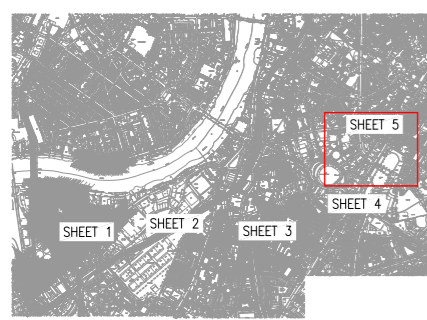


A5 - Settlement contours and building damage classification – Alternative construction option

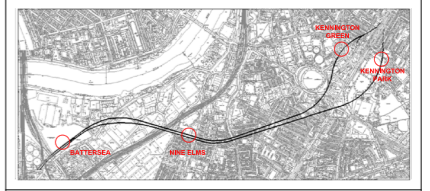
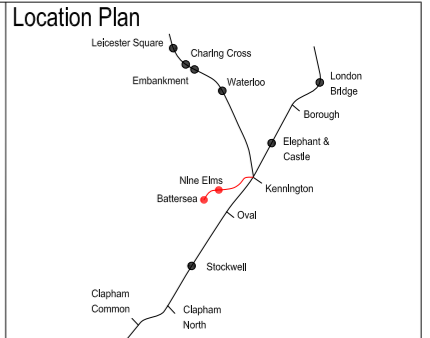
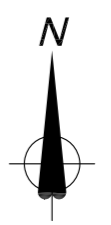
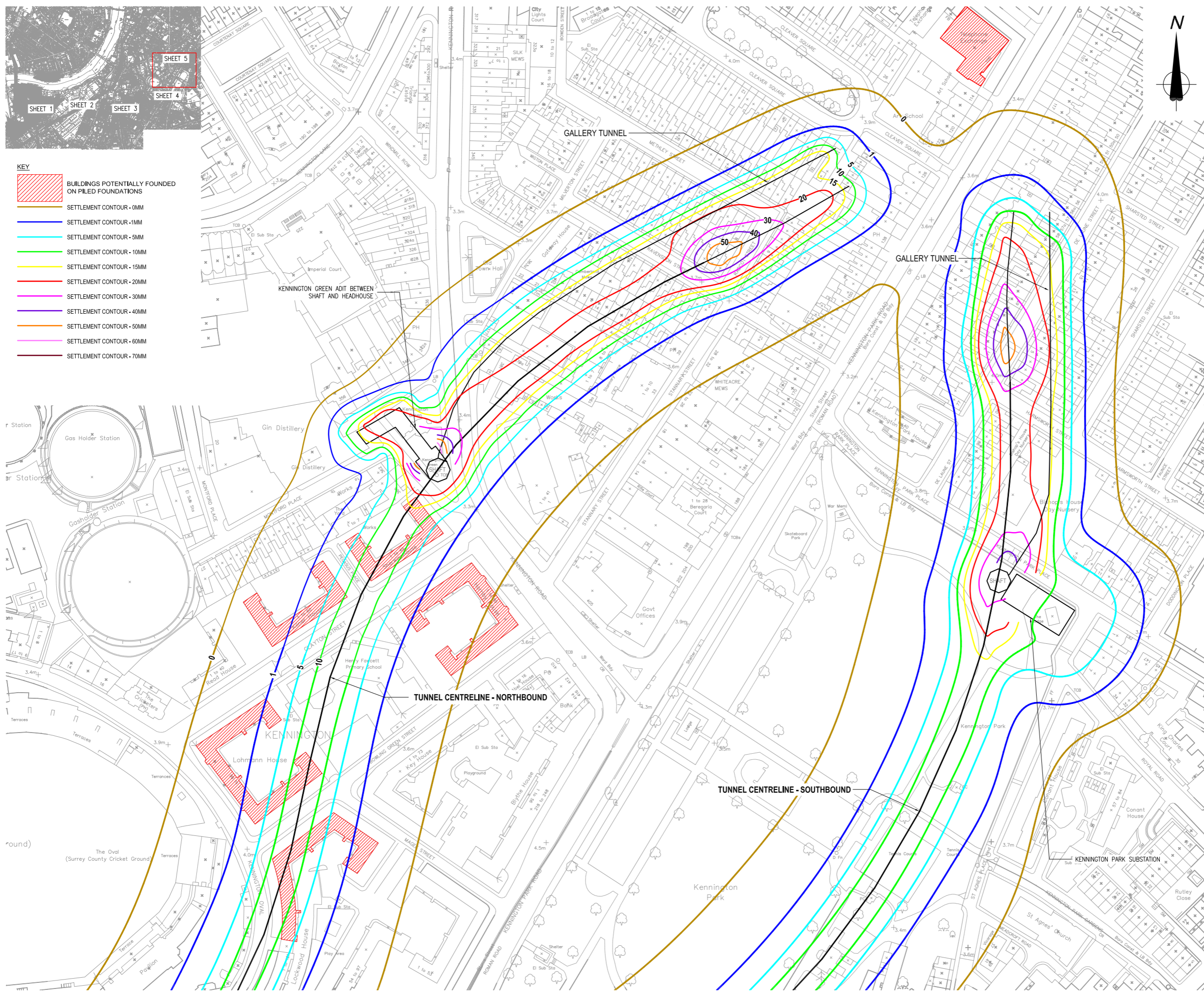
Drawing numbers:

GRNLEB-BHD-TU-XX-DR-GEO-14701-06-01

GRNLEB-BHD-TU-XX-DR-GEO-14703-06-01



- KEY**
- BUILDINGS POTENTIALLY FOUNDED ON PILED FOUNDATIONS
 - SETTLEMENT CONTOUR - 0MM
 - SETTLEMENT CONTOUR - 1MM
 - SETTLEMENT CONTOUR - 5MM
 - SETTLEMENT CONTOUR - 10MM
 - SETTLEMENT CONTOUR - 15MM
 - SETTLEMENT CONTOUR - 20MM
 - SETTLEMENT CONTOUR - 30MM
 - SETTLEMENT CONTOUR - 40MM
 - SETTLEMENT CONTOUR - 50MM
 - SETTLEMENT CONTOUR - 60MM
 - SETTLEMENT CONTOUR - 70MM



- Notes:**
1. ALL CONTOURS SHOWN ARE IN MM.
 2. ANALYSIS HAS BEEN BASED ON THE INFORMATION AVAILABLE AT THE TIME OF DESIGN.
 3. MODELLING ONLY TAKES ACCOUNT OF THE IMPACT OF THE NORTHERN LINE EXTENSION AND ASSOCIATED INFRASTRUCTURE E.G. STATION BOXES. THE EFFECTS OF BATTERSEA POWER STATION REDEVELOPMENT HAVE NOT BEEN INCORPORATED.
 4. TUNNEL ALIGNMENT IS BASED ON DRAWING GRNLEB-HGL-00-XX-DR-TUN-0010-02-01.
 5. CROSS PASSAGE LOCATION IS BASED ON DRAWING GRNLEB-HGL-00-XX-DR-TUN-0010-02-01.
 6. GALLERY TUNNEL ALIGNMENT IS BASED ON DRAWING GRNLEB-HGL-TU-XX-DR-TUN-2419-02-01 AND GRNLEB-HGL-TU-XX-DR-TUN-2420-02-01.
 7. SUBSTATION AT KENNINGTON PARK IS BASED ON DRAWING GRNLEB-HGL-ST-XX-DR-TUN-3120-01-01. ADIT BETWEEN SHAFT AND HEADHOUSE AT KENNINGTON GREEN IS BASED ON DRAWING GRNLEB-HGL-00-XX-DR-TUN-2300-03-01.
 8. SETTLEMENT DUE TO RUNNING TUNNELS ARE BASED ON A 1.5% VOLUME LOSS. SEE SETTLEMENT REPORT FOR FULL DETAILS ON OTHER TUNNEL TYPES.
 9. GALLERY TUNNEL EXTERNAL DIAMETER IS 4.1M AND IS ASSUMED TO BE HAND DUG. SETTLEMENT DUE TO TUNNELS BETWEEN KENNINGTON GREEN/PARK SHAFT AND THE STEP PLATE JUNCTION ARE ASSUMED TO BE 2%.
 10. SETTLEMENT DUE TO GALLERY TUNNELS IS BASED ON 2% VOLUME LOSS.
 11. SETTLEMENT DUE TO STATION EXCAVATIONS ARE BASED ON CURVES FROM CIRIA C80 FIGURE 2.9 (b) - EXCEPT THE ADIT AT KENNINGTON GREEN WHICH IS BASED ON CIRIA C580 FIGURE 2.12. THE GROUND MOVEMENT CURVES ARE CONSIDERED TO REPRESENT 100% GROUND MOVEMENT PROFILE, HOWEVER THE STATION EXCAVATIONS WILL HAVE AN INCREASED STIFFNESS AT THE CORNERS, THEREFORE THE SETTLEMENT CONTOURS AROUND THE EXCAVATIONS ARE A CONSERVATIVE ESTIMATE.
 12. SETTLEMENT DUE TO EXCAVATIONS OF SHAFTS IS BASED ON THE LONDON UNDERGROUND MANUAL OF GOOD PRACTICE USING G-068 NEW AND BOWERS (1994).
 13. THE MAP IS BASED ON ORDNANCE SURVEY, REPRODUCED FROM LANDRANGER 150,000 MAP BY PERMISSION OF ORDNANCE SURVEY © ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE. © CROWN COPYRIGHT 1988. ALL RIGHTS RESERVED. LICENSE NUMBER: AL 10005517. THE ORDNANCE SURVEY DATA USED WAS THAT AVAILABLE AT THE TIME OF 2012 REFERENCE DESIGN, AND THIS MAY RECENT CHANGES WILL NOT BE REFLECTED IN THE MAPS USED FOR ANALYSIS.

Rev	By	Chkd	Apprvd	Date	Description
06-01	JMB	JD	SL	20/03/13	AMENDED CONTOURS
05-01	JMB	JD	SL	19/02/13	NOTES AMENDED
04-01	JMB	JD	SL	06/02/13	INCLUSION OF ADITS & SUBSTATION
03-01	JMB	JD	SL	18/01/13	CROSS PASSAGES ADDED
02-01	JMB	JP	JP	02/11/12	CHANGE IN ALIGNMENT
01-01	JMB	JD	JP	19/10/12	FOR INFORMATION

Client

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FAX: 020 3479 8001
www.halcrow.com

Project: **NORTHERN LINE EXTENSION TO BATTERSEA TWAO FOR T1L**

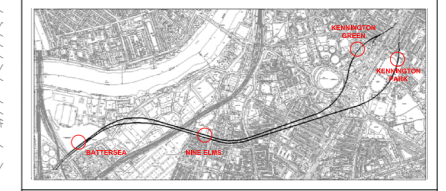
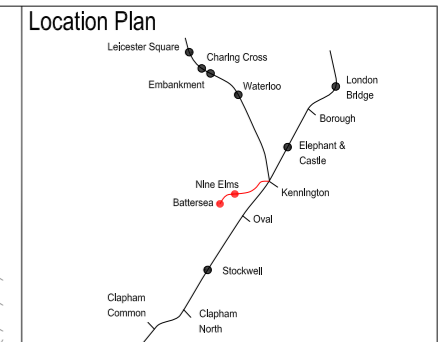
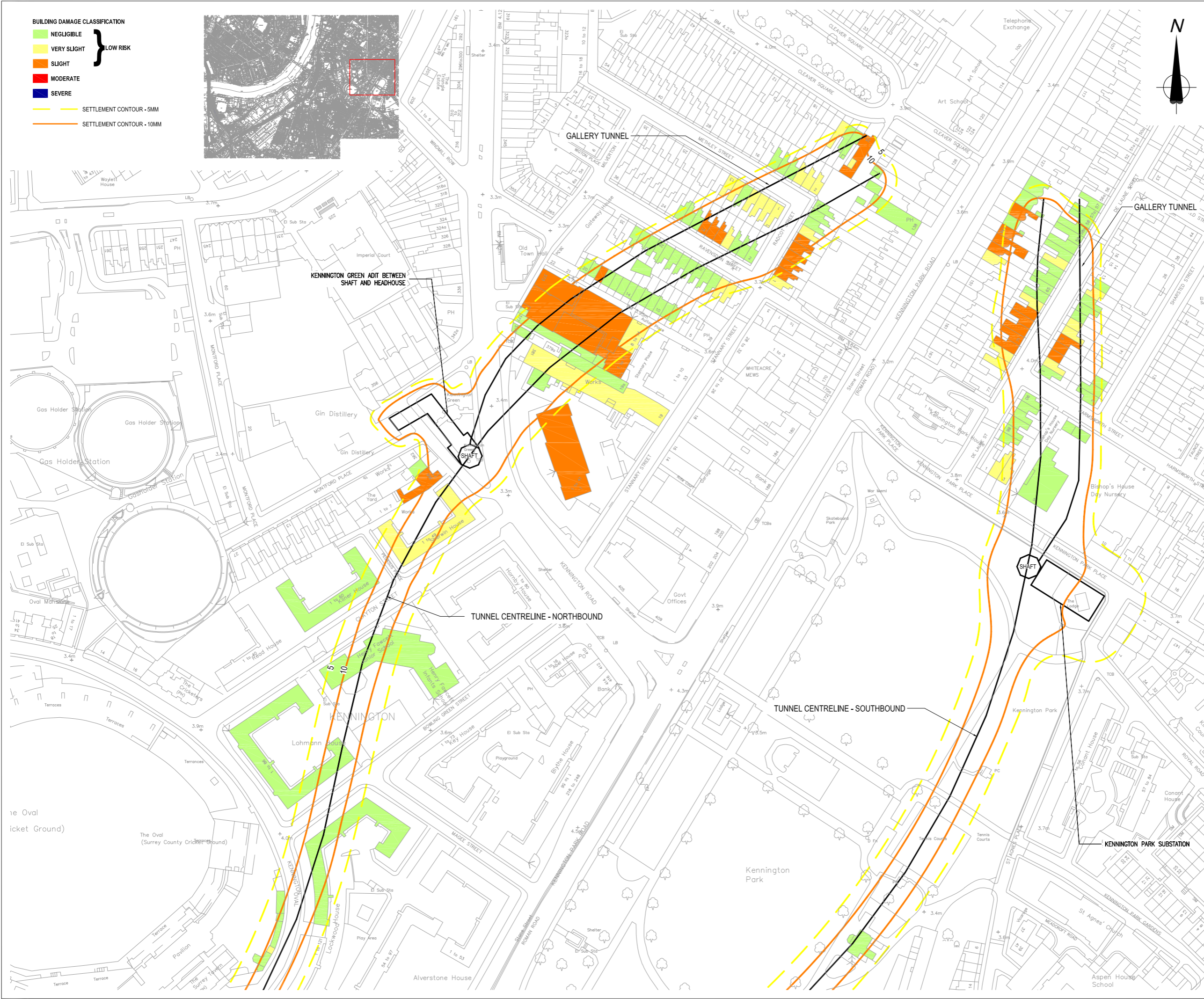
Drawing: **SURFACE SETTLEMENT CONTOURS ALTERNATIVE FOR GALLERY TUNNELS (NO TEMPORARY GROUT SHAFTS)**

Suballby: **S4 - FORMAL ISSUE TO CLIENT**

Drawn by: JMB Date: 20/03/13
Checked by: JD Date: 20/03/13
Approved by: SL Date: 20/03/13
Drawing Scale: 1:1000

Drawing No: **GRNLEB-HGL-TU-XX-DR-GEO-14701** Rev'd: **06-01**

- BUILDING DAMAGE CLASSIFICATION**
- NEGLIGIBLE
 - VERY SLIGHT
 - SLIGHT
 - MODERATE
 - SEVERE
- LOW RISK**
- SETTLEMENT CONTOUR - 5MM
 - SETTLEMENT CONTOUR - 10MM



- Notes:**
- ALL CONTOURS SHOWN ARE IN MM.
 - THE BUILDING DAMAGE CLASSIFICATION IS BASED ON ASSESSMENT METHODS USED IN DESIGN FOR CROSSBRI (BURLAND ET AL. 1977).
 - ANALYSIS HAS BEEN BASED ON THE INFORMATION AVAILABLE AT THE TIME OF DESIGN.
 - MODELLING ONLY TAKES ACCOUNT OF THE IMPACT OF THE NORTHERN LINE EXTENSION AND ASSOCIATED INFRASTRUCTURE E.G. STATION BOXES. THE EFFECTS OF BATTERSEA POWER STATION REDEVELOPMENT HAVE NOT BEEN INCORPORATED.
 - TUNNEL ALIGNMENT IS BASED ON DRAWING GRNLEB-HGL-00-XX-M2-PWY-0010-02-01.
 - CROSS PASSAGE LOCATION IS BASED ON DRAWING GRNLEB-HGL-00-XX-DR-TUN-2002-03-01.
 - SUBSTATION AT KENNINGTON PARK IS BASED ON DRAWING GRNLEB-BHD-ST-XX-DR-SFR-13120-01-01. ADIT BETWEEN SHAFT AND HEADHOUSE AT KENNINGTON GREEN IS BASED ON DRAWING GRNLEB-HGL-00-XX-DR-TUN-2300-03-01.
 - GALLERY TUNNEL ALIGNMENT IS BASED ON DRAWING GRNLEB-HGL-TU-XX-DR-TUN-2411-02-01 AND GRNLEB-HGL-TU-XX-DR-TUN-2412-02-01.
 - SETTLEMENT DUE TO RUNNING TUNNELS ARE BASED ON A 1.5% VOLUME LOSS. SEE SETTLEMENT REPORT FOR FULL DETAILS ON OTHER TUNNEL TYPES.
 - GALLERY TUNNEL EXTERNAL DIAMETER IS 4.1M AND IS ASSUMED TO BE HAND DIG.
 - SETTLEMENT DUE TO TUNNELS BETWEEN KENNINGTON GREEN/PARK SHAFT AND THE STEP PLATE JUNCTION ARE ASSUMED TO BE 2%.
 - SETTLEMENT DUE TO GALLERY TUNNELS IS BASED ON 2% VOLUME LOSS.
 - SETTLEMENT DUE TO STATION EXCAVATIONS ARE BASED ON CURVES FROM CIRIA C580 FIGURE 2.9 (B) EXCEPT AT KENNINGTON GREEN WHICH IS BASED ON CIRIA C580 FIGURE 2.12. THE GROUND MOVEMENT CURVES ARE CONSIDERED TO REPRESENT 100% GROUND MOVEMENT PROFILE. HOWEVER THE STATION EXCAVATIONS WILL HAVE AN INCREASED STIFFNESS AT THE CORNERS. THEREFORE THE SETTLEMENT CONTOURS AND BUILDING DAMAGE CLASSIFICATIONS AROUND THE EXCAVATIONS ARE CONSERVATIVE.
 - SETTLEMENT DUE TO EXCAVATIONS OF SHAFTS IS BASED ON THE LONDON UNDERGROUND MANUAL OF GOOD PRACTICE USING G-058 NEW AND BOWERS (1994).
 - THE MAP IS BASED ON ORDNANCE SURVEY, REPRODUCED FROM LANDRANGER 1:50,000 MAP BY PERMISSION OF ORDNANCE SURVEY © ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE © CROWN COPYRIGHT 1988. ALL RIGHTS RESERVED. LICENSE NUMBER: AL 100005517. THE ORDNANCE SURVEY DATA USED WAS THAT AVAILABLE AT THE TIME OF 2012 REFERENCE DESIGN. AND THUS ANY RECENT CHANGES WILL NOT BE REFLECTED IN THE MAPS USED FOR ANALYSIS.
 - ALL BUILDINGS WITHIN CATEGORY 3 (MODERATE) OR ABOVE ARE SUBJECT TO A FURTHER PHASE OF ASSESSMENT.
 - ALL LISTED BUILDINGS WILL BE SUBJECT TO A FURTHER PHASE OF ASSESSMENT.
 - DEFECTS SURVEYS WILL BE REQUIRED ON ALL BUILDINGS PREDICTED TO EXPERIENCE 10MM OR MORE OF MOVEMENT.
 - DEFECTS SURVEYS WILL BE REQUIRED ON ALL LISTED BUILDINGS PREDICTED TO EXPERIENCE 1MM OR MORE OF MOVEMENT.

Rev	By	Chkd	Appvd	Date	Description
06-01	JMB	JD	SL	20/03/13	AMENDED CONTOURS
05-01	JMB	JD	SL	19/02/13	NOTES AMENDED
04-01	JMB	JD	SL	06/02/13	INCLUSION OF ADITS & SUBSTATION
03-01	JMB	JD	SL	18/01/13	CROSS PASSAGES ADDED
02-01	JMB	JP	JP	02/11/12	CHANGE IN ALIGNMENT
01-01	JMB	JD	JP	19/10/12	FOR INFORMATION

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 www.halcrow.com

Project: **NORTHERN LINE EXTENSION TO BATTERSEA TWAO FOR TIL**

Drawing: **BUILDING DAMAGE CLASSIFICATION ALTERNATIVE FOR GALLERY TUNNELS (NO TEMPORARY GROUT SHAFTS)**

Subtable: **S4 - FORMAL ISSUE TO CLIENT**

Drawn by: JMB Date: 20/03/13
 Checked by: JD Date: 20/03/13
 Approved by: SL Date: 20/03/13
 Drawing Scale: 1:1000

Drawing No.: **GRNLEB-BHD-TU-XX-DR-GEO-14703** Revision: **06-01**

A6 - Utility damage assessment drawings - December 2012 Stage C Drawing Issue

Drawings numbers:

GAS

GRNLEB-BHD-00-XX-DR-GEO-14610-04-01

GRNLEB-BHD-00-XX-DR-GEO-14611-04-01

GRNLEB-BHD-00-XX-DR-GEO-14612-04-01

GRNLEB-BHD-00-XX-DR-GEO-14613-04-01

GRNLEB-BHD-00-XX-DR-GEO-14614-04-01

SEWERS

GRNLEB-BHD-00-XX-DR-GEO-14615-04-01

GRNLEB-BHD-00-XX-DR-GEO-14616-04-01

GRNLEB-BHD-00-XX-DR-GEO-14617-04-01

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GRNLEB-BHD-00-XX-DR-GEO-14619-04-01

WATER

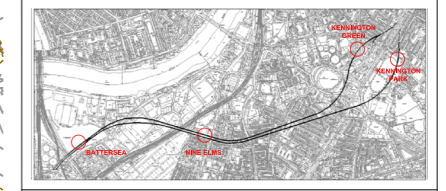
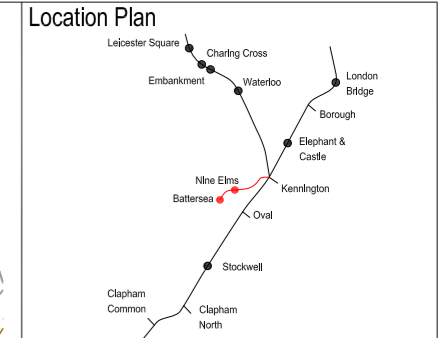
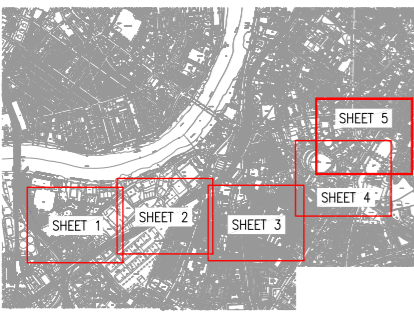
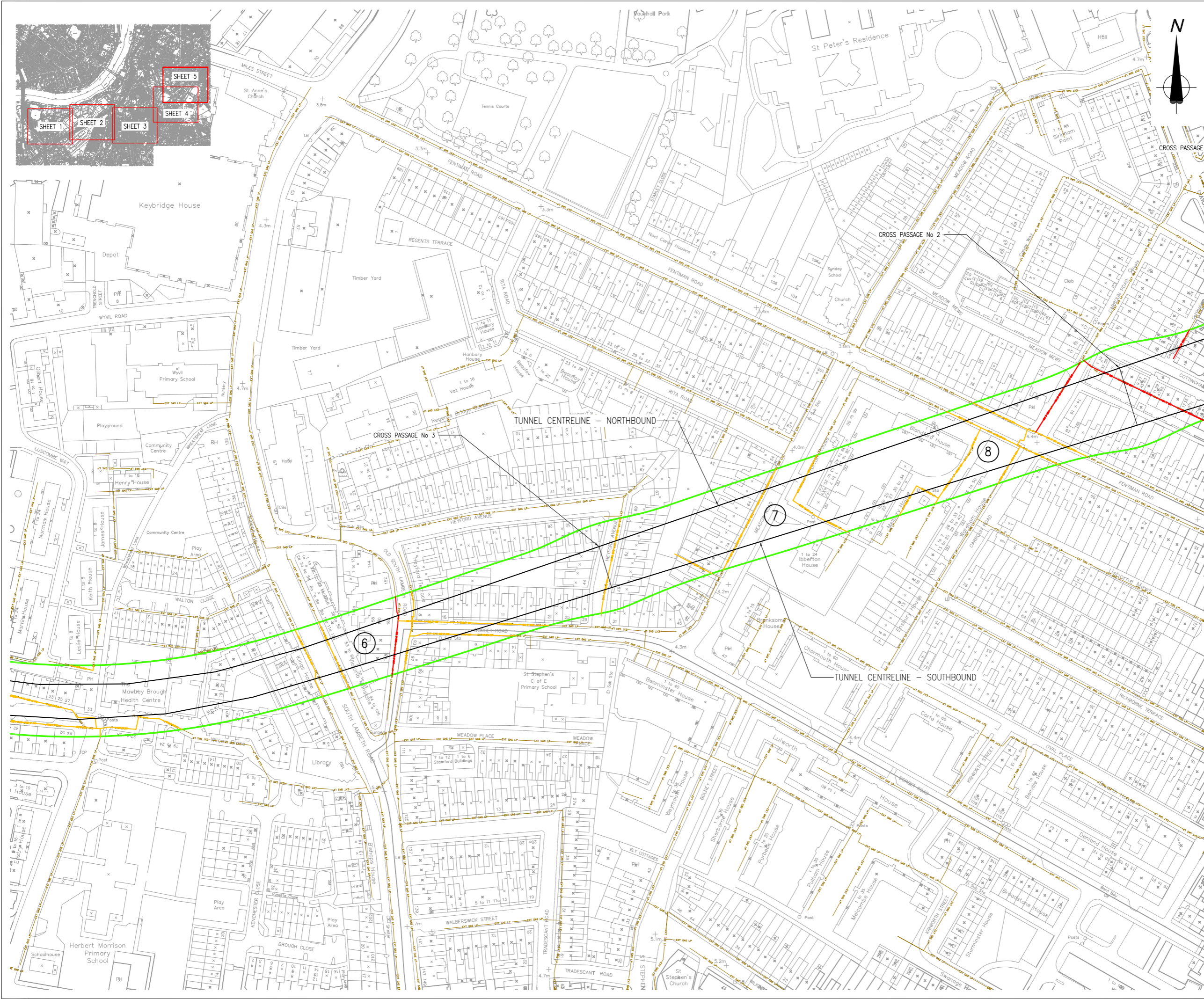
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GRNLEB-BHD-00-XX-DR-GEO-14623-04-01

GRNLEB-BHD-00-XX-DR-GEO-14624-04-01



- Notes:**
1. ALL CONTOURS SHOWN ARE IN MM
 2. ANALYSIS HAS BEEN BASED ON THE SERVICE INFORMATION AVAILABLE AT THE TIME OF DESIGN
 3. MODELLING ONLY TAKES ACCOUNT OF THE IMPACT OF THE NORTHERN LINE EXTENSION AND ASSOCIATED INFRASTRUCTURE E.G. STATION BOXES.
 4. TUNNEL ALIGNMENT IS BASED ON DRAWING GRNLEB-BHD-00-XX-M2-PWY-0001-02-01.
 5. CROSS PASSAGE LOCATION IS BASED ON DRAWING GRNLEB-HL-00-XX-DR-TUN-0004-01-01.
 6. SUBSTATION AT KENNINGTON PARK IS BASED ON DRAWING GRNLEB-HD-ST-XX-DR-STR-13120-01-01. ADIT BETWEEN SHAFT AND HEADHOUSE AT KENNINGTON GREEN IS BASED ON DRAWING GRNLEB-HL-00-XX-DR-TUN-23000-01-01.
 7. SETTLEMENT DUE TO RUNNING TUNNELS IS BASED ON A 1.5% VOLUME LOSS. SEE SETTLEMENT REPORT FOR FULL DETAILS ON OTHER TUNNEL TYPES.
 8. SETTLEMENT DUE TO STATION EXCAVATIONS ARE BASED ON CURVES FROM CIRIA CS60 FIGURE 2.9 (B) . EXCEPT THE ADIT AT KENNINGTON GREEN WHICH IS BASED ON CIRIA CS60 FIGURE 2.10. THE GROUND MOVEMENT CURVES ARE CONSIDERED TO REPRESENT 100% GROUND MOVEMENT PROFILE, HOWEVER THE STATION EXCAVATIONS WILL HAVE AN INCREASED STIFFNESS AT THE CORNERS. THEREFORE THE SETTLEMENT CONTOURS AROUND THE EXCAVATIONS ARE A CONSERVATIVE ESTIMATE.
 9. SETTLEMENT DUE TO EXCAVATIONS OF SHAFTS IS BASED ON THE LONDON UNDERGROUND MANUAL OF GOOD PRACTICE USING G-058 NEW AND BOWERS (1994) .
 10. THE MAP IS BASED ON ORDNANCE SURVEY, REPRODUCED FROM LANDRANGER 1:50,000 MAP BY PERMISSION OF ORDNANCE SURVEY © ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE. © CROWN COPYRIGHT 1988. ALL RIGHTS RESERVED. LICENSE NUMBER: AL 10000517. THE ORDNANCE SURVEY DATA USED WAS THAT AVAILABLE AT THE TIME OF 2012 REFERENCE DESIGN, AND THUS ANY RECENT CHANGES WILL NOT BE REFLECTED IN THE MAPS USED FOR ANALYSIS.
 11. ALL SHALLOW UTILITIES EXCEEDING 10MM OF SETTLEMENT OR EXCEEDING LIMITS OF STRAIN, JOINT PULL-OUT OR JOINT ROTATION REQUIRE FURTHER INVESTIGATION AND ANALYSIS. (SEE SETTLEMENT REPORT GRNLEB-BHD-00-XX-TNT-GEO-00049)

- SETTLEMENT CONTOUR 10mm
- GAS UTILITIES NOT AFFECTED
- GAS UTILITIES AFFECTED
- GAS UTILITIES CRITICAL

19 CROSS REFERENCE TO THE SETTLEMENT REPORT GRNLEB-BHD-00-XX-TNT-GEO-00049

Rev	By	Chkd	Apprvd	Date	Description
04-01	JMB	JD	SL	13/03/13	NOTES AMENDED
03-01	JMB	JD	SL	19/02/13	NOTES AMENDED
02-01	JMB	JD	SL	06/02/13	INCLUSION OF ADITS & SUBSTATION
01-01	JMB	JD	SL	18/01/13	FIRST DRAWN

Client

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FAX: 020 3479 8001
www.halcrow.com

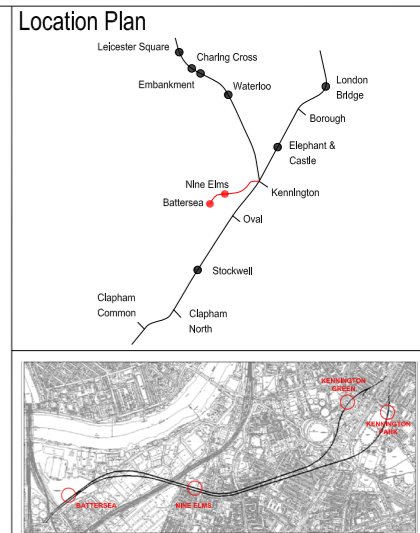
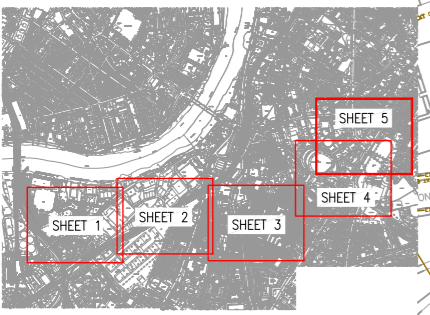
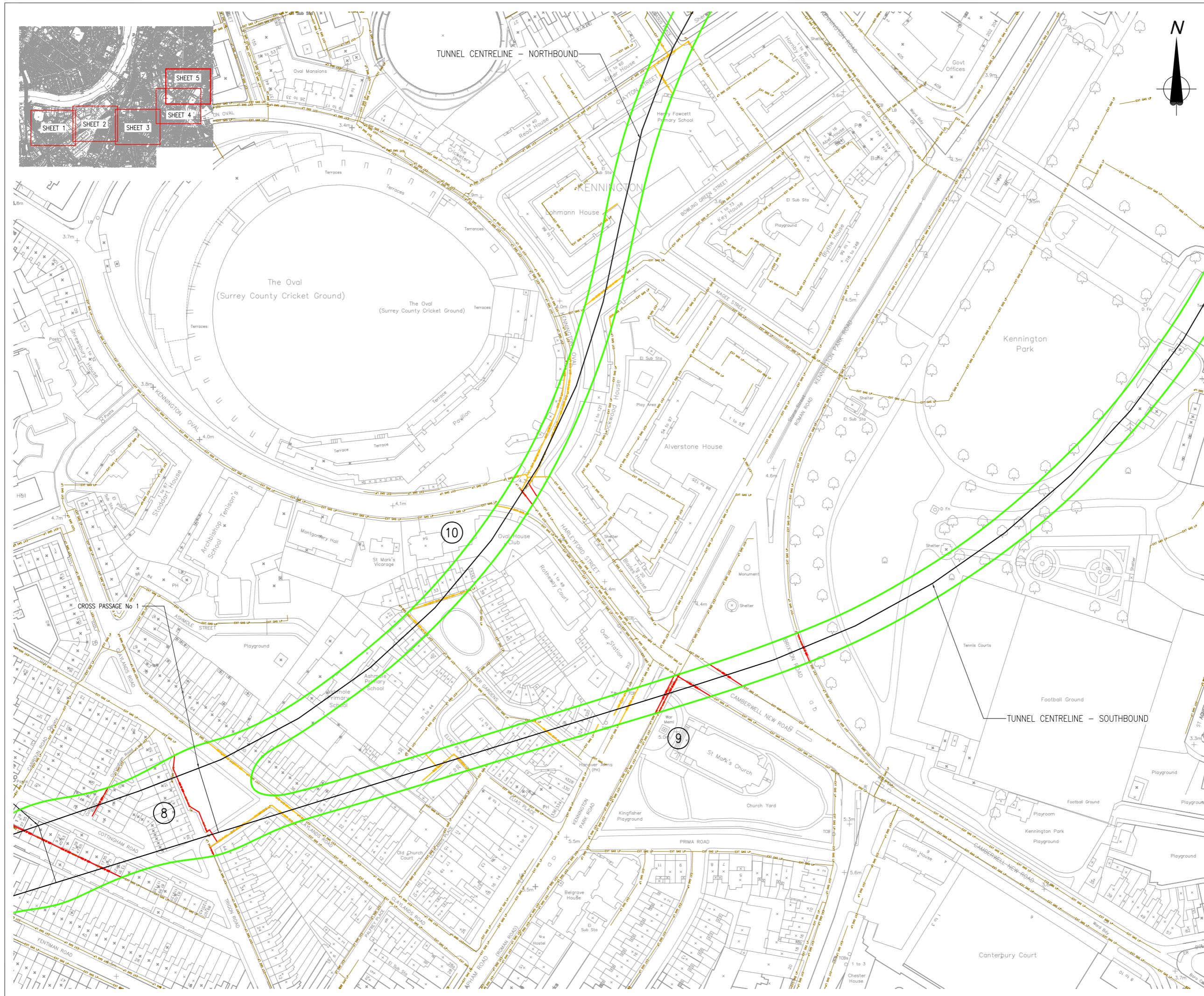
Project: **NORTHERN LINE EXTENSION TO BATTERSEA TWAO FOR TIL**

Drawing: **UTILITY DAMAGE ASSESSMENT GAS - SHEET 3 OF 5**

Subtitle: **S4 - FORMAL ISSUE TO CLIENT**

Drawn by: JMB Date: 13/03/13
Checked by: JD Date: 13/03/13
Approved by: SL Date: 13/03/13
Drawing Scale: 1:1000

Drawing No.: **GRNLEB-BHD-00-XX-DR-GEO-14612** Revision: **04-01**



- Notes:**
1. ALL CONTOURS SHOWN ARE IN MM
 2. ANALYSIS HAS BEEN BASED ON THE SERVICE INFORMATION AVAILABLE AT THE TIME OF DESIGN
 3. MODELLING ONLY TAKES ACCOUNT OF THE IMPACT OF THE NORTHERN LINE EXTENSION AND ASSOCIATED INFRASTRUCTURE E.G. STATION BOXES.
 4. TUNNEL ALIGNMENT IS BASED ON DRAWING GRNLEB-HGL-00-XX-M2-PWY-00010-02-01.
 5. CROSS PASSAGE LOCATION IS BASED ON DRAWING GRNLEB-HGL-00-XX-M2-TUN-00020-01-01.
 6. SUBSTATION AT KENNINGTON PARK IS BASED ON DRAWING GRNLEB-BHD-ST-XX-DR-STR-13120-01-01. ADIT BETWEEN SHAFT AND HEADHOUSE AT KENNINGTON GREEN IS BASED ON DRAWING GRNLEB-HGL-00-XX-DR-TUN-23000-03-01.
 7. SETTLEMENT DUE TO EXCAVATIONS OF SHAFTS IS BASED ON A 1.5% VOLUME LOSS. SEE SETTLEMENT REPORT FOR FULL DETAILS ON OTHER TUNNEL TYPES.
 8. SETTLEMENT DUE TO STATION EXCAVATIONS ARE BASED ON CURVES FROM CIRIA C580 FIGURE 2.9 (b), EXCEPT THE ADIT AT KENNINGTON GREEN WHICH IS BASED ON CIRIA C580 FIGURE 2.12. THE GROUND MOVEMENT CURVES ARE CONSIDERED TO REPRESENT 100% GROUND MOVEMENT PROFILE. HOWEVER THE STATION EXCAVATIONS WILL HAVE AN INCREASED STIFFNESS AT THE CORNERS, THEREFORE THE SETTLEMENT CONTOURS AROUND THE EXCAVATIONS ARE A CONSERVATIVE ESTIMATE.
 9. SETTLEMENT DUE TO EXCAVATIONS OF SHAFTS IS BASED ON THE LONDON UNDERGROUND MANUAL OF GOOD PRACTICE USING G-058 NEW AND BOWERS (1994). THE MAP IS BASED ON ORDNANCE SURVEY, REPRODUCED FROM LANDRANGER 1:50,000 MAP BY PERMISSION OF ORDNANCE SURVEY © ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE. © CROWN COPYRIGHT 1986. ALL RIGHTS RESERVED. LICENSE NUMBER: AL 10005517. THE ORDNANCE SURVEY DATA USED WAS THAT AVAILABLE AT THE TIME OF 2012 REFERENCE DESIGN, AND THUS ANY RECENT CHANGES WILL NOT BE REFLECTED IN THE MAPS USED FOR ANALYSIS.
 10. ALL SHALLOW UTILITIES EXCEEDING 10MM OF SETTLEMENT OR EXCEEDING LIMITS OF STRAIN, JOINT PULL-OUT OR JOINT ROTATION REQUIRE FURTHER INVESTIGATION AND ANALYSIS. (SEE SETTLEMENT REPORT GRNLEB-BHD-00-XX-TNT-GEO-00048).

- 10mm SETTLEMENT CONTOUR
- GAS UTILITIES NOT AFFECTED
- GAS UTILITIES AFFECTED
- GAS UTILITIES CRITICAL

19 CROSS REFERENCE TO THE SETTLEMENT REPORT GRNLEB-BHD-00-XX-TNT-GEO-00049

Rev	By	Chkd	Appvd	Date	Description
04-01	JMB	JD	SL	13/03/13	NOTES AMENDED
03-01	JMB	JD	SL	19/02/13	NOTES AMENDED
02-01	JMB	JD	SL	06/02/13	INCLUSION OF ADITS & SUBSTATION
01-01	JMB	JD	SL	18/01/13	FIRST DRAWN

Client

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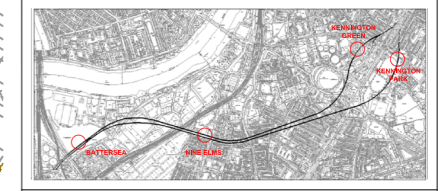
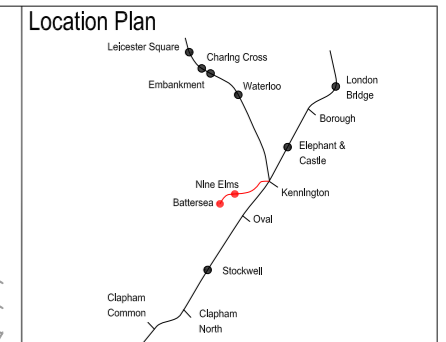
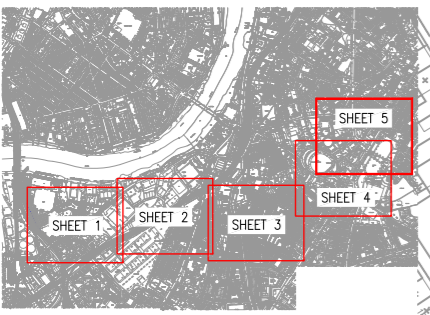
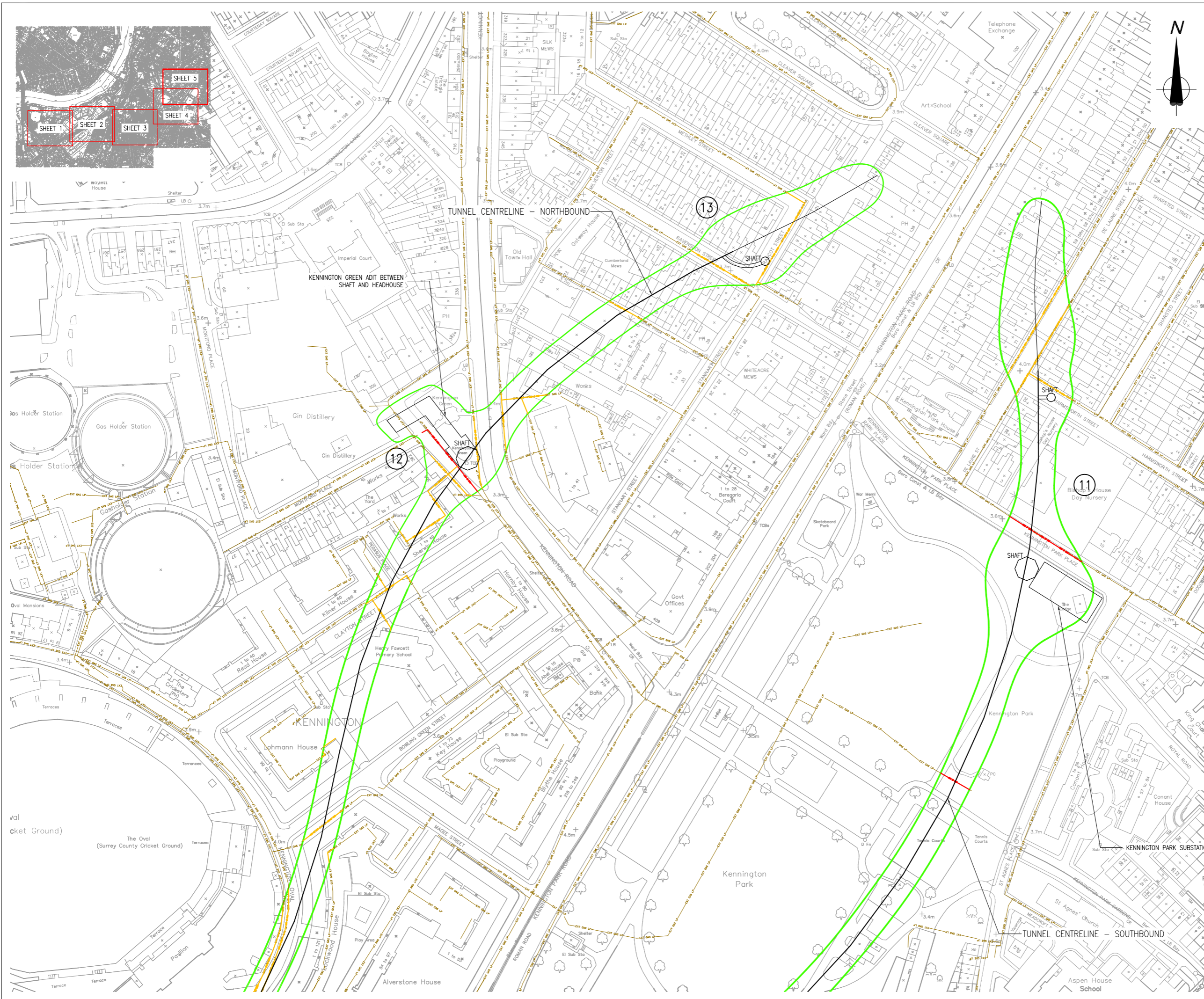
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 A CH2M HILL COMPANY
 Elms House, 43 Brook Green
 Hammermith, London W6 7EF
 TEL: 020 3479 9000
 FAX: 020 3479 8001
 www.halcrow.com

Project: **NORTHERN LINE EXTENSION TO BATTERSEA TWAO FOR TfL**

Drawing: **UTILITY DAMAGE ASSESSMENT GAS - SHEET 4 OF 5**

Suitability: **S4 - FORMAL ISSUE TO CLIENT**

Drawn by: JMB	Date: 13/03/13
Checked by: JD	Date: 13/03/13
Approved by: SL	Date: 13/03/13
Drawing Scale: 1:1000	
Drawing No: GRNLEB-BHD-00-XX-DR-GEO-14613	Revision: 04-01



- Notes:**
- ALL CONTOURS SHOWN ARE IN MM
 - ANALYSIS HAS BEEN BASED ON THE SERVICE INFORMATION AVAILABLE AT THE TIME OF DESIGN
 - MODELLING ONLY TAKES ACCOUNT OF THE IMPACT OF THE NORTHERN LINE EXTENSION AND ASSOCIATED INFRASTRUCTURE E.G. STATION BOXES.
 - TUNNEL ALIGNMENT IS BASED ON DRAWING GRNLEB-HGL-00-XX-M2-PWY-00010-02-01.
 - CROSS PASSAGE LOCATION IS BASED ON DRAWING GRNLEB-HGL-00-XX-DR-TUN-00020-03-01.
 - SUBSTATION AT KENNINGTON PARK IS BASED ON DRAWING GRNLEB-HGL-00-XX-DR-STR-13120-01-01. ADIT BETWEEN SHAFT AND HEADHOUSE AT KENNINGTON GREEN IS BASED ON DRAWING GRNLEB-HGL-00-XX-DR-TUN-23000-03-01.
 - SETTLEMENT DUE TO DRIVING TUNNELS IS BASED ON A 1.5% VOLUME LOSS. SEE SETTLEMENT REPORT FOR FULL DETAILS ON OTHER TUNNEL TYPES.
 - SETTLEMENT DUE TO STATION EXCAVATIONS ARE BASED ON CURVES FROM CIRIA CS60 FIGURE 2.9 (B). EXCEPT THE ADIT AT KENNINGTON GREEN WHICH IS BASED ON CIRIA CS60 FIGURE 2.12. THE GROUND MOVEMENT CURVES ARE CONSIDERED TO REPRESENT 100% GROUND MOVEMENT PROFILE. HOWEVER THE STATION EXCAVATIONS WILL HAVE AN INCREASED STIFFNESS AT THE CORNERS, THEREFORE THE SETTLEMENT CONTOURS AROUND THE EXCAVATIONS ARE A CONSERVATIVE ESTIMATE.
 - SETTLEMENT DUE TO EXCAVATIONS OF SHAFTS IS BASED ON THE LONDON UNDERGROUND MANUAL OF GOOD PRACTICE USING G-268 NEW AND BOWERS (1994).
 - THE MAP IS BASED ON ORDNANCE SURVEY, REPRODUCED FROM LANDRANGER 150,000 MAP BY PERMISSION OF ORDNANCE SURVEY © ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE. © CROWN COPYRIGHT 1988. ALL RIGHTS RESERVED. LICENSE NUMBER: AL 10006514. THE ORDNANCE SURVEY DATA USED WAS THAT AVAILABLE AT THE TIME OF 2012 REFERENCE DESIGN, AND THUS ANY RECENT CHANGES WILL NOT BE REFLECTED IN THE MAPS USED FOR ANALYSIS.
 - ALL SHALLOW UTILITIES EXCEEDING 10MM OF SETTLEMENT OR EXCEEDING LIMITS OF STRAIN, JOINT PULL-OUT OR JOINT ROTATION REQUIRE FURTHER INVESTIGATION AND ANALYSIS. (SEE SETTLEMENT REPORT GRNLEB-HGL-00-XX-TNT-GEO-00049).

- SETTLEMENT CONTOUR 10mm
- GAS UTILITIES NOT AFFECTED
- GAS UTILITIES AFFECTED
- GAS UTILITIES CRITICAL

19 CROSS REFERENCE TO THE SETTLEMENT REPORT GRNLEB-BHD-00-XX-TNT-GEO-00049

Rev	By	Chkd	Appvd	Date	Description
04-01	JMB	JD	SL	13/03/13	NOTES AMENDED
03-01	JMB	JD	SL	19/02/13	NOTES AMENDED
02-01	JMB	JD	SL	06/02/13	INCLUSION OF ADITS & SUBSTATION
01-01	JMB	JD	SL	18/01/13	FIRST DRAWN

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Project: **NORTHERN LINE EXTENSION TO BATTERSEA TWAO FOR TIL**

Drawing: **UTILITY DAMAGE ASSESSMENT GAS - SHEET 5 OF 5**

Suitability: **S4 - FORMAL ISSUE TO CLIENT**

Drawn by: JMB	Date: 13/03/13
Checked by: JD	Date: 13/03/13
Approved by: SL	Date: 13/03/13
Drawing Scale: 1:1000	

Drawing No.: GRNLEB-BHD-00-XX-DR-GEO-14614	Revision: 04-01
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