Utilities Statement

February 2018

Prepared by CH2M on behalf of the Environment Agency
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</table>
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Executive summary</td>
<td>1</td>
</tr>
<tr>
<td>2. Introduction</td>
<td>2</td>
</tr>
<tr>
<td>2.1. Purpose</td>
<td>2</td>
</tr>
<tr>
<td>2.2. Background</td>
<td>2</td>
</tr>
<tr>
<td>2.3. Engagement with utility companies</td>
<td>2</td>
</tr>
<tr>
<td>3. Utility requirements: Permanent operation</td>
<td>4</td>
</tr>
<tr>
<td>3.1. Electricity</td>
<td>4</td>
</tr>
<tr>
<td>3.2. Telecommunications</td>
<td>5</td>
</tr>
<tr>
<td>3.3. Water</td>
<td>5</td>
</tr>
<tr>
<td>3.4. Sewerage and Foul Drainage</td>
<td>5</td>
</tr>
<tr>
<td>4. Affected assets</td>
<td>6</td>
</tr>
<tr>
<td>4.1. Thames Water</td>
<td>6</td>
</tr>
<tr>
<td>4.2. Scottish and Southern Energy (SSE)</td>
<td>7</td>
</tr>
<tr>
<td>4.3. Openreach, British Telecom (BT)</td>
<td>7</td>
</tr>
<tr>
<td>4.4. Vodafone</td>
<td>8</td>
</tr>
<tr>
<td>4.5. Virgin Media</td>
<td>8</td>
</tr>
<tr>
<td>4.6. Southern Gas Network (SGN)</td>
<td>8</td>
</tr>
<tr>
<td>4.7. National Grid (NG)</td>
<td>9</td>
</tr>
<tr>
<td>4.8. Other utilities</td>
<td>9</td>
</tr>
<tr>
<td>5. Potential solutions</td>
<td>10</td>
</tr>
<tr>
<td>5.1. Botley Bridge</td>
<td>10</td>
</tr>
<tr>
<td>5.2. Westway Bridge</td>
<td>10</td>
</tr>
<tr>
<td>5.3. Hinksey Meadows</td>
<td>10</td>
</tr>
<tr>
<td>5.4. Willow Walk</td>
<td>10</td>
</tr>
<tr>
<td>5.5. North Hinksey to South Hinksey fields</td>
<td>10</td>
</tr>
<tr>
<td>5.6. Devil’s Backbone</td>
<td>11</td>
</tr>
<tr>
<td>5.7. Junction of Old Abingdon Road and Kennington Road</td>
<td>11</td>
</tr>
<tr>
<td>5.8. A423 Bypass Kennington Railway Bridge</td>
<td>12</td>
</tr>
<tr>
<td>5.9. Western side of Munday’s Bridge</td>
<td>12</td>
</tr>
<tr>
<td>5.10. New Hinksey</td>
<td>13</td>
</tr>
<tr>
<td>5.11. Overhead cables</td>
<td>13</td>
</tr>
<tr>
<td>6. Summary</td>
<td>14</td>
</tr>
<tr>
<td>Appendix A – Utility Plans</td>
<td>15</td>
</tr>
</tbody>
</table>
1. Executive summary

This Utilities Statement outlines the utilities that would be required for the implementation and operation of the Oxford Flood Alleviation Scheme and considers how existing utility assets would be affected by the construction of the proposes works.

Enquiries were issued to the statutory undertakers in accordance with Section C2 of the New Roads and Street Works Act 1991, Section 84 in June 2015 and updated in 2017, to determine the location of existing apparatus. The statutory undertaker’s responses to these enquiries indicate that the following utility companies are affected by the project:

a. Thames Water Utilities Limited
b. Openreach, British Telecommunications (BT)
c. Scottish and Southern Energy (SSE)
d. Vodafone
e. Virgin Media
f. National Grid
g. SGN
h. Unknown providers

The route and design of the works were determined through a process of consultation, technical feasibility and a multi-criteria analysis. One of the criterion in the analysis was to minimize the impact to existing utility infrastructure. However, it was not entirely possible to avoid some conflicts with existing infrastructure; therefore, it will be necessary to divert, lower and/or protect some utilities that cross the Application site.

During the discussions with the utilities companies to develop outline quotations the scheme designers have worked with the companies to ensure that all the proposed diversions are safe, practical, achievable and meet both the requirements of the flood alleviation scheme and the future maintenance of the utilities.

The Environment Agency are continuing discussions with all affected utility providers and requested that C4 stage detailed designs and estimates are prepared for all the proposed protection and diversion works to utilities. This has been commenced prior to the planning application submission to ensure that utility providers undertaking diversion have sufficient lead in times to design the works and procure materials to meet the proposed construction programme once planning permission is granted.

The statutory records also indicate that the Application site is well located to take advantage of existing utility connections, as there are telecoms and electricity running close to the potential required connections for the scheme operation.

Temporary utilities required for site compounds during the construction phase will be established by the contractor directly with the relevant providers for the duration of the temporary site set up. This is currently expected to be for three years.
2. Introduction

2.1. Purpose

CH2M was commissioned by the Environment Agency to undertake the detailed design for a Flood Alleviation Scheme in Oxford and prepare a planning submission for the main scheme.

This utilities statement has been developed to be submitted with the planning application for the construction of the Oxford Flood Alleviation Scheme. The Utilities Statement has been prepared following extensive consultation with statutory undertakers.

CH2M has consulted with statutory undertakers in order to undertake the diversion and protection of affected utilities, as well as to provide permanent electricity and telecoms for the scheme operation.

2.2. Background

The applicant, the Environment Agency, is seeking planning permission to build a new flood alleviation scheme composed of new channel and modification of existing channels, flow control structures, bridge crossings, and raised defences in the form of floodwalls or embankments. The majority of the proposed channel route is through relatively undeveloped open land used for agricultural purposes.

2.3. Engagement with utility companies

Under the New Roads and Street Works Act 1991 utility companies are required to provide information as follows:

a. C2 (preliminary enquiries): The utility companies are required to supply information regarding the general position and nature of apparatus from their records and draw attention to any limitations in the quality of this information.

In line with stage C2, CH2M commissioned Zetica to carry out a desk based utility utilities search for the proposed area of the Oxford FAS site in 2015 and again in 2017. The information received was recorded and used to develop the project layout and design. It was also used to identify any construction conflicts with utilities.

Immediately prior to undertaking extensive ground investigation and archaeological trenching works in the area in 2017 Zetica undertook a Ground Penetrating Radar (GPR) survey across all the open areas of the site. The results of this survey were combined with results from the C2 searches to refine the locations of utilities. Detailed utility plans for the whole site are provided in Appendix A. In addition, trial pits have been excavated on a number of key utilities to positively identify and confirm the exact size, location and depth of these, this has informed the design of diversions and protection measures.

b. C3 (initial design and budget estimates): requests for initial budget cost estimation are submitted to utility companies along with preliminary project designs. This includes the extent of the proposed works with potential diversion routes indicated for existing apparatus thought to be affected. The utility companies provide preliminary details of the effects on their apparatus (i.e., mitigation measures) and budget estimates of the measures (as assessed at preliminary stage).

As part of stage C3, the project team met the identified utility companies in 2017 to discuss the mitigation required for each asset impacted by the scheme, to undertake initiate negotiations and obtain initial budget cost estimates. These have been received from most suppliers. Any information not received during stage C3 would be obtained at stage C4.

c. C4 (detailed design and estimates): requests for detailed estimates are submitted to utility companies along with final design details of the proposed project, working drawings and an outline
programme. Stage C4 is a very important stage as it establishes in detail what the necessary utility mitigation measures are, who they are to be undertaken by and form the basis of the Official Works Order. The C4 detailed estimate also provides a benchmark for cost monitoring and final account reconciliation.

Following receipt of C3 estimates the Environment Agency have requested that C4 estimates are prepared for all the proposed works to utilities. Where applicable design fees for the work have been paid to the service suppliers to enable this work to progress. This process has been commenced prior to the submission of the planning application to ensure that utility providers undertaking diversion have sufficient lead in times to design the works and procure materials to meet the proposed construction programme once planning has been consented.
3. Utility requirements: Permanent operation

3.1. Electricity

3.1.1. Eastwyke Ditch Control Structure

A new automatic gated flood control structure will be installed at Eastwyke Ditch. The primary objective of the structure is to prevent west to east flows during a flood event while the structure is to allow flows to be unchanged during non-flood conditions, which are from east to west (water from the Thames).

The new automatically operating tilting weir is planned to be situated immediately to the east of where Eastwyke Ditch crosses the railway line (OS Coordinates 451070, 205035 – SP510050) as shown in Figure 1.

![Figure 1. Satellite view showing the approximate proposed location of the proposed Eastwyke Ditch control gate](image)

The gate will be operated via electric actuator with a square drive / manual handwheel for emergency operation. The supply requirements are estimated at 400V, three phase system. The new water control gate to be installed at Eastwyke Ditch, will be owned and managed by the Environment Agency.

For the operation of the flow control structure a new electrical power supplies would be required. SSE records show an apparatus near the new structure location on Whitehouse Road, which could be suitable. Negotiations with SSE for new supply are ongoing.
3.1.2. Hydrometric Installations

New hydrometric flow and water level and flow gauging points are proposed at two locations on Botley Road and two locations on Old Abingdon Road. These locations will constantly record water levels in river system to allow scheme performance to be monitored and to enhance the existing flood warning system in the wider Oxford area.

It is intended that these installations will be powered from batteries and solar panels. However, in shaded locations or high vandalism risk areas it is preferable to have a permanent single-phase connection with a battery back up to reduce the risk of system failures in the flood warning network.

There are several supply options due to the density of utilities in Botley and Old Abingdon Roads where the hydrometric installations will be located.

3.2. Telecommunications

3.2.1. Eastwyke Ditch Control Structure

Telecommunication connections will be required at Eastwyke flow control structure for the remote/automatic control of penstocks. Telemetry equipment will be installed and programmed into the control system to monitor a variety of systems parameters.

During the operation phase, telecommunication connections would be established with a host utility, depending on the most secure route. This might be a physical PSTN connection to leased fibre-optic systems or mobile telecommunications systems, or a mixture of both.

3.2.2. Hydrometric Installations

The flow and level monitoring locations outlined in Section 3.1.2 will also require a PSTN communications connection. As in the previous section this might be a physical PSTN connection to leased fibre-optic systems or mobile telecommunications systems, or a mixture of both for robustness.

There are both fibre-optic communications cables and a robust mobile phone signal along both Botley and Old Abingdon Roads. BT have been contacted to investigate the cost of a hardwired PSTN connection at all four sites.

3.3. Water

A small domestic single standpipe water supply connection will be required for a private relocated stable block at South Hinksey for livestock. Thames Water supply other properties in the area and a new connection quotation has been requested. No other water supplies are required for the operation of the scheme.

3.4. Sewerage and Foul Drainage

There are no permanent sewer connections required. The scheme will generate no foul drainage during its operation.
4. Affected assets

The following sections outline points where the proposed new scheme will interact with existing utilities. This list is based on the results of the C2 searches, trial pits and the GPR survey of the site, initial discussion with the relevant utility providers has confirmed the presence and status of these utilities. We are currently exploring the diversion of some services prior to commencement of the main construction works. If feasible these would allow a quicker commencement of the main excavation works however early diversion works will depend on a number of factors which are still being resolved.

4.1. Thames Water

The existing Thames Water assets within the site boundary are illustrated on drawing no. IMSE500177-CH2-ZZ-ZZ-VS-UT-0020 within Existing utilities plan in Appendix A.

The known Thames Water utility assets potentially affected by the project are listed below:

**A1A.TW.001.** A 27” Strategic main on the northern side of Botley Bridge (OS coordinates 449062, 206298).

**A1A.TW.002.** An 8” Distribution main on the southern side of Botley Bridge (OS coordinates 449062, 206298).

**A3C.TW.001.** A 24” Strategic main located in South Hinksey, approximately 250m to the north of Devil’s Backbone footpath (OS coordinates 450826, 204483). This pipe may be diverted prior to main works.

**A3D.TW.001.** A 24” Strategic main at Oatlands ground (OS coordinates 449979, 206013), located on the northern side of the proposed embankment and would not be permanently affected by the works.

**A3E.TW.001.** A 24” Strategic main runs within close proximity to Eastwyke ditch (OS coordinates 451061, 205029). Therefore, an assessment will be required to determine the potential risk/impact to the water main.

**A4A.TW.001.** A 450mm foul water pipe runs north to south through South Hinksey village (OS coordinates 451118, 203992). This pipe would be located beneath a proposed earth embankment of approximately 1.5m above existing ground level. Thames Water records show the invert of the sewer approximately 3m below existing ground and therefore the risk of the foul sewer being affected by the works would be very low.

**A4D.TW.001.** A 6” clean water main running parallel to Old Abingdon Road (OS coordinates 451621, 203664), it is required a permanent diversion during construction works.

**A4D.TW.002.** A 6” clean water main running parallel to Kennington Road (OS coordinates 451621, 203664), it will be diverted during construction works.

**A4E.TW.001** and **A4H.TW.001.** A 24” strategic main at A423 West of Bypass Railway Bridge at Kennington (OS coordinates 451784, 203525), some works will be required during the construction stage.

**A4E.TW.004.** 1200mm foul water pipe runs through Kennington village from west to east by Munday’s bridge (OS coordinates 451986, 203236).

**A4E.TW.002.** An abandoned pipe nearby Munday’s Bridge (OS coordinates 451986, 203236).

**A4E.TW.003.** A 900mm surface water pipe which flows into existing channel by Munday’s Bridge (Os coordinates 451986, 203236).

**A4F.TW.001.** A 3” distribution main is located at the centre of the access track to the Boathouse at New Hinksey (OS coordinates 451682, 204888). This asset would mostly be situated outside the proposed works, the main point of interaction would be to the east of the access track at where the water main
crosses the access track.

**A4F.TW.002.** A 600mm (assumed diameter) foul water pipe located to the north of the access track to the Boathouse at New Hinksey (OS coordinates 451682, 204888).

**A4F.TW.003.** A 24” strategic main to the east of the allotments at New Hinksey (OS coordinates 452079, 204519). An assessment would be required to determine whether cover protection would be needed.

**A4F.TW.004.** A 3” distribution main to the north of Donnington Bridge road (OS coordinates 452111, 204373), some works would be required to this pipe during the construction stage.

### 4.2. Scottish and Southern Energy (SSE)

The existing SSE assets within the site boundary are illustrated on drawing no. IMSE500177-CH2-00-00-VS-UT-0021 within Existing utilities plan in Appendix A.

The known SSE utility assets potentially affected by the project are listed below:

**A2A.SSE.HV.UG.001.** An underground 11kV HV cable runs parallel to the existing Seacourt stream by West Way Bridge (OS coordinates 449080, 206188).

**A2B.SSE.HV.UG.001.** An underground 11kV HV cable at Hinksey Meadow field. (OS coordinates 449143, 206062), this asset may be diverted prior to main works.

**A2B.SSE.HV.UG.002.** An 11kV HV cable runs underground at Willow walk (OS coordinates 449616, 205732), requiring being diverted during main works.

**A3B.SSE.HV.OH.001.** A 33kV HV overhead cable at North Hinksey (OS coordinates 450041, 205196), this cable this asset may be diverted prior to main works.

**A3C.SSE.HV.UG.001.** An underground 11kV HV line that runs to the north of Devil’s Backbone (OS coordinates 451083, 204382), this cable will be diverted during main works.

**A4D.SSE.LV.UG.001.** Unknown underground LV cable at Old Abingdon Road (OS coordinates 451629, 203660), to be diverted during construction stage.

**A4D.SSE.HV.UG.001.** An underground 11kV HV cable runs to the north of Old Abingdon Road (OS coordinates 451577, 203636). Diversion required during main works.

**A4D.SSE.HV.UG.002.** Two oil-filled cables to the south of Old Abingdon Road (OS coordinates 451596, 203641), those cables to be diverted further south during the construction stage.

**A4E.SSE.HV.UG.001.** Two oil-filled cables run parallel to the existing channel near the railway at Kennington village (OS coordinates 451966, 203250). Affected cables section will be diverted near Munday’s bridge as part of the construction works.

During construction stage, other SSE assets could be affected by temporary works. Those assets have been also identified on drawing IMSE500177-CH2-00-00-VS-UT-0021. An impact assessment will be undertaken on those specific assets.

A number of SSE overhead cables run through the scheme area. A clearance assessment has been undertaken to evaluate possible infrastructure impacts by the scheme. SSE are advising on the safe clearance requirements.

### 4.3. Openreach, British Telecom (BT)

The existing BT assets within the site boundary are illustrated on drawing no. IMSE500177-CH2-ZZ-ZZ-VS-UT-0022 within Existing utilities plan in Appendix A.

The known BT utility assets potentially affected by the project are listed below:
A1A.BT.001. A BT asset runs across Botley bridge by the north side of the road (OS coordinates 449063, 206308).

A1B.BT.001. A BT asset at Seacourt Park & Ride (OS coordinates 449187, 206418).

A3D.BT.001. A BT cable at Osney industrial state (OS coordinates 449918, 205796).

A4D.BT.001. A 12-way duct runs along the northern side of Old Abingdon Road (OS coordinates 451586, 203646). It would require to be diverted to facilitate the construction of the new bridge.

A4D.BT.002. A 2-way duct runs along the western side of Kennington Road (OS coordinates 451625, 203640). This duct will be also required to be diverted at the construction stage.

A4D.BT.003. A 4-way duct to the eastern side of Kennington Road (OS coordinates 451634, 203653). As the western side duct, this duct will be diverted during the construction stage.

A4F.BT.001, A4F.BT.002, A4F.BT.003, A4F.BT.004 and A4F.BT.005. 3 BT cables at the access track to the boathouse at New Hinksey (OS coordinates 451682, 204981) are to be assessed by BT to locate the exact asset locations and identify the optimal solution for this location.

A4F.BT.006 and A4F.BT.007. A BT cable runs from a joint box on the north side of the access track to the boathouse heading south to an unknown location (OS coordinates 451921, 204856). This cable would cross the proposed embankment at this location, therefore it is proposed to pass this cable through the new embankment.

4.4. Vodafone

The existing Vodafone assets within the site boundary are illustrated on drawing no. IMSE500177-CH2-ZZ-ZZ-VS-UT-0023 within Existing utilities plan in Appendix A.

The known Vodafone utility assets potentially affected by the project are listed below:

A4D.VDF.001. A Vodafone cable runs within the Kennington Road carriageway (OS coordinates 451625, 203651). This cable is to be diverted during the construction of the new bridge at Old Abingdon Road.

A4E.VDF.001 and A4H.VDF.001. A Vodafone asset runs at the southern side of the A423 railway bridge (OS coordinates 451807, 203484). The estimated clearance from the crown of the proposed west and east culvert to the cable is 5.5m and 4.3m, respectively, which is assumed to be sufficient to not affect the cable.

4.5. Virgin Media

The existing Virgin Media assets within the site boundary are illustrated on drawing no. IMSE500177-CH2-ZZ-ZZ-VS-UT-0024 within Existing utilities plan in Appendix A.

The known Virgin Media utility assets potentially affected by the project are listed below:

A1B.VM.001. A Virgin Media cable is within close proximity to a proposed access track adjacent to a proposed flood wall nearby Cowmead Allotments (OS coordinates 449523, 206312). The cable would not be permanently affected but it could be temporarily affected during construction as it would be located within the footprint of the temporary works where plant will be operating.

A4D.VM.001. A Virgin Media asset is located at the edge of Kennington Road (OS coordinates 451633, 203657).

A4D.VM.002. Virgin Media records shows an asset running parallelly to Old Abingdon Road, approximately 10m away. After conversations with Virgin Media, it has been confirmed this asset was a temporary diversion during some works to the bridge over the railway.

4.6. Southern Gas Network (SGN)
The existing SGN assets within the site boundary are illustrated on drawing no. IMSE500177-CH2-ZZ-ZZ-VS-UT-0025 within Existing utilities plan in Appendix A.

The known SGN utility assets potentially affected by the project are listed below:

**A1A.SGN.01.** A low pressure pipe runs across Botley bridge by the north side of the road (OS coordinates 449063, 206308).

**A3C.SGN.001.** A 500mm medium pressure gas pipe runs perpendicular to the proposed new channel, approximately 600m to the north of Devil’s Backbone footpath (OS coordinates 450573, 204701).

**A4D.SGN.001.** A low pressure pipe runs across the Old Abingdon Road (OS coordinates 451580, 203631). The affected section of the pipe will be diverted during main works.

**A4D.SGN.002.** A medium pressure pipe is within the carriageway at Old Abingdon Road (OS coordinates 451580, 203631). It will be diverted during the new bridge construction works.

**A4D.SGN.003.** A low pressure pipe is within the Kennington road carriageway (OS coordinates 451630, 203644). Diversion required during construction works.

**A4F.SGN.001.** A low pressure pipe crosses the proposed floodwall at the access track to the boathouse at New Hinksey (OS coordinates 451667, 204969).

**A4F.SGN.002.** A medium pressure pipe is located at the fields to the north of Donnington Bridge Road (OS coordinates 452000, 404638). This pipe will cross the new earth embankment at several locations, so the main concern will be additional loading and gaining access to the gas main. Discussions with SGN will be in place to agree the most optimum solution for protecting this pipe.

### 4.7. National Grid (NG)

The NG assets within the site boundary run from north to south as a single run consisting of two 400kV circuits. From east of Seacourt Park & Ride to the electric station at Osney Mead industrial state the alignment runs in the form of overhead cables, then cables go underground on the section past South Hinksey along a stone track known locally as the electric Road. From the cable end at South Hinksey the service runs as overhead cables heads to the southern side of the scheme up to A423 railway bridge where cables cross over the railway bridge to the other side of the railway.

These are not directly affected by the scheme however plant will need to cross under overhead cables and over the Electric Road. National Grid have provided details of the height of their overhead cables and the required clearances. Discussions will be held to confirm protection measures where the Electric Road is crossed.

### 4.8. Other utilities

Record drawings supplied by Zetica indicate there are some other providers within the Oxford area which would not be affected by the scheme:

a. Network Rail – although discussions are underway with NR as works are on their landholding or in close proximity to the railway line in a number of locations.

b. Oxford University Telecommunications

c. Zayo Group UK Ltd co JSM Group Ltd

d. Instalcom

e. GTC
5. Potential solutions

This section establishes the potential solutions for the identified affected assets. Details of each solution besides the associated service references are detailed below. During the development of the C3 stage quotations each of the solutions has been discussed and agreed with the relevant utility providers to ensure they are safe, achievable and acceptable from the perspective of ongoing maintenance of each utility. For the purpose of this section, the solutions are split into the main works locations.

5.1. Botley Bridge

The proposed works at Botley Bridge is to increase the hydraulic capacity of the bridge by lowering the channel bed at the bridge. The 27’’ strategic main (A1A.TW.001) runs parallel to the bridge deck on the northern side and it is supported by concrete stanchions. The proposed works of lowering the channel bed at the bridge would not permanently affect the water main but construction works will need careful undertaking to avoid impact on the water main. The 8’’ distribution main (A1A.TW.002) is located within the bridge deck and therefore will not be affected.

5.2. Westway Bridge

The proposed works is to increase the span of the existing Westway Bridge to accommodate the new/widened channel. The proposed eastern abutment would be located at the location of the underground 11kV HV electric cable (A2A.SSE.HV.UG.001) and it is proposed to divert the electric cable to the east of the abutment. Care will be needed to maintain the clearance requirements to the overhead power locations along the east edge of this bridge site.

5.3. Hinksey Meadows

The proposed channel at this location would be 58m wide and 1.2m deep. The depth of the proposed channel below existing ground level is deeper than the depth of the existing 11kV power cable (A2B.SSE.HV.UG.001) located where the proposed channel is. This cable will be diverted along the edge of the proposed new channel.

5.4. Willow Walk

The proposed works is to construct a new vehicle bridge at Willow Walk to accommodate the proposed channel.

The 11kV cable (A2B.SSE.HV.UG.002) would be situated within the new proposed channel and would be exposed through the channel. The 11kV cable will be diverted so that it runs within the pavement of the proposed bridge over the new channel.

5.5. North Hinksey to South Hinksey fields

The proposed works from North Hinksey to South Hinksey is to create a two-stage channel that would have a wide and shallow upper channel (second-stage), with deeper narrow lower channel (first-stage) through the center. The proposed second stage channel would be approximately 160m wide and the proposed first stage would be approximately 8m wide.

At North Hinksey, there is a 33kV HV overhead cable (A3B.SSE.HV.OH.001) that has four electric poles and this cable runs diagonally within the proposed channel route. Situating the supports on islands is not acceptable so it is proposed to re-route the cable either below the channel or overhead such that it is perpendicular to the channel which is the shortest crossing route and will avoid the need for a
support within the channel.

The 24” strategic water main (A3C.TW.001) located 250m to the north of Devil’s Backbone footpath would be exposed in the deep channel and would sit 0.62m to 0.69m above the surface of the channel bed. A water main exposed in the channel would be unacceptable. The agreed solution with Thames Water consists in diverting and lowering the section of the pipe affected by the new second stage channel, a length of approximately 170m.

The 500mm medium pressure gas pipe (A3C.SGN.001) is a cast iron pipe. This pipe runs perpendicularly across the field, 600m to the north of Devil’s Backbone footpath. As the strategic main, the gas main would be exposed in the first stage channel and would sit 0.40m to 0.81m above the surface of the channel bed. The discussed solution with SGN is to lower and divert the pipe at the section affected by the new second stage channel, a length of approximately 180m.

5.6. Devil’s Backbone

The proposed works is to construct a new vehicle bridge at Devil’s Backbone to accommodate the proposed channel. The 11kV high voltage line (A3C.SSE.HV.UG.001) that runs to the north of Devil’s Backbone would obstruct the construction of the proposed bridge.

The two existing electric poles of the 11kV high voltage line would hinder the construction activities for the proposed bridge as they have limited clearance.

The solution currently being discussed with SSE is to temporarily divert the cable away from the bridge and nearby piling works and then relocate it within ducts through the new bridge.

5.7. Junction of Old Abingdon Road and Kennington Road

The proposed works at the junction of Old Abingdon Road and Kennington road is to construct two-span bridges; one at Old Abingdon Road and the other at Kennington Road. The proposed bridge carriageway decks would have total depths of approximately 0.75m and hence it would not be possible to accommodate the diverted utilities within the deck. The proposed pavements on the bridge have deeper depths and it is proposed to divert required utilities into the pavements. Due to the nature of the proposed bridges and construction sequencing it is likely that most utilities will need temporary diversion to allow the bridge to be built and then a second diversion to relocate them within the new bridge, see Table 1.

Table 1. Affected assets required to be diverted at Old Abingdon Road

<table>
<thead>
<tr>
<th>Service reference</th>
<th>Provider company</th>
<th>Service details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4D.TW.001</td>
<td>Thames Water</td>
<td>6” distribution main</td>
</tr>
<tr>
<td>A4D.TW.002</td>
<td>Thames Water</td>
<td>6” distribution main</td>
</tr>
<tr>
<td>A4D.SSE.LV.UG.001</td>
<td>Scottish and Southern Energy</td>
<td>Unknown</td>
</tr>
<tr>
<td>A4D.SSE.HV.UG.001</td>
<td>Scottish and Southern Energy</td>
<td>11kV 95x3C Al CAS U/A</td>
</tr>
<tr>
<td>A4D.VDF.001</td>
<td>Vodafone</td>
<td>Unknown</td>
</tr>
<tr>
<td>A4D.SGN.001</td>
<td>Southern Gas Network</td>
<td>Low pressure pipe</td>
</tr>
<tr>
<td>A4D.SGN.002</td>
<td>Southern Gas Network</td>
<td>Medium pressure pipe</td>
</tr>
<tr>
<td>Service reference</td>
<td>Provider company</td>
<td>Service details</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>A4D.BT.001</td>
<td>Openreach, British Telecom</td>
<td>12-way duct</td>
</tr>
<tr>
<td>A4D.BT.002</td>
<td>Openreach, British Telecom</td>
<td>2-way duct</td>
</tr>
<tr>
<td>A4D.BT.003</td>
<td>Openreach, British Telecom</td>
<td>4-way duct</td>
</tr>
<tr>
<td>A4D.VM.001</td>
<td>Virgin Media</td>
<td>Unknown</td>
</tr>
<tr>
<td>A4D.VM.002</td>
<td>Virgin Media</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

The summary of the proposed construction methodology for each bridge is outlined below:

1. Install a cofferdam on the water channel to the east of Kennington Bridge (i.e. at downstream end).
2. Temporarily divert all the utilities that are located within the dig area and the sheet piles alignment.
3. Drive the sheet piles abutments, excavate the channel, then construct the bridge deck.
4. Permanently divert the temporarily diverted utilities so that they are located within the pavement.
5. Surface the bridge deck and finalise construction.

Once this bridge is completed then a similar sequencing will be undertaken to construct Old Abingdon Road Bridge. Discussions are underway with utility operators to programme these diversions to minimise the number of steps required to achieve the final solution.

There are two oil-filled cables (A4D.SSE.HV.UG.002) that are located on the line of the proposed sheet piles for the construction of Kennington Road Bridge abutments. A proposed solution is to divert the cables so that they are situated further to the south of the proposed sheet piling works prior to the main construction works.

5.8. A423 Bypass Kennington Railway Bridge

The proposed works at A423 Bypass Kennington Railway Bridge include constructing a large culvert (8m wide and 3.7m deep) at both sides, east and west, of the bridge. The A423 Bypass embankment is over 10m high which combined with the presence of overhead cables and the associated protracted traffic disruptions, limits any open culvert construction methods. Therefore, it is anticipated that the construction of the culverts would be jacked or bored through the embankment.

The upstream alignment of the A423 West culvert runs in-between two pylons which fixes the positioning of the upstream headwall and therefore it is not possible to avoid the clash with the water main. The clearance below the water main down to the outer face of the culvert would be approximately 4.20m.

The proposed solution is to divert the water main (A4E.TW.001) so that the location at which the water main inclines onto the bridge deck is moved to be further to the west. Thames Water are currently undertaking trial pits to confirm the exact location and level of this pipe to inform the diversion design.

At the location of the A423 West culvert headwall, the Vodafone cable (A4E.VDF.001) would also be in close proximity to the proposed sheet piles headwall. The proposed solution will be to locally divert the cable so that it is situated to the north of the proposed headwall.

5.9. Western side of Munday’s Bridge

The proposed design at the western side of Munday’s Bridge is to further widen the existing channel on the western side by replacing sheet piles and then constructing new sheet piles to the west of the
existing sheet piles.

The proposed widening of the existing channel would require the existing Thames Water three surface water outfalls (A4E.TW.003) to be relocated to the edge of the proposed widened channel. The proposal is to rebuild the outfall “like-to-like” to maintain the landscape setting within this area.

Two oil-filled cables (A4E.SSE.HV.UG.001) would be situated at the location of a proposed sheet piles channel. The potential solution will be to divert the two oil-filled cables so that they are situated outside the proposed line of sheet piles.

5.10. New Hinksey

The proposed works at New Hinksey are raised flood defences in the form of walls and earth embankment.

A reinforced concrete floodwall would be built at the northern side of the access track to the boathouse with a height of 1.0 to 1.5m. A 3” distribution main (A4F.TW.001) and a low gas main (A4F.SGN.001) runs in close proximity to the proposed wall alignment, crossing it at one point. The proposed solution is to sleeve both mains through the foundations of the new wall.

The proposed location of the floodwall would be located a distance away from the foul water pipe (A4F.TW.002) to the northern side, Thames Water are advising on the required minimum clearance.

A flood embankment is to be built along the field northern on the side of Donnington Bridge road with a height of approximately 1.5m above existing ground levels. There is a strategic water main (A4F.TW.003) that runs to the east of the allotment gardens and would be located beneath the proposed embankment. Consequently, an assessment is required to determine whether cover protection would be needed to protect against additional loadings from the embankment. Thames Water are assessing this pipe. There is a BT cable (A4F.BT.007), which would cross the proposed embankment. It is proposed to pass this cable through the proposed embankment.

The 24” medium pressure pipe (A4F.SGN.002) will cross the new flood embankment at three different points. The cover over the gas main to the surface will increase, resulting in additional weight over the pipe. SGN are assessing the load capacity of this pipe to review whether additional protection measures are required to allow the construction of the embankment and avoid the need for diversions or re-routing the gas main.

A concrete floodwall will be built from the southern end of the new earth embankment to the Donnington Bridge road, where it would be tied into the road embankment. The water main (A4F.TW.004) would also cross the new floodwall, and the proposed solution is to sleeve the water main through the foundations of the new floodwall then caulk around the pipe to minimise leakage of flood water through the sleeving.

5.11. Overhead cables

There are some SSE and NG overhead assets identified within the site boundary which would not be permanently affected by the proposed works and therefore they would not require any protection/diversion. However, proposed construction works would be carried out directly beneath the overhead assets. Furthermore, the clearances of these assets from existing ground levels would be changed at locations of proposed raised structures such as floodwalls, embankments, and bridges. Discussions are underway with both suppliers to confirm minimum clearance heights for plant operating below overhead cables. Visual goal post markers will be used on site to demarcate agreed clearances. The 11kV power cables on the east side of South Hinksey will need to be temporarily diverted to allow safe installation of the piled defence in this area.
6. Summary

The scheme design has been developed to minimize impacts on utilities across the area. However, there are still a number of locations where there are clashes with both underground and overhead utilities. Discussions with all service providers of the affected utilities have been carried out and noted within Section 4 of this document. Initial C3 stage quotations for each diversion have been obtained.

During the discussions with the utilities companies to develop these quotations the scheme designers have worked with the companies to ensure that the proposed diversions are safe, practical, achievable and meet both the requirements of the flood alleviation scheme and the future maintenance of the utilities. Ongoing discussions are continuing during the planning determination period to finalise the details of the utility works and ensure that providers have sufficient lead in times to design the works and procure materials to meet the proposed construction programme once planning has been consented.
Appendix A – Utility Plans

IMSE500177-CH2-ZZ-ZZ-VS-UT-0020
IMSE500177-CH2-00-00-VS-UT-0021
IMSE500177-CH2-ZZ-VS-UT-0022
IMSE500177-CH2-ZZ-VS-UT-0023
IMSE500177-CH2-ZZ-VS-UT-0024
IMSE500177-CH2-ZZ-VS-UT-0025