THAMES WATER UTILITIES LIMITED

DEVELOPER SERVICES
CUSTOMER LED TEAM

X2039/214
SHEERWATER LINK ROAD

IMPACT STUDY REPORT

Company Confidential

February 2013

Date	Issue	Author	Checked	Approved
February 2013	1	Lal Kulatilake	Gavin Smith	Cyril Okonkwo

CONTENTS

1. Development Proposals

Woking Borough Council via Mayer Brown has notified Thames Water (TW) that they intend to construct new road improvement works named as 'Sheerwater Link Road in Woking, Surrey. The proposed development covers some areas of Monument Road, Monument Way East, Eve Road, Albert Drive and Arnold Road. Several Thames Water surface water and foul sewers are within this development area. It is for this reason that this impact study has been undertaken. Appendix 'A' shows the proposed Sheerwater Link Road development.

2. Information Submitted by the Developer

The following drawings have been submitted by the developer.

Drawing Number	Description
WBCSHEERWATER.1/11 Rev.E	Proposed Sheerwater Link Road
WBCSWATER.2/20 Rev.E	Drainage & Ducting (1 of 3)
WBCSWATER.2/21 Rev.E	Drainage & Ducting (2 of 3)
WBCSWATER.2/22 Rev.E	Drainage & Ducting (3 of 3)

Proposed Sheerwater Link Road drawing is in Appendix A and all other drawings are in Appendix B.

The drawings submitted by the developer show the general arrangement of the proposed Sheerwater Link Road and details of proposed drainage and ducting. The drawings do not show levels of proposed roads, verges and footpath areas. These would be required for the detail design stage.

A summary of the proposed work is given below.

- A part of Monument Way East will be widened and extended up to Albert Drive as a new link road. The link road, named as 'New Road', has footpaths and cycle paths.
- In Monument Road, the existing traffic signal at the junction with Arnold Road is to be removed, existing signal junction with Walton Road to be modified and a new traffic signal to be introduced at the junction with Monument Way East. Also two new pedestrian crossings and new footways will be constructed.
- In Eve Road and Arnold Road, raised areas and narrow lane widths will be introduced to restrict the traffic. Additional parking areas and new footpaths will be constructed in this area.
- In Albert Drive new footways, cycle paths and verges will be constructed. Also a new boundary wall to be constructed along the northern boundary between the junctions of New Road and Woking Business Park.

The developer for this project is Woking Borough Council and the consultant is Mayer Brown Ltd.

3. Thames Water Assets in the Development Area

Several Thames Water surface water and foul sewers are in the development area. Details of all surface water (SW) and foul sewers in the area are shown in Appendix C. All the information given below is based on Thames Water View Tool. Note that there are no Thames Water clean water mains in this area, it is believed that another water company is responsible for providing clean water to the area.

Monument Way East, proposed New Road and Albert Drive

A 1400mm x 1000mm concrete SW culvert runs along Monument Way East, proposed New Road and Albert Drive from the junction of Monument Road / Monument Way East to a point 30m east of the junction of Albert Drive / Woking Business Park. Further downstream details of this culvert/sewer are not available (downstream of manhole 0751). Approximately a 15m section of this culvert at the junction of Monument Road / Walton Road between manholes 6653 to 6655 is a brick construction.

SW pipes of 225mm diameter concrete and an unknown size of foul Vitrified Clay (VC) run along Monument Way East. A 225mm diameter VC foul sewer runs along entire length of Monument Way East and up to Woking Business Park.

A 150mm VC SW pipe is in Albert Drive between the junction of Eve Road and at a point 40m east of the junction of Woking Business Park. An another 40m of 200mm VC foul sewer runs along Albert Drive towards the junction of Eve Road.

Monument Road
The following sewers are in Monument Road:

- 1200mm x 1000mm brick SW culvert between the junctions of Monument Way East and Walton Road.
- 675mm concrete SW sewer between the junctions of Walton Road and Maybury Road.
- 225mm VC foul sewer between the junctions of Walton Road and Maybury Road.
- 225mm VC foul sewer approximately 70m long from the junction of Walton Road towards south.
- 300mm CI foul sewer pumping main between the junctions of Walton Road and Maybury Road.

Eve Road
A 200mm VC foul sewer runs along entire length of Eve Road. There are three unknown sizes of branches feeding to this sewer.

Arnold Road
A 200mm VC foul sewer runs along entire length of Arnold Road. There are two unknown sizes of branches feeding to this sewer.

4. Development Works Affecting Thames Water Assets

The following impacts on existing Thames Water assets are anticipated due to this development (Please refer Appendix B – Proposed Drainage & Ducting).

4.1 New discharges to surface water network

- Albert Drive – Discharge from new 225mm SW sewer to MH0751
  The developer had initially proposed to discharge at a maximum rate of 20 l/s by using a 75m^3 capacity surface water attenuation tank. Subsequently, they requested to discharge at a rate of 35 l/s without an attenuation tank.

4.2 Impact on existing manholes

Due to construction works of the proposed development, the following manholes which are currently topographically located either in verge or open areas will be topographically located in carriageways.

- MH7602 & MH8652 in Monument Way East and MH9651 in Albert Drive

These manholes are currently in verge and it will be in the road after completion of the construction.

- MH7652 in Monument Way East and MH9656 in proposed New Road
  These manholes are currently in open area and it will be in the road after completion of the construction.

Due to changing of topographical position from either verge or open area to road, the following modifications works need to be considered for these manholes.

- Amendments to depth.
- Changing of manhole cover.
- Complete reconstruction of manhole.

The detail design work shall be carried out after receiving the final construction drawings including proposed ground levels from the developer.

Available details of all relevant manholes are given in Appendix D.

4.3 Changing of cover to existing surface water and foul sewers

Due to the proposed construction works, covers (Distance between ground level and pipe crown level) to the following surface water and foul sewers will be changed.

- All surface water and foul sewers in Monument Road, Monument Way East, Albert Drive, Eve Road and Arnold Road.

- The 1400x1000mm surface water culvert/sewer in Monument Way East up to manhole 0751 in Albert Drive.

5. Assessment and additional information required

Additional information is required to confirm the impact of the proposed development works on Thames Water assets, the following is suggested.

5.1 Surface Water Discharges

The developer has suggested connecting a new 225mm SW sewer to the existing 1200mm x 1000mm SW culvert at manhole 0751 with a discharge rate of 35 l/s. Our preliminary assessment indicates that there is not any significant increase of impermeable areas due to this development. This should be confirmed by a calculation from the Developer and reviewed by Thames Water. At this stage there would appear to be adequate capacity in Thames Water SW assets for this discharge and other proposed minor discharges.

It is necessary to investigate current surface water drainage arrangement in the area between Monument Way Easy and Albert Drive where New Road will be constructed. An impermeable area survey shall also be carried out for entire development area.

Furthermore, according to Thames Water Sewer Flooding History Database (SFHD), there are no reported surface water flooding incidents in the development area.

The SFHD shows a single foul sewer flooding incident in the area, at 15 Eve Road in August 2008. Detail of this incident is given in Appendix E.

There is currently no surface water model available for this area. Requirement of a model will be depend upon the results of the changes in impermeable areas and flow paths.

5.2 Additional information Required

- Details of existing 1400mm x 1000mm SW culvert in Monument Way East / Albert Drive and 1200mm x 1000mm SW culvert in Monument Road are not available. Furthermore, downstream details of the 1400mm x 1000mm SW culvert at manhole 0751 are also not available. These will be required to confirm sizes for hydraulic capacity and to confirm revised surface loadings are acceptable
- The levels for proposed carriageways, parking areas, footways, cycle paths, access maintained areas and verges are required to be provided by the developer (Refer drawing number WBCSHEERWATER.1/11 Rev.E). These are required to confirm level changes to manholes and loads above Thames Water assets
- Manhole survey to confirm invert levels and pipe sizes.
- Should the assets be assessed to be at risk of damage from the construction activities a CCTV survey to confirm pre and post construction condition will be required.

Any activities to Thames Water assets will require Thames Water Operations to be consulted.

5.3 Future design works

- Once details of the existing SW culverts are received, an assessment has to be made for impact on these culverts due to proposed construction works. Additional protection may be required that will be determined following the assessment.

- Modifications/reconstruction of existing five manholes identified in section 4.2 have to be carried out once all relevant proposed levels are received from the developer. The required modifications/reconstruction works shall be designed in accordance with TW specifications.

- Assessment on depths (distance between ground level and crown level) of existing TW assets will be carried out once all relevant proposed levels have been received.

- After review of the comparison of existing and proposed impermeable areas a decision will be taken if there is adequate capacity and if a surface water network model is required.

- For discharge at manhole 0751, direction of the new flow should be equal or less than 90 deg to the downstream flow. If this is not the case, appropriate additional manhole(s) has to be constructed.

APPENDIX: A

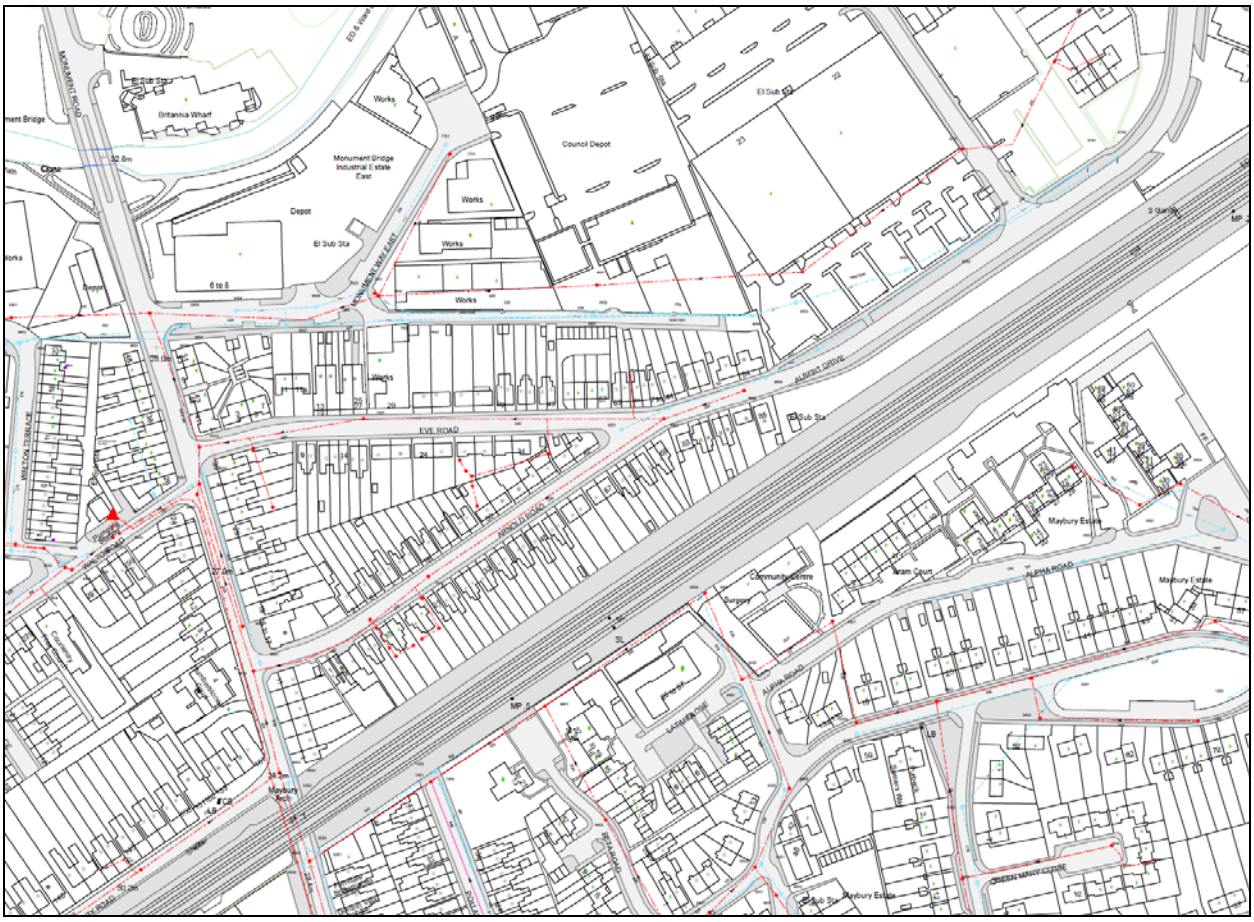
Drawing – Proposed Sheerwater Link Road

APPENDIX: B

Drawings – Drainage & Ducting

APPENDIX: C

Thames Water Existing Assets Details



APPENDIX: D

Effected Manhole Details

FIELD	VALUE
OBJECTID	415020
ANCILLARYROLE	Null
GIS ID	5712005
Short GIS ID	3EFET
Reference	TQ01597602
Alternate Reference	Null
Maintainer	Thames Water Utilities
Date Built	Null
Year Built Code	Unknown
Comments1	Null
Vesting Date	Null
De Vesting Date	Null
Comments2	Null
Trunk	No
Location Check Method	Unchecked
SubtypeCD	Manhole
Purpose	Foul
Lifecycle Status	Live
Cover Level in m	28.05
Invert Level in m	24.99
Depth in m	3.06
Side Entry	No
Cover Vented	No
Summit	No
H&S Classification	No
Construction Material	Unknown
Cover Shape	Double Triangular
Cover Duty	Heavy
Opening Diameter or Length in mm	550
Opening Width in mm	Null
Shaft Diameter or Length in mm	450
Shaft Width in mm	450
Shaft Depth in mm	Null
Chamber Diameter or Length in mm	1070
Chamber Width in mm	Null
Gallery Diameter or Length in mm	Null
Gallery Width in mm	Null
Bifurcation	No
Demarcation	No
Catchpit	No
Catchpit Depth in m	Null
Deep Bore Soakaway	No
Symbol Code	1
Flushing Point	No
Shape X	501727
Shape Y	159650
Corporate Asset Code	23170510
Legislation	None
DATEPOSTED	Null

FIELD	VALUE
OBJECTID	435073
ANCILLARYROLE	Null
GIS ID	5714623
Short GIS ID	3EHFJ
Reference	TQ01597652
Alternate Reference	Null
Maintainer	Thames Water Utilities
Date Built	Null
Year Built Code	Unknown
Comments1	UTL.SIZE?
Vesting Date	Null
De Vesting Date	Null
Comments2	Null
Trunk	No
Location Check Method	Unchecked
SubtypeCD	Manhole
Purpose	Surface
Lifecycle Status	Live
Cover Level in m	Null
Invert Level in m	Null
Depth in m	Null
Side Entry	No
Cover Vented	No
Summit	No
H&S Classification	No
Construction Material	Unknown
Cover Shape	Unknown
Cover Duty	Unknown
Opening Diameter or Length in mm	Null
Opening Width in mm	Null
Shaft Diameter or Length in mm	Null
Shaft Width in mm	Null
Shaft Depth in mm	Null
Chamber Diameter or Length in mm	Null
Chamber Width in mm	Null
Gallery Diameter or Length in mm	Null
Gallery Width in mm	Null
Bifurcation	No
Demarcation	No
Catchpit	No
Catchpit Depth in m	Null
Deep Bore Soakaway	No
Symbol Code	3
Flushing Point	No
Shape X	501741
Shape Y	159642
Corporate Asset Code	23170510
Legislation	None
DATEPOSTED	Null

FIELD	VALUE
OBJECTID	425322
ANCILLARYROLE	Null
GIS ID	5712450
Short GIS ID	3EFR6
Reference	TQ01598652
Alternate Reference	Null
Maintainer	Thames Water Utilities
Date Built	Null
Year Built Code	Unknown
Comments1	UTL.SIZE?
Vesting Date	Null
De Vesting Date	Null
Comments2	Null
Trunk	No
Location Check Method	Unchecked
SubtypeCD	Manhole
Purpose	Surface
Lifecycle Status	Live
Cover Level in m	Null
Invert Level in m	Null
Depth in m	Null
Side Entry	No
Cover Vented	No
Summit	No
H&S Classification	No
Construction Material	Unknown
Cover Shape	Unknown
Cover Duty	Unknown
Opening Diameter or Length in mm	Null
Opening Width in mm	Null
Shaft Diameter or Length in mm	Null
Shaft Width in mm	Null
Shaft Depth in mm	Null
Chamber Diameter or Length in mm	Null
Chamber Width in mm	Null
Gallery Diameter or Length in mm	Null
Gallery Width in mm	Null
Bifurcation	No
Demarcation	No
Catchpit	No
Catchpit Depth in m	Null
Deep Bore Soakaway	No
Symbol Code	3
Flushing Point	No
Shape X	501828
Shape Y	159643
Corporate Asset Code	23170510
Legislation	None
DATEPOSTED	Null

FIELD	VALUE
OBJECTID	454275
ANCILLARYROLE	Null
GIS ID	5753133
Short GIS ID	3FB59
Reference	TQ01599651
Alternate Reference	Null
Maintainer	Thames Water Utilities
Date Built	Null
Year Built Code	Unknown
Comments1	Null
Vesting Date	Null
De Vesting Date	Null
Comments2	Null
Trunk	No
Location Check Method	Unchecked
SubtypeCD	Manhole
Purpose	Surface
Lifecycle Status	Live
Cover Level in m	27.58
Invert Level in m	26.29
Depth in m	1.29
Side Entry	No
Cover Vented	No
Summit	No
H&S Classification	No
Construction Material	Unknown
Cover Shape	Rectangular
Cover Duty	Heavy
Opening Diameter or Length in mm	600
Opening Width in mm	450
Shaft Diameter or Length in mm	Null
Shaft Width in mm	Null
Shaft Depth in mm	Null
Chamber Diameter or Length in mm	1070
Chamber Width in mm	Null
Gallery Diameter or Length in mm	Null
Gallery Width in mm	Null
Bifurcation	No
Demarcation	No
Catchpit	No
Catchpit Depth in m	Null
Deep Bore Soakaway	No
Symbol Code	3
Flushing Point	No
Shape X	501930
Shape Y	159625
Corporate Asset Code	23170510
Legislation	None
DATEPOSTED	Null

FIELD	VALUE
OBJECTID	424708
ANCILLARYROLE	Null
GIS ID	5712570
Short GIS ID	3EFUI
Reference	TQ01599656
Alternate Reference	Null
Maintainer	Thames Water Utilities
Date Built	Null
Year Built Code	Unknown
Comments1	UTL.SIZE?
Vesting Date	Null
De Vesting Date	Null
Comments2	Null
Trunk	No
Location Check Method	Unchecked
SubtypeCD	Manhole
Purpose	Surface
Lifecycle Status	Live
Cover Level in m	Null
Invert Level in m	Null
Depth in m	Null
Side Entry	No
Cover Vented	No
Summit	No
H&S Classification	No
Construction Material	Unknown
Cover Shape	Unknown
Cover Duty	Unknown
Opening Diameter or Length in mm	Null
Opening Width in mm	Null
Shaft Diameter or Length in mm	Null
Shaft Width in mm	Null
Shaft Depth in mm	Null
Chamber Diameter or Length in mm	Null
Chamber Width in mm	Null
Gallery Diameter or Length in mm	Null
Gallery Width in mm	Null
Bifurcation	No
Demarcation	No
Catchpit	No
Catchpit Depth in m	Null
Deep Bore Soakaway	No
Symbol Code	3
Flushing Point	No
Shape X	501900
Shape Y	159641
Corporate Asset Code	23170510
Legislation	None
DATEPOSTED	Null

APPENDIX: E

Records of Thames Water Sewer Flooding History Database

FIELD	VALUE
OBJECTID	10211
Creation User	GISF
Date Created	Null
Date Modified	28/03/2010 10:14:12
Last User	INT_SFH_IAR_01
Sewer Flood ID	1063524
Point X	501700.1
Point Y	159612.8
Sewer Type	Foul
Hydraulic Flood Risk Code	Null
Other Cause Flood Risk Code	OE2
Active Reference	Null
Other Cause Work Reference	Null
Hydraulic SFI	0
OPS SFI	50
Mitigation	Null
Mitigation Device	Null
Flood Incident Date	06-AUG-08
Flood Location Code	E
Rainfall Return	0