Technical design note

Project name	Land Adjacent Haldens Parkway, Thrapston, Northamptonshire		
Design note title	Emissions Monitoring Plan		
Document reference	23880-HYD-XX-XX-RP-GE-5007-S2-P02		
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Revision	01		
Date	30 May 2023	Approved	✓

1. Introduction

This document sets out monitoring requirements relating to remedial works associated with activities covered by a Deposit for Recovery (DfR) activity and MPP Deployment on land at Thrapston, Northamptonshire. It has been prepared to support a DfR permit application by Mick George Limited as earthworks contractor for the development. More specifically it is presented in response to Question 3b of Application Form B4.

The plan covers monitoring in respect of:

- Protection of the water environment;
- Occupational health & safety;
- Nuisance issues.

This report should be read with reference to:

- Drawing 23880-HYD-XX-ZZ-DR-GE-1022 (Monitoring Plan);
- TDN reference 23880-HYD-XX-XX-RP-GE-5004-S1-P01 (Pollution Emissions Plan); and
- TDN reference 23880-HYD-XX-XX-RP-GE-5003-S1-P01 (Environmental Risk Assessment).

2. Nuisance, Health & Safety

2.1 Emissions and Parameters

Monitoring will take place in accordance with Table 2.1:

Table 2.1. Emission monitoring

Emission	Apparatus	Frequency	Location [1]
Dust	Frisbee collection stand	Weekly	A, B, C, D
Noise	Meters (hand held or static)	Daily	A, B, C, D
Odour	Human perception	Daily	A, B, C, D
Vibration		Daily	A, B, C, D

[1] As shown on drawing 23880-HYD-XX-ZZ-DR-GE-1022 (monitoring plan)

2.2 Background Monitoring

The Positions marked on Drawing 23880-HYD-XX-ZZ-DR-GE-1022 will be monitored for dust/ fibre, noise, odour, and vibration prior to works commencing in order to set trigger levels for comparison with operational observations.

2.3 Operational Monitoring

The works will involve the construction of a bund that will require the monitoring to move as construction progresses. Daily monitoring at the work face will therefore be mobile. Observations and recordings will be noted daily as per the Pollution Emissions Plan.

3. Water Monitoring

3.1 Purpose

Water monitoring is required to demonstrate that the construction works are having no adverse effects on the water environment.

3.2 Surface Water Monitoring

There is no surface water within the site boundary. It is proposed to carry our monitoring at Point X on Drawing 23880-HYD-XX-ZZ-DR-GE-1022 attached, this being point close to the site on Polopit Brook that is likely to have flowing water all year round.

The following monitoring regime is proposed:

- Daily: visual inspection for oil sheen and contamination by silt;
- Weekly: sample and on-site testing for pH, EC, DO, temperature and turbidity;
- 3 monthly (or in the event the daily/weekly inspections give rise to concern): NH4-N; TOC; Se; Sb; Hg; Al; Mg; SO4; Cl; Fe; Cd; Cr; Cu; Ni; Pb; Zn; Fluoride; BTEX; PCBs; PAH; TDS; DOC.

Monitoring to be undertaken by qualified and experienced personnel from Hydrock under an appointment from Mick George Ltd.

3.3 Groundwater Monitoring

3.3.1 General Principles

Construction works are expected to lead to the loss of all pre-existing monitoring boreholes. However, where possible, given the value of the long-term data, some will be replaced by a new borehole with the same standpipe configuration but in 'sterile' land where they are not expected to be damaged.

3.3.2 Proposed New Network

The proposed new network is summarised in Table 3.1. and the locations are shown on Drawing 23880-HYD-XX-ZZ-DR-GE-1022.

All new monitoring boreholes need to be installed prior to earthworks commencing.

Table 3.1: Proposed Groundwater Monitoring Network

Borehole Number	Target Aquifer	Orientation
GW01	Cornbrash Formation	Up-gradient
GW02	Cornbrash Formation	Up-gradient
GW03	Cornbrash Formation	Up-gradient
GW04	Cornbrash Formation	Up-gradient
GW05	Cornbrash Formation	Up-gradient
GW06	Cornbrash Formation	Up-gradient
GW07	Blisworth Limestone	Cross-gradient
GW08	Cornbrash Formation	Up-gradient
GW09	Cornbrash Formation	Down-gradient
GW10	Blisworth Limestone	Down-gradient
GW11	Cornbrash Formation	Down-gradient
GW12	Cornbrash Formation	Down-gradient
GW13	Cornbrash Formation	Cross-gradient

3.3.3 *Proposed Monitoring Regime*

- Weekly:
  - Groundwater level;
  - sample and on-site testing for pH, EC, temperature, DO;
- Monthly (or in the event the weekly inspections give rise to concern): PAH; TPH; pH; Cl; NH_4-N; Cd; Ni; EC; TON; TOC; Ca; Mg; Na; K; Total alkalinity; SO4; Fe; Mn; Cr; Cu; Pb; Zn.

3.3.4 *Decommissioning Existing Boreholes*

All pre-existing monitoring boreholes need to be professionally decommissioned by the contractor, Mick George Ltd., in accordance with an EA-approved CQA plan before the headworks are accidentally destroyed by earthworks (to avoid them becoming conduits for surface to groundwater pollution).

3.4 Ground gas monitoring

3.4.1 *Proposed network*

Hydrogeological conditions are such that it is not possible for the groundwater monitoring boreholes to function effectively as gas monitoring boreholes. As such a new network of gas monitoring boreholes is required.

The proposed new network is summarised in Table 3.2. and locations shown on Drawing 23880-HYD-XX-ZZ-DR-GE-1022.

Table 3.2: Proposed ground gas monitoring network

Borehole Number	Orientation
GAS01	DfR Bund - Development Side
GAS02	DfR Bund - Development Side
GAS03	DfR Bund - Development Side
GAS04	DfR Bund - Development Side
GAS05	DfR Bund - Development Side
GAS06	DfR Bund - Development Side
GAS07	DfR Bund - Development Side
GAS08	DfR Bund - Development Side
GAS09	DfR Bund - Development Side
GAS10	DfR Bund - Development Side
GAS11	DfR Bund - Field Side
GAS12	DfR Bund - Field Side
GAS13	DfR Bund - Field Side
GAS14	DfR Bund - Field Side
GAS15	DfR Bund - Field Side
GAS16	DfR Bund - Field Side
GAS17	DfR Bund - Field Side

3.4.2 Proposed Monitoring Regime

The following measurements/records will be taken weekly:

- Weather conditions;
- Concentrations of methane, carbon dioxide, and oxygen;
- Relative pressure;
- Gas flow;
- Atmospheric pressure;
- Groundwater level.

4. Assessment

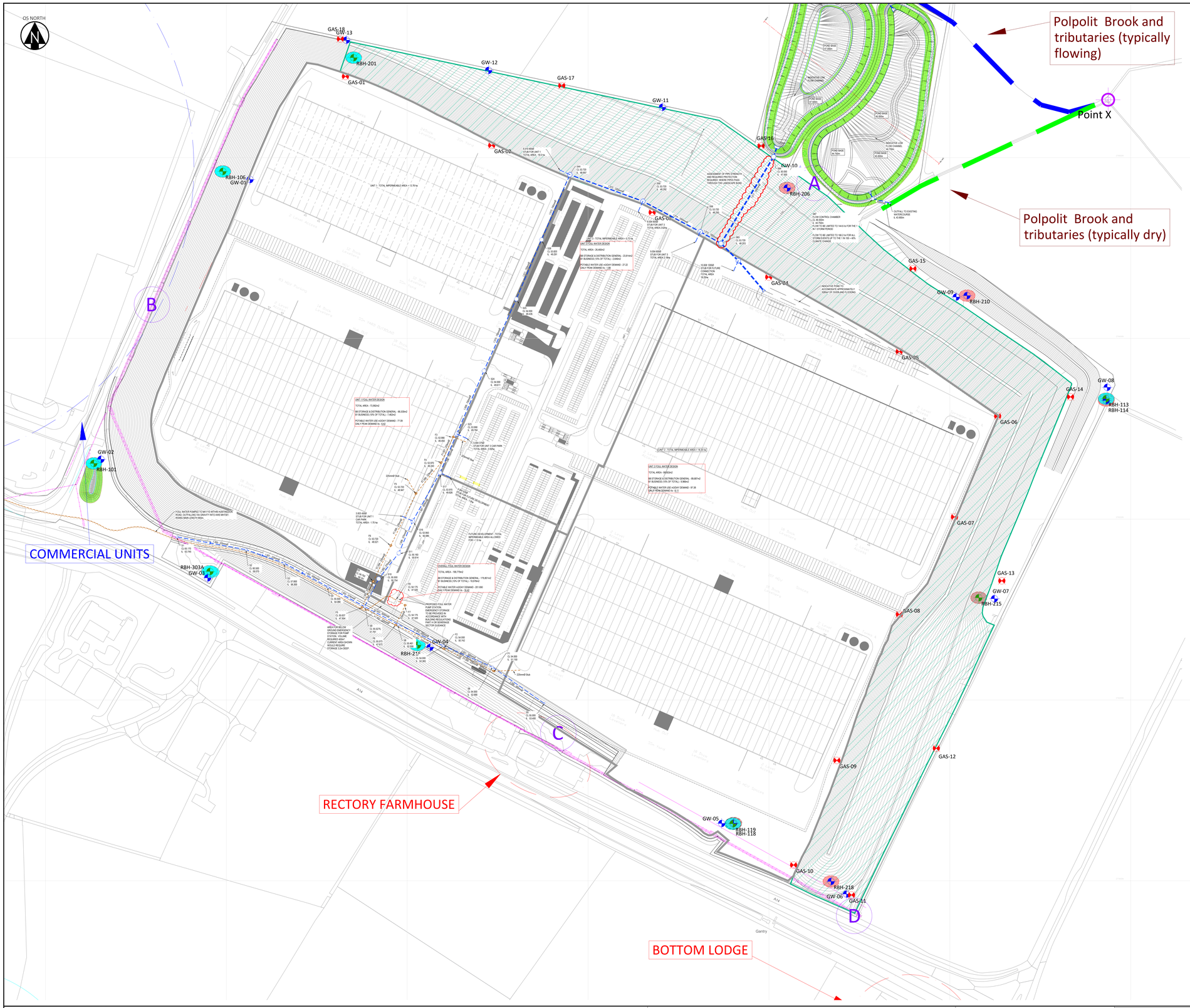
Water monitoring data will be compiled by Hydrock and assessed for evidence of unacceptable contamination.

Gas monitoring data will be assessed to confirm gas regime and the need or otherwise for gas protection measures in buildings.

5. Duration of monitoring

All monitoring will cease 3 months after works completion with the data being used to support the compilation of a surrender report for the DfR permit.

Appendix A Monitoring Plan



Surface Water Monitoring Point			
Location	X	Y	Zone
Point X	502375	278664	Polpolit Brook

Nuisance Receptors Monioring Point			
Location	Provisional x	Provisional y	Receptor
A	502050	278570	General receptor
B	501320	278435	Haldens Parkway Industrial Estate
C	501765	277965	Rectory Farmhouse
D	502095	277760	Bottom Lodge

Shallow Gas Monitoring Wells			
Location	Provisional x	Provisional y	Zone
GAS01	501532	278690	DfR Bund - Development Side
GAS02	501693	278614	DfR Bund - Development Side
GAS03	501871	278540	DfR Bund - Development Side
GAS04	502000	278468	DfR Bund - Development Side
GAS05	502144	278385	DfR Bund - Development Side
GAS06	502253	278314	DfR Bund - Development Side
GAS07	502205	278203	DfR Bund - Development Side
GAS08	502144	278095	DfR Bund - Development Side
GAS09	502075	277933	DfR Bund - Development Side
GAS10	502027	277817	DfR Bund - Development Side
GAS11	502091	277784	DfR Bund - Field Side
GAS12	502185	277947	DfR Bund - Field Side
GAS13	502258	278132	DfR Bund - Field Side
GAS14	502333	278335	DfR Bund - Field Side
GAS15	502159	278477	DfR Bund - Field Side
GAS16	501991	278613	DfR Bund - Field Side
GAS17	501771	278680	DfR Bund - Field Side
GAS18	501526	278731	DfR Bund - Field Side

Groundwater Monitoring Wells				
Location	Provisional x	Provisional y	Orientation	Anticipated Strata
GW01	501426	278576	Up-gradient	Cornbrash Formation
GW02	501261	278266	Up-gradient	Cornbrash Formation
GW03	501379	278135	Up-gradient	Cornbrash Formation
GW04	501625	278058	Up-gradient	Cornbrash Formation
GW05	501948	277863	Up-gradient	Cornbrash Formation
GW06	502086	277785	Up-gradient	Cornbrash Formation
GW07	502249	278112	Cross-gradient	Blisworth Limestone
GW08	502374	278346	Up-gradient	Cornbrash Formation
GW09	502207	278446	Down-gradient	Blisworth Limestone
GW10	502035	278586	Down-gradient	Blisworth Limestone
GW11	501882	278656	Down-gradient	Cornbrash Formation
GW12	501690	278697	Down-gradient	Cornbrash Formation
GW13	501533	278730	Cross-gradient	Cornbrash Formation

The current development plan indicates that the following existing groundwater monitoring points may potentially serviceable thoughout the development process. Preference is to be given to retaining these locations instead of constructing the associated new monitoring point.

Location		
Existing	Proposed	Screened Strata
RBH-113	GW08	Cornbrash Formation
RBH-119	GW05	Cornbrash Formation
RBH-303A	GW03	Cornbrash Formation
RBH-101	GW02	Cornbrash Formation

KEY

Existing Installation (for historical trends at equivalent locations to post DfR monitoring plan)

Cornbrash Limestone Formation

Blisworth Limestone Formation

Proposed Monitoring Plan

GAS-17 Shallow gas monitoring well (installed above groundwater level)

GW-13 Groundwater Monitoring Well (installed in either Blisworth Limestone or Cornbrash Formation as appropriate)

Point X Surface water monitoring point (Polopit Brook, most up-stream location where flows are observed)

A Nuisance Receptor Monitoring Point

DfR Area

KEY:
- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED FOUL WATER DRAINAGE
- PROPOSED FOUL RISING MAIN
- PROPOSED HEADWALL - SIZE T.B.C
- EXISTING ANGLIAN WATER FOUL WATER SEWER

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

3. This drawing has been based on the following drawings and information:
HRT-php-01-XX-DR-A-4432-012-P18
ACAD-LTP-BWB-DGT-XX-M3-C-0601-S1-P1_Basins Proposed Levels-Model
x-332210963-STN-HDG-SW-M2-CD-0501_On-Site FW-SW

REV						
P03	Key amended					
	LW	09/08/23	EC	09/08/23	EC	09/08/23
P02	22/06/23					
	LW	22/06/23	AB	22/06/23	AB	22/06/23
P01	FIRST ISSUE					
	LH	22/06/23	LW	22/06/23	EC	22/06/23
REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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CLIENT
MICK GEORGE LIMITED

PROJECT
LAND ADJACENT HALDEN PARKWAY THRAPSTON

TITLE
DfR Proposed
Environmental Monitoring Plan

HYDROCK PROJECT NO. 23880

SCALE @ A0 1:1500

PURPOSE OF ISSUE SUITABLE FOR INFORMATION

STATUS S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) 23880-HYD-XX-ZZ-DR-GE-1022

REVISION P03