CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Contract No 313Q/2014/15

Construction of the Cape Flats 3 Bulk Sewer – Phase 2

Presented by: Clyde Koen

Making progress possible. Together.

PROJECT BACKGROUND

- Catchment area
- Investigation of route options
- Description of works
- Design considerations


Plattekloof
Parow
Goodwood
Brooklyn
Kensington
Thornton
Ravensmead
Woodstock
Epping
Observatory
Pinelands
Langa
Bonteheuwel
Athlone WWTW
Raapenberg Pump Station
Rondebosch
Bridgetown
Bridgetown Pump Station
Newlands
Athlone
Rylands
Claremont
Guguletu
Bishopscourt
Manenberg
Nyanga
Wynberg
Ottery
Browns Farms
Philippi
Constantia
Cape Flats 1 and 2 Bulk Sewers
Bergvliet
Plumstead
Cape Flats 3 Bulk Sewer
Philippi Horticultural Area
Tokai
Retreat
Westlake
Lotus River
Cape Flats WWTW
Muizenberg
Kalk Bay
5 km
Image © 2012 GeoEye
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

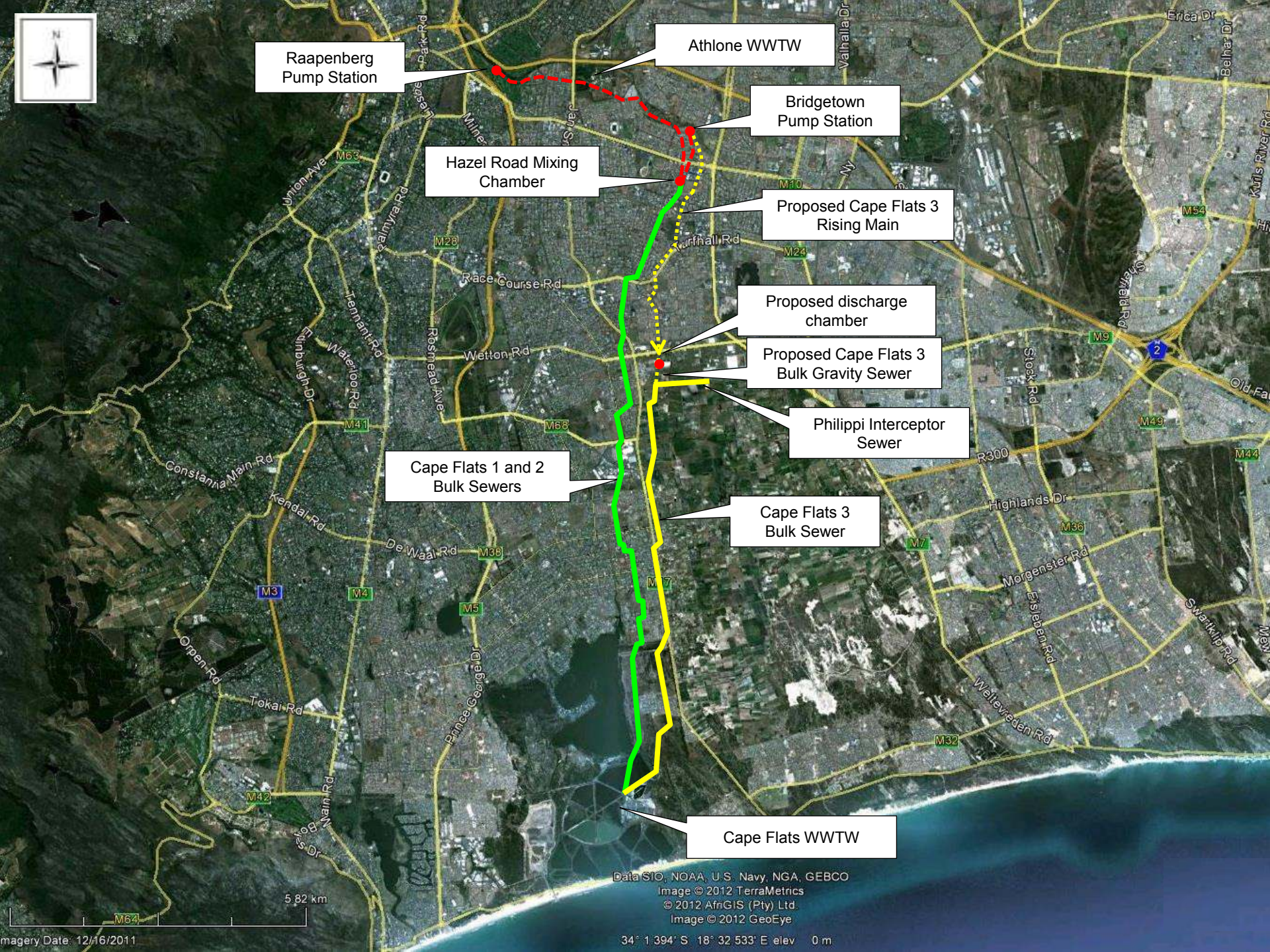
Raapenberg Pump Station
Athlone WWTW
Bridgetown Pump Station
Hazel Road Mixing Chamber
Proposed Cape Flats 3 Rising Main
Proposed discharge chamber
Proposed Cape Flats 3 Bulk Gravity Sewer
Philippi Interceptor Sewer
Cape Flats 1 and 2 Bulk Sewers
Cape Flats 3 Bulk Sewer
Cape Flats WWTW
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2012 TerraMetrics
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Image © 2012 GeoEye
34° 1.394' S 18° 32.533' E elev 0 m
5.82 km
Imagery Date: 12/16/2011

Cape Flats 1 and 2 Bulk Sewers

- The Cape Flats 1 (CF1) (1050mm and 1500mm) and Cape Flats 2 (CF2) (1500mm and 1800mm) are major strategic bulk sewers constructed in 1962 and 1969, respectively
- Start at Bridgetown Pump Station and terminate at Cape Flats WWTW
- CF1 and CF2 have limited capacity, are in poor condition and urgently need rehabilitation

Cape Flats 3 Bulk Sewer

- The existing southern section of the Cape Flats 3 (CF3) was commissioned in 1996
- The next phase of the CF3 Bulk Sewer is urgently required to relieve pressure on the CF1 and CF2
- CF1 and CF2 cannot be rehabilitated until CF3 is completed

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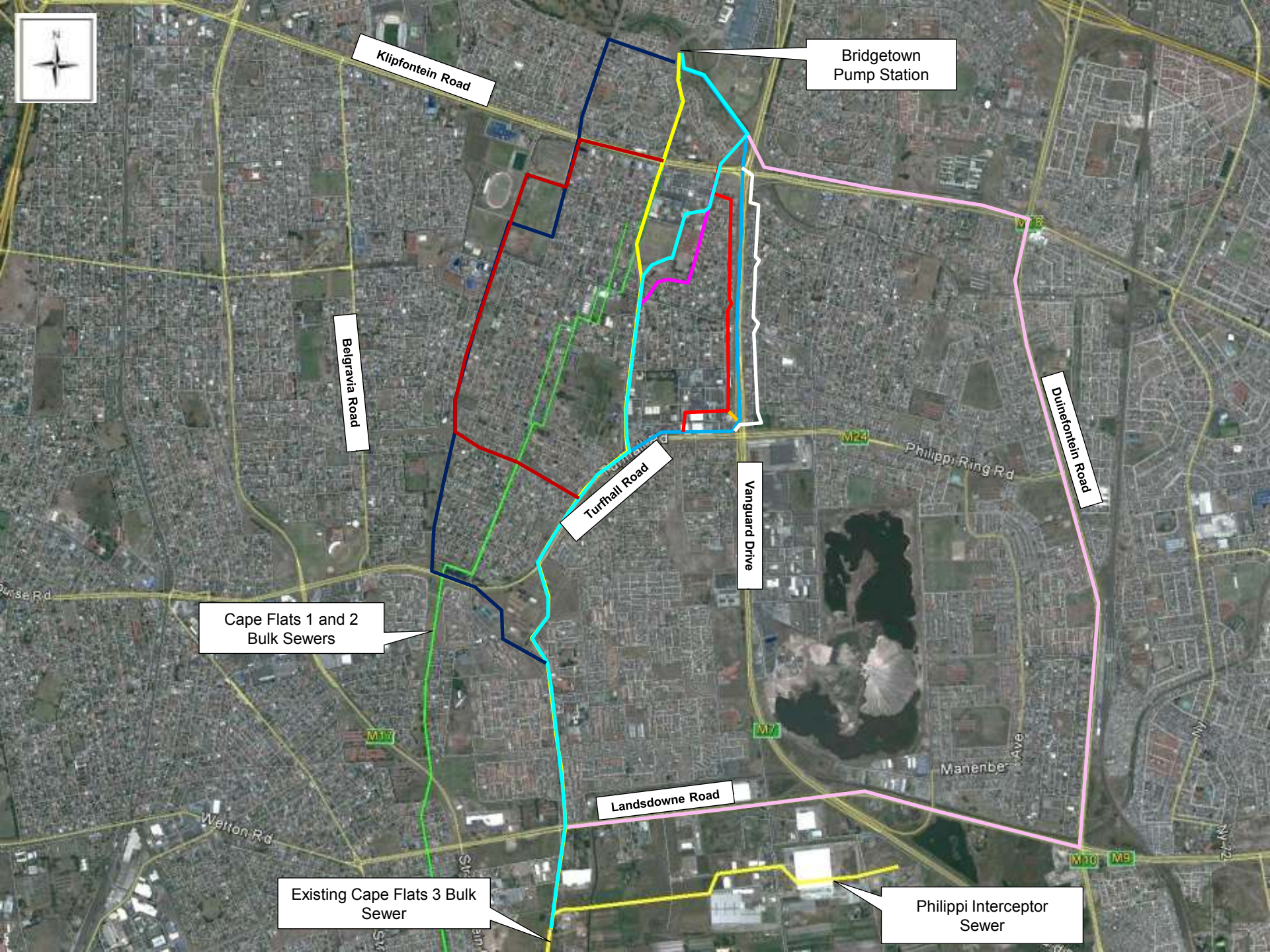
Klipfontein Road
Bridgetown Pump Station
Belgravia Road
Turffhall Road
Vanguard Drive
Duinefontein Road
Philippi Ring Rd
Cape Flats 1 and 2 Bulk Sewers
Landsdowne Road
Welton Rd
Existing Cape Flats 3 Bulk Sewer
Philippi Interceptor Sewer

PROJECT BACKGROUND

Route No.	Route description	Score out of 100						Weighted score	Rank
		Technical factors			Social Factors		Economic factors		
		Length (m)	Length of limited working width (in close proximity to existing services)	Total bends above 30° (degrees)	Direct access to private properties temporarily affected	Indirect access to private properties temporarily affected	Estimated cost		
	Weighting	*0.00*	*0.25*	*0.10*	*0.25*	*0.10*	*0.30*	*1.00*	
0A	Petunia - Hazel - Pooke	100	84	100	38	6	100	71	6
0B	Vanguard - Turfhall	86	100	81	100	97	82	92	1
1	Voorspoed - Welby - Turfhall	81	95	0	0	68	74	53	10
2	Shaanti - Angela - Vanguard - Turfhall	81	97	11	25	75	75	61	7
3	Shaanti - Angela - Reen - David - Turfhall	84	93	10	21	73	79	60	8
4	Yusuf Gool - Open Space - Pooke	90	97	45	75	77	85	81	2
5	Yusuf Gool - Open Space - Khalfe - Pooke	88	95	17	55	76	82	71	5
6	Yusuf Gool - Open Space - Pooke - Jeram - Bodau - Pooke	87	98	5	84	78	81	78	4
7	Yusuf Gool - Gatesville Flats - Pooke	90	92	52	75	73	85	79	3
8	Appledene - Blossom - Carnie - Johnston	76	72	35	58	0	71	57	9
9	Bosduif - Klipfontein - Carnie - Johnston	69	75	48	37	18	61	53	11
10	Klipfontein - Duinefontein	0	0	92	100	100	0	44	12


Bridgetown
Pump Station
Klipfontein Road
Vanguard Drive
Hazel Road
Cape Flats 1 and 2
Bulk Sewers
Turfhall Road
Landsdowne Road
Philippi
Interceptor
Sewer
Existing Cape Flats 3 Bulk
Sewer
Strandfontein Rd
Old Strandfontein Rd
M17
N7


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Bridgetown
Pump Station
Klipfontein Road
Hazel Road
Vanguard Drive
Cape Flats 1 and 2
Bulk Sewers
Turffhall Road
Landsdowne Road
Philippi
Interceptor
Sewer
Existing Cape Flats 3
Bulk Sewer
Strandfontein Rd
Old Strandfontein Rd
M17
N7


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Bridgetown Pump Station
Klipfontein Road
Vanguard Drive
Hazel Road
Cape Flats 1 and 2 Bulk Sewers
Turffhall Road
Landsdowne Road
Philippi Interceptor Sewer
Existing Cape Flats 3 Bulk Sewer
Strandfontein Rd
Old Strandfontein Rd
M17
N7


Pooke Road
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Bridgetown Pump Station
Klipfontein Road
Vanguard Drive
Hazel Road
Cape Flats 1 and 2 Bulk Sewers
Turffhall Road
Landsdowne Road
Philippi Interceptor Sewer
Existing Cape Flats 3 Bulk Sewer
Strandfontein Rd
Old Strandfontein Rd
M17
N7


M24
M24
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N
Bridgetown Pump Station
Klipfontein Road
Vanguard Drive
Hazel Road
Cape Flats 1 and 2 Bulk Sewers
Turfhall Road
Landsdowne Road
Philippi Interceptor Sewer
Existing Cape Flats 3 Bulk Sewer
M17
N7


Hanover Park Avenue
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Bridgetown
Pump Station
Klipfontein Road
Vanguard Drive
Hazel Road
Cape Flats 1 and 2
Bulk Sewers
Turfhall Road
Landsdowne Road
Philippi
Interceptor
Sewer
Existing Cape Flats 3
Bulk Sewer


Hanover Park Avenue
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Bridgetown Pump Station
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Philippi Interceptor Sewer
Existing Cape Flats 3 Bulk Sewer
Strandfontein Rd
Old Strandfontein Rd
M17
N7

Description of the Works

- Total length: 5300m
  - 5050m x 1000mm ND ductile iron rising main
  - 250m x 1200mm ND HDPE-lined concrete gravity main
- 1100m of the rising main will consist of ductile iron jacking pipes installed with a tunnel boring machine (TBM)
- 5no in-situ cast concrete air valve chambers
- 4no in-situ cast concrete scour valve chambers
- 1no in-situ cast concrete discharge chamber
- 2no in-situ cast concrete sewer manholes
- Upgrade Bridgetown Pump Station (4th pump, 110kW to 200kW motors, 500kVA to 1600kVA transformers, VSD, MCC, PLC, building, valve chamber)
- Accommodation of traffic and reinstatement of roads
- Security

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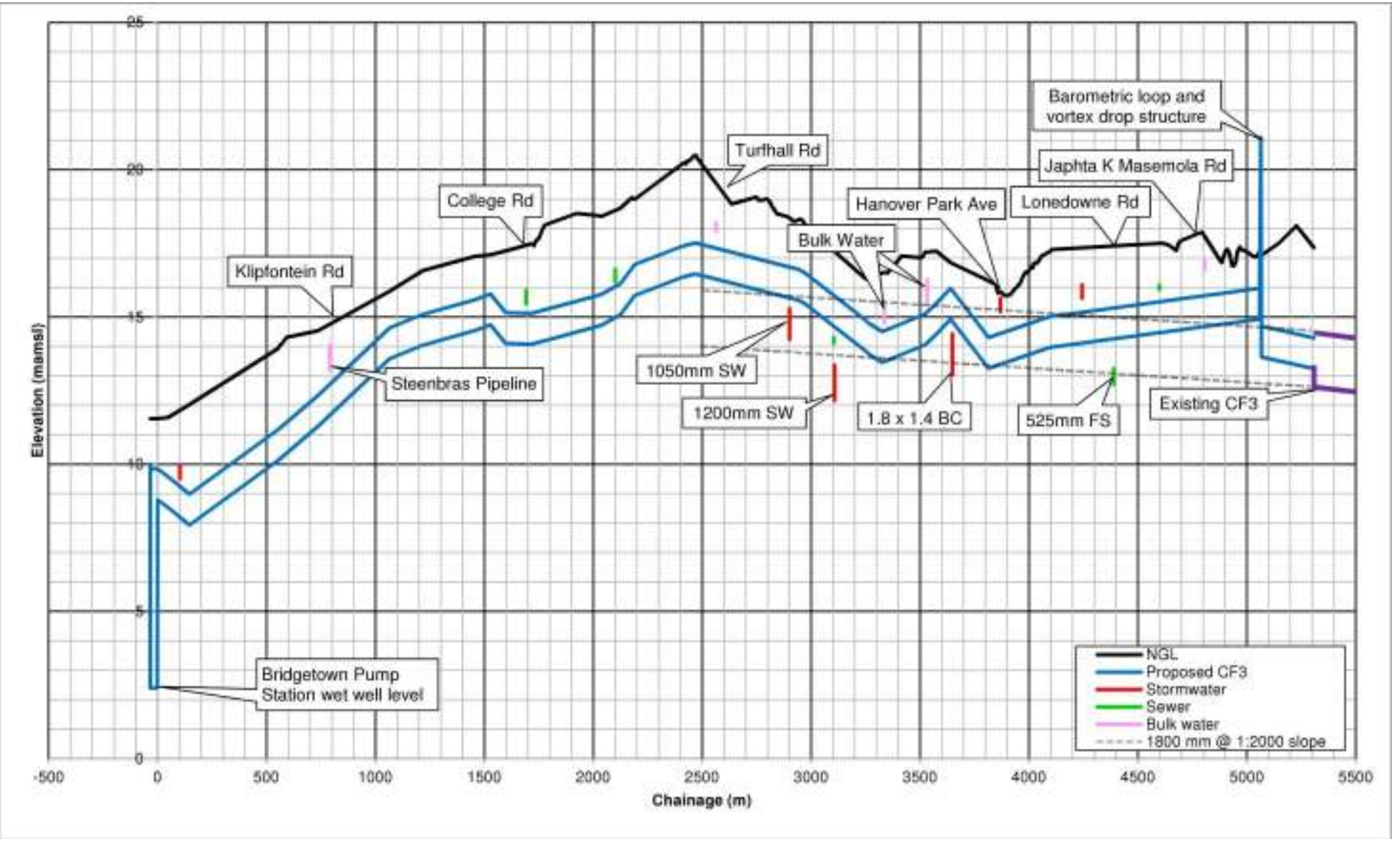
Design Considerations

- Design life = 50 years minimum
- Population and densification projections
- 2062 required capacity : 1 300 l/s (PWWF)
- Hydraulic design (rising main, gravity main, hydraulic gradient, etc.)
- Pipeline horizontal and vertical alignment ito exist services



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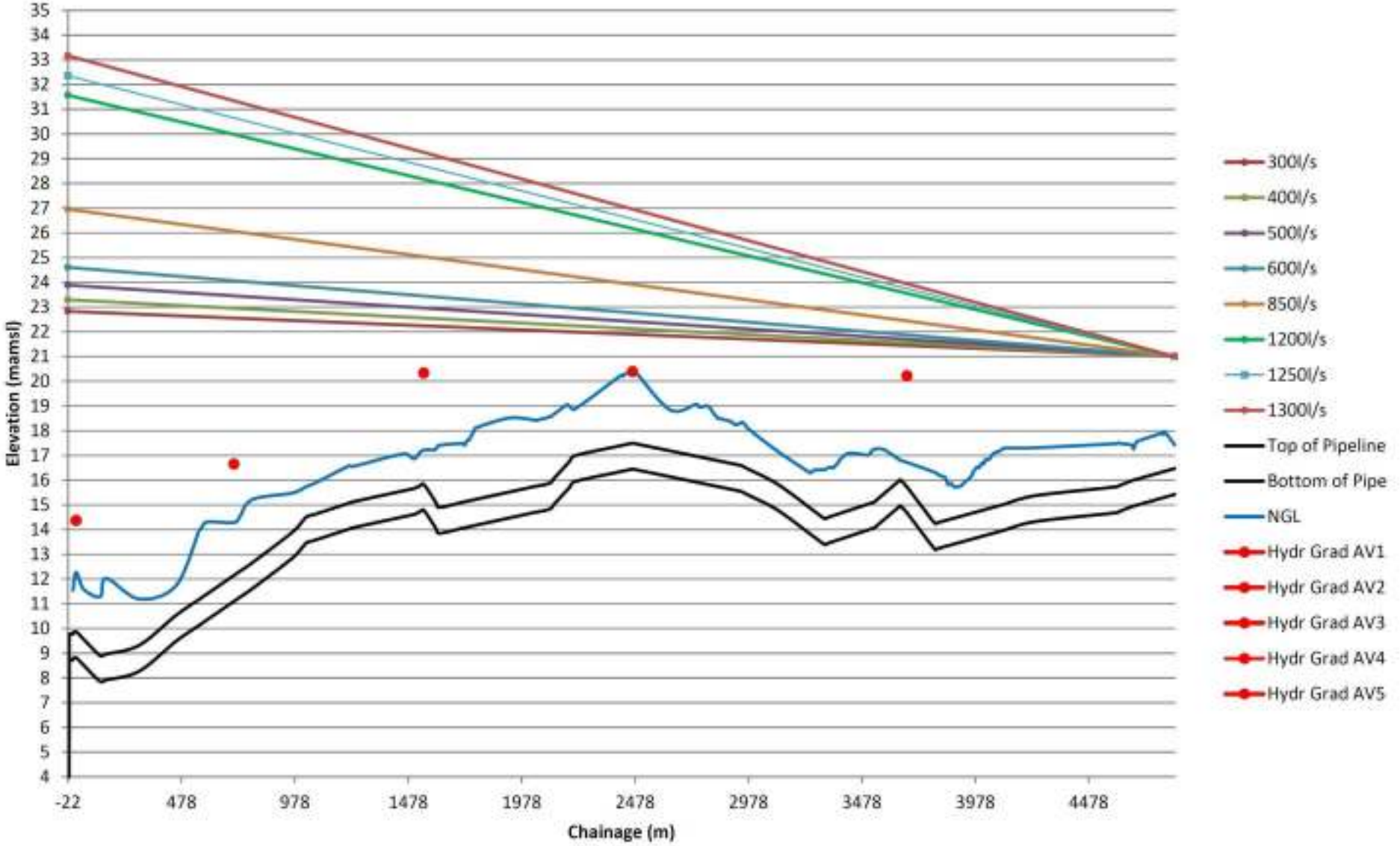
Hydraulic Gradient Assessment (1000mmø)



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Design Considerations (cont.)

- Design life = 50 years minimum
- Population and densification projections
- 2062 required capacity : 1 300 l/s (PWWF)
- Hydraulic design (rising main, gravity main, hydraulic gradient, etc.)
- Pipeline horizontal and vertical alignment ito exist services
- Corrosion and pipeline materials

GEBCO

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LAKE PIPES SA
Project: Cape Flats 3 Bulk Sewer
Client: City of Cape Town
Engineer: AECOM
Contractor: CSV Construction

Design Considerations (cont.)

- Design life = 50 years minimum
- Population and densification projections
- 2062 required capacity : 1 300 l/s (PWWF)
- Hydraulic design (rising main, gravity main, hydraulic gradient, etc.)
- Pipeline horizontal and vertical alignment ito exist services
- Corrosion and pipeline materials
- Upgrading Bridgetown Pump Station
- Operations and maintenance
- Construction


VISITOR
VISITOR
'Busy Lilly'
Cape Flats 3 Bulk Sewer
HERRENKNECHT
Tunnelvortriebstechnik


VISITOR

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THANK YOU

Clyde Koen

Clyde.koen@capetown.gov.za

Making progress possible. Together.