RiverOak Strategic Partners

# Applicant's Written Summary of Case put Orally - Compulsory Acquisition Hearing and associated appendices

**TR020002/D5/**CAH

**Examination Document**

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| **Project Name:** | Manston Airport Development Consent Order |
| **Application Ref:** | TR020002 |
| **Submission Deadline:** | **5** |
| **Date:** | 29 March 2019 |

**MANSTON AIRPORT DEVELOPMENT CONSENT ORDER APPLICATION**

**DOCUMENT REFERENCE TR020002/D5/CAH**

# APPLICANT'S WRITTEN SUMMARY OF ORAL SUBMISSIONS PUT AT COMPULSORY ACQUISITION HEARING

**20 MARCH 2019**

**Laurence Suite, Building 500, Discovery Park, Sandwich, CT13 9FF**

## 1 Introduction

1.1 This document summarises the case put by RiverOak Strategic Partners (the Applicant), at the Compulsory Acquisition Hearing. The hearing opened at 10.00am on 20 March 2019 at Laurence Suite, Building 500, Discovery Park, Sandwich, CT13 9FF. The agenda for the hearing was set out in the Examining Authority's (ExA) letter published on the Planning Inspectorate's website on 11 March 2019.

1.2 In what follows, the Applicant's submissions on the points raised broadly follow the items as set out in the ExA's agenda.

## 2 Agenda Item 4: Documentation

2.1 The Applicant set out, and explained the nature of, changes to the relevant application documents as submitted at Deadlines 1, 3 and 4, as follows:

Deadline 1:

- Updated application tracker;
- Updated NSIP justification to include a new appendix on the Northern Grass;
- Minor corrections to various parts of the ES noted in s51 advice and the s55 checklist;

Deadline 3:

- Updated application tracker;
- Book of Reference with Schedule of changes
- Updated Noise Mitigation Plan – the main change being the introduction of an annual cargo and passenger air transport movement cap.
- Revised dDCO

Deadline 4:

- Updated application tracker;

- Updated Noise Mitigation Plan – the changes including increasing the amount available for noise insulation from £4,000 to £10,000

- Updated REAC

2.2 The compulsory acquisition status report has also been regularly updated to reflect ongoing engagement with landowners.

## 3 Agenda Item 5: Funding

### *5 (a) RiverOak Strategic Partners*

3.1 The Applicant apologised that it had not been in a position to submit details of the business restructuring. This was a result of the restructuring taking longer than expected in part due to the ongoing discussions with Stone Hill Park (SHP) regarding the acquisition of the site. The restructuring was estimated to be complete by the end of April.

3.2 The Applicant's intention is that RiverOak Manston Limited, a UK registered company, would be its sole owner.

3.3 The directors of the Applicant are Tony Freudmann, Gerald Huesler, Niall Lawlor, Nick Rothwell, Rico Seitz and George Yerrall. The Applicant was incorporated in August 2016, and Calder & Co acted as the Applicant's auditors. The shareholders of MIO Investments are the project's investors. Although the investors wished to remain confidential, their loans to MIO Investments had been subject to due diligence and approval by HMRC under the Business Investment Relief scheme and declared in their tax returns.

3.4 The Applicant intends to provide a new funding statement by the end of April when the restructuring is complete, and provide as much relevant information as it can. It may be possible to bring this date forward, subject to consultation with the investors. Until then, the current Funding Statement and the PwC letter appended to it stood.

3.5 The Applicant confirmed that it was providing the following documents at deadline 5, with the caveat that the SoCGs would be progressed as far as possible by the Applicant [TR020002/D5/TA]:

(1) Revised transport assessment and appendices

(2) Revised traffic and transport chapter of ES

(3) Stage 1 road safety audits and swept path assessments on the proposed access junctions

(4) Proposed mitigation and improvements at off site junctions and road links

(5) Assessment of traffic impacts on the M2 Junction 7 Brenley Corner

(6) Potential assessment on the A2/A258 Duke of York roundabout at Dover

(7) Agreed (or Draft if not yet agreed) SoCGs with KCC, TDC and HE in respect of transport issues

(8) Revised noise and air quality assessment following changes associated with any revised transport assessment

3.6 The Applicant stated that it was possible that a change in Thanet District Council's policy on use of the Order land would impact the valuation assessment within the property cost estimate. A note on this matter was asked to be provided at deadline 5 and can be found at Appendix 1.

3.7 In relation to the pipeline running from the airport to Pegwell Bay, the applicant stated that it was believed to have been constructed around the time of World War II to provide drainage and ran almost exclusively on land owned by the military. Residential properties were then built over the pipeline, with landowners generally unaware of it as it was not shown on Land Registry titles. Although the pipeline appeared to be in good condition currently, the Applicant was applying for rights of access for repairs. Despite diligent enquiry, the Applicant had been unable to ascertain the owner of the pipeline; Southern Water and Stone Hill Park Ltd in particular having denied owning it.

3.8 The acquisition of the pipeline by the Applicant from persons unknown (but presumed to be the landowners through whose land it runs) is considered to be of benefit to the landowners of the properties through which it ran, as the potential liability to them would be removed and an identifiable party would be responsible for maintenance.

3.9 The Applicant had been engaging in continued negotiations with SHP regarding the acquisition of the site. It had made a without prejudice offer, subject to contract for a significant sum. The sum offered in without prejudice negotiations does not undermine the Applicant's assessment of the land value that would be payable under the compensation code. The principles of compensation for land taken through compulsory purchase are entirely different to the considerations that may be taken into account in a commercially negotiated transaction.

3.10 The Applicant confirmed that the Jentex site (the fuel farm) was not included in the CPO property cost assessment provided by CBRE and included in the Funding Statement. The Jentex site was part of the RAF fuel farm from the 1960s. The Ministry of Defence sold it to the Jenkins family, who then provided fuel to cross channel ferries and central heating. The Applicant decided to acquire this site, which was achieved by agreement, as it was considered highly beneficial to have a fuel farm adjacent to the airport.

3.11 The Applicant agreed to provide the environmental reports it obtained during the acquisition at deadline 5, which can be found at Appendix 2.

3.12 The Applicant does not believe it would be appropriate to provide details of the make-up of property cost estimate identifying individual sites subject to compulsory acquisition as it is highly confidential and commercially sensitive and disclosure would prejudice compensation negotiations. Such action is unprecedented.

**(*b*) *Resource Implications***

3.13 The revised Funding Statement would reflect the current best estimate of capital expenditure which was £306m. This amount had been determined by a collective effort of the Applicant's consultant team, many of whom had extensive airport experience. Until the detailed design stage, it would not be possible provide a precise valuation. Information about the current category/class of the estimate is provided at Appendix 3.

3.14 The phase 1 construction estimate had risen within a similar overall total from £100m to £186m because of a greater proportion of the works such as ground levelling are considered to be needed for phase 1 before the airport could reopen.

3.15 The Applicant has now spent £14.5m on the project and its funders continue to have a further £30m set aside to include its costs until the grant of the DCO and to pay for land acquisition and noise mitigation costs.

***(c) The Undertaker and availability of funds, (d) Potential shortfalls***

3.16 In response to questions about the obligation of the Applicant's funders to meet land acquisition and noise mitigation costs, the Applicant is providing a redacted copy of its joint venture agreement and a supplementary agreement reflecting the increase in the amount at Article 9 of the dDCO at Appendix 4, which demonstrates the obligation of the funders to meet such costs. Furthermore, a letter from Helix Fiduciary with appendices from Foot Anstey and HMRC is provided at Appendix 5, setting out the status of the investors and the availability of their funds.

3.17 The Applicant provides at Appendix 6 an explanation of how the £13.1m, representing £7.5m of costs of land compensation and £5.6m of noise mitigation, has been arrived at. Note that the agreement with the investors is to cover £15m for these costs, to allow for £1.9m in shortfall should it in fact be higher.

***(e) Timing***

3.18 The evidence provided by the Applicant is that the funds for compulsory acquisition are available now, i.e. well in advance of the guidance that it should be available within the statutory period following the order being made.

***(f) Revised Noise Mitigation Plan***

3.19 The revised Noise Mitigation Plan offers up to £10,000 for sound insulation at what is now estimated to be 225 properties, i.e. a total of £2,250,000, below the originally assumed figure of £4,000,000 for £4,000 for each of 1000 properties.

3.20 For the eight properties entitled to relocation, they would receive unaffected market value uplifted by 2.5% plus £5,000, giving a total estimate of £3,200,000. The properties would be re-sold or let for half of that figure, so £1,600,000 has been included in the funding statement.

***(g) Blight***

3.21 The Applicant provides at Appendix 7 evidence that its accountants Calder & Co have £500,000 that can be drawn down for blight claims, despite its valuer CBRE advising that no properties are likely to be eligible for blight because there are no residential properties within the Order limits.

***(h) Guarantee or alternative form of security***

3.22 The Applicant has added 'parent company guarantee' to the options in Article 9 of the dDCO and expects either that or a guarantee from a person of sufficient financial standing will be the option chosen.

3.23 The report of the Transport Select Committee inquiry into small airports in 2015 is provided at Appendix 8, supporting the case that the Secretary of State would be the better body to approve

the guarantee provided at Article 9. The project also affects a wider area than that of Thanet District Council, further suggesting a higher-level body would be more appropriate.

## 4 Agenda Item 6: Crown Land

4.1 The Applicant is in active discussion with the Ministry of Defence, Met Office and Government Legal Service Bona Vacantia division on the subject of Crown Land and is endeavouring to reach agreement with each of them as soon as possible, noting however that on many other DCO applications this does not occur until late in the process, often in the decision period. The Applicant agrees that Article 40 on Crown land should be revised and this is shown in the revised draft DCO at TR020002/D5/2.1.

4.2 In particular, in relation to the High Resolution Direction Finder (HRDF) (plot 041), the Applicant had taken part in a fruitful meeting with the MoD that week who had agreed to instruct its contractor Aquila to consider its proposal for relocation. This was outside the Order limits and the necessary rights would be sought separately. In relation to the MoD's other sites one was in active use and one was not (plots 038 and 026 respectively); one of the two Bona Vacantia plots was not considered an interest in land and one was an option expiring in July 2020 and so was considered an interest in land (plots 019c and 050b respectively); the Met Office considered Crown consent was not necessary for its land (plot 027) but the Applicant believed that it was and was pursuing this.

## 5 Agenda Item 7: Special Category Land

5.1 No party disagrees with the Applicant's position on status of special category land.

## 6 Agenda Item 8: Statutory Undertakers

6.1 The Applicant's position on statutory undertakers was as follows.

6.2 NATS is not a statutory undertaker, and it was agreed that this wording should be added to the draft SoCG.

6.3 It has proven difficult to find a person to engage from BT, but their apparatus will not be impacted and the default protective provisions in the dDCO will apply to them.

6.4 Nemo Link had agreed in a SoCG to accept the standard protective provisions in the dDCO (paragraph 3.1.4 of REP3-182).

6.5 In relation to Network Rail (NR) the parties were not agreed, as the Applicant does not consider that NR's full protective provisions are applicable to a situation where the Applicant was not constructing or installing infrastructure but merely acquiring an existing pipeline under it that NR itself might otherwise be liable for maintaining in the absence of another identified owner. Negotiations were continuing.

6.6 Assets described as belonging to UK Power Networks and South East Power Networks did in fact all belong to South East Power Networks and an updated Book of Reference will be provided in due course. SEPN were considering whether tailored protective provisions were necessary.

6.7 Southern Water had agreed in a SoCG to accept the standard protective provisions in the dDCO (paragraph 3.1.6 of REP4-009).

6.8 Southern Gas Networks (SGN) were negotiating tailored protective provisions with the Applicant and these were close to agreement.

## 7 Agenda Item 9: Negotiations with other affected persons

7.1 The land consisting of plots 071, 072, 072a and 077, the Jentex fuel facility, was acquired by agreement from the Jenkins family on 17 September 2018 and the interest registered on 15 January 2019. The land has been leased back to the Jenkins family in the meantime.

7.2 The Applicant explained that the Department for Transport had no legal interest in the land arising from Operation Brock/Stack when the application was made; SHP to confirm if this has changed recently.

7.3 The DfT were not expecting to enter into a SoCG given that they were also the decision-maker, but may issue a Statement of Fact.

## 8 Agenda Items 10 and 11: Oral representations/Objections

8.1 The Applicant has provided a revised Compulsory Acquisition Status Report correcting erroneous column entries, at TR020002/D5/CASR.

8.2 The Applicant does not accept the testimony of Altitude Aviation Advisory as to its business case. A summary of the business plan has been provided to the Examining Authority. Plainly the Applicant has a more detailed analysis but it is subject to commercial confidentiality. In short, the Applicant is not willing to reveal to potential customers or competitors the precise charges or revenues it anticipates because that would adversely affect its negotiations in future. As with any such investment, investors had been provided privately with more detailed information that it was not appropriate to put in the public domain. The Applicant provides a commentary on its business plan as requested in an appendix to its summary of case at ISH2 (need and operations).

8.3 The Applicant provides a narrative on the *Chesterfield Properties* case about publication of viability reports, at Appendix 9. It means that the ExA should be satisfied that there is sufficient certainty that the development will take place because the Applicant has shown it has sufficient funds and because the Joint Venture obliges the owners of those funds to spend them on the project; but in any event, it is not a requirement that the decision-maker be satisfied that the development will take place before authorising compulsory acquisition.

## 9 Agenda Item 12: Category 3 Persons

9.1 It was agreed that this would be dealt with in the Written Questions.

## 10 Agenda Item 13: Draft DCO

10.1 The Applicant does not agree with SHP's proposals for inclusion in the dDCO, except that it would be prepared to adopt the equivalent to the Crichel Down rules in relation to SHP's interest.

## 11 Agenda Item 15: Land Required

11.1 The Applicant has provided a new requirement 19 in the dDCO TR020002/D5/2.1 to tie the Northern Grass to airport-related development and to reflect references to associated development in government guidance, i.e. that it should (amongst other possibilities) support the operation of the NSIP.

11.2 The Applicant provides more information about the warehousing, northern grass, Fixed Base Operations (FBO) and Maintenance Repair and Overhaul (MRO) income set out in its business plan at Appendix 10.

11.3 The Applicant explained that the forecast ATMs in the Azimuth Report formed the basis of the proposed infrastructure being applied for. Viscount Aviation took the Azimuth forecasts, applied appropriate assumptions in respect of stand time and based aircraft and calculated the number of stands and associated infrastructure that would be required. It was never the case that the infrastructure had been designed to accommodate 83,000 ATMs per year. For that number of ATMs to be achieved would require that on every stand, every aircraft stood for the minimum possible time and was replaced by a new arriving aircraft as soon as it departed, throughout the operational period. No airport could realistically operate in that way. The Applicant has provided the calculation of the number of stands required to accommodate the forecast ATMs at together with the airside warehousing required at Appendix 11.

11.4 The assumption used is that each based aircraft requires a stand as it is assumed that this will be dedicated to that aircraft. For non-based aircraft, it is assumed that the average ground time will be 3 hours and that, due to varying schedules and a degree of charter operations, there will be a need to provide for a "bunching" of aircraft - i.e. the non-based aircraft will not arrive/depart in an even spread throughout the day and that 3 times to number of stands will be needed by comparison to what would be needed if the aircraft did arrive and depart on an evenly spread schedule throughout the day. It will be part of the attractiveness of the airport that aircraft will be relatively free to arrive when they choose throughout the day.

## 12 Agenda Item 16: Reasonable Alternatives

12.1 The Applicant confirmed that the Jentex land had been bought, and that a SoCG agreeing to relocate had been signed by Polar and Avman.

12.2 The Applicant has engaged proactively with SHP to acquire the land. SHP's Responses to Written Questions refers to and appends a number of formal approaches made by the Applicant to SHP for the purchase of their land. This does not present a full picture. In particular, detailed negotiations have been ongoing directly between the principals of the two companies since October 2018. It is the Applicant's position that these negotiations have been on a without prejudice basis and subject to contract, and at least in part are still subject to Non-Disclosure Agreements. These negotiations have been complicated by the recent negotiations between

SHP and the DfT in relation to Operation Stack/Brock. However, negotiations between the Applicant and SHP are still ongoing, and the Applicant remains hopeful that voluntary acquisition of the site may be possible.

12.3 SHP had suggested that the Applicant lease the site for a period. Mr Freudmann inaccurately summarised the offer as being for 25 years. In fact it was for 125 years. The terms on which the lease was proposed were not commercially viable and were rejected on that basis by the Applicant. The Applicant's letter setting out its reasons for the rejection of the offer was included by SHP as an appendix to its Responses to Written Questions.

12.4 SHP made submissions in relation to its own planning applications made to Thanet District Council as Local Planning Authority (LPA). Again, SHP's response to the ExA's written questions on this point (FWQ G.1.9) does not provide a complete picture. The Applicant would refer the ExA to its own answer to that question (REP3-195), which sets out the matter comprehensively. Additionally, the Applicant has been informed that the deadline for determination of SHP's Hybrid Planning Application (TDC reference OL/TH/18/0660 submitted 4 May 2018) has been subject to a further third extension – now until 31 August 2019. Again, it would appear that SHP has failed to provide the additional information sought by the LPA to enable it to determine the application, and its application remains incomplete. It remains to be seen whether SHP has serious intentions to develop the site in the way that it has suggested.

**APPENDICES TO WRITTEN SUMMARY OF ORAL SUBMISSIONS PUT AT COMPULSORY ACQUISITION HEARING HELD ON 20 MARCH**

## APPENDIX 1: Note on hope value and the impacts of Thanet District Council's emerging plan on the valuation of the land

1 During the Compulsory Acquisition Hearing on 20 March 2019 he Applicant was asked about hope value and the impacts of Thanet District Council's emerging plan on the valuation of the land. The Applicant's surveyor, Colin Smith of CBRE, confirmed that planning policy and the potential for permission are elements within the valuation assessment.

2 This position is set out in the leading case on these matters, Clearun*:

> *120. ... It is also common ground that the mere assumption of a grant of planning permission either at the valuation date, or within 18 months, need not necessarily confer any additional market value above existing use value. The real issue is whether the assumed grant of planning permission under section 16(3) or hope value under section 14(3) would have enhanced the market value of the reference land above its value for its existing use.*

3 Accordingly, the Applicant believes that the existence of a local planning policy in favour of a residential mixed use development such as that proposed by Stone Hill Park Limited (SHP), would do no more than influence Hope Value based on an uplift of existing use value. The Applicant has allowed for a quantum of contingency sufficient to accommodate such a change in Thanet District Council's emerging plan.

## APPENDIX 2: Jentex Environmental Reports

GEO-ENVIRONMENTAL ASSESSMENT
JENTEX
CLIFFSEND, KENT
JENTEX GROUP OF COMPANIES
GEA-18996-15-134 REV A
OCTOBER 2016

AN idom GROUP COMPANY

GEO-ENVIRONMENTAL ASSESSMENT
JENTEX
CLIFFSEND, KENT
JENTEX GROUP OF COMPANIES
GEA-18996-15-134 REV A
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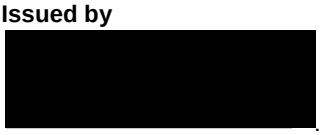
**Authors**

Chris McCartney

**Issued by**



Rob Glavin

**Approved by**

Siobhan Jackson

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**Document Revisions**

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KENT 1 Leonard Place, Westerham Road, Keston. BR2 6HQ Tel: 01689 889 980

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APPENDIX 4

- Soil Chemistry
- Summary Spreadsheet
- Laboratory Analysis Certificates

## SECTION 1 INTRODUCTION

1.1 Jentex proposes to develop an area occupied by their petroleum depot located at Canterbury Road West, Cliffsend, Kent for residential development purposes. The proposed development comprises low-rise housing. Idom Merebrook Limited (Merebrook) has been commissioned by Jentex to undertake preliminary site investigation works and to advise on the geo-environmental implications of the redevelopment of the site for the proposed end use.

1.2 The objectives of the investigation are to:

*i.* Form a preliminary assessment of the surface and sub-surface ground conditions present at the site;

*ii.* Identify potential contamination of shallow soils (specifically by petroleum hydrocarbons) that could impact upon the deeper aquifer; and

*iii.* Evaluate the risks associated with any identified hazards;

*iv.* Provide preliminary recommendations for the mitigation of any significant risks identified.

1.3 A Phase 1 (Non-intrusive Investigation) and a Phase 2a (Preliminary Exploratory Investigation) have been undertaken for the subject site.

1.4 This report presents the findings of the geo-environmental investigation and provides an interpretation of the geo-environmental conditions that exist at the site. The contaminative status of the site and the implications with respect to development have been interpreted in accordance with the current government guidance on source-pathway-receptor risk assessment. This report uses a Tier 1 risk assessment to ascribe a conservative qualitative appraisal of the hazards associated with the site.

1.5 This report has been prepared for Jentex for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult Jentex and Merebrook as to the extent to which the findings may be appropriate for their use.

## SECTION 2 PHASE 1 (NON-INTRUSIVE INVESTIGATION)

### 2.1 INTRODUCTION

2.1.1 The non-intrusive investigation has been conducted with reference to the documents and sources detailed in Table 1 below:

Table 1: Published Data and Information Sources

| SOURCE DATA | GROUNDSURE DATA |
|---|---|
| BGS 1:50,000 Series Geological Sheet 274 | Ordnance Survey (OS) historical maps scaled at 1:10,560, 1:10,000, 1:2,500 and 1:1,250 dated 1873 - 2010 |
| BGS Geology of Britain 1:50,000 online maps | Water abstraction, discharge and pollution data |
| Radon: guidance on protection measures for new dwellings | Registered waste management sites |
| Environment Agency (EA) online data maps | Mining records and natural ground stability data |
| UK National Air Quality Archive, online | Protected areas of environmentally sensitive land use or conservation |
| | Other relevant designations and/or authorisations and Trade Directory entries |

2.1.2 The above sources are all authoritative and it is believed that they are reasonably reliable. However, independent verification of the information supplied has not necessarily been carried out and Merebrook cannot be held liable for inaccuracies or deficiencies in the information.

### 2.2 SITE LOCATION AND SETTING

2.2.1 The site is located on the northern side of Canterbury Road West, in the north of Cliffsend.

2.2.2 The site occupies an area of approximately 2.16 hectares located at National Grid Reference 634449, 165143 and indicated on drawing 18996-304-001 presented in Appendix 1 of this report.

2.2.3 The site is bounded to the north and west by land associated with an adjacent airfield. Adjacent land to the south and east is occupied by residential properties, beyond which is open farmland.

2.2.4 The site is currently occupied by Jentex Petroleum, an operational fuel depot. The site is positioned over three levels gradually rising in height from the southern boundary.

2.2.5 The lowest level is predominantly occupied by concrete hardstanding with occasional landscaped areas. Petrol filling pumps are present in the southwest with associated bunded above ground fuel storage tanks (AST). Further east there are two below ground fuel holding tanks. In the south and southeast of the site there are two maintenance buildings used to maintain and store company equipment and vehicles, constructed of cement sheet panels.

2.2.6 The mid-level comprises a predominantly grassed covered area with a single storey brick built site office building and access and parking road. In the western extent of the grassed area are two large bunded fuel AST, beyond which is small disused breeze block building.

2.2.7 The highest elevation at the northern extent is occupied by a tarmac and gravelled road which circumvents the site. This area is used to store fuel trailers and is also where former fuel filling points are located, but dispensers have since been removed.

2.2.8 Surrounding land use is predominantly open farmland with a small amount of residential buildings to the east and south. A small airfield is located on land to the north.

## 2.3 SITE HISTORY

2.3.1 The site history, based on a review of the historic and current maps, dating from 1873 to 2010 is summarised below. Potentially contaminative land uses are shown in **bold**. Copies of key maps used in this review are provided in Appendix 2.

Table 2: Summary of the key features shown on historic maps

| DATA SOURCE | SITE / SURROUNDINGS |
|---|---|
| 1873 (1:2,500 scale). | The site was open farmland. |
| | Surrounding land comprised open farmland with a track along the southern boundary. |
| 1907 (1:2,500 scale). | No significant changes to previous map edition. |
| | Road network was present on land within 250 m west and water drainage features were present on land within 250 m southeast. |
| 1938 (1:2,500 scale). | No significant changes to previous map edition. |
| | Residential properties were marked on land within 100 m southeast. |
| 1957-1962 (1:10,000 scale). | No significant changes to previous map edition. |
| | Airfield was denoted on land to the north and northwest. |
| 1961 (1:2,500 scale). | Four large circular tanks were positioned across the centre of the site and two buildings were present in the southeast. |
| | Further residential development was present on land within 250 m east of the site boundary and nurseries buildings were located approximately 130 m east. |

| DATA SOURCE | SITE / SURROUNDINGS |
|---|---|
| 1972-1975 (1:2,500 scale). | Additional small buildings were present in the south of the site and the site was denoted as an oil storage depot. |
| | A garage was present within residential land approximately 50 m east and a tank was denoted in land immediately northwest within airfield perimeter (sewage tank). |
| 1981-1983 (1:2,500 scale). | Additional tanks were located in southeast and east of the site. |
| | Another tank was present adjacent to (sewage) tank immediately northwest of the site boundary. |
| 2002 (1:10,000 scale). | Two additional circular tanks were added in the west of the site. |
| | No significant changes to previous map edition. |
| 2010 (1:10,000 scale). | Larger three of the four large circular tanks through the centre of the site had been removed. |
| | No significant changes to previous map edition. |

2.3.2 In summary, historic plans show that the site was open farmland until 1961 when a number of large circular sewerage tanks were constructed. Between 1972 and 1975 an oil storage depot was built on the site. Further tanks were constructed until at least 2002, however three were removed by 2010.

2.3.3 The historic maps show sewerage tanks and an oil storage depot on the site that may be potentially significant contaminative land uses.

2.3.4 Given the nature of the historical mapping process (scale, representation of conditions at discrete time intervals frequency etc.), any such maps and plans may not provide a comprehensive account of a site's history. Identification of pertinent land uses and associated potentially contaminative activities, may therefore be absent from mapping records.

## 2.4 GEOLOGY

2.4.1 The published geological map indicates the site is directly underlain by bedrock geology comprising Margate Chalk Member. There are no recorded drift deposits.

## 2.5 HYDROGEOLOGY

2.5.1 The Environment Agency (EA) Aquifer status classifies the underlying chalk as a principal aquifer.

2.5.2 The site lies within an outer zone (zone 2) groundwater source protection zone with two associated abstraction licence records within one kilometre of the site. These both refer to potable water supplies for Southern Water Services dated from 2 November 2006.

## 2.6 HYDROLOGY

2.6.1 There are no surface water features within 250 m of the site. The nearest major surface water feature is a reservoir located approximately 440 m southwest.

2.6.2 There are no surface water abstraction licences within one kilometre of the site.

2.6.3 Flood risk mapping from the EA indicates the site is not susceptible to flooding.

## 2.7 CURRENT SITE ISSUES

2.7.1 Potentially significant environmental issues have been investigated within relevant distances of the site, based on the database of records supplied by Groundsure. These relate to the following searches:

*i.* Water discharge or pollution incidents within 250 m of the site;

*ii.* Waste management sites within 250 m of the site;

*iii.* Statutory authorisations within 50 m of the site;

*iv.* Trade directory entries of possible contaminative use within 50 m of the site;

*v.* Special protection or conservation areas within 50 m of the site; and

*vi.* Any other relevant issues.

2.7.2 Potentially significant environmental issues identified by the above searches are summarised in Table 3 below.

Table 3: Potentially significant environmental issues

| ENVIRONMENTAL CATEGORY | DESCRIPTION |
|---|---|
| Water discharge or pollution incidents within 250 m | There are no water or pollution discharge incidents within 250m of the site. |
| Waste management sites within 250 m | The site is licensed as a physico-chemical treatment plant treating up to 25,000 tonnes of fuel oil per year. |
| Statutory authorisations within 50 m | One historic Part B Permit for petrol vapour recovery process located on site. |
| Trade directory entries of possible contaminative use within 50 m | Current land uses include oil storage, Jentex fuel distributors and generic tanks. |
| Special protection or conservation areas within 50 m | The site is classified as a Nitrate Vulnerable Zone for groundwater by DEFRA. |

| ENVIRONMENTAL CATEGORY | DESCRIPTION |
|---|---|
| Other relevant issues | There are no other relevant issues. |

## 2.8 INDICATIVE GROUND STABILITY HAZARDS

2.8.1 Ground stability hazards are negligible.

## 2.9 RADON GAS

2.9.1 The site does not lie within a Radon Affected Area as defined by the Health Protection Agency (<1% of houses are above the action level).

## 2.10 AIR QUALITY

2.10.1 The site lies within the Thanet Urban Air Quality Management Area (AQMA) for Thanet District Council. The pollutant recorded is nitrogen dioxide. Proposals for new development are likely to require an air quality assessment.

## 2.11 ECOLOGY

2.11.1 Information from environmental and ecological datasets was obtained from a review of the MAGIC (Multi-Agency Geographic Information for the Countryside) website and the Groundsure report. There are no special conservation areas within one kilometre of the site however; the assessed data indicates that the site is within a priority breeding area for Corn Bunting, Grey Partridge, Lapwing, Turtle Dove and the Yellow Wagtail as part of the British Conservation Targeting Project.

## 2.12 PREVIOUS INVESTIGATIONS

2.12.1 Previous site investigations have been undertaken by RAW Consulting. However, there were limited in both scope and extent. As a result, these investigations have not been considered further.

## 2.13 PRELIMINARY CONCEPTUAL SITE MODEL AND RISK ASSESSMENT

2.13.1 From the Phase 1 assessment a preliminary site conceptual model and risk assessment have been produced using the framework established in Part IIA of the *Environmental Protection Act 1990* and detailed in Contaminated Land Report *CLR11 - Model Procedures for the Management of Land Contamination*.

2.13.2 Risk from contamination has been assessed using the source-pathway-receptor and pollutant linkage methodology, whereby a risk can only exist if all elements of: source, pathway and receptor, are present.

2.13.3 Potential Sources

*i.* Contaminated Made Ground resulting from historic land use. The principal contaminating of concern is petroleum hydrocarbons, resulting from bulk fuel storage and processing;

*ii.* Potential asbestos containing materials (ACM) from demolition and construction phases of on-site buildings;

*iii.* Organic contaminants from both historic land use and current on-site above and below ground storage tanks.

2.13.4 Potential Pathways

*i.* Direct contact;

*ii.* Ingestion and inhalation of contaminated soil and dust; and

*iii.* Vertical migration to aquifer.

2.13.5 Potential Receptors

*i.* Human health (future residents and construction workers);

*ii.* Potable water (permeation of supply pipes); and

*iii.* Controlled waters (underlying aquifer).

2.13.6 Pollutant Linkages and Risk Ratings

2.13.6.1 From the Phase 1 assessment a preliminary site conceptual model has been produced as Table 4 which identifies the potential pollutant linkages. These have been used to inform the Phase 2 intrusive investigation presented in the subsequent sections.

Table 4: Preliminary Conceptual Model

| POSSIBLE POLLUTANT LINKAGE | | | RISK CHARACTERISATION |
|---|---|---|---|
| **POTENTIAL SOURCES** | **PATHWAYS** | **RECEPTORS** | |
| Heavy metals and hydrocarbons (made ground) | Contact with contaminated soil | Human health (current users) | **Moderate risk identified** Potential for made ground which can contain elevated metals and hydrocarbons. |
| | Ingestion and inhalation of contaminated soil and dust | Human health (current users) | |
| Heavy metals and hydrocarbons (made ground) | Contact with contaminated soil | Human health (future residents and construction workers) | **Moderate risk identified** Potential for made ground which can contain elevated metals and hydrocarbons. |
| | Ingestion and inhalation of contaminated soil and dust | Human health (future residents and construction workers) | |

| POSSIBLE POLLUTANT LINKAGE | | | RISK CHARACTERISATION |
|---|---|---|---|
| **POTENTIAL SOURCES** | **PATHWAYS** | **RECEPTORS** | |
| Asbestos (made ground) | Ingestion and inhalation of contaminated soil and dust | Human health (future residents and construction workers) | **Moderate risk identified** Potential for asbestos to be found within the made ground. |
| Contamination (all forms) | Vertical migration to aquifer | Controlled waters | **Moderate risk identified** Potential for contamination to affect underlying principal aquifer. |
| Contamination (all forms) | Horizontal migration to surface water | Controlled waters | **Low risk identified** No surface waters in the vicinity. |
| Hydrocarbons | Direct contact | Plastic water pipes | **Moderate risk identified** Potential for hydrocarbon contamination in process areas. |
| Hazardous Gas/Vapours In soil | Ingress into buildings and voids | Human health (future residents and construction workers) | **Moderate risk identified** Risk of vapours from unidentified localised fuel leaks. |

## SECTION 3 SITE INVESTIGATION RATIONALE

3.1.1 A site investigation rationale has been devised in accordance with the findings of the Phase 1 investigation and the resultant preliminary conceptual site model and risk assessment. Priority contaminants were identified as petroleum hydrocarbons.

3.1.2 Site investigation locations were targeted at accessible oil storage and processing areas. Locations were targeted beneath the large oil tanks that had been removed, adjacent to fuelling and transfer points and adjacent to the interceptor. Boreholes and trial pits were excavated across the three terraces that form the site to enable an understanding of shallow contamination or any movement within shallow stratum.

3.1.3 Groundwater in the region is anticipated to be at a depth of approximately 50 metres below ground level. None of the boreholes were drilled to intercept groundwater and the principal aim of the site investigation was to understand the potential for shallow contamination to be adversely impacting upon the deeper Chalk Aquifer.

3.1.4 Site investigation was not undertaken in the area of the currently active Environmental Permit (in the west of the site), as safe access for plant and machinery could not be achieved. Furthermore, the site investigation could have compromised the environmental protection measures (slabs and bunds) that are currently in place. This area of the site remains operational.

### 3.2 SITE INVESTIGATION METHODS

3.2.1 An intrusive investigation was carried out by Merebrook on 22 and 23 April 2015, and comprised the following scope of work:

*i.* Three cable percussion boreholes (MBH1 to MBH3) to 10.45 metres below ground level (m bgl);

*ii.* Fifteen machine-dug trial holes (MTP1 to MTP15) to a depth of 4.0 m bgl.

3.2.2 Exploratory hole locations are indicated on drawing 18996-304-001 in Appendix 1. Logging of exploratory holes was undertaken by a Merebrook Officer. Exploratory hole logs are contained in Appendix 3.

3.2.3 Representative soil samples were taken from various depths and strata to assess the contaminative status of the site. Soil samples were submitted to an MCERTS/ UKAS accredited laboratory for chemical analysis of a broad suite of potential contaminants, but with specific emphasis upon petroleum hydrocarbons. The results are provided in Appendix 4.

## SECTION 4 GROUND CONDITIONS

### 4.1 SURFACE GROUND CONDITIONS

4.1.1 The surfacing upon the upper terrace (to the north), generally comprised tarmac or made ground consisting of sand and gravel. The middle terrace was surfaced by crushed concrete and demolition rubble, which has become colonised by some grass, whilst the lower terrace to the south, is surfaced by a combination of tarmac and concrete. Outside of the main process areas the site is given to grass and small shrubs.

4.1.2 The currently permitted operations take place upon a series of concrete slabs. These appear to be cracked, but have historically been repaired using a bituminous binder.

### 4.2 SUB-SURFACE GROUND CONDITIONS

4.2.1 The ground conditions encountered identified Made Ground, overlying natural Chalk deposits. In places these had weathered to form a silty clay, elsewhere, they were encountered as structureless chalk in a silt matrix. This is consistent with the published geology for the site.

4.2.2 A summary of the ground conditions encountered is presented in Table 5, whilst a more detailed assessment of the strata is contained in the following sections of the report.

Table 5: Summary of Sub-surface Ground Conditions

| STRATA | DEPTH TO TOP RANGE (m bgl) | THICKNESS RANGE (m) |
|---|---|---|
| Made Ground | 0 | 0.3-3.2 |
| Weathered Chalk | 0.3-2.7 | 0 >3.7 |
| Structureless Chalk | 0.9-3.2 | 3.2 |

4.2.3 Made Ground

4.2.3.1 Made Ground typically comprised clays and silts with varying portions of tarmac, brick and concrete. Locally reworked ground is described; this is in areas where the chalk is likely to have been affected by foundations and tank bases. A concrete obstruction was identified in MTP4 at 1.9 metres below ground level (m bgl). It was not possible to excavate beneath this obstruction.

4.2.3.2 Ash and clinker was encountered in the Made Ground within a number of the boreholes. In addition, a slight hydrocarbon odour was recorded in trial pits MTP3, MTP4 and MTP5. However, where these were encountered, there was no evidence of impact upon the deeper natural stratum. In addition, there was no evidence of staining or free product.

4.2.3.3 No perched groundwater was encountered during the site investigation.

4.2.4 Natural Ground

4.2.4.1 The weathered chalk is described as a soft brown clay and silt with chalk gravels. The underlying structureless Chalk was encountered as weak Chalk clasts within a silty chalk matrix.

4.2.4.2 There was no evidence of contamination within the natural deposits.

4.2.4.3 No groundwater was encountered during the site investigation.

## SECTION 5 ENVIRONMENTAL ASSESSMENT

### 5.1 SOIL QUALITY

5.1.1 A total of 25 soil samples were submitted to the laboratory for chemical analysis, including 14 samples from natural ground and 11 samples from Made Ground. The laboratory chemical analysis certificates are contained in Appendix 4. The results of the analysis are summarised in Table 6.

5.1.2 An initial screening exercise has been undertaken whereby contaminant concentrations recorded in soils have been assessed against *Suitable for Use Levels* (S4ULs) published in 2015 by LQM/CIEH[1]. These precautionary screening levels are designed to be representative of minimal risk to human health in a number of land use scenarios. In this report S4ULs have been selected for a residential land use where the possibility of consumption of homegrown produce exists and assuming a soil organic matter of 1 %. For lead the DEFRA Category 4 Screening Level[2] has been used as this is based on updated toxicological data and a low risk to human health.

5.1.3 An additional set of phytotoxin screening levels have been adopted from 'The Code of Agricultural Practice for the Protection of Soil' Ministry of Agriculture, Fisheries and Food (MAFF), 1993, which are protective of healthy plant growth.

Table 6: Summary of Soils Chemical Analysis Results

| CONTAMINANT | UNITS | MAX | MEAN | No of Tests | SCREENING LEVEL (SL) | No > SL* |
|---|---|---|---|---|---|---|
| **HUMAN HEALTH RISK ASSESSMENT** | | | | | | |
| Asbestos in soil | - | | | 3 | Detected | 2 |
| pH | - | 10 | 8.9 | 24 | 5 – 9 | 1 |
| Arsenic | $mg.kg^{-1}$ | 5.4 | 4.4 | 3 | 37 | 0 |
| Cadmium | $mg.kg^{-1}$ | 0.4 | 0.3 | 3 | 11 | 0 |
| Chromium (total) | $mg.kg^{-1}$ | 18 | 16 | 3 | 910 | 0 |
| Hexavalent Chromium | $mg.kg^{-1}$ | <4 | <4 | 3 | 6 | 0 |
| Lead | $mg.kg^{-1}$ | 39 | 29 | 3 | 200 | 0 |
| Mercury | $mg.kg^{-1}$ | <0.3 | <0.3 | 3 | 40 | 0 |
| Nickel | $mg.kg^{-1}$ | 17 | 15 | 3 | 180 | 0 |
| Selenium | $mg.kg^{-1}$ | <1 | <1 | 3 | 250 | 0 |
| TPH Aliphatic >$EC_5$ - $EC_6$ | $mg.kg^{-1}$ | <0.1 | <0.1 | 24 | 42 | 0 |
| TPH Aliphatic >$EC_6$ - $EC_8$ | $mg.kg^{-1}$ | <0.1 | <0.1 | 24 | 100 | 0 |
| TPH Aliphatic >$EC_8$ - $EC_{10}$ | $mg.kg^{-1}$ | <0.1 | <0.1 | 24 | 27 | 0 |
| TPH Aliphatic >$EC_{10}$ - $EC_{12}$ | $mg.kg^{-1}$ | <1 | <1 | 24 | 130 | 0 |
| TPH Aliphatic >$EC_{12}$ - $EC_{16}$ | $mg.kg^{-1}$ | 24 | 3.6 | 24 | 1100 | 0 |
| TPH Aliphatic >$EC_{16}$ - $EC_{21}$ | $mg.kg^{-1}$ | 120 | 17.7 | 24 | 65000 | 0 |
| TPH Aliphatic >$EC_{21}$ - $EC_{35}$ | $mg.kg^{-1}$ | 120 | 26.1 | 24 | 65000 | 0 |
| TPH Aromatic >$EC_5$ - $EC_7$ | $mg.kg^{-1}$ | <0.1 | <0.1 | 24 | 70 | 0 |
| TPH Aromatic >$EC_7$ - $EC_8$ | $mg.kg^{-1}$ | <0.1 | <0.1 | 24 | 130 | 0 |
| TPH Aromatic >$EC_8$ - $EC_{10}$ | $mg.kg^{-1}$ | <0.1 | <0.1 | 24 | 34 | 0 |
| TPH Aromatic >$EC_{10}$ - $EC_{12}$ | $mg.kg^{-1}$ | 1.1 | 1.0 | 24 | 74 | 0 |
| TPH Aromatic >$EC_{12}$ - $EC_{16}$ | $mg.kg^{-1}$ | 25 | 3.5 | 24 | 140 | 0 |

[1] Nathanail, C. P., McCaffrey, C., Gillett, A. G., Ogden, R. C. and Nathanail, J. F. 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham. Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3100. All rights reserved.

[2] SP1010 *Development of Category 4 Screening Levels Main Report* (Dec 2013) and SP1010 *Policy Companion Document* (Mar 2014).

| CONTAMINANT | UNITS | MAX | MEAN | No of Tests | SCREENING LEVEL (SL) | No > SL* |
|---|---|---|---|---|---|---|
| **HUMAN HEALTH RISK ASSESSMENT** | | | | | | |
| TPH Aromatic >$EC_{16}$ - $EC_{21}$ | $mg.kg^{-1}$ | 140 | 24.0 | 24 | 260 | 0 |
| TPH Aromatic >$EC_{21}$ - $EC_{35}$ | $mg.kg^{-1}$ | 210 | 44.8 | 24 | 1100 | 0 |
| Benzene | $mg.kg^{-1}$ | <1 | <1 | 24 | 0.087 | 0 |
| Toluene | $mg.kg^{-1}$ | <1 | <1 | 24 | 130 | 0 |
| Ethylbenzene | $mg.kg^{-1}$ | <1 | <1 | 24 | 47 | 0 |
| Xylene | $mg.kg^{-1}$ | <1 | <1 | 24 | 56 | 0 |
| Acenaphthene | $mg.kg^{-1}$ | 0.5 | 0.24 | 3 | 210 | 0 |
| Acenaphthylene | $mg.kg^{-1}$ | 0.27 | 0.16 | 3 | 170 | 0 |
| Anthracene | $mg.kg^{-1}$ | 1.6 | 0.66 | 3 | 2400 | 0 |
| Benz(a)anthracene | $mg.kg^{-1}$ | 5.0 | 2.25 | 3 | 7.2 | 0 |
| Benzo(a)pyrene | $mg.kg^{-1}$ | 6.4 | 2.84 | 3 | 2.2 | 3 |
| Benzo(b)fluoranthene | $mg.kg^{-1}$ | 7.0 | 3.18 | 3 | 2.6 | 0 |
| Benzo(ghi)perylene | $mg.kg^{-1}$ | 3.6 | 1.60 | 3 | 320 | 0 |
| Benzo(k)fluoranthene | $mg.kg^{-1}$ | 3.6 | 1.55 | 3 | 77 | 0 |
| Chrysene | $mg.kg^{-1}$ | 5.5 | 2.59 | 3 | 15 | 0 |
| Dibenz(ah)anthracene | $mg.kg^{-1}$ | 0.61 | 0.27 | 3 | 0.24 | 3 |
| Fluoranthene | $mg.kg^{-1}$ | 11 | 7.97 | 3 | 280 | 0 |
| Fluorene | $mg.kg^{-1}$ | 0.51 | 0.24 | 3 | 170 | 0 |
| Indeno(123-cd)pyrene | $mg.kg^{-1}$ | 3.1 | 1.37 | 3 | 27 | 0 |
| Naphthalene | $mg.kg^{-1}$ | <0.05 | <0.05 | 3 | 2.3 | 0 |
| Phenanthrene | $mg.kg^{-1}$ | 5.0 | 2.25 | 3 | 95 | 0 |
| Pyrene | $mg.kg^{-1}$ | 10.0 | 4.48 | 3 | 620 | 0 |
| Phenol | $mg.kg^{-1}$ | <1 | < | 3 | 120 | 0 |
| **PHYTOTOXICITY RISK ASSESSMENT** | | | | | | |
| | **Units** | **Max** | **Mean** | **No of Test** | **Screening Level (SL)** | **No > SL** |
| Copper | $mg.kg^{-1}$ | 19 | 17 | 3 | 200 | 0 |
| Nickel | $mg.kg^{-1}$ | 17 | 15 | 3 | 110 | 0 |
| Zinc | $mg.kg^{-1}$ | 58 | 47 | 3 | 300 | 0 |

Notes: * Number of samples exceeding screening level nd = not detected

5.1.4 Zootoxic Metals (harmful to human health)

5.1.4.1 None of the contaminants exceed the thresholds protective of human health.

5.1.5 Phytotoxic Metals (harmful to plant health)

5.1.5.1 None of the contaminants exceed the thresholds protective of plant growth.

5.1.6 Organic Contaminants

5.1.6.1 Concentrations of both benzo(a)pyrene and dibenz(ah)anthracene were recorded at levels in excess of the thresholds protective of human health in all three of the

samples analysed (MTP5, MTP10 and MBH3). All three samples were collected from the Made Ground.

5.1.7 Inorganic Contaminants

5.1.7.1 Slightly elevated pH was detected in one borehole, whilst asbestos was found at two of the three locations analysed (MTP11 and MTP14). Potential asbestos containing materials were also recorded in trial pit MTP11. All of the samples were collected from Made Ground containing evidence of demolition rubble.

5.2 **GROUNDWATER**

5.2.1 Groundwater monitoring has not been undertaken as part of this assessment. Groundwater beneath the site is at significant depth, but is considered to be a highly sensitive receptor.

5.2.2 No significant contamination of shallow Made Ground or deeper natural soils has been recorded. Even in instances where hydrocarbon odours were noted, there was little evidence of contamination in the soil data.

5.2.3 Where petroleum hydrocarbons have been detected, these are at very low levels. Furthermore, where hydrocarbons were recorded in shallow soils, none have been detected in the deeper natural strata, indicating that they are not readily mobile or easily leached.

5.2.4 Only one sample of natural soil, collected from MTP6 at a depth of 1.5 m bgl, located in the centre of the site (beneath one of the former oil tanks), contained total petroleum hydrocarbon concentrations in excess of the laboratory limits of detection. The concentrations in MTP6, 510 $mg.kg^{-1}$, are consistent with those in the Made Ground at similar depths. In these samples there is no evidence of leaching and the concentrations recorded in MTP6 are not sufficient to represent a potential risk to underlying groundwater.

5.2.5 Concentrations of metallic contaminants and polyaromatic hydrocarbons are not considered sufficient to represent a significant risk to controlled waters.

## SECTION 6 RISK ASSESSMENT

6.1 The potential sources of contamination at the site and the implications with respect to development have been interpreted in accordance with the current government guidance on source-pathway-receptor risk assessment.

6.2 The investigations demonstrate that the former uses of the site have resulted in mild contamination by polyaromatic hydrocarbons and asbestos (with respect to human health). No significant soil based source of groundwater contamination has been identified. These materials are considered for their potential to act as sources for a number of pollutant linkages.

6.3 The potential impacts of contamination sources have been considered with respect to the following receptors:

*i.* The general public and present site users,

*ii.* Residents of future development,

*iii.* Groundwater,

*iv.* Surface water,

*v.* Construction workers,

*vi.* Adjacent land, and

*vii.* Infrastructure.

6.4 In each case the existence of a pollutant linkage requires a pathway by which the receptor could be exposed to the source. A qualitative assessment of risk is thus considered in the first instance with respect to the site in its current condition and is summarised in the sections below.

6.5 **Present site users**

6.5.1 Most of the operational areas are covered by tarmac or concrete hard standing. In these areas the hard surfaces break potential exposure pathways mitigating the potential risks to current site users. The central terrace of the site is rarely accessed, but is surfaced by compacted demolition rubble. There was no evidence of disturbance of this area and no evidence of dust generation. Therefore, in the context of the site's ongoing use, the potential risk to site users is considered to be low.

6.6 **Residents of future development**

6.6.1.1 Contamination by polyaromatic hydrocarbons was encountered in shallow soils. The thresholds used in this assessment consider use by children. If the site is developed as a residential care home, as proposed, the level of potential risk is greatly diminished and it is unlikely that remediation would be required.

6.6.1.2 Furthermore, the material that makes up the shallow made ground across the site will not form a suitable growing medium. Therefore, subsoil and topsoil of a suitable quality will be required in areas of soft landscaping. These should be chemically validated, but will break any potential contamination pathways through the prevention dust generation, accidental ingestion or dermal contact. No volatile contamination has been observed.

6.6.2 <u>Asbestos</u>

6.6.2.1 Asbestos has been found in shallow soils. Again, the material that makes up the shallow made ground across the site will not form a suitable growing medium.

Therefore, subsoil and topsoil of a suitable quality will be required in areas of soft landscaping. This will break any potential contamination pathways through the prevention of dust generation or dermal contact with underlying made ground.

6.6.3 Hazardous Soil Gas/Vapours

6.6.3.1 No volatile contamination has been identified. Gas monitoring was not undertaken as part of the initial site investigation.

6.7 **Controlled waters**

6.7.1 No significant soil based source of groundwater contamination has been identified. Limited contamination of shallow soils by petroleum hydrocarbons was observed. Where deeper samples were collected from the same boreholes no contamination was detected, indicating limited mobility/leachability.

6.7.2 Therefore the potential risks to controlled waters are considered to be low. It is, however, acknowledged that further testing will be required as part of the detailed planning application and upon removal of the remaining tanks and associated infrastructure.

6.8 **Construction workers**

6.8.1 Potentially, construction workers are initially at the greatest risk from exposure to hazardous contamination due to excavation works and during the handling of materials including imported soils. Providing that dust levels are kept within statutory limits and appropriate health and safety procedures are adhered to during the construction phase, the levels of chemical contamination recorded to date are not considered to present an acute risk to human health.

6.9 **Adjacent land**

6.9.1 The contamination identified is not readily mobile. In addition, the depth to groundwater is such that the potential pathways for contamination to act upon adjacent land are very limited. The site's surfacing will prevent dust generation or the release of fugitive asbestos fibres. As a result it is considered that the potential risk to adjacent properties is low.

6.10 **Infrastructure**

6.10.1 Limited contamination with the potential to permeate polymeric services has been identified by this investigation; however it is recommended that the utility provider is consulted with respect to their requirements for water supply pipes.

6.10.2 Utility companies apply strict guideline levels on use of polymeric pipes and may consider all made ground unsuitable for typical plastic pipe materials to be used.

## SECTION 7 UPDATED CONCEPTUAL MODEL

7.1 Following completion of phases 1 and 2 of the investigation and a qualitative risk assessment, the conceptual model for the site, with relation to pollutant linkages, has been updated. The revised model is presented in Table 7 below.

Table 7: Revised Conceptual Model

| POSSIBLE POLLUTANT LINKAGE | | | RISK CHARACTERISATION |
|---|---|---|---|
| **POTENTIAL SOURCES** | **PATHWAYS** | **RECEPTORS** | |
| Heavy metals and hydrocarbons (made ground) | Contact with contaminated soil | Human health (current users) | **Low - Moderate risk identified** Low levels of contamination identified. Some, limited mitigation measures will be required. |
| | Ingestion and inhalation of contaminated soil and dust | Human health (current users) | |
| Heavy metals and hydrocarbons (made ground) | Contact with contaminated soil | Human health (future residents and construction workers) | **Low - Moderate risk identified** Low level contamination by PAH has been identified in the shallow made ground. |
| | Ingestion and inhalation of contaminated soil and dust | Human health (future residents and construction workers) | |
| Asbestos (made ground) | Ingestion and inhalation of contaminated soil and dust | Human health (future residents and construction workers) | **Low - Moderate risk** Asbestos has been identified in the made ground. It is likely that this is at trace levels, but mitigation will be required. |
| Contamination (all forms) | Vertical migration to aquifer | Controlled waters | **Low risk identified** No significant contamination identified. |
| Contamination (all forms) | Horizontal migration to surface water | Controlled waters | **Low risk identified** No surface waters in the vicinity |
| Hydrocarbons | Direct contact | Plastic water pipes | **Low risk identified** Limited contamination identified but requirements should be confirmed with utility provider. |
| Hazardous Gas/Vapours In soil | Ingress into buildings and voids | Human health (future residents and construction workers) | **Low risk identified** Limited contamination identified. |

## SECTION 8 PRELIMINARY REMEDIATION STRATEGY

8.1 The identified risks at the site can be mitigated by removal of either the source, pathway or receptor. With reference to the conceptual model for the site a remediation strategy, based on source or pathway removal, has been designed.

8.2 It should be noted that the investigation represents a preliminary assessment only and it is acknowledged that further investigation will be required at a later date. However, sufficient information is presented to demonstrate an understanding of the prevailing ground conditions and associated risks.

8.3 Contamination of shallow soils by polyaromatic hydrocarbons and asbestos has been identified. The proposed buildings and associated hard standing will sever any potential pollutant pathways and therefore mitigate the potential risks identified. The existing shallow Made Ground does not represent a suitable growing medium and suitable quality subsoil and topsoil will be required. This will form a clean cover system that will break any potential pollution pathways. It is recommended that clean soils should be placed to a thickness of 300 mm in areas of soft landscaping, with 600 mm likely to be required in private gardens.

8.4 No volatile contamination has been identified and concentrations of petroleum hydrocarbons in soils are not considered sufficient to represent a potential risk to controlled waters.

8.5 Further investigation is required beneath residual tanks and below the area of the active Environmental Permit. This investigation is only possible once these have been fully decommissioned and overhead power lines etc. removed to permit access.

8.6 The development should be designed to facilitate the retention of soils on site. This should be undertaken in accordance with a Materials Management Plan, produced under the Claire Code of Practice.

8.7 Materials, including waste soils which are not to be retained on site, should be removed and disposed of in accordance with all relevant statues including the *Environmental Protection Act 1990*, *The Controlled Waste Regulations 2012* as amended, *The Waste Regulations 2011* as amended, *The List of Wastes Regulations 2005* as amended, *The Hazardous Waste Regulations 2005* as amended, *The Waste Management Regulations 2006* and *The Environmental Permitting Regulations 2010* as amended.

8.8 Potential risks to construction workers have been identified and the adoption of appropriate Health and Safety procedures will ensure that risks to operatives from hazardous materials at the site are minimised. Operatives should not be allowed to eat, drink or smoke on site except in designated areas and should be required to wash all exposed skin at the end of each shift. Operatives should be informed of the potential hazards at the site and should be required to report any observations of suspect material.

8.9 Any observations of ground conditions atypical of those already described should be reported to Merebrook immediately so that an assessment of appropriate action can be made.

## SECTION 9 CONCLUSIONS

9.1 The site investigation has provided good coverage of the current and historical operations at the site. Some contamination, with respect to human health, has been identified and mitigation measures are likely to be required. This will be in the form of clean cover which, owing to the paucity of the existing soils, is necessary to form areas of soft landscaping.

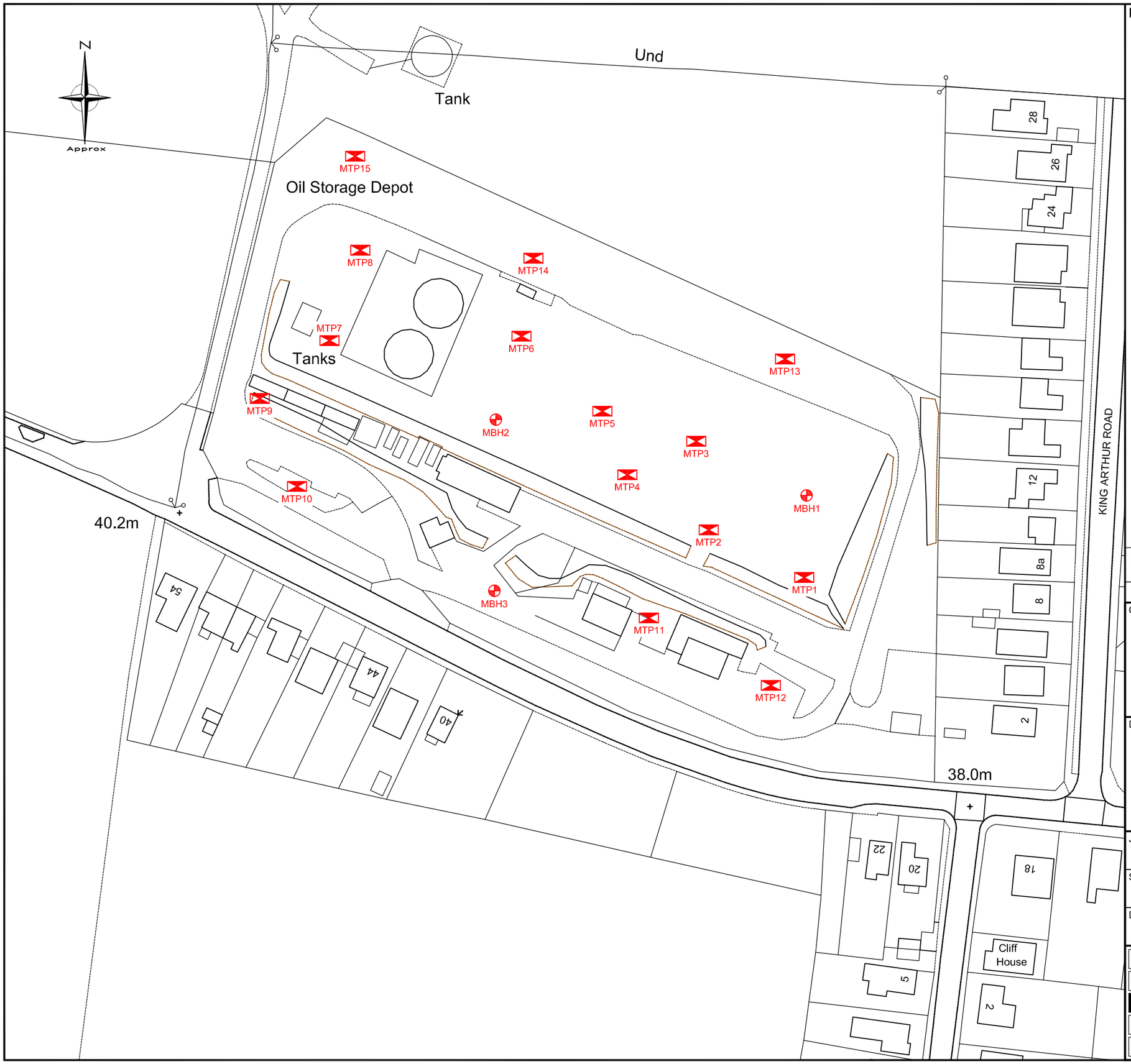
9.2 No significant soil based source of groundwater contamination has been identified. Where hydrocarbons were detected in shallow soils none were detected in the deeper natural soils in the same location. Therefore, the potential for widespread remediation to be required with this regard is considered to negligible.

9.3 Further investigation will be required, but this assessment provides sufficient information to enable the determination of the planning application and the implementation of appropriately worded planning conditions.

9.4 It will be possible to re-use materials on site under a Materials Management Plan. Given the terracing on site, the development should be designed to ensure that the required materials are accommodated, thereby minimising waste disposal volumes.

9.5 Although this report is not aimed at providing geotechnical assessment, the data from the boreholes indicates that shallow foundations are likely to be appropriate for buildings of less than three stories in height. In addition, levels of contamination are not sufficient to prohibit the use of soakaways. These should be positioned away from areas where there is the potential for ground contamination. Further testing and agreement from the Environment Agency will be required prior to detailed design.

**APPENDIX 1** ▪ Drawings




Legend

MBHref — Merebrook cable percussion borehole with location reference

MTPref — Merebrook trial pit with location reference

| Based on OS data<br>Ordnance Survey (c) Crown Copyright 2015. All rights reserved. Licence number 100022432 | 18-05-2015 | | - |
|---|---|---|---|
| | RH | CM | - |
| Issue Details | Dwn | Chd | App'd |

Client/Project

Jentex

Cliffsend

Dwg Title

Approximate

Site Investigation Locations

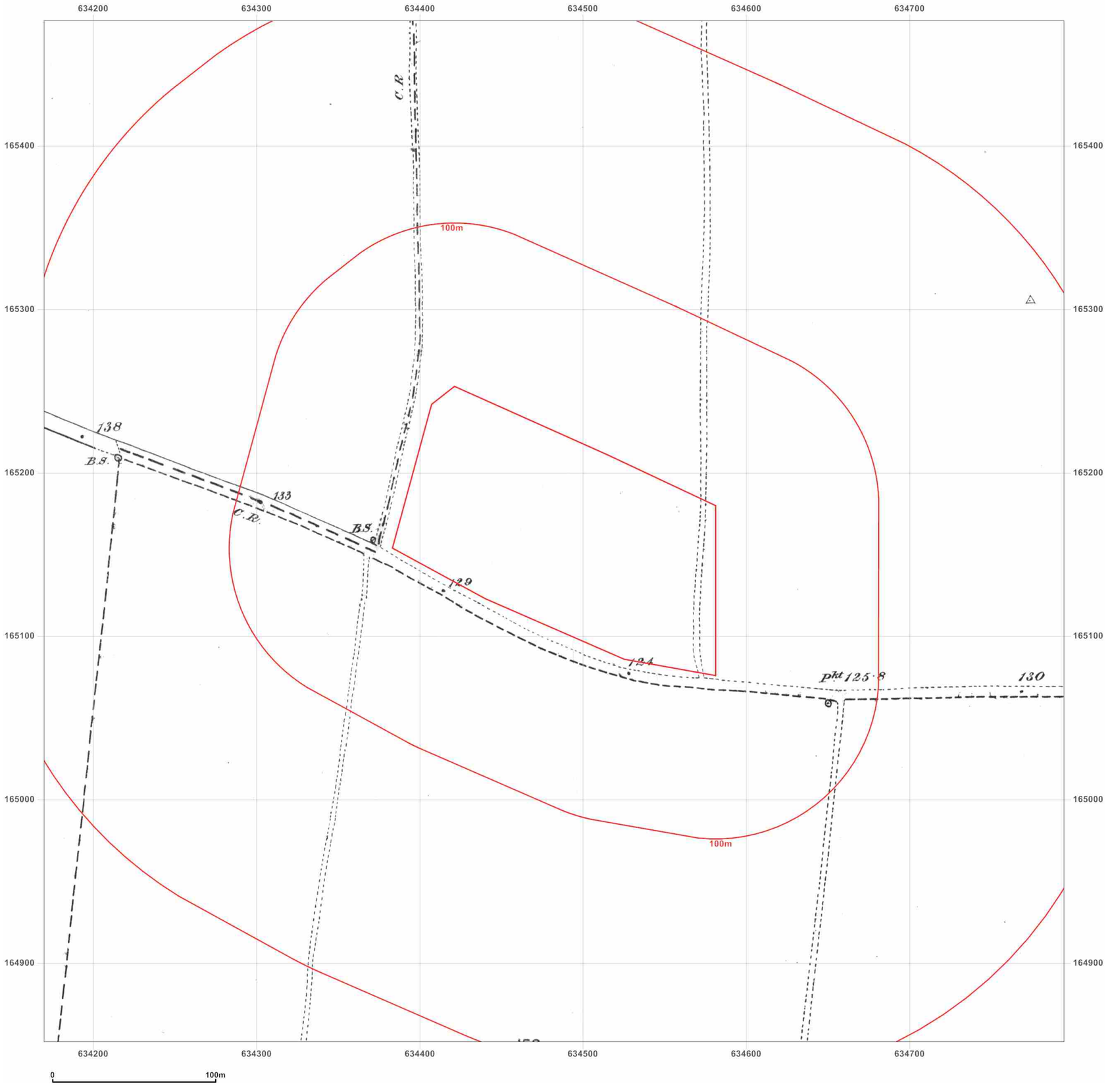
| Job No. | Dwg No. | Revision |
|---|---|---|
| 18996 | 304-001 | - |
| Scale | Date | Frame Dimensions mm |
| 1:1000 | May 2015 | (A3) 400 x 280 |
| Drawn | Checked | Approved |
| RH | CM | - |


London
Kent
Derby
Cardiff
Manchester

idom merebrook

East Mill, Bridgefoot, Belper, Derbyshire, England. DE56 2UA
tel +44(0)1773 829988 fax +44(0)1773 829393 email info@merebrook.co.uk

**APPENDIX 2** ▪ Historic Plans




Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** County Series

**Map date:** **1873**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1873
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

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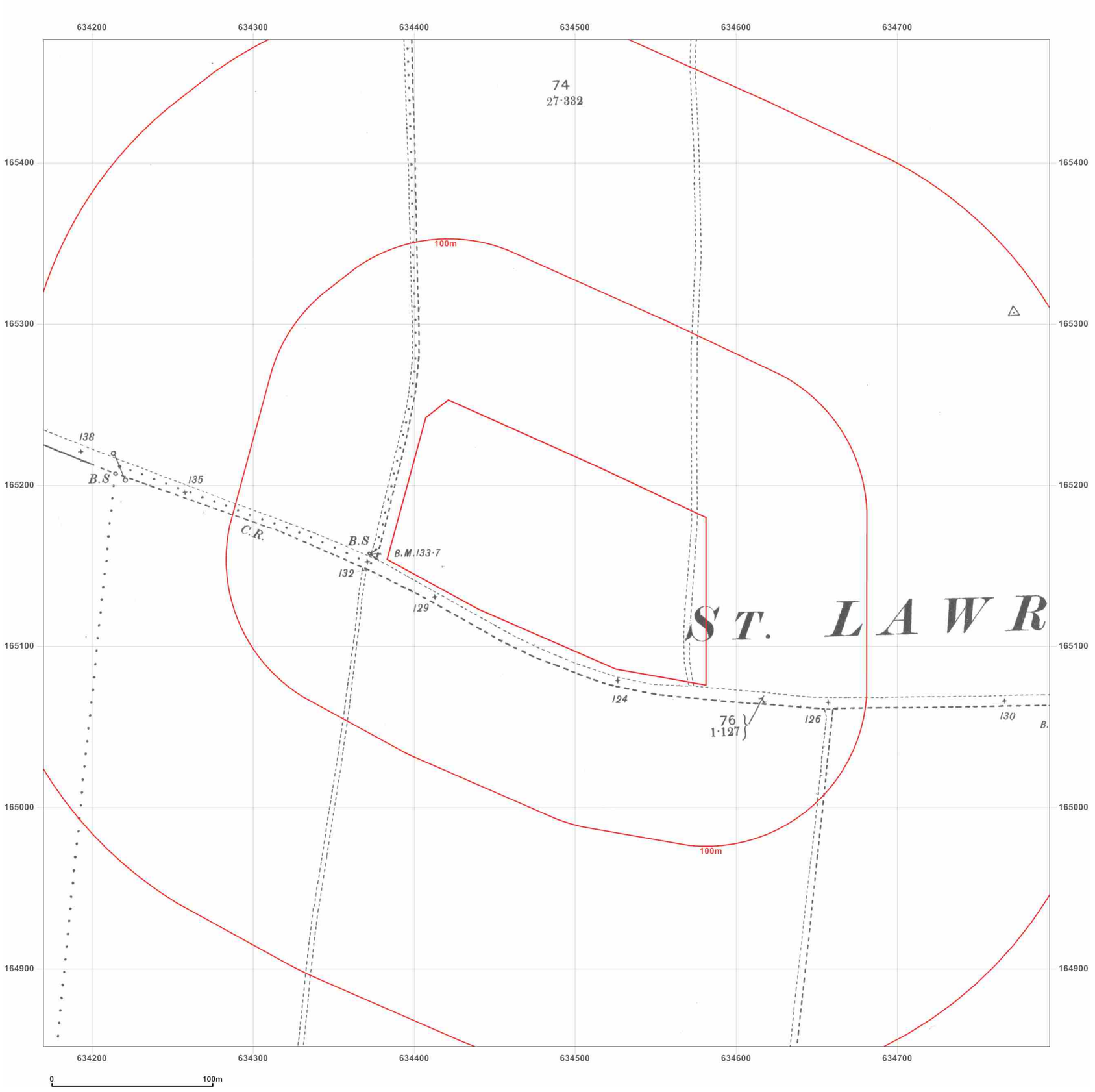
Production date: 18 May 2015

To view map legend click here *Legend*




Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** County Series

**Map date:** **1898**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

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**Site Details:**

JENTEX PETROLEUM,
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RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** County Series

**Map date:** **1907**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 18 May 2015

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Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** County Series

**Map date:** **1938**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 18 May 2015

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# Groundsure INSIGHTS

**Site Details:**

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CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** National Grid

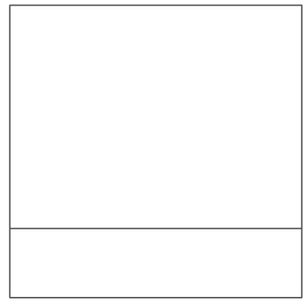
**Map date:** **1961**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1961
Revised 1961
Edition N/A
Copyright 1963
Levelled 1952



Surveyed 1961
Revised 1961
Edition N/A
Copyright 1963
Levelled 1952

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Groundsure INSIGHTS

**Site Details:**

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RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** National Grid

**Map date:** **1972-1975**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1961
Revised 1975
Edition N/A
Copyright 1977
Levelled 1952

Surveyed 1972
Revised 1972
Edition N/A
Copyright 1973
Levelled 1952

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Groundsure INSIGHTS

**Site Details:**

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RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** National Grid

**Map date:** **1981-1983**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1976

Surveyed 1981
Revised 1981
Edition N/A
Copyright 1982
Levelled 1976

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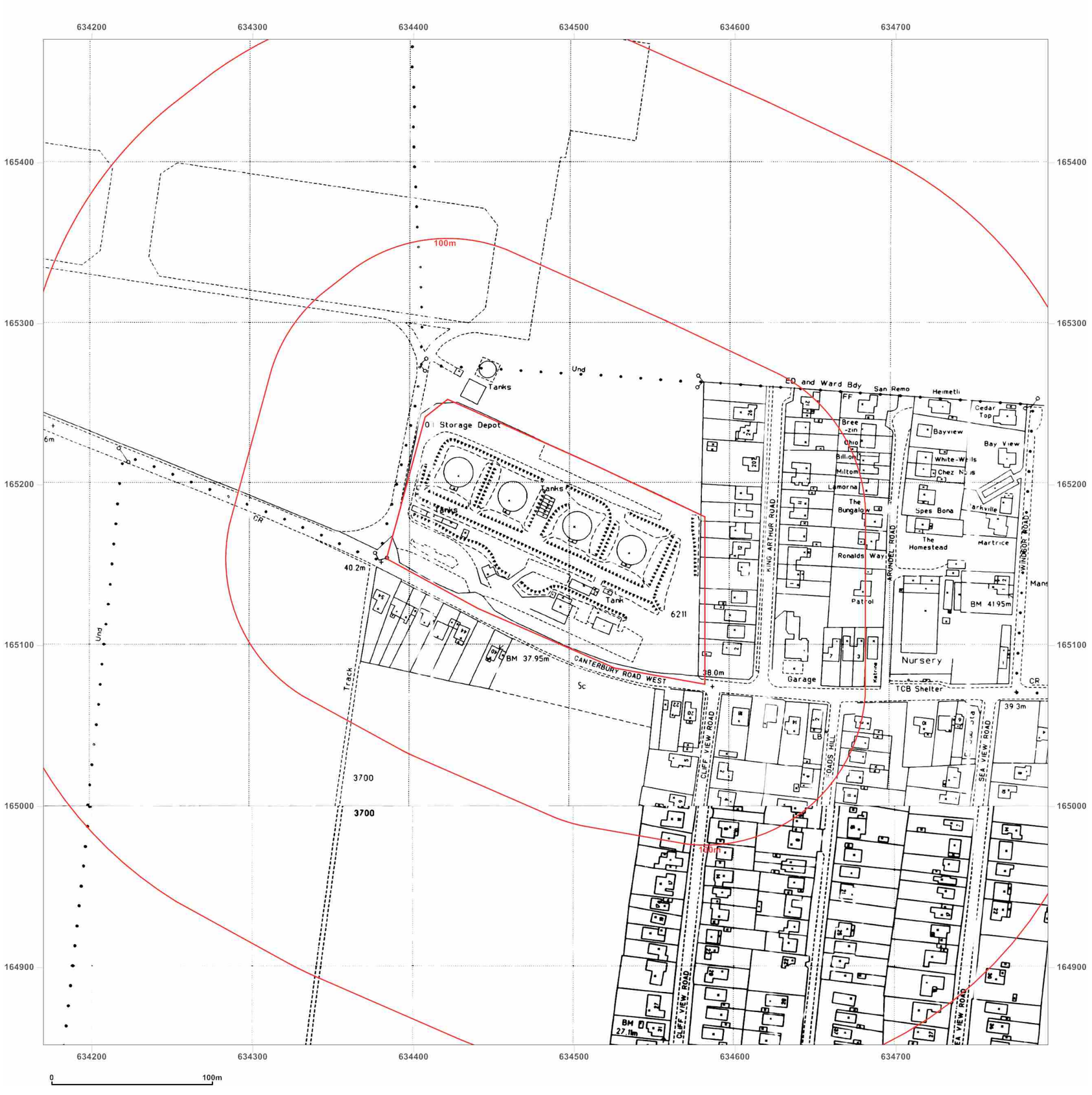


Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** National Grid

**Map date:** **1993**

**Scale:** 1:2,500

**Printed at:** 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

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Production date: 18 May 2015

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Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** County Series

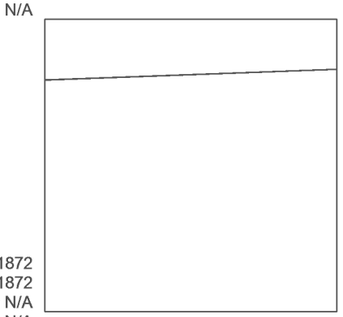
**Map date:** **1872**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
S

Surveyed 1872
Revised 1872
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1872
Revised 1872
Edition N/A
Copyright N/A
Levelled N/A

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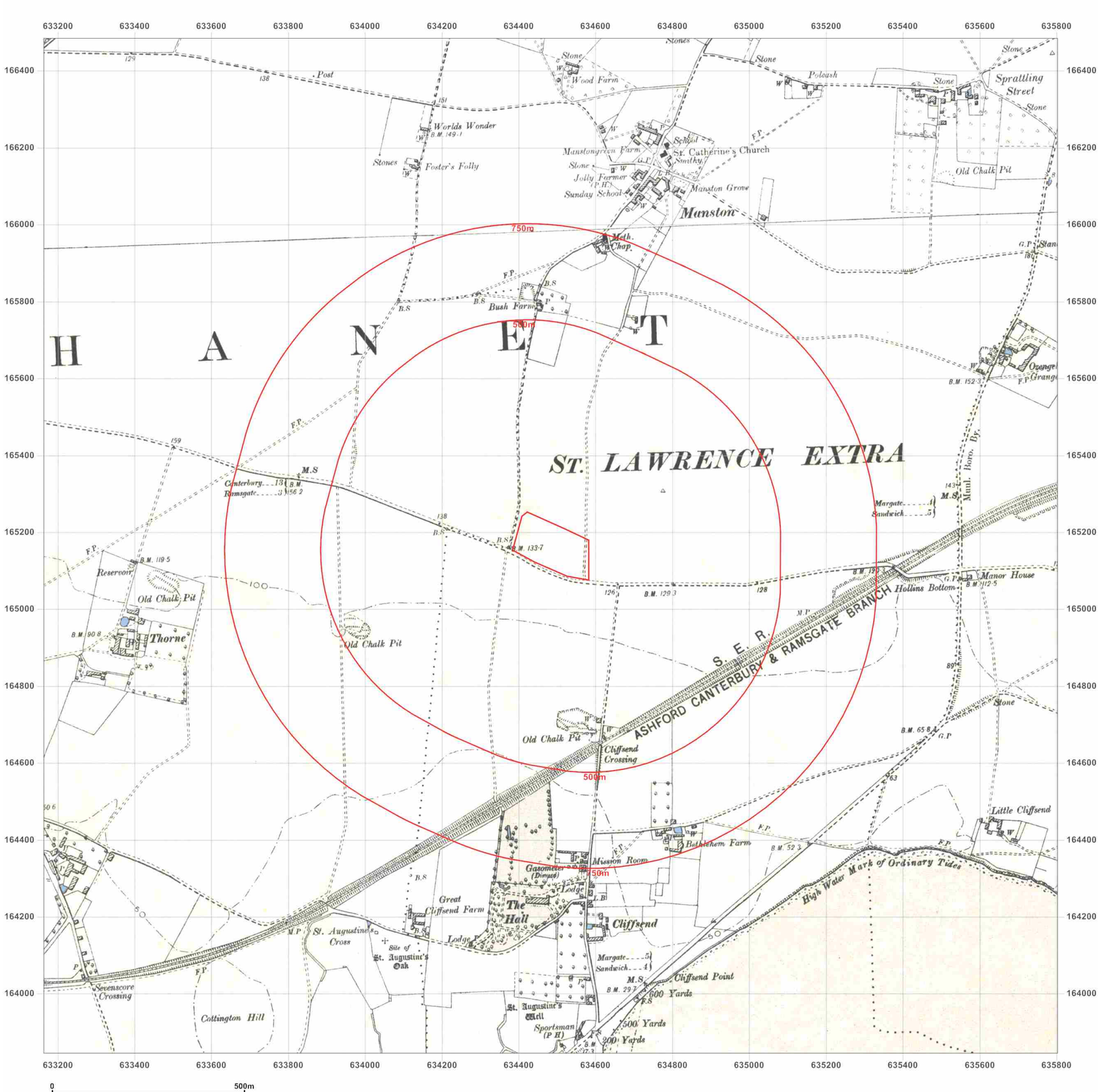
Production date: 18 May 2015

To view map legend click here *Legend*




Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** County Series

**Map date:** **1896-1897**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
S

Surveyed 1872
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1897
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 18 May 2015

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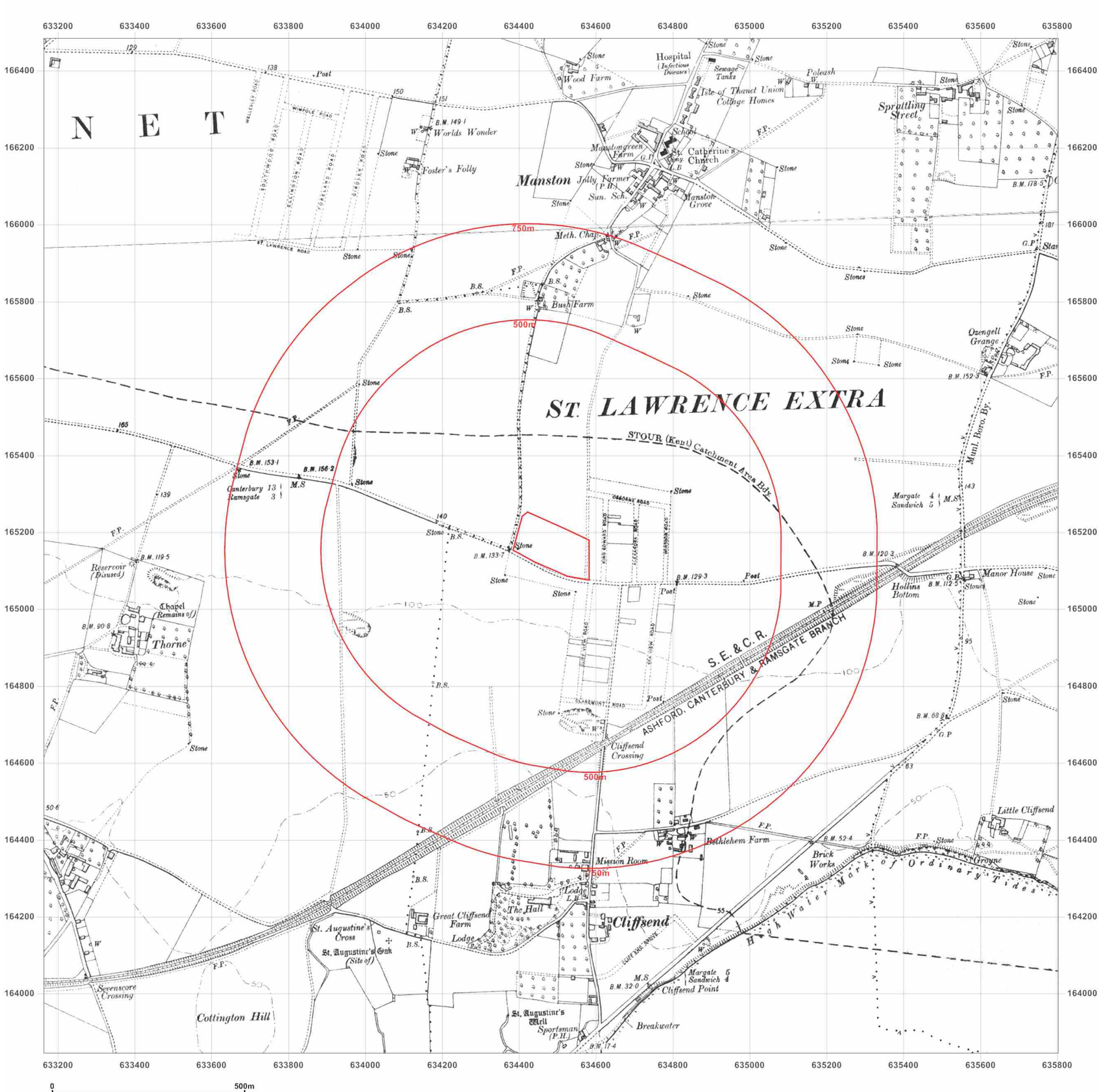


Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** County Series

**Map date:** **1905**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
S

Surveyed 1872
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 18 May 2015

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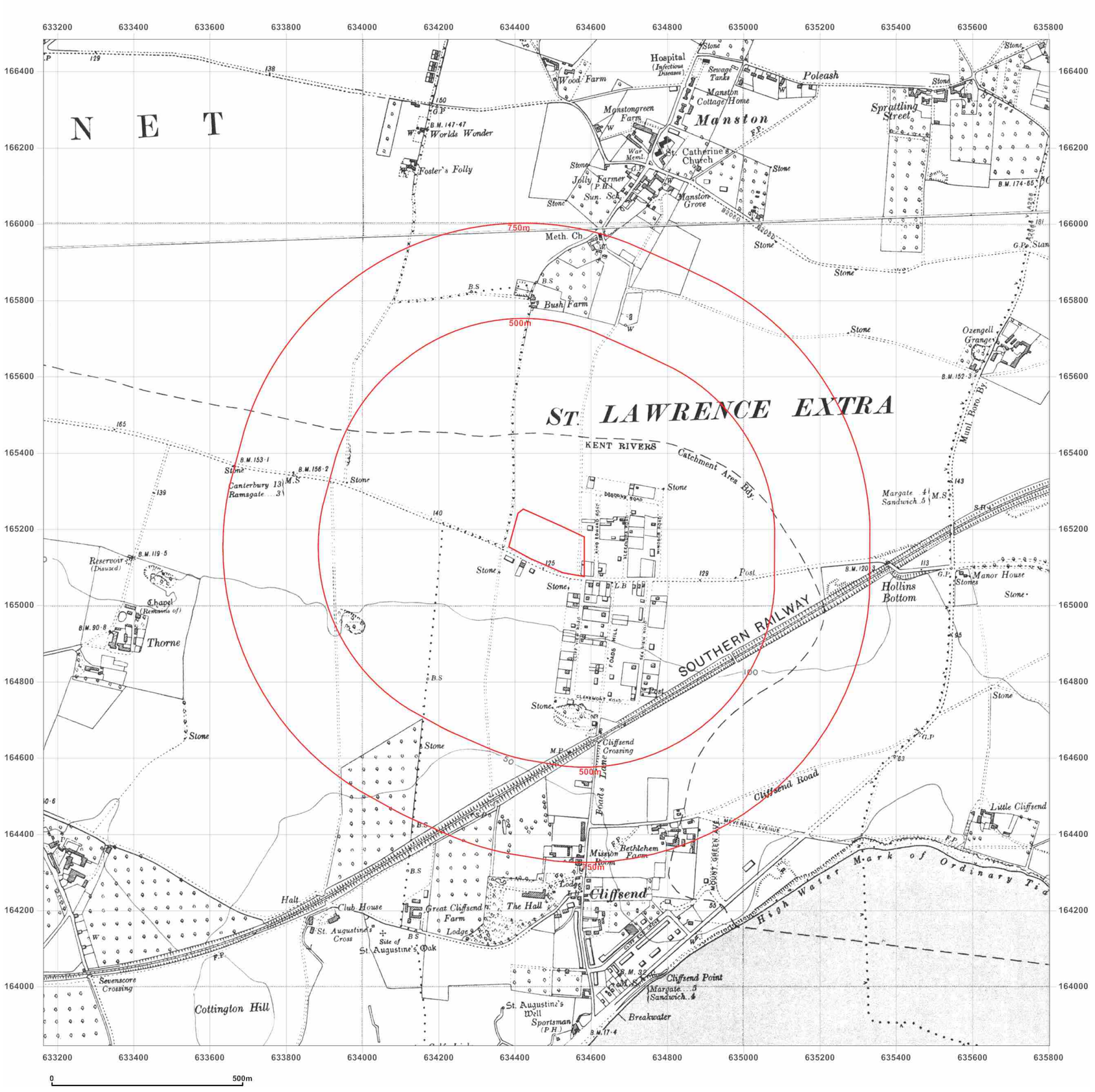



Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** County Series

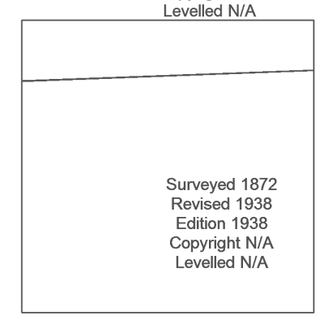
**Map date:** **1938**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
S

Surveyed 1872
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A



Surveyed 1872
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

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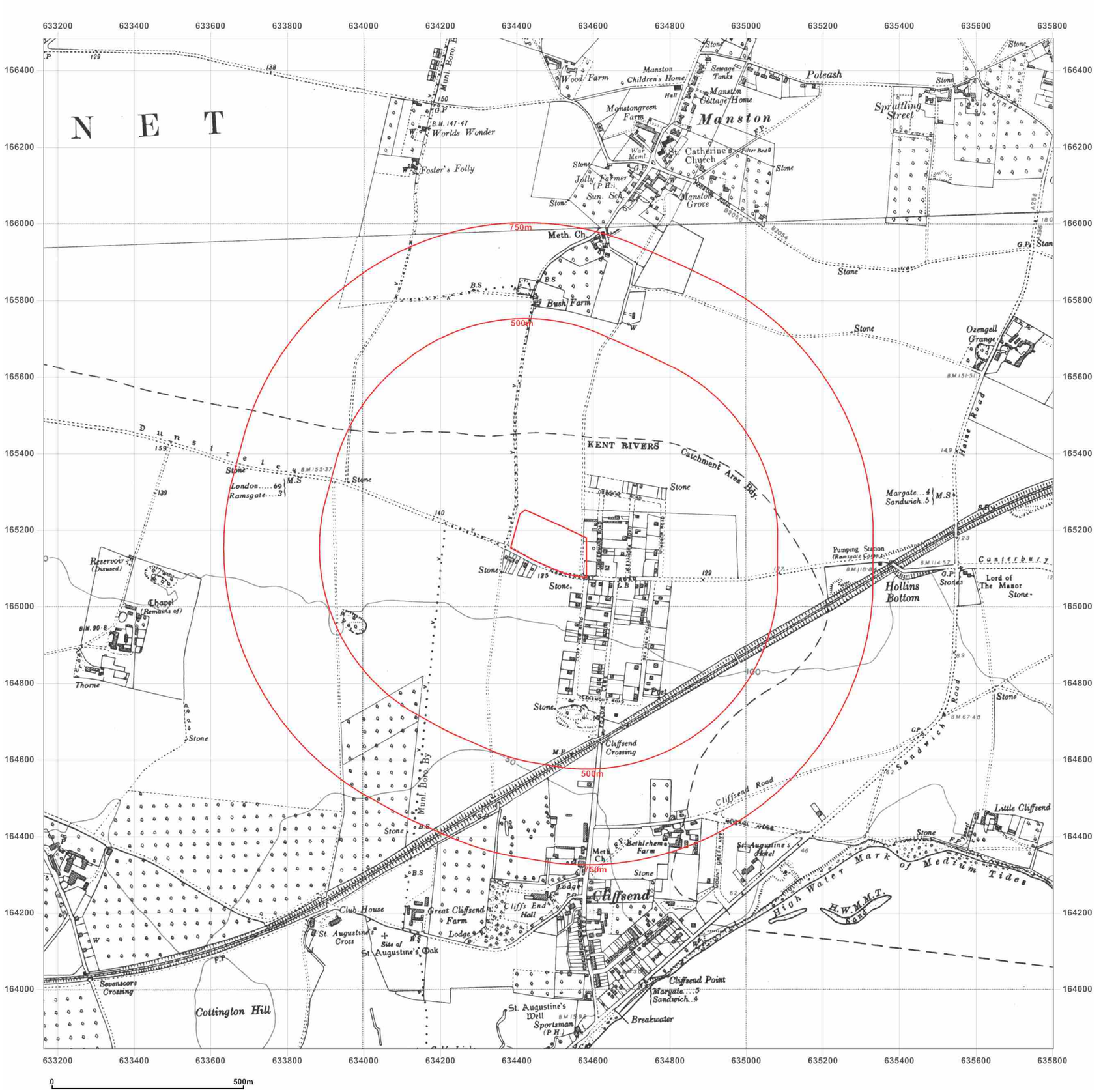
Production date: 18 May 2015

To view map legend click here *Legend*




Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** County Series

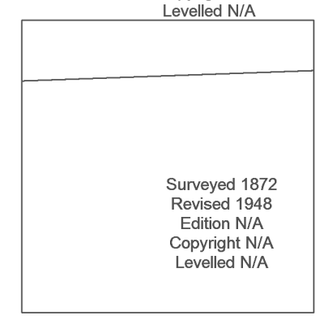
**Map date:** **1948**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
S

Surveyed 1872
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1872
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 18 May 2015

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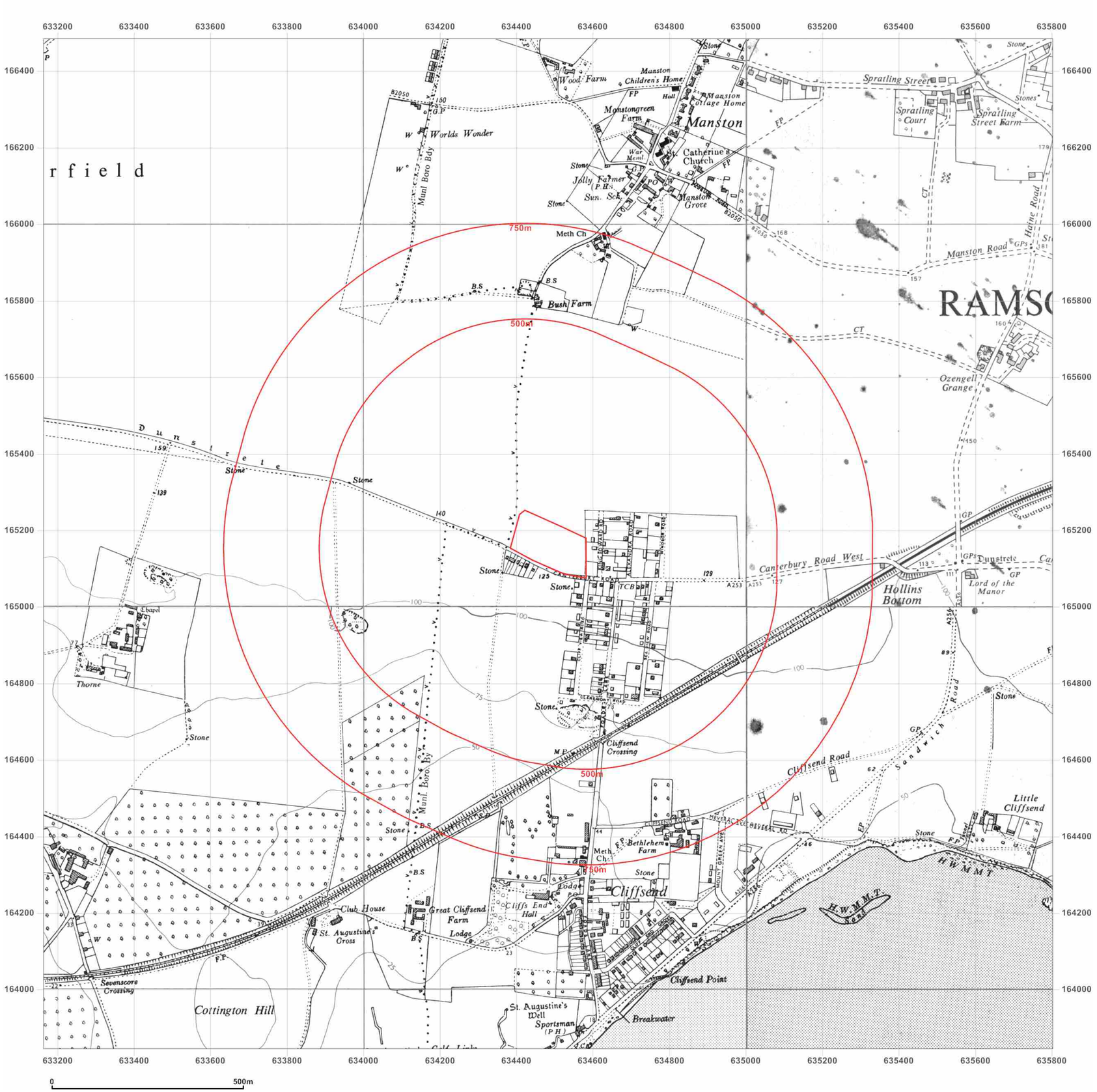


Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** Provisional
**Map date:** **1957-1962**
**Scale:** 1:10,560
**Printed at:** 1:10,560

N
W E
S

Surveyed 1961
Revised 1961
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1962
Revised 1962
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1959
Revised 1959
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 18 May 2015

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Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
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RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** Provisional
**Map date:** **1968-1969**
**Scale:** 1:10,560
**Printed at:** 1:10,560

N
W E
S

Surveyed 1968
Revised 1968
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1968
Revised 1968
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1968
Revised 1969
Edition N/A
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Levelled N/A

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Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** National Grid

**Map date:** **1971-1975**

**Scale:** 1:10,000

**Printed at:** 1:10,000

N
W E
S

Surveyed 1973
Revised 1973
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1971
Revised 1971
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1974
Revised 1975
Edition N/A
Copyright N/A
Levelled N/A

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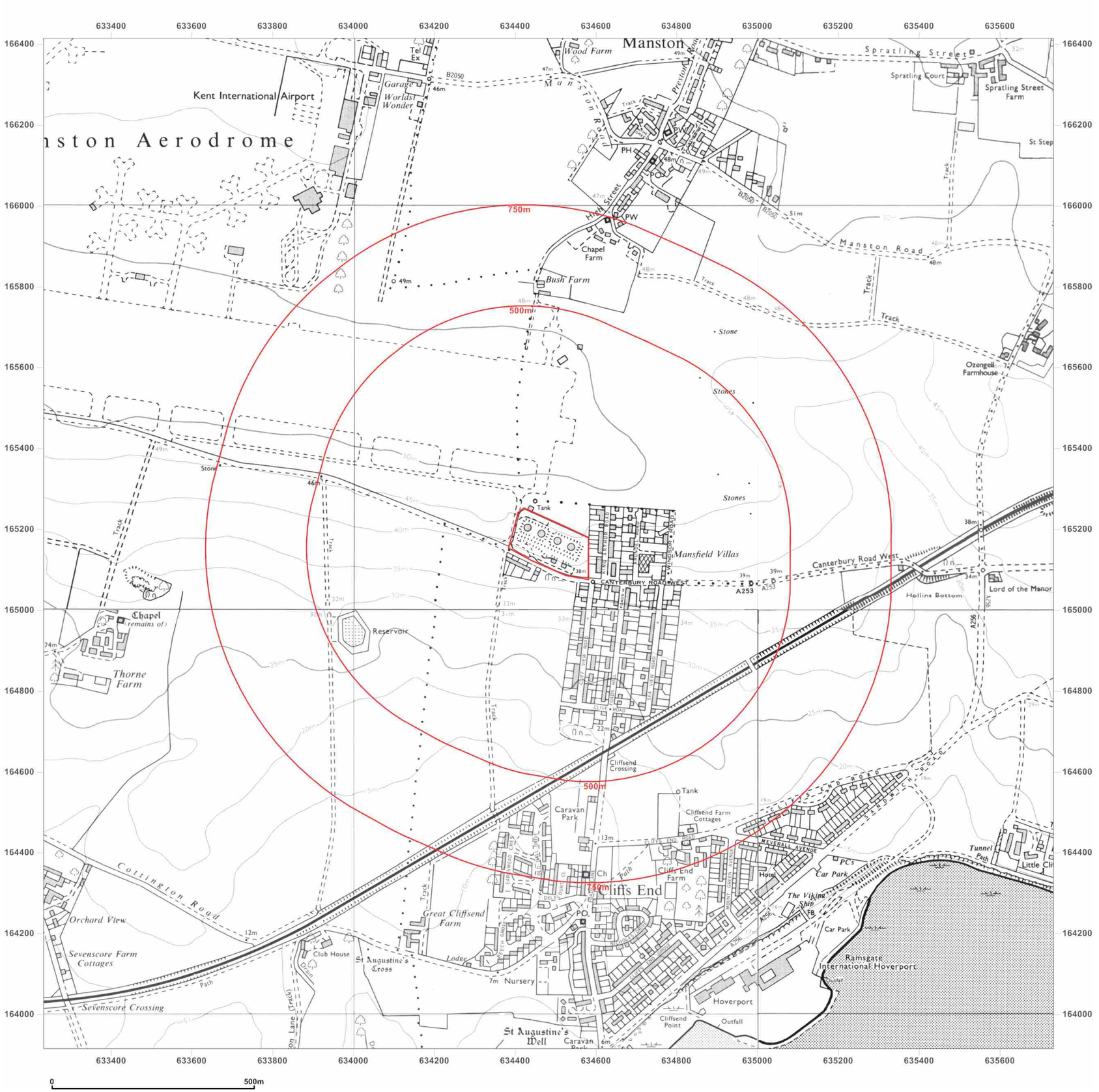


# Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** National Grid
**Map date:** **1989-1994**
**Scale:** 1:10,000
**Printed at:** 1:10,000

N
W E
S

Surveyed 1984
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1977
Revised 1994
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1975
Revised 1989
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1989
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

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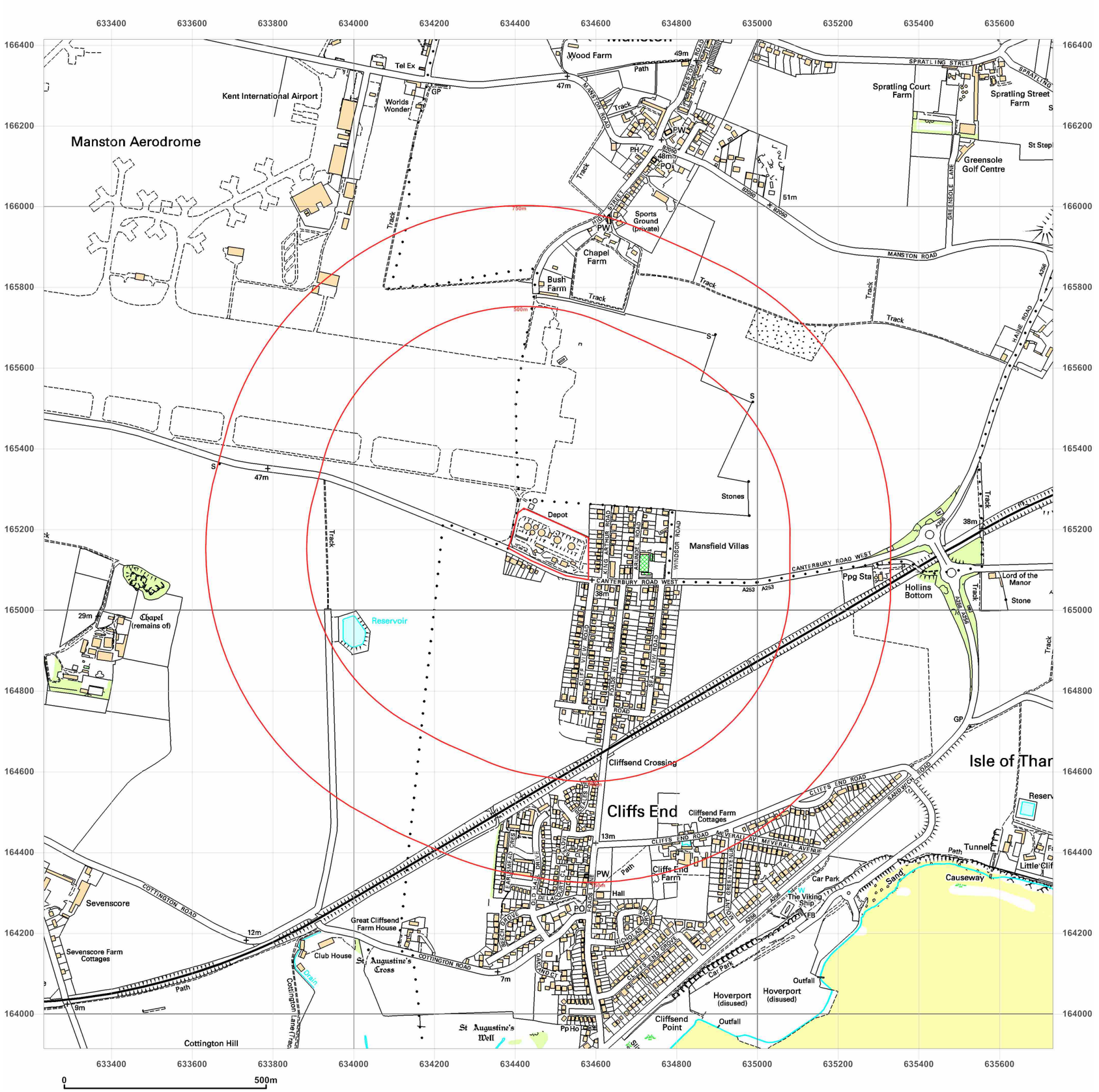
Production date: 18 May 2015

To view map legend click here *Legend*




Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** 1:10,000 Raster

**Map date:** **2002**

**Scale:** 1:10,000

**Printed at:** 1:10,000

N
W E
S

2002

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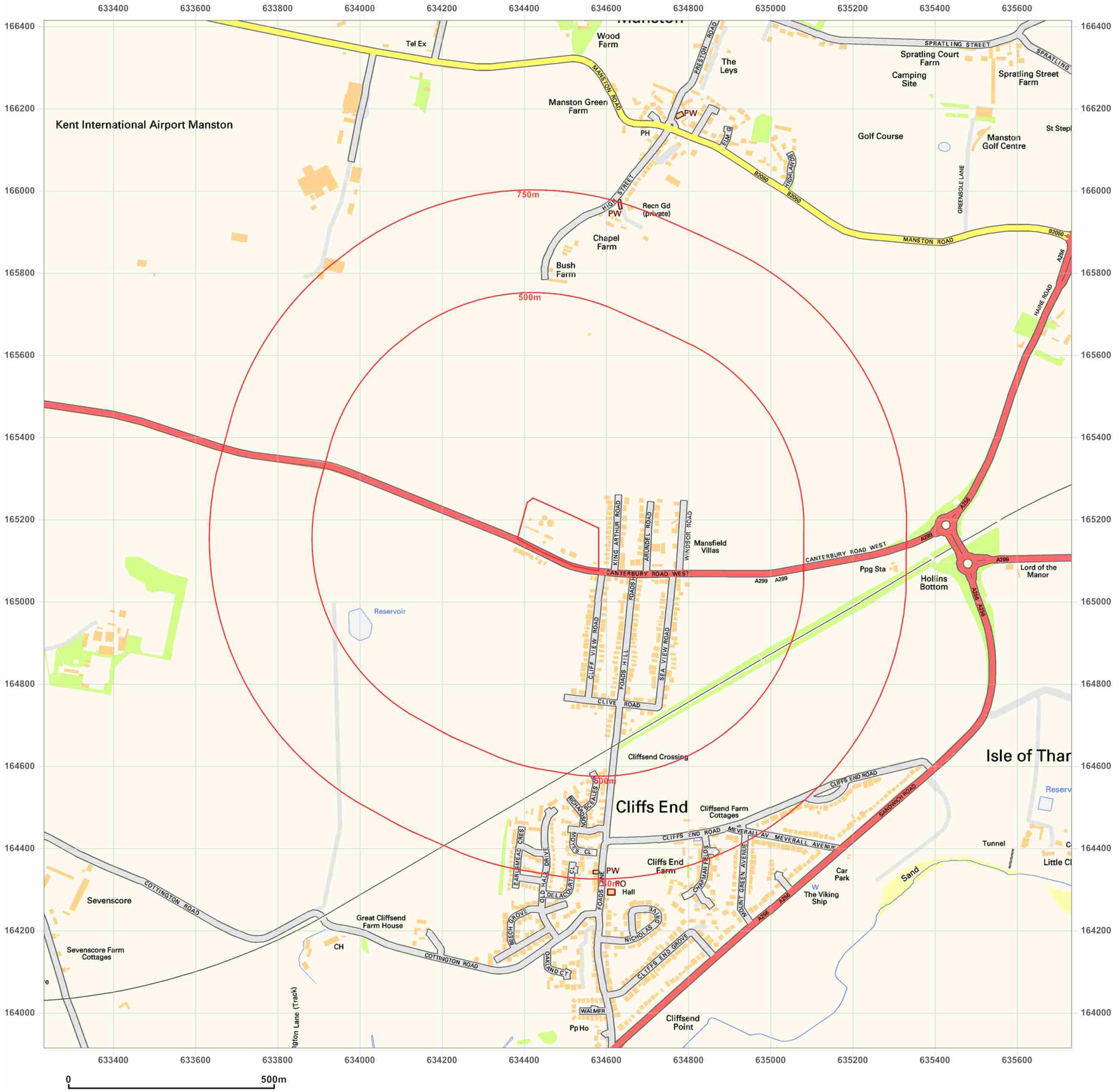


Groundsure INSIGHTS

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** National Grid
**Map date:** **2010**
**Scale:** 1:10,000
**Printed at:** 1:10,000

N
W E
S

2010

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Production date: 18 May 2015

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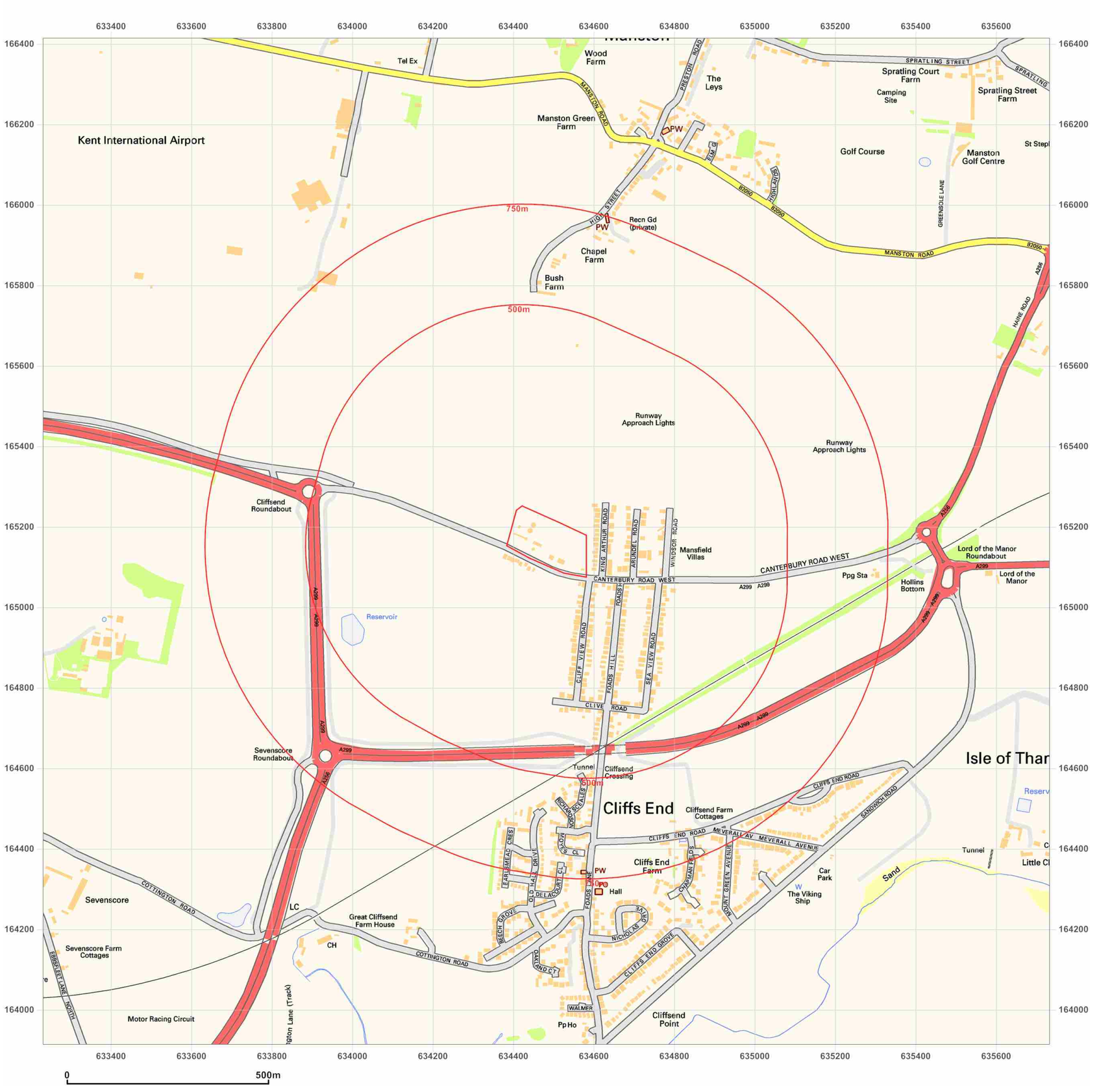


**Groundsure INSIGHTS**

**Site Details:**

JENTEX PETROLEUM,
CANTERBURY ROAD WEST,
RAMSGATE, CT12 5DU

**Client Ref:** 15-S504-CJM-18996
**Report Ref:** HMD-154-2102768
**Grid Ref:** 634482, 165164

**Map Name:** National Grid

**Map date:** **2014**

**Scale:** 1:10,000

**Printed at:** 1:10,000

N
W E
S

2014

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Production date: 18 May 2015

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**APPENDIX 3**

- Exploratory Hole Logs
- BGS Borehole Logs

idom merebrook
Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Equipment and Methods**
Cable percussion rig

Borehole No
**MBH1**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Co-ords**
-

**Hole Type**
Cable

**Location:** Cliffsend, Kent

**Level**
-

**Scale**
1:55

**Client:** Jentex

**Dates:** 21/04/2015

**Logged By**
CJM

| Well | Water Strike | Samples & In Situ Testing: Depth (m) | Type | Results | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | | 0.25 | D | | (0.80) | | Grass over brown gravelly SAND with occasional brick cobbles. Gravel is predominantly fine to coarse sub-angular to sub-rounded brick. |
| | | 0.40-0.50 | B | | | | |
| | | 0.70 | D | | | | |
| | | | | | 0.80 | | |
| | | 1.00 | CPT | N=9 | | | Brown sandy gravelly CLAY/SILT with brick and concrete cobbles encoutered at 2.6mbgl. |
| | | 1.00 | D | (1,1,2,3,2,2) | | | |
| | | 1.00-1.45 | B | | | | |
| | | 1.70 | D | | | | |
| | | 2.00 | SPT | N=28 | (2.40) | | |
| | | 2.00-2.45 | D | (5,12,13,7,4,4) | | | |
| | | 2.60 | D | | | | |
| | | 3.00 | SPT | N=35 | | | |
| | | 3.00-3.45 | D | (2,4,5,12,5,13) | | | |
| | | | | | 3.20 | | |
| | | 3.50 | D | | | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional orange staining and black specks. Occasional flint encountered throughout stratum. |
| | | 4.00 | SPT | N=52 | | | |
| | | 4.00-4.45 | D | (5,7,8,15,14,15) | | | |
| | | 4.70 | D | | | | |
| | | 5.00 | SPT | N=34 | | | |
| | | 5.00-5.45 | D | (3,5,6,8,9,11) | | | |
| | | 6.00 | D | | | | |
| | | 6.50 | SPT | N=30 | | | |
| | | 6.50 | D | (3,4,7,6,9,8) | | | |
| | | 7.00 | D | | (7.25) | | |
| | | 8.00 | SPT | N=23 | | | |
| | | 8.00 | D | (8,7,7,5,6,5) | | | |
| | | 8.00-8.45 | D | | | | |
| | | 9.00 | D | | | | |
| | | 9.50 | D | | | | |
| | | 10.00 | SPT | N=28 | | | |
| | | 10.00 | D | (3,4,5,8,7,8) | | | |
| | | 10.00-10.45 | D | | | | |
| | | | | | 10.45 | | End of Borehole at 10.45 m |
| | | | Type | Results | | | |

**Remarks:** Brick and tarmac cobbles encountered at 2.6mbgl which damaged the cylinder cutter.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
SPT - in-situ standard penetration test (spoon)
CPT - in-situ standard penetration test (cone)
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample
U - small undisturbed sample

idom merebrook
Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Equipment and Methods**
Cable percussion rig

Borehole No
**MBH2**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Co-ords**
-

**Hole Type**
Cable

**Location:** Cliffsend, Kent

**Level**
-

**Scale**
1:55

**Client:** Jentex

**Dates:** 22/04/2015

**Logged By**
CJM

| Well | Water Strike | Samples & In Situ Testing: Depth (m) | Type | Results | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | | | | | 0.15 | | Grass over brown clayey gravelly SAND. Gravel is predominantly fine to coarse sub-angular to sub-rounded flint and chalk. |
| | | 0.25 | D | | (0.75) | | Soft to firm brown sandy gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk. |
| | | 0.50 | D | | | | |
| | | 0.75 | D | | 0.90 | | Firm brown sandy gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk. |
| | | 1.00 | SPT | N=12 | (0.60) | | |
| | | 1.00 | D | (1,2,1,2,4,5) | | | |
| | | 1.00-1.45 | D | | 1.50 | | Light brown sandy gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk. (Weathered CHALK) |
| | | 1.50-1.80 | B | | (0.80) | | |
| | | 2.00 | SPT | N=21 | | | |
| | | 2.00-2.45 | D | (4,7,5,5,6,5) | 2.30 | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional orange staining and black specks. Occasional flint encountered throughout stratum. Bands of flint encountered at 5.0m and between 7.2 and 7.6mbgl. |
| | | 2.70-3.00 | B | | | | |
| | | 3.00-3.45 | U | | | | |
| | | 3.45-3.50 | D | | | | |
| | | 3.70 | D | | | | |
| | | 4.00 | SPT | N=51 | | | |
| | | 4.00-4.45 | D | (3,5,10,14,12,15) | | | |
| | | 4.60 | D | | | | |
| | | 5.00 | SPT | N=34 | | | |
| | | 5.00-5.45 | D | (3,5,8,7,9,10) | | | |
| | | 6.00 | D | | | | |
| | | 6.50 | SPT | N=36 | (8.15) | | |
| | | 6.50-6.95 | D | (4,8,6,8,10,12) | | | |
| | | 7.00 | D | | | | |
| | | 8.00 | SPT | N=23 | | | |
| | | 8.00 | D | (4,6,7,6,5,5) | | | |
| | | 8.00-8.45 | D | | | | |
| | | 9.00 | D | | | | |
| | | 10.00 | SPT | N=39 | | | |
| | | 10.00 | D | (5,6,8,10,11,10) | | | |
| | | 10.00-10.45 | D | | 10.45 | | End of Borehole at 10.45 m |
| | | | Type | Results | | | |

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
SPT - in-situ standard penetration test (spoon)
CPT - in-situ standard penetration test (cone)
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample
U - small undisturbed sample

idom merebrook
Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Equipment and Methods**
Cable percussion rig

Borehole No
**MBH3**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Co-ords**
-

**Hole Type**
Cable

**Location:** Cliffsend, Kent

**Level**
-

**Scale**
1:55

**Client:** Jentex

**Dates:** 23/04/2015

**Logged By**
CJM

| Well | Water Strike | Samples & In Situ Testing: Depth (m) | Type | Results | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | | | | | 0.25 | | CONCRETE. |
| | | 0.30 | D | | | | |
| | | 0.50 | D | | 0.45 | | Brown clayey SAND and GRAVEL. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk and flint with occasional brick. |
| | | 0.75 | D | | 0.70 | | |
| | | 1.00 | SPT | N=21 | 0.80 | | Soft brown very sandy CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk with occasional brick. |
| | | 1.00 | D | (2,3,5,5,6,5) | (0.40) | | |
| | | 1.00-1.45 | D | | 1.20 | | Soft brown sandy very gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk and flint. |
| | | 1.70 | D | | | | |
| | | 2.00 | SPT | N=21 | | | Soft brown slightly gravelly sandy CLAY/SILT. Gravel is predomiantly fine to coarse sub-angular to rounded chalk and occasional flint. |
| | | 2.00-2.45 | D | (2,3,5,4,7,5) | | | |
| | | 2.50-2.80 | B | | | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional black specks. Occasional flint encountered throughout stratum. |
| | | 3.00-3.45 | U | | | | |
| | | 3.45-3.50 | D | | | | |
| | | 3.70 | D | | | | |
| | | 4.00 | SPT | N=25 | | | |
| | | 4.00-4.45 | D | (2,3,5,6,7,7) | | | |
| | | 4.60 | D | | | | |
| | | 5.00 | SPT | N=27 | | | |
| | | 5.00-5.45 | D | (2,3,6,6,7,8) | | | |
| | | | | | (9.25) | | |
| | | 6.00 | D | | | | |
| | | 6.50 | SPT | N=40 | | | |
| | | 6.50-6.95 | D | (5,7,9,10,10,11) | | | |
| | | 7.00 | D | | | | |
| | | 8.00 | SPT | N=31 | | | |
| | | 8.00 | D | (4,5,6,8,8,9) | | | |
| | | 8.00-8.45 | D | | | | |
| | | 9.00 | D | | | | |
| | | 10.00 | SPT | N=37 | | | |
| | | 10.00 | D | (4,7,8,9,10,10) | | | |
| | | 10.00-10.45 | D | | 10.45 | | End of Borehole at 10.45 m |
| | | | Type | Results | | | |

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
SPT - in-situ standard penetration test (spoon)
CPT - in-situ standard penetration test (cone)
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample
U - small undisturbed sample

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Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP1**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):** -

**Date**
21/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
4.00

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | |
| 0.10 | D,J | | | (0.30) | | Grass over soft brown sandy gravelly CLAY. Gravel is predominantly fine to coarse brick, concrete and chalk. |
| | | | | 0.30 | | |
| 0.40 | D,J | | | (1.30) | | Brown sandy gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub rounded to rounded chalk. |
| 1.60 | D,J | | | 1.60 | | Brown sandy very gravelly CLAY/SILT with occasional chalk pockets from 2.5mbgl. Gravel is predominantly fine to coarse sub-rounded to rounded chalk. |
| 2.60 | D | | | (2.40) | | |
| 3.60 | D | | | 4.00 | | Trialpit Complete at 4.00 m |

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

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Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP2**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):**
-

**Date**
21/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
3.60

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | | |
| 0.10 | D,J | | | (0.30) | 0.30 | | Grass over soft brown sandy gravelly CLAY. Gravel is predominantly fine to coarse brick, concrete and chalk. |
| 0.50 | D,J | | | (0.60) | 0.90 | | Soft brown sandy gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk, flint and occasional brick. |
| 1.10 | D,J | | | (1.00) | 1.90 | | Soft brown sandy gravelly CLAY/SILT with occasional brick cobbles. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk, flint and occasional brick. |
| 2.20 | D,J | | | (0.60) | 2.50 | | Brown, orange-brown and light brown sandy gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-rounded to angular chalk, flint, clinker and porcelain. |
| 2.60 | D | | | (0.80) | 3.30 | | Light brown and white gravelly silty SAND/sandy SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk and occasional flint. (Weathered CHALK) |
| 3.40 | D | | | (0.30) | 3.60 | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional black specks. |
| | | | | | | | Trialpit Complete at 3.60 m |

1
2
3
4

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

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Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP3**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):** -

**Date**
21/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
2.60

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | | |
| 0.20 | D,J | | | (0.30) | 0.30 | | Grass over brown and orange-brown very gravelly SAND. Gravel is predominantly fine to coarse flint and brick. |
| 0.50 | D,J | | | (1.80) | 2.10 | | Soft to firm dark grey very sandy CLAY/SILT with occasional brick cobbles. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk, brick and occasional clinker, with inclusions of metal wire, decaying wood and fibreglass insulation. (Slight hydrocarbon odour at 1.5mbgl) |
| 1.50 | D,J | | | | | | |
| 2.20 | D,J | | | | | | |
| 2.40 | D,J | | | (0.30) | 2.30 | | Firm brown sandy gravelly CLAY. Gravel is predominantly fine to coarse flint, brick and chalk. |
| | | | | | 2.60 | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional black specks. |
| | | | | | | | Trialpit Complete at 2.60 m |

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

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Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP4**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):** -

**Date**
21/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
1.90

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | |
| 0.10 | D,J | | | (0.30) | | Grass over brown and orange-brown very gravelly SAND. Gravel is predominantly fine to coarse brick and concrete. |
| | | | | 0.30 | | |
| 0.50 | D,J | | | | | Soft dark grey sandy veru gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angualr to sub-rounded chalk with occasioanl flint and brick. (Slight hydrocarbon odour which became stronger at 1.3mbgl) |
| | | | | (1.20) | | |
| 1.30 | D,J | | | | | |
| | | | | 1.50 | | |
| 1.60 | D,J | | | (0.40) | | Brown gravelly SAND. Gravel is predominantly fine to coarse sub-angular to sub-rounded flint, brick and concrete. |
| | | | | 1.90 | | Trialpit Complete at 1.90 m |

**Remarks:** Concrete obstructions encountered at 1.6mbgl at eastern and western extents of the pit, preventing progression - possible service).

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

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Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP5**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):**
-

**Date**
21/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
2.30

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | |
| 0.10 | D,J | | | (0.30) | | Grass over brown gravelly SAND. Gravel comprised predominantly crushed brick. |
| | | | | 0.30 | | |
| 0.50 | D,J | | | (1.60) | | Soft to firm dark grey very sandy CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded flint and brick with inclusions of metal pipe and clinker. (Slight hydrocarbon odour) |
| 1.50 | D,J | | | | | |
| | | | | 1.90 | | |
| 2.00 | D,J | | | (0.40) | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional black specks. |
| | | | | 2.30 | | Trialpit Complete at 2.30 m |

1
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**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

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Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP6**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):** -

**Date**
22/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
1.90

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | |
| 0.10 | D,J | | | (0.30) | | Grass over brown clayey gravelly SAND. Gravel is predominantly fine to coarse sub-angular to sub-rounded flint and chalk. |
| | | | | 0.30 | | |
| 0.50 | D,J | | | (1.10) | | Soft to firm brown sandy gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk and occasional brick. |
| | | | | 1.40 | | |
| 1.50 | D,J | | | (0.50) | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional orange staining and black specks. |
| | | | | 1.90 | | Trialpit Complete at 1.90 m |

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP7**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):** -

**Date**
22/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
2.00

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | |
| 0.20 | D,J | | | (0.60) | | Grass over brown gravelly SAND. Gravel is predominantly fine to coarse sub-angular to sub-rounded brick and chalk. |
| | | | | 0.60 | | |
| 1.00 | D,J | | | (0.90) | | Soft brown and white sandy very gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk. |
| | | | | 1.50 | | |
| 1.60 | D,J | | | (0.50) | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional orange staining and black specks. |
| | | | | 2.00 | | Trialpit Complete at 2.00 m |

**Remarks:** Old cable encoutered at 1mbgl.

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

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Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP8**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):**
-

**Date**
22/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
1.70

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | |
| 0.30 | D,J | | | (0.90) | | Grass over brown gravelly SAND with occasional brick cobbles. Gravel is predominantly fine to coarse sub-angular to sub-rounded brick. |
| 1.00 | D,J | | | 0.90<br>(0.80) | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional orange staining and black specks. |
| | | | | 1.70 | | Trialpit Complete at 1.70 m |

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4

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

idom merebrook
Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP9**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):**
-

**Date**
22/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
2.50

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | |
| 0.50 | D,J | | | (1.90) | | Grass over brown gravelly clayey SAND with occasional brick and breeze block cobbles. Gravel is predominantly fine to coarse brick, concrete, chalk and breeze block fragments. |
| 1.50 | D,J | | | | | |
| 2.00 | D,J | | | 1.90<br>(0.60) | | Soft to firm brown sandy gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk and occasional flint. |
| | | | | 2.50 | | Trialpit Complete at 2.50 m |

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

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Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP10**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):** -

**Date**
22/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
2.00

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | | |
| 0.10 | D,J | | | (0.40) | 0.40 | | Grass over brown silty CLAY. |
| 0.60 | D,J | | | (0.50) | 0.90 | | Brown, light brown and white gravelly silty CLAY. Gravel is predominantly fine to coarse flint, brick and chalk. |
| 1.00 | D,J | | | (0.40) | 1.30 | | Soft brown slightly gravelly sandy CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk and occasional flint. |
| 1.40 | D,J | | | (0.70) | 2.00 | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional orange staining and black specks and occasional coarse flint. |
| | | | | | | | Trialpit Complete at 2.00 m |

1
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3
4

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

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Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP11**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):** -

**Date**
22/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
1.50

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | |
| 0.50 | D,J | | | (1.20) | | Grass over brown gravelly very sandy CLAY. Gravel is predominantly fine to coarse sub-angular to sub-rounded flint, chalk and brick with occasional cement sheet fragments. |
| 1.30 | D,J | | | 1.20<br>(0.30)<br>1.50 | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional orange staining and black specks and occasional coarse flint.<br>Trialpit Complete at 1.50 m |

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

idom merebrook
Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP12**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):** -

**Date**
22/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
2.30

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | | |
| 0.20 | D,J | | | (0.40) | 0.40 | | Tarmac and flint GRAVEL with occasional brick cobbles. |
| 0.60 | D,J | | | (0.70) | 1.10 | | REWORKED GROUND: Brown and white sandy very gravelly CLAY. Gravel is predominantly fine to coarse sub-rounded to angular chalk. |
| 1.20 | D,J | | | (0.70) | 1.80 | | Soft to firm brown sandy gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk. |
| 1.90 | D,J | | | (0.50) | 2.30 | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional orange staining and black specks. |
| | | | | | | | Trialpit Complete at 2.30 m |

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

idom merebrook
Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP13**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):** -

**Date**
23/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
3.50

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | |
| 0.20 | D,J | | | (0.50) | | Flint and tarmac GRAVEL over a brown SAND and GRAVEL. Gravel is predominantly fine to coarse sub-angular to sub-rounded flint, brick and tarmac. |
| | | | | 0.50 | | REWORKED GROUND: Soft to firm brown sandy gravelly CLAY. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk. |
| 0.80 | D,J | | | (0.80) | | |
| | | | | 1.30 | | |
| 1.40 | D,J | | | | | Firm brown slightly gravelly sandy CLAY/SILT. Gravel is predominantly fine to coarse sub-rounded to rounded flint. |
| | | | | 1.50 | | |
| 1.60 | D,J | | | | | Firm brown and white sandy very gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk. |
| | | | | (2.00) | | |
| 2.90 | D | | | | | |
| | | | | 3.50 | | Trialpit Complete at 3.50 m |

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**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP14**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):** -

**Date**
23/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
3.50

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | Legend | Stratum Description |
|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | |
| | | | | 0.10 | | TARMAC. |
| 0.30 | D,J | | | (0.50) | | Brown SAND and GRAVEL with occasional brick cobbles. Gravel is predominantly fine to coarse brick and tarmac with occasional ceramic and roof tile fragments. |
| 0.70 | D,J | | | 0.60 | | Soft to firm brown sandy gravelly CLAY/SILT with a concrete cobble encountered at 2.0mbgl. Gravel is predominantly fine to coarse sub-angular to sub-rounded flint. |
| 1.70 | D,J | | | (2.10) | | |
| 2.80 | D,J | | | 2.70 | | Firm brown sandy very gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk. |
| 3.20 | D,J | | | (0.40) | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional orange staining and black specks. |
| | | | | 3.10 | | |
| | | | | (0.40) | | |
| | | | | 3.50 | | Trialpit Complete at 3.50 m |

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

idom merebrook
Offices:
Belper: 01773 829988
Keston: 01689 889980
email: consulting@merebrook.co.uk

**Plant:** JCB 3CX

**Co-ords:** -

Trialpit No
**MTP15**
Sheet 1 of 1

**Project Name**
Jentex

**Project No.**
18996

**Dimensions (m):** -

**Date**
23/04/2015

**Location:** Cliffsend, Kent

**Depth (m)**
1.60

**Scale**
1:25

**Client:** Jentex

**Logged By**
CJM

| Samples & In Situ Testing | | | Water Strike | Depth in metres (thickness) | | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| Depth (m) | Type | Results | | | | | |
| 0.10 | D,J | | | (0.30) | 0.30 | | Brown and grey SAND and GRAVEL. Gravel is predominantly fine to coarse tarmac and concrete. |
| 0.50 | D,J | | | (0.50) | 0.80 | | Orange-brown sandy gravelly CLAY/SILT with occasional brick cobbles. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk. |
| 0.90 | D,J | | | (0.80) | 1.60 | | Soft to firm brown sandy gravelly CLAY/SILT. Gravel is predominantly fine to coarse sub-angular to sub-rounded chalk. |
| 1.70 | D,J | | | (0.50) | 2.10 | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL and COBBLES. Clasts are weak, white with occasional black specks. |
| | | | | | | | Trialpit Complete at 1.60 m |

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4

**Remarks:**

IVN - in-situ hand vane
IPP - in-situ pocket penetrometer
PID - in-situ photoionization detector

D - small disturbed sample (tub)
J - amber glass jar (250ml)
V - amber glass jar (60ml)
B - bulk disturbed sample

**APPENDIX 4**

- Soil Chemistry
- Summary Spreadsheet
- Laboratory Analysis Certificates

**Chris McCartney**
Merebrook
First Floor
1 Leonard Place
Westerham Road
Keston
BR2 6HQ

**t:** 01689 889980
**f:** 01689 889981
**e:** cmccartney@merebrook.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

**t:** 01923 225404
**f:** 01923 237404
**e:** reception@i2analytical.com

# Analytical Report Number : 15-70839

| | | | |
|---|---|---|---|
| **Project / Site name:** | Jentex | **Samples received on:** | 30/04/2015 |
| **Your job number:** | 18996 | **Samples instructed on:** | 30/04/2015 |
| **Your order number:** | 15-S2-FDO-LABS | **Analysis completed by:** | 07/05/2015 |
| **Report Issue Number:** | 1 | **Report issued on:** | 07/05/2015 |
| **Samples Analysed:** | 25 soil samples | | |

**Signed:** [redacted]

Dr Claire Stone
Quality Manager
**For & on behalf of i2 Analytical Ltd.**

**Signed:** [redacted]

Emma Winter
Assistant Reporting Manager
**For & on behalf of i2 Analytical Ltd.**

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

**Analytical Report Number: 15-70839**

**Project / Site name: Jentex**

**Your Order No: 15-S2-FDO-LABS**

| Lab Sample Number | | | | 439567 | 439568 | 439569 | 439570 | 439571 |
|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MTP3 | MTP3 | MTP4 | MTP5 | MTP5 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 0.50 | 2.40 | 1.30 | 0.50 | 2.00 |
| **Date Sampled** | | | | 21/04/2015 | 21/04/2015 | 21/04/2015 | 21/04/2015 | 21/04/2015 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 15 | 17 | 13 | 13 | 20 |
| Total mass of sample received | kg | 0.001 | NONE | 1.0 | 0.92 | 1.0 | 1.1 | 0.91 |
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | - | - | - | - | - |
| Asbestos in Soil | Type | N/A | ISO 17025 | - | - | - | Not-detected | - |
| **General Inorganics** | | | | | | | | |
| pH | pH Units | N/A | MCERTS | - | - | - | 8.4 | - |
| Total Cyanide | mg/kg | 1 | MCERTS | - | - | - | < 1 | - |
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | - | - | - | 0.098 | - |
| Water Soluble Sulphate as $SO_4$ (2:1) | mg/kg | 2.5 | MCERTS | - | - | - | 98 | - |
| Water Soluble SO4 (BRE SD 2:1 Leach Equivalent) | g/l | 0.00125 | MCERTS | - | - | - | 0.049 | - |
| Sulphide | mg/kg | 1 | MCERTS | - | - | - | 3.8 | - |
| Organic Matter | % | 0.1 | MCERTS | - | - | - | 1.1 | - |
| **Total Phenols** | | | | | | | | |
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | - | - | - | < 1.0 | - |
| **Speciated PAHs** | | | | | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | - | - | - | < 0.05 | - |
| Acenaphthylene | mg/kg | 0.1 | MCERTS | - | - | - | 0.27 | - |
| Acenaphthene | mg/kg | 0.1 | MCERTS | - | - | - | 0.50 | - |
| Fluorene | mg/kg | 0.1 | MCERTS | - | - | - | 0.51 | - |
| Phenanthrene | mg/kg | 0.1 | MCERTS | - | - | - | 5.0 | - |
| Anthracene | mg/kg | 0.1 | MCERTS | - | - | - | 1.6 | - |
| Fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | 11 | - |
| Pyrene | mg/kg | 0.1 | MCERTS | - | - | - | 10 | - |
| Benzo(a)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | 5.0 | - |
| Chrysene | mg/kg | 0.05 | MCERTS | - | - | - | 5.5 | - |
| Benzo(b)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | 7.0 | - |
| Benzo(k)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | 3.6 | - |
| Benzo(a)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | 6.4 | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | 3.1 | - |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | 0.61 | - |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | - | - | - | 3.6 | - |
| **Total PAH** | | | | | | | | |
| Speciated Total EPA-16 PAHs | mg/kg | 1.6 | MCERTS | - | - | - | 64.2 | - |
| **Heavy Metals / Metalloids** | | | | | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 5.2 | - |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | - | - | - | 0.3 | - |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | - | - | - | < 4.0 | - |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 18 | - |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 17 | - |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 32 | - |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | - | - | - | < 0.3 | - |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 16 | - |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | < 1.0 | - |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 53 | - |

**Analytical Report Number: 15-70839**

**Project / Site name: Jentex**

**Your Order No: 15-S2-FDO-LABS**

| Lab Sample Number | | | | 439567 | 439568 | 439569 | 439570 | 439571 |
|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MTP3 | MTP3 | MTP4 | MTP5 | MTP5 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 0.50 | 2.40 | 1.30 | 0.50 | 2.00 |
| **Date Sampled** | | | | 21/04/2015 | 21/04/2015 | 21/04/2015 | 21/04/2015 | 21/04/2015 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | |
| **Monoaromatics** | | | | | | | | |
| Benzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Ethylbenzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| p & m-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| **Petroleum Hydrocarbons** | | | | | | | | |
| TPH-CWG - Aliphatic >EC5 - EC6 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC6 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | 24 | < 2.0 | < 2.0 |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8 | MCERTS | < 8.0 | < 8.0 | 84 | < 8.0 | < 8.0 |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8 | MCERTS | < 8.0 | < 8.0 | 120 | 36 | < 8.0 |
| **TPH-CWG - Aliphatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | < 10 | < 10 | 230 | 36 | < 10 |
| TPH-CWG - Aromatic >EC5 - EC7 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC7 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | 1.1 | < 1.0 | < 1.0 |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | 25 | 9.7 | < 2.0 |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10 | MCERTS | < 10 | < 10 | 110 | 80 | < 10 |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10 | MCERTS | 13 | < 10 | 190 | 210 | < 10 |
| **TPH-CWG - Aromatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 13 | < 10 | 330 | 300 | < 10 |

**Analytical Report Number: 15-70839**

**Project / Site name: Jentex**

**Your Order No: 15-S2-FDO-LABS**

| Lab Sample Number | | | | 439572 | 439573 | 439574 | 439575 | 439576 |
|---|---|---|---|---|---|---|---|---|
| Sample Reference | | | | MTP6 | MTP8 | MTP8 | MTP10 | MTP10 |
| Sample Number | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m) | | | | 1.50 | 0.30 | 1.00 | 0.60 | 1.00 |
| Date Sampled | | | | 22/04/2015 | 22/04/2015 | 22/04/2015 | 22/04/2015 | 22/04/2015 |
| Time Taken | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 17 | 5.6 | 19 | 7.9 | 12 |
| Total mass of sample received | kg | 0.001 | NONE | 0.92 | 1.0 | 1.0 | 1.3 | 0.63 |
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | - | - | - | - | - |
| Asbestos in Soil | Type | N/A | ISO 17025 | - | - | - | - | - |
| **General Inorganics** | | | | | | | | |
| pH | pH Units | N/A | MCERTS | - | - | - | 8.4 | - |
| Total Cyanide | mg/kg | 1 | MCERTS | - | - | - | < 1 | - |
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | - | - | - | 0.023 | - |
| Water Soluble Sulphate as $SO_4$ (2:1) | mg/kg | 2.5 | MCERTS | - | - | - | 23 | - |
| Water Soluble SO4 (BRE SD 2:1 Leach Equivalent) | g/l | 0.00125 | MCERTS | - | - | - | 0.012 | - |
| Sulphide | mg/kg | 1 | MCERTS | - | - | - | < 1.0 | - |
| Organic Matter | % | 0.1 | MCERTS | - | - | - | 2.0 | - |
| **Total Phenols** | | | | | | | | |
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | - | - | - | < 1.0 | - |
| **Speciated PAHs** | | | | | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | - | - | - | < 0.05 | - |
| Acenaphthylene | mg/kg | 0.1 | MCERTS | - | - | - | 0.11 | - |
| Acenaphthene | mg/kg | 0.1 | MCERTS | - | - | - | < 0.10 | - |
| Fluorene | mg/kg | 0.1 | MCERTS | - | - | - | < 0.10 | - |
| Phenanthrene | mg/kg | 0.1 | MCERTS | - | - | - | 1.4 | - |
| Anthracene | mg/kg | 0.1 | MCERTS | - | - | - | 0.27 | - |
| Fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | 3.2 | - |
| Pyrene | mg/kg | 0.1 | MCERTS | - | - | - | 2.8 | - |
| Benzo(a)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | 1.4 | - |
| Chrysene | mg/kg | 0.05 | MCERTS | - | - | - | 1.8 | - |
| Benzo(b)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | 2.1 | - |
| Benzo(k)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | 0.76 | - |
| Benzo(a)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | 1.7 | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | 0.79 | - |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | < 0.10 | - |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | - | - | - | 0.94 | - |
| **Total PAH** | | | | | | | | |
| Speciated Total EPA-16 PAHs | mg/kg | 1.6 | MCERTS | - | - | - | 17.3 | - |
| **Heavy Metals / Metalloids** | | | | | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 2.6 | - |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | - | - | - | < 0.2 | - |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | - | - | - | < 4.0 | - |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 14 | - |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 15 | - |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 17 | - |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | - | - | - | < 0.3 | - |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 17 | - |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | < 1.0 | - |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | 31 | - |

**Analytical Report Number: 15-70839**

**Project / Site name: Jentex**
**Your Order No: 15-S2-FDO-LABS**

| Lab Sample Number | | | | 439572 | 439573 | 439574 | 439575 | 439576 |
|---|---|---|---|---|---|---|---|---|
| Sample Reference | | | | MTP6 | MTP8 | MTP8 | MTP10 | MTP10 |
| Sample Number | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m) | | | | 1.50 | 0.30 | 1.00 | 0.60 | 1.00 |
| Date Sampled | | | | 22/04/2015 | 22/04/2015 | 22/04/2015 | 22/04/2015 | 22/04/2015 |
| Time Taken | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | |
| **Monoaromatics** | | | | | | | | |
| Benzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Ethylbenzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| p & m-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| **Petroleum Hydrocarbons** | | | | | | | | |
| TPH-CWG - Aliphatic >EC5 - EC6 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC6 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2 | MCERTS | 17 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8 | MCERTS | 120 | < 8.0 | < 8.0 | < 8.0 | < 8.0 |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8 | MCERTS | 78 | 23 | < 8.0 | < 8.0 | < 8.0 |
| **TPH-CWG - Aliphatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 210 | 23 | < 10 | < 10 | < 10 |
| TPH-CWG - Aromatic >EC5 - EC7 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC7 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2 | MCERTS | 6.6 | 2.1 | < 2.0 | < 2.0 | < 2.0 |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10 | MCERTS | 140 | 28 | < 10 | 11 | < 10 |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10 | MCERTS | 210 | 150 | < 10 | 26 | < 10 |
| **TPH-CWG - Aromatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 360 | 180 | < 10 | 38 | < 10 |

**Analytical Report Number: 15-70839**

**Project / Site name: Jentex**

**Your Order No: 15-S2-FDO-LABS**

| Lab Sample Number | | | | 439577 | 439578 | 439579 | 439580 | 439581 |
|---|---|---|---|---|---|---|---|---|
| Sample Reference | | | | MTP11 | MTP11 | MTP13 | MTP13 | MTP14 |
| Sample Number | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m) | | | | 0.50 | 1.30 | 0.80 | 1.40 | 0.30 |
| Date Sampled | | | | 22/04/2015 | 22/04/2015 | 23/04/2015 | 23/04/2015 | 23/04/2015 |
| Time Taken | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | - |
| Moisture Content | % | N/A | NONE | 16 | 20 | 15 | 13 | - |
| Total mass of sample received | kg | 0.001 | NONE | 0.91 | 0.96 | 1.2 | 1.0 | - |
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | Chrysotile- Loose fibres | - | - | - | Chrysotile, Anthophyllite- Loose fibres |
| Asbestos in Soil | Type | N/A | ISO 17025 | Detected | - | - | - | Detected |
| **General Inorganics** | | | | | | | | |
| pH | pH Units | N/A | MCERTS | - | - | - | - | - |
| Total Cyanide | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | - | - | - | - | - |
| Water Soluble Sulphate as $SO_4$ (2:1) | mg/kg | 2.5 | MCERTS | - | - | - | - | - |
| Water Soluble SO4 (BRE SD 2:1 Leach Equivalent) | g/l | 0.00125 | MCERTS | - | - | - | - | - |
| Sulphide | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Organic Matter | % | 0.1 | MCERTS | - | - | - | - | - |
| **Total Phenols** | | | | | | | | |
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| **Speciated PAHs** | | | | | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | - | - | - | - | - |
| Acenaphthylene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Acenaphthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Fluorene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Phenanthrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Anthracene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Pyrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Benzo(a)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Chrysene | mg/kg | 0.05 | MCERTS | - | - | - | - | - |
| Benzo(b)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Benzo(k)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Benzo(a)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | - | - | - | - | - |
| **Total PAH** | | | | | | | | |
| Speciated Total EPA-16 PAHs | mg/kg | 1.6 | MCERTS | - | - | - | - | - |
| **Heavy Metals / Metalloids** | | | | | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | - | - | - | - | - |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | - | - | - | - | - |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | - | - | - | - | - |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |

**Analytical Report Number: 15-70839**

**Project / Site name: Jentex**
**Your Order No: 15-S2-FDO-LABS**

| Lab Sample Number | | | | 439577 | 439578 | 439579 | 439580 | 439581 |
|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MTP11 | MTP11 | MTP13 | MTP13 | MTP14 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 0.50 | 1.30 | 0.80 | 1.40 | 0.30 |
| **Date Sampled** | | | | 22/04/2015 | 22/04/2015 | 23/04/2015 | 23/04/2015 | 23/04/2015 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | |
| **Monoaromatics** | | | | | | | | |
| Benzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | - |
| Toluene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | - |
| Ethylbenzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | - |
| p & m-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | - |
| o-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | - |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | - |
| **Petroleum Hydrocarbons** | | | | | | | | |
| TPH-CWG - Aliphatic >EC5 - EC6 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | - |
| TPH-CWG - Aliphatic >EC6 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | - |
| TPH-CWG - Aliphatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | - |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | - |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | < 2.0 | < 2.0 | - |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8 | MCERTS | 9.8 | < 8.0 | < 8.0 | < 8.0 | - |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8 | MCERTS | 68 | < 8.0 | < 8.0 | < 8.0 | - |
| **TPH-CWG - Aliphatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 78 | < 10 | < 10 | < 10 | - |
| TPH-CWG - Aromatic >EC5 - EC7 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | - |
| TPH-CWG - Aromatic >EC7 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | - |
| TPH-CWG - Aromatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | - |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | - |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | < 2.0 | < 2.0 | - |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10 | MCERTS | < 10 | < 10 | < 10 | < 10 | - |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10 | MCERTS | 31 | < 10 | < 10 | < 10 | - |
| **TPH-CWG - Aromatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 31 | < 10 | < 10 | < 10 | - |

**Analytical Report Number: 15-70839**

**Project / Site name: Jentex**

**Your Order No: 15-S2-FDO-LABS**

| Lab Sample Number | | | | 439582 | 439583 | 439584 | 439585 | 439586 |
|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MTP14 | MTP14 | MBH1 | MBH1 | MBH1 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 0.70 | 2.80 | 0.40 | 3.50 | 8.00 |
| **Date Sampled** | | | | 21/04/2015 | 23/04/2015 | 23/04/2015 | 21/04/2015 | 22/04/2015 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 10 | 12 | 8.9 | 21 | 19 |
| Total mass of sample received | kg | 0.001 | NONE | 1.1 | 1.0 | 2.0 | 0.82 | 0.82 |
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | - | - | - | - | - |
| Asbestos in Soil | Type | N/A | ISO 17025 | - | - | - | - | - |
| **General Inorganics** | | | | | | | | |
| pH | pH Units | N/A | MCERTS | - | - | - | - | - |
| Total Cyanide | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | - | - | - | - | - |
| Water Soluble Sulphate as $SO_4$ (2:1) | mg/kg | 2.5 | MCERTS | - | - | - | - | - |
| Water Soluble SO4 (BRE SD 2:1 Leach Equivalent) | g/l | 0.00125 | MCERTS | - | - | - | - | - |
| Sulphide | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Organic Matter | % | 0.1 | MCERTS | - | - | - | - | - |
| **Total Phenols** | | | | | | | | |
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| **Speciated PAHs** | | | | | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | - | - | - | - | - |
| Acenaphthylene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Acenaphthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Fluorene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Phenanthrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Anthracene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Pyrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Benzo(a)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Chrysene | mg/kg | 0.05 | MCERTS | - | - | - | - | - |
| Benzo(b)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Benzo(k)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Benzo(a)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | - | - | - | - | - |
| **Total PAH** | | | | | | | | |
| Speciated Total EPA-16 PAHs | mg/kg | 1.6 | MCERTS | - | - | - | - | - |
| **Heavy Metals / Metalloids** | | | | | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | - | - | - | - | - |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | - | - | - | - | - |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | - | - | - | - | - |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - |

**Analytical Report Number: 15-70839**

**Project / Site name: Jentex**
**Your Order No: 15-S2-FDO-LABS**

| Lab Sample Number | | | | 439582 | 439583 | 439584 | 439585 | 439586 |
|---|---|---|---|---|---|---|---|---|
| Sample Reference | | | | MTP14 | MTP14 | MBH1 | MBH1 | MBH1 |
| Sample Number | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m) | | | | 0.70 | 2.80 | 0.40 | 3.50 | 8.00 |
| Date Sampled | | | | 21/04/2015 | 23/04/2015 | 23/04/2015 | 21/04/2015 | 22/04/2015 |
| Time Taken | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | |
| **Monoaromatics** | | | | | | | | |
| Benzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Ethylbenzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| p & m-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| **Petroleum Hydrocarbons** | | | | | | | | |
| TPH-CWG - Aliphatic >EC5 - EC6 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC6 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | 2.3 | < 2.0 | < 2.0 |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8 | MCERTS | < 8.0 | < 8.0 | 29 | < 8.0 | < 8.0 |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8 | MCERTS | < 8.0 | < 8.0 | 68 | < 8.0 | < 8.0 |
| **TPH-CWG - Aliphatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | < 10 | < 10 | 99 | < 10 | < 10 |
| TPH-CWG - Aromatic >EC5 - EC7 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC7 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | 2.4 | < 2.0 | < 2.0 |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10 | MCERTS | < 10 | < 10 | 28 | < 10 | < 10 |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10 | MCERTS | < 10 | < 10 | 83 | < 10 | < 10 |
| **TPH-CWG - Aromatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | < 10 | < 10 | 110 | < 10 | < 10 |

**Analytical Report Number: 15-70839**

**Project / Site name: Jentex**

**Your Order No: 15-S2-FDO-LABS**

| Lab Sample Number | | | | 439587 | 439588 | 439589 | 439590 | 439591 |
|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MBH2 | MBH2 | MBH3 | MBH3 | MBH3 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 2.00 | 8.00 | 0.30 | 0.75 | 8.00 |
| **Date Sampled** | | | | 22/04/2015 | 22/04/2015 | 23/04/2015 | 23/04/2015 | 23/04/2015 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 18 | 20 | 14 | 15 | 21 |
| Total mass of sample received | kg | 0.001 | NONE | 0.81 | 0.82 | 0.90 | 0.71 | 0.81 |
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | - | - | - | - | - |
| Asbestos in Soil | Type | N/A | ISO 17025 | - | - | - | - | - |
| **General Inorganics** | | | | | | | | |
| pH | pH Units | N/A | MCERTS | - | - | 10.0 | - | - |
| Total Cyanide | mg/kg | 1 | MCERTS | - | - | < 1 | - | - |
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | - | - | 0.39 | - | - |
| Water Soluble Sulphate as $SO_4$ (2:1) | mg/kg | 2.5 | MCERTS | - | - | 390 | - | - |
| Water Soluble SO4 (BRE SD 2:1 Leach Equivalent) | g/l | 0.00125 | MCERTS | - | - | 0.19 | - | - |
| Sulphide | mg/kg | 1 | MCERTS | - | - | < 1.0 | - | - |
| Organic Matter | % | 0.1 | MCERTS | - | - | 0.1 | - | - |
| **Total Phenols** | | | | | | | | |
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | - | - | < 1.0 | - | - |
| **Speciated PAHs** | | | | | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | - | - | < 0.05 | - | - |
| Acenaphthylene | mg/kg | 0.1 | MCERTS | - | - | < 0.10 | - | - |
| Acenaphthene | mg/kg | 0.1 | MCERTS | - | - | < 0.10 | - | - |
| Fluorene | mg/kg | 0.1 | MCERTS | - | - | < 0.10 | - | - |
| Phenanthrene | mg/kg | 0.1 | MCERTS | - | - | < 0.10 | - | - |
| Anthracene | mg/kg | 0.1 | MCERTS | - | - | < 0.10 | - | - |
| Fluoranthene | mg/kg | 0.1 | MCERTS | - | - | 0.71 | - | - |
| Pyrene | mg/kg | 0.1 | MCERTS | - | - | 0.65 | - | - |
| Benzo(a)anthracene | mg/kg | 0.1 | MCERTS | - | - | 0.36 | - | - |
| Chrysene | mg/kg | 0.05 | MCERTS | - | - | 0.47 | - | - |
| Benzo(b)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | 0.44 | - | - |
| Benzo(k)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | 0.28 | - | - |
| Benzo(a)pyrene | mg/kg | 0.1 | MCERTS | - | - | 0.41 | - | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.1 | MCERTS | - | - | 0.22 | - | - |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | MCERTS | - | - | < 0.10 | - | - |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | - | - | 0.27 | - | - |
| **Total PAH** | | | | | | | | |
| Speciated Total EPA-16 PAHs | mg/kg | 1.6 | MCERTS | - | - | 3.81 | - | - |
| **Heavy Metals / Metalloids** | | | | | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | 5.4 | - | - |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | - | - | 0.4 | - | - |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | - | - | < 4.0 | - | - |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | 16 | - | - |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | 19 | - | - |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | 39 | - | - |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | - | - | < 0.3 | - | - |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | 12 | - | - |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | < 1.0 | - | - |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | 58 | - | - |

**Analytical Report Number: 15-70839**

**Project / Site name: Jentex**

**Your Order No: 15-S2-FDO-LABS**

| Lab Sample Number | | | | 439587 | 439588 | 439589 | 439590 | 439591 |
|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MBH2 | MBH2 | MBH3 | MBH3 | MBH3 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 2.00 | 8.00 | 0.30 | 0.75 | 8.00 |
| **Date Sampled** | | | | 22/04/2015 | 22/04/2015 | 23/04/2015 | 23/04/2015 | 23/04/2015 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | |
| **Monoaromatics** | | | | | | | | |
| Benzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Ethylbenzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| p & m-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| **Petroleum Hydrocarbons** | | | | | | | | |
| TPH-CWG - Aliphatic >EC5 - EC6 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC6 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | 4.1 | < 2.0 | < 2.0 |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8 | MCERTS | < 8.0 | < 8.0 | 29 | < 8.0 | < 8.0 |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8 | MCERTS | 16 | < 8.0 | 90 | < 8.0 | < 8.0 |
| **TPH-CWG - Aliphatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 16 | < 10 | 120 | < 10 | < 10 |
| TPH-CWG - Aromatic >EC5 - EC7 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC7 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10 | MCERTS | < 10 | < 10 | < 10 | < 10 | < 10 |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10 | MCERTS | < 10 | < 10 | 11 | < 10 | < 10 |
| **TPH-CWG - Aromatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | < 10 | < 10 | 11 | < 10 | < 10 |

**Analytical Report Number : 15-70839**

**Project / Site name: Jentex**

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and topsoil/loam soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description * |
|---|---|---|---|---|
| 439567 | MTP3 | None Supplied | 0.50 | Brown topsoil and sand with gravel and chalk. |
| 439568 | MTP3 | None Supplied | 2.40 | White chalk.** |
| 439569 | MTP4 | None Supplied | 1.30 | Brown topsoil and sand with gravel and chalk. |
| 439570 | MTP5 | None Supplied | 0.50 | Brown topsoil and sand with gravel and chalk. |
| 439571 | MTP5 | None Supplied | 2.00 | White chalk.** |
| 439572 | MTP6 | None Supplied | 1.50 | Light brown chalk.** |
| 439573 | MTP8 | None Supplied | 0.30 | Brown sandy topsoil with gravel and rubble. |
| 439574 | MTP8 | None Supplied | 1.00 | White chalk.** |
| 439575 | MTP10 | None Supplied | 0.60 | Brown sandy topsoil with gravel and rubble. |
| 439576 | MTP10 | None Supplied | 1.00 | Brown topsoil and sand with gravel and vegetation. |
| 439577 | MTP11 | None Supplied | 0.50 | Brown topsoil and sand with gravel and vegetation. |
| 439578 | MTP11 | None Supplied | 1.30 | Beige chalk.** |
| 439579 | MTP13 | None Supplied | 0.80 | Brown topsoil and clay with gravel and chalk. |
| 439580 | MTP13 | None Supplied | 1.40 | Brown topsoil and clay with gravel and vegetation. |
| 439581 | MTP14 | None Supplied | 0.30 | - |
| 439582 | MTP14 | None Supplied | 0.70 | Brown topsoil and clay with gravel and chalk. |
| 439583 | MTP14 | None Supplied | 2.80 | Brown sandy topsoil with gravel and chalk. |
| 439584 | MBH1 | None Supplied | 0.40 | Brown sandy topsoil with rubble. |
| 439585 | MBH1 | None Supplied | 3.50 | White chalk.** |
| 439586 | MBH1 | None Supplied | 8.00 | White chalk.** |
| 439587 | MBH2 | None Supplied | 2.00 | White chalk.** |
| 439588 | MBH2 | None Supplied | 8.00 | White chalk.** |
| 439589 | MBH3 | None Supplied | 0.30 | Brown sandy topsoil with gravel and chalk. |
| 439590 | MBH3 | None Supplied | 0.75 | Brown clay and sand with chalk. |
| 439591 | MBH3 | None Supplied | 8.00 | White chalk.** |

**Non MCERTS matix

**Analytical Report Number : 15-70839**

**Project / Site name: Jentex**

**Water matrix abbreviations: Surface Water (SW)  Potable Water (PW)  Ground Water (GW)**

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|---|---|---|---|---|---|
| Asbestos identification in soil | Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques. | In house method based on HSG 248 | A001-PL | D | ISO 17025 |
| BTEX and MTBE in soil | Determination of BTEX in soil by headspace GC-MS. | In-house method based on USEPA8260 | L073S-PL | W | MCERTS |
| Hexavalent chromium in soil | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry. | In-house method | L080-PL | W | MCERTS |
| Metals in soil by ICP-OES | Determination of metals in soil by aqua-regia digestion followed by ICP-OES. | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil. | L038-PL | D | MCERTS |
| Moisture Content | Moisture content, determined gravimetrically. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L019-UK/PL | W | NONE |
| Monohydric phenols in soil | Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar) | L080-PL | W | MCERTS |
| Organic matter in soil | Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate. | BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L023-PL | D | MCERTS |
| pH in soil (automated) | Determination of pH in soil by addition of water followed by electrometric measurement. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L099-PL | D | MCERTS |
| Speciated EPA-16 PAHs in soil | Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. | In-house method based on USEPA 8270 | L064-PL | D | MCERTS |
| Stones content of soil | Standard preparation for all samples unless otherwise detailed. Stones not passing through a 10 mm sieve is determined gravimetrically and reported as a percentage of the dry weight. Sample results are not corrected for the stone content of the sample. | In-house method based on British Standard Methods and MCERTS requirements. | L019-UK/PL | D | NONE |
| Sulphate, water soluble, in soil | Determination of water soluble sulphate by extraction with water followed by ICP-OES. Results reported corrected for extraction ratio (soil equivalent) as g/l and mg/kg; and upon the 2:1 leachate (g/l) | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L038-PL | D | MCERTS |
| Sulphide in soil | Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode. | In-house method | L010-PL | D | MCERTS |
| Total cyanide in soil | Determination of total cyanide by distillation followed by colorimetry. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton  (Skalar) | L080-PL | W | MCERTS |
| TPHCWG (Soil) | Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. | In-house method | L076-PL | W | MCERTS |

**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**
**For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.**
**Soil analytical results are expressed on a dry weight basis.  Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**

AN idom GROUP COMPANY

**Idom Merebrook Ltd** 1 Leonard Place, Westerham Road, Keston, Kent, BR2 6HQ
**t** +44 (0)1689 889 980 **f** +44 (0)1689 889 981 **e** consulting@merebrook.co.uk **merebrook.co.uk** **idom.com**
Registered in England No. 02740216 Registered office: Belper
**offices** London Kent Derby Cardiff Manchester Moray

# GEO-ENVIRONMENTAL ASSESSMENT REPORT
# JENTEX - SUPPLEMENTARY ASSESSMENT
# CLIFFSEND, KENT
# JENTEX GROUP OF COMPANIES
# GEA-18996B-16-204
# MAY 2016

GEO-ENVIRONMENTAL ASSESSMENT REPORT
JENTEX - SUPPLEMENTARY ASSESSMENT
CLIFFSEND, KENT
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Current Document Details

**Authors**

Chris McCartney

[redacted] .....

Keith Paramor

**Issued by**

[redacted]

..... .....

Chris McCartney

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Report issued from

KENT 1 Leonard Place, Westerham Road, Keston. BR2 6HQ Tel: 01689 889 980

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## SECTION 1 INTRODUCTION

1.1 Idom Merebrook Ltd (Merebrook) was instructed by Jentex Group of Companies to undertake a supplementary geo-environmental assessment for a site at Canterbury Road West, Cliffsend, Kent which is being developed for a residential land use.

1.2 An earlier intrusive investigation for the site was undertaken by Merebrook in 2015 (ref: GEA18996-15-134). The findings of this initial investigation were accepted by the Environment Agency. However, following discussion with Merebrook, the EA agreed a scope for a further supplementary site investigation by way of an addendum to the previous report. This addendum may be used to support planning and approvals for new development. A review of test data from this phase of investigation against human health criteria appropriate to the proposed end-use has been included.

1.3 This report presents the findings of the supplementary site investigation and interpretation of the geo-environmental conditions within the supplementary investigation areas. It is not intended to duplicate information contained within the original report (GEA18996-15-134), which contains details of the site's environmental and geological setting and this, therefore, should be read in conjunction with this document.

1.4 To comply with the agreed scope of the supplementary works the investigation targeted the following:

*i.* Former tank areas – Trial pits in former tank footprints and a ten metre borehole through the base of the bunded area,

*ii.* Concrete apron – Trial pits,

*iii.* Pipeline between tank bunds and interceptor – Trial pits; and

*iv.* Interceptor – a ten metre borehole through the base of the interceptor.

1.5 This report has been prepared for Jentex Group of Companies for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult Jentex Group of Companies and Merebrook as to the extent to which the findings may be appropriate for their use.

## SECTION 2 SITE INVESTIGATION METHODS

2.1 An intrusive investigation was carried out by Merebrook during 16 to 18 March 2016 in accordance with the guidance and provision of the BS5930:2015 *Code of practice for ground investigations* and BS10175:2001 *Investigation of potentially contaminated sites – Code of practice*. It comprised the following scope of work:

*i.* Two multi-purpose drilling rig (Comacchio Rig) boreholes (MBH101 and MBH102) advanced to ten metres below ground level (m bgl); and

*ii.* Eight machine-dug trial pits (MTP101 to MTP108) to a maximum depth of 3.5 m bgl.

Table 1: Summary indicating which locations targeted which feature

| Location | Targeted feature |
|---|---|
| MBH101 | Borehole in bunded area at location of former tank to the west of the office building. |
| MBH102 | Borehole in the base of the interceptor |
| MTP101 & MTP102 | Trial pits in footprints of former tanks to the west of the office building. |
| MTP103 & MTP104 | Trial pits in front of maintenance shed. |
| MTP105 | Trial pit next to pipeline between tank bunds and interceptor. |
| MTP6, MTP7 and MTP8 | Trial pits within concrete apron. |

2.2 Exploratory hole locations are indicated on drawing 18996-304-002 in Appendix 1. Logging of exploratory holes was undertaken by a Merebrook Officer. Exploratory hole logs are contained in Appendix 2.

2.3 A Comacchio Rig is a multi-purpose hydraulic rig, capable of using rotary augers (both solid and open stem), rotary percussive drilling and window sampling. The equipment was used to advance boreholes MBH101 and MBH102. Arisings were extracted in liners (similar to that of windowless sampling equipment) to allow accurate logging of stratum changes and identify visible contamination, and to avoid cross contamination. Upon completion, the boreholes were reinstated with bentonite pellets and capped at the surface with concrete.

2.4 The holes were drilled using clean drilling methods.

2.5 Trial pits were undertaken by tracked 360 excavator. Upon completion trial pits were backfilled with arisings. If visual contamination was encountered this material was segregated and not backfilled.

2.6 Representative soil samples were taken from various depths to assess the contaminative status of the site. Samples were obtained from both made ground to assess the potential contaminative impact to shallow material; and immediately below in natural strata to assess the impact on natural ground of any potential leaching. Soil samples from this supplementary investigation were submitted to an

MCERTS/UKAS accredited laboratory for chemical analysis of a broad suite of potential contaminants. Additional samples were specifically restricted to analysis for the only metallic contaminant of concern – lead – associated with fuel storage. The results are provided in Appendix 3.

## SECTION 3 GROUND CONDITIONS

### 3.1 SURFACE GROUND CONDITIONS

3.1.1 Surfacing across the investigated locations comprised both concrete and grassed areas. In the location of the former tank areas, apart from the bunded tank, were surfaced with grass. All other investigated locations during this phase were concrete surfaced. The base of the bunded area and the interceptor were also both concrete.

### 3.2 SUB-SURFACE GROUND CONDITIONS

3.2.1 The ground conditions encountered were consistent with published geology.

3.2.2 A summary of the ground conditions encountered is presented in Table 2, whilst a more detailed assessment of the strata is contained in the following sections of the report.

Table 2: Summary of Sub-surface Ground Conditions

| STRATA | DEPTH TO TOP RANGE (m bgl) | THICKNESS RANGE (m) |
|---|---|---|
| Made Ground | 0 | 0.3 – 2.1 |
| Head deposits | 0.5 – 2.1 | 0.45 – 1.1 |
| Chalk | 0.3 – 3.0 | < 9.7 |

3.2.3 **Made Ground**

3.2.3.1 Made ground comprised varying consistencies of clay, sand and gravel.

3.2.3.2 At MBH101, a sandy flint gravel sub base was present beneath the concrete base of the bunded area. Deepest made ground was encountered in the former tank grassed areas to the west of the site office building. This comprised soft brown sandy gravelly clay with frequent concrete and slab cobbles. Gravel included chalk, brick and concrete.

3.2.3.3 Made ground (and reworked ground) was encountered at MTP103 in the form of light brown and white gravelly silt (from weathered chalk), and at MTP104 in the form of soft brown slightly gravelly sandy clay. The reworked ground at MTP103 encountered visual and olfactory evidence of contamination comprising a small section of clay pipe at 1.2 m bgl which contained oily silt. This pipe did not appear to be continuous.

3.2.3.4 No perched water was encountered.

3.2.4 **Head deposits**

3.2.4.1 Head deposits were encountered in all locations apart from MBH102, MTP103 and MTP108 where chalk was present immediately below made ground. This stratum comprised sandy gravelly clay, and silty sandy clay with the gravel component consisting of flint and chalk.

3.2.4.2 No visual or olfactory evidence of contamination was observed in this stratum.

3.2.4.3 No groundwater was encountered.

3.2.5 **Chalk**

3.2.5.1 Chalk was encountered at all locations investigated, initially as structureless chalk composed of white and off white silt matrix, inferred as chalk Grade Dm. Clasts were fine to coarse gravel sized, low density and weak with occasional black specks and orange staining. At MBH101 and MBH102 evidence of structure was found from 5.5 m bgl and 1.5 m bgl, respectively.

3.2.5.2 Visual olfactory contamination was only encountered at MBH102 beneath the interceptor. Hydrocarbon contamination appeared most concentrated in the initial 100 mm as black staining with strong hydrocarbon odour. Slight grey staining and odour was also present in the underlying 800 mm, below which depth no visual and olfactory evidence of contamination was apparent.

## SECTION 4 ENVIRONMENTAL ASSESSMENT

### 4.1 SOIL QUALITY

4.1.1 From the supplementary phase of investigation a total of 24 soil samples were submitted to the laboratory for chemical analysis, including sixteen samples from natural ground and eight samples from made ground. The laboratory chemical analysis certificates are contained in Appendix 3. The results of the analysis are summarised in Table 3.

4.1.2 The testing suite included, asbestos, phenols, cyanide and heavy metals, and speciated petroleum hydrocarbons and BTEX compounds. The results of the analysis have been assessed against *Suitable for Use Levels* (S4ULs) published in 2015 by LQM/CIEH[1]. These precautionary screening levels are designed to be representative of minimal risk to human health in a number of land use scenarios. In this report S4ULs have been selected for a residential land use where the possibility of consumption of home-grown produce exists and assuming a soil

[1] Nathanail, C. P., McCaffrey, C., Gillett, A. G., Ogden, R. C. and Nathanail, J. F. 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham. Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3100. All rights reserved.

organic matter of 1 %. For lead the DEFRA Category 4 Screening Level[2] has been used as this is based on updated toxicological data and a low risk to human health.

4.1.3 An additional set of phytotoxin screening levels have been adopted from 'The Code of Agricultural Practice for the Protection of Soil' Ministry of Agriculture, Fisheries and Food (MAFF), 1993, which are protective of healthy plant growth.

Table 3: Summary of Soils Chemical Analysis Results

| CONTAMINANT | UNITS | MAX | MEAN | No of Tests | SCREENING LEVEL (SL) | No > SL* |
|---|---|---|---|---|---|---|
| **HUMAN HEALTH RISK ASSESSMENT** | | | | | | |
| Asbestos in soil | - | - | - | 4 | Detected | 1 |
| pH | - | 10.0 | 9.03 | 11 | 5 – 9 | 0 |
| Arsenic | $mg.kg^{-1}$ | 7.7 | 4.43 | 11 | 37 | 0 |
| Cadmium | $mg.kg^{-1}$ | 0.5 | 0.29 | 11 | 11 | 0 |
| Chromium (total) | $mg.kg^{-1}$ | 24.0 | 13.25 | 11 | 910 | 0 |
| Hexavalent Chromium | $mg.kg^{-1}$ | < 4.0 | < 4.0 | 11 | 6 | 0 |
| Lead | $mg.kg^{-1}$ | 950 | 58.63 | 21 | 200 | 1 |
| Mercury | $mg.kg^{-1}$ | < 0.3 | < 0.3 | 11 | 40 | 0 |
| Nickel | $mg.kg^{-1}$ | 21.0 | 11.95 | 11 | 130 | 0 |
| Selenium | $mg.kg^{-1}$ | 3.4 | 1.4 | 11 | 250 | 0 |
| TPH Aliphatic >$EC_5$ - $EC_6$ | $mg.kg^{-1}$ | < 0.1 | < 0.1 | 24 | 42 | 0 |
| TPH Aliphatic >$EC_6$ - $EC_8$ | $mg.kg^{-1}$ | < 0.1 | < 0.1 | 24 | 100 | 0 |
| TPH Aliphatic >$EC_8$ - $EC_{10}$ | $mg.kg^{-1}$ | 3.3 | 0.23 | 24 | 27 | 0 |
| TPH Aliphatic >$EC_{10}$ - $EC_{12}$ | $mg.kg^{-1}$ | 320.0 | 29.28 | 24 | 130 | 2 |
| TPH Aliphatic >$EC_{12}$ - $EC_{16}$ | $mg.kg^{-1}$ | 8100.0 | 420.63 | 24 | 1100 | 2 |
| TPH Aliphatic >$EC_{16}$ - $EC_{21}$ | $mg.kg^{-1}$ | 18000 | 889.87 | 24 | 65000 | 0 |
| TPH Aliphatic >$EC_{21}$ - $EC_{35}$ | $mg.kg^{-1}$ | 44000 | 2012.67 | 24 | 65000 | 0 |
| TPH Aromatic >$EC_5$ - $EC_7$ | $mg.kg^{-1}$ | < 0.1 | < 0.1 | 24 | 70 | 0 |
| TPH Aromatic >$EC_7$ - $EC_8$ | $mg.kg^{-1}$ | < 0.1 | < 0.1 | 24 | 130 | 0 |
| TPH Aromatic >$EC_8$ - $EC_{10}$ | $mg.kg^{-1}$ | 6.2 | 0.35 | 24 | 34 | 0 |
| TPH Aromatic >$EC_{10}$ - $EC_{12}$ | $mg.kg^{-1}$ | 200.0 | 17.33 | 24 | 74 | 2 |
| TPH Aromatic >$EC_{12}$ - $EC_{16}$ | $mg.kg^{-1}$ | 7200.0 | 386.58 | 24 | 140 | 2 |
| TPH Aromatic >$EC_{16}$ - $EC_{21}$ | $mg.kg^{-1}$ | 15000.0 | 784.08 | 24 | 260 | 2 |
| TPH Aromatic >$EC_{21}$ - $EC_{35}$ | $mg.kg^{-1}$ | 29000.0 | 1402.75 | 24 | 1100 | 2 |
| Benzene | $mg.kg^{-1}$ | <1 | <1 | 24 | 0.087 | 0 |
| Toluene | $mg.kg^{-1}$ | <1 | <1 | 24 | 130 | 0 |
| Ethylbenzene | $mg.kg^{-1}$ | <1 | <1 | 24 | 47 | 0 |
| Xylene | $mg.kg^{-1}$ | <1 | <1 | 24 | 56 | 0 |
| Acenaphthene | $mg.kg^{-1}$ | < 0.1 | < 0.1 | 11 | 210 | 0 |
| Acenaphthylene | $mg.kg^{-1}$ | < 0.1 | < 0.1 | 11 | 170 | 0 |
| Anthracene | $mg.kg^{-1}$ | < 0.1 | < 0.1 | 11 | 2400 | 0 |

[2] SP1010 *Development of Category 4 Screening Levels Main Report* (Dec 2013) and SP1010 *Policy Companion Document* (Mar 2014).

| CONTAMINANT | UNITS | MAX | MEAN | No of Tests | SCREENING LEVEL (SL) | No > SL* |
|---|---|---|---|---|---|---|
| **HUMAN HEALTH RISK ASSESSMENT** | | | | | | |
| Benz(a)anthracene | $mg.kg^{-1}$ | 1.1 | 0.29 | 11 | 7.2 | 0 |
| Benzo(a)pyrene | $mg.kg^{-1}$ | 2.4 | 0.47 | 11 | 2.2 | 1 |
| Benzo(b)fluoranthene | $mg.kg^{-1}$ | 3.0 | 0.58 | 11 | 2.6 | 1 |
| Benzo(ghi)perylene | $mg.kg^{-1}$ | 2.3 | 0.18 | 11 | 320 | 0 |
| Benzo(k)fluoranthene | $mg.kg^{-1}$ | 1.5 | 0.31 | 11 | 77 | 0 |
| Chrysene | $mg.kg^{-1}$ | 1.2 | 0.26 | 11 | 15 | 0 |
| Dibenz(ah)anthracene | $mg.kg^{-1}$ | 0.27 | 0.12 | 11 | 0.24 | 1 |
| Fluoranthene | $mg.kg^{-1}$ | 1.3 | 0.33 | 11 | 280 | 0 |
| Fluorene | $mg.kg^{-1}$ | < 0.1 | < 0.1 | 11 | 170 | 0 |
| Indeno(123-cd)pyrene | $mg.kg^{-1}$ | 1.9 | 0.38 | 11 | 27 | 0 |
| Naphthalene | $mg.kg^{-1}$ | < 0.05 | < 0.05 | 11 | 2.3 | 0 |
| Phenanthrene | $mg.kg^{-1}$ | < 0.1 | < 0.1 | 11 | 95 | 0 |
| Pyrene | $mg.kg^{-1}$ | 1.5 | 0.37 | 11 | 620 | 0 |
| Phenol | $mg.kg^{-1}$ | | | | 120 | |
| **PHYTOTOXICITY RISK ASSESSMENT** | | | | | | |
| | **Units** | **Max** | **Mean** | **No of Test** | **Screening Level (SL)** | **No > SL** |
| Copper | $mg.kg^{-1}$ | 91.0 | 19.73 | 11 | 200 | 0 |
| Nickel | $mg.kg^{-1}$ | 21.0 | 11.95 | 11 | 110 | 0 |
| Zinc | $mg.kg^{-1}$ | 81.0 | 42.45 | 11 | 300 | 0 |

Notes: * Number of samples exceeding screening level nd = not detected

4.1.4 **Zootoxic Metals (harmful to human health)**

4.1.4.1 The small section of clay pipe at MTP103 (1.2 m bgl) containing oily silt detected an elevated level of lead at 950 mg/kg which exceeds the human health screening level. A sample collected immediately beneath at 1.3 m bgl within natural chalk recorded lead below the level of detection (< 1.0 mg/kg) indicating contamination was confined to the pipe contents.

4.1.5 **Phytotoxic Metals (harmful to plant health)**

4.1.5.1 No samples tested detected concentrations above relevant assessment criteria for phytotoxic metals.

4.1.6 **Organic Contaminants**

4.1.6.1 Significant organic contamination with reference to human health was detected at three locations: MBH102, MTP103 and MTP107.

4.1.6.2 At the base of the interceptor in MBH102, immediately below the concrete (0.35 m bgl), structureless chalk was encountered with black staining and a strong hydrocarbon odour. The sample from 0.35 m bgl recorded elevated aliphatic and aromatic TPH fractions C 10 – C 12 and C 12 – C 16, and aromatic TPH fractions C 16 – C 21 and C 21 – C 35.

4.1.6.3 The sample from MTP103 at the clay pipe (1.2 m bgl) containing oily silt also detected elevated aliphatic and aromatic TPH fractions C 10 – C 12 and C 12 – C 16, and aromatic TPH fractions C 16 – C 21 and C 21 – C 35.

4.1.6.4 At MTP107 within made ground, elevations of PAH Benzo(b)fluoranthene, Benzo(a)pyrene and Dibenz(a,h)anthracene were detected above relevant assessment criteria for human health.

4.1.7 **Inorganic Contaminants**

4.1.7.1 Asbestos as chrysotile was detected at MTP105 at 0.3 m bgl however no visual fibrous or fragmented asbestos material were observed. The sample was subject to quantification which determined the asbestos was at trace levels (0.002 % w/w).

## SECTION 5 UPDATED RISK ASSESSMENT

5.1 Two phases of investigation have been completed within the key areas of potential contamination sources as required by the Environment Agency. The 2015 investigation identified slight impacts by polyaromatic hydrocarbons and asbestos (detected sporadically). The 2016 supplementary investigation found that the former uses of the site have resulted in shallow, localised hydrocarbon contamination at MTP103, MTP107 and MBH102, an additional occurrence of asbestos at low levels and a singular occurrence of three PAH compounds marginally in excess of their human health screening levels located at the concrete apron in made ground in MTP107.

5.2 No significant contamination in either made ground or natural strata was encountered in the former tank locations (MTP101 and MTP102) to the west of the site office building. Natural strata have not been significantly impacted indicating vertical migration is not occurring at these locations.

5.3 Further west at the bunded area where a former tank was located borehole MBH101 also detected no significant evidence of contamination at depth. Samples were tested at 0.9 m bgl and 1.4 m bgl where minor TPH was detected; however a sample from 2.4 m bgl contained concentrations of TPH below the level of detection indicating any contamination has not been vertically mobile. Concentrations were all below relevant screening levels for human health at this location.

5.4 No significant evidence of contamination was detected in the vicinity of pipeline between tank bunds and the interceptor (MTP105). This demonstrates that the pipeline has remained intact as no visual evidence or significant chemical evidence of leakage was detected. Asbestos was detected in made ground at this location however this was quantified at trace levels (0.002 % w/w).

5.5 At the interceptor (MBH102) the material immediately below the concrete base was visually contaminated and chemical results support this, with concentrations of TPH above relevant assessment criteria for human health. The following material

between 0.4 m and 0.8 m indicated a slight hydrocarbon odour supported by marginal chemical impact, however below relevant assessment criteria for human health. Any impact appeared to gradually dissipate and samples from 1.6 m and 2.6 m both recorded speciated petroleum hydrocarbon fractions and BTEX compounds below the level of detection.

5.6 With regards to human health risks and future residential development, the previous risk assessment in GEA-18996-15-134 remains valid and the identified pollutant linkages are discussed below.

*i.* PAH pose a localised low risk where impacted soils are exposed in gardens via ingestion of soil, inhalation of soil-derived dust and consumption of home-grown produce. However site wide representative concentrations of PAH do not appear to be significant and the actual risk will be subject to the location of impacted soil within proposed development layouts.

*ii.* Overall heavy metals concentrations are considered to remain at non-significant levels. The one incidence of lead from the supplementary investigation was found in material contained within broken section of pipe and is not representative of made ground conditions.

*iii.* Asbestos may pose a low risk should impacted soils remain exposed within gardens or landscaped areas. However, the risk from sporadic low level asbestos contamination should be managed by simple clean cover measures to prevent tracking back of soils into houses.

*iv.* The supplementary investigations have identified localised petroleum hydrocarbon contamination in excess of human health screening criteria which were not found during the 2015 investigations. These were mainly in the low volatile heavier carbon ranges where the risks exist mainly from ingestion and inhalation of soil and soil derived dust and dermal contact. However. locally stained and malodorous soils may pose a risk from vapour ingress into dwellings.

*v.* Hydrocarbon contamination can pose a risk of permeation and degradation of plastic potable water pipes. The statutory undertaker will need to be consulted on acceptable pipe materials and trench backfill.

## SECTION 6 CONCLUSION AND RECOMMENDATIONS

6.1 The site investigations have provided good coverage of the current and historical operations at the site. Some contamination, with respect to human health, has been identified and mitigation measures are likely to be required. This will be in the form of clean cover. General comments with regard mitigation measures are presented here which should be reviewed when detailed development proposals are available.

6.2 If any further contaminated pipe sections like that encountered at MTP103 are encountered these should be locally removed and validated. Where significant contamination as staining and odours are encountered such as those in shallow soils of MBH102, this material should also be locally removed and validated.

6.3 This supplementary investigation has highlighted shallow petroleum hydrocarbons, PAH and asbestos fibres may pose a risk to human health: construction workers during development and to final end users. As the contamination is slight to moderate the risks can be addressed by ensuring impacted soils are not present within the upper soil profile of gardens and landscaped areas. However, measures to ensure asbestos fibres are controlled during the construction phase will need to be in place.

6.4 No significant soil based source of groundwater contamination has been identified. Where hydrocarbons were detected in shallow soils none were detected in the deeper natural soils in the same location. Therefore, the potential for widespread remediation to be required with this regard is considered to negligible.

6.5 It will be possible to re-use materials on site under a Materials Management Plan. Given the terracing on site, the development should be designed to ensure that the required materials are accommodated, thereby minimising waste disposal volumes. Given the soil sequence present on site it is anticipated that imported clean topsoil will be required to complete garden formation. The quality of such material should be subject to independent validation and confirmation that agreed depths of clean soil have been placed.

**APPENDIX 1** ▪ Drawings


Legend

- MBHref — Merebrook cable percussion borehole with location reference (2015)
- MTPref — Merebrook trial pit with location reference (2015)
- MBHref — Merebrook Comacchio Rig boreholes (2016)
- MTPref — Merebrook trial pit (2016)

| Based on 18996-304-001 Ordnance Survey (c) Crown Copyright 2015. All rights reserved. Licence number 100022432 | 07-04-2016 | - |
|---|---|---|
| | RH | CM | - |
| Issue Details | Dwn | Chd | App'd |

Client/Project

Jentex

Cliffsend

Dwg Title

Approximate
Site Investigation Locations
2015 & 2016

| Job No. | Dwg No. | Revision |
|---|---|---|
| 18996 | 304-002 | - |
| Scale: 1:1000 | Date: April 2016 | Frame Dimensions mm: (A3) 400 x 280 |
| Drawn: RH | Checked: CM | Approved: - |


London
Kent
Derby
Cardiff
Manchester

idom merebrook

East Mill, Bridgefoot, Belper, Derbyshire, England. DE56 2UA
tel +44(0)1773 829988 fax +44(0)1773 829393 email info@merebrook.co.uk

**APPENDIX 2** ▪ Exploratory Hole Logs

Idom Merebrook Ltd, East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA
t +44 (0) 1773 829 988 e consulting@merebrook.co.uk
merebrook.co.uk idom.com
AN idom GROUP COMPANY

**offices** London Kent Derby Cardiff Manchester Stirling

# TRIAL PIT LOG

TrialPit No
MTP101
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Jentex | Project No. 18996b | Co-ords: - / Level: | Date 16/03/2016 |
| Location: | Cliffsend, Kent | | Dimensions (m): | Scale 1:25 |
| Equipment: | | | Depth 3.50 | Logged CJM |

| Water Strike | Samples & In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | 0.10 | D,J | | | | | MADE GROUND: Grass over soft brown sandy gravelly CLAY with frequent concrete and slab cobbles. Gravel comprised predominantly fine to coarse angular to sub-rounded chalk, brick and concrete. |
| | 1.20 | D,J | | | | | |
| | | | | 2.00 | | | MADE GROUND: Crushed siltstone band. |
| | | | | 2.10 | | | Soft brown slightly gravelly very sandy CLAY. Gravel comprised predominantly fine to medium sub-rounded to rounded chalk. |
| | 2.20 | D,J | | | | | |
| | | | | 3.00 | | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL. Clasts are low density, weak and white. |
| | 3.10 | D,J | | | | | |
| | | | | 3.50 | | | End of Pit at 3.500m |

1 2 3 4 5

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)

**Stability**
Trial pit very unstable.

**Remarks**
Large concrete boulder between 0.8 and 1.3 m bgl on northern side of pit.

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Idom Merebrook Ltd, East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA
t +44 (0) 1773 829 988 e consulting@merebrook.co.uk
merebrook.co.uk idom.com
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# TRIAL PIT LOG

TrialPit No
MTP102
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Jentex | Project No. 18996b | Co-ords: - / Level: | Date 16/03/2016 |
| Location: | Cliffsend, Kent | | Dimensions (m): | Scale 1:25 |
| Equipment: | | | Depth 3.50 | Logged CJM |

| Water Strike | Samples & In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | 0.10 | D,J | | | | | MADE GROUND: Grass over soft brown sandy gravelly CLAY with frequent concrete and slab cobbles. Gravel comprised predominantly fine to coarse angular to sub-rounded chalk, brick and concrete. |
| | 1.10 | D,J | | | | | |
| | 2.00 | D,J | | 1.90 | | | Soft brown slightly gravelly very sandy CLAY. Gravel comprised predominantly fine to medium sub-rounded to rounded chalk. |
| | 3.10 | D,J | | 3.00 | | | Structureless CHALK composed of a white silt matrix, sub-angular to rounded GRAVEL. Clasts are low density, weak and white. |
| | | | | 3.50 | | | End of Pit at 3.500m |

1 2 3 4 5

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)

**Stability**
Trial pit very unstable.

**Remarks**

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Idom Merebrook Ltd, East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA
t +44 (0) 1773 829 988 e consulting@merebrook.co.uk
merebrook.co.uk idom.com
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# TRIAL PIT LOG

TrialPit No
**MTP103**
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Jentex | Project No. 18996b | Co-ords: - / Level: | Date 16/03/2016 |
| Location: | Cliffsend, Kent | | Dimensions (m): | Scale 1:25 |
| Equipment: | | | Depth 2.50 | Logged CJM |

| Water Strike | Samples & In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | | | | | | | MADE GROUND: CONCRETE. |
| | | | | 0.20 | | | |
| | 0.30 | D,J | | | | | MADE GROUND: Brown and grey clayey sandy GRAVEL. Gravel comprised predominantly fine to coarse sub-angular to sub-rounded brick, concrete and asphalt. |
| | | | | 0.40 | | | |
| | 0.50 | D,J | | | | | MADE GROUND: Light brown and white gravelly SILT. Gravel comprised predominantly fine to coarse sub-rounded to rounded chalk. Small section of clay pipe encountered at 1.2 m bgl containing oily silt. |
| | 1.20 | D,J | | | | | |
| | 1.30 | D,J | | 1.30 | | | Structureless CHALK composed of a white and off white SILT matrix. Clasts are low density, weak and white. |
| | | | | 2.50 | | | End of Pit at 2.500m |

1 2 3 4 5

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)

**Stability**

**Remarks**

idom merebrook

Idom Merebrook Ltd, East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA
t +44 (0) 1773 829 988 e consulting@merebrook.co.uk
merebrook.co.uk idom.com
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# TRIAL PIT LOG

TrialPit No
MTP104
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Jentex | Project No. 18996b | Co-ords: - Level: | Date 16/03/2016 |
| Location: | Cliffsend, Kent | | Dimensions (m): | Scale 1:25 |
| Equipment: | | | Depth 3.00 | Logged CJM |

| Water Strike | Samples & In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | | | | 0.10 | | | MADE GROUND: CONCRETE. |
| | 0.20 | D,J | | | | | MADE GROUND: Brown SAND, CLAY and GRAVEL. Gravel comprised predominantly fine to coarse sub-angular to sub-rounded flint, brick and concrete. |
| | | | | 0.40 | | | |
| | 0.50 | D,J | | | | | MADE GROUND: Soft brown slightly gravelly sandy CLAY. Gravel comprised predominantly fine to coarse sub-rounded to angular flint. |
| | | | | 1.10 | | | |
| | 1.20 | D,J | | | | | Soft to firm brown and light brown slightly gravelly sandy CLAY. |
| | | | | 1.60 | | | |
| | 1.70 | D,J | | | | | Structureless CHALK composed of a white and off white SILT matrix. Clasts are low density, weak and white. |
| | | | | 3.00 | | | End of Pit at 3.000m |

1 2 3 4 5

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)

**Stability**

**Remarks**

Idom Merebrook Ltd, East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA
t +44 (0) 1773 829 988 e consulting@merebrook.co.uk
merebrook.co.uk idom.com
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# TRIAL PIT LOG

TrialPit No
**MTP105**
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Jentex | Project No. 18996b | Co-ords: - / Level: | Date 16/03/2016 |
| Location: | Cliffsend, Kent | | Dimensions (m): | Scale 1:25 |
| Equipment: | | | Depth 2.80 | Logged CJM |

| Water Strike | Samples & In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | | | | 0.10 | | | MADE GROUND: CONCRETE. |
| | 0.30 | D,J | | | | | MADE GROUND: Soft brown and dark brown slightly gravelly CLAY. Gravel comprised predominantly fine to coarse sub-angular to sub-rounded flint and chalk. |
| | 0.60 | D,J | | 0.50 | | | Soft to firm brown slightly gravelly sandy CLAY. Gravel comprised predominantly fine to coarse sub-rounded to rounded flint. |
| | 1.20 | D,J | | 1.10 | | | Structureless CHALK composed of a white and off white SILT matrix. Clasts are low density, weak and white. |
| | 2.20 | D,J | | 2.80 | | | End of Pit at 2.800m |

1 2 3 4 5

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)

**Stability**

**Remarks**

Idom Merebrook Ltd, East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA
t +44 (0) 1773 829 988 e consulting@merebrook.co.uk
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# TRIAL PIT LOG

TrialPit No
MTP106
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Jentex | Project No. 18996b | Co-ords: - Level: | Date 16/03/2016 |
| Location: | Cliffsend, Kent | | Dimensions (m): | Scale 1:25 |
| Equipment: | | | Depth 3.00 | Logged CJM |

| Water Strike | Samples & In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | | | | | | | MADE GROUND: CONCRETE. |
| | 0.30 | D,J | | 0.20 | | | MADE GROUND: Soft to firm sandy gravelly CLAY. Gravel comprised predominantly fine to coarse sub-angular to sub-rounded chalk, brick and concrete. |
| | 0.70 | D,J | | 0.60 | | | Soft to firm brown silty sandy CLAY. |
| | 1.50 | D,J | | 1.40 | | | Structureless CHALK composed of a white and off white SILT matrix. Clasts are low density, weak and white. |
| | 2.50 | D,J | | 3.00 | | | End of Pit at 3.000m |

1
2
3
4
5

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)

**Stability**

**Remarks**

Idom Merebrook Ltd, East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA
t +44 (0) 1773 829 988 e consulting@merebrook.co.uk
merebrook.co.uk idom.com
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# TRIAL PIT LOG

TrialPit No
MTP107
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Jentex | Project No. 18996b | Co-ords: - Level: | Date 16/03/2016 |
| Location: | Cliffsend, Kent | | Dimensions (m): | Scale 1:25 |
| Equipment: | | | Depth 3.20 | Logged CJM |

| Water Strike | Samples & In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | | | | 0.20 | | | MADE GROUND: CONCRETE. |
| | 0.40 | D,J | | | | | MADE GROUND: Soft brown sandy gravelly CLAY. Gravel comprised predominantly fine to coarse sub-angular to sub-rounded chalk, brick and concrete. |
| | 0.70 | D,J | | 0.60 | | | Soft to firm brown silty sandy CLAY. |
| | 1.30 | D,J | | 1.20 | | | Structureless CHALK composed of a white and off white SILT matrix. Clasts are low density, weak and white with occasional orange staining. |
| | 2.30 | D,J | | 3.20 | | | End of Pit at 3.200m |

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)

**Stability**

**Remarks**

Idom Merebrook Ltd, East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA
t +44 (0) 1773 829 988 e consulting@merebrook.co.uk
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# TRIAL PIT LOG

TrialPit No
MTP108
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Jentex | Project No. 18996b | Co-ords: - / Level: | Date 16/03/2016 |
| Location: | Cliffsend, Kent | | Dimensions (m): | Scale 1:25 |
| Equipment: | | | Depth 2.80 | Logged CJM |

| Water Strike | Samples & In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | | | | 0.20 | | | MADE GROUND: REINFORCED CONCRETE. |
| | 0.40 | D,J | | | | | MADE GROUND: Light brown and white silty GRAVEL. Gravel comprised predominantly fine to coarse sub-rounded to angular chalk. |
| | | | | 1.30 | | | |
| | 1.50 | D,J | | | | | Structureless CHALK composed of a white and off white sandy SILT matrix. Clasts are low density, weak and white with occasional black specks. |
| | 2.50 | D,J | | | | | |
| | | | | 2.80 | | | End of Pit at 2.800m |

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)

**Stability**

**Remarks**

idom merebrook
Idom Merebrook Ltd, East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA
t +44 (0) 1773 829 988 e consulting@merebrook.co.uk
merebrook.co.uk idom.com
AN idom GROUP COMPANY
**offices** London Kent Derby Cardiff Manchester Moray

# Borehole Log

Borehole No.
**MBH101**
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: Jentex | Project No. 18996b | Co-ords: | Hole Type CP |
| Location: Cliffsend, Kent | | Level: | Scale 1:50 |
| Equipment: | | Dates: 16/03/2016 | Logged By |

| Well | Wtr Strk | Sample and In Situ Testing: Depth (m) | Type | Results | Coring: FI | TCR | SCR | RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.50 | D,J | | | | | | 0.40 | | | MADE GROUND: CONCRETE. |
| | | 0.90 | D,J | | | | | | 0.90 | | | MADE GROUND: Brown gravelly SAND (SUB BASE). Gravel comprised predominantly fine to coarse sub-rounded to angular flint. |
| | | 1.40 | D,J | | | | | | 1.35 | | | Soft to firm brown slightly gravelly sandy CLAY. Gravel comprised predominantly fine to coarse sub-rounded to angular flint. |
| | | 2.40 | D,J | | | | | | | | | Stuctureless CHALK composed of a white SILT matrix. Clasts are fine to coarse low density, weak and white with occasional flint cobbles. |
| | | 3.40 | D,J | | | | | | | | | |
| | | 4.40 | D,J | | | | | | | | | |
| | | 5.60 | D,J | | | | | | 5.50 | | | White CHALK with occasional orange staining and flint cobbles. |
| | | 6.60 | D,J | | | | | | | | | |
| | | 7.60 | D,J | | | | | | | | | |
| | | 8.60 | D,J | | | | | | | | | |
| | | 9.60 | D,J | | | | | | | | | |
| | | | | | | | | | 10.00 | | | |

1 2 3 4 5 6 7 8 9 10

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
SPT(C) = Standard Penetration Test (Cone)
SPT(S) = Standard Penetration Test (Split Spoon)

HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)
FI = fracture index
TCR = total core recovery
SCR = solid core recovery
RQD = rock quality designation

**Remarks**

idom merebrook

Idom Merebrook Ltd, East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA
t +44 (0) 1773 829 988 e consulting@merebrook.co.uk
merebrook.co.uk idom.com
AN idom GROUP COMPANY

**offices** London Kent Derby Cardiff Manchester Moray

# Borehole Log

Borehole No.
**MBH102**
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: Jentex | Project No. 18996b | Co-ords: | Hole Type CP |
| Location: Cliffsend, Kent | | Level: | Scale 1:50 |
| Equipment: | | Dates: 17/03/2016 | Logged By |

| Well | Wtr Strk | Sample and In Situ Testing | | | Coring | | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | FI | TCR | SCR | RQD | | | | |
| | | 0.35 | D,J | | | | | | 0.30 | | | MADE GROUND: CONCRETE. |
| | | 0.50 | D,J | | | | | | 0.40 | | | Structureless CHALK composed of a white and black stained SILT matrix. Clasts are low density, weak, white with occasional grey staining. (Strong hydrocarbon odour) |
| | | 0.90 | D,J | | | | | | 0.80 | | | Structureless CHALK composed of a white and grey SILT matrix. Clasts are low density, weak white with occasional black specks. (Slight hydrocarbon odour) |
| | | 1.40 | D,J | | | | | | | | | Structureless CHALK composed of white slightly sandy SILT matrix. Clasts are medium density, weak and white. |
| | | 1.60 | D,J | | | | | | 1.50 | | | White CHALK with occasional orange staining and black specks; and with frequent flint cobbles. |
| | | 2.60 | D,J | | | | | | | | | |
| | | 3.60 | D,J | | | | | | | | | |
| | | 4.60 | D,J | | | | | | | | | |
| | | 5.60 | D,J | | | | | | | | | |
| | | 6.60 | D,J | | | | | | | | | |
| | | 7.60 | D,J | | | | | | | | | |
| | | 8.60 | D,J | | | | | | | | | |
| | | 9.60 | D,J | | | | | | | | | |
| | | | | | | | | | 10.00 | | | |

1 2 3 4 5 6 7 8 9 10

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
SPT(C) = Standard Penetration Test (Cone)
SPT(S) = Standard Penetration Test (Split Spoon)

HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)
FI = fracture index
TCR = total core recovery
SCR = solid core recovery
RQD = rock quality designation

**Remarks**

**APPENDIX 3**

- Soil Chemistry
- Laboratory Analysis Certificates

**Chris McCartney**
Merebrook
First Floor
1 Leonard Place
Westerham Road
Keston
BR2 6HQ

**t:** 01689 889980
**f:** 01689 889981
**e:** cmccartney@merebrook.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

**t:** 01923 225404
**f:** 01923 237404
**e:** reception@i2analytical.com

# Analytical Report Number : 16-13799

| | | | |
|---|---|---|---|
| **Project / Site name:** | Jentex | **Samples received on:** | 21/03/2016 |
| **Your job number:** | 18996 | **Samples instructed on:** | 21/03/2016 |
| **Your order number:** | 16-S2-FDO-LABS | **Analysis completed by:** | 30/03/2016 |
| **Report Issue Number:** | 1 | **Report issued on:** | 30/03/2016 |
| **Samples Analysed:** | 21 soil samples | | |

**Signed:** [redacted]

Dr Irma Doyle
Senior Account Manager
**For & on behalf of i2 Analytical Ltd.**

**Signed:** [redacted]

Rexona Rahman
Reporting Manager
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

| | |
|---|---|
| soils | - 4 weeks from reporting |
| leachates | - 2 weeks from reporting |
| waters | - 2 weeks from reporting |
| asbestos | - 6 months from reporting |

Excel copies of reports are only valid when accompanied by this PDF certificate.

**Analytical Report Number: 16-13799**

**Project / Site name: Jentex**

**Your Order No: 16-S2-FDO-LABS**

| Lab Sample Number | | | | 552216 | 552217 | 552218 | 552219 | 552220 | 552221 |
|---|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MTP101 | MTP101 | MTP102 | MTP102 | MTP103 | MTP103 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 1.20 | 2.20 | 0.10 | 2.00 | 1.20 | 1.30 |
| **Date Sampled** | | | | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 16 | 14 | 14 | 15 | 25 | 19 |
| Total mass of sample received | kg | 0.001 | NONE | 1.2 | 1.0 | 1.3 | 1.2 | 1.0 | 1.1 |
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | - | - | - | - | - | - |
| Asbestos in Soil | Type | N/A | ISO 17025 | Not-detected | - | - | - | - | - |
| Asbestos Quantification (Stage 2) | % | 0.001 | ISO 17025 | - | - | - | - | - | - |
| Asbestos Quantification | % | 0.001 | ISO 17025 | - | - | - | - | - | - |
| **General Inorganics** | | | | | | | | | |
| pH | pH Units | N/A | MCERTS | - | - | - | - | - | 9.3 |
| Total Cyanide | mg/kg | 1 | MCERTS | - | - | - | - | - | < 1 |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | - | - | - | - | - | 0.025 |
| Sulphide | mg/kg | 1 | MCERTS | - | - | - | - | - | < 1.0 |
| Organic Matter | % | 0.1 | MCERTS | - | - | - | - | - | 0.1 |
| **Total Phenols** | | | | | | | | | |
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | - | - | - | - | - | < 1.0 |
| **Speciated PAHs** | | | | | | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | - | - | - | - | - | < 0.05 |
| Acenaphthylene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Acenaphthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Fluorene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Phenanthrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Anthracene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Pyrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Benzo(a)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Chrysene | mg/kg | 0.05 | MCERTS | - | - | - | - | - | < 0.05 |
| Benzo(b)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Benzo(k)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Benzo(a)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | - | - | < 0.10 |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | - | - | - | - | - | < 0.05 |
| **Total PAH** | | | | | | | | | |
| Speciated Total EPA-16 PAHs | mg/kg | 1.6 | MCERTS | - | - | - | - | - | < 1.60 |
| **Heavy Metals / Metalloids** | | | | | | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - | < 1.0 |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | - | - | - | - | - | 0.2 |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | - | - | - | - | - | < 4.0 |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - | < 1.0 |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - | 5.8 |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | 19 | 32 | 17 | 19 | 950 | < 1.0 |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | - | - | - | - | - | < 0.3 |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - | 2.5 |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - | < 1.0 |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | - | - | 12 |

**Analytical Report Number: 16-13799**

**Project / Site name: Jentex**

**Your Order No: 16-S2-FDO-LABS**

| Lab Sample Number | | | | 552216 | 552217 | 552218 | 552219 | 552220 | 552221 |
|---|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MTP101 | MTP101 | MTP102 | MTP102 | MTP103 | MTP103 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 1.20 | 2.20 | 0.10 | 2.00 | 1.20 | 1.30 |
| **Date Sampled** | | | | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | | |
| **Monoaromatics** | | | | | | | | | |
| Benzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 110 | < 1.0 |
| Ethylbenzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 93 | < 1.0 |
| p & m-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 320 | < 1.0 |
| o-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 460 | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |

**Petroleum Hydrocarbons**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TPH-CWG - Aliphatic >EC5 - EC6 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC6 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | 3.3 | < 0.1 |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 250 | < 1.0 |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | 17 | < 2.0 | 8100 | < 2.0 |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8 | MCERTS | < 8.0 | 20 | 58 | < 8.0 | 18000 | < 8.0 |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8 | MCERTS | < 8.0 | < 8.0 | 110 | < 8.0 | 44000 | < 8.0 |
| **TPH-CWG - Aliphatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | < 10 | 22 | 180 | < 10 | 71000 | < 10 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TPH-CWG - Aromatic >EC5 - EC7 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC7 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | 6.2 | < 0.1 |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 200 | < 1.0 |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | 3.2 | < 2.0 | 7200 | < 2.0 |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10 | MCERTS | < 10 | < 10 | 50 | < 10 | 15000 | < 10 |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10 | MCERTS | < 10 | 18 | 140 | 10 | 29000 | < 10 |
| **TPH-CWG - Aromatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | < 10 | 24 | 190 | 13 | 51000 | < 10 |

**Analytical Report Number: 16-13799**

**Project / Site name: Jentex**

**Your Order No: 16-S2-FDO-LABS**

| Lab Sample Number | | | | 552222 | 552223 | 552224 | 552225 | 552226 | 552227 |
|---|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MTP104 | MTP104 | MTP105 | MTP105 | MTP106 | MTP106 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 0.20 | 1.20 | 0.30 | 1.20 | 0.30 | 0.70 |
| **Date Sampled** | | | | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 8.7 | 13 | 10 | 14 | 10 | 11 |
| Total mass of sample received | kg | 0.001 | NONE | 1.1 | 1.1 | 1.0 | 1.1 | 0.51 | 1.0 |
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | - | - | Chrysotile | - | - | - |
| Asbestos in Soil | Type | N/A | ISO 17025 | Not-detected | - | Detected | - | Not-detected | - |
| Asbestos Quantification (Stage 2) | % | 0.001 | ISO 17025 | - | - | 0.002 | - | - | - |
| Asbestos Quantification | % | 0.001 | ISO 17025 | - | - | 0.002 | - | - | - |
| **General Inorganics** | | | | | | | | | |
| pH | pH Units | N/A | MCERTS | 10.0 | 8.8 | 8.9 | 8.6 | 8.9 | 8.9 |
| Total Cyanide | mg/kg | 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | 0.39 | 0.014 | 0.024 | 0.016 | 0.045 | 0.0094 |
| Sulphide | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Organic Matter | % | 0.1 | MCERTS | 0.7 | 1.1 | 1.7 | < 0.1 | 0.7 | 0.8 |
| **Total Phenols** | | | | | | | | | |
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| **Speciated PAHs** | | | | | | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthylene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Acenaphthene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Fluorene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Phenanthrene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Anthracene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Fluoranthene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | 0.99 | < 0.10 | 0.22 | < 0.10 |
| Pyrene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | 1.5 | < 0.10 | 0.22 | < 0.10 |
| Benzo(a)anthracene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | 0.99 | < 0.10 | 0.15 | < 0.10 |
| Chrysene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | 0.89 | < 0.05 | 0.18 | < 0.05 |
| Benzo(b)fluoranthene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | 2.1 | < 0.10 | 0.21 | < 0.10 |
| Benzo(k)fluoranthene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | 0.74 | < 0.10 | 0.23 | < 0.10 |
| Benzo(a)pyrene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | 1.5 | < 0.10 | 0.25 | < 0.10 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | 1.2 | < 0.10 | < 0.10 | < 0.10 |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | 1.3 | < 0.05 | < 0.05 | < 0.05 |
| **Total PAH** | | | | | | | | | |
| Speciated Total EPA-16 PAHs | mg/kg | 1.6 | MCERTS | < 1.60 | < 1.60 | 11.1 | < 1.60 | < 1.60 | < 1.60 |
| **Heavy Metals / Metalloids** | | | | | | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | 6.6 | 4.6 | 7.6 | < 1.0 | 6.9 | 5.1 |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | < 0.2 | 0.3 | 0.3 | 0.2 | 0.4 | 0.3 |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | 20 | 21 | 24 | < 1.0 | 20 | 18 |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | 18 | 14 | 91 | 7.5 | 20 | 13 |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | 23 | 10 | 29 | < 1.0 | 32 | 9.8 |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | 15 | 18 | 21 | 1.6 | 18 | 17 |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | 57 | 42 | 72 | 9.9 | 66 | 46 |

**Analytical Report Number: 16-13799**

**Project / Site name: Jentex**

**Your Order No: 16-S2-FDO-LABS**

| Lab Sample Number | | | | 552222 | 552223 | 552224 | 552225 | 552226 | 552227 |
|---|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MTP104 | MTP104 | MTP105 | MTP105 | MTP106 | MTP106 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 0.20 | 1.20 | 0.30 | 1.20 | 0.30 | 0.70 |
| **Date Sampled** | | | | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | | |
| **Monoaromatics** | | | | | | | | | |
| Benzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Ethylbenzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| p & m-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |

**Petroleum Hydrocarbons**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TPH-CWG - Aliphatic >EC5 - EC6 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC6 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | 100 | < 1.0 | < 1.0 | < 1.0 |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | 15 | < 2.0 | 2.9 | < 2.0 |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8 | MCERTS | < 8.0 | < 8.0 | 37 | < 8.0 | 8.9 | < 8.0 |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8 | MCERTS | 21 | < 8.0 | 68 | < 8.0 | 24 | < 8.0 |
| **TPH-CWG - Aliphatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 27 | < 10 | 220 | < 10 | 36 | < 10 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TPH-CWG - Aromatic >EC5 - EC7 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC7 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | 14 | < 1.0 | < 1.0 | < 1.0 |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | 24 | 2.2 | 3.1 | < 2.0 |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10 | MCERTS | < 10 | < 10 | 100 | < 10 | 10 | < 10 |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10 | MCERTS | 37 | 11 | 470 | 43 | 45 | < 10 |
| **TPH-CWG - Aromatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 42 | 11 | 610 | 52 | 59 | < 10 |

**Analytical Report Number: 16-13799**

**Project / Site name: Jentex**

**Your Order No: 16-S2-FDO-LABS**

| Lab Sample Number | | | | 552228 | 552229 | 552230 | 552231 | 552232 | 552233 |
|---|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MTP107 | MTP107 | MTP108 | MTP108 | MBH101 | MBH101 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 0.40 | 0.70 | 0.40 | 1.50 | 0.90 | 1.40 |
| **Date Sampled** | | | | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 15 | 15 | 16 | 17 | 15 | 15 |
| Total mass of sample received | kg | 0.001 | NONE | 1.1 | 1.2 | 1.1 | 1.1 | 1.2 | 1.0 |
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | - | - | - | - | - | - |
| Asbestos in Soil | Type | N/A | ISO 17025 | - | - | - | - | - | - |
| Asbestos Quantification (Stage 2) | % | 0.001 | ISO 17025 | - | - | - | - | - | - |
| Asbestos Quantification | % | 0.001 | ISO 17025 | - | - | - | - | - | - |
| **General Inorganics** | | | | | | | | | |
| pH | pH Units | N/A | MCERTS | 8.7 | 8.9 | 9.1 | 9.2 | - | - |
| Total Cyanide | mg/kg | 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | - | - |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | 0.013 | 0.021 | 0.016 | 0.013 | - | - |
| Sulphide | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | - | - |
| Organic Matter | % | 0.1 | MCERTS | 1.2 | 1.0 | 0.3 | < 0.1 | - | - |
| **Total Phenols** | | | | | | | | | |
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | - | - |
| **Speciated PAHs** | | | | | | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - | - |
| Acenaphthylene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | < 0.10 | < 0.10 | - | - |
| Acenaphthene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | < 0.10 | < 0.10 | - | - |
| Fluorene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | < 0.10 | < 0.10 | - | - |
| Phenanthrene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | < 0.10 | < 0.10 | - | - |
| Anthracene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | < 0.10 | < 0.10 | - | - |
| Fluoranthene | mg/kg | 0.1 | MCERTS | 1.3 | 0.39 | < 0.10 | < 0.10 | - | - |
| Pyrene | mg/kg | 0.1 | MCERTS | 1.3 | 0.36 | < 0.10 | < 0.10 | - | - |
| Benzo(a)anthracene | mg/kg | 0.1 | MCERTS | 1.1 | 0.21 | < 0.10 | < 0.10 | - | - |
| Chrysene | mg/kg | 0.05 | MCERTS | 1.2 | 0.26 | < 0.05 | < 0.05 | - | - |
| Benzo(b)fluoranthene | mg/kg | 0.1 | MCERTS | 3.0 | 0.34 | < 0.10 | < 0.10 | - | - |
| Benzo(k)fluoranthene | mg/kg | 0.1 | MCERTS | 1.5 | 0.19 | < 0.10 | < 0.10 | - | - |
| Benzo(a)pyrene | mg/kg | 0.1 | MCERTS | 2.4 | 0.27 | < 0.10 | < 0.10 | - | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.1 | MCERTS | 1.9 | 0.23 | < 0.10 | < 0.10 | - | - |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | MCERTS | 0.27 | < 0.10 | < 0.10 | < 0.10 | - | - |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | 2.3 | 0.21 | < 0.05 | < 0.05 | - | - |
| **Total PAH** | | | | | | | | | |
| Speciated Total EPA-16 PAHs | mg/kg | 1.6 | MCERTS | 16.2 | 2.46 | < 1.60 | < 1.60 | - | - |
| **Heavy Metals / Metalloids** | | | | | | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | 4.9 | 7.7 | 1.8 | 1.5 | - | - |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | 0.5 | 0.4 | 0.2 | 0.2 | - | - |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | < 4.0 | < 4.0 | < 4.0 | < 4.0 | - | - |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | 16 | 20 | 3.8 | < 1.0 | - | - |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | 20 | 15 | 8.7 | 4.0 | - | - |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | 25 | 25 | 2.3 | < 1.0 | 30 | < 1.0 |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | < 0.3 | < 0.3 | < 0.3 | < 0.3 | - | - |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | 15 | 16 | 5.3 | 2.0 | - | - |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | 2.0 | < 1.0 | 2.0 | 3.4 | - | - |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | 81 | 50 | 19 | 12 | - | - |

**Analytical Report Number: 16-13799**

**Project / Site name: Jentex**

**Your Order No: 16-S2-FDO-LABS**

| **Lab Sample Number** | | | | 552228 | 552229 | 552230 | 552231 | 552232 | 552233 |
|---|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MTP107 | MTP107 | MTP108 | MTP108 | MBH101 | MBH101 |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Depth (m)** | | | | 0.40 | 0.70 | 0.40 | 1.50 | 0.90 | 1.40 |
| **Date Sampled** | | | | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 | 16/03/2016 |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | | |
| **Monoaromatics** | | | | | | | | | |
| Benzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Ethylbenzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| p & m-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |

**Petroleum Hydrocarbons**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TPH-CWG - Aliphatic >EC5 - EC6 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC6 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1 | MCERTS | 9.2 | < 1.0 | < 1.0 | 4.5 | < 1.0 | < 1.0 |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2 | MCERTS | 19 | < 2.0 | < 2.0 | < 2.0 | 5.0 | < 2.0 |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8 | MCERTS | 62 | < 8.0 | < 8.0 | < 8.0 | 22 | < 8.0 |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8 | MCERTS | 270 | 10 | < 8.0 | 16 | 15 | < 8.0 |
| **TPH-CWG - Aliphatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 360 | 11 | < 10 | 23 | 42 | < 10 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TPH-CWG - Aromatic >EC5 - EC7 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC7 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1 | MCERTS | 1.9 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2 | MCERTS | 9.9 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | 2.6 |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10 | MCERTS | 55 | < 10 | < 10 | < 10 | 14 | < 10 |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10 | MCERTS | 280 | 12 | < 10 | < 10 | 17 | 19 |
| **TPH-CWG - Aromatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 350 | 16 | < 10 | < 10 | 32 | 28 |

**Analytical Report Number: 16-13799**

**Project / Site name: Jentex**

**Your Order No: 16-S2-FDO-LABS**

| **Lab Sample Number** | | | | 552234 | 552235 | 552236 | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MBH102 | MBH102 | MBH102 | | | |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | | | |
| **Depth (m)** | | | | 0.35 | 0.50 | 0.90 | | | |
| **Date Sampled** | | | | 17/03/2016 | 17/03/2016 | 17/03/2016 | | | |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | | | |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | | | |
| Moisture Content | % | N/A | NONE | 20 | 19 | 13 | | | |
| Total mass of sample received | kg | 0.001 | NONE | 1.2 | 1.1 | 1.1 | | | |
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | - | - | - | | | |
| Asbestos in Soil | Type | N/A | ISO 17025 | - | - | - | | | |
| Asbestos Quantification (Stage 2) | % | 0.001 | ISO 17025 | - | - | - | | | |
| Asbestos Quantification | % | 0.001 | ISO 17025 | - | - | - | | | |
| **General Inorganics** | | | | | | | | | |
| pH | pH Units | N/A | MCERTS | - | - | - | | | |
| Total Cyanide | mg/kg | 1 | MCERTS | - | - | - | | | |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | - | - | - | | | |
| Sulphide | mg/kg | 1 | MCERTS | - | - | - | | | |
| Organic Matter | % | 0.1 | MCERTS | - | - | - | | | |
| **Total Phenols** | | | | | | | | | |
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | - | - | - | | | |
| **Speciated PAHs** | | | | | | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | - | - | - | | | |
| Acenaphthylene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Acenaphthene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Fluorene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Phenanthrene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Anthracene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Pyrene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Benzo(a)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Chrysene | mg/kg | 0.05 | MCERTS | - | - | - | | | |
| Benzo(b)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Benzo(k)fluoranthene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Benzo(a)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | MCERTS | - | - | - | | | |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | - | - | - | | | |
| **Total PAH** | | | | | | | | | |
| Speciated Total EPA-16 PAHs | mg/kg | 1.6 | MCERTS | - | - | - | | | |
| **Heavy Metals / Metalloids** | | | | | | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | | | |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | - | - | - | | | |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | - | - | - | | | |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | | | |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | | | |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | < 1.0 | 2.2 | 1.0 | | | |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | - | - | - | | | |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | | | |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | | | |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | - | - | - | | | |

**Analytical Report Number: 16-13799**

**Project / Site name: Jentex**

**Your Order No: 16-S2-FDO-LABS**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Lab Sample Number** | | | | 552234 | 552235 | 552236 | | | |
| **Sample Reference** | | | | MBH102 | MBH102 | MBH102 | | | |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | | | |
| **Depth (m)** | | | | 0.35 | 0.50 | 0.90 | | | |
| **Date Sampled** | | | | 17/03/2016 | 17/03/2016 | 17/03/2016 | | | |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | | | |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | | |
| **Monoaromatics** | | | | | | | | | |
| Benzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | | |
| Toluene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | | |
| Ethylbenzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | | |
| p & m-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | | |
| o-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | | |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | | |

**Petroleum Hydrocarbons**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TPH-CWG - Aliphatic >EC5 - EC6 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | | |
| TPH-CWG - Aliphatic >EC6 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | | |
| TPH-CWG - Aliphatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | | |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1 | MCERTS | 320 | < 1.0 | < 1.0 | | | |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2 | MCERTS | 1900 | 4.1 | < 2.0 | | | |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8 | MCERTS | 3000 | 26 | 11 | | | |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8 | MCERTS | 3600 | 66 | < 8.0 | | | |
| **TPH-CWG - Aliphatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 8800 | 96 | 14 | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TPH-CWG - Aromatic >EC5 - EC7 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | | |
| TPH-CWG - Aromatic >EC7 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | | |
| TPH-CWG - Aromatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | | |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1 | MCERTS | 180 | < 1.0 | < 1.0 | | | |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2 | MCERTS | 2000 | < 2.0 | 3.0 | | | |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10 | MCERTS | 3400 | 17 | 22 | | | |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10 | MCERTS | 3400 | 54 | 30 | | | |
| **TPH-CWG - Aromatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | 8900 | 71 | 55 | | | |

**Analytical Report Number: 16-13799**

**Project / Site name: Jentex**

**Your Order No: 16-S2-FDO-LABS**

| Lab Sample Number | | | | |
|---|---|---|---|---|
| Sample Reference | | | | |
| Sample Number | | | | |
| Depth (m) | | | | |
| Date Sampled | | | | |
| Time Taken | | | | |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | |
| Stone Content | % | 0.1 | NONE | |
| Moisture Content | % | N/A | NONE | |
| Total mass of sample received | kg | 0.001 | NONE | |
| Asbestos in Soil Screen / Identification Name | Type | N/A | ISO 17025 | |
| Asbestos in Soil | Type | N/A | ISO 17025 | |
| Asbestos Quantification (Stage 2) | % | 0.001 | ISO 17025 | |
| Asbestos Quantification | % | 0.001 | ISO 17025 | |
| **General Inorganics** | | | | |
| pH | pH Units | N/A | MCERTS | |
| Total Cyanide | mg/kg | 1 | MCERTS | |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | |
| Sulphide | mg/kg | 1 | MCERTS | |
| Organic Matter | % | 0.1 | MCERTS | |
| **Total Phenols** | | | | |
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | |
| **Speciated PAHs** | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | |
| Acenaphthylene | mg/kg | 0.1 | MCERTS | |
| Acenaphthene | mg/kg | 0.1 | MCERTS | |
| Fluorene | mg/kg | 0.1 | MCERTS | |
| Phenanthrene | mg/kg | 0.1 | MCERTS | |
| Anthracene | mg/kg | 0.1 | MCERTS | |
| Fluoranthene | mg/kg | 0.1 | MCERTS | |
| Pyrene | mg/kg | 0.1 | MCERTS | |
| Benzo(a)anthracene | mg/kg | 0.1 | MCERTS | |
| Chrysene | mg/kg | 0.05 | MCERTS | |
| Benzo(b)fluoranthene | mg/kg | 0.1 | MCERTS | |
| Benzo(k)fluoranthene | mg/kg | 0.1 | MCERTS | |
| Benzo(a)pyrene | mg/kg | 0.1 | MCERTS | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.1 | MCERTS | |
| Dibenz(a,h)anthracene | mg/kg | 0.1 | MCERTS | |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | |
| **Total PAH** | | | | |
| Speciated Total EPA-16 PAHs | mg/kg | 1.6 | MCERTS | |
| **Heavy Metals / Metalloids** | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | |

**Analytical Report Number: 16-13799**

**Project / Site name: Jentex**

**Your Order No: 16-S2-FDO-LABS**

| | | | | |
|---|---|---|---|---|
| **Lab Sample Number** | | | | |
| **Sample Reference** | | | | |
| **Sample Number** | | | | |
| **Depth (m)** | | | | |
| **Date Sampled** | | | | |
| **Time Taken** | | | | |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | |
| **Monoaromatics** | | | | |
| Benzene | µg/kg | 1 | MCERTS | |
| Toluene | µg/kg | 1 | MCERTS | |
| Ethylbenzene | µg/kg | 1 | MCERTS | |
| p & m-xylene | µg/kg | 1 | MCERTS | |
| o-xylene | µg/kg | 1 | MCERTS | |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | |

**Petroleum Hydrocarbons**

| | | | | |
|---|---|---|---|---|
| TPH-CWG - Aliphatic >EC5 - EC6 | mg/kg | 0.1 | MCERTS | |
| TPH-CWG - Aliphatic >EC6 - EC8 | mg/kg | 0.1 | MCERTS | |
| TPH-CWG - Aliphatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1 | MCERTS | |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2 | MCERTS | |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8 | MCERTS | |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8 | MCERTS | |
| **TPH-CWG - Aliphatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | |

| | | | | |
|---|---|---|---|---|
| TPH-CWG - Aromatic >EC5 - EC7 | mg/kg | 0.1 | MCERTS | |
| TPH-CWG - Aromatic >EC7 - EC8 | mg/kg | 0.1 | MCERTS | |
| TPH-CWG - Aromatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1 | MCERTS | |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2 | MCERTS | |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10 | MCERTS | |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10 | MCERTS | |
| **TPH-CWG - Aromatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | |

**Analytical Report Number:** 16-13799
**Project / Site name:** Jentex
**Your Order No:** 16-S2-FDO-LABS

# Certificate of Analysis - Asbestos Quantification

## Methods:

### Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

### Quantitative Analysis

"The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

| Sample Number | Sample ID | Sample Depth (m) | Sample Weight (g) | Asbestos Containing Material Types Detected (ACM) | PLM Results | Asbestos by hand picking/weighing (%) | Total % Asbestos in Sample |
|---|---|---|---|---|---|---|---|
| **552224** | MTP105 | 0.30 | 179 | Loose Fibres & Insulation Board/Tile | **Chrysotile** | 0.002 | **0.002** |

Opinions and interpretations expressed herein are outside the scope of UKAS accreditatior

**Analytical Report Number : 16-13799**

**Project / Site name: Jentex**

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description * |
|---|---|---|---|---|
| 552216 | MTP101 | None Supplied | 1.20 | Brown loam and clay. |
| 552217 | MTP101 | None Supplied | 2.20 | Brown loam and clay with gravel. |
| 552218 | MTP102 | None Supplied | 0.10 | Brown clay and loam with gravel. |
| 552219 | MTP102 | None Supplied | 2.00 | Brown loam and sand with gravel. |
| 552220 | MTP103 | None Supplied | 1.20 | Black tar with gravel.** |
| 552221 | MTP103 | None Supplied | 1.30 | White chalk.** |
| 552222 | MTP104 | None Supplied | 0.20 | Brown gravelly loam with rubble. |
| 552223 | MTP104 | None Supplied | 1.20 | Brown clay and loam. |
| 552224 | MTP105 | None Supplied | 0.30 | Brown clay and loam. |
| 552225 | MTP105 | None Supplied | 1.20 | White chalk.** |
| 552226 | MTP106 | None Supplied | 0.30 | Grey clay and loam with gravel. |
| 552227 | MTP106 | None Supplied | 0.70 | Brown loam and clay. |
| 552228 | MTP107 | None Supplied | 0.40 | Grey clay and loam with gravel and chalk. |
| 552229 | MTP107 | None Supplied | 0.70 | Brown loam and clay with gravel. |
| 552230 | MTP108 | None Supplied | 0.40 | Beige chalk with gravel. |
| 552231 | MTP108 | None Supplied | 1.50 | White chalk.** |
| 552232 | MBH101 | None Supplied | 0.90 | Brown loam and clay with gravel. |
| 552233 | MBH101 | None Supplied | 1.40 | White chalk.** |
| 552234 | MBH102 | None Supplied | 0.35 | Beige clay and sand with chalk. |
| 552235 | MBH102 | None Supplied | 0.50 | White chalk.** |
| 552236 | MBH102 | None Supplied | 0.90 | White chalk.** |

**Non MCerts matrix

**Analytical Report Number : 16-13799**

**Project / Site name: Jentex**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)**

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|---|---|---|---|---|---|
| Asbestos identification in soil | Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques. | In house method based on HSG 248 | A001-PL | D | ISO 17025 |
| Asbestos Quantification | The analysis was carried out using documented in-house method based on references. | HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft). | A006 | D | ISO 17025 |
| BTEX and MTBE in soil (Monoaromatics) | Determination of BTEX in soil by headspace GC-MS. | In-house method based on USEPA8260 | L073B-PL | W | MCERTS |
| Hexavalent chromium in soil | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry. | In-house method | L080-PL | W | MCERTS |
| Metals in soil by ICP-OES | Determination of metals in soil by aqua-regia digestion followed by ICP-OES. | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil. | L038-PL | D | MCERTS |
| Moisture Content | Moisture content, determined gravimetrically. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L019-UK/PL | W | NONE |
| Monohydric phenols in soil | Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar) | L080-PL | W | MCERTS |
| Organic matter in soil | Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate. | BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L023-PL | D | MCERTS |
| pH in soil (automated) | Determination of pH in soil by addition of water followed by automated electrometric measurement. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L099-PL | D | MCERTS |
| Speciated EPA-16 PAHs in soil | Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. | In-house method based on USEPA 8270 | L064-PL | D | MCERTS |
| Stones content of soil | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. | In-house method based on British Standard Methods and MCERTS requirements. | L019-UK/PL | D | NONE |
| Sulphate, water soluble, in soil | Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent). | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES. | L038-PL | D | MCERTS |
| Sulphide in soil | Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode. | In-house method | L010-PL | D | MCERTS |
| Total cyanide in soil | Determination of total cyanide by distillation followed by colorimetry. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL | W | MCERTS |
| TPHCWG (Soil) | Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. | In-house method | L076-PL | W | MCERTS |

**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**
**For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.**
**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**

**Chris McCartney**
Merebrook
First Floor
1 Leonard Place
Westerham Road
Keston
BR2 6HQ

**t:** 01689 889980
**f:** 01689 889981
**e:** cmccartney@merebrook.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

**t:** 01923 225404
**f:** 01923 237404
**e:** reception@i2analytical.com

# Analytical Report Number : 16-14335

| | | | |
|---|---|---|---|
| **Project / Site name:** | Jentex | **Samples received on:** | 30/03/2016 |
| **Your job number:** | 18996 | **Samples instructed on:** | 30/03/2016 |
| **Your order number:** | 16-S2-FDO-LABS | **Analysis completed by:** | 06/04/2016 |
| **Report Issue Number:** | 1 | **Report issued on:** | 06/04/2016 |
| **Samples Analysed:** | 3 soil samples | | |

**Signed:** [redacted]

Rexona Rahman
Reporting Manager
**For & on behalf of i2 Analytical Ltd.**

**Signed:** [redacted]

Emma Winter
Assistant Reporting Manager
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

| | |
|---|---|
| soils | - 4 weeks from reporting |
| leachates | - 2 weeks from reporting |
| waters | - 2 weeks from reporting |
| asbestos | - 6 months from reporting |

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**Analytical Report Number: 16-14335**

**Project / Site name: Jentex**
**Your Order No: 16-S2-FDO-LABS**

| **Lab Sample Number** | | | | 555232 | 555233 | 555234 | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Reference** | | | | MBH1 | MBH2 | MBH2 | | |
| **Sample Number** | | | | None Supplied | None Supplied | None Supplied | | |
| **Depth (m)** | | | | 2.40 | 1.60 | 2.60 | | |
| **Date Sampled** | | | | 16/03/2016 | 17/03/2016 | 17/03/2016 | | |
| **Time Taken** | | | | None Supplied | None Supplied | None Supplied | | |
| **Analytical Parameter (Soil Analysis)** | **Units** | **Limit of detection** | **Accreditation Status** | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | | |
| Moisture Content | % | N/A | NONE | 20 | 20 | 21 | | |
| Total mass of sample received | kg | 0.001 | NONE | 0.56 | 0.57 | 0.56 | | |
| **Monoaromatics** | | | | | | | | |
| Benzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | |
| Toluene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | |
| Ethylbenzene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | |
| p & m-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | |
| o-xylene | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | |
| **Petroleum Hydrocarbons** | | | | | | | | |
| TPH-CWG - Aliphatic >EC5 - EC6 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| TPH-CWG - Aliphatic >EC6 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| TPH-CWG - Aliphatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | < 2.0 | | |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8 | MCERTS | < 8.0 | < 8.0 | < 8.0 | | |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8 | MCERTS | < 8.0 | < 8.0 | < 8.0 | | |
| **TPH-CWG - Aliphatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | < 10 | < 10 | < 10 | | |
| TPH-CWG - Aromatic >EC5 - EC7 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| TPH-CWG - Aromatic >EC7 - EC8 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| TPH-CWG - Aromatic >EC8 - EC10 | mg/kg | 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | | |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | | |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | < 2.0 | | |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10 | MCERTS | < 10 | < 10 | < 10 | | |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10 | MCERTS | < 10 | < 10 | < 10 | | |
| **TPH-CWG - Aromatic (EC5 - EC35)** | mg/kg | 10 | MCERTS | < 10 | < 10 | < 10 | | |

**Analytical Report Number : 16-14335**

**Project / Site name: Jentex**

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description * |
|---|---|---|---|---|
| 555232 | MBH1 | None Supplied | 2.40 | White chalk.** |
| 555233 | MBH2 | None Supplied | 1.60 | White chalk.** |
| 555234 | MBH2 | None Supplied | 2.60 | White chalk.** |

**Non MCerts matrix

**Analytical Report Number : 16-14335**

**Project / Site name: Jentex**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)**

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|---|---|---|---|---|---|
| BTEX and MTBE in soil (Monoaromatics) | Determination of BTEX in soil by headspace GC-MS. | In-house method based on USEPA8260 | L073B-PL | W | MCERTS |
| Moisture Content | Moisture content, determined gravimetrically. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L019-UK/PL | W | NONE |
| Stones content of soil | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. | In-house method based on British Standard Methods and MCERTS requirements. | L019-UK/PL | D | NONE |
| TPHCWG (Soil) | Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. | In-house method | L076-PL | W | MCERTS |

**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**
**For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.**
**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**

AN idom GROUP COMPANY

**Idom Merebrook Ltd** 1 Leonard Place, Westerham Road, Keston, Kent, BR2 6HQ
**t** +44 (0)1689 889 980 **f** +44 (0)1689 889 981 **e** consulting@merebrook.co.uk **merebrook.co.uk** **idom.com**
Registered in England No. 02740216 Registered office: Belper
**offices** London Kent Derby Cardiff Manchester Moray

**APPENDIX 3: Note regarding the category/class of the capital expenditure estimate**

1 On 20 March 2019 at the Compulsory Purchase Hearing, the Applicant represented to the ExA an overall project cost estimate of £306m to build the project according to the masterplan. The Applicant explained at that time that its ability to precisely measure the cost of the project had been severely limited by its near complete lack of site access prior to the Compulsory Purchase Hearing. The ExA asked at the time if the standard deviation of the estimate was "A", "B" or "C".

2 The Applicant has performed its own search and asked its consultants and has been unable to find a commonly understood reference to what is meant by "A", "B" or "C". However, the applicant has sought to contextualize the construction estimate by referencing the New Rules of Measurement published in 2013 (NRM1) in alignment with the previously defined Royal Institute of British Architects (RIBA) Outline of Work Stages (2007) A & B (Appraisal and Design Brief) which now aligns to RIBA Stages 0 & 1 (Strategic Definition & Preparation and Brief). Using these references as a guide, Manston would currently be at Stage 2. Stage 2 in the RIBA Plan of Work 2013 is summarized as follows: Prepare Concept Design, including outline proposals for structural design, building services systems, outline specifications and preliminary Cost Information along with relevant Project Strategies in accordance with Design Programme.

## APPENDIX 4: Joint Venture Agreement

Dated15 December2016

**(1) M.I.O. Investments Limited**

**(2) RiverOak Strategic Partners Limited**

**(3) RiverOak Manston Limited**

[redacted]

**(5) RiverOak Operations Limited**

# Joint Venture Agreement

Relating To Manston Airport

BARLOW ROBBINS SOLICITORS

Barlow Robbins Solicitors
The Oriel
Sydenham Road
Guildford, Surrey
GU1 3SR

**T:** +44 (0)**1483 543210**
**F:** +44 (0)**1483 464260**
DX 2407 GUILDFORD
**www.barlowrobbins.com**

## Table of Contents

**THIS AGREEMENT** is dated 15 December 2016

**BETWEEN**

(1) **M.I.O. INVESTMENTS LIMITED** a company registered in Belize with a registered IBC number 162,208 whose registered office and agent is A.J.K Corporate Services (Belize) Limited, Blake Building, Suite 306, Corner of Eyre & Hutson Street, P.O. Box 2670, Belize City, Belize (**Capital Investor**);

(2) **RIVEROAK STRATEGIC PARTNERS LIMITED** a company incorporated and registered in England and Wales with company number 10269461 whose registered office is at 50 Broadway, London SW1H 0BL (**JVC**);

(3) **RIVEROAK MANSTON LIMITED** a company incorporated and registered in in England and Wales with company number 10286975 whose registered office is at 50 Broadway, London SW1H 0BL (**ROML**);

[redacted]

(5) **RIVEROAK OPERATIONS LIMITED** a company incorporated and registered in England and Wales with Company number 10311804 whose registered office is at 50 Broadway, London SW1H 0BL (**ROOL**)

**BACKGROUND**

(A) The JVC is a private company limited by shares incorporated in England under the CA 2006 and has an issued share capital of one ordinary share of £1 which is held by ROML.

(B) ROOL is a wholly owned subsidiary of the JVC.

(C) M.I.O and ROML have come together with the intention of applying for the necessary consents to acquire, develop and operate Manston Airport and subsequently carrying out such acquisition, development and operation (as detailed in clause 2.1). The JVC has been formed as the entity through which the parties will undertake this project. The project will be completed in two phases, being Phase 1 and Phase 2 (each as defined below).

(D) ROOL has agreed to undertake the day to day operations of Phase 1 (as defined below) on behalf of the JVC.

(E) The JVC shall carry on business in accordance with the terms and conditions of this agreement.

(F) Capital Investor and ROML shall exercise their rights in relation to the JVC in accordance with the terms and conditions of this agreement.

**IT IS HEREBY AGREED**

## 1. INTERPRETATION

1.1. The definitions and rules of interpretation in this clause apply in this agreement.

| | |
|---|---|
| **A Shares** | the ordinary A shares of £0.0001 each in the capital of the JVC. |
| **Adequate Procedures** | adequate procedures, as referred to in section 7(2) of the Bribery Act 2010 and any guidance issued by the Secretary of State under section 9 of the Bribery Act 2010. |
| **Airport** | Manston Airport, comprising all the land previously used as an airport or for related activities at Manston, Kent CT12 England (including, without limitation, the land registered at the Land Registry with title number K803975). |
| **Articles** | the new articles of association of the JVC in agreed form to be adopted on or prior to Completion as amended or superseded from time to time. |
| **Associated Person** | in relation to a company, a person (including an employee, agent or subsidiary) who performs services for or on behalf of that company. |
| **B Shares** | the ordinary B shares of £0.0001 each in the capital of the JVC. |
| **Board** | the board of directors of the JVC as constituted from time to time. |
| **Budget** | the budget in respect of Phase 1, in the agreed form, as set out in Schedule 3. |
| **Business** | has the meaning given in clause 2. |
| **Business Day** | any day other than a Saturday, Sunday or public holiday in England when banks in London are open for business. |
| **Business Plan** | has the meaning given in clause 9. |

| | |
|---|---|
| **CA 2006** | the Companies Act 2006. |
| **Capital Investor Consent** | the prior written consent or agreement of Capital Investor (whether for the purposes of clause 4.1 or for any other purpose contemplated by this Agreement) given by a Capital Investor Director notified by Capital Investor to ROML as authorised to communicate any Capital Investor Consent. |
| **Capital Investor Directors** | the three persons nominated to act as directors of the JVC by Capital Investor in accordance with the Articles (as amended from time to time) and Capital Investor Director shall mean any one of them. |
| **Completion** | the completion of this Agreement in accordance with clause 3. |
| **Completion Date** | the date hereof. |
| **Completion Loan Notes** | the 1,450,000 Loan Notes to be issued to Capital Investor at Completion against compliance by Capital Investor with its obligation to advance funds pursuant to clause 3.3.3. |
| **Confidential Information** | has the meaning given in clause 19. |
| **Connected Person** | has the meaning given in s.1122 of the Corporation Tax Act 2010. |
| **CTA 2010** | the Corporation Tax Act 2010. |
| **Deed of Adherence** | the deed of adherence in the form set out in Schedule 2. |
| **Deed of Transfer and Waiver** | the deed of transfer and waiver in the agreed form between RiverOak Investment Corp (ii) ROML (iii) the JVC and [redacted] |
| **Director** | a director of the JVC. |
| **Development Consent Order** | a statutory instrument granting development consent for the construction and operation of an airport at Manston in Kent made by the Secretary of State for Transport under the Planning Act 2008. |
| **Drag Along Right** | the drag along right at article 20 of the Articles. |
| **Electronic form** | has the meaning given in section 1168 of the CA 2006. |

| | |
|---|---|
| **Eligible Director** | any Eligible Capital Investor Director or Eligible ROML Director (as the case may be). |
| **Eligible Capital Investor Director** | a Capital Investor Director who would be entitled to vote on the matter at a meeting of the Board (but excluding any Capital Investor Director whose vote is not to be counted in respect of the particular matter). |
| **Eligible ROML Director** | a ROML Director who would be entitled to vote on the matter at a meeting of the Board (but excluding any ROML Director whose vote is not to be counted in respect of the particular matter). |
| **Encumbrance** | any interest or equity of any person (including any right to acquire, option or right of pre-emption) or any mortgage, charge, pledge, lien, assignment, hypothecation, security interest, title retention or any other security agreement or arrangement. |
| **Extra Loan Notes** | has the meaning given in clause 6.5.2 |
| **Facility** | has the meaning given in clause 6.1. |
| **Financial Year** | in relation to the JVC, means its accounting reference period. |
| **Group** | in relation to a company, that company, any subsidiary or holding company from time to time of that company, and any subsidiary from time to time of a holding company of that company. Each company in a Group is a **member of the Group**. |
| **holding company** | has the meaning given in clause 1.11. |
| **Loan Agreement** | the loan agreement between Capital Investor, the JVC, [redacted] dated 5 August 2016. |
| **Loan Note Holder** | any holder of any Loan Notes. |
| **Loan Note Instrument** | the instrument comprising the Non-convertible Interest-free Loan Notes 2021 in agreed form. |
| **Loan Notes** | the loan notes issued under the Loan Note Instrument (including, for the avoidance of doubt, the Completion Loan Notes, the Replacement Loan Notes and any Extra Loan Notes issued from time to time). |

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|---|---|
| **Loan Note Replacement Deed** | the deed in agreed form to be entered into at Completion between the parties to the Loan Agreement. |
| **M.I.O. Side Letter** | a letter from Capital Investor to the directors of ROML in the agreed form. |
| **Option** | has the meaning given in clause 15. |
| **Option End Date** | has the meaning given in clause 15. |
| **Phase 1** | has the meaning given in clause 2.1.1. |
| **Phase 2** | has the meaning given in clause 2.1.2. |
| **Principal Loan Note Amount** | the principal outstanding amount of all Loan Notes in issue for the time being. |
| **Project Management Timeline** | the document in the agreed form set out in Schedule 4. |
| **Project Success Event** | the later of the following events:<br>• the Secretary of State for Transport (or such other relevant government officer) having granted a Development Consent Order pursuant to sections 104 or 105 of the Planning Act 2008 (including powers, rights and authorisations needed to acquire the land registered at the Land Registry with title number K803975) provided that no application for permission to bring judicial review proceedings has been made within the requisite time period for bringing such application (being, as at the date of this agreement, six weeks from the date of the Secretary of State's decision to grant the Development Consent Order); and<br>• a final judgment from a court of competent jurisdiction dismissing any judicial review proceedings in respect of the Development Consent Order. |
| **Project Termination Event** | the later of the following events:<br>• the Secretary of State for Transport (or such other relevant government officer) either (i) refusing to grant a Development Consent Order and such refusal not being the subject of a successful judicial review challenge or (ii) granting a Development Consent Order |

and amending it in such a way that Phase 2 cannot, in the reasonable opinion of both ROML and Capital Investor, be implemented; or (iii) granting a Development Consent Order without including powers, rights and authorisations needed to acquire the land registered at the Land Registry with title number K803975; or (iv) the acquisition of the land registered at the Land Registry with title number K803975 not having been achieved by 31 December 2018 despite the parties having used all their respective reasonable endeavours and acted in good faith to achieve such acquisition by such date; and

- the Development Consent Order is quashed by a court following a successful judicial review and there is no further right of appeal to a court of competent jurisdiction.

| | |
|---|---|
| **Replacement Loan Notes** | the 350,000 Loan Notes to be issued to Capital Investor pursuant to the terms of the Loan Note Replacement Deed. |
| **Respective Proportions** | in relation to a Shareholder, the proportion which the number of shares held by that party in the JVC bears at the relevant time to the total number of issued shares of the JVC. |
| **RiverOak Investment Corp.** | RiverOak Investment Corporation LLC, a Delaware limited liability corporation whose registered office is at One Atlantic Street, Suite 703, Stamford, CT 06901, USA. |
| **ROML Consent** | the prior written consent or agreement of ROML (whether for the purposes of clause 4.1 or for any other purpose contemplated by this Agreement) given by a ROML Director notified by ROML to Capital Investor as authorised to communicate any ROML Consent. |
| **ROML Directors** | the three persons nominated to act as a director of the JVC by ROML in accordance with the Articles (as amended from time to time) and **ROML Director** shall mean any one of them. |
| **Shareholder** | any person who holds shares in the capital of the JVC and **Shareholders** means all of them together. |
| **Shares** | the A Shares and the B Shares in issue from time to time. |
| **subsidiary** | has the meaning given in clause 1.11. |
| **Subscriber Shares** | has the meaning given in clause 3.2.3. |

**Tag Along Right** means the tag along right at article 19 of the Articles.

1.2. Clause, Schedule and paragraph headings shall not affect the interpretation of this agreement.

1.3. References to clauses and Schedules are to clauses of and Schedules to this agreement and references to paragraphs are to paragraphs of the relevant Schedule.

1.4. The Schedules form part of this agreement and shall have effect as if set out in full in the body of this agreement. Any reference to this agreement includes the Schedules.

1.5. A reference to **this agreement** or to any **other agreement or document referred to in this agreement** is a reference to this agreement or such other agreement or document as varied or novated in accordance with its terms from time to time.

1.6. Unless the context otherwise requires, words in the singular shall include the plural and in the plural shall include the singular.

1.7. Unless the context otherwise requires, a reference to one gender shall include a reference to the other genders.

1.8. A **person** includes a natural person, corporate or unincorporated body (whether or not having separate legal personality).

1.9. A reference to a **party** shall include that party's successors and permitted assigns.

1.10. A reference to a **company** shall include any company, corporation or other body corporate, wherever and however incorporated or established.

1.11. A reference to a **holding company** or a **subsidiary** means a holding company or a subsidiary (as the case may be) as defined in section 1159 of the CA 2006 and for the purposes only of the membership requirement contained in sections 1159(1)(b) and (c), a company shall be treated as a member of another company even if its shares in that other company are registered in the name of:

1.11.1. another person (or its nominee), by way of security or in connection with the taking of security; or

1.11.2. its nominee.

In the case of a limited liability partnership which is a subsidiary of a company or another limited liability partnership, section 1159 of the CA 2006 shall be amended so that: (a) references in sections 1159(1)(a) and (c) to voting rights are to the members' rights to vote on all or substantially all matters which are decided by a vote of the members of the limited liability partnership; and (b) the reference in section 1159(1)(b) to the right to appoint or remove a majority of its board of directors is to the right to appoint or remove members holding a majority of the voting rights.

1.12. A reference to **writing** or **written** includes messages sent by email.

1.13. Any words following the terms **including**, **include**, **in particular**, **for example** or any similar expression shall be construed as illustrative and shall not limit the sense of the words, description, definition, phrase or term preceding those terms.

1.14. Where the context permits, **other** and **otherwise** are illustrative and shall not limit the sense of the words preceding them.

1.15. References to a document in **agreed form** are to that document in the form agreed by Capital Investor and ROML and initialled by them or on their behalf for identification or acknowledged as being in agreed form via email exchange between their respective solicitors.

1.16. A reference to a statute or statutory provision is a reference to it as amended, extended or re-enacted from time to time.

1.17. A reference to a statute or statutory provision shall include all subordinate legislation made from time to time under that statute or statutory provision.

1.18. Any reference to an English legal term for any action, remedy, method of judicial proceeding, legal document, legal status, court, official or any legal concept or thing shall, in respect of any jurisdiction other than England, be deemed to include a reference to that which most nearly approximates to the English legal term in that jurisdiction.

1.19. Any obligation on a party not to do something includes an obligation not to allow that thing to be done.

1.20. Unless the context requires otherwise, words and expressions defined in the Articles shall have the same meaning when used in this agreement.

## 2. BUSINESS OF THE JVC

2.1. The business of the JVC as set out in this clause 2.1 (**Business**) is:

2.1.1. applying for and obtaining a Development Consent Order, including powers, rights and authorisations needed to acquire all relevant land and rights reasonably necessary to operate the Airport (or making such acquisition even without such an order) (**Phase 1**); and

2.1.2. thereafter:

2.1.2.1. implementing the Development Consent Order, including (without limitation) by the acquisition of the Airport; and

2.1.2.2. investing in, developing, operating, and maintaining the Airport and its business and all business opportunities at, ancillary to or connected with the Airport;

(clauses 2.1.2.1 and 2.1.2.2 are, together, **Phase 2**).

2.2. Each party shall use all reasonable endeavours to promote and develop the Business to the best advantage of the JVC.

2.3. Capital Investor and ROML shall, to the extent that any part of the Business is not exploited through the JVC or through entities owned wholly or partly by it, have the opportunity to participate in all such business in their Respective Proportions.

## 3. COMPLETION

3.1. Completion shall take place on the Completion Date.

3.2. At Completion, Capital Investor and ROML shall procure that such shareholder and board meetings of the JVC are held as may be necessary to:

3.2.1. sub-divide the JVC's one ordinary issued share of £1 into 10,000 ordinary issued shares of £0.0001 each;

3.2.2. adopt the Articles;

3.2.3. approve the transfer (at nominal value) of 9,000 ordinary shares of £0.0001 each in the capital of the JVC from ROML to Capital Investor (**Subscriber Shares**);

3.2.4. re-designate the ordinary shares in the capital of the JVC held by:

3.2.4.1. ROML as B Shares; and

3.2.4.2. Capital Investor as A Shares;

3.2.5. approve and adopt the Loan Note Instrument;

3.2.6. issue to Capital Investor:

3.2.6.1. the Completion Loan Notes; and

3.2.6.2. the Replacement Loan Notes

(subject to compliance with clauses 3.3.5.2 and 3.3.5.3); and

3.2.7. appoint Gerhard Kuno Hüsler, Nick Rothwell and Rico Seitz as Capital Investor Directors and Anthony Freudmann, Niall Lawlor and George Yerall as ROML Directors with immediate effect.

3.3. At Completion:

3.3.1. as consideration for the transfer of the Subscriber Shares, Capital Investor shall pay £0.90 to ROML (receipt of which is hereby acknowledged);

3.3.2. the JVC shall:

3.3.2.1. update the register of members to reflect the share subdivision pursuant to clause 3.2.1, the share transfer pursuant to clause 3.2.3, the share re-designation pursuant to clause 3.2.4 and issue a share certificate to:

a) ROML in respect of its holding of B Shares; and

b) Capital Investor in respect of its holding of A Shares;

3.3.2.2. make all necessary filings at Companies House to reflect the matters transacted pursuant to clause 3.2;

3.3.3. Capital Investor shall advance £1,450,000 to the JVC in consideration for the issue of the Completion Loan Notes;

3.3.4. the JVC shall, subject to ROML complying with its obligation in clause 3.3.6.2, pay RiverOak Investment Corp. £800,000 (in sterling by electronic transfer of immediately available funds to such account as RiverOak Investment Corp

may nominate) in consideration of it executing and delivering the Deed of Transfer and Waiver;

3.3.5. Capital Investor shall deliver to ROML:

3.3.5.1. a certified copy of the resolution adopted by Capital Investor's board (i) approving the terms of this agreement; and (ii) authorising any director or officers to execute this agreement (and all ancillary documents) for and on behalf of Capital Investor;

3.3.5.2. a counterpart of the Loan Note Replacement Deed duly executed by Capital Investor;

3.3.5.3. a counterpart of the Loan Note Instrument duly executed by Capital Investor;

3.3.5.4. the M.I.O. Side Letter duly signed.

3.3.6. ROML shall deliver to Capital Investor:

3.3.6.1. an executed stock transfer form in favour of Capital Investor in respect of the Subscriber Shares;

3.3.6.2. an executed counterpart of the Deed of Transfer and Waiver (on behalf of ROML, Mr Lawlor, George Yerrall, Anthony Freudmann and RiverOak Investment Corp);

3.3.6.3. a certified copy of the resolution adopted by ROML's board (i) approving the terms of this agreement and (ii) authorising any director or officers to execute this agreement (and all ancillary documents) for and on behalf of ROML;

3.3.6.4. a counterpart of the Loan Note Replacement Deed duly executed by the JVC, Mr Lawlor, George Yerrall and Tony Freudmann; and

3.3.6.5. a counterpart of the Loan Note Instrument duly executed by the JVC and ROML.

3.4. With effect from Completion, the JVC shall use all reasonable endeavours to implement Phase 1 in accordance with the Budget and the Project Management Timeline.

3.5. With effect from Completion:

3.5.1. the JVC appoints ROOL to undertake the services set out in Schedule 5;

3.5.2. ROOL accepts such appointment subject to the terms and conditions set out in Schedule 5; and

3.5.3. the JVC and ROOL acknowledge that any and all expenditure that ROOL incurs shall be as agent for and on behalf of ROSP.

## 4. MATTERS REQUIRING SHAREHOLDER CONSENT

4.1. The JVC shall not, and each of the Shareholders undertakes to each other (as a separate covenant by each of them) to exercise all such voting rights and powers of control available to them in relation to the JVC to ensure that the JVC shall not, except with Capital Investor Consent and ROML Consent, take any actions set out in Schedule 1.

4.2. The requirement for ROML Consent pursuant to clause 4.1 shall cease to have effect if, after the Option End Date or, if earlier, upon the occurrence of a Project Success Event, ROML does not own more than 20 per cent. of the Shares.

4.3. Upon the requirement for ROML Consent ceasing to have effect pursuant to clause 4.2, the Tag Along Right and Drag Along Right shall be deemed to come into force.

4.4. Capital Investor hereby undertakes to ROML that it shall not operate or purport to operate the Drag Along Right prior to the requirement for ROML Consent ceasing to have effect pursuant to clause 4.2.

## 5. DIRECTORS AND MANAGEMENT

5.1. The Board has responsibility for the supervision and management of the JVC and its Business, subject to clauses 3.4, 4 and Schedule 5.

5.2. The Board (and the board of directors of any subsidiary of the JVC from time to time) shall have a minimum number of six directors made up of three Capital Investor Directors and three ROML Directors. Capital Investor may appoint a further Capital Investor Director in respect of the JVC and each of the JVC's subsidiaries if, after the Option End Date or, if earlier, upon the occurrence of a Project Success Event, ROML does not own more than 20 per cent. of the Shares.

5.3. There will be no formal post of chairman of the JVC but a chairman shall be appointed for each meeting of the Board by the agreement of those present at the meeting save that no such chairman shall have a casting vote.

5.4. For so long as:

5.4.1. Capital Investor is a Shareholder it shall have the right, subject to clause 5.2, to appoint and maintain in office a minimum of three natural persons as Capital Investor may from time to time direct as Capital Investor Directors (and as members of each and any committee of the Board and directors of any subsidiary of the JVC from time to time) and to remove any director so appointed and, upon his removal whether by Capital Investor or otherwise, to appoint another person to act as a Capital Investor Director in his place; and

5.4.2. ROML is a Shareholder it shall have the right to appoint and maintain in office three natural persons as ROML may from time to time direct as ROML Directors (and as members of each and any committee of the Board and directors of any subsidiary of the JVC from time to time) and to remove any director so appointed and, upon his removal whether by ROML or otherwise, to appoint another person to act as a ROML Director in his place.

5.5. Appointment and removal of a director pursuant to clause 5.4, shall be by written notice to the JVC. The appointment or removal takes effect on the date on which the notice is received by the JVC (or its subsidiary as the case may be) or, if a later date is given in the notice, on that date. Capital Investor and ROML shall consult with the other prior to any appointment or removal of a director.

5.6. Each of Capital Investor and ROML covenants with the other that it shall not (save with the prior written request of the other) remove a director appointed by the other.

5.7. Any party removing a director which it has appointed (or attempting to do so) shall indemnify and keep indemnified the JVC ,each of the JVC's subsidiaries and each other party against any claim connected with the director's removal (or attempted removal) from office.

5.8. The Shareholders intend there to be a meeting of the Board at least each month, and any director may participate by telephone or other audio or visual device so long as he or she can hear, and be heard by, the other members of the Board.

5.9. Any director may call a meeting of the Board. Each of Capital Investor and ROML may, in its absolute discretion, invite any of its directors or legal or beneficial owners to any such meeting.

5.10. The JVC shall (and each of Capital Investor and ROML shall use reasonable endeavours to) ensure that at least five Business Days' notice of a Board meeting (and each committee of it) is given to all directors entitled to receive notice accompanied by:

5.10.1. a written agenda specifying in reasonable detail the matters to be raised at the meeting; and

5.10.2. copies of any papers to be discussed at the meeting

and the JVC shall, as soon as practicable after each meeting, provide all directors with a copy of the minutes or committee minutes of such meetings.

5.11. The quorum at any meeting of directors of the JVC or any of its subsidiaries (including adjourned meetings) is one Eligible Capital Investor Director (or his alternate) and one Eligible ROML Director (or his alternate).

5.12. No business shall be conducted at any meeting of directors unless a quorum is present at the beginning of the meeting and at the time when there is to be voting on any business.

5.13. If a quorum is not present within 30 minutes of the time specified for a directors' meeting in the notice of the meeting then it shall be adjourned for 5 Business Days at the same time and place.

5.14. Capital Investor and ROML shall use their respective reasonable endeavours to ensure that any meeting of the Board and every general meeting of the JVC has the requisite quorum.

5.15. A meeting of directors shall be adjourned to another time or date at the request of all Capital Investor Directors or all the ROML Directors present at the meeting. No business may be conducted at a meeting after such a request has been made. No more than one such adjournment may be made in respect of a meeting.

## 6. FINANCE FOR JVC

6.1. The parties shall procure that the JVC shall use the proceeds of the Completion Loan Notes and the Replacement Loan Notes (**Proceeds**) only to satisfy the liabilities for Phase 1 which are set out in the Budget.

6.2. The Proceeds shall be retained in and disbursed from a bank account to be agreed between ROML and Capital Investor, provided that:

6.2.1. no payment shall be made from such account without the written approval of a Capital Investor Director and a ROML Director;

6.2.2. the approval of a Capital Investor Director and a ROML Director shall not be required pursuant to clause 6.2.1 in respect of any amount under £10,000 which is included in the Budget.

6.3. At any time that ROML owns less than 50 per cent. of the Shares, Capital Investor shall provide any finance required by the Budget for the time being by subscribing for the necessary amount of Loan Notes, and ROML shall have no right to provide any such finance.

6.4. At any time that ROML owns 50 per cent. of the Shares, Capital Investor and ROML shall each provide half of any finance required by the Budget for the time being by subscribing respectively for half of the total Loan Notes required to be issued in order to raise such finance. At any time that ROML owns more than 50 per cent. of the Shares, Capital Investor and ROML shall each provide any finance required by the Budget in their Respective Proportions.

6.5. There is no obligation on Capital Investor and ROML to provide any finance to the JVC beyond that set out in the Budget (**Additional Finance**) but, if either does provide any Additional Finance:

6.5.1. Capital Investor and ROML shall each have the opportunity to provide the Additional Finance in their Respective Proportions;

6.5.2. such Additional Finance shall be provided by way of subscriptions for Loan Notes (**Extra Loan Notes**) together with a subscription at par for (in the case of the Capital Investor) new A Shares and (in the case of ROML) new B Shares, in accordance with the formula set out in clause 6.5; and

6.5.3. to the extent that either of the parties does not provide any of its Respective Proportion of such Additional Finance (**Shortfall**), the other shall be entitled to provide the Shortfall.

6.6. If a party subscribes for Extra Loan Notes pursuant to clauses 6.5.2 or 6.5.3 it shall be entitled to subscribe for such number of A Shares or (as the case may be) B Shares as is equal to N, where:

**N** equals New Capital divided by Current Value;

**Current Capital** means the amount equal to the Principal Loan Note Amount (excluding the proposed Additional Finance);

**Current Value** equals Current Capital divided by Issued Shares;

**Issued Shares** means the number of Shares in issue immediately before the subscription for Extra Loan Notes; and

**New Capital** equals the principal amount of the Additional Finance).

For example, if there are 10,000 Shares in issue, Current Capital is £4,512,500 and a further £500,000 is required, N will be 500,000/(£4,512,500/10,000) and hence 1,108 Shares would be issued to the relevant party at their nominal value (that is, in return for a rounded-up payment of £0.12) when it subscribes for the £500,000 of Extra Loan Notes.

6.7. Each party hereby agrees that it will vote in favour of any resolution required to issue Shares pursuant to clause 6.6 and disapply any pre-emptions rights in relation to such Shares.

6.8. Capital Investor undertakes to each of the JVC and ROML to use all reasonable endeavours to provide such letters of comfort or similar assurances as it is able to support the application for the Development Consent Order, including, but not limited to:

6.8.1. supporting the funding statement submitted with the application for the Development Consent Order; and

6.8.2. responding to any questions in relation to the funding statement that may be raised by the Planning Inspectorate.

6.9. Capital Investor and ROML agree, in accordance with the Budget, the following limits on the following JVC's costs for the period 1st of January 2016 until 31st of December 2017 after which time, the parties shall pay their own costs (except for reasonable travel costs):

[redacted]

6.10. In the event that either:

6.10.1. a Project Termination Event occurs; or

6.10.2. a Project Success Event has not occurred by 31 December 2018,

(each a **Trigger Event**)

[redacted] shall pay Capital Investor, within 90 days of receiving written demand from Capital Investor following such Trigger Event, an amount equal to half of the Principal Loan Note Amount held by Capital Investor on the date of such Trigger Event, subject to clauses 6.11 and 6.12.

6.11. The amount payable by [redacted] pursuant to clause 6.10 shall be capped, in aggregate, at an amount equal to the sum of [redacted] any interest payable thereon (at the rate of 3 per cent. per annum over the rate set from time to time by the Monetary Policy Committee of the Bank of England or its successor, from the due date until payment both before and after judgment) and all reasonable costs incurred by Capital Investor in enforcing the provisions of clause 6.10.

6.12. [redacted] obligations under clause 6.10 are subject to any agreement to the contrary or variation of such obligations which may be confirmed in signed writing between [redacted] and Capital Investor from time to time.

## 7. RESTRICTIONS ON THE PARTIES

7.1. No Shareholder nor any of its subsidiaries or Connected Persons during the times specified in clause 7.7 below, shall carry on or be employed, engaged or interested in any business which would be in competition with the JVC, the Business or any part of the Business, including any developments in the Business after the date of this agreement.

7.2. No Shareholder nor any of its subsidiaries or Connected Persons shall, in any similar area of Business in which the JVC operates and during the times specified in clause 7.7 below, deal with or seek the custom of any person that is, or was within the previous 12 months, a client or customer of the JVC.

7.3. No Shareholder nor any of its subsidiaries or Connected Persons shall during the times specified in clause 7.7 below offer employment to, enter into a contract for the services of, or attempt to solicit or seek to entice away from the JVC any individual who is at the time of the offer or attempt, a director, officer or employee holding an executive or managerial position with the JVC or procure or facilitate the making of any such offer or attempt by any other person.

7.4. No Shareholder nor any of its subsidiaries or Connected Persons shall during the times specified in clause 7.7 below solicit or endeavour to entice away from the JVC any supplier who supplies, or has supplied within the previous 12 months, goods and/or services to the JVC if that solicitation or enticement causes or would cause such supplier to cease supplying, or materially reduce its supply of, those goods and/or services to the JVC.

7.5. The undertakings in this clause are given by each Shareholder to the others and to the JVC and apply to actions carried out by each Shareholder (or any of its subsidiaries) in any capacity and whether directly or indirectly, on the party's (or subsidiary's) own behalf, on behalf of any other person or jointly with any other person.

7.6. Nothing in this clause:

7.6.1. shall apply to or otherwise restrict the JVC or any of its subsidiaries;

7.6.2. prevents a party or any of its subsidiaries from holding for investment purposes only:

7.6.2.1. any units of any authorised unit trust; or

7.6.2.2. not more than five per cent. of any class of shares or securities of any company traded on a recognised investment exchange (within the meaning of the Financial Services and Markets Act 2000).

7.7. The times during which the restrictions in this clause apply are:

7.7.1. any time when the party in question is a Shareholder; and

7.7.2. for a period of 24 months after the party in question ceases to be a Shareholder.

7.8. Each of the covenants in this clause is considered fair and reasonable by the parties.

7.9. Each Shareholder shall procure that its subsidiaries and Connected Persons comply with the terms of this clause 7.

## 8. ANTI-CORRUPTION

8.1. Each of Capital Investor and ROML undertake to each other that:

8.1.1. it will not, and will procure that the JVC will not, in the course of the operation of the Business, engage in any activity, practice or conduct which would constitute an offence under sections 1, 2 or 6 of the Bribery Act 2010;

8.1.2. it has and will maintain in place, and will procure that the JVC has and will maintain in place, Adequate Procedures designed to prevent any Associated Person from undertaking any conduct that would give rise to an offence under section 7 of the Bribery Act 2010; and

8.1.3. from time to time, at the reasonable request of the other, it will confirm in writing that it has complied with its undertakings under clause 8.1.1 and clause 8.1.2 and will provide any information reasonably requested by the other in support of such compliance.

## 9. BUSINESS PLAN

9.1. Following the occurrence of a Project Success Event, a business plan shall be prepared by the Board for the JVC annually (**Business Plan**). The Business Plan shall include, in relation to the Financial Year to which it relates:

9.1.1. a cashflow statement giving:

9.1.1.1. an estimate of the working capital requirements of the Business; and

9.1.1.2. an indication of the amount (if any) that it is considered prudent to retain, for the purpose of meeting those requirements, out of those profits of the previous Financial Year that are available for distribution to shareholders;

9.1.2. a monthly projected profit and loss account;

9.1.3. an operating budget (including capital expenditure requirements) and balance sheet forecast;

9.1.4. a management report giving business objectives for the year; and

9.1.5. a financial report which shall include an analysis of the estimated results of the JVC for the previous Financial Year compared with the Business Plan for that year, identifying variations in sales, revenues, costs and other material items.

9.2. The first Business Plan shall be prepared by the Board as soon as reasonably practicable following the occurrence of the Project Success Event (and in any event within 60 days thereafter) and approved and adopted by agreement in writing by Capital Investor and ROML, with such amendments as Capital Investor and ROML may agree, as soon as possible after it has been prepared.

9.3. The second and each subsequent Business Plan shall be:

9.3.1. prepared by the Board at least 60 days before the end of the Financial Year which precedes the Financial Year to which such Business Plan relates; and

9.3.2. approved and adopted by agreement in writing by Capital Investor and ROML, with such amendments as Capital Investor and ROML may agree, as soon as possible after it has been prepared.

## 10. ACCOUNTING AND OTHER INFORMATION

10.1. The JVC shall at all times maintain accurate and complete accounting and other financial records including all corporation tax computations and related documents and correspondence with HM Revenue & Customs in accordance with the

requirements of all applicable laws and generally accepted accounting principles applicable in the United Kingdom.

10.2. Capital Investor and ROML and their authorised representatives shall be allowed access at all reasonable times to examine the books and records of the JVC and to discuss the JVC's affairs with its directors and senior management.

10.3. The JVC shall supply Capital Investor and ROML with the financial and other information necessary to keep the party informed about how effectively the Business is performing including, without limitation:

10.3.1. a copy of each year's Business Plan for approval in accordance with clause 9.2;

10.3.2. a copy of the audited accounts of the JVC prepared in accordance with the laws applicable in and the accounting standards, principles and practices generally accepted in the United Kingdom, within 6 months of the end of the year to which the audited accounts relate; and

10.3.3. monthly management accounts of the JVC to be supplied within 10 days of the end of the month to which they relate and the accounts shall include a profit and loss account, a balance sheet and a cashflow statement and such other information as Capital Investor and ROML may reasonably require.

10.4. The JVC shall, as soon as reasonably practicable, comply with any reasonable request made by a party, to provide (at the cost of the party making the request) such documents, information and correspondence necessary to enable the requesting party to comply with any filing, elections, returns or other requirements of HM Revenue & Customs or of any other revenue or tax authority in relation to the affairs of such requesting party.

## 11. DIVIDEND AND CAPITAL POLICIES

11.1. Capital Investor and ROML agree that JVC shall not declare, pay or make any dividend or other distribution of capital or profit until all Loan Notes in issue for the time being have been repaid in full by JVC.

11.2. All distributions made by the JVC shall be made to the Shareholders in their Respective Proportions.

11.3. Capital Investor and ROML agree that on any sale of the Shares to a third party to this Agreement, the proceeds of such sale shall be paid:

11.3.1. first, in paying off the Loan Notes together with an amount to each Loan Note Holder equal to 10% per annum (from the date of issue until the date of payment) of the principal outstanding amount from time to time (calculated on the basis of the amount outstanding at the end of each full calendar month) of each Loan Note held by such Loan Note Holder;

11.3.2. secondly, to Capital Investor and to ROML in their Respective Proportions, save that if ROML owns less than 20 per cent. of the Shares, the Respective Proportions shall be adjusted by reducing Capital Investor's Respective Proportion by 10 percentage points and by increasing ROML's Respective Proportion by 10 percentage points.

For example, if Capital Investor owns 85 per cent. and ROML owns 15 per cent. of the Shares then their Respective Proportions would be adjusted to 75 per cent. and 25 per cent..

The following are other examples of the effect of clause 11:

**Example 1:**

**Example 2:**

## 12. TAX MATTERS

Unless Capital Investor and ROML otherwise expressly agree in writing, Capital Investor and ROML shall procure that all of the JVC's trading losses and all other amounts eligible for relief from taxation shall be carried by JVC and not surrendered (wholly or partly) to Capital Investor and ROML.

## 13. TRANSFER OF SHARES

13.1. No Shareholder shall create any Encumbrance over, transfer, or otherwise dispose of or give any person any rights in or over any share or interest in any share in the JVC unless it is permitted or required under this agreement or the Articles (as the case may be) and carried out in accordance with the terms of this agreement or the Articles (as the case may be).

13.2. A Shareholder may do anything prohibited by this clause if Capital Investor and ROML have consented to it in writing.

13.3. Neither Capital Investor nor ROML may transfer any Shares without the prior written consent of the other, save in respect of any Permitted Transfer (as defined in the Articles), a transfer pursuant to article 17 of the Articles, a transfer pursuant to articles 15 of the Articles or any transfer brought about by operation of the Tag Along Right or Drag Along Right (which such transfers might be, for the avoidance of doubt, prevented by the terms of clauses 4.3 or 4.4 of this agreement).

13.4. Except as expressly provided in the Articles or this agreement, Capital Investor and ROML shall procure that no transfer of shares shall be registered by the Board unless the transferee of such shares has executed and delivered a Deed of Adherence.

13.5. On completion of a transfer of shares made in accordance with this agreement or the Articles:

13.5.1. the parties shall procure that the relevant Shares are re-designated so that Capital Investor only holds A Shares and ROML only holds B Shares (other than on a transfer of shares made to a Permitted Transferee (as defined in the Articles);

13.5.2. where the transferor is disposing of its entire holding of Shares:

13.5.2.1. such transferor shall deliver to the JVC the resignations (together with acknowledgements of no claims against the JVC) of any directors appointed by it, to take effect at completion of the sale of the shares; and

13.5.2.2. Capital Investor and ROML shall use their reasonable endeavours to procure that such transferor is released from any guarantees, security arrangements and other obligations that it has given in respect of the JVC and its Business.

## 14. ISSUE OF FURTHER SHARES

Except as expressly provided in this agreement, the JVC shall not issue any shares or other equity securities (within the meaning of section 560(1) of the CA 2006) to any person, unless that person is a party to this agreement or has executed and delivered a Deed of Adherence.

## 15. OPTION

15.1. At any time and on any number of occasions before the date falling two years after the date of this agreement (**Option End Date**), ROML shall have the option (**Option**) to purchase A Shares (**Option Shares**) at their nominal value from Capital Investor, provided always that:

15.1.1. the maximum number of A Shares which ROML may purchase is such number as will result in it holding 50 per cent. of the entire issued share capital of the JVC; and

15.1.2.

ROML may only purchase such A Shares if it simultaneously purchases Loan Notes from Capital Investor, the principal amount (**Option Loan Note Amount**) and price (**Option Loan Note Price**) of which is calculated in accordance with clause 15.2.

15.2. The Option Loan Note Amount shall be:

Principal Loan Note Amount multiplied by (1.25 multiplied by (Option Shares/Shares))_

and the Option Loan Note Price shall be:

Option Loan Note Amount multiplied by (Buy-Back Premium Factor to the power of N)

where:

**Buy-Back Premium Factor** means 1.03 if the Option Exercise Notice is given before 30 June 2017 and, if not, means 1.1;

**N** means the number of completed calendar months between the date of this Agreement and the date of the relevant Option Exercise Notice (as defined below) divided by twelve;

**Option Shares** has the meaning given in clause 15.1;

**Principal Loan Note Amount** has the meaning given in clause 1.1; and

**Shares** has the meaning given in clause 1.1.

For example, if the Principal Loan Note Amount is £3.8m, ROML buys 2,500 A Shares and the Buy-Back Premium is 1.1 (because the Option Exercise Notice was given nineteen complete calendar months after the date of this agreement), the Option Loan Note Amount would be:

((3,800,000)*(1.25*(2,500/10,000) = £1,187,500

and the Option Loan Note Price would be:

£1,187,500*(1.1^(19/12)) = £1,380,931.18,

15.3. The price payable to Capital Investor (**Option Price**) on the exercise of the Option shall the sum of:

(a) an amount equal to the Option Loan Note Price (which shall be paid in consideration of the transfer of the Option Loan Note Amount to ROML); and

(b) the aggregate nominal value of the Option Shares (which shall be paid in consideration of the transfer of the Option Shares).

15.4. ROML may exercise any part of the Option, before the date falling two years after the date of this Agreement, by giving Capital Investor 10 Business Days' notice in writing (the **Option Exercise Notice**) that it is exercising the Option and the number of A Shares it is exercising the Option in respect of, whereupon ROML and Capital Investor shall complete the transfer of both the Option Shares and the Option Loan Note Amount on the first Business Day following expiry of the Option Exercise Notice by:

15.4.1. ROML transferring the Option Price to Capital Investor to such account as it shall nominate in writing;

15.4.2. Capital Investor delivering an appropriate executed stock transfer form;

15.4.3. Capital Investor transferring the relevant Loan Notes to ROML in accordance with the Loan Note Instrument;

15.4.4. Where necessary, the JVC issuing new certificates in respect of Loan Notes to reflect the transfers referred to in clause 15.4.3; and

15.4.5. ROML and Capital Investor re-designating the Option Shares in accordance with clause 13.5.

15.5. If Capital Investor fails so to complete the sale of the Option Shares or Option Loan Note Amount, ROML is irrevocably authorised to appoint any person it nominates for the purpose as agent to transfer the Option Shares or Option Loan Note Amount on Capital Investor's behalf and to do anything else that ROML may reasonably require to complete the Option, and the JVC may receive the purchase price in trust for Capital Investor (without any obligation to pay interest), giving a receipt that shall discharge ROML.

## 16. TERMINATION AND LIQUIDATION

16.1. Subject to clause 16.2, this agreement shall terminate:

16.1.1. when either Capital Investor or ROML ceases to hold any shares in JVC; or

16.1.2. when a resolution is passed by shareholders or creditors, or an order is made by a court or other competent body or person instituting a process that shall lead to JVC being wound up and its assets being distributed among JVC's creditors, shareholders or other contributors; or

16.1.3. with Capital Investor Consent and ROML Consent.

16.2. On termination of this agreement, the following clauses shall continue in force:

16.2.1. Clause 1 (interpretation);

16.2.2. Clause 6.10 to 6.12 inclusive;

16.2.3. Clause 7 (restrictions on parties);

16.2.4. Clause 12 (tax matters);

16.2.5. this clause 16.2;

16.2.6. Clause 19 (confidentiality);

16.2.7. Clause 23 (assignment and other dealings);

16.2.8. Clause 24 (entire agreement);

16.2.9. Clause 25 (variation and waiver);

16.2.10. Clause 26 (costs);

16.2.11. Clause 28 (notices);

16.2.12. Clause 29 (severance);

16.2.13. Clause 31 (third party rights);

16.2.14. Clause 34 (inadequacy of damages); and

16.2.15. Clause 35 (governing law and jurisdiction);

16.3. Termination of this agreement shall not affect any rights, remedies, obligations or liabilities of the parties that have accrued up to the date of termination, including the right to claim damages in respect of any breach of the agreement which existed at or before the date of termination.

16.4. Where, following an event referred to in clause 16.1.2, the JVC is to be wound up and its assets distributed, the Shareholders shall agree a suitable basis for dealing with the interests and assets of the JVC and shall endeavour to ensure that, before dissolution:

16.4.1. all existing contracts of the JVC are performed to the extent that there are sufficient resources;

16.4.2. the JVC shall not enter into any new contractual obligations; and

16.4.3. the JVC's assets are distributed as soon as practical in accordance with clause 17.2.3.

## 17. PROJECT SUCCESS EVENT OR PROJECT TERMINATION EVENT: PROCEDURE

17.1. If a Project Success Event occurs, each of Capital Investor and ROML shall:

17.1.1. continue to use all reasonable endeavours to achieve the objectives of Phase 2 and any remaining objectives of Phase 1;

17.1.2. be entitled, subject to clause 6.2, to contribute on such terms as they agree further finance to the Business in furtherance of the objectives of Phase 2 and any remaining objectives of Phase 1;

17.1.3. to the extent that there is any shortfall in the funds required for the achievement of the objectives of Phase 2 and any remaining objectives of Phase 1, use all their respective reasonable endeavours to obtain such funding from a third party; and

17.1.4. consider, and if thought fit negotiate, in good faith such revisions to this agreement, or such replacement joint venture agreement, (including with any proposed third party funder, if relevant) as they each consider appropriate and in the best interests of the Business in order to facilitate the success of Phase 2.

17.2. If a Project Termination Event occurs, each of Capital Investor and ROML shall:

17.2.1. use all reasonable endeavours to sell the JVC or the Business (**Sale**) to a third party (**Buyer**) at the best price realistically achievable in the circumstances;

17.2.2. if such parties agree that there is no reasonable prospect of finding a Buyer, or if a Sale has not been concluded within 6 months of the occurrence of the Project Termination Event, the parties shall wind up of the JVC as soon as reasonably practicable thereafter.

17.2.3. Upon a winding-up of the JVC, the following order of distribution shall apply:

17.2.3.1. first, in repaying any third party debt;

17.2.3.2. secondly, in repaying the Principal Loan Note Amounts on a pari passu basis; and

17.2.3.3. thirdly, in distributing any remaining assets to the holders of the A Shares and the B Shares pro rata to their shareholdings.

## 18. STATUS OF AGREEMENT

18.1. Each Shareholder shall, separately and severally and to the extent that it is able to do so, exercise all its voting rights and other powers in relation to the JVC to procure that the provisions of this agreement are properly and promptly observed and given full force and effect according to the spirit and intention of the agreement.

18.2. If there is an inconsistency between any of the express provisions of this agreement and the express provisions of the Articles, the provisions of this agreement shall prevail as between the parties.

18.3. The Shareholders shall, as necessary, exercise their powers of voting and any other rights and powers they have to amend, waive or suspend a conflicting provision in the Articles to the extent necessary to permit the JVC and its Business to be administered as provided in this agreement.

## 19. CONFIDENTIALITY

19.1. In this clause, **Confidential Information** means any information (however recorded or preserved) which:

19.1.1. any party may have or acquire (whether before, on or after the date of this agreement) in relation to the customers, suppliers, business, assets, affairs, plans, intentions, market opportunities, operations, processes, product information, know-how, designs, trade secrets or software of the JVC (including, without limitation, any information provided pursuant to clause 10); or

19.1.2. any party or any member of its Group may have or acquire (whether before, on or after the date of this agreement) in relation to the affairs of any other party or any member of any other party's Group, as a consequence of the negotiations relating to this agreement or any other agreement or document referred to in this agreement or the performance of the agreement or any other agreement or document referred to in this agreement; or

19.1.3. relates to the contents of this agreement (or any agreement or document referred to in this agreement or agreement or arrangement entered into pursuant to this agreement),

but excludes the information in clause 19.2.

19.2. Information is not Confidential Information if:

19.2.1. it is or becomes generally available to the public (other than as a result of its disclosure in breach of this agreement); or

19.2.2. a party can establish to the reasonable satisfaction of the relevant party that it found out the information from a person not connected with the relevant party or its Group and that such person is not under any obligation of confidence in respect of the information; or

19.2.3. a party can establish to the reasonable satisfaction of the relevant party that the information was known to the first party before the date of this agreement and that it was not under any obligation of confidence in respect of the information; or

19.2.4. the parties agree in writing that it is not confidential.

19.3. Each party shall at all times keep confidential (and ensure that its employees, agents, subsidiaries, and the employees and agents of such subsidiaries, and the JVC shall keep confidential) any Confidential Information and shall not use such Confidential Information except for the purpose of exercising or performing its rights and obligations under or in connection with this agreement, and shall not disclose such Confidential Information except:

19.3.1. to a party's professional advisers where such disclosure is for a purpose related to the operation of this agreement; or

19.3.2. with the written consent of such of the JVC or the party that the information relates to; or

19.3.3. as may be required by law or by the rules of any recognised stock exchange, or governmental or other regulatory authority or by a court or other authority of competent jurisdiction, provided that, to the extent it is legally permitted to do so, it gives the relevant party as much notice of such disclosure as possible and, where notice of disclosure is not prohibited and is given in accordance with this clause, it takes into account the reasonable requests of the relevant party in relation to the content of such disclosure; or

19.3.4. to any tax authority to the extent reasonably required for the purposes of the tax affairs of the party concerned or any member of its Group.

19.4. Each party shall inform (and shall use all reasonable endeavours to procure that any subsidiary and the JVC shall inform) any officer, employee or agent or any professional adviser advising it in relation to the matters referred to in this agreement, or to whom it provides Confidential Information, that such information is confidential and shall require them:

19.4.1. to keep it confidential; and

19.4.2. not to disclose it to any third party (other than those persons to whom it has already been disclosed in accordance with the terms of this agreement).

19.5. On termination of this agreement, each party shall (and shall use all reasonable endeavours to procure that its subsidiaries, and its officers and employees and those of its subsidiaries and the JVC shall):

19.5.1. return to the relevant party all documents and materials (and any copies) containing, reflecting, incorporating or based on the relevant party's Confidential Information; and

19.5.2. erase all the other parties' Confidential Information from computer and communications systems and devices used by it, including such systems and data storage services provided by third parties (to the extent technically and legally practicable),

provided that a recipient party (and/or the JVC, as the case may be) may retain documents and materials containing, reflecting, incorporating or based on the other parties' Confidential Information to the extent required by law or any applicable governmental or regulatory authority.

19.6. The provisions of this clause 19 shall continue to apply after termination of this agreement for any cause.

## 20. ANNOUNCEMENTS

No party shall make, or permit any person to make, any public announcement, communication or circular (**announcement**) concerning this agreement without the prior written consent of the other parties.

## 21. WARRANTIES

21.1. ROML warrants to Capital Investor that:

21.1.1. it is the sole legal and beneficial owner of the Subscriber Shares;

21.1.2. it is entitled to transfer the legal and beneficial title to the Subscriber Shares to Capital Investor, pursuant to clause 3, free from all Encumbrances and without the consent of any other person.

21.2. Each party warrants and represents to the other that, at the date of this agreement, the JVC has not carried on any business, has no assets or liabilities, has no employees and is not a party to any contracts except as necessary to comply with clause 3.

21.3. Capital Investor, JVC and ROML each separately and severally warrant and represent to the other parties that:

21.3.1. it is a corporation duly organised and validly existing under the laws of the jurisdiction of its organisation or incorporation;

21.3.2. it has full power and authority and has obtained all necessary authorities and consents to enter into and perform its obligations under this agreement and such other agreements and arrangements referred to in this agreement; and

21.3.3. the signing of this agreement and the performance of its obligations under this agreement and the other agreements and arrangements referred to in this agreement will not result in a breach of any other agreement or arrangement to which it is a party, nor give rise to any right of termination of any other agreement or arrangement to which it is a party.

## 22. FURTHER ASSURANCE

Without prejudice to clause 3, at its own expense each party (each, an **Assurer**) shall (and shall use all reasonable endeavours to procure that any relevant third party shall) promptly execute and deliver such documents and perform such acts as any other party (such party, an **Assured**) may reasonably require from time to time for the purpose of giving full effect to the relevant Assured's rights or the relevant Assurer's obligations set out in this agreement.

## 23. ASSIGNMENT AND OTHER DEALINGS

No party shall assign, transfer, mortgage, charge, sub-contract, declare a trust over or deal in any other manner with any or all of its rights and obligations under this agreement (or any other document referred to in it) without the prior written consent of the other parties.

## 24. ENTIRE AGREEMENT

24.1. This agreement (together with any documents referred to in it) constitutes the entire agreement between the parties and supersedes and extinguishes all previous discussions, correspondence, negotiations, drafts, agreements, promises, assurances, warranties, representations, arrangements and understandings between them, whether written or oral, relating to its subject matter.

24.2. Each party acknowledges that in entering into this agreement (and any documents referred to in it), it does not rely on, and shall have no remedies in respect of, any statement, representation, assurance or warranty (whether made innocently or negligently) that is not set out in this agreement or those documents.

24.3. Nothing in this clause shall limit or exclude any liability for fraud.

## 25. VARIATION AND WAIVER

25.1. No variation of this agreement shall be effective unless it is in writing and signed by the parties.

25.2. A waiver of any right or remedy under this agreement or by law is only effective if given in writing and signed by the person waiving such right or remedy. Any such waiver shall apply only to the circumstances for which it is given and shall not be deemed a waiver of any subsequent breach or default.

25.3. A failure or delay by any person to exercise any right or remedy provided under this agreement or by law shall not constitute a waiver of that or any other right or remedy, nor shall it prevent or restrict any further exercise of that or any other right or remedy. No single or partial exercise of any right or remedy provided under this agreement or by law shall prevent or restrict the further exercise of that or any other right or remedy.

25.4. A person that waives a right or remedy provided under this agreement or by law in relation to one person, or takes or fails to take any action against that person, does not affect its rights or remedies in relation to any other person.

## 26. COSTS

Except as expressly provided in this agreement, the JVC shall pay the reasonable costs and expenses of Capital Investor and ROML incurred in connection with the negotiation, preparation, execution and performance of this agreement (and any documents referred to in it), such amounts to be agreed by Capital Investor and ROML and which costs shall form part of the Budget.

## 27. NO PARTNERSHIP OR AGENCY

27.1. Nothing in this agreement is intended to, or shall be deemed to, establish any partnership between the parties or constitute any party the agent of another party.

27.2. Each party confirms that it is acting on its own behalf and not for the benefit of any other person.

## 28. NOTICES

28.1. A notice given to a party under or in connection with this agreement:

28.1.1. shall be in writing and in English;

28.1.2. shall be signed by or on behalf of the party giving it;

28.1.3. shall be sent to the relevant party for the attention of the contact and to the address specified in this agreement, or such other address as that party may notify to the other in accordance with the provisions of this clause 28; and

28.1.4. shall be:

28.1.4.1. delivered by hand; or

28.1.4.2. sent by pre-paid first class post or another next working day delivery service providing proof of postage; or

28.1.4.3. sent by airmail or reputable international overnight courier (if the notice is to be served by post to an address outside the country from which it is sent); or

28.1.4.4. sent by email to an email address.

28.2. The addresses for service of notices are:

28.2.1. **Capital Investor**

[redacted]

28.2.2. **The JVC**

[redacted]

28.2.3. **ROML**

[redacted]

[redacted]

28.2.5. **ROOL**

[redacted]

28.3. A party may change its details for service of notices, provided that the address for service is an address in England following any change, by giving notice to the other parties. Any change notified pursuant to this clause shall take effect at 9.00 am on the later of:

28.3.1. the date (if any) specified in the notice as the effective date for the change; and

28.3.2. five Business Days after deemed receipt of the notice of change.

28.4. Delivery of a notice is deemed to have taken place (provided that all other requirements in this clause have been satisfied):

28.4.1. if delivered by hand, on signature of a delivery receipt; or

28.4.2. if sent by pre-paid first class post or another next working day delivery service providing proof of postage to an address in the United Kingdom, at 9.00 am on the second Business Day after posting; or

28.4.3. if sent by pre-paid airmail to an address outside the country from which it is sent, at 9.00 am on the fifth Business Day after posting; or

28.4.4. if sent by reputable international overnight courier to an address outside the country from which it is sent, on signature of a delivery receipt or at the time the notice is left at the address; or

28.4.5. if sent by email, at the time of transmission; and

28.4.6. if deemed receipt under the previous sub-clauses of this clause 28.4 is not within business hours (meaning 9.00 am to 5.30 pm Monday to Friday on a day that is not a public holiday in the place of deemed receipt), at 9.00 am on the day when business next starts in the place of deemed receipt. For the purposes of this clause, all references to time are to local time in the place of deemed receipt.

28.5. To prove service, it is sufficient to prove that:

28.5.1. if delivered by hand or by reputable international overnight courier, the notice was delivered to the correct address; or

28.5.2. if sent by post or by airmail, the envelope containing the notice was properly addressed, paid for and posted; or

28.5.3. if sent by email, the notice was properly addressed and sent to the email address of the recipient.

28.6. This clause 28 shall apply to the service of any proceedings or other documents in any legal action.

## 29. SEVERANCE

29.1. If any provision or part-provision of this agreement is or becomes invalid, illegal or unenforceable, it shall be deemed modified to the minimum extent necessary to make it valid, legal and enforceable. If such modification is not possible, the relevant provision or part-provision shall be deemed deleted. Any modification to or deletion of a provision or part-provision under this clause shall not affect the validity and enforceability of the rest of this agreement.

29.2. If one party gives notice to any other of the possibility that any provision or part-provision of this agreement is invalid, illegal or unenforceable, the relevant parties shall negotiate in good faith to amend such provision so that, as amended, it is legal, valid and enforceable, and, to the greatest extent possible, achieves the intended commercial result of the original provision.

## 30. AGREEMENT SURVIVES COMPLETION

This agreement (other than obligations that have already been fully performed) remains in full force after Completion.

## 31. THIRD PARTY RIGHTS

31.1. A person who is not a party to this agreement shall not have any rights under the Contracts (Rights of Third Parties) Act 1999 to enforce any term of this agreement.

31.2. No rights of the parties to terminate, rescind or vary this agreement (or unilaterally to waive any rights under this agreement or settle any claims in relation to this agreement) are subject to the consent of any other person.

## 32. COUNTERPARTS

This agreement may be executed in any number of counterparts, each of which when executed shall constitute a duplicate original, but all the counterparts shall together constitute the one agreement.

## 33. RIGHTS AND REMEDIES

Except as expressly provided in this agreement, the rights and remedies provided under this agreement are in addition to, and not exclusive of, any rights or remedies provided by law.

## 34. INADEQUACY OF DAMAGES

Without prejudice to any other rights or remedies that a party may have, each party acknowledges and agrees that damages alone would not be an adequate remedy for any breach of the terms of clause 7 or clause 19 by that party. Accordingly, the other parties shall be entitled to the remedies of injunction, specific performance or other equitable relief for any threatened or actual breach of the terms of clause 7 or clause 19 of this agreement.

## 35. DISPUTE RESOLUTION, GOVERNING LAW AND JURISDICTION

35.1. If a dispute arises in connection with the JVC, the Business or the Airport, the relevant parties shall attempt in good faith to resolve the dispute for at least 10 Business Days. If no such resolution is reached in that period, the parties will attempt to settle the dispute by mediation in London in accordance with the CEDR Model Mediation Procedure. Unless otherwise agreed between the parties, the mediator shall be nominated by CEDR and the mediation will start promptly. No party may commence any court proceedings in relation to the whole or part of any dispute whilst both parties are engaged in the mediation process, provided always that the right to issue proceedings is not prejudiced by a delay.

35.2. This agreement and any dispute or claim (including non-contractual disputes or claims) arising out of or in connection with it or its subject matter or formation shall be governed by and construed in accordance with the law of England and Wales.

35.3. Each party irrevocably agrees that the courts of England and Wales shall have exclusive jurisdiction to settle any dispute or claim (including non-contractual disputes or claims) arising out of or in connection with this agreement or its subject matter or formation.

This agreement has been entered into as a deed and is delivered and takes effect on the date stated at the beginning of it.

## SCHEDULE 1

## MATTERS RESERVED FOR SHAREHOLDER APPROVAL

**1.** Altering in any respect the Articles or the rights attaching to any of the shares in the JVC (except as provided in clause 18.3 of this agreement).

**2.** Acquiring, or exercising any right to acquire, any land (whether pursuant to a Compulsory Purchase Order or otherwise).

**3.** Permitting the registration of any person as a member of the JVC other than any Permitted Transferee (as defined in the Articles).

**4.** Increasing the amount of the JVC's issued share capital, granting any option or other interest (in the form of convertible securities or in any other form) over or in its share capital, redeeming or purchasing any of its own shares or effecting any other reorganisation of its share capital.

**5.** Issuing any loan capital in the JVC or entering into any commitment with any person with respect to the issue of any loan capital.

**6.** Making any borrowing (except pursuant to clauses 6 or 15) or repaying any Loan Notes or other borrowings or paying any interest or relevant costs (other than on a due date and in accordance with a binding obligation to make such repayment or payment).

**7.** Applying for the listing or trading of the JVC's shares or debt securities on any stock exchange or market.

**8.** Passing any resolution for the JVC's winding up or presenting any petition for its administration (unless it has become insolvent).

**9.** Altering the name of the JVC or its registered office.

**10.** Amending the Budget.

**11.** Adopting or amending the Business Plan in respect of each Financial Year.

**12.** Changing the nature of the JVC's Business or commencing any new business by the JVC which is not ancillary or incidental to the Business.

**13.** Forming any subsidiary or acquiring shares in any other company or participating in any partnership or joint venture (incorporated or not).

**14.** Amalgamating or merging with any other company or business undertaking.

**15.** Making any acquisition or disposal by the JVC of any material asset(s).

**16.** Creating or granting any Encumbrance over the whole or any part of the Business, undertaking or assets of the JVC or over any shares in the JVC or agreeing to do so other than liens arising in the ordinary course of business or any charge arising by the operation or purported operation of title retention clauses and in the ordinary course of business.

**17.** Making any loan (otherwise than by way of deposit with a bank or other institution the normal business of which includes the acceptance of deposits or in the ordinary course of business) or granting any credit (other than in the normal course of trading) or giving any guarantee (other than in the normal course of trading) or indemnity.

**18.** Appointing any agent or other intermediary to conduct any of the JVC's Business (save as set out in Schedule 5).

**19.** Entering into any arrangement, contract or transaction outside the normal course of the JVC's Business or otherwise than on arm's length terms.

**20.** Giving notice of termination of any arrangements, contracts or transactions which are material in the nature of the JVC's Business (including, for the avoidance of doubt, the arrangements set out in Schedule 5), or materially varying any such arrangements, contracts or transactions.

**21.** Adopting or amending any standard terms of business (including prices) on which the JVC is prepared to provide goods or services to third parties.

**22.** Granting any rights (by licence or otherwise) in or over any intellectual property owned or used by the JVC.

**23.** Factoring or assigning any of the book debts of the JVC.

**24.** Changing the auditors of the JVC or its Financial Year end.

**25.** Making or permitting to be made any material change in the accounting policies and principles adopted by the JVC in the preparation of its audited and management accounts except as may be required to ensure compliance with relevant accounting standards under the CA 2006 or any other generally accepted accounting principles in the United Kingdom.

**26.** Establishing or amending any profit-sharing, share option, bonus or other incentive scheme of any nature for the JVC's directors or employees.

**27.** Establishing or amending any pension scheme or granting any pension rights to any of the JVC's directors, officers, employees, former directors, officers or employees, or any member of any such person's family.

**28.** Dismissing any director, officer or employee in circumstances in which the JVC incurs or agrees to bear redundancy or other costs in excess of £5,000 in total.

**29.** Instituting, settling or compromising any material legal proceedings (other than debt recovery proceedings in the ordinary course of business) instituted or threatened against the JVC or submitting to arbitration or alternative dispute resolution any dispute involving the JVC.

**30.** Making any agreement with any revenue or tax authorities or making any claim, disclaimer, election or consent exceeding £10,000 for tax purposes in relation to the JVC or its business.

## SCHEDULE 2
## DEED OF ADHERENCE

THIS DEED is dated [DATE]

PARTIES

(1) [NAME OF SHAREHOLDER] of [ADDRESS OF SHAREHOLDER] (**New Shareholder**).

(2) The persons named in the Schedule as the existing shareholders of the Company (**Continuing Shareholders**).

(3) RIVEROAK STRATEGIC PARTNERS LIMITED a company incorporated and registered in England and Wales with company number 10269461 whose registered office is at 50 Broadway, London SW1H 0BL (**the Company**)

BACKGROUND

(A) This deed is entered into under clause [NUMBER] of an agreement dated [DATE] 2016, made between (i) the Continuing Shareholders (ii) the Company and [NAME OF OUTGOING SHAREHOLDER] (**Transferor**), as amended from time to time (**Shareholders' Agreement**), for the purpose of regulating the exercise of their rights and obligations in relation to the Company.

(B) By a [transfer of OR subscription for] Shares in the capital of the Company dated [DATE], [the Transferor transferred to the New Shareholder OR the New Shareholder subscribed for] [NUMBER] [CLASS] Shares of £[AMOUNT] each in the capital of the Company.

AGREED TERMS

1 Words and expressions used in this deed shall, unless the context expressly requires otherwise, have the meaning given to them in the Shareholders' Agreement. The Effective Date means the date of this deed.

2 The New Shareholder confirms that it has been supplied with a copy of the Shareholders' Agreement. The New Shareholder, the Company and each of the Continuing Shareholders undertake with each other that, from the Effective Date, the New Shareholder shall [assume all of the rights of the Transferor under the Shareholders' Agreement and shall observe, perform and be bound by the provisions of the Shareholders' Agreement that contain obligations on the Transferor OR assume all of the rights under the Shareholders' Agreement granted to holders of the same class of Shares as those that are allotted to the New Shareholder and shall observe perform and be bound by the provisions of the Shareholders' Agreement that contain obligations on holders of the same class of Shares as those that are allotted to the New Shareholder] as though the New Shareholder was an original party to the Shareholders' Agreement as a Shareholder.

3 This deed may be executed in any number of counterparts, each of which when executed and delivered shall constitute a duplicate original, but all the counterparts shall together constitute the one agreement.

4 This deed and any dispute or claim arising out of or in connection with it or its subject matter or formation (including non-contractual disputes or claims) shall be governed by and construed in accordance with the law of England and Wales.

5 Each party irrevocably agrees that the courts of England and Wales shall have exclusive jurisdiction to settle any dispute or claim arising out of or in connection with this deed or its subject matter or formation (including non-contractual disputes or claims).

This document has been executed as a deed and is delivered and takes effect on the date stated at the beginning of it.

**THE SCHEDULE**

[***INSERT DETAILS OF THOSE SHAREHOLDERS THAT WILL CONTINUE AS PARTIES TO THE SHAREHOLDERS' AGREEMENT***]

[***INSERT APPROPRIATE EXECUTION CLAUSES***]

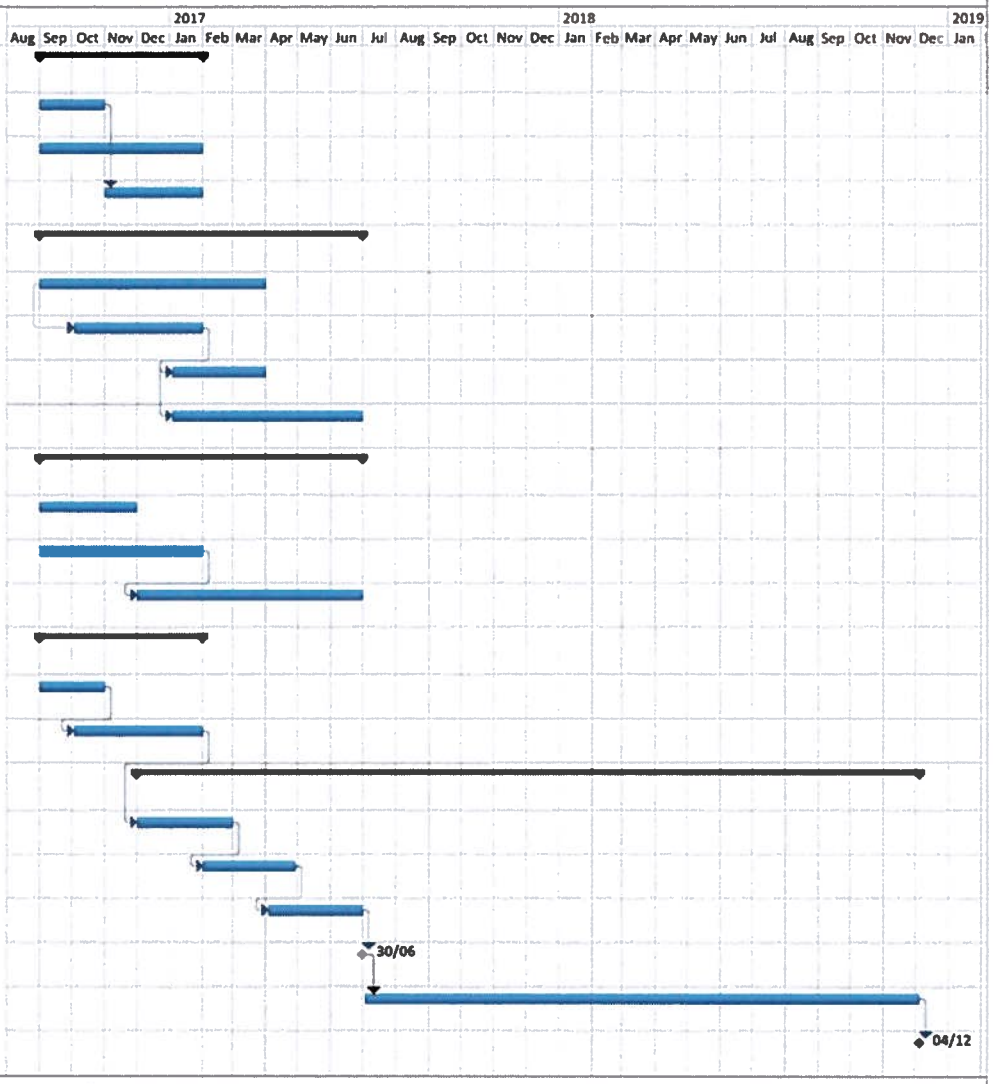
# SCHEDULE 4

## PROJECT MANAGEMENT TIMELINE

### Manston Airport Masterplan
### High Level Programme

RPS

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **Masterplan** | **103 days** | **Thu 01/09/16** | **Tue 31/01/17** |
| 2 | Complete Forecasting | 43 days | Thu 01/09/16 | Mon 31/10/16 |
| 3 | Facilities Development | 103 days | Thu 01/09/16 | Tue 31/01/17 |
| 4 | Develop Cost Plan | 60 days | Tue 01/11/16 | Tue 31/01/17 |
| 5 | **EIA** | **207 days** | **Thu 01/09/16** | **Fri 30/06/17** |
| 6 | Baseline Data Collection | 146 days | Thu 01/09/16 | Fri 31/03/17 |
| 7 | Preliminary Environmental Information Report | 81 days | Mon 03/10/16 | Tue 31/01/17 |
| 8 | Statutory Consultation | 64 days | Tue 03/01/17 | Fri 31/03/17 |
| 9 | Environmental Statement | 125 days | Tue 03/01/17 | Fri 30/06/17 |
| 10 | **CAA License** | **207 days** | **Thu 01/09/16** | **Fri 30/06/17** |
| 11 | Start CAA Engagement | 65 days | Thu 01/09/16 | Wed 30/11/16 |
| 12 | Identify Nav Aids / Procedures | 103 days | Thu 01/09/16 | Tue 31/01/17 |
| 13 | Prepare Aerodrome Manual Framework | 142 days | Thu 01/12/16 | Fri 30/06/17 |
| 14 | **Land Reference** | **103 days** | **Thu 01/09/16** | **Tue 31/01/17** |
| 15 | Review Requirements | 43 days | Thu 01/09/16 | Mon 31/10/16 |
| 16 | Land Reference | 81 days | Mon 03/10/16 | Tue 31/01/17 |
| 17 | **DCO Documents** | **502 days** | **Thu 01/12/16** | **Tue 04/12/18** |
| 18 | Draft Documents | 58 days | Thu 01/12/16 | Tue 28/02/17 |
| 19 | Review Requirements | 61 days | Wed 01/02/17 | Fri 28/04/17 |
| 20 | Final Document | 61 days | Mon 03/04/17 | Fri 30/06/17 |
| 21 | Submit DCO | 0 days | Fri 30/06/17 | Fri 30/06/17 |
| 22 | DCO Approval Period | 18 mons | Mon 03/07/17 | Tue 04/12/18 |
| 23 | DCO Confirmed | 0 days | Tue 04/12/18 | Tue 04/12/18 |




Nk018417 Manston Airport Masterplan - High Level Programme
Thu 20/10/16

Page 1

REVISION: A02

## SCHEDULE 5

## PROJECT MANAGEMENT SERVICES

**1.** In this Schedule, the following definitions apply:

| | |
|---|---|
| **Deliverables** | all Documents, products and materials developed by ROOL or its agents, subcontractors, consultants and employees in relation to the Services in any form, including computer programs, data, reports and specifications (including drafts). |
| **Document** | includes, in addition to any document in writing, any drawing, map, plan, diagram, design, picture or other image, tape, disk or other device or record embodying information in any form. |
| **Intellectual Property Rights** | patents, utility models, rights to inventions, copyright and neighbouring and related rights, moral rights, trade marks and service marks, business names and domain names, rights in get-up and trade dress, goodwill and the right to sue for passing off or unfair competition, rights in designs, rights in computer software, database rights, rights to use, and protect the confidentiality of, confidential information (including know-how and trade secrets) and all other intellectual property rights, in each case whether registered or unregistered and including all applications and rights to apply for and be granted, renewals or extensions of, and rights to claim priority from, such rights and all similar or equivalent rights or forms of protection which subsist or will subsist now or in the future in any part of the world. |
| **Services** | all of the activities to be undertaken or performed by ROOL as described in paragraph 2 of this Schedule 5. |
| **Term** | the period commencing on the date of this agreement and ending on the earlier of:<br>(i) the termination of the Agreement in accordance with its terms;<br>(ii) the occurrence of a Project Success Event; or<br>(iii) the occurrence of a Project Termination Event. |
| **ROOL's Team** | all employees, consultants, agents, professional advisers, subcontractors and third parties which it engages in relation to the Services. |

**2.** ROOL shall perform and provide the services necessary and appropriate to manage Phase 1, including but not limited to:

2.1. supervising and co-ordinating the work being carried out by the third party specialist suppliers, currently Bircham Dyson Bell LLP, Amec Foster Wheeler, RPS, Mouchel, Osprey, Viscount, Azimuth, Wordsmith and such other additional suppliers as may be appointed in the future;

2.2. liaising regularly with HM Planning Inspectorate and such other statutory agencies as may be appropriate from time to time;

2.3. reporting on the suppliers' work and arranging for representatives of Capital Investor to be present at meetings;

2.4. opening and operating the JVC's (and, if required, ROOL's) bank account at Barclays Bank PLC;

2.5. preparing and maintaining such books and records as may be required in the normal course of the business and as may be agreed with Capital Investor for the implementation of Phase 1;

2.6. managing public relations, a project website and social media in respect of Phase 1.

**3.** Notwithstanding any other provision of this agreement, ROOL may subcontract its obligations under this agreement to any one or more of the ROOL's Team without the prior consent of ROSP. ROOL shall remain responsible for all acts and omissions of such subcontractors as if they were its own.

**4.** ROOL shall use reasonable endeavours to:

4.1. provide the Services in accordance with the Budget and shall not incur any financial liability on behalf of the JVC other than in respect of those items of expenditure identified in the Budget;

4.2. provide the services in accordance with the Project Management Timeline;

4.3. co-operate with Capital Investor in all matters relating to the Services;

4.4. procure the availability of ROOL's Team to provide the Services during the Term;

4.5. promptly inform Capital Investor of any unavailability (or anticipated unavailability) of any member of ROOL's Team for longer than 15 Business Days. If Capital Investor requires, ROOL shall provide a suitably qualified replacement;

4.6. not make any changes to ROOL's Team without the prior written approval of Capital Investor (such approval not to be unreasonably withheld or delayed); and

4.7. ensure that ROOL's Team use reasonable skill and care in the performance of the Services.

**5.** ROOL shall:

5.1 notify Capital Investor as soon as it becomes aware of any health and safety hazards or issues which arise in relation to the Services;

5.2 obtain, and at all times maintain during the Term, all necessary licences and consents and comply with all relevant legislation in relation to the Services; and

5.3 allocate sufficient resources to the Services to enable it to comply with its obligations in this Schedule.

**6.** Capital Investor shall use reasonable endeavours to:

6.1 co-operate with ROOL in all matters relating to the Services; and

6.2 provide such information as ROOL reasonably requests.

**7.** ROOL shall not charge Capital Investor or JVC for the Services. Instead, ROOL and Capital Investor have agreed that each of Niall Lawlor, George Yerrall and Tony Freudmann (or their nominee(s)) may separately charge JVC for their work in procuring the provision of the Services, provided always that, during the time period set out in clause 6.9, the aggregate of such charges must not exceed the caps described in clause 6.9.

**8.** ROOL warrants to the JVC that:

8.1 ROOL will perform the Services with reasonable care and skill and in accordance with best commercial practices and standards in the industry for similar services; and

8.2 the Services and Deliverables will be provided in accordance with all applicable legislation from time to time in force.

**9.** ROOL assigns to the JVC, with full title guarantee and free from all third party rights, the Intellectual Property Rights and all other rights in the products of the Services (including the Deliverables).

**10.** At its own expense, ROOL shall, and shall use all reasonable endeavours to procure that any necessary third party shall, promptly execute and deliver such documents and perform such acts as may be required for the purpose of giving full effect to this Agreement, including securing for the JVC all right, title and interest in and to the Intellectual Property Rights and all other rights assigned to the JVC in accordance with paragraph 9 above.

**11.** ROOL shall obtain waivers of any moral rights in the products of the Services (including the Deliverables) to which any individual is now or may be at any future time entitled under Chapter IV of Part I of the Copyright Designs and Patents Act 1988 or any similar provisions of law in any jurisdiction.

**12.** ROOL will engage the JVC and Capital Investor in any material planning discussions from time to time and keep Capital Investor reasonably informed about the affairs of the JVC and progress towards each material milestone.

**13.** In particular, ROOL will facilitate regular discussions between appropriate members of its personnel and those of Capital Investor in relation to the JVC, the Airport or the Business, including, without limitation, in relation to performance issues, matters of concern, new developments, resource requirements, compliance with deadlines and such other matters as may be agreed between ROOL and Capital Investor from time to time.

**14.** ROOL will also ensure that Capital Investor and the JVC are given reasonable notice of any material meeting and the opportunity to attend all such meetings.

**15.** ROOL will provide monthly cash flow projections on or before the 20th of each month.

.....
Authorised Signatory

.....
Authorised Signatory

Executed as a Deed by
**HLX DIRECTORS LIMITED**
as Director for **M.I.O. INVESTMENTS LIMITED**

[redacted]
.....
**Director**

Executed as a Deed by
for and on behalf of **RIVEROAK STRATEGIC PARTNERS LIMITED**

In the presence of:
Witness Name: TOBY RICHARDS-CARPENTER
Address: 50 BROADWAY, LONDON SW1H 0BL

Signature: [redacted]
Occupation: SOLICITOR

Executed as Deed by
for and on behalf of **RIVEROAK MANSTON LIMITED**

[redacted]
**Director**

In the presence of:
Witness Name: TOBY RICHARDS-CARPENTER
Address: 50 BROADWAY, LONDON SW1H 0BL

Signature: [redacted]
Occupation: SOLICITOR

Executed as a Deed by [redacted]
Acting by his attorney Anthony Freudmann [redacted]
.....
In the presence of:
Witness Name: TOBY RICHARDS-CARPENTER
Address: 50 BROADWAY, LONDON SW1H 0BL

Signature: [redacted]
Occupation: SOLICITOR

Executed as Deed by
for and on behalf of **RIVEROAK OPERATIONS LIMITED**

[redacted]
**Director**

In the presence of:
Witness Name: TOBY RICHARDS-CARPENTER
Address: 50 BROADWAY, LONDON SW1H 0BL

Signature: [redacted]
Occupation: SOLICITOR

[redacted] .....

Authorised Signatory Nick Rothwell

[redacted] .....

Authorised Signatory Rico Seitz

Executed as a Deed by
**HLX DIRECTORS LIMITED**
as Director for **M.I.O. INVESTMENTS LIMITED**

Executed as a Deed by
for and on behalf of **RIVEROAK STRATEGIC PARTNERS LIMITED**

.....
**Director**

In the presence of:
Witness Name:
Address:

Signature:
Occupation:

Executed as Deed by
for and on behalf of **RIVEROAK MANSTON LIMITED**

.....
**Director**

In the presence of:
Witness Name:
Address:

Signature:
Occupation:

Executed as a Deed by [redacted]

.....
[redacted]

In the presence of:
Witness Name:
Address:

Signature:
Occupation:

Executed as Deed by
for and on behalf of **RIVEROAK OPERATIONS LIMITED**

.....
**Director**

In the presence of:
Witness Name:
Address:

Signature:
Occupation:

**DATED 29TH MARCH 2019**

**(1) M.I.O. INVESTMENTS LIMITED**

**(2) RIVEROAK STRATEGIC PARTNERS LIMITED**

**(3) RIVEROAK MANSTON LIMITED**

[redacted]

**AND**

**(5) RIVEROAK OPERATIONS LIMITED**

---

# DEED OF VARIATION TO JOINT VENTURE AGREEMENT

---

BDB PITMANS

50 Broadway London
SW1H 0BL United Kingdom
DX 2317 Victoria

T +44 (0)20 7227 7000
F +44 (0)20 7222 3480
W www.bdb-law.co.uk

**THIS AGREEMENT** is dated **29TH MARCH 2019**

**PARTIES**

(1) **M.I.O. INVESTMENTS LIMITED** a company registered in Belize with a registered IBC number 162,208 whose registered office and agent is Morgan & Morgan Trust Belize Limited, Blake Building, Suite 306, Corner of Eyre & Hutson Street, P.O. Box 2670, Belize City, Belize (**Capital Investor**);

(2) **RIVEROAK STRATEGIC PARTNERS LIMITED** (incorporated in England and Wales with company number 10269461) the registered office of which is at Calder & Co, 16 Charles II Street, London, SW1Y 4NW, UK (**JVC**);

(3) **RIVEROAK MANSTON LIMITED** (incorporated and registered in England and Wales with Company number 10286975) the registered office of which is at Calder & Co, 16 Charles II Street, London, SW1Y 4NW, UK (**ROML**);

[redacted]

(5) **RIVEROAK OPERATIONS LIMITED** (incorporated and registered in England and Wales with Company number 10311804) the registered office of which is at Calder & Co, 16 Charles II Street, London, SW1Y 4NW, UK (**ROOL**).

**BACKGROUND**

(A) The parties to this agreement entered into the Joint Venture Agreement for the purpose of regulating the operation of the JVC.

(B) In order to ensure the Joint Venture Agreement addresses further funding requirements of the JVC the parties now wish to vary the terms of the Joint Venture Agreement as set out in this agreement.

**AGREED TERMS**

1 **Interpretation**

1.1 The definitions and rules of interpretation in this clause apply in this agreement.

| | |
|---|---|
| **Business Day** | means any day other than a Saturday, Sunday or public holiday in England when banks in London are open for business. |
| **Joint Venture Agreement** | the joint venture agreement relating to Manston Airport made between the parties hereto dated 15 December 2016, as varied by a deed of variation dated 30 October 2018. |

1.2 Clause, schedule and paragraph headings shall not affect the interpretation of this agreement.

1.3 Words in the singular shall include the plural and vice versa.

1.4 A reference to writing or written does not include e-mail.

1.5 Any obligation in this agreement on a person not to do something includes an obligation not to agree or allow that thing to be done.

1.6 A reference to a document is a reference to that document as varied or novated (in each case, other than in breach of this agreement) at any time.

1.7 Any phrase introduced by the terms including, include, in particular or any similar expression shall be construed as illustrative and shall not limit the sense of the words preceding those terms.

1.8 A reference to 'party' or 'parties' refers to the parties hereto.

1.9 A reference to a 'clause' or 'schedule' shall be to a clause or schedule of this agreement or the Shareholders' Agreement as the context requires.

## 2 Variation to Shareholders' Agreement

2.1 With effect from the date of this agreement the Joint Venture Agreement shall continue in full force and effect as varied in accordance with clause 2.2.

2.2 The Joint Venture Agreement shall be varied as follows:

2.2.1 Clause 6.5 shall be amended by the insertion of the words:

"or (in the case of Capital Investor) pursuant to clause 6.9"

in between the words 'Budget' and '**(Additional Finance)**' such that the passage in question shall now read:

"There is no obligation on Capital Investor and ROML to provide any finance to the JVC beyond that set out in the Budget or (in the case of Capital Investor) pursuant to clause 6.13 **(Additional Finance)** but, if either does provide any Additional Finance:"

2.2.2 A new clause 6.13 shall be inserted as follows:

"Capital Investor shall provide any funding required by the JVC for the Purpose **(Purpose Funding)**."

2.2.3 A new clause 6.14 shall be inserted as follows:

"Any Purpose Funding shall be provided by way of subscriptions for 2019 Loan Notes together with a subscription at par for new A Shares in accordance with the formula set out at clause 6.15."

2.2.4 A new clause 6.15 shall be inserted as follows:

"If Capital Investor subscribes for 2019 Loan Notes pursuant to clause 6.14 it shall be entitled to subscribe for such number of A Shares as is equal to N, where

**N** equals New Capital divided by Current Value

**Current Capital** means the amount equal to the Principal Loan Note Amount plus the 2019 Loan Note Amount (excluding the proposed Purpose Funding)

**Current Value** equals Current Capital divided by Issued Shares

**Issued Shares** means the number of Shares in issue immediately before the subscription for 2019 Loan Notes; and

**New Capital** equals the principal amount of the Purpose Funding.

For example, if there are 10,000 Shares in issue, Current Capital is £4,512,500 and a further £500,000 is required, N will be 500,000/(£4,512,500/10,000) and hence 1,108 A Shares would be issued to the relevant party at their nominal value (that is, in return for a rounded-up payment of £0.12) when it subscribes for the £500,000 of 2019 Loan Notes."

2.2.5 A new clause 6.16 shall be inserted as follows:

"Each party hereby agrees that it will vote in favour of any resolution required to issue A Shares pursuant to clause 6.15 and disapply any pre-emptions rights in relation to such shares"

2.2.6 The following new definitions shall be added to clause 1.1:

| | |
|---|---|
| "**2019 Loan Note Amount** | the principal outstanding amount of all 2019 Loan Notes in issue for the time being." |
| "**2019 Loan Note Instrument** | the instrument comprising up to £15,000,000 Interest-free non-convertible loan stock entered into between the JVC and Capital Investor on or around 29 March 2019." |
| "**2019 Loan Notes** | the loan notes issued under the 2019 Loan Note Instrument." |
| "**Compulsory Acquisition Purpose** | means the purpose of making funds available to the JVC to enable the JVC to meet claims for land compensation arising from the proposed development of Manston Airport in Kent." |
| "**Noise Mitigation Purpose** | means the purpose of making funds available to the JVC to enable the JVC to meet its obligation to fund the noise mitigation measures accompanying a grant of development consent for it to develop Manston Airport in Kent." |
| "**Purpose** | means either the Noise Mitigation Purpose or the Compulsory Acquisition Purpose." |

"**Purpose Funding** has the meaning given in clause 6.13."

## 3 Third party rights

This agreement does not confer any rights on any person that is not a party to this agreement pursuant to the Contracts (Rights of Third Parties) Act 1999.

## 4 Severance

4.1 If any provision of this agreement (or part of a provision) is found by any court or administrative body of competent jurisdiction to be invalid, unenforceable or illegal, the other provisions shall remain in force.

4.2 If any invalid, unenforceable or illegal provision would be valid, enforceable or legal if some part of it were deleted or modified, that provision shall apply with whatever modification is necessary to give effect to the commercial intention of the parties.

## 5 Variation

A variation of this agreement shall only be valid if it is in writing and signed by each of the parties hereto.

## 6 Costs

All costs and expenses in connection with the negotiation, preparation, execution and performance of this agreement, and any documents referred to in it, shall be borne by the party that incurred the costs.

## 7 Notices

7.1 A notice given to a party under or in connection with this agreement shall be in writing and shall be delivered by hand or sent by pre-paid first-class post, recorded delivery or special delivery (in the case of the Company) to that party's register's office from time to time and (in each other case) to such party's address as contained in the parties clause to this agreement (or to such other address as that party may notify to the other party in accordance with this agreement).

7.2 Delivery of a notice is deemed to have taken place (provided that all other requirements in this clause 7 have been satisfied) if delivered by hand, at the time the notice is left at the address, or if sent by post on the second Business Day after posting, unless such deemed receipt would occur outside business hours (meaning 9.00 am to 5.30 pm Monday to Friday on a day that is not a public holiday in the place of deemed receipt), in which case deemed receipt will occur when business next starts in the place of receipt (and all references to time are to local time in the place of receipt).

7.3 For the avoidance of doubt a notice shall not be validly served if given by email.

7.4 This clause 7 does not apply to the service of any proceedings or other documents in any legal action.

## 8 Whole agreement

8.1 This agreement and the documents referred to or incorporated in it or executed contemporaneously with it constitutes the entire agreement between the parties and supersedes and extinguishes all previous agreements, promises, assurances, warranties, representations and understandings between them, whether written or oral, relating to their subject matter.

8.2 Each party agrees that it does not rely on and shall have no remedies in respect of any statement, representation, assurance or warranty (whether made innocently or negligently) that is not set out in this agreement or the documents referred to or incorporated in it or executed contemporaneously with it. Each party agrees that it shall have no claim for innocent or negligent misrepresentation or negligent misstatement based on any statement in this agreement or the documents referred to or incorporated in it or executed contemporaneously with it in it.

## 9 Counterparts

This Deed may be executed in any number of counterparts and all such counterparts taken together shall be deemed to constitute one and the same instrument.

## 10 Governing law and jurisdiction

10.1 This agreement and any dispute or claim arising out of or in connection with it or its subject matter shall be governed by and construed in accordance with the law of England and Wales.

10.2 Each party submits to the exclusive jurisdiction of the Courts of England and Wales and waives any objections to proceedings in such courts on the grounds of venue or on the grounds that proceedings have been brought in an inconvenient forum.

This document is executed as a deed and is delivered and takes effect on the date stated at the beginning of it.

EXECUTED as a deed by HLX DIRECTORS LIMITED as director for )

M.I.O. INVESTMENTS LIMITED )

[redacted] .....

Nicholas Rothwell Authorised Signatory

[redacted] .....

Rico Seitz Authorised Signatory

EXECUTED as a deed by )

RIVEROAK STRATEGIC PARTNERS LIMITED )

acting by )

NIALL LANLOR )

a director; and )

[redacted]

Director

ANTHONY FRELDMANN )

a director )

[redacted] .....

Director

[redacted]

EXECUTED as a deed by )

RIVEROAK MANSTON LIMITED )

acting by )

NIALL LAWLOR )

a director; and )

ANTHONY FREUDMANN )

a director )

[redacted]

Director

[redacted]

.....

Director

EXECUTED as a deed by )

RIVEROAK OPERATIONS LIMITED )

acting by )

NIALL LAWLER )

a director; and )

ANTHONY FREUDMANN )

a director )

[redacted]

[redacted] Director

.....

Director

**DATED 29TH MARCH 2019**

**(1) RIVEROAK STRATEGIC PARTNERS LIMITED**

**and**

**(2) M.I.O INVESTMENTS LIMITED**

---

# LOAN NOTE INSTRUMENT

**Constituting up to £15,000,000 interest-free non-convertible loan stock 2025**

---

---

BDB PITMANS

50 Broadway London
SW1H 0BL United Kingdom

T +44 (0)20 7227 7000
F +44 (0)20 7222 3480

**THIS INSTRUMENT** is entered into the 29th day of March 2019

**BETWEEN:**

(1) **RIVEROAK STRATEGIC PARTNERS LIMITED** (incorporated in England and Wales under company number 10269461) the registered office of which is at Calder & Co, 16 Charles II Street, London, SW1Y 4NW, UK (the "**Company**"); and

(2) **M.I.O. INVESTMENTS LIMITED** a company registered in Belize with a registered IBC number 162,208 whose registered office and agent is Morgan & Morgan Trust Corporation Belize Limited, Blake Building, Suite 306, Corner of Eyre & Hutson Street, P.O. Box 2670, Belize City, Belize (**Capital Investor**).

**WHEREAS**

(A) By a resolution of the Directors of the Company passed on or around the date of this Instrument the Company has created up to £15,000,000 Interest-free Non-convertible Loan Notes 2025 to be constituted on and subject to the terms and conditions contained in this Instrument.

(B) Capital Investor has agreed to subscribe for Notes (as defined below) on and subject to the terms and conditions contained in this Instrument.

**IT IS HEREBY AGREED** as follows:

## 1 Definitions and interpretation

1.1 In this Instrument:

**"Act"**
means the Companies Act 2006;

**"Articles"**
means the articles of association of the Company from time to time;

**"Business Day"**
means any day other than a Saturday, Sunday or public holiday in England when banks in London are open for business;

**"Capital Investor Director"**
means any director of the Company nominated to act as a director by Capital Investor in accordance with the Articles;

**"Certificate"**
means any certificate issued to a Noteholder pursuant to the provisions of this Instrument in the form or substantially in the form set out in Schedule 1 (*Certificate*);

**"Compulsory Acquisition Purpose"**
means the purpose of making funds available to the Company to enable the Company to meet claims for land compensation arising from the proposed development of Manston Airport in Kent;

**"Development Consent Order"**
has the meaning given in the Joint Venture Agreement;

**"the Directors"**
means the directors for the time being of the Company;

**"Encumbrance"**
means and includes any interest or equity of any person (including any right to acquire, option or right of pre-emption) any encumbrance, mortgage, charge, assignment, pledge, lien, right of

set-off, retention of title, hypothecation or security interest of any kind whatsoever or any other security agreement or arrangement;

**"Events of Default"**
means any of the events set out in clause 7 (*Accelerated Repayment and Events of Default*);

**"Instrument"**
means this instrument including the Schedules hereto as from time to time modified in accordance with the provisions contained in this Instrument;

**"Issue Notice"**
has the meaning given in clause 3.2;

**"Joint Venture Agreement"**
means the joint venture agreement entered into on 15 December 2016 between (1) the Company (2) ROML (3) Niall Lawlor (4) ROOL and (5) Capital Investor, as amended pursuant to a deed of variation entered into on 30 October 2018 and a further deed of variation entered into on or around the date of this Instrument;

**"Listing"**
means the admission of the Company's shares to the Official List of the UK Listing Authority or to the AIM market of the London Stock Exchange becoming effective or the granting of an application by the Company for the Company's shares to be dealt in on any other recognised investment exchange;

**"London Stock Exchange"**
means London Stock Exchange plc;

**"Noise Mitigation Purpose"**
means the purpose of making funds available to the Company to enable the Company to meet its obligation to fund the noise mitigation measures accompanying a grant of development consent for it to develop Manston Airport in Kent;

**"Noteholder"**
means a person for the time being entered in the Register as a holder of Notes;

**"Notes"**
means the interest-free non-convertible loan notes 2025 hereby constituted or, as the case may require, the amount thereof for the time being issued and outstanding or a specific portion thereof;

**"Project Termination Event"**
has the meaning given in the Joint Venture Agreement;

**"Purpose"**
means either the Noise Mitigation Purpose or the Compulsory Acquisition Purpose;

**"recognised investment exchange"**
means a recognised investment exchange as defined in section 285 of the Financial Services and Markets Act 2000;

**"Redemption"**
includes repayment and the words "**redeem**" or "**redeemed**" and "**repay**" or "**repaid**" shall be construed accordingly;

**"Register"**
means the register required to be maintained pursuant to clause 8 (Register);

**"Repayment Date"**
has the meaning given in schedule 2;

**"ROML"**
Riveroak Manston Limited a company incorporated and registered in England and Wales with Company number 10286975 whose registered office is at Calder & Co, 16 Charles II Street, London, SW1Y 4NW, UK;

**"ROML Director"**
means any director of the Company nominated to act as a director by ROML in accordance with the Articles;

**"ROOL"**

Riveroak Operations Limited a company incorporated and registered in England and Wales with Company number 10311804 whose registered office is at Calder & Co, 16 Charles II Street, London, SW1Y 4NW, UK;

**"Subscription Date"**
has the meaning given in clause 3.4.2;

**"£"**
means the lawful currency of the United Kingdom for the time being;

**"Tax"**
shall be construed so as to include all present and future taxes, charges, imposts, duties, levies, deductions, withholdings or amounts or charges of a similar nature, or any amount payable on account of, or as security for, any of the foregoing, including any penalties, fines, surcharges or interest payable in connection with such amounts and "**Taxes**" and "**Taxation**" shall be construed accordingly;

**"UK Listing Authority"**
means the Financial Services Authority acting in its capacity as the competent authority for the purposes of Part VI of the Financial Services and Markets Act 2000, including where the context so permits, any committee, employee, officer or servant to whom any function of the UK Listing Authority may for the time being be delegated;

1.2 In this Instrument:

(a) unless otherwise specified references to clauses, sub-clauses and Schedules are to clauses, sub-clauses of and Schedules to this Instrument and references within a Schedule to paragraphs are to paragraphs of that Schedule;

(b) the clause and paragraph headings are included for convenience only and shall not affect the construction of this Instrument;

(c) words denoting the singular shall include the plural and vice versa;

(d) words denoting any gender shall include a reference to each other gender;

(e) references to persons shall include references to natural persons, firms, partnerships, companies, corporations, associations, organisations, governments, states, foundations and trusts (in each case whether or not having separate legal personality);

(f) references to a party or to parties shall, where the context so admits, mean a party or parties to this Instrument, their successors and permitted assigns;

(g) words and expressions defined in the Act shall, where the context so admits, bear the same meanings in this Instrument;

(h) references to any statute, statutory provision or EC Directive shall be construed as references to that statute, statutory provision or EC Directive as respectively amended, consolidated, extended or re-enacted as at the date of this Instrument and to any rules, orders, regulations, instruments or other subordinate legislation made thereunder; and

(i) a reference to any agreement or other document shall be construed as a reference to that agreement or document as from time to time supplemented or amended.

## 2 Amount and ranking of notes

2.1 The Notes shall be known as up to £15,000,000 Interest-free Non-convertible Loan Notes 2025.

2.2 The principal amount of the Notes is limited to £15,000,000. The Notes shall only be issued in amounts of one pound (£1.00) or any multiple thereof.

2.3 The whole of the Notes, as and when issued, shall rank pari passu equally and rateably without discrimination or preference.

2.4 The Notes shall not bear interest.

## 3 Issue of Notes to Capital Investor

3.1 Notes may only be issued in consideration for funds advanced to the Company by Capital Investor for the Purpose.

3.2 Notes shall be issued to Capital Investor in such tranches as the Purpose may require from time to time on the Company giving at least 5 Business Days' prior written notice to Capital Investor ("**Issue Notice**") at any time following the date of this Instrument until the earlier of:

3.2.1 the fifth anniversary of the grant of the Development Consent Order, and

3.2.2 30 June 2025.

3.3 Capital Investor shall not have any obligation to subscribe for Notes if a Project Termination Event occurs.

3.4 Each Issue Notice shall:

3.4.1 state the nominal amount of Notes to be subscribed for by Capital Investor ("**Subscription Amount**");

3.4.2 state the date on which such subscription is to occur (being a date not less than 5 Business Days following the date of deemed service of the Issue Notice) ("**Subscription Date**");

3.4.3 specify the Purpose for which funding is required, including (in the case of a Compulsory Acquisition Purpose) the address of the property which is the subject of the claim for land compensation; and

3.4.4 where the tranche exceeds £10,000, be signed by a Capital Investor Director and a ROML Director.

## 4 Payment and application of subscription monies

4.1 Full payment of the subscription monies for the Notes to be subscribed pursuant to clause 3 shall be made no later than the Subscription Date for payment to such account as the Company shall nominate in writing to the subscriber in cleared or immediately available funds.

4.2 Upon receipt by the Company of the relevant subscription monies the Company shall forthwith allot and issue the Notes subscribed, free from Encumbrances and shall register the subscriber as a fully paid holder of the Notes applied for and shall issue forthwith a Certificate in respect of the Notes subscribed.

4.3 The subscription monies for the Notes shall be applied by the Company solely for discharging its obligations in connection with the Purpose as stated in the relevant Issue Notice.

## 5 Redemption

5.1 The Company shall, as and when any Notes are due to be redeemed in accordance with the provisions contained in Schedule 2 (Provisions as to Repayment), pay to the Noteholder the full principal amount of such Notes to be redeemed.

5.2 The principal amount of the Notes to be redeemed shall be paid by telegraphic transfer to an account notified by the Noteholder to the Company, provided that the Company has received written notice of such account not less than 10 Business Days prior to the date of payment.

5.3 All payments required to be made by the Company under this Instrument shall be made without reference to any set-off or counterclaim and shall be made free and clear of and without any deduction for or on account of any set-off or counterclaim.

5.4 All payments to be made by the Company under or in respect of the Notes shall be made free and clear of and without any deduction or withholding of Tax save as required by law.

## 6 Entitlement to a certificate

6.1 The Noteholder shall be entitled to one Certificate stating the amount of the Notes held by him, or one Certificate for each tranche of Notes issued to him.

6.2 Every Certificate shall be executed and delivered as a deed of the Company in accordance with the Articles and shall be in the form or substantially in the form set out in Schedule 1 (*Certificate*).

## 7 Accelerated repayment and events of default

7.1 The Notes, to the extent they have not been previously redeemed, shall on demand become immediately due and repayable at par on the happening of any of the following events:

(a) if the Company fails to make payment when due of any principal hereunder;

(b) if a resolution is passed for winding up the Company (except for the purpose of a reconstruction or amalgamation previously approved by the Noteholder);

7.2 The Company shall, upon becoming aware of the happening of any Event of Default, forthwith give notice in writing to each Noteholder of the same.

## 8 Register

8.1 A register of the Noteholders will be kept at the registered office of the Company and there shall be entered in the Register:

(a) the name and address of the Noteholder for the time being;

(b) the amount of Notes held by each Noteholder;

(c) the date at which the name of the Noteholder is entered in respect of the Notes standing in his name;

(d) the date at which any person ceased to be a Noteholder; and

(e) the serial number of each Certificate issued and the date of issue thereof.

8.2 Any change of name or address on the part of any Noteholder shall be notified forthwith to the Company following which the Register shall be altered accordingly.

8.3 The Noteholder may at all reasonable times during office hours inspect the said Register and (at its expense) shall be entitled to take copies thereof.

## 9 Dealings

The Notes shall not be capable of being dealt in on any recognised investment exchange in the United Kingdom or elsewhere and no application has been or will be made to any recognised investment exchange for permission to deal in or for an official or other quotation for the Notes.

## 10 General meetings of the company

The Notes do not carry the right to attend or vote at general meetings of the Company.

## 11 Alteration of this instrument

The provisions of this Instrument and the conditions on which the Notes are held may only be altered, abrogated or added to with the consent in writing of the Company and Capital Investor.

## 12 Enforcement of Noteholder's rights

The Company hereby covenants with each Noteholder duly to perform and observe the obligations on its part contained in this Instrument.

## 13 Successors

This document shall be binding upon and for the benefit of the parties, their respective successors (including in the case of natural persons their legal personal representatives) and permitted assigns.

## 14 Contracts (Rights of Third Parties) Act 1999

No term of this Instrument is enforceable pursuant to the Contracts (Rights of Third Parties) Act 1999 by any person other than the Company and the Noteholder.

## 15 Governing law and jurisdiction

15.1 This Instrument shall be governed by and construed in accordance with the Laws of England and Wales.

15.2 Each party submits to the exclusive jurisdiction of the Courts of England and Wales and waives any objections to proceedings in such courts on the grounds of venue or on the grounds that proceedings have been brought in an inconvenient forum.

## SCHEDULE 1

Certificate

| Certificate No. | Registration Date | Amount |
|---|---|---|
| | | £ |

**RIVEROAK STRATEGIC PARTNERS LIMITED**

(Incorporated under the Companies Act 2006
and registered in England and Wales under No. 10269461)

---

**INTEREST-FREE NON-CONVERTIBLE LOAN NOTES 2025**

Issued pursuant to the Articles of Association of the Company and to a resolution of the board of directors passed on ● ● 2019

THIS IS TO CERTIFY THAT ● of ● is/are the registered holder(s) of [ ] Interest-free Non-convertible Loan Notes 2025 which Notes are constituted by an Instrument entered into by the Company on ● 2019 (the "**Instrument**") and issued with the benefit of, and subject to, the provisions contained in the Instrument.

Dated 20●●

**EXECUTED** as a **DEED** by **RIVEROAK STRATEGIC PARTNERS LIMITED** acting by )
)
)
a director )
)
And )

a director

.....

director

.....

director

*Notes:*

1. *A copy of the Instrument is available for inspection at the registered office of the Company.*
2. *The Notes are transferable in the circumstances specified in the Instrument but are not capable of being dealt in on any recognised investment exchange and accordingly no application will be made to any recognised investment exchange for listing or quotation of the Notes.*

## SCHEDULE 2

Provisions as to repayment

1 **REPAYMENT**

1.1 Unless previously repaid the Notes shall be redeemed at par by the Company on the earlier of:

(a) the date falling 10 Business Days after receipt by the Company of an instruction signed by ROML and Capital Investor to repay the Notes;

(b) the date of sale of the entire issued share capital of the Company to a third party by ROML and Capital Investor;

(c) the date of sale of the whole or substantially the whole of the assets of the Company to a third party;

(d) immediately prior to a Listing;

(e) 31 December 2025; and

(f) the winding-up of the Company;

("**Repayment Date**").

2 **PURCHASE AND PREPAYMENT**

The Company shall not have the right to prepay any of the Notes unless each Noteholder shall have given its prior written consent to such prepayment.

3 **RETURN OF CERTIFICATES**

3.1 Where the Notes are due to be repaid under any of the provisions of the Instrument the Noteholder shall, not later than the Repayment Date, deliver up to the Company at its registered office for the time being the Certificate(s) for his Notes which are due to be repaid in order that the same may be cancelled. Upon such delivery and against a receipt for the principal moneys and interest payable in respect of the Notes to be repaid the Company shall pay to the Noteholder the amount payable to him in respect of such repayment and such payment may be made through a bank on behalf of the Company if the Company shall think fit.

3.2 If the Noteholder shall fail or refuse to deliver up the Certificate(s) therefor (or, in the absence of such Certificate, an indemnity in lieu thereof in a form reasonably satisfactory to the Directors) in accordance with paragraph 3.1 of this Schedule 3 (Provisions as to Repayment) at the time and place fixed for the repayment thereof or shall fail or refuse to accept payment of the moneys payable in respect thereof:

(a) the moneys payable to the Noteholder shall be set aside by the Company and paid into a separate bank account and held by the Company in trust for the Noteholder but without interest;

(b) any such setting aside shall be deemed for all the purposes of the Instrument to be a payment to the Noteholder and the Company shall thereby be discharged from all obligations in connection with such Notes; and

(c) any such amount so paid in or deposited which remains unclaimed after a period of six years from the making of the payment in or deposit shall revert to the Company notwithstanding that in the intervening period the obligation to pay the same may have been provided for in the books, accounts and other records of the Company.

## SCHEDULE 3

Provisions as to notices and other matters

1 **TRUSTS NOT RECOGNISED**

1.1 Except as required by law or as ordered by a Court of competent jurisdiction the Company will recognise the registered holder of the Notes as the absolute owner thereof and shall not be bound to take notice or see to the execution of any trust whether express, implied or constructive to which the Notes may be subject or to enter notice of any such trust on the Register in respect of the Notes.

1.2 The receipt of the registered holder for the time being of the Notes, or in the case of joint registered holders the receipt of that one whose name stands first in the Register in respect of such joint holding, for the principal moneys or interest from time-to-time accruing due in respect thereof or for any other moneys payable in respect thereof shall be a good discharge to the Company notwithstanding any notice it may have whether express or otherwise of the right, title, interest or claim of any other person to or in such Notes, interest or moneys.

2 **LOST OR DESTROYED CERTIFICATES**

2.1 If any Certificate be worn out or defaced then upon production thereof to the Directors they may cancel the same and may issue a new Certificate in lieu thereof and if any such Certificate be lost or destroyed then upon proof thereof to the reasonable satisfaction of the Directors (or in default of proof on such indemnity as the Directors may deem adequate being given) a new Certificate in lieu thereof may be given to the persons entitled to such lost or destroyed Certificate.

2.2 An entry as to the issue of the new Certificate and indemnity (if any) shall be made in the Register.

2.3 There shall be paid to the Company in respect of any new Certificate issued hereunder such sum as the Directors shall determine to be reasonable in reimbursement of the expenses incurred in connection therewith.

3 **NOTICES**

3.1 Any notice to be served under this Instrument shall be in writing and shall be served by delivering the same or sending the same by pre-paid registered or recorded delivery post (or, in the case of an address for service outside the United Kingdom, by registered airmail) or by email to the party on which it is to be served at, in the case of notice to the Company, its registered office for the time being or to both of the email addresses set out in paragraph 3.4(a) below and in the case of notice to a Noteholder its address shown in the Register or to the email address shown in paragraph 3.4(b) below or in any case to such other address or email address as any party may from time to time notify in writing to the other parties for this purpose. In the case of joint registered holders of any Notes a notice given to the Noteholder whose name stands first in the Register in respect of such Notes shall be sufficient notice to all the joint holders.

3.2 Any notice shall be deemed to have been served:

(a) if delivered, at the time of delivery;

(b) if sent by post, on the second Business Day next following the date on which it was properly posted;

(c) if sent by registered airmail, five Business Days next following the date on which it was properly posted; and

(d) if sent by email, at the time of transmission if transmitted before 5pm on a Business Day but otherwise at 9.00am on the next following Business Day.

3.3 In proving service of any notice by delivery or by post it shall be sufficient to prove that the envelope containing the same was properly addressed and was delivered or sent by registered or recorded delivery post as aforesaid; in proving service of any notice by email it shall be sufficient to prove the notice was sent to the correct email address.

3.4 The email addresses for service of notice shall be:

(a) in the case of the Company: nick.rothwell@helixfiduciary.com and tony.freudmann@rsp.co.uk;

(b) in the case of a Noteholder: nick.rothwell@helixfiduciary.com

**IN WITNESS** of the above this document has been executed and delivered as a deed by each of the parties on the date written at the beginning of this document.

**EXECUTED** as a **DEED** by **RIVEROAK STRATEGIC PARTNERS LIMITED** acting by NIALL LAWLOR a director; and ANTHONY FREEDMAN a director

[redacted]

director

.....

director

**EXECUTED** as a **DEED** by **HLX DIRECTORS LIMITED** as director for **M.I.O. INVESTMENTS LIMITED**

[redacted]

.....

Nicholas Rothwell Authorised Signatory

[redacted]

.....

Rico Seitz Authorised Signatory

**APPENDIX 5: Correspondence from Helix Fiduciary with appendices from Foot Anstey and HMRC**

HELIX

HM Planning Inspectorate
Bristol
United Kingdom

25th March, 2019

Dear Sirs,

With reference to the hearing regarding the funding of the Manston DCO project that took place on the 20th March 2019 I am writing to clarify certain matters and to give an update on statements made earlier.

In my letter dated 12.7.18 addressed to yourselves I referred to approaching HMRC on a named basis for the UK resident investors, to utilise non UK earned income for Business Investment Relief purposes[1]. In this regard I have attached to this letter 3 confirmations received from HMRC dated 1 December 2016 accepting our proposed use of the UK resident shareholders' funds. This is to ensure to the Inspectorate that our UK investors, Mr XXXXXX, Mr XXXXXXXXXX and Mr. XXXXXXXXXX are reporting all funds that they are investing into the project on their personal tax returns to HMRC[2]. The other significant investors are Swiss resident, being myself, Mr. Rico Seitz and Mr. Gerhard Huesler who are directors on the board of RiverOak Strategic Partners Limited "RSP" which I stated and alluded to during my testimony at the hearing. All of the Swiss investors are also fully declared to the Swiss Tax authorities.

As stated at the hearings and also as part of the original funding statements the investors are committed to the completions of the project. Helix Fiduciary AG "Helix" is in control of the bank accounts from which the funding is provided by way of loans to RiverOak Strategic Partners Limited. We have to date committed £14,758,185 to the project. This includes the purchase of the fuel storage facility known as "Jentex" for the sum of £2,658,185 including costs and all taxes plus the funding of RSP's auditor's account with £500,000 for blight costs.

With the original funding statement Helix also provided a letter from PWC, one of the "big four" accounting firms, which had undertaken a review of two of our fiduciary structures which are solely managed and controlled by Helix. The findings from their report confirmed the identities of the ultimate beneficial owners of those accounts (Mr XXXXXX, Mr XXXXXXXXXX and Mr. XXXXXXXXXX), the fact that the entire funds of the various accounts did not have the assets pledged in favour of the bank or any pledges or guarantees recorded by

[1] Attached is a letter from the individuals' agent regarding the application of Business Investment Relief together with the 3 confirmations from HMRC that we may source the project with certain funds.
[2] The BIR investments are reported annually after the end of the tax year in which they arose.

**Helix Fiduciary AG** | Schanzeneggstrasse 3 | CH-8002 Zürich | Switzerland
helixfiduciary.com | Phone +41 (0)44 206 50 80 | Fax +41 (0)44 206 50 88

the bank in favour of another bank or third party and finally, each structure had the currency equivalent that exceeded the sum of £15 million (a total that exceeded £30 million). This amount is substantially more than is already required.

Helix can confirm that nothing declared in the letter of PWC addressed to the Inspectorate has changed at the date of this letter except the total values of each account have increased significantly due to performance of the publically traded assets held. We confirm that these structures and assets under the Automatic Exchange of Information are also reported indirectly to HMRC.

It was questioned at the hearings whether we truly had the resources or the commitment to complete this project of the DCO and the CPO of the land. The commitment we have shown to date we believe cannot be doubted. No sensible person in their right mind would believe that we could spend the level of funds that we have and that we would not follow through to the end.

The reason for our redaction is that our co-investors, who are not directors on RSP, are all very successful individuals and feel that if their identities were revealed at this time they would become the objects of hostile social media coverage,. Further if we showed the level of assets in their accounts even on a redacted basis, should their identities be revealed to the public later, it would not take a lot of thought by the media to connect all the bank information with the individuals concerned.

We appreciate that in an ideal world the Examining Authority would like to know the identity of all investors. However, we are dealing here with not with a PLC or a large public authority but with private individuals who have chosen to invest in a major UK infrastructure project under the provisions of the Business Investment Relief Scheme as developed and approved by HM Treasury. They have already made full and complete disclosure to HMRC who are aware of their identities. They have submitted themselves to the intense scrutiny to be expected of HMRC and to whom they also make annual returns in respect of this investment.

Yours sincerely
For and on behalf of
Helix Fiduciary AG

[redacted]

Nicholas Rothwell
Director

[redacted]

Rico Seitz
Director

FootAnstey

**To Whom It May Concern:**

We act for X, Y and Z ("**the Individuals**") and have done so for over 5 years. We advise the Individuals on their personal tax affairs in the UK (amongst other things).

The Individuals are all non-domiciled in the UK but are or have previously been, tax resident in the UK. The Individuals have elected in each year of tax residence in the UK to be taxed on the *remittance basis*, thereby making each of them *remittance basis users* ("**RBUs**").

The basic premise of the remittance basis of taxation is that UK tax will only be payable on foreign income or gains ("**FIGs**") received or realised by the RBU (or any "Relevant Person"[1] in relation to the RBU) when the same are brought to the UK, or otherwise remitted. The definition of a "remittance" is wide and would ordinarily include the situation where FIGs are brought to the UK to invest in private companies.

"Business Investment Relief" was introduced from 6 April 2012 as a means of allowing FIGs to be brought to the UK without the usual remittance rules applying. It was designed to encourage inward investment in to the UK by non-domiciled individuals.

There are strict conditions which have to be satisfied before the relief is available but in general terms:

1 There must be a "qualifying investment" in a "target company";

2 The investment must be made within 45 days of the FIGs being brought to the UK;

3 The RBU and no Relevant Person in relation to the RBU can obtain or be expected to obtain any related benefit whether directly or indirectly from the investment; and

4 The RBU must claim the relief in his or her self-assessment tax return for the relevant year.

The qualifying investment can be made by way of secured/unsecured loan or a subscription for newly issued or existing, ordinary or preference shares in the target company, which must be a private limited company. The company must be a trading company or be a holding company of a trading group or a stakeholder company, which invests in trading companies.

It is possible to obtain advanced clearance from HMRC about the availability of BIR, prior to the investment being made.

In the present case, we advised the Individuals about the availability of BIR on the proposed transfer of their offshore income into M.I.O Investments Limited which in turn invested the funds into RiverOak Strategic Partners Limited.

We applied to HMRC for advanced clearance and the Individuals were made known to HMRC as part of this application. The clearance was given on 1 December 2016 (see letters attached). The clearance was given subject to the circumstances and the nature of the investment as described in the clearance application and subsequent correspondence with HMRC remaining the same.

We confirm that the circumstances as described to HMRC remain the same.

[redacted]

**Deborah Carrivick**
**Partner, Foot Anstey LLP**

[1] A Relevant Person is the individual taxpayer, his or her spouse and minor children/grandchildren and certain connected trusts and companies

HM Revenue & Customs

**Business Investment Relief**
**HM Revenue and Customs**
BX9 1BN

Mr

LONDON

**Phone** 03000 527416
8.30am-5.00pm, Monday to Friday

**Fax** 03000 527402

**Web** www.gov.uk

**Date** 1 December 2016
**Our ref** 0500

Dear Mr

**Business Investment Relief – Advance Assurance**

Thank you for your agent's letters and enclosures of 4 October and 11 November 2016.

I can confirm that, on the basis of the information your agent has supplied, it is the opinion of HM Revenue and Customs (HMRC) that the proposed investment in RiverOak Strategic Partners Limited can be treated as a qualifying investment as defined in section 809VC of the business investment relief provisions in Chapter A1 of Part 14 Income Tax Act 2007(ITA).

I remind you that:

- As the person claiming relief, you are wholly responsible for the accuracy of the information supplied to HMRC.
- This opinion is based solely on the information you provided and will not apply in any circumstances beyond those described by you.
- If any of the circumstances or the nature of the investment differ from those described by you, or other facts come to light which have an impact on whether the investment is a qualifying investment, HMRC will not be bound by this opinion.
- This opinion is given on the basis of the legislation in force at the date of this letter. It may not apply if there are any changes to that legislation in the future.

You can find guidance on the business investment relief on our website www.HMRC.gov.uk. Please refer to the Information Note and associated Guidance Note: Changes to the Remittance Basis, to find out:

- When an investment will qualify for the relief
- The actions you must take to claim relief
- Your ongoing responsibilities in relation to the investment
- What to do if you extract funds from your investment directly or indirectly.

This advance assurance applies to you alone, as the applicant, and to the specific investment made by a relevant person on which you asked for an opinion. Nothing stated or implied in this letter can be relied upon by any other person including those making investments in the same target company or the target company itself.

Although we have provided this assurance please be aware that we do have reservations about the above company's likely trading position. As such we expect you and your agent to keep the position under review and to expect that HMRC will do likewise. With that in mind it would be helpful if, for the two years after the claim is made, a "white notes" entry is made on your tax return to summarise the position as this may help avoid us having to open formal enquiries.

In the vast majority of cases an advance assurance we give will be correct in law and therefore binding on HMRC. However there are some circumstances which mean that we can no longer be bound by an advance assurance we have given. Please read the section 'When you can rely on information or advice provided by HMRC' for full information on when you can rely on an advance assurance response from us. This can be found at http://www.hmrc.gov.uk/pdfs/info-hmrc.htm.

Please note that our new address is Business Investment Relief, HM Revenue and Customs, BX9 1BN. If you write to us but do not use this address then we may not get your post.

Yours sincerely

**Cameron Wilson**
Customer Relationship Manager

To find out what you can expect from us and what we expect from you go to **www.gov.uk/hmrc/your-charter** and have a look at 'Your Charter'.

HM Revenue & Customs

**Business Investment Relief**
**HM Revenue and Customs**
BX9 1BN

Mr

LONDON

**Phone** 03000 527416
8.30am-5.00pm, Monday to Friday

**Fax** 03000 527402

**Web** www.gov.uk

**Date** 1 December 2016
**Our ref** - -0498

Dear Mr

**Business Investment Relief – Advance Assurance**

Thank you for your agent's letters and enclosures of 4 October and 11 November 2016.

I can confirm that, on the basis of the information your agent has supplied, it is the opinion of HM Revenue and Customs (HMRC) that the proposed investment in RiverOak Strategic Partners Limited can be treated as a qualifying investment as defined in section 809VC of the business investment relief provisions in Chapter A1 of Part 14 Income Tax Act 2007(ITA).

I remind you that:

- As the person claiming relief, you are wholly responsible for the accuracy of the information supplied to HMRC.
- This opinion is based solely on the information you provided and will not apply in any circumstances beyond those described by you.
- If any of the circumstances or the nature of the investment differ from those described by you, or other facts come to light which have an impact on whether the investment is a qualifying investment, HMRC will not be bound by this opinion.
- This opinion is given on the basis of the legislation in force at the date of this letter. It may not apply if there are any changes to that legislation in the future.

You can find guidance on the business investment relief on our website www.HMRC.gov.uk. Please refer to the Information Note and associated Guidance Note: Changes to the Remittance Basis, to find out:

- When an investment will qualify for the relief
- The actions you must take to claim relief
- Your ongoing responsibilities in relation to the investment
- What to do if you extract funds from your investment directly or indirectly.





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This advance assurance applies to you alone, as the applicant, and to the specific investment made by a relevant person on which you asked for an opinion. Nothing stated or implied in this letter can be relied upon by any other person including those making investments in the same target company or the target company itself.

Although we have provided this assurance please be aware that we do have reservations about the above company's likely trading position. As such we expect you and your agent to keep the position under review and to expect that HMRC will do likewise. With that in mind it would be helpful if, for the two years after the claim is made, a "white notes" entry is made on your tax return to summarise the position as this may help avoid us having to open formal enquiries.

In the vast majority of cases an advance assurance we give will be correct in law and therefore binding on HMRC. However there are some circumstances which mean that we can no longer be bound by an advance assurance we have given. Please read the section 'When you can rely on information or advice provided by HMRC' for full information on when you can rely on an advance assurance response from us. This can be found at http://www.hmrc.gov.uk/pdfs/info-hmrc.htm.

Please note that our new address is Business Investment Relief, HM Revenue and Customs, BX9 1BN. If you write to us but do not use this address then we may not get your post.

Yours sincerely

**Cameron Wilson**
Customer Relationship Manager

To find out what you can expect from us and what we expect from you go to **www.gov.uk/hmrc/your-charter** and have a look at 'Your Charter'.

HM Revenue & Customs

**Business Investment Relief**
**HM Revenue and Customs**
BX9 1BN

Mr

LONDON

**Phone** 03000 527416
8.30am-5.00pm, Monday to Friday

**Fax** 03000 527402

**Web** www.gov.uk

**Date** 1 December 2016
**Our ref** `499

Dear Mr

**Business Investment Relief – Advance Assurance**

Thank you for your agent's letters and enclosures of 4 October and 11 November 2016.

I can confirm that, on the basis of the information your agent has supplied, it is the opinion of HM Revenue and Customs (HMRC) that the proposed investment in RiverOak Strategic Partners Limited can be treated as a qualifying investment as defined in section 809VC of the business investment relief provisions in Chapter A1 of Part 14 Income Tax Act 2007(ITA).

I remind you that:

- As the person claiming relief, you are wholly responsible for the accuracy of the information supplied to HMRC.
- This opinion is based solely on the information you provided and will not apply in any circumstances beyond those described by you.
- If any of the circumstances or the nature of the investment differ from those described by you, or other facts come to light which have an impact on whether the investment is a qualifying investment, HMRC will not be bound by this opinion.
- This opinion is given on the basis of the legislation in force at the date of this letter. It may not apply if there are any changes to that legislation in the future.

You can find guidance on the business investment relief on our website www.HMRC.gov.uk. Please refer to the Information Note and associated Guidance Note: Changes to the Remittance Basis, to find out:

- When an investment will qualify for the relief
- The actions you must take to claim relief
- Your ongoing responsibilities in relation to the investment
- What to do if you extract funds from your investment directly or indirectly.

This advance assurance applies to you alone, as the applicant, and to the specific investment made by a relevant person on which you asked for an opinion. Nothing stated or implied in this letter can be relied upon by any other person including those making investments in the same target company or the target company itself.

Although we have provided this assurance please be aware that we do have reservations about the above company's likely trading position. As such we expect you and your agent to keep the position under review and to expect that HMRC will do likewise. With that in mind it would be helpful if, for the two years after the claim is made, a "white notes" entry is made on your tax return to summarise the position as this may help avoid us having to open formal enquiries.

In the vast majority of cases an advance assurance we give will be correct in law and therefore binding on HMRC. However there are some circumstances which mean that we can no longer be bound by an advance assurance we have given. Please read the section 'When you can rely on information or advice provided by HMRC' for full information on when you can rely on an advance assurance response from us. This can be found at http://www.hmrc.gov.uk/pdfs/info-hmrc.htm.

Please note that our new address is Business Investment Relief, HM Revenue and Customs, BX9 1BN. If you write to us but do not use this address then we may not get your post.

Yours sincerely

**Cameron Wilson**
Customer Relationship Manager

To find out what you can expect from us and what we expect from you go to **www.gov.uk/hmrc/your-charter** and have a look at 'Your Charter'.

**APPENDIX 6: Note setting out the basis of the Property Cost Estimate in the Funding Statement**

1 The estimated amount provided within the Funding Statement [APP-013] for the acquisition of land is £7.5m. As noted by Colin Smith of CBRE at the hearing, it would plainly be wholly inappropriate for the Applicant to be asked to provide detail on the Property Cost Estimate figures. The individual figures are commercially sensitive and if divulged would undermine the Applicant's ability to negotiate a compensation claim.

2 The assessment of estimated compensation has been, as with any valuation, undertaken in line with the Compensation Code, and represents the total of:

2.1 The Open Market Value of land taken in a "no scheme world";

2.2 Severance and Injurious Affection - where part only of a land holding is compulsorily acquired, there may be entitlement also to compensation for any depreciation in the value of the retained land; and

2.3 Disturbance - the costs and losses incurred as a result of being displaced from occupation of the property. This head of claim is generally only available to occupiers of property, but it may also apply to the rights of an investment owner to recover incidental costs in particular circumstances.

3 As explained at the hearing, the figure of £7.5m does not provide for the acquisition of the freehold of the Jentex site. The Applicant has acquired that site. The Jentex site is included within the Book of Reference (plots 71, 72, 72a, and 77) [APP-014]. There are a number of lesser interests in that land to which the compulsory acquisition powers within the Order apply (as set out in the Book of Reference). The acquisition of those lesser interests is accounted for within the £7.5m figure.

## APPENDIX 7: Calder & Co - RiverOak Client Account Statement

# Bankline

RBS
The Royal Bank of Scotland

Statement for account [redacted] from 15/02/2019 to 18/03/2019

| | | | |
|---|---|---|---|
| Short name: | CALDER & CO/RIVEROAK | Currency: | GBP |
| Alias: | CALDER & CO/RIVEROAK | Account type: | CLIENT DEPOSIT MANAG |
| BIC: | [redacted] | Bank name: | Royal Bank of Scotland |
| IBAN: | [redacted] | Bank branch: | [redacted] |

| Date | Narrative | Type | Debit | Credit | Ledger balance |
|---|---|---|---|---|---|
| **18/03/2019** | **LOAN TO RIVEROAK MANSTON** [redacted] | **ITL** | | **500,000.00** | **-** |
| | **CLOSING BALANCE** | | | | **7,446.86Cr** |
| 21/02/2019 | FREUDMANN TIPPLE<br>FREUDMANN TIPPLE<br>FP 21/02/19 10 [redacted] | EBP | 190,000.00 | | 7,446.86Cr |
| 21/02/2019 | CALDERS/OFFICE<br>FP CHG | EBP | 3.00 | | 197,446.86Cr |
| 18/02/2019 | [redacted] | | | 193,265.66 | 197,449.86Cr |
| | **OPENING BALANCE** | | | | **4,184.20Cr** |
| **Totals** | | | **190,003.00** | **693,265.66** | |

NB: Transactions with today's or next business day's date may still be subject to confirmation and may subsequently be reversed from your account.

**APPENDIX 8: Transport Committee report on smaller airports - March 2015**

House of Commons

Transport Committee

# Smaller airports

## Ninth Report of Session 2014–15

*Report, together with formal minutes relating to the report*

*Ordered by the House of Commons*
*to be printed 9 March 2015*

**HC 713**
Published on 13 March 2015
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London: The Stationery Office Limited
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## The Transport Committee

The Transport Committee is appointed by the House of Commons to examine the expenditure, administration, and policy of the Department for Transport and its Associate Public Bodies.

### Current membership

Mrs Louise Ellman (Labour/Co-operative, Liverpool Riverside) (Chair)
Sarah Champion *(Labour, Rotherham)*
Jim Fitzpatrick *(Labour, Poplar and Limehouse)*
Mr Tom Harris *(Labour, Glasgow South)*
Karen Lumley *(Conservative, Redditch)*
Jason McCartney *(Conservative, Colne Valley)*
Karl McCartney *(Conservative, Lincoln)*
Mr Adrian Sanders *(Liberal Democrat, Torbay)*
Chloe Smith *(Conservative, Norwich North)*
Graham Stringer *(Labour, Blackley and Broughton)*
Martin Vickers *(Conservative, Cleethorpes)*

### Powers

The Committee is one of the departmental select committees, the powers of which are set out in House of Commons Standing Orders, principally in SO No 152. These are available on the internet via www.parliament.uk.

### Publication

The Reports of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the internet at http://www.parliament.uk/transcom. A list of Reports of the Committee in the present Parliament is at the back of this volume.

The Reports of the Committee and the formal minutes relating to that report are available in a printed volume. Written evidence is published on the internet only.

### Committee staff

The current staff of the Committee are Gordon Clarke (Clerk), Nick Beech (Second Clerk), Alexandra Meakin (Committee Specialist), Adrian Hitchins (Senior Committee Assistant), Stewart McIlvenna (Committee Assistant), and Hannah Pearce (Media Officer)

### Contacts

All correspondence should be addressed to the Clerk of the Transport Committee, House of Commons, 14 Tothill Street, London SW1H 9NB, The telephone number for general enquiries is 020 7219 6263; the Committee's email address is transcom@parliament.uk

# Contents

## Report

# Summary

Smaller airports are economic and social enablers. They facilitate vital national and international connections for people and businesses in the UK.

We found that Air Passenger Duty (APD) is the principal threat to the smaller airports sector. APD cannot be amended to support people, businesses and regional economies because of the operation of European competition law, while proposals to devolve it to the regions would serve only to spread a patchwork of market distortions across the UK. It was disappointing that the concerns we raised about APD in our First Report of Session 2013-14 on *Aviation strategy* were ignored by the Treasury. We urge Transport Ministers to pursue those recommendations and the important concerns raised by smaller airports with the Treasury.

The Airports Commission will publish its final report on expanding hub airport capacity in the south-east shortly after the general election. The whole country will only be able to share the economic benefits if airlines secure slots to provide services to UK airports outside London. The DfT needs to assess how new slots might be allocated and whether slots could be ring-fenced for domestic services.

The DfT recently began to promote the use of Public Service Obligations (PSOs) to subsidise existing and new air routes from smaller airports. This is an interesting new initiative to facilitate regional connectivity, but the European Commission rules governing PSOs are opaque. The DfT needs to seek clarification from the Commission as a matter of urgency to allow airports and airlines to plan effectively and to engage with this policy.

Manston airport closed just before the start of our inquiry in May 2014. We considered this case in detail both to inform our wider recommendations and because the Kent public are concerned. We found a relatively small district council grappling with complex questions in relation to the current and future use of the airport which were beyond its expertise and resources. We welcome the DfT's recognition of that point and subsequent intervention, which we hope will provide the district council with access to the necessary advice. To ensure that similar cases do not arise in future, the Government needs to review the backing provided by higher-tier local government and central Government to small district councils in complex, one-off cases and examine whether it has the necessary powers to protect strategic transport assets.

# 1 Introduction

## Scope

1. In this inquiry, we defined a smaller airport as one with a Civil Aviation Authority (CAA) licence which handled fewer than 5 million passengers per annum. The nine busiest UK airports—London Heathrow, London Gatwick, Manchester, London Stansted, Edinburgh, London Luton, Birmingham, Glasgow and Bristol—fell outside the scope of our inquiry. The 40 or so smaller airports that were in the scope of the inquiry ranged in size from Newcastle, which handled 4.4 million passengers in 2013, to Lydd, which handled 1,000 passengers.[1] We also considered smaller airports which did not handle scheduled passenger flights but which hosted services such as business aviation, express air freight, general aviation or helicopter operations.

2. Smaller airports host a range of aviation services including scheduled services to domestic and international destinations, lifeline passenger services to geographically isolated locations, chartered holiday flights, freight and cargo operations, flying schools, helicopter operations and aircraft maintenance.

## Value

3. Smaller airports are economic enablers. They allow businesses and people to transport themselves, visitors, customers and products nationally and internationally, which facilitates both exports and internal investment. In addition, smaller airports are themselves employers and often provide a focus for clusters of aviation-related businesses. For example, Newcastle airport provides 3,200 onsite jobs and supports a further 8,000 jobs in the north-east region. It generates some £650 million each year for the north-east economy. Similarly, more than 2,000 people work at Liverpool John Lennon airport, which contributes around £170 million annually to the local economy.[2] Smaller airports are crucial to the maintenance and growth of regional economies.[3]

4. Smaller airports also provide essential lifeline connectivity for geographically isolated locations such as Orkney, Shetland and the Hebrides. Such services are generally not commercially viable and require state support. In 2014, we examined the social and political case for subsidising such services in our Report on *Passenger Transport in Isolated Communities*.[4]

## Viability

5. Smaller airports grew rapidly in the late 1990s and early 2000s. Over that period, airports outside London grew more rapidly than those serving the capital, because passenger numbers increased in line with the expansion of low-cost, short-haul airlines. Passenger

1 Civil Aviation Authority, *UK Aviation Statistics 2013*

2 Q10

3 Airport Operators Association (SMA 020); Department for Transport (SMA 039) paras 19 to 21

4 Transport Committee, Fourth Report of Session 2013-14, *Passenger transport in isolated communities*, HC 288

numbers at smaller airports began to decline in 2005. That trend was exacerbated by the 2008 recession, since when smaller airports have suffered disproportionately compared with larger airports.[5] John Spooner, Chairman, Regional and Business Airports Group, observed that "small airports caught pneumonia when the rest of the country caught a cold."[6] The Department for Transport (DfT) acknowledged that "recent economic conditions have been challenging for the UK's aviation sector."[7]

6. Smaller airports are relatively fragile commercial entities. While they operate from fixed locations and catchment areas, airlines and other aviation businesses are highly mobile and can swiftly adjust or relocate their services in line with demand. Smaller airports that rely on services provided by a single airline are especially vulnerable to fluctuations in market conditions. In response, some smaller airports have diversified the range of aviation-related activities conducted from and at their sites to maximise resilience and commercial viability. Darren Caplan, Chief Executive, Airport Operators Association (AOA), pointed out that "Bournemouth has successfully diversified; they have one third commercial, a third general aviation and a third cargo. Humberside has gone strongly into helicopters to supplement its income. Biggin Hill and Farnborough both have a strong aerospace component on their sites."[8]

7. Since the 2008 recession, Bristol Filton, Coventry, Plymouth, Penzance and Manston airports have all closed either completely or to commercial traffic. In addition, Blackpool closed to commercial traffic in the course of our inquiry.[9] Although the circumstances varied in those cases, the closures were ultimately a result of airport owners and/or airlines concluding that commercial services were no longer viable. Iain Osbourne, Group Director for Regulatory Policy, CAA, asserted that "it is very hard to kill an airport".[10] He argued that uncommercial airports often "drop down to a semi-dormant state" but are "still there … disciplining the market."[11] The argument that a dormant airport is still economically significant because airlines might choose to fly from it in the future cannot be sustained if temporarily uncommercial airports are developed for housing, as happened at Bristol Filton and has been proposed at Manston [see paragraph 45]. Because airports, by their nature, occupy large, flat sites, they are attractive to developers, especially in areas of high housing demand.

8. The UK contains a relatively large number of airports in a fairly small geographical area. Indeed, it contains more airports per head than comparable EU member states.[12] The Under-Secretary of State, DfT, Robert Goodwill MP, observed that "we live in a vibrant, competitive environment, unlike many parts of Europe where local authorities control their airports … I am very comfortable with the fact that we have a large number of

5 Q6

6 Q32

7 Department for Transport (SMA 039) para 7

8 Q32

9 Blackpool airport closed to commercial traffic in October 2014.

10 Q24

11 Q32

12 Department for Transport (SMA 039) para 14

airports."[13] The Chartered Institute of Logistics and Transport (CILT) spelled out the practical consequences of the Minister's observation:

> Smaller airports vary in terms of financial viability, but there are a number which are not and probably never will be profitable. There are some regions where there are more airports than are really needed, and where the case for public financial support is not strong. An airport cannot survive if airlines and other aircraft operators do not want to use it.[14]

9. **We welcome the range of consumer choice provided by the comparatively large number of smaller airports in the UK. The Government is rightly cautious about making direct interventions in this market, which rewards enterprise and provides consumers with competitive prices and choice. There is no case for a general policy of state intervention to keep all smaller airports open.**

13 Q200

14 Chartered Institute of Logistics and Transport (SMA 038) summary

# 2 Levelling the playing field

10. We expect the Government to maintain a fiscal and regulatory regime that encourages investment, allows fair and open competition between airlines and airports, supports regional connectivity and addresses damaging market distortions. This chapter examines how the Government is addressing those issues.

## Air Passenger Duty

11. Air Passenger Duty (APD) is an excise duty which is charged on nearly all passenger flights departing from airports in the UK and the Isle of Man.[15] The rate of duty varies according to passenger destination and class of travel. Darren Caplan, Chief Executive, AOA, highlighted the impact of APD on smaller airports:

> Before I came here today I asked several small airports, "What is the single biggest issue? You can say anything. Surface access? Planning?" APD comes back again and again. It is the airlines that are being charged, and they are saying that APD is the thing affecting their growth. It is a big issue.[16]

APD directly affects the growth and viability of smaller airports. We heard that several airlines decided either not to route to the UK or to fly less frequently because of the impact of APD.[17]

12. Because APD is a departure tax, it is currently applied to both the inbound and outbound legs of domestic return flights in the UK. Such domestic flights might involve travelling point to point or transferring to/from further flights at a hub airport in the UK. Domestic return flights are core business for airlines operating from regional smaller airports. The double-charging of APD disproportionately affects passengers travelling from UK smaller airports in addition to placing all UK airports at a disadvantage compared with their EU competitors. For example, a passenger who took a return flight from Leeds-Bradford airport to New York via Heathrow would be charged APD on the outbound flights from Leeds-Bradford to Heathrow and from Heathrow to New York. In addition, they would be charged APD on the return inbound flight from Heathrow to Leeds-Bradford. In comparison, a passenger who flew from Leeds-Bradford airport to New York via Paris Charles de Gaulle would only be charged APD on the outbound flight from Leeds-Bradford to Paris.

13. Following its introduction in 1994, the disproportionate effect of APD was recognised by an APD exemption on the return leg of domestic flights. In June 1998, the European Commission ruled that that exemption for domestic flights was legally defective, because it

15 APD is not charged on flights involving aircraft with fewer than 20 seats or on flights from airports in the Scottish Highlands and Islands.

16 Q37

17 Q37

did not provide the same effective tax treatment for all EU flights.[18] The APD exemption for the return leg of domestic flights was subsequently scrapped in the Budget 2000.[19]

14. In addition to its effect on domestic flights, APD curbs demand for international tourism to the UK. World Economic Forum data places the UK 139th out of 140 countries in terms of tourism competitiveness with respect to air taxes and charges. Only Chad operates a less competitive air taxation regime than the UK.[20]

15. In the autumn statement 2014, the Treasury attempted to mitigate the effect of APD on airports and airlines by scrapping APD for children under 12 from May 2015, with the revision being extended to children under 16 in 2016. Larger airports host the majority of international family holiday traffic. Indeed, many smaller airports do not have long enough runways to land the large jets that are used to run long-haul holiday flights. **We welcome the acknowledgement of the negative impact of APD on the aviation sector in the autumn statement 2014. However, exempting children from APD was a marginal change which did nothing for business travellers and little for smaller airports.**

16. Following the Scottish independence referendum, the Smith Commission was set up to examine the further devolution of powers to Scotland. In November 2014, it recommended devolving APD to the Scottish Parliament.[21] In line with the Smith Commission recommendation, clause 14 of the draft Scotland Bill would disapply APD from passengers departing from Scottish airports and allow the Scottish Parliament to set a tax for passengers departing from Scottish airports.[22] It is, of course, conceivable that the Scottish Government would set a tax at the same rate as APD in England, in which case this devolutionary measure would have no effect beyond increasing tax revenues to the Scottish Government.

17. Northern Ireland is currently the only part of the UK to share a land border with another state—in this case, the Republic of Ireland—which applies lower rates of aviation tax. Belfast International Airport explained how the variation in aviation taxes between Belfast and Dublin has affected its operations:

> The imposition of such a costly 'penalty' creates significant price advantage for competitor airlines operating out of Dublin Airport. It is estimated that Northern Ireland is losing 1.5 million passenger journeys to Dublin which translates into the loss of 1,500 jobs capable of generating £30 million approximately in wages and salaries coupled with the creation of new downstream enterprises … For the foreseeable future, Dublin will continue to 'poach' passengers from Northern Ireland, something that will continue to have a deleterious effect on both profitability and route development. In confidential talks we have had with a number of prospective carriers, they have indicated that APD is preventing them from making favourable

18 HC Deb 26 May 1999 col 183W [Commons written answer]

19 Finance Act 2000, section 18

20 ABTA (SMA 057) para 22

21 The Smith Commission, *Report of the Smith Commission for further devolution of powers to the Scottish Parliament*, November 2014

22 Cabinet Office, *Scotland in the United Kingdom: An enduring settlement*, Cm 8990, January 2015

decisions which, when added up, would amount to an additional 3 million passengers or 3,000 new jobs.[23]

**APD prevents airports in Northern Ireland competing on a level playing field with airports in the Republic of Ireland. This has cost Northern Ireland jobs, growth and connectivity.**

18. **If APD were scrapped in Scotland, airports in England would be subject to a similar competitive disadvantage to that currently experienced in Northern Ireland. The further devolution of APD to, for example, north-east England or Wales would ultimately serve to extend a patchwork of APD-derived market distortions across the UK and drive a race to the bottom on regional APD rates. We would prefer the Government to act strategically and in the national interest to address APD.**

19. The DfT acknowledged smaller airports' concerns about APD in its written evidence to this inquiry, but balanced that observation by highlighting the contribution APD makes to Exchequer revenues.[24] We acknowledge the importance of maintaining tax revenues but question whether APD is an efficient means of achieving that end. In 2013, a report by PricewaterhouseCoopers, *The Economic Impact of APD*, found that abolition of APD could provide an initial short-term boost to UK GDP of around 0.45 % in the first 12 months, averaging at just under 0.3 % in subsequent years. In addition, it found that abolition would result in an increase in investment and exports, arguing that investment might rise by 6% in total between 2013 and 2015, with exports rising by 5% in the same period. The report argued that almost 60,000 jobs could be created between 2013 and 2020 if APD were axed. PricewaterhouseCoopers concluded that the abolition of APD would more than pay for itself through increased tax revenues from other sources due to the consequent increase in economic activity.[25]

20. **The way in which APD is double-charged on domestic return flights is damaging to UK smaller airports. In effect, it incentivises airlines and passengers to fly from airports located in other EU member states. It cannot be revised to allow UK airports to compete on a level playing field in the European marketplace because of the operation of EU competition law. The proposed devolution of APD to Scotland threatens to create further market distortions which could severely disadvantage airports in England. *It is disappointing that the concerns we raised previously about APD in our First Report of Session 2013-14 on Aviation strategy were ignored by the Treasury.*[26] *We urge Transport Ministers to pursue those recommendations and the important concerns raised by smaller airports with the Treasury.***

## Public Service Obligations

21. A Public Service Obligation (PSO) is an arrangement by which a governing body or other authority runs an auction for subsidies which allows the winning company a

23 Belfast International Airport (SMA 069)

24 Department for Transport (SMA 039) para 14

25 PricewaterhouseCoopers, *The Economic Impact of APD*, February 2013

26 Transport Committee, Sixth Special Report of Session 2013-14, *Aviation strategy: Government Response to the Committee's First Report of Session 2013-14*, HC 78, recommendation 29

monopoly to operate an air service for a period of time for the given subsidy. PSOs are used in cases where there is insufficient revenue for routes to be profitable in a free market, but where it is socially, economically and/or politically desirable to maintain the transport link. In short, PSOs allow the state to subsidise air travel that is not commercially viable.

22. PSOs must be offered for tender in the Official Journal of the European Union and bidding is open to any transport operator registered in an EU member state. The winning tenderer usually receives a monopoly on the route, but they may have to conform to one or more conditions of service, such as the type and size of aircraft, the timing of services, maximum fares or service quality.

23. In 2014, the Government introduced a policy to promote the use of PSOs to maintain routes from smaller airports to London which might otherwise be lost. The funding stream for that policy is known as the Regional Air Connectivity Fund. In June 2014, the Government announced support from the Regional Air Connectivity Fund to maintain the air link between Dundee airport and London Stansted until 2016 through a PSO agreed with Dundee City Council.[27] In October 2014, the Government announced a second new PSO to maintain the Newquay to London Gatwick air link, which was agreed with Cornwall County Council.[28]

24. On 22 January 2015, the Government extended its PSO policy to include state support for new air routes rather than simply supporting existing routes at risk of closure. It made £56 million available over the next three years to fund PSOs that support new air routes. Airports and airlines were invited to bid for this funding, with the first round of applications closing on 25 February 2015.[29] ***The DfT should regularly report on the number of applicants and of successful applications to the Regional Air Connectivity Fund to support new air routes and publish this information on its website.***

25. State support for air transport is governed by European Commission aviation state aid guidelines. PSOs can only be implemented with the agreement of the European Commission. The DfT has submitted a "*Draft protocol for UK start-up aid for airports handling fewer than 3 million passengers per annum*" for clearance by the European Commission.[30] If the European Commission agrees this protocol, the DfT will be able to award start-up aid for air transport to airports handling fewer than 3 million passengers per annum without further reference to the European Commission. ***The DfT should set out a timetable for negotiations with the European Commission on its "Draft Protocol for UK start-up aid for airports handling fewer than 3 million passengers per annum" to allow smaller airports and local authorities that are considering accessing the Regional Air Connectivity Fund to plan effectively.***

26. European Commission guidelines allow start-up aid to be provided for air routes involving airports that handle between 3 million to 5 million passengers per annum in

27 Department for Transport, *UK government funding for Dundee to London Stansted air link,* 6 June 2014

28 Department for Transport, *Government funding secures Cornwall to London air link*, 27 October 2014

29 Department for Transport, *Regional airports asked to bid for up to £56 million funding for new routes over next 3 years*, 22 January 2015

30 Department for Transport, *Airports with fewer than 5 million passengers per year: start-up aid*, 22 January 2015

"duly substantiated exceptional cases".[31] Such cases must be individually notified to the European Commission and require individual clearance from the European Commission before funding can be made available. The DfT stated:

> Discussions with the Commission have not identified what evidence would need to be provided but have indicated that the bar is likely to be set very high. Therefore application for routes from airports of between 3-5 million passengers per annum will need to submit as part of the initial application stage very strong evidence to demonstrate that funding of the route is a 'duly substantiated exceptional case'.[32]

***The DfT should work with the European Commission to clarify what a "duly substantiated exceptional case" means in practice. Certainty on that point will allow UK smaller airports handling between 3 million and 5 million passengers a year to engage with the DfT's PSO policy, which could play an important role in facilitating regional air connectivity.***

27. **We welcome the DfT's policy of promoting PSOs both to support existing air routes and to start up new air routes. As currently implemented and given its current level of funding, however, this policy represents a marginal change to the smaller airports market rather than a strategic intervention. For example, although the maintenance of air routes from Dundee to London Stansted and from Newquay to London Gatwick may be desirable, it is unclear why those air routes should attract public subsidy while others do not. PSOs could become strategically significant if they were used to facilitate regional connectivity to an expanded hub airport in the south-east.**

## Airports Commission

28. The Airports Commission is currently examining the need for additional airport capacity in the UK. In its interim report, the Airports Commission concluded that one additional runway is needed in the south-east by 2030 and that a second new runway will probably be required in the south-east by 2050 if the UK is to retain international connectivity. The Airports Commission has identified two options at London Heathrow and one option at London Gatwick where new runways might be constructed.[33] It will make its final report and recommendations to the next Government in summer 2015.

29. The UK is currently suffering from a shortage of hub airport capacity rather than a shortage of airport capacity per se. We discussed the nature and importance of hub airports in detail in our *Aviation strategy* report.[34] Hub airports serve both their own catchment areas and incoming traffic from other airports. The volume of traffic handled by hub airports enables them to serve additional destinations and to maintain high service volumes. The UK currently has one hub airport, Heathrow, which has been short of

31 Department for Transport, *Start-up aid for airports with fewer than 5 million passengers per annum* (January 2015), para 1.6

32 Department for Transport, *Start-up aid for airports with fewer than 5 million passengers per annum* (January 2015), para 1.10

33 Airports Commission, *Interim Report* (December 2013)

34 Transport Committee, First Report of Session 2013-14, *Aviation strategy*, HC 78-I, chapter 4

capacity for a decade and which is currently operating at full capacity. Constrained capacity has damaged domestic air connectivity from smaller airports to Heathrow, and the number of UK destinations served from Heathrow has steadily declined over the past decade. In 2015, the only smaller airports with an air route to Heathrow are Aberdeen, Belfast City, Leeds-Bradford and Newcastle.[35]

30. Many smaller airports have replaced withdrawn flights to Heathrow with flights to European hub airports. While airport hubs in northern Europe—in particular, Amsterdam-Schiphol, Frankfurt and Paris Charles de Gaulle—are attracting more transfer traffic from the UK, Heathrow remains a key access point to international and long-haul travel for many passengers from smaller airports. In its interim report, the Airports Commission identified that connections to other European airport hubs enhance connectivity from the UK's regional airports but are not an adequate replacement for links to Heathrow.[36] Heathrow offers strong connectivity to a number of important markets, notably North America, which is not replicated at other hub airports. The value of regional links to Heathrow is demonstrated by the fall in passenger numbers at smaller airports where such services were withdrawn. For example, Durham Tees Valley airport experienced a 75% reduction in passenger numbers following the withdrawal of its Heathrow service in 2009.[37]

31. If the next Government were to implement a recommendation by the Airports Commission to construct a new runway at either Heathrow or Gatwick regional connectivity could be hugely increased. Such a step change in regional connectivity would only occur, however, if smaller airports were able to link to enhanced hub capacity by securing slots at the expanded airport.

32. The CAA explained why airlines have withdrawn services from UK smaller airports to Heathrow:

> The lack of runway capacity at Heathrow … has probably priced off services that generate a smaller profit per slot. Since domestic services tend to be served with smaller aircraft and cover shorter distances than other routes, they are likely to generate a smaller profit per slot to airlines.[38]

Although an increase in hub capacity in the south-east would deliver more slots for airlines, the economic barrier to regional connectivity to smaller airports highlighted by the CAA would still apply, because the slots would be released in tranches to maintain demand. This means that the market alone may never deliver sufficient slots to facilitate regional connectivity.

33. The CAA explained how new slots at an expanded hub airport in the south-east would be released:

35 Department for Transport (SMA 039) para 30

36 Airports Commission, *Interim Report* (December 2013)

37 Department for Transport (SMA 039) para 9

38 Civil Aviation Authority (SMA 024) para 2.17

> There is a collaborative process between airports, NATS and the airlines to decide who is going to get the slots. If the role is left with the airports, I would have thought that capacity—slots—will be released at a pace that sustains the overall economics, because it is not in any of the commercial players' interests to drive down values.[39]

It seems likely that new slots at an expanded hub airport in the south-east would be released in timed tranches to maintain demand, which would underpin any bonds issued to finance airport expansion.

34. The Minister set out his view that the market would deliver sufficient slots to support regional connectivity from smaller airports:

> I am confident that the airlines based in our UK major airports will see the opportunity of increased slots being made available to get passengers who are currently going to Schiphol, Charles de Gaulle, Frankfurt or Brussels into airports in the London area. I think they will rise to that challenge.[40]

Paul Le Blond, Chair, Aviation Forum, Chartered Institute of Logistics and Transport, was less confident that the market would deliver services to smaller airports. He proposed ring-fencing a certain number of new slots at an expanded hub airport for services to smaller airports. He argued that ring-fencing "a double daily service to a reasonable number of small airports would be a very small proportion of any additional capacity created."[41] John Spooner, Chairman, Regional and Business Airports Group, stated that he had discussed with both Heathrow and Gatwick the question whether slots for services to regional airports should be ring-fenced.[42] He added that the time at which flights arrive at a hub airport in crucial in developing regional connectivity to support business growth.[43]

35. **The whole country will be able to share in the economic benefits of an expanded hub airport in the south-east only if that expansion entails airlines securing sufficient slots to maintain services to smaller airports in the English regions, Scotland, Wales and Northern Ireland. The way in which new slots at an expanded hub airport in the south-east might be allocated is currently opaque.** ***The DfT should assess (a) how new slots might be allocated; (b) whether some of those slots could be ring-fenced for domestic services to smaller airports; (c) whether the Public Service Obligation mechanism could be applied to new services using any such new slots; and (d) what proportion of new slots would need to be allocated to flights to UK smaller airports to support regional connectivity effectively.***

36. **We recognise that the Airports Commission has carefully defined the scope of its inquiry. Nevertheless, we note that it has on occasion considered the role of smaller airports.** ***We encourage the Airports Commission to reflect on the role of smaller airports***

39 Q42
40 Q256
41 Q42
42 Q44
43 Q44

***in its final report. In particular, it should consider how new slots at an expanded hub airport in the south-east might be allocated to services to smaller airports in the UK.***

# 3 Case study: Manston

37. Manston airport is located in the district of Thanet in Kent some 13 miles north-east of Canterbury and about one mile from the coast near the town of Ramsgate. It occupies a 700-acre site. Manston closed as an airport shortly before the start of this inquiry in May 2014. We scrutinised this individual case of a smaller airport closing to inform our inquiry and wider recommendations.

38. Manston has a relatively lengthy runway which extends to some 9,000 feet. The largest long-haul aircraft—for example, Airbus A310, A330, A340, A350 and A380; Boeing 747, 767, 777, 787; and McDonnell Douglas DC-10 and MD-11—require a runway of at least 8,000 feet. Apart from Heathrow, Gatwick and Stansted, Manston is the only runway in the south-east capable of handling the largest long-haul aircraft. Several witnesses to our inquiry pointed out Manston's suitability as a diversionary airport due to its lengthy runway.[44] Stansted airport is currently used to handle most diverted aircraft in the south-east. Diversions disrupt commercial operations at Stansted, which is bad news for passengers and airlines. That problem is only likely to worsen as Stansted becomes busier over the next decade.[45] The Minister pointed out that "suitably trained traffic controllers, emergency services and expert technical support" would need to be located at Manston for it to receive diverted aircraft.[46]

## History

39. Manston is a former RAF base. In 1989, a civilian airport, Kent International airport, was set up within the RAF facility. This airport was run from the current terminal building. In 1998, the Ministry of Defence put RAF Manston up for sale. All RAF operations ceased at the site in 1999. In 1999, Manston was purchased by the Wiggins Group, which oversaw the airfield's transition from a military base to CAA-licensed civilian airport. From 1999 to 2003, the Wiggins Group operated Manston as a cargo airport. In 2004, the Wiggins Group, which at this point changed its name to PlaneStation, purchased a new airline called EUjet. EUjet based five aircraft at Manston, which attempted to compete as a passenger airport. In 2005, all EUjet operations were suspended and the airport went into liquidation.[47]

40. Manston was purchased by a New Zealand company, Infratil, in August 2005 for £17 million. From 2005 to 2012, airlines such as Flybe and Monarch ran scheduled passenger services from Manston. In November 2012, Infratil secured a new commercial passenger service at Manston, when KLM announced twice-daily flights to Amsterdam. The first KLM flight took place in April 2013.

44 Q174; Q184; Q194

45 Daily Telegraph, *Plane diverted under RAF escort after disturbance on board*, 24 January 2011

46 Q217

47 RiverOak (SMA 042) para 18

## Manston Skyport

41. On 15 October 2013, Infratil announced they would sell Manston Airport to a company called Manston Skyport. Manston Skyport was wholly owned by Ann Gloag, co-founder of Stagecoach Group. It began running the airport on 29 November 2013. Ann Gloag purchased Manston from Infratil for £1.[48] At the time of the purchase, she stated:

> I am delighted to have purchased Manston Airport from Infratil as I believe there is real potential for growth that has not been fully captured. Having worked in the transport industry for over 30 years, I believe I am very well placed to help maximise opportunities for both freight and passengers at Manston.[49]

The local Member of Parliament, Sir Roger Gale MP, told us that "In a personal telephone conversation with me at that time Ms. Gloag indicated that she intended to invest heavily in the airport and would give it two years to turn around the business."[50] We invited Ann Gloag to provide us with oral evidence at our session on 2 February 2015. She was unavailable, although the company that ran Manston on her behalf, Manston Skyport, provided written and oral evidence.

42. Manston Skyport announced its plan to close Manston airport on 19 March 2014, less than four months after its purchase. The airport closed on 15 May 2014 and its commercial aerodrome licence was returned to the CAA, which meant that it was no longer licensed to operate as an airport. Manston Skyport told us that it decided to close Manston because Ryanair withdrew from discussions to operate from Manston, because British Airways decided not to relocate its cargo operation to Manston and because the Airports Commission concluded that hub capacity should be expanded in the south-east.[51]

## RiverOak

43. RiverOak Investment Corp is a private equity group based in Stamford, Connecticut, USA. RiverOak was keen to purchase Manston as a base for cargo operations.[52] It told us:

> In late April 2014, RiverOak began a dialogue with Mrs Gloag regarding a possible purchase of the airport. Mrs Gloag provided full financial disclosure based on which RiverOak offered to pay the asking price of £7 million. The offer was rejected.[53]

Manston Skyport contested RiverOak's claim that it had offered £7 million to purchase Manston airport.[54] RiverOak later provided documentary evidence to back up this claim.[55]

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48 Q49

49 Kent Online, 14 October 2013

50 Sir Roger Gale MP (SMA064)

51 Q69; Q61

52 Q117

53 RiverOak (SMA 042) para 18

54 Qq 75-84

55 RiverOak (SMA090)

If Ann Gloag's motivation was to run Manston as an airport, accepting RiverOak's £7 million offer would have allowed her to correct her initial error in purchasing the airport and left her with a generous profit. RiverOak has maintained its interest in purchasing Manston and operating it as an airport.

## Sale to Trevor Cartner and Chris Musgrave

44. In its written evidence, Manston Skyport stated that "In September 2014 Manston Skyport sold the site to regeneration specialists who have plans to redevelop the site over the coming years."[56] The regeneration specialists, Trevor Cartner and Chris Musgrave, were invited to provide us with oral evidence on 2 February 2015. They were unavailable, although they later submitted written evidence. In September 2014, Chris Musgrave told *Kent Online*:

> We will be looking to comprehensively redevelop the whole site to create a mixed-use community. This is in light of the fact that the airport has closed, the equipment has been sold and it will not reopen. We are aware that there were a number of job losses when the airport closed and a far greater number will replace these, and that the benefits will reach the whole of east Kent.[57]

45. At our oral evidence session on 2 February 2015, we examined Manston Skyport's statement that it "sold the site to regeneration specialists".[58] Pauline Bradley, Director, Manston Skyport Limited, told us that "80% of the share capital of that business is owned by Mr Musgrave and Mr Cartner. We have a minority interest in the business going forward."[59] We noted:

- Manston Airport is currently owned by a joint venture company called Lothian Shelf 718. There are two classes of share in Lothian Shelf 718—A shares and B shares. Mr Cartner and Mr Musgrave hold 80 A shares; Ann Gloag holds 20 B shares.[60]

- The articles of Lothian Shelf 718 state that a decision at a directors meeting requires a unanimous vote involving at least one A director and one B director.[61] There are two A directors, Mr Cartner and Mr Musgrave, and one B director, Pauline Bradley, who was appointed by Ann Gloag. Regardless of her minority shareholding, Ann Gloag, as holder of the 20 B shares and having appointed the B director, holds equal decision making power to and a de facto veto over Mr Cartner and Mr Musgrave.

56 Manston Skyport Limited (SMA0070) para 4.1

57 Kent Online, 24 September 2014

58 Manston Skyport Limited (SMA0070) para 4.1

59 Q89

60 Trevor Cartner and Chris Musgrave (SMA 093)

61 Companies House, *Written record of resolution of the sole member of Lothian Shelf (718) Limited*, No. 09223403, para 10

- Ann Gloag holds a legal charge over the Manston airport site. This charge relates to a loan to Lothian Shelf 718.[62]
- Because the joint venture agreement between Mr Cartner, Mr Musgrave and Ann Gloag to redevelop Manston is not in the public domain, it is unknown how any profits derived from the redevelopment of Manston might be shared. The allocation of profits might not be in line with the 80:20 share allocation.

46. On Ann Gloag's motivation in purchasing Manston airport, Sir Roger Gale MP commented:

> I believe now that I was completely misled, that I was lied to and that Mrs Gloag had no intention whatsoever of running this as an airport, and every intention of seeking to turn it into an asset-stripping property development.[63]

The Minister expressed an alternative view, stating that he did "not believe that Mrs Gloag bought the airport with a view to closing down operations and turning it into a development site."[64] ***We recommend that Ann Gloag places the joint venture agreement between herself, Chris Musgrave and Trevor Cartner to redevelop Manston in the public domain to make it clear who would benefit from the proposed redevelopment of Manston and to repudiate allegations of asset-stripping. We would be happy to publish this document on our website.***

## Thanet District Council

47. Thanet District Council (TDC) is the local planning authority with responsibility for Manston. TDC told us that it received a petition on 10 July 2014 asking it to compulsorily purchase Manston.[65] It subsequently agreed a motion to conduct "a detailed examination of the legal and financial implications of a Compulsory Purchase Order before a final decision is reached."[66] Councillor Iris Johnston, Leader, TDC, explained:

> We have had some difficult experiences of compulsory purchase orders (CPOs) and the feeling was that we needed an indemnity partner that covered all our costs … We went out for soft-market testing, and some companies came forward, including RiverOak … We were not satisfied with the information that was coming forward. It is very difficult for a company, particularly an American company, to meet the criteria of the district council. We need to see three years' accounts. Our due diligence is very strong.[67]

62 Land Registry, Title No. K803975; Q98

63 Q179

64 Q226

65 Q159

66 Thanet District Council, *Full council discuss purchase of Manston Airport*, July 2014

67 Q159

A CPO involving RiverOak as the indemnity partner was considered at a TDC cabinet meeting on 11 December 2014. The TDC cabinet decided not to proceed with the proposed CPO at that meeting.

48. We welcome Councillor Johnston's commitment to due diligence. We agree that risks should, so far as is possible, be transferred to the private sector to protect the interests of council taxpayers. However, we question whether a small district council has sufficient funds or legal and financial expertise to handle a case of this magnitude. For example, TDC told us that it spent £26,000 on legal advice in relation to the proposed CPO.[68] That sum was unlikely to provide TDC with adequate advice in relation to indemnification by a US company or to allow it to understand RiverOak's business plan and operating model. **We expect higher-tier local government bodies to fulfil their strategic oversight functions by supporting local planning authorities in resolving one-off, complex cases involving nationally significant transport assets.**

## Kent County Council

49. Kent County Council (KCC) is the local transport authority for Kent, which means it has strategic oversight of aviation in the county. On 17 July 2014, KCC considered the case of Manston airport. County councillors agreed the following motion by 82 votes to nil:

> That Kent County Council supports the actions taken so far by Thanet District Council to retain Manston as a regional airport. We recognise the value that a regional airport brings to East Kent and are disappointed at its closure. Kent County Council will explore with Thanet District Council ways in which it can support proposals to retain Manston as an airport.[69]

Paul Carter, Leader, KCC, attended and voted at that meeting.

50. In September 2014, Paul Carter commented on the sale of Manston to Chris Musgrave and Trevor Cartner:

> Chris Musgrave and Trevor Cartner have a fantastic track record in taking over large and difficult sites following the demise of earlier uses, and regenerating them to create jobs and bring economic benefits to the wider area. Their team has done this at Wynyard Park in Billingham, where they have created 2,000 jobs and attracted £200 million of private investment, and at Discovery Park here in Kent where more than 1,000 new jobs have been added to the 600 that Pfizer left behind. I have every confidence that they can do even more at Manston.[70]

Paul Carter's remarks in September 2014 were inconsistent with the motion agreed by KCC on 17 July 2014.

68 Q163

69 Kent County Council, Minutes, 17 July 2014

70 Isle of Thanet Gazette, *County council leader has "confidence" in new owners of former Manston airport*, 23 September 2014

51. We asked Paul Carter to explain his position. He told us that "the motion that was supported unanimously by the county council said we would be prepared to support Thanet district council in a CPO process at Manston, provided a viable and thriving airport could be delivered at Manston."[71] He subsequently admitted that there was no such caveat to the KCC motion.[72] He also reiterated his enthusiasm for the redevelopment of the Manston site rather than its operating as an airport.[73] We asked him whether Trevor Cartner or Chris Musgrave had shown him detailed plans for the redevelopment. He replied, "They showed me nothing."[74]

52. **Kent County Council has the legal and financial resources to assess complex CPO cases. Despite having agreed a motion to support Thanet District Council, it failed to deploy those assets. In failing to support Thanet District Council's scrutiny of the proposed CPO at Manston, Kent County Council also failed to fulfil its strategic oversight function as the local transport authority.**

## Role of the DfT

53. The DfT interceded in the Manston case following TDC's decision not to proceed with a compulsory purchase order. In December 2014, the Minister of State, DfT, John Hayes MP, chaired a meeting with interested parties and agreed to co-ordinate work across Government to explore all options to secure the airport's future. **That the DfT judged it necessary to intervene in the Manston case shows the extent to which Kent County Council failed to fulfil its strategic oversight role.**

54. In February 2015, more than two months after the DfT intervened, we asked the Under-Secretary of State, DfT, Robert Goodwill MP, what progress had been made. He told us that the DfT was doing "everything we can to facilitate a rescue deal so that aviation can continue at Manston, if that be possible".[75]

55. We asked the Minister to explain the nature of the DfT's intervention over the past two months. He explained that

> Thanet council supplied the Department for Transport with the papers they considered in reaching their decision that RiverOak were not a suitable indemnity party for the compulsory purchase process. A review of the papers supplied to the Department by Thanet council is one of a number of options being considered.[76]

On 5 March 2015, the DfT announced that it will "appoint a consultant to review the process so far on decisions about the future of Manston airport."[77] **We welcome the DfT's decision to appoint a consultant to examine the Manston case. The uncertainty faced by**

71 Q169
72 Q170
73 Q168
74 Q168
75 Q214
76 Q230
77 Department for Transport, *Manston airport review,* March 2015

**the public and other interested parties could have been reduced if it had not taken three months before the DfT acted.** ***The DfT should set out clear terms of reference for the consultant who is contracted to examine the Manston decision-making process and place them in the public domain. Those terms of reference should include (a) an explicit requirement to assess whether RiverOak is an appropriate indemnity partner for Thanet District Council; (b) a deadline for the consultant to report back to the DfT; and (c) an expeditious timescale for subsequent DfT decision making. To ensure that similar cases are handled promptly and effectively in future, the Government should clarify precisely how (a) central Government and (b) higher-tier local authorities are responsible for supporting lower-tier planning authorities in cases where a strategic transport asset is subject to a proposed compulsory purchase order.***

56. We asked the Minister which powers the DfT had used to intervene in the Manston case. He said that he did "not think that the United Kingdom Government, unlike maybe the Scottish or the Welsh Government, are in the position of wanting to intervene directly to take over operations of an airport."[78] **We agree that there is no general case for the Government to purchase airports, including Manston.** We questioned whether the DfT has any other powers short of nationalisation in cases where a strategic transport asset might be at risk. The Minister told us that "we have the powers that we need, for example, to work with the CAA … It is very important indeed that we explore all the avenues we can and ensure that whatever powers we have in terms of the Government can be used to their fullest effect."[79] ***The DfT should review what powers it has to intervene in cases where strategic transport assets are at risk and whether those powers are fit for purpose.***

78 Q215

79 Q216

# Conclusions and recommendations

## Viability

1. We welcome the range of consumer choice provided by the comparatively large number of smaller airports in the UK. The Government is rightly cautious about making direct interventions in this market, which rewards enterprise and provides consumers with competitive prices and choice. There is no case for a general policy of state intervention to keep all smaller airports open. (Paragraph 9)

## Air Passenger Duty

2. We welcome the acknowledgement of the negative impact of APD on the aviation sector in the autumn statement 2014. However, exempting children from APD was a marginal change which did nothing for business travellers and little for smaller airports. (Paragraph 15)

3. APD prevents airports in Northern Ireland competing on a level playing field with airports in the Republic of Ireland. This has cost Northern Ireland jobs, growth and connectivity. (Paragraph 17)

4. If APD were scrapped in Scotland, airports in England would be subject to a similar competitive disadvantage to that currently experienced in Northern Ireland. The further devolution of APD to, for example, north-east England or Wales would ultimately serve to extend a patchwork of APD-derived market distortions across the UK and drive a race to the bottom on regional APD rates. We would prefer the Government to act strategically and in the national interest to address APD (Paragraph 18)

5. The way in which APD is double-charged on domestic return flights is damaging to UK smaller airports. In effect, it incentivises airlines and passengers to fly from airports located in other EU member states. It cannot be revised to allow UK airports to compete on a level playing field in the European marketplace because of the operation of EU competition law. The proposed devolution of APD to Scotland threatens to create further market distortions which could severely disadvantage airports in England. It is disappointing that the concerns we raised previously about APD in our First Report of Session 2013-14 on *Aviation strategy* were ignored by the Treasury. We urge Transport Ministers to pursue those recommendations and the important concerns raised by smaller airports with the Treasury. (Paragraph 20)

## Public Service Obligations

6. The DfT should regularly report on the number of applicants and of successful applications to the Regional Air Connectivity Fund to support new air routes and publish this information on its website. (Paragraph 24)

7. The DfT should set out a timetable for negotiations with the European Commission on its "Draft Protocol for UK start-up aid for airports handling fewer than 3 million passengers per annum" to allow smaller airports and local authorities that are

considering accessing the Regional Air Connectivity Fund to plan effectively. (Paragraph 25)

**8.** The DfT should work with the European Commission to clarify what a "duly substantiated exceptional case" means in practice. Certainty on that point will allow UK smaller airports handling between 3 million and 5 million passengers a year to engage with the DfT's PSO policy, which could play an important role in facilitating regional air connectivity. (Paragraph 26)

**9.** We welcome the DfT's policy of promoting PSOs both to support existing air routes and to start up new air routes. As currently implemented and given its current level of funding, however, this policy represents a marginal change to the smaller airports market rather than a strategic intervention. For example, although the maintenance of air routes from Dundee to London Stansted and from Newquay to London Gatwick may be desirable, it is unclear why those air routes should attract public subsidy while others do not. PSOs could become strategically significant if they were used to facilitate regional connectivity to an expanded hub airport in the south-east (Paragraph 27)

## Airports Commission

**10.** The whole country will be able to share in the economic benefits of an expanded hub airport in the south-east only if that expansion entails airlines securing sufficient slots to maintain services to smaller airports in the English regions, Scotland, Wales and Northern Ireland. The way in which new slots at an expanded hub airport in the south-east might be allocated is currently opaque. The DfT should assess (a) how new slots might be allocated; (b) whether some of those slots could be ring-fenced for domestic services to smaller airports; (c) whether the Public Service Obligation mechanism could be applied to new services using any such new slots; and (d) what proportion of new slots would need to be allocated to flights to UK smaller airports to support regional connectivity effectively. (Paragraph 35)

**11.** We recognise that the Airports Commission has carefully defined the scope of its inquiry. Nevertheless, we note that it has on occasion considered the role of smaller airports. We encourage the Airports Commission to reflect on the role of smaller airports in its final report. In particular, it should consider how new slots at an expanded hub airport in the south-east might be allocated to services to smaller airports in the UK. (Paragraph 36)

## Case study: Manston

**12.** We recommend that Ann Gloag places the joint venture agreement between herself, Chris Musgrave and Trevor Cartner to redevelop Manston in the public domain to make it clear who would benefit from the proposed redevelopment of Manston and to repudiate allegations of asset-stripping. We would be happy to publish this document on our website. (Paragraph 46)

**13.** We expect higher-tier local government bodies to fulfil their strategic oversight functions by supporting local planning authorities in resolving one-off, complex cases involving nationally significant transport assets. (Paragraph 48)

**14.** Kent County Council has the legal and financial resources to assess complex CPO cases. Despite having agreed a motion to support Thanet District Council, it failed to deploy those assets. In failing to support Thanet District Council's scrutiny of the proposed CPO at Manston, Kent County Council also failed to fulfil its strategic oversight function as the local transport authority. (Paragraph 52)

**15.** That the DfT judged it necessary to intervene in the Manston case shows the extent to which Kent County Council failed to fulfil its strategic oversight role. (Paragraph 53)

**16.** We welcome the DfT's decision to appoint a consultant to examine the Manston case. The uncertainty faced by the public and other interested parties could have been reduced if it had not taken three months before the DfT acted. The DfT should set out clear terms of reference for the consultant who is contracted to examine the Manston decision-making process and place them in the public domain. Those terms of reference should include (a) an explicit requirement to assess whether RiverOak is an appropriate indemnity partner for Thanet District Council; (b) a deadline for the consultant to report back to the DfT; and (c) an expeditious timescale for subsequent DfT decision making. To ensure that similar cases are handled promptly and effectively in future, the Government should clarify precisely how (a) central Government and (b) higher-tier local authorities are responsible for supporting lower-tier planning authorities in cases where a strategic transport asset is subject to a proposed compulsory purchase order. (Paragraph 55)

**17.** We agree that there is no general case for the Government to purchase airports, including Manston. (Paragraph 56)

**18.** The DfT should review what powers it has to intervene in cases where strategic transport assets are at risk and whether those powers are fit for purpose. (Paragraph 56)

# Formal Minutes

## Monday 9 March 2015

Members present:

Mrs Louise Ellman, in the Chair

| | |
|---|---|
| Jim Fitzpatrick | Mr Adrian Sanders |
| Karen Lumley | Chloe Smith |
| Jason McCartney | Martin Vickers |

Draft Report (*Smaller airports*), proposed by the Chair, brought up and read.

*Ordered*, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 56 read and agreed to.

Summary agreed to.

*Resolved*, That the Report be the Ninth Report of the Committee to the House.

*Ordered*, That the Chair make the Report to the House.

*Ordered*, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[Date and time to be fixed by the Chair

# Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the Committee's inquiry page at www.parliament.uk/transcom.

| | *Question number* |
|---|---|
| **Monday 19 January 2015** | |
| **Nathan Stower**, Chief Executive, British Air Transport Association, **Darren, Caplan**, Chief Executive, Airport Operators Association, **Iain Osborne**, Group Director for Regulatory Policy, Civil Aviation Authority, **Paul Le Blond**, Chairman, Aviation Forum, Chartered Institute of Logistics and Transport, and **John Spooner**, Chairman, Regional and Business Airports Group | Q1-47 |
| **Monday 2 February 2015** | |
| **Pauline Bradley**, Director, Manston Skyport Limited, **Alastair Welch**, Interim Director, Kent Airport Limited **Alan Mackinnon**, Interim Director, Kent Airport Limited, **George Yerrall**, Partner, RiverOak Investment Corp, and **Tony Freudmann**, Partner, RiverOak Investment Corp | Q48-146 |
| Paul **Carter**, Leader, Kent County Council, **David Smith**, Director of Economic Development, Kent County Council, **Councillor Iris Johnston**, Leader, Thanet District Council, **Madeline Homer**, Acting Chief Executive, Thanet District Council, **Paul Cook**, Interim Director of Corporate Resources, Thanet District Council, and **Sir Roger Gale MP** | Q147-181 |
| **Ms Rosalyn McIntyre**, No Night Flights, **Dr Beau Webber**, Chair, Save Manston Airport Group, and **Angie Sutton**, Why Not Manston? | Q182-197 |
| **Monday 23 February 2015** | |
| **Mr Robert Goodwill MP**, Parliamentary Under-Secretary of State, Department for Transport, and **Ben Smith**, Deputy Director Aviation Policy and Delivery, Department for Transport | Q198-264 |

# Published written evidence

The following written evidence was received and can be viewed on the Committee's inquiry web page at www.parliament.uk/transcom. INQ numbers are generated by the evidence processing system and so may not be complete.

1 ABTA (SMA0057)
2 AICES (SMA0052)
3 Air Medical Ltd (SMA0011)
4 Airport Operators Association (SMA0020)
5 Allan Clifford (SMA0016)
6 Belfast International Airport Limited (SMA0069)
7 Birmingham Airport (SMA0044)
8 Bristol Airport (SMA0017)
9 British Air Transport Association (BATA) (SMA0062)
10 British Vehicle Rental and Leasing Association (SMA0009)
11 Coastal Airports (Holdings Limited) (SMA0072)
12 Coastal Airports (Holdings Limited) (SMA0076)
13 Department for Regional Development (SMA0001)
14 Department for Transport (SMA0039)
15 Derbyshire, Nottinghamshire and Leicestershire Chamber of Commerce (SMA0031)
16 Dover District Council (SMA0074)
17 Dr. Jean-Paul Addie (SMA0005)
18 East of England Energy Group (EEEGR) (SMA0013)
19 Exeter City Council and Heart of the South West Local Enterprise Partnership (SMA0030)
20 Finlays Horticulture Investments Ltd (SMA0077)
21 Flybe Plc (SMA0063)
22 Friends of Liverpool Airport (FoLA) (SMA0019)
23 Gary and Marta Easton (SMA0035)
24 General Aviation Awareness Council (GAAC) (SMA0018)
25 Indigo Planning on behalf of London Ashford Airport (SMA0050)
26 Kent County Council (SMA0034)
27 Lab-Tools Ltd. (Nano-Science) (SMA0067)
28 Liverpool John Lennon Airport (SMA0032)
29 London Assembly Transport Committee (SMA0004)
30 London Biggin Hill Airport (SMA0056)
31 London City Airport (SMA0051)
32 London Oxford Airport (SMA0003)
33 Manchester Airports Group (SMA0023)
34 Manston Skyport Ltd (SMA0070)
35 Manston Skyport Ltd (SMA0089)
36 Mr Laurence N Price (SMA0027)
37 Mrs Sue Girdler (SMA0068)
38 Nestrans (SMA0054)

39 Newcastle International Airport Ltd (SMA0037)
40 No Night Flights (SMA0092)
41 No Night Flights and Manston Pickle (SMA0025)
42 Oil & Gas UK (SMA0026)
43 Oxfordshire County Council - Oxfordshire Lep (SMA0036)
44 Peel Holdings (Management) Limited (SMA0055)
45 Regional and Business Airports Group (SMA0041)
46 Rigby Group Plc / Regional & City Airports (RCA) (SMA0040)
47 RiverOak Investment Corp., LLC (SMA0042)
48 RiverOak Investment Corp., LLC (SMA0075)
49 RiverOak Investment Corp., LLC (SMA0090)
50 RiverOak Investment Corp., LLC (SMA0094)
51 Royal Aeronautical Society (SMA0047)
52 Save Manston Airport Group (SMA0029)
53 Sir Roger Gale MP (SMA0064)
54 States of Guernsey (SMA0033)
55 Stobart Group Ltd (SMA0022)
56 Stuart Vint (SMA0085)
57 Supporters of Manston Airport (SMA0008)
58 Supporters of Manston Airport (SMA0081)
59 Supporters of Manston Airport (SMA0091)
60 TAG Farnborough Airport Ltd (SMA0021)
61 Tees Valley Unlimited (SMA0010)
62 TG Aviation Limited (SMA0073)
63 Thanet District Council (SMA0014)
64 The Chartered Institute of Logistics and Transport (SMA0038)
65 The Highlands and Islands Transport Partnership (HITRANS) (SMA0046)
66 Trevor Cartner and Chris Musgrove (SMA0093)
67 UK Civil Aviation Authority (CAA) (SMA0024)
68 Welsh Government (SMA0048)
69 Why Not Manston? (SMA0043)
70 Winbourne Martin French (SMA0058)
71 Winbourne Martin French (SMA0060)
72 WYG (SMA0053)

# List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the Committee's website at www.parliament.uk/transcom.
The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

**Session 2014–15**

| | | |
|---|---|---|
| Eighth Report | Motoring of the future | HC 429 |
| Seventh Report | Investing in the railway | HC 257 |
| Sixth Report | Government motoring agencies–the user perspective | HC 287 (HC 884) |
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**APPENDIX 9: Summary of the Applicant's case on 3 Chesterfield Properties Plc v Secretary of State for the Environment (1998) P&CR 117**

**SUMMARY OF THE APPLICANT'S CASE ON**

**CHESTERFIELD PROPERTIES PLC V S.S. ENVIRONMENT**

**(1998) P&CR 117**

1 Chesterfield Properties Plc v Secretary of State for the Environment (1998) P&CR 117 is authority for the proposition that compulsory acquisition can be authorised even if the decision-maker is not satisfied that the proposed development will probably be carried out.

2 That case concerned a challenge to the confirmation of a compulsory purchase order under s.226 of the Town and Country Planning Act 1990, but the principle it establishes applies generally to applications for powers of compulsory acquisition (Gala Leisure Ltd v Secretary of State for the Environment, Transport and the Regions (2001) 82 P&CR 11 at paragraph 68).

3 In Chesterfield, the Secretary of State confirmed the compulsory purchase order notwithstanding his finding that the proposed development was only marginally viable such that there was a real risk that it would not be carried out. He endorsed the finding of his Inspector that the chance of the development proceeding might be slight given the private funding that was yet to be secured, but that it would be in the public interest to allow the promoters of the scheme the opportunity to present the scheme to the market with the benefit of a confirmed compulsory purchase order, which was likely to improve the chances of securing private funding.

4 In the subsequent challenge to that decision, the court rejected the following inter-related arguments:

(i) That it was fundamental to the confirmation of a compulsory purchase order that the Secretary of State must be satisfied at the date of the confirmation that the proposed development underlying the compulsory purchase was likely to proceed if the order was confirmed; and

(ii) That the acquisition of a person's land against his will is *prima facie* a violation of a constitutional right, such that the courts would only sanction it if a substantial justification was shown, and such a justification must involve the confirming authority being satisfied that the development would probably take place

5 In dismissing those argument, Laws J found that:

(i) "…had Parliament intended that the Secretary of State's power should only arise if he were satisfied on the balance of probability that the development would be carried out, it would have so provided in clear terms" (Chesterfield at p.575) ; and

(ii) “There may very readily be cases where the Secretary of State concludes (a) that the public interest decisively requires the development to go ahead; (b) that it is less likely, or much less likely, to go ahead without a compulsory purchase order; (c) but that even if the order is made he cannot conclude that it will probably go ahead” (Chesterfield at p.580). In those circumstances, he would be entitled to confirm the compulsory purchase order.

6 There is no statutory requirement in the Planning Act 2008 that the Secretary of State may only authorise compulsory acquisition if he is satisfied on the balance of probability that the development subject to the application for development consent would be carried out. There is no requirement in the common law that compulsory acquisition can only be sanctioned where the decision-maker is satisfied that the proposed development is likely to take place. In order to establish a compelling case in the public interest justifying powers of compulsory acquisition, it is not necessary to establish that the proposed development will certainly, or probably be carried out.

**APPENDIX 10: Note substantiating net income figure**

## 1 WAREHOUSE RENTAL INCOME:

1.1 The assumption is that the airside warehousing space requirement will be driven by the forecast annual flown freight tonnages and so a ratio of annual flown freight tonnage to airside warehousing space required has been produced. Further, to recognize the increasing efficiency of space to tonnage that will arise as the tonnages grow, this ratio has been adjusted over the 20 year forecast period to start at what existed at a "quiet" airport (Prestwick has used as the example) and to end at what exists at a "busy" airport (East Midlands has been used as the example as the present flown tonnages there are similar to the flown tonnages forecast in year 20 at Manston).

1.2 The business model assumes that the airport operator will provide handling for all freight, aside from freight affiliated with "E-commerce" carriers. Thus, the requirement for airside warehouse space to rent is only supplied to the "E-Commerce" carriers who will occupy the space to handle the freight on their own. The remaining warehouse space, where the airport operator will employ workers, is owner occupied and there is no rental income affiliated with this occupancy of space.

1.3 RSP has assumed a conservative lease charge on the "E-Commerce" occupied space, which is based on previous experience of its advisors, commercially confidential conversations and comparable 'property' analysis.

## 2 NORTHERN GRASS RENTAL INCOME:

2.1 At this point, it is difficult to ascertain who will be occupying a specific amount of space, and on what terms that tenant will be looking for. The applicant has been in extensive conversations with potential end-users to occupy space on the Northern Grass for Airport related purposes, however, these conversations remain commercially confidential.

2.2 The applicant and its advisors have conducted industry research on comparable properties and ascribed conservative lease rates, terms and scenarios. The underlying scenarios vary, depending on the needs of the end-user. RSP have run pro-forma models which consider different scenarios of lease terms, characteristics and durations i.e., FRI, fee simple, ground lease, and variant lease scenarios at different lengths.

## 3 FBO RENTAL INCOME & MRO RENTAL INCOME:

3.1 Both Fixed Base Operator & Maintenance Repair and Overhaul rental income are derived from the assumption that at each facility a single tenant will build, occupy, staff and maintain the facility and business. The underlying ground lease for the facilities are based on operational experience and comparable lease terms.

**APPENDIX 11: Calculation of the number of stands required to accommodate the forecast ATMs**

1 The assumption is that each based aircraft requires a stand as it is assumed that this will be dedicated to that aircraft.

2 For non-based aircraft, it is assumed that the average ground time will be 3 hours and that, due to varying schedules and a degree of charter operations, there will be a need to provide for a “bunching" of aircraft - i.e. the non-based aircraft will not arrive/depart in an even spread throughout the day and that 3 times the number of stands will be needed by comparison to what would be needed if the aircraft did arrive and depart on an evenly spread schedule throughout the day.

| FREIGHTER STANDS | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Y11 | Y12 | Y13 | Y14 | Y15 | Y16 | Y17 | Y18 | Y19 | Y20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Based Aircraft | - | 5 | 5 | 9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | | | | | | | | | | | | | | | | | | | | |
| Mean Summer Daily Rotations Excluding Based Carriers | - | 3.09 | 3.89 | 5.24 | 4.61 | 4.90 | 5.90 | 6.32 | 6.61 | 6.90 | 7.57 | 8.27 | 9.01 | 9.77 | 10.56 | 11.38 | 12.23 | 13.12 | 14.05 | 15.01 |
| Mean Winter Daily Rotations Excluding Based Carriers | - | 1.34 | 2.05 | 3.41 | 2.69 | 2.97 | 3.97 | 4.40 | 4.69 | 4.97 | 5.57 | 6.19 | 6.84 | 7.52 | 8.22 | 8.95 | 9.70 | 10.49 | 11.31 | 12.16 |
| Larger of the Daily summer and winter rotations | - | 3.09 | 3.89 | 5.24 | 4.61 | 4.90 | 5.90 | 6.32 | 6.61 | 6.90 | 7.57 | 8.27 | 9.01 | 9.77 | 10.56 | 11.38 | 12.23 | 13.12 | 14.05 | 15.01 |
| | | | | | | | | | | | | | | | | | | | | |
| Number of Daily Stand-Hours Required Excluding Based Carriers | - | 9.26 | 11.67 | 15.73 | 13.83 | 14.69 | 17.69 | 18.97 | 19.83 | 20.69 | 22.71 | 24.82 | 27.02 | 29.30 | 31.67 | 34.13 | 36.70 | 39.37 | 42.14 | 45.03 |
| expressed in days | - | 0.58 | 0.73 | 0.98 | 0.86 | 0.92 | 1.11 | 1.19 | 1.24 | 1.29 | 1.42 | 1.55 | 1.69 | 1.83 | 1.98 | 2.13 | 2.29 | 2.46 | 2.63 | 2.81 |
| adjusted for bunching | - | 1.74 | 2.19 | 2.95 | 2.59 | 2.75 | 3.32 | 3.56 | 3.72 | 3.88 | 4.26 | 4.65 | 5.07 | 5.49 | 5.94 | 6.40 | 6.88 | 7.38 | 7.90 | 8.44 |
| | | | | | | | | | | | | | | | | | | | | |
| Based plus non-based demand rounded up | - | 7 | 8 | 12 | 13 | 13 | 14 | 14 | 14 | 14 | 15 | 15 | 16 | 16 | 16 | 17 | 17 | 18 | 18 | 19 |

| Assumptions: | |
|---|---|
| Hours per stand use for non-based aircraft | 3 |
| Hours per day | 16 |
| Bunching factor | 3 |

**Calculation as to the amount of airside warehousing required**

2.1 The assumption is that the airside warehousing space requirement will be driven by the forecast annual flown freight tonnages and so a ratio of annual flown freight tonnage to airside warehousing space required has been produced. Further, to recognise the increasing efficiency of space to tonnage that will arise as the tonnages grow, this ratio has been adjusted over the 20 year forecast period to start at what existed at a "quiet" airport (Prestwick has used as the example) and to end at what exists at a "busy" airport (East Midlands has been used as the example as the present flown tonnages there are similar to the flown tonnages forecast in year 20 at Manston).

2.2 A ratio of annual flown freight tonnage to warehouse space is used to derive warehouse space requirements.

2.3 The ratio starts at what existed at Prestwick at its peak volumes and alters linearly to the ratio at East Midlands airport cur

| Airport | Tonnage | Warehousing | Ratio |
|---|---|---|---|
| | | SQM | MT/1000SQM |
| PIK | 50,000 | 5,000 | 10,000 |
| EMA | 340,000 | 65,000 | 5,231 |

| | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Y11 | Y12 | Y13 | Y14 | Y15 | Y16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ratio** | 10,000 | 9,750 | 9,500 | 9,250 | 9,000 | 8,750 | 8,500 | 8,250 | 8,000 | 7,750 | 7,500 | 7,250 | 7,000 | 6,750 | 6,500 | 6,250 |
| **Annual Flown Tonnage** | 0 | 96,553 | 108,553 | 167,092 | 173,741 | 181,436 | 192,908 | 200,673 | 216,765 | 212,351 | 222,377 | 234,508 | 244,690 | 256,989 | 270,579 | 283,904 |
| **SQ M requirement** | - | 9,903 | 11,427 | 18,064 | 19,305 | 20,736 | 22,695 | 24,324 | 27,096 | 27,400 | 29,650 | 32,346 | 34,956 | 38,072 | 41,628 | 45,425 |

| | Y17 | Y18 | Y19 | Y20 |
|---|---|---|---|---|
| **Ratio** | 6,000 | 5,750 | 5,500 | 5,250 |
| **Annual Flown Tonnage** | 296,594 | 312,344 | 324,838 | 340,758 |
| **SQ M requirement** | 49,432 | 54,321 | 59,061 | 64,906 |