Update Report on Birchfield Park (disused landfill), Yeovil

Strategic Director: *Vega Sturgess, Operations and Customer Focus*
Assistant Director: *Laurence Willis, Assistant Director - Environment*
Service Manager: *Garry Green, Property and Engineering Services Manager*
Lead Officer: *Ian Case, Principal Engineer, Property & Engineering Services*
Contact Details: *ian.case@southsomerset.gov.uk or 01935 462074*

The appendices of the Contingency Plan (for the most part plans) have been omitted to save paper. These plans are available on request.

Purpose of the Report

This report seeks to establish a formal reporting link from the Birchfield Group and to inform and update members on matters associated with the disused landfill site known as Birchfield Park, Yeovil. It is envisaged that an update report will be presented around this time on an annual basis and in the Audit report dated January 2015, it was recommended that there was formal approval of a management strategy and contingency plan for the site by members.

Public Interest

The report indicates how the Birchfield Disused Landfill site is effectively managed to ensure the wellbeing of the residents and the environment.

Recommendations

(1) That the report be noted.
(2) That the Management Strategy is approved
(3) That the Contingency Plan is approved

Background

Birchfield Park is an historic landfill site used for domestic waste from the early sixties up until the early 80s. On completion of landfilling operations it was passed to SSDC to be used as public open space. The site is managed by the Property & Engineering Service of this Council.

The site is located in the eastern part of Yeovil, spanning Lyde Road. The landfill whilst being continuous in timescale was referred to as Birchfield and Sunningdale. For the purposes of clarity it was decided some years ago to refer to the complete site as Birchfield. The area to the west of Lyde Road running from Birchfield Road to Lyde Road being referred to now as **Birchfield West**. The area Running from Lyde Road towards the River Yeo being referred to as **Birchfield East**.

Birchfield West is bounded by a primary school and residential areas. Birchfield East is bounded by a mixture of residential and small industrial use. The east boundary drops steeply to the alluvial flood plain of the River Yeo. Some of this area forms part of Yeovil Country Park.

Annual Update

Capital Scheme Progress

There is currently a capital scheme (£615k) under design which will provide long term enhancement to the pollution prevention regime. This will deal with the high and concentrated levels of leachate and gas at the eastern end of the site and will involve a gas collection and flare system.

The key objectives of the project are to appraise the quantity of gas and leachate production, the composition and how this is distributed around the site. This will then provide the knowledge to fine tune the decisions to be taken to replace the existing gas extraction measures on the southern side and enhance as appropriate. The project will also look at and partially deal with the leachate issue and the disparity of the leachate quality arriving at the pumping station compared with that higher up the site.

The project is required in essence to replace and in doing so, enhance the gas protection measures already in place particularly along the southern boundary. The existing gas extraction plant is some 25 years old and is nearing the end of it's useful life. In addition changes in technology and understanding of landfill sites will enable a more robust solution to the potential for gas migration to adjoining land uses. It should also reduce the pressure within the landfill and therefore reduce the risk of migration.

The project involves the potential of reducing the level of the leachate within the landfill mass but this will involve a likely increase in revenue implications as the volume and possibly quality of the leachate will increase.

The benefit of both these elements is that they have the potential of creating a stable environment for the degradation of the waste. This will then speed up the degradation which has long term benefits for the site as a whole.

We have recently completed some specialised large diameter boreholes installed in the landfill on Birchfield East which attracted some local interest largely I think due to the size of the drilling rig. These will be monitored for a period of around 8 months, the data analysed and then a trial pumping period carried out to determine the final design for the collection and flare plant.

At some point during this period we will be submitting a planning application and thereafter, assuming consent granted, will be installing an access road and infrastructure as the new plant will be situated closer to the houses on the northern side. Obviously careful consideration will be given to aesthetics and also ensuring that noise levels are minimal given our experience with the existing plant operation.

Traveller Occupation of Car Park

We have in recent years installed security measures to secure the site against unauthorised entry. Whist this appears to have been successful, there have been two instances this year of occupation of the car park area. This has caused local concern but of less concern from a site risk issue due to that the occupation is on a hard surface or one that is not believed to be on domestic tip material.

It has been suggested that a height restriction barrier is installed similar to the one installed at Huish car park recently. The layout of the new car park area lends itself to this installation with appropriate fencing / bunding etc and the cost would be around £7,000.

However, the issue here is that the barrier would have to be far enough off the road to allow authorised vehicles to enter the site without blocking Lyde Road. Unauthorised vehicles, if they drove in, would have to reverse onto a busy road.

At the Birchfield Group in August it was decided to erect a height restriction barrier at the earliest opportunity.

Gas monitoring

Environmental Health staff carry out the monitoring of the site and pass the raw data to the Principal Engineer who keeps the master spreadsheets on a shared drive and records this data together with any leachate sampling results.

In-situ gas concentration measurements are taken from boreholes located at various monitoring positions and the instrument measures concentrations, Oxygen (O), Carbon Dioxide (CO_2) and Methane (CH_4) as % v/v. The instrument also measures Hydrogen Sulphide (H_2S) and Carbon Monoxide (CO) in ppm. Of these gases it is CH_4 and CO_2 which are principle hazardous landfill gases of concern.
Where Carbon Dioxide concentrations of above 10% v/v or Methane concentrations of above 5% v/v are measured then gas flow rates are also measured. This provides further information on the level of risk posed.

Atmospheric pressure is measured as this is thought to influence ground gas movement where – research indicates that higher gas concentrations can be measured during a drop in atmospheric pressure following a period of high pressure.

For the purposes of monitoring and assessment each area of the site is classified as internal or external according to the following:

Internal boreholes are located on the landfill or on the landfill side of gas protection measures in areas where these are present. Elevated concentrations of hazardous gases are expected within these boreholes. Such boreholes provide an indication of gas conditions within the landfill.

External boreholes are intended to be located beyond the extents of the landfill and those which are external to gas protection measures where these are present. The presence of elevated landfill gas readings within such locations may indicate gas migration to areas surrounding the landfill.

Recent data indicates that both sides (east and west) of Birchfield landfill are actively gassing. There are currently no obvious signs of gas production activity changing significantly. Gas flow monitoring indicates that there is significant gas pressure within the Birchfield East landfill particularly to the far (eastern) end.

Data collected from areas to the south and north of both Birchfield West & East indicate that offsite gas migration has not been occurring in these areas.

Financial Implications

There are no financial implications in noting this report. Should any works be required, other than already approved, be needed this will be subject to a separate report or procedures as appropriate

Council Plan Implications

Ensuring that the Birchfield Disused Landfill site is effectively managed contributes to the Environment and the Health & Communities focuses of the Council the Council Plan:

Carbon Emissions and Climate Change Implications

None.

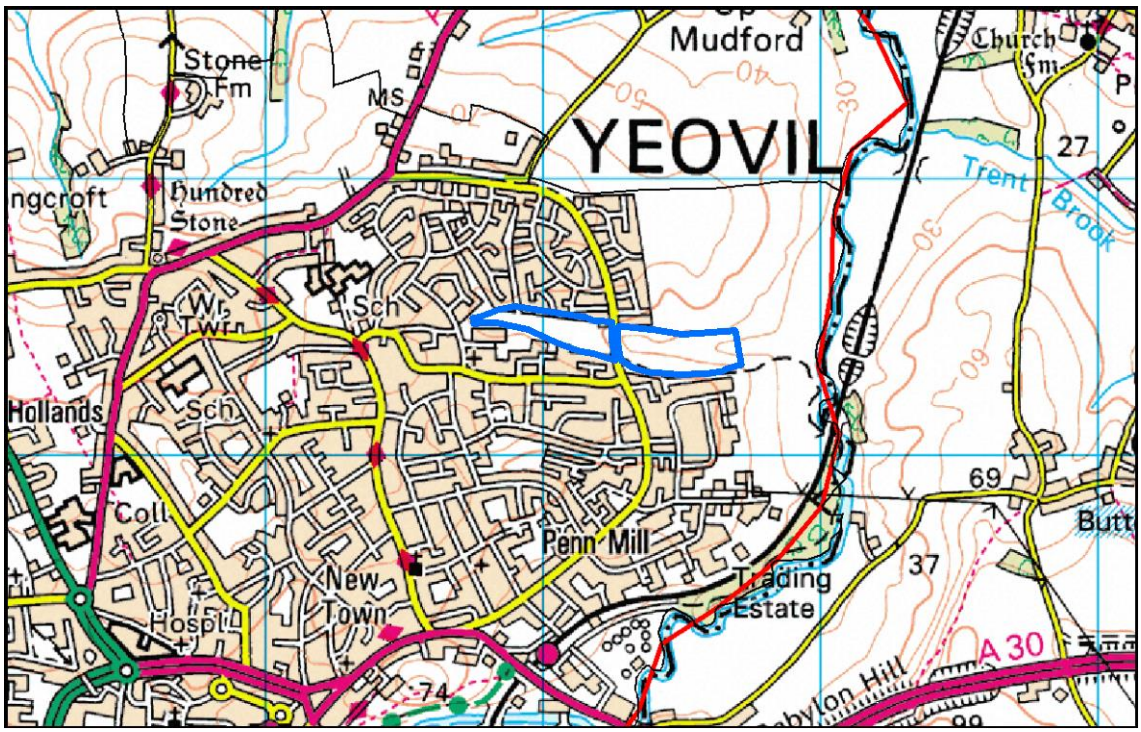
Equality and Diversity Implications

Due regard and consideration has been given to equalities issues and concluded that the impact is negligible.

Background Papers

There are no background papers to this report.

Location Plan



Appendix 1 - Management Strategy

1. Responsibility for Strategy

The purpose of this strategy is to ensure that the Birchfield Disused Landfill site is effectively managed to ensure the wellbeing of the residents and the environment together with staff and contractors working on the site. It is intended that this will be a live document and reviewed annually.

The management of the site is overseen by the Birchfield Group consisting of the relevant Portfolio Holders, the ward members from Yeovil Without and Yeovil East and the relevant officers.

The membership of the Panel is as follows:

Ric Pallister	Leader
Peter Gubbins	Area South Portfolio Holder
Henry Hobhouse	Property Portfolio Holder
Rob Stickland	Ward Member East
David Recardo	Ward Member East
Tony Lock	Ward Member East
Gye Dibben	Yeovil Without
Mike Lock	Yeovil Without
Graham Oakes	Yeovil Without
Laurence Willis	Assistant Director - Environment
Ian Case	Principal Engineer, Property & Engineering
Pam Harvey	Civil Contingencies Manager
Chris Cooper	Streetscene Services Manager
Vicki Dawson	Principal Environmental Health Officer
Alasdair Bell	Environmental Health Manager
Kim Close	Area Development - South

The Birchfield Group will:-

- review the Birchfield Annual Report prior to it being presented to Area South in September each year and consider/approve any recommendations as appropriate.
- review the monitoring results for gas, leachate and maintenance arrangements.
- review revenue budget.
- review and monitor the implementation of the Birchfield Management Strategy
- review the Contingency Plan ensuring that it is up to date and fit for purpose
- review and note the Engineer's report and consider recommendations as appropriate.
- review the legal protection maintained on the site in respect of illegal incursions.
- act as consultees for capital bids and offer support as required for the implementation of further control measures.

- respond appropriately to issues that occur on site including special meetings as required

- ensure compliance with the Birchfield Audit Report

2. Summary of Control Measures

Landfills generate gas and it is the potential for this gas to migrate off site to surrounding land uses or indeed migrate to the surface and be emitted at surface which constitutes the risk.

It is therefore part of the control measures to monitor the boundaries to ensure the gas is contained within the landfill and that no migration pathways exist and that any mitigation measures are effective.

A programme of monitoring is therefore undertaken by SSDC staff (and others as required) of boreholes both located around the perimeter of the site and internally. The results of the monitoring are recorded on master spreadsheets and reviewed to ensure unexpected changes are dealt with as appropriate.

There are engineered measures consisting of bentonite barriers which effectively seal off the boundary and therefore remove a pathway to adjacent land uses. On this site these have been designed and installed to protect residential land uses to the north side of Birchfield East.

To date there is no requirement for installation of barriers at any other boundary as monitoring has shown that gas migration is not occurring.

The leachate is collected informally through the old drain laid at the base of the original valley floor and is pumped on to the Wessex Water sewer for treatment under an effluent discharge consent agreement.

This leachate is sampled and tested to ensure compliance with the discharge consent agreement and the data also forms the basis for the Wessex Water charges which are calculated using the strength and volume data.

The site is a controlled site and no works are permitted without prior approval of the Principal Engineer of Property & Engineering. This is to ensure that any works proposed do not compromise the control measures or indeed open up migration pathways.

Over the last few years we have built up a working relationship with a specialist consultant (CGL) who we employ as and when we need specialist advice. This enables us to obtain reliable and more importantly consistent advice regarding the site.

Appendix 2 - Contingency Plan

South Somerset District Council August 2015

Birchfield Park (also known as Birchfield Disused Landfill Site)

Contingency Plan (without Appendices)

	Issue Details
Title	Birchfield Disused Landfill Site - Contingency Plan
Issue & Version Number	Version 6.4
Officer	Civil Contingencies & Business Continuity Manager
Authorisation Date	Draft Copy – Pending
Review Date	-September 2016

Contents :

1. General Information
    - 1.1 Site Details Summary
    - 1.2 Potential problems which could occur at the site
2. Landfill Gas (groundgas)
    - 2.1 Introduction
    - 2.2 Site Controls
    - 2.3 Emergency Procedure for Monitoring Gas in Buildings
    - 2.4 Gas Extraction System
    - 2.5 Report of a ‘gas’ smell
3. Leachate
    - 3.1 Introduction
    - 3.2 Leachate Collection & Treatment
4. Voids and failures of the ‘cap’
5. Encampments / Trespass
6. Fires
    - 6.1 Above ground fires
    - 6.2 Underground fires
7. Crisis Management Plan & Emergency Communications
8. Contact Details

Appendix 1 - Site Location Plan

Appendix 2 - Site Plan – West Side

Appendix 3 - Site Plan – East Side

Appendix 4 - Monitoring Location Plans

Appendix 5 - Unauthorised Access Information Note

Appendix 6 - Injunction (against lighting of fires)

1. General Information

Birchfield Park is an area of open space which straddles Lyde Road and runs from Birchfield Road to the west down to Yeovil Country Park in the east.

There are hazards at the site due to its former use as a landfill site and as such is a controlled site managed by the Council's Property & Engineering section.

The open space element is looked after by Streetscene but any works other than routine grass cutting are to be referred to Property & Engineering for approval and recording before being carried out.

This plan identifies the significant hazards at the site, how these are managed and the controls in place should anything unusual occur.

This plan forms an appendix to the Council's Emergency Plan and informs the Council's response to incidents occurring on or near the site. The Birchfield Park Group who form a reporting link to Members are responsible for the adoption and ownership of this plan.

1.1 Site Details Summary

The site for identification purposes comprises two areas. The area to the east of Lyde Road is referred to as Birchfield Park East (known historically as the Birchfield Landfill). The area to the west of Lyde Road is referred to as Birchfield Park West (historically known as the Sunningdale Landfill).

The two areas are former landfill sites, which were filled with assorted waste during the 1960's 70's & 80's. Both landfills had been closed by mid 1980s and covered with approximately 1m depth of clay soils to form a capping layer. The areas are currently predominantly grassed and are used for public open space. Land uses in areas immediately surrounding the landfills include residential, commercial/business, a scout hall and a primary school. A road crosses the eastern part of the site from Lyde Road into a large residential development site which was the subject of detailed design to minimise any detrimental effects.

1.2 Potential problems which could occur at the site

The following are situations which could occur at and around a disused landfill site :-

- Gas migration off site towards surrounding land uses – see **Section 2.**
- Gas extraction system breakdown – see **Section 2.**
- Leachate Pumping Station breakdown – see **Section 3**
- Voids appearing at the ground surface – see **Section 4.**
- Traveller incursions (or other trespass) onto the site – see **Section 5.**
- Fires at the site – see **Section 6.**

2. Landfill Gas (groundgas)

2.1 Introduction

Hazards posed by methane, the potentially explosive constituent of landfill gas, is the most obvious potential issue at a landfill site. Such hazards became higher profile following a gas explosion at Loscoe in Derbyshire and other incidents. It should however be noted that although consequences can be severe the occurrence of such incidents is extremely rare.

The usual major constituents of landfill gas are methane and carbon dioxide both of which are colourless and odourless. Despite this landfill gas often has a distinctive odour due to the presence of trace gas components such as sulphur compounds. Landfill gas containing the flammable gas methane can form explosive or flammable mixtures in air (at concentrations between 5% and 15%) . Landfill gas may also act as an asphyxiate and be toxic either alone or when mixed with air, when the oxygen content is depleted.

Usually landfill gas only becomes a problem when it accumulates in confined spaces, such as poorly ventilated buildings, allowing gas concentrations to become hazardous. When landfill gas is released into open air (external conditions) it is quickly diluted to insignificant concentrations.

Landfill gas can migrate away from its source of origin if there is a pressure and available pathway. For example, landfill gas could migrate from within a landfill to a nearby property via a service route. For this reason issues need to be considered at areas surrounding a landfill in addition to those within its boundaries.

2.2 Site Controls

The site conditions are monitored by SSDC at various locations (boreholes) around the site.
Some boreholes are designated as '**External**' boreholes and therefore the presence of landfill gas is not expected in these boreholes. Some of these are within the site boundary but outside of the tipped area. It follows that others are outside of the site boundary.

Should this routine monitoring indicate the following conditions in 'External' boreholes then the flow chart below is to be followed :-

5% v/v Methane and /or

10% v/v Carbon Dioxide

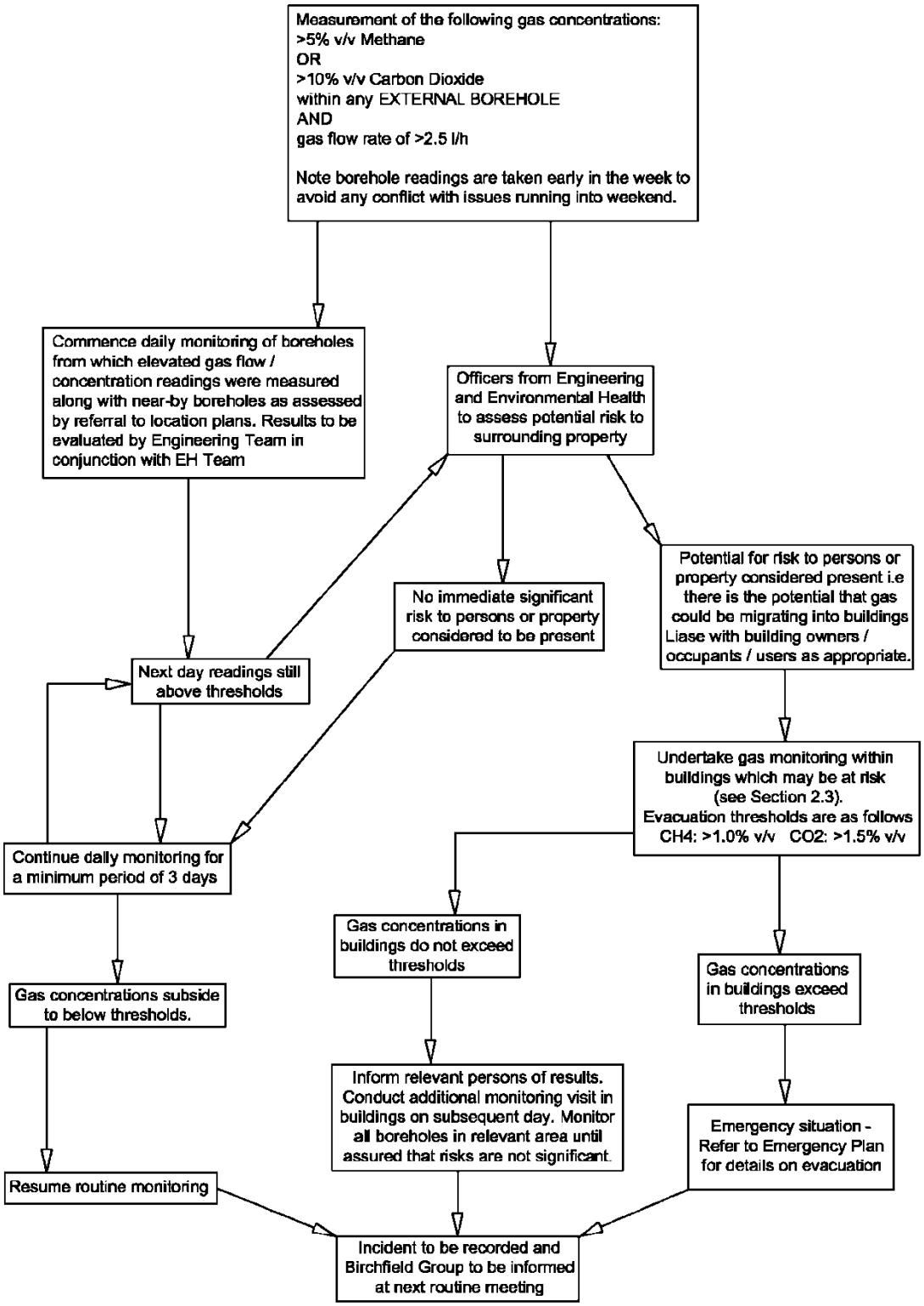
Together with flow rates greater than 2.5 l/h

Other boreholes are designated as '**Internal**' and the presence of landfill gas is expected at varying concentrations and flow rates. This is because these boreholes are generally within the landfill mass where the gas originates.

Relevant persons referred to in flow chart are:-

Pam Harvey – Civil Contingencies Manager
Ian Case – Principal Engineer
Vicki Dawson - Principal Environmental Protection Officer
Owners / occupants / users of any affected buildings

PROCEDURE FOR DEALING WITH POTENTIAL LANDFILL GAS PROBLEMS



The following table indicates which boreholes could be relevant to this plan and which are External and which are Internal :-

These boreholes are shown on the plans at Appendix 4

Area	**Borehole Refs prefixed 'SSDC'**
Area East - External	**04-5 ; 04-5A ; 04-6 ; 04-6A ; 04-7 ; 06-3 ; 06-4 ; 06-6 ; 06-7 ; 06-9 ; 06-10 ; 08-1 ; 08-2 ; 08-3 ; 08-4 ; 08-5 ; 10-1 ; 10-3 ; PM1 ; PM2 ; PM3 ; PM4 ; PM5 ; PM6 ; PM7 ; PM8**
Area West - External	**04-8 ; 04-9 ; 04-10 ; 04-11 ; 04-13 ; 04-15 ; 04-16 ; 04-18 ; 04-18A ; 04-19 ; 05-8A ; 05-8B ; 05-17A**
Area West -Internal	**04-14 ; 04-17 ; 04-20 ; 04-21 ; 05-22 ; 06-1 ; 06-2 ; 04-12**
Area East - Internal	**04-1 ; 04-1B ; 04-2 ; 04-2A ; 04-2B ; 04-3 ; 04-4 ; 06-5 ; 06-8 ; 06-11 ; 10-2 ; 10-4 ; 11-1 ; 11-2 ; 11-3 ; 11-4 ; 11-5 ; 11-6B ; 11/7 ; 11/8 ; 11/9 ; 11/10 ; 11/11 ; 11/12 Add in 2015 boreholes**

Somerset Scientific Services also monitor some boreholes at the school and also on the new development to the north of the site. These boreholes would be considered as 'external' boreholes. They monitor these on behalf of Somerset education and the developer respectively.

2.3 Emergency Procedure for Monitoring Gas in Buildings

Initially all information about the gas readings should be assessed and any properties with the potential to be affected identified by Engineering and Environmental Protection officers.

The following procedure should be followed where it is has been assessed that there may be the possibility of landfill gas migrating into buildings.

1) Go to suspected buildings with the intrinsically safe Geotechnical Instruments GA2000PLUS Gas Analyser. On arrival at the property(ies), note date time and reason for visit.

3) Knock on door (do not use doorbell).

4) Show form of identification and inform occupier of reason for visit, and explain what measurements need to be taken.

5) Before entering building make gas measurements at door for landfill gas. The procedure described below should be implemented if the following gas concentrations are exceeded:

- 1% by volume (20% of L.E.L.) of flammable gas/methane/hydrogen.
- 1.5% by volume of carbon dioxide.

6) All measurements should be carried out using an intrinsically safe instrument (e.g. GA2000) until it is shown there are no methane concentrations in the building in excess of 1% v/v.

7) Ask the occupier if any unpleasant or unusual odours have been noticed. Note their apparent source. Make gas measurements in all parts of the property, as indicated in Form C1 (located at Appendix A of this document), where gas is likely to collect and record all readings and locations. No cellar or other confined space should be entered unless the precautions outlined in current HSE Guidance Note INDG258 are followed. A copy of this document is held by the EP Dept, or can be obtained from the HSE website.

8) If hazardous gases (either flammable gas or carbon dioxide) are detected, action should be taken in accordance with the procedures described in the following table. The time of any such find and the peak and steady concentrations of gas should be recorded. If evacuation is required then this should be undertaken in accordance with procedure described in this section.

Trigger Concentrations For Gas In Buildings

Gas Concentration	**Location**	**Action**
More Than: 1% v/v Methane/Flammable gas or 1.5 % v/v Carbon Dioxide	General voids in occupied areas; unoccupied voids near occupied areas, points of ingress into occupied areas e.g. service ducts cracks at skirtings	Evacuate building; ventilate building; control sources of ignition; identify source of gas; identify points of ingress; instigate control measures; monitor continuously.
Equal to or less than: 1 % v/v Methane or 1.5 % v/v Carbon Dioxide	Anywhere in the building e.g. occupied or unoccupied voids, points of ingress, service ducts, underfloor cavities etc.	Ventilate areas affected; control sources of ignition; identify source of gas; identify points of ingress; instigate control measures; instigate monitoring scheme.

9) Whether gas is detected or not, inform the occupier of results of testing. If the evacuation procedure is not implemented send the occupier a letter of explanation and a copy of the report.

10) Upon leaving, note time of departure.

When landfill gas concentrations are found within buildings in excess of 1% v/v methane or 1.5% v/v carbon dioxide the affected occupied areas should be dealt with using the procedures set out in the Councils Emergency Plan.

If the building is unoccupied, as far as possible check airbricks, letterbox, and service entries e.g. water cocks and sewage outlets, also near-ground gas concentrations next to likely service entry points. If gas is detected the investigating officer should attempt to find and advise the occupiers or owners. It is important that before anyone enters the building,

measurements are taken for gas. If the building is to be left unattended, a warning of the possibility of danger from gas should be posted. If no gas is detected, a letter advising the occupiers should be posted through the letterbox.

IF GAS IS SUSPECTED:

DO NOT	**Smoke or strike matches**
DO NOT	**Turn electrical switches on or off**
DO NOT	**Enter confined spaces**
DO	**Put out naked flames**
DO	**Open doors and windows**
DO	**Keep people away from the affected area**
DO	**Turn off the gas meter at the control valve**

Gas Measurement Survey in Building Form

Address of Building _____

Construction | Date | Time

Cause of visit _____

Survey carried out by _____

Name of person seen _____

Name of Owner/Occupier _____

Property unoccupied or entry not obtained ☐

Doorway check before entering _____

Flammable Gas _____%LEL Carbon Dioxide _____v/v Oxygen _____v/v

Location Surveyed	Concentration			Time
	Flammable Gas	CO_2	O_2	

Locations to Survey

Under Floor Space ☐ Cupboards ☐ Loft ☐ Wall Cavity ☐

Under Stairs ☐ Skirting Boards ☐ Cellar Heads ☐ Other (Specify) ☐

Service Points

Gas ☐ Electricity ☐ Telephone ☐ Water ☐

Drains (specify Number _____

Outside Garage ☐ Outbuildings ☐ Greenhouse ☐ Airbricks (No..) ☐

2.4 Gas Extraction System

A gas extraction system is present on the southern boundary of Birchfield Area East. This was originally designed to provide some protection to the industrial estate to the south when the site was closed to tipping. The system includes a telemetry device that will automatically contact maintenance engineers in the event of a malfunction with the system.

The maintenance engineers are (May 2015) :-

Greenfield Technical Services Ltd.

10 Greenfield Road, Burwash, East Sussex, TN19 7BX

The numbers dialled are :-

Ray Heathcote	Office :	01580 201 066
	Mobile :	07860 837 857
Ian Heathcote	Mobile :	07977 330 669

Each number is dialled 3 times before moving onto the next number. If the unit is unable to get an answer from the engineers it will dial Deane Helpline on (01823) 257485. Deane helpline will then contact :

In office hours: Ian Case, Principal Engineer - *01935 462074 / 07760 168 575*

Out of office hours: Pam Harvey, Civil Contingencies Manager – *07797 797 037*

In the unlikely event of a call being received i.e. the engineers are not available it would be prudent to remotely interrogate the system by dialling :-

01935 414 138.

The call will be answered by a prolonged bleep and then a message. If the unit is functioning correctly the message will be "*out station 123 normal"* followed by "*end of message"*. If there is a problem with the system the message will indicate which component of the system has the fault. The message should be noted including the stated sensor number.

The engineers should then be contacted to ensure they have the message for them to action.

A spare motor and pump is available which the engineers can install in the event of a serious problem occurring with the one that is currently operating. The spare pump is kept by the maintenance engineers as they would need to install.

However, increased monitoring may be required as determined by Ian Case & EP Unit to ensure migration off site is not occurring as a result of the breakdown.

For information the alarm states are :-

Sensor 1 – Flame Arrestor

Sensor 2 – Inlet Suction

Sensor 3 – Gas Flow

Electricity Alarm - Failure

Battery Alarm - Failure

2.5 Report of a 'Gas' Smell

It is considered unlikely that a member of the public will ring SSDC reporting a gas smell and in all probability it is likely that any gas smell will be from mains gas.

However, should this occur they should be advised to ring :-

National Gas Service emergency line : 0800 111 999

They should also be advised (as stated on National Gas website) :-

- **Open all doors and windows to ventilate the property**
- **Do not turn on/off electrical switches**
- **Extinguish all naked flames, do not smoke, strike matches or do anything which would cause ignition**
- **If there are any electrical security, entry phones/locks, open door manually**

National Gas have been contacted (2014) and their procedure is understood to be :-

They respond within 1-2 hours and advise as above.

They do a 'tightness' test (pressure test) which can test for leak on internal pipework

If there is a drop of say 2mbar from working pressure they will cap off the meter and advise property occupier/owner to get the system checked by a Gas Safe registered engineer. Sometimes an appliance can be identified and they will deal with this as appropriate.

If no pressure drop they will carry out internal gas measurements.

If this doesn't show anything they will then check perimeters and carry out further checks outside.

If nothing shown they will then carry out a series of borehole/probe checks along the line of the main to determine any leaks in the ground.

Therefore there will be **NO** requirement for SSDC officers to carry out monitoring within buildings.

3. Leachate

3.1 Introduction

Leachate is formed when water passes through the waste material of a landfill. The source of this water can be from rain, groundwater flow or the waste itself. As the liquid moves through the landfill many organic and inorganic compounds are picked up from the waste material. Some of these compounds are likely to be harmful and the resultant leachate is therefore considered to be polluted.

3.2 Leachate Collection & Treatment

The former landfill at Birchfield is not engineered or lined and is therefore known as a 'dilute and disperse landfill'. It poses a potential minor risk of pollution to the surrounding water environment, as leachate is potentially free to migrate out of the landfill.

Originally, a pipe was provided as tipping proceeded in the base of the valley. Historically this collected and conveyed surface water falling on the catchment through the site and to the watercourse downstream and then onto the nearby River Yeo. In 2004 (?) a scheme, jointly funded by Wessex Water & SSDC, was implemented effectively picking up surface water and directing this along the northern boundary of the landfill site. The status of this new pipe was a public surface water sewer. The old drain forms the leachate collection system and the leachate is pumped to the public foul sewer under an effluent discharge agreement which has been in place from October 2011. When the pumping station was made live. As part of monitoring procedures, the leachate is routinely collected and sent for analysis by to assess the strength of the pollutant. This information is subsequently passed to Wessex Water.

We have a pumping station to collect the leachate and this has been designed to provide as robust a solution as possible to prevent a discharge of leachate to the watercourse.

Design measures are :-

Dual pumps and rising mains

Telemetry warning system

Sufficient storage capacity in the system should a failure occur

Provision of maintained diesel pump and pipework to allow for over pumping in the event of prolonged failure of the plant.

The maintenance engineers are :-

Enitial Ltd.

Enterprise Drive, Four Ashes, Wolverhampton, WV10 7DE

Tel : 01902 798 798

The numbers dialled by the telemetry system are :-

Ed Cracknell	Mobile :	07554 452 346
Mark Perry	Mobile :	07811 990 756

4. Voids and failures of the cap system

Historically, there have been incidents of voids occurring in the surface of the park as a result of settlement of the landfill resulting in various sized holes appearing at the site. However, this has not occurred for some years. The site is informally but regularly monitored by horticultural services and other SSDC staff who visit the site for other matters. Therefore, along with other users of the open space any voids at the surface will be readily identified.

Should a void or defect in the surface layer be reported the following procedure should be followed :-

1. If void found by a member of (SSDC) staff, they will immediately contact their line manager or other responsible officer, giving details of the location and extent of the problem.
2. During this time the officer will immediately organise for secure temporary fencing to be installed and warning signs erected around the void to secure the area. As a guide the fencing should be at least 2m away from the edges of the void.
3. The officer will contact Ian Case or Garry Green to inform him of the situation so he can decide upon and arrange the correct infilling which will ensure that the integrity of the surface cap is retained. Property and Engineering will assess the risk associated with the void and act appropriately for example organise more secure fencing.
4. Should a defect be reported outside of office hours, the emergency call out team will fence the area securely and report the event to their line manager and Ian Case at the earliest opportunity.
5. Property and Engineering officers will investigate the void and take restorative action as appropriate.

DO NOT **Enter void**

DO **Report the incident immediately and confirm that measures are in place to secure the area.**

Ensure that the area is secured to the public

<u>Contacts</u>

Streetscene Services, office hours – Rich Davy - 01935 - 462807

Jane Parton - 01935 - 462817

Ian Case – 01935 462074 or 07760 168 575

Garry Green - 01935 - 462066 or 07971 111 876

Emergency Call Out Crew – Pam Harvey – 07797 797 037

5. Encampments / Trespass

Currently the following measures are in place to prevent unauthorised access.

1. All gates, which could allow vehicular access, are kept chained and locked closed.
2. Lockable bollards are located at the Birchfield East main entrance and also by Birchfield Road to further protect the main gateways into the park.
3. A series of boulders have been installed at various locations not able to be protected by gates to resist the possibility of trailed vehicles gaining access onto the main park surface.
4. The boundaries of the park are securely fenced where possible with bunds to protect the more vulnerable areas.

To date, these measures have been successful in deterring unauthorised access.

Due to the risks involved the decision was taken through the Birchfield Group to initially do all possible to prevent unauthorised access as above. In addition a standing injunction has been obtained to prevent the lighting of fires on the site.

If this failed then the site is to be considered as a 'Key Site' when implementing the SSDC Procedure for Unauthorised Encampments.

This effectively means that the process must commence to evict immediately and legal proceedings commenced.

Appendix 5 includes and Advice Note which has been prepared to be issued to the encampment advising of the risks associated with the site and precautions they need to take should they refuse to vacate.

This Advice Note, together with a copy of the Injunction, is to be issued to each caravan in the encampment as soon as is reasonably practical following the unauthorised access is reported.

6. Fires

Liaison has taken place with the Fire Service and the current measures and actions are deemed suitable.

6.1 Above Ground Fires

Any uncontrolled fires that occur on the site or in the vicinity of the site should be reported to the fire brigade immediately. Methods for dealing with fires on the site should largely be as standard procedures. However the fire brigade should be alerted to the fact that the site is a former landfill and that there may be added risks due to the presence of methane and potentially other flammable or toxic gases. These are generally below the surface but would be at ground level in the vicinity of boreholes and other chambers. In all cases the Council's Property & Engineering Team should be alerted to the occurrence of any fires at the site or surrounding areas. The Property & Engineering Team will assess the potential for underground fires and arrange for any additional monitoring to be carried out as appropriate.

It is especially important to prevent fires occurring on adjacent sites from migrating towards the landfill. Any fires that occur on the site should obviously be extinguished at the earliest possible opportunity (by the fire brigade).

The occurrence of surface fires could initiate underground fires that are far more difficult to extinguish, these are discussed below.

6.2 Underground Fires

Consideration should be given at any landfill site to the possibility of underground (subterranean) fires occurring. The possibility exists due to many wastes being combustible for example household waste, paper, plastics and rubber. The presence of other wastes within landfills such as oils and flammable chemicals increase the risk of fire.

Underground fires usually propagate slowly by smouldering, should they break to surface then flames may appear but most frequently active combustion remains at depth. Because of this underground fires can go unnoticed for some time.

The main hazards posed by underground fires include:

- Production and release of toxic, asphyxiant and noxious gases that can migrate through the ground.
- Potential for above ground fires if the combustion reaches ground surface.
- Ground subsidence within burnt zones by the formation and collapse of underground cavities.
- Heat damage to buried structures and site services for ex. Power cables.

Underground fires may be started by:

- Sustained application of heat from sources which may themselves not be at very high temperatures for example underground electrical cables.
- Direct ignition due to an above ground fire for example a bonfire.

- Self-heating and spontaneous combustion by chemical oxidation or exothermic chemical reactions in certain waste materials within the landfill.

Underground fire indicators:

- Emissions of steam or smoke
- Blackened or dead vegetation
- In some cases particularly lush vegetation due to increased soil temperatures
- Subsidence (although this often occurs on landfills for other reasons)
- The presence of elevated carbon monoxide within the landfill

Carbon monoxide data is collected along with other data on a routine basis. The possibility of an underground fire will be considered when reviewing this data. It should be noted that there are potential sources of carbon monoxide other than an underground fire although it has been suggested that levels in excess of 1,000 ppm are very likely to confirm such a fire.

7. Crisis Management Plan & Emergency Communications

Any incident needs to be handled in accordance with the SSDC Emergency Plan. The emergency plan contains all relevant SSDC contacts.

In brief, any type of Emergency that could occur on the site would be dealt with by the Emergency Services in close conjunction with the District Council as the owner of the site. If residents should need to be evacuated then that would dealt with by the Civil Contingencies Manager and depending on the numbers of residents to be cared for there are arrangements in place with a number of large operators such as Wincanton Race Course to look after residents on their site. A number of our services such as engineers and environmental health would be available to give advice and help to the emergency services at the site.

If the incident is declared a major incident by any of the emergency responders, then the Councils emergency plan does recommend that an Emergency Management Team is set up along with a Recovery group to manage the Councils response to the incident. Information about how both groups are set up is detailed in the Councils Emergency Plan.

Specific contacts relating to the Birchfield Site appear in the next part of this document

8. Contact Details

8.1 Property & Engineering Services

Ian Case	01935 462074	07760 168 575
Principal Engineer		
Garry Green	01935 462066	07971 111 876
Property & Engineering Services Manager		

8.2 Environmental Protection Unit - During Office Hours

Alasdair Bell	01935 462056	07971 111 998
Environmental Health Manager		
Vicki Dawson	01935 462546	07971 971 338
Principal Environmental Protection Officer		

8.3 Environmental Health Out of Hours Service

The Deane Helpline 01823 257 185 or via 01935 462 462

8.4 Gas Extraction System Maintenance Engineers

Greenfield Technical Services Ltd :

Ray Heathcote	01435 883504	07860 837857
Trevor Heathcote	01580 880056	07710 345917

8.5 Leachate Pumping Station Maintenance Engineers

Ential Ltd :

Ed Cracknell	07554 452 346
Mark Perry	07811 990 756

8.6 Transco

Emergency Line 0800 111 999