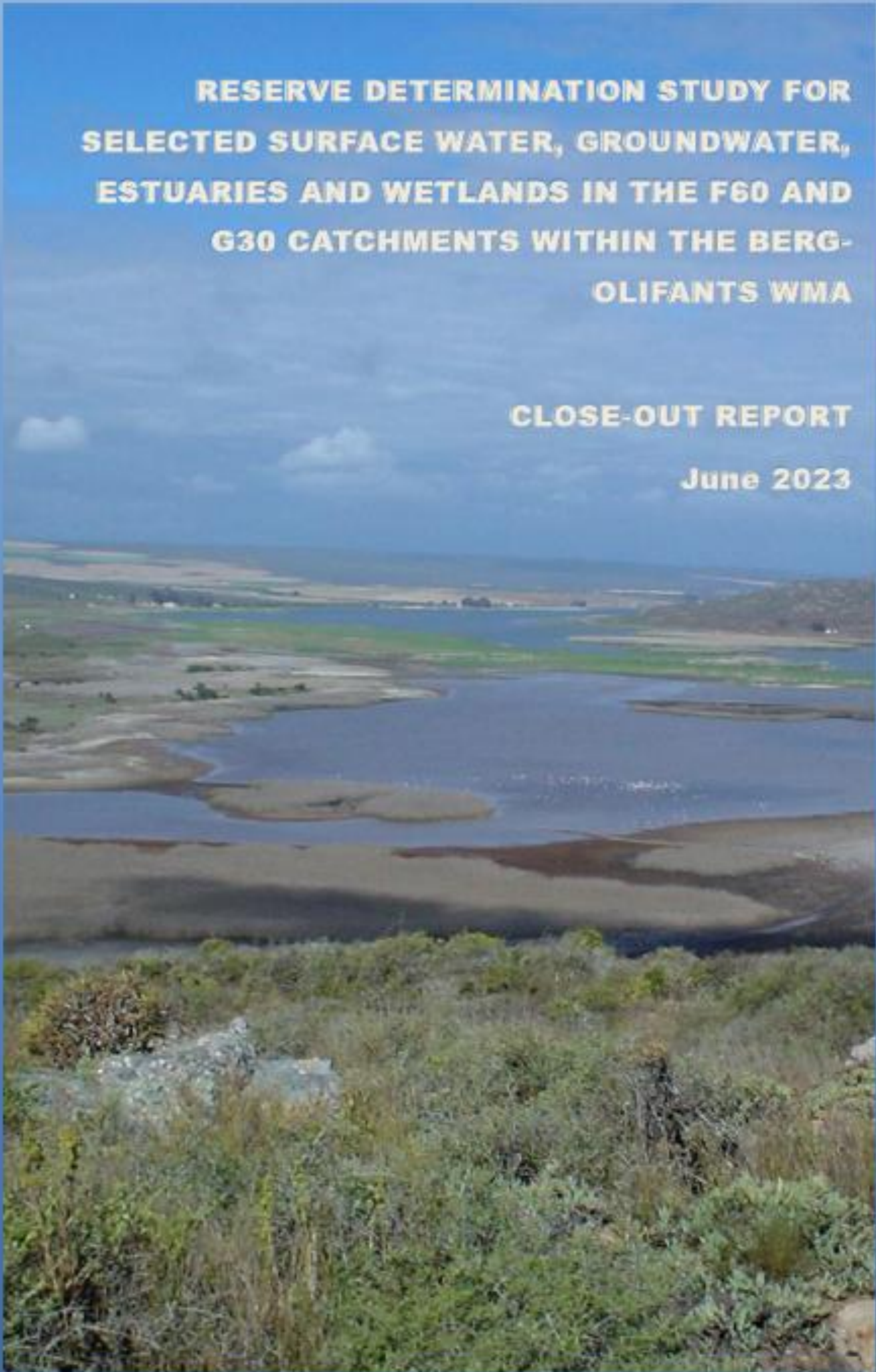
RESERVE DETERMINATION STUDY FOR SELECTED SURFACE WATER, GROUNDWATER, ESTUARIES AND WETLANDS IN THE F60 AND G30 CATCHMENTS WITHIN THE BERG-OLIFANTS WMA

CLOSE-OUT REPORT

June 2023



Department of Water and Sanitation

Chief Directorate: Water Ecosystem Management

DEPARTMENT: WATER AND SANITATION

CHIEF DIRECTORATE: WATER ECOSYSTEM MANAGEMENT

RESERVE DETERMINATION STUDY FOR SELECTED SURFACE WATER, GROUNDWATER, ESTUARIES AND WETLANDS IN THE F60 AND G30 CATCHMENTS WITHIN THE BERG-OLIFANTS WMA

WP11340

CLOSE-OUT REPORT

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AUTHORS:	Belcher, T and Grobler, D (eds)
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STUDY NAME:	Reserve Determination Study for Selected Surface Water, Groundwater, Estuaries and Wetlands in the F60 and G30 Catchments within the Berg-Olifants WMA
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DOCUMENT INDEX

Reports as part of this project:

Bold type indicates this report.

REPORT INDEX	REPORT NUMBER	REPORT TITLE
1.0	RDM/WMA09/00/CON/0121	Inception Report
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3.0	RDM/WMA09/00/CON/0123	Groundwater Delineation Report
4.0	RDM/WMA09/00/CON/0124	Surface Water Delineation Report
5.0	RDM/WMA09/00/CON/0125	EcoClassification Report
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ACRONYMS AND ABBREVIATIONS

CD: RDM	Chief Directorate: Resource Directed Measures
DWA	Department of Water Affairs
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
EIS	Ecological Importance and Sensitivity
EWR	Ecological Water Requirements
GRAII	Groundwater Resource Assessment II
NWA	National Water Act
PMC	Project Management Committee
PSC	Project Steering Committee
PES	Present Ecological State
RDM	Resource Directed Measures
REC	Recommended Ecological Category
RQO	Resource Quality Objective
V&V	Validation and Verification
WARMS	Water Authorisation Registration Management System
WMA	Water Management Area
WR2012	Water Resources 2012
WRC	Water Research Commission
WRSM	Water Resources Simulation Model

1. INTRODUCTION

1.1 Background

The Chief Directorate: Water Ecosystems Management of the Department of Water and Sanitation (DWS) embarked in May 2021 on a Reserve determination study for the G30 and F60 catchments in the Berg Olifants Water Management Area (WMA). The study emanates from increasing public attention given to the Sandveld from the media, the public in general and the need of the relevant authorities to improve sustainable utilisation of the resources.

Agricultural expansion continues within the Sandveld and the long-term climate change modelling indicates that the area is going to become drier and hotter in the next 50 to 80 years (Western Cape Government, 2018). Municipal and agricultural requirements are slowly increasing and thus the pressure on water resources, and their extent of dependence, in the area is continually increasing with the associated impacts on groundwater-dependent and surface water ecosystems. It is thus crucial that the Reserve calculations are revisited and the water resources with the Sandveld catchments addressed holistically, with a clear understanding of the surface and groundwater interactions, the origin and pathways of groundwater in the catchment, and interdependencies being well researched and documented.

The recent drought conditions that were experienced in the Western Cape in 2017/2018 have added to the need of users to attempt to secure longer-term sustainable access to water resources. The low water levels of the Verlorevlei estuary and its associated wetland areas added to the concerns about the long-term management and biodiversity of the area.

Verlorevlei within the study area was designated as a Wetland of International Importance (Ramsar Site) on 28 June 1991 under the Ramsar Convention on Wetlands of International Importance, especially as Waterfowl Habitat. In addition, peat wetlands have been identified to occur in the area that is associated with the Verlorevlei that provide important ecological services but are under severe threat and require urgent protection. It was thus deemed crucial that the Reserve calculations are revisited and the water resources with the Sandveld catchments addressed holistically, with a clear understanding of the surface and groundwater interactions and interdependencies being well researched and documented.

The river, wetland, estuarine and groundwater components of the Reserve determinations used the latest Resource Directed Measures (RDM) recommended methodologies, but needed a slightly adapted approach to address the following:

- Most of the surface water features within the study area are non-perennial with a hydrological regime and water quality that has high variability.
- Surface water ecosystems in these systems are often dominated by wetland habitats or confined to isolated pools during the dry summer season.
- The estuaries within the area comprise mostly coastal lakes or estuarine salt pans, with a low diversity of hardy species. These systems are mostly nearly permanently closed and also have very little freshwater inflow from their associated river systems.
- Very close integration occurs between the surface water ecosystems (rivers, wetlands and estuarine habitats) as well as with the groundwater. Integration of these two

specialist fields and the recommended ecological Reserve (quantity and quality) thus needs to take place.

The revised generic procedure is provided below, which shows the process for the determination of the Ecological Water Requirement (EWR) in the context of the larger RDM process, with possible links to issues such as the stakeholder process, classification, implementation and operation, indicated as suggested ways to integrate the Reserve determination process.

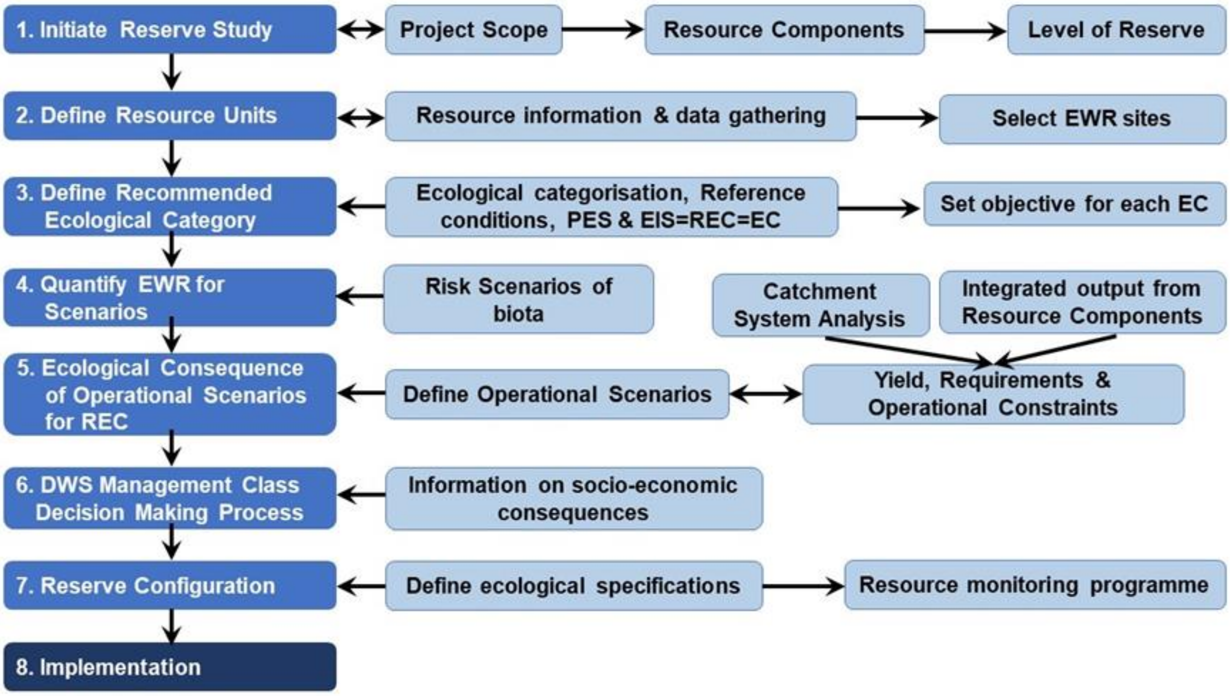

Figure 1. The Reserve Determination Process (adapted from DWAF, 2008)

1.2 Objectives

The main aim identified for the study were to identify gaps in previous Reserve Determination Studies and to determine the Reserve at a high level of confidence to yield results that could be gazetted and provide legal protection specifications. The following objectives are listed:

1. Determination of the water quantity and quality for the protection of rivers at various EWR sites;
2. Determination of the water quantity and quality for the protection of representative priority wetlands, pans and lakes;
3. Determination of the water quantity and quality of estuarine freshwater requirements for the protection of various identified estuaries;
4. Determination of the groundwater quantity and quality requirements for the protection of groundwater resources; and
5. Determination of the quantity and quality of water required for the provision of Basic Human Needs.

1.3 Purpose of this Report

This report forms the final deliverable of the study and serves as feedback on final deliverables, milestones, challenges and lessons learnt through the Reserve determination for surface and groundwater in the G30 and F60 catchments of the Berg Olifants Water Management Area. It comprises the reporting on these aspects and makes recommendations for future studies of a similar nature.

2. STUDY DELIVERABLES AND OUTPUTS

The following reports were produced as part of the study are provided in Table 1.

Table 1: List of Project Reports compiled in the Study

REPORT INDEX	REPORT NUMBER	REPORT TITLE
1.0	RDM/WMA09/00/CON/0121	Inception Report
2.0	RDM/WMA09/00/CON/0122	Gap Analysis Report
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11.0	RDM/WMA09/00/CON/0132	Ecological Reserve Implementation Plan
12.0	RDM/WMA09/00/CON/0133	Project Close-Out Report

The tasks and deliverables of this study are summarised in the table below.

Table 2: Summary of Study Tasks and Deliverables

Task	Date completed
Deliverable 1: Project Inception	
Final Inception report	November 2021
Deliverable 2: Phase 2: Review of water resources information and data gathering	
Review of water resource information and Gap Analysis Report - Rainfall, hydrology, flow, water quality, water level and groundwater data. Summary of preliminary determinations of the ecological Reserve for groundwater, surface water, wetlands and estuaries in the study area. Data and relevant information for the area have been collected from the DWS monitoring network, regional monitoring programme and other sources to inform the delineation of resource units and the EWR site selection. Rainfall data has been obtained to update the hydrological model (WR2012) for the study area to 2021/2. The model is being refined to account for the substantial groundwater contribution to baseflow.	February 2022
Deliverables 3 and 4: Delineation of Surface and Groundwater resources	
Water resources Delineation report (Volume 1 - Groundwater): Delineation and defining of groundwater resource units and relation to surface water resources.	August 2022
Water resources Delineation report (Volume 2 (Rivers, wetlands and estuaries): Delineation and defining of surface water resource units and study sites.	August 2022

Deliverable 5: EcoClassification	
EWR Site Survey 1 report (dry season EWR assessment) and EWR Site Survey 2 report (wet season EWR assessment): Biota and water quality data were collected during a dry season (April 2022) and wet season (September 2022) survey at the EWR sites in the study area. Hydraulic surveys were also undertaken at the EWR sites in June and August 2022. The field data collection surveys for the estuaries reserve determination were undertaken in November 2021.	April 2022; September 2022
EcoClassification report: An integration workshop was held in March 2022 and again in September 2022 to ensure proper integration of the rivers and wetland site selections. The outcomes of these discussions informed the PES and EIS assessments.	November 2022
Deliverable 6: EWR Report	
Ecological Water Requirements: Rivers, Wetlands and Estuaries report: Consultations were held between the surface (rivers and wetlands), groundwater and estuary team members in October 2022 to ensure integration. The Estuary EWR workshop was undertaken at the end of November 2022, and the draft reports were compiled in December 2022.	February 2023
Deliverable 7: Scenario Report	
EWR Scenario report – ecological categories and EWRs to achieve ecological conditions. System operations options to achieve scenarios: Scenario analysis was undertaken for a Sustainability Scenario and a Climate Change Scenario. Discussions have been held with water users in the study area in the PSC meetings and in separate discussions (April 2022) to inform the present status assessments as well as for the generation of scenarios.	April 2023
Deliverable 8: EcoSpecifications and Monitoring Report	
Set ecological objectives (Ecospecs) for each Ecological Category	April 2023
Deliverable 9: Groundwater Reserve Report	
Groundwater EWR Report: Groundwater level, water quality and groundwater use data have been obtained from DWS monitoring, WARMs, V&V, the NGA database, as well as previous studies and water users such as municipalities and private organisations. Data from WULA applications was also investigated. This information was used to delineate the groundwater resource units and generate the EWR recommendations.	July 2023
Deliverables 10 and 11: Final Integrated EWR Report and Implementation Plan	
RDM Main integrated report (Groundwater, rivers, wetlands and estuaries)	May 2023
Reserve Implementation Plan: Deliberations were undertaken with DWS in November 2022 and again in April 2023 to inform the EWR Implementation Recommendations.	May 2023
Deliverable 12: Capacity Building Report	
Deliverable 13: External Reviewer Reports	
Groundwater external review	June 2023
Surface water external review	June/July 2023
Deliverable 14: Reserve templates	
Surface Water Reserve Template	June 2023
Groundwater Reserve Template	July 2023
Deliverable 15: Project Closure	
Project closure report	June 2023

As part of the study, the meetings and engagements that were held are summarised in Table 3. Minutes of the various engagements were compiled.

Table 3: Summary of Meetings and Stakeholder Engagements

Project Management Committee (PMC) Meetings
PMC 1 – 26 Aug 2021 PMC 2 - 2 March 2022 PMC 3 – 17 May 2022 PMC 4 – 27 October 2022 PMC 5 - 28 February 2023 PMC6 - 11 May 2023 Close-out Meeting – 20 June 2023

Project Steering Committee (PSC) Meetings
PSC 1 – 26 January 2022 PSC 2 – 21 July 2022 PSC 3 - 23 November 2022. PSC 4 - 23 March 2023 (final PSC meeting).
Capacity Building Sessions
5 – 9 September 2022 – Hydrology, Groundwater and Reserve determination procedures and Field surveys 24 November 2022 – Implementation and scenarios for the implementation of the Ecological Reserve 2 March 2023 – Estuary Reserve determination workshop
Stakeholder Information Sharing Sessions
Water user stakeholder engagement was held on 6 April 2022. Environmental interest group stakeholder meeting was held on 7 April 2022. Reserve Implementation Workshop (DWS internal) was held in April 2023 Reserve Implementation Workshop for external stakeholders is scheduled for July 2023.

3. ISSUES AND CHALLENGES

The key issues and challenges associated with the project are outlined below:

3.1. Lack of data

Lack of data across the F60 and G30 sub-catchments impacts the level of confidence in the Reserve determinations. Most of the data were from single measurements with very few long-term monitoring data sets. Active sampling of surface and groundwater did not form part of the scope of this project and thus the Reserve determination is reliant on existing data where available. For the sub-catchments, the lack of flow and water quality data and the widespread undocumented abstraction and storage of water provided additional uncertainty.

In terms of surface water flow data, there are no operational streamflow gauges in the study area. Historical observed daily flows are available on the Kruismans River at Tweekuilen/Eendekuil (DWS flow gauge G3H001) for the period 1971 to 2005. Validation of simulated flows could thus only be undertaken by means of flow records at two streamflow gauges, namely G3H001 and needed to be inferred from E3H001 (outside of the study area), as well as with inputs from the specialists on the team (estuarine and riverine specialists).

No long-term water level measurements were available for any of the rivers and wetland sites, especially for recent years. The only site for which some water level data were obtained, together with site-specific rainfall data, was the main pan in the Rocherpan wetland (part of “Die Vlei”). Routine water level measurements for this wetland, as collected by Cape Nature Reserve staff, were only available for the period June 1982 to December 1996.

For surface water quality data, most of the data was associated with once-off, longitudinal river water quality surveys. The only monitoring points in the G30 tertiary catchment where there is a longer data record are at the Kruismans River at Tweekuilen/Eendekuil, and the Hol River at Wittewater/Papkuilsvlei gauging sites, referred to as G3H001 and G3H005 respectively. At the

G3H001 sampling site (Kruismans River at Tweekuilen/Eendekuil), some 374 samples were collected from 1970 to 2017, while 102 samples were collected at G3H005 (Hol River at Wittewater Papkuilsvlei) between 1978 and 2017. Sampling frequency started at monthly intervals but was later reduced to *ad hoc* sample collection. The historical data record at both sampling stations was examined for seasonal changes to determine if there are differences in water quality between the wet and dry seasons. There is no long-term water quality monitoring data available in the F60 tertiary catchment.

For groundwater, most of the water level data was obtained from single event measurements of static water levels. The only available long-term monitoring data is in the central Sandveld region, with the DWS monitoring data mostly being used and supplemented with the other above-mentioned available datasets. The initial water quality data sets comprised only electrical conductivity (EC) and pH. Detailed water quality data from laboratory testing analysis results were only received at the end of the study period.

3.2. Undertaking EcoStatus Assessments during an Extended Dry Period

Undertaking the assessment at the end of a dry period where the water resources had not yet recovered from a prolonged drought. Both the dry and wet season field collections needed to take place when only low flow was observed at the EWR sites as no higher flow events occurred during the duration of the study. As a result of the extended dry period and drought since about 2015, the ecological condition of the surface water ecosystems and in particular the Verlorenvlei Estuary was in a degraded ecological condition. Hypersaline conditions were observed in the Jakkals, Wadrift and lower Verlorenvlei estuaries. In the Verlorenvlei, pH values recorded were less than 4 in most of the sites sampled. In general, little to no aquatic biota were observed in the estuaries as a result of the hypersaline conditions.

The Estuarine Health Index score for the Verlorenvlei Estuary in the observed Present (2022) was estimated to be 23 (i.e. 23% similar to natural condition), which translates into a Present Ecological Status (PES) of an "E Category". This arises from flow deprivation causing persistent long-term exposure of the lake margins and bed (very low water levels) leading to an extreme decline in water quality as a result of lake acidification, with cascading impacts on microalgae, macrophytes, invertebrates, fish and bird fauna.

The river and wetland ecostatus assessments are also likely to be lower than would have been the case if the fieldwork had been undertaken after even a normal rainfall had been experienced during the study period.

This reduced aquatic ecological assessment made recommendations for reference conditions as well as a desired target ecological state challenging.

3.3. Aquatic ecosystems (rivers, wetlands and estuarine habitats) strongly dependent on groundwater

For the G30 river systems, fault zones have been mapped parallel or near the river/wetland systems. The current hypothesis is that these fault systems act as preferred pathways for groundwater flow and that at discontinuous sections along these structural faults, there is an upwelling of groundwater into the unconsolidated sands. These areas are where seepage zones and springs are present and also where groundwater exploration is targeted. It could be assumed that these areas would contribute to the baseflow of these systems, at certain points along the system.

Modelling of surface water runoff for Reserve determination studies is undertaken using the Pitman Water Resources Simulation Model (WRSM), which is a rainfall-runoff model that simulates surface water runoff and has limited groundwater modelling capabilities. Modelling of surface water runoff for surface water systems strongly dependent on groundwater contributions was thus a challenge. Baseflow and spring flow contributions were modelled explicitly by using a defined time series of inflows calculated outside of the model and with inputs and guidance from the groundwater specialists. Bed losses were included on the channel modules in the model at appropriate locations in the catchment, notably in the Papkuils and Jakkals Rivers.

The baseflow calculations for the F60 and G30 catchments are based on data from the GRAII (2012) and a recent study completed by Watson (2019) where the groundwater component within the J2000 rainfall-run-off modeller was distributed to calculate baseflow and streamflow estimates. Baseflow and streamflow estimates were calculated for the four main tributaries; Bergvallei, Kruismans, Hol and Krom Antonies. These tributaries make up 81% of the streamflow into the Verlorenvlei. It was also found that of the water entering the Verlorenvlei, ~56% of the total flow is a surface run-off, with groundwater baseflow and interflow contributing ~40% and ~4%, respectively (Watson et al., 2019). For those not linked to the Verlorenvlei System (G30H and the F60 systems), the GRAII (2012) values were used. Baseflow estimations were obtained from the GRAII model as well as the estimated baseflow percentage of total flow calculated by Watson (2019).

The WRSM2000 Pitman model was updated with the latest land-use information available (Western Cape Department of Agriculture Crop Census 2017/18 and Department of Environmental Affairs Land Cover dataset) to produce the best possible estimates of present-day flow. Land-use components included: Irrigation and return flows, Afforestation, Alien invasive plants and Urban/rural water requirements.

The large dams and smaller farm dams were also included in the WRSM2000 Pitman model setup. The smaller dams were incorporated to include the effect of irrigation from farm dams, as well as the effect of multiple small dams' regulation in streamflow and loss of water by evaporation from the dam surfaces. The subsequent result is a reduction in water yield from water resource developments downstream of these dams. The present-day flows were then generated using the configured model with all the catchment development information incorporated at the required resolution.

3.4. Highly variable flow and water quality

Both G30 and F60 quaternary catchments have non-perennial rivers linked to wetlands with definite wet and dry rainfall seasons, with and without interaction with the groundwater and springs in the study areas. This meant that environmental flow and water quality requirements cannot easily be extrapolated. Even within an EWR site, the water quality and flow were observed to be variable as a result of groundwater contribution to surface water flow and quality.

4. LESSONS LEARNT AND RECOMMENDATIONS

Below is a summary of the key lessons learnt for applying the Reserve determination study to the F60 and G30 Tertiary Catchments and concerns regarding its successful implementation towards improving resource protection in the area:

1. **Reserve Monitoring, Data and Information**: The required Reserve determination data needs to be in place to ensure there is a high confidence in the EWR recommendations. Confidence in reserve determinations is critically dependent on having the correct data. The collection of the right data and information needs to be in place long before the need for the Reserve determination study takes place. This includes:
    a. Verified flow data at critically placed flow gauging stations, with, as a minimum, surface and sub-surface water level monitoring (e.g. using piezometers and water level plates).
    b. Spring flow at all key springs contributing to surface water ecosystems, such as Papkuils, Eendekuil, and Kruisfontein, should be monitored.
    c. Surface water (rivers and wetlands) quality and groundwater quality should be measured at the same time and location, as the groundwater and surface water interaction is important in the G30 and F60 catchments.
    d. Monitoring of groundwater levels and key water quality variables in areas where groundwater contributes to baseflow or in highly utilised aquifers.
    e. Monitoring of water abstraction and storage.

2. **Dealing with highly variable, sensitive and complex aquatic ecosystems**: The study area comprises surface and groundwater systems with a high variability in quantity and quality that results in complex aquatic ecosystems. The occurrence of surface water in the systems is fragmented and does not allow for easy Reserve recommendations or water resource management. The management of these water resources thus needs to be supported by data collection that informs the management thereof and the operation rules applied. This also requires a strong integration of disciplines.

3. **Lumping of Reserve recommendations**: The continuous disconnect between the Reserve recommendations for rivers and estuaries, in general, relates to the differing statistical assessment of flow events. The assessments often miss key events from working with averages. This is particularly true for rivers such as in this study area. Aquatic ecological

damage results primarily during low flow conditions, however, the occurrences are not specifically stipulated in a flow requirement that is presented as an average. In addition, the lumping together of the Reserve recommendations in quaternaries, particularly for water quality and groundwater levels, in highly variable systems does not work.

4. **Need for an adaptive Reserve recommendation**: An adaptive management approach should be taken to the implementation of the Reserve in the study area, where rainfall monitoring should be used to guide the amount of water that is allocated in a particular year or season. If there is a period of low rainfall, then less water should be allocated than there is following periods of normal or above-average rainfall.

5. **Need for better modelling of groundwater contribution to surface water flow**: Better water resource protection methods and modelling of flow for groundwater-dependent ecosystems are required. The inability of hydrological models to include groundwater contributions in groundwater-dependent ecosystems is a major shortcoming. The Papkuils, Lower Verlorenvlei, Langvlei and Jakkals Systems are unique groundwater-dependent aquatic ecosystems, but due to a lack of baseflow separation and streamflow data, the relationship between the surface and groundwater for these systems could not be adequately during this study.

6. **Implementation of the Reserve during droughts**: The recent drought conditions have added to the difficulty of water resource management and managing water use at the ground level for the Water User Association (WUA). Catchment management measures typically do not address water use management during droughts. Critical damage is typically done to aquatic ecosystems in these extreme low flow periods. Water use allocations for the study area should not be given as an annual maximum or average that gives a water user 100% assurance of their allocated water, even in dry periods.

7. **Current water use in the study area:** The current water use in most of the study area has led to a disproportion of water use in areas where water is readily available. These areas are also the areas critical in supplying water to downstream important aquatic ecosystems. The current distribution of water use however requires a disproportion in the Reserve contribution required from those areas that are less developed. More strategic guidance on water use and crop selection is needed for the area.

8. **Water resource protection needs to be prioritised in this area**: Water resource management in the area is still focused on water users. DWS must take a much stronger stance in water-stressed and ecologically sensitive areas and actively communicate that stance.

    a. The seep wetlands and upper-catchment valley bottom wetlands that would, under natural conditions, have been a dominant source of water to the main longitudinal wetland systems in lower reaches of the G30 river have been severely impacted (and in some cases totally lost) through surface and sub-surface water abstraction for agricultural activities in the region. Abstraction of water from the seepage and upper-catchment areas needs to be urgently curtailed to provide sufficient water to the main wetlands systems in G30, especially during the low-flow period (late spring / early summer to late summer / early autumn).

b. No drilling of boreholes should be allowed within the flood zone or riparian zones of rivers, or within wetlands or a buffer area of at least 100 m around wetlands unless a formal application process is followed (with supporting specialist studies) to obtain approval for such activities where the impact on aquatic ecosystems can clearly be shown to be of low significance.

c. The identification of areas where declining groundwater levels are observed, and where groundwater-surface water interaction is significantly reduced should be prioritised according to the severity of the decline and trends. Once these areas have been identified, regulatory tools such as compulsory licencing and/or other interventions should be implemented to intervene as soon as possible. Focus areas should include, but not be limited to, the Bergvallei, Jansekraal and Langvlei/Wadrift Catchment areas, as well as the Papkuilsvlei and Rocherpan areas.

d. Where existing groundwater abstraction activities need to be authorised or new abstraction activities are proposed, and there are wetland areas within 500 m of the abstraction point/s, then monitoring of the lateral inflow of subsurface water into the wetland/s and subsurface water levels within the wetland/s should be undertaken using piezometers to demonstrate that the potential impact of the abstraction on wetland vegetation will be of low significance before an authorisation is granted. Ongoing monitoring should also be undertaken once authorisation is granted, to show that there is no significant impact on water levels or wetland vegetation.

e. There should be a legislated period for the abstraction of surface waters, for example when water is plentiful (June to September). Instream dams must release flows entering the dam outside of this period downstream of the dam, to sustain downstream ecosystems.

9. **The Reserve determination and Implementation Plan is only the start of the process**: These Reserve recommendations need to be followed by a more detailed water allocation plan with operation rules.

10. **Empowerment of local water resource management**: Strong leadership, champions and communication in communities is essential to water use and resource protection in this area and will bring harmony. The management of the water resources needs to be localised to be effective. This however requires that harmony as there must be trust in those managing the water resources. DWS needs to play a moderation role with leaders and the WUAs. Communication of data outcomes also need to be strengthened to improve the trust. The process in establishing a Catchment Management Agency and WUAs for the area must be speeded up.

5. FINANCIAL BREAKDOWN

Invoice number	BlueScience invoice number	Date of inv issue	Invoice amount	Vat	Total	Percentage
1	825		R559 620,00	R83 943,00	R643 563,00	
2	843		R303 840,00	R45 576,00	R349 416,00	
3	848		R824 722,26	R123 708,34	R948 430,60	
4	861	25-Apr-22	R419 634,16	R62 945,12	R482 579,28	
5	882	26-Jun-22	R125 060,00	R18 759,00	R143 819,00	
6	893	31-Jul-22	R225 660,15	R30 221,27	R255 881,42	
7	906	23-Sep-22	R646 520,86	R96 978,13	R743 498,99	
8	923	31-Oct-22	R501 640,00	R75 246,00	R576 886,00	
9	934	08-Dec-22	R388 860,00	R58 329,00	R447 189,00	
10	953	16-Feb-23	R447 680,00	R67 152,00	R514 832,00	
11	965	13-Mar-23	R641 240,00	R96 186,00	R737 426,00	
12	1003	21-Jun-23	R342 740,00	R51 411,00	R394 151,00	
	Total amount claimed		**R5 427 217,43**	**R810 454,86**	**R6 237 672,29**	99,93%
	Total amount approved		**R5 428 106,44**	**R814 215,97**	**R6 242 322,40**	