



**water & sanitation**

Department:  
Water and Sanitation  
**REPUBLIC OF SOUTH AFRICA**

# **Reconciliation Strategy of the KwaZulu-Natal Coastal Metropolitan Area: Phase 2**

**Strategy Steering Committee (SSC)  
Meeting No. 10**

**30 August 2016**

# Item 1: Welcome



# TEAM INTRODUCTION

- **Chair: Mr Tendani Nditwani**
- **DWS:**
  - Study Manager: Mr Niel van Wyk
  - Deputy Study Manager: Mr Kennedy Mandaza
- **PSP: AECOM**
  - Study Director: Mr Gerald de Jager
  - Study Leader: Ms Hermien Pieterse (Supported by Specialists and Technical Team)
  - Stakeholder participation: Ms Bongi Shinga

# GENERAL ARRANGEMENTS

- **Facilities**
- **Tea, coffee and lunch**
- **Meeting arrangements**
  - Introduction of attendees
  - Discussions & Questions times indicated on Agenda

## Item 2: Attendance and Apologies



# ATTENDANCE REGISTER

- **Attendance register distributed**
  - Please return to Ms Bongsi Shinga
- **Apologies**
  - Please provide

# Item 3: Approval of the Agenda



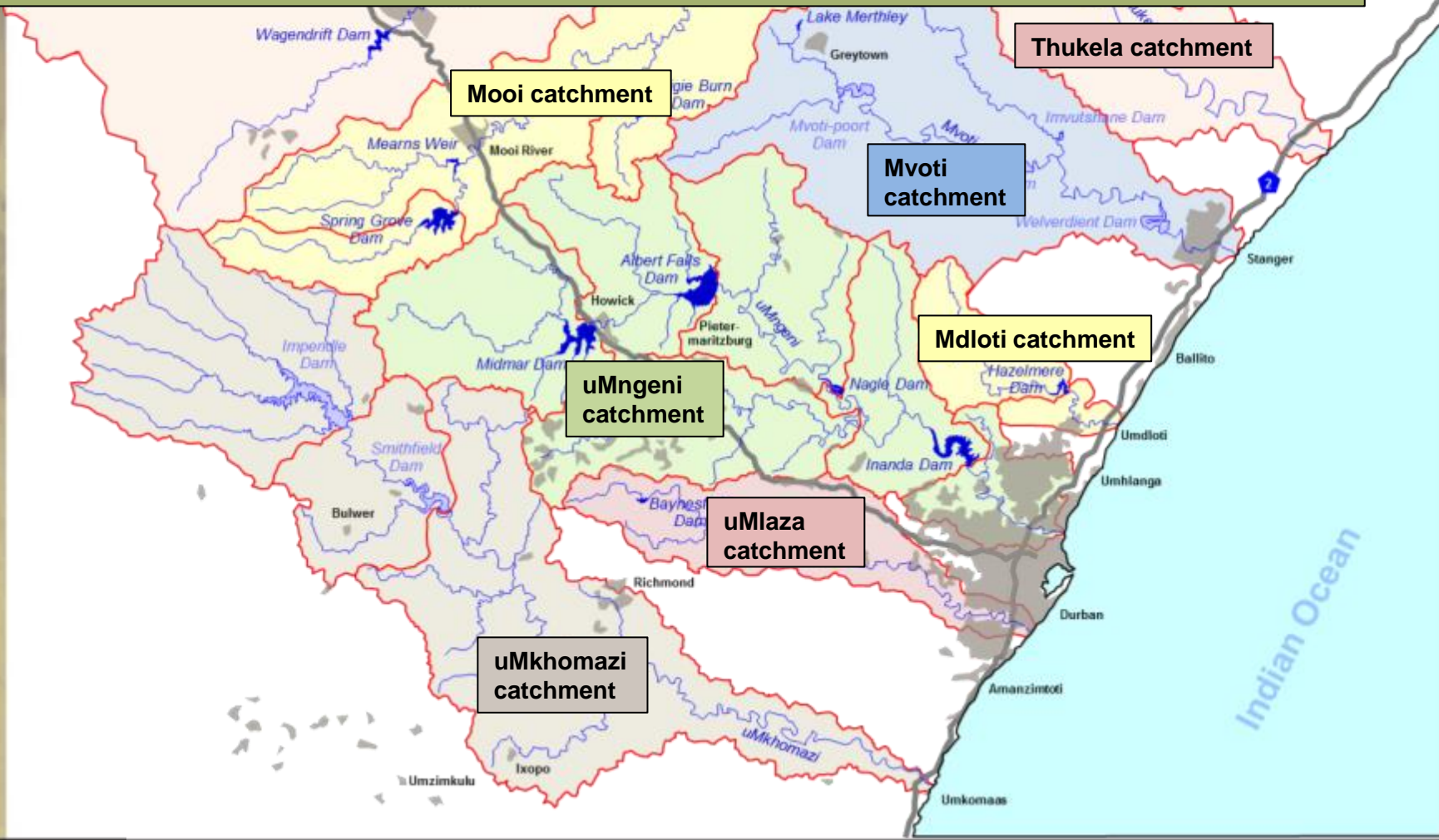
# AGENDA ITEMS

1. Welcome
2. Attendance and Apologies
3. Approval of the Agenda
4. Minutes of SSC Meeting 9
5. SSC theme: feedback and Summary of Updated Strategy
  - 5.1 Water requirements and balances
  - 5.2 Management interventions
  - 5.3 Physical infrastructure interventions
  - 5.4 Feedback on implementation of strategy intervention options
  - 5.5 WC/WDM
6. Drought Situation and System Operation Forums
7. Other Studies and Initiatives
8. Communication
9. Implementation of Strategy and Way Forward
10. Date for Next Meetings
11. Closure

*To be discussed per system:*

- Mgeni
- North Coast
- South Cost

## Item 4: Minutes of Previous Meeting



# Item 5: SSC Theme: Feedback and Summary of Updated Strategy



# BACKGROUND

- *Original Water Reconciliation Strategy Study for the KwaZulu-Natal Coastal Metropolitan Areas* commenced in 2006
- Followed by 3-year continuation study, the Maintenance of the Water Reconciliation Strategy for the KwaZulu-Natal Coast Metropolitan Areas – Phase 1
- In March 2014, Phase 2 of the continuation study commenced – to be completed by February 2017

# UPDATE OF THE RECONCILIATION STRATEGY: METHODOLOGY (1 OF 2)

## Why Do we have a Reconciliation Strategy?

- The implementation of new water resource developments takes time and good planning, and if not done proactively, can result in systems running into a deficit. This can lead to:
  - Systems being vulnerable to drought and
  - Water resources stifling growth and development

## Why does the Reconciliation strategy need to be continued with and updated?

- To monitor progress of strategy intervention implementation
- To adapt and respond to changes in the volume and location of the requirement for water and various other factors that can influence a systems water balance.
- To incorporate new research and information from other external studies.

# UPDATE OF THE RECONCILIATION STRATEGY: METHODOLOGY (2 OF 2)

## How is the strategy updated and continued with?

- Input from Strategy Steering Committee (SSC 6<sup>th</sup> to 10<sup>th</sup>) from intermediate updates via status reports
- Input from technical support Group (TSG) meetings to direct technical team and integrate planning of key stakeholder initiatives

## Basic process of updating the strategy is

- Update of water requirements (based on most recent actual supply)
- Review Intervention options and status of implementation
  - Management interventions
    - Demand side interventions (e.g. WC/WDM)
    - Supply side interventions (e.g. Catchment care)
  - Physical infrastructure interventions (e.g. Dams, transfers etc.)
- Review Reconciliation scenarios and update action plan

## **5. SSC THEME: FEEDBACK AND SUMMARY OF UPDATED STRATEGY**

**5.1 Water requirements and balances (including short-term impacts of drought)**

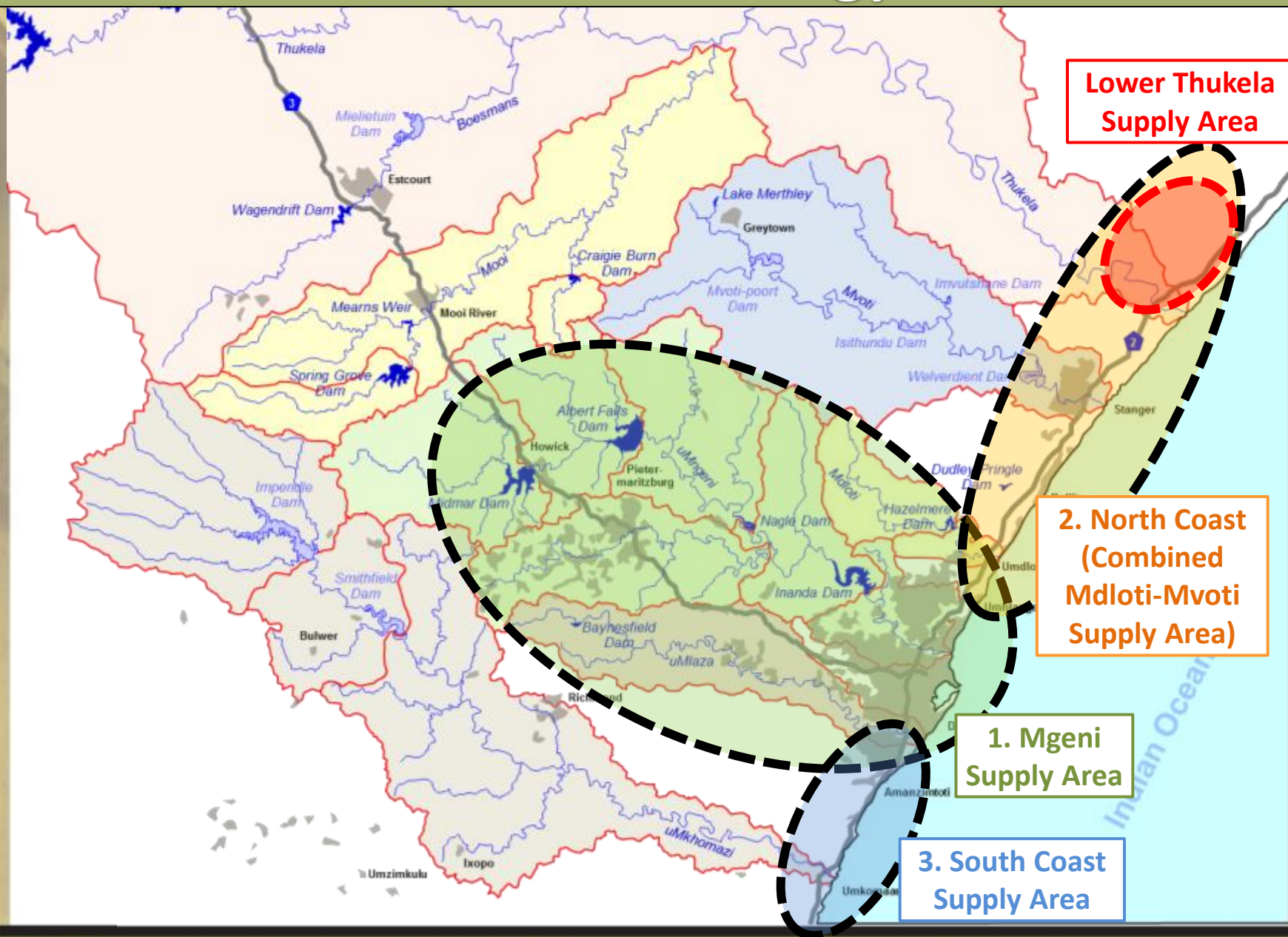
**5.2 Management intervention: Management of system operation and drought interventions**

**5.3 Physical infrastructure interventions**

**5.4 Feedback on implementation of Strategy Intervention Options**

**5.5 WC/WDM**

# The Reconciliation Strategy Area

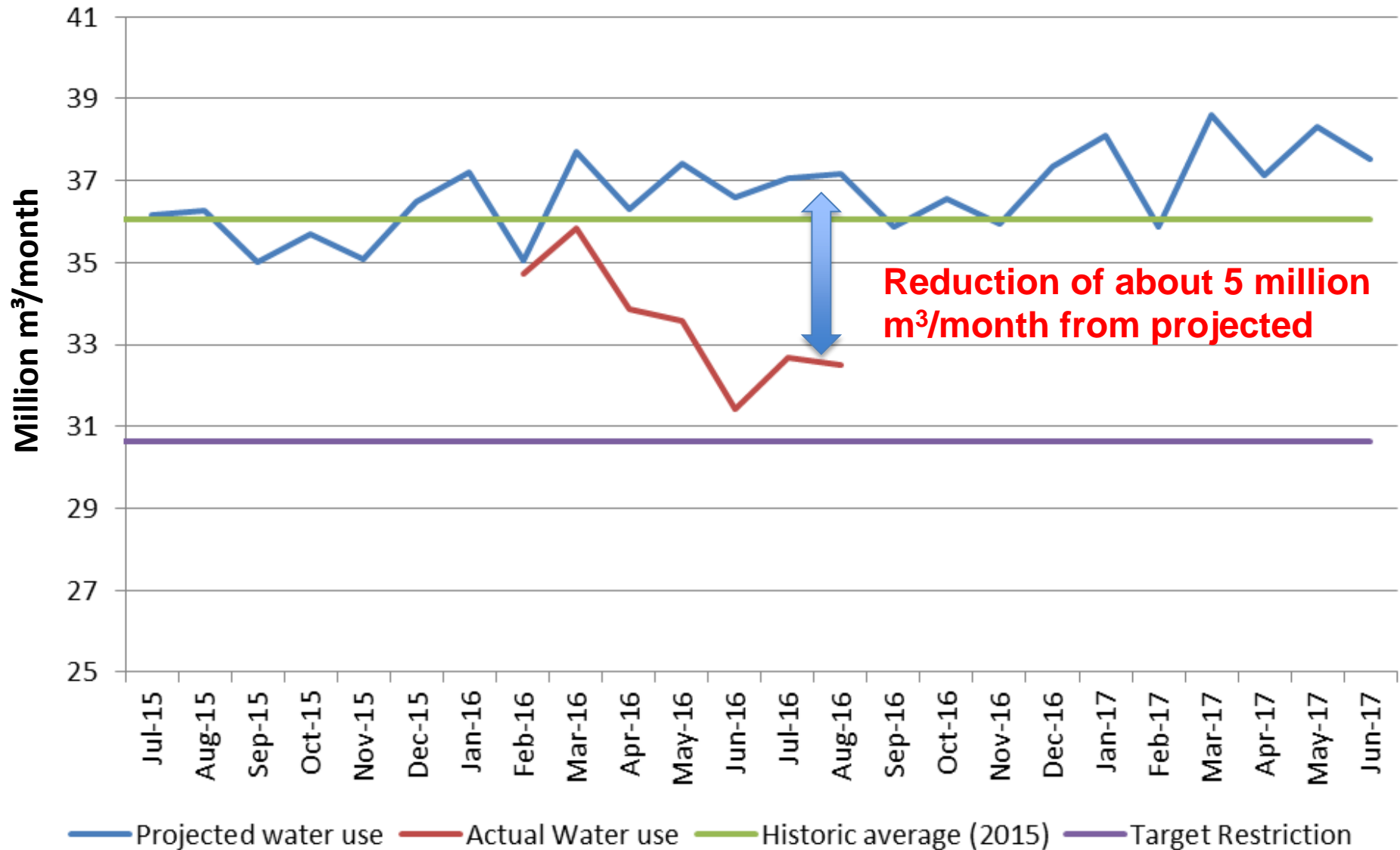


# 5.1 Mgeni Water Supply System

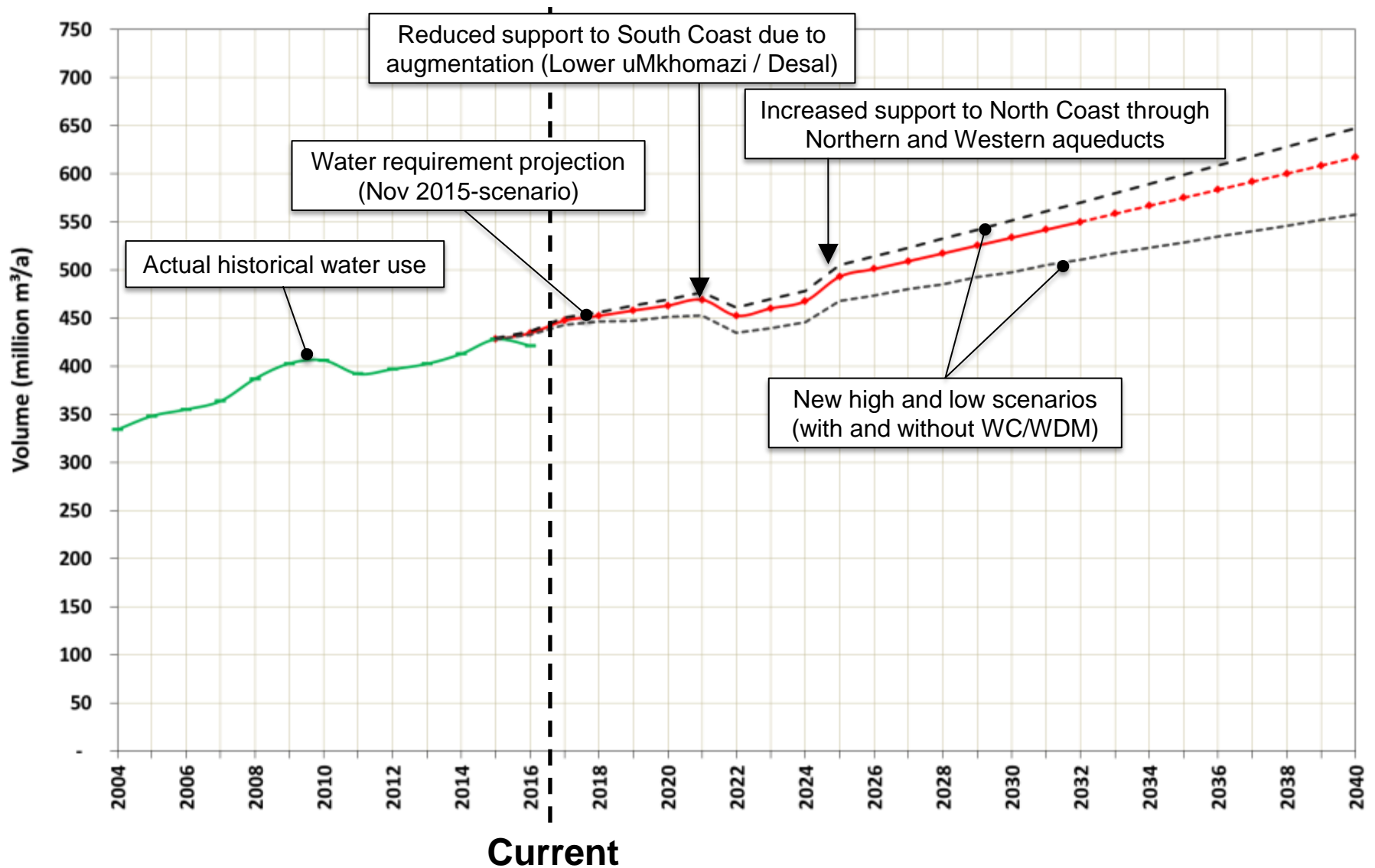


Midmar Dam  
([rhinoclub.wordpress.com](http://rhinoclub.wordpress.com))

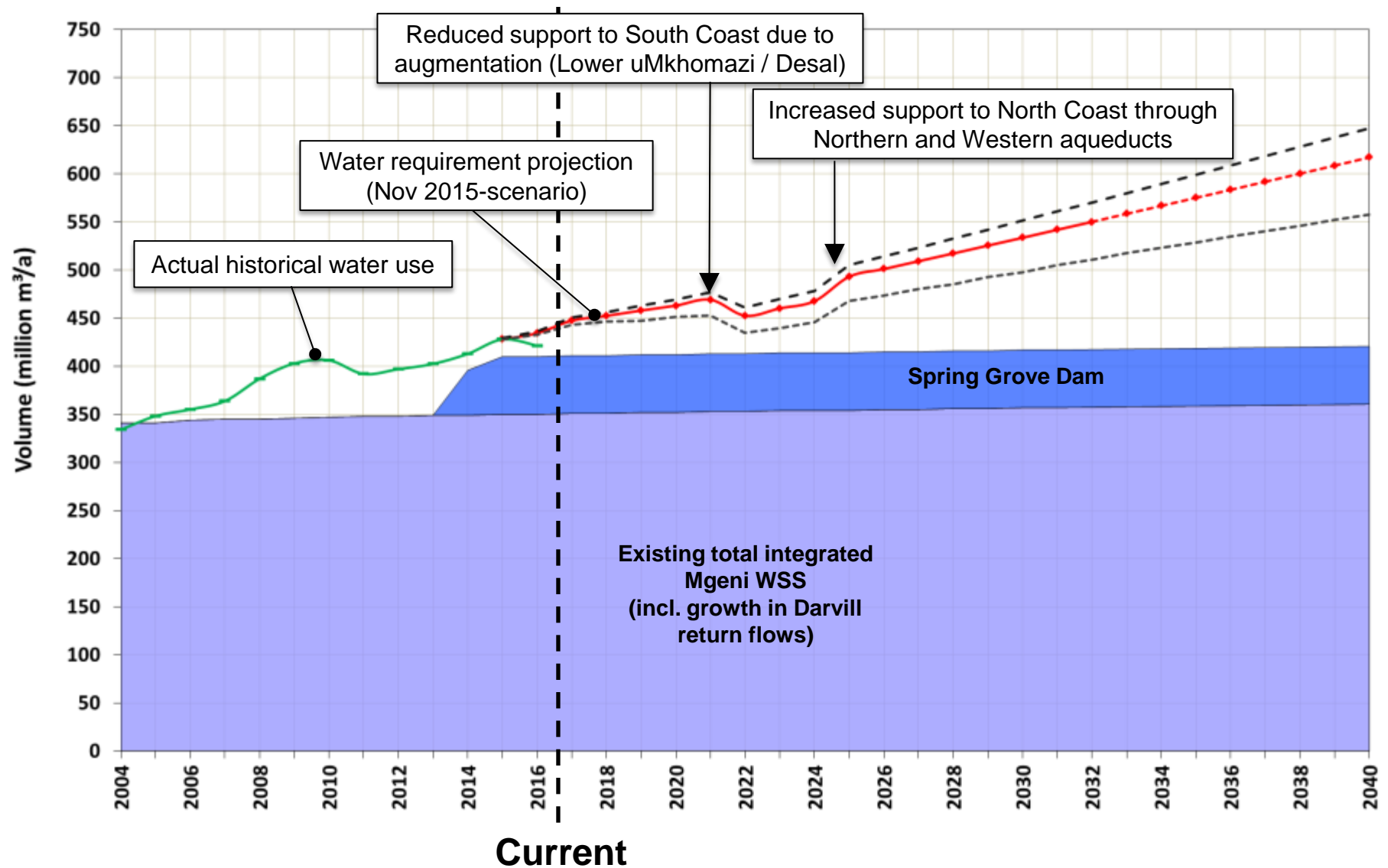
# ACTUAL WATER SUPPLY COMPARED TO PROJECTIONS



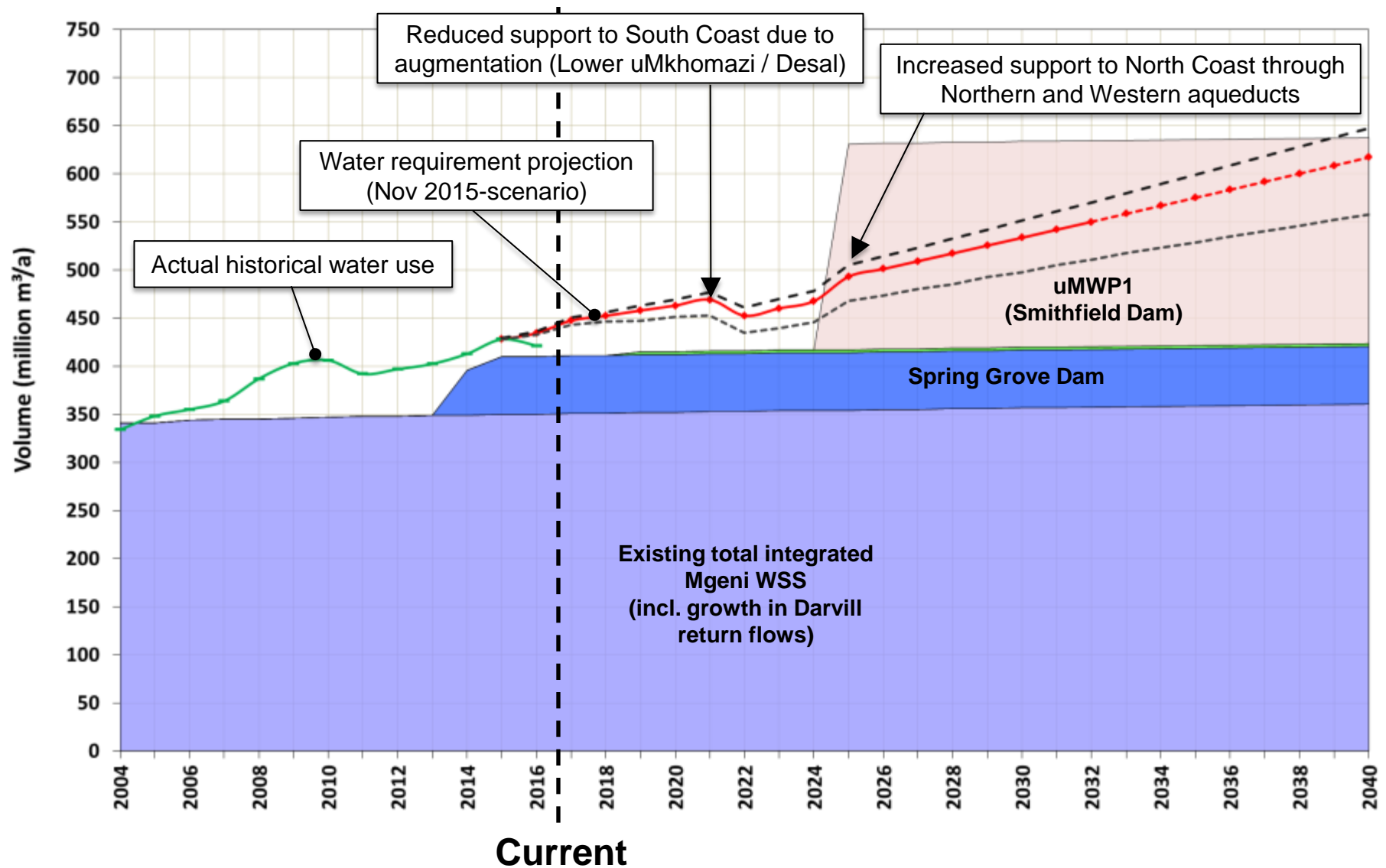
# MGENI WSS: WATER REQUIREMENTS



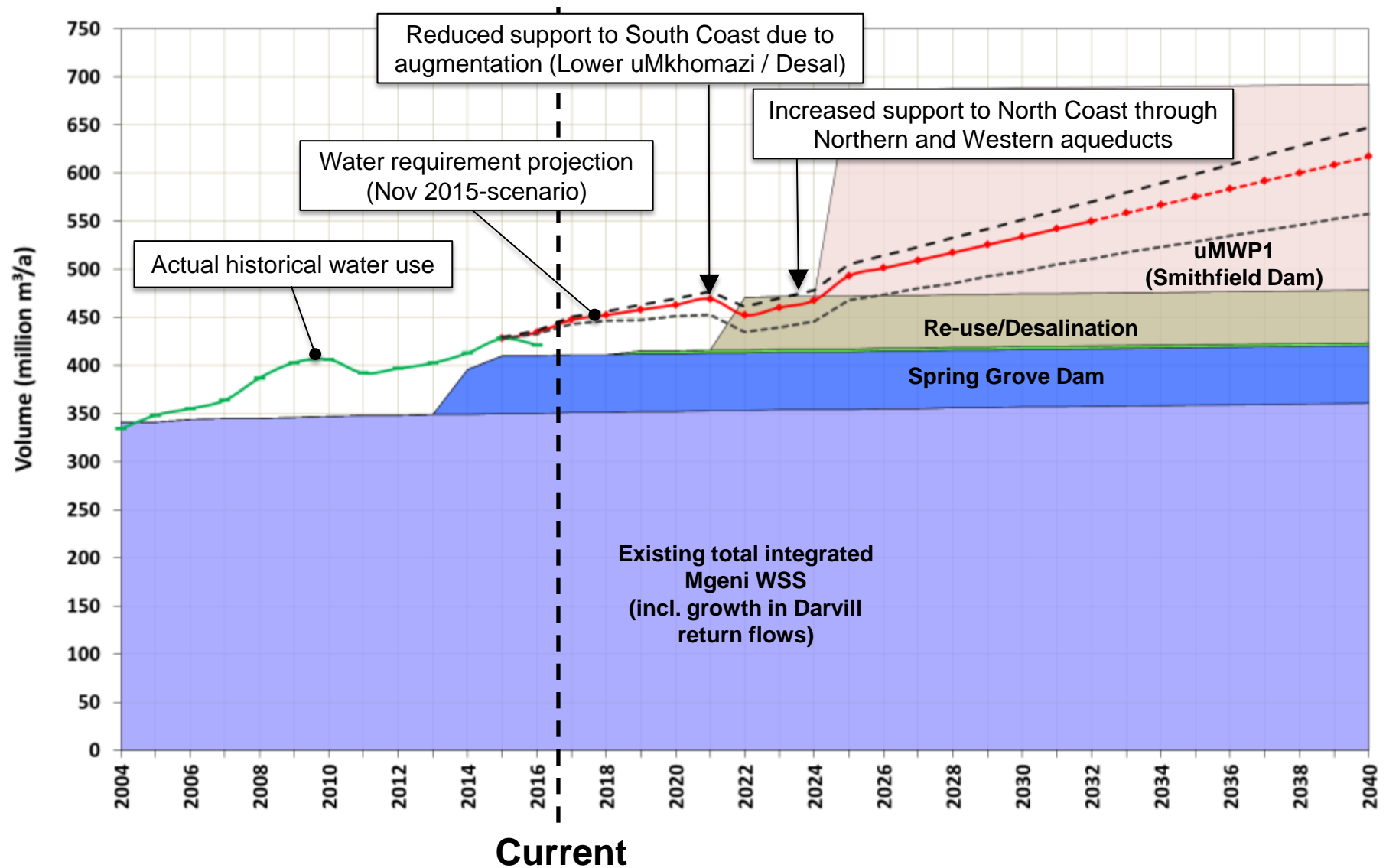
# MGENI WSS: EXISTING RESOURCES



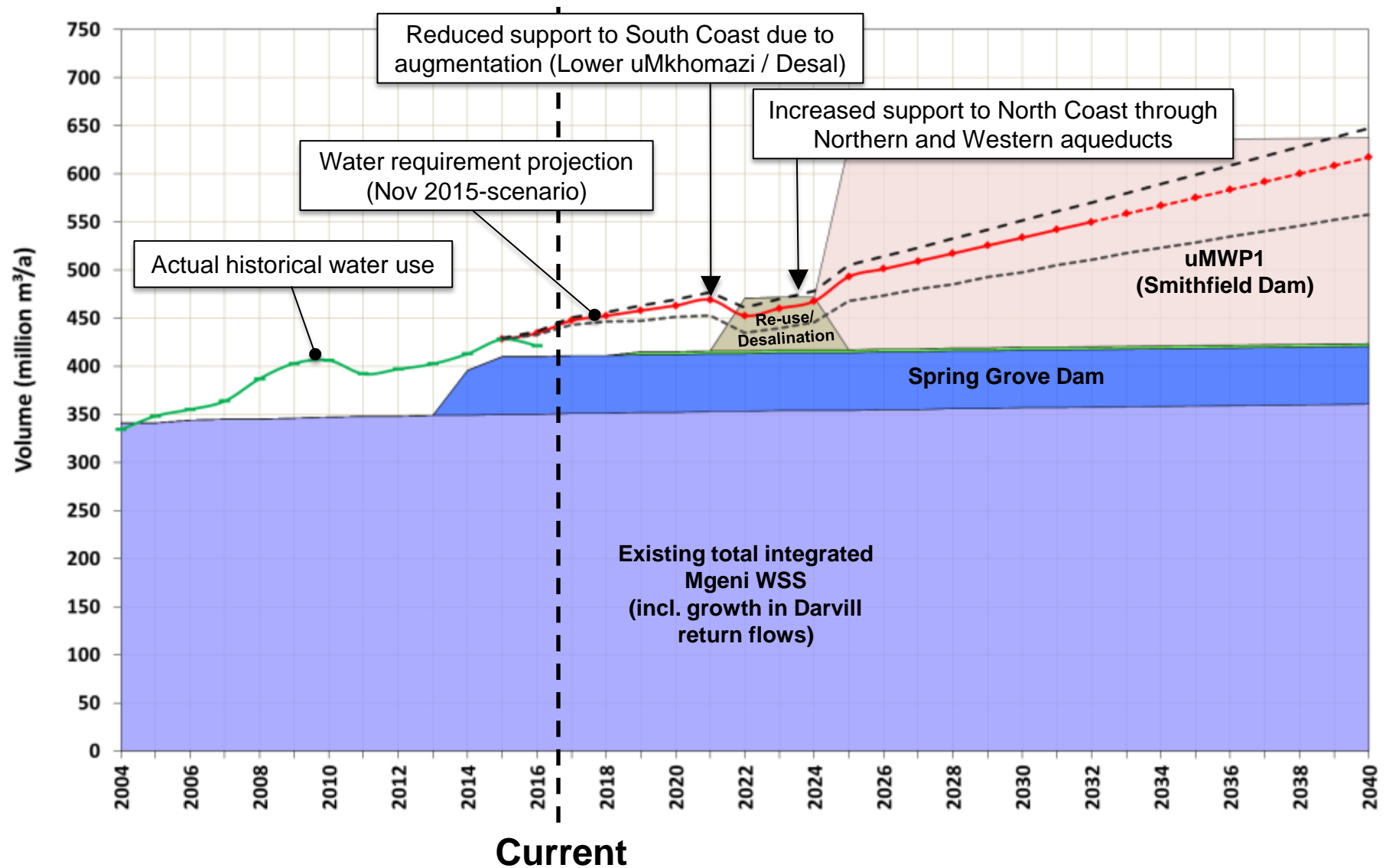
# MGENI WSS: INTERVENTION OPTIONS



# MGENI WSS: INTERVENTION OPTIONS



# MGENI WSS: INTERVENTION OPTIONS



# Intervention Options Actions List

Scheme	Start date	End date	Comment/s
<b>Mooi-Mgeni Transfer Scheme Phase 2A &amp; B (DWS/TCTA)</b>			
<b>Upgrade Mearns pump station and pipeline (3.2 m<sup>3</sup>/s)</b>	In progress	Dec 2015	1 <sup>st</sup> commissioning Feb 2016
<b>Delivery via MMTS2B (1.8 m<sup>3</sup>/s)</b>	-	Feb 2016	-
<b>uMkhomazi Water Project Phase 1 (DWS)</b>			<b>IMMINENT</b>
<b>Feasibility Studies (Raw and Potable Water)</b>		End 2015	<b>Completed</b>
<b>Feasibility Study EIA</b>	Nov 2012	Mid 2017	EIA to be submitted in Nov 2016
<b>Decision to proceed with uMWP-1 and offtake agreements</b>	Dec 2016	Dec 2017	-
<b>Detailed design</b>	Jan 2017	Dec 2018	-
<b>Construction</b>	Jan 2019	Dec 2024	-
<b>Delivery (220 million m<sup>3</sup>/a, or 214 million m<sup>3</sup>/a with release to Lower uMkhomazi)</b>	-	Dec 2024	

# Intervention Options Actions List

Main scheme	Start date	End date	Comment/s
Direct re-use of treated wastewater (eThekweni MM)			???
Tender preparation and adjudication	Jan 2017	Jun 2017	- Requires council resolution and public buy-in
Tender award, financing and site establishment	Jun 2017	Jun 2018	-
Construction and commissioning	Jul 2018	Dec 2020	-
Delivery (41 million m <sup>3</sup> /a)	-	Jan 2021	-
Desalination of seawater (Umgeni Water)			LONG TERM
Funding procurement, design and tender phase	Jan 2017	Jul 2018	1 year assumed starting 2016
Construction	Jul 2018	Jun 2020	2 years assumed
Delivery (150 Mℓ/d)	-	Jan 2021	Tongaat (long term option, due to other feasible options)

# UPDATE OF THE RECONCILIATION STRATEGY (MGENI WSS PORTION SUMMARY 1 OF 3)

The Following are key **Management Interventions** for the strategy:

## Demand side interventions:

- WC/WDM interventions by WSAs (based on their master plans)
- Rainwater harvesting: improve users awareness and behaviour
- Drought operating rules: i.e. water restrictions during server droughts to maintain risk levels to acceptable user defined levels

## Supply side Interventions:

- Water supply operating rules (day to day rules to maximise system yield) which includes:
  - Maximising pumping from Inanda to reduced spillage and imbalance
  - Full transfer from Spring Grove via MMTS1&2 to Midmar Dam
- Catchment care and maintaining ecological infrastructure to maintain water availability from a quantity and quality perspective.

# UPDATE OF THE RECONCILIATION STRATEGY (MGENI WSS PORTION SUMMARY 2 OF 3)

The Following are key **Supply side Interventions** for the strategy:

## Dams and transfers:

- Smithfield dam and associated tunnel
- New WTP at Baynesfield and associated bulk infrastructure (including new northern aqueduct) to deliver potable water into system and north/eastwards to shed-zones.

## Re-use and desalination:

- eThekwini Re-mix pilot plant at central works
- Direct re-use of water in the Mgeni WWS (i.e. at Kwamashu and Northern Works)

# UPDATE OF THE RECONCILIATION STRATEGY (MGENI WSS PORTION SUMMARY 3 OF 3)

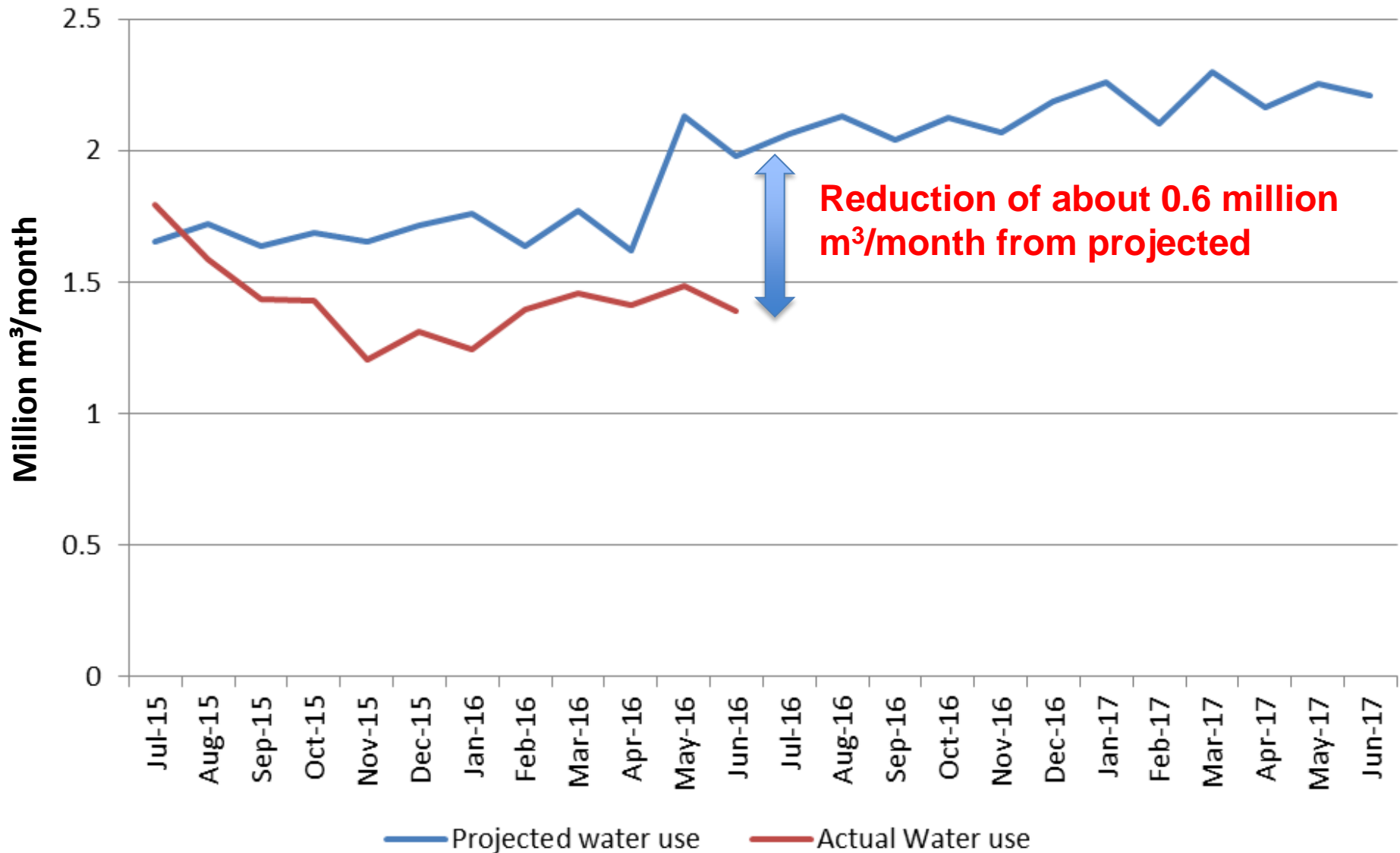
The Following are possible future **Interventions** for the strategy, for which further investigations and research are recommended:

- Thukela Water project (Jana and/or Mielietuin dams) as a long term water option for KZN, which needs to be considered in combination, or against other long term options e.g. uMWP2 etc.
- Re-mix plant at central works full phase which should be considered once the pilot plant is proven to be successful and sustainable. Distribution of water into the system needs further consideration, as currently availability into CBD/central area not constrained from Inanda.
- New WTP at Inanda Dam to make fuller use of yield in lower Mgeni WSS and supply into Kwamashu and surrounds.
- Desalination of seawater for areas/communities along the coast

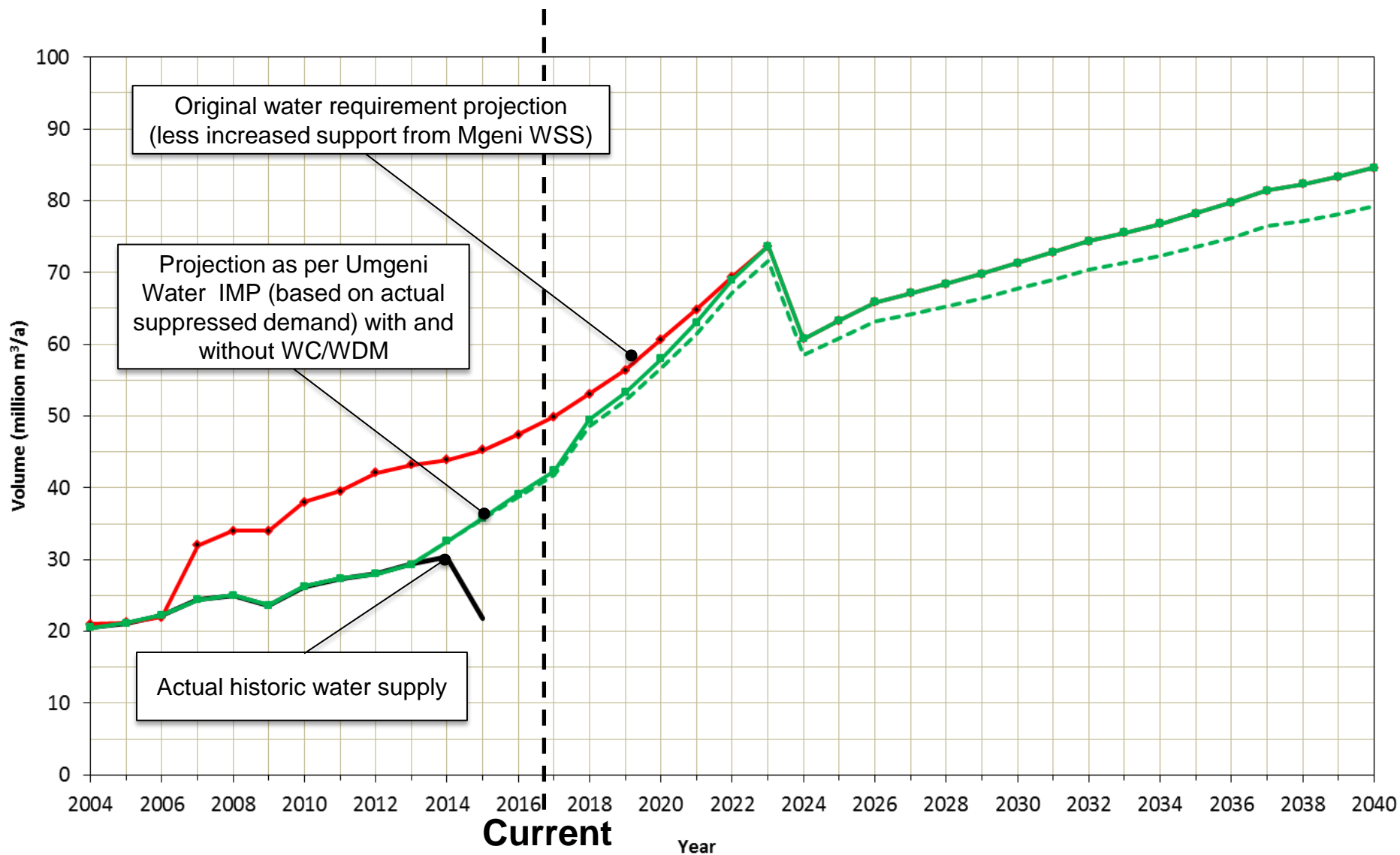
## 5.2 North Coast Water Supply System



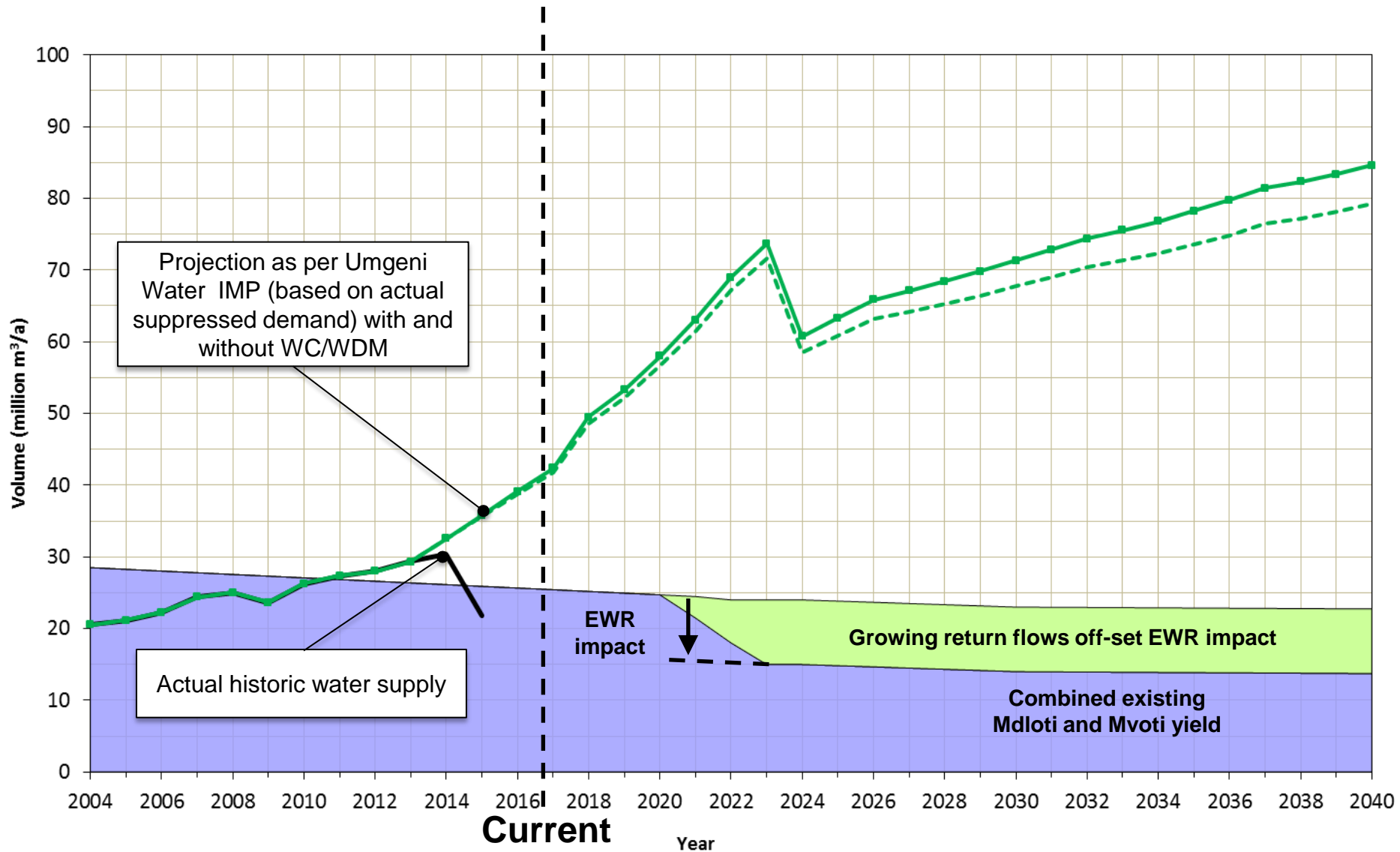
# ACTUAL WATER SUPPLY COMPARED TO PROJECTIONS



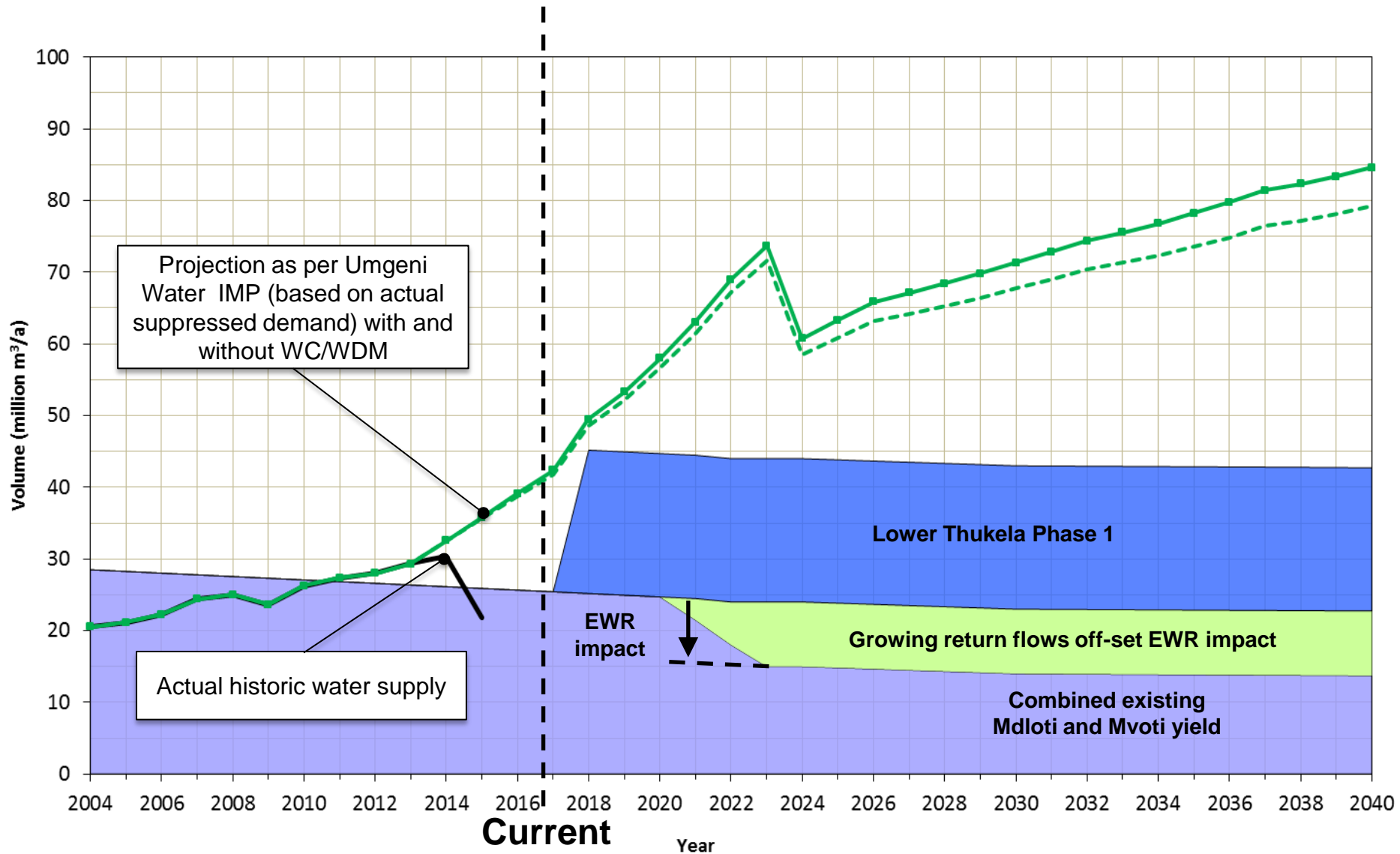
# NORTH COAST WSS: WATER REQUIREMENTS



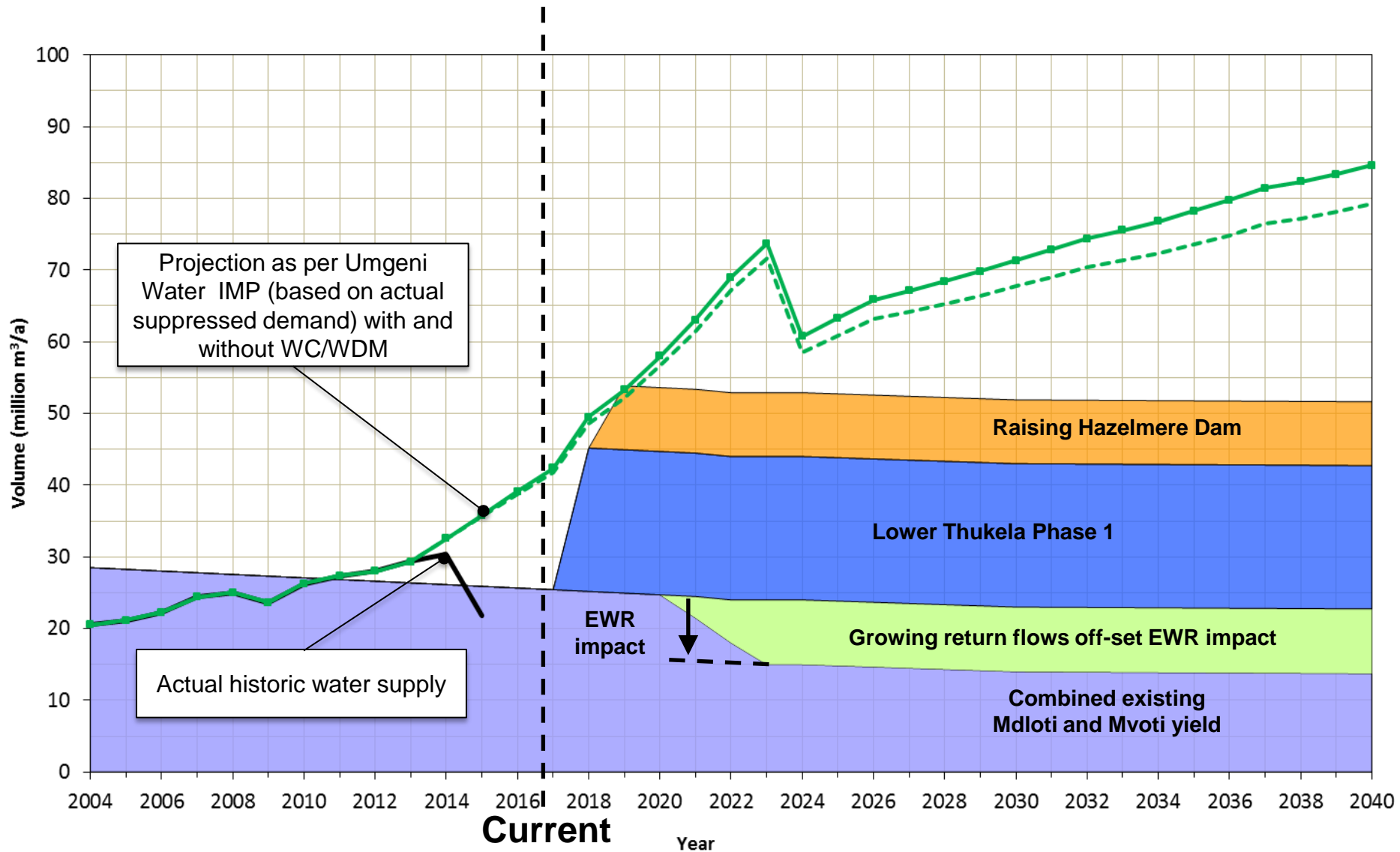
# NORTH COAST WSS: EXISTING RESOURCES



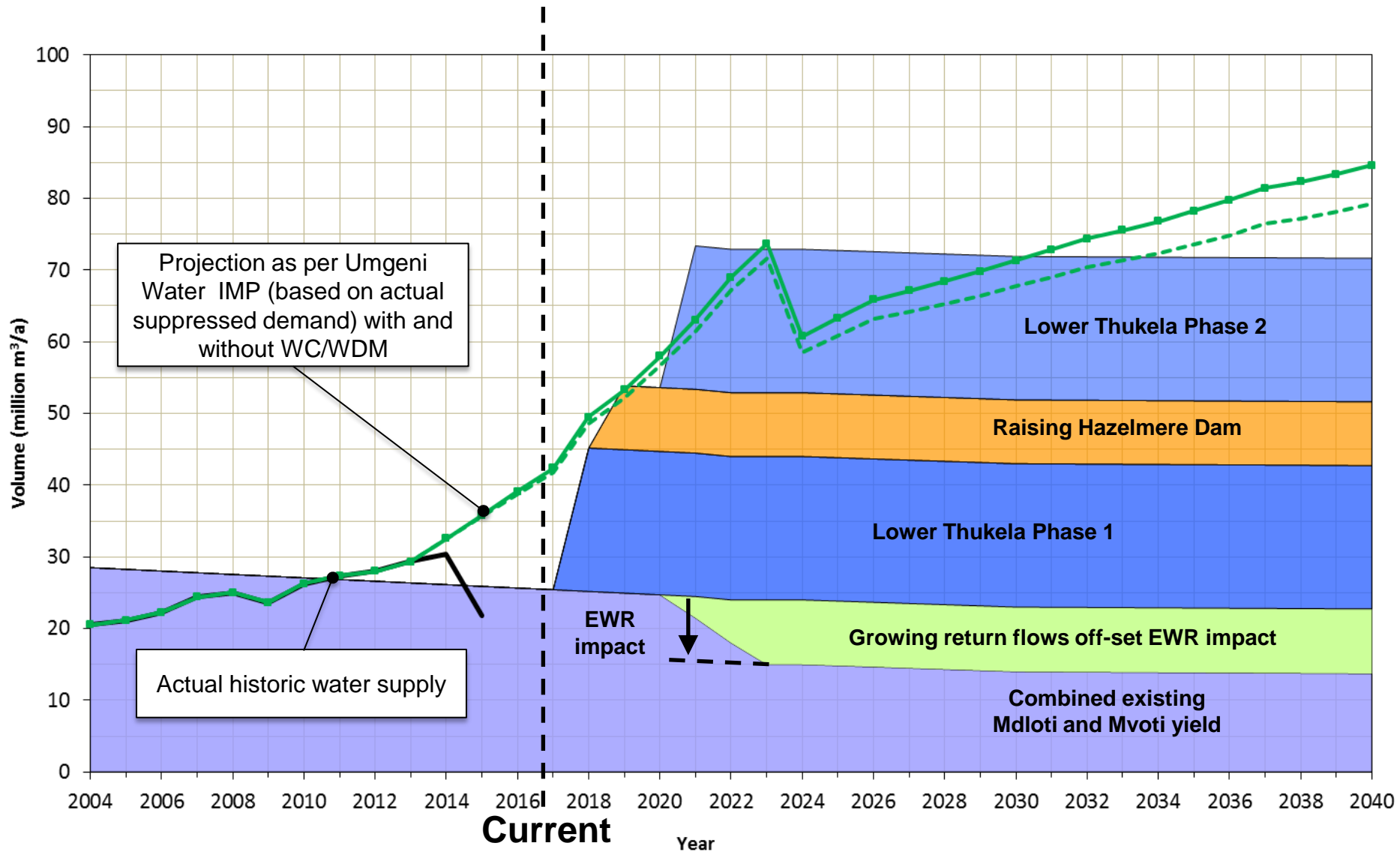
# NORTH COAST WSS: INTERVENTION OPTIONS



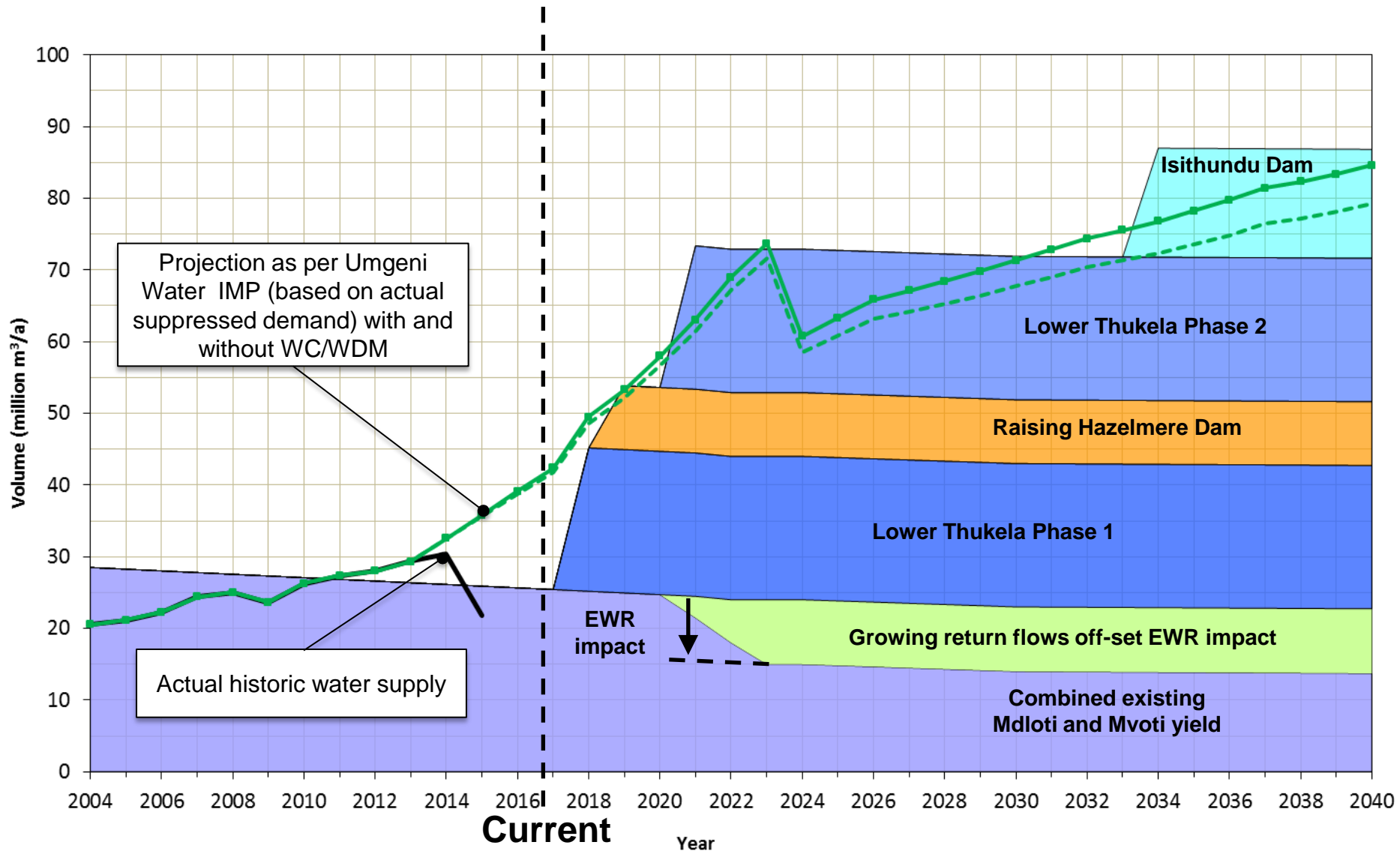
# NORTH COAST WSS: INTERVENTION OPTIONS



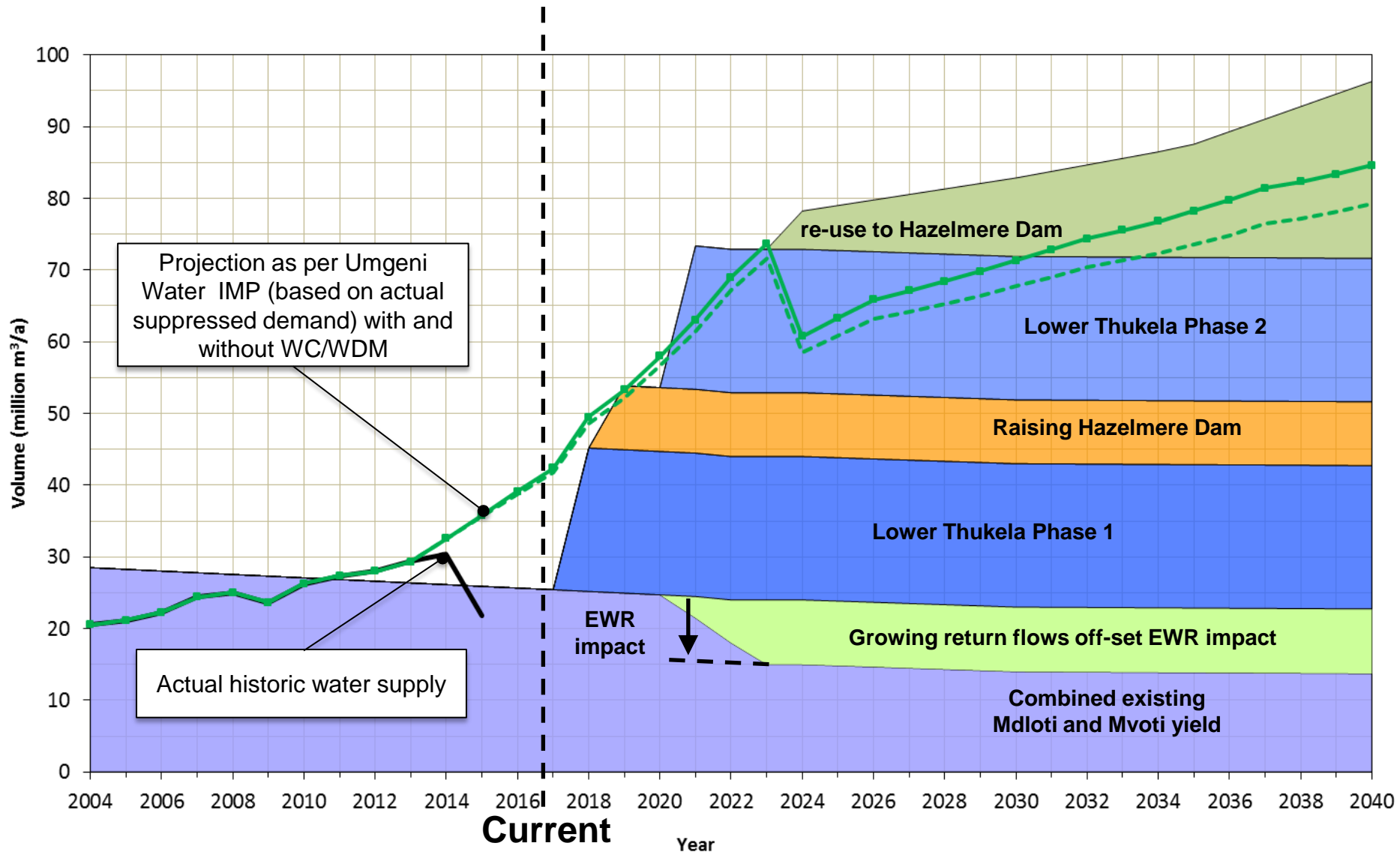
# NORTH COAST WSS: INTERVENTION OPTIONS



# NORTH COAST WSS: INTERVENTION OPTIONS



# NORTH COAST WSS: INTERVENTION OPTIONS



# Intervention Options List

Main scheme	Start date	End date	Comment/s
Hazelmere Dam Raising (DWS) – 23.0 to 43.7 million m <sup>3</sup>			<b>IN PROCESS</b>
Construction	Jan 2016	Aug 2017	
Delivery		End 2017	DWS estimate
Lower Thukela Bulk Water Supply Scheme (Umgeni Water)			
Phase 1: Construction	Feb 2014	Jun 2016	Underway – 1 <sup>st</sup> delivery October 2016
Phase 1: Delivery (55 Mℓ/d)	-	Dec 2016	- <b>IN PROCESS</b>
Phase 2: Design	Jan 2017	Dec 2017	
Phase 2: Construction	Jan 2018	Dec 2019	To be confirmed
Phase 2: Delivery (55 Mℓ/d, total 110 Mℓ/d)	-	Jan 2020	- <b>IMMINENT</b>
Hazelmere re-use			
Regional Wastewater Works			eThekweni – feasibility study for regional wastewater works on North Coast

# Intervention Options List

Main scheme	Start date	End date	Comment/s
<b>Mvoti River Scheme - Isithundu Dam (DWS)</b>			<b>LONG TERM</b>
<b>Feasibility Study</b>	Apr 2021	Apr 2024	Estimated start date (timeline moved)
<b>EIA (including estuary)</b>	Jun 2021	Apr 2024	-
<b>Detailed design</b>	Aug 2024	Jul 2026	-
<b>Construction</b>	Oct 2026	Oct 2030	-
<b>Delivery</b>	-	Apr 2030	-
<b>Upper Tugela (Mielietuin or Jana dams) (DWS)</b>			<b>LONG TERM</b>
<b>Feasibility study</b>	Completed Probably would require a bridging study		
<b>EIA</b>	Needed together with bridging study		

# UPDATE OF THE RECONCILIATION STRATEGY (NORTH COAST PORTION SUMMARY 1 OF 2)

The Following are key **Management Interventions** for the strategy:

## Demand side interventions:

- WC/WDM interventions by WSAs (based on their master plans)
- Rainwater harvesting - improve users awareness and behaviour
- Drought operating rules. I.e. water restrictions during severe droughts to maintain risk levels to acceptable user defined levels

## Supply side Interventions:

- Water supply operating rules (day to day rule to maximise yield):
  - Managing EWR impact and return flow constraints
  - Operating rule for link Hazelmere Dam supply & Lower Thukela (still to be developed)
- Catchment care partnership not yet commenced on North Coast rivers but catchment management forums supported.

# UPDATE OF THE RECONCILIATION STRATEGY (MGENI WSS PORTION SUMMARY 2 OF 2)

The Following are key **Supply side Interventions** for the strategy:

## Dams and transfers:

- Lower Thukela Phase 1 and 2
- Raising of Hazelmere Dam.

## Re-use and desalination:

- Re-use of Water via Hazelmere Dam

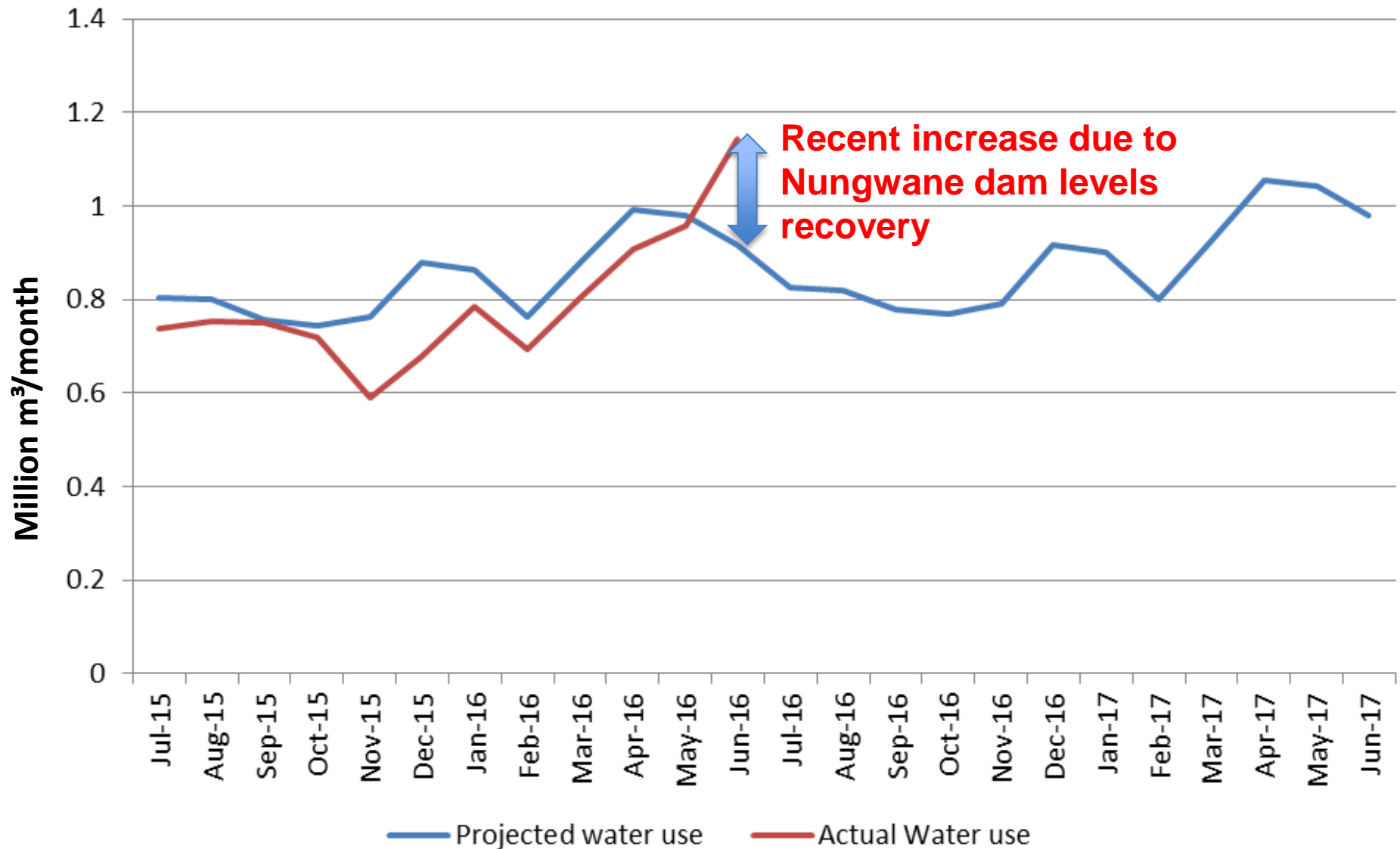
The following are interventions for which further investigations and research are recommended:

- Thukela Water project (Jana and/or Mieleituin Dams)
- Mvoti River Development Project – Isithundu Dam

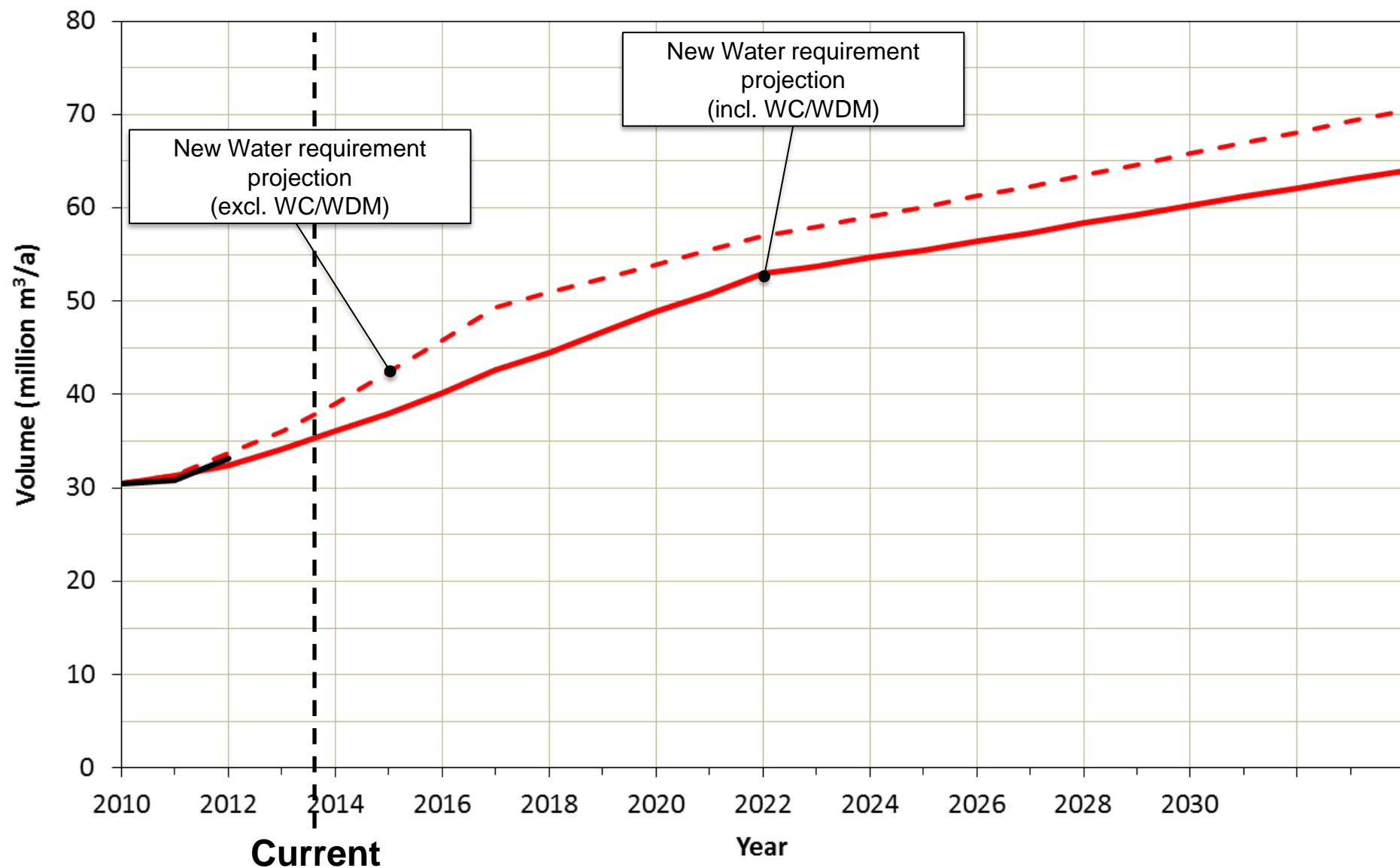
## 5.3 South Coast Water Supply System



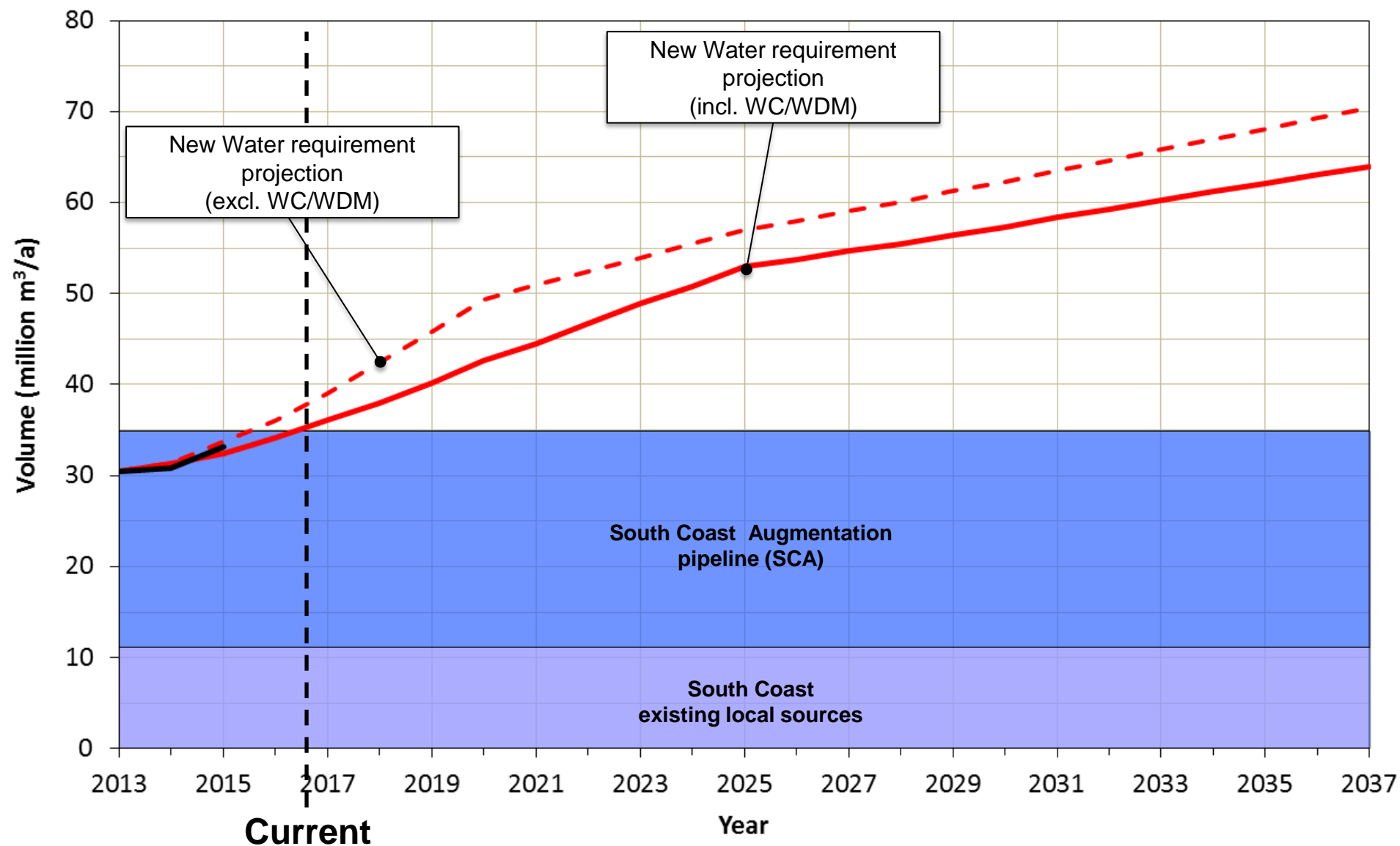
# ACTUAL WATER SUPPLY COMPARED TO PROJECTIONS



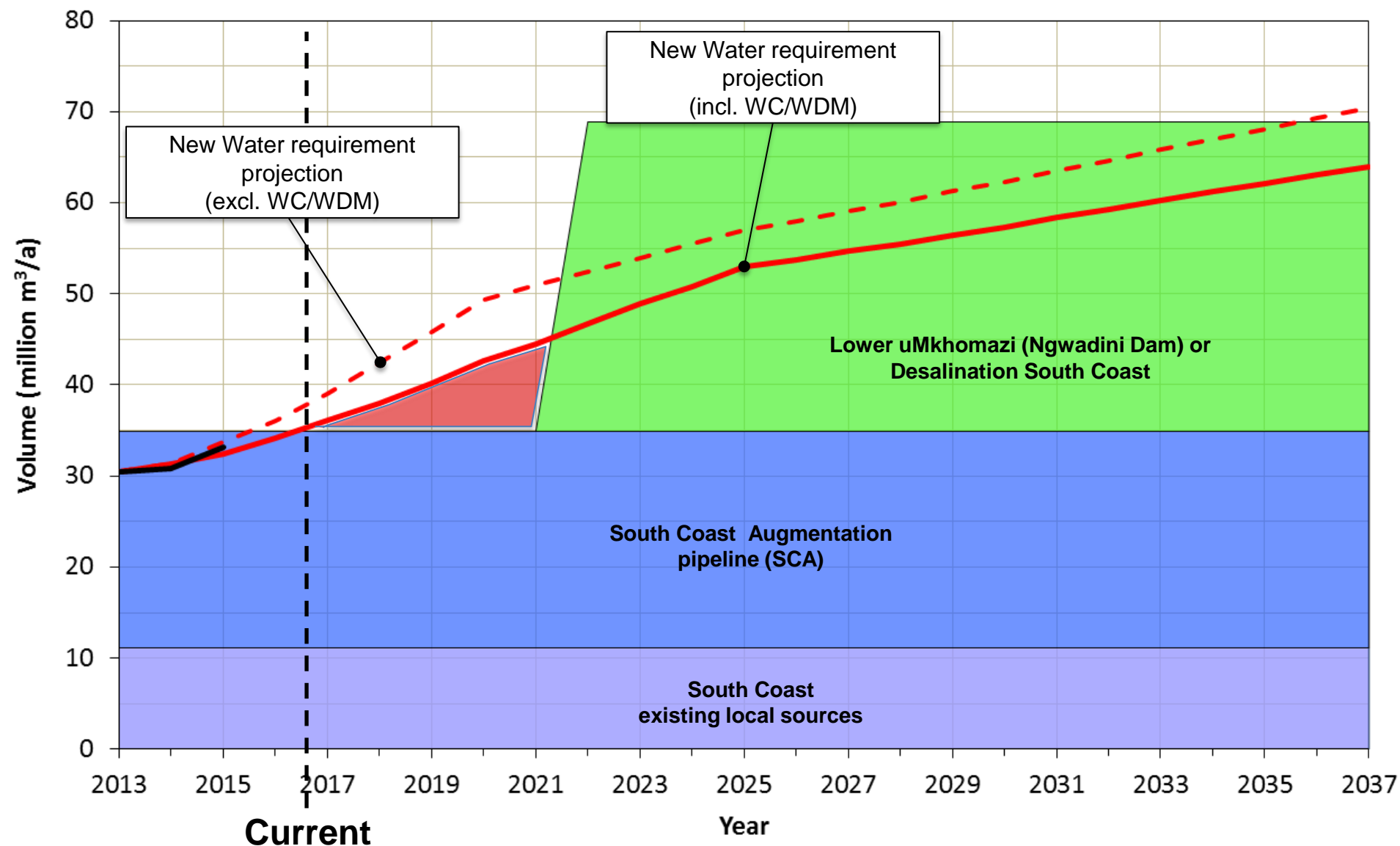
# SOUTH COAST WSS: EXISTING RESOURCES



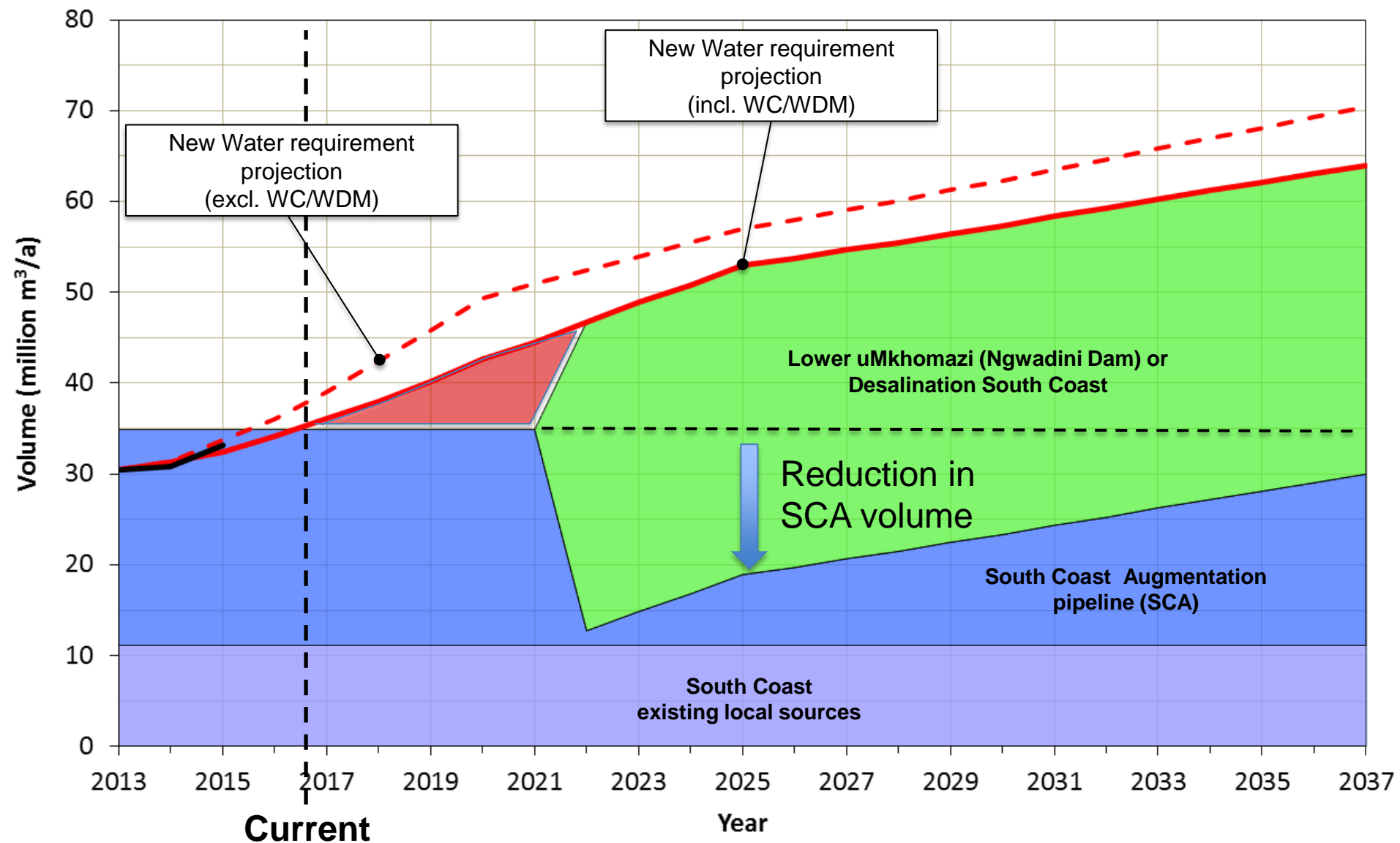
# SOUTH COAST WSS: EXISTING RESOURCES



# SOUTH COAST WSS: INTERVENTION OPTIONS



# SOUTH COAST WSS: INTERVENTION OPTIONS



# Intervention Options List

Scheme	Start date	End date	Comment/s
<b>Desalination of seawater (Umgeni Water)</b>			
<b>Funding procurement, preparation of PPP contract and procurement</b>	Sep 2016	July 2017	8 months assumed
<b>Design and tender phase</b>	July 2017	July 2018	1 year assumed
<b>Construction</b>	July 2018	Dec 2021	2 and a half years assumed
<b>Delivery (150 Mℓ/d)</b>	-	Jan 2022	Tongaat (long term option, due to other feasible options) or Lovu options
<b>Lower uMkhomazi Bulk Water Supply Scheme (Umgeni Water)</b>			
<b>Feasibility Study</b>	Jul 2014	April 2016	
<b>EIA Approval</b>	End 2015	Mid 2017	
<b>Detailed design</b>	Jan 2017	Dec 2017	
<b>Construction (Delivery 100 Mℓ/d)</b>	July 2018	Jan 2022	Yield available before & after uMWP-1 with releases

# UPDATE OF THE RECONCILIATION STRATEGY (SOUTH COAST PORTION SUMMARY 1 OF 2)

The Following are key **Management Interventions** for the strategy:

## Demand side interventions:

- WC/WDM interventions by WSAs (based on their master plans)
- Rainwater harvesting - improve users awareness and behaviour
- Drought operating rules. I.e. water restrictions during server droughts to maintain risk levels to acceptable user defined levels

## Supply side Interventions:

- Water supply operating rules (day to day rule to maximise yield):
  - Managing yield when available from local dams/rivers
  - Operating rule for Mpambanyoni emergency scheme
- Catchment care partnership not yet commenced on South Coast rivers but catchment management forums supported.

# UPDATE OF THE RECONCILIATION STRATEGY (MGENI WSS PORTION SUMMARY 2 OF 2)

The Following are key **Supply side Interventions** for the strategy:

## Dams and transfers:

- Lower uMkhomazi BWSS with Ngwadini Dam

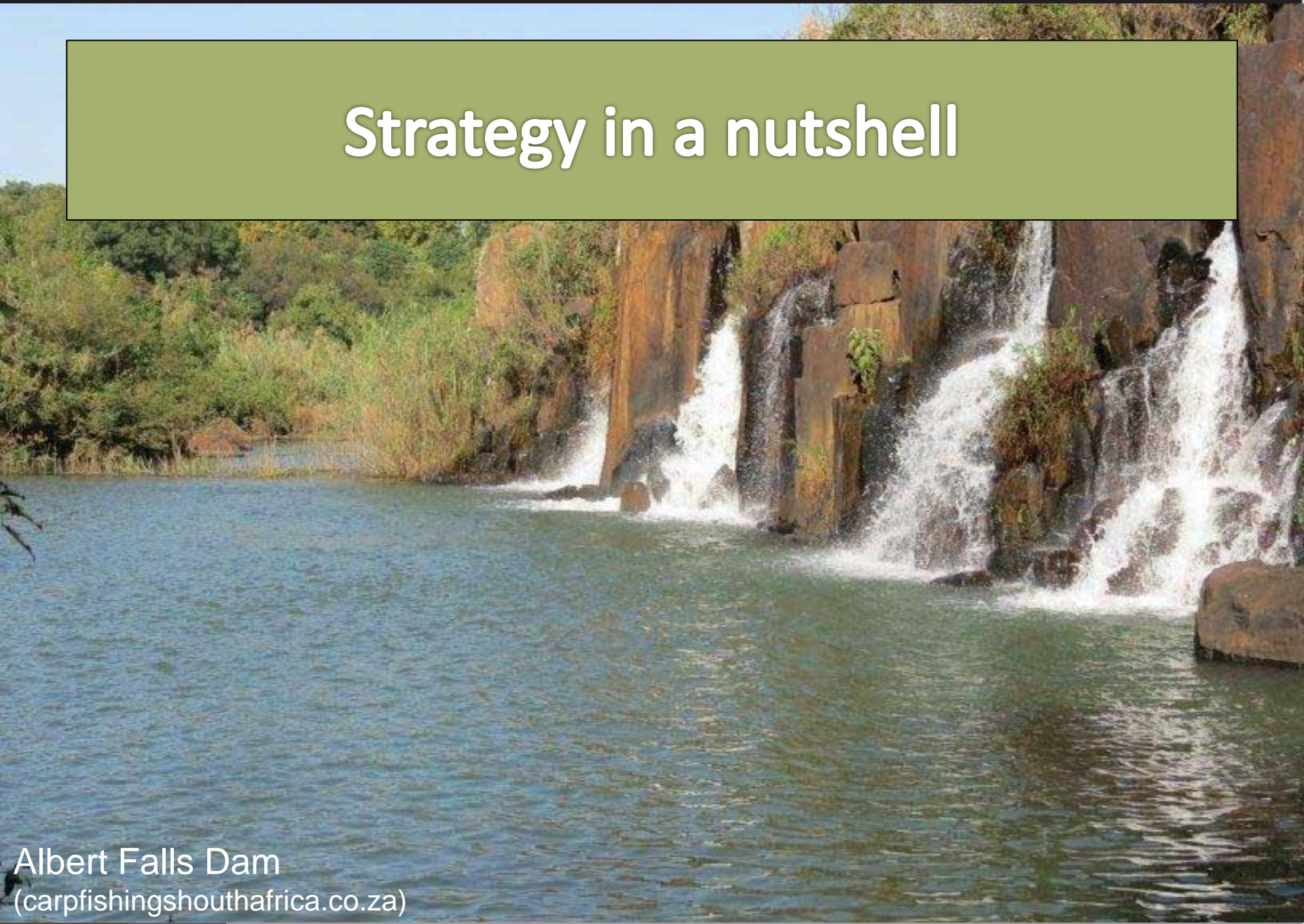
## Re-use and desalination:

- Desalination of Seawater at Lovu

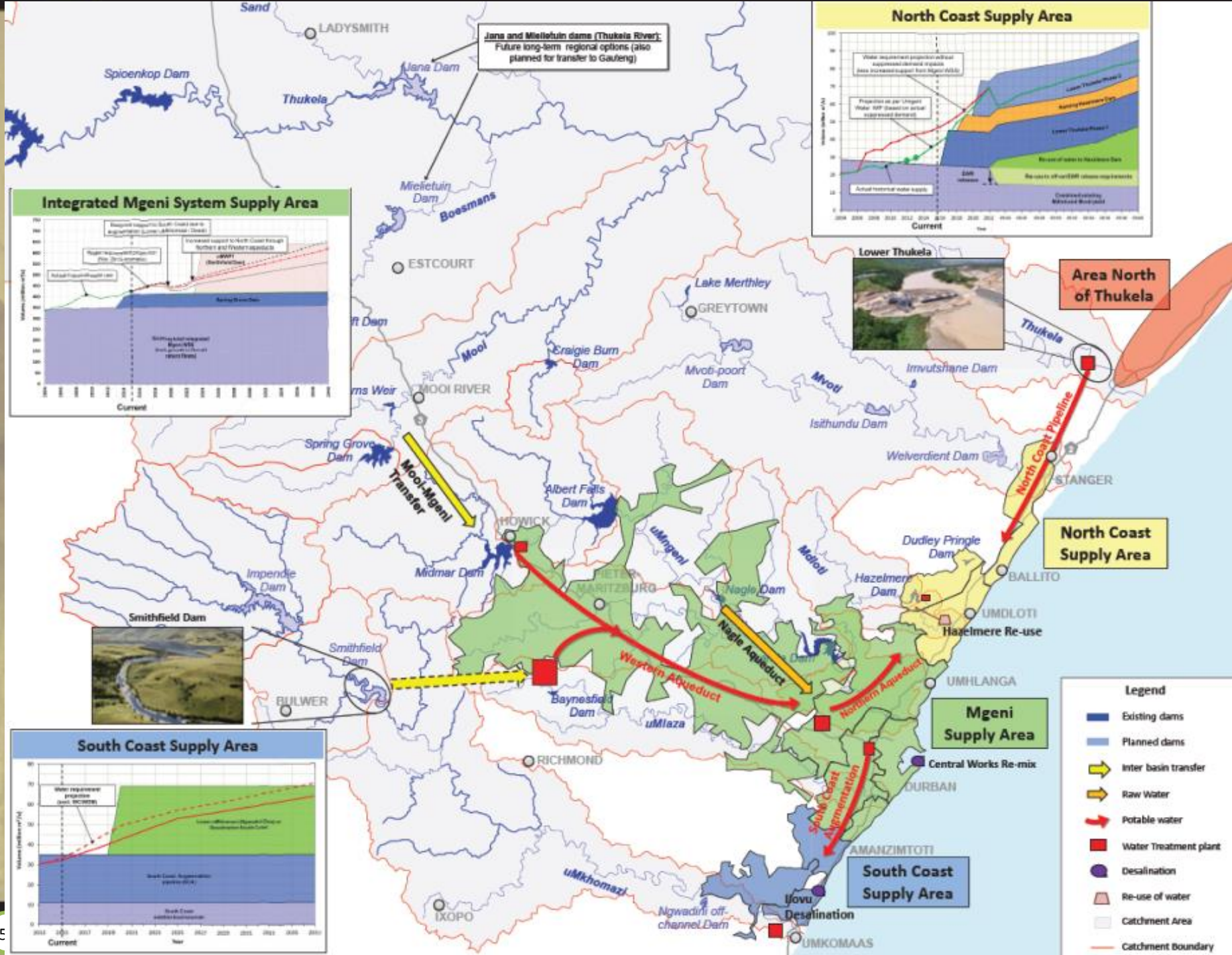
The following are interventions for which further investigations and research are recommended:

- Continued use of the Mpambanyoni Emergency scheme until shortfall is averted.
- Re-use of water on the South coast

# Strategy in a nutshell



Albert Falls Dam  
([carpfishingshouthafrica.co.za](http://carpfishingshouthafrica.co.za))



# 5. SSC THEME: FEEDBACK AND SUMMARY OF UPDATED STRATEGY

5.1 Water requirements and balances (including short-term impacts of drought)

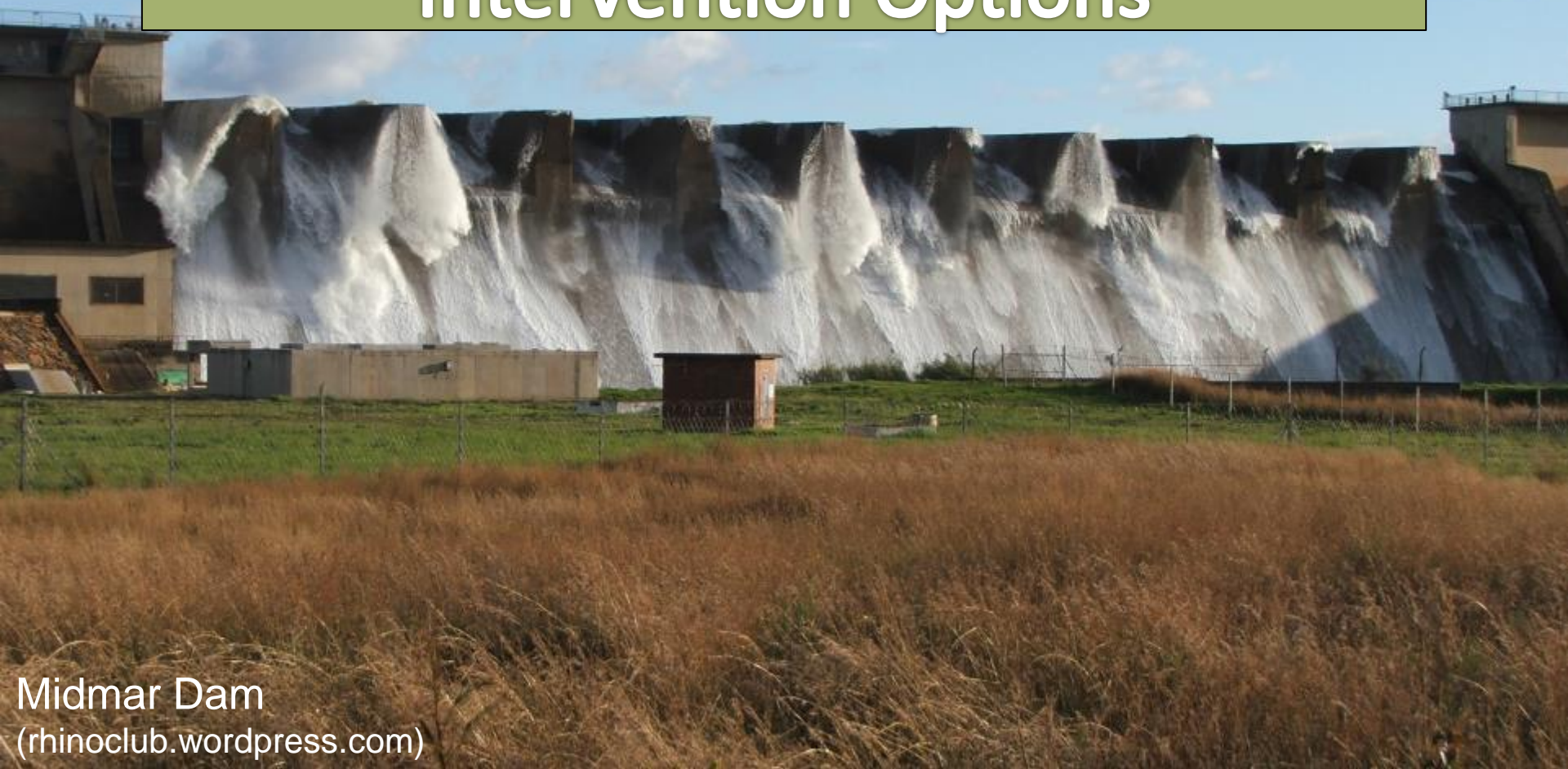
5.2 Management intervention: Management of system operation and drought interventions

5.3 Physical infrastructure interventions

5.4 Feedback on implementation of Strategy Intervention Options

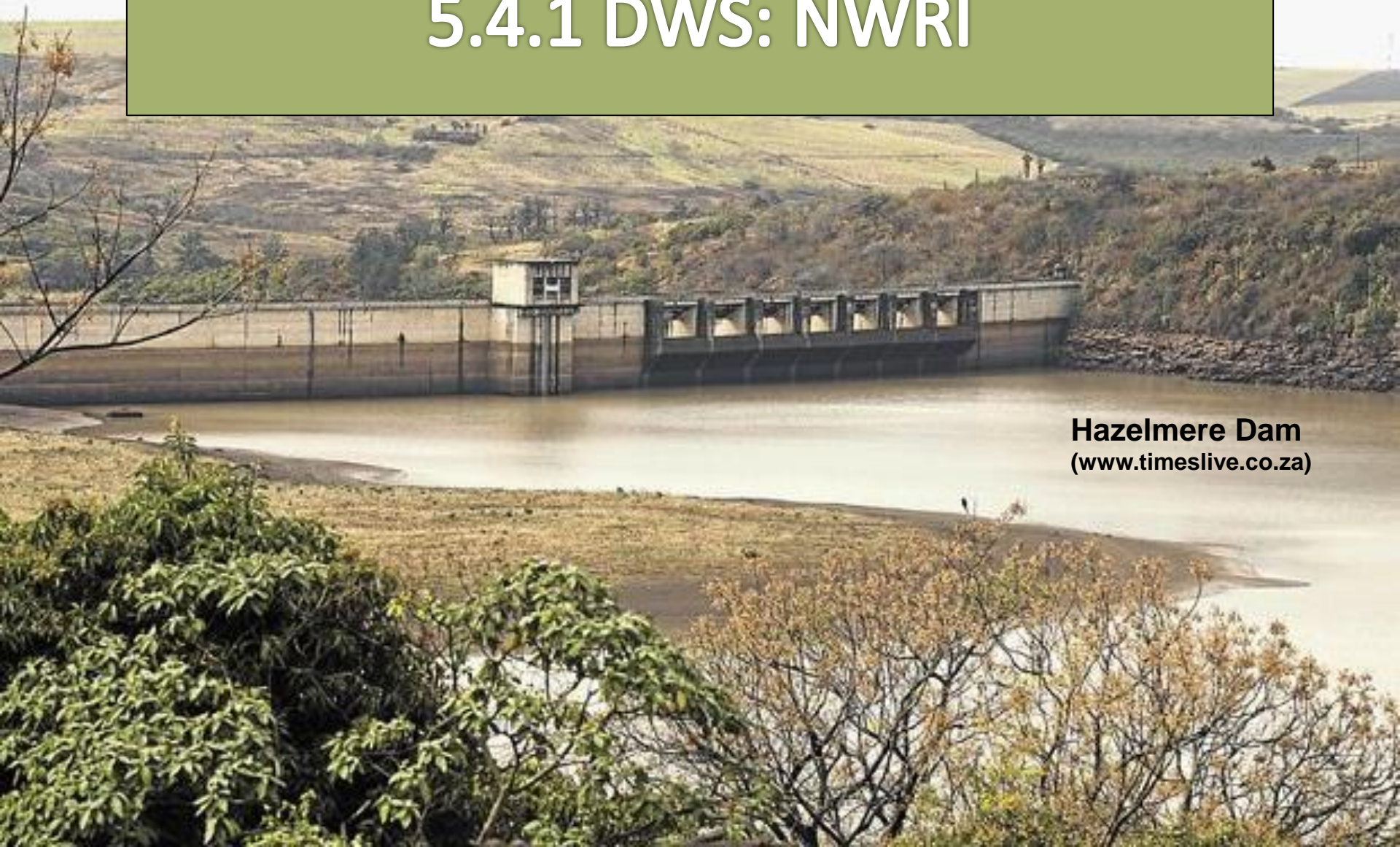
5.5 WC/WDM

# Item 5.4: Feedback on Implementation of Strategy Intervention Options



Midmar Dam  
([rhinoclub.wordpress.com](http://rhinoclub.wordpress.com))

## 5.4.1 DWS: NWRI



**Hazelmere Dam**  
([www.timeslive.co.za](http://www.timeslive.co.za))

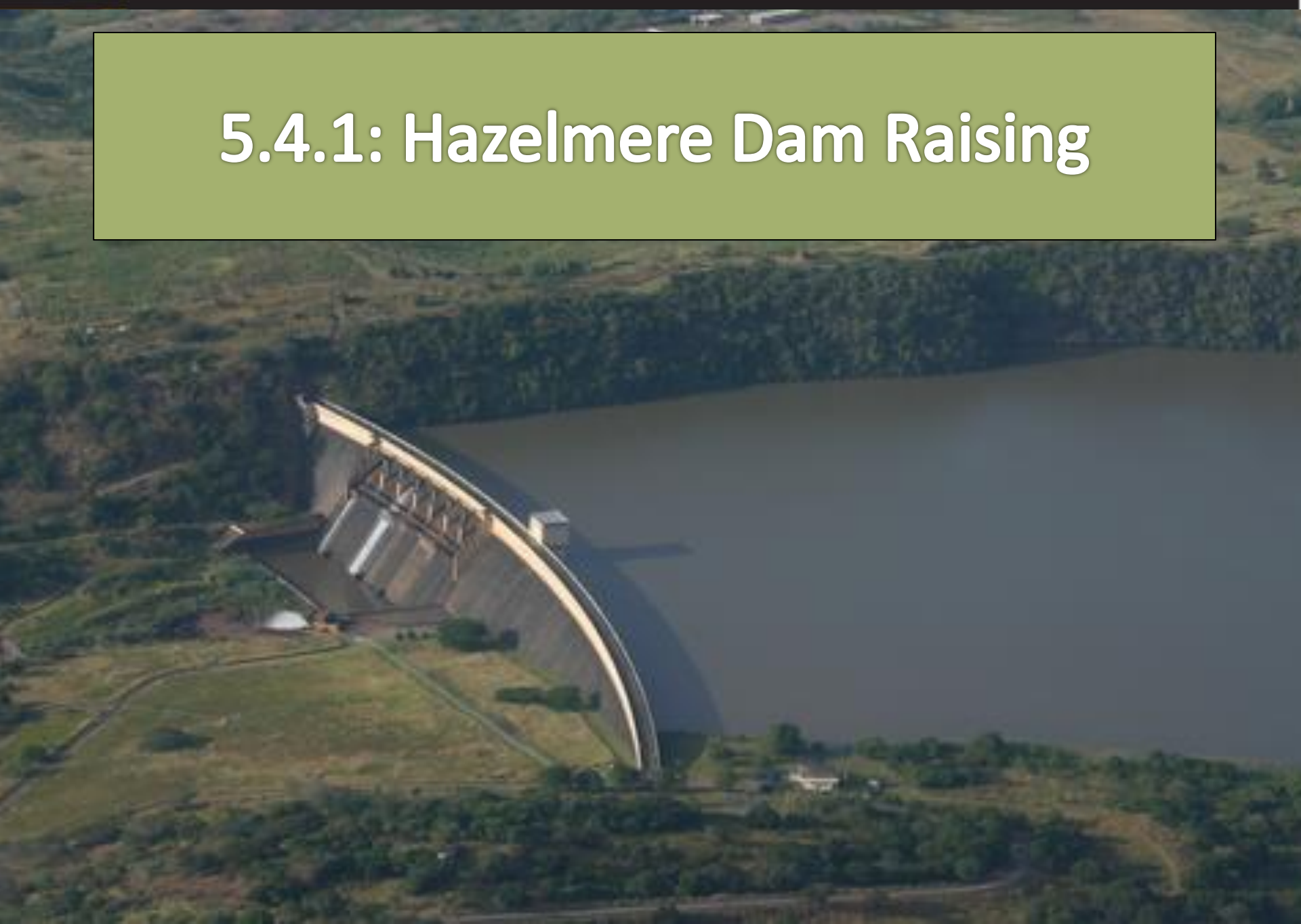
## 5.4.1: Mooi-Mgeni Transfer Scheme (MMTS)

SPRING GROVE DAM  
2013

# Project Status - MMTS-2 Dam

- Spring Grove Dam at Operation and Maintenance phase
- Water ( $4.5 \text{ m}^3/\text{s}$ ) is being transferred and the system is in testing/hand over phase

## 5.4.1: Hazelmere Dam Raising



# Project Status – Raising of Hazelmere Dam

- Project is fast-tracked and will reach its “original” full supply level by November 2016
- Project completion date is August 2017
- Hazelmere Dam will be allowed to fill up to 65% of “old” capacity and then gradually increase the capacity along with construction progress
- There were problems with the grouting, this was sorted out and the pre-stress anchoring can now continue

## 5.4.1: uMkhomazi River Project (uMWP)



# Project Status – uMkhomazi Water Project (uMWP-1)

- **MODULE 2: EIA**

- Public Participation completed
- EIA Report finalise by end September 2016
- TCTA Directive to Implement signed by October 2016
- DEA authorisation expected by March 2017
- DMR authorisation expected by July 2017
- Construction to start by end 2019
- Water delivery by end 2024

## 5.4.2 Umgeni Water



## 5.4.3 eThekweni MM

**Hazelmere Dam**  
([northcoastcourier.co.za](http://northcoastcourier.co.za))

# 5. SSC THEME: FEEDBACK AND SUMMARY OF UPDATED STRATEGY

5.1 Water requirements and balances (including short-term impacts of drought)

5.2 Management intervention: Management of system operation and drought interventions

5.3 Physical infrastructure interventions

5.4 Feedback on implementation of Strategy Intervention Options

5.5 WC/WDM

# 5. SSC THEME: FEEDBACK AND SUMMARY OF UPDATED STRATEGY

## 5.5 Water Conservation/Water Demand Management

- eThekweni MM
- uMgungundlovu DM
- Msunduzi LM
- Ilembe DM
- Ugu DM



# Item 6: Drought Situation and System Operating Forums



6.1

## Item 7: Other Studies and Initiatives



# Item 7.1: uMngeni Ecological Infrastructure Partnership (UEIP)



**uMngeni River**  
([midlandsconservanciesforum.wordpress.com](http://midlandsconservanciesforum.wordpress.com))

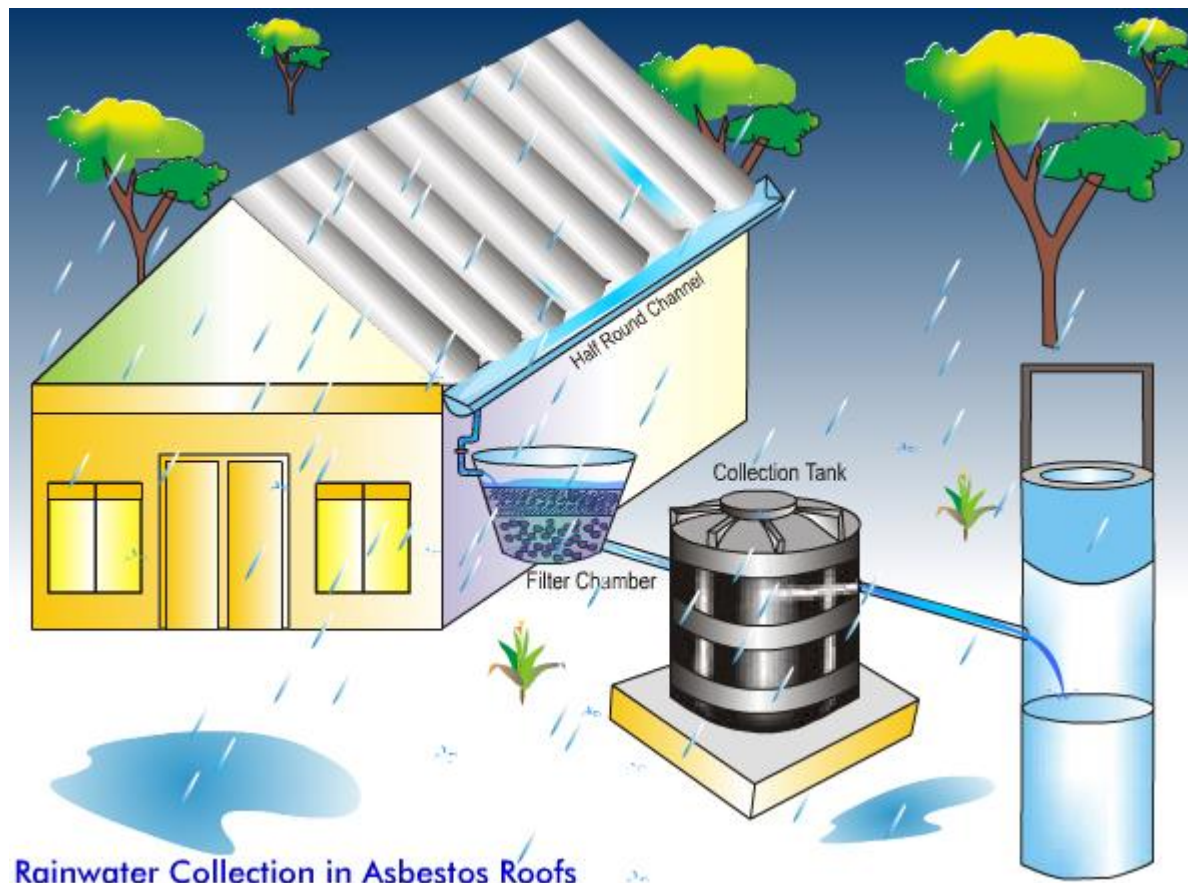
7.1

## Item 7.2: Tugela River – Observations from low flow monitoring



7.2

# Item 7.3: Rainwater harvesting



# Rainwater Harvesting

## Investigation of rainwater harvesting during previous stages of the Reconciliation Strategy

- The findings of the investigation during Stage 2 of the Reconciliation Strategy concluded that rainwater harvesting should be encouraged for “**conjunctive use**”, i.e. using rainwater at all times and switching to municipal supply only when unavoidable
- When more water is used from the RWH tank, more storage is available to capture next rainfall event
- RDP housing with varying roof sizes can harvest between **36 and 57%** of the annual **Free Basic Water** (FBW) from its roof

# Rainwater Harvesting

## Benefits of rainwater harvesting

- Food gardening for personal provision
- Gardening and landscaping
- Toilet flushing and laundry
- Creating conservation awareness with users
- And many more...

## Challenges with rainwater harvesting

- Rainfall is variable, both spatial and temporal – size of RWH model will vary across different regions
- Rainwater collected from roofs and gutters is not safe for potable uses
- Currently no SABS standards for manufacturing of plastic RWH tanks
- Need to develop suitable regulations for the use of rainwater harvesting in municipalities
- Rainwater harvesting volumes too small to show on water balances for regional schemes

## Item 8: Communication



# COMMUNICATION

- Confirmation of SSC members
- DWS project website:

<https://www.dws.gov.za/projects.aspx>

- Key message and focus
  - Status Report
  - Media Release

# Item 9: Implementation of Strategy and Way Forward



# WAY FORWARD

- Key actions for TSG
- Actions for SSC
- Way forward
  - Compile proceedings and consider comments from the meeting
  - Workshops/meetings with specific stakeholders to discuss specific technical matters, if required
  - Continuation of the study

## Item 10: Date of next meeting



# DATE OF NEXT MEETING

- **SSC MEETING NO. 11:**
  - **2 February 2017**
  - Last meeting for the Reconciliation Strategy of the KwaZulu-Natal Coastal Metropolitan Area: Phase 2



**water & sanitation**

Department:  
Water and Sanitation  
**REPUBLIC OF SOUTH AFRICA**

# Thank you