



**Geotechnical & Environmental Engineers**

**CONCEPTUAL SITE MODEL, ENVIRONMENTAL  
SETTING AND SITE DESIGN REPORT  
GOLF WORLD STANSTED LIMITED**

**Carried Out For: GOLF WORLD STANSTED LIMITED**

**January 2019**

**Report Reference: 17090J-03-ESSD**

# CONCEPTUAL SITE MODEL, ENVIRONMENTAL SETTING AND SITE DESIGN REPORT GOLF WORLD STANSTED LIMITED

Carried Out For: **GOLF WORLD STANSTED LIMITED**

**Discovery CE Limited**

The Granary  
Broadwell House Farm  
Broadwell, Rugby  
Warwickshire  
CV23 8HF

Tel: 01926 813909  
Fax: 01926 814909  
Email: [discovery@dce-services.co.uk](mailto:discovery@dce-services.co.uk)  
Web: [www.dce-services.co.uk](http://www.dce-services.co.uk)

## CONCEPTUAL SITE MODEL, ENVIRONMENTAL SETTING AND SITE DESIGN REPORT GOLF WORLD STANSTED LIMITED

### CONTENTS

<b>1</b>	<b>REPORT CONTEXT .....</b>	<b>1</b>
	1.1 THE OPERATOR OF THE PROPOSED ACTIVITY.....	1
	1.2 THE AGENT WHO COMPLETED THIS REPORT.....	1
	1.3 OUTLINE OF THE PROPOSED ACTIVITY AND PREVIOUS LAND USES .....	1
	1.4 SOURCES OF INFORMATION .....	2
<b>2</b>	<b>SITE DETAILS .....</b>	<b>3</b>
	2.1 SITE LOCATION AND ACCESS, INCLUDING APPROPRIATE NATIONAL GRID REFERENCES .....	3
	2.2 SITE CLASSIFICATION .....	3
	2.3 APPLICATION BOUNDARIES AND SITE SECURITY .....	3
	2.4 ANY RELEVANT, ADJACENT FORMER WASTE MANAGEMENT ACTIVITY BOUNDARIES.....	4
	2.5 SITE CONTEXT .....	4
	2.6 ENVIRONMENT AGENCY POSITION STATEMENT ON THE LOCATION OF LANDFILLS .....	5
<b>3</b>	<b>SOURCES.....</b>	<b>5</b>
	3.1 SITE DEVELOPMENT.....	5
	3.2 HISTORICAL DEVELOPMENT.....	5
	3.3 INCIDENTS .....	5
	3.4 PROPOSED DEVELOPMENT.....	5
<b>4</b>	<b>PATHWAY AND RECEPTOR .....</b>	<b>6</b>
	4.1 GEOLOGY .....	6
	4.2 HYDROLOGY .....	7
	4.3 HYDROGEOLOGY .....	8
	4.4 GROUNDWATER FLOW.....	8
	4.5 GROUNDWATER QUALITY.....	8
<b>5</b>	<b>MAN-MADE SUBSURFACE PATHWAYS.....</b>	<b>8</b>
<b>6</b>	<b>RECEPTORS AND COMPLIANCE POINTS .....</b>	<b>8</b>
	6.1 GROUNDWATER .....	8
	6.2 SURFACE WATER .....	8
	6.3 AMENITY (NUISANCE AND HEALTH ISSUES).....	8
<b>7</b>	<b>POLLUTION CONTROL MEASURES .....</b>	<b>9</b>
	7.1 SITE ENGINEERING.....	9
	7.2 CAPPING.....	9
	7.3 RESTORATION.....	9
	7.4 SURFACE WATER MANAGEMENT .....	9
	7.5 POST CLOSURE CONTROLS (AFTERCARE).....	9
<b>8</b>	<b>MONITORING .....</b>	<b>10</b>
	8.1 WEATHER .....	10
	8.2 GAS MONITORING INFRASTRUCTURE .....	10
<b>9</b>	<b>SITE CONDITION REPORT .....</b>	<b>10</b>
	9.1 OVERVIEW .....	10
	9.2 INTRODUCTION TO THE SCR (CURRENT CONDITION).....	10
	9.3 OBJECTIVES OF THE SCR.....	11
	9.4 DATA INTERPRETATION AND CONCLUSIONS.....	11

### TABLES

Table 1	Site History.....	1
Table 2	Summary of Ground Conditions (Natural Strata).....	6
Table 3	Summary of Ground Conditions (Closed Landfill Strata).....	7

**CONCEPTUAL SITE MODEL, ENVIRONMENTAL SETTING AND SITE DESIGN REPORT  
GOLF WORLD STANSTED LIMITED**

**FIGURES**

Figure 1 Proposed Development Agreed With Planning .....3  
Figure 2 Proposed Application Area Site Operational Layout.....4

**CONCEPTUAL SITE MODEL, ENVIRONMENTAL SETTING AND SITE DESIGN REPORT  
 GOLF WORLD STANSTED LIMITED**

**1 REPORT CONTEXT**

The following put the site, its history, the proposed operations into context.

**1.1 The Operator of The Proposed Activity**

The operator is:

<p><b>Golf World Stansted Ltd</b>                  Hall Road                  Elsenham                  Nr Stansted Airport                  Essex                  CM22 6FL                  Tel: 01279-812865                  Director: Colin Pharaoh, (E: <a href="mailto:colin@golfworldstansted.co.uk">colin@golfworldstansted.co.uk</a>).</p>
--

**1.2 The Agent Who Completed This Report**

<p><b>Discovery CE Limited</b>                  The Granary                  Broadwell House Farm                  Broadwell                  Rugby                  CV23 8HF                  Tel: 01926 813909                  Contact: James D Nelson (E: <a href="mailto:j.nelson@dce-services.co.uk">j.nelson@dce-services.co.uk</a>)</p>
---

**1.3 Outline of The Proposed Activity and Previous Land Uses**

It is proposed to import up to 58000 m<sup>3</sup> of clean, greenfield soils as determined under planning. The soils will be used to reprofile the land to improve drainage, and to construct a runoff storage lagoon to provide water for the wider golf course.

The site previous history is summarised below in Table 1.

**Table 1 Site History**

Date	The Site	Surrounding Area
1876-1877	The site had not been developed.	Catt's Lane was noted immediately to the north of the site. 'Pennington hall' was also established at approximately 250m north east. A large fish pond was observed approximately 400m to the south west. 'Sandpits farm' was recorded approximately 500m north west and the 'Great Eastern Railway was observed at 880m to the west.
1896-1898	No changes were observed on site.	'Regent's spring' was observed approximately 400m to the east. Sand pits and 'old sand pits' were noted approximately 560m north west, north of 'Sandpits Farm'.

Date	The Site	Surrounding Area
1919-1920	The site had undergone no changes during this period.	A boat house associated with the fish pond was recorded approximately 430m south west. 'Sandy Mount' and a 'Well' were founded approximately 510m north west. The 'Sand Pits' 560m north west were no longer observed. The 'Elsenham and Thaxted Light Railway' was noted approximately 910m north running east to west.
1947-1948	No changes were noted on site.	Rises were recorded approximately 300m west of the site. A 'Sand and Gravel Pit' was noted approximately 510m north west associated with 'Pennington Hall'
1960-1969	The site had been noted as 'Sand Pit'.	Sinks' were noted approximately 110m south east. Drains were also recorded approximately 150m and 160m north west. 'Catt's Lane' immediately north of the site was no longer observed. The 'Elsenham and Thaxted Light Railway' approximately 910m north was dismantled.
1981-1982	No changes were made to the site during this period.	The 'Sand and Gravel Pit' 300m north west was no longer observed. A lake was recorded at 500m north.
1993-1994	The site had not undergone development during this time.	Issues were noted immediately north west of the site and a 'dismantled pit' was recorded approximately 750m to the north west.
2002	The site has been recorded as a 'golf driving range' that forms a part of the 'golf course' that extends off site to the east and south. A pond was also recorded to the south west. A clubhouse associated with the 'golf driving range' had been constructed on the north west portion of the site.	A drain had been noted approximately 2m north running east to west, beyond which a large woodland area was observed approximately 20m north running east to west. An access road was also recorded immediately to the west of the site linking it to 'Hall Road' to the south. Drains were noted approximately 200m south and 270m west of the site, respectively. The 'Golf Course' was established extending off site to approximately 770m east.
2010-2014	The clubhouse to the north west of the site had been extended.	No changes were made to the surrounding area.

There have been no further changes to the site.

## 1.4 Sources of Information

The main sources of information for this document are listed below:

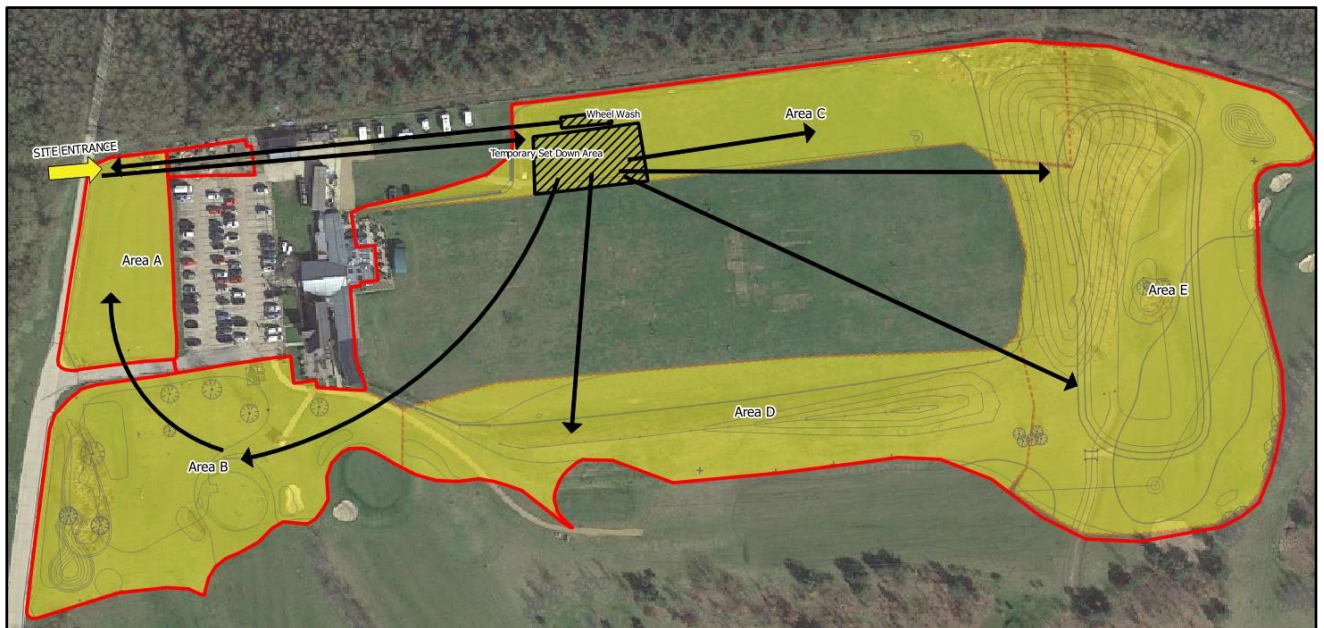
1. Pam Brown Associates, Phase 1 Desk Study, Elsenham Golf And Leisure, Bishops Stortford, Essex, CM22 6DH, Ref: 1608-16 /AT/ MM, Dated August 2016 (**PBA**);
2. Discovery CE Limited, Intrusive Investigation & Assessment, Elsenham Golf & Leisure, Report Reference: 17090J-01, October 2017 (**DCE**); and
3. Discovery CE Limited, Waste Recovery Plan & Environmental Management System, Bespoke Environmental Permit For The Reuse Of Clean Soils In Landscaping, Golf World Stansted Ltd, Hall Road, Elsenham, Report Reference: 17090J-02-WRP&EMS, January 2019 (**WRP&EMS**).

Any additional documents are referred to in the text as necessary.





**Figure 2 Proposed Application Area Site Operational Layout**



## **2.4 Any relevant, adjacent former waste management activity boundaries**

The land directly to the north remains as an operation landfill.

The subject site itself was part of the larger landfill complex. The details of which are in Appendix 6 of the Pam Brown Associates, Phase 1 Desk Study, Elsenham Golf And Leisure, Bishops Stortford, Essex, CM22 6DH, Ref: 1608-16 /AT/ MM, Dated August 2016. This report has been included with the submission.

## **2.5 Site Context**

The site is generally flat with gentle slopes upwards to the north and east. There is mounded ground at the east and south of the site, Areas E & D (Figure 2).

The site is generally remote from residential and recreational areas, and other agricultural or urban sites (up to 500 m).

Risks to controlled waters, groundwater and local surface waters which are present beneath the site and close to the west (Stansted Brook), were assessed in detail under planning and were reported to be at low risk from the site in its current condition and will remain at low risk during and after the proposed development works. The investigations and assessment report (DCE Report 17090J-01, Dated October 2017) along with the EA agreement (Letter: AE/2017/122201/01-L01, Dated: 28/11/2017) of the low risk status are included with this submission.



There is a SSSI (Elsenham Wood) approximately 970 m from the application eastern boundary. It is understood the SSSI status relates to the presence of a rare species of orchid being present in the wood. The only possible impact from the subject site on this SSSI would be fugitive dust. Due to the distance involved there is a very low likelihood of any adverse impact and so the risk is considered as **LOW**.

## **2.6 Environment Agency position statement on the location of landfills**

The EA has strict requirements for landfills in relation to controlled waters. The proposal site used to be part of a now closed (1994) landfill which accepted non-putrescible wastes.

The risks to the surrounding groundwater and surface waters was considered via intrusive investigations, with associated soil, groundwater and surface water testing. The outcome agreed with the EA was that current and future risks (during and after the development) are **LOW**.

## **3 SOURCES**

### **3.1 Site development**

The site will be redeveloped through the import of clean soils for reprofiling in layers and gentle slopes to improve drainage and create a new water storage lagoon. All slopes will be gentle and stable.

### **3.2 Historical development**

See Table 1 on page 1.

### **3.3 Incidents**

We are unaware of any historical incidents relating to environmental impacts, emissions or health and safety impacts.

### **3.4 Proposed development**

The proposed waste types are R5 soils. A total volume of 58000 m<sup>3</sup> will be imported. It has been assumed a working density of 1.65 t/m<sup>3</sup> for the soils concerned and so a total tonnage of 95700 tonnes. Any changes in density of soils will be recorded and used in determining the relevant volume/mass.

The soils must match the following general physical description:

*“No materials other than clean naturally occurring soil and mineral including top and sub-soils; underlying rock from which constituent parts make up part of the soil; clays, silts, sands and gravels;”*

*underlying geology shall be imported to the site. No contaminated materials and/or waste that will undergo any significant physical, chemical or biological transformations and/or dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact shall be imported to the site. All materials imported must be capable of direct use as part of the development, hereby permitted, without the need for treatment. Any necessary certification shall be forwarded to the Local Planning authority within 28 days of authorisation.”*

The chemical criteria for the imported soils are based on the screening criteria as listed in DCE Report 17090J-01, Dated October 2017 (DCE1) and reproduced in the Waste Recovery Plan and Environmental Management System (WRP&EMS).

The tipping of material will not be done in cells but the materials placed in layers across the required areas of the development area at the discretion of the site operator. Stability will not be an issue as the slopes will be gentle and settlement will only be slight long-term creep settlement.

The final landform will be the new profiles driving range, golf course and new water storage lagoon and after-use. The details are present in the submitted DCE1 and WRP&EMS.

## **4 PATHWAY AND RECEPTOR**

### **4.1 Geology**

Reference to the British Geological Survey map for the site (BGS 1:50000, Sheet No. 222 (Solid & Drift), Great Dunmow (1990), indicates that the superficial geology includes the Kesgrave Catchment Subgroup in the west of the site. Kesgrave Sand and Gravel deposits are indicated beneath much of the site and Head Deposits are anticipated in the south and east of the subject area. The underlying bedrock geology is indicated as Thanet and Lambeth Group with London Clay to the south and east.

It is understood that the Kesgrave Sand and Gravel deposits were quarried pre-1950s and the site was subsequently used as a landfill site between about 1973 and 1994.

The investigations undertaken in DCE1 confirmed the following geology at the subject site (Table 2 and Table 3).

**Table 2 Summary of Ground Conditions (Natural Strata)**

<b>Strata &amp; General Description</b>	<b>Depth Encountered (m bgl)</b>	<b>Thickness Range (m)</b>
<b>1 MADE GROUND/TOPSOIL</b> Turf over brown clayey slightly gravelly SAND or Turf over very soft brown slightly sandy gravelly CLAY.	<b>Ground Level</b>	<b>0.3 to 1.0</b>
<b>2a KESGRAVE CATCHMENT GROUP</b>	<b>Absent or 0.3</b>	<b>2.8 to 3.9 where present</b>

Strata & General Description	Depth Encountered (m bgl)	Thickness Range (m)
<p>Orangish brown slightly gravelly slightly clayey medium to coarse SAND with occasional rootlets. Gravel is angular to rounded fine to coarse of quartzite and flint.</p> <p>Yellow slightly clayey fine to coarse SAND. Also, Yellow fine to medium SAND.</p> <p><b>2b HEAD DEPOSITS</b> (Cohesive) Brown, grey and orange-brown slightly sandy and/or gravelly CLAY. Gravel subangular to rounded of fine to coarse quartzite and flint; &amp;</p> <p>(Granular) light grey, cream, orange-brown slightly clayey slightly gravelly medium to coarse SAND; Yellow-brown medium to coarse SAND.</p> <p><b>3 THANET &amp; LAMBETH GROUP</b> Brown locally orange-brown locally grey CLAY.</p>	<p><b>Absent or 0.3</b></p> <p><b>3.0 to 4.0</b></p>	<p>Encountered in BH101 &amp; BH105.</p> <p><b>2.7to &gt;3</b> where present</p> <p>Encountered in BH103 &amp; BH104.</p> <p><b>&gt;1.0 to &gt;3.0</b></p>

**Table 3 Summary of Ground Conditions (Closed Landfill Strata)**

Strata & General Description	Depth Encountered (m bgl)	Thickness Range (m)
<p><b>1 MADE GROUND (TOPSOIL)</b> Turf over firm locally soft brown, light brown occasionally grey slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded of flint and chalk. Occasional brick fragments.</p>	<p><b>Ground level</b> Absent in DS201 and DS202</p>	<p><b>0.0 to 0.3</b></p>
<p><b>2 MADE GROUND (LANDFILL CAP)</b> Turf over firm locally soft brown, light brown occasionally grey slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded of flint and chalk. Occasional brick fragments.</p> <p><b>3 MADE GROUND (LANDFILL WASTE MASS)</b> Soft occasionally firm grey, occasionally brown reddish-brown dark-grey black slightly sandy slightly gravelly CLAY. Gravel subangular to subrounded of fine to coarse, brick, concrete, wood, plastic, metal, glass, cardboard, flint and quartzite.</p> <p><b>In BH102</b> Very soft black and dark grey very gravelly CLAY. Gravel is angular to rounded fine to coarse of flint, chalk and quartzite. Frequent metal and plastic fragments. Occasional wire and brick. Strong degrading waste odour; and</p> <p>Very soft black and dark grey gravelly CLAY. Gravel is angular to rounded fine to coarse of flint, chalk, quartzite, brick and cement. Frequent textiles, wood, metal and plastic fragments. Occasional wire and brick. Strong degrading waste odour. Damp between 4.0 and 5.0 m bgl. (LANDFILL WASTE MASS)</p>	<p><b>Ground Level to 0.35</b></p> <p><b>0.8 to &gt;4.0</b></p>	<p><b>0.8 to 3.7</b></p> <p>On average is approximately 1.3 m thick</p> <p><b>&gt;0.2 to 4.2</b></p> <p>Waste only fully penetrated in BH102</p>
<p><b>4 MADE GROUND (LANDFILL BASE LINER)</b> Firm to stiff brown locally dark brown slightly gravelly CLAY. Gravel is angular to subrounded of fine to medium chalk and flint.</p>	<p><b>5.8</b> (BH102 only)</p>	<p><b>&gt;0.2</b> (BH102 only)</p>

Site investigations relating to the site are described in PBA and DCE1.

## 4.2 Hydrology

The site development will not impact or influence any controlled waters.

### **4.3 Hydrogeology**

The site is not near any SPZs. The site development will not impact or influence any controlled waters as determined in DCE1 and supported by the Environment Agency.

### **4.4 Groundwater Flow**

Groundwater level and quality monitoring was undertaken (DCE 17090J-01, October 2017). The groundwater flow direction was shown generally to be from the east (or east-north-east) to the west (or west-south-west).

### **4.5 Groundwater Quality**

The groundwater at the site was of good quality with no exceedences of EQS/DWS. A water sample from the closed landfill waste mass area had some minor exceedences for EQS and DWS

## **5 MAN-MADE SUBSURFACE PATHWAYS**

Other than the investigation borehole there are no other significant subsurface pathways at the site. There are no drains through the subject areas which discharge to controlled waters. There are no buried services through the subject area.

## **6 RECEPTORS AND COMPLIANCE POINTS**

The groundwater beneath the site area and the Stansted Brook were considered as the most sensitive water receptors and were found to be at **LOW** risk.

The Elsenham Wood SSSI (970 m to the east) was considered sensitive but due to its distance from the site any impacts from runoff, noise, dust and odour will be negligible; therefore the risk is **LOW**.

### **6.1 Groundwater**

Groundwater beneath and around the site has not been and will not be impacted.

### **6.2 Surface Water**

The Stansted Brook, the nearest surface water receptor to the site has not been and will not be impacted.

### **6.3 Amenity (Nuisance and Health Issues)**

The site is not within 500m of a sensitive receptor such as a home, school, hospital or nursing home, food preparation facility or similar.

However, it is within 1 kilometre of a SSSI (Elsenham Wood) – approximately 970 m to the east. It is unlikely this SSSI will be impacted (say by dust and/or noise) therefore the risk is **LOW**.

## **7 POLLUTION CONTROL MEASURES**

### **7.1 Site Engineering**

The site is currently golf course land and a driving range.

The only engineering is the import of clean soils for reprofiling to improve runoff control and to provide a more interesting experience for future users of the golf course. The engineering will include the creation of a new water surface storage lagoon to be used for sustainable watering greens.

Pollution control measures will be a wheel wash to prevent soils leaving the site onto the site access road and the public highway thus reducing likelihood of dust.

Damping down and hoardings will be used around the development area to prevent dust generation in dry and/or windy weather.

### **7.2 Capping**

This is not necessary. The imported soils will be clean, greenfield materials meeting the quality protocols set out in the WRP&EMS.

### **7.3 Restoration**

The imported soils are unlikely to settle significantly once placed and tracked/rolled into position. The final surface of the imported soils will be covered with the previously stripped topsoil (to a maximum thickness of 0.2 m) with the areas grass-seeded as appropriate.

### **7.4 Surface water management**

The purpose of the works is to reprofile the site in such a way to manage runoff better. During the works, the runoff waters concerned will generally be kept on site or redirected to immediately adjacent areas. None of the runoff will enter any surface water course.

### **7.5 Post closure controls (Aftercare)**

There are no proposed aftercare requirements as the result will be a reprofiled golf course.

## **8 MONITORING**

### **8.1 Weather**

During the development works local weather forecasts from the Met Office will be consulted which will inform the progression of the works. For example if prolonged heavy rainfall is forecast then works may be temporarily stopped, the area secured and stockpiles covered with tarpaulins/plastic sheeting.

### **8.2 Gas Monitoring Infrastructure**

The clean soils being recovered will not act as a source of ground gases or landfill gas and so no gas monitoring will be required.

## **9 SITE CONDITION REPORT**

### **9.1 Overview**

A site condition report (SCR) is not necessary for parts of a permitted activity where waste is deposited/used permanently.

The SCR is necessary for areas of the permitted site where we have not deposited any waste (eg site access areas, site offices, weigh bridge, wheel wash etc).

The SCR describes and records the condition of the land and groundwater at a site. It will enable us to demonstrate that we have protected land and groundwater during the lifetime of the site and it is in a satisfactory state when we come to surrender the permit.

You will have presented much of the information required for the SCR in other sections. Where this occurs you do not need to repeat that information here, but should summarise it and refer to other sections of the document.

### **9.2 Introduction to the SCR (Current Condition)**

The current condition of the site has been covered in previous sections:

- Site details (Section 2)
- Outline of proposed development (Section 1.3)
- Any former land-uses that may give rise to potential sources of non-waste related contamination (see Section 3);



- Sources of Information (see Section 1.4);
- Geology and hydrogeology (see Sections 4.1 and 4.3)
- Archive search and land-use chronology (Section 1.4 and 3.2);
- Relevant information relating to potential contaminants (see Section 3); and
- Any history of incidents (there are no records of any incidents, Section 3.3).

### **9.3 Objectives of the SCR**

Under UK permitting a baseline site condition report is necessary to determine the site conditions before the proposed activity is undertaken.

This has been undertaken under a parallel process under planning as referenced in Discovery CE Limited, Intrusive Investigation & Assessment, Elsenham Golf & Leisure, Report Reference: 17090J-01, October 2017. This will need to be revisited once the operations are concluded and the permit needs to be surrendered.

### **9.4 Data interpretation and conclusions**

The conclusion is that the site in its current status, during the site operations and after will have a **LOW** risk of impacting the ground, controlled waters, human health and/or ecological receptors at or near the site.

Once the operations are complete all relevant documentation relating to the soil import and use activities will be compiled and reported to the local planning authority (Uttlesford District Council) with 28 days of completion of the works. This will also be used in applying to surrender the permit.

For **Discovery CE Limited**

James D Nelson  
BSc (Hons) MSc CSci CChem FRSC SiLC  
Associate Director