



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Briefing the Portfolio Committee on Water and Sanitation

On

Progress Report on Audit of Water and Sanitation Infrastructure

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1: Background

- The new policy Review approved by cabinet in 2013 recommends transfer of infrastructure of regional scale to Regional Water Utilities.
- The current legislative Review will finalise the establishment of Regional Water Utilities.
- The policy proposes the extension of the scope and area of jurisdiction of water boards to fulfil the function of Regional Water Utilities, which could contribute towards addressing the municipal water service delivery problems.
- The scope among others, as per section 8.5.3 of the National Water Resources Strategy, will include
 - Management,
 - Operation and
 - Maintenance
- Of regional water infrastructure; development of new regional water resources and provision of support to WSAs and CMAs.

..Background

- Regional Infrastructure:
 - includes regional water resource infrastructure (dams, weirs, canals, etc.); regional water treatment works; regional wastewater treatment works and regional bulk pipelines (potable or raw) and sewers.
 - The definition of Regional Infrastructure could also be expanded to include bulk infrastructure of regional significance. (i.e. A Large Waste Water Treatment Works that only serves on LA)
- On 15 September 2000, in the Government Gazette No. 21549 Notice No. 902, the Minister gazetted that water services works shall not be transferred or disposed of without the approval of Parliament if the value of such works exceed R100 million.

2: Overview of Regional Bulk Type of Regional Bulk infrastructure (for the provision of water services)

Type A: Infrastructure belonging to Government

Type B: Infrastructure belonging to National Government that need to be transferred to Water Services Authorities / Regional Water Utilities

Type C: Infrastructure currently owned by Water Boards

Type D: New or (recent) Infrastructure projects implemented / funded through government Grants (i.e. RBIG)

Type E: Schemes currently owned and managed by Municipalities

- E1- Not performing well in accordance to blue and green drop ratings
- E2 Performing satisfactory in accordance to blue and green drop ratings

... Overview of Regional Bulk

- Type B:** Infrastructure belonging to National Government that need to be transferred to Water Services Authorities / Regional Water Utilities
- Accord to Government Gazette No. 21549, water services assets were transferred by the Department to district municipalities in 2008 by means of a transfer agreement.
 - Previous cabinet memorandums for approval for the transfer of strategic assets were not approved by Cabinet due to concerns about the capacities of such municipalities to operate and maintain such assets.
 - Therefore only operational responsibility was transferred and not legal ownership.

...Overview of Regional Bulk

Type D: New or (recent) Infrastructure projects implemented / funded through government Grants;

- Currently the summary of RBIG schemes are as follows:
 - 12 Schemes that need to be transferred from DWS through NTP;
 - 8 Existing schemes that need to be transferred;
 - 14 Completed schemes by RBIG and
 - 130 RBIG projects as work-in-progress (WIP)
- Although sustainability issues are part of the planning of RBIG projects, a lot of these projects were initiated before the decision regarding the establishment of Regional Water Utilities.
- Therefore DWS must embark on a process to audit all of the above schemes to inform their current performing and recommended future operations and maintenance strategies as well as the most appropriate institutional arrangements

3: Key challenges / concerns

- Below are some visible concerns and problem areas regarding type B projects already transferred to municipalities:

- There are concerns that the condition of infrastructure already transferred is **declining** rapidly due to the continuing lack of capacity and resources allocated to the management, operation and maintenance of the infrastructure.
- Municipalities that these schemes were transferred to, face various **institutional challenges**, including staff shortages, funding shortages, lack of income, political turmoil and lack of political will. All these lead to declining services and discontent among consumers.
- Time has demonstrated that despite support, certain municipalities are not taking **accountability** for the schemes intended to be transferred.
- The Cabinet committee halted some of the transfers in 2009, raising the issue of capacity of WSA's to operate the schemes.⁸

..General Challenges /concerns

Effective management

- Failure or **poor O & M** of existing bulk infrastructure by many WSA
- Poor **asset management** practices /culture within WSA
- High **water losses** and high water use inefficiencies lead to inappropriate and large infrastructure requirements

Design / Planning

- Poor or inappropriate **planning and design** of bulk infrastructure
- Inadequate **integration** between reticulation , bulk and water resource planning
- **Supply side management paradigm** is still very prominent and alternative demand side management options are ignored.
- Inadequate planning capacity / resources with many municipalities

4: Infrastructure Audit review Scope / Phases

- The audit will be limited to reviewing the following regional bulk infrastructure / schemes:
 - Type B (government schemes to be transferred to WSA)
 - Type D (schemes implemented through various programmes).
 - Type E1 (existing schemes / infrastructure, owned by municipalities that have poor “blue-and green drop performance
- The audit should also include the following functions/phases:
 - **Phase 1:** Identification of all regional bulk infrastructure / schemes according to accepted definition
 - **Phase 2:** Identification / development / adoption of **best management practices**, key performance indicators and benchmarks

4: Infrastructure Audit review Scope / Phases (Cont.)

- **Phase 3:** Capturing of all regional bulk schemes / infrastructure on **Geo-Database information** management system (a lot of them should already be on the system)
- **Phase 4:** Brief **desk –top assessment** of all schemes / infrastructure based on available information.
- **Phase 5:** Detailed assessment / audit of **type B and D** schemes
- **Phase 6:** Detailed assessment / audit of **type E1** schemes
- **Phase 7:** Recommendations and proposals for B, D and E1 schemes
- **Phase 8:** Overall recommendations and proposals to inform strategy and policy of regional water utilities

Scope of Audit

- Scope of Audit to include the following:
 - The **overall Performance**, both technical and financial, of the scheme to date;
 - The overall **condition** of the scheme / infrastructure
 - Was/is the scheme as implemented addressing the **initial need?**
 - The overall **operation and maintenance** of the scheme
 - The scheme / infrastructure **design and planning** parameters
 - The **impact** of the scheme / investment on the area(s) / population served/targeted
 - Is the scheme / investment been **sustained** or likely to be sustainable to the design lifespan (or beyond)?
 - The operating and maintenance **costs** of the scheme / infrastructure
 - The **capacity / skills / resources** required to effectively manage the schemes.

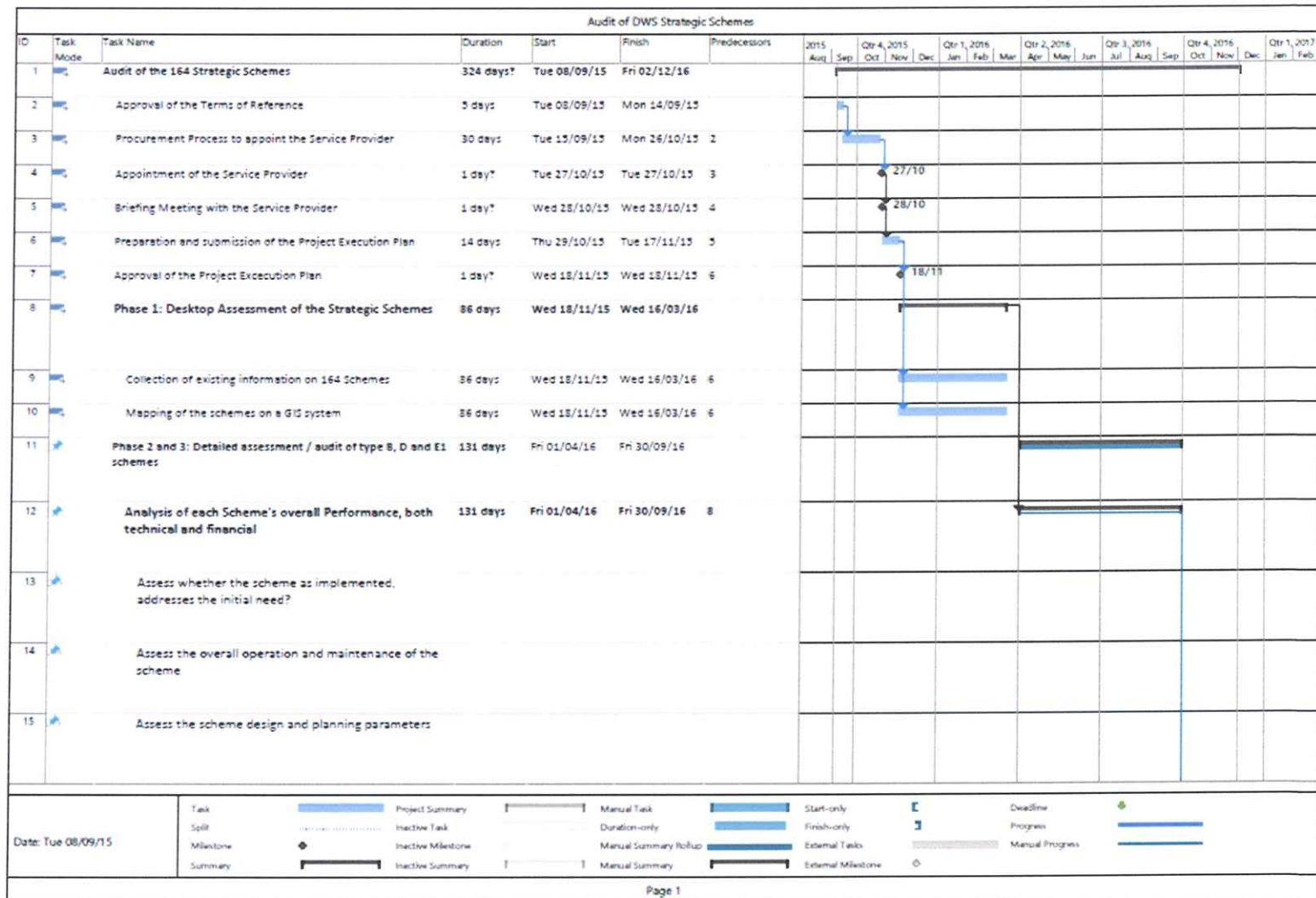
Scope of Audit (Cont.)

- Assessment of the **consumer** demand , water use and customer management that receive services from the scheme / infrastructure.
- Assessment of the **connecting infrastructure** to the bulk infrastructure (Water resource or reticulation infrastructure)
- Assessment of the impact of the **environment** the performance of the scheme /infrastructure may have (particularly WWTW)
- Assessment of the existing **institutional capacity** and performance.
- Identify **alternative institutional options** to manage the infrastructure / schemes
- What **improvements** can be recommended for the scheme to function effectively and efficiently?

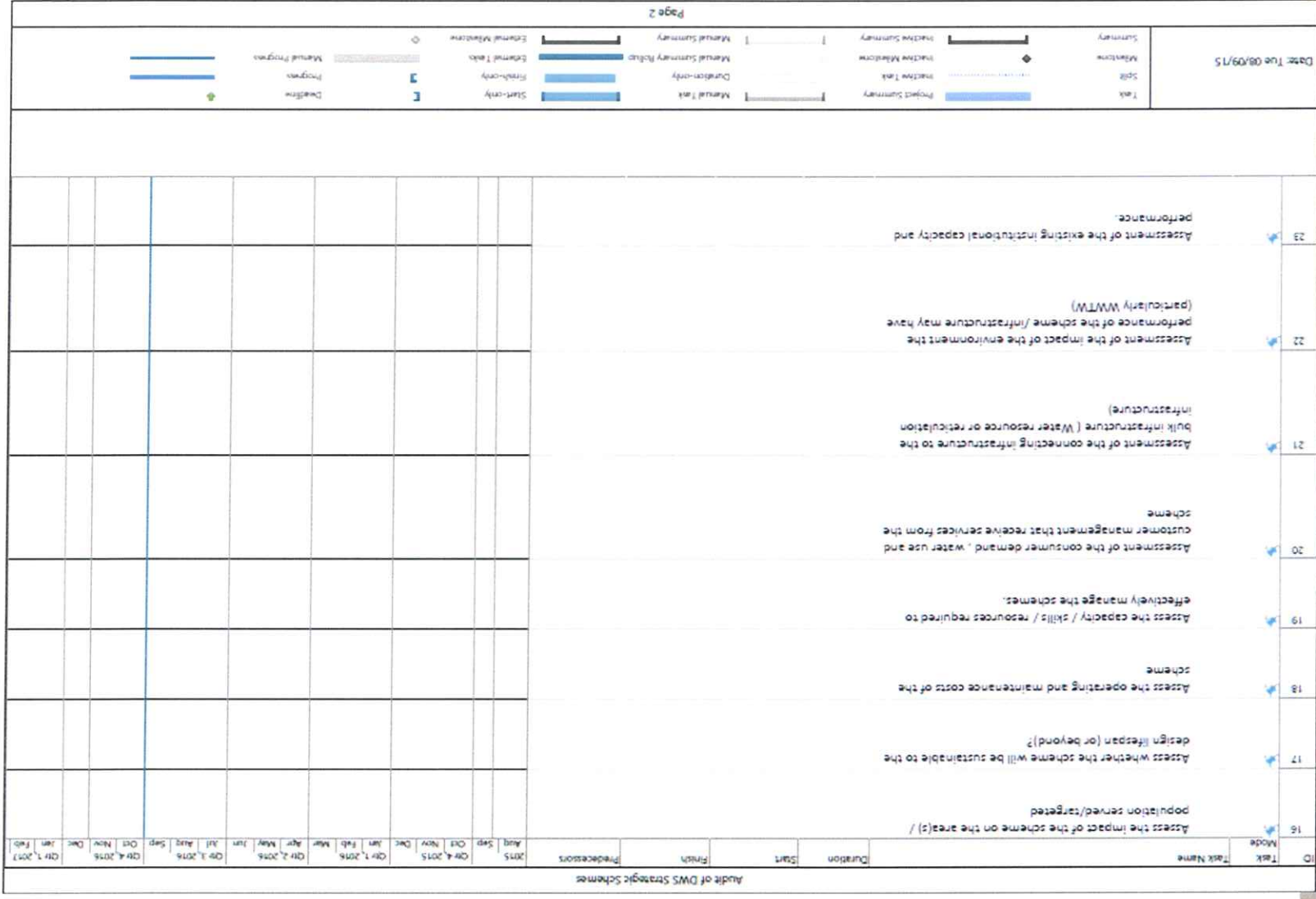
Envisaged Audit Outcome

- The **outcomes** of the audit report are to include the following:
 - Design and planning assessment for each scheme
 - **Condition and performance** assessment report for each scheme;
 - Development of a **detailed plan** to restore the condition /performance of the scheme with financial implications;
 - Proposals on **institutional** arrangements roles , functions and responsibilities
 - **Operation and maintenance plan** to ensure the scheme operates effectively and efficiently with financial and human resource plan and identification of Further Infrastructure requirements or rehabilitation work needed.
 - **Asset Management Plan** for each scheme.
 - **Financial and consumer demand management plan (including demand management)** to effectively operate and maintain the each scheme

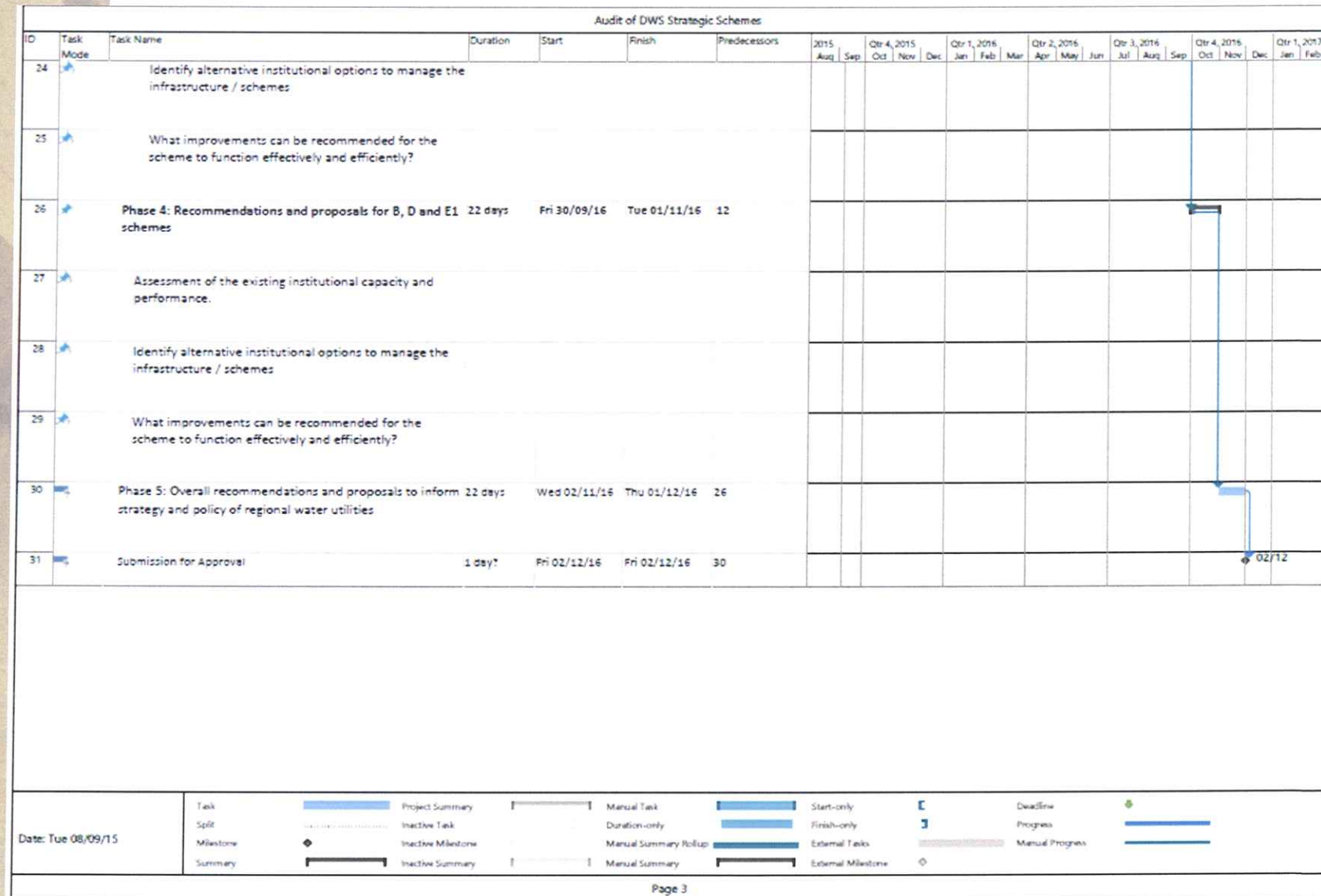
5: Execution Plan Gantt Chart



5: Execution Plan Gantt Chart



5: Execution Plan Gantt Chart



National Evaluation of Irrigation Infrastructure of DWS using Smart Technologies





Overview

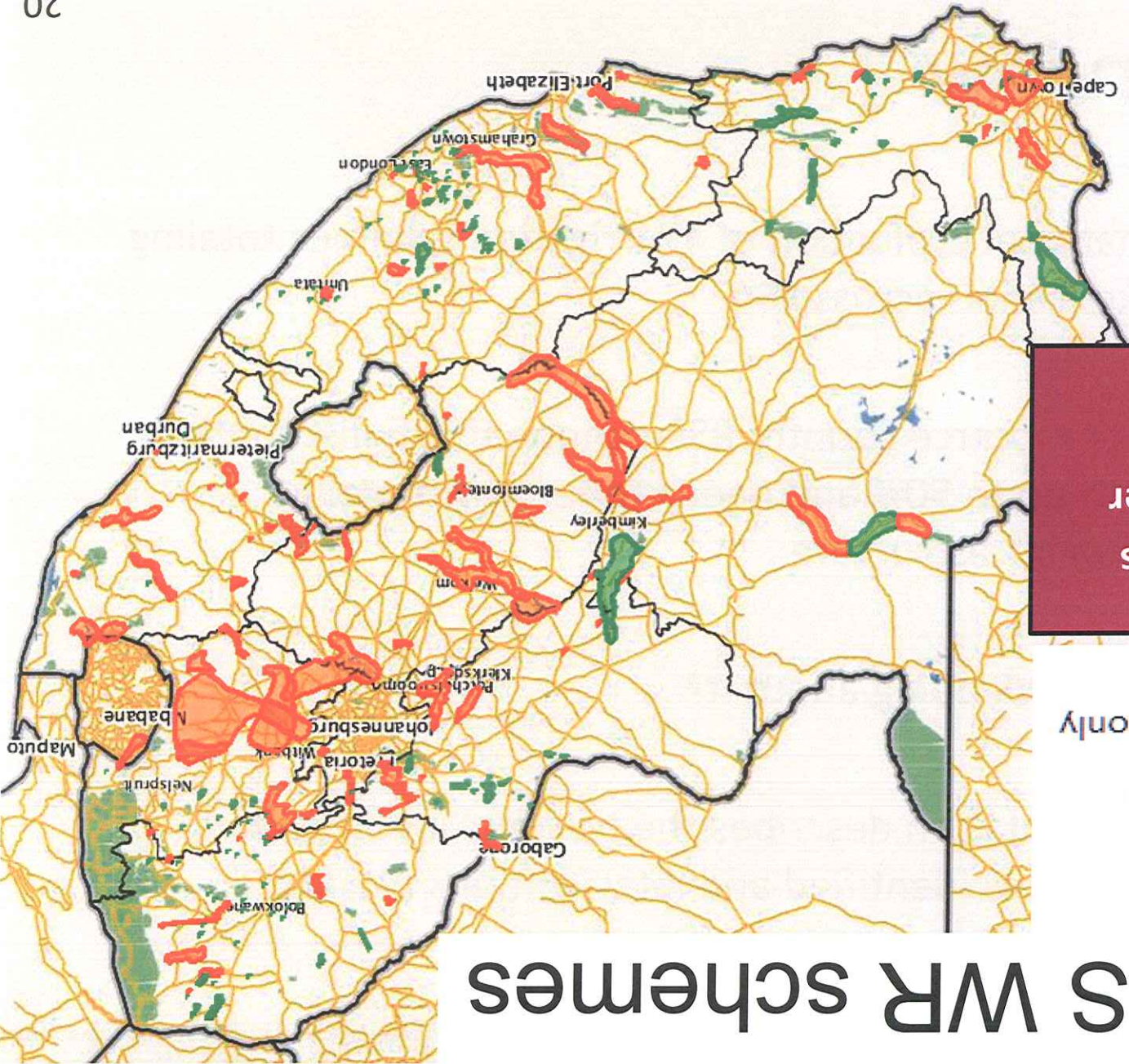
- ▶ DWS national evaluation of 47 irrigation schemes totaling 6553 km canals across RSA
- ▶ As a water scarce country RSA cannot afford distribution losses of up to 50% and needs to refurbish ageing irrigation infrastructure
- ▶ What is DWS doing about it?
- ▶ This presentation describes the national investigation, key problems identified and interventions proposed

DWS WR schemes

- 236 WR schemes
- Including transfer schemes

Legend

-  Irrigation only
-  Multi-use



Map of DWS Irrigation Water

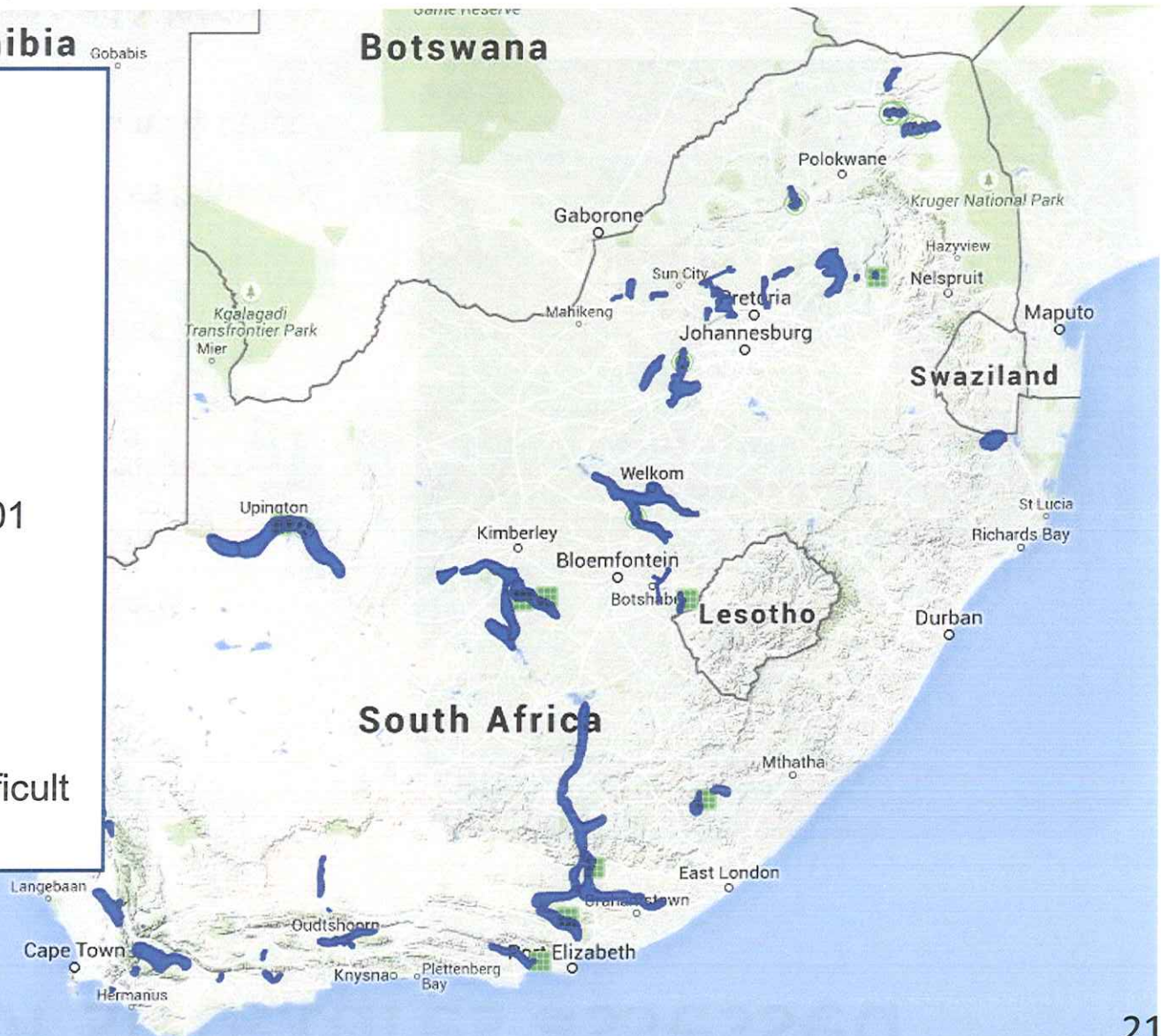
Key Challenges

Extent:

- ▶ 47 schemes
- ▶ 6 553 km canals
- ▶ 21 286 structures

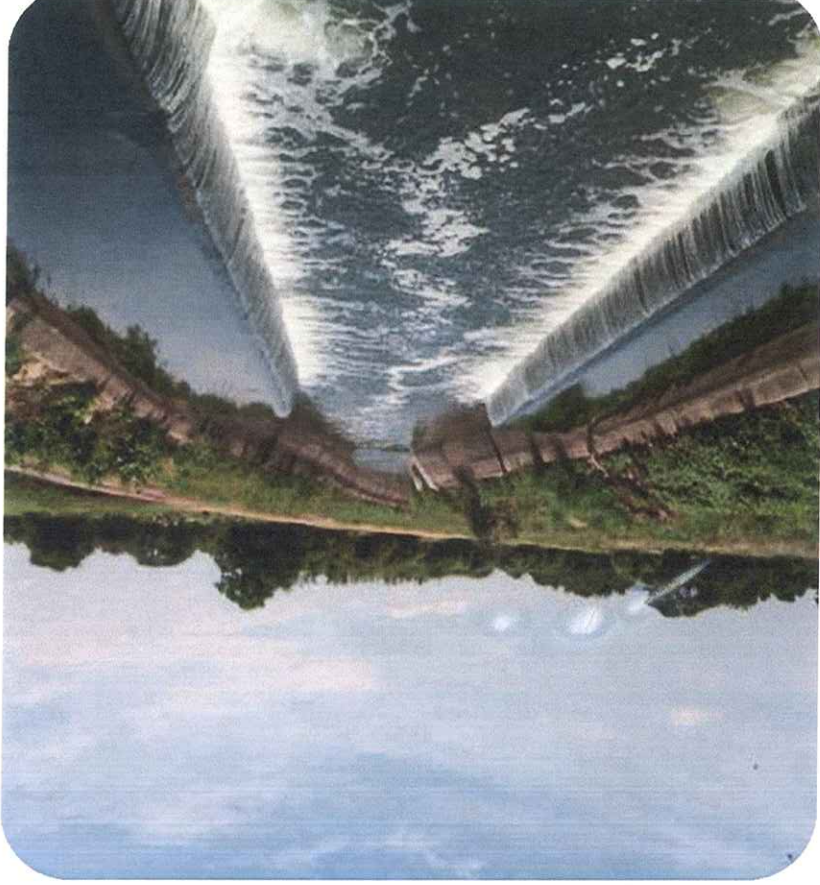
Logistics:

- ▶ 24 months (started 201 April to 2016 April) to complete
- ▶ spread across RSA
- ▶ canals are full water (only few dry weeks)
- ▶ some canals have difficult access



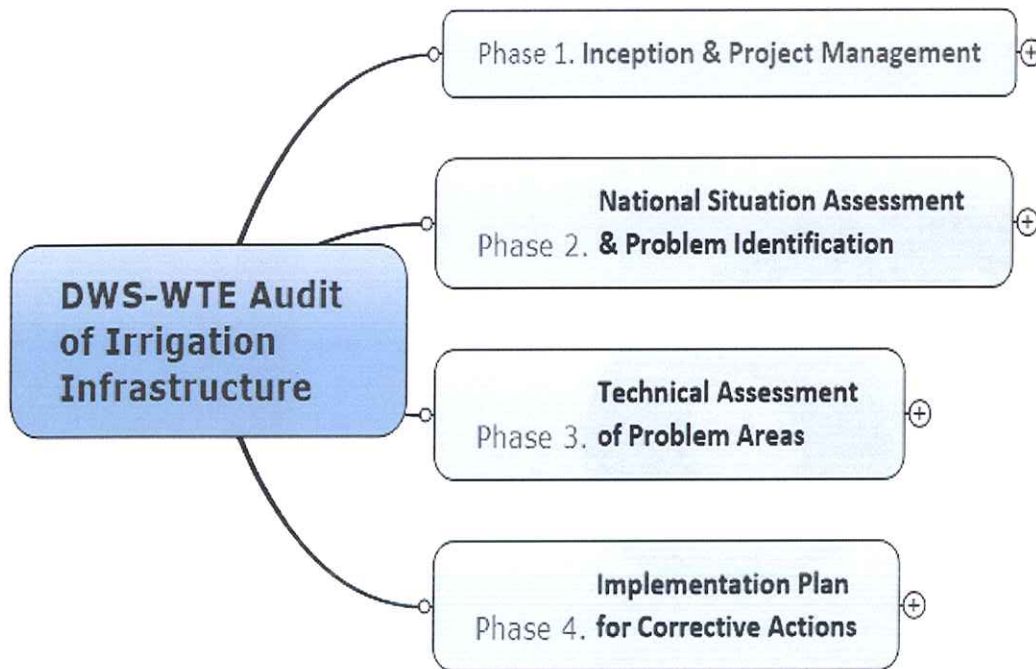
Type of structures assessed

- ▶ Canal excavation, fills & berms
- ▶ Canal lining
- ▶ Tunnels & siphons
- ▶ Aqueducts
- ▶ Super-ducts & culverts
- ▶ Vehicle & pedestrian bridges
- ▶ Long weirs & control gates
- ▶ Emergency spills & rejects
- ▶ Canal drops & chutes
- ▶ Vehicle access
- ▶ Service outlet sluices & meters
- ▶ Parshall flume, crump & other meters
- ▶ Canal service road & fences



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Condition Assessment Process followed:



- ▶ Define asset hierarchy & questions
- ▶ Setup information system & tools
- ▶ Review design standards
- ▶ Research causes of canal failure

- ▶ Identified > 21000 canal structures to improve asset management
- ▶ Investigated age & expected life
- ▶ Set criticality for each asset

- ▶ Field verification & assessments (completed 40 of 47 schemes and >4700 km canals & structures)
- ▶ Problem analysis & solution design (completed Eastern; others on track)

- ▶ Costing & budgeting (in progress)
- ▶ Implementation plans (in progress)



End of Presentation

