the Commercial and Institutional Member contributions for new capital expenditure, the Association and DWS will contribute unencumbered existing water infrastructure to the OMM Programme.

4.6.1 External Senior Debt

Given the capital requirements of the OMM Programme, external debt providers (Development Finance Institutions ("DFIs"), Multilateral Lending Agencies ("MLAs"), Government, Commercial Lenders and Export Credit Agencies ("ECAs") are expected to participate in the senior debt financing required by the Commercial Members to fund their 50% contribution to the total OMM Programme capital expenditure requirements. Furthermore, Institutional Members may also seek to participate in the debt financing portion backed by the Commercial Members.

The preliminary financing strategy of the Commercial Members is to maximise gearing and obtain long-dated debt tenors from the senior debt providers. This is expected to improve tariff efficiency and affordability from a Commercial Member offtake perspective. Long-dated debt tenors are considered feasible given the long useful lives of the infrastructure as well as proposed 25-year offtake agreements with the Commercial Members. The funding is expected to be based on limited recourse financing principles where the senior lenders are expected to place reliance on the OMM Programme cash flows underpinned by long term, take-or-pay offtake agreements with the Commercial Members.

The indicative senior debt assumptions currently being applied in the OMM Programme financial model are based on informal feedback obtained from the market sounding process as well as terms applied on other infrastructure projects in the local market. The debt terms will continue to be refined during the next phases of the OMM Programme lifecycle where prospective lenders will be engaged to provide indicative senior debt term sheets indicating pricing, terms and preliminary credit requirements. The current high-level debt assumptions are as follows:

1. **Drawdown profile:** *Pari passu* between the Commercial and Institutional Members;
2. **Tenor**: 18 years (commencing at Financial Close), other than for the Energy Projects, which have 10-year tenors;
3. **Repayments**: Semi-annual repayments following an amortising profile with no bullet repayment, commencing from Financial Close (i.e. no capital repayment grace period / capitalised interest during construction – this approach is considered conservative and may be refined);
4. **Interest rate**: Variable JIBAR-linked interest rates with all-in margins (risk margin, liquidity and statutory costs) of 3.5% p.a. Interest is compounded semi-annually based on the outstanding debt balance. To the extent that interest is not fully serviced at the required period, the interest gets capitalised to the debt balance; and
5. **Debt service reserve account**: Funded at Financial Close equal to one semi-annual debt service payment.

4.6.2 Institutional Contributions

The Institutional Members' 50% portion of the required OMM Programme capital expenditure is expected to be funded through Government funding mechanisms (e.g. budget allocations, grants and other reserves).

The following capital grants from National Treasury / DWS are expected to be utilised:

- **Bulk raw water infrastructure (e.g. Phases 2B and 2B+):** Water Trading Entity ("WTE") capital grants and budget allocations;
- **Bulk potable water infrastructure (e.g. Northern Limb WTW):** Regional Bulk Infrastructure Grant ("RBIG") and / or Water Services Infrastructure Grant ("WSIG"); and
- Potable water reticulation infrastructure: Municipal Infrastructure Grant ("MIG").

National Treasury currently provides budget allocations to DWS annually. A portion of this budget gets allocated to RBIG, which is utilised across various projects in the country, and another is allocated to WTEs, which may be applied directly to particular selected projects. The grants are expected to be allocated upfront (to a project advance account) as a lump sum, from where capital drawdowns in line with a particular project's capital expenditure schedule can be drawn.

The availability and feasibility of allocating the Government capital grants and prospective budget allocations still have to be assessed by the Development Bank of Southern Africa's ("DBSA") Infrastructure Fund ("IF"), DWS as well as National Treasury, but Government expects to have sufficient capital to fully fund the Institutional Member portion of the OMM Programme's capital requirements. Applications to Government for the Institutional Member funding contributions will be coordinated by the IF and are expected to be carried out in parallel with the external debt fundraising process.

4.7 Funding Approach for Commercial Members

It is anticipated that, in order to meet the funding required from the Commercial Members, a consortium of external financiers will be required. The funding process for a programme of this nature and complexity is bespoke and dynamic and will require multiple iterations with the prospective financing partners and Government in order to finalise the ultimate funding structure.

The ultimate financing structure of the OMM Programme will be dependent on the commercial metrics, the strength of the proposed water supply arrangements with the various private and public parties, and the proposed risk allocation and available mitigation strategies. The allocation of risk will be at the heart of the successful development and financing of the OMM Programme and the risk profile will ultimately drive the appetite from prospective financiers to support the OMM Programme and influence the financing terms and ultimate capital structure.

After further refining the commercial and financial viability of the OMM Programme, a financial model was developed to support the fundraising process based on further-refined assumptions of technical, engineering, operating, economic and other relevant factors. This financial model is to be utilised and updated on an ongoing basis throughout the feasibility and bankability processes, and ultimately up to financial close of each of the projects included in the OMM Programme.

As part of the development lifecycle of the OMM Programme, the various development work streams (technical, commercial, environmental, governance, compliance, legal and regulatory) will need to be progressed through the Studies Phase to achieve a bankable programme and initiate the formal fund-raising process. It is important to consider the bankability of the OMM Programme from the perspective of prospective financiers throughout the phases and to ensure that the requirements of the financiers are continuously incorporated into the programme development activities.

The level of imported machinery or equipment is also being considered, as an Export Credit Agency ("ECA") could also play a role in the financial structure to either provide direct funding or loan guarantees to other lenders in order to expand funding options for the OMM Programme.

4.8 Operations and Maintenance Overview

The OMM Programme's operational expenditure will be reviewed and updated on an annual basis as part of the Association's budgeting process and will be tabled and approved by the Members annually, while providing a three-year outlook. Through the governance structure of the OMM Programme, there will be continued oversight

and monitoring of expenditure to ensure that costs are adequately and efficiently mapped, managed, and controlled, taking into consideration the forecasted daily volume of water required by each Member.

The OMM Programme's operating costs will largely consist of the categories discussed below.

4.8.1 Bulk Raw Water Operating Costs

Table 38: Variable operating costs

Cost item	Basis of cost	Escalation basis
Water consumption	Linked to a volume offtake rate (R/kl)	CPI
Variable electricity costs ***Note:*** *This will only be incurred where the OMM Programme's energy solution does not provide sufficient electricity (i.e. Excess electricity required from Eskom related to the pumping of water).*	Electricity cost related to the pumping of water. Linked to a cost per kWh (R/kWh) for ESKOM procured electricity supply component	Eskom escalation rate i.e. 7% above CPI

Table 39: Fixed operating costs

Cost item	Basis of cost	Escalation basis
Direct labour costs	Costs related to direct labour required for the construction and operations and maintenance of the bulk raw water infrastructure	CPI
Overhead costs	The Association's business management head office costs	CPI
Fixed electricity costs	Eskom connection and administration fees for electricity supply related to the ongoing running of the OMM Programme facilities.	Eskom escalation rate i.e. 7% above CPI
Water licence	Annual fee	CPI
Insurance	Annual fee	CPI
Security	Annual fee	CPI
Fleet management	Annual fee	CPI
Other fixed costs	Annual allocation	CPI

4.8.2 Bulk Potable Water Operating Costs

Table 40: Variable operating costs

Cost item	Basis of cost	Escalation basis
Chemicals	Linked to a volume offtake rate (R/kl)	CPI
Variable electricity costs ***Note:*** *This will only be incurred where the OMM Programme's energy solution does not provide sufficient electricity (i.e. Excess electricity required from Eskom related to the pumping of water)*	Electricity cost related to the pumping of water. Linked to a cost per kWh (R/kWh) for ESKOM procured electricity supply component	Eskom escalation rate i.e. 7% above CPI

Table 41: Fixed operating costs

Cost item	Basis of cost	Escalation basis
Direct labour costs	Costs related to direct labour required for the construction and operations and maintenance of the bulk potable water infrastructure	CPI
Overhead costs	The Association's business management head office costs	CPI
Fixed electricity costs	Eskom connection and administration fees for electricity supply related to the ongoing running of the OMM Programme facilities.	Eskom escalation rate i.e. 7% above CPI
Water treatment	Annual allocation	CPI
Water testing	Annual allocation	CPI
Insurance	Annual fee	CPI
Security	Annual fee	CPI
Fleet management	Annual fee	CPI
Other fixed costs	Annual allocation	CPI

4.8.3 Potable Reticulation Water Operating Costs

Table 42: Variable operating costs

Cost item	Basis of cost	Escalation basis
Variable electricity costs ***Note:*** *This will only be incurred where the OMM Programme's energy solution does not provide sufficient electricity (i.e. Excess electricity required from Eskom related to the pumping of water)*	Electricity cost related to the pumping of water. Linked to a cost per kWh (R/kWh) for ESKOM procured electricity supply component	Eskom escalation rate i.e. 7% above CPI

Table 43: Fixed operating costs

Cost item	Basis of cost	Escalation basis
Direct labour costs	Costs related to direct labour required for the construction of the potable reticulation infrastructure	CPI
Overhead costs	The Association's business management head office costs	CPI
Fixed electricity costs	Eskom connection and administration fees for electricity supply related to the ongoing running of the OMM facilities.	Eskom escalation rate i.e. 7% above CPI
Insurance	Annual fee	CPI
Security	Annual fee	CPI
Fleet management	Annual fee	CPI
Meter management	Annual fee	CPI
Other fixed costs	Annual allocation	CPI

4.8.4 Maintenance Costs

Ongoing / routine maintenance costs:

- A fixed percentage of the capital expenditure per project will be budgeted annually for ongoing / routine maintenance. This allocation will increase by CPI annually. The following categories of maintenance costs have been provided for:

- Civil works
- Mechanical equipment
- Electrical equipment
- Pipes

- For the purpose of this Intermediate Business Case, a fixed rate of 0.4% per annum has been applied to all projects (excluding the Water Treatment Works) based on total capital expenditure, which allocation then escalates at CPI annually.
- For the Northern Limb Water Treatment Works, maintenance cost estimates have been provided in 2017 terms and escalated to 2023 nominal terms at CPI.

Lifecycle replacement costs:

- Aligned to the Association's accounting policies, assets are expected to be replaced based on their useful lives, as follows:

Table 44: Useful life of assets

Asset category	Useful life (years)
Dams	100
Pipes	50
Buildings & civil works	45
Ventilation and cranes	20
Electrical equipment	15
Mechanical equipment	15
Instrumentation	15
Energy storage	10
Solar panels	10
Valves	10
Fencing	10
Furniture and fittings	10
Instrumentation and meters	8
Fire protection	7
Borehole pumps	5
Tools and equipment	5

Asset category	Useful life (years)
Motor vehicles	4
IT equipment	3
Intangible assets	25 (amortised over the life of the OMM Programme)

4.9 Tariff and Proposed Off-take Methodology

The OMM Programme is envisaged as a cost recovery model (i.e. revenue is directly linked to the underlying OMM Programme costs, reserve requirements and debt service where applicable). The revenue for the OMM Programme will be generated through a combination of fixed and demand-dependent water tariffs invoiced to the Institutional and Commercial Members.

4.9.1 Cost Allocations

The costs for the OMM Programme will be split into the following main categories, applicable to the Commercial and Institutional Members respectively as set out in the table below:

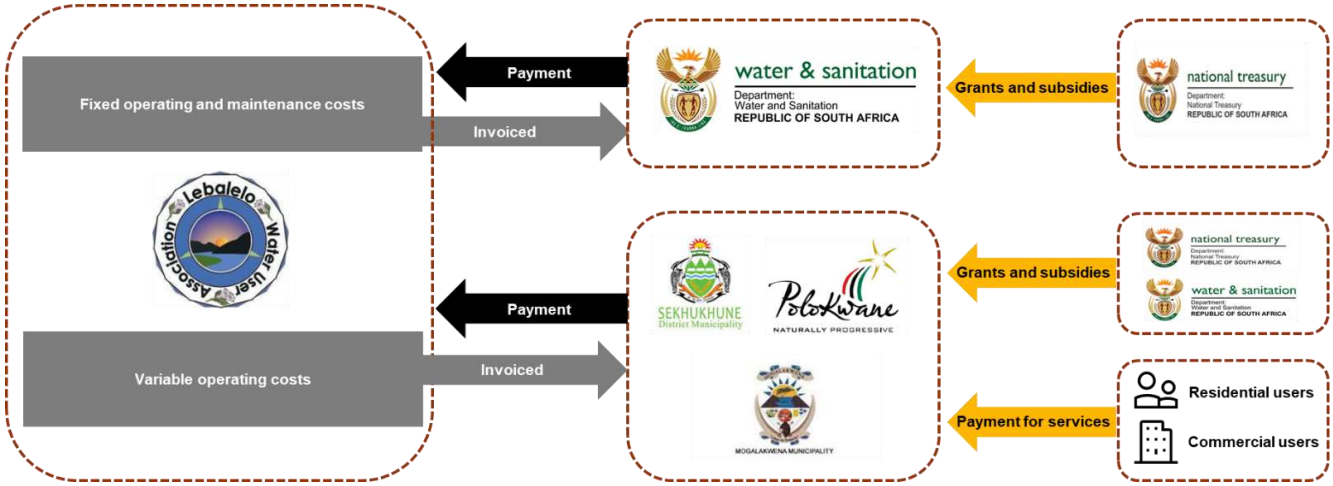
Table 45: Cost categories

Cost category	Invoicing basis	Allocation basis	Commercial Members	Institutional Members
Variable operating costs	Demand-dependent water tariff	Actual consumption	Yes – only for bulk raw water	Yes
Fixed operating costs	Fixed annual contribution	Total capacity	Yes – only for bulk raw water	Yes
Maintenance costs	Fixed annual contribution	Total capacity	Yes – only for bulk raw water	Yes
Debt service	Fixed annual contribution	Total capacity	Yes	No
Asset replacement reserve contributions	Fixed annual contribution	Total capacity	Yes – only for bulk raw water	Yes
Contribution adjustments	Fixed annual contribution	Actual consumption	Yes – only for bulk raw water	Yes

The Association has signed a funding agreement with DWS which addresses the allocation of both capital costs and operating and maintenance costs for the OMM Programme. It is currently expected that DWS will service the fixed operating and maintenance costs associated with the Institutional Members, whilst the Municipalities will be responsible for their proportional share of the variable operating costs.

The Institutional Members will be solely responsible for the operating and maintenance costs related to bulk potable water distribution and potable water reticulation. The Commercial Members will be solely responsible for the external debt service.

Figure 32: Illustrative flowchart outlining the flow of funds for the Institutional Members' share of costs



4.9.2 Working Capital Considerations

The OMM Programme's working capital will be directly linked to the revenue and operating costs (sourced from tariff payments). The expectation is that the net working capital requirements will be minimal given that revenue, operating costs and debt service will match closely from a timing perspective. Specific payment terms have not been taken into account in the analysis for this Intermediate Business Case but will be explored in more detail for the Final Business Case.

4.10 Tariff Credits

Existing infrastructure that was previously funded by Institutional and Commercial Members since inception to 2021 will also be contributed into the OMM Programme. The previously funded infrastructure includes Phase 1A (Raising of the Flag Boshielo Dam wall), Phase 2A (building of De Hoop Dam), Phase 2C (the pipeline from De Hoop Dam to Steelpoort), and Phase 2H (the existing Association infrastructure, including Southern Extension and Southern Extension 2).

As part of the commercial construct of the OMM Programme, Institutional and Commercial Members who previously contributed towards the existing infrastructure will receive capital credits to compensate them for their previous capital contributions, proportionate to their nominal historic contributions. The capital credit mechanism will reduce the effective annual contributions for these Members by taking into account the recognised depreciated replacement value of the existing infrastructure while assuming a 4% nominal annual return on the assets over a period of 25 years. This will function in a manner similar to an amortising loan with a 4% interest rate per annum and a 25-year tenor, repaid on an amortising profile. These capital credits will be offset against applicable Member contributions.

4.11 Credit Risk and Mitigants

4.11.1 Commercial Member Credit Risks

A key consideration from a prospective capital provider's perspective will be the Commercial and Institutional Members' ability to service their ongoing payment obligations under the proposed offtake agreements.

The majority of the water volume allocated to the Commercial Members in the OMM Programme is expected to be taken up mostly by large listed public mining companies in South Africa with substantial balance sheets underpinned by cash generative operations and backed by 25 year take-or-pay offtake commitments. Approximately 80% of the allocated Commercial Member water capacity is expected to be taken up by mining companies in the Platinum Group Metals (PGMs) sector, with the balance being taken up by non-PGM miners and and Non-Mining Members. Short and medium term offtake options will also be provided to offtakers not able to commit to the full 25-year offtake period to facilitate wider participation in the OMM Programme. These short-term offtakers will, however, not become Members of the OMM Programme and will have no voting rights, and the level of reliance on shorter dated and smaller offtakers will be limited so as not to negatively impact the overall credit risk of the OMM Programme.

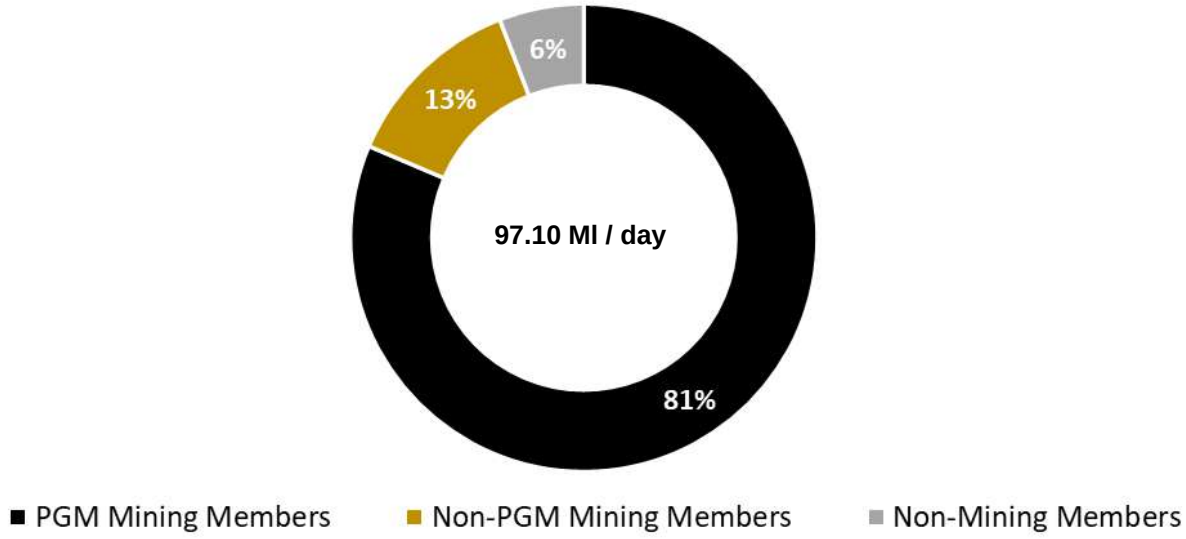
Table 46: Outlining the breakdown of Commercial Member capacity

Company / Member	Allocated Ml per day	Commodity	Percentage of allocation	Market Capitalisation per JSE
Anglo American Platinum (Angloplats)	24.00	PGMs	24.72%	GBP 30 billion
Ivanhoe Mines	10.00	PGMs	10.30%	CAD 14 billion
Modikwa Mine (JV by Angloplats and ARM)	8.20	PGMs	8.44%	ZAR 45 billion (ARM), GBP 30 billion (Angloplats)
Northam Platinum	7.00	PGMs	7.21%	ZAR 70 billion
Tameng mining and exploration	7.00	PGMs	7.21%	N/A
Zijin Platinum (Nkwe Mine)	7.00	PGMs	7.21%	N/A
African Rainbow Minerals (ARM)	5.00	PGMs	5.15%	ZAR 45 billion
Sibanye- Stillwater (Akanani mine)	5.00	PGMs	5.15%	ZAR 114 billion
Impala Platinum	4.40	PGMs	4.53%	ZAR 151 billion
Corridor Mining Resources	1.50	PGMs	1.54%	N/A
Total for PGM Mining Members	**79.10**		**81.46%**	
Cheetah Chrome	3.00	Chrome	3.09%	N/A

Company / Member	Allocated Ml per day	Commodity	Percentage of allocation	Market Capitalisation per JSE
Glencore-Merafe	2.40	Chrome	2.47%	GBP 59 billion
Samancor Chrome	1.25	Chrome	1.29%	N/A
Tubatse alloys (member of Samancor group)	1.25	Chrome	1.29%	N/A
Assore Limited	1.00	Chrome	1.03%	N/A
Vanadium Resources	2.40	Vanadium	2.47%	AUD 36 million
Bushveld Minerals	1.00	Vanadium	1.03%	N/A
Total for Non-PGM Mining Members	**12.30**		**12.67%**	
Fetakgomo Tubatse Industrial Park (FTIP)	5.00	Commercial use	5.15%	N/A
Sylvania	0.50	Commercial use	0.51%	N/A
Kadoma Investments	0.20	Commercial use	0.21%	N/A
Total for Non-Mining Members	**5.70**		**5.87%**	
Total Commercial Members	**97.10**		**100%**	

Note (1): *Market capitalisation was sourced via S&P Capital IQ as at 30 April 2023*

Figure 33: Commercial Member capacity by Member type



The OMM Programme external debt obligations will be serviced solely by Commercial Members as part of their water tariff. It is anticipated that the majority of the Commercial Member Offtake agreements will be guaranteed through contractual remedies established through the Offtake agreement, Member agreement as well as the transformed Association's Constitution which will assist in mitigating credit risk from an external lender perspective. In accordance with the Members' Agreement, a consequence of a Member withdrawing or terminating their offtake agreement prematurely will result in a termination obligation being triggered which will require that specific Member to compensate the OMM Programme for that Member's proportional share of future fixed operating costs and debt service obligations for the remainder of the agreed offtake period. Additional credit enhancements could also be considered such as the parent-company guarantees, letters of credit, or other forms of security on to further mitigate the Commercial Member credit risk.

4.11.2 Institutional Member Credit Risk

A high-level financial analysis was undertaken on the Institutional Members (outlined in table 47 overleaf) to form an initial view on their credit and liquidity risk profiles. Through an analysis of publicly available financial information, a credit and liquidity profile of the Institutional Members was formed based on:

- Historic audited Annual Financial Statements;
- Municipal annual reports;
- Tabled budgets;
- Integrated development plans; and
- Reported water statistics by DWS.

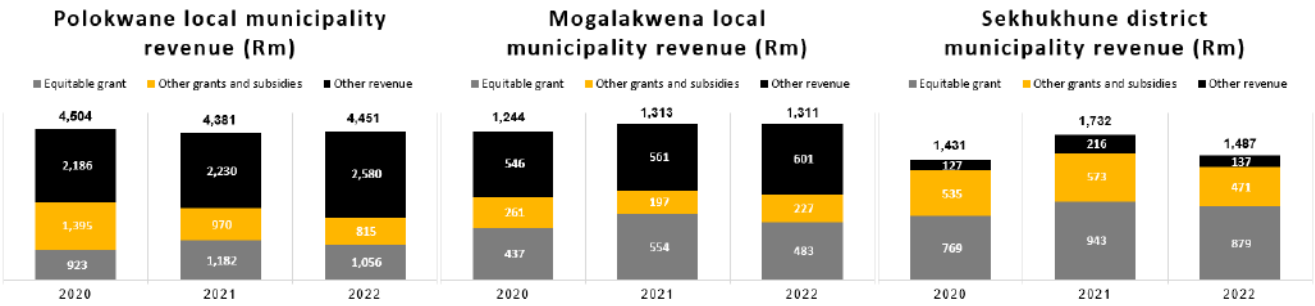
Table 47: Outlining the breakdown of Institutional Member capacity

Municipality	Allocated Ml per day
Polokwane Local Municipality	60.00
Mogalakwena Local Municipality	42.50
Sekhukhune District Municipality	42.50
Total Institutional Member capacity	**145.00**

From the institutional analysis performed, we understand that the required service delivery requirements of Municipalities and their commitment to provide water is part of provincial and nationally tabled infrastructure development plans which demonstrate a commitment to fund and partake in membership of a programme of this magnitude over the long term.

The Institutional Members are currently funded through revenues generated from services delivered to their customers (residential and commercial) as well as Government grants and subsidies. Based on the analysis performed, there is a relatively high government grant dependency at a municipal level which may impact their ability to generate revenue growth from exchange transactions (i.e. revenue from services rendered). In addition, significant non-revenue water levels were noted by DWS which are expected to impact these municipalities' ability to sustainably generate revenue from additional water volumes while servicing the associated cost base.

Figure 34: Outlining the levels of grants and subsidies of municipalities

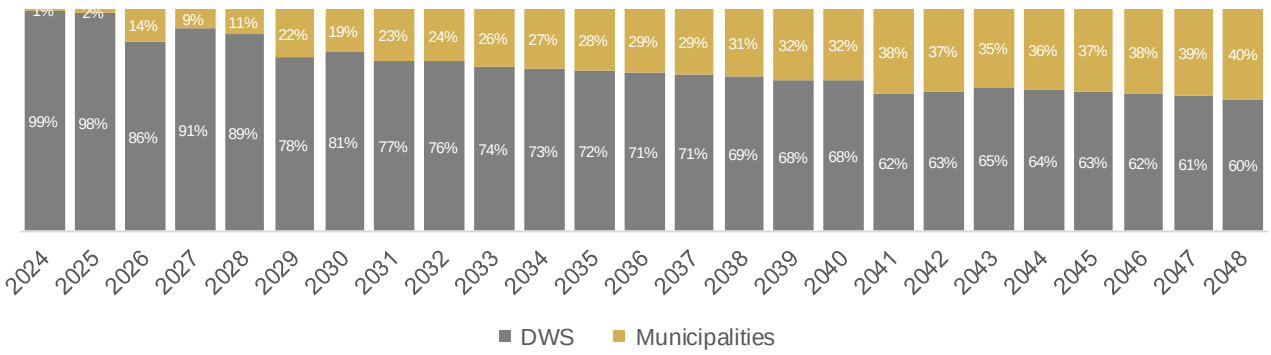


Source: *Annual Financial Statements of Municipalities per National Treasury*

As indicated in section 4.9 above, it is expected that DWS, through the Funding Agreement[6], will service the fixed costs (fixed operating expenses, maintenance costs and asset replacement reserve contributions) allocated to the Institutional Member over the life of the OMM Programme. This reduces the credit risk exposure to respective municipalities to only the variable costs component. To further mitigate the Institutional Member credit risk and ensure long-term financial sustainability of the OMM Programme, credit enhancements, improved water revenue recovery at municipal level, additional government support and other contractual strategies should be explored.

[6] ***Source:*** *Funding Agreement entered between DWS and the Association*

Figure 35: Municipalities and DWS exposure to operating costs over time (Nominal terms, %)



(1): Source: *Funding Agreement entered between DWS and the Association*

4.12 Reserve Accounts

4.12.1 Debt Service Reserve Account

A Debt Service Reserve Account ("DSRA") is expected to be required by the prospective lenders within the OMM Programme. The DSRA will assist to provide an additional security measure for commercial lenders and ensure that the OMM Programme will have funds deposited to cover short-term future debt service requirements in the event of adverse operating performance or conditions. The DSRA is expected to be equal 6-12 months' projected debt service obligations.

The DSRA will improve the OMM Programme's credit case and provide an additional level of comfort to lenders in the event of a potential debt service default by the Commercial Members, as an additional layer of ringfenced funds are available that will allow additional time to address the operational challenges.

The DSRA is expected to be funded during construction as part of the overall OMM Programme costs, and will be for the account of the Commercial Members. To the extent that debt has been fully serviced and there is no longer a requirement for the DSRA, the funds in the account will be utilised to reduce the tariff levels for Commercial Members.

4.12.2 Liquidity Reserve

It will be important to ensure the OMM Programme remains liquid to ensure that funds are available for unexpected costs or revenue shortfalls. For the purposes of the Intermediate Business Case, it has been assumed that the OMM Programme will maintain a minimum operating cash balance equal to 6-months' forecast operating expenses during the operations period.

The liquidity reserve will be funded through adjustments to the annual contributions from both the Commercial and Institutional Members (additional cost item included in the calculation of annual contributions). To the extent that the liquidity reserve is no longer required, the funds in the account will be utilised to reduce the future contributions for Members.

4.12.3 Asset Replacement Reserve

An asset replacement reserve account is considered key to de-risking the ability of the OMM Programme to incur major lifecycle costs for the replacement / refurbishment of equipment and other assets. The asset replacement reserve account will be funded on a continuous basis through an additional annual contribution from all Members such that forecast required major replacement / refurbishment costs can be funded out of the reserve account without requiring substantial additional contributions from the Members in those years. This mechanism will not only provide the OMM Programme with a fund to ensure that equipment and assets can be replaced at the end of their useful lives, but will also allow annual contributions to remain largely stable and predictable year-on-year, with major ad hoc costs being funded out of the reserve account rather than from additional Member contributions. The current reserving mechanism combines the annual contributions from the Members and the interest earned on the account to achieve a reserve balance equal to 70% of each asset class's construction capital expenditure (escalated at CPI) by the end of that asset class's useful life (100% in the case of solar panels and energy storage). Reserving for asset replacements under the OMM Programme is, however, only done for bulk raw and bulk potable water assets. Together with DWS, the respective municipalities will retain responsibility for replacing / refurbishing the reticulation assets outside of the OMM Programme.

4.13 Financial Feasibility

Achieving and maintaining financial feasibility is a key consideration for the OMM Programme. The ability to generate and manage funds in a way that ensures long-term viability is essential in the commercial and financing strategy of the OMM Programme. Financial feasibility encompasses a wide range of factors, including effective cost management, efficient capital structure, predictive revenue generation and collection, risk mitigation, and strategic planning. These key aspects were considered in the development of the approach to financial sustainability for the OMM Programme, as follows:

4.13.1 Cost Management

- The costs of the OMM Programme will form part of a transparent budgeting process which will be tabled and approved by Members on an annual basis, together with rolling three-year forecasts. This allows the OMM Programme and its Members to track and plan expenditure in a manner which will improve decision-making.
- The costs which will be included in the Members' tariffs and annual contributions will be included in contractually signed offtake agreements.

4.13.2 Capital Structuring

- The proposed long-term tenors for the senior debt are designed to match the long-term nature of the OMM Programme and the associated useful lives of the underlying asset base, and will help to improve the overall affordability of the OMM Programme for the Commercial Members.
- Through maximising the use of gearing to fund the Commercial Members' contributions towards capital expenditure, cost-effective sources of capital will be deployed to improve the long-term cost of water for the OMM Programme.

4.13.3 Revenue Generation and Collection

- The OMM Programme tariff and contribution structures are based on a cost recovery mechanism which is cost reflective and supported by long-term offtake agreements. This tariff structure is expected to allow the Members to plan and budget their contributions in a reasonably predictable manner.
- From a risk perspective, there may be limited ability to adjust pricing due to affordability and regulatory constraints(particularly for in relation to the underlying municipalities) which might limit the OMM Programmes' ability to respond to changes in market conditions or cost structures. This is being examined as part of the risk management strategy of the OMM Programme.

4.13.4 Credit Risk and Mitigants

- The long term creditworthiness of Commercial and Institutional Members poses a risk to the overall sustainability of the OMM Programme due to the risk non-payment from Members which could impact the OMM Programme's cash flows. This risk increases during Member changes (whether due to termination or otherwise) whereby other Members may be required to absorb the obligations associated with the additional water capacity in the system, which will increase their future payment obligations to the OMM Programme.
- Given the anticipated concentration risk on the PGM mining sector, commodity cycles may have an impact on the long-term production levels of mining operations which will affect the risk of non-payment by the Commercial Members over the course of the OMM Programme
- The OMM Programme has signed a funding agreement with DWS who is expected to provide a commitment to fund the fixed operating and maintenance costs allocated to the Institutional Members. This could limit the payment obligation of the respective Municipalities to the variable operating and maintenance costs. This could further enhance the affordability of the OMM Programme to these Municipalities and could support their ability to set tariffs which may be more affordable and likely to be collectable from end users.

4.14 Key Financial Model Outputs

4.14.1 Financial Model Purpose

The OMM Programme financial model will be used to:

- Generate financial forecasts in respect of the OMM Programme and for individual projects which will be used by the Association and its Members, Government and the financiers to assess the financial feasibility of the OMM Programme holistically and on a project-by-project basis;
- Determine an appropriate capital structure;
- Determine an appropriate tariff and contribution mechanism;
- Illustrate the OMM Programme's funding capacity;
- Illustrate the contributions required at a Member level; and
- Illustrate various operating scenarios and sensitivities.

The financial model specification document is presented in Attachment H1.

4.14.2 Financial Model Key Outputs

The OMM Programme's cost profile includes capital expenditure, fixed and variable operating expenses, asset replacement costs, and debt service.

For the purposes of this Intermediate Business Case, the financial model outputs are presented (i) specifically for Phases 2B & 2B+ and the associated Northern Limb Water Treatment Works and Energy Solution, and (ii) for the OMM Programme as a whole.

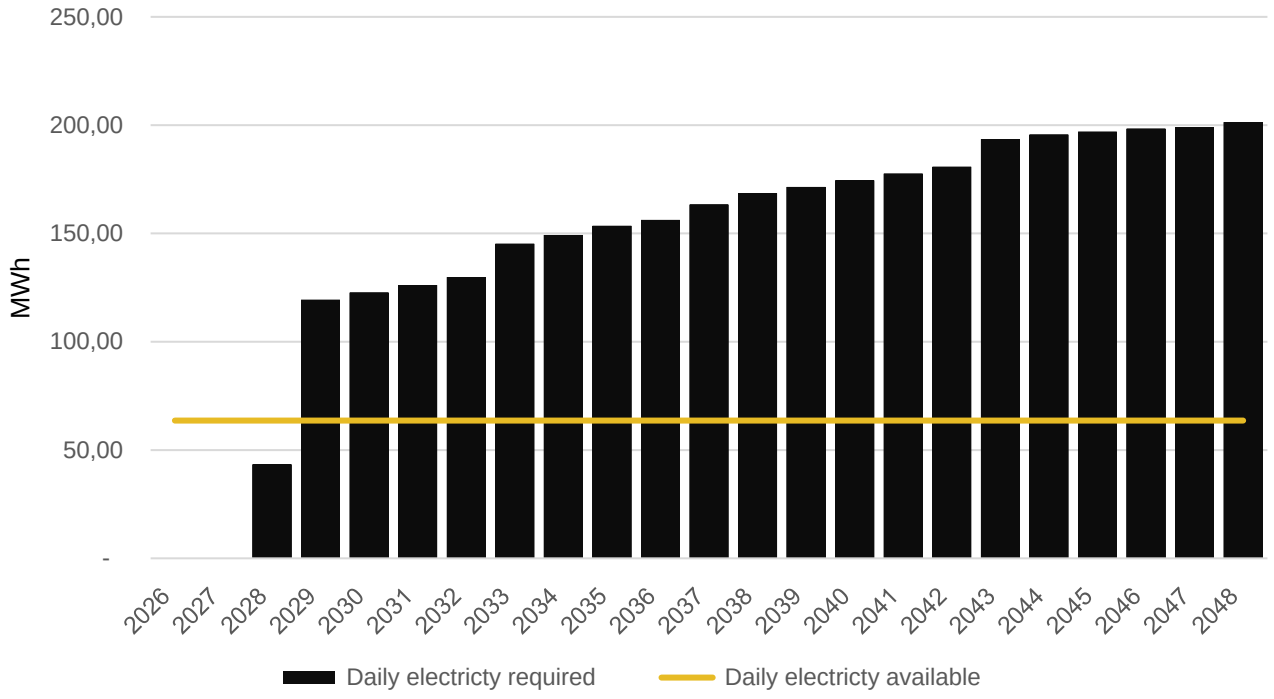
4.14.2.1Phases 2B & 2B+ and Associated Northern Limb Water Treatment Works and Energy Solution

Capital expenditure

Financial Close for Phase 2B & 2B+, the Northern Limb Water Treatment Works, and the Northern Limb Energy Solution is targeted for December 2023, with a 2-year construction period from 2024 to 2025 and commercial readiness targeted for early in 2026.

In the Northern Limb, internal generation will be sufficient to meet demand requirements and no grid connection is considered necessary.

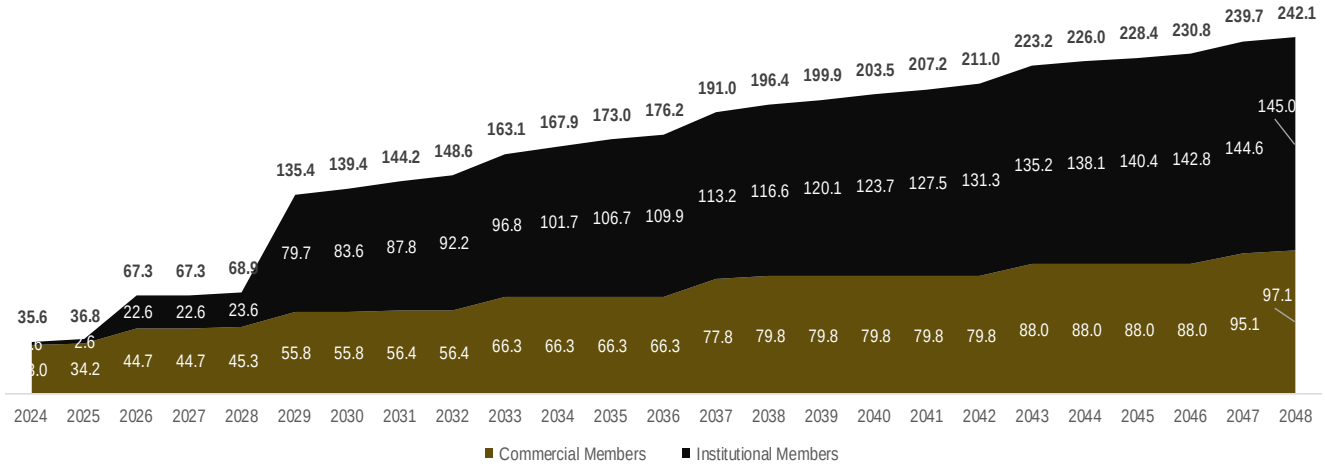
Figure 36: Forecast Eastern Limb Energy generation vs demand



In the Eastern Limb, additional electricity will be purchased from Eskom.

Over and above the ongoing O&M costs, additional contribution adjustments are applied to the tariffs throughout the OMM Programme life. These adjustments are applied to the contributions from the Members to take into consideration, for example, top-ups in required operating cash balances, recognition for interest earned on reserve accounts, etc.

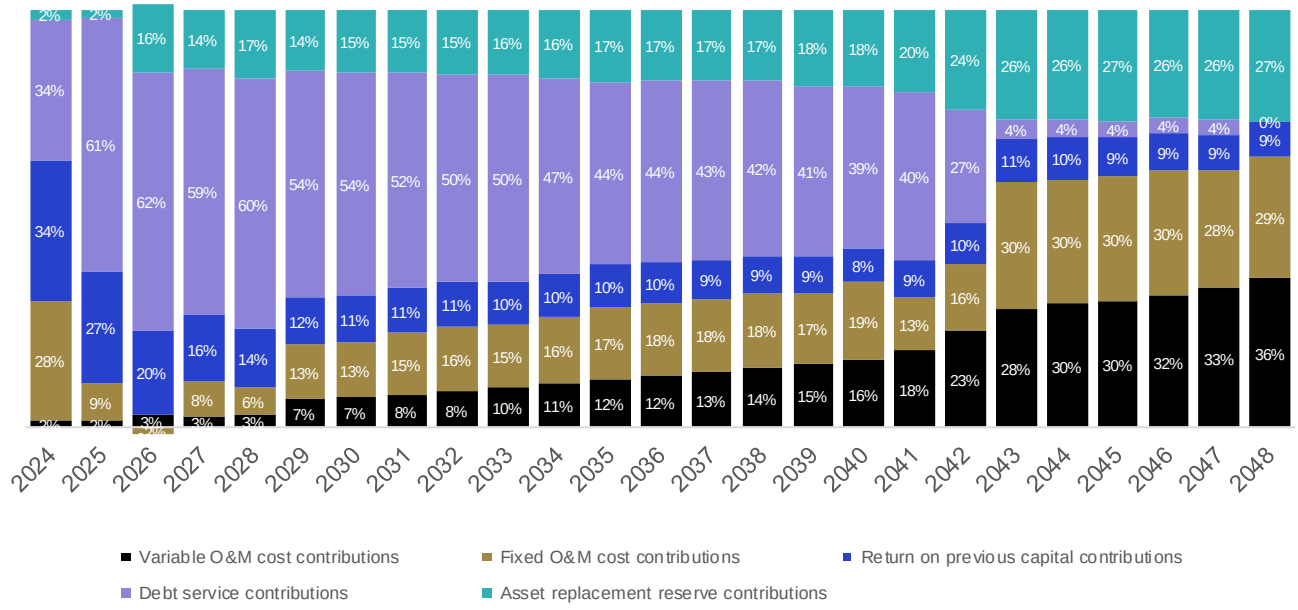
Figure 37: Total water demand for Commercial Members and Institutional Members (Ml per day)



Implied OMM Programme cost per kilolitre

The forecast water tariff profiles for the OMM Programme take into account the fixed and variable operational expenses, debt service, maintenance costs, and asset replacement reserve contributions.

Figure 38: Real terms (2023) implied cost per kilolitre percentage



Debt service schedule

The debt for Phases 2B & 2B+ and the Northern Limb WTW is assumed to have an 18-year tenor priced at the 3-month JIBAR (forward curve) with a 3.5% margin, while the debt for the Northern Limb Energy Solution has also been priced at a 3.5% margin on 3-month JIBAR, but over a 10 year tenor. The OMM Programme is expected to fully service its debt obligations as the cashflow required to service the debt is priced in the Commercial Members' water tariff.

4.15 Funding Approach

It is anticipated that, in order to meet the estimated funding requirement for the OMM Programme, a consortium of financiers will be required. Consideration was given to the potential sources of debt, various funding considerations and an overview of the anticipated debt raising process to be followed. The funding process for a programme of this nature and complexity is bespoke and dynamic and will require multiple iterations with the prospective financing partners and Government in order to finalise the ultimate funding structure.

The ultimate financing structure of the OMM Programme will be dependent on the commercial metrics, the strength of the proposed Water Supply arrangements with the various private and public parties and the proposed risk allocation and available mitigation strategies. The allocation of risk will be at the heart of the successful development and financing of the OMM Programme and the risk profile will ultimately drive the appetite from prospective financiers to support the OMM Programme and influence the financing terms and ultimate capital structure.

After further refining the commercial and financial viability of the OMM Programme, an advanced financial model was developed based on further-refined assumptions of technical, engineering, operating, economic and other relevant factors. This financial model is to be utilised and updated on an ongoing basis through to bankability.

As part of the development lifecycle of the OMM Programme, the various development work streams (technical, commercial, environmental, governance, compliance, legal and regulatory) will need to be progressed through the Studies to arrive at bankability and initiate the formal fund-raising process. It is important to consider the bankability of the OMM Programme from the perspective of prospective financiers throughout the phases and to ensure that the requirements of the financiers are continued to be incorporated into the project development activities. Once the OMM Programme development is at a mature stage and the funding strategy has been developed, the debt market can be formally approached.

4.15.1 Potential Debt Providers

It is anticipated that for the OMM Programme the Multilateral Lending Agencies ("MLAs"), Development Finance Institutions ("DFIs") and the Government will play a key role in setting up the framework for the funding structure, followed by commercial banks assuming the OMM Programme will be sufficiently de-risked to facilitate their participation. As a minimum, support from at least one of the DFIs or MLAs is expected through the provision of debt financing and/or political risk guarantees which may be advantageous given the current macro-economic outlook and Government budget constraints in South Africa.

The level of imported machinery or equipment is also being considered as we anticipate that an Export Credit Agency ("ECA") could also play a role in the financial structure to either provide direct funding or loan guarantees to other lenders in order to expand funding options for the OMM Programme.

4.16 Tax Considerations

In this section the potential tax impact of the OMM Programme including, the extension of the current Association's mandates and activities as part of the transformation process to establish the transformed Association, and the funding thereof with reference to the Association.

4.16.1 Income Tax

The Association, which was established by Law, is approved by SARS for the purposes of section 10(1)(cA)(i) of the Income Tax Act (ITA). All its receipts and accruals are thus exempt from Income Tax. The Association is also exempt from paying dividends tax, capital gains tax and donations tax.

The Association is currently primarily funded by its members, i.e. water users licensed to receive a water allocation from the water scheme. Members pay water tariffs, calculated with reference to its water allocation per the licence granted. The income tax exemption granted to the Association applies to all income streams irrespective of the nature of the receipt. The section 10(1)(cA)(i) approval as initially granted on 24 April 2022, was confirmed by SARS on 17 February 2023.

In addition, SARS approved the Association for the purposes of section 18A(1)(a) of the Income Tax Act. With effect from 17 February 2023 the Association may thus issue section 18A donation receipts for donations of cash or property in kind made by third party donors to the Association in respect of qualifying SED projects.

The Association will be transformed, extending its existing mandate and activities to include the building of potable water infrastructure. The concept furthermore envisages that the OMM Programme will be funded by members' contributions raised in the form of water tariff and once-off or annual capital contribution; loan funding as well as funding from Institutional Members in the form of grant funding and service payments.

The Minister of DWS has recently issued a Regulation that provides that Water User Associations may be directed to perform certain tasks, which may include the emergency provision of water services through the manufacture, supply, delivery and procurement of water tanks, and related goods and services as a response to the COVID-19 pandemic.

The extension of the current Water User Association's mandate, function and activities may affect its income tax-exempt status if the Association is reclassified as a water services provider for the purposes of the Income Tax Act. This will only happen if the additional powers granted to the Association, are regarded as similar to that of a Water Board (established in terms of the Water Services Act) or if it would have fallen within the ambit of a "local authority" prior to the coming in operation of section 3(1)(h) of the Revenue Laws Amendment Act, 2006).

Although the Association will, as a water services provider as defined in the ITA, still qualify for exemption from income tax, dividends' tax and capital gains tax, it will no longer be exempt from donations' tax. A water services provider furthermore does not qualify for section 18A approval, which means that if the Association 's tax exemption type changes, it will no longer be allowed to issue section 18A donation receipts to its third party donors.

The potential reclassification of the Association for income tax purposes and the appropriate notifications and or application to SARS, will be considered once the mandate, function and powers of the Association has been finalised by the Minister of the Department Water and Sanitation.

4.16.2 Value Added Tax (VAT)

The Association is a registered vendor for Value Added Tax (VAT) purposes, and is not currently for VAT purposes regarded as either a “welfare organisation” that conducts welfare activities or a “designated entity” in respect of grant funding.

The capacity in which the Association is engaged by the Government in the OMM Programme will determine whether the standard or zero rate will for VAT purposes apply to the supply or deemed supply of services.

Should the transformed Association, due to an extension of its powers, be reclassified for tax purposes as a water service provider, the Association will likely constitute a “designated entity” whose services and deemed services to Government will be subject to 15% of VAT.

4.17 Affordibility Test

Utilising the outputs from the financial model, the effective costs per kilolitre for the Commercial and Institutional Members were considered from an affordability perspective in terms of their current cost of water.

4.17.1 Commercial Member Affordability

As outlined in section 4.9, the Commercial Members will pay for their portion of the fixed and variable operating and maintenance costs and the full external debt service obligations through their water tariff. Given the high proportion of fixed costs and debt service in the OMM Programme, the effective cost of water per Member is very sensitive to the water volumes. Note that these costs currently exclude the capital credits which will be attributed to the Commercial Members on a proportionate basis to their contributions toward previous capital expenditure. Each Commercial Member will therefore have a different effective cost per kl.

The cost of water received from the OMM Programme will be an operating cost from a Commercial Member perspective, and as part of the tax consequences outline in section 4.16, this cost will be tax deductible and provide an element of tax saving to the Member.

From 2030, water volumes are expected to stabilise and grow steadily once the phases in both the Northern and Eastern Limb reach operational readiness. Volumes in 2030 are expected to reach 139.41 Ml per day (55.78 Ml per day for Commercial Members).

The 2030 tariff in real terms for Commercial Members comprise O&M costs contributions, return on previous capital contributions, debt service contributions including contribution adjustments and asset replacement reserve contributions.

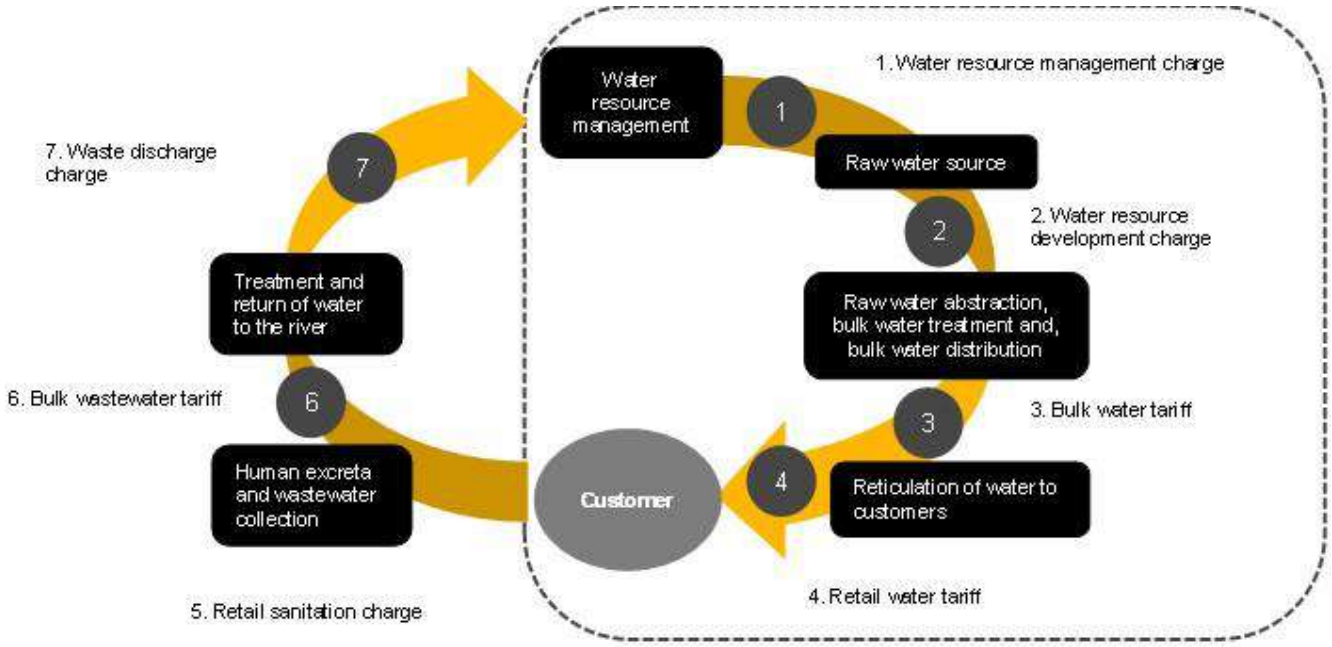
It should be noted that the electricity O&M costs under the OMM Programme are lower than the current Association costs, due to the Energy Solutions proposed for the OMM Programme. These solutions effectively reallocate a portion of the O&M cost to debt service.

Based on the implied real costs, the proposed cost of water sourced through the OMM Programme for Commercial Members is expected to be more expensive when compared to their current cost of water sourced from the Association. There is an ongoing engagement process with the Commercial Members whereby the projected water tariffs are disclosed and sensitised. Considering the strategic rationale and dependence of the Commercial Members on the OMM Programme, it’s anticipated that the Members will support the OMM

Programme while being able to absorb the increased cost of water without compromising their long-term financial sustainability.

4.17.2 Institutional Member Affordability

Figure 39: Typical water cost and pricing chain



Source: *Administered Prices Water: A report for National Treasury*

The affordability and ability of Institutional Member consumers to pay for water services is a key consideration for the financial sustainability of the OMM Programme. In the typical water cost and pricing chain outlined in Figure 39 above, the cost of potable reticulated water delivered to the customer is subject to a water resource charges and bulk and retail water tariffs. From an OMM Programme perspective, the implied costs from the financial model provide a cost estimate for bulk potable water.

From an Institutional Member perspective, the implied weighted average real cost (in 2023 terms) for potable water will be adjusted for the capital credits applicable to the Institutional Members through DWS. This cost, however, excludes the O&M costs related to the reticulation of the potable water. The anticipated cost for reticulating the potable water will need to be further understood as the Studies Phase progresses.

These municipalities obtain subsidies for operating costs (to support the provision of affordable basic services to poor households) which are provided by National Government through the local government equitable share and various other operating grants which will be used in addition to their respective generated exchange revenue to acquire the water from the OMM Programme.

As set out in section 4.9, DWS is expected to service the fixed cost base related to the Institutional Member water capacity over the life of the OMM Programme. It is therefore expected that a portion of the weighted average real cost per kl will be covered by DWS. There is expected to be headroom for an implied profit/margin when pricing

from retail water tariffs, where a portion of the costs are borne by DWS (as anticipated) and therefore the proposed OMM Programme water tariff is considered affordable from an Institutional Member's perspective.

(4): Source: Funding Agreement entered between DWS and the Association

4.18 Financial Case Conclusion

The analysis performed under the Financial Case indicates that the new capital expenditure required for the implementation of the OMM Programme can be funded through a combination of Government-backed contributions and external debt and illustrates the estimated contributions required by each Member on an annual basis to cover the anticipated financing and other operating and maintenance costs over the OMM Programme period.

Annual cost contributions per Member are considered to be high compared to the current cost of delivering bulk raw water by the Association, largely due to the capital cost element and associated debt service by the Commercial Members. These indicative costs will need to be tested with the Members to ensure that they can be accepted, giving due consideration to the strategic importance of the OMM Programme and the Members' commitments to not only securing their own water supplies over the long-term, but also uplifting the communities in and around the OMM Programme footprint.

As part of preparing the Final Business Case, it will be important to undertake various scenario and sensitivity testing on the key drivers of value for the OMM Programme, using the financial model. This will help to highlight the primary areas of risk from a financial / commercial perspective, and allow the OMM Programme management team to determine the necessary mitigants. It will also be important to understand the added cost of delivering reticulated water, and incorporate formal feedback from the prospective financiers following receipt of their indicative term sheets as part of the formal fundraising process, to verify the proposed capital structure and indicative financing terms applied to date.

5. Management Case

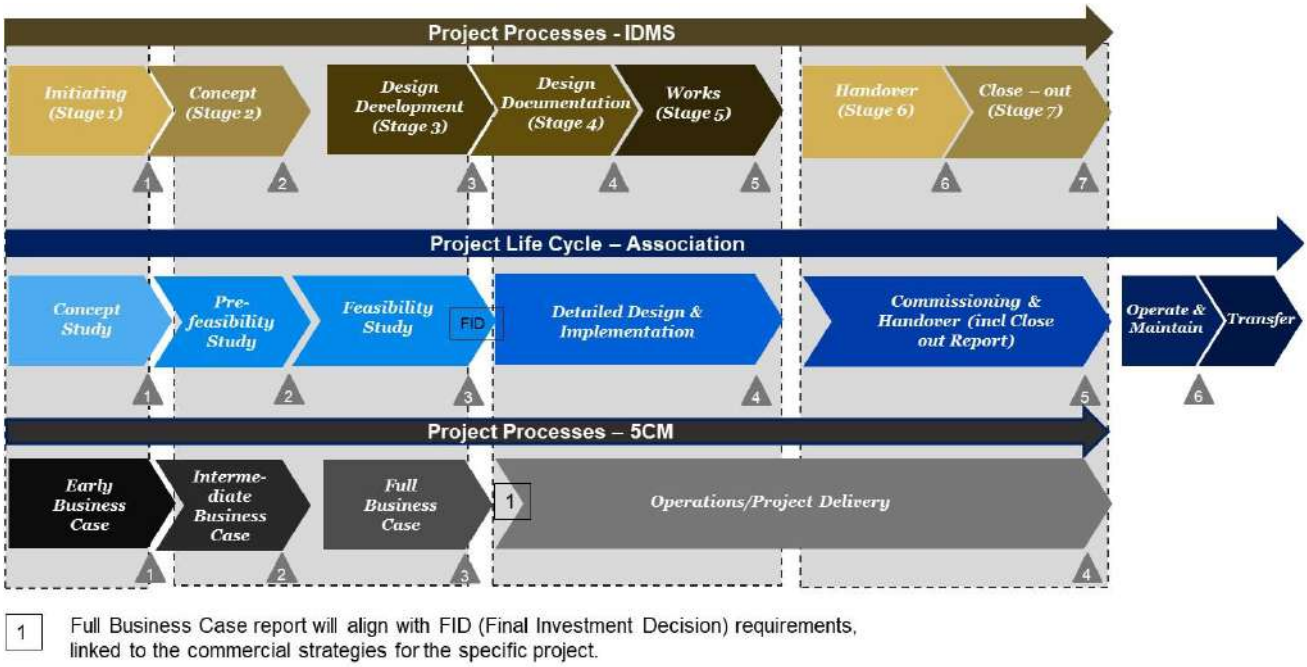
The purpose of the management dimension of the business case is to demonstrate that robust arrangements are in place for the delivery, monitoring and evaluation of the scheme, including feedback into the organisation's strategic planning cycle. Evidence must be provided that the OMM Programme will be managed in accordance with best practice, subjected to independent assurance and that the necessary arrangements are in place for change and contract management, benefits realisation and risk management.

5.1 OMM Programme Implementation Methodology

The OMM Programme implementation methodology is based on the application of international proven and accepted good project practices aligned to the Association's members' capital investment governance processes. To this extent the Association adopted an industry acceptable gated framework to execute each indicated phase with its associated purpose, technical details, project management outputs, business and stakeholder key outputs, and outcomes.

For the public sector execution of infrastructure, the Infrastructure Delivery Management System (IDMS) is generally recommended as an execution framework. It forms part of the Framework for Infrastructure Delivery and Procurement Management (FIPDM). Whilst the OMM Programme is not required to comply with the IDMS, the aim of the set framework is similar with the successful execution of the programme and projects as the key objective. The following comparison between the processes indicated that there is - alignment between the Association's Stage Gate Model, the IDMS and the Infrastructure South Africa's adopted Five Case Model.

Figure 40: Mapping of Association's project life cycle to IDMS and 5CM



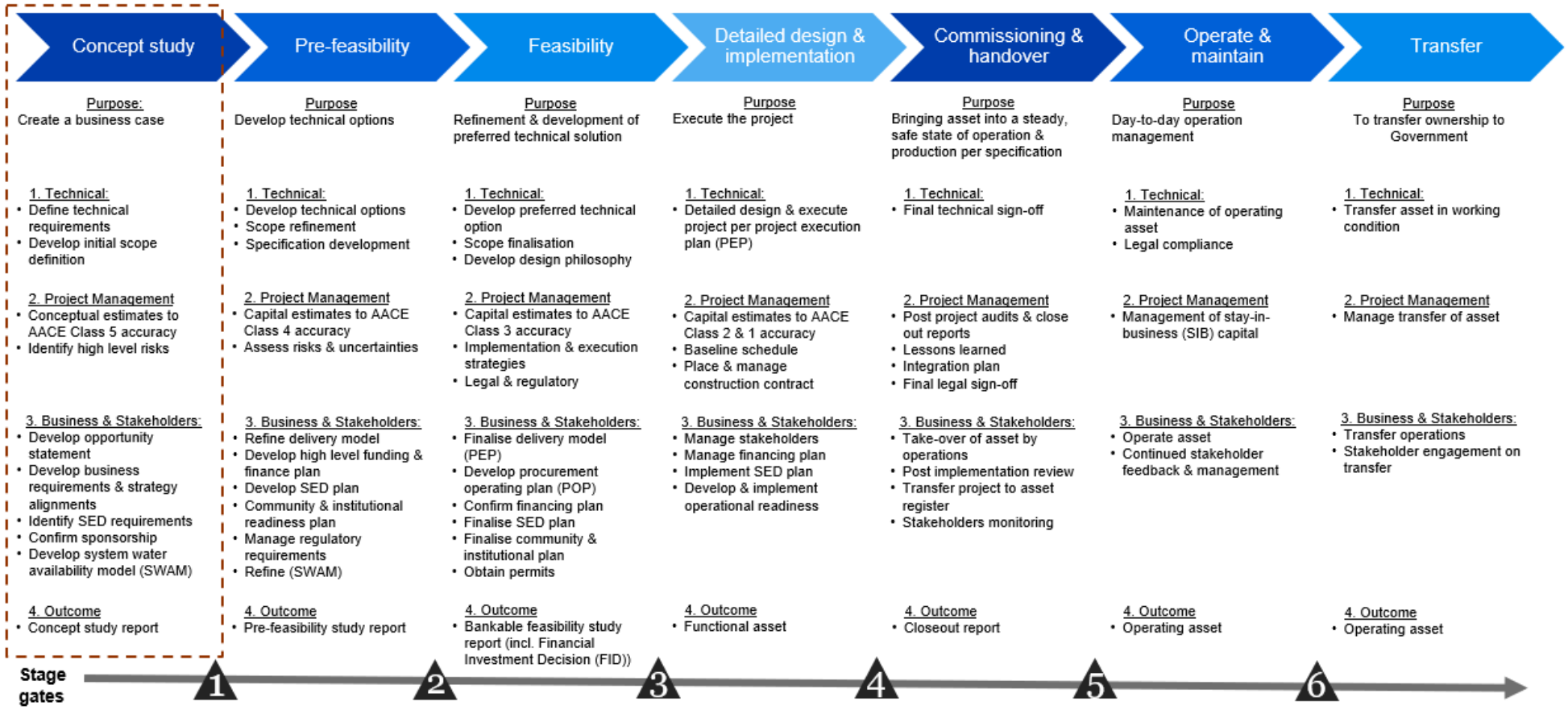
1 Full Business Case report will align with FID (Final Investment Decision) requirements, linked to the commercial strategies for the specific project.

The OMM Programme, will follow the Association's approved stage gate project implementation. The OMM Programme consists of the following seven key phases:

1. Concept study / 5CM Early Business Case;
2. Pre-feasibility study/ 5CM Intermediate Business Case;
3. Bankable Feasibility study as well as a financial investment decision (FID) / 5CM Full Business Case;
4. Implementation consisting of detail design, final procurement and construction;
5. Commissioning and handover;
6. Transfer; and
7. Operate and maintain.

Each phase of the OMM Programme will demonstrate progressive elaboration of the details of the projects and programme and the resultant scope, schedule and costs will be refined with each progressive phase. Figure 41 overleaf summarises the Association's Stage Gate Model phases.

Figure 41: Association stage gate project implementation phases



5.1.1 Phased OMM Programme Development and Roll-Over Strategy between Pre-Feasibility and Feasibility Phases

Details associated with the purpose, technical, project management, business and stakeholder key outputs and outcomes within the execution gated framework, will be executed within each phase. Each project phase will progressively elaborate the technical options, capital estimates, risks, timelines and stakeholder and business plans. It will further develop the technical options that will serve the OMM Programme objectives and financial business case to underpin the viability of the commercial model by expanding both high level technical and business requirements of the intended revised programme. It will set out the scope, business, financial, operational, organisational, institutional, stakeholder, infrastructure and asset management responses to deliver the requirements. Table 48 below indicates the overall deliverables within each study phase.

Table 48: Stage gate requirements: Overview

Stage	Concept Study	Pre-feasibility	Bankable Feasibility
Business Establishment		**Final Investment Decision**	
Purpose and key activities	• Business justification • Identify the strategic needs • Identify the concept to meet the requirements • Identify programme concept scope • Identify potential technical options • Reject obvious non-viable options • Prove potential business case and strategic fit • Identify benefits (SMART) • Develop strategic business case	• Procure professional and managing contractor team • Develop technical options • Determine required levels of service • Select most viable option • Demonstrate viability • Project implementation strategy • Scope the project execution plan • Check validity of the business case • Identify and quantify benefits	• Detail and optimise selected option • Detail quantification of benefits • Basis for implementation schedule and Control Budget for funding approval • Technical development to enable implementation of contractor appointments • Finalise the project execution plan • Check validity of the business case
Outcome	Concept Study: Early Business Case Report	Pre-feasibility Study: Intermediate Business Case Report	Bankable Feasibility Study: Full Business Case Report

Within each study phase certain minimum typical deliverables are essential as indicated in Table 49 below.

Table 49: Typical stage gate criteria

Stage	Concept Study	Pre-feasibility	Bankable Feasibility
Technical and Engineering	• Concept • Scope discovery and development and WBS update • Scope and battery limits definition	• Option identification • Option selection • Construction strategy • Basic design • General construction arrangements • Initial horizontal routing • Initial vertical profiling • Basic hydraulic design • Basic geotechnical and topographical assessment	• Preliminary design • Confirm horizontal routing • Confirm vertical profiling • Hydraulic design • Preliminary specification • Completed geotechnical and topographical mapping
1. Engineering Deliverables			
Project Scope Description	Start	Preliminary integrated programme and individual project descriptions	Final programme and project descriptions
Water Balance Model and Capacities	Start	Prelim	Complete
Scheme Layout Location Plans	Start	Prelim	Prelim
Block Flow Diagrams and General Arrangement Drawings		Plant Location: Site selection for treatment plants and routing for pipelines	Confirmation of sites based on final geotechnical data
Specifications and Datasheets		Start	Prelim
Discipline engineering designs and drawings		Prelim	Complete
Material Offtakes		Preliminary to support estimating process	Sufficient level of definition to support estimating and EPC Lumpsum bidding processes
2. Procurement and Contracting			
Commercial and Contracting	Contract strategy	• Procure Engineering consultant(s)	Contract documents

Stage	Concept Study	Pre-feasibility	Bankable Feasibility
		• Procurement strategy	
Contracting Strategy	Start	Defined with next phase plan ready for implementation	Completed and market tested for key areas
3. Construction			
Construction Strategy		Defined	Completed
4. Commissioning and Handover			
Commissioning and Handover Plan			Commissioning and Handover Plan
5. Operational Readiness			
Operational Readiness Plan		• Plan pre-feasibility and feasibility activities for operational readiness plan • Hazops Studies	• Develop Operational Readiness Plan, user requirements for construction phase • Develop Hazops Plan
6. Project controls			
6.1 Integration management		Defined with next phase plan ready for implementation	Completed
6.2 Scope and change managements processes		Prelim	Complete
6.3 Cost management	• Capital cost estimate (Concept) • Operating cost estimate (Concept)	• Develop Cost Controls Environment for the Project • Capital cost estimate (Pre-feasibility) • Operating cost estimate (Pre-feasibility)	• Develop Cost Controls Environment for the Project • Capital cost estimate (BFS) • Operating cost estimate (BFS)
6.4 Schedule management	Programme level schedule	• Master schedule: Projects level schedule to level 2 • Develop Scheduling Procedure	Develop Baseline Schedule for execution
6.5 Quality management		Defined with next phase plan ready for implementation	Completed

Stage	Concept Study	Pre-feasibility	Bankable Feasibility
7. Services			
7.1 Safety and Health			• Develop Project S&H plan for construction • Develop S&H system and reporting
7.2 Human Resources	Develop Target Operating Model (TOM)	Finalised TOM	• Develop and Implement job descriptions, grading and recruitment plan • Develop site labour plan
7.3 Finances		Develop Delegation of Authority	• Define vendor payment process and master data details • Final Investment Decision and Funding
7.4 Document Control		Preliminary Document Mgt Plan	Finalised Document Mgt Plan
7.5 Risk Management	Risk Register (Concept Stage)	Preliminary Risk Mgt Plan	Finalised Risk Mgt Plan
7.6 Information Technology		Preliminary IT Mgt Plan	Finalised IT Mgt Plan
7.7 Internal Communication		Communications Plan	
7.8 External Stakeholder management	• Identify stakeholders • Develop concept Stakeholder Management Plan	Preliminary Stakeholder Management Plan (SMP)	Final Stakeholder Management Plan (SMP)
7.9 Environmental, Social and Economic Development (ESED)	• Identify environmental, social and economic stakeholders • Identify ESED opportunities	Specialist studies, field work and reporting	Conduct Environmental and Social Impact Studies
7.10 Governance, Compliance, Legal and Regulatory	Assumed	• Legal appointment structure • High level regulatory due diligence on proposed options to identify any fatal flaws	• Land acquisitions plan • Regulatory due diligence on selected option • Review proposed structure from a

Stage	Concept Study	Pre-feasibility	Bankable Feasibility
		• Servitudes, property rights, access, contracts identified	bankability perspective • Draft/review the proposed agreements from a bankability perspective

The OMM Programme will be delivered within three primary workstreams, namely:

1. Technical and Development:
   a. Engineering;
   b. Contracting and Procurement;
   c. Construction Planning; and
   d. Commissioning Planning.
2. Project Services:
   a. Health and Safety;
   b. Human resources;
   c. Finances;
   d. Document control;
   e. Risk management;
   f. Information technology;
   g. Internal communication;
   h. External stakeholder management;
   i. Environmental, Social and Economic Development; and
   j. Governance, Compliance, Legal and regulatory.
3. Project Controls:
   a. Integration management;
   b. Scope and change managements processes;
   c. Cost management;
   d. Schedule management;
   e. Quality management; and
   f. Quality.

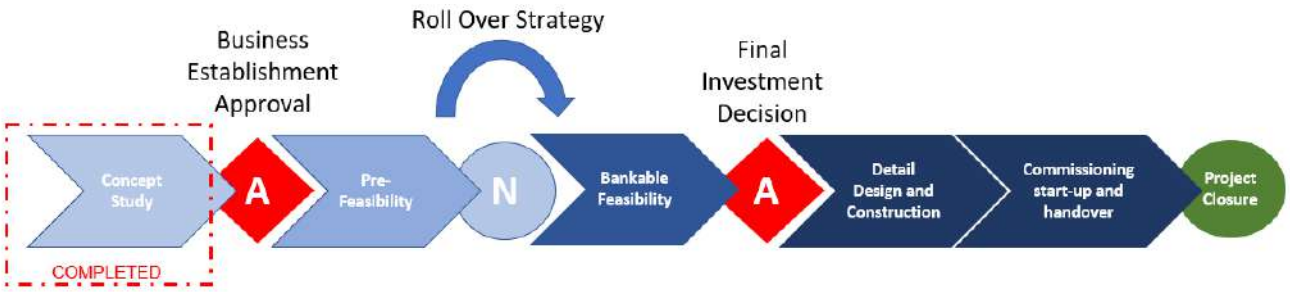
Technical options captured in this report will be further developed and the feasibility thereof confirmed, ultimately preparing the appropriate option for detail design leading into procurement and construction.

A roll over strategy will be applied between the Pre-feasibility and Feasibility phases which provides the project team the right to carry on with Feasibility study work if the following criteria are fulfilled after the Pre-feasibility phase:

1. The target date milestones for implementation of the OMM Programme as defined in this Report does not move by more than 6 months taking into account any delays experienced up to the start of the Pre-feasibility study;
2. The Feasibility phase costs remain within 10% of the budget excluding the impact of escalation into account; and

3. The total budget for the OMM Programme is within the accuracy ranges contained in the Concept Study Report, excluding any additional scope instructed by the OMM Programme Steering Committee that was not included in this report.

Figure 42: Stage gate and roll-over strategy



5.2 OMM Programme Management Governance Arrangements

5.2.1 Governance Structure

As part of the transformation of the Association the Association's Constitution was amended to take into consideration the widening of the Association's operating scope and membership. This change resulted in a changed Management Committee, reflecting the revised stakeholders. The Management Committee role as primary governance body of the Association is, amongst other aspects, responsible for the following key areas:

1. Strategic planning and monitoring;
2. Ensure governance and risk compliance;
3. Provide financial oversight;
4. Ongoing oversight of stakeholder relationship management; and
5. Support and review performance of the CEO.

The Management Committee (MANCOM) is empowered to appoint sub-committees to assist with its work. MANCOM is assisted through a Finance Committee (FINCOM) and a Social and Ethics Committee (SECOM). These committees also have charters that may be amended to increase size, objectives and mandates. Given the size of the OMM Programme (value and complexity), and to keep the focus of the current two subcommittees on the day-to-day operating business of the Association, the MANCOM has established a OMM Programme Steering Committee (STEERCOM) within the Association to provide dedicated steer and governance support to the OMM Programme. The STEERCOM has its own charter and members representing a blend of parties drawn from the transformed Association's Members. The STEERCOM is, amongst other aspects, responsible for the following key areas:

1. Oversight of OMM Programme; and
2. Collaboration forum to reach consensus on OMM Programme decisions.

Over and above the STEERCOM two additional committees will also be established with regard to oversight of the funding agreements in support of the MANCOM. The two committees are respectively the Olifants River Implementation Committee with DWS and the Association as members (Institutional funding) and the Funders

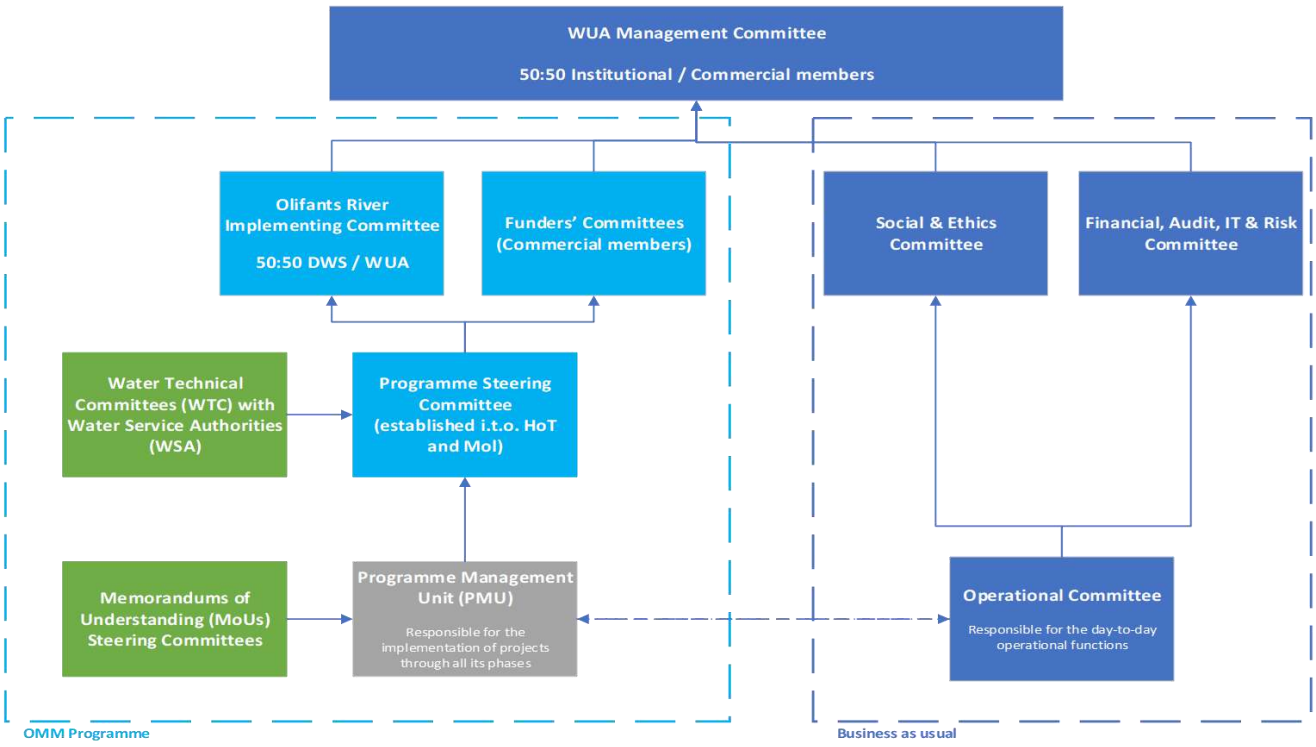
Committee with the Coordinating Bank and the Association as members (Commercial funding). The Committees, amongst other aspects, will provide oversight for the following key areas:

1. Implementation of the OMM Programme funding strategy;
2. Manage compliance to the "Funding Agreements";
3. Governance compliance; and
4. Ensure value for money.

The Association's Operations Committee (OPSCOM) ensures that the Association's management team are sufficiently informed and involved in the decision-making processes of the Association's business as usual activities and the OMM Programme from a day-to-day perspective. The management team through the managers, report to the OPSCOM on various issues pertaining to their responsibilities.

The figure below documents the high-level management structure for the Association.

Figure 43: Governance structure at establishment



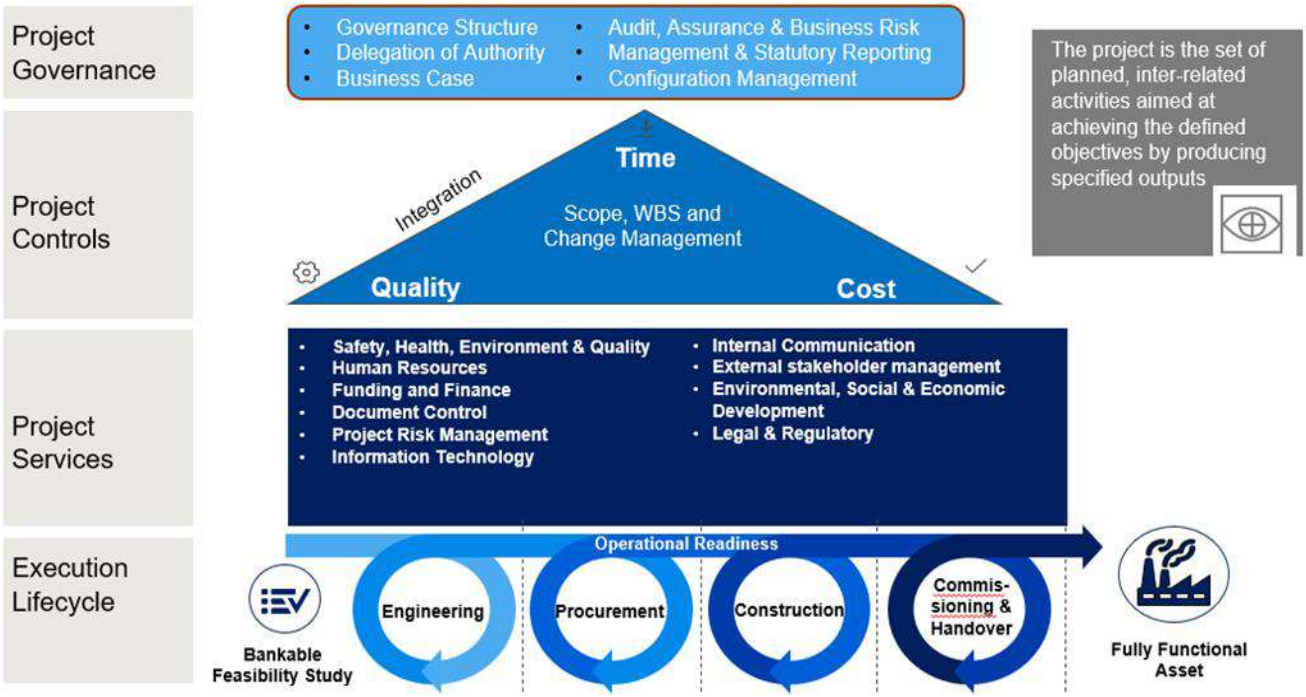
A resourcing partnership between Members was agreed as part of the transformed Association establishment to support the Association by assisting the OMM Programme PMU, the WSAs and SED activities. In this regard the PMU is targeting to be staffed from within the Association, new appointments and seconded representatives (through the Resourcing Agreement) from the Members.

The PMU will be established as a department within the Association's operational and management structures to act as an Owner's Team Representatives and will be responsible, via the Association's management and governance structures to develop and execute the OMM Programme within the mandate defined.

5.3 OMM Programme Execution Strategy

The execution of the OMM Programme will be setup with a focus on the execution approach of the implementation phase that will ultimately follow the studies. This is centred around the execution phases of engineering, contracting and procurement, construction and commissioning. These core phases will be supported by the ten key project services required for execution while an independent project controls function will provide information to the execution while at the same time ensure appropriate governance over the execution. This is illustrated in the figure below.

Figure 44: OMM Programme execution model for technical implementation



It is the strategy of the OMM Programme to develop the programme of projects by following the development process as mandated and by obtaining specialist development, engineering, procurement and construction management skills in the market.

These skills will be obtained through the appointment of Study Phase Main Consultants supported by Specialist Consultants that will complement the skills of the PMU. The Study Phase Main Consultants and Specialist Consultants will be responsible to design the technical aspects of the project, provide necessary skills and knowledge through the use of their internal processes and software systems to achieve and deliver the scope of the OMM Programme.

The OMM Programme plan provides for the appointment of three Main Consultants. The Bulk Water Supply Consultant (ZNJV) was appointed in December 2022. This consultant will also supporting general programme scope coordination and programme integration. The other Main Consultant will be appointed to execute the feasibility studies for the Potable Water Reticulation scopes in the Eastern and Northern Limbs respectively. These consultants will appoint specialist consultants to support the work as required. All anticipated specialist consultant and subcontracts required during the Study Phases, will be identified up front by the Main Consultants, fully compliant with the OMM Programme Procurement Policy and Procedure, and submitted to the PMU as part of a Contracts List for PMU approval.

The OMM Project Management Unit (PMU) will act as an owner's team representative of the Association. The PMU, as a delegated authority from the Association, will ensure that the overall project objectives as set out in this document as well as all supporting referenced information, are achieved without harm and within budget, time and quality targets.

A Project Execution Plan (PEP) will be developed for each phase and serves as the execution statement for the PMU and, as the project develops and detail is elaborated prior to the final investment decision and notice to proceed, will be continuously updated and adjusted as project information, overall execution methods, commercial and contractual engagements obtain the level of certainty and readiness for project approval to commence detail design and project implementation.

To ensure design and project management continuity on the OMM Programme it is the objective during Study Phases, forming part of the Bankable Feasibility Study, that the Main Consultants, in the form of a Project Management Consultants (PMC) will conduct and/or manage the multi-disciplined designs as appropriate to the construction contracting methodology agreed for the execution phase. The intent is that the Main Consultants manage the detail design, construction and handover of the associated works for and on behalf of the PMU subject to acceptable performance during the Study Phase monitored against pre-agreed Key Performance Indicators (KPIs).

For the OMM Programme execution phases, managed by the PMC, the EPC Lump Sum modality has been selected, for the Bulk Water Supply scopes as well as Primary and Secondary Potable Water Reticulation projects and for the final Potable Water Reticulation projects onto yard connections the contracting option will be Engineering and Construction Short Contract (ECSC) Option B, as this best addresses the requirements of all stakeholders in current market conditions.

Inclusive of the design required to achieve the objectives as set out in the project charter, the Main Consultants, as required, will define the procurement package methodologies, procurement package dictionaries and procurement packages by using a risk informed process to achieve an acceptable risk rating as agreed with the PMU.

The prepared procurement packages will be executed for and on behalf of the OMM Programme PMU procurement and commercial team who will perform hold point approvals and an oversight role.

The Main Consultants, as required, together with the procurement and commercial team of the PMU, will contractually manage the defined outcomes and deliverables as per contract including equipment specifications and standards. The identified construction companies and original equipment manufacturers must be engaged as early as possible during the basic design and later detail design phases.

Appropriate project and engineering controls are put in place to both manage change related to engineering clarifications and impacts, as well as the impact realized to the project related to scope, cost, time and risk.

Therefore, the change management process that will be adopted during the execution of the project, the OMM Programme will align to the Contract and project control policy and change management procedure – that includes all knowledge/discipline areas.

The objectives and deliverables for the phase of the project are to have a defined project scope, with defined cost, time and risk provisions, adequate resources identified and association commercial documentation ready to issue to the market once financial close (FID) is obtained.

5.3.1 Project Controls

The OMM Programme Management Unit (PMU) will have ownership of the project controls environment and it will be managed and reported on centrally through the use of transparent information defined from an integrated control environment. The project control environment will be multi-layered and the execution of the project controls within the respective consultant and contractor scopes will also be the responsibility of the Consultants and Contractors. The final verified and integrated reporting will be managed and informed on centrally by the PMU. The project controls environment will ensure transparency of information, promote good governance, reduce risk and facilitate the integration of information during the various phases of the projects (studies and execution).

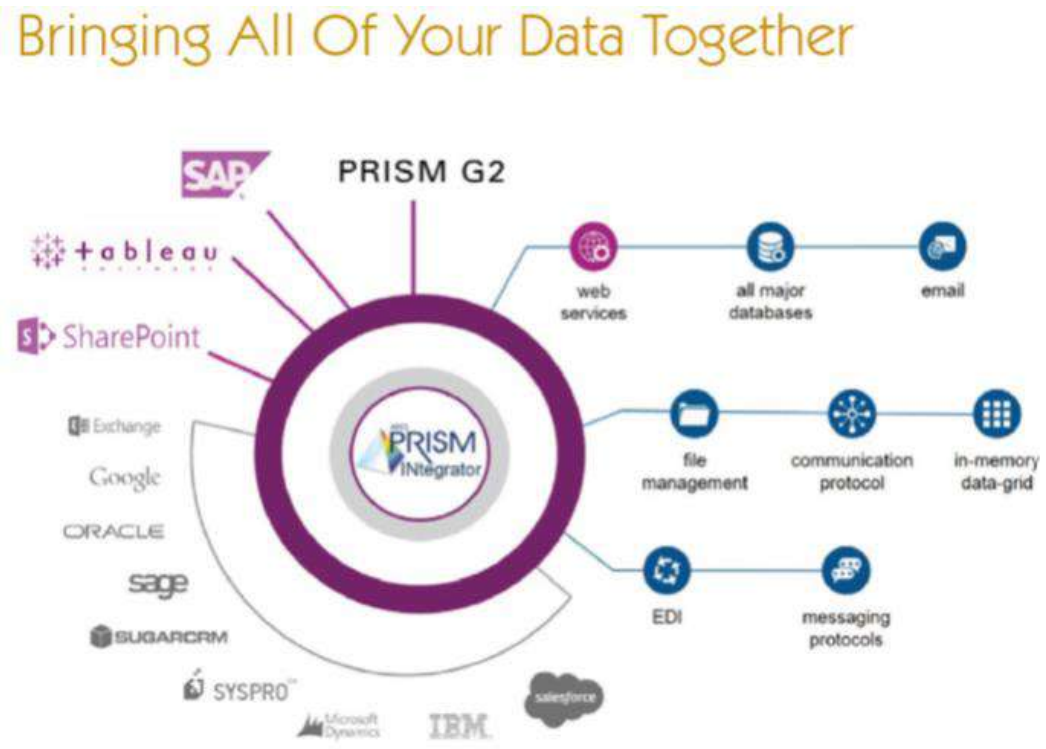
The scoping, framework and management of the project controls will be a key responsibility of the PMU in line with the approved Association policies and procedures. The implementation and detail development of these will be done by the main Consultant/s utilising their detail procedures, plans and previous experience within the integrated control environment as reflected in their Project Execution Plans (PEP).

The project specific critical controls consist of the following areas:

1. Cost Control;
2. Planning and Scheduling;
3. Change Management;
4. Risk Management;
5. Commercial and Procurement Management;
6. Quality Assurance Management;
7. Project Document Management;
8. Reporting;
9. Project Safety, Health, Environmental and Quality; and
10. Manpower Information (Access Control).

The integrated cost management process focuses on ensuring that the capital cost of projects is controlled within the approved capital cost estimate, adjusted by all/any changes as approved. The cost control system implemented by the main Consultant/s is to provide proactive day to day control of the budget, commitments, and expenditure, forecasting of cashflow and cost flow, and managing of contingency drawdowns by means of recording and creating an audit trail of performance against the approved baseline budget. The PMU will integrate the main Consultant/s cost control information within the PMU's cost management system Ares Prism G2. Ares Prism G2 Software is an enterprise project controls solution delivering value, accuracy, and performance. The software includes cost management functionality, enabling integration of project schedules and cost estimates to develop time-phased budgets and forecasts, earned-value, measure project performance and productivity, and registering of changes and risks. Ares Prism has been deployed as the integrated cost and schedule management platform illustrated below.

Figure 45: Ares Prism platform overview



Source: *Ares Prism Cost Management White Paper*

The integrated planning and scheduling management focuses on controlling the progress of projects against the established and approved baseline schedule. The main Consultant/s produces each project schedule for implementation of the project and monitors, and controls the status of the project and reports the progress. The PMU will integrate the main Consultant/s schedules into the Integrated OMM Programme schedule to ensure uniform planning and scheduling methodology across all projects being executed to allow for programme management, and integrating accurate and timely reporting. PMU's integrated schedule system is Primavera P6 a project, program and portfolio management tool for planning and controlling projects. Primavera P6 features a Gannt chart, resources, PERT network charts, critical path analysis, which is integrated with the cost management system of Ares Prism G2 seamlessly.

The integrated change management focuses on the essential elements of a structured approach to change management during the implementation of the project. The main Consultant/s will manage changes aligned with the project change management procedure, evaluate the impact of the change determined in terms of cost and schedule. The PMU will evaluate and approve all management of changes to minimise changes to designs or execution strategy after the scope has been frozen and approved.

The integrated risk management process focuses on project risks. This process ensures that risks are adequately identified, analysed and appropriate responses planned, implemented and monitored on projects. It also involves, developing and implementing risk controls and plans to mitigate the risks. Risk will be performed at an integrated level with each project required to have:

1. Phase specific risk assessment to identify and assess risks relevant to that projects phase
2. Assurance plan to facilitate Critical Control Management for high impact events, and

3. Live singular OMM PMU integrated project risk register to inform the cost and schedule risk registers and Integrated Control Base

The integrated commercial and procurement management process focuses on the fact that procurement of goods and services is done effectively and professionally. The process is transparent and complies with financial measures. The objectives of Sustainable Development, Broad-Based Black Economic Empowerment (B-BBEE), the development of Small, Medium & Micro Enterprises (SMME's) are applied, and to consider preferential procurement as far as reasonably practicable whilst still achieving value for money. The commercial and procurement function focuses on the establishment of a procurement programme for the build and contracting for various phases/stages of the pipeline and related infrastructure. The contracts will be managed through the CEMAR application in order that claims can be managed and that active contract management is made simpler and secure. CEMAR is a web based platform, a dedicated contract management solution for the NEC, FIDIC and other contract types to manage contract administrative demands, as depicted below.

Figure 46: CEMAR application overview

Source: *https://thinkproject.com/wp-content/uploads/2021/03/Cemar_Brochure_EN.pdf*

The integrated quality assurance management process focuses on the effective quality management performance in line with the approved quality management plan derived and prepared in collaboration with inputs from the main Consultant/s. The PMU shall be accountable for the effective quality management performance,

to ensure the achievement of project specific objectives are met and all project produced have been verified and validated to be for purpose and meets the agreed quality requirements.

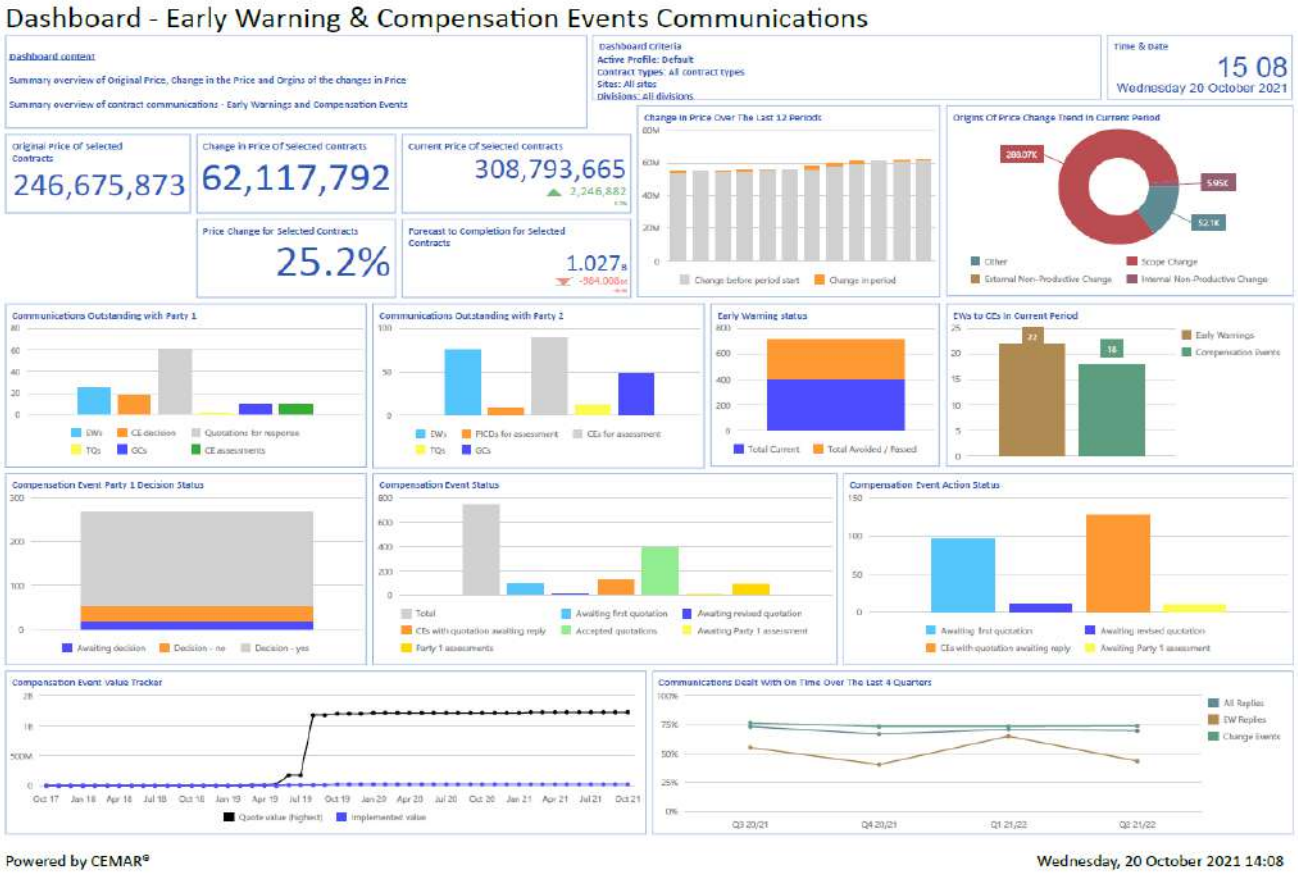
The integrated document management process focuses on the effective and consistent management of all documentation across the business and during the execution of projects. Managing and storing all internal and external project related communication in a transparent, traceable and auditable manner. The PMU will store all documentation in the PMU SharePoint an object oriented dynamic approach has been chosen to restore and retrieve documents. SharePoint is a web-based application used for document storing and sharing, featuring a multi-purpose functionality, centralised administration, document management and collaboration, enhanced security, ease of use and content management. Extra precautionary measures shall be taken to secure and restrict access to private, confidential, sensitive and/or vital records, the loss and or distribution of which may cause embarrassment to the Association and/or its staff, or their legal liability or render it partially or totally unable to carry out its normal functions. These extra precautions will be in line with the Protection of Personal Information Act, 2013 (POPI Act), to ensure the gathering and processing of personal information during the execution of projects quality processes shall comply with the requirements of the POPI Act.

The integrated reporting process focuses on the accurate reporting of the OMM Programme of projects per project specific control area. The main Consultant/s will prepare project controls reports, covering the project specific control areas mentioned in this section in line with the reporting cadence and project calendar. The PMU will consolidate the reporting information and generate the OMM Programme project dashboards and reports within the reporting cadence and OMM Programme reporting calendar using the latest cloud base dashboards and management reports provided by Ares Prism, Primavera P6,and CEMAR as illustrated below:

Figure 47: Areas Prism G2 – Cost and schedule

Source: *Ares Prism Project Dashboarding White Paper*

Figure 48: CEMAR – Contracts



Source: *https://thinkproject.com/products/cemar/*

The integrated Safety, Health, Environmental and Quality Implementation (SHEQ) focuses on ensuring all projects are executed within the stipulated Occupational Health and Safety Act, and all other applicable legislation. All project related SHEQ risks, and legal compliance requirements shall be the responsibility of the main Contractor/s. The OMM PMU will consolidate the SHEQ Statistics and compile the OMM Programme SHEQ report.

The OMM Programme access control infrastructure is secured by various technologies/systems. The systems are integrated using a Gallagher platform which is a fully integrated access control solution. The Gallagher platform controls all the access requirements and allows for the remote control in opening and closing of gates and doors, on/off switching of alarm systems and fence energisers and fence sensors.

5.3.2 Quality Assurance Management

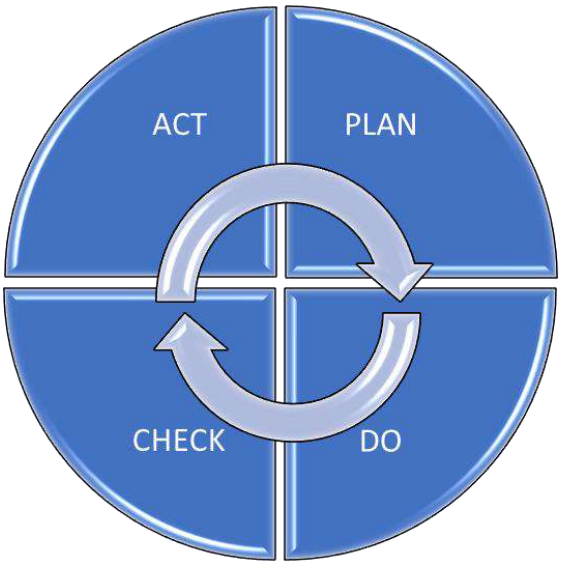
Quality Assurance (QA) focuses on the efficient use of processes in the programme/project to generate quality project deliverables.

Quality assurance on the OMM Programme will primarily focus on the processes utilized in the project efficiently to generate quality project deliverables in line with the Quality Management Policy. This will follow the international accepted 4 system quality management process in line with ISO 9000 approach which recognizes

Plan-Do-Check-Act as the operating principle of ISO's management system standards. The intent is for continuous improvement which ideally operates in a never-ending loop. The process is customized for OMM to cover the following steps:

1. **PLAN.** Prepare a full plan with scope verification and special requirements such as policy and legal constraints prior to starting the work;
2. **DO.** Execute the scope of work according to the agreed Plan;
3. **CHECK.** Review and verify that the work product comply with Plan;
4. **ACT.** Report on performance measures and implement improvement actions and repeat the whole cycle again.

Figure 49: Plan-Do-Check-Act cycle



**Source: Iso 9000 or Quality Management for Organizational Excellence: Introduction to Total Quality by David L. Goetsch and Stenley Davis-Pearson New International Edition (Paperback, 7th edition)*

Each step within the quality management system will have a minimum of 3 levels of verification namely:

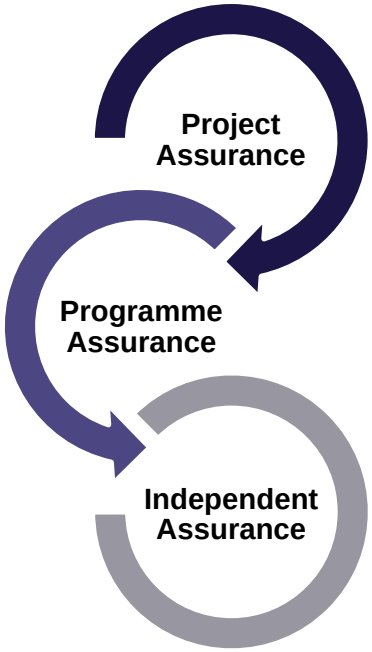
1. Performer;
2. Checker; and
3. Approver.

Over and above these processes the PMU, and for execution supported by a PMC, will perform a further level of verification on all critical documents, processes and activities throughout the lifecycle of the programme by also utilising the above 3 levels of verification.

The final layer of quality management will be an Independent audits on all processes conducted. These reports will be issued directly to the Project Sponsor who will share it with the OMM Programme Steering Committee (STEERCOM) and Management Committee (MANCOM). The report will recommend the level of assurance employed on the OMM Programme and all recommendation from the independent audits as agreed by the OMM Programme Steering Committee will be implemented within 30 days.

The overall framework for Assurance showing the Three levels is demonstrated below:

Figure 50: OMM Programme assurance framework



5.3.2.1 Quality Management Plan

A OMM Programme Quality Management Plan are developed for each project/key scope component within the programme and developed by the main Consultants comprising of three Quality Management elements:

- Quality Management System;
- Design Quality Assurance; and
- Supplier Quality Assurance.

The Quality Management System of the organisation includes the methodology, documentation and resources required to support the Project Management process and to ensure it is applied consistently, in compliance with the referenced standards and requirements.

Design Quality Assurance defines the Association, systems and documentation for design and engineering activities that the design authority must comply with. It will thus support the design and engineering management requirements that the PMU is expected to comply with.

Supplier Quality Assurance relates to assuring the quality of goods and services during procurement and construction. It is based upon establishing the criticality of the supply, clearly defining what is required, evaluating the competence of the supplier and checking what is supplied.

The Project Management Quality Plan covers the requisite outcomes that are to be achieved by the main Consultants to ensure the delivery of quality deliverables/outcomes/products within the three quality management elements, comprising of:

1. Inputs from each project discipline defined in the project development framework defining quality assurance objectives;
2. The Quality Management Plan incorporates:
    a. Aspects related to "how" both OMM and 3rd party Contractors / Consultants will collaborate and integrate quality data and information in the quality management system;
    b. Indicate how various statutory, regulatory and customer requirements as well as internal and external quality requirements must be met;
    c. How the application of quality management processes will reduce project risk;
    d. How deviations and non-conformance to quality requirements will be corrected;
    e. The frequency, format and content regarding quality management reporting; and
    f. Specific standards and related guidelines should be defined per project discipline management plans such as:
        i. Project Controls Management covering:
            > Schedule Management Plan
            > Cost Management Plan
        ii. Risk Management Plan;
        iii. Procurement Management Plan;
        iv. Change Management Plan; and
        v. Design and Engineering Management Plan.

The overarching objective of the project quality management plan is to ensure that all project products/deliverables produced on OMM Programme projects have been verified and validated to be fit for purpose and to meet agreed quality requirements.

5.3.2.2 Independent Assurance Provider

PricewaterhouseCoopers (PWC) has been appointed to provide the OMM Programme with an independent internal assurance function as the final layer of assurance.

The detailed scope is:

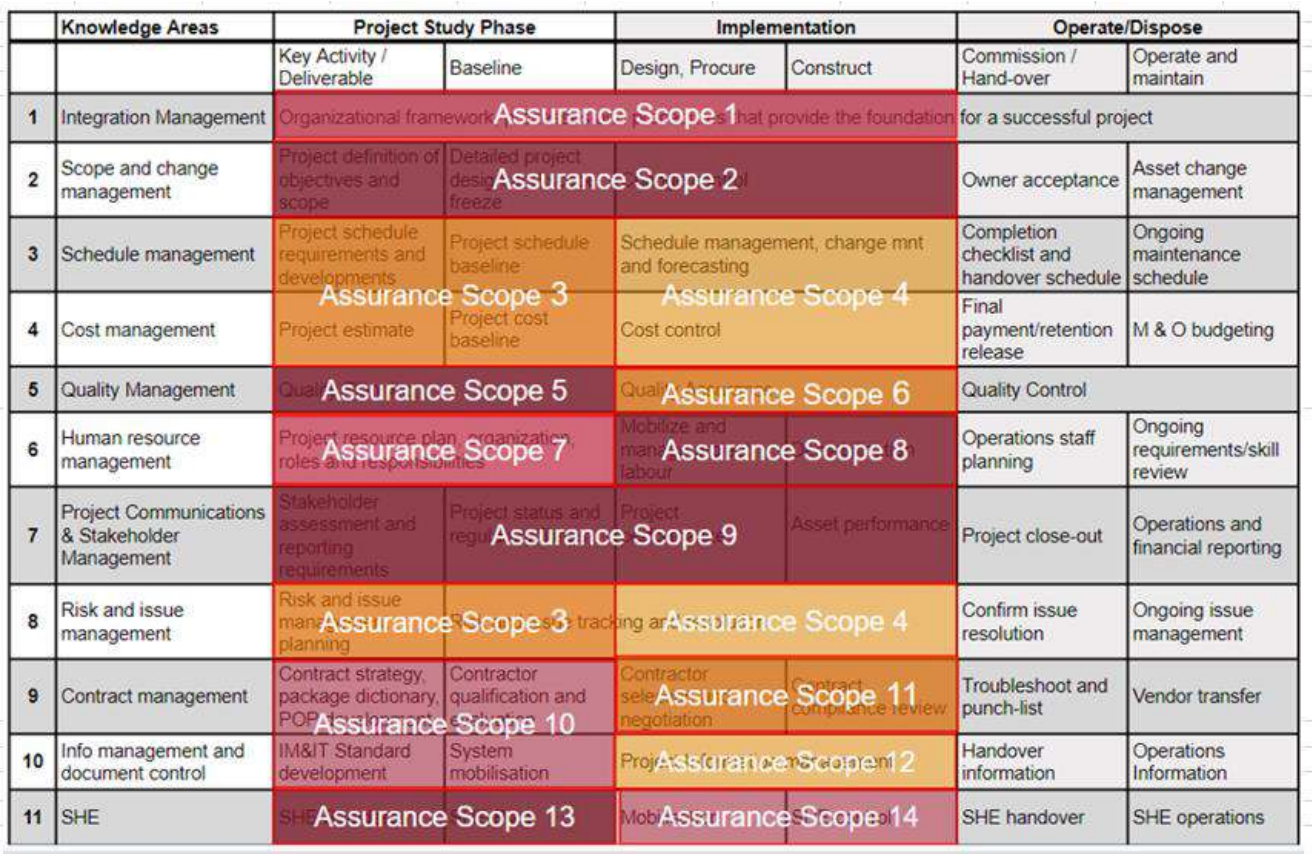
- Conduct eight independent project reviews over a 24-month period on the deliverables of the main consultant (ZNJV and other potable water consultant(s) still to be appointed) covering eight specific focus areas as stated in the list of deliverables below against the agreed review framework of the PMU; and
- Conduct two independent project reviews on Southern Extension 2 project against the policies and procedures by applying the PMU assurance framework over a 12-month period (once review every 6 months) on the deliverables against the project scope of the main consultant and 3 other key technical consultants.

Independent project reviews will focus on the following eight focus areas:

- Integration management during the study phase;
- Scope and change management;
- Schedule, cost and risk estimate development during the study phase;
- Schedule, cost and risk management during the implementation;
- Human resource management;
- Quality management;
- Contract management, information management and document control; and
- SHE management;

Each assurance scope will cover key activities/deliverables depending in which phase the study or project is, all as indicated in the following figure:

Figure 51: Key activities/deliverables per assurance scope



Observations will be included in an independent project review report.

5.3.3 OMM Programme Work Breakdown Structure

The OMM Programme Work Breakdown Structure (WBS) criteria was developed considering the current phase/stage of the project to ensure integrity among cost, schedule, scope and document management systems, there will be constant optimisation for the OMM Programme WBS as the project/s progress through the phases/stages, as set up from the outset with a common configuration taxonomy. Table 50 below sets out the key elements of the work breakdown structure.

Table 50: Work breakdown structure

#	Element	Details
1	Elements to be included in the WBS	1. Existing assets 2. Assets under design or construction 3. Bulk raw water programme 4. Bulk potable water programme 5. Potable water reticulation programme

#	Element	Details
		6. PMO including new business establishment / Association transformation
2	Levels of breakdown	1. Assets: identify assets at each owner level. Association WBS to align with the Asset Register and Chart of Account levels 2. Programmes: identify to project and sub-project levels 3. Projects: identify to SABS 1200 levels, and activity level 4. PMO: identify workstreams, activities per workstream

5.4 Operating Model and Operational Readiness

The objective of the operating model and operational readiness planning was to create a vehicle for the creation of the Association and implementation and operation of the OMM Programme. To achieve this an as-is evaluation was conducted to understand the current Association operating model. This involved an analysis of the current value chain – this showed that the Association is in line with its initial mandate which was to build and distribute bulk raw water infrastructure to develop the Eastern Limb through a collaboration between the DWS and the mining industry. However, the value chain suggests that it will need to be transformed in order to cater for the future Association's social licence to operate, allow mines to take advantage of a favourable commodity cycle and make provisions for potable water. The evaluation of the current functional structures and organisational structures show that the association is fit for its current purpose. With a staff complement of around 40, key functional roles exist in the business such as: Administration, Project Management, Core Operations (bulk water reticulation), Finance, SED / PR / CC and Governance, Risk, Compliance and Legal (GRC&L).

The framework deployed to develop the Association target operating model (TOM) is geared to transforming Association's business strategy into tactical operations through four main lenses – customer offerings, business capabilities, organisational structures and enterprise performance management. The approach adopted focussed on the following elements:

1. **Development of an Integrated Management Model** – The purpose of IMM is to standardise and link methods, systems and processes within the Association by:
   - Implementing selected ISO Standards,
   - Optimising the use of the installed Maximo asset management life cycle and workflow process system by creating / improving linkage to Infrastructure asset registers, Supply chain management, SHEQ programs, Project administration and payment certificates as well as HR processes ,and
   - Creating operational dashboards and KPI's.
2. **Development of design principles** – The design principles for the operating model is aimed at achieving the strategic objectives of horizon 1 and 2 which is "improving lives through water" and "transforming into a Smart Water Utility". The model structure would be designed through the following elements:
   - Value chain analysis – Analysis of the value chain to determine what constitutes primary support, functional support and operational scope;
   - Service delivery model – Model describing which operational entities are responsible for the strategy, tactical planning and execution of business processes;
   - Capability model – Representations of all organisational business capabilities, their relationship, geography and hierarchy;
   - Functional structure – Illustration of functional groups in the organisation according to a specialised or similar set of roles or tasks;
   - Organisational structure – System describing an organisation's hierarchy within which all the managerial tasks are performed; and

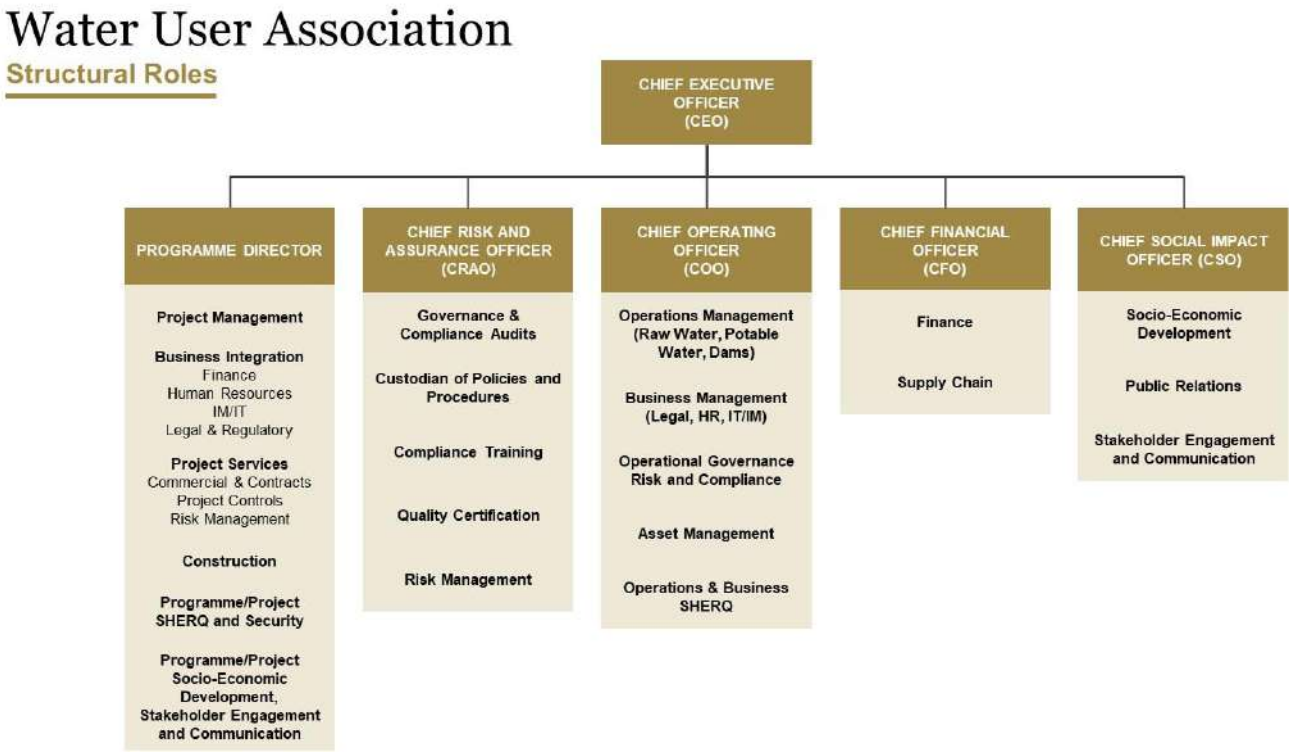
- Technology landscape – Functional representation of the structure and workings of the IT infrastructure in an organisation. This will be addressed as part of the pre-feasibility study.

3. **To-be value chain analysis** – The new mandate means that the Association will operate and maintain:
   - the current Association bulk raw water value chain;
   - the newly installed bulk raw water infrastructure in the Eastern and Northern Limb;
   - the Flag Boshielo and De Hoop Dams;
   - all water treatment works and associated bulk potable water infrastructure up to command reservoirs for all new build infrastructure;
   - the refurbished and extension of Mooihoek, Steelpoort and Ga-Malakane water treatment works;
   - the newly constructed Mokopane (28Ml/d), Sekuruwe (21 Ml/d), Havercroft (10Ml/d) and Spitskop (21Ml/d) water treatment works; and
   - Localised renewable energy infrastructure while also using Eskom energy during off peak.

   The reticulation infrastructure beyond the command reservoirs will be the responsibility of the water services authorities.

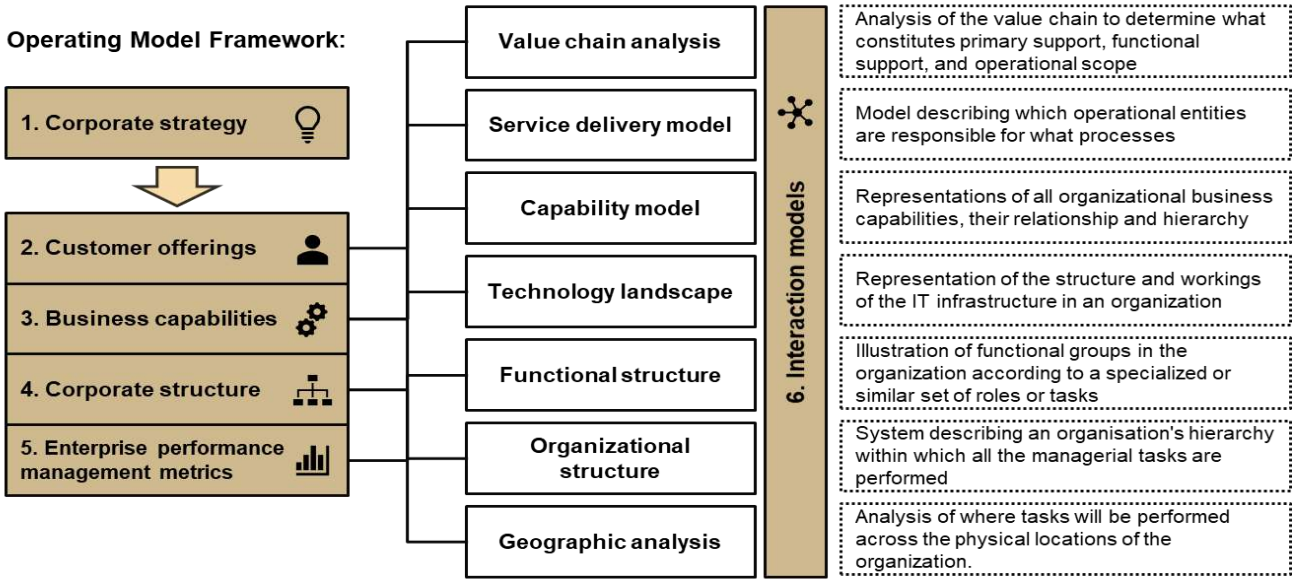
4. **Service delivery model** – This model describes the functional centres where work will be performed. This model is essentially the context in which the Association's new capabilities will be arranged into services. The model consists of executive leadership, Centre of Expertise (CoE), Centres of Competence (CoC), outsourced services (which is split into construction sourcing and outsourced functional and operational service), On Site and Functional Centres. There will also be further emphasis on the SED structures to bolster the organisation's impact on the communities it services.
5. **Capability model and key process matrix** – Based on the requirements for the future state of the association's value chain, key processes were established and linked to functional owners. Furthermore, a capability model was developed to demonstrate the sub-functions for each function. Then processes were established and linked to the service delivery model and geographic location (so that there is an understanding of who and where processes will be performed).
6. **Association functional structure and organisational structures** – In order to operationalise the envisaged capabilities the Association will need to grow significantly during the transformation process. The business will be organised under five functional heads that will all report into the CEO – these five roles will make up the executive structure of the Association as presented in the diagram below. The Programme Director will manage and control the project management of the mega projects. The COO will be responsible for core operations, these include raw water and bulk potable water infrastructure management inclusive of dam management and potable water operational support to WSAs, Business Management that include HR, Legal and IT/IM, Operational Governance, Risk and Compliance, SHEQ and Asset Management. The CFO role will manage support functions including finance and supply chain. Head of Risk and Assurance that will be responsible for all internal and external assurance processes, custodian of the policies and procedures, certification and integrated risk management. Lastly The Head of Socio-Economic Development and Communications, who will ultimately manage the SED platform for the association. The staff complement is expected to grow from 40 FTE to a high-level estimate of 200 FTE at the end of FY29.

Figure 52: Association functional structure



7. **The WSAs functional structure and organisational structures** – Part of the Association's mandate (as per the HoT) is the management support and overview of the WSAs with regard to the potable water scope that will be implemented by the OMM Programme. To fulfil this obligation, the OMM Programme, in conjunction with the WSAs, will perform operational readiness reviews of the impacted functional and structural areas and assist the WSAs with the required alterations to their functional and organisational structures to cater for the additional future infrastructure, inclusive of management systems and tools. The assessment will commence during the design periods once the potable water scopes in the affected regions are finalised.

Figure 53: Target operating model framework



5.4.1 Operational Readiness Planning

Operational readiness planning was not addressed yet in the Early Business Case. The following elements of operational readiness were addressed and the further development will be addressed in the Business Transformation of the Association as well as in the Full Business Case of the individual projects.

5.4.1.1 This Intermediate Business Case

Once the scope has been confirmed, the framework for an end state operating user requirements and specifications document will be drafted, this will define the elements required during the basic engineering phase for the following:

1. Operability and maintainability philosophy specifications and requirements of facilities;
2. Operability and maintainability specifications and requirements for systems; and
3. Interoperability requirements and specifications for control and organisational systems (such as PLC/SCADA systems and ERP/ SCM systems).

5.4.1.2 Operations and Maintenance Philosophy

The Association was established in terms of Section 92(1) of the National Water Act, Act 36 of 1998. This was published in the Government Gazette 23053 of 1 February 2002.

Over the past 21 years Association has successfully operated and maintained its bulk water infrastructure, by a dedicated operations. The Association uses the IBM MAXIMO system, one of the world's leading Enterprise Asset Management systems to support and control the schedule and issue of works orders, maintain its infrastructure asset register, order spares and maintain stores inventory as well as to generate and pay invoices. The Operations Unit is further supported by a state of the art telemetry and SCADA system that enables the remote start and stop of pumps, monitor reservoirs levels, pressures and flows from a centralised control room. Drones, CCTV Cameras, electrified perimeter fences and alarm systems safe guard the infrastructure of the Association, monitoring is also done from a central control room by highly skilled staff.

The Operations and Maintenance (O&M) Philosophy is intended to establish a future O&M vision, with an increased focus on Occupational Health and Safety, surety of supply, optimising worker contributions , ,ensuring return on investment and minimising operation life-cycle cost. It is intended that this document would incorporate O&M lessons learned into on-going and future project upgrades, ensuring an integrated O&M system is delivered.

A fundamental principle of the O&M Philosophy is that of standardised equipment and business processes. Generic design and standardized components allow for consistency of O&M by reducing the amount of training required for artisans and operators, allowing for trend analysis and lessons learned, and reducing the number of spares required to be maintained on hand. Consideration should be given to standard systems that are easy to maintain, flexible enough to allow for future growth, and robust enough to ensure uninterrupted operations. Once a system architecture design is selected, additional systems should be compatible and, if possible, identical.

Documentation of current operating practices is intended to provide operational readiness with the lessons learned and best practice information for effective incorporation into the project designs. Many of these lessons learned and best practices are based on previous operations, maintenance, and project upgrade activities. If possible, each of the "shall" requirements will be traced to a specific lesson learned document or an O&M decision document. Where no formal decision documents exist, this document will provide documentation of these requirements.

5.4.1.3 Monitoring and control systems

A monitoring and control system should minimize life-cycle cost while optimizing system performance and production processes. The O&M monitoring and control system will provide the following:

- Centralize remote surveillance monitoring to reduce operational costs.
- Start up and shut down systems locally to optimize system performance.
- Control operations local-remotely to optimize production processes.
- Monitor and collate operation parameters such as meter readings,levels, flows and pressures

Only those parameters critical to the operations of the system or component should be monitored. Monitoring should not be performed just for the sake of obtaining data. Each monitored parameter should have a specific operationally related purpose, such as system performance evaluation, production figures or trend analysis.

To allow for an integrated processing view and minimize monitoring life-cycle cost, remote monitoring at a central monitoring location is highly desired. The use of remote monitoring will minimize the amount of data to be collected while touring the facilities. The operators can then be more concerned with identifying abnormalities associated with the operation. Recording data from remote monitoring stations also helps to minimize the amount of travelling time of Operations and Maintenance personnel and thereby improving efficiency.

5.4.1.4 Full Business Case

During the feasibility phase, the basic engineering function needs to be provided with input regarding the operability and maintainability specifications and requirements to ensure reliable, fit-for-purpose, safe and efficient operational and maintenance processes. To this end, the operational readiness team will liaise with the engineering design team and provide input into the Hazard and Operability Studies (HAZOPS). Input for operating and maintenance requirements will be provided at a sub-system level.

The End State Operating Requirements document and Operational Readiness Plan (ORP) will be a primary deliverable for Operational Readiness Planning in the Feasibility Phase. The plan will detail interoperability requirements and specifications for facility, system and sub-system controls with enterprise management

systems such as ERP/ SCM systems. The ORP plan will also detail the requirements for commissioning, ramp-up and handover processes between project and operational resources.

Attachment I contains a detailed description of Association's Operational Readiness Analysis to transition into the transformed Association.

5.4.1.5 OMM Programme Management Unit

The OMM Programme Management Unit (PMU) was appointed to act as an Owner's Team and will be responsible to develop and execute the OMM Programme.

The Association and its Project Management Unit (PMU) structures will be phased in as the OMM Programme moves through the development phases of the stage gate project implementation model. The intent of populating these organisational structures, amongst others, is to maximise the utilisation of the experience on offer from the Association's members as well as securing inclusiveness of these members through continued direct involvement in the OMM Programme.

Detailed job profiles with roles and responsibilities were developed for the organisational structures and for each implementation phase will be issued to all Association members to provide CVs of potential candidates. Successful candidates will be seconded as members of the OMM Programme into the PMU. Remaining positions will be advertised in the labour market for appointment directly into the Association on a contracted basis for the duration of the OMM Programme. Where direct appointments are proven difficult due to a lack of skilled resources available in the market, specialist service providers through NEC3 Professional Service Agreements will be utilised to fill the gaps while the appointment processes continue. Specialist Consulting Companies will also be appointed to support the PMU on ad hoc work assignments.

The PMU are setup for the Study Phases and Execution Phase in accordance to the organograms below which is aligned to the execution approach of the OMM Programme.

Figure 54: PMU functional structure

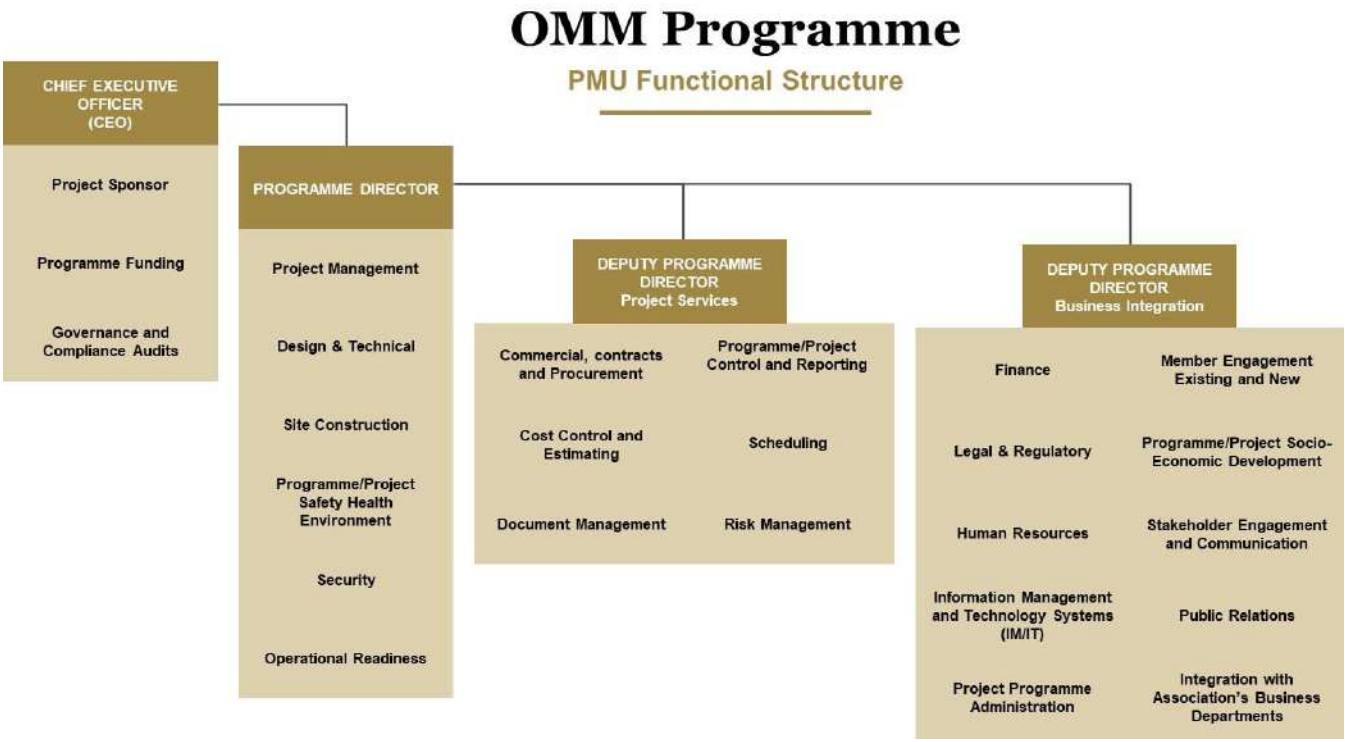


Figure 55: Organisational structure – Home office PMU

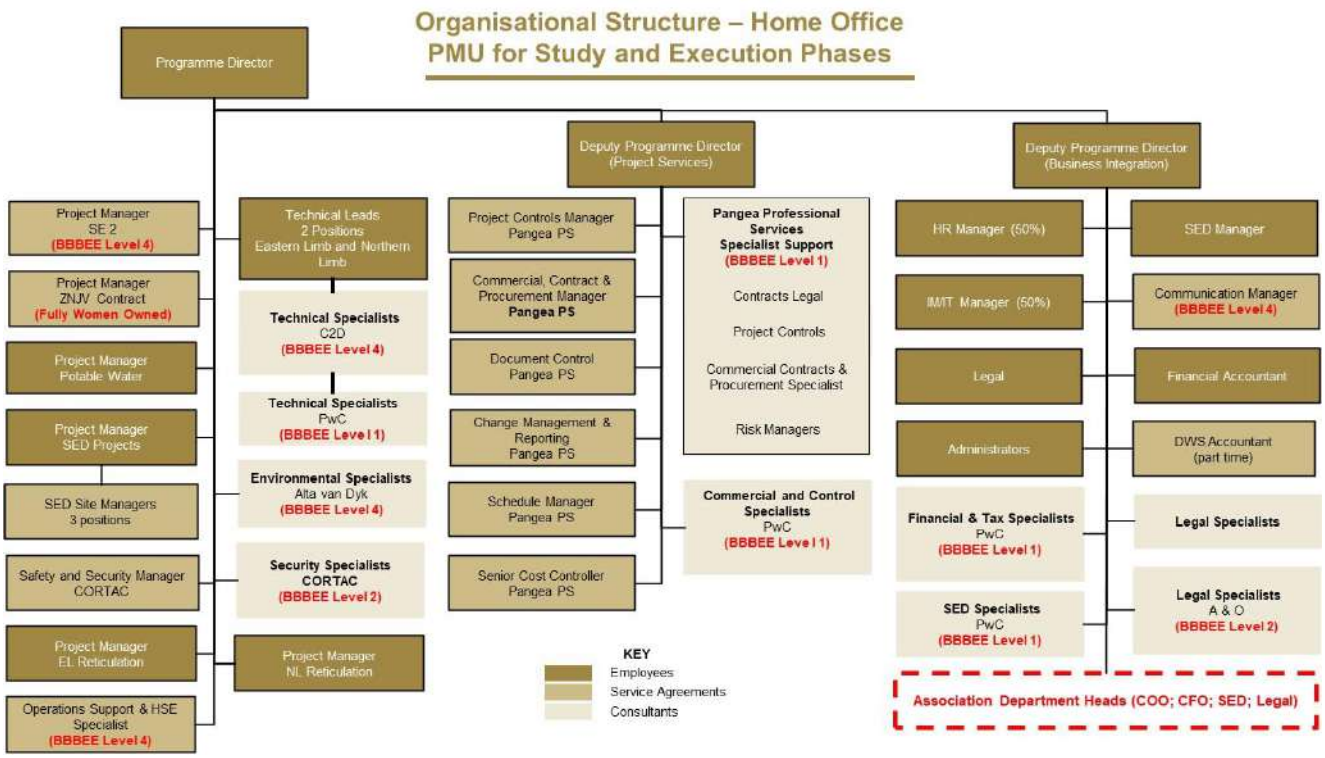
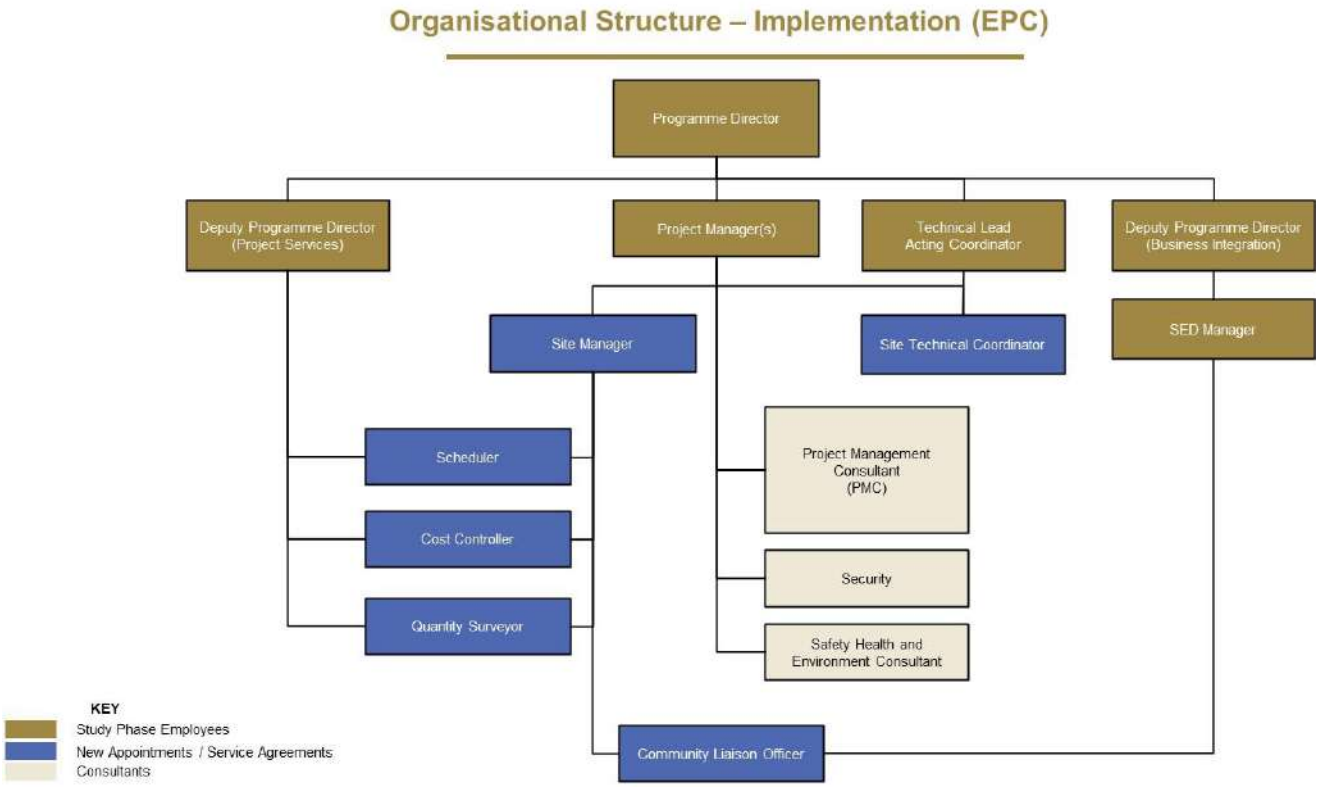


Figure 56: Organisational structure – Implementation (EPC)



The PMU will be centrally based either in Gauteng during the study phases or at the operational centre during construction. A project specific site team will be based at the construction centre of each project and will be a duplicate of the diagram above.

Although not reflected in the organogram, the PMU will make provision for training and development positions for 3 young professionals during the Study phase of the OMM Programme and up to 5 during the execution phase. The training and development will take the form of rotating the young professionals through the different parts of the OMM Programme applicable to their profession. During the rotation they will be given direct responsibility for a portion of the work, reporting to the manager or lead of the area. Each young professional will also be allocated a sponsor from senior members of the PMU. The sponsor will be responsible to agree to the development program and ensure the effective implementation thereof. The young professionals can be nominated from Association Members who will also have to bear the costs associated with the individual during the secondment period to the OMM Programme. The minimum secondment period will be 6 months.

5.4.2 Resource Appointment, Training and Development

5.4.2.1.1 Permanent Employees and Fixed Term Contracts

In order to function as an integrated team, all programme personnel (PMU and Specialist Consultant personnel) will receive induction and training on the execution methodology, PEP and Project Management Plans.

5.4.2.1.2 Skills Development (Learning and Development)

The Association promotes employees development with the following purpose:-

- To develop the skills of the Association's employees, thereby improving their quality of life, workplace productivity and competitiveness;
- To encourage employees to participate in Learnership and other training programmes;
- To improve the prospects of employing people disadvantaged by unfair discrimination and readdress these disadvantages through training and education;
- To ensure quality education and training; and
- To develop skills amongst job entrants, to develop learning environments and to provide opportunities to employees to acquire skills.

The Association will pay for employees' formal studies with the specific institutions which are relevant to the employees job, through a formal learning and development process. The bursary application will be recommended by the line manager, supported by the Financial Manager and approved by the CEO.

The employee will sign a workback contract with the Association All cost related to the studies will be paid to the institution directly and the employees will then sign a work back agreement with the Association for the period of study.

5.4.2.1.3 Talent Management

The Association utilizes the talent management process to manage the recruitment, development, promotion and retention of employees by employing the right people with the right skills into the right jobs at the right time to achieve Associations goals.

Talent Management includes the following process:

- Organisational design;
- Workforce planning;
- Sourcing;
- Selection practice;
- Learning and development;
- Performance management (including compensation);
- Leadership development;
- Succession management;
- Retention and engagement; and
- Career planning and development.

The process benefits both the Association and employees in that employees are able to manage their careers and personal career plans. High performing employees will be motivated, committed to the association and achievement of the Association goals.

The Association has employed a standardised onboarding process in order to efficiently integrate new employees successfully in order for them to be integral members of the Association.

This is done through a roadmap for both employees and line managers to manage and validate the process between the parties.

The onboarding process is a key and critical component of talent retention and its made of 3 phases which are pre-employment, post-hire 1 and post-hire 2.

Table 51: Onboarding process

Pre-employment	Post-hire 1	Post-hire 2
• Recruitment • Information sharing • Logistics	• Welcome and sign-on • Introduction programmes • Training & development • Employee engagement	• Employee engagement & support • Performance management • Quality assurance

5.4.2.1.4 Other Service Providers

The training and development of the resources that will be contracted Professional Service Agreement on assignment basis, will remain the responsibility of the relevant service provider. Onboarding and Performance Management will be applied to service providers more than 50% of their time utilised. The requirements will be influenced by the PMU to ensure alignment.

5.4.2.1.5 Site Contractors

Each construction site is unique and once the construction managers have been appointed, he/she together with the HR representative will modify as required the standard requirements and compile the site training file for the project. Once the training requirements have been approved, it will be issued to construction contractors at the tender stage so that each contractor can financially provide for such training.

5.5 Safety and Security

5.5.1 Construction

Construction security will be led by the OMM Programme Security Consultant. During the project phases the Contractor will remain responsible for their onsite security, however to ensure that there is a consolidated and integrated solution in place, the OMM Programme will provide the main contractor with guideline requirements to streamline the processes.

It will be expected of the contractor to follow these guidelines as part of their contractual performance. All guideline aspects have been designed to flawlessly integrate into the OMM Programme security philosophy and strategy.

The guidelines include site perimeter specification, lighting requirements, community engagement protocol, official communication channels, electronic onsite incident notification, geographic risk profiling, security officer training and supervision, site access policies and recommendations and Community Liaison Officer (CLO) training and guidance.

The OMM Programme will make available response and patrol services, centralised control room services, information and intelligence gathering, community engagement activities, site supervision, staff induction, EMS services, SAPS services, investigation services, goods and staff escort services and survey services. The contractor guidelines have been designed to ensure the contractor is aware of all relevant services and is guided as to how to access and engage any of the required services.

The guidelines will also assist in indicating the official channels of communication and escalations ensuring a co-ordinated response to any risk exposure. In addition, the collaboration of information is of utmost importance and

valuable and the centralisation and collection of it will be greatly assisted if all these protocols are followed and executed by all vested parties.

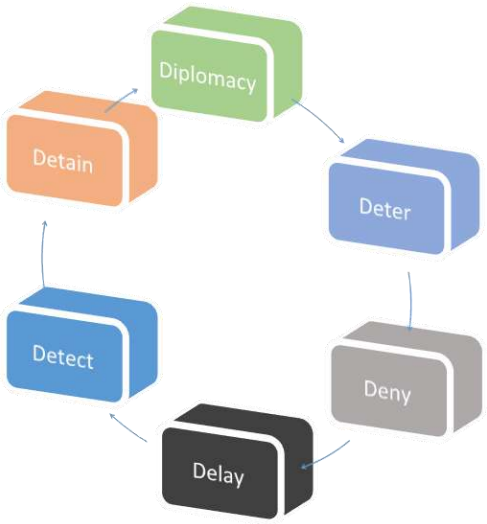
This approach will ensure operational excellence irrelevant of how many different role players are involved and is tailored to assist the contractor in focusing on their main tasks by making sure the risks that may present themselves are mitigated and controlled.

5.5.2 Operations

Linear infrastructure has always been a challenging design to secure and protect. The challenges normally posed would be the vast distances and rugged terrains that need to be accessed in executing solutions. Compounding the forgoing would be the lack of/or expense involved in establishing stable and efficient communication/connectivity to be utilised by solutions.

The security operational approach is based on the 6D philosophy. The philosophy is most suited for the securing and protecting of linear infrastructure installations. This operational approach has been successfully applied and implemented on existing Association infrastructure with great success. The international standards would refer to it as a 5D approach however in the South African landscape we have added a 6th arm to the approach which will be referred to as diplomacy.

The 6D philosophy is supported by various physical designs and technology to support the solution. The various technologies that complement one another as part of the solution is cut and climb fence sensors, electrified internal fence, camera surveillance utilising latest artificial Intelligence features, access control system with features similar to a PSIM (Physical Security Information Management system) and alarm detection devices.

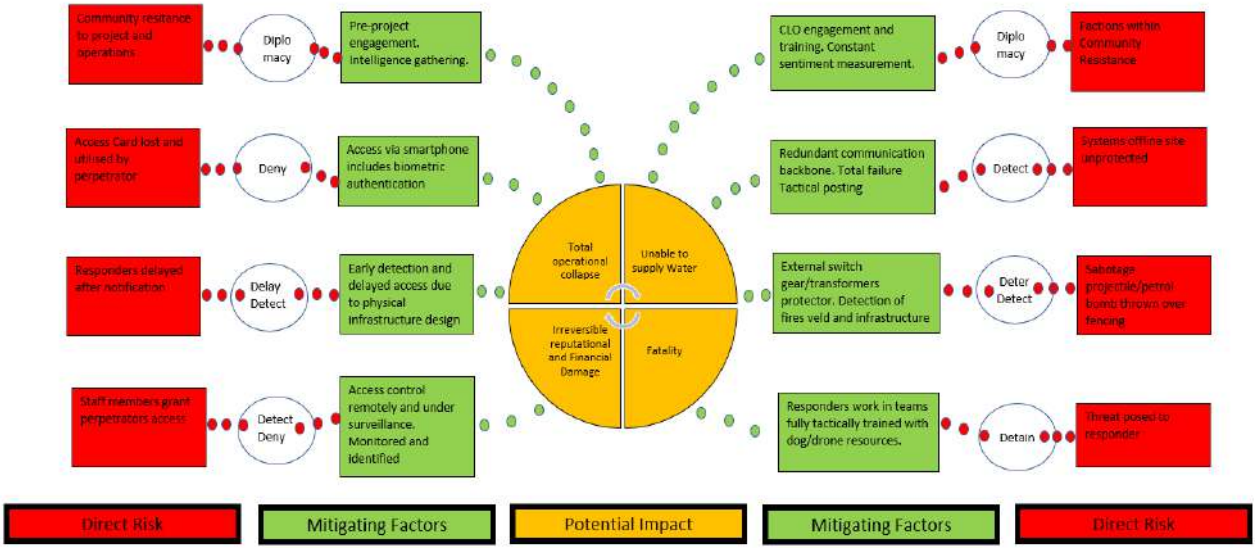


Physical features such as high security mesh fencing with concrete casts to prevent under dig attempts, window frame choices limiting opening supported by ventilation ducts instead, hooded and sloped covers for open transformers, anti-bandit or DS1 rated external doors, dual interlocked vehicle access gates, double fencing with a 3 meter detection servitude between the fences.

The collaboration of the technologies blended with the structural designs and the solutions specific specifications, allows for a remotely managed, secured and operated facility.

The last part, and equally important element to the solution is the responding tactical vehicle. The solution format allows for 2 to 3 highly trained multi-disciplined tactical officers with either/or dog handling training or drone flying competency. When not specifically tasked the team will be patrolling the route within their deployed boundaries on a 24/7 basis. Similar resources will be spread out along a linear infrastructure on a minimalised basis.

Figure 57: The "Bowtie" representation illustrates some of the principles.



5.5.2.1 Strategy Elaborated

Diplomacy

Diplomacy refers to community related matters where constant monitoring, alignment and information gathering is involved. Advance engagements and information gathering of local communities are critical to the successful undertaking and completion of projects. The engagement focus is to ascertain community buy in and to get local leadership commitment and alignment with the program. Further assurance is attained by the appointment of Community Liaison Officers (CLO's) and the relevant guidance and training of these individuals.

To further cement the commitment and support, SED projects (High Performing Schools Program) are undertaken to ensure positive community sentiment and support.

Deter

The infrastructure build and design should visibly pose a challenge and hence be a physical deterrent to potential threats. The external defence should discourage individuals from attempting to access the site by alternative means.

Defy

Access to infrastructure is strictly controlled and limited to very few which in turns denies free access or any form of access to third parties onto the terrain. Access system with full remote control allows for full oversight of who is allowed into various areas day or night.

Delay

Delay refers to buying time to enable responders to arrive and detain suspects before any substantial damage to infrastructure. Substantial refers to damage that directly affects the business in supplying water to its clients.

To implement the above refers to physical structures i.e., wire mesh fencing external, double interlocked access gates with internal full height electrical fencing. Similarly should the outer perimeter fail the external access points will have burglar proofing and minimum anti bandit door specifications to further delay unauthorised entry attempts.

Detect

To further improve on the 6D philosophy various intelligent detection devices are deployed connected to a remote command centre. On the outer perimeter the fence is fitted with cut and climb detection devices. These devices alert on cut and climb attempts.

The second layer is the electric fence which will also send notifications should attempts be made to breach it.

Thirdly the terrain has Auto Track with Pan Tilt and Zoom (PTZ's) fitted. These cameras are armed with auto track technology which enables the camera to patrol the entire terrain. Upon detecting movement it will change direction and zoom in on target and start following it. At the same time built in Artificial Intelligence (AI) will determine what object it is and should it be a human/vehicle and or weapon (fire arm/knife etc); the system will send an alert with a live video presenting the remote control centre with the video evidence of a potential intruder.

The early detection ability tied with conforming delay infrastructure allows for enough time for a patrolling responder to reach the site in time to disrupt the actions of potential intruders thus preventing substantial damage.

Detain

With the success of the implementation of the foregoing 5D's clarification, the last D (Detain) is of utmost importance. In linear infrastructure applications a normal alarm responder as we know it will not be able to manage the threats posed in this environment. The responders must work in teams, drive 4X4 capable vehicles, have multiple capabilities including drone and dog utilisation and must be tactical trained.

In this environment the perpetrators will be in groups (crime relevant and community relevant) with a high likely hood of them being armed and hence the prior requirements prerequisite.

The required format is more expensive than the ordinary solution but with the right technology (detect) and physical structure (deny), the density of the solution can be diluted to a balance point ensuring a holistic approach to the solution.

5.5.2.2 Strategy Motivation

Besides the obvious there is a multitude of advantages to the Association responsible for the infrastructure:

- No onsite guards or personal required. Reduces risks and costs;
- Although the infrastructure covers large terrain the Association has full control and historical data of where his personal was on which day and for how long;
- Staff dismissed has access revoked immediately and you can be assured they do not have access anywhere by chance. No keys or codes;
- Systems are remotely managed allowing emergency access anywhere should it be required without anyone having to drive to a location to unlock;
- Systems can also be remotely disarmed to allow for maintenance functions to be performed ensuring the systems are armed again without staff required to perform this function;
- CCTV systems also perform production and maintenance functions at the same time as they give visual confirmation of dam levels, pumps running, terrain maintenance quality and can be utilised to inspect various structure i.e., dam walls etc.;
- The systems also gives you time and date stamped evidence trail in the event of any unsafe acts by staff or Health, Safety, Environment & Community (HSEC) incident to allow for factual assessment after the event;
- Design includes Wi-Fi hotspots for staff use to ensure connectivity during the execution of their work;
- The system allows for Time & Attendance reports to determine on-duty functions of staff;

- The deployed tactical units with drone capability can be deployed during daytime to survey not security related functions i.e., construction progress, manhole conditions, erosion impact etc.;
- Physical perimeter capable of delaying access by groups during unrest situations;
- Renewable energy power sources ensuring uptime of systems during power outages;
- Limited community interference and reduced community risks.

The strategy adopted is an international standard and applied in many instances. The only deviation from standards would be the addition of a diplomacy arm which is necessitated due to the South African landscape.

5.6 Stakeholder Identification and Assessment

The stakeholders required for the successful implementation of the OMM Programme have been identified. A stakeholder assessment was done to establish which stakeholders are critical to the OMM Programme and how engagement will happen with them. Stakeholders in the following groups were identified:

Table 52: Stakeholders

Stakeholders	Relevance
National Government	
Department of Water and Sanitation (DWS)	• The DWS is the lead partner in this partnership and has signed the Heads of Terms, Finance and Cession agreements. • They play a critical role in getting the municipalities over the line and ensuring their continued cooperation and support • Water User Associations are established under the National Water Act (NWA). DWS will need to approve and support the establishment of the transformed Association. This process has already commenced and consultation with all impacted stakeholders has happened • It is important that internal alignment around these types of partnerships happen so that no unnecessary delays are created.
National Treasury (NT)	• NT is responsible for the fiscus and understands the financial status the country presents itself • NT need to ensure that Government's portion of the funding of the OMM Programme is committed. • Agreement on how the OPEX will be funded is required.
Infrastructure SA (ISA)	• The mandate of ISA is to coordinate large Infrastructure projects in terms of the relevant legislation • The mandate includes facilitation between Government and Private Sector to co-fund infrastructure development through unlocking potential blockages with compliance approvals • The OMM Programme is supporting the 5CM which has been adopted by ISA • The OMM Programme is one of the priority projects for ISA
Cooperative Governance and Traditional Affairs (CoGTA)	• CoGTA is responsible for municipalities. Any discussion about the potable water provision, funding options for the municipalities and institutional arrangements need to be agreed with CoGTA • CoGTA will be critical in ensuring support from municipalities. Their commitment to the project was given by the new Minister Ms Thembi

Stakeholders	Relevance
	Nkadimeng, who attended the OMM Polokwane launch in October 2022
Public-Private Growth Initiative (PPGI)	• Is a supporter to OMM Programme in aligning Government with the growth objectives of the country with those of this programme
Department of Mineral Resources (DMR)	• Responsible for approval of mining activities and social and labour plans (SLPs) • They will be critical in the SED Collaboration Forum and alignment and integration of SLPs
State Security Agency	• The mission of the SSA is to provide critical and unique intelligence on threats and opportunities for the government to advance South Africa's national security interests in a changing global environment • Due to the nature of this project incidences with the “construction mafia” has already started • The SSA is needed to support the project in dealing with these criminal elements that wants to solicit money illegally through threatening contractors and staff.
Lepelle Northern Water (LNW)	• LNW is an entity of DWS and is responsible for supplying bulk water in the Limpopo province and supporting municipalities with the implementation of water services • LNW has been mandated to construct phase 2F+ which is currently under construction • LNW will be key in the discussions around the institutional arrangements for the operation and maintenance of potable water infrastructure
Municipal Infrastructure Support Agent (MISA)	• MISA is responsible for supporting municipalities with asset management and operations and maintenance. • MISA is critical in supporting the SED programme with skills development of municipal staff and technical staff with training
Department of Education	• The National Department of Education supports the OMM Programme and would like the OMM PMU to consider implementing the school sanitation project in Limpopo
Productivity South Africa	• PSA’s mandate is to promote employment growth and productivity thereby contributing to South Africa's socio-economic development and competitiveness. • They will be a key member of the SED Collaboration forum to be set up
Provincial Government	
DWS Limpopo	• Representative of DWS in the Province • DWS LP played a key role in helping the OMM team engage with the municipalities • Regulate and support water services authorities
Limpopo - Office of the Premier	• Responsible for economic development in the province • The OMM Programme will stimulate economic development in the Olifants River Catchment area in the Limpopo Province • Provide leadership and coordination with local municipalities in the province

Stakeholders	Relevance
Premier's office / Premier's Employment Growth Advisory Council (PEGAC)	• The OMM Programme is supported by the Premier of the Limpopo Province • The Premier has set up a committee (PEGAC) that looks at economic growth and development in Limpopo. It is important that this project is integrated with what is planned for the province
Limpopo Department of Education	• Support the OMM SED Schools programme • MEC of Education committed to support the High-Performing Schools Programme (HPSP) • Will be critical in the SED Collaboration forum to integrate initiatives around infrastructure projects and teacher/ learner development
Local Government – About 380 000 people will be provided with access to water supply	
Sekhukhune District Municipality (SDM) (Water Services Authority (WSA)), including the following Local Municipalities: Elias Motsoaledi, Ephraim Mogale, Fetakgomo-Tubatse and Makhuduthamaga.	• Most of the communities in the Eastern Limb fall under the jurisdiction of SDM. The WSA is in control of potable water provision in its area of jurisdiction. • It is important that municipalities engage with communities and traditional leaders about the OMM Programme • Discussions underway with the new management team at SDM to get MoU signed and sharing of existing information • Need better support from SDM in community engagements
Capricorn District Municipality, including the Polokwane Local Municipality (PLM) (	• Engage in terms of the District Development Model (DDM) model
Waterberg District Municipality (WDM) including, specifically, the Mogalakwena Local Municipality (MLM) (Water Services Authority)	• In terms of WDM: ▪ Engage in terms of the District Development Model (DDM) model • In terms of MLM: ▪ Same applies as above for the communities in the Northern Limb ▪ Good cooperation has been received from the municipality in terms of making information available necessary for the study phase ▪ Need better support from MLM in engaging municipalities
Traditional Leaders	• Traditional leaders in the affected communities need to be consulted and MoUs signed to ensure their commitment to the project • Traditional leaders to support the project through showing support when SED projects are to be implemented
SED Project sponsors	
Vodacom	• Current SED Partners who provided sponsorship towards the schools programme • This list will grow as more sponsors come on board to support communities in the Limpopo province • Sponsorships can be in kind or in the form of donations which will be handled through the SED Collaboration Forum
Esor Construction	
Hall Longmore	
NEC-XON	
Tess Engineering	

Stakeholders	Relevance
Inspireware	
Scarab Waste Water Treatment	
Container World	
Commercial Stakeholders – confirmed members	
Anglo American Platinum (including the following mines: Der Brochen, Modikwa (with ARM), Mogalakwena, Mototolo, Twickenham)	• Ensuring water security for their operations • Social licence to operate • This project will set up a collaboration platform for the implementation of SED Projects. • Alignment of SLP's to support the SED programme • Tariff impact • These mines have committed to contributing to the funding of pre-feasibility and feasibility studies • Engagement with all mines is necessary to ensure that they are still committed to the project
African Rainbow Minerals (including the following mines: Modikwa (with AAP) and Two Rivers Platinum (with Implats)	
Assore (including Dwarsrivier Chrome Mine)	
Cheetah Chrome South Africa Proprietary Limited (including the Dilokong / Ga-Mathipa Mine)	
Corridor Resources / SAIL Group (including the Black Chrome Mine)	
Glencore-Merafe Venture (Lion Smelter)	
Impala Platinum (including the Marula Platinum Mine and Two Rivers Mine (with ARM))	
Ivanplats Proprietary Limited (including Platreef Resources)	
Northam Platinum (including the Booysendal North Mine)	
Tameng Mining and Exploration Proprietary Ltd	
Commercial Stakeholders – continued interaction	
BCR Holdings (Pty) Limited	• Ensuring water security for their operations • Social licence to operate • This project will set up a collaboration platform for the implementation of SED Projects.
Bushveld Minerals (including the Bushveld Minerals Mokopane Mine Prospect)	

Fetakgomo Tubatse Industrial Park (FTIP)	• Alignment of SLP's to support the SED programme • Tariff impact • These mines have committed to contributing to the funding of pre-feasibility and feasibility studies • Engagement with all mines is necessary to ensure that they are still committed to the project
Kadoma Investments	
Vanadium Resources Pty Ltd	
Sylvania	
Zijin Platinum (Nkwe Platinum / Garatau Mine)	

Regular meetings are also held with the Institutional and Commercial Members to provide them with progress updates. A formal Communications and Engagement Plan is developed and will be continuously reviewed as new stakeholders are onboarded and as the engagement progresses.

Attachment J contains a detailed description of the OMM Programme's stakeholder management approach.

5.6.1 Stakeholder Implementation Plan

A stakeholder implementation and communication plan has been developed. The plan focus has the following focus areas:

- Key institutional stakeholders that are critical to the success of the project but who are not yet committed nor supportive of the project;
- Key commercial users that have not yet committed to participating in the project through the signing and honouring of commitment letters;
- SED stakeholders that can contribute through donations or in-kind towards the SED component of the project; and
- New potential off-takers that can form part of the project and contribute financially.

Communication and engagement mediums for these stakeholders have been identified and will be implemented throughout the project duration. Specific platforms will be used to communicate with communities and traditional leaders to ensure that they are aware of the project and ready to participate either through job opportunities or other entrepreneurial activities. The communication plan will be updated on a monthly basis and shared with all stakeholders to ensure transparency and create continuous awareness and interest.

5.7 Key Performance Indicators and Realisation Plan

The effects or outcomes of the OMM Programme implementation strategy and tracking of benefit realisation will be quantified through KPIs which can be assessed by the Association through a number of economic and other tracking variables. Targets are to be set at the beginning of each implementation phase and associated KPIs developed, assessed, validated, and reported on, on a regular basis to assist in refining and optimizing the implementation plans and services. Where possible KPIs will be set at the service department level to assist in focusing the strategy and interventions with the department head taking responsibility for performance against the KPI. The first set of KPIs will be developed for approval and implementation prior to kick-off of the Pre-feasibility Study Phase and will cover the following Association areas of responsibility:

1. Strategic Management;
2. Health, Safety and Environment;
3. OMM Programme Delivery:

a. Engineering;
b. Commercial and Procurement; and
c. Project Management and Construction.

4. OMM Programme Enablement Services:
   a. Human resources;
   b. Finance;
   c. Document control;
   d. Risk management;
   e. Information technology; and
   f. Internal communication and reporting
5. External stakeholder management;
6. Socio-economic development; and
7. Governance, compliance, legal and regulatory.

Target and benefit realisation management will be monitored through a Benefits Register that will clearly provide a description of the target, what aspect or activities associated with the target will give rise to the benefit and facilitate monitoring, activities required to secure the benefits from the target, the Key Performance Indicator (KPI) that will be used to monitor progress against the target and a timeline for updating KPI measurements.

Table 53: KPI register

	Responsible Entity	Measurement
Personnel Performance Agreements including personnel service agreements	PMU Line Manager supported by HR	Bi-Annually
Specialist Consultants		
• Pangea	Deputy Programme Director – Project Services	Quarterly
• Alta van Dyk Environmental	Programme Director	Quarterly
• Cortac	Programme Director	Quarterly
• PwC	Deputy Programme Director – Business Integration	Quarterly
• Allan and Overy	Deputy Programme Director – Business Integration	Quarterly
Study Consultants		
• Infraburo	SE2 Project Manager	Quarterly
• ZNJV	ZNJV Project Manager	Quarterly

5.8 Study Phase Approved Budget

As described in the Early Business Case Report and the OMM Programme implementation methodology is based on the application of international proven and accepted good project practices aligned to the Association members' capital investment governance processes. To this extent a stage gate project implementation model

is utilised and each phase will be developed to demonstrate progressive elaboration of the details associated with scope, schedule and costs.

The Study Phase costs were escalated from an October 2021 base date to January 2023 reference date resulting in an increase to total cost. However, additional approvals are not required at this stage, and the approved Study Phase costs remain the same:

It is important to note that the Study phase costs do not make any allowance for early procurement, long lead items or implementation of accelerated projects.

Schedule durations for all projects, for costing purposes, allowed for:

- Pre-feasibility study phase of 6 months; and
- Feasibility study phase of 12 months.

The estimating methodology applied for study consultants costs included:

- Development of a typical list of deliverables required during both study phases for consultant support to the PMU as well as main technical Consultants;
- Level of effort calculated in man days required to deliver each identified deliverable;
- Applied market related Consultant daily rates; and
- Study consultant estimate costs (total cost and applicable rates) were benchmarked for applicability through a market intelligence survey where scope specific budget quotations were obtained from the market.

The estimating methodology applied for PMU and Operational Team costs included:

- Developed diagram of positions required from the Target Operating Model (TOM);
- Phasing in of positions identified during the study phase period (pre-feasibility and/or feasibility phase); and
- Applied market related salaries to positions as per Association policies.

Contingencies was applied following a review process. A further allowance of 15% was included for facilities, systems and incidental costs calculated on the total cost estimated for the PMU and Operation team.

As a benchmark, the Study phase cost was compared against the Engineering Council of South Africa's "Guideline Scope of Services and Tariff of Fees for Persons Registered in terms of the Engineering Profession Act, 2000". Taking the estimated OMM Programme setup and preparation phase costs into consideration, the total study fees equate to between 89% to 96% of ECSA applied Tariff of Fees for similar projects.

5.9 Risk Management Plan

5.9.1 Risk Management

The Association defines risk as uncertain future events that could influence its ability to achieve its objectives. The Association has a risk management framework in place for managing risk to facilitate rational and informed decision making.

The approach is to prevent value destruction through deliberate planning, arranging and controlling of activities and resources to minimize negative impact of risks to tolerable levels.

A traditional view of risk is negative, with risk being characterized as threats with adverse consequences but the Association's approach is to identify risks that include and create opportunity. This gives equal status to opportunities and threats and seeks to manage them proactively to the benefit of the Association.

The risk management functions that are in place for the OMM Programme are overarching and take cognisance of the specific risk management plans for each and every project within the OMM Programme.

The Association have adopted the PMI standards as presented in the Project Management Body of Knowledge (PMBok) and the Global Five (5) Case Model in terms of risk management for their organisation.

It is essential that these approaches are highlighted as they provide the flow in terms of risk management. The approach considers the following:

Definition:

- Project risk management includes the processes of conducting risk management planning, identification, analysis, response planning and monitoring and control on a project;
- The objectives of project risk management are to:
  - Increase the probability and impact of positive events; and
  - Decrease the probability and impact of negative events in the project
- Risk is the effect of uncertainty on objectives;
- Risk should be considered with opportunity i.e. risk & opportunity, because not all risks are bad;
- Risk is a positive or negative deviation from what was expected; and
- Need to differentiate between risk, consequence and cause. Because of the cause (fact or condition) the risk (uncertainty) occurs leading to consequences (possible impacts).

5.9.2 Risk Management Processes

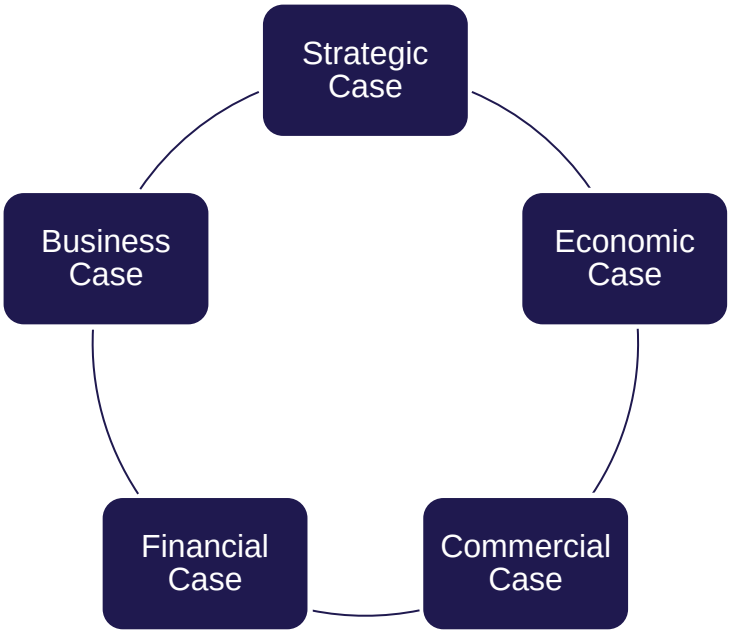
- Plan risk management:
  - The process of defining how to conduct risk management activities for a project
- Identify risks:
  - The process of determining which risks may affect the project and documenting their characteristics
- Allocation of risk:
  - Who is responsible for the risk? (Risk Owner)
- Perform Qualitative Risk Analysis:
  - The process of prioritising risks for further analysis or action by assessing and combining their probability of occurrence and impact
- Perform quantitative risk analysis:
  - The process of numerically analysing the effect of identified risks on overall project objectives
- Plan risk responses:
  - The process of developing options and actions to enhance opportunities and to reduce threats to project objectives
  - Risk improvement plans
- Monitor and control risks:

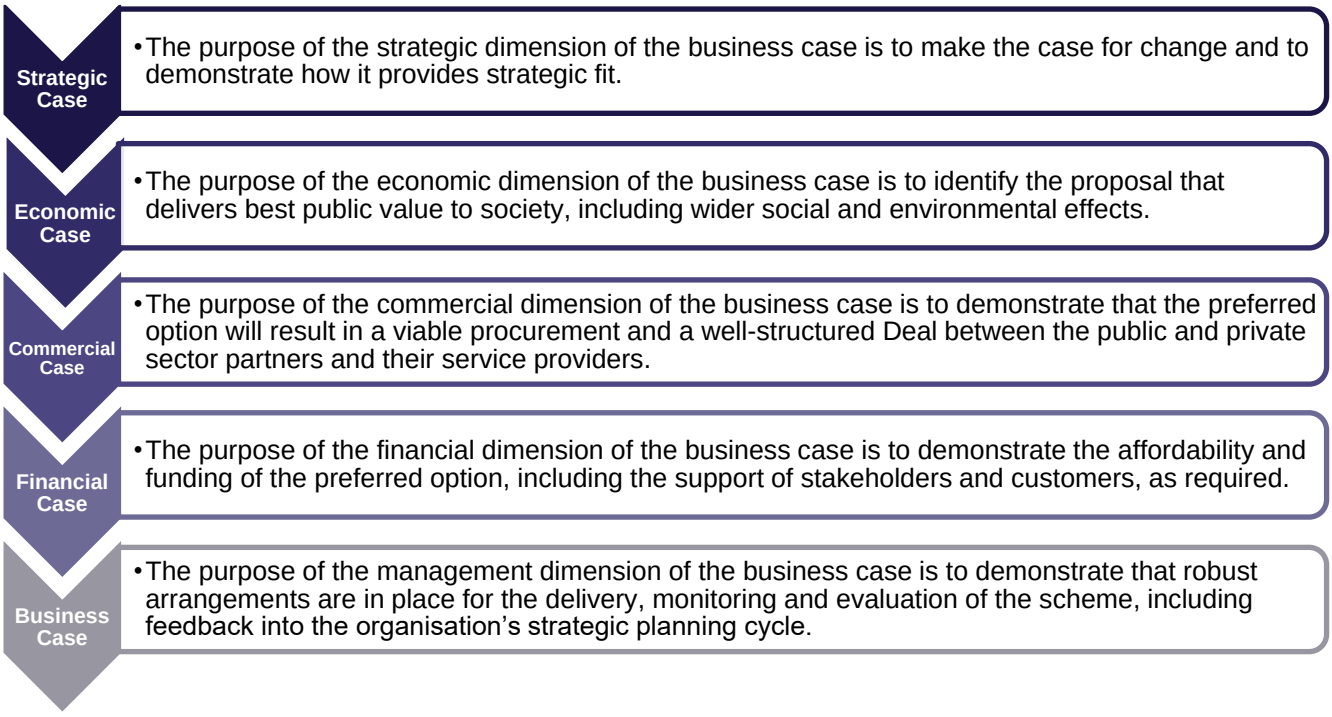
- The process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks and evaluating risk process effectiveness throughout the project

Figure 58: Risk identification

In terms of the **Global Five (5) Case Model** the risk management plan shall align with:

Figure 59: Risk management plan alignment





5.9.3 Risk Management Plan

The Risk Management Plan shall:

1. Be an essential stage gate deliverable;
2. Specify those risk management policies that the risk management process is designed to support;

3. Reference, related and applicable supplementary documents, such as standards and procedures;
4. Define the following:
    a. What Risk Identification and Assessment (RIA) workshops will be held, when, and who the attendees should be;
    b. The methods to be used for categorisation, organisation, consolidation and comparison of risks;
    c. The risk monitoring and control methodologies to be applied to the risks;
    d. The frequency and format of the risk mitigation progress assessment, feed-back, review and reporting, and the plan for future project level risk identification workshops;
    e. Risk response strategies which are driven by the common goal of project success against planned performance output;
    f. The scope of the risk management effort and its assigned roles and responsibilities;
    g. The default values, parameters and criteria for ranges that will be/have been used in the grid matrix and other assimilations in order to qualitatively determine the status of the identified risk;
    h. Methods and tools to be used to perform on-going risk management;
    i. The methods of quantitative and qualitative assessment and analysis that will be applied;
    j. Risk mitigation techniques to be applied in specific cases;
    k. The selected probabilistic level of confidence (P number) of achieving forecast or predicted outcome, that will determine the necessary value of contingency and the basis on which this selection has been made;
    l. The ranges of capital cost and schedule variables that will be used to described uncertainties and unstructured risk;
    m. The budget provision for the activity of the risk management process;
    n. The protocol, channels, networks, timing and formats for communication of risk analysis results and review outcomes to interested parties and stakeholders;
    o. The threshold criteria for risk categorisation and attention that determines what response action will be taken and by whom;
    p. How and when the risk management process will be audited; and
    q. The risk breakdown structure for risk categorisation purposes.

5.9.3.1 Addressing the Risk Management Plan for the OMM Programme

The OMM Programme has recently conducted a workshop whereby inputs from all risk owners have been provided and a Risk Register has been updated.

This OMM Programme Risk Register takes cognisance of the risks within the programme and integrates risks from projects that are being conceptualized, those in progress and the projects that are being implemented. The Risk Register has been prepared with the following identification categories:

- Risk Number;
- Workstream;
- Risk Name;
- Risk Description;
- Causes;
- Consequences;
- Impact;
- Rating;
- Likelihood;
- Inherent Risk Factor;
- Inherent Risk;
- Controls;
- Control Effectiveness;
- Control Effectiveness Factor;

- Residual Risk Factor;
- Residual Risk;
- Risk Owner (Responsible);
- Risk Manager (Accountable);
- Actioned By (Action Person);
- Action Plans;
- Manager Action Plan; and
- Target Date.

The table below provides an extract of the most prominent risks from the OMM Programme Risk Register.

Table 54: OMM Programme risk overview

	Risk	Consequence
1	**Strategic Business:** Government and commercial members may not be in a position to fund its contribution given impact of credit rating downgrading, other priority capital allocations and commodity cycles for the mining sector	1. Commercial and Institutional Members may be required to cross subsidise each other's contractual commitments; and 2. Higher financing costs and compliance requirements due to sovereign risk and source of funding.
2	**Technical Business:** Insufficient availability of water to augment Flag Boshielo and De Hoop Dams due to climate change, illegal abstraction and environmental requirements may impact the viability of the project and regulator may deny water permits	1. Concerns over adequate water availability may result in the feasibility study not being bankable; 2. Infrastructure design specifications may be misaligned to resource availability which will adversely impact on build cost; 3. Social and commercial water commitments not being met; and 4. Water permit may not be forthcoming.
3	**Socio Economic / Communities:** The legacy of inadequate stakeholder engagement, communication, access and participation combined with complex community dynamics and high levels of unmet expectations, could lead to increased community unrest compromising the projects ability to execute and delays	1. Unrest incidents could threaten the safety of contractors and community members; 2. Social unrest which could further delay completion of the OMM Programme; and 3. Disaffected communities may threaten the safety of, or prevent service providers from surveying the site to demarcated area battery limits (farm boundaries, community boundaries, mines spheres of influence and municipal boundaries).
4	**Technical / Strategic / Business:** ESKOM will be unable to deliver a reliable supply of power to its customers over the next 6-8 years as much needed backlog maintenance is done and technical commissioning issues on its new plants are resolved. In addition the cost increases requested are in excess of CPI making the cost of electricity over the long term extremely expensive	1. Disruption of water service delivery; 2. Significant escalation in OPEX costs; and 3. Planning to include alternative energy solutions, resulting in an increase in capital cost.

	Risk	Consequence
5	**Socio Economic / Communities:** Alignment and meeting expectations for local labour, especially for potable water infrastructure (build out to stands)	1. Delays and disruption due to unmet local expectations compromising the timeline and/or leading to additional costs.
6	**Finance External:** Credit risk profile of country and project may make it more difficult to source funding and lead to high financing costs compromising the viability of the project	1. Sourcing of funding will become more difficult; 2. Cost of financing likely to increase; and 3. Viability of the scheme could be compromised.
7	**Finance Public Sector:** The SA Government may not be in a position to fund their portion of the capital required for the programme, leading to additional funding required from private institutions and/or members	1. Inability to obtain adequate funding will lead to delays and possible cashflow pressure on the Association and could compromise the OMM Programme.
8	**Finance Private Corporate Members:** Funding may not be able to be sourced from private institutions by commercial members	1. Shortage of capital for the OMM Programme; 2. Delays and/or cancellation of the OMM Programme; 3. Reputational risk for the Mining Industry; and 4. Loss of trust between Government and the Mining Industry.
9	**Finance / Commercial Sustainability:** Communities unable to pay for potable water	1. Municipal institutions may not be able to pay LNW and the Association for provision of water services; 2. Inability to sustain Operating and Maintenance structures and services; and 3. Loan payment defaults to funding institutions.
10	**Socio Economic / Communities:** Political pronouncements, positioning and messaging will continue to build community expectations which are unlikely to be met, resulting in dissatisfaction and disruption from the community which could lead to delays, damage and additional costs	1. Community disruptions could lead to delays, damage and additional costs; and 2. Migration of unemployed people to construction areas, leading to access and safety issues.
11	**Strategic Business:** Institutional members may not fully align and commit to the OMM Programme	1. Delays could result from inadequate or delayed commitment from local, provincial and national institutions / authorities, compromising our ability to provide access to potable water.
12	**Socio Economic / Communities:** The OMM Programme only addresses the provision of access to potable water without addressing sanitation	1. Community health and safety issues which will place further drain on community health services and economic productivity.

	Risk	Consequence
13	**Technical / Business:** The construction industry has shrunk and will need to ramp-up to cater for the volume of work required in the OMM Programme, especially with regards commodities for piping and pumps, which might lead to delays and cost increase	1. Delays and price increases while the industry ramps-up to requirements; and 2. Quality control will need to be managed.
14	**Environment / Business:** Climate changes could result in severe weather related incidents and/or changes to the water resource profile, leading to delays, price increases and/or compromising the viability of the OMM Programme	1. Delays, price increases and/or viability of the OMM Programme.
15	**Legal / Business:** Changes to laws, regulations and legal regimes/ frameworks could lead to significant delays and price increases to provide bulk and potable water to the stakeholder consumption base	1. Delays and price increases to comply with new regulations.
16	**Technical / Business:** The high volume of pipes and pumps required could lead to shortages in the supply of critical materials and commodities used in fabrication of supplies, leading to delays and price increases	1. Delays and additional costs.

5.10 Management Case Conclusion

The management dimension of the business case demonstrated arrangements that are put in place for the delivery, monitoring and evaluation of the OMM Programme, including feedback into the organisation's strategic and governance bodies. It is also clearly indicated that the OMM Programme will be managed in accordance with best international and local good practice, subjected to independent assurance and that the necessary arrangements are in place for change and contract management, benefits realisation and risk management.

Conclusion and Salient Issues for Further Consideration

From the 5 key aspects of this Intermediate Business Case Report #1, it can be seen that the OMM Programme selected, aligned with the OMM Programme objectives, the most viable project solutions for Phases 2B & 2B+, Water Treatment Works in the Mogalakwena district and associated electrical infrastructure for the detailed projects. The solutions meets the objectives of the Association and its members, and is aligned to the required accuracy level for a Pre-feasibility Study Report. The OMM Programme also further updated all other OMM Programme related data in this report with the latest and most accurate information available. The projects not developed to Pre-feasibility Study level for this report (although information updates were provided) will be addressed in IBC Report #2 targeted for the third quarter of 2023. Based on the details contained in this IBC Report #1, the OMM Programme will notify the Association's Members, aligned with the "Roll-Over" concept already approved, that the OMM Programme is proceeding into the Bankable Feasibility Phase for the following projects:

- Phases 2B & 2B+;
- Water Treatment Works in the Mogalakwena district at Mokopane and Sekuruwe; and
- Associated electrical infrastructure for the network.

A detailed Cost Benefit Analysis was conducted on the OMM Programme highlighting the need for an accelerated approach to the implementation of the water supply projects.Completion of the OMM Programme will help address the many inequalities in water access in Limpopo and will provide benefits to Commercial users and local communities. Access to adequate water supply will bring about direct benefits such as employment opportunities, as well as indirect opportunities from social investment initiatives implemented by mining firms operating in the respective communities. Other benefits include improved school attendance from better health, with learners being able to focus on schooling and attaining higher levels of education.

The Economic Vibility Analysis of the OMM Programme has show:

- A positive Net Present Value (NPV) of R12.53 billion;
- Internal Rate of Return of 16%; and
- Benefit Cost Ratio of 1.27.

Therefore, the CBA for the provision of water infrastructure, based on well developed designs, cost estimates and schedules, yielded positive results, with all three measurements used suggesting that the OMM Programme presents an economically viable investment opportunity.

The water resource availability was verified and a report developed by the Joint Water Forum, indicated that sufficient levels of water are forecasted to supply the OMM Programme required design capacities from the respective dams.

Phases 2B & 2B+ is designed to a sufficient level of detail to proceed with the commercial processes to appoint a construction contractor. The Phases 2B & 2B+ project provides for the delivery of raw water from Flag Boshielo Dam (on the Olifants River) northwards. Delivery is via a new steel pipeline from Flag Boshielo to Pruissen (2B), and from Pruissen to Sekuruwe (2B+), and three associated new pump stations at Flag Boshielo Dam, Malgas and Doornfontein respectively. The primary objective of the project is to feed bulk raw water to two Water Treatment Works (from which potable water can be provided to communities), and the mines in the Northern

Limb. Partial completed designs was available for the sections from Flag Boshielo to Piet-se-Kop and will be directly utilised as the basis to appoint an EPC Contractor to be ready to start construction in January 2024. The section from Piet-se-Kop to Sekuruwe was already constructed by the Mogalakwena Local Municipality. Condition assessment will be performed on this section of the pipeline, refurbishment and upgrades implemented as required in parallel with the construction of the new pipeline section. The total scope from Flag Boshielo to Sekuruwe will be commissioned as a single integrated network.

Two new WTWs will be constructed in the Northern Limb to deliver potable water to communities from the new 2B & 2B+ pipeline. The WTW will be located at Mokopane (28Ml/d) and Sekuruwe (21Ml/d). Previously commissioned and partially completed detail designs will be used as basis to accelerate the execution of these projects in parallel with the construction of 2B & 2B+ pipelines. This will enable immediate distribution of potable water to communities as soon as the bulk raw water is available.

As an alternative to full reliance on Eskom electricity supply, alternative solutions were defined for both the Northern and Eastern Limb that will be more economical over the repayment period for members, but also remove load shedding concerns and meeting schedule requirements.

The ESKOM electricity emission factor for South Africa (2021) was 1.06kg CO_2 emitted/kWh. This selected energy solution will reduce the Association's CO_2 emissions associated with Bulk Raw Water Supply by 69%, supporting the OMM Programme Sustainable Development Goals (SDG).

A detail stakeholder and community interaction plan is developed, based on experience from the Association and consultants responsible for work conducted on the ORWRDP in an effort to streamline construction activities in the affected areas. The Feasibility Phase of the OMM Programme will include the rollout of SED projects in communities ahead of commencement of infrastructure construction activities.

Following successful soft market testing of funding institutions, the OMM Programme is ready to circulate an Information Memorandum into the market to start funding applications for Phases 2B & 2B+ and the 2 WTWs as part of the integrated OMM Programme.

Early start timelines will target Construction to start on these projects in January 2024.

The OMM Programme capacitated the PMU with sufficient capabilities to affect the design, build, financing, operation and maintenance of the OMM Programme and will as far as possible, mitigate identified risks through strategies, plans and designs that will be developed during the pre-feasibility stage and remaining residual risk profiles will be transferred to the project risk register for management.

The Association is enabled to deliver against its purpose of 'Improving Lives Through Water'

Next Phase Readiness – Continuation of the Study Phase (Roll-Over between Pre-Feasibility Phase and Bankable Feasibility Phase)

As described earlier, the OMM Programme implementation methodology is based on the application of international proven and accepted good project practices aligned to the Association's members' capital investment governance processes. To this extent a stage gate project implementation model is utilised and each phase will be developed to demonstrate progressive elaboration of the details associated with scope, schedule and costs. The planning process for each project phase is critical to align contractors, consultants and team members to drive common goals through a single execution approach. To this extend the Pre-Feasibility Study

and Bankable Feasibility Study Phase are already underway and the OMM Programme is preparing for the outstanding activities associated with the Bankable Feasibility Phase for Phases 2B&2B+ and the WTWs in the Mogalakwena region and will include the following key activities:

1. Finalise detail requirements for Phases 2B&2B+ and the WTWs;
2. Prepare EPC contract documentation and contract specific scopes of work
3. Prepare and issue a Request for Information (RFI) into the market for each agreed contract and finalise bidders shortlists
4. Prepare and issue Request for Proposal (RFP) for the applicable scopes to the short listed bidders
5. Prepare tender evaluation documents and tools for the respective RFPs
6. Prepare Full Business Case Report #1 with focus on Phases 2B&2B+ and the WTWs;
7. Confirm environmental and other regulatory requirements are in process and will be ready for EPC contract award;
8. Commence with stakeholder engagement and SED projects in the affected areas;
9. Prepare Information Memorandum (MI) for potential financing institutions,
10. Engage with financing institutions and issue MI into the market;
11. Develop financing term sheets, ready for issue to the financing institutions together with the Full Business Case Report #1
12. Obtain Final Investment Decision (FID) approval from all Members.

Study Phase Budget

As detailed in the EBC Report a Study Phase budget was approved by the Association's Governance Structures. This resource will be utilised to obtain Final Investment Decision for projects within the OMM Programme. All activities referenced in the previous section is covered by this budget.

As a benchmark, the Study Phase cost was compared against the Engineering Council of South Africa's "Guideline Scope of Services and Tariff of Fees for Persons Registered in terms of the Engineering Profession Act, 2000". Taking the estimated OMM Programme setup and preparation phase costs into consideration, the total study fees equate to between 89% to 96% of ECSA applied Tariff of Fees for similar projects.

The approved Study Phase budget is sufficient to complete the agreed scopes of work and current expenditure is highlighted in the March 2023 Cost Report summary below:

Study Phase Schedules

The OMM Programme IBC #2 will include the full business case definition for Phases 2B & 2B+ and the WTWs. This document, updated with inputs and requirements from the financing institutions, together with a FID approval request will be issued to the Association's Members for their action before 30 October 2023. In parallel this document together with the final funding agreements will be issued to the financing institutions for a final due diligence and approval for funding. This action is also targeted to be completed by 30 October 2023.

The other Study Phase activities will proceed as per original plan with the final IBC, Report #2 to be issued by the third quarter of 2023 (Pre-Feasibility Roll Over Report) and the FBC to be issued 12 months later. As previously indicated the Study Phase critical path is determined by regulatory applications and processes.

Below is an extract of the key milestones for OMM Programme Study Phase:

Next Phase OMM Programme Key Risks

Major construction, financing and operational risks would be borne by the Association in terms of water supply agreements signed with Members. The Association will capacitate an organisation with sufficient capabilities to effect the design, build, financing, operations and maintenance of the OMM Programme or components thereof.

The Association will, as far as possible, mitigate identified risks through strategies, plans and designs that will be developed during the Pre-feasibility stage and remaining residual risk profiles will be transferred to the project risk register for management. The risks below were identified as key to the execution of the Pre-feasibility and Feasibility studies. The initial risk register of the studies will be updated through workshops with the OMM Programme Steering Committee and mitigation plans developed.

The following are the most prominent risks directly associated to the study phase execution of the OMM Programme:

1. The Association is not yet fully financially equipped to fund the OMM Programme Execution Phase as per the anticipated schedule for each project;

   Mitigation summary: Detailed funding plan, tracked as a standalone project with dedicated personnel.
2. Governance and approval delays to achieve FID will impact overall schedule, cost and continuity of manpower resources;

   Mitigation summary: Frequent Member Communication and securing agenda items on the Members' relevant approval bodies, meeting OMM Programme target dates.
3. The integrated OMM Programme is negatively impacted by delays in the potable water projects caused by a lack of involvement by and approval processes at municipal and local government levels;

   Mitigation summary: Support form al spheres of government obtained with Memorandums of Understanding signed with WSAs requiring frequent Water Technical Committee meetings that will report into the OMM Programme and WSA's governance structures.
4. Extended timelines to appoint Association PMU and Operational Team resources (linked to OMM Programme funding approval) may impact effective management and quality of work;

   Mitigation summary: As a short term alternative to direct appointments, service level agreements with consultants were put in place to manage the personnel gap while the appointment processes continue.
5. Regulatory and environmental approvals dictate the timeline for the OMM Programme up to FID, negatively impacting water supply target dates;

   Mitigation summary: The OMM Programme is registered as a strategic infrastructure project, SIP19 within government structures with the turnaround commitments associated with a Government strategic project.
6. Current assumption for water volumes is based on a single tap on a stand and a specific stand metrics as per the Concept Study, which may grow, resulting in new scope and volume demands from source.

   Mitigation summary: Consultants, together with the WSAs will update the baseline from where agreements with the local community leaders will fix the scope of supply.

The key risks are further assessed in the risk register where risks are assessed on the likelihood of occurrence as well the impact if they do occur, mitigation plans registered and post-mitigated impacts provided for calculating contingencies on time and cost as detailed in Attachment K.

Approval

This Intermediate Business Case Report #1 is recommended for approval by the OMM Programme Steering Committee confirming that it meets all the Pre-feasibility Study Phase and 5 Case Model requirements for Phases 2B & 2B+ and the WTWs in the Mogalakwena region together with the associated energy supply to these units, and that the OMM Programme can proceed into the next implementation phase.

Approved by OMM Programme Steering Committee:

Name ……..	**Date** ……..	**Signature** ……

Designation: OMM Programme Sponsor

Attachments

Please see below for a list of the attachments to the Intermediate Business Case Report #1 and note that these attachments will only be shared on request.

Attachment A: Association Establishment

- A1 Rebranding Plan
- A2 Key Agreements
  - A2.1 Heads of Terms for an OMM Framework Agreement
  - A2.2 Implementation Agreement
  - A2.3 Funding Agreement
  - A2.4 Draft Constitution
  - A2.5 Draft Members Agreement
  - A2.6 Draft Off-take Agreement
- A3 Policies and Procedures

  Policies
  - A3.1 Delegation of Authority
  - A3.2 Business Integrity Policy
  - A3.3 Sustainable Development Policy
  - A3.4 Project Health and Safety Policy
  - A3.5 Project Risk Management Policy
  - A3.6 Programme and Project Development and Implementation Policy
  - A3.7 Project Controls Policy
  - A3.8 Project Procurement Policy
  - A3.9 Project Quality Policy
  - A3.10 Project Environmental Construction Regulatory and Permitting Policy
  - A3.11 ICT Policy Framework

  Procedures
  - A3.12 Project Procurement Procedure
  - A3.13 Project Cost Management Procedure
  - A3.14 Quality Management Procedure
  - A3.15 Change Management Procedure
  - A3.16 Project Schedule Management Procedure
  - A3.17 Project Risk Management Procedure

Attachment B: Technical Design

- B1 Phase 2B Detail Design Report
- B2 Phase 2B+ Detail Design Report
- B3 Mokopane WTW Detail Design Report
- B4 Sekuruwe WTW Detail Design Report
- B5 SE2 Project Phase 1 Detail Design Report
- B6 SE2 Project Phase 2 Peliminary Design Report
- B7 Renewable Energy Option Study
- B8 Option Selection Study - Phase 2B Pump Stations

Attachment C: Cost Benefit Analysis

- C1 Baseline Study
- C2 Socio-economic Impact Study
- C3 Cost benefit Analysis

Attachment D: Environmental and Regulatory

- D1 Environmental Regulatory Excurtion Plan

Attachment E: Commercial

- E1 NEC3 Option A EPC Fixed Price Terms and Conditions

Attachment F: OMM Programme Schedules

- F1 Integrated OMM Programme Schedule

Attachment G: Capital Cost Estimate

- G1 OMM Programme Capital Cost Estimate

Attachment H: Financial

- H1 Financial Model Specification
- H2 Financial Model and Analysis
- H3 Soft Market Testing

Attachment I: OMM Programme Management

- I1 Operational Readiness

Attachment J: Stakeholder Management and Socio-Economic Development

- J1 Stakeholder Management
- J2 High-Performing Schools Programme Brochure

Attachment K: Risk

- K1 Master Risk Register