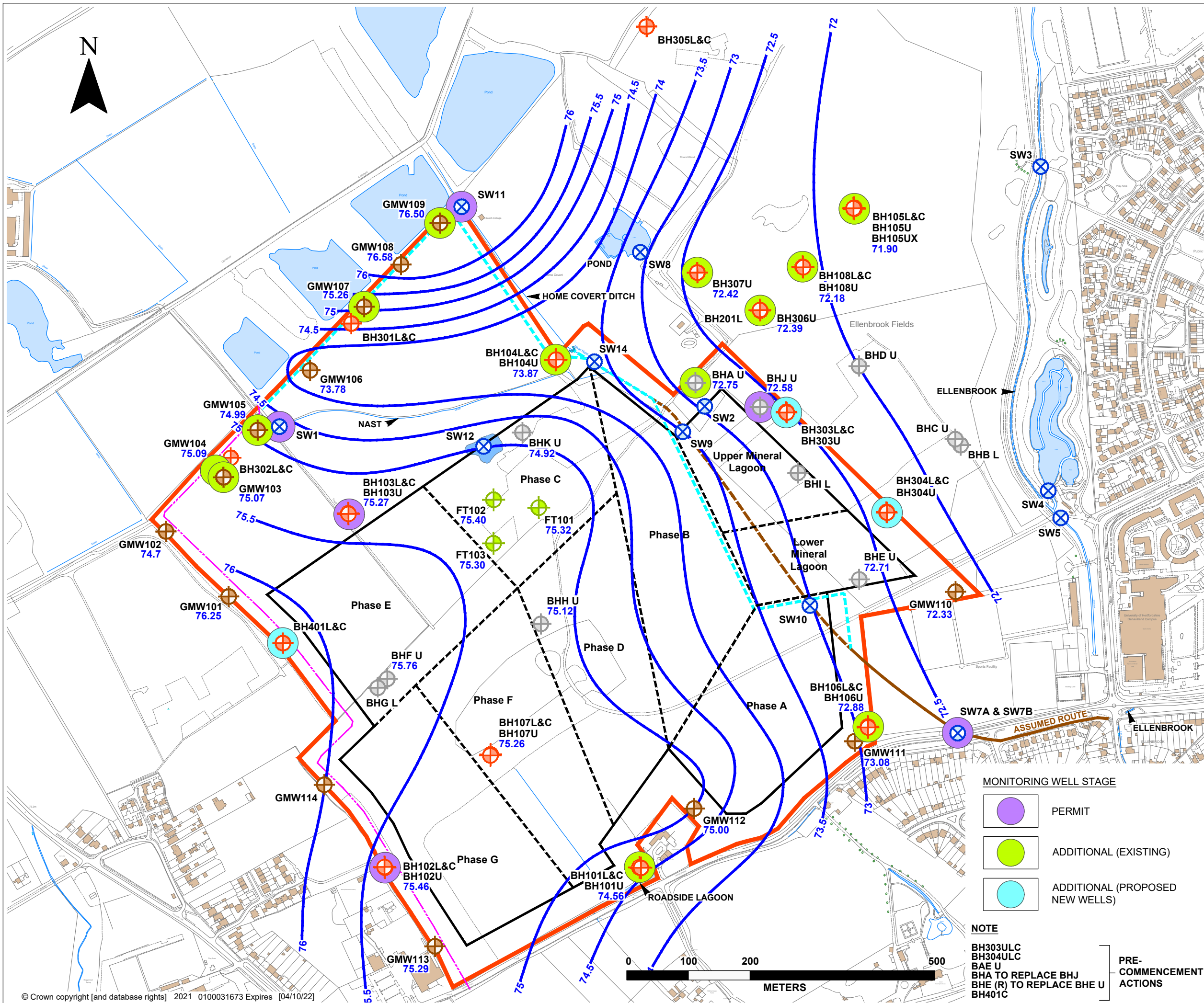


DRAWINGS

Drawing 1: Monitoring Well Plan, Piezometric Surface (UMH), Lagoons and Surface Water 04/2021
Drawing 2: Monitoring Well Plan, Piezometric Surface (UMH), Lagoons and Surface Water 08/2019
Drawing 3: Monitoring Well Plan, Piezometric Surface (LMH), 04/2021
Drawing 4: Monitoring Well Plan, Piezometric Surface (Chalk), 04/2021
Drawing 5: Affinity Water Catchment Plan
Drawing 6: Chalk Aquifer – Bromate Concentrations
Drawing 7: Lower Mineral Aquifer – Bromate Concentrations
Drawing 8: Proposed Phase Specific Monitoring Well Locations
Drawing 9: Lagoon Site Plan and Cross Section
Drawing 10: Groundwater Hydrographs
Drawing 11: Conceptual Lagoon & Buttress Design
Drawing 12: Restoration Plan

09885.00024.19.001.0f_UMH_GW_CONTOURS-0421.dwg



LEGEND

- SITE BOUNDARY
- EXISTING RIVER NAST CULVERT (TO BE RETAINED)
- EXISTING RIVER NAST CULVERT (TO BE ABANDONED)
- RIVER NAST CULVERT (PROPOSED ROUTE)
- NATIONAL GRID GAS PIPELINE (SURVEYED LOCATION)
- PROPOSED MINERAL DEVELOPMENT SITE
- PHASE BOUNDARY
- PRE BRETT MONITORING WELLS

SLR BOREHOLES

- DUAL MONITORING WELLS (LOWER MINERAL HORIZON AND CHALK)
- SHALLOW MONITORING WELL (UPPER MINERAL HORIZON)
- SURFACE WATER MONITORING POINT
- FIRE TRAINING AREA MONITORING WELL
- GAS AND UPPER MINERAL AQUIFER MONITORING WELLS

PIEZOMETRIC SURFACE

- PIEZOMETRIC SURFACE ELEVATION (mAOD) - SLR (APRIL 2021)

built on relationships

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HATFIELD ROAD QUARRY
GROUNDWATER MANAGEMENT PLAN
UPPER MINERAL HORIZON
GROUNDWATER CONTOURS
(APRIL 2021)

DRAWING 1

Scale NTS (A3)

Date AUGUST 2022

MONITORING WELL STAGE

- PERMIT
- ADDITIONAL (EXISTING)
- ADDITIONAL (PROPOSED NEW WELLS)

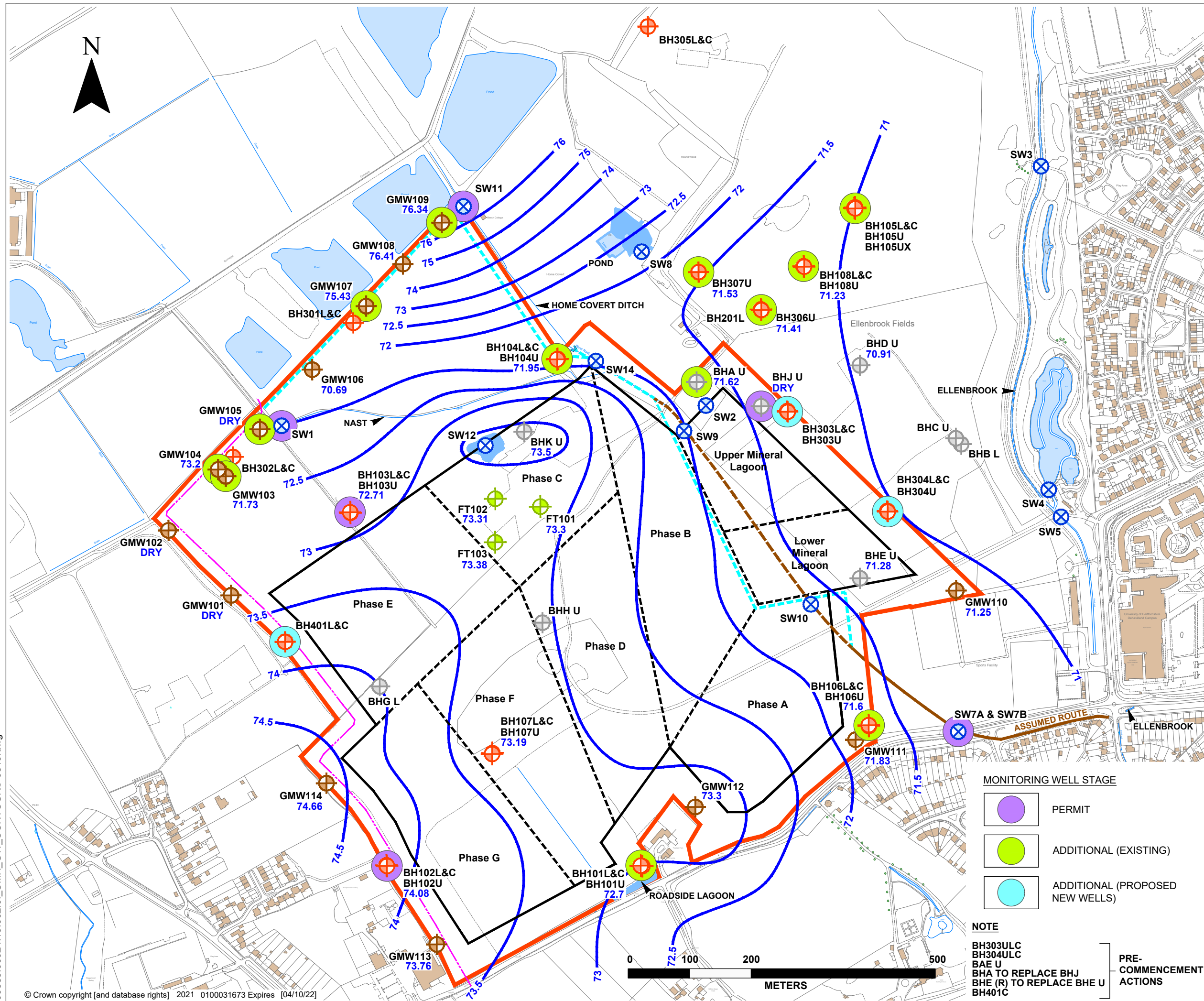
NOTE

BH303ULC
BH304ULC
BAE U
BHA TO REPLACE BHJ
BHE (R) TO REPLACE BHE U
BH401C

PRE-COMMENCEMENT ACTIONS

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LEGEND

- SITE BOUNDARY
- EXISTING RIVER NAST CULVERT (TO BE RETAINED)
- EXISTING RIVER NAST CULVERT (TO BE ABANDONED)
- RIVER NAST CULVERT (PROPOSED ROUTE)
- NATIONAL GRID GAS PIPELINE (SURVEYED LOCATION)
- PROPOSED MINERAL DEVELOPMENT SITE
- PHASE BOUNDARY
- PRE BRETT MONITORING WELLS

SLR BOREHOLES

- DUAL MONITORING WELLS (LOWER MINERAL HORIZON AND CHALK)
- SHALLOW MONITORING WELL (UPPER MINERAL HORIZON)
- SURFACE WATER MONITORING POINT
- FIRE TRAINING AREA MONITORING WELL
- GAS AND UPPER MINERAL AQUIFER MONITORING WELLS

PIEZOMETRIC SURFACE

- PIEZOMETRIC SURFACE ELEVATION (mAOD) - SLR (AUGUST 2019)

MONITORING WELL STAGE

- PERMIT
- ADDITIONAL (EXISTING)
- ADDITIONAL (PROPOSED NEW WELLS)

NOTE

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BH304ULC
BAE U
BHA TO REPLACE BHJ
BHE (R) TO REPLACE BHE U
BH401C

PRE-COMMENCEMENT ACTIONS

HATFIELD ROAD QUARRY

GROUNDWATER MANAGEMENT PLAN

UPPER MINERAL HORIZON

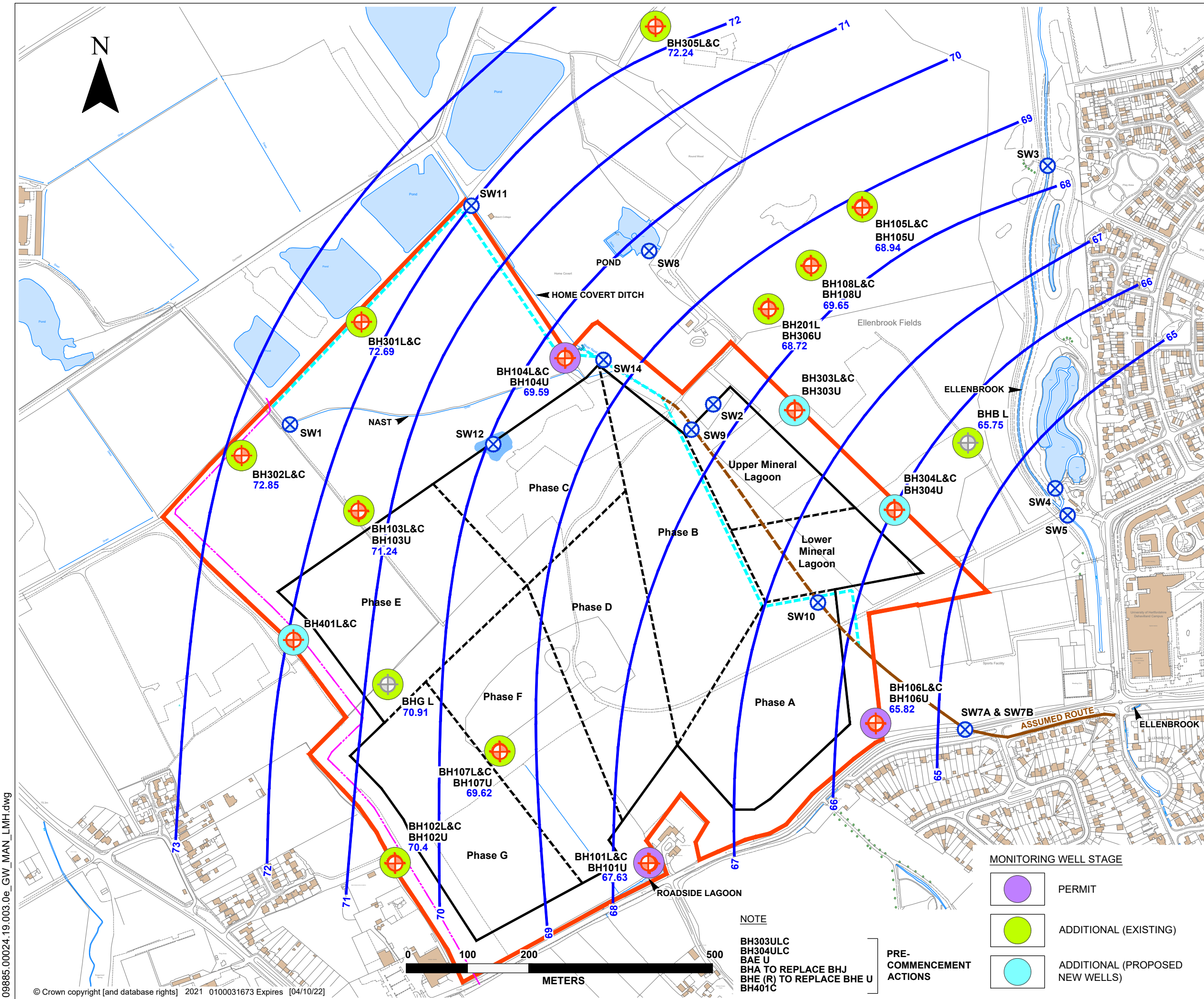
GROUNDWATER CONTOURS

(AUGUST 2019)

DRAWING 2

Scale NTS (A3) Date AUGUST 2022

09885.00024.19.003.0e_GW_MAN_LMH.dwg



LEGEND

SITE BOUNDARY

EXISTING RIVER NAST CULVERT (TO BE RETAINED)

EXISTING RIVER NAST CULVERT (TO BE ABANDONED)

RIVER NAST CULVERT (PROPOSED ROUTE)

NATIONAL GRID GAS PIPELINE (SURVEYED LOCATION)

PROPOSED MINERAL DEVELOPMENT SITE

PHASE BOUNDARY

PRE BRETT MONITORING WELLS

SLR BOREHOLES

BH104L&C

DUAL MONITORING WELLS (LOWER MINERAL HORIZON AND CHALK)

BH104U

SHALLOW MONITORING WELL (UPPER MINERAL HORIZON)

SW2

SURFACE WATER MONITORING POINT

GMW106

GAS AND UPPER MINERAL AQUIFER MONITORING WELLS

PIEZOMETRIC SURFACE

65

PIEZOMETRIC SURFACE ELEVATION (mAOD) - SLR (APRIL 2021)



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HATFIELD ROAD QUARRY

GROUNDWATER MANAGEMENT PLAN

LOWER MINERAL HORIZON
GROUNDWATER CONTOURS
(APRIL 2021)

DRAWING 3

Scale

NTS (A3)

Date

AUGUST 2022

NOTE

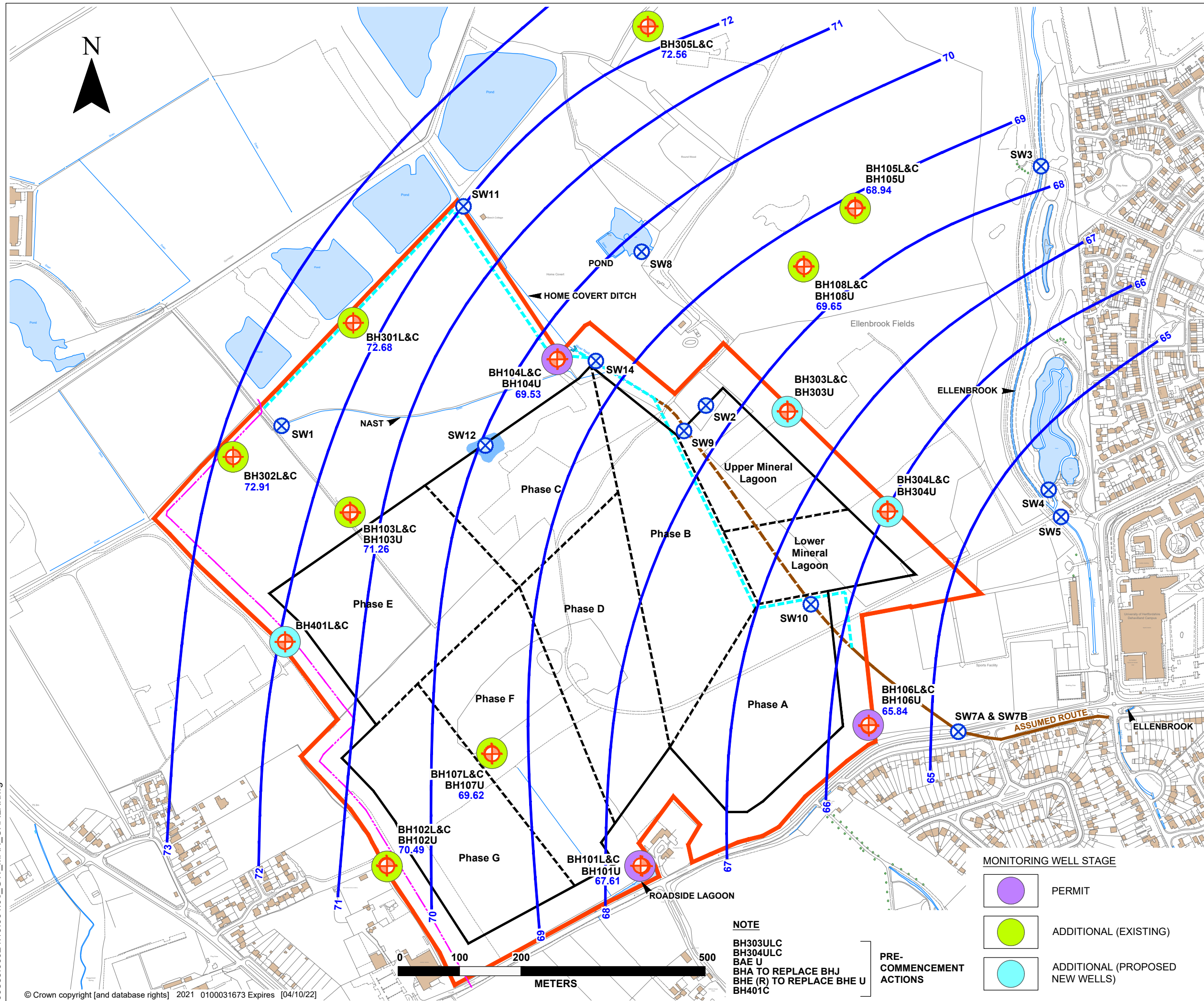
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BH304ULC
BAE U
BHA TO REPLACE BHJ
BHE (R) TO REPLACE BHE U
BH401C

PRE-COMMENCEMENT ACTIONS

PERMIT

ADDITIONAL (EXISTING)

ADDITIONAL (PROPOSED NEW WELLS)



NOTE

BH303ULC
BH304ULC
BAE U
BHA TO REPLACE BHJ
BHE (R) TO REPLACE BHE U
BH401C

PRE-
COMMENCEMENT
ACTIONS

MONITORING WELL STAGE

- PERMIT
- ADDITIONAL (EXISTING)
- ADDITIONAL (PROPOSED NEW WELLS)

LEGEND

- SITE BOUNDARY
- EXISTING RIVER NAST CULVERT (TO BE RETAINED)
- EXISTING RIVER NAST CULVERT (TO BE ABANDONED)
- RIVER NAST CULVERT (PROPOSED ROUTE)
- NATIONAL GRID GAS PIPELINE (SURVEYED LOCATION)
- PROPOSED MINERAL DEVELOPMENT SITE
- PHASE BOUNDARY
- PRE BRETT MONITORING WELLS
- SLR BOREHOLES
- DUAL MONITORING WELLS (LOWER MINERAL HORIZON AND CHALK)
- SHALLOW MONITORING WELL (UPPER MINERAL HORIZON)
- SURFACE WATER MONITORING POINT
- GAS AND UPPER MINERAL AQUIFER MONITORING WELLS
- PIEZOMETRIC SURFACE
- PIEZOMETRIC SURFACE ELEVATION (mAOD) - SLR (APRIL 2021)

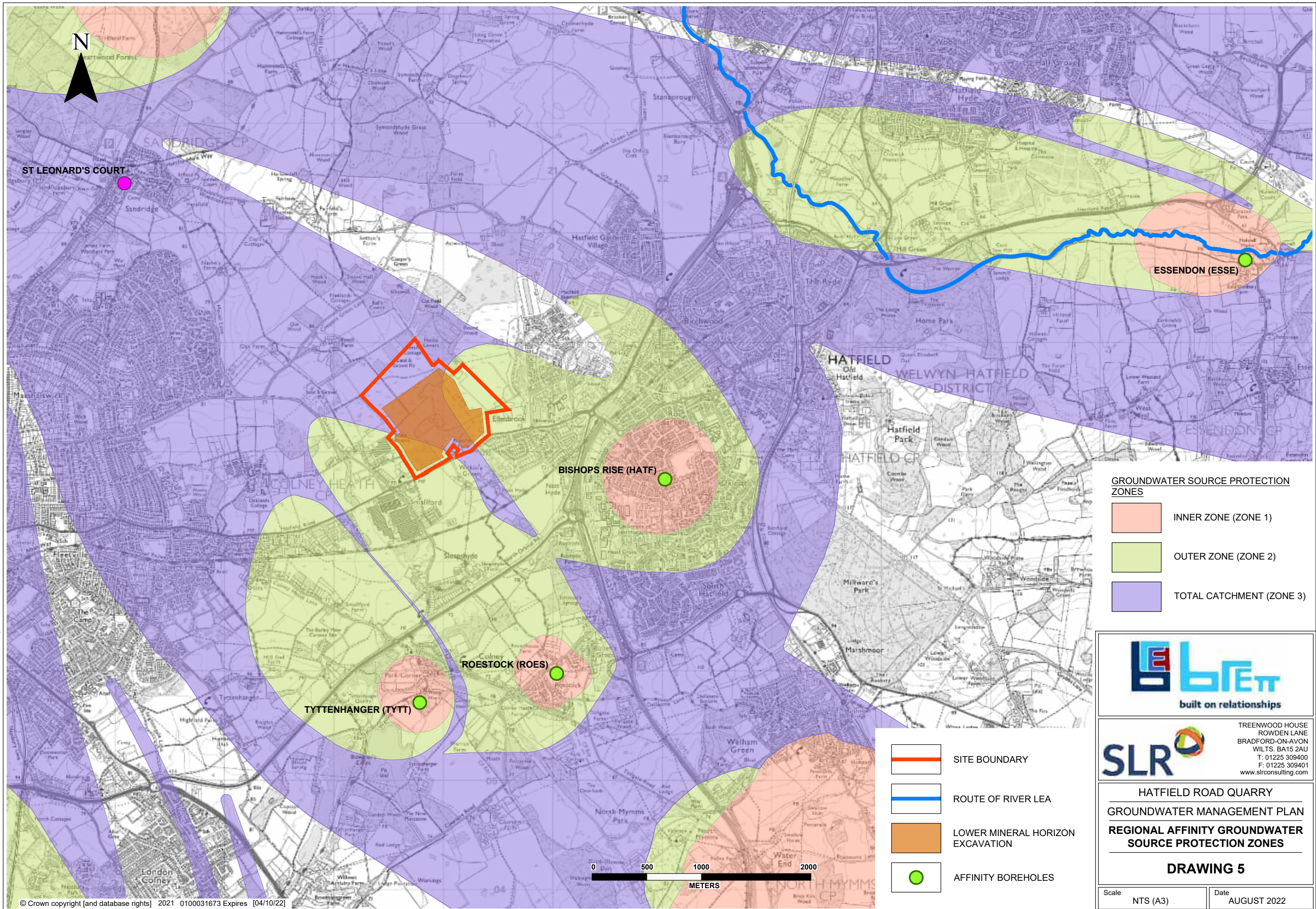
BRETT
built on relationships

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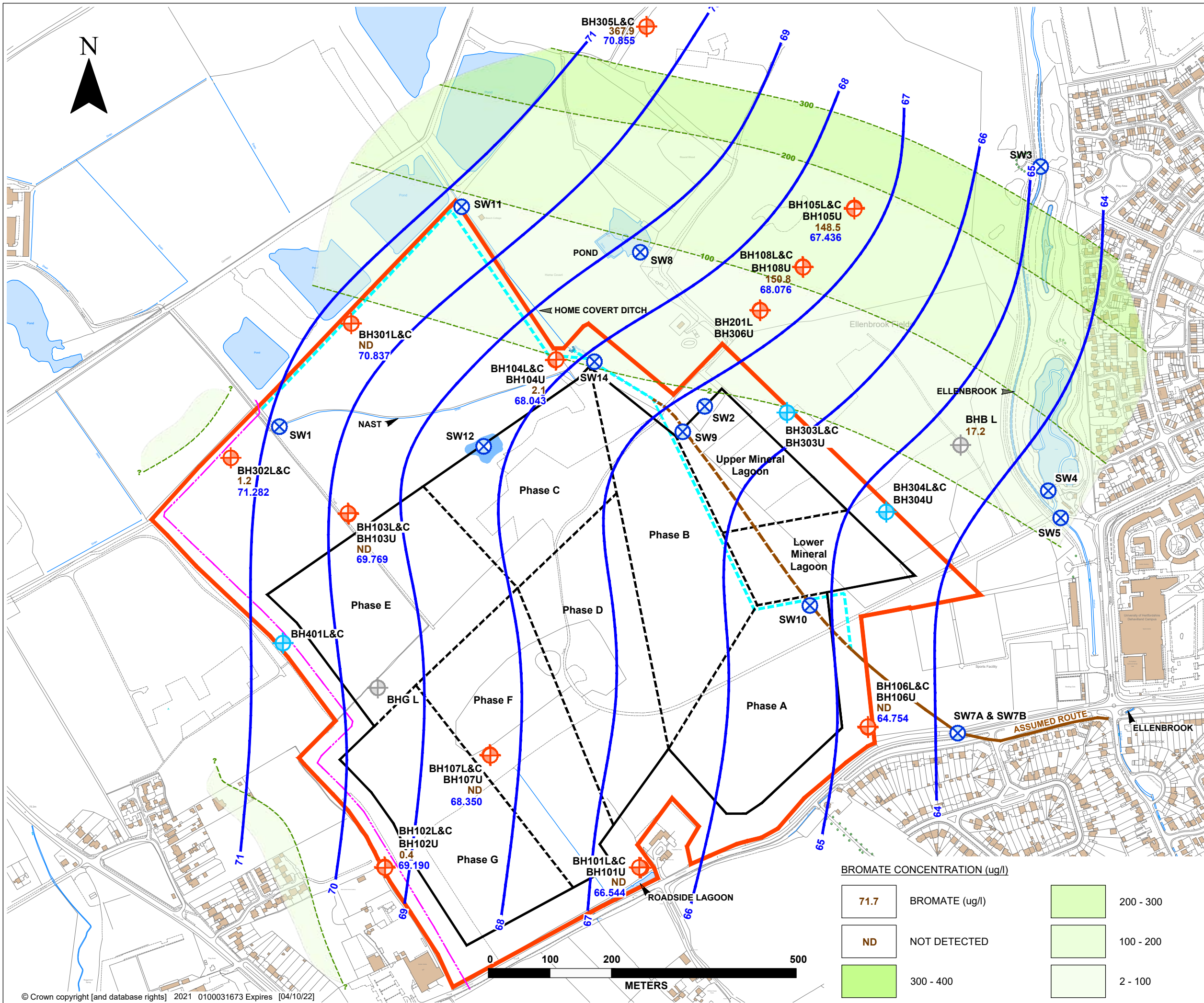
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HATFIELD ROAD QUARRY
GROUNDWATER MANAGEMENT PLAN
CHALK
GROUNDWATER CONTOURS
(APRIL 2021)
DRAWING 4

Scale NTS (A3) Date AUGUST 2022



09885.00041.19.006.0_CHALK_BROMATE_CON-JAN22.dwg



LEGEND

- SITE BOUNDARY
- EXISTING RIVER NAST CULVERT (TO BE RETAINED)
- EXISTING RIVER NAST CULVERT (TO BE ABANDONED)
- RIVER NAST CULVERT (PROPOSED ROUTE)
- NATIONAL GRID GAS PIPELINE (SURVEYED LOCATION)
- PROPOSED MINERAL DEVELOPMENT SITE
- PHASE BOUNDARY
- PRE BRETT MONITORING WELLS

SLR BOREHOLES

- DUAL MONITORING WELLS (LOWER MINERAL AQUIFER AND CHALK)
- SHALLOW MONITORING WELL (UPPER MINERAL AQUIFER)
- SURFACE WATER MONITORING POINT
- GAS AND UPPER MINERAL AQUIFER MONITORING WELLS
- GROUNDWATER MONITORING WELLS TO BE INSTALLED

PIEZOMETRIC SURFACE

- PIEZOMETRIC SURFACE ELEVATION (mAOD) - SLR (JANUARY 2022)

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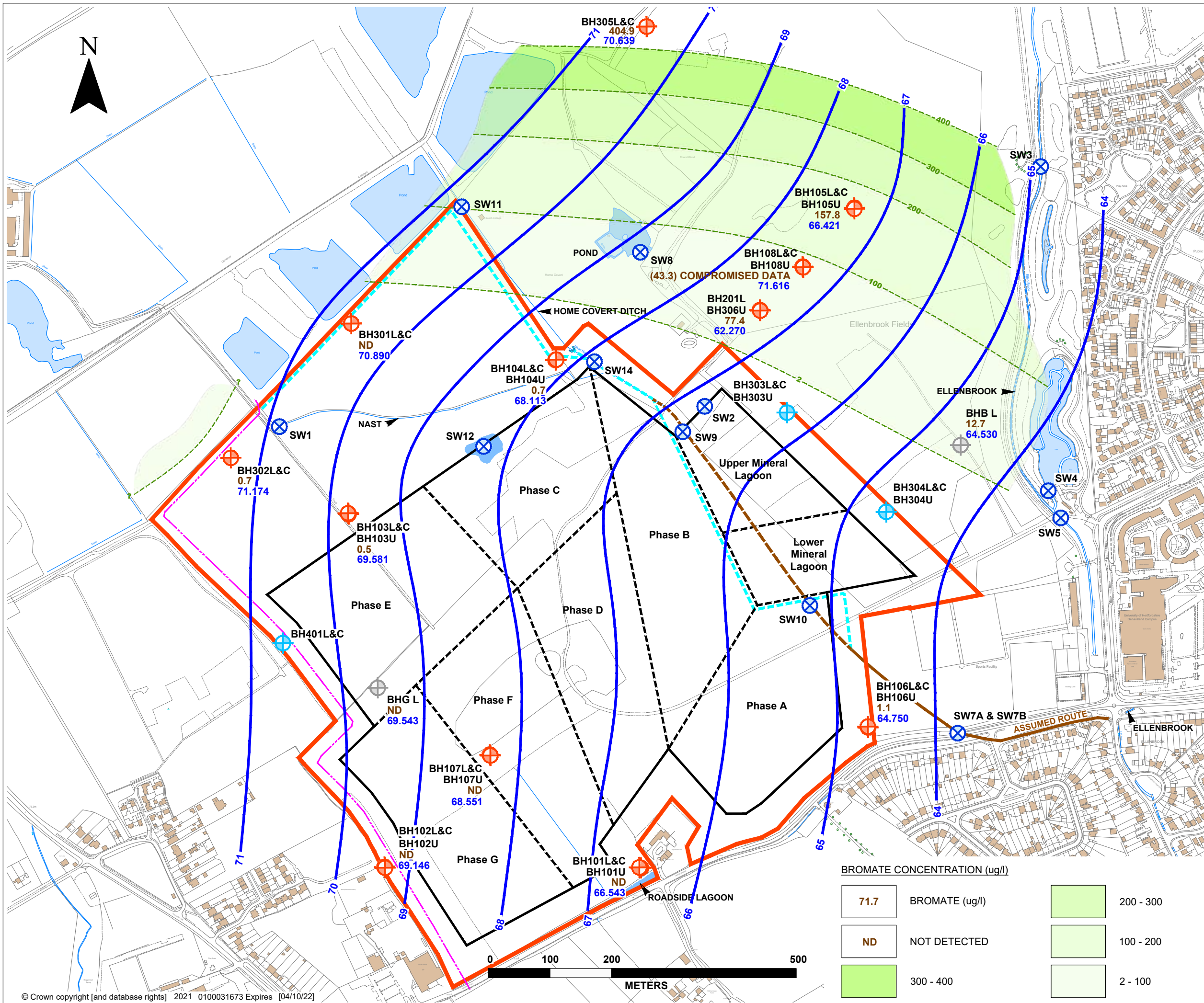
GROUNDWATER MANAGEMENT PLAN

CHALK AQUIFER PIEZOMETRIC SURFACE AND BROMATE CONCENTRATIONS

DRAWING 6

Scale: NTS (A3) Date: AUGUST 2022

09885.00041.19.007.0_LMH_BROMATE_CON-JAN22.dwg



LEGEND

SITE BOUNDARY

EXISTING RIVER NAST CULVERT (TO BE RETAINED)

EXISTING RIVER NAST CULVERT (TO BE ABANDONED)

RIVER NAST CULVERT (PROPOSED ROUTE)

NATIONAL GRID GAS PIPELINE (SURVEYED LOCATION)

PROPOSED MINERAL DEVELOPMENT SITE

PHASE BOUNDARY

BHK U

PRE BRETT MONITORING WELLS

SLR BOREHOLES

BH104L&C

DUAL MONITORING WELLS (LOWER MINERAL AQUIFER AND CHALK)

BH104U

SHALLOW MONITORING WELL (UPPER MINERAL AQUIFER)

SW2

SURFACE WATER MONITORING POINT

GMW106

GAS AND UPPER MINERAL AQUIFER MONITORING WELLS

GROUNDWATER MONITORING WELLS TO BE INSTALLED

PIEZOMETRIC SURFACE

65

PIEZOMETRIC SURFACE ELEVATION (mAOD) - SLR (JANUARY 2022)

Brett

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HATFIELD ROAD QUARRY

GROUNDWATER MANAGEMENT PLAN

LOWER MINERAL HORIZON AQUIFER

PIEZOMETRIC SURFACE AND BROMATE CONCENTRATIONS

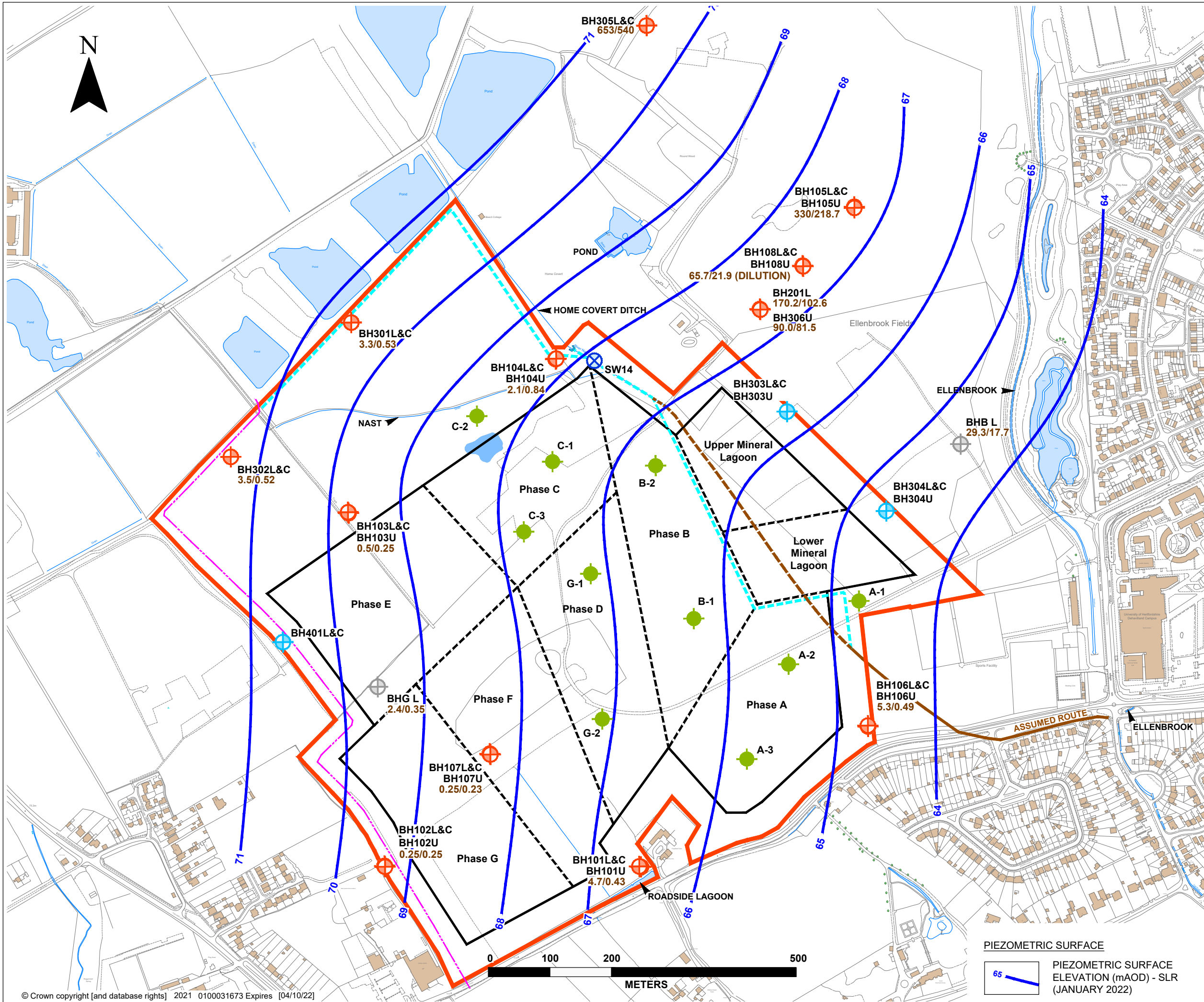
DRAWING 7

Scale
NTS (A3)

Date
AUGUST 2022

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LEGEND

SITE BOUNDARY

EXISTING RIVER NAST
CULVERT (TO BE RETAINED)

EXISTING RIVER NAST
CULVERT (TO BE
ABANDONED)

RIVER NAST CULVERT
(PROPOSED ROUTE)

NATIONAL GRID GAS PIPELINE
(SURVEYED LOCATION)

PROPOSED MINERAL
DEVELOPMENT SITE

PHASE BOUNDARY (A-G)

PRE BRETT MONITORING
WELLS

BHK U

SLR BOREHOLES

DUAL MONITORING WELLS
(LOWER MINERAL HORIZON
AND CHALK)

SHALLOW MONITORING WELL
(UPPER MINERAL HORIZON)

2.1/0.84

MAXIMUM / MEAN BROMATE
CONCENTRATION TO JANUARY
2022

SW2

SURFACE WATER
MONITORING POINT

GMW106

GAS AND UPPER MINERAL
AQUIFER MONITORING
WELLS

GROUNDWATER
MONITORING WELLS TO BE
INSTALLED

PHASE MONITORING WELLS
(UMA, LMA) TO BE INSTALLED



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HATFIELD ROAD QUARRY

GROUNDWATER MANAGEMENT PLAN

LOWER MINERAL HORIZON AQUIFER

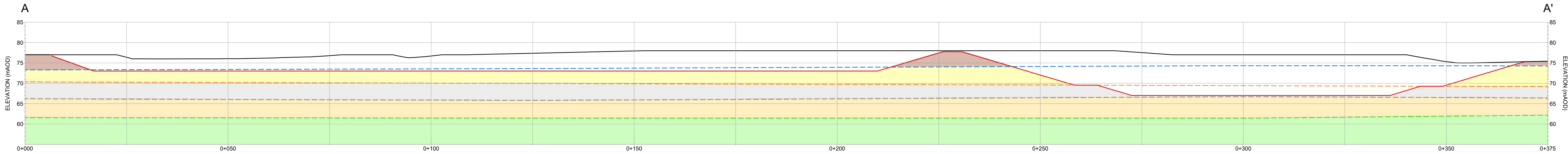
PIEZOMETRIC SURFACE PROPOSED

PHASE MONITORING WELLS

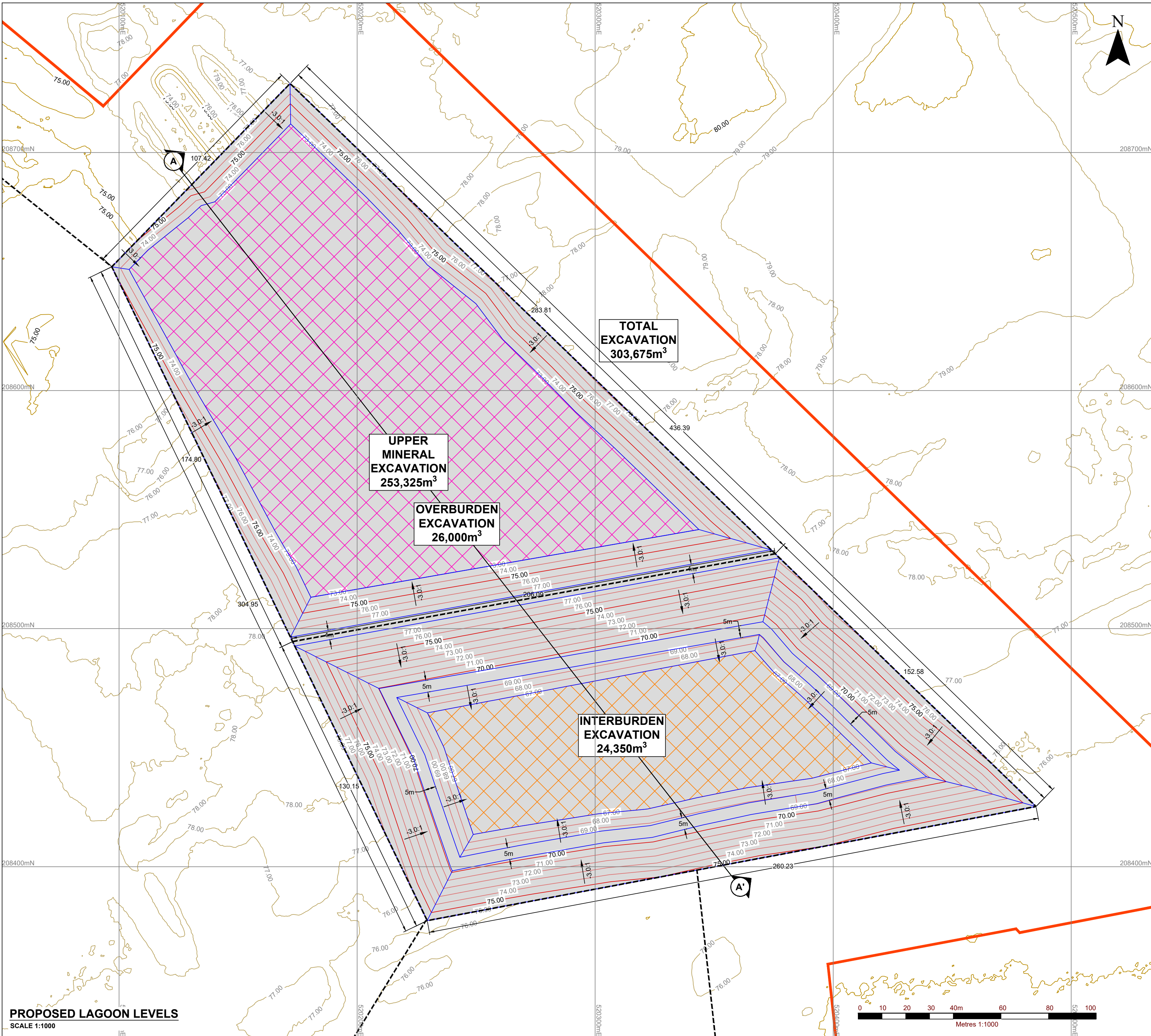
DRAWING 8

Scale
NTS (A3)

Date
AUGUST 2022



SECTION A-A'
SCALE 1:500



LEGEND - PLAN

- SITE BOUNDARY
- PHASE BOUNDARY
- TOPOGRAPHIC SURVEY LEVEL CONTOURS (mAOD)
- PROPOSED LAGOON EXCAVATION CONTOURS (mAOD)
- UPPER MINERAL LAGOON BASAL AREA (23,130m²)
- LOWER MINERAL LAGOON BASAL AREA (8,571m²)

LEGEND - SECTION

- TOPOGRAPHIC SURVEY LEVEL PROFILE
- PROPOSED LAGOON LEVEL PROFILE
- TOP OF UPPER MINERAL / BASE OF OVERBURDEN LEVEL PROFILE
- TOP OF INTERBURDEN / BASE OF UPPER MINERAL LEVEL PROFILE
- TOP OF LOWER MINERAL / BASE OF INTERBURDEN LEVEL PROFILE
- TOP OF CHALK / BASE OF LOWER MINERAL LEVEL PROFILE
- OVERBURDEN
- UPPER MINERAL
- INTERBURDEN
- LOWER MINERAL
- CHALK

Revision	By	CHK'd By	Date	Comments
0	KW	PR	08/22	

SLR global environmental solutions

Site: HATFIELD ROAD QUARRY

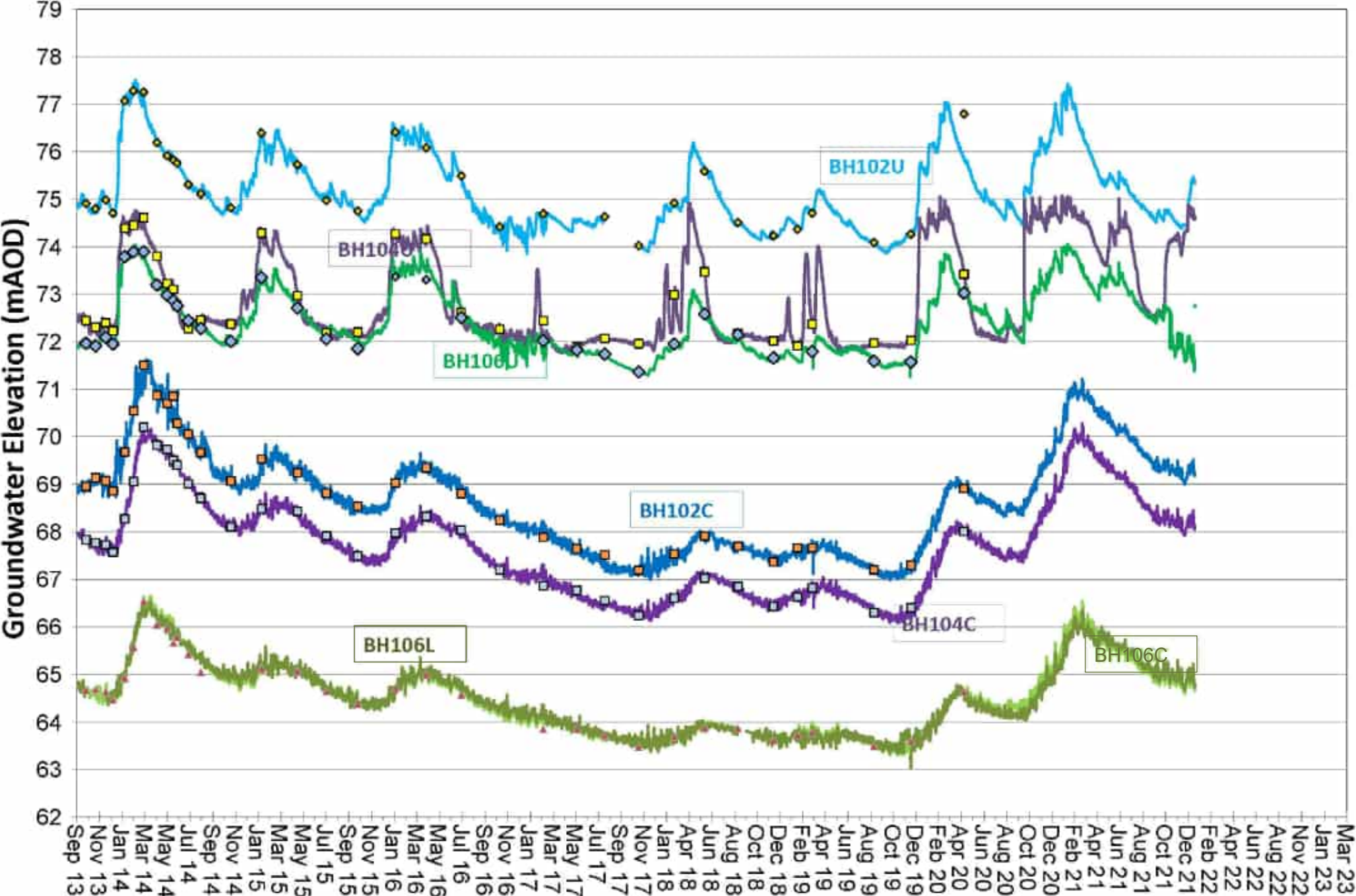
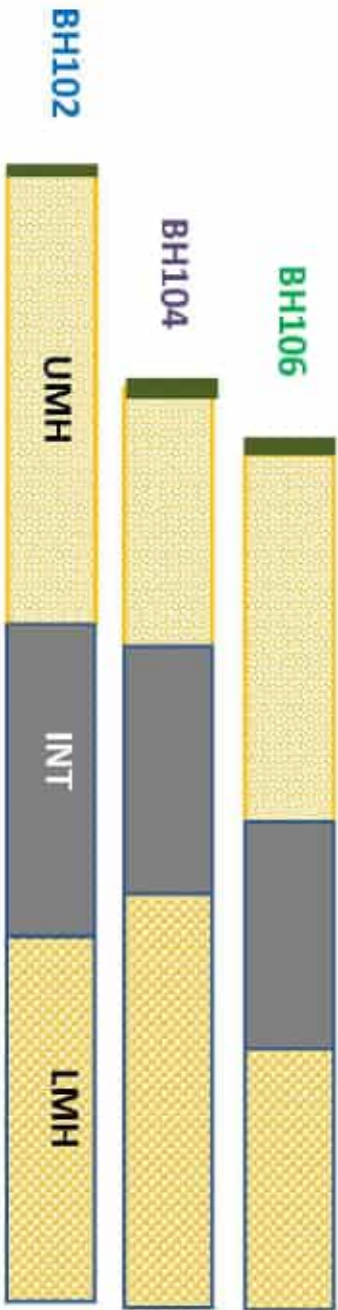
Project: GROUNDWATER MANAGEMENT PLAN

Drawing Title: LAGOON SITE PLAN & CROSS SECTION

Scale: AS SHOWN @ A1 Date: AUGUST 2022

Drawing Number: 009 Revision: 0

Hatfield Groundwater Hydrograph- All Aquifers



NOTES

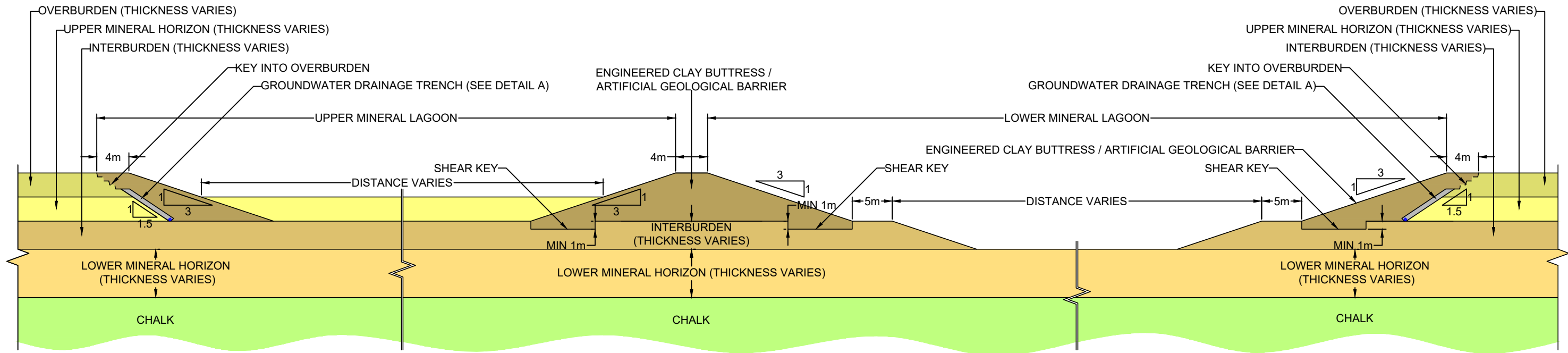


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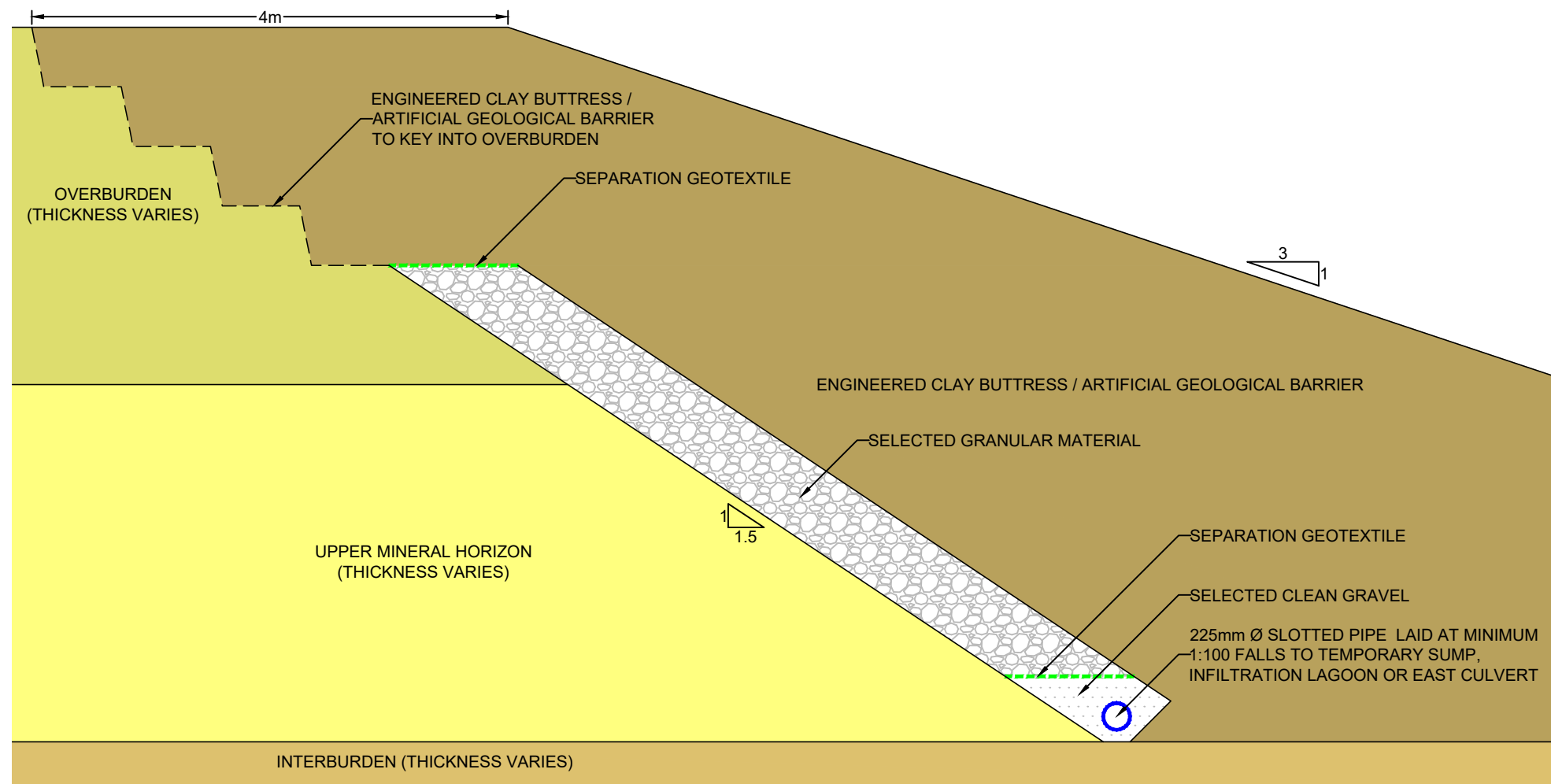
HATFIELD ROAD QUARRY
GROUNDWATER MANAGEMENT PLAN
GROUNDWATER HYDROGRAPHS
DRAWING 10

Scale
NTS (A3)

Date
AUGUST 2022



SCHEMATIC DETAIL THROUGH LMA AND UMA INFILTRATION LAGOONS
SCALE 1:500



DETAIL A: GROUNDWATER CONTROL DRAIN
SCALE 1:50

0	KW	PR	08/22	
Revision	By	Chk'd By	Date	Comments
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 global environmental solutions				
2 nd and 3 rd FLOORS 15 MIDDLE PAVEMENT NOTTINGHAM NG1 7DX T: 01159 647280 F: 01159 751576 www.slrconsulting.com				
Site HATFIELD ROAD QUARRY				
Project GROUNDWATER MANAGEMENT PLAN				
Drawing Title CONCEPTUAL LAGOON & BUTTRESS DESIGN				
Scale AS SHOWN @ A3			Date AUGUST 2022	
Drawing Number 011				Revision 0



208590_01008.00180.261.HQ_3.15 RESTORATION PLAN REV1 2.dwg
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SCRUB PLANTING										
Tree/Shrub species	Form/Habit	Root condition	Minimum no. of Breaks	Age/Condition or Number of Times Transplanted	Minimum size of container	Overall Height (cm)	Percentage Mix (%)	SC1 (2262m²)	SC2 (4687 m²)	SC3 (3970 m²)
Total Plant No.s @ 1m Centres										
<i>Corylus avellana</i>	Hazel	Branched	Bagged/Bareroot	3	1+2 or 1/2	60-80	30	679	1406	1191
<i>Crataegus monogyna</i>	Hawthorn	Transplant - seed raised	Bagged/Bareroot		1+1 or 1/1	60-80	20	452	937	784
<i>Ilex aquifolium</i>	Holly	Leaders and Laterals	Container			3L	10	226	469	397
<i>Prunus spinosa</i>	Blackthorn	Transplant - seed raised	Bagged/Bareroot		1+1 or 1/1	60-80	25	566	1172	993
<i>Rosa canina</i>	Dog rose	Branched	Bagged/Bareroot	3	1+1 or 1/1	60-80	8	113	234	198
<i>Viburnum opulus</i>	Guelder rose	Branched	Bagged/Bareroot	3	1+2 or 1/2	60-80	10	226	469	397
Total								2262	4687	3970

MIDGEO PLANTING													
Tree/Shrub species	Form/Habit	Root condition	Minimum no. of Breaks	Age/Condition or Number of Times Transplanted	Minimum size of container	Overall Height (cm)	Planting Block m	H1	H2	H3	H4	H5	H6
Total Plant No.s @ 5 per 1m													
<i>Corylus avellana</i>	Hazel	Branched	Bagged/Bareroot	3	1+2 or 1/2	60-80	10%	195	60	220	145	70	215
<i>Crataegus monogyna</i>	Hawthorn	Transplant - seed raised	Bagged/Bareroot		1+1 or 1/1	60-80	30%	585	175	655	440	210	640
<i>Ilex aquifolium</i>	Holly	Leaders and Laterals	Container			3L	10%	195	60	220	145	70	215
<i>Prunus spinosa</i>	Blackthorn	Transplant - seed raised	Bagged/Bareroot		1+1 or 1/1	60-80	40%	780	235	870	585	280	885
<i>Rosa canina</i>	Dog rose	Branched	Bagged/Bareroot	3	1+1 or 1/1	60-80	10%	195	60	220	145	70	215
Total							100%	1950	590	2185	1460	700	2140

WOODLAND/SCRUB PLANTING													
Tree/Shrub species	Form/Habit	Root condition	Minimum no. of Breaks	Age/Condition or Number of Times Transplanted	Minimum size of container	Overall Height (cm)	Planting Block m²	WP1	WP2	WP3	WP4	WP5	WP6
Total Plant No.s @ 2m Centres													
<i>Acer campestre</i>	Field Maple	Transplant - seed raised	Bagged/Bareroot		1+1 or 1/1	60-80	5%	70	405	50	35	50	25
<i>Corylus avellana</i>	Hazel	Branched	Bagged/Bareroot	3	1+2 or 1/2	60-80	10%	145	810	100	75	100	45
<i>Crataegus monogyna</i>	Hawthorn	Transplant - seed raised	Bagged/Bareroot		1+1 or 1/1	60-80	10%	145	810	100	75	100	45
<i>Ilex aquifolium</i>	Holly	Leaders and Laterals	Container			3L	2.5%	35	200	25	20	25	10
<i>Malus sylvestris</i>	Crab apple	Transplant - seed raised	Bagged/Bareroot		1+1 or 1/1	60-80	2.5%	35	200	25	20	25	10
<i>Prunus avium</i>	Wild Cherry	Transplant - seed raised	Bagged/Bareroot		1+1 or 1/1	60-80	5%	70	405	50	35	50	25
<i>Prunus spinosa</i>	Blackthorn	Transplant - seed raised	Bagged/Bareroot		1+1 or 1/1	60-80	2.5%	35	200	25	20	25	10
<i>Quercus robur</i>	Pedunculate oak	Transplant - seed raised	Bagged/Bareroot		1+1 or 1/1	60-80	35%	505	2635	355	260	355	160
<i>Rosa canina</i>	Dog rose	Branched	Bagged/Bareroot	3	1+1 or 1/1	60-80	2.5%	35	200	25	20	25	10
<i>Sorbus aria</i>	Whitebeam	Transplant - seed raised	Bagged/Bareroot		1+1 or 1/1	60-80	16%	215	1215	150	110	150	70
<i>Viburnum opulus</i>	Guelder rose	Branched	Bagged/Bareroot	3	1+2 or 1/2	60-80	10%	145	810	100	75	100	45
Total							100%	1445	8100	8100	740	1010	460

LEGEND

- SITE BOUNDARY
- PROPOSED CONTOURS (2m INTERVALS)
- PROPOSED NAST DIVERSION (PERFORATED PIPE)
- PROPOSED NAST DIVERSION (SOLID PIPE)
- APPROXIMATE EXISTING RIVER NAST CULVERT
- GAS PIPELINE ROUTE TAKEN FROM NATIONAL GRID DRAWING EA_TE_26_2S_16351
- PUBLIC RIGHT OF WAY
- BRIDGEWAY TO BE DEDICATED
- PERMISSIVE RIGHT OF WAY
- MINERAL EXTRACTION AREA
- NAST CULVERT AND SURFACE WATER MONITORING POINT
- RETAINED BOREHOLES
- RETAINED ACCESS ROAD
- POTENTIAL INDICATIVE LOCATION OF BACK DRAIN
- PROPOSED OPEN DITCH/SWALE
- ADVANCE HEDGEROW AND TREE PLANTING
- EXISTING TREES AND SHRUBS
- PROPOSED HEDGEROW
- PROPOSED SCRUB
- PROPOSED MARGINAL VEGETATION/REEDBED
- WATER BODY / PONDS
- UNIMPROVED NEUTRAL-ACIDIC GRASSLAND
- CALCAREOUS GRASSLAND
- PROPOSED RIDGE AND FURROW

REV1 HD MCJ 09.22

Revision By Chkd By Date Comments

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HATFIELD AERODROME

PLANNING APPLICATION

RESTORATION PLAN

HQ 3/15-REV-1

Scale 1:2,500 @ A1 Date SEPTEMBER 2022

0 80m 200

Metres 1:2500

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