

TODDINGTON LANE, LITTLEHAMPTON, WEST SUSSEX
DRAINAGE SURVEY
Date: 18th February 2014
Job No: 20644

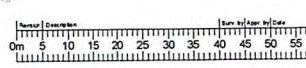
Drainage
All drainage was filled with pipe sizes and invert levels recorded. Wherever possible the chamber manholes have been located and positioned on the drawing. All connections from gullies, external rainwater pipes and external soil stacks have been shown wherever possible and marked with invert levels. Drains / sewers between manholes are assumed to be straight. All sub surface drainage positions should be cross checked in critical areas by RD or GPR survey or hand digging holes.

Notes:
1. DRAINAGE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCED BY MAYER BROWN LTD. JOB NO. APH/11/11/2008 DATE AUGUST 2014. NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS UNLESS SPECIFIC TO DRAINAGE.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILE EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES CONNECTIVITY OBTAINED USING ACOUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED ASSUMED AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.

ABBREVIATIONS		DRAINAGE KEY	
ACPI	ASSUMED CONNECTION POINT	UH	LAMP HOLE
AG	ABOVE GROUND	NP	NO PIPES VISIBLE
AR	ASSUMED ROUTE	NPV	NO PIPES VISIBLE
BD	BACK DROP	OU	OUTLET
BL	BRICK	OU	OUTLET
BL	BASE LEVEL	POW	PIPE ON WALL
CI	CAST IRON	PT	PIPE TO GROUND
CL	COVER LEVEL	PTG	PIPE TO GROUND
CO	CONCRETE	PVC	POLYVINYL CHLORIDE
CU	CULVERT	PVC	POLYVINYL CHLORIDE
CP	CATCHPIT	PVC	POLYVINYL CHLORIDE
CWG	COMBINED WATER SEWER	PVC	POLYVINYL CHLORIDE
CH	DRAINAGE CHANNEL	R	RIGID MAN
DI	DUCTILE IRON	R	RIGID MAN
FD	FLAT TOP DRAIN	R	RIGID MAN
FWS	FULL WATER SEWER	SOP	SOFFIT
GT	GULLY	SWS	SURFACE WATER SEWER
IC	INVERT COVER	UL	UNABLE TO SURVEY
IC	INVERT LEVEL	UL	UNABLE TO SURVEY
IT	INTERCEPTOR	VP	VENT PIPE
IT	INTERCEPTOR	VP	VENT PIPE
KD	KEYS OUTLET	WL	WATER LEVEL

LEGEND	
LINEAR DRAIN	LINEAR DRAIN
POINT DRAIN	POINT DRAIN
SURFACE WATER	SURFACE WATER
SEWER	SEWER
MANHOLE	MANHOLE
CHAMBER	CHAMBER

CAUTIONARY NOTES
1. Pipe sizes are shown from visual inspection or taken from existing information. Pipe sizes are recorded in all manholes and depths in manholes.
2. Where there is a change in pipe size, the larger size should be shown. It is advised that a CCTV survey is carried out to confirm the correct pipe size. Please refer to the survey report for further details.
3. ALWAYS BEWARE CAUTION WHEN EXCAVATING.



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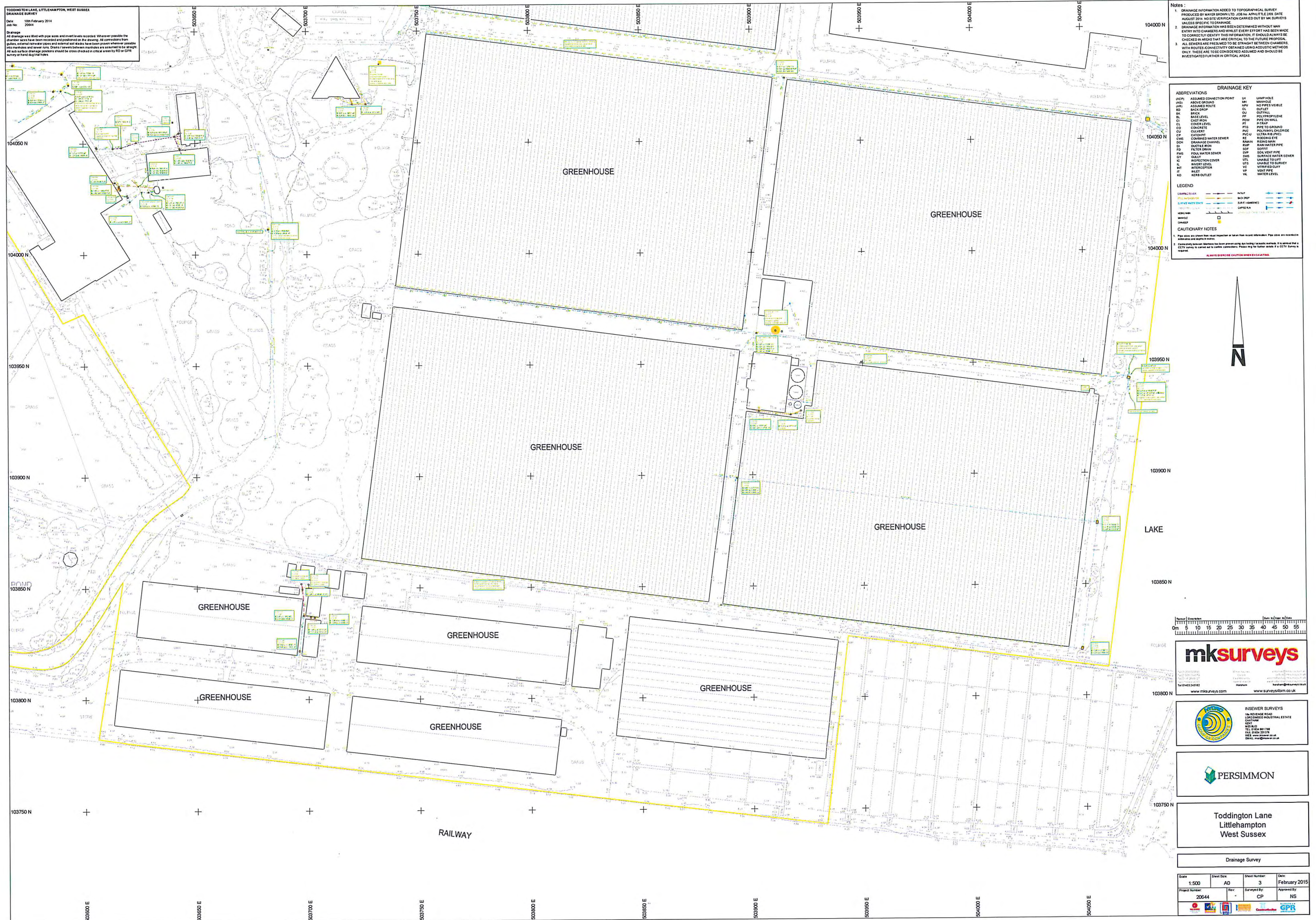
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PERSIMMON

Toddington Lane
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Drainage Survey

Scale	1:500	Sheet Size	A0	Sheet Number	2	Date	February 2015
Project Number	20644	Rev	-	Surveyed By	CP	Approved By	NS



TODDINGTON LANE, LITTLEHAMPTON, WEST SUSSEX
DRAINAGE SURVEY
Date: 18th February 2014
Job No: 20644
Drainage: All drainage was lifted with pipe sizes and invert levels recorded. Whenever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external sewer pipes and external wet stacks have been proven wherever possible into manholes and sewer runs. Drainage / sewers between manholes are assumed to be straight. All sub-surface drainage positions should be cross checked in critical areas by RQ or CPM survey or hand dug trial holes.



Notes:

1. DRAINAGE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCED BY MAYER BROWN LTD. JOB NO. AP/PL/15/208. DATE AUGUST 2014. NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS UNLESS SPECIFIC TO DRAINAGE.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILE EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES / CONNECTIVITY OBTAINED USING ACOUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED AS APPROXIMATE AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.

ABBREVIATIONS

ACF	ASSUMED CONNECTION POINT	LH	LAMP HOLE
AGD	ABOVE GROUND	MM	MANHOLE
AR	ASSUMED ROUTE	NPV	NO PIPES VISIBLE
BD	BACK DROP	OL	OUTLET
BR	BRICK	OU	OUTFALL
BL	BASE LEVEL	PP	POLYPROPYLENE
CL	CAST IRON	POW	PIPE ON WALL
CL	COVER LEVEL	PT	P-TRAP
CO	CONCRETE	PTD	PIPE TO GROUND
CU	CULVERT	PVC	POLYVINYL CHLORIDE
CP	CATCHPIT	PVC-U	ULTRA RIGID (PVC)
CWS	COMBINED WATER SEWER	RE	ROOFING EYE
DI	DRAINAGE CHANNEL	REMAN	REINFORCED MAN
DCH	DRAINAGE CHANNEL	RWP	RUN WATER PIPE
FD	FILTER DRAIN	SOF	SOFT
FWS	FULL WATER SEWER	SVP	SOIL VENT PIPE
GUY	GULLY	SVS	SURFACE WATER SEWER
IC	INVERT COVER	UTL	UNABLE TO LEFT
INT	INTERCEPTOR	UTL	UNABLE TO SURVEY
IT	INVERT	VC	VENT PIPE
MD	MANHOLE	WL	WATER LEVEL

LEGEND

COMBINED SEWER	IC/PT	IC/PT
SOIL WATER SEWER	IC/PT	IC/PT
SURFACE WATER SEWER	IC/PT	IC/PT
INVERT	IC/PT	IC/PT
WHOLE	IC/PT	IC/PT
CHAMBER	IC/PT	IC/PT

CAUTIONARY NOTES

1. Pipe sizes and depths from visual inspection or taken from record information. Pipe sizes are recorded in millimetres and depths in metres.
2. Connectivity between Manholes has been proven using data logging / acoustic methods. It is advised that a CCTV survey is carried out to confirm connections. Please ring for further details if a CCTV Survey is required.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.

mk surveys

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NOTE: This building has been demolished and is currently just earthworks. No evidence of original drainage.

NOTE: This building has been demolished and is currently just earthworks. No evidence of original drainage.

100Ø PVC pipe evident in trench. Assumed existing drainage from polytunnels. Assumed redundant

Notes:

1. DRAINAGE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCED BY MAYOR BROWN LTD. JOB NO. A/PH/LITTLE 20/9. DATE AUGUST 2014. NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS UNLESS SPECIFIC TO DRAINAGE.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILST EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES /CONNECTIVITY OBTAINED USING ACUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED ASSUMED AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.

ABBREVIATIONS		DRAINAGE KEY	
(ACR)	ASSUMED CONNECTION POINT	LH	LAMP HOUSE
(AG)	APPROACH	MH	MANHOLE
(AP)	ASSUMED ROUTE	NP	NO PIPES VISIBLE
(BO)	BACK DROP	OUT	OUTLET
BK	BANK	OU	OUTFALL
BS	BASE LEVEL	PC	POLYPROPYLENE
CS	CAST IRON	PI	PIPE ON DRAIN
CP	COVER LEVEL	POW	P-TRAP
CO	CONCRETE	PTD	PTD PIPE TO GROUND
CU	CULVERT	PCV	POLYVINYL CHLORIDE
CV	CATCHER	ULR	ULTRA RISE PIPES-U
CWS	COMBINED WATER SEWER	RE	REEDING EYE
D	DRAIN	RFP	RAIN FUTURE CHANNEL
DI	DUCTILE IRON	ROF	RAIN WATER FLOW
DM	DRAINAGE MANHOLE	SVP	SOIL VENT PIPE
FWB	FOUL WATER SEWER	SW	SEWAGE TREATMENT SEWER
FI	FIBERGLASS	UTL	UTILITY TO SURFACE
IC	INFECTION CONTROL	UL	UTILITY TO LIFT
INT	INTERCEPTOR	VC	VERTICALLY CAST
IS	IRON	VP	VENT PIPE
KE	KEIR OUTLET	WL	WATER LEVEL

LEGEND

- COMBINED SEWER
- POLL WATER SENSOR
- GAUGE WATER SENSOR
- UNIDENTIFIED SEWER
- MANHOLE
- INLET
- BACK STOP
- SURVEY ABANDONED
- CAPPED RUN
- DATA INFORMATION IS SHOWN IN GREEN
- SURVEY BOUNDARY

CAUTIONARY NOTES

1. Pipe sizes are shown from visual inspection or taken from record information. Pipe sizes are recorded in millimetres and depths in metres.
2. Connectivity between Manholes has been proven using dye testing / acoustic methods. It is advised that a CCTV survey is carried out to confirm connections. Please ring for further details if a CCTV survey is required.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.



GREENHOUSE

SHEET 3 OF 12



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PERSIMMON

Toddington Lane
Littlehampton
West Sussex

(ACCESS)

Drainage Survey

Scale 1:250	Sheet Size: A0	Sheet Number: 1	Date: February 2015
Project Number: 20644	Rev: -	Surveyed By: CP	Approved By: NS

Notes :

1. DRAINAGE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCED BY MAYER BROWN LTD. JOB NO. APHILLTLE 309, DATE AUGUST 2014. NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS UNLESS SPECIFIC TO DRAINAGE.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITH MAN ENTRY INTO CHAMBERS AND WHILST EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. DRAWINGS ARE PREPARED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES/CONNECTIVITY OBTAINED USING ACOUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED ASSUMED AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.

DRAINAGE KEY	
ABBREVIATIONS	
(ACP)	ASSUMED CONNECTION POINT
CG	CONCRETE GROUND
(AR)	ASSURED RISE
BP	BREAK
BR	BRICK
BL	BASE LEVEL
CB	CAST IRON
CL	COVER LEVEL
CO	CONCRETE
CJ	CULVERT
CP	CONCRETE
DWS	COMBINED WATER SEWER
DC	DUCTILE IRON
DT	DUCTILE IRON
FC	FOOT CULVERT
FWS	FOUL WATER SEWER
IC	INFECTION COVER
IN	INLET
INT	INTERCEPTOR
IT	INLET
KB	KOBRI OUTLET
LP	LAMP HOUSE
LV	LEAK
NH	NO PIPES BEHIND
OP	OPEN
OU	OUTFALL
PCW	PIPE ON WALL
PT	P-TRAFF
PTG	PISTON TO GROUND
PVC	PVC PIPE TO CHURCH
UL	ULTRA HIGH PVC
RE	RE ROODING EYE
RR	RE ROODING EYE
RWP	RUNNING WATER PIPE
RP	ROOF
RS	ROOF SINK PIPE
SV	SUPPLY
UTL	UNDER TO LEFT
UNL	UNDER TO RIGHT
VP	VENTRIATED CAP
WC	WATER
WL	WATER LEVEL

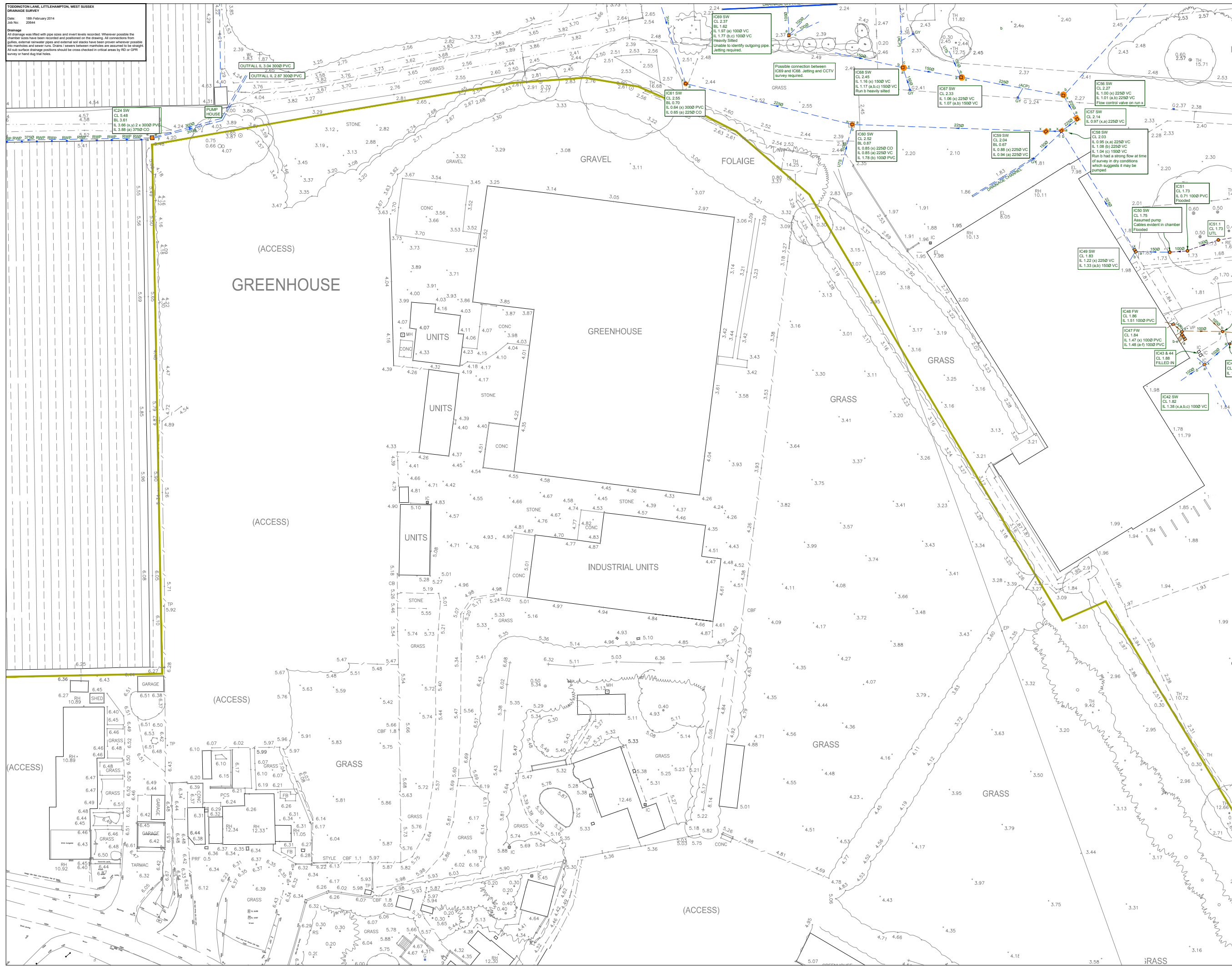
LEGEND

COMBINED SENDER		INBOX	
POLY WATER SENDER		BACK STOP	
DIFFERENTIAL WATER SENDER		SURVEY ANCHORED	
CHAINED POLY SENDER		CAPTED RUL	
INBOX ONLY		PRODUCES ANCHORS AND SENSORS IN GREEN	
WATER ONLY		SURVEY SENSORY	
CHAINED ONLY			

CAUTIONARY NOTES

1. Pipe sizes are shown from visual inspection or taken from recorded data. Pipe sizes are recorded in millimetres and depths in metres.
2. Connectivity between Manholes has been proven using dye testing / acoustic methods. It is advised that a CCTV survey is carried out to confirm connections. Please ring for further advice if a CCTV Survey is required.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.



TODDINGTON LANE, LITTLEHAMPTON, WEST SUSSEX
DRAINAGE SURVEY

Date: 18th February 2014
Job No: 20944

Drainage
All drainage was lifted with pipe sizes and invert levels recorded. Wherever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external rainwater pipes and external soil stacks have been proven wherever possible into the sewer system. Drains / sewers between manholes are assumed to be straight. All sub surface drainage positions should be cross checked in critical areas by RD or GPR survey or hand dug trial holes.

FOLIAGE

FOLIAGE

POLYTUNNELS

GREENHOUSE

Notes :

1. DRAINAGE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCED BY MAYER BROWNLIE, JOB NO. APH/11/12-309, DATE AUGUST 2014. NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS UNLESS SPECIFIC TO DRAINAGE.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILST EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES/CONNECTIVITY OBTAINED USING ACOUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED ASSUMED AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.

[illegible]

LEGEND

COMBINED DRAINER		PIVOT	
FLOOD WATER DRAINER		BACK STOP	
SURFACE WATER DRAINER		SURVEY ABROOKED	
UNIDENTIFIED DRAINER		CAPPED RUI	
UNKNOWN			

RAINAGE INFORMATION IS SHOWN IN GREEN

CAUTIONARY NOTES

1. Pipe sizes are shown from visual inspection or taken from record information. Pipe sizes are recorded in millimetres and depths in metres.
2. Connectivity between Manholes has been proven using dye testing / acoustic methods. It is advised that a CCTV survey is carried out to confirm connections. Please ring for further details if a CCTV Survey is required.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.



SHEET 5 OF 12



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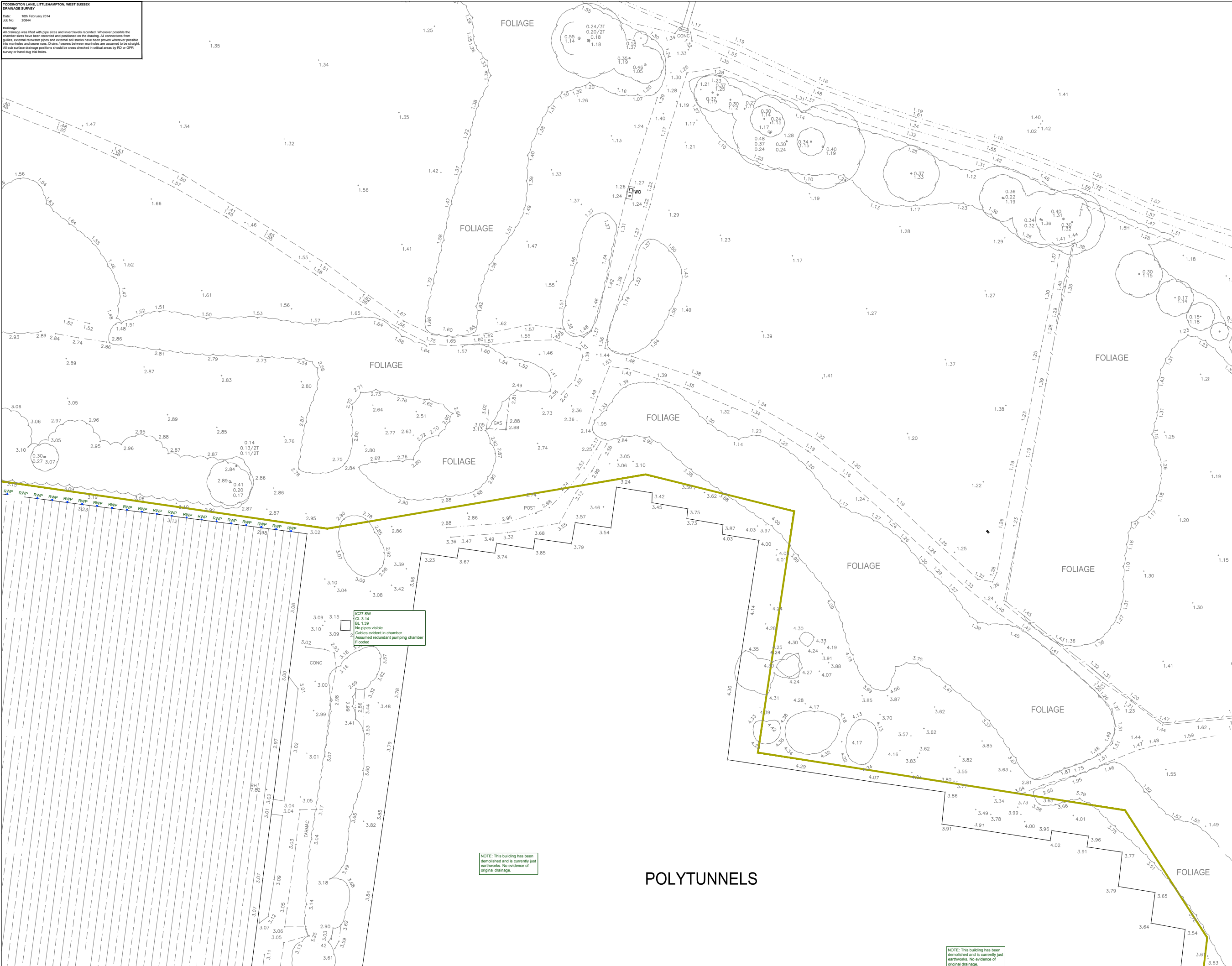
ERSIMMON

Toddington Lane
Littlehampton
West Sussex

Drainage Survey

Scale 1:250	Sheet Size: A0	Sheet Number: 2	Date: February 2015
Project Number: 20644	Rev.: -	Surveyed By: CP	Approved By: NS

TODDINGTON LANE, LITTLEHAMPTON, WEST SUSSEX
DRAINAGE SURVEY
Date: 18th February 2014
Job No: 20644
Drainage
All drainage was lifted with pipe sizes and invert levels recorded. Whenever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external sewer pipes and external soil stacks have been proven wherever possible into manholes and sewer runs. Drains / sewers between manholes are assumed to be straight. All sub-surface drainage positions should be cross checked in critical areas by RD or CPM survey or hand dug trial holes.



Notes :
1. DRAINAGE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCED BY MAYHEW BROWN LTD. JOB NO. APM/LITTLE 208. DATE AUGUST 2014. NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS UNLESS SPECIFIC TO DRAINAGE.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILE EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES / CONNECTIVITY OBTAINED USING ACOUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED ASSUMED AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.

ABBREVIATIONS

ACDP	ASSUMED CONNECTION POINT	LH	LAMP HOLE
AGD	ABOVE GROUND	MM	MANHOLE
AR	ASSUMED ROUTE	NPV	NO PIPES VISIBLE
BD	BACK DROP	OL	OUTLET
BR	BRICK	OU	OUTFALL
BL	BASE LEVEL	PP	POLYPROPYLENE
CL	CAST IRON	POW	PIPE ON WALL
CU	CULVERT	PT	P-TJUMP
CO	CONCRETE	PTD	PIPE TO GROUND
CS	CULVERT	PVC	POLYVINYL CHLORIDE
CP	CATCHPIT	PVC-U	ULTRA RISE (PVC)
CWS	COMBINED WATER SEWER	RE	ROOFING EYE
DCH	DRAINAGE CHANNEL	RM	REINFORCED MAN
DI	DUCTILE IRON	RWP	RAIN WATER PIPE
FD	FILTER DRAIN	SOF	SOFT
FWS	FOLI WATER SEWER	SVP	SOIL VENT PIPE
G	GULLY	SW	SURFACE WATER SEWER
IC	INSPECTION COVER	U	UNABLE TO SURVEY
INT	INTERCEPTOR	VC	VENT PIPE
IO	INLET	VP	VENT PIPE
MD	MANHOLE	WL	WATER LEVEL

LEGEND

COMBINED SEWER	ACDP	NO PIPES VISIBLE
SOIL WATER SEWER	BD	NO PIPES VISIBLE
SURFACE WATER SEWER	BR	NO PIPES VISIBLE
INSPECTION COVER	CL	NO PIPES VISIBLE
MANHOLE	CU	NO PIPES VISIBLE
WHOLE	CO	NO PIPES VISIBLE
CHAMBER	CS	NO PIPES VISIBLE

CAUTIONARY NOTES

- Pipe sizes and depths from visual inspection or taken from record information. Pipe sizes are recorded in millimetres and depths in metres.
- Connectivity between Manholes has been proven using gas testing / acoustic methods. It is advised that a CCTV survey is carried out to confirm connections. Please ring for further details if a CCTV survey is required.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.



SHEET 6 OF 12

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TODDINGTON LANE, LITTLEHAMPTON, WEST SUSSEX
DRAINAGE SURVEY
Date: 18th February 2014
Job No: 20644
Drainage
All drainage was lifted with pipe sizes and invert levels recorded. Whenever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external sewer pipes and external wet stacks have been proven wherever possible into manholes and sewer runs. Drains / sewers between manholes are assumed to be straight. All sub surface drainage positions should be cross checked in critical areas by RQ or CPM survey or hand dug trial holes.

NOTE: This building has been demolished and is currently just earthworks. No evidence of original drainage.

POLYTUNNELS

NOTE: This building has been demolished and is currently just earthworks. No evidence of original drainage.

Notes :
1. DRAINAGE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCED BY MAYHEW BROWN LTD. JOB NO. APL/LITTLE 2008. DATE AUGUST 2014. NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS UNLESS SPECIFIC TO DRAINAGE.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILE EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES / CONNECTIVITY OBTAINED USING ACQUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED ASSUMED AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.

ABBREVIATIONS

DRAINAGE KEY

LEGEND

CAUTIONARY NOTES



SHEET 8 OF 12

Scale: 1:250

Sheet Size: A0

Sheet Number: 2

Date: February 2015

Project Number: 20644

Rev: -

Surveyed By: CP

Approved By: NS

mk surveys

INSEWER SURVEYS

PERSIMMON

Toddington Lane
Littlehampton
West Sussex

Drainage Survey

TODDINGTON LANE, LITTLEHAMPTON, WEST SUSSEX
DRAINAGE SURVEY
Date: 18th February 2014
Job No: 20644
Drainage
All drainage was filled with pipe sizes and invert levels recorded. Wherever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external sewer pipes and external soil stacks have been proven wherever possible into manholes and sewer runs. Drains / sewers between manholes are assumed to be straight. All sub-surface drainage positions should be cross checked in critical areas by RQ or CPQ survey or hand dug trial holes.



Notes:
1. DRAINAGE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCE BY MAYER BROWN LTD. JOB NO. AP/LITTLE 2008. DATE AUGUST 2014. NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS UNLESS SPECIFIC TO DRAINAGE.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILE EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES CONNECTIVITY OBTAINED USING ACQUISITVE METHODS ONLY. THESE ARE TO BE CONSIDERED AS APPROXIMATE AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.

ABBREVIATIONS

ADCP	ASSUMED CONNECTION POINT	LH	LAMP HOLE
AGD	ABOVE GROUND	MM	MANHOLE
AR	ASSUMED ROUTE	NPV	NO PIPES VISIBLE
BD	BACK DROP	OU	OUTLET
BR	BRICK	PP	POLYPROPYLENE
BL	BASE LEVEL	POT	PIPE ON WALL
CL	CAST IRON	PST	P-STRAP
CO	CONCRETE	PTD	PIPE TO GROUND
CU	CULVERT	PVC	POLYVINYL CHLORIDE
CP	CATCHPIT	PVC-U	ULTRA RISE (PVC)
CWS	COMBINED WATER SEWER	RE	ROOFING EYE
DCH	DUCTILE IRON	RH	RAIN WATER PIPE
DI	DRIVE IN	RS	REINFORCED
FD	FILTER DRAIN	SOF	SOFT
FWS	FULL WATER SEWER	SVP	SOIL VENT PIPE
GY	GULLY	SW	SURFACE WATER SEWER
IC	INVERT COVER	UL	UNABLE TO LIFT
INT	INTERCEPTOR	VC	UNABLE TO SURVEY
IT	INLET	VP	VENT PIPE
MD	MANHOLE	WL	WATER LEVEL

LEGEND

1. Pipe sizes and depths from visual inspection or taken from record information. Pipe sizes are recorded in millimetres and depths in metres.

2. Connectivity between manholes has been proven using gas testing / acoustic methods. It is advised that a CCTV survey is carried out to confirm connections. Please ring for further details if a CCTV survey is required.

CAUTIONARY NOTES

1. Pipe sizes and depths from visual inspection or taken from record information. Pipe sizes are recorded in millimetres and depths in metres.

2. Connectivity between manholes has been proven using gas testing / acoustic methods. It is advised that a CCTV survey is carried out to confirm connections. Please ring for further details if a CCTV survey is required.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.

SHEET 9 OF 12

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mk surveys

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TODDINGTON LANE, LITTLEHAMPTON, WEST SUSSEX
DRAINAGE SURVEY
Date: 18th February 2014
Job No: 20644
Drainage
All drainage was filled with pipe sizes and invert levels recorded. Wherever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external sewer pipes and external soil stacks have been proven wherever possible into manholes and sewer runs. Drains / sewers between manholes are assumed to be straight. All sub-surface drainage positions should be cross checked in critical areas by RQ or CPQ survey or hand dug trial holes.



Notes:
1. DRAINAGE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCE BY MAYER BROWN LTD. JOB NO. AP/LITTLE 2008. DATE AUGUST 2014. NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS UNLESS SPECIFIC TO DRAINAGE.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILE EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES CONNECTIVITY OBTAINED USING ACUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED AS APPROXIMATE AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.

ABBREVIATIONS

ADCP	ASSUMED CONNECTION POINT	LH	LAMP HOLE
AGD	ABOVE GROUND	MM	MANHOLE
AR	ASSUMED ROUTE	NPV	NO PIPES VISIBLE
BD	BACK DROP	OU	OUTLET
BR	BRICK	PP	POLYPROPYLENE
BL	BASE LEVEL	PTD	PIPE ON WALL
CL	CAST IRON	P-T	P-T JUNCTION
CO	CONCRETE	PVC	POLYVINYL CHLORIDE
CU	CULVERT	PVC-U	ULTRA RIGID PVC
CP	CATCHPIT	RE	ROOFING EYE
CWS	COMBINED WATER SEWER	RHS	RAIN WATER PIPE
DCH	DUCTILE IRON	RS	RAIN WATER
FD	FILTER DRAIN	SOF	SOFT
FWS	FULL WATER SEWER	SVP	SOIL VENT PIPE
GY	GULLY	SW	SURFACE WATER SEWER
IC	INVERT COVER	UL	UNABLE TO LIFT
INT	INTERCEPTOR	VC	UNABLE TO SURVEY
IT	INLET	VP	VENT PIPE
KD	KIDNEY OUTLET	WL	WATER LEVEL

LEGEND

1. Pipe sizes and depths from visual inspection or taken from record information. Pipe sizes are recorded in millimetres and depths in metres.

2. Connectivity between manholes has been proven using gas testing / acoustic methods. It is advised that a CCTV survey is carried out to confirm connections. Please ring for further details if a CCTV survey is required.

CAUTIONARY NOTES

1. Pipe sizes and depths from visual inspection or taken from record information. Pipe sizes are recorded in millimetres and depths in metres.

2. Connectivity between manholes has been proven using gas testing / acoustic methods. It is advised that a CCTV survey is carried out to confirm connections. Please ring for further details if a CCTV survey is required.

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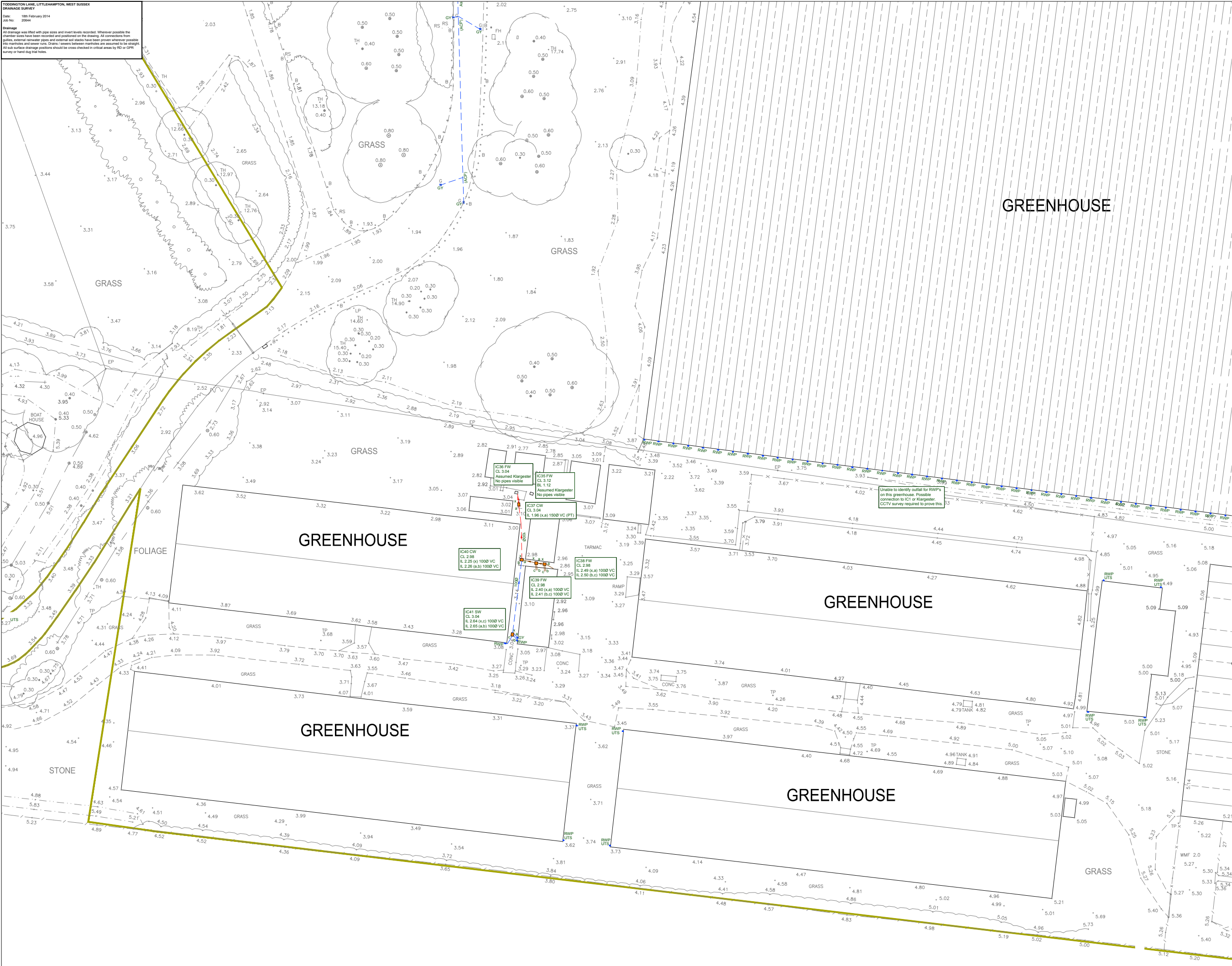
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TODDINGTON LANE, LITTLEHAMPTON, WEST SUSSEX
DRAINAGE SURVEY
Date: 18th February 2014
Job No: 20644
Drainage
All drainage was fitted with pipe sizes and invert levels recorded. Whenever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external sewer pipes and external soil stacks have been proven wherever possible into manholes and sewer runs. Drains / sewers between manholes are assumed to be straight. All sub-surface drainage positions should be cross checked in critical areas by RQ or GPR survey or hand dug trial holes.



Notes :

1. DRAINAGE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCED BY MAYHEW BROWN LTD. JOB NO. APM/LITTLE 2008. DATE AUGUST 2014. NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS UNLESS SPECIFIC TO DRAINAGE.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILE EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES / CONNECTIVITY OBTAINED USING ACOUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED ASSUMED AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.

ABBREVIATIONS

ACPP	ASSUMED CONNECTION POINT	LH	LAMP HOLE
AGD	ABOVE GROUND	MM	MANHOLE
AR	ASSUMED ROUTE	NPV	NO PIPES VISIBLE
BD	BACK DROP	OL	OUTLET
BR	BRICK	OU	OUTFALL
BL	BASE LEVEL	PP	POLYPROPYLENE
CL	CAST IRON	POW	PIPE ON WALL
CU	CULVERT	P-T	P-T JUNCTION
CO	CONCRETE	PTD	PIPE TO GROUND
CP	CATCHPIT	PVC	POLYVINYL CHLORIDE
CWS	COMBINED WATER SEWER	RE	ROOFING EYE
DI	DRAINAGE CHANNEL	RMAN	REINFORCED MANHOLE
DCH	DRAINAGE CHANNEL	RWP	RAIN WATER PIPE
FD	FILTER DRAIN	SOF	SOFT
FWS	FULL WATER SEWER	SVP	SOIL VENT PIPE
GY	GULLY	SW	SURFACE WATER SEWER
IC	INSPECTION COVER	UL	UNABLE TO LIFT
INT	INTERCEPTOR	UTL	UNABLE TO SURVEY
MD	MANHOLE	VC	VERTICAL
MD	MANHOLE	WL	WATER LEVEL

LEGEND

COMBINED SEWER	—	ACPP	—	NPV
SURFACE WATER SEWER	—	AGD	—	NO PIPES
UNABLE TO SURVEY	—	AR	—	UNABLE TO SURVEY
UNABLE TO SURVEY	—	BD	—	UNABLE TO SURVEY
UNABLE TO SURVEY	—	BR	—	UNABLE TO SURVEY
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UNABLE TO SURVEY	—	MD	—	UNABLE TO SURVEY

CAUTIONARY NOTES

1. Pipe sizes and depths from visual inspection or taken from record information. Pipe sizes are recorded in millimetres and depths in metres.
2. Connectivity between Manholes has been proven using the following / acoustic methods. It is advised that a CCTV survey is carried out to confirm connections. Please refer to further details if a CCTV survey is required.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.

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TODDINGTON LANE, LITTLEHAMPTON, WEST SUSSEX
DRAINAGE SURVEY
Date: 18th February 2014
Job No: 20644
Drainage: All drainage was lifted with pipe sizes and invert levels recorded. Wherever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external downpipes and external soil stacks have been proven wherever possible into manholes and sewer runs. Drains / sewers between manholes are assumed to be straight. All sub-surface drainage positions should be cross checked in critical areas by R2 or GPR survey or hand dug trial holes.



Notes :
1. DRAINAGE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCED BY MAYHEW BROWN LTD. J201401/18/19/20/21 DATE AUGUST 2014. NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS UNLESS SPECIFIC TO DRAINAGE.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILE EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES CONNECTIVITY OBTAINED USING ACUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED ASSUMED AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.

ABBREVIATIONS

ADP	ASSUMED CONNECTION POINT	LH	LAMP HOLE
AGD	ABOVE GROUND	MM	MANHOLE
AR	ASSUMED ROUTE	NPV	NO PIPES VISIBLE
BD	BACK DROP	OL	OUTLET
BK	BRICK	OU	OUTFALL
BL	BASE LEVEL	PP	POLYPROPYLENE
CI	CAST IRON	POW	PIPE ON WALL
CL	CONCRETE	PT	P-TJUMP
CO	CONCRETE	PTD	PIPE TO DRAIN
CU	CULVERT	PVC	POLYVINYL CHLORIDE
CP	CATCHMENT	PVC-U	ULTRA RISE (PVC)
CWS	COMBINED WATER SEWER	RE	ROOFING EYE
DCH	DRAINAGE CHANNEL	RM	RAIN MAN
DI	DUCTILE IRON	RWP	RAIN WATER PIPE
FD	FILTER DRAIN	SOF	SOFT
FWS	FOLI WATER SEWER	SVP	SOIL VENT PIPE
GY	GULLY	SW	SURFACE WATER SEWER
HC	INSPECTION COVER	UTL	UNABLE TO LIFT
INT	INTERCEPTOR	UTS	UNABLE TO SURVEY
MD	MANHOLE	VC	VENT PIPE
ND	NOISE OUTLET	WL	WATER LEVEL

LEGEND

COMBINED SEWER	---	ADP	---	---
FOLI WATER SEWER	---	AGD	---	---
SURFACE WATER SEWER	---	AR	---	---
UNABLE TO SURVEY	---	BD	---	---
UNABLE TO SURVEY	---	BK	---	---
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CAUTIONARY NOTES

- Pipe sizes and depths from visual inspection or taken from record information. Pipe sizes are recorded in millimetres and depths in metres.
- Connectivity between Manholes has been proven using gas testing / acoustic methods. It is advised that a CCTV survey is carried out to confirm connections. Please refer to further details if a CCTV Survey is required.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.

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mk surveys

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Appendix G
Greenfield Runoff Calculation

Glanville Consultants		Page 1
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ICP SUDS Mean Annual Flood

Input

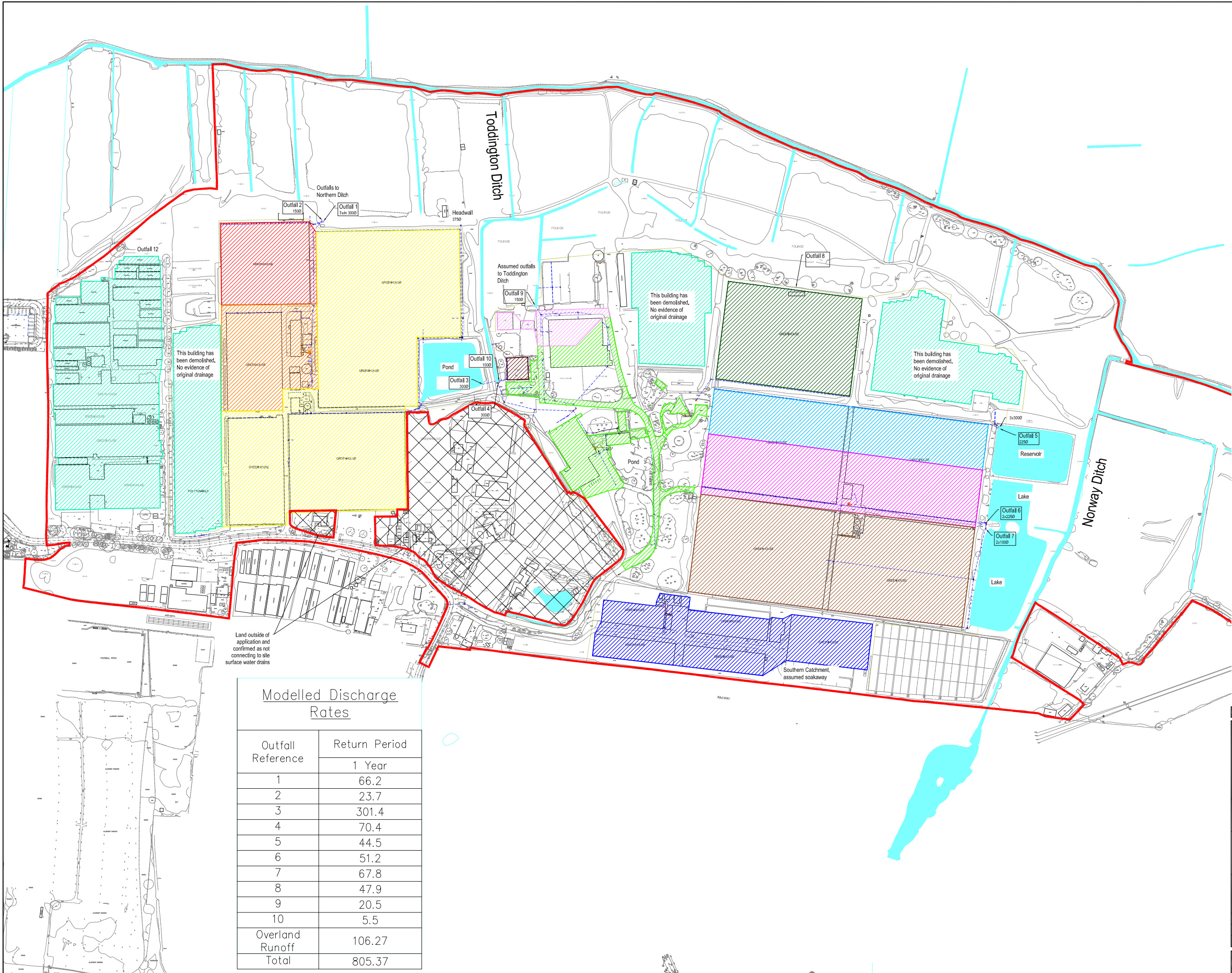
Return Period (years)	1	Soil	0.500
Area (ha)	1.000	Urban	0.750
SAAR (mm)	739	Region Number	Region 7

Results l/s

QBAR Rural	5.9
QBAR Urban	15.0
Q1 year	12.7
Q1 year	12.7
Q30 years	26.0
Q100 years	30.4

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Appendix H
Existing Discharge Rates



- NOTES
1. This drawing is to be read in conjunction with all other relevant documents and specifications.
 2. Dimensions not to be scaled.
 3. All drainage catchments are indicative only and based on the drainage survey drawing completed by mksurveys, job no. 20644.
 4. Simulation modelling using WinDes has been undertaken based on the existing network identified by mksurveys.
 5. Simulation modelling has included surcharged outfalls in accordance with the modelled flood levels provided by the Environment Agency.
 6. Overland runoff from areas where no positive drainage connection was identified has been undertaken.

KEY TO IMPERMEABLE AREAS

- Outfall 1
- Outfall 2
- Outfall 3
- Outfall 4
- Outfall 5
- Outfall 6
- Outfall 7
- Outfall 8
- Outfall 9
- Outfall 10
- Overland runoff
- Soakaway catchment
- Assumed flow direction
- Site Boundary
- Existing ditches and ponds

Modelled Discharge Rates

Outfall Reference	Return Period
	1 Year
1	66.2
2	23.7
3	301.4
4	70.4
5	44.5
6	51.2
7	67.8
8	47.9
9	20.5
10	5.5
Overland Runoff	106.27
Total	805.37

Rev.

Description

Date

Chkd



Glanville

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Tel: (01235) 515550 Fax: (01235) 817799
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Client :

Persimmon Homes

Project :

North Littlehampton

Title :

Existing Surface Water Drainage Rates

Project Engineer :

S.Hudson

Scale :

1:2000 @ A1

Project Director :

K.Rayner

Date :

February 2015

Status :

PRELIMINARY

Drawing No.

8140927/121

Rev

ARUNSHIRE COUNTY COUNCIL L1439-42121-006

Appendix L

Windes Calculations Existing Rates

Glanville Consultants		Page 1
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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.300	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	10.000	0.050	200.0	0.500	4.00	0.0	0.600	oo	41	
1.001	20.000	0.500	40.0	0.000	0.00	0.0	0.600	oo	41	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	4.15	3.050	0.500	0.0	0.0	0.0	1.11	156.0	0.0
1.001	0.00	4.28	3.000	0.500	0.0	0.0	0.0	2.49	351.0	0.0

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	19.300	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
DTS Status		OFF	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 2, 30, 99, 100
Climate Change (%)	0, 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	1	+0%	30/15 Summer				3.210
1.001	2	15 Winter	1	+0%					3.092

PN	US/MH Name	Depth (m)	Surcharged Volume (m³)	Flooded Flow / Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	-0.140	0.000	0.54	65.4	OK	
1.001	2	-0.208	0.000	0.22	66.2	OK	

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.300	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	85.000	0.570	149.1	0.800	4.00	0.0	0.600	o	150	
1.001	20.000	0.780	25.6	0.000	0.00	0.0	0.600	o	150	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	5.73	3.050	0.800	0.0	0.0	0.0	0.82	14.5	0.0
1.001	0.00	5.89	2.480	0.800	0.0	0.0	0.0	2.00	35.3	0.0

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Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	19.300	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
DTS Status		OFF	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 2, 30, 99, 100
Climate Change (%)	0, 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	30 Winter	1	+0%	1/15 Summer	2/30 Winter			4.211
1.001	2	30 Winter	1	+0%					2.574

PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	1.011	0.000	1.66		23.7	FLOOD RISK	58
1.001	2	-0.056	0.000	0.71		23.7	OK	

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.300	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	40.000	0.660	60.6	2.500	4.00	0.0	0.600	∞	41	
2.000	40.000	0.610	65.6	3.300	4.00	0.0	0.600	∞	41	
1.001	20.000	0.760	26.3	0.000	0.00	0.0	0.600	o	300	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	4.33	3.800	2.500	0.0	0.0	0.0	2.02	284.8	0.0
2.000	0.00	4.34	2.610	3.300	0.0	0.0	0.0	1.94	273.7	0.0
1.001	0.00	4.45	2.000	5.800	0.0	0.0	0.0	3.08	217.5	0.0

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	19.300	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
DTS Status		OFF	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 2, 30, 99, 100
Climate Change (%)	0, 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	1	+0%	1/15 Summer	30/15 Winter			4.151
2.000	2	15 Winter	1	+0%	1/15 Summer	2/15 Winter			3.531
1.001	3	15 Winter	1	+0%	1/15 Summer	99/15 Winter			3.454

PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.051	0.000	1.04		275.5	SURCHARGED	15
2.000	2	0.621	0.000	0.87		220.8	FLOOD RISK	46
1.001	3	1.154	0.000	1.59		301.4	SURCHARGED	16

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.300	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	36.000	0.210	171.4	1.230	4.00	0.0	0.600	o	225	
1.001	23.000	0.040	575.0	0.000	0.00	0.0	0.600	o	300	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	4.60	0.850	1.230	0.0	0.0	0.0	1.00	39.6	0.0
1.001	0.00	5.19	0.640	1.230	0.0	0.0	0.0	0.65	45.8	0.0

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	19.300	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
DTS Status		OFF	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 2, 30, 99, 100
Climate Change (%)	0, 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	1	+0%	1/15 Summer	30/15 Summer			1.763
1.001	2	15 Winter	1	+0%	1/15 Summer				1.006

PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.688	0.000	1.89		70.6	SURCHARGED	32
1.001	2	0.066	0.000	1.94		70.4	SURCHARGED	

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.300	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	160.000	0.640	250.0	1.700	4.00	0.0	0.600	o	225	
1.001	12.000	0.100	120.0	0.000	0.00	0.0	0.600	o	225	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	7.24	3.240	1.700	0.0	0.0	0.0	0.82	32.7	0.0
1.001	0.00	7.41	2.600	1.700	0.0	0.0	0.0	1.19	47.4	0.0

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	19.300	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
DTS Status		OFF	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 2, 30, 99, 100
Climate Change (%)	0, 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	60 Winter	1	+0%	1/15 Summer	2/15 Winter			4.071
1.001	2	60 Winter	1	+0%	1/30 Summer				2.834

PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.606	0.000	1.38		44.6	FLOOD RISK	69
1.001	2	0.009	0.000	1.10		44.5	SURCHARGED	

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Glanville Consultants		Page 1
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:19 File OUTFALL 6.MDX	Designed by jokelly Checked by	
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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.300	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	162.000	0.820	197.6	2.220	4.00	0.0	0.600	o	225	
1.001	12.000	0.100	120.0	0.000	0.00	0.0	0.600	o	225	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	6.91	3.270	2.220	0.0	0.0	0.0	0.93	36.8	0.0
1.001	0.00	7.08	2.450	2.220	0.0	0.0	0.0	1.19	47.4	0.0

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Glanville Consultants		Page 2
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:19 File OUTFALL 6.MDX		
Designed by jokelly Checked by		
Micro Drainage		Network 2015.1

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	19.300	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
DTS Status		OFF	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 2, 30, 99, 100
Climate Change (%)	0, 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	60 Winter	1	+0%	1/15 Summer	2/15 Winter			4.368
1.001	2	60 Winter	1	+0%	1/15 Summer				2.724

PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.873	0.000	1.41		51.3	FLOOD RISK	73
1.001	2	0.049	0.000	1.26		51.2	SURCHARGED	

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Glanville Consultants		Page 1
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:20 File OUTFALL 7.MDX	Designed by jokelly Checked by	
Micro Drainage Network 2015.1		

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.300	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	55.500	0.060	925.0	3.720	4.00	0.0	0.600	o	225	
1.001	12.000	0.100	120.0	0.000	0.00	0.0	0.600	o	225	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	6.19	2.230	3.720	0.0	0.0	0.0	0.42	16.8	0.0
1.001	0.00	6.36	2.170	3.720	0.0	0.0	0.0	1.19	47.4	0.0

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Glanville Consultants		Page 2
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:20 File OUTFALL 7.MDX		
Designed by jokelly Checked by		
Micro Drainage		Network 2015.1

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	19.300	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
DTS Status		OFF	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 2, 30, 99, 100
Climate Change (%)	0, 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	60 Winter	1	+0%	1/15 Summer	1/30 Winter			3.619
1.001	2	60 Winter	1	+0%	1/15 Summer				2.563

PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	1.164	39.094	4.19		67.8	FLOOD	92
1.001	2	0.168	0.000	1.67		67.8	SURCHARGED	

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Glanville Consultants		Page 1
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:21 File OUTFALL 8.MDX	Designed by jokelly Checked by	
Micro Drainage Network 2015.1		

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.300	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	80.000	0.600	133.3	1.800	4.00	0.0	0.600	o	225	
1.001	12.000	0.100	120.0	0.000	0.00	0.0	0.600	o	225	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	5.18	3.300	1.800	0.0	0.0	0.0	1.13	45.0	0.0
1.001	0.00	5.35	2.700	1.800	0.0	0.0	0.0	1.19	47.4	0.0

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Glanville Consultants		Page 2
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:21 File OUTFALL 8.MDX		
Designed by jokelly Checked by		
Micro Drainage		Network 2015.1

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	19.300	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
DTS Status		OFF	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 2, 30, 99, 100
Climate Change (%)	0, 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	60 Winter	1	+0%	1/15 Summer	2/15 Winter			3.861
1.001	2	60 Winter	1	+0%	1/15 Summer				3.140

PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.336	0.000	1.09		47.9	FLOOD RISK	69
1.001	2	0.215	0.000	1.18		47.9	SURCHARGED	

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Glanville Consultants		Page 1
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:22 File OUTFALL 9.MDX	Designed by jokelly Checked by	
Micro Drainage Network 2015.1		

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.300	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	50.000	0.200	250.0	1.380	4.00	0.0	0.600	o	300	
1.001	10.000	0.100	100.0	0.000	0.00	0.0	0.600	o	300	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	I.Area (ha)	Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	4.84	3.600	1.380	0.0	0.0	0.0	0.99	70.0	0.0
1.001	0.00	4.95	3.400	1.380	0.0	0.0	0.0	1.57	111.1	0.0

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Glanville Consultants		Page 2
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:22 File OUTFALL 9.MDX		
Designed by jokelly Checked by		
Micro Drainage		Network 2015.1

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales Cv (Summer)			0.750
M5-60 (mm)	19.300	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
DTS Status			OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 2, 30, 99, 100
Climate Change (%)	0, 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	30 Winter	1	+0%	1/15 Summer	2/30 Winter			4.134
1.001	2	15 Winter	1	+0%	1/15 Summer	100/15 Winter			3.927

PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.234	0.000	1.05		69.0	FLOOD RISK	43
1.001	2	0.227	0.000	0.74		58.7	FLOOD RISK	

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Glanville Consultants		Page 1
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:23 File OUTFALL 10.MDX	Designed by jokelly Checked by	
Micro Drainage Network 2015.1		

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.300	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	43.000	0.540	79.6	0.350	4.00	0.0	0.600	o	225	
1.001	10.000	0.100	100.0	0.000	0.00	0.0	0.600	o	225	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	4.49	1.550	0.350	0.0	0.0	0.0	1.47	58.3	0.0
1.001	0.00	4.62	1.010	0.350	0.0	0.0	0.0	1.31	52.0	0.0

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Glanville Consultants		Page 2
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:23 File OUTFALL 10.MDX		
Designed by jokelly Checked by		
Micro Drainage		Network 2015.1

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	19.300	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
DTS Status		OFF	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 2, 30, 99, 100
Climate Change (%)	0, 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	30 Winter	1	+0%	1/15 Summer	30/15 Summer			2.126
1.001	2	30 Winter	1	+0%	1/15 Summer				2.052

PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.351	0.000	0.37		20.3	FLOOD RISK	33
1.001	2	0.817	0.000	0.47		20.3	FLOOD RISK	

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Glanville Consultants		Page 1
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:24 File OUTFALL 11.MDX	Designed by jokelly Checked by	
Micro Drainage Network 2015.1		

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.300	Minimum Backdrop Height (m)	0.200
Ratio R	0.350	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	24.000	0.610	39.3	0.065	4.00	0.0	0.600	o	100	
1.001	10.000	0.100	100.0	0.000	0.00	0.0	0.600	o	225	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	4.32	2.080	0.065	0.0	0.0	0.0	1.23	9.7	0.0
1.001	0.00	4.45	1.345	0.065	0.0	0.0	0.0	1.31	52.0	0.0

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Glanville Consultants		Page 2
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 31/03/2015 10:24 File OUTFALL 11.MDX		
Designed by jokelly Checked by		
Micro Drainage		Network 2015.1

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	19.300	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep		Fine Inertia Status	ON
DTS Status		OFF	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 2, 30, 99, 100
Climate Change (%)	0, 0, 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	1	+0%	1/15 Summer	30/15 Summer			2.204
1.001	2	15 Summer	1	+0%	1/15 Summer				2.016

PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.024	0.000	0.56		5.3	FLOOD RISK	19
1.001	2	0.446	0.000	0.12		5.2	FLOOD RISK	

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APPENDIX I: Drainage Strategy, West of Wetlands