Central Bedfordshire Council
www.centralbedfordshire.gov.uk

Water Cycle Study Appendix A Annex 1

July 2017

Annex I: Environment Agency Input Data

The following spreadsheets were provided by the Environment Agency's Anglian region for 14 treatment works.

Central Beds WCS Assessment Datasheet April 2016

Catchment	**Barton Le Clay STW**
STW Point Code	**BARTON**
Date	
Receiving Water	Barton Brook leading to Campton Brook
WFD Waterbody ID	GB105033037500 - Barton Brook
Upstream Sample Point	None
Downstream Sample Point	17M05 - BARTON BK.ION BRIDGE HANSCOMBE END

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**1143**	-	AWCNF/11060
Post-Growth DWF	m3/day			
BOD	mg/l	**15**	95 %ile	
Ammonia	mg/l	**6**	95 %ile	
Phosphate	mg/l	**-**	AA	

Upstream River data

Variable	Unit	Mean	SD	Comments/Assumptions
Flow	m3/day	**2748**	**959**	from Low Flows Enterprise (H&T, May 2010)
BOD	mg/l	**1.15**	**0.69**	Assume u/s river quality mid-high status
Ammonia	mg/l	**0.09**	**0.05**	Assume u/s river quality mid-high status
Phosphate	mg/l	**0.022**	**0.022**	Assume u/s river quality mid-high status as ILC model predicts >90% of P from STW. No other obvious sources u/s.

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**1429**	**476**	Based on current permitted DWF of 1143 m3/day
Post-Growth flow	m3/day			
BOD	mg/l	**2.66**	**1.78**	No step change. 24.01.2000 to 12.01.2016
Ammonia	mg/l	**1.23**	**1.197**	24/05/2011 to 28/02/2016
Phosphate	mg/l	**5.21**	**1.2**	Since last step change (All pre-OSM data). 28/11/03 to 19/11/07

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **N**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	High	**4.00**	**-**
Ammonia	High	**0.60**	**-**
Phosphate	Poor	**-**	**1.058**

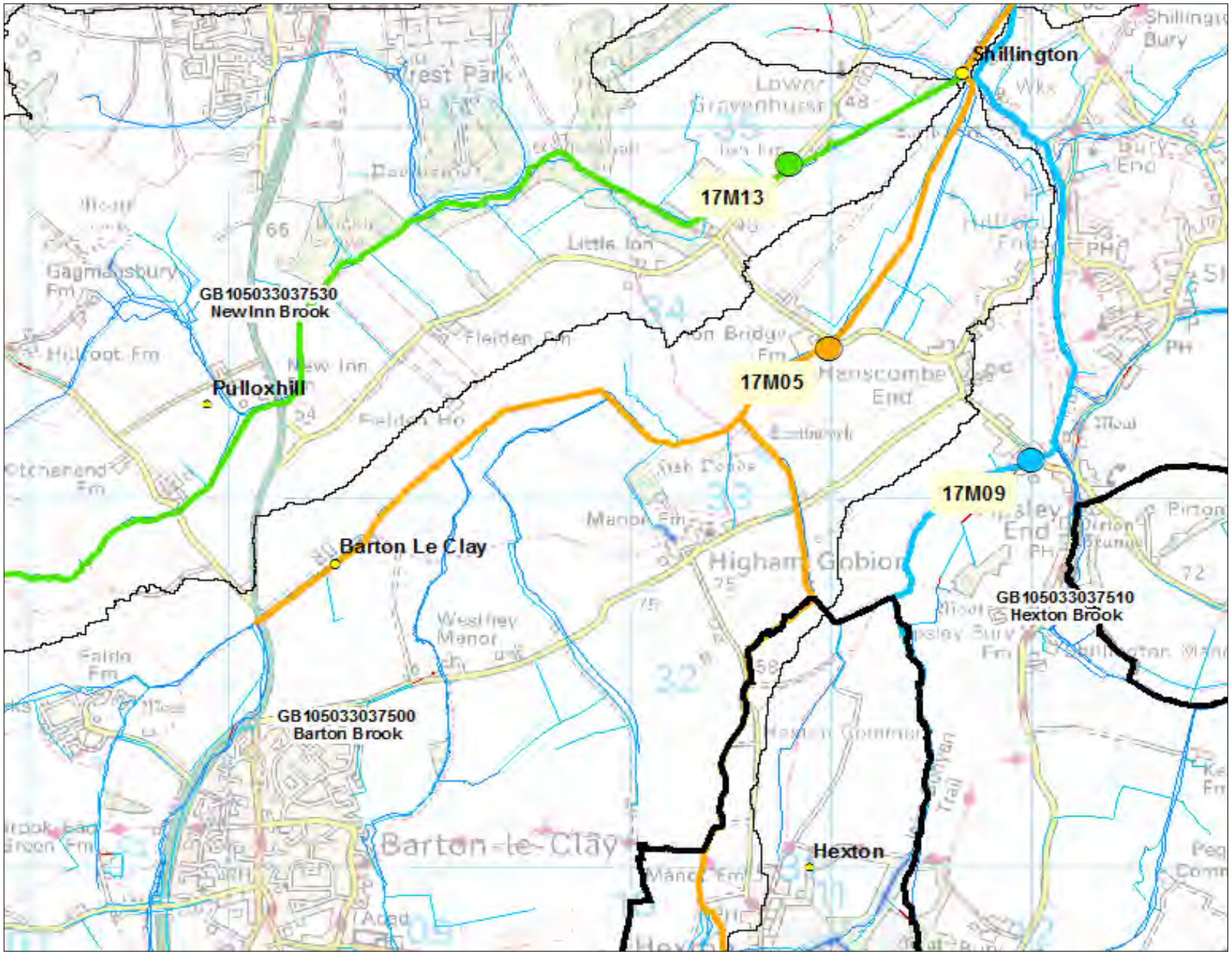
2. Improve WFD Status

Variable	Status	90 %ile (mg/l)	AA (mg/l)
Phosphate	Good	**-**	**0.197**
Phosphate	Moderate	**-**	**0.081**

Comments/Assumptions

No Deterioration assessments
RBMP2 status (based on 2012-2014 data at sample point 17M05):
BOD - High
Ammonia - High
Phosphate - Poor
- calculate permit limits required to maintain RBMP2 status

Improve WFD Status assessments
- applies to phosphate element only
- calculate permit limit required to achieve Good and Moderate status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17M13
GB105033037530
NewInn Brook
Pulloxhill
17M05
17M09
Barton Le Clay
GB105033037510
Hexton Brook
GB105033037500
Barton Brook
Hexton

Central Beds WCS Assessment Datasheet April 2016

Catchment	**Biggleswade STW**
STW Point Code	BIGGLES
Date	
Receiving Water	River Ivel
WFD Waterbody ID	GB105033038170 - Ivel (Langford to Roxton)
Upstream Sample Point	19M01 - R.IVEL BROOM MILL
Downstream Sample Point	19M04 - R.IVEL NEW ROAD BEESTON

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**4100**	-	AW1NF/1162
Post Growth DWF	m3/day		-	
BOD	mg/l	**25**	95 %ile	
Ammonia	mg/l	**10**	95 %ile	
Phosphate	mg/l	**2**	AA	*UWWTD SA(E) requirement, effective 01/01/2005*

Upstream River data

Variable	Unit	Mean	SD	Comments/Assumptions
Flow	m3/day	**194314**	**67219**	Low Flows Enterprise, H&T, March 2013
BOD	mg/l	**1.28**	**0.67**	since last step change 05.08.04 to 01.05.14
Ammonia	mg/l	**0.11**	**0.08**	since last step change 09.03.07 to 01.05.14
Phosphate	mg/l	**0.21**	**0.06**	since last step change 12.12.07 to 01.05.14

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**5125**	**1708**	Based on post-'flow' scheme DWF
Post Growth flow	m3/day			
BOD	mg/l	**5.34**	**2.77**	since last step change 03.05.07 to 18.03.16
Ammonia	mg/l	**1.29**	**0.95**	since last step change 27.11.08 to 17.03.16
Phosphate	mg/l	**1.04**	**0.38**	Since last step change. 07.02.08 to 18.03.16

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **N**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	High	**4.00**	**-**
Ammonia	High	**0.30**	**-**
Phosphate	Moderate	**-**	**0.21**

2. Improve WFD Status

Variable	Status	90 %ile (mg/l)	AA (mg/l)
Phosphate	Good	**-**	**0.088**

Comments/Assumptions

No Deterioration assessments
RBMP2 status (based on 2012-2014 data at sample point 19M04):
BOD - High
Ammonia - High
Phosphate - Moderate
- calculate permit limits required to maintain 'RBMP2 status'

Improve WFD Status assessments
- applies to phosphate element only
- assume mid-Good quality upstream (mean & sd 0.068 mg/l)
- calculate permit limit required to achieve Good status

Central Beds WCS Assessment - Permit limits required

NO DETERIORATION ASSESSMENT

	Biggleswade STW		
	BOD	Ammonia	Phosphate
River Downstream of Discharge			
No Deterioration target	High	High	Moderate
Designated Salmonid Fishery ?	N	-	-
River quality target (90-percentile or AA)	4.00	0.30	0.21
Current Consent			
Current Permited DWF (m3/day)	4100		
Consent limits (95%ile or AA)	25	10	2
Discharge Quality Required - Current Permitted			
Current Permited DWF (m3/day)	4100		
Effluent quality required (95%ile or AA)			
Discharge Quality Required - Post Growth			
Post Growth DWF (m3/day)	0		
Effluent quality required (95%ile or AA)			

IMPROVEMENT TO WFD STATUS ASSESSMENT

	Biggleswade STW		
		Phosphate	
River Downstream of Discharge			
WFD Status target		Good	
Designated Salmonid Fishery ?		-	
River quality target (90-percentile or AA)		0.088	
Discharge Quality Required - Current Permitted DWF			
Current DWF (m3/day)	4100		
Effluent quality required (95%ile or AA)			
Discharge Quality Required - Post Growth			
Pre-AMP5 DWF (m3/day)	0		
Effluent quality required (95%ile or AA)			

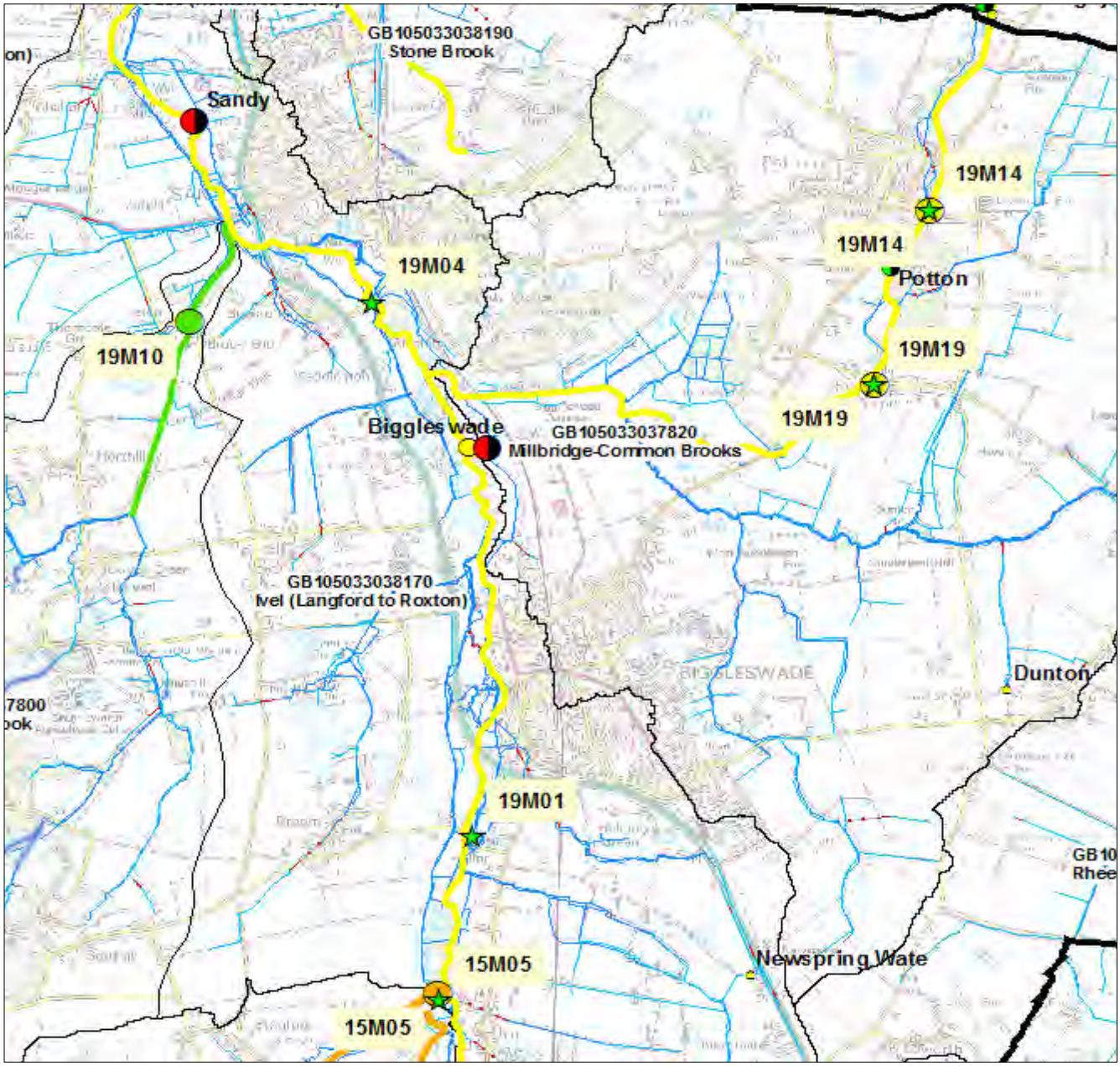
Key to 'Effluent Quality Required'

Green – no change to current consent required

Amber – consent tightening required, but within limits of conventional treatment processes

Red Value – not achievable within limits of conventional treatment processes

WCS Conclusion: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Stone Brook
Sandy
19M14
19M14
19M04
Potton
19M10
19M19
19M19
Biggleswade
GB105033037820
Millbridge-Common Brooks
GB105033038170
Ivel (Langford to Roxton)
Dunton
19M01
15M05
Newspring Wate
15M05

Monte Carlo Datasheet - for Central Beds WCS, April 2016

Catchment	**Chalton STW**
STW Point Code	**CHALTON**
Date	
Receiving Water	River Flit
WFD Waterbody ID	GB105033037640
Upstream Sample Point	16M05 - monitoring ceased in 2008
Downstream Sample Point	16M06 - FANCOTT BK.TRIB.IVEL CRANFORD BRIDGE

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**15000**	-	AW1NF/876
Post Growth DWF	m3/day			Incorporating all proposed growth & development in Local Plans
BOD	mg/l	**12**	95 %ile	
Ammonia	mg/l	**1**	95 %ile	Limit applies from 1st April 2018 (AMP6 scheme)
Phosphate	mg/l	**2**	AA	UWWTD SA(E) requirement since 1999

Upstream River data

Variable	Unit	Mean	SD	Comments/Assumptions
Flow	m3/day	**1037**	**432**	from Low Flows Enterprise, October 2012
BOD	mg/l	**0.86**	**0.53**	Since last step change. 25.11.04 to 25.03.08 [sample point not monitored since 2008]
Ammonia	mg/l	**0.04**	**0.04**	No step changes. 24.01.00 to 25.03.08 [sample point not monitored since 2008]
Phosphate	mg/l	**0.058**	**0.058**	Assume mid-Good quality (for sample point 16M06)

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**18750**	**6250**	Based on current permitted DWF of 15000 m3/day
Post Growth DWF	m3/day			
BOD	mg/l	**3.22**	**1.21**	Since last step change. 01.02.10 to 28.02.16
Ammonia	mg/l	**1.78**	**0.98**	Since last step change. 21.10.10 to 28.02.16
Phosphate	mg/l	**0.92**	**0.37**	Since last step change 03.12.07 to 02.02.16

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **N**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	High	**4.00**	-
Ammonia	High	**0.30**	-
Phosphate	Poor	-	**1.03**

2. Improve WFD Status

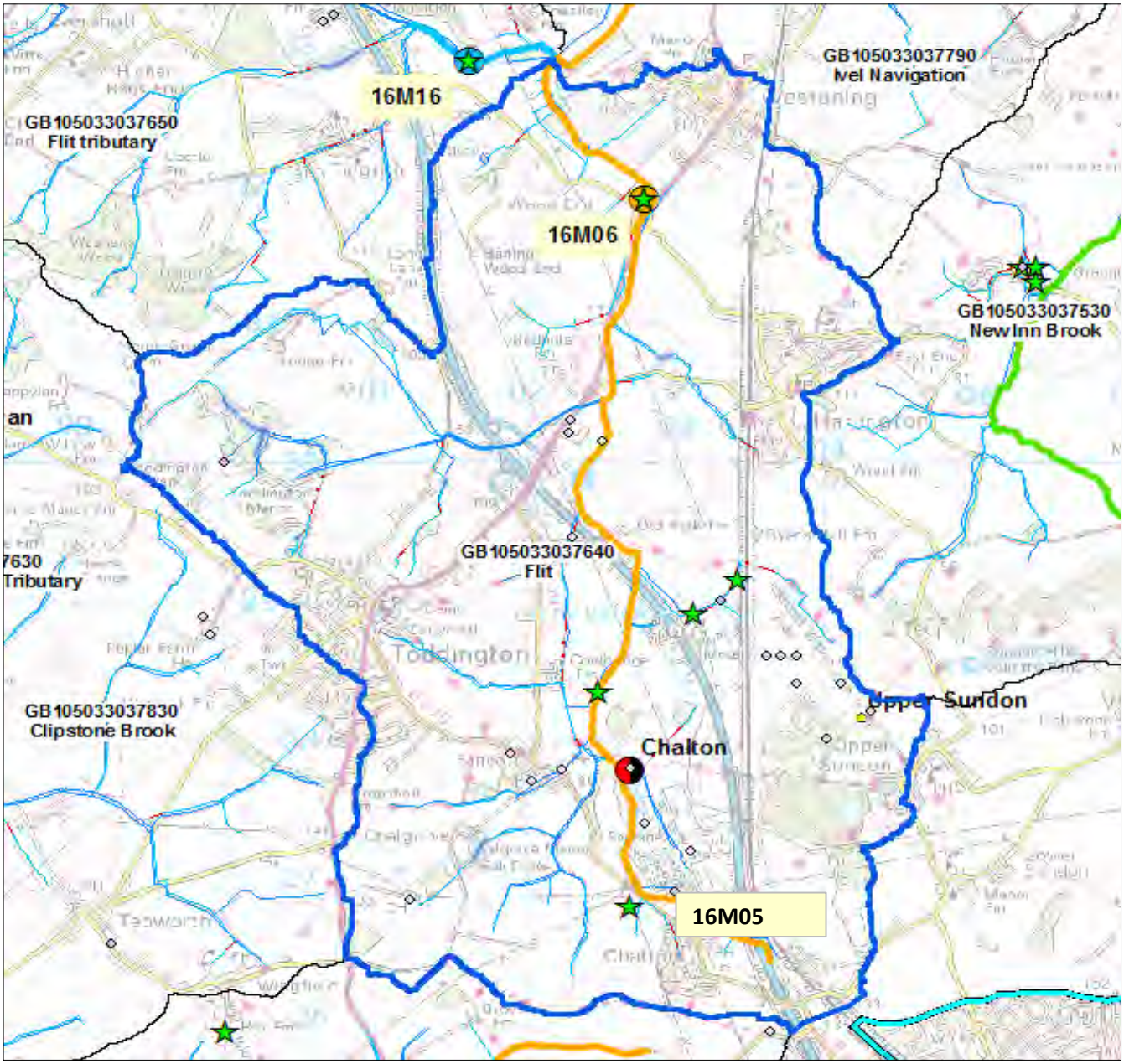
Variable	Status	(mg/l)	(mg/l)
Phosphate	Good	-	**0.075**
Phosphate	Moderate	-	**0.184**

Comments/Assumptions

No Deterioration assessments
RBMP2 status (based on 2012-2014 data at sample point 16M06):
BOD - High
Ammonia - High
Phosphate - Poor
- calculate permit limits required to maintain RBMP2 status at current permitted DWF and at '2031 DWF' incorporating proposed growth & development
(N.B. AMP6 WFD No Deterioration permit limit of 1 mg/l is now confirmed. The new permit will be effective from 1st April 2018)

Improve WFD Status assessments
- applies to phosphate element only
- calculate permit limit required to achieve Good status and Moderate status for current and 2031 DWF scenarios

N.B. Chalton STW is also identified as a receptor for additional foul flows from Luton. Assessment needs to consider the cumulative discharge rate.


GB105033037790
Ivel Navigation
16M16
GB105033037650
Flit tributary
16M06
GB105033037530
New Inn Brook
GB105033037640
Flit
Toddington
Upper Sundon
GB105033037830
Clipstone Brook
Chalton
16M05

Monte Carlo Datasheet - for Central Beds WCS, April 2016

STW	**Clifton STW**
Point Code	Clifton
Date	
Receiving Water	Henlow Brook
WFD Waterbody ID	GB105033037770 - Henlow Brook
Upstream Sample Point	15M03 - HENLOW BK.TRIB.IVEL HENLOW CROSS
Downstream Sample Point	15M05 - HENLOW BK.TRIB.IVEL D/S LANGFORD MILL

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**2931**	-	**AW1NF944**
Post Growth DWF	m3/day			
BOD	mg/l	**14**	95 %ile	
Ammonia	mg/l	**5**	95 %ile	
Phosphate	mg/l	**1**	AA	AMP4 HD scheme, effective 01/04/10

Upstream River data

Variable	Unit	Mean	SD/Q95	Comments/Assumptions
Flow	m3/day	**4840**	**690**	Flow data from file - no attribution.
BOD	mg/l	**1.14**	**1.09**	Since last step change, single outier removed. 21/09/04 to 05/12/07
Ammonia	mg/l	**0.2**	**0.44**	No step changes. Date range 19/01/00 to 07/04/16
Phosphate	mg/l	**0.069**	**0.069**	Upstream status Poor due to MoD discharge. Assume mid-Good for WCS calculations.

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Consented Flow	m3/day	**3664**	**1221**	Based on current consented DWF of 2931 m3/day
Post Growth DWF	m3/day			
BOD	mg/l	**1.84**	**1.83**	19/05/10 to 24/03/16 (i.e. since last step change)
Ammonia	mg/l	**0.17**	**0.5**	03/05/08 to 23/03/16 (i.e. since last step change)
Phosphate	mg/l	**0.4**	**0.43**	09/04/09 to 24/03/16 (i.e. since last step change)

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **N**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	High	**4.00**	**-**
Ammonia	High	**0.30**	**-**
Phosphate	Poor	**-**	**1.091**

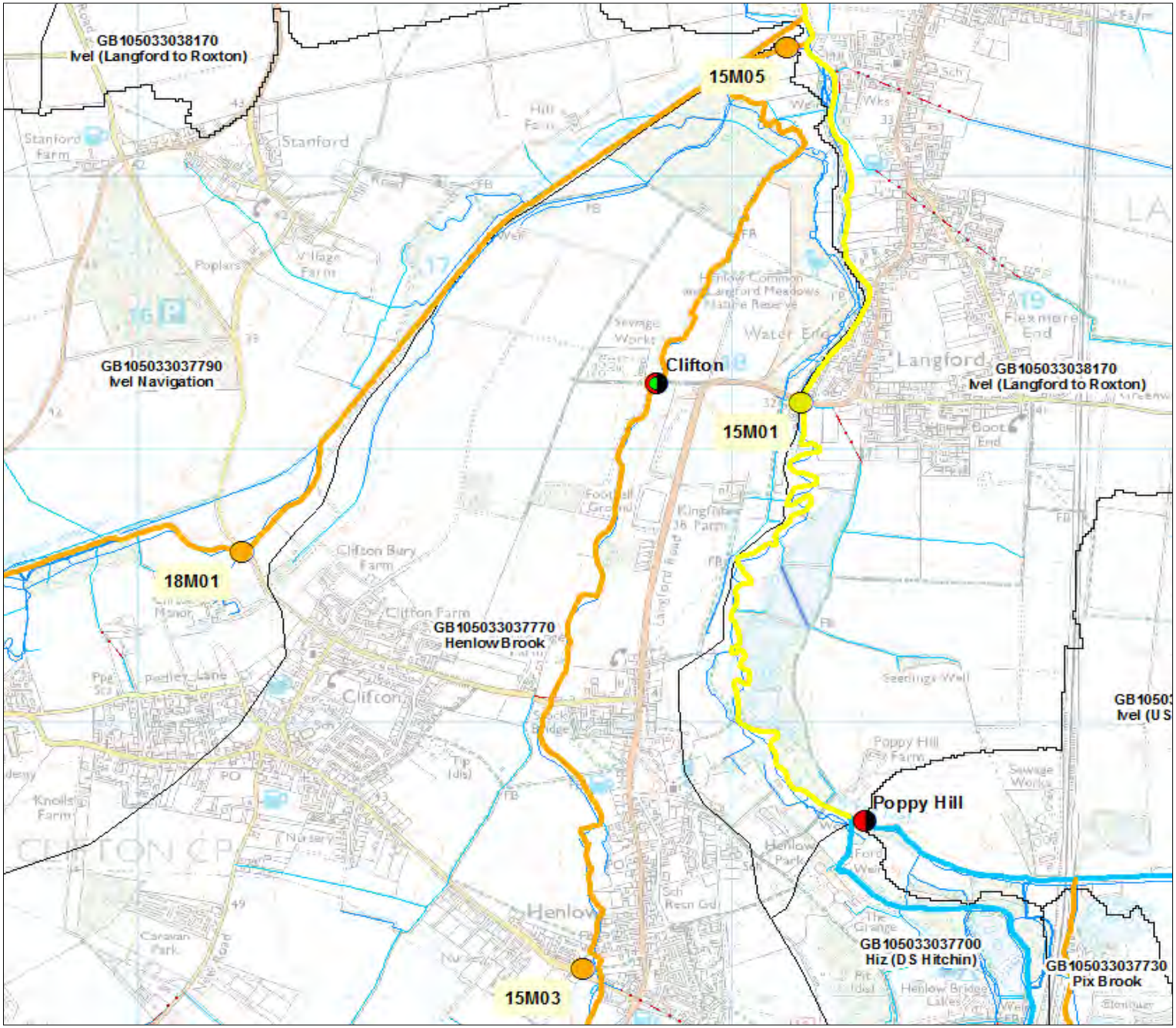
2. Improve to Good Status

Variable	Status	90 %ile (mg/l)	AA (mg/l)
Phosphate	Good	**-**	**0.089**
Phosphate	Moderate	**-**	**0.212**

Comments/Assumptions

No Deterioration
RBMP2 status (based on 2012-2014 data at sample point 15M05):
BOD - High
Ammonia - High
Phosphate - Poor

Improve to Good Status
- Applies to phosphate element only
- calculate permit limits required to achieve Moderate and Good status
(assume the upstream RAF discharge has been 'sorted', and use mid-Good upstream quality: mean and sd 0.069 mg/l)


GB105033038170
Ivel (Langford to Roxton)
15M05
GB105033037790
Ivel Navigation
Clifton
GB105033038170
Ivel (Langford to Roxton)
15M01
18M01
GB105033037770
Henlow Brook
Poppy Hill
GB105033037700
Hiz (D S Hitchin)
GB105033037730
Pix Brook
15M03

WFD Assessment Datasheet - Central Beds WCS 2016

Catchment	**Clophill STW**
STW Point Code	CLOPHIL
Date (& Officer)	10/10/2016 (SH)
Receiving Water	River Flit
WFD Waterbody ID	GB105033037790 - Flit and Ivel Navigation d/s of Shefford
Upstream Sample Point	No appropriate u/s sample point
Downstream Sample Point	16M03 - R.FLIT BEADLOW RD.BR.

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**1800**	-	AW1NF127
BOD	mg/l	**45**	95 %ile	
Ammonia	mg/l	**15**	95 %ile	
Phosphate	mg/l	**-**	AA	*(Proposed AMP5 WFD scheme was 'technically infeasible')*

Upstream River data

Variable	Unit	Mean	SD/Q95	Comments/Assumptions
Flow	m3/day	46200	19200	*From old calculations - origin uncertain*
BOD	mg/l	**1.15**	**0.69**	No data - assume mid-High status
Ammonia	mg/l	**0.26**	**0.15**	No data - assume mid-Good status
Phosphate	mg/l	**0.612**	**0.612**	No data - assume mid-Poor status

STW - current discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**2250**	**750**	Standard assumptions: Mean = 1.25 x DWF, sd= mean / 3
Current Flow	m3/day	**1417**	**260**	2015 Flow compliance data. ****Please check with AWS****
BOD	mg/l	**15.63**	**7.73**	Data since latest setp change. 04/03/2010 to 22/08/2016
Ammonia	mg/l	**4.66**	**3.76**	Data since latest setp change. 30/01/2008 to 22/08/2016
Phosphate	mg/l	**7.09**	**1.09**	Since last step change. 30/10/00 to 06/05/08 (No OSM data)

Downstream WFD Targets

Salmonid Fishery (Y/N) ?	**N**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	High	**4.00**	**-**
Ammonia	Good	**0.60**	**-**
Phosphate	Poor	**-**	**1.036**

2. Improve WFD Status

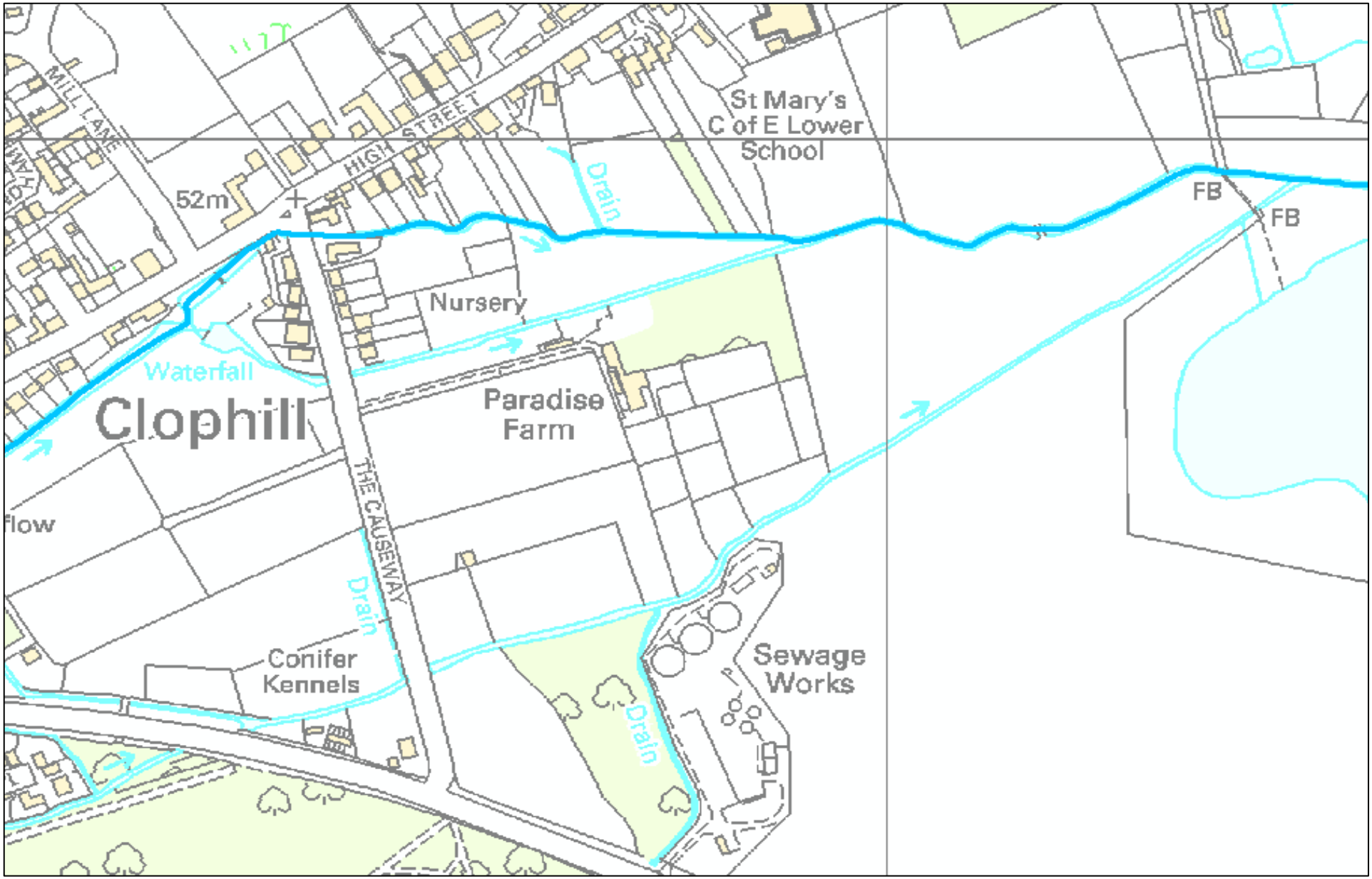
Variable	Status	90 %ile (mg/l)	AA (mg/l)
Phosphate	Good	**-**	**0.076**
Phosphate	Moderate	**-**	**0.187**

Comments/Assumptions

No Deterioration assessments
RBMP2 status (based on 2012-2014 data at sample point 16M03):
BOD - High *(carried over from RBMP1)*
Ammonia - Good
Phosphate - Poor
- calculate permit limits required to maintain RBMP2 status

Improve WFD Status assessments
- applies to phosphate element only
- **assume mid-Good status upstream (mean and sd 0.059 mg/l)**
- calculate permit limits required to achieve Good and Moderate status


16M03
R.FLIT BEADLOW RD.BR.
Clophill STW
16M15
RUNNING WATERS A507 HOLLINGTON JUNCTION
Clophill


MILL LANE
HIGH STREET
52m
St Mary's
C of E Lower
School
Drain
FB
FB
Nursery
Waterfall
Clophill
Paradise
Farm
THE CAUSEWAY
flow
Drain
Conifer
Kennels
Drain
Sewage
Works

Monte Carlo Datasheet - for Central Beds WCS, April 2016

Catchment	**Dunstable STW**
Date	
Receiving Water	Ouzel Brook
WFD Waterbody ID	GB105033030530 - Ouzel Brook
Upstream Sample Point	06M30 (monitoring ceased in 2003)
Downstream Sample Point	06M03 - OUZEL BK.TRIB.OUZEL STANBRIDGEFORD

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**17000**	-	AWCNF/10397
Post Growth DWF	m3/day			Incorporating all proposed growth & development in Local Plans
BOD	mg/l	**12**	95 %ile	
Ammonia	mg/l	**3**	95 %ile	Limit applies from 1st April 2018 (AMP6 scheme)
Phosphate	mg/l	**2**	AA	UWWTD SA(E) requirement since 2003

Upstream River data

Variable	Unit	Mean	SD	Comments/Assumptions
Flow	m3/day	**2765**	**950**	from Low Flows Enterprise, October 2012
BOD	mg/l	**2.2**	**2.66**	Data from 08.10.01 to 04.08.03 [sample point not monitored since 2003]
Ammonia	mg/l	**0.19**	**0.21**	Data from 08.10.01 to 04.08.03 [sample point not monitored since 2003]
Phosphate	mg/l	**0.02**	**0.01**	Data from 08.10.01 to 04.08.03 [sample point not monitored since 2003]

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**21250**	**7083**	Based on current permitted DWF of 17000 m3/day
Post Growth flow	m3/day	**-**	**-**	
BOD	mg/l	**2.59**	**1.47**	Since last step change 30.09.04 to 30.03.16
Ammonia	mg/l	**0.62**	**0.75**	Since last step change. 11.05.07 to 26.11.15
Phosphate	mg/l	**1.7**	**0.78**	Since last step change 28.01.15 to 30.03.16

Downstream WFD Targets

Salmonid Fishery (Y/N) ?	**N**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	High	**4.00**	**-**
Ammonia	High	**0.30**	**-**
Phosphate	Poor		**1.031**

2. Improve WFD Status

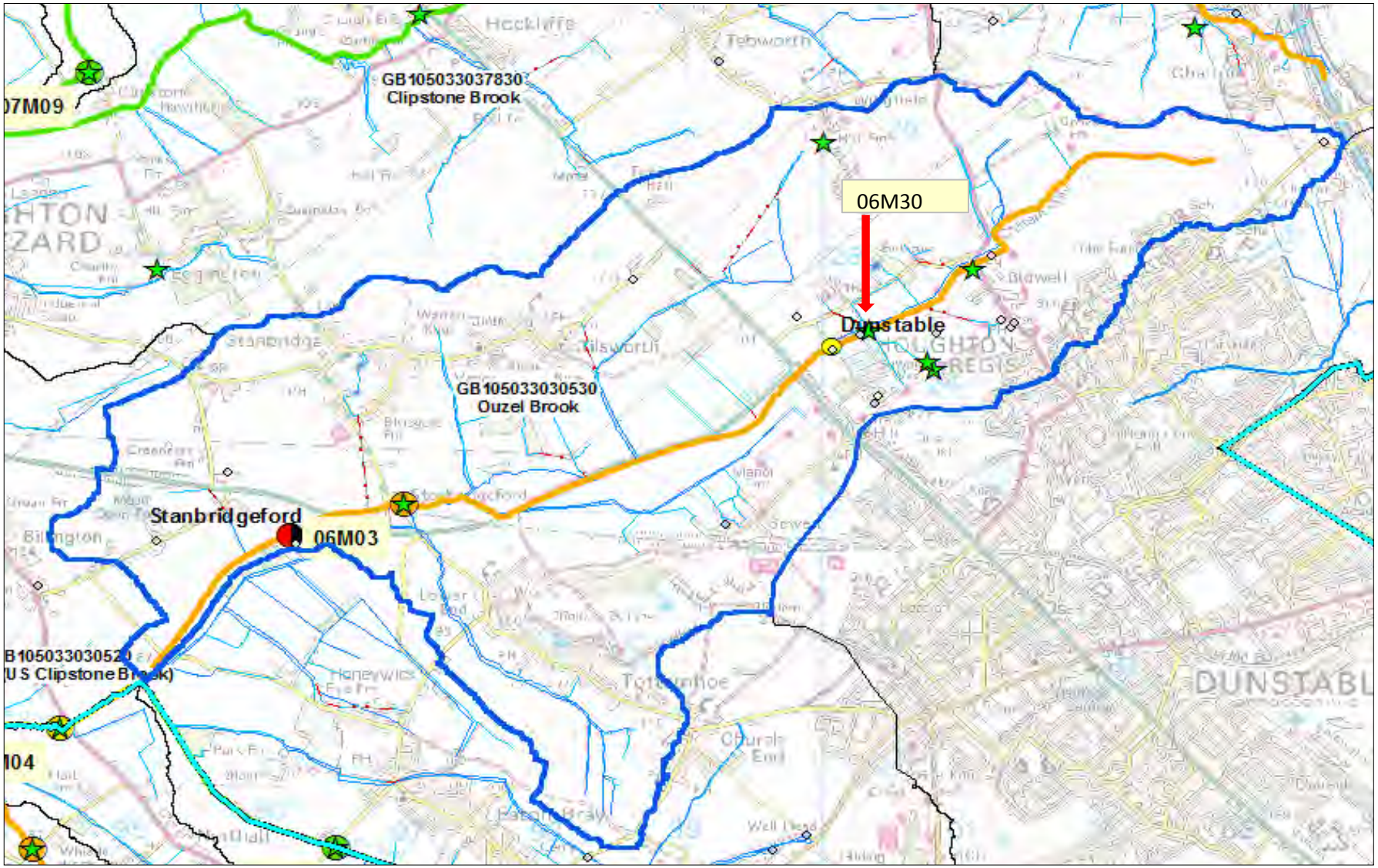
Variable	Status	(mg/l)	(mg/l)
Phosphate	Good	**-**	**0.075**
Phosphate	Moderate	**-**	**0.185**

Comments/Assumptions

No Deterioration assessments
RBMP2 status (based on 2012-2014 data at sample point 06M03):
BOD -High
Ammonia -High
Phosphate -Poor
- calculate permit limits required to maintain RBMP2 status at current permitted DWF and at '2031 DWF' incorporating proposed growth & development
(N.B. AMP6 WFD No Deterioration permit limit of 3 mg/l is now confirmed. The new permit will be effective from 1st April 2018)

Improve WFD Status assessments
- applies to phosphate element only
- calculate permit limit required to achieve Good status and Moderate status for current and 2031 DWF scenarios

N.B. Dunstable STW is also identified as a receptor for additional foul flows from Luton. Assessment needs to consider the cumulative discharge rate.


GB105033037830
Clipstone Brook
06M30
Dunstable
GB105033030530
Ouzel Brook
Stanbridgeford
06M03

Monte Carlo Datasheet - for Central Beds WCS, April 2016

Catchment	**Flitwick STW**
STW Point Code	FLITWCK
Date	
Receiving Water	Running Waters/Steppingley Brook
WFD Waterbody ID	GB105033037660 - Running Waters-Steppingley
Upstream Sample Point	16M07 - Running Waters, A5120 Rd Br, Flitwick. *Stopped sampling 2008*
Downstream Sample Point	16M15 - RUNNING WATERS A507 HOLLINGTON JUNCTION

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**8300**	-	AWCNF/2057
Post Growth DWF	m3/day		-	
BOD	mg/l	**15**	95 %ile	
Ammonia	mg/l	**5**	95 %ile	
Phosphate	mg/l	**2**	AA	*UWWTD SA(E) requirement - since 01/01/05*

Upstream River data

Variable	Unit	Mean	SD/Q95	Comments/Assumptions
Flow	m3/day	**8640**	**2160**	Low Flows 2000, 26/11/2007 (for AMP5 planning)
BOD	mg/l	**1.30**	**1.2**	Since last step change. 23/07/04 to 01/04/08 (no recent data)
Ammonia	mg/l	**0.06**	**0.062**	Since last step change. 23/04/04 to 01/04/08 (no recent data)
Phosphate	mg/l	**0.05**	**0.02**	Since last step change. 23/04/04 to 01/04/08 (no recent data)

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**10375**	**3458**	Based on permitted DWF
Post Growth flow	m3/day	**0**	**0**	
BOD	mg/l	**2.23**	**1.16**	Since last step change. 02/07/04 to 16/03/16
Ammonia	mg/l	**0.69**	**0.65**	Since last step change. 15/07/11 to 16/03/16
Phosphate	mg/l	**1.08**	**0.76**	Since last step change. 09/09/04 to 03/03/16

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **N**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	Good		-
Ammonia	Good	**0.60**	-
Phosphate	Poor	-	**1.037**

2. Improve WFD Status

Variable	Status	90 %ile (mg/l)	AA (mg/l)
Phosphate	Good	-	**0.076**
Phosphate	Moderate	-	**0.187**

Comments/Assumptions

No Deterioration assessments
RBMP2 status (based on 2013-2014 data at sample point 06M04 *(new sample point in 2013)*):
BOD - High
Ammonia - High
Phosphate - Poor

Improve WFD Status assessments
- applies to phosphate element only
- calculate permit limit required to achieve Good status and Moderate status
(assume mid-Good quality upstream: 0.059 mg/l mean & sd)

Central Beds WCS Assessment - Results

NO DETERIORATION ASSESSMENT

	Flitwick STW			
	BOD	Ammonia	Phosphate	
River Downstream of Discharge				
No Deterioration target	Good	Good	Poor	
Designated Salmonid Fishery ?	N	-	-	-
River quality target (90-percentile or AA)	0.00	0.60	1.037	

Current Consent

Current Permited DWF (m3/day)	8300		
Consent limits (95%ile or AA)	15	5	2

Discharge Quality Required - Current

Current Permited DWF (m3/day)	8300			
Effluent quality required (95%ile or AA)				

Discharge Quality Required - Post Growth

Pre-AMP5 DWF (m3/day)	0			
Effluent quality required (95%ile or AA)				

Key to 'Effluent Quality Required'

Green – no change to current consent required

Amber – consent tightening required, but within limits of conventional treatment processes

Red Value – not achievable within limits of conventional treatment processes

IMPROVEMENT TO WFD STATUS ASSESSMENT

	Flitwick STW			
			Phosphate	Phosphate
River Downstream of Discharge				
WFD Status target			Good	Moderate
Designated Salmonid Fishery ?	-	-	-	-
River quality target (90-percentile or AA)	-		0.076	0.187

Discharge Quality Required - Current

Current DWF (m3/day)	8300			
Effluent quality required (95%ile or AA)	-			

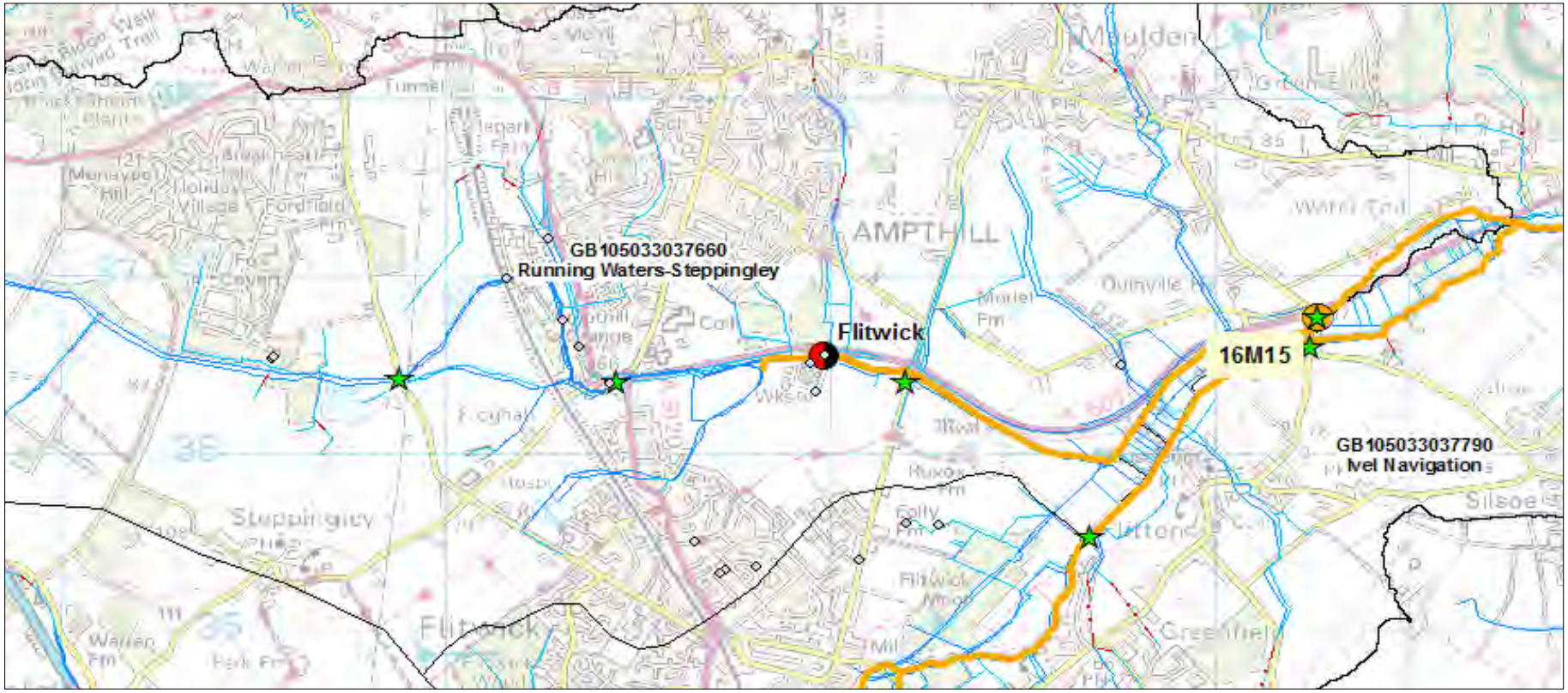
Discharge Quality Required - Post Growth

Pre-AMP5 DWF (m3/day)	0			
Effluent quality required (95%ile or AA)	-	-	-	-

PR14 Conclusion:

No Deterioration Assessment:

Improve WFD status assessment:


GB105033037660
Running Waters-Steppingley
Flitwick
16M15
GB105033037790
Ivel Navigation
AMPTHILL
Steppingley
Flitwick

Monte Carlo Datasheet - for Central Beds WCS, April 2016

Catchment	**Leighton Linslade**
STW Point Code	**LEIGHTN**
Date	
Receiving Water	River Ouzel
WFD Waterbody ID	GB105033037971 - Ouzel US Caldecote Mill
Upstream Sample Point	08M01 - R.OUZEL TOWN BRIDGE LEIGHTON
Downstream Sample Point	08M02 - R.OUZEL GRANGE MILL

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**7600**	-	AWCNF/10415
Post Growth DWF	m3/day			
BOD	mg/l	**60**	95 %ile	
Ammonia	mg/l	**30**	95 %ile	
Phosphate	mg/l	**2**	AA	UWWTD SA(E) requirement since 01/01/203

Upstream River data

Variable	Unit	Mean	SD/Q95	Comments/Assumptions
Flow	m3/day	**83030**	**5115**	From Low Flows Enterprise [H&T, Feb, 2013]
BOD	mg/l	**2.03**	**1.28**	No step changes: data from 25.01.00 to 11.12.07 ***No recent data***
Ammonia	mg/l	**0.1**	**0.12**	25.01.00 to 08.02.16 [3 outliers removed]
Phosphate	mg/l	**0.24**	**0.15**	Since last step change 23.11.07 to 08.02.16

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**9500**	**3167**	Based on current permitted DWF of 7600 m3/day
Post Growth flow	m3/day	**0**	**0**	
BOD	mg/l	**7.57**	**3.86**	Since last step change. 29.07.03 to 30.03.16
Ammonia	mg/l	**2.51**	**1.3**	Since last step change. 10.05.12 to 16.03.16
Phosphate	mg/l	**1.28**	**0.66**	total P, det 0348 since last step change 04.04.03 to 30.03.16

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **N**

Comments/Assumptions

<u>No Deterioration assessments</u>
RBMP status (based on 2006-2008 data at sample point 08M02):
BOD - High
Ammonia - Good
Phosphate - Poor
- calculate permit limits required to maintain RBMP status
08M02 no longer sampled for WFD classification

<u>Improve WFD Status assessments</u>
- applies to phosphate element only
- calculate permit limit required to achieve Good status and Moderate status
(assume mid-good quality upstream: mean and sd both 0.057 mg/l)

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	High	**4.00**	**-**
Ammonia	Good	**0.60**	**-**
Phosphate	Poor	**-**	**1.029**

2. Improve WFD Status

Variable	Status	90 %ile (mg/l)	AA (mg/l)
Phosphate	Good	**-**	**0.075**
Phosphate	Moderate	**-**	**0.185**

NO DETERIORATION' ASSESSMENT

	Leighton Linslade		
	BOD	Ammonia	Phosphate
River Downstream of Discharge			
No Deterioration target	High	Good	Poor
Designated Salmonid Fishery ?	N	-	-
River quality target (90-percentile or AA)	4.00	0.60	1.029

Current Consent

Current Permited DWF (m3/day)	7600		
Consent limits (95%ile or AA)	60	30	2

Discharge Quality Required

Current Permited DWF (m3/day)	7600		
Effluent quality required (95%ile or AA)			

IMPROVEMENT TO WFD STATUS' ASSESSMENT

	Leighton Linslade	
	Phosphate	Phosphate
River Downstream of Discharge		
WFD Status target	Good	Moderate
Designated Salmonid Fishery ?	-	-
River quality target (90-percentile or AA)	0.075	0.185

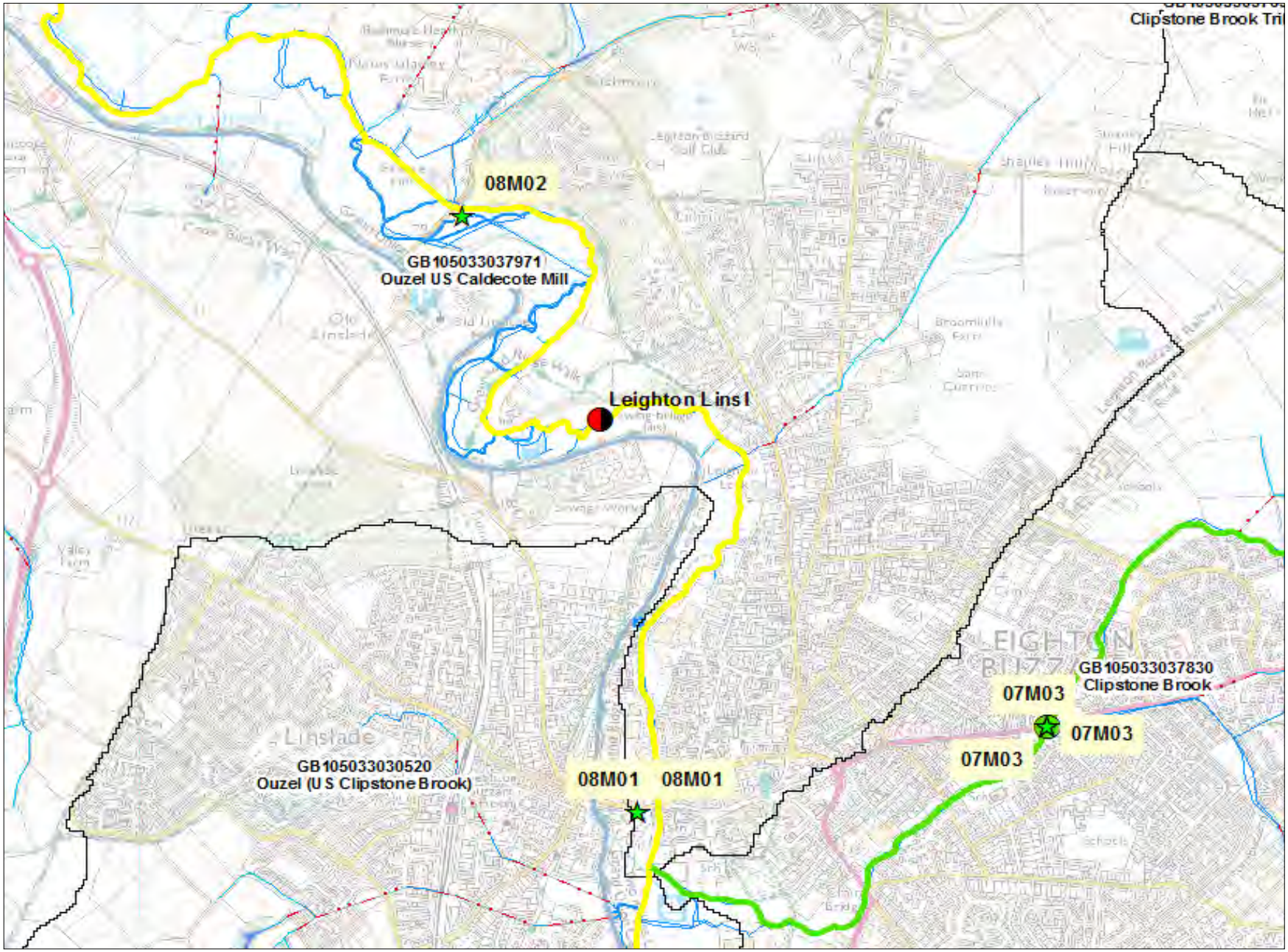
Discharge Quality Required - Current

Current DWF (m3/day)	7600	
Effluent quality required (95%ile or AA)		

PR14 Conclusion:

No Deterioration Assessment:

Improve WFD status assessment: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08M02
GB105033037971
Ouzel US Caldecote Mill
Leighton Linsl
GB105033037830
Clipstone Brook
07M03
07M03
07M03
GB105033030520
Ouzel (US Clipstone Brook)
08M01
08M01

Monte Carlo Datasheet - for Central Beds WCS, April 2016

Catchment	**Poppy Hill STW**
STW Point Code	POPPY H
Date	
Receiving Water	River Ivel
WFD Waterbody ID	GB105033038170 - Ivel (Langford to Roxton)
Upstream Sample Point	No suitable sample point (discharge imm d/s confluence)
Downstream Sample Point	15M01 - R.IVEL A6001 RD.BR.LANGFORD

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**4700**	-	AW1NF/2418
Post Growth DWF	m3/day		-	
BOD	mg/l	**20**	95 %ile	
Ammonia	mg/l	**8**	95 %ile	
Phosphate	mg/l	**2**	AA	UWWTD SA(E),effective 01/01/09

Upstream River data

Variable	Unit	Mean	SD	Comments/Assumptions
Flow	m3/day	**99532**	**38880**	From STW file - no attribution
BOD	mg/l	**1.15**	**0.69**	No suitable sample point - assume mid-High quality
Ammonia	mg/l	**0.09**	**0.05**	No suitable sample point - assume mid-High quality
Phosphate	mg/l	**0.070**	**0.070**	No suitable sample point - assume mid-Good quality

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**5875**	**1958**	Based on DWF of 4700 m3/day
Post Growth flow	m3/day	**0**	**0**	
BOD	mg/l	**6.5**	**2.72**	Since last step change. 28.07.05 to 24.03.16
Ammonia	mg/l	**2.13**	**1.07**	Since last step change. 05.07.06 to 23.03.16
Phosphate	mg/l	**1.42**	**0.42**	Since last step change. 03.12.13 to 24.03.16

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **N**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	High	**4.00**	**-**
Ammonia	High	**0.30**	**-**
Phosphate	Moderate	**-**	**0.212**

2. Improve WFD Status

Variable	Status	90 %ile (mg/l)	AA (mg/l)
Phosphate	Good	**-**	**0.090**

Comments/Assumptions

No Deterioration assessments
RBMP2 status (based on 2012-2014 data at sample point 15M01):
BOD - High
Ammonia - High
Phosphate - Moderate
- calculate permit limits required to maintain RBMP2 status

Improve WFD Status assessments
- applies to phosphate element only
- calculate permit limit required to achieve Good status

WCS Assessment - Results

NO DETERIORATION ASSESSMENT

	Poppy Hill STW		
	BOD	Ammonia	Phosphate
River Downstream of Discharge			
No Deterioration target	High	High	Moderate
Designated Salmonid Fishery ?	N	-	-
River quality target (90-percentile or AA)	4.00	0.30	0.212
Current Consent			
Current Permited DWF (m3/day)	4700		
Consent limits (95%ile or AA)	20	8	2
Discharge Quality Required			
Current Permited DWF (m3/day)	4700		
Effluent quality required (95%ile or AA)			
Discharge Quality Required			
Post Growth DWF (m3/day)	0		
Effluent quality required (95%ile or AA)			

Key to 'Effluent Quality Required'

Green – no change to current consent required

Amber – consent tightening required, but within limits of conventional treatment processes

Red Value – not achievable within limits of conventional treatment processes

IMPROVEMENT TO WFD STATUS ASSESSMENT

	Poppy Hill STW		
		Phosphate	
River Downstream of Discharge			
WFD Status target		Good	
Designated Salmonid Fishery ?		-	
River quality target (90-percentile or AA)		0.090	
Discharge Quality Required - Current Permitted DWF			
Current DWF (m3/day)	4700		
Effluent quality required (95%ile or AA)			
Discharge Quality Required - Post Growth DWF			
Pre-AMP5 DWF (m3/day)	0		
Effluent quality required (95%ile or AA)			

PR14 Conclusion:

No Deterioration Assessment:

PR14 No Deterioration schemes to be considered:

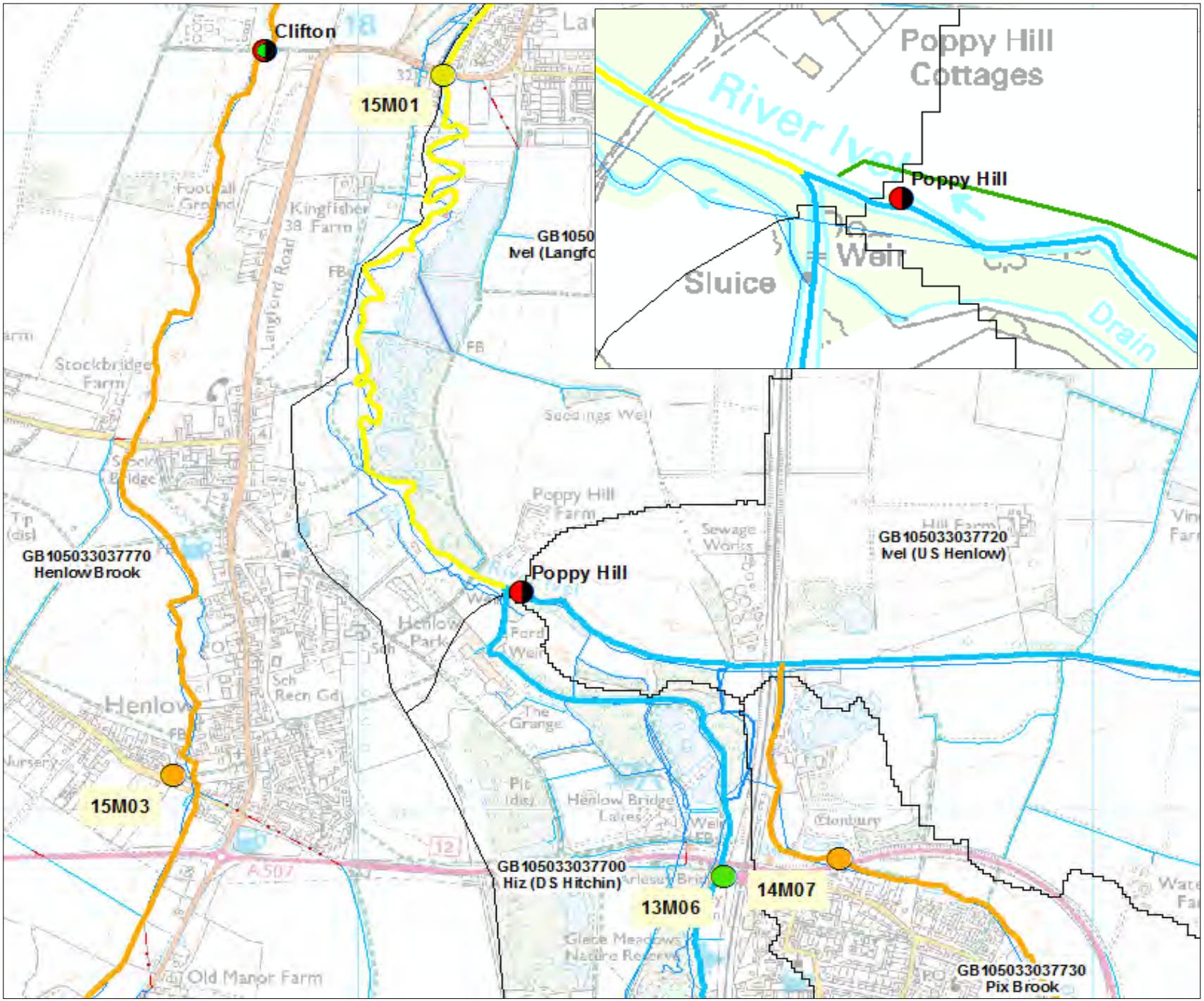
BOD - **no scheme necessary**

Ammonia 3 mg/l 95 %ile

Phosphate 0.5 mg/l AA.

Improve WFD status assessment:

A discharge at **0.5 mg/l AA** is predicted to result in an imporvement to Good phosphate status downstream.


Clifton
15M01
GB1050
Ivel (Langfo
Poppy Hill
Cottages
River Ivel
Poppy Hill
Weir
Sluice
Drain
Stockbridge Farm
Langford Road
Kingfisher 38 Farm
Football Ground
Seddings Well
Poppy Hill Farm
Sewage Works
GB105033037720
Ivel (U S Henlow)
GB105033037770
Henlow Brook
Poppy Hill
Henlow Park
Ford Well
Sch Recn Gd
Henlow
The Grange
Pit (dis)
Henlow Bridge Lakes
Glenbury
15M03
A507
GB105033037700
Hiz (D S Hitchin)
13M06
14M07
Glace Meadows Nature Reserve
Old Manor Farm
GB105033037730
Pix Brook

Monte Carlo Datasheet - for Central Beds WCS, April 2016

Catchment	**Potton STW**
STW Point Code	**POTTON**
Date	
Receiving Water	Sutton Brook, then Millbridge/Common Brook
WFD Waterbody ID	GB105033037820 Millbridge-Common Brooks
Upstream Sample Point	19M14 - MILLBRIDGE BK.IVEL B1042 RD.BR.POTTON
Downstream Sample Point	19M19 - MILLBRIDGE BK.TRIB.IVEL SUTTON FORD

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**1200**	-	AW1NF/975
Post Growth DWF	m3/day			
BOD	mg/l	**15**	95 %ile	
Ammonia	mg/l	**8**	95 %ile	
Phosphate	mg/l	**1**	AA	AMP5 HD P-removal Scheme effective 01/01/10

Upstream River data

Variable	Unit	Mean	SD	Comments/Assumptions
Flow	m3/day	**9417.60**	**2220.48**	Low Flows Enterprise [H&T, jan 2013)
BOD	mg/l	**1.89**	**1.16**	No step changes, outlier >35mg/l removed. 18/01/2000 to 15/08/2007
Ammonia	mg/l	**0.21**	**0.22**	Since last step change. 17.01.07 to 03.05.16
Phosphate	mg/l	**0.07**	**0.04**	Since last step change. 05.11.09 to 03.05.16

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**1500**	**500**	Based on current permitted DWF of 1200 m3/day
Post Growth flow	m3/day	**0**	**0**	
BOD	mg/l	**2.71**	**1.12**	Since last step change. 07/12/2009 to 17/03/16
Ammonia	mg/l	**2.25**	**2.02**	No step change, all data 18.01.00 to 17.03.16
Phosphate	mg/l	**0.52**	**0.28**	Post p-removal. 15/03/10 to 17/03/2016

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **N**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	High	**4.00**	**-**
Ammonia	Good	**0.60**	**-**
Phosphate	Moderate	**-**	**0.176**

2. Improve WFD Status

Variable	Status	90 %ile (mg/l)	AA (mg/l)
		-	**-**
Phosphate	Good	**-**	**0.070**

Comments/Assumptions

No Deterioration assessments
RBMP2 status (based on 2006-2008 data at sample point 19M19):
BOD - High
Ammonia - Good *(Moderate status recorded in RBMP2, but No Deterioration obligation means target remains Good status)*
Phosphate - Moderate
- calculate permit limits required to maintain RBMP status

Improve WFD Status assessments
- applies to phosphate element only
- calculate permit limit required to achieve Good status
(assume mid-Good upstream quality : mean 0.054 mg/l, sd 0.054 mg/l)

NO DETERIORATION' ASSESSMENT

	Potton STW		
	BOD	Ammonia	Phosphate
River Downstream of Discharge			
No Deterioration target	High	Good	Moderate
Designated Salmonid Fishery ?	N	-	-
River quality target (90-percentile or AA)	4.00	0.60	0.18

Current Consent

Current Permited DWF (m3/day)	1200		
Consent limits (95%ile or AA)	15	8	1

Discharge Quality Required - Current DWF

Current Permited DWF (m3/day)	1200		
Effluent quality required (95%ile or AA)			

Discharge Quality Required - Post Growth DWF

Pre-AMP5 DWF (m3/day)	0		
Effluent quality required (95%ile or AA)			

IMPROVEMENT TO WFD STATUS' ASSESSMENT - N/A

	Potton STW		
	BOD	Ammonia	Phosphate
River Downstream of Discharge			
WFD Status target	Good	Good	Good
Designated Salmonid Fishery ?	N	-	-
River quality target (90-percentile or AA)	-	-	0.070

Discharge Quality Required - Current

Current DWF (m3/day)	1200		
Effluent quality required (95%ile or AA)	-	-	

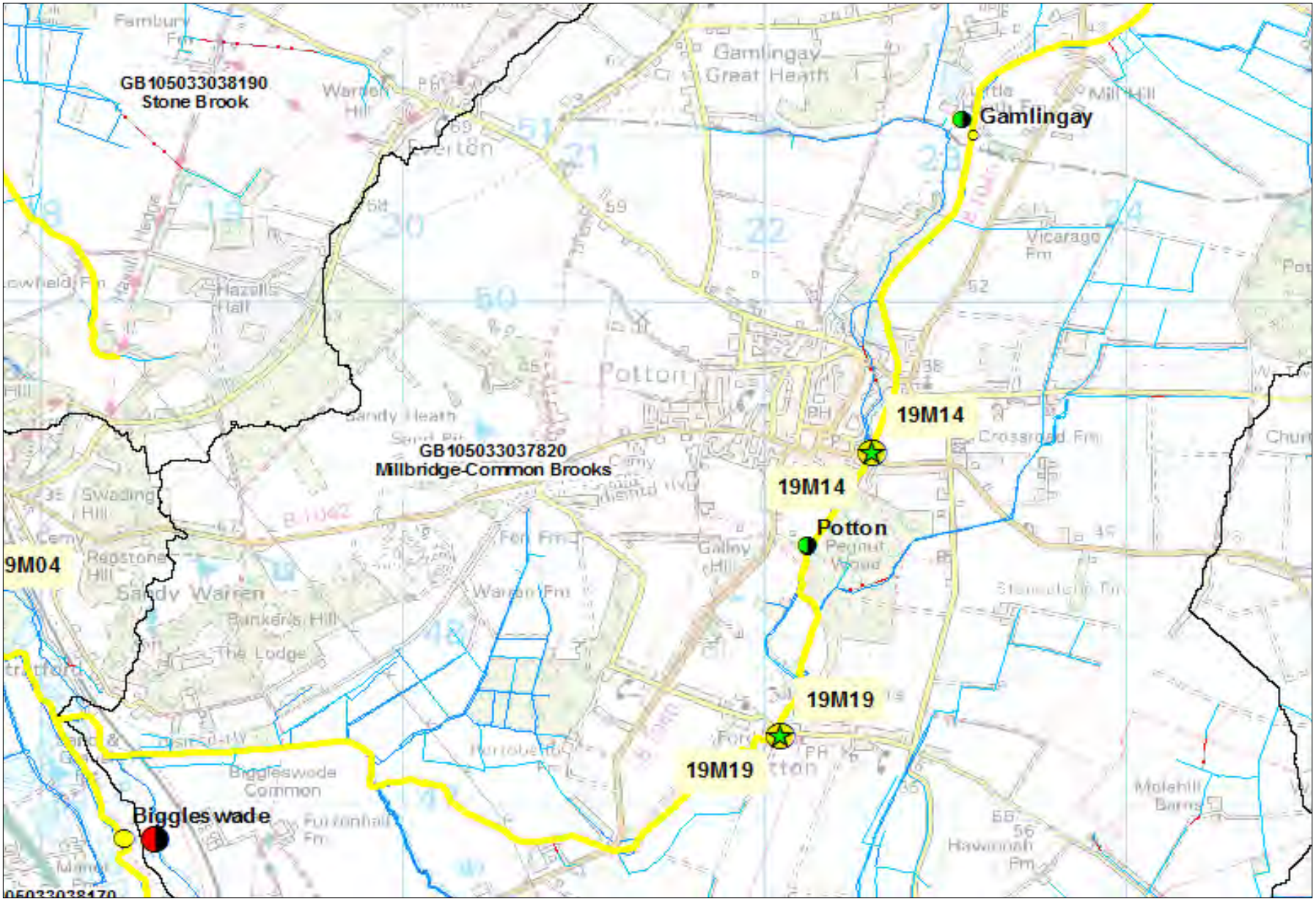
Discharge Quality Required - Post Growth DWF

Future DWF (m3/day)	0		
Effluent quality required (95%ile or AA)	-	-	

WCS Conclusion:

No Deterioration Assessment:

Improve WFD status assessment:


GB105033038190
Stone Brook
Gamlingay
GB105033037820
Millbridge-Common Brooks
19M14
19M14
Potton
19M19
19M19
9M04
Biggleswade

Monte Carlo Datasheet - for Central Beds WCS, April 2016

Catchment	**Sandy STW**
STW Point Code	SANDY
Date	
Receiving Water	River Ivel
WFD Waterbody ID	GB105033038170
Upstream Sample Point	19M04, R.IVEL NEW ROAD BEESTON
Downstream Sample Point	19M07, R.IVEL TEMPSFORD DEPOT FT.BR.

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**2200**	-	AW1NF/759
Post Growth DWF	m3/day		-	
BOD	mg/l	**40**	95 %ile	
Ammonia	mg/l	**13**	95 %ile	
Phosphate	mg/l	**2**	AA	*UWWTD SA(E) requirement, effective 01/05/05*

Upstream River data

Variable	Unit	Mean	SD/Q95	Comments/Assumptions
Flow	m3/day	**228096**	**79661**	Low Flows Enterprise, from H&T March 2013
BOD	mg/l	**1.29**	**0.75**	Since last step change 10/06/04 to 01/05/14
Ammonia	mg/l	**0.11**	**0.11**	No step change. Date range 18/01/00 to 31/03/16
Phosphate	mg/l	**0.19**	**0.06**	Since last step change 16/12/08 to 31/03/16

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**2750**	**917**	Based on post-'flow' scheme DWF
Post Growth flow	m3/day	**0**	**0**	
BOD	mg/l	**12.11**	**6.63**	No step change. Date range 18/01/00 to 18/03/16
Ammonia	mg/l	**3.41**	**2.75**	Since last step change. 21/07/06 to 17/03/16
Phosphate	mg/l	**1.35**	**0.59**	Since last step change. 16/12/04 to 18/03/16

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **Y**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	High	**3.00**	**-**
Ammonia	High	**0.30**	**-**
Phosphate	Moderate	**-**	**0.212**

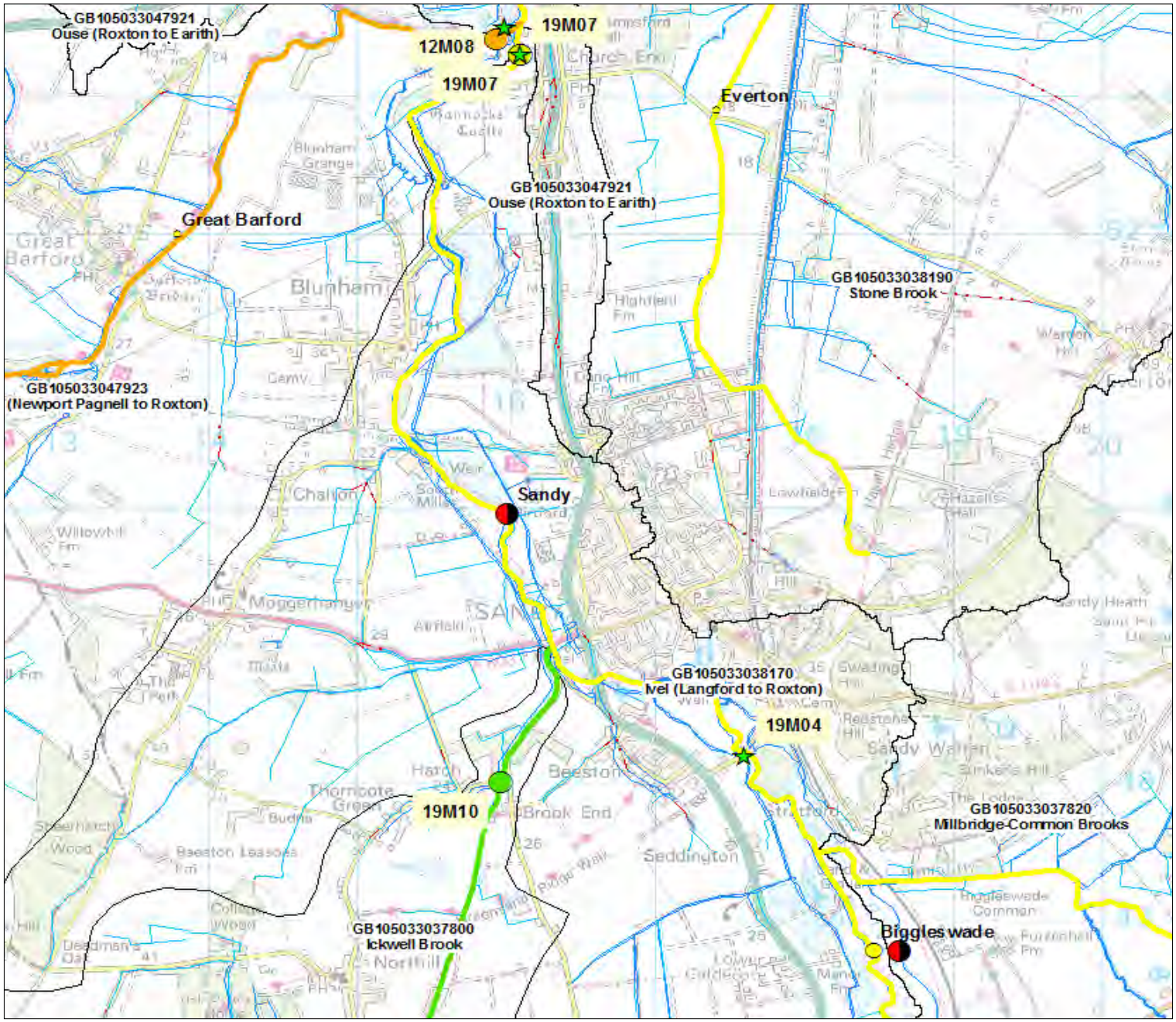
2. Improve WFD Status

Variable	Status	90 %ile (mg/l)	AA (mg/l)
Phosphate	Good	**-**	**0.090**

Comments/Assumptions

<u>No Deterioration assessments</u>
RBMP status (based on 2012-2014 data at sample point 19M07):
BOD - High
Ammonia - High
Phosphate - Moderate
- calculate permit limits required to maintain RBMP status

<u>Improve WFD Status assessments</u>
- **applies to phosphate element only**
- calculate permit limit required to achieve Good status
(assume mid-Good quality upstream: mean & sd 0.07 mg/l)


GB105033047921
Ouse (Roxton to E arith)
19M07
12M08
19M07
Everton
GB105033047921
Ouse (Roxton to E arith)
Great Barford
GB105033038190
Stone Brook
GB105033047923
(Newport Pagnell to Roxton)
Sandy
GB105033038170
Ivel (Langford to Roxton)
19M04
19M10
GB105033037820
Millbridge-Common Brooks
GB105033037800
Ickwell Brook
Biggleswade

Monte Carlo Datasheet - for Central Beds WCS, April 2016

Catchment	**Shillington STW**
STW Point Code	SHILLTN
Date	
Receiving Water	Campton Brook
WFD Waterbody ID	GB105033037750
Upstream Sample Point	N/A - discharge immediately d/s multiple confluence - see map
Downstream Sample Point	17M02, CAMPTON BK.SOUTH BRIDGE SHEFFORD

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**1204**	-	AW1NF/693
Post Growth DWF	m3/day		-	
BOD	mg/l	**40**	95 %ile	
Ammonia	mg/l	**15**	95 %ile	
Phosphate	mg/l	**-**	AA	

Upstream River data

Variable	Unit	Mean	SD	Comments/Assumptions
Flow	m3/day	**8813**	**1547**	From H&T, Low Flows Enterprise, March 2013
BOD	mg/l	**1.15**	**0.69**	No data - assume mid-High status
Ammonia	mg/l	**0.09**	**0.05**	No data - assume mid-High status
Phosphate	mg/l	**0.067**	**0.067**	No data - assume mid-Good status

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**1505**	**502**	Based on post-'flow' scheme DWF of 1204 m3/day
Post growth flow	m3/day	**0**	**0**	
BOD	mg/l	**16.95**	**6.35**	All data 24.01.00 to 16.03.16 (one outlier removed)
Ammonia	mg/l	**4.69**	**3.44**	All data 24.01.00 to 16.03.16 (one outlier removed)
Phosphate	mg/l	**4.45**	**1.87**	Since last step change. 24.04.08 to 09.10.13 [no OSM data]

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **N**

1. No Deterioration

Variable	Status	(mg/l)	(mg/l)
BOD	High	**4.00**	**-**
Ammonia	High	**0.30**	**-**
Phosphate	Poor	**-**	**1.077**

2. Improve WFD Status

Variable	Status	(mg/l)	(mg/l)
Phosphate	Good	**-**	**0.086**
Phosphate	Moderate	**-**	**0.206**

Comments/Assumptions

No Deterioration assessments
RBMP2 status (based on 20121-2014 data at sample point 17M02):
BOD - High
Ammonia - High
Phosphate - Poor
- calculate permit limits required to maintain RBMP status

Improve WFD Status assessments
- applies to Phosphate element only
- calculate permit limit required to achieve Good and Moderate status

WCS Assessment - Results

NO DETERIORATION ASSESSMENT

	Shillington STW		
	BOD	Ammonia	Phosphate
River Downstream of Discharge			
No Deterioration target	High	High	Poor
Designated Salmonid Fishery ?	N	-	-
River quality target (90-percentile or AA)	4.00	0.30	1.077

Current Consent

Current Permited DWF (m3/day)	1204		
Consent limits (95%ile or AA)	40	15	-

Discharge Quality Required - Current DWF

Current Permited DWF (m3/day)	1204		
Effluent quality required (95%ile or AA)			

Discharge Quality Required - Post Growth

Post Growth DWF (m3/day)	0		
Effluent quality required (95%ile or AA)			

IMPROVEMENT TO WFD STATUS ASSESSMENT

	Shillington STW		
	Phosphate	Phosphate	
River Downstream of Discharge			
WFD Status target	Good	Moderate	
Designated Salmonid Fishery ?	-	-	
River quality target (90-percentile or AA)	0.086	0.206	

Discharge Quality Required - Current Permitted DWF

Current DWF (m3/day)	1204		
Effluent quality required (95%ile or AA)			

Discharge Quality Required - Post Growth DWF

Pre-AMP5 DWF (m3/day)	0		
Effluent quality required (95%ile or AA)			

Key to 'Effluent Quality Required'

Green – no change to current consent required

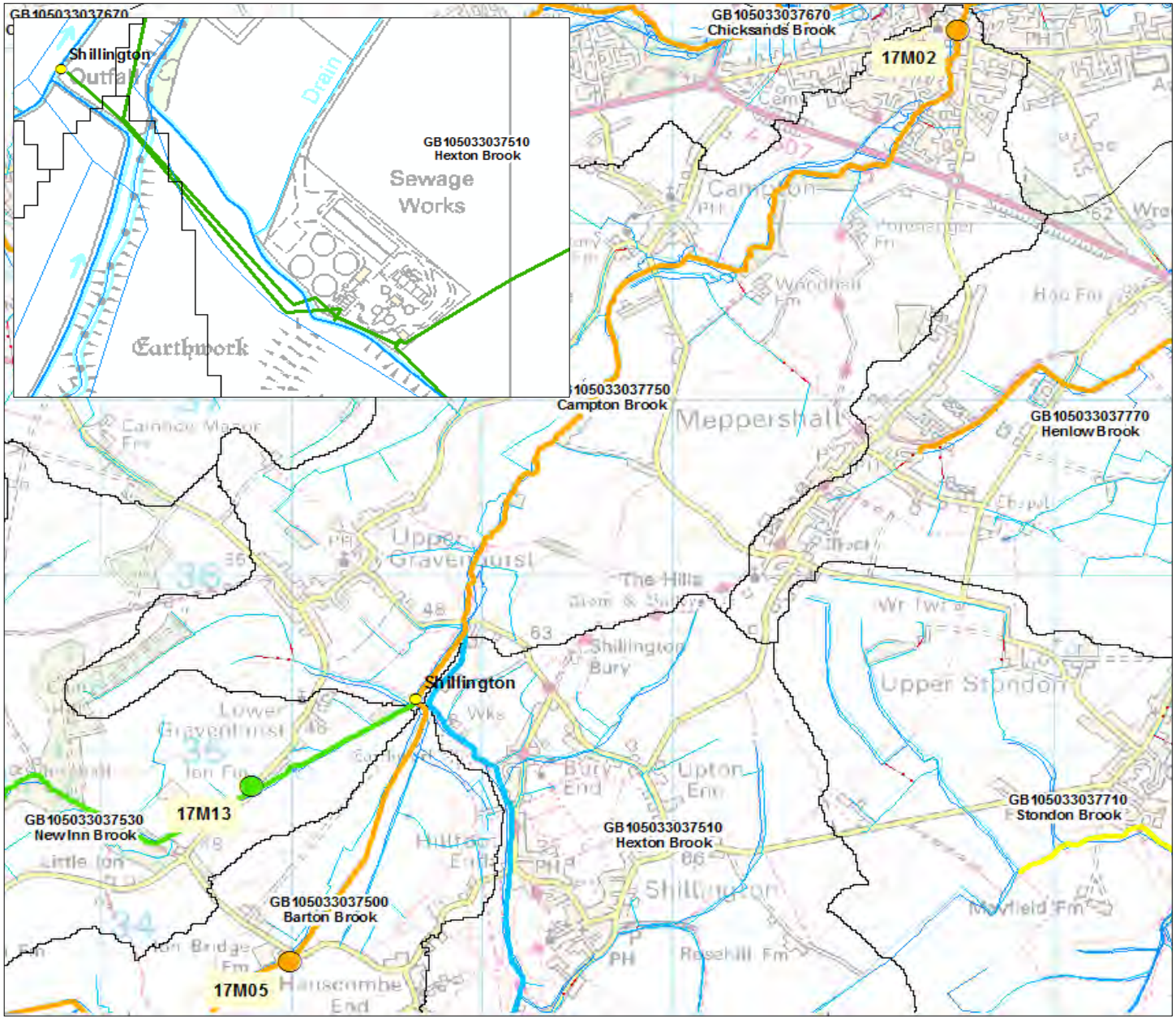
Amber – consent tightening required, but within limits of conventional treatment processes

Red Value – not achievable within limits of conventional treatment processes

PR14 Conclusion:

No Deterioration Assessment:

Improve WFD status assessment: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Chicksands Brook
17M02
Shillington
Outfall
Drain
GB105033037510
Hexton Brook
Sewage
Works
Earthwork
105033037750
Campton Brook
Meppershall
GB105033037770
Henlow Brook
Upper
Gravenhurst
The Hills
Shillington
Bury
Upper Stondon
Lower
Gravenhurst
17M13
GB105033037530
New Inn Brook
Little Ion
Bury
End
Upton
End
GB105033037710
Stondon Brook
GB105033037510
Hexton Brook
Shillington
Moffield Fm
GB105033037500
Barton Brook
17M05
Hanscombe
End
Rosehill Fm

Monte Carlo Datasheet - for Central Beds WCS, April 2016

Catchment	**Stanbridgeford STW**
STW Point Code	**STANBFD**
Date	
Receiving Water	Ouzel Brook
WFD Waterbody ID	GB105033030530
Upstream Sample Point	06M03 - OUZEL BK.TRIB.OUZEL STANBRIDGEFORD
Downstream Sample Point	06M04 - OUZEL BK.TRIB.OUZEL A4146 R/B.BILLINGTON

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**2482**	-	AW1NF/2574
Post Growth DWF	m3/day			
BOD	mg/l	**20**	95 %ile	
Ammonia	mg/l	**12**	95 %ile	
Phosphate	mg/l	**2**	AA	UWWTD SAE P removal, effective 2004

Upstream River data

Variable	Unit	Mean	SD	Comments/Assumptions
Flow	m3/day	**9504**	**950**	Flows from Low Flows Enterprise [H&T Oct 2012)
BOD	mg/l	**1.47**	**0.87**	Since last step change. 25.08.04 to 26.11.07 [ceased sampling for BOD 2007]
Ammonia	mg/l	**0.1**	**0.13**	Since last step change. 21.07.11 to 13.04.16.
Phosphate	mg/l	**0.43**	**0.35**	Since last step change. 13.08.02 to 13.04.16

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**3103**	**1034**	Based on current permitted DWF of 2482 m3/day
Post Growth flow	m3/day	**0**	**0**	
BOD	mg/l	**2.19**	**1.12**	Since last step change. 09.02.12 to 30.03.16
Ammonia	mg/l	**0.33**	**0.43**	Since last step change. 11.03.05 to 16.03.16
Phosphate	mg/l	**0.63**	**0.59**	Since last step change 10.12.08 to 30.03.16 (Total P)

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **N**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	High	**4.00**	**-**
Ammonia	High	**0.30**	**-**
Phosphate	Poor	**-**	**1.036**

2. Improve WFD Status

Variable	Status	90 %ile (mg/l)	AA (mg/l)
Phosphate	Good	**-**	**0.076**
Phosphate	Moderate	**-**	**0.187**

Comments/Assumptions

No Deterioration assessments
RBMP2 status (based on 2012-2014 data at sample point 06M04):
BOD - High
Ammonia - High
Phosphate - Poor (downstrean sample point is Moderate status, but is influenced by Good status of Eaton Bray Brook - see map)
- calculate permit limits required to maintain RBMP2 status

Improve WFD Status assessments
- applies to phosphate element only
- calculate permit limit required to achieve Good and Moderate status (assume mid-Good upstream quality : mean 0.059 mg/l, sd 0.059 mg/l)

****Works is currently flow non-compliant - 2014 measured DWF 2871 m3/day****

NO DETERIORATION' ASSESSMENT

	Stanbridgeford STW		
	BOD	Ammonia	Phosphate
River Downstream of Discharge			
No Deterioration target	High	High	Poor
Designated Salmonid Fishery ?	N	-	-
River quality target (90-percentile or AA)	4.00	0.30	1.036
Current Consent			
Current Permited DWF (m3/day)	2482		
Consent limits (95%ile or AA)	20	12	2
Discharge Quality Required			
Current Permited DWF (m3/day)	2482		
Effluent quality required (95%ile or AA)			
Discharge Quality Required			
Post Growth DWF (m3/day)	0		
Effluent quality required (95%ile or AA)	-	-	-

IMPROVEMENT TO WFD STATUS' ASSESSMENT

	Stanbridgeford STW		
		Phosphate	Phosphate
River Downstream of Discharge			
WFD Status target		Good	Moderate
Designated Salmonid Fishery ?		N	N
River quality target (90-percentile or AA)		0.076	0.187
Discharge Quality Required - Current			
Current DWF (m3/day)	2482		
Effluent quality required (95%ile or AA)	-		
Discharge Quality Required - Future			
Post Growth DWF (m3/day)	0		
Effluent quality required (95%ile or AA)	-	-	-

PR14 Conclusion:

No Deterioration Assessment:

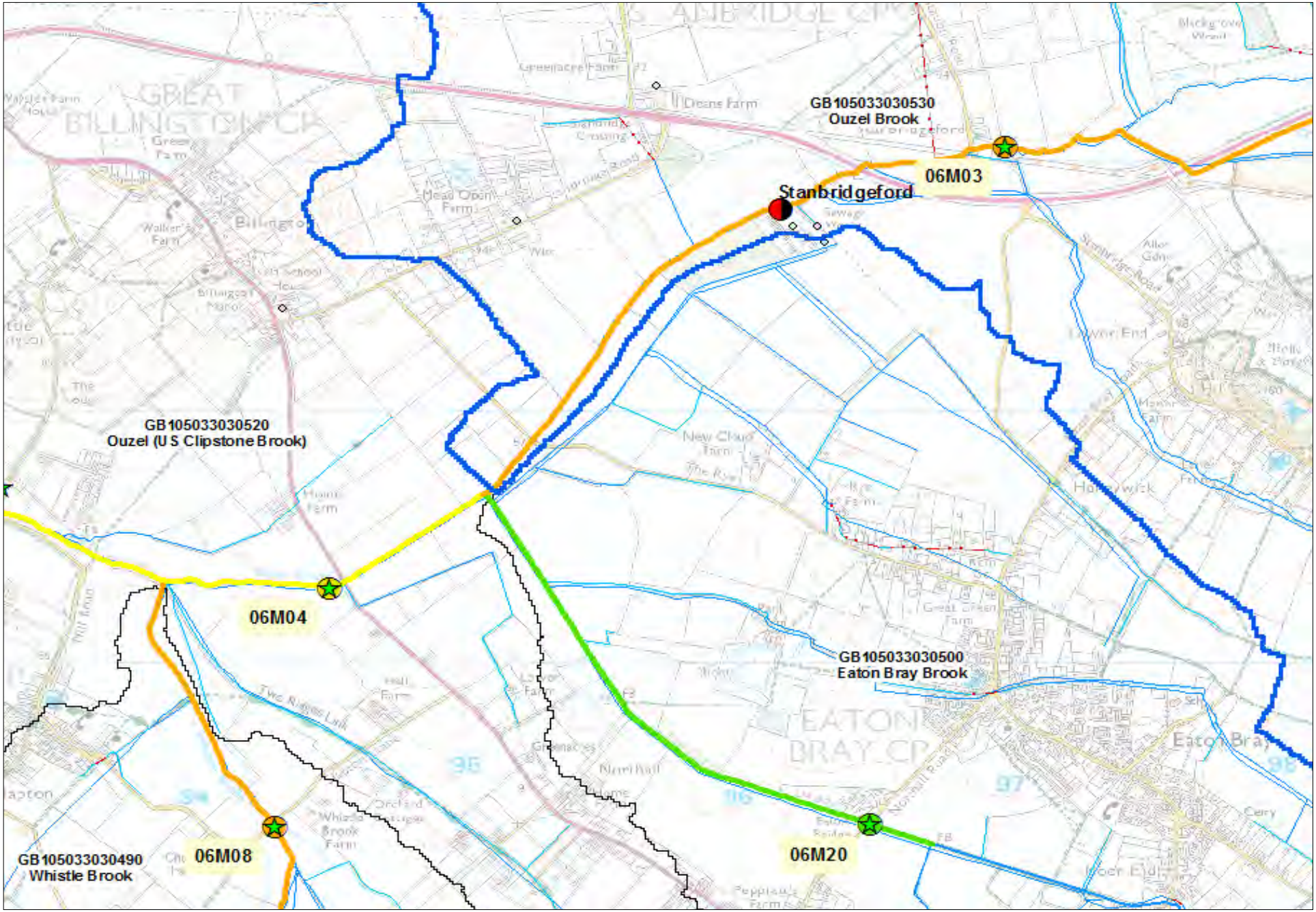
Improve WFD status assessment:

Key to 'Effluent Quality Required'

Green – no change to current consent required

Amber – consent tightening required, but within limits of conventional treatment processes

Red Value – not achievable within limits of conventional treatment processes


GB105033030530
Ouzel Brook
06M03
Stanbridgeford
GB105033030520
Ouzel (U S Clipstone Brook)
06M04
GB105033030500
Eaton Bray Brook
06M08
06M20
GB105033030490
Whistle Brook

Monte Carlo Datasheet - for Central Beds WCS, April 2016

Catchment	**Tempsford STW**
STW Point Code	TEMPSFO
Date	
Receiving Water	Stone brook, trib of River Great Ouse
WFD Waterbody ID	GB105033038190 - Stone Brook
Upstream Sample Point	None
Downstream Sample Point	20M07 - STONE BK.TRIB.OUSE STONE BR.B1043 RD.BR.

STW Permit limits

Variable	Unit	Limit	Statistic	**Permit Number**
Permitted DWF	m3/day	**700**	-	AWCNF/1223
Post Growth DWF	m3/day		-	
BOD	mg/l	**20**	95 %ile	
Ammonia	mg/l	**3.5**	95 %ile	*AMP6 WFD scheme to be in place by 31/03/20*
Phosphate	mg/l	**1**	AA	*AMP4 HD scheme - since 01/01/10*

Upstream River data

Variable	Unit	Mean	SD	Comments/Assumptions
Flow	m3/day	**8035**	**1088**	Low Flows Enterprise, validated by spot sampling. Jan 2015
BOD	mg/l	**1.86**	**1.12**	No data - assume mid-High status
Ammonia	mg/l	**0.07**	**0.04**	No data - assume mid-High status
Phosphate	mg/l	**0.069**	**0.069**	No data - assume mid-Good status.

STW discharge data

Variable	Unit	Mean	SD	Comments/Assumptions
Permitted Flow	m3/day	**875**	**292**	Based on current permitted (post-AMP5) DWF
Post Growth flow	m3/day	**0**	**0**	Based on pre-AMP5 DWF
BOD	mg/l	**5.66**	**4.85**	Since last step change. 08/08/06 to 17/03/16
Ammonia	mg/l	**1.95**	**1.66**	Since last step change. 15/10/09 to 17/03/16
Phosphate	mg/l	**0.44**	**0.19**	Since last step change. 10/01/12 to 17/03/16

Downstream WFD Targets

Salmonid Fishery (Y/N) ? **N**

1. No Deterioration

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	Moderate	**6.50**	**-**
Ammonia	Good	**2.50**	**-**
Phosphate	Moderate	**-**	**0.211**

2. Improve WFD Status

Variable	Status	90 %ile (mg/l)	AA (mg/l)
BOD	Good	**5**	-
Phosphate	Good	**-**	**0.089**

Comments/Assumptions

<u>No Deterioration assessments</u>
RBMP2 status (based on 2013-2014 data at sample point 20M07):
BOD - Moderate
Ammonia - Poor (**Good status predicted following AMP6 WFD scheme)**
Phosphate - Moderate
- calculate permit limits required to maintain RBMP2 status

<u>Improve WFD Status assessments</u>
- applies to BOD and Phosphate elements only
- calculate permit limit required to achieve Good status for BOD and Phosphate

WCS Assessment - Results

NO DETERIORATION ASSESSMENT

	Tempsford STW		
	BOD	Ammonia	Phosphate
River Downstream of Discharge			
No Deterioration target	Moderate	Good	Moderate
Designated Salmonid Fishery ?	N	-	-
River quality target (90-percentile or AA)	6.50	2.50	0.211

Current Consent

Current Permited DWF (m3/day)		700	
Consent limits (95%ile or AA)	20	3.5	1

Discharge Quality Required - Current

Current Permited DWF (m3/day)		700	
Effluent quality required (95%ile or AA)			

Discharge Quality Required - Growth

Pre-AMP5 DWF (m3/day)		0	
Effluent quality required (95%ile or AA)	-		

Key to 'Effluent Quality Required'

Green – no change to current consent required

Amber – consent tightening required, but within limits of conventional treatment processes

Red Value – not achievable within limits of conventional treatment processes

IMPROVEMENT TO WFD STATUS ASSESSMENT

	Tempsford STW		
	BOD	Phosphate	
River Downstream of Discharge			
WFD Status target	Good	Good	
Designated Salmonid Fishery ?	-	-	
River quality target (90-percentile or AA)	5.00	0.09	

Discharge Quality Required - Current Permitted DWF

Current DWF (m3/day)		700	
Effluent quality required (95%ile or AA)	-		

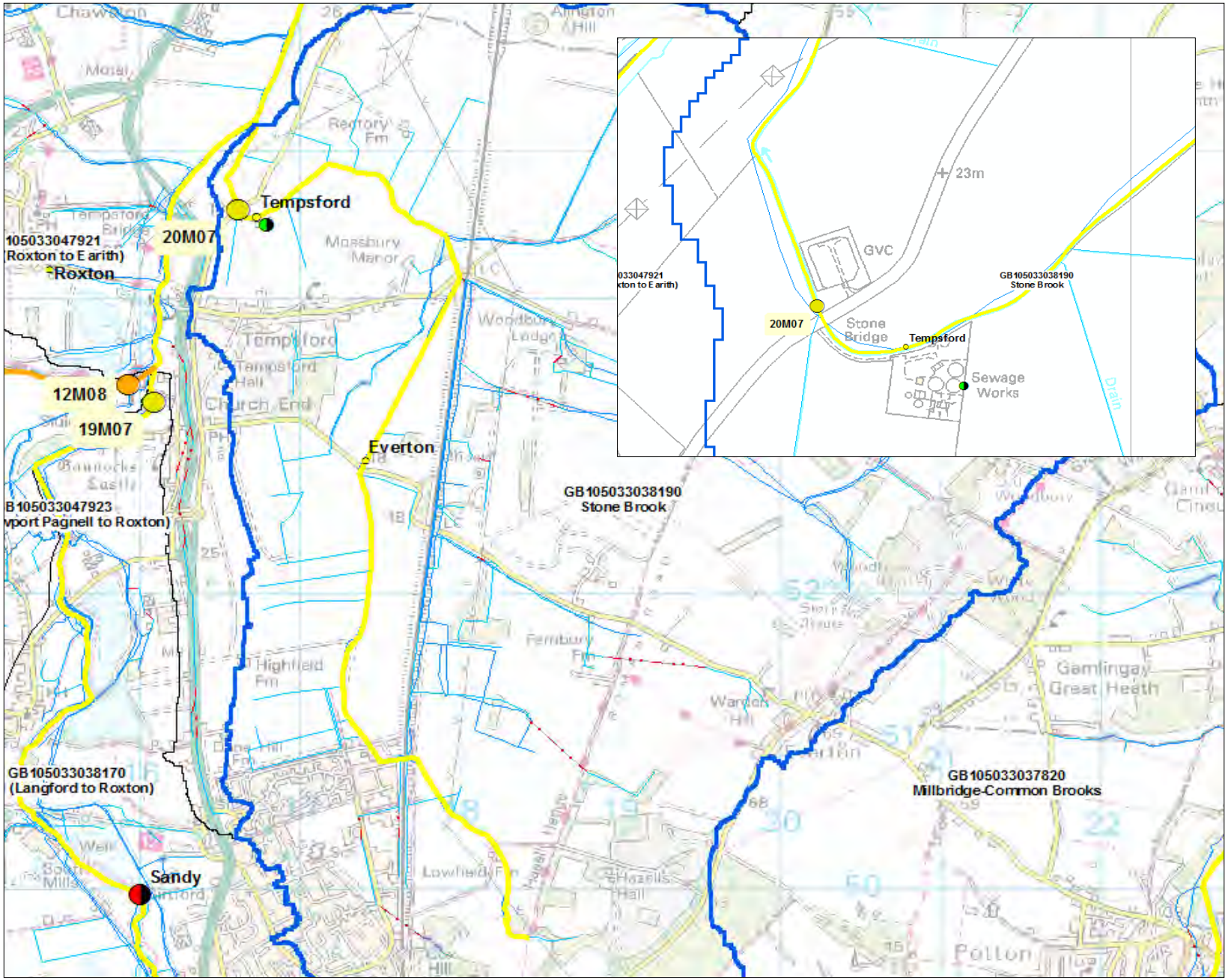
Discharge Quality Required - Post Growth DWF

Pre-AMP5 DWF (m3/day)		0	
Effluent quality required (95%ile or AA)	-		

WCS Conclusion:

No Deterioration Assessment:

Improve WFD status assessment:


Tempsford
20M07
105033047921
(Roxton to E arith)
Roxton
12M08
19M07
Everton
B105033047923
vport Pagnell to Roxton)
GB105033038190
Stone Brook
GB105033038170
(Langford to Roxton)
Sandy
GB105033037820
Millbridge-Common Brooks
23m
GVC
033047921
xton to E arith)
GB105033038190
Stone Brook
20M07
Stone
Bridge
Tempsford
Sewage
Works
Drain