

TONBRIDGE & MALLING BOROUGH COUNCIL



EXECUTIVE SERVICES

Chief Executive

Julie Beilby BSc (Hons) MBA

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NB - This agenda contains proposals, recommendations and options. These do not represent Council policy or decisions until they have received proper consideration through the full decision making process.

Contact: Democratic Services
committee.services@tmbc.gov.uk

1 February 2021

To: MEMBERS OF THE STREET SCENE AND ENVIRONMENT SERVICES
ADVISORY BOARD
(Copies to all Members of the Council)

Dear Sir/Madam

Your attendance is requested at a meeting of the Street Scene and Environment Services Advisory Board to be held online via Microsoft Teams on Tuesday, 9th February, 2021 commencing at 7.30 pm. Information on how to observe the meeting will be published on the Council's website.

Yours faithfully

JULIE BEILBY

Chief Executive

A G E N D A

PART 1 - PUBLIC

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2. Declarations of interest 7 - 8

Members in any doubt about such declarations are advised to contact Legal or Democratic Services in advance of the meeting

3. Minutes 9 - 12

To confirm as a correct record the Notes of the meeting of the Street Scene and Environment Services Advisory Board held on 8 December 2020

4. Presentation by Laser Energy

Representatives from Laser Energy will provide information on the Borough Council's carbon footprint.

Matters for recommendation to the Cabinet

5. Climate Change Forum 13 - 16

To outline the format for a proposed "Climate Change Forum" to establish wider engagement on climate change issues

6. Priory Wood, Tonbridge - Landfill Gas Investigation - Update 17 - 88

The report provided an update on the monitoring of landfill gas levels at the Priory Wood site in Tonbridge and set out a number of next steps for consideration.

7. Wildflower Strip on Amenity Open space 89 - 94

This report considers the potential introduction of wildflower strips on areas of amenity open space. The report identifies a potential trial location in Tonbridge and suggests further liaison with the Medway Valley Countryside Partnership to consider additional borough wide opportunities in the future.

Matters submitted for Information

8. Street Scene and Waste Services - Response to Covid 19 95 - 100

This report updates Members on progress with the themes/activities identified within the Street Scene and Waste section of the approved First Year Addendum to the Council's Corporate Strategy. This includes updates on service performance, the roll out of the new service arrangements to flats/communal areas, the reduction in the number of bring bank sites, the reintroduction of the weekend bulky collection service and the transfer of public conveniences to Parish/Town Councils.

9. Urgent Items 101 - 102

Any other items which the Chairman decides are urgent due to special circumstances and of which notice has been given to the Chief Executive.

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The Chairman to move that the press and public be excluded from the remainder of the meeting during consideration of any items the publication of which would disclose exempt information.

PART 2 - PRIVATE

11. Urgent Items 105 - 106

Any other items which the Chairman decides are urgent due to special circumstances and of which notice has been given to the Chief Executive.

MEMBERSHIP

Cllr M O Davis (Chairman)
Cllr Mrs S Bell (Vice-Chairman)

Cllr G C Bridge
Cllr D J Cooper
Cllr D A S Davis
Cllr S M Hammond
Cllr M A J Hood
Cllr F A Hoskins
Cllr A P J Keeley

Cllr D Keers
Cllr A Kennedy
Cllr Mrs C B Langridge
Cllr R V Roud
Cllr J L Sergison
Cllr T B Shaw
Cllr Miss G E Thomas

Apologies for absence

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Declarations of interest

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TONBRIDGE AND MALLING BOROUGH COUNCIL

STREET SCENE AND ENVIRONMENT SERVICES ADVISORY BOARD

Tuesday, 8th December, 2020

Present: Cllr M O Davis (Chairman), Cllr Mrs S Bell (Vice-Chairman), Cllr G C Bridge, Cllr D J Cooper, Cllr D A S Davis, Cllr M A J Hood, Cllr F A Hoskins, Cllr D Keers, Cllr R V Roud, Cllr J L Sergison, Cllr T B Shaw and Cllr Miss G E Thomas

Councillors Mrs J A Anderson, M C Base, Mrs P A Bates, R P Betts, M D Boughton, V M C Branson, A E Clark, N J Heslop, Mrs F A Kemp, D Lettington, B J Luker, Mrs A S Oakley, W E Palmer, M R Rhodes, N G Stapleton, K B Tanner and Mrs M Tatton were also present pursuant to Council Procedure Rule No 15.21.

PART 1 - PUBLIC

SSE 20/22 DECLARATIONS OF INTEREST

There were no declarations of interest made in accordance with the Code of Conduct.

SSE 20/23 MINUTES

RESOLVED: That the notes of the meeting of the Street Scene and Environment Services Advisory Board held on 5 October 2020 be approved as a correct record and signed by the Chairman.

MATTERS FOR RECOMMENDATION TO THE CABINET

SSE 20/24 REVIEW OF FEES AND CHARGES

The joint report of the Director of Street Scene, Leisure and Technical Services and the Director of Planning, Housing and Environmental Health set out the proposed fees and charges for the provision of services in respect of garden waste subscriptions, fixed penalty notices for littering, household bulky refuse and fridge/freezer collections, 'missed' refuse collections, stray dog redemption fees, pest control, food certificates, contaminated land monitoring and private water supplies with effect from 1 April 2021.

Consideration had been given to a range of factors, including the Borough Council's overall financial position, market position, trading patterns, the current rate of inflation and customer feedback. In addition, the set of guiding principles for the setting of fees and charges approved by the Finance, Innovation and Property Advisory Board had also been taken into account.

RECOMMENDED: That

- (1) the proposed scale of charges for garden waste subscriptions, fixed penalty notices for littering, household bulky refuse and fridge/freezer collections, 'missed' refuse collections, stray dog redemption fees, pest control, food certificates, contaminated land monitoring and private waste supplies, as detailed in the report, be approved; and
- (2) the proposed scale of charges be implemented from 1 April 2021.

***Referred to Cabinet**

SSE 20/25 KENT AND MEDWAY ENERGY AND LOW EMISSION STRATEGY

Decision Notice D200087MEM

The report of the Chief Executive sought endorsement of the Kent and Medway Energy and Low Emissions Strategy (ELES) which outlined the approach to be taken to achieve a reduction in carbon emissions and improvements in air quality across the county. The Strategy, attached at Annex 1, identified a number of priority actions (set out on pages 15-28 of the Strategy) and included a commitment to meet the UK Government target to achieve net-zero emissions by 2050. The ELES had been formally adopted at the Kent and Medway Net-Zero Conference held on 27 November and district councils would work in partnership to support the implementation of the priority actions.

The report identified the links between the ELES and the Tonbridge and Malling Climate Change Strategy and Action Plan and the Borough Council's aspiration of carbon neutrality within 10 years. In addition, the report recognised the synergies between the aims and objectives of the Strategy and the Borough Council's Air Quality Action Plan (AQAP), due to go out to public consultation in January 2021, which focussed on transport, planning and infrastructure, policy guidance and public health and well-being.

The Cabinet Member for Street Scene and Environment Services drew attention to a pilot scheme by Kent County Council and DEFRA to create community woodlands across the county and advised that preliminary discussions had been held regarding identification of a possible site within the Borough.

RECOMMENDED: That

- (1) the Kent and Medway Energy and Low Emissions Strategy be endorsed; and

- (2) implementation in line with existing Borough Council Climate Change and Air Quality objectives be supported.

MATTERS SUBMITTED FOR INFORMATION

SSE 20/26 IMPACT OF COVID-19 PANDEMIC ON THE ENVIRONMENTAL HEALTH SERVICE

The report of the Director of Planning, Housing and Environmental Health provided an update on the impact the Covid-19 pandemic had had on both the Environmental Protection and the Food and Safety teams within Environmental Services. Additionally, reference was made to the agreed First Year Addendum to the Corporate Strategy.

It was noted that requests to the Service had increased dramatically throughout the pandemic and both teams had experienced significantly increased pressures and changes to their role and current priorities.

SSE 20/27 STREET SCENE AND WASTE SERVICES - RESPONSE TO COVID-19

The report of the Director of Street Scene, Leisure and Technical Services provided an update on progress with the themes and activities identified within the Street Scene and Waste section of the approved First Year Addendum to the Corporate Strategy. This included updates on service performance, the roll out of the new service arrangements to flats and communal areas, the reduction in the number of bring bank sites and the reintroduction of the weekend bulky waste collection service, subscriptions for garden waste and the transfer of public conveniences to Parish/Town Councils.

SSE 20/28 WASTE AND STREET SCENE SERVICES UPDATE

The report provided updates on a number of issues and initiatives managed by the Waste and Street Scene Service Services. Particular reference was made to the retendering of the Pest Control, Dog Warden and Public Toilet Cleaning contracts and to the performance of the waste contractor which had seen a significant improvement since the engagement of a new manager in August.

SSE 20/29 EXCLUSION OF PRESS AND PUBLIC

There were no items considered in private.

The meeting ended at 9.30 pm

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TONBRIDGE & MALLING BOROUGH COUNCIL

STREET SCENE and ENVIRONMENT SERVICES ADVISORY BOARD

09 February 2021

Report of the Chief Executive

Part 1- Public

Matters for Recommendation to Cabinet - Non-Key Decision (Decision may be taken by the Cabinet Member)

1 CLIMATE CHANGE FORUM

To outline the format for a proposed “Climate Change Forum” to establish wider engagement on climate change issues

1.1 Background

- 1.1.1 The Borough Council has an ambitious aspiration to be carbon neutral by 2030 and has recently adopted a Climate Change Strategy and Year 1 Action plan to support this. Members will be aware that consultants have been appointed to establish the carbon footprint of the Council and its operations and provide options to achieve net zero. Work on this is underway, with outcomes due to be reported to the next meeting of this committee.
- 1.1.2 It is recognised that significant challenges faced in relation to climate change are outside the remit of the Borough Council. We can however, work with others to learn more about their own plans and ideas for carbon reduction, how to inspire and motivate others to tackle the issues and to develop an open conversation with others working on these critical issues.
- 1.1.3 It is therefore proposed that a cross-agency Climate Change Forum is supported to help drive forward a response to the climate emergency. The Forum would also help coordinate climate action across Tonbridge and Malling.

1.2 Membership and process of the proposed Climate Change Forum

- 1.2.1 The Leader and Cabinet Member propose that the normal convention for political balance be set aside. It is therefore suggested that in addition to the Cabinet Member, there should be three Conservative Borough Councillors, and the Chairman will welcome a representative Borough Councillor from each political group. Representation from a variety of different sectors would also provide a wider understanding of the issues and opportunities across the borough. We would want to invite representatives from the following sectors:

- 4 x Conservative Borough Council Members (to include the Cabinet Member) and 1 x Borough Council representative from each remaining political group
- Kent County Council
- Parish Council (a representative able to feed back to all parishes via existing forums such as Parish Partnership Panel)
- Tonbridge Forum representative (not from the Borough Council)
- Local climate change/biodiversity interest groups
- Education sector
- Business sector
- Faith sector
- Voluntary & Community Sector
- Youth Forum representative
- East Malling Research

1.2.2 There may of course be additional groups or neighbourhood forums with a particular interest in climate change issues and we would be open to nominations. We can promote the group via the Council website and social media channels.

1.2.3 It is suggested that, at least in the interim period whilst the group is established, the Forum is chaired by the Cabinet Member for Street Scene and Environment Services. We will currently be looking to hold virtual meetings due to the current restrictions. This may however, be a preferable longer term option, given the wider carbon reduction benefits of reducing travel to meetings. Initially we will look to hold meetings every six months. The work of the Forum and any minutes of meetings, will be reported to this Committee and published on the Council's website.

1.3 Legal Implications

1.3.1 None

1.4 Financial and Value for Money Considerations

1.4.1 There is no budget assigned to this Forum, but there will be costs associated with staff time.

1.5 Risk Assessment

1.5.1 N/A

1.6 Equality Impact Assessment

1.6.1 The decisions recommended through this paper have a remote or low relevance to the substance of the Equality Act. There is no perceived impact on end users.

1.7 Policy Considerations

- 1.7.1 Asset Management
- 1.7.2 Biodiversity & Sustainability
- 1.7.3 Business Continuity/Resilience
- 1.7.4 Climate Change
- 1.7.5 Communications
- 1.7.6 Community

1.8 Recommendations

- 1.8.1 That Members **ENDORSE** the format of the proposed Climate Change Forum as outlined in the report.

The Chief Executive confirms that the proposals contained in the recommendation(s), if approved, will fall within the Council's Budget and Policy Framework.

Background papers:

contact: Gill Fox

Nil

Julie Beilby
Chief Executive

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TONBRIDGE & MALLING BOROUGH COUNCIL

STREET SCENE and ENVIRONMENT SERVICES ADVISORY BOARD

09 February 2021

Report of the Director of Planning, Housing & Environmental Health

Part 1- Public

Matters for Recommendation to Cabinet - Non-Key Decision (Decision may be taken by the Cabinet Member)

1 PRIORY WOOD, TONBRIDGE – LANDFILL GAS INVESTIGATION UPDATE

SUMMARY

1.1 Since 1988 this Council has been monitoring landfill gas levels at the Priory Wood site in Tonbridge which now comprises a public open space owned and maintained by the Council. Following a desktop review of the site in order to create a specific risk assessment, a more detailed investigation was deemed necessary and in August 2019, 17 new gas monitoring boreholes were drilled across the site and monitoring fortnightly for 12 months undertaken in order to produce a Quantitative Risk Assessment. That risk assessment has determined that currently the gases generated within the landfill pose a moderate to low risk to site users and those properties in the immediate vicinity.

1.2 Background

1.2.1 The site known as Priory Wood is a closed landfill site now used as a public open space. It lies to the southeast of Deakin Leas in Tonbridge and is bordered on its eastern and southern sides by the Tonbridge to Hastings railway line and the A21 respectively (See attached plan in **Annex 1**). The site was quarried before accepting waste between approximately 1956 and 1975.

1.2.2 Gas monitoring has been undertaken by this Council since 1988 at a selection of boreholes, which overtime became lost by overgrown vegetation or unusable due to ground movements breaking connections and flooding. In early 2019 only 2 useable boreholes remained along with an additional monitoring point on the gas pump which was installed as part of the gas control measures.

1.2.3 In response to the landfill gas issue at the former Jocopit site in Borough Green and a review of similar sites in Tonbridge and Malling, a desktop study of the Priory Wood site found that whilst there were no current peaks in landfill gas levels recorded at Priory Woods, a suitable and sufficient Risk Assessment could not be created as there was a lack of monitoring coverage given only two boreholes remained in use along with a monitoring point on the gas pump.

1.2.4 Due to the limitations in the data available, in June 2019 Members approved an intrusive investigation including the installation of 17 new gas monitoring boreholes and an extended period of monitoring to allow a robust gas risk assessment to be undertaken.

1.3 Detailed Investigation outcomes and recommendations

1.3.1 Our consultants Ecologia have now concluded the 12 months of fortnightly monitoring at each of the new 17 boreholes and produced a Quantitative Risk assessment which can be seen in **Annex 2**.

1.3.2 The conclusions of this body of work are that;

- The landfill area is still generating high concentrations of methane and carbon dioxide gas, although the flow rates were low indicating that gases were being adequately ventilated by the active gas extraction system and/or naturally via vertical emission from soils.
- Risks to on-site receptors comprising workers are **low** on the basis that mitigation can be provided through appropriate workplace exposure controls in accordance with the Health and Safety at Work Act.
- Risks to on-site receptors comprising recreational users of the Site as a public open space are considered **low** on the basis that exposure would be of low duration and gas emissions are low and readily diluted in the atmosphere.
- Risks to off-site receptors comprising residential properties at Deakin Leas are **moderate to low** based on elevated carbon dioxide concentrations identified in boreholes near to the properties. It is considered that there remains uncertainty as to whether this data reflects gas migration from the landfill or natural sources.
- Risks to off-site school receptors are **moderate to low** on the basis that gas concentrations in the landfill measured up to 44% methane within nearby waste material and that gas monitoring has not been undertaken between the waste material and the school boundary. Risks to existing school buildings are considered likely to be **low** based on limited monitoring completed during planning, however, the potential for gas migration into the school land has not been directly assessed.
- There is uncertainty with respect to whether monitoring included a period of 'worst case' pressure fall, the potential for continuous water body in shallow soils at the Site and if this extends to residential properties, whether gas migration occurs between the waste area and the school boundary, and whether the known faults in underlying bedrock could act as a preferential pathway for ground gases, should the gas extraction system cease operation.

1.3.3 In order to address the identified uncertainties which remain, Ecologia have made several recommendations to further refine the risk assessment. These are listed in the table below. Also listed are their considered pros and cons given the cost implications of the further work, as whilst this work would be phased and potentially not all required if early results were favourable, the full suite if considered necessary would require additional spending in excess of £15,000, as shown in the quotes for the works at **Annex 3 and Annex 4**.

Ecologia Recommendation	Pros	Cons
Install 2no new boreholes between the waste fill and the school land	Would address uncertainties in risk to occupants of the school buildings.	Potential unnecessary spend given monitoring during construction of school buildings in 2014 did not identify landfill gas. Also significant buffer of school playing fields separate the waste fill from the school buildings.
Surface emissions monitoring of the waste area	Would refine risk to those using the site for recreation or maintenance.	Unnecessary spend. There are no receptors on site that are stationary and low to the ground (apart from Scientific Officer during monitoring).
Replace BH1 (old borehole nearest residential receptor)	May refine data regarding the risk from landfill gas to the nearest residential receptor.	Potential unnecessary spend. Proposed borehole will still be prone to flooding as BH1 was, and may therefore be unusable. New borehole WS1 is also outside of the waste fill and only a little over 5m from BH1 location.
Continuous monitoring of select boreholes	May provide information about how the gases behave during pressure/weather changes.	Low pressure events have been captured during previous monitoring, additional information is therefore likely to be minimal.

Carbon isotope testing to determine source of elevated carbon dioxide	Will confirm whether the elevated carbon dioxide is coming from the landfill or another source.	Unlikely to be a significant alternative source of carbon dioxide.
Infrastructure report for the gas extraction system	Will confirm the integrity of the gas extraction system, which is the only protection for the residential receptors.	May identify the need for additional maintenance costs.

1.4 Next Steps

- 1.4.1 The results of the Quantitative Risk Assessment report (QRA) (**Annex 2**) show no High or Imminent risks have been identified in respect of Landfill Gas at the Priory Wood Site.
- 1.4.2 Whilst some moderate risk has been identified due to monitoring uncertainties, the cost to benefit of the recommendations made by Ecologia to address these uncertainties has not been proven (as shown in 1.3.3), except in respect of the Infrastructure Report for the gas extraction system. This system is identified as important in safeguarding residential properties. It is therefore recommended to proceed with this recommendation which has been quoted by Ecologia at £1152 as shown separately to other works in **Annex 4**.
- 1.4.3 It is important to note that this infrastructure report may identify works which are required to rectify any identified faults/issues with the system, the costs of which cannot be guessed at this time.
- 1.4.4 Whilst it is not recommended to press ahead with any other recommendations in the QRA report at this time, Officers from the EP team have resumed in house monthly monitoring of gas levels in the new boreholes and will be in a position to keep the situation under review and report back to members if the situation changes in the future.

1.5 Legal Implications

- 1.5.1 Part 2A of the Environmental Protection Act 1990 places a duty on all local councils to investigate where land in its area might have been contaminated because of the way it was used in the past or how it is currently used. The council then has to put any sites they find in order of priority based on the risk they might cause to human health or the wider environment. We have been doing this in line with our Contaminated Land Inspection Strategy.

- 1.5.2 Having identified a potential issue at this location, we have carried out a further investigation and have identified suitable further steps and will be progressing with these.
- 1.5.3 On conclusion of the investigation and in the context of advice from our consultants and expert legal advice it is considered that the site does not need to be 'declared' under part 2A of the Contaminated Land regime at this time.

1.6 Financial and Value for Money Considerations

- 1.6.1 No provision for the cost of these investigative works is, or could reasonably have been, specifically included in the Council's budget. However, funds for the identified works at this site will be funded from within existing budgets. Should it be necessary to extend the nature of investigations to include remedial works for example to the gas extraction system then additional funds will need to be identified in due course.

1.7 Risk Assessment

- 1.7.1 Part of the investigation into potential contaminated land required under Part 2A of the Environmental Protection Act 1990 includes the creation of a detailed risk assessment for the site which has now been completed.

1.8 Policy Considerations

This investigation is in line with the Council's Contaminated Land inspection strategy updated in 2016 which can be found online at <https://www.tmbc.gov.uk/services/environment-and-planning/pollution/pollution-control-contaminated-land>.

1.9 Recommendations

- 1.9.1 It is **RECOMMENDED** that Cabinet **ENDORSE** the next steps as put forward in sections 1.4.2 and 1.4.4 of this report.

The Director of Planning, Housing & Environmental Health confirms that the proposals contained in the recommendation(s), if approved, will fall within the Council's Budget and Policy Framework.

Background papers:

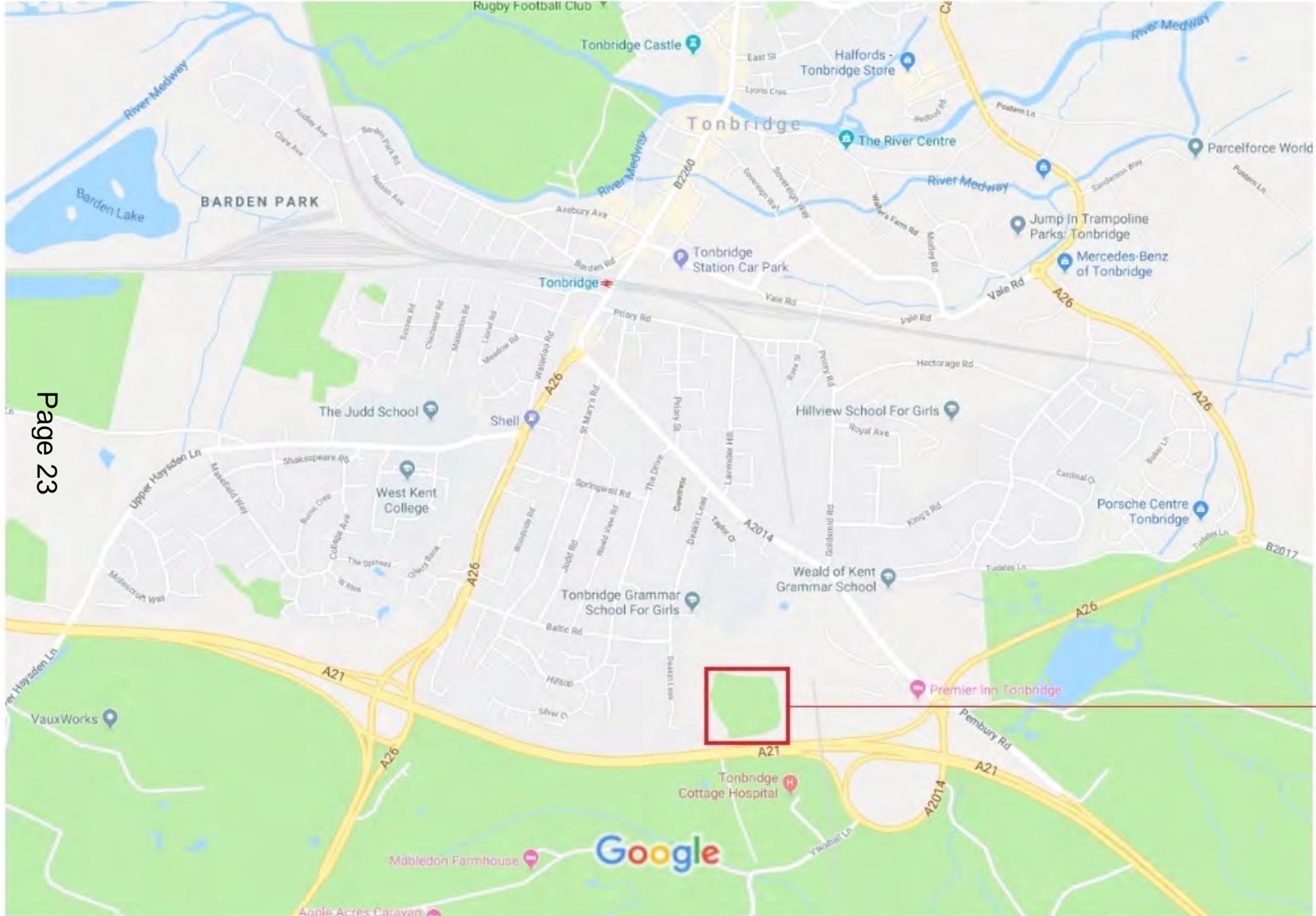
Nil

contact: Linda Hibbs
Crispin Kennard

Eleanor Hoyle
Director of Planning, Housing and Environmental Health

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Prory Wood



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Site

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**Quantitative Risk Assessment
(QRA) Report**

for

**Priory Wood Landfill, Tonbridge,
Kent, TN11 0NA**



Report

Ecologia[™]
experts on the ground

**Quantitative Risk Assessment (QRA) Report
for**

**Priory Wood Landfill,
Tonbridge, Kent, TN11 0NA**

Prepared for: Tonbridge & Malling Borough Council

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Kent
ME19 4LZ**

Reference: EES 19.091.1

Date: 3rd November 2020

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**Title: Quantitative Risk Assessment (QRA) Report
Priory Wood Landfill, Tonbridge, Kent, TN11 0NA**

Ecologia Reference: EES 19.091.1

Client: Tonbridge & Malling Borough Council	Client Reference: Priory Wood Landfill
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Management Systems Control

Ecologia operates under an integrated management system certified to ISO 9001:2015, ISO 14001:2015 and BS OHSAS 18001:2007.

Version No.	Status	Prepared by:	Checked by:	Authorised by:	Date
1	FINAL	L. Allen BSc	LA. Cammack BSc	LA. Cammack BSc	03/11/2020

Limitations, Confidentiality Clauses and Copyright:

Ecologia Environmental Solutions Ltd has prepared this report in accordance with the instructions of the above named Client with all reasonable skill, care and diligence within the terms of the Contract and taking account of the resources devoted to us by agreement with the Client.

This report is produced solely for the benefit of the above named Client. No liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing.

The report is for the sole use of the Client and Ecologia Environmental Solutions Ltd shall not be responsible for any use of the report or its content for any purpose other than that for which it was prepared or provided.

This report refers, within the limitations stated, to the conditions of the Site at the time of the inspection and data review. No warranty is given as to the possibility of future changes in the condition of the Site.

Ecologia Environmental Solutions Ltd undertakes to display and maintain total confidentiality of the project. No information will be passed to, or discussed with any third party, without the direct authorisation and written consent of the Client.

Should the Client require to pass copies of the report to other parties for information, the whole report should be so copied, but no professional liability or warranty shall be extended to other parties by Ecologia Environmental Solutions Ltd in this connection without the explicit written agreement thereto by Ecologia Environmental Solutions Ltd.

Ecologia has undertaken this report in accordance with the agreement dated 28/03/2019 under which these services have been performed. The report may be relied upon by Tonbridge and Malling Borough Council, as "the Client" within the meaning given to that phrase within the agreement and subject to the terms and conditions contained therein.

Report

EXECUTIVE SUMMARY

Site Location & Description	<p>The Site is located at Priory Wood Landfill, Tonbridge, Kent, TN11 0NA.</p> <p>The Site comprises a public open space park with mainly grass across the centre and routes are cleared to facilitate walking paths. The Site can be accessed from Deakin Leas in the south west or from Vauxhall Gardens in the north east. The site is at an elevation of approximately 70-65 m above ordnance datum; however, the surface is undulating. Woodland is present around the perimeter of the Site. A steep cutting is present in the east falling to an adjacent active railway line. A locked compound comprising a gas extraction system is present in the south west of the Site, with 5No. ventilation stacks across the western side.</p> <p>Off-site to the west are residential properties of Deakin Leas, to the south is a slope leading to the A21 Tonbridge By-Pass, the east is a railway line and to the north is Tonbridge Grammar School.</p>
Objective	<p>This QRA report is intended to assess the risk from ground gas associated with the landfill and identify the need for any additional investigation or risk mitigation works that may be required.</p>
Environmental Setting	<p>The Site geology comprises superficial strata of Wadhurst Clay in the west and Ashdown Formation in the east. The Tonbridge Sand Formation is also present to the south and east. BGS geological mapping of the area (BGS, 1997) indicates the presence of a fault at depth between the Wadhurst Clay and the Ashdown Beds trending east to west and south west within the Site. The mapping indicates that the Wadhurst Clay is at an incline north of 10-15 degrees.</p> <p>The Wadhurst Clay Formation is an unproductive stratum. The Ashdown and Tonbridge Sand Formations are designated as Secondary A aquifers. The Site is not within a groundwater source protection zone.</p> <p>Surface water drains are present on the northern and western boundaries of the Site. A pond is present in the south west of the Site. The nearest surface water feature off-site is a pond approximately 107 m south of the Site.</p> <p>Ancient and semi-natural woodland is present on the eastern and western boundaries of the Site. The Site is also within an area of adopted greenbelt. The High Weald (an area of outstanding natural beauty) is located approximately 40 m south of the Site.</p>
Historical Setting	<p>The Site was undeveloped on the earliest mapping of 1867-1891 and was therefore likely quarried prior to the earliest available maps. The Site was historically an open cast quarry to obtain iron ore from the Wadhurst Clay Formation and was known as the Priory Wood Pits. The eastern area of the Site was quarried for Sandstone and was known as the Priory Wood Quarry. Other quarrying activities, known as lambshank pits as well as brickworks, were historically present in the vicinity of the Site. Permission for landfilling at the Site was granted in 1956 and was extended to include tipping of household waste in 1969. It is understood tipping ceased by 1980 when the site is no longer shown as a refuse tip on historical maps. Planning permission was granted for use of the land as a public open space with informal recreational use was granted in 1988.</p>

Conclusions & Recommendations

The following conclusions are made:

- The landfill area is still generating high concentrations of methane and carbon dioxide gas, which are being adequately ventilated by the gas extraction system and/or naturally via vertical emission from soils.
- Risks to on-site receptors comprising recreational users are considered **low** on the basis that exposure would be of limited duration.
- Risks to off-site residential receptors are **moderate to low** based on elevated carbon dioxide concentrations identified in boreholes near to the property.
- Risks to off-site school receptors are **moderate to low** on the basis that gas concentrations in the landfill are measured up to 44% methane within nearby waste material. No gas monitoring has been undertaken between the waste material and the school boundary to confirm risks.
- There is uncertainty with respect to whether monitoring included a period of 'worst case' pressure fall. Also uncertainty as to whether a continuous water body is present in shallow soils and if this extends to residential properties and whether the faults in the underlying bedrock could act as a preferential pathway for ground gases, should the gas extraction system cease operation.

The following recommendations are made:

- Installation of additional monitoring wells between the waste area and school land in the north and monitoring for ground gases.
- Hydraulic permeability testing of natural strata, and measurement of surface emissions across the landfill area.
- Replacement of monitoring well at BH1 and routine monitoring of water levels.
- Continuous ground gas monitoring in selected boreholes to confirm the potential for gas accumulation and migration with changes in atmospheric pressure.
- Sampling of gases within the landfill and near to residential properties for carbon isotope testing to confirm the potential source of elevated carbon dioxide.

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APPENDICES

Appendix I	Ground Gas Risk Assessment
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1. INTRODUCTION

1.1. Background

Ecologia was instructed by Tonbridge and Malling Borough Council (the 'Client') to carry out ground gas monitoring over a 12 month programme and complete a Quantitative Risk Assessment (QRA) Report for Priory Wood Landfill, Tonbridge, Kent, TN11 0NA.

As part of the works, Ecologia (part of the RSK Group) commissioned RSK Environment Limited (RSK) to undertake the ground gas risk assessment. The key findings of the report are summarised in [Section 2](#) and [Section 3](#), with the full report included in [Appendix I](#).

1.2. Objectives

The objective of QRA report is as follows:

- To review the findings of previous site investigation and ground gas monitoring data collected at the Site;
- To undertake an assessment of risk from ground gas associated with the landfill to off-site receptors (i.e. residential properties and school); and,
- To identify the need for any additional investigation or risk mitigation works that may be required.

1.3. Previous Assessments

This report should be read in conjunction with the following previous assessments completed for the Site:

- Leap Environmental Ltd, 'DRAFT Phase 1 Desk Study and Site Reconnaissance Report' (Ref: LP1702). Dated 5th October 2018;
- Ecologia Environmental Solutions Ltd, 'Preliminary Land Contamination Assessment' (Ref: EES 19.091.1). Dated 20th September 2019;
- Ecologia Environmental Solutions Ltd, 'Quarterly Ground Gas Monitoring Report' (Ref: EES 19.091.1). Dated 29th November 2019;
- Ecologia Environmental Solutions Ltd, 'Quarterly Ground Gas Monitoring Report (Q2)' (Ref: EES 19.091.1). Dated 31st March 2020;
- Ecologia Environmental Solutions Ltd, 'Quarterly Ground Gas Monitoring Report (Q3)' (Ref: EES 19.091.1). Dated 1st June 2020; and,
- Ecologia Environmental Solutions Ltd, 'Quarterly Ground Gas Monitoring Report (Q4)' (Ref: EES 19.091.1). Dated 8th September 2020.

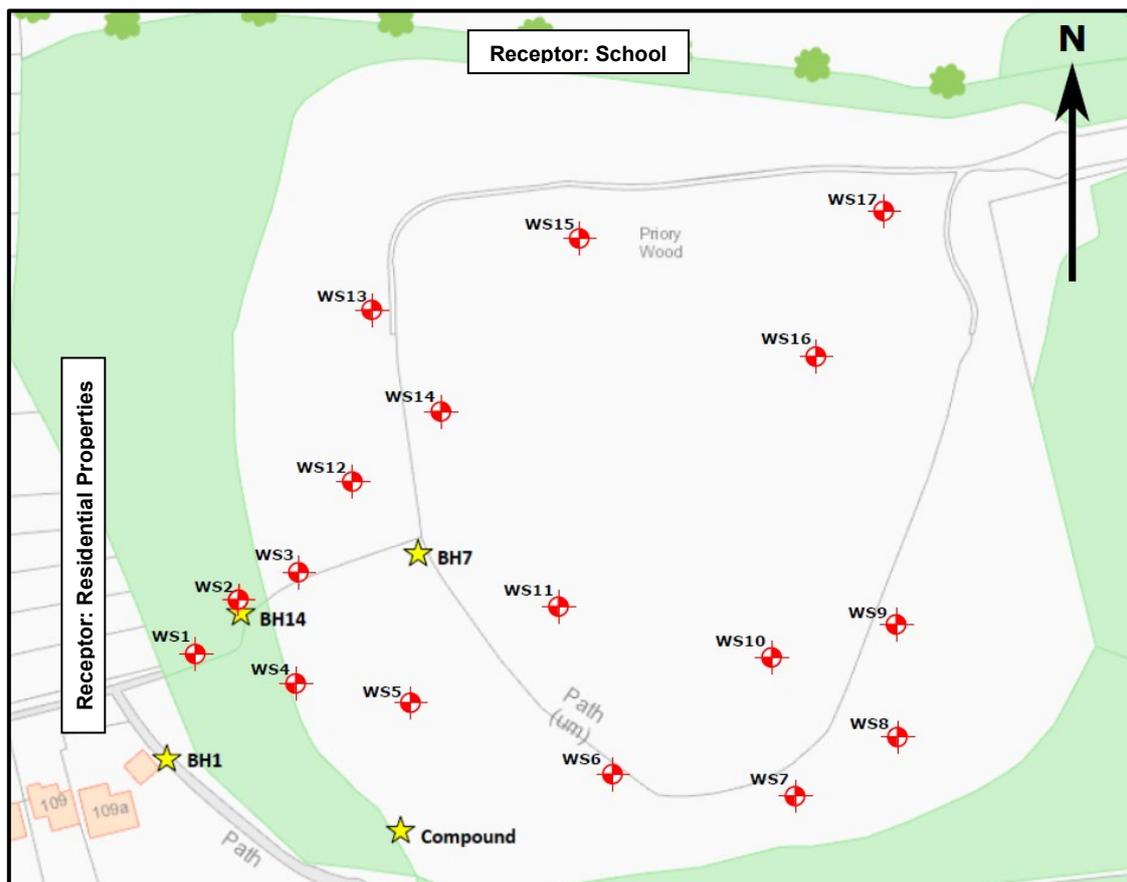
A range of other third-party information comprising geological maps, maps of existing and historical ground gas extraction boreholes, drawings of existing gas mitigation measures and planning records were also reviewed.

2. GROUND GAS RISK ASSESSMENT

2.1. Background

Ecologia has completed twenty-six rounds of ground gas monitoring on a fortnightly basis between 29th August 2019 and 26th August 2020. Atmospheric pressure recorded during the monitoring period was low (<1000mb) on 7 of the 26 monitoring rounds, with the lowest atmospheric pressure of 986 mb, recorded on 7th November 2019.

The borehole locations monitored by Ecologia 'WS1 – WS17' are depicted on Plan 1 below. We understand that Tonbridge and Malling Borough Council (TMBC) also regularly monitor from boreholes 'BH1, BH7 and BH14'.



Plan 1. Ground Gas Monitoring Well Locations

2.2. Gas Management System

It is understood that circa 1993 TMBC installed a gas extraction system comprising of a cut-off trench along the western boundary of the landfill. The trench is understood to be 10 m deep and include 5No. vented granular wells. These comprise a slotted 150 mm HDPE pipe with drainage curtain, leading to a single 3 m high ventilation vent pipe rising above ground and secured with a concrete base. The pipe is protected by geomembrane and overlain by turf and topsoil. The ventilation pipe is shown to have a port at 1 m height for the collection of gas samples.

The ventilation system incorporates an electrical gas booster to improve gas extraction rates. It is understood that this system operates each working day between 8am and 6pm.

2.3. Ground Gas Monitoring Results

A summary of findings at each borehole monitored by Ecologia are presented in Table 2.1 below, including the maximum gas concentrations and maximum steady-state flow rates.

Table 2.1. Summary of calculated Hazardous Gas Flow Rates (Ecologia Data)

Zone	Location	Peak Methane (% v/v)	Peak Carbon Dioxide (% v/v)	Maximum Steady-State Flow Rate (l/hr)	Methane GSV (l/hr)	Carbon Dioxide (l/hr)	Characteristic Situation
Outside	WS1	0.7	2.7	<0.1	<0.01	<0.01	CS1
Outside	WS2	2.1	4.9	0.1	0.002	0.004	CS1
Outside	WS3	7.1	7.5	<0.1	<0.01	<0.01	CS1
Inside	WS4	68.4	39.9	0.1	0.068	0.037	CS1
Inside	WS5	76.3	39.9	0.1	0.076	0.031	CS2
Inside	WS6	45.1	39.9	0.1	0.045	0.027	CS1
Inside	WS7	47.1	35.2	<0.1	<0.01	<0.01	CS1
Inside	WS8	30.4	24.0	0.1	0.030	0.021	CS1
Inside	WS9	76.3	35.0	0.1	0.076	0.031	CS2
Inside	WS10	45.4	25.1	<0.1	<0.01	<0.01	CS1
Inside	WS11	57.7	26.2	<0.1	<0.01	<0.01	CS1
Inside	WS12	13	20.0	0.1	0.013	0.008	CS1
Inside	WS13	67.9	30.2	0.2	0.136	0.053	CS2
Inside	WS14	14.7	23.9	<0.1	<0.01	<0.01	CS1
Inside	WS15	23.0	24.5	0.1	0.023	0.024	CS1
Inside	WS16	10.0	20.2	<0.1	<0.01	<0.01	CS1
Inside	WS17	44.3	21.6	<0.1	<0.01	<0.01	CS1

Based on the data collected by Ecologia, boreholes within the landfill represent CS2 conditions due to hazardous gas flow rates greater than 0.07 l/hr (low hazard potential).

The calculated hazardous gas flow rates for boreholes outside the landfill represent CS1 conditions (very low hazard potential).

It is important to note that the calculated hazardous gas flow rates are much lower than those reported by Leap between 2009 and 2018, which may have been recorded during times when the gas extraction system was inoperable. Due to this, a 'worst case' calculation has been undertaken to determine hazardous gas flow rates with more precautionary flow rates. The results are presented in Table 2.2 overleaf.

Table 2.2. Summary of 'worst case' Hazardous Gas Flow Rates

Zone	Location	Peak Methane (% v/v)	Peak Carbon Dioxide (% v/v)	Maximum Steady-State Flow Rate (l/hr)	Methane GSV (l/hr)	Carbon Dioxide (l/hr)	Characteristic Situation
Outside	WS1	0.7	2.7	12.9	0.09	0.34	CS2
Outside	WS2	2.1	4.9	12.9	0.27	0.63	CS2
Outside	WS3	7.1	7.5	12.9	0.92	0.96	CS3
Inside	WS12	13.0	20.0	12.9	1.67	2.58	CS3
Inside	Various	76.3	39.9	8.1	6.18	3.23	CS4

The use of 'worst case' gas flow rates as reported by Leap would indicate a CS4 (moderate to high hazard potential) within the landfill area and CS2 outside of the landfill area (low hazard potential).

3. CONCLUSIONS AND RECOMMENDATIONS

3.1. Conclusions

The following conclusions are made following the ground gas risk assessment:

- The landfill area is still generating high concentrations of methane and carbon dioxide gas. The recorded flow rates and differential pressure in monitoring wells by Ecologia was low and indicated that gases were being adequately ventilated by the active gas extraction system and/or naturally via vertical emission from soils.
- Risks to on-site receptors comprising workers are **low** on the basis that mitigation can be provided through appropriate workplace exposure controls in accordance with the Health and Safety at Work Act.
- Risks to on-site receptors comprising recreational users of the Site as a public open space are considered **low** on the basis that exposure would be of low duration and gas emissions are low and readily diluted in the atmosphere.
- Risks to off-site receptors comprising residential properties at Deakin Leas are **moderate to low** based on elevated carbon dioxide concentrations identified in boreholes near to the property. It is considered that there remains uncertainty as to whether this data reflects gas migration from the landfill or natural sources.
- Risks to off-site school receptors are **moderate to low** on the basis that gas concentrations in the landfill are measured up to 44% methane within nearby waste material and that gas monitoring has not been undertaken between the waste material and the school boundary. Risks to existing school buildings are considered likely to be low based on limited monitoring completed during planning, however, the potential for gas migration into the school land has not been directly assessed.
- There is uncertainty with respect to whether monitoring included a period of 'worst case' pressure fall, the potential for continuous water body in shallow soils at the Site and if this extends to residential properties, whether gas migration occurs between the waste area and the school boundary, and whether the known faults in underlying bedrock could act as a preferential pathway for ground gases, should the gas extraction system cease operation.

3.2. Recommendations

In order to further refine the risk assessment, the following actions are recommended:

- Installation of additional monitoring wells between the waste area and school land in the north, including hydraulic permeability testing of natural strata, and measurement of surface emissions across the landfill area.
- Replacement of the monitoring well at BH1 and routine monitoring of water levels to confirm the potential for gas migration at this location and the source of elevated carbon dioxide.
- Continuous ground gas monitoring in selected boreholes inside and outside of the landfill area to confirm the potential for gas accumulation and migration with changes in atmospheric pressure.
- Sampling of gases within the landfill and near to residential properties for carbon isotope testing to confirm the potential source of elevated carbon dioxide.

GROUND GAS RISK ASSESSMENT



Tonbridge & Malling Borough Council

Priory Wood Landfill, Tonbridge, Kent, TN11 0NA

Ground Gas Risk Assessment

1921480-R01 (01)

OCTOBER 2020

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RSK GENERAL NOTES

Project No.: 1921480 R01 (01)

Title: Ground Gas Risk Assessment

Client: Tonbridge & Malling Borough Council

Date: 29 October 2020

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Status: Rev 01

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Revision control sheet

Revision reference	Date	Reason for revision
Rev 00	23/10/20	First issue
Rev 01	29/10/20	Second issue following Ecologia comments

RSK Environment Limited (RSK) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and RSK. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by RSK for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of RSK and the party for whom it was prepared.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Environment Ltd.

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1 INTRODUCTION

1.1 Commissioning

RSK Environment Limited (RSK) was commissioned by Ecologia Environmental Solutions Ltd, on behalf of Tonbridge and Malling Borough Council (TMBC) ('the client'), to undertake a ground gas risk assessment for the Priory Wood Landfill, Tonbridge, Kent, TN11 0NA (herein referred to as 'the site').

The project was carried out to an agreed brief as set out in RSK proposal Ref: 1921480 T01 dated 28 August 2020.

The risk assessment has been undertaken following completion of a preliminary land contamination assessment by Ecologia, which included site investigation works, and the completion of follow-on ground gas monitoring on 26 occasions from 28 August 2019 to 26 August 2020.

This report is subject to the RSK service constraints given in **Appendix A** and limitations that may be described through this document.

1.2 Objectives

The objective of the work is:

- to review the findings of previous site investigation and ground gas monitoring data collected at the site;
- to undertake an assessment of risk from ground gas associated with the landfill to off-site receptors; and
- to identify the need for any additional investigation or risk mitigation works that may be required.

1.3 Scope of works

The scope of this assessment has been developed in accordance with relevant British Standards and authoritative technical guidance as referenced through the report.

The assessment of the contamination status of the site has been undertaken in general accordance with Land Contamination: Risk Management (LCRM, 2020), and in general accordance with BS 10175: 2011 + A2 2017 (BSI, 2017).

The assessment of risk from ground gas has been undertaken in accordance with relevant guidance as referenced throughout this report.

The scope of works will comprise an assessment of the site, its development and environs, to include:

- A brief review of investigation data obtained for the site by Ecologia and relevant information as provided by TMBC;
- Development of a ground gas conceptual site model;
- Ground gas risk assessment based on the available data; and
- Recommendations for further investigation or mitigation, if required.

1.4 Existing reports

The following reports were made available for review:

- Ecologia Environmental Solutions Ltd. Preliminary Land Contamination Assessment. Tonbridge & Malling Borough Council. Ref: 19.091.1. September 2019.
- Leap Environmental Ltd. DRAFT Phase 1 Desk Study and Site Reconnaissance Report. Tonbridge & Malling Borough Council. Ref: LP1702. October 2018.

A range of other third-party information comprising geological maps, maps of existing and historical ground gas extraction boreholes, drawings of existing gas mitigation measures, planning records, and the findings of correspondence between Ecologia and TMBC were also provided to RSK.

1.5 Limitations

The study aims principally to identify and assess the potential risks and liabilities associated with ground gas generation within the landfill to current off-site receptors. This report has been designed generally to meet the objectives of a ground gas risk assessment as set out in BS8485 (2015) and associated guidance.

The report and associated assessment are based largely on third party data provided by others. RSK assume this information to be reliable and correct, and no additional checks have been made to confirm its authenticity. RSK accept no liability for any errors or omissions in the data provided.

This report should be considered in the light of any changes in legislation, statutory requirement or industry practices that have occurred after the date of issue.

The opinions expressed in this report, and the comments and recommendations given, are based on the information provided by Ecologia and TMBC. No intrusive investigations have been undertaken by RSK to confirm the actual ground conditions and hence the environmental status of the site.

2 SITE INFORMATION

2.1 Site location

The following information comprises a brief summary of desk-based and site investigation information as contained in the reports referenced in Section 1.4. A summary of relevant site information is provided in **Table 1**.

Table 1 Site Information

Category	Information
Site name	Priory Wood Landfill
Site address and postcode	Deakin Leas, TN9 2JT
National Grid reference	TQ 59170 44980
Approximate Site Area	5.21 Hectares
Site Description	The site comprises a public open space park and consistent of overgrown vegetation and grass across the center and routes cleared to facilitate walking paths. The site is accessed from Deakin Leas in the south west. The site is at an elevation of approximately 70-65 m above ordnance datum, however, the site surface is undulating. Woodland is present in the east, west, and north boundaries of the site. A steep cutting is present in the east falling to an adjacent active railway line. A locked compound comprising a gas extraction system is present in the south west of the site. In the west of the site are 5 ventilation stacks.
Site Surroundings	To the west are residential properties of Deakin Leas, to the south is a slope leading to the A21 Tonbridge By-Pass, the east is a railway line and to the north is Tonbridge Grammar School.
Geology	The site geology comprises superficial strata of Wadhurst Clay (weathered stiff plastic Clay at surface with dark grey shales, mudstones, sandstone, limestone and clay ironstone at depth) in the west and Ashdown Formation (interbedded siltstone and sandstone with subordinate mudstone and shale horizons) in the east. The Tonbridge Sand Formation comprising interbedded mudstones, clays, silts and thinly bedded sandstones is to the south and east. A weathered horizon typically comprises red and mottled grey and orange silts. BGS geological mapping of the area (BGS, 1997) indicates the presence of a faults at depth between the Wadhurst Clay and the Ashdown Beds trending east to west and south west within the site. The mapping indicates that the Wadhurst Clay is at an incline north of 10-15 degrees.
Hydrogeology	The Wadhurst Clay Formation is an unproductive stratum. The Ashdown and Tonbridge Sand Formations are designated as Secondary A aquifers. The site is not within a groundwater source protection zone.
Hydrology	Surface water drains are present on the northern and western boundaries of the site. A pond is present in the south west of the site. The nearest surface water feature off-site is a pond approximately 107 m south of the site.
Sensitive Land Uses	Ancient and semi-natural woodland is present on the eastern and western boundaries of the site. The site is also within an area of adopted greenbelt. The High Weald (an area of outstanding natural beauty) is located approximately 40 m south of the site.
Site History	The site was undeveloped on the earliest mapping of 1867-1891 and was therefore likely quarried prior to the earliest available maps. The site was historically an open cast quarry to obtain iron ore from the Wadhurst Clay Formation and was known as the Priory Wood Pits. The eastern area of the site was quarried for Sandstone and was known as the Priory Wood Quarry. Other quarrying activities, known as lambshank pits as well as brickworks, were historically present in the vicinity of the site. Permission for landfilling at the site was granted in 1956 and was extended to include tipping of household waste in 1969. It is understood tipping ceased by 1980 when the site is no longer shown as a refuse tip on

Category	Information
Landfill Records	<p>historical maps. Planning permission was granted for use of the land as a public open space with informal recreational use was granted in 1988.</p> <p>Landfill records provided by TMBC indicate that tipping of waste commenced circa 1958 and the last records are from 1975. Waste deposited was recorded to include condemned food including meat products including 'offensive matter' related to a case of 'T.B' (assumed tuberculosis). Site ledgers record numerous complaints of rodent infestation, flies and odour. Leachate runoff associated with the site was appeared to be controlled as part of an apparent dilute and disperse process.</p>

3 GROUND GAS CONCEPTUAL SITE MODEL

The site has been subject to previous investigation and monitoring by Ecologia as detailed in their Preliminary Land Contamination Risk Assessment Report (EES 19.091.1, September 2019). The following chapter provides a summary of the investigation findings with respect to risks from ground gas in the context of the conceptual site model.

Diagrammatic conceptual cross sections of the site based on recent investigation by Ecologia and as provided are in **Appendix B**. With respect to the wider Conceptual Site Model, reference should be made to the Ecologia report (2019).

3.1 Ground Gas Sources

The Ecologia preliminary risk assessment identified potential sources of ground gas as follows:

- Historic refuse tip: Landfill gases including carbon dioxide, methane, and volatile organic compounds (VOCs).

The Leap Desktop Study identified a potential off-site source of ground gas associated with an infilled pond located immediately south-west of the site. The potential for on-site migration of landfill gas was identified associated with this source, however, risk from landfill gas were only identified to off-site residents and therefore this source has not been carried forward for further assessment. No other off-site sources were identified by Ecologia or Leap.

Details pertaining to the historical refuse tip as a source of ground gas, as identified in desk-based information, is detailed below.

3.1.1 Priory Wood Landfill

The Ecologia report notes that the site historically comprised a brick quarry prior to 1872 and later become a refuse tip up to 1972. It is understood that materials placed into the tip were unmonitored and are therefore of the potential for placement of putrescible material of unknown nature. In accordance with Figure 6 of BS 8576:2013, the age of the landfill and potential for municipal waste to be present, indicates the generation source potential of the landfill to be high to very high.

A summary of historical site Investigation reports prepared by Leap Environmental (ref: LE/QEMS/Doc 07-5-01-Rev3, 2018) indicates ground conditions at the site as follows:

- The landfill area comprised orange/yellow brown and grey firm to stiff silty Clay (of 0.8-1.1 m thickness) over predominately domestic waste material, which included polythene bags, iron, wood, newspapers, metal, plastic bottles, glass paint tins, clinker, ceramic, rubber fabric, wire, paper, shows, food waste, and concrete. The waste was recorded of between 7.4 m and 10.4 m in thickness and was underlain by 1.35-1.85 m of clay fill. Mudstone was locally encountered from 7 m depth.
- Outside of the waste area, the ground conditions comprised Made Ground comprising light brown clay with occasional tip rubbish (up to 1.5 m) over Wadhurst Clay (blue grey clay/orange brown clay with ironstone) of 1.7 m in thickness, over Ashdown Beds (brown silty clay).
- Perched water was encountered within the landfill at 1.9 m bgl within the waste area.

Later investigations by WEEKS in 1992 indicated that the waste area extended to within shrubland in the west. A single trial pit located to determine the position of a mapped fault in the underlying bedrock did not identify the fault.

Numerous boreholes were later installed by Kent County Council (KCC) and included re-numbering of existing monitoring boreholes to comprise BH1 to BH14. The majority of these were in the west of the site, within the waste, and outside the known waste boundary. Borehole BH1 appears to be located within the boundary of a residential property.

Perched water was identified on site during historical investigations within shallow Made Ground (circa 1.7-1.9mbgl) and standing water levels, likely comprising groundwater, were recorded at approximately 9 mbgl.

3.1.2 Gas Management System

It is understood that circa 1993 TMBC installed a gas extraction system comprising of a cut-off trench as shown on the proposed plan as provided by TMBC.

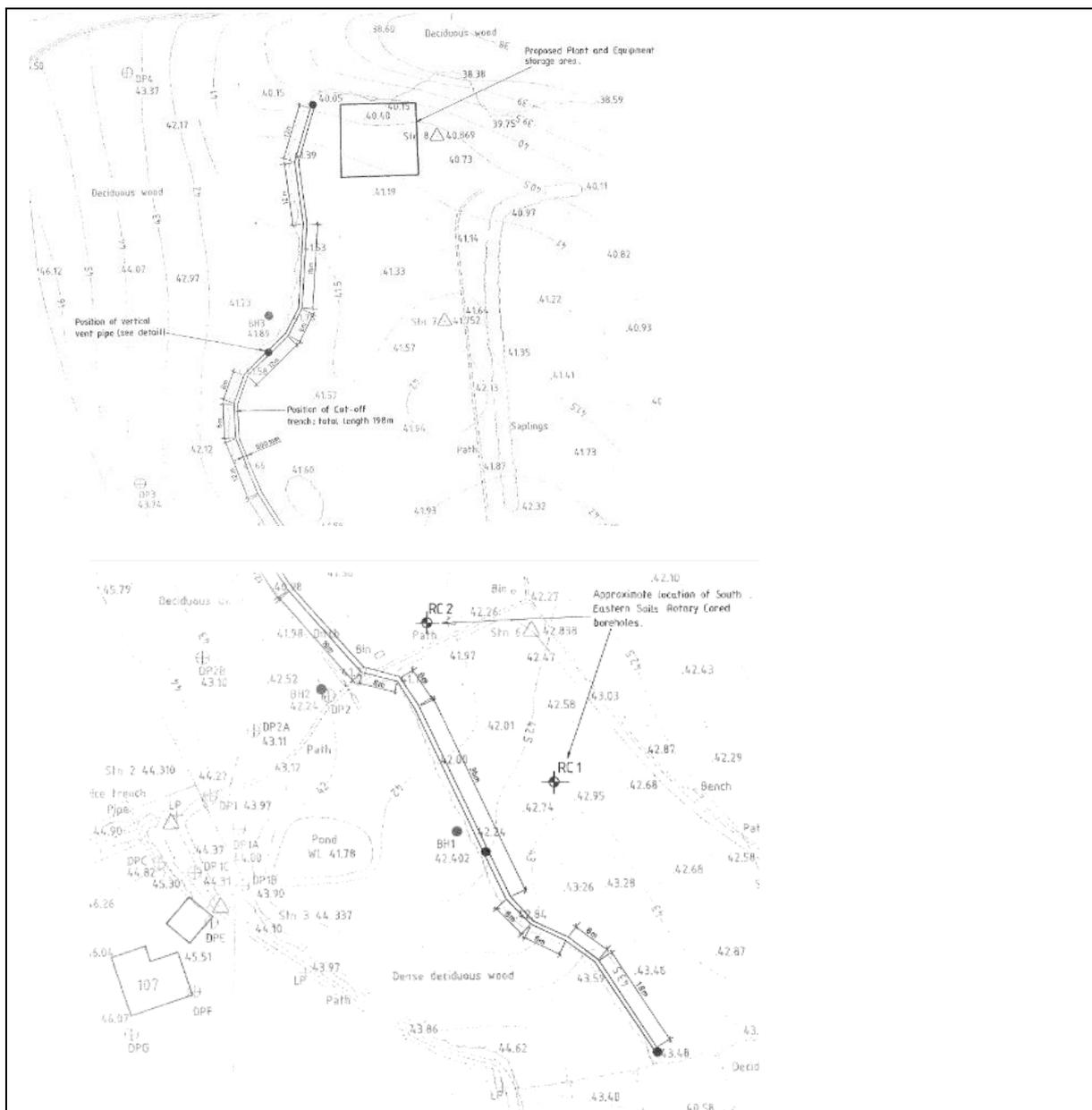


Plate 1: Extract of Ventilation Trench Location (from TMBC)

Information recorded by Leap Environmental (Ref: LE/QEMS/Doc 07-5-01-Rev3, 2018) indicates that the gas cut-off trench was designed by WEEKS and was approximately 200 m long and 2.5 m deep. It is understood from the Leap report that the landfill gas control system was reviewed and that gas concentrations remained elevated. This was considered likely due to landfill gas generation deeper than 2.5 mbgl and subsequent migration in underlying fissures. It was recommended that a further gas ventilation borehole would be located at the edge of the waste (along the line of the assumed fissure) and pumped for two weeks.

A gas pumping trial had been undertaken in October 1993 and demonstrated a reduction in gas concentrations at up to 60 m from the pump but no decrease at 70 m from the pump.

It was further recommended that a 10 m deep cut-off trench was installed to include 5 vented granular wells. It is understood this was implemented in August 1994 by A2 Coring Services.

The design of the ventilation system based on partial drawings provided by TMBC is shown in Plate 2.

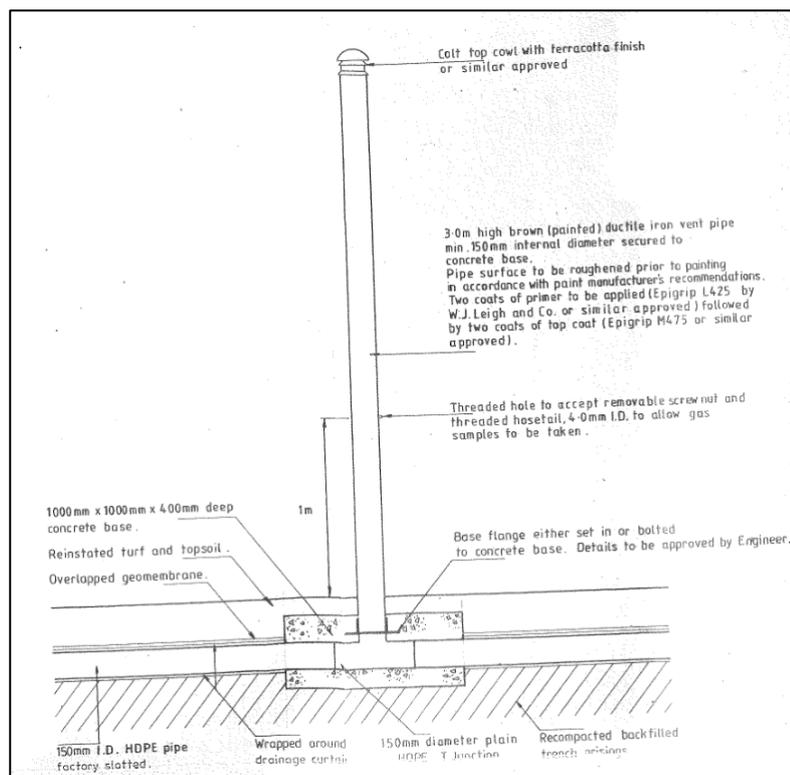


Plate 2: Extract of Ventilation System Design (from TMBC)

This comprises a slotted 150 mm HDPE pipe with drainage curtain, leading to a single 3 m high ventilation vent pipe rising above ground and secured with a concrete base. The pipe is protected by geomembrane and overlain by turf and topsoil. The ventilation pipe is shown to have a port at 1 m height for the collection of gas samples.

The landfill gas migration control system ventstack operational manual, prepared by Soiltec, indicates that the ventilation system incorporates an electrical gas booster to improve gas extraction rates. It is understood that this system operates each working day between 8am and 6pm.

3.1.3 Historical Landfill Gas Monitoring

Leap Environmental reviewed available historical ground gas monitoring data for the site from the period of 1991 through to 1996. The majority of historical ground gas monitoring wells installed at the site were centred in the waste and where outside of the waste were towards residential housing in the west.

Four boreholes (BH1-BH4) installed outside of the waste between the venting trench and residential properties on Deakin Leas were routinely monitored during operation of the pumped system. As reported by Leap, initial methane concentrations in boreholes of 20-80% v/v recorded in April 1996 decreased by June to 0% in BH1, BH2 and BH3. Concentrations in BH4, closest to the ventilation trench, remained circa 30-40% v/v.

3.1.4 Historical Ground Gas Risk Assessment

Leap Environmental also reviewed ground gas monitoring data collected by TMBC dated from 2009 to 25 June 2018 (the latest monitoring having been undertaken by Leap). The dataset included boreholes BH1, BH7 and BH14. The remaining boreholes on site were indicated to have been lost or damaged.

A summary of maximum steady ground gas concentrations and flow rates as summarised by Leap Environmental are presented in **Table 2**. Leap Environmental do not summarise the atmospheric pressure at which monitoring was undertaken.

Table 2 Summary of Ground Gas Monitoring (BH1, BH7, BH14 and Pump) (from Leap, 2018)

Borehole	Pump On	Pump off	Pump On	Pump Off
	Maximum concentration within landfill		Maximum recorded concentration outside of landfill	
Carbon Dioxide	6.0	27.3	19.1	20.1
Methane	6.1	58.9	0.4	0.1

Flow rates were reported by Leap to be up to 12.9 l/hr in BH1 (located outside of the landfill) and up to 8.1 l/hr in 2013 in BH7 (located within the landfill material).

Based on the data summarised in **Table 2**, Leap calculated Gas Screening Values (GSV) and associated Characteristic Situation (CS) ratings in line with British Standards BS8485:2015. Leap determined the following characteristic situation:

- Within the landfill with pump on: CS3
- Within the landfill with pump off: CS4
- Outside the landfill with pump on: CS3
- Outside the landfill with pump off: CS3.

It should be noted that the characterisation of gas outside of the landfill was based on elevated carbon dioxide concentrations identified in BH1. The assessment identified that there were potentially unacceptable risks (categorised as high) to the off-site residents from ground gases associated with the landfill.

3.1.5 Contaminants of Concern

Based on the prior studies by Leap Environmental, contaminants of concern pertinent to ground gas are as follows:

- Methane; and
- Carbon Dioxide.

The potential for volatile organic compounds (VOCs) associated with putrescible landfill waste was identified by Leap Environmental. It is beyond the scope of this report to assess potential risks from VOCs, however, where this linkage is considered relevant, further recommendations have been made.

3.2 Receptors

Potential on-site receptors to hazardous ground gas as identified by Ecologia included:

- Public Open Space Users.

Off-site receptors for ground gas have also been identified as follows:

- Users of Residential land use to the west; and
- School Users to the north.

Buildings can be considered as a receptor but are typically of a lower sensitivity. Based on risk assessment protective of building occupants (i.e. human health), it is likely that protection would also be conferred to buildings and therefore these have not been subject to assessment.

Site workers have not been considered as receptors on the basis that future works on site would be subject to appropriate controls put in place in accordance with the Health and Safety at Work Act (1990).

Historical site visits by Leap and Ecologia do not identify observations of vegetation die back or the presence of vegetation or ecology as a sensitive receptor and therefore site vegetation has also been excluded as a receptor.

3.3 Pathways

Potential pathways for ground gas within the landfill to the aforementioned receptors are as follows:

- Inhalation of hazardous ground gas resulting in asphyxiation (on-site and off-site receptors); and
- Accumulation of hazardous ground gases beneath buildings followed by explosion (off-site receptors).

For a pollutant linkage to be complete to off site receptors, gases must migrate from the source within the landfill towards these receptors and be of concentration and flow to pose a hazard.

The potential for a migration pathway is dependent on several factors and could be subject to preferential pathways. Credible preferential pathways potentially connecting the source and receptor through vertical and lateral migration are:

- Geology including presence of fissures and fractures;
- building foundations (i.e. piled foundations and vibro-stone columns);
- construction joints and cracks within building structure, specifically the floor slab; and
- utility routes and service penetrations into buildings.

Based on the limited presence of shallow groundwater on site migration via gases dissolved in groundwater is not considered to be complete and is thus excluded from further assessment.

3.4 Preliminary risk assessment

The risk classification to identify Potential Contaminant Linkages (PCLs) has been undertaken based on the combination of hazard consequence and probability using a risk matrix from CIRIA C552 (Rudland et al., 2001).

The preliminary risk assessment incorporates those previously identified by Ecologia and Leap Environmental, as well as risks to school users to the north. A summary of potential risks for identified ground gas PCLs is presented in **Table 3**.

Table 3 Preliminary Risk Assessment Summary

Potential source	Potential receptor	Possible pathway	Likelihood	Severity	Potential risk
Landfill Ground Gas (Methane, Carbon Dioxide)	Human health (site users – workers and public)	Inhalation of outdoor gases/vapours	Low likelihood	Severe	Moderate
	Human Health - adjacent residential users	Ingress of ground gas into buildings causing asphyxiation	Likely	Severe	High
		Accumulation ground gas into buildings causing explosion	Likely	Severe	High
	Human health – school users	Ingress of ground gas into buildings causing asphyxiation	Low likelihood	Severe	Moderate
		Accumulation ground gas into buildings causing explosion	Low likelihood	Severe	Moderate

3.5 Conceptual Uncertainty

As identified in the previous gas risk assessment prepared by Leap, there were uncertainties pertaining to the underlying data as follows:

- The number and spacing of existing monitoring wells at the site were considered inadequate with reference to current good practice guidance, and therefore further monitoring well installations were required to characterise the current ground gas regime.
- The assessment of gas historical data by Leap did not include comparison of gas concentrations with other site conditions, such as atmospheric pressure to determine the likely source of gas concentrations. Furthermore, flow was noted to have been monitored from BH1, BH7 and at the pump, however, it appears only values from BH1 were presented. Flow rates from gas generation within the landfill are not clear, nor is it clear whether flow rates correlated with high gas concentrations.

- The effectiveness of the existing gas extraction system appears to be effective at reducing gas concentrations within the landfill, based on the comparison of gas concentrations recorded by TMBC and presented by Leap. However, should the gas extraction system become inoperable or fail, the migration of gas within the landfill could change and risks to off-site receptors increase.

4 GROUND INVESTIGATION AND MONITORING

4.1 Site Investigation by Ecologia (2019)

On the instruction of TBMC, Ecologia undertook a site investigation of the Priory Wood Site comprising 17 window sample boreholes (WS1-WS17) to depths of between 2 and 3 m below ground level (mbgl). Each borehole was installed as a ground gas monitoring well. A total of 22 samples were taken and analysed at a UKAS accredited laboratory for asbestos, and chemical analysis including metals, total petroleum hydrocarbons (TPH), BTEX (benzene, toluene, ethylbenzene, xylenes), polycyclic aromatic hydrocarbons (PAH) and fraction organic carbon (FOC).

The locations of exploratory boreholes and pre-existing monitoring wells on site is presented in Plate 3.

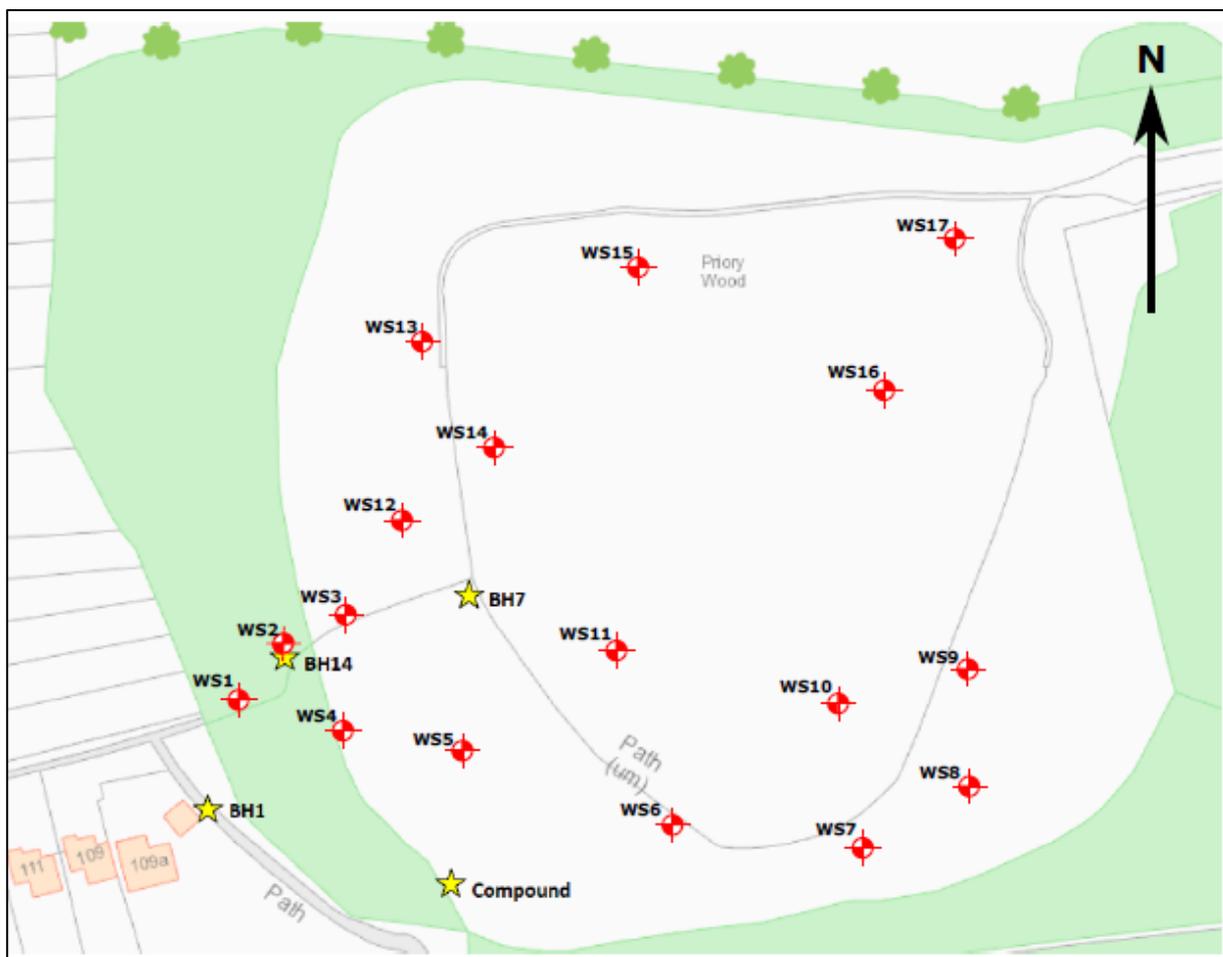


Plate 3: Ecologia Exploratory Hole Location Plan

Full details of the investigation findings are presented in the Ecologia Report (EES 19.091.1), however, a brief summary of the findings is provided below:

- Made Ground was encountered in all exploratory boreholes. Outside of the waste area ground conditions typically comprised very soft to soft sandy gravelly clay to a depth of 0.8 mbgl followed by stiff grey mottled orange/brown very closely laminated clay to a depth of 3 mbgl;

- Waste material was not identified in WS2 located in the west of the site, and visual observations of waste material in WS1 (furthest west) were limited to flint and wood between 2.18 and 2.3 m;
- Domestic refuse waste was encountered in WS4 to WS11, and WS13 to WS17 at surface in some locations to the full depth of investigation (3 m). The waste was identified to be thickest in the east and centre parts of the site as these locations did not identified the base.
- In the borehole to the north (WS17) was identified to comprise 0.25 m of very soft brown slightly gravelly fine to coarse sandy clay, with presence of plastic, brick, wood, glass and concrete from 0.25 m. A wooden obstruction was identified between 0.4 m and 0.6 m. Firm grey mottled brown sandy gravelly clay including gravel sized fragments of flint, brick and wood and rare plastic and chalk was identified from 0.6 m to 1.8 m. Gravel of angular concrete, brick and glass and a moderate odour of hydrocarbons was identified from 1.8 m to the full exploratory hole depth (3.0 m).
- In WS15, soils were described as soft gravelly clay throughout with presence of metal, wood, plastic, flint, glass and brick were identified from surface. At 2.0 to 3.0 m was identified paper and black organic streaking. A large piece of wood was identified between 2.8-2.85 m and ash between 2.9-3.0 m (the full depth of exploratory investigation).
- Perched water was encountered in WS4 (2.35 mbgl), WS8 (2.0 mbgl) and WS14 (2.2 mbgl).
- Chemical analysis of soil samples taken across the site indicated fraction organic carbon to range from 0.0049 (in natural material at 2.2 m in WS2) to 0.042 (in waste material in WS17).

4.2 Ground Gas Monitoring by Ecologia (2019-2020)

Ecologia completed ground gas monitoring at the site on 26 occasions between 29 August 2019 and 26 August 2020. Monitoring across the site on a fortnightly basis for 12 months is consistent in line with a good practice guidance for sites of high to very high generation source potential.

Atmospheric pressure recorded during the monitoring period was low (<1000mb) on 7 of the 26 monitoring rounds, with the lowest atmospheric pressure of 986 mb, recorded on 7 November 2019. It is understood that the gas extraction system remained operational throughout the monitoring undertaken by Ecologia.

Monitoring was completed in installed window samples WS1 to WS17. The full dataset can be found in **Appendix C**. A summary of the ground gas monitoring data is presented in **Table 4**.

Table 4 Summary of Ecologia Ground Gas Monitoring Data

Landfill Location	Location	Peak Methane (% v/v)	Peak Carbon Dioxide (% v/v)	Minimum Steady State Oxygen (%)	Maximum Steady-State Flow Rate (l/hr)	Relative Borehole Pressure Range (mb)
Outside	WS1	0.7	2.7	1.6	<0.1	-1.5 – 0.5
Outside	WS2	2.1	4.9	12.7	0.1	-0.2 – 0.1
Outside	WS3	7.1	7.5	6.5	<0.1	-0.7 – 0.8
Inside	WS4	68.4	39.9	0.1	0.1	-0.1 – 0.7
Inside	WS5	76.3	39.9	<0.1	0.1	-0.2 – 1.0

Landfill Location	Location	Peak Methane (% v/v)	Peak Carbon Dioxide (% v/v)	Minimum Steady State Oxygen (%)	Maximum Steady-State Flow Rate (l/hr)	Relative Borehole Pressure Range (mb)
Inside	WS6	45.1	39.9	<0.1	0.1	-2.8 – 0.8
Inside	WS7	47.1	35.2	0.1	<0.1	-0.1 – 0.5
Inside	WS8	30.4	24.0	<0.1	0.1	-0.2 – 1.0
Inside	WS9	76.3	35.0	<0.1	0.1	-0.2 – 0.2
Inside	WS10	45.4	25.1	0.1	<0.1	-0.2 – 0.2
Inside	WS11	57.7	26.2	<0.1	<0.1	-0.2 – 0.6
Inside	WS12	13.0	20.0	8.0	0.1	-2.3 – 0.9
Inside	WS13	67.9	30.2	<0.1	0.2	-0.1 – 0.5
Inside	WS14	14.7	23.9	<0.1	<0.1	-0.4 – 1.8
Inside	WS15	23.0	24.5	<0.1	0.1	-0.1 – 0.2
Inside	WS16	10.0	20.2	0.4	<0.1	-0.1 – 0.7
Inside	WS17	44.3	21.6	<0.1	<0.1	-0.2 – 0.5

The gas concentrations identified within the interior of the landfill indicate gas concentrations indicative of active gas generation (typically 60% methane, 40% carbon dioxide). Flow rates were consistently recorded to be low (maximum 0.2 l/hr) and relative borehole pressures (0.2-1.8 mbar) are typical of a gas generation. The recorded gas generation and lack of flow is likely due to the existing gas ventilation and extraction measures, but also due to the lack of a landfill cap. The lack of a confining layer would act to encourage vertical emission and limit horizontal migration of ground gas.

Boreholes located outside of the waste mass indicate that landfill gas concentrations decrease with distance from the known waste deposition area. The location furthest away from known waste sources (WS1) had significantly lower concentrations of methane and carbon dioxide than identified within the waste material.

Steady state concentrations of carbon dioxide in wells outside of the waste area (WS1, WS2, WS3) were typically 2.7-7.5% v/v with the highest concentrations recorded in WS3 and lowest in WS1.

On occasion monitoring of gases recorded depleted oxygen, with the low of 1.6% v/v recorded on 29 January, 26 February, 12 March, 26 March, and 09 July 2020. However, all other monitoring visits for WS1 recorded concentrations of oxygen in the normal range (i.e. 14-20% v/v). The depleted oxygen in WS1 is lower than as found in other boreholes installed outside of the waste area (6.5-12.7% v/v). It is possible that during this period, soils were waterlogged (as identified elsewhere) and therefore the borehole could not be replenished with ground gas or localised anoxic conditions increased nitrogen in the monitoring well.

4.3 Monitoring by Tonbridge & Malling Borough Council (2019-2020)

Ground gas monitoring of data collected by TMBC on boreholes BH1, BH7 and from the gas extraction compound is undertaken and has been provided for 2019 and 2020. Data from a total of 11 monitoring

visits was provided comprising 9 in 2019 and 2 in 2020. It should be noted that BH1 was not routinely monitored due to this location being in an area of standing water during wet meteorological conditions.

Atmospheric pressure recorded during monitoring visits varied from 992 mbar to 1020 mbar. A summary of the collated information is provided in **Table 5**. The full dataset is provided in **Appendix C**.

Table 5 Summary of TMBC Ground Gas Monitoring Data (2019-2020)

Landfill Location	Location	Peak Methane (% v/v)	Peak Carbon Dioxide (% v/v)	Minimum Steady State Oxygen (%)	Maximum Steady-State Flow Rate (l/hr)*	Relative Pressure Range (mb)
Outside	BH1	0.1	8.5	10.2	0.2 (-1.5)	0 - 0.05
Inside	BH7	1.4	2.4	18.7	0.0 (-2.5)	0 - 0.07
Outside	Compound	1.8	2.7	18.4	-2.7	0.02 - 0.1
Note: * Highest negative flows are presented in brackets.						

The ground gas monitoring data provided by TMBC indicates that methane concentrations adjacent to the property were recorded up to 0.1% v/v and carbon dioxide of up to 8.5% v/v. Flow rates were typically low and up to 0.2 l/hr, however, negative flow of up to -1.5 l/hr was also identified. It should be noted that not all monitoring events were recorded due to the well being observed to be flooded.

The recorded installation of BH1 (then DPD) in May 1992 indicates plain pipework was installed to 1 m depth whereby perforated piezometer tubing was installed to 3.1 m depth. The strata encountered comprised sandy clay from 0.5 m depth. Groundwater levels were not recorded and other than where flooded are not subsequently recorded. It is considered possible that high groundwater levels at BH1 impede gas flow into the borehole and result in depleted oxygen levels.

The concentrations of landfill gas within BH7, located in the east of the waste area and on the landfill side of the ventilation trench indicates gas concentrations that are an order of magnitude lower than those identified by Ecologia in nearby monitoring wells (e.g. WS11, WS14 and WS5). Historical logs of BH7 (KCC< 1994) indicate that material in this location comprised 0.2 m topsoil over 4.5 m of grey brown clay, over 'black ash some clay small amount of plastic' and was described as 'wet'. Natural strata comprising the Tonbridge Sands was encountered at 9.7 m below ground level. The installation of this borehole appears to comprise 1 m plain section followed by slotted pipework to 10 m. Water levels at this location do not appear to be monitored by TMBC and it is therefore plausible that the screened section of the borehole does not adequately target the waste deposits and that groundwater levels are acting to restrict gas emission at this location.

Landfill gas concentrations in the compound (understood to be measured from the landfill gas extraction pump) are similar to those observed in BH7. However, the compound is not in an area of known landfill waste.

4.4 Monitoring by Soils Limited at Tonbridge Grammar School

A Phase 2 Ground Investigation was undertaken by Soils Limited in 2014 on behalf of Tonbridge Grammar School. This was associated with proposals to develop a new sixth form centre located on the southern boundary of the school grounds and to the north of the Priory Wood site.

Soils Ltd investigation scope included four windowless sampled boreholes to depths of 4.1 mbgl and installation of monitoring standpipes were included in WS3 and WS4 located in the south east and north east of the proposed development area.

Borehole logs indicated the geology in these locations to comprise Made Ground comprising yellowish brown slightly gravelly very sandy silt or silty clay (of 0.35-0.6 m thickness) over Wadhurst Clay Formation comprising firm light orange grey yellow mottled silty clay (of 0.85 to 1.5 m thickness) over bedrock of fine to medium dark grey green weakly cemented ferruginous stained siltstone, which extended to the base of the borehole.

Groundwater and ground gas installations comprised screened sections across the Wadhurst Clay Formation and Siltstone. Groundwater levels were recorded at depths between 1.95 mbgl and 2.37 mbgl.

Ground gas monitoring was undertaken on three occasions and was reported to include falling barometric trends, however, the atmospheric pressure at time of monitoring was not recorded. Gas concentrations were identified to comprise a maximum of 3.2% carbon dioxide and no detection of methane. There were no positive flow rates reported and a single negative flow of -0.1 l/hr.

The school development was characterised by Soils Ltd with reference to BS 8485:2007 as a Characteristic Situation 1 or 'very low' hazard potential.

5 GROUND GAS RISK ASSESSMENT

5.1 Risk Assessment Methodology

The recent monitoring by Ecologia and TMBC provide an updated monitoring dataset, upon which ground gas risk assessment can be undertaken. The assessment has been undertaken to assess the following potential contaminant linkages:

- Ground gas and vapour migration from landfill to impact current site users (workers and the public) via outdoor inhalation;
- Ground gas migration from landfill to impact off-site residential receptors via ingress of ground gas and asphyxiation and accumulation of ground gas and subsequent explosion; and
- Ground gas migration from landfill to impact off-site school users via ingress of ground gas and asphyxiation and accumulation of ground gas and subsequent explosion.

The risks to habitable buildings from ground gases have been assessed in accordance with BS8485:2015+A1:2019 (BS8485), which provides guidance on ground gas (methane and carbon dioxide) characterisation and hazard assessment, as well as providing a framework for the prescription of protection measures within new buildings.

The process involves characterising the gas hazard from combining the qualitative assessment of risk (using the CSM) with ground investigation data so that a 'characteristic situation' (CS) can be derived for the site or zones within the site. Characteristic situations range from CS1 to CS6, the higher the CS, the higher the hazard potential. Gas protection measures within new buildings can be prescribed using a point scoring system, taking into consideration the CS and the proposed building type.

To determine the site CS, borehole hazardous gas flow rates (Q_{hg}) are calculated per borehole for methane and carbon dioxide as follows:

$$\text{Peak gas concentration (\%)} / 100 \times \text{Steady state flow rate (l/hr)} = \text{Hazardous Gas Flow Rate (l/hr)}$$

In determining the applicability of Q_{hg}, consideration is given to the reliability of the measured gas concentrations and flow rates, whether there is adequate data for assessment, and whether the findings are as expected in line with the conceptual site model.

More detailed quantitative risk assessment, for example to estimate the potential for gas migration to a defined building through specific strata and to estimate surface emission rates at the receptor. However, detailed quantitative risk assessment is outside the scope of this report. A detailed quantitative assessment would be supported by the collection of further specific site data (i.e. soil permeability, building dimensions and foundations etc.) in order that quantitative estimates reflect the site conditions.

5.2 Site Zoning

The site has been zoned into areas comprising the area of landfill within which waste is present and the area outside of the landfill. It is noted that monitoring wells are not present in natural strata to the north. It has been assumed that ground conditions as identified in other monitoring wells outside of the waste to the west are representative of conditions to the north.

5.3 Hazardous Gas Flow Rates (Ecologia Data)

The summary of hazardous gas flow rates from Ecologia dataset is provided in **Appendix D**. A summary of findings at each borehole, based on the maximum gas concentrations and maximum steady-state flow rates for each borehole monitored by Ecologia is presented in **Table 6**.

Table 6 Summary of calculated Hazardous Gas Flow Rates (Ecologia Dataset)

Zone	Location	Peak Methane (% v/v)	Peak Carbon Dioxide (% v/v)	Maximum Steady-State Flow Rate (l/hr)*	Methane GSV (l/hr)	Carbon Dioxide GSV (l/hr)	Characteristic Situation
Outside	WS1	0.7	2.7	<0.1	<0.01	<0.01	CS1
Outside	WS2	2.1	4.9	0.1	0.002	0.004	CS1
Outside	WS3	7.1	7.5	<0.1	<0.01	<0.01	CS1
Inside	WS4	68.4	39.9	0.1	0.068	0.037	CS1
Inside	WS5	76.3	39.9	0.1	0.076	0.031	CS2
Inside	WS6	45.1	39.9	0.1	0.045	0.027	CS1
Inside	WS7	47.1	35.2	<0.1	<0.01	<0.01	CS1
Inside	WS8	30.4	24.0	0.1	0.030	0.021	CS1
Inside	WS9	76.3	35.0	0.1	0.076	0.031	CS2
Inside	WS10	45.4	25.1	<0.1	<0.01	<0.01	CS1
Inside	WS11	57.7	26.2	<0.1	<0.01	<0.01	CS1
Inside	WS12	13.0	20.0	0.1	0.013	0.008	CS1
Inside	WS13	67.9	30.2	0.2	0.136	0.053	CS2
Inside	WS14	14.7	23.9	<0.1	<0.01	<0.01	CS1
Inside	WS15	23.0	24.5	0.1	0.023	0.024	CS1
Inside	WS16	10.0	20.2	<0.1	<0.01	<0.01	CS1
Inside	WS17	44.3	21.6	<0.1	<0.01	<0.01	CS1

Based on the data collected by Ecologia, it is noted that boreholes located within the landfill are indicated to represent CS2 conditions due to hazardous gas flow rates greater than 0.07 l/hr and thus a low hazard potential. The calculated hazardous gas flow rates outside the landfill are consistent with a CS1 category or very low hazard potential.

Based on the maximum gas concentrations identified in WS1 in the west, flow rates would need to reach 10 l/hr to be categorised as CS2. In the north, concentrations observed in WS17 would require flow rates of 0.15 l/hr to be categorised as CS2.

It is noted that the calculated hazardous gas flow rates are lower than those reported by Leap in 2018 due to steady state flow rates consistently reported as circa the instrument limit of detection. This may be due to the continued operation of the gas extraction system, and therefore may not be sufficiently precautionary should the gas extraction system be inoperable.

Flow rates were recorded by TMBC from 2019-2020 of up to 2.7 l/hr (if recorded negative flows are indicative of potential positive flow rate). Leap identified from a review of data from 2009 to 2018 that flow rates of up to 12.9 l/hr were recorded outside the landfill and 8.1 l/hr inside the landfill. Therefore, a worst-case calculation has been undertaken to determine hazardous gas flow rates with more precautionary flow rates. The summary of calculated hazardous gas flow rates is presented in **Table 7**.

Table 7 Summary of 'worst case' Hazardous Gas Flow Rates

Zone	Location	Peak Methane (% v/v)	Peak Carbon Dioxide (% v/v)	Maximum Steady-State Flow Rate (l/hr)*	Methane GSV (l/hr)	Carbon Dioxide GSV (l/hr)	Characteristic Situation
Outside	WS1	0.7	2.7	12.9	0.09	0.34	CS2
Outside	WS2	2.1	4.9	12.9	0.27	0.63	CS2
Outside	WS3	7.1	7.5	12.9	0.92	0.96	CS3
Inside	Various	76.3	39.9	8.1	6.18	3.23	CS4
* Flow rate based on higher rates as measured from historical monitoring data and reported by Leap Environmental Ltd.							

Gas concentrations recorded by Ecologia are consistent with gas concentrations identified by TMBC historically and as reviewed by Leap in 2018. The use of 'worst case' gas flow rates as reported by Leap would indicate a CS4 (moderate to high hazard potential) within the waste area and CS2 outside of the waste area (low hazard potential).

Outside of the waste area, there is observed a reduction in ground gas concentrations with distance from the source. The location furthest from the source (WS1) indicates a Characteristic Situation 2 or 'low' risk of ground gas based on the 'worst case' recorded flow rate.

It is noted that the recorded carbon dioxide concentrations in locations outside the landfill range from 0.7-7.1% v/v in Ecologia dataset and were recorded by TMBC in BH1 up to 8.5 % v/v. The source of elevated carbon dioxide could be due to landfill gas migration or the effect of microbial respiration in soil or groundwater.

Data reported by Leap indicated that when the gas extraction system was switched off gas concentrations within the landfill increased. However, there was little change in gas concentrations recorded outside of the landfill when the pump was on or off. This could indicate evidence of limited connectivity between the landfill and surrounding geology, however, consideration would need to be given to whether this data included periods of low and falling pressure or whether there would be a lag period for gases to build up within the landfill and migrate laterally.

Based on interpretation of the above data, it is considered that risks to off-site school buildings are likely to be mitigated on the basis that school buildings are in excess of 150 m from the site, are located over low

permeability strata (Wadhurst Clay), and this has been confirmed, to a limited extent, by ground investigation during a prior extension of the school facilities.

Potential risk to residential receptors on Deakin Leas, is low to moderate, which is consistent with a CS2 designation based on Ecologia data of WS1 and elevated carbon dioxide in BH1. Ground gas migration is considered likely to be mitigated with distance from the landfill due to the presence of Wadhurst Clay, however, risks may increase should current gas extraction methods cease.

It should be noted that there are specific uncertainties with respect to the reliability of data taken from historical boreholes located adjacent to the residential property and lack of data collected outside of the waste material adjacent to the school site and therefore further works should be undertaken to better clarify these potential contaminant linkages.

5.4 Preferential Gas Pathways

It should be noted that gas migration occurs via the path of least resistance along pressure gradients (advection) and concentration gradients (diffusion) as well as in solution via groundwater flow. Therefore, gas migration could occur laterally through the underlying geological faults and then be emitted elsewhere. Gas could also migrate into properties via cracks in foundations or service ducts.

The geological records for the site indicate that a fault line is present between the underlying Ashdown Beds and Wadhurst Clay trending west to east towards the residential properties and north to south within the Ashdown Beds in the south east of the site towards the Tonbridge By-Pass. Sections presenting the assumed fault locations as inferred by Weeks (provided in **Appendix B**), indicate that the fault underlying off-site residential properties is at depth and is overlain by significant thickness of Wadhurst Clay. It is also noted from records reviewed by Leap, that historical investigations to identify the fault on site were unsuccessful.

It is possible that the fault could act as a conduit for ground gas, however, this is considered unlikely based on the following:

- The landfill is not capped and therefore gases can freely be emitted to surface;
- The borehole pressure records provide further evidence that hazardous gases are not accumulating within the landfill;
- Shallow perched water within the landfill is likely to limit movement of gases at depth;
- The continued operation of the gas extraction system ; and
- The suspected geological fault is indicated by Weeks to be covered by a significant thickness of Wadhurst Clay at locations equivalent to the distance to residential properties, and therefore this limits the potential for gas emission/migration.

It is understood that the properties adjacent west of the site on Deakin Leas were constructed prior to the landfill and thus would be unlikely to have gas protection measures. Therefore, if present hazardous gases could ingress into properties across the building footprint as well as through service penetrations.

5.5 Risks to site users and workers

Risks to site workers associated with ground gas at the site, for example those undertaking excavations or working within the landfill compound area, would be subject to controls in accordance with the Health and Safety at Work Act (1974). Therefore, risks to workers have not been further assessed.

Risks to the public from outdoor exposure are likely to be limited to short time periods associated with recreational activities. Furthermore, no public buildings or large depressions on site in which gases could accumulate. Due to the likelihood for gas emissions to readily mix with ambient air, the overall exposure to hazardous gases for on-site users is likely to be low.

5.6 Residual Data Gaps and Uncertainty

Based on a review of the data provided by Ecologia and TMBC, there are inherent uncertainties regarding the site conceptualisation and monitoring data, detailed as follows:

- The Priory Wood Landfill continues to generate gas at methane and carbon dioxide ratios typical for degradation of proteins and lipids. The landfill waste is recorded to extend to approximately 10 m below ground level and is not typically located beneath an engineered cap. Monitoring wells installed by Ecologia did not fully permeate the waste stratum and may therefore not represent potential gas sources at depth.
- The gas extraction system is situated in western part of the landfill and continues to operate as monitored and maintained by TBMC. Should the gas extraction system cease or become inoperable, ground gas risks may increase due to a possible increase in gas pressure within the landfill.
- No recent monitoring locations are positioned between the waste deposition area and Tonbridge Grammar School to the north. Previous investigations by Soils Ltd did not identify significant concentrations of ground gas or flow, however the monitoring conducted was of limited duration and spatial extent and may not have identified 'worst case' conditions. The presence of Wadhurst Clay is confirmed in the vicinity of the school and therefore based on the information pertaining to Deakin Leas the risks could be considered low. However, the extent of gas protection measures in existing school buildings are unknown and therefore the potential for gas migration towards this receptor should be subject to specific confirmatory investigation.
- Perched water has been identified on site and is likely to be present in localised areas due to variability in underlying landfill deposits and presence of the Wadhurst Clay. The Tunbridge Wells Sand Formation and underlying Ashdown Formation are designated aquifers and is likely to contain groundwater at depth. The potential for dissolved phase gases to enter groundwater and migrate off-site is considered unlikely to be a significant gas migration pathway, but has not been confirmed through previous investigation.
- Monitoring of ground gas at BH1 indicates that this location is routinely flooded due to ingress of surface water run-off. The level of observed perched water or groundwater within the borehole is not on records received and it is therefore unclear whether the borehole is routinely flooded with groundwater or not. On this basis, the ground gas results from BH1 are not considered in isolation to be reliable for the assessment of ground gas risk to the adjacent residential property.

6 UPDATED CONCEPTUAL SITE MODEL

Based on the ground gas risk assessment, the preliminary risk assessment can be updated as summarised in **Table 8**.

Table 8 Preliminary Risk Assessment Summary

Potential source	Potential receptor	Possible pathway	Likelihood	Severity	Potential risk
Landfill Ground Gas (Methane, Carbon Dioxide)	Human health (site users – workers and public)	Inhalation of outdoor gases/vapours	Very Unlikely	Severe	Low
	Human Health – adjacent residential users	Ingress of ground gas into buildings causing asphyxiation	Unlikely	Severe	Moderate / Low
		Accumulation ground gas into buildings causing explosion	Very Unlikely	Severe	Low
	Human health – school users	Ingress of ground gas into buildings causing asphyxiation	Unlikely	Severe	Moderate / Low
		Accumulation ground gas into buildings causing explosion	Unlikely	Severe	Moderate / Low

Moderate to low risks have been identified for residential users associated with elevated carbon dioxide concentrations (up to 8.5% v/v) that may be associated with migration of landfill gas or from other natural sources. It is considered that further investigation of groundwater levels near to the property and monitoring from an associated source may provide evidence that this linkage could be reduced to low.

Moderate to low risks are also identified to school users on the basis that monitoring undertaken to date as part of planning proposals was of limited duration. The likelihood of low risks may be confirmed through the monitoring of ground gas at the northern site boundary in locations outside of the waste deposition area.

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7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

Based on the review of previous historical investigations, risk assessments and recent ground gas monitoring by Ecologia and TMBC, RSK conclude the following:

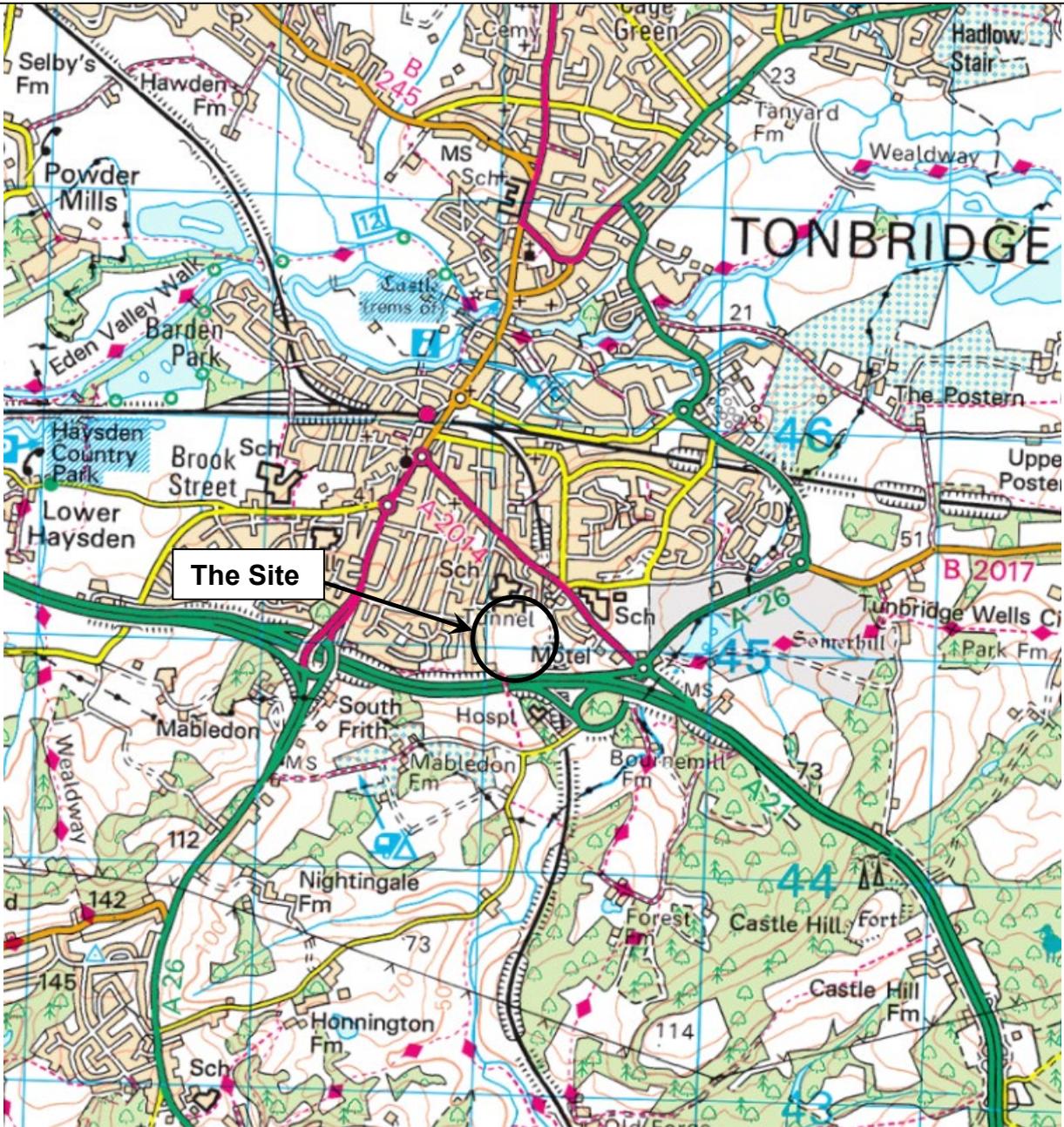
- The monitoring of hazardous ground gas within the landfill confirms that the waste deposition area is still generating high concentrations of methane and carbon dioxide gas, consistent with the age and recorded types of waste buried. The recorded flow rates and differential pressure in monitoring wells by Ecologia was low and indicated that gases were adequately ventilated by the active gas extraction system and/or naturally via vertical emission from soils.
- Risks to on-site receptors comprising workers are low on the basis that relevant mitigation can be provided through appropriate workplace exposure controls in accordance with the Health and Safety at Work Act. Risks to on-site receptors, considered to comprise recreational users of the site as a public open space are also considered low on the basis that exposure would be of low duration and gas emissions are low and readily diluted in the atmosphere.
- Risks to off-site receptors comprising residential properties at Deakin Leas are **moderate to low** based on elevated carbon dioxide concentrations identified in boreholes near to the property. It is considered that there remains uncertainty as to whether this data reflects gas migration from the landfill or natural sources.
- Risks to off-site school receptors are **moderate to low** on the basis that gas concentrations in the landfill are measured up to 44% methane within nearby waste material and that gas monitoring has not been undertaken between the waste material and the school boundary. Risks to existing school buildings are considered likely to be low based on limited monitoring completed during planning, however, the potential for gas migration into the school land has not been directly assessed.
- There is significant uncertainty with respect to whether monitoring included a period of 'worst case' pressure fall, the potential for continuous water body in shallow soils at the site and if this extends to residential properties, whether gas migration occurs between the waste area and the school boundary, and whether the known faults in underlying bedrock could act as a preferential pathway for ground gases, should the gas extraction system cease operation.

7.2 Recommendations

In order to further refine the risk assessment presented herein, RSK recommend the following:

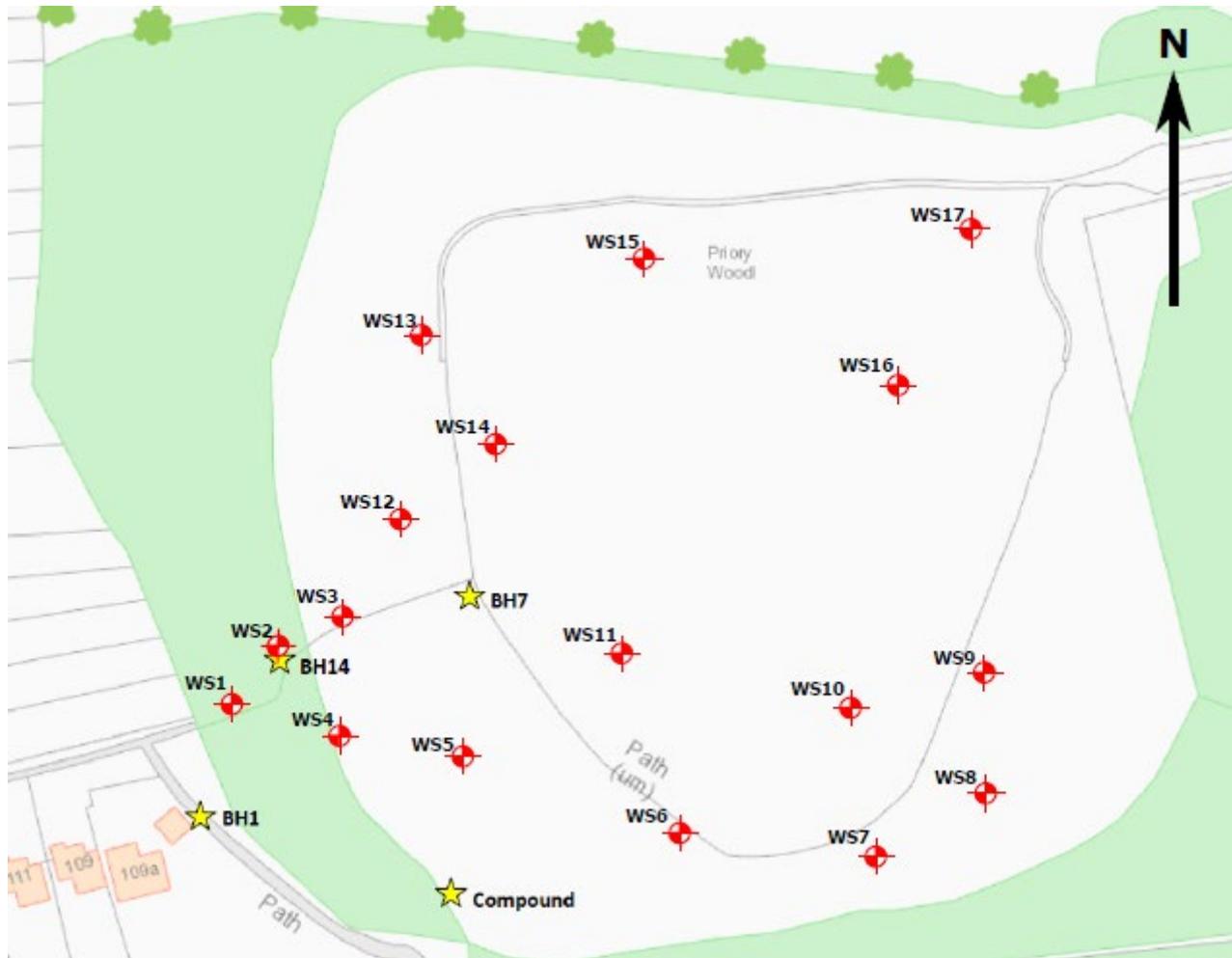
- Confirmatory investigation to be undertaken to include monitoring wells between the waste area and school land, hydraulic permeability testing of natural strata, and measurement of surface emissions across the landfill area;
- Replacement of the monitoring well at BH1 and routine monitoring of water levels to confirm the potential for gas migration at this location and the source of elevated carbon dioxide; and
- High frequency monitoring in locations within and outside of the waste material to confirm the potential for gas accumulation and migration with changes in atmospheric conditions. If this is not conclusive, sampling of gases within the landfill and near to residential properties could include carbon isotope analysis to confirm the potential source of elevated carbon dioxide concentrations.

FIGURES



Reproduced from the Tonbridge Ordnance Survey 1:50,000 Scale Landranger Map.
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 RSK Group Limited, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT.

	SITE LOCATION PLAN	Client: Ecologia Environmental Solutions Ltd	Figure No: 1
		Site: Priory Wood Landfill	Job No: 1921480
		Scale: NTS	Source: OS



Reproduced from the Ecologia Environmental Solutions Report Ref: EES 19.091.1

	SITE LAYOUT PLAN	Client: Ecologia Environmental Solutions Ltd	Figure No: 2
		Site: Priory Wood Landfill	Job No: 1921480
		Scale: NTS	Source: OS

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Kirstie Parr
Tonbridge & Malling Borough Council
Gibson Building
Gibson Drive
Kings Hill
West Malling
ME19 4LZ

Ecologia Ref: EES 19.091.2

27th November 2020

Dear Kirstie,

Re: Priory Wood Landfill, Tonbridge, Kent, TN11 0NA – Additional Ground Gas Monitoring & Risk Assessment

1. Introduction

Following completion of the Quantitative Risk Assessment (QRA) report for the abovementioned site, Ecologia have provided costs for undertaking the recommended actions. A phased approach has been suggested to see if remaining uncertainties can be addressed in the earlier stages without the need for continuous monitoring / carbon isotope testing.

2. Scope of Works

The following scope of works has been allowed for in this proposal:

- **Phase 1:** Installation of two additional boreholes along the northern boundary with the school replacement of BH1 near to residential properties (all targeted outside the landfill area) – 3No. new boreholes in total.
 - Each borehole to be drilled and installed to 3m bgl and finished with raised covers.
 - Soil logging in accordance with British Standard BS 5930:2015.
 - Site survey of all boreholes, gas ventilation system and ventilation stacks to get accurate locations for internal records (optional).
 - ***Note: due to access restrictions in the north, a handheld window sampler is proposed for the drilling.***
- **Phase 2:** Completion of three (3No.) rounds of manual monitoring to confirm gas concentrations and water levels in the boreholes.
 - Monitoring to include the existing boreholes to expand the dataset (20No. positions in total).
 - Completion of pump tests in boreholes installed into natural strata to assess the hydraulic permeability on-site (between 4-5No. boreholes).
 - Review Phase 1 data and provide addendum report to include results of permeability testing and additional monitoring rounds. At this stage, ground gas



pathways may be confirmed as low and therefore no further works are required; however, if uncertainties still remain then proceed to Phase 3.

- **Phase 3:** Continuous ground gas monitoring and measurement of surface emissions across the site (if required).
 - Continuous ground gas monitoring in three (3No.) boreholes (one inside and two outside of the landfill area) for a period of 4 weeks to assess the potential for gas accumulation and migration with changes in atmospheric pressure.
 - During the installation of continuous monitors, a surface walkover Flame Ionisation Detector (FID) survey will be undertaken to identify flammable emissions across the site, helping to identify flux survey areas.
 - Monitoring of surface emissions using flux chambers across five (5No.) locations (three inside the landfill area and two outside), in line with Environment Agency guidance.
- **Phase 4:** Carbon isotope testing to confirm the potential source of elevated carbon dioxide (if required).
 - Sampling of gases from two (2No.) boreholes (one from landfill area and BH1).
 - Samples will be sent to a specialist laboratory for analysis using benzene synthesis and liquid scintillation counting.
- Production of final report to include results from the continuous monitoring, surface monitoring and carbon isotope testing together with a detailed gas risk assessment for the site.

3. Costs

ITEMS		RATE (£)	QTY	COST (£)
Liaison / H&S / Preparatory Works		630.00	1	630.00
Phase 1	Installation of Monitoring Wells – 3No. new boreholes & welfare	2,650.00	1	2,650.00
	Site Survey (optional)	595.00	1	595.00
Subtotal Phase 1				£3,875.00
Phase 2	Gas Monitoring Visits – 3No. included	474.22	3	1,422.66
	Hydraulic Permeability Testing	600.00	1	600.00
	Addendum Report	950.00	1	950.00
Subtotal Phase 2				£2,972.66
Phase 3	Continuous Gas Monitoring – weekly hire of 3No. units	864.00	4	3,456.00
	Installation of Continuous Gas Monitoring & FID Survey	564.00	1	564.00
	Surface Gas Monitoring – 5No. flux boxes	576.00	1	576.00
	Continuous Gas Monitoring – Fortnightly Maintenance Visit & Decommissioning	330.00	2	660.00
Subtotal Phase 3				£5,256.00
Phase 4	Carbon Isotope Testing – 2No. boreholes (CO ₂ only)	648.00	2	1,296.00
Subtotal Phase 4				£1,296.00
Final Report and Updated QRA		2,500.00	1	2,500.00
Total Cost (exc. VAT)				£ 15,899.66



Payable (30 days payment terms) as follows:

Monthly invoicing for works completed.

Standard Conditions of Contract Apply.

4. Supply of Information, Exclusions & Assumptions

The following information will be required:

- Service / utilities reports will be required.

The following exclusions apply to this proposal:

- The costs for possible delays associated with ecological or archaeological constraints not communicated to Ecologia at the time of this proposal.
- No allowance for any regulatory liaison / meetings with the Environment Agency, Local Planning Authority, Building Control etc.
- Any fees payable to Regulators are excluded from this proposal.
- Any laboratory analysis has been excluded from this proposal.
- The proposal does not include for UXO survey or onsite support.

The following assumptions are made:

- The proposal does not include costs for any licences or consents that may apply to this work.
- The proposal and costs are associated to the works within the boundaries of the site; work on third party property is not included.
- The client will be required to arrange safe access and working areas for our operatives within the proposed work areas.
- We assume that sampling locations can be accessed without the need to break hardstanding. If extensive breaking out of hardstanding is required additional charges will be recharged at cost plus 20%.
- No pedestrian and vehicular access restrictions, including access to investigation locations (e.g. from overhead lines, concrete or hard surfacing, vegetation, structures, services/manholes, ponding etc).
- The costs do not include any issues not expressly specified within this proposal.

We trust this proposal reflects your requirements, however, should you have any queries regarding the enclosed, please do not hesitate to contact the undersigned.

Yours Sincerely,

For and on behalf of Ecologia

Prepared by: Lucy Allen
Project Manager

Checked & Authorised by: Giacomo Maini
Managing Director



CONDITIONS OF CONTRACT

These Conditions of Contract ("the Conditions") and the Proposal EES 19.091.2 dated 27/11/2020 together form the "Agreement" and are submitted by Ecologia Environmental Solutions Limited (the "Company") to Tonbridge & Malling Borough Council (the "Client").

DEFINITIONS

"Company"	means Ecologia Environmental Solutions Limited, its employees, agents and consultants.
"Client"	means the party with whom this Agreement is made upon the acceptance of the proposal.
"Proposal"	means the documents outlining the Company's proposed Services to be performed for the Client, with all attachments and amendments.
"Services"	means those specific tasks undertaken by the Company and detailed within the Proposal, and any additional tasks subsequently agreed between the Company and the Client.
"Site"	means the property, land or area on which the Services are to be provided.

In these Conditions, unless the context requires otherwise, any references to the singular includes the plural (and vice versa).

The Company will only provide the Services in accordance with these Conditions, which will be deemed to have been accepted by the Client upon instructing the Company to provide the Services detailed in the Proposal. The Company hereby expressly excludes any terms and conditions of the Client.

1 (of 19). APPOINTMENT

- 1.1 Subject to sub clause 1.2, the appointment of the Company shall commence from the date of acceptance by the Company of a written instruction by the Client to perform the Services set out in the Proposal;
- 1.2 At the Company's complete discretion, it may accept an oral instruction to carry out the Proposal, provided that written confirmation from the Client is received within 24 hours of that oral instruction. If such written confirmation is not received within this time the Company may immediately cease further work until it is provided and the Company shall have no further obligation to perform the Services until it is so received.

2. THE SERVICES

- 2.1 The Company shall provide the Services to the Client in accordance with these Conditions.
- 2.2 While time estimates are given in good faith, time for delivery of the Services shall not be of the essence.
- 2.3 The Services will be performed for the exclusive use of the Client, unless expressly provided otherwise in the Proposal.

3. PAYMENT

- 3.1 The Client shall pay the Company the fees set out in the Proposal and in accordance with this Condition 3.
- 3.2 Time shall be of the essence for all payments under these Conditions.
- 3.3 Save as may otherwise expressly agreed, the Company will submit invoices on a monthly basis and payment in full is due within 30 days of the date of the invoice. The Client shall notify the Company in writing within 10 days of receipt if any invoice is disputed.
- 3.4 All fees quoted shall be exclusive of expenses, disbursement and VAT, unless otherwise stated.
- 3.5 If an invoice remains unpaid for 30 days the Company shall be entitled to charge interest from the date



of that invoice at the rate of 8% above the base lending rate of The Bank of England from time to time applying until the invoice is paid in full.

4. RIGHT OF ENTRY

- 4.1 The Client hereby grants the Company and its sub-contractors the right of entry to the Site and permission to perform the Services, including without limitation the performance of test borings and all other Site investigations which are contained in the Proposal.
- 4.2 Should the Client not own the Site, the Client warrants that it has obtained the permission of Site owner and, so far as may be relevant, the permission of the Site occupier to grant the Company the right of entry and permission referred to in sub clause 4.1 and the Client hereby indemnifies the Company against all liability, loss, costs and expenses incurred by reason of any claim brought by any person for loss, damage or distress caused to that person as a result of the Company entering on to the Site and performing the Services without permission of the Site owner or Site occupier.

5. SURFACE and SUB-SURFACE EXPLORATIONS

- 5.1 The Client acknowledges that, in performing the Services, the terrain, vegetation and buildings, structures, improvements and equipment at, in or upon the Site may be affected, altered or damaged as a result of the use of equipment necessary for the Company to provide the Services. The Company will not be liable for any effect, alteration or damage so arising and the Client hereby indemnifies the Company against any loss or claim arising out of or connected with any effect, alteration or damage as the case may be.
- 5.2 The Client grants permission to the Company to conduct Site investigations in accordance with the Proposal. The Company relies on the information provided to it by the Client and does not accept liability for any damage, injury or interference with the Site or any subterranean structure or condition of the Site, including without limiting the generality of this term, any pipe, tank, cable or any other service provided at the Site if the existence and location of the same is not drawn to the Company's attention by the Client prior to commencement of the Services.

6. INFORMATION TO BE SUPPLIED BY THE CLIENT

- 6.1 The Client shall supply to The Company without charge and within sufficient time to permit the Company to provide the Services in a timely manner all necessary and relevant data and information in the possession of the Client related to the Proposal and shall give such assistance as shall reasonably be required in the provision of the Services.
- 6.2 Without reducing the generality of the obligation in sub clause 6.1, the Client shall provide the Company with any information in the Client's possession regarding the existence of hazardous materials or waste at or under the Site, and all relevant documents relating to handling practices, environmental permits, records of compliance or non-compliance, or other matters which might reasonably be considered to affect the provision of the Services.
- 6.3 If the Client is not the Site owner or operator it shall nevertheless procure such information as is required under sub clauses 6.1 and 6.2 and all such data and information shall be deemed to be supplied directly by the Client for the purpose of these Conditions. The Company will not be responsible for damages, claims or liabilities which arise as a result of the Client providing inaccurate or incomplete information.

7. SITE CONDITIONS

- 7.1 The Client agrees that in some circumstances Site conditions might prevent or inhibit provision of the Services as anticipated in the Proposal and that if unforeseen location of hazardous waste materials or conditions are encountered, including, without limiting the generality of the term, obstruction by others using the Site, provision of the Services under this Agreement may be delayed.
- 7.2 Any such delays referred to in sub clause 7.1 and any delays caused directly or indirectly by the Client, its sub-contractors, consultants, agents, officers, directors and employees, shall automatically extend the contract completion date for provision of the Services and The Company shall be entitled to charge the Client for any additional costs incurred together with any reasonable delay charges. In this sub clause "delay charges" shall include, but not be limited to, costs associated with personnel and equipment rescheduling and/or reassignment adjustments and all other costs arising out of or connected such delay including, but not limited to, labour and material escalation costs and extended



overhead costs.

8. INTELLECTUAL PROPERTY RIGHTS

- 8.1 In this clause "Intellectual property rights" means any patent, copyright, registered or unregistered design right, database right, registered or unregistered trade mark, rights in relation to confidential information or any other intellectual property rights in any part of the world;
- 8.2 All databases, designs, documents, drawings, notebooks, photographs and records which are made by the Company or any of the Company's personnel in the course of providing the Services, any media containing or recording any part of any of the foregoing items, and any intellectual property rights in respect of any of those items, shall belong exclusively to the Company, and accordingly to the extent that it may be necessary for the avoidance of doubt to do so the Client hereby assigns to the Company (where appropriate, by way of present assignment of future copyright) or (in any other case) agrees to assign to the Company absolutely on demand with full title guarantee and for no further consideration, all intellectual property rights in respect of those items.
- 8.3 If and to the extent that it is not reasonably practicable for the Company to provide the Services without the use of any intellectual property rights of the Client, the Client hereby grants to the Company a non-exclusive, irrevocable, non-transferable and royalty-free licence to use such intellectual property rights of the Client as the Company shall require for that purpose.

9. FORCE MAJEURE

The Client shall not hold the Company responsible for damages or delays in performance caused by acts of God, acts and/or omissions of government or regulatory authorities, or other events which are beyond the control of the Company. For this purpose, such acts or events shall include, but not limited to storms, floods, epidemics, war, riot, strikes, lockouts or other industrial disturbances, and inability with reasonable diligence to supply personnel, information or material to the project. Should such acts or event occur, it is agreed that the Company shall use reasonable efforts to overcome all difficulties arising and to resume as soon as reasonably possible the normal pursuit and schedule of the Services covered by this Agreement. Delays in excess of thirty (30) days within the scope of this Clause shall, at the option of either party, entitle either party to terminate this Agreement.

10. CONFIDENTIALITY

- 10.1 Subject to sub clause 10.2, the Company will not disclose information about the Agreement, its Services or its reports to anyone except on the Client's written instructions. The Company will keep information confidential except to the extent necessary (1) for the Company to perform its Services, or (2) to comply with professional standards to protect public health, safety and the environment, or (3) to comply with any decision, judgement or order of the Court, or any lawful direction, instruction, notice or order of any competent regulatory authority ("Orders"). Information which is known to the public or technical information which the Company may have developed independently or acquired without any breach of duty will not be considered confidential.
- 10.2 If by Order the Company is required by law to disclose information in its possession, the Company shall give the Client prompt notice in writing, whenever possible, of such facts. Thereafter, the Company may, without liability to the Client or others, comply with such Orders. If any claims are asserted against the Company because of the Company's compliance, the Client will hold the Company harmless from such claims, provided that the Company's disclosure is made under a reasonable bona fide belief, or on advice of counsel, that disclosure is required by Order.

11. PROVISION OF THE SERVICES

- 11.1 The Company shall exercise all reasonable skill, care and diligence in the discharge of the Services and shall exercise the same degree of care ordinarily exercised by qualified professionals undertaking work under similar circumstances in the same geographical area.
- 11.2 The Client acknowledges that provision of the Services requires decisions, which are based upon professional judgement, rather than scientific certainties, and that there are inherent risks associated with the assessment or remediation of Sites, especially those containing hazardous materials. The Company's recommendations and conclusions are subject to modifications due to changes in Site conditions or regulations which may occur after the Services have been performed or



during the performance of the services.

- 11.3 The Client acknowledges that the Company's Services as described in the Proposal will be performed solely for the use of the Client and to the standards outlined in Conditions above and will not be disclosed or used or relied upon in any way by any third party unless stated otherwise in the Proposal. No warranty, indemnity or guarantee either express or implied, is given or intended by the Company in either this Agreement or in the Company's report(s).
- 11.4 The Client acknowledges that the findings and recommendations of the Company relate only to the conditions at the site at the time the Company undertakes the Services.
- 11.5 The Client acknowledges that it will place no reliance on information, data or any other matter other than that contained within a final report prepared and provided by the Company, and the Client acknowledges that the Company has no liability for any loss, damage or injury caused by the Client's reliance upon information, data or other matters not so presented to the Client.
- 11.6 The Client acknowledges that the Company has neither created nor contributed to the presence of hazardous materials or hazardous conditions at or near the Site, and that the Company's compensation for Services is disproportionately small in relation to the potential risk of injury, loss or damages arising from release of, or exposure to, such conditions. The Client agrees to indemnify and hold the Company harmless from any claim for liability, damages (whether direct or consequential), injury, loss or expenses sustained by any party arising from the presence of hazardous materials or hazardous conditions at the Site, except to the extent caused by the gross negligence or wilful misconduct of the Company.

12. LIMITATION OF LIABILITY

- 12.1 In this clause 12:
 - 12.1.1 "Liability" means any liability by reason of any representation (unless fraudulent) or the breach of any implied condition, warranty or other term or any duty at common law or under any statute, or under any express term of this agreement or otherwise; and
 - 12.1.2 "Loss" means, in relation to either party, any loss of profit, contracts, goodwill, anticipated savings, wasted expenditure or other loss of any kind which is incurred by that party, or any damages, costs or other claims for compensation and any expenses (including legal expenses) which are awarded against or incurred by or paid or agreed to be paid by that party, however the same may arise and whether occasioned by the negligence of the other party, its employees or agents or otherwise.
- 12.2 Neither party seeks to limit any Liability which it may have arising out of or in connection with this agreement in respect of death or personal injury caused through negligence or fraudulent misrepresentation.
- 12.3 Save as may otherwise be expressly provided in clause 5 and subject to clause 12.2:
 - 12.3.1 neither party shall have any Liability to the other party arising out of or in connection with this agreement for any indirect, special or consequential Loss of the other party; and
 - 12.3.2 the total Liability of either party for any other Loss of the other party in respect of any one event or series of connected events shall not exceed the sum payable to the Company for the Services or £50,000 whichever is the greater amount.

13. DURATION OF AGREEMENT

- 13.1 This agreement shall commence on the date referred to in clause 2 hereof and, subject to the following provisions, shall continue until the Services have been provided.
- 13.2 The Client may forthwith terminate this agreement by giving written notice to the Company if the Company:
 - 13.2.1 commits a material breach of this agreement and, if the breach is capable of being remedied, fails to remedy it within 30 days after receipt of a written notice specifying the breach and requiring it to be remedied; or
 - 13.2.2 goes into liquidation or administration, has a receiver appointed over any of its assets or makes a voluntary arrangement or composition with its creditors (in each case, within the meaning of



the Insolvency Act 1986).

- 13.3 The Company may forthwith terminate this agreement by giving written notice to the Client if the Client:
- 13.3.1 fails to pay any sum payable by it under this agreement within 30 days of the due date of payment;
 - 13.3.2 commits a material breach of this agreement (other than one to which clause 13.3.1 applies) and, if the breach is capable of remedy, fails to remedy it within 30 days after receipt of a written notice specifying the breach and requiring it to be remedied; or
 - 13.3.3 into liquidation or administration, has a receiver appointed over any of its assets or makes a voluntary arrangement or composition with its creditors (in each case, within the meaning of the Insolvency Act 1986).
- 13.4 For the purposes of clauses 13.2.1 and 13.3.2, a breach of any provision of this agreement shall be considered capable of remedy if the party in breach can comply with the provision in question in all respects other than as to the time of performance (provided that the time of performance is not of the essence).
- 13.5 No time or indulgence granted by either party shall be considered a waiver of any provision by the party, and no waiver by either party of a breach of this agreement shall be considered a waiver of any subsequent breach of the same or any other provision.
- 13.6 The termination of this agreement for any reason shall not affect any accrued right or liability of either party arising under this agreement and shall not affect any other right or remedy of either party.

14. CONSEQUENCES OF TERMINATION

- 14.1 On the termination of this agreement for any reason the Company shall:
- 14.2 return to the Client all Confidential Information and Personal Data obtained or produced in the course of providing the Services;
- 14.3 The expiry of this agreement shall not affect any:
- 14.3.1 payment which is owing by either party to the other;
 - 14.3.2 other accrued rights of either party; or
 - 14.3.3 provision of this agreement which is expressed to come into force or continue in force on or after termination.

15. PUBLICITY

- 15.1 Save that the Company reserves the right to publicise the existence of the Agreement but give no details of the contract, no press release or other public statement relating to the Proposal shall be made by either party without the written consent of the other, which consent shall not be unreasonably withheld.

16. WAIVER

- 16.1 The failure by either party to exercise any right or remedy shall not constitute a waiver of that right or remedy.
- 16.2 No waiver shall be effective unless it is communicated to the other party in writing in accordance with clause 17.
- 16.3 A waiver of any right or remedy arising from a breach of the Conditions shall not constitute a waiver of any right or remedy arising from any other breach of the Conditions.

17. NOTICE

- 17.1 A notice relating to this agreement will be validly given only if it is in writing and delivered personally or by courier, or sent by first class post (or air mail if overseas), recorded delivery, electronic mail or fax, to the party in question (marked for the attention of "The Company Secretary", or such other officer of that party as it notified to the other party in writing for this purpose) at the address or fax number set out in this agreement or such other address or fax number as the party in question may specify by



notice.

17.2 In the absence of evidence of earlier receipt, a notice is deemed given:

17.2.1 if delivered personally or by courier, when left at the relevant address;

17.2.2 if sent by first class post, two days after posting it or if sent by air mail, six days after posting it;

17.2.3 if sent by fax, on completion of transmission, provided that the transmitting fax machine prints out a successful transmission report; and

17.2.4 if sent by electronic mail, when the time received, or sent, recorded by the company's electronic mail server.

17.3 If a notice is deemed under sub-clause 17.2 to have been given on a day other than a normal working day, or if the notice is given by fax and transmission is completed after 5.00pm on a normal working day, it shall instead be deemed to be given on the next working day.

17.4 Each party shall immediately give notice to the other of a change in its address or fax number.

18. NATURE OF AGREEMENT

18.1 The Company shall be entitled to exercise any of its rights or perform any of its obligations under this Agreement through a subcontractor or agent or one more of its affiliated companies.

18.2 The parties shall not without the prior written consent of the other assign, mortgage, charge or otherwise transfer to another person, or create any trust over, any of its rights under this agreement.

18.3 Neither party shall unreasonably withhold or delay giving its consent to the other transferring any of its rights or obligations to a person who acquires substantially the whole of the assets of the party in question, provided that the transferee enters into a binding written agreement with the party in question to comply with all the applicable provisions of this agreement.

18.4 Nothing in this agreement shall constitute or create or be deemed to constitute or create a partnership or the relationship of principal and agent or employer and employee between the Company and the Client or any of the Company's personnel.

18.5 This agreement contains the entire agreement between the parties with respect to its subject matter and may not be varied except by a written agreement between the parties.

18.6 Each party acknowledges that in entering into this agreement it does not rely on any representation, warranty or other term or any understanding except as expressly set out in this agreement, but nothing in this agreement affects the liability of either party for fraudulent misrepresentation.

18.7 Except as otherwise may be provided, a person who is not a party to this agreement has no right under the Contracts (Rights of Third Parties) Act 1999 to rely upon or enforce any term of this agreement, but nothing in this agreement shall affect any right or remedy of a third party which exists or is available otherwise than as a result of that Act.

18.8 If any provision of this agreement is held by any court or other competent authority to be invalid or unenforceable in whole or in part, this agreement shall continue to be valid as to its other provisions and the remainder of the affected provision.

19. APPLICABLE LAW AND JURISDICTION

19.1 English law shall apply to the whole of this agreement.

19.2 Any dispute arising out of or in connection with this agreement shall be subject to the non-exclusive jurisdiction of the English courts, to which the parties agree to submit.

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Kirstie Parr
Tonbridge & Malling Borough Council
Gibson Building
Gibson Drive
Kings Hill
West Malling
ME19 4LZ

Ecologia Ref: 19.091.3

26th January 2021

Dear Kirstie,

**Re: Priory Wood Landfill, Tonbridge, Kent, TN11 0NA – Gas Extraction System
Condition Survey**

1. Introduction

Ecologia have provided costs for checking the condition of the gas extraction system at the above referenced site. The inspection will include the following works:

- Site visit to identify the infrastructure and provide a condition report, including gas monitoring on the 5No. vent stacks; and,
- Flare Service Engineer to inspect and report on the condition / performance of the electrical gas booster unit.

Cost Summary:

Item	Total (£)
Condition Report on Current Infrastructure (inc. gas monitoring on 5No. vent stacks)	762.00
Inspect / Service Gas Booster Unit	390.00
Total Cost (exc. VAT)	1,152.00

Payable (30 days payment terms) as follows:

To be invoiced on submission of the condition report.

Standard Conditions of Contract Apply.

2. Timescales

Ecologia will require the following time to complete the works:

- Mobilisation – Currently allow a minimum 10 working days' notice. This may be reviewed following receipt of instruction.
- Reporting – up to 5 working days after completion of inspections.



3. Requirements

The following will be required for the works:

- Infrastructure location plan to show the 5 vent stacks and compound area.
- Locations need to be accessible i.e. padlock keys available, locations free from significant vegetation overgrowth.
- Power is required to the motor control on the blower to allow for a full inspection.

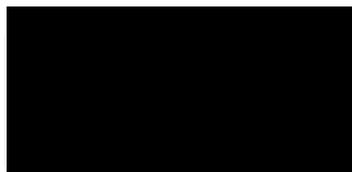
We hope the above costs are to your satisfaction, however, if you have any queries or wish to discuss further please do not hesitate to contact us.

Yours Sincerely,

For and on behalf of Ecologia

Prepared by: Lucy Allen
Project Manager

Checked & Authorised by: Leigh Anne Cammack
Director





CONDITIONS OF CONTRACT

These Conditions of Contract ("the Conditions") and the Proposal Ref: 19.091.3 dated 26/01/2021 together form the "Agreement" and are submitted by Ecologia Environmental Solutions Limited (the "Company") to Tonbridge & Malling Borough Council (the "Client").

DEFINITIONS

"Company"	means Ecologia Environmental Solutions Limited, its employees, agents and consultants.
"Client"	means the party with whom this Agreement is made upon the acceptance of the proposal.
"Proposal"	means the documents outlining the Company's proposed Services to be performed for the Client, with all attachments and amendments.
"Services"	means those specific tasks undertaken by the Company and detailed within the Proposal, and any additional tasks subsequently agreed between the Company and the Client.
"Site"	means the property, land or area on which the Services are to be provided.

In these Conditions, unless the context requires otherwise, any references to the singular includes the plural (and vice versa).

The Company will only provide the Services in accordance with these Conditions and the Client will be deemed to have been accepted by the Client upon instructing the Company to provide the Services detailed in the Proposal. The Company hereby expressly excludes any terms and conditions of the Client.

1 (of 19). APPOINTMENT

- 1.1 Subject to sub clause 1.2, the appointment of the Company shall commence from the date of acceptance by the Company of a written instruction by the Client to perform the Services set out in the Proposal;
- 1.2 At the Company's complete discretion, it may accept an oral instruction to carry out the Proposal, provided that written confirmation from the Client is received within 24 hours of that oral instruction. If such written confirmation is not received within this time the Company may immediately cease further work until it is provided and the Company shall have no further obligation to perform the Services until it is so received.

2. THE SERVICES

- 2.1 The Company shall provide the Services to the Client in accordance with these Conditions.
- 2.2 While time estimates are given in good faith, time for delivery of the Services shall not be of the essence.
- 2.3 The Services will be performed for the exclusive use of the Client, unless expressly provided otherwise in the Proposal.

3. PAYMENT

- 3.1 The Client shall pay the Company the fees set out in the Proposal and in accordance with this Condition 3.
- 3.2 Time shall be of the essence for all payments under these Conditions.
- 3.3 Save as may otherwise expressly agreed, the Company will submit invoices on a monthly basis and payment in full is due within 30 days of the date of the invoice. The Client shall notify the Company in writing within 10 days of receipt if any invoice is disputed.



- 3.4 All fees quoted shall be exclusive of expenses, disbursement and VAT, unless otherwise stated.
- 3.5 If an invoice remains unpaid for 30 days the Company shall be entitled to charge interest from the date of that invoice at the rate of 8% above the base lending rate of The Bank of England from time to time applying until the invoice is paid in full.

4. RIGHT OF ENTRY

- 4.1 The Client hereby grants the Company and its sub-contractors the right of entry to the Site and permission to perform the Services, including without limitation the performance of test borings and all other Site investigations which are contained in the Proposal.
- 4.2 Should the Client not own the Site, the Client warrants that it has obtained the permission of Site owner and, so far as may be relevant, the permission of the Site occupier to grant the Company the right of entry and permission referred to in sub clause 4.1 and the Client hereby indemnifies the Company against all liability, loss, costs and expenses incurred by reason of any claim brought by any person for loss, damage or distress caused to that person as a result of the Company entering on to the Site and performing the Services without permission of the Site owner or Site occupier.

5. SURFACE and SUB-SURFACE EXPLORATIONS

- 5.1 The Client acknowledges that, in performing the Services, the terrain, vegetation and buildings, structures, improvements and equipment at, in or upon the Site may be affected, altered or damaged as a result of the use of equipment necessary for the Company to provide the Services. The Company will not be liable for any effect, alteration or damage so arising and the Client hereby indemnifies the Company against any loss or claim arising out of or connected with any effect, alteration or damage as the case may be.
- 5.2 The Client grants permission to the Company to conduct Site investigations in accordance with the Proposal. The Company relies on the information provided to it by the Client and does not accept liability for any damage, injury or interference with the Site or any subterranean structure or condition of the Site, including without limiting the generality of this term, any pipe, tank, cable or any other service provided at the Site if the existence and location of the same is not drawn to the Company's attention by the Client prior to commencement of the Services.

6. INFORMATION TO BE SUPPLIED BY THE CLIENT

- 6.1 The Client shall supply to The Company without charge and within sufficient time to permit the Company to provide the Services in a timely manner all necessary and relevant data and information in the possession of the Client related to the Proposal and shall give such assistance as shall reasonably be required in the provision of the Services.
- 6.2 Without reducing the generality of the obligation in sub clause 6.1, the Client shall provide the Company with any information in the Client's possession regarding the existence of hazardous materials or waste at or under the Site, and all relevant documents relating to handling practices, environmental permits, records of compliance or non-compliance, or other matters which might reasonably be considered to affect the provision of the Services.
- 6.3 If the Client is not the Site owner or operator it shall nevertheless procure such information as is required under sub clauses 6.1 and 6.2 and all such data and information shall be deemed to be supplied directly by the Client for the purpose of these Conditions. The Company will not be responsible for damages, claims or liabilities which arise as a result of the Client providing inaccurate or incomplete information.

7. SITE CONDITIONS

- 7.1 The Client agrees that in some circumstances Site conditions might prevent or inhibit provision of the Services as anticipated in the Proposal and that if unforeseen location of hazardous waste materials or conditions are encountered, including, without limiting the generality of the term, obstruction by others using the Site, provision of the Services under this Agreement may be delayed.
- 7.2 Any such delays referred to in sub clause 7.1 and any delays caused directly or indirectly by the



Client, its sub-contractors, consultants, agents, officers, directors and employees, shall automatically extend the contract completion date for provision of the Services and The Company shall be entitled to charge the Client for any additional costs incurred together with any reasonable delay charges. In this sub clause "delay charges" shall include, but not be limited to, costs associated with personnel and equipment rescheduling and/or reassignment adjustments and all other costs arising out of or connected such delay including, but not limited to, labour and material escalation costs and extended overhead costs.

8. INTELLECTUAL PROPERTY RIGHTS

- 8.1 In this clause "Intellectual property rights" means any patent, copyright, registered or unregistered design right, database right, registered or unregistered trade mark, rights in relation to confidential information or any other intellectual property rights in any part of the world;
- 8.2 All databases, designs, documents, drawings, notebooks, photographs and records which are made by the Company or any of the Company's personnel in the course of providing the Services, any media containing or recording any part of any of the foregoing items, and any intellectual property rights in respect of any of those items, shall belong exclusively to the Company, and accordingly to the extent that it may be necessary for the avoidance of doubt to do so the Client hereby assigns to the Company (where appropriate, by way of present assignment of future copyright) or (in any other case) agrees to assign to the Company absolutely on demand with full title guarantee and for no further consideration, all intellectual property rights in respect of those items.
- 8.3 If and to the extent that it is not reasonably practicable for the Company to provide the Services without the use of any intellectual property rights of the Client, the Client hereby grants to the Company a non-exclusive, irrevocable, non-transferable and royalty-free licence to use such intellectual property rights of the Client as the Company shall require for that purpose.

9. FORCE MAJEURE

The Client shall not hold the Company responsible for damages or delays in performance caused by acts of God, acts and/or omissions of government or regulatory authorities, or other events which are beyond the control of the Company. For this purpose, such acts or events shall include, but not limited to storms, floods, epidemics, war, riot, strikes, lockouts or other industrial disturbances, and inability with reasonable diligence to supply personnel, information or material to the project. Should such acts or event occur, it is agreed that the Company shall use reasonable efforts to overcome all difficulties arising and to resume as soon as reasonably possible the normal pursuit and schedule of the Services covered by this Agreement. Delays in excess of thirty (30) days within the scope of this Clause shall, at the option of either party, entitle either party to terminate this Agreement.

10. CONFIDENTIALITY

- 10.1 Subject to sub clause 10.2, the Company will not disclose information about the Agreement, its Services or its reports to anyone except on the Client's written instructions. The Company will keep information confidential except to the extent necessary (1) for the Company to perform its Services, or (2) to comply with professional standards to protect public health, safety and the environment, or (3) to comply with any decision, judgement or order of the Court, or any lawful direction, instruction, notice or order of any competent regulatory authority ("Orders"). Information which is known to the public or technical information which the Company may have developed independently or acquired without any breach of duty will not be considered confidential.
- 10.2 If by Order the Company is required by law to disclose information in its possession, the Company shall give the Client prompt notice in writing, whenever possible, of such facts. Thereafter, the Company may, without liability to the Client or others, comply with such Orders. If any claims are asserted against the Company because of the Company's compliance, the Client will hold the Company harmless from such claims, provided that the Company's disclosure is made under a reasonable bona fide belief, or on advice of counsel, that disclosure is required by Order.

11. PROVISION OF THE SERVICES

- 11.1 The Company shall exercise all reasonable skill, care and diligence in the discharge of the Services



and shall exercise the same degree of care ordinarily exercised by qualified professionals undertaking work under similar circumstances in the same geographical area.

- 11.2 The Client acknowledges that provision of the Services requires decisions, which are based upon professional judgement, rather than scientific certainties, and that there are inherent risks associated with the assessment or remediation of Sites, especially those containing hazardous materials. The Company's recommendations and conclusions are subject to modifications due to changes in Site conditions or regulations which may occur after the Services have been performed or during the performance of the services.
- 11.3 The Client acknowledges that the Company's Services as described in the Proposal will be performed solely for the use of the Client and to the standards outlined in Conditions above and will not be disclosed or used or relied upon in any way by any third party unless stated otherwise in the Proposal. No warranty, indemnity or guarantee either express or implied, is given or intended by the Company in either this Agreement or in the Company's report(s).
- 11.4 The Client acknowledges that the findings and recommendations of the Company relate only to the conditions at the site at the time the Company undertakes the Services.
- 11.5 The Client acknowledges that it will place no reliance on information, data or any other matter other than that contained within a final report prepared and provided by the Company, and the Client acknowledges that the Company has no liability for any loss, damage or injury caused by the Client's reliance upon information, data or other matters not so presented to the Client.
- 11.6 The Client acknowledges that the Company has neither created nor contributed to the presence of hazardous materials or hazardous conditions at or near the Site, and that the Company's compensation for Services is disproportionately small in relation to the potential risk of injury, loss or damages arising from release of, or exposure to, such conditions. The Client agrees to indemnify and hold the Company harmless from any claim for liability, damages (whether direct or consequential), injury, loss or expenses sustained by any party arising from the presence of hazardous materials or hazardous conditions at the Site, except to the extent caused by the gross negligence or wilful misconduct of the Company.

12. LIMITATION OF LIABILITY

12.1 In this clause 12:

12.1.1 "Liability" means any liability by reason of any representation (unless fraudulent) or the breach of any implied condition, warranty or other term or any duty at common law or under any statute, or under any express term of this agreement or otherwise; and

12.1.2 "Loss" means, in relation to either party, any loss of profit, contracts, goodwill, anticipated savings, wasted expenditure or other loss of any kind which is incurred by that party, or any damages, costs or other claims for compensation and any expenses (including legal expenses) which are awarded against or incurred by or paid or agreed to be paid by that party, however the same may arise and whether occasioned by the negligence of the other party, its employees or agents or otherwise.

12.2 Neither party seeks to limit any Liability which it may have arising out of or in connection with this agreement in respect of death or personal injury caused through negligence or fraudulent misrepresentation.

12.3 Save as may otherwise be expressly provided in clause 5 and subject to clause 12.2:

12.3.1 neither party shall have any Liability to the other party arising out of or in connection with this agreement for any indirect, special or consequential Loss of the other party; and

12.3.2 the total Liability of either party for any other Loss of the other party in respect of any one event or series of connected events shall not exceed the sum payable to the Company for the Services or £50,000 whichever is the greater amount.

13. DURATION OF AGREEMENT

13.1 This agreement shall commence on the date referred to in clause 2 hereof and, subject to the



following provisions, shall continue until the Services have been provided.

- 13.2 The Client may forthwith terminate this agreement by giving written notice to the Company if the Company:
- 13.2.1 commits a material breach of this agreement and, if the breach is capable of being remedied, fails to remedy it within 30 days after receipt of a written notice specifying the breach and requiring it to be remedied; or
 - 13.2.2 goes into liquidation or administration, has a receiver appointed over any of its assets or makes a voluntary arrangement or composition with its creditors (in each case, within the meaning of the Insolvency Act 1986).
- 13.3 The Company may forthwith terminate this agreement by giving written notice to the Client if the Client:
- 13.3.1 fails to pay any sum payable by it under this agreement within 30 days of the due date of payment;
 - 13.3.2 commits a material breach of this agreement (other than one to which clause 13.3.1 applies) and, if the breach is capable of remedy, fails to remedy it within 30 days after receipt of a written notice specifying the breach and requiring it to be remedied; or
 - 13.3.3 into liquidation or administration, has a receiver appointed over any of its assets or makes a voluntary arrangement or composition with its creditors (in each case, within the meaning of the Insolvency Act 1986).
- 13.4 For the purposes of clauses 13.2.1 and 13.3.2, a breach of any provision of this agreement shall be considered capable of remedy if the party in breach can comply with the provision in question in all respects other than as to the time of performance (provided that the time of performance is not of the essence).
- 13.5 No time or indulgence granted by either party shall be considered a waiver of any provision by the party, and no waiver by either party of a breach of this agreement shall be considered a waiver of any subsequent breach of the same or any other provision.
- 13.6 The termination of this agreement for any reason shall not affect any accrued right or liability of either party arising under this agreement and shall not affect any other right or remedy of either party.

14. CONSEQUENCES OF TERMINATION

- 14.1 On the termination of this agreement for any reason the Company shall:
- 14.2 return to the Client all Confidential Information and Personal Data obtained or produced in the course of providing the Services;
- 14.3 The expiry of this agreement shall not affect any:
- 14.3.1 payment which is owing by either party to the other;
 - 14.3.2 other accrued rights of either party; or
 - 14.3.3 provision of this agreement which is expressed to come into force or continue in force on or after termination.

15. PUBLICITY

- 15.1 Save that the Company reserves the right to publicise the existence of the Agreement but give no details of the contract, no press release or other public statement relating to the Proposal shall be made by either party without the written consent of the other, which consent shall not be unreasonably withheld.

16. WAIVER

- 16.1 The failure by either party to exercise any right or remedy shall not constitute a waiver of that right or remedy.



16.2 No waiver shall be effective unless it is communicated to the other party in writing in accordance with clause 17.

16.3 A waiver of any right or remedy arising from a breach of the Conditions shall not constitute a waiver of any right or remedy arising from any other breach of the Conditions.

17. NOTICE

17.1 A notice relating to this agreement will be validly given only if it is in writing and delivered personally or by courier, or sent by first class post (or air mail if overseas), recorded delivery or fax, to the party in question (marked for the attention of "The Company Secretary", or such other officer of that party as it notified to the other party in writing for this purpose) at the address or fax number set out in this agreement or such other address or fax number as the party in question may specify by notice. A notice shall not be valid if sent by e-mail.

17.2 In the absence of evidence of earlier receipt, a notice is deemed given:

17.2.1 if delivered personally or by courier, when left at the relevant address;

17.2.2 if sent by first class post, two days after posting it or if sent by air mail, six days after posting it; and

17.2.3 if sent by fax, on completion of transmission, provided that the transmitting fax machine prints out a successful transmission report.

17.3 If a notice is deemed under sub-clause 17.2 to have been given on a day other than a normal working day, or if the notice is given by fax and transmission is completed after 5.00pm on a normal working day, it shall instead be deemed to be given on the next working day.

17.4 Each party shall immediately give notice to the other of a change in its address or fax number.

18. NATURE OF AGREEMENT

18.1 The Company shall be entitled to exercise any of its rights or perform any of its obligations under this Agreement through a subcontractor or agent or one more of its affiliated companies.

18.2 The parties shall not without the prior written consent of the other assign, mortgage, charge or otherwise transfer to another person, or create any trust over, any of its rights under this agreement.

18.3 Neither party shall unreasonably withhold or delay giving its consent to the other transferring any of its rights or obligations to a person who acquires substantially the whole of the assets of the party in question, provided that the transferee enters into a binding written agreement with the party in question to comply with all the applicable provisions of this agreement.

18.4 Nothing in this agreement shall constitute or create or be deemed to constitute or create a partnership or the relationship of principal and agent or employer and employee between the Company and the Client or any of the Company's personnel.

18.5 This agreement contains the entire agreement between the parties with respect to its subject matter and may not be varied except by a written agreement between the parties.

18.6 Each party acknowledges that in entering into this agreement it does not rely on any representation, warranty or other term or any understanding except as expressly set out in this agreement, but nothing in this agreement affects the liability of either party for fraudulent misrepresentation.

18.7 Except as otherwise may be provided, a person who is not a party to this agreement has no right under the Contracts (Rights of Third Parties) Act 1999 to rely upon or enforce any term of this agreement, but nothing in this agreement shall affect any right or remedy of a third party which exists or is available otherwise than as a result of that Act.

18.8 If any provision of this agreement is held by any court or other competent authority to be invalid or unenforceable in whole or in part, this agreement shall continue to be valid as to its other provisions and the remainder of the affected provision.

19. APPLICABLE LAW AND JURISDICTION



- 19.1 English law shall apply to the whole of this agreement.
- 19.2 Any dispute arising out of or in connection with this agreement shall be subject to the non-exclusive jurisdiction of the English courts, to which the parties agree to submit.

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TONBRIDGE & MALLING BOROUGH COUNCIL

STREET SCENE and ENVIRONMENT SERVICES ADVISORY BOARD

09 February 2021

Report of the Director of Street Scene, Leisure & Technical Services

Part 1- Public

Matters for Recommendation to Cabinet - Non-Key Decision (Decision may be taken by the Cabinet Member)

1 WILDFLOWER STRIP ON AMENITY OPEN SPACE

Summary

This report considers the potential introduction of wildflower strips on areas of amenity open space. The report identifies a potential trial location in Tonbridge and suggests further liaison with the Medway Valley Countryside Partnership to consider additional borough wide opportunities in the future.

1.1 Background

- 1.1.1 A number of Members have raised the potential of introducing wildflower strips on amenity open space and/or allowing the grass to grow longer by reducing the frequency of cuts. Both with an aim to support increased biodiversity.
- 1.1.2 In considering such an approach a number of issues need to be taken into account including location and ownership of the land, response from residents, littering and dog fouling, financial implications and significantly the impact on the ground maintenance contract.

1.2 Proposed Trial

- 1.2.1 In order to consider the matter further it is felt appropriate to identify a location to use as a trial and feed in the lessons learnt into a future report.
- 1.2.2 A suitable location has been identified in Darenth Avenue Tonbridge and the proposed amenity space is shown in **Annex 1**. The area has been inspected by the Medway Valley Countryside Partnership which considers it a good choice for letting the verge grow long by altering the cutting frequency. The sward has quite a few herbs visible in it already such as red clover and black medic which may provide a nectar source for bees and butterflies.
- 1.2.3 It is proposed to trial this area to be cut twice a year in March and September for the main body of the open space and cutting the edges against the road and path 15 times as per the current contract. The 2 cuts will be 'cut and mulch' leaving cuttings on site to avoid collection costs and additional carbon implications of extra transportation. The latter issue also needs to be considered when bringing

forward any future proposals given the Council's current target for Carbon neutrality.

- 1.2.4 The ground maintenance contractor has been consulted and based on this being only one site has confirmed there will be no financial implications for the trial. Medway Valley has also offered to prepare text for an interpretation panel explaining why the grass is not being cut so regularly.

1.3 Future report

- 1.3.1 There are clearly a range of issues that will need to be considered in looking at additional sites in the future and the outcome of the trial this year will assist in this regard. It is proposed that a report be developed with the assistance of the Medway Valley Countryside Partnership, in liaison with the Council's grounds maintenance contractor, and that both the report and potential options be considered at a future meeting of this Board.

1.4 Legal Implications

- 1.4.1 None

1.5 Financial and Value for Money Considerations

- 1.5.1 The Council's grounds maintenance contractor has confirmed that the one-off trial can be delivered at no additional cost. Consideration will, however, need to be given to any financial impacts of extending this approach to other areas within the borough or any other proposals arising from the future report.

1.6 Risk Assessment

- 1.6.1 None

1.7 Equality Impact Assessment

- 1.7.1 The decisions recommended through this paper have a remote or low relevance to the substance of the Equality Act. There is no perceived impact on end users.

1.8 Policy Considerations

- 1.8.1 Asset Management, Biodiversity & Sustainability, Climate Change and Community

1.9 Recommendations

- 1.9.1 It is **RECOMMENDED** to Cabinet that:

- 1) the proposed trial of a wildflower strip on amenity open space at Darenth Avenue be progressed.
- 2) liaison be undertaken with the Medway Valley Countryside Partnership and the Council's grounds maintenance contractor with a full report being

considered at a future meeting of this Board on the potential of wider borough proposals.

The Director of Street Scene, Leisure & Technical Services confirms that the proposals contained in the recommendation(s), if approved, will fall within the Council's Budget and Policy Framework.

Background papers:

contact: Darren Lanes

Nil

Robert Styles

Director of Street Scene, Leisure and Technical Services

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TONBRIDGE & MALLING BOROUGH COUNCIL

STREET SCENE and ENVIRONMENT SERVICES ADVISORY BOARD

09 February 2021

Report of the Director of Street Scene, Leisure & Technical Services

Part 1- Public

Matters for Information

1 STREET SCENE AND WASTE SERVICES - RESPONSE TO COVID 19

Summary

This report updates Members on progress with the themes/activities identified within the Street Scene and Waste section of the approved First Year Addendum to the Council's Corporate Strategy. This includes updates on service performance, the roll out of the new service arrangements to flats/communal areas, the reduction in the number of bring bank sites, the reintroduction of the weekend bulky collection service and the transfer of public conveniences to Parish/Town Councils.

1.1 Introduction

1.1.1 At its meeting on 3 June 2020, Cabinet approved a First Year Addendum to the Corporate Strategy in response to the Covid-19 pandemic. The Addendum identified a number of themes/activities and, within each, identified specific service areas to be reviewed, with an aim to Re-orientate and then Recover these services. Cabinet also agreed that progress with these themes/activities be monitored through updates to relevant Advisory Boards and Committees. Included within the Addendum are themes/activities related to Street Scene and Waste.

1.1.2 A previous update was presented to Members of this Advisory Board on 8 December 2020.

Service Performance

1.1.3 Members will be aware of the previous implications that Covid-19 has had on the delivery of core services within the Council's Waste Contract. Through the period of the first lockdown this was most evident with around 50% of contractor staff either on sick leave, self-isolating or "shielding" at some points. This was combined with significantly increased tonnages across all waste streams, a situation that was replicated across Kent and nationwide. As such, service provision was prioritised to focus on key kerbside collections and resulted in a number of other service suspensions including garden waste collections, new garden waste subscriptions, bulky collections (charged doorstep collection

service) and the Saturday Freighter Service. In addition, resources were also temporarily directed away from Street Cleansing.

- 1.1.4 As the Covid-19 staffing pressures eased for Urbaser all services were reintroduced with the exception of the Saturday Freighter Service that is further detailed below. Service performance also significantly improved following the re-introduction of services and is being reflected in increased round completions, a reduction in missed collections and reduced customer comments/complaints. This improvement in service was also reflected over the Christmas period with a minimal level of non-completed rounds. Programmed catch up rounds were undertaken on two Saturdays during the Christmas period in lieu of bank holidays and collection schedules returned to normal from Monday 11 January as planned.
- 1.1.5 With a national lockdown re-introduced on the 5 January 2021 and cases of Covid 19 increasing, due consideration has been given to current and future service delivery. The Council is monitoring impacts in liaison with all other Local Authorities across the County through weekly briefings of the Kent Resource Partnership Forum. Of greatest concern is staffing levels and some Authorities (both within Kent and Nationally) have already taken steps to prioritise service provision in their area. Officers at Tonbridge and Malling are monitoring staffing levels on a daily basis in liaison with Urbaser and if required may have to prioritise key services in accordance with our Business Continuity Plan. As with the first national lockdown kerbside collections of general refuse and food waste, and the collection of clinical waste will be the highest priority. Impacts of staff absences on this Council's contract have already been seen in January affecting street cleansing crews and reactive resources used to clear reported missed bin and deliver new/replacement bins.
- 1.1.6 It is also worth note that Kent County Council are having to close Dunbrik Transfer Site during February for further repair and improvement works. This will result in Sevenoaks delivering their kerbside collections to North Farm Transfer Station and again the activation of the Tunbridge Wells Borough Council depot being used as a backup transfer station for the month. The previous closure did not have a notable impact prior to Christmas, but this will need careful management again to reduce the potential impact on collections within Tonbridge and Malling throughout February.

1.2 Reintroduction of Weekend Bulky Waste Collection (Saturday Freighter Service)

- 1.2.1 The weekend service is still currently suspended, in both Tonbridge & Malling and Tunbridge Wells. Whilst its suspension was in part related to staffing resources, the other key consideration was the implications of social distancing guidance and the safety and welfare of both those residents using the service and the staff operating them. This was also an issue for Kent County Council in relation to the Household Waste Recycling Centres and whilst these have reopened, attendance is controlled through a strict pre-booking system and safe social distancing

measures that still remain in place. The reopening of these KCC facilities does provide the opportunity for TMBC residents to dispose of bulky waste that they may have otherwise taken to our weekend service and KCC has confirmed that they currently remain open following the announcement of the most recent national lockdown. To date the Council has received an extremely low level of public comment on the suspension of this service.

- 1.2.2 Whilst a generic Health and Safety Risk Assessment for the service has been provided by Urbaser, the implications of this will now need to be considered in relation to each individual site. It is, however, anticipated that this will not commence until the end of the current national lockdown and will also need to take into consideration any future restrictions.

1.3 New Service Arrangements to Flats and Communal Properties

- 1.3.1 As reported to Members of this Advisory Board on 8 December 2020 it was proposed and agreed that a trial/pilot rollout of the new service arrangements to flats and communal areas in a designated area of Tonbridge commence in January 2021. Subject to the outcome of the trial it was then the intention to roll out across the rest of the borough during the Spring. Progress had been made on the arrangements for the trial through an internal officer working group and liaison with Urbaser with a proposed commencement date of 25 January.
- 1.3.2 Following the most recent national lockdown a review has, however, been undertaken of the proposed trial. This has taken into account both Government guidance & regulations, as well as guidance issued to Council staff relating to essential working. Given the impact of the trial on staff resources both within the Council and Urbaser, the interaction needed between two external contractors, Council staff and potentially the public and the need to ensure full resilience for potential further service pressures resulting from Covid 19 and the EU withdrawal, the decision has unfortunately been taken to postpone the trial.
- 1.3.3 This is regretful and I am sure will be disappointing for Members and residents alike. Whilst the residents of the flats are extremely keen to benefit from the new service it is essential that staff and public safety take precedent. I am sure Members will appreciate that we are not in a position to confirm a revised date at this time and this will be reviewed as the national & corporate guidance develops.

1.4 Bring Bank/Recycling Sites

- 1.4.1 The full reduction of bring bank/recycling sites across the borough is pending and will see the reduction of sites to 10 key strategic locations across the borough. As previously reported and agreed by Members of this Advisory Board the reduction in bring bank sites across the borough is now commencing prior to the new service provision being rolled out to flats and communal areas.
- 1.4.2 This is taking place in liaison with the relevant Local Members and is being undertaken on a phased basis. The continuation of this activity has also been

reviewed in light of the recent national lockdown. Given the specific operations that are taking place and the interaction between staff, contractors and the public is negligible, the first phase of removals did continue and commenced on the 11 January 2021 seeing the removal of 9 sites. Phase 1 works have been complete and Phase 2 sites are currently being considered and Local Members and the relevant Parish/Town Council's will be made aware in advance of their removal.

1.5 Transfer of Public Conveniences

1.5.1 As previously reported the transfer of public conveniences to Parish /Town Councils has been approved by Cabinet following recommendations considered by this Board with an estimated annual saving of £70,000 contributing to the Savings and Transformation Strategy. The timescale agreed prior to the pandemic was 1 April 2021 and this timescale can still be achieved. The transfer relies on the legal agreements being actioned and improvements made to the existing facilities so they are in a fit state to transfer.

1.5.2 An update was reported to the Finance, Innovation and Property Advisory Board on 6 January 2021 where the following recommendations were agreed.

- The public conveniences at East Peckham, Borough Green, West Malling and East Malling & Larkfield be transferred to the respective Parish Councils in line with the terms outlined in the report;
- Borough Green Parish Council's request to purchase land at Crowhill in Borough Green be investigated, and;
- Options be investigated for the disposal/alternative use of any public convenience sites not transferred to Parish/Town Councils

1.5.3 Liaison continues to take place with all relevant Parish/Town Council's on the proposed transfer and legal documentation has been drafted. Condition surveys have been undertaken on those facilities due to be transferred with any works due to be scheduled prior to transfer.

1.5.4 Since reporting to the Finance, Innovation and Property Advisory Board confirmation has been received from West Malling Parish Council that it has now declined the offer of transfer and, therefore, this site will be closed from 1 April 2021 alongside the facilities at Hadlow, Snodland and Aylesford and options will be investigated for disposal/alternative use as appropriate.

1.6 Legal Implications

1.6.1 The statutory framework governing the response to the pandemic is evolving and changing on a frequent basis, both in the restrictions placed upon individuals and upon the responsibility of local authorities. Specific proposals or changes brought

forward following a review of the services will be assessed at the appropriate time in liaison with Legal Services to ensure they are lawful.

1.7 Financial and Value for Money Considerations

1.7.1 With regard to the transfer of Public Conveniences an estimated annual saving of £70,000 has been highlighted contributing to the Savings and Transformation Strategy.

1.8 Risk Assessment

1.8.1 The Operational Risk Assessment for Street Scene Leisure and Technical Services has been updated and is being revised on an ongoing basis as government guidance on Covid-19 changes.

Background papers:

contact: Darren Lanes

Nil

Robert Styles

Director of Street Scene, Leisure & Technical Services

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Agenda Item 9

Any other items which the Chairman decides are urgent due to special circumstances and of which notice has been given to the Chief Executive.

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Agenda Item 10

The Chairman to move that the press and public be excluded from the remainder of the meeting during consideration of any items the publication of which would disclose exempt information.

**ANY REPORTS APPEARING AFTER THIS PAGE CONTAIN EXEMPT
INFORMATION**

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Agenda Item 11

Any other items which the Chairman decides are urgent due to special circumstances and of which notice has been given to the Chief Executive.

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