Environment Agency permitting decisions

Bespoke Variation

We have decided to issue the variation to the permit for Runfold Landfill South Areas A and C operated by SUEZ Recycling and Recovery UK Limited.

The variation number is EPR/SP3131GC/V003.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Description of the changes introduced by the Variation

This is a Substantial Variation.

This variation application proposed to:

- Amend the waste types from inert to non-hazardous and the Waste Acceptance Criteria for Area C to match that of Area A – this includes an update to the site's Monitoring Management Plan and Leachate Management Plan for Area C
- Revise the groundwater quality compliance limits for Cadmium and Nickel as a result of increased background levels of these contaminants – ***this aspect of the application has been refused, please see the Key Issues Section for more detail***
- Update references to the pre and post settlement contour plans and surface water management plans for both Areas A & C to reflect the recently (local planning authority) approved restoration scheme
- Remove perimeter gas compliance limits for Carbon Dioxide and replace these with action levels as per Industry Code of Practice on Perimeter Soil Gas
- Revise the groundwater quality compliance limits for Chloride and Ammoniacal Nitrogen

We have also incorporated the changes required by the Industrial Emissions Directive and a permit review into the variation. This includes the amendment of the wording of several permit conditions relating to notifications, reporting, emissions, waste acceptance, management and also includes the addition of a condition relating to a requirement for monitoring of groundwater and soil and pest control.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Key issues
- Annex 1 the decision checklist
- Annex 2 the consultation responses

Key issues of the decision

With regard to the operator's request to "Amend the Waste Acceptance Criteria for Area C to match that of Area A" as part of this variation application.

Variation application

In the application documents the applicant concluded that active landfill gas and leachate collection and management is not necessary due to the restrictions on the nature of the wastes to be deposited (low biodegradable content) and the quality of the leachate likely to be produced.

Area A history and concerns

Area A has experienced exceedences of the 1m leachate head compliance limit for long periods of time, in excess of predictions from the HRA, with the maximum level reaching 9.46m and with mean levels of up to 3m. It has been necessary for this leachate to be pumped out and disposed of off-site from wells LMPA1 and LMPA2 (and excess ponded surface water).

The applicant asserted that the heads are perched and not representative of fully saturated waste. However, because of the small area of waste that these wells represent, and the absence of any leachate collection system, it cannot be demonstrated:

a) What leachate heads in the other parts of the cells are, and
b) What drawdown radius exists around each of the wells.

It therefore cannot be claimed that the pumping out of these wells is effectively lowering leachate heads around the wells and across the rest of the cells.

Landsim runs

The model runs supplied with the variation application indicated there would be no unacceptable impact upon the aquifer from leachate. However, this is likely to be due to the use of unrealistic fixed heads based on spreadsheet calculations which assume much lower heads than actually monitored.

Therefore, as the model had not been set up to be representative of the real situation, it could not be relied upon to demonstrate that there is no risk of unacceptable contamination of the aquifer from Area A, and thus Area C.

Further information

Due to the fact that Area A (and proposals for Area C) has not been designed in accordance with the standards required for a Non-Hazardous Waste Landfill under the Landfill Directive, further information was required in order to ascertain whether the activities of the site would pose an unacceptable risk of pollution to groundwater and/or surface water. Responses to Schedule 5 Notices which included the following were received:

- Revisions to the site's Hydrogeological Risk Assessment
- Landsim input data and associated results of the modelling

- Revised Leachate Management Proposals.

However, following assessment of these submissions, we consider that the risk assessments presented have not adequately demonstrated that there will be no long term risk of groundwater pollution and/or surface water pollution for the following reasons:

- The conceptual models for Area A and Area C, involving a concept of soakaways and pond leachate disposal, are not clear.
- Modelled pathways from the source to receptors are limited to basal leakage and overtopping, and do not include other feasible pathways via the sidewalls, and a combination of simultaneous leakage from the base, the sidewalls and by overtopping beneath the cap.
- Use of Landsim to model the impacts on groundwater based on the conceptual models involving fixed heads in very low permeability wastes for which there is no leachate management, and soakaways, is inappropriate, because the model was not designed for these scenarios.
- It is not clear that the engineered geological barrier component in the model of Area C reflects what would actually be constructed.
- Leachate source term data from Area A does not include data from the surface water/leachate that has already collected in Area A.
- A Schedule 5 Notice (dated 2nd November 2015) issued to the operator requested that evidence of the physical properties of the waste placed in Area A be submitted, this has not been provided. The evidence was required because the physical properties of the waste (in particular: the field capacity, porosity, permeability, and any layering of the wastes) has an important effect on the water balance, and the estimates that have been used in risk assessments to date do not represent actual existing site conditions.
- Impacts on groundwater and surface water as a result of discharges from Area A and Area C are not clear. This is due to both the current conceptual model being unclear and the inappropriate use of Landsim.

As a result, we do not consider that the HRA as submitted provides justification for the proposal to amend the waste acceptance criteria in Area C to match that of Area A without conditions.

Suggested and accepted proposal

The Landfill Directive (LfD) requirements for an artificial sealing liner and drainage layer are absolute for non-hazardous and hazardous landfills. The specification may only be reduced if justified by risk assessment.

As we have not received adequate justification by risk assessment from the applicant, in order to protect the underlying (SPZ 3) aquifer and surrounding environment it has been proposed by the Environment Agency, and accepted by the applicant, that prior to the infilling with non-hazardous waste, Area C will have a leachate drainage and extraction system and Artificial Sealing Liner installed to facilitate the effective removal of landfill leachate. A limit of

‘1m above the top of the clay liner’ has been set for leachate head levels in monitoring points LMPC1, LMPC2 and LSC.

Design proposals for a leachate drainage and extraction system have been submitted by the applicant, however they are insufficient with regards to detail. In order to make up the shortfall of information provided, we have included a pre-operational condition in the permit that requires the operator to provide the additional information before waste is accepted.

This additional information request includes, but is not limited to, a request for engineering proposals which meet the following standards required by Technical Guidance Note EPR 5.02: How to Comply with your Environmental Permit – Additional Guidance for Landfill:

- Recommendations for Leachate Management, in particular points: 6, 10-12, 14, 16, 19-21 and 24 of the guidance

With regard to the operator’s request to “Revise the groundwater quality compliance limits for Cadmium and Nickel as a result of increased background levels of these contaminants”

Background monitoring for Cadmium and Nickel has been undertaken in up-gradient boreholes BH701 and BH706. The compliance limits of 0.001mg/l for Cadmium and 0.0154mg/l for Nickel, in down-gradient boreholes, have been described as unsuitable due to higher concentrations of these two determinands being measured in the up-gradient boreholes.

A report “Runfold South Landfill Site (Areas A and C) Technical Note: Groundwater Quality Compliance Limits” was submitted on the 1st August 2014, to us and agreed by us on the 5th August 2014. This report contained 5 years’ worth (January 2008 to February 2013) of up and down-gradient groundwater borehole monitoring data for various parameters (including Nickel and Cadmium) and any concentrations recorded below the LOD were substituted with a value equal to half the detection limit as recommended by EA Guidance (Environment Agency, 2010, Techniques for the Interpretation of Landfill Monitoring Data Guidance Notes, Final Technical Report P1-471, Bristol).

As a result of this report, in the absence of elevated concentrations of key indicators of potential leachate migration, SUEZ considered, and at the time the Environment Agency agreed, that the recorded concentrations are not attributable to the Site but are a reflection of up-gradient conditions.

However, an analysis of up-gradient borehole monitoring data (annual reports from May 2011 to April 2015) has shown that Nickel and Cadmium concentrations have not risen above the current compliance limits since 2012, and thus the up-gradient chemistry no longer supports the proposals for increasing the compliance limits in down-gradient boreholes for these determinands.

Current Compliance Limits	Proposed Compliance Limits
Ni: 0.0154mg/l	Ni: 0.0250 mg/l
Cd: 0.0010 mg/l	Cd: 0.0014 mg/l

	Cadmium		Nickel	
Annual Report Date	Highest Average Concentration in up-gradient BHs	Highest Maximum Concentration in up-gradient BHs	Highest Average Concentration in up-gradient BHs	Highest Maximum Concentration in up-gradient BHs
May 2011 to April 2012	0.0007	0.0014	0.0400	0.0950
May 2012 to April 2013	0.0001	0.0001	0.0080	0.0110
May 2013 to April 2014	0.0001	0.0002	0.0090	0.0100
May 2014 to April 2015	0.0001	0.0003	0.0100	0.0130

Therefore, this section of the variation application has been refused and the compliance limits for Cadmium and Nickel will remain at the current permitted levels.

During the determination of this variation application is was also noted that the compliance limits for Chloride and Ammoniacal Nitrogen seemed high in comparison to concentrations of these parameters in up-gradient boreholes. A compliance limit review was carried out by the applicant and new limits were proposed, based on the 95%ile of the data sets for each down-gradient borehole. We have accepted these newly proposed limits for Chloride and Ammoniacal Nitrogen and we have incorporated them into the permit as a part of this variation.

With regard to Biodiversity, Heritage, Landscape and Nature Conservation

There are 2 listed sites and 3 listed species within the relevant screening distances of the landfill site which have the potential to be negatively affected by the proposals in this variation:

- Moor Park, Site of Special Scientific Interest (SSSI)
- River Wey, Local Wildlife Site (LWS)

- Brown Trout, European Eel and Bullhead (Protected Species).

Moor Park is 1km downstream of the landfill site and supports Alder Carr, a nationally rare habitat, with the only example in the county of deep water alder swamp. The site's plant communities could be affected by nutrient enrichment from the migration of additional leachate from Area C of the landfill, following the applicant's proposals to infill this area with non-hazardous waste. This is due to there being a potential pathway to the SSSI via the underlying aquifer and surface water (River Wey) which runs adjacent to the site.

The rich diversity of aquatic and marginal flora in the River Wey could be affected by an increase in nutrients, spikes in ammonia and dissolved oxygen crashes from infiltrating leachate from the applicant's proposals.

With regards to the above protected species, heavy metals, such as Cadmium, which can be found in leachate, are extremely toxic to fish and mammals and can bioaccumulate in their tissues rapidly, causing a wide range of health problems including organ failure and cancer. Brown trout in this vicinity are also caught for human consumption, potentially having a knock on effect for people. An increase in leachate entering the River Wey, from the applicant's proposals, could also result in spikes in ammonia, sewage fungus and dissolved oxygen crashes which could be detrimental to the species.

Although there is a potential for damage from all of the above, prior to the infilling of waste the operator has agreed to install a leachate drainage blanket into Area C which will enable any leachate generated to be collected and extracted to be tankered off site for disposal, and thus will reduce the risk of leachate escaping the site. With this measure in place together with the containment engineering proposed and pre-operational condition (3) imposed, there is no pathway for damage to the sites, habitats or species.

With regard to the removal of perimeter gas compliance limits for Carbon Dioxide and replacement with action levels as per Industry Code of Practice on Perimeter Soil Gas

We are happy with the carbon dioxide action levels proposed by the operator, which are based on the currently monitored 'background' levels in the perimeter boreholes. However, monitoring for any changes in carbon dioxide level during and following the installation of liner, but prior to the infilling of waste in Area C, will need to be carried out. We then need the operator to carry out a reassessment of the proposed action levels, ensuring the inclusion of the aforementioned monitoring datasets.

Annex 1: decision checklist
This document should be read in conjunction with the application, supporting information and permit/notice.

Aspect considered	Justification / Detail	Criteria met
Receipt of submission		
Confidential information	A claim for commercial or industrial confidentiality has not been made.	✓
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential. The decision was taken in accordance with our guidance on commercial confidentiality.	✓
Consultation		
Scope of consultation	The consultation requirements were identified and implemented. The decision was taken in accordance with our Public Participation Statement and our Working Together Agreements. For this application we consulted the following bodies: • Public Health England • Natural England • Local Authority (Planning & Environmental Health Department)	✓
Responses to consultation	The web publicising and consultation responses (Annex 2) were taken into account in the decision. The decision was taken in accordance with our guidance.	✓
European Directives		
Applicable directives	All applicable European directives have been considered in the determination of the application.	✓
The site		
Biodiversity, Heritage, Landscape and Nature Conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat . A full assessment of the application and its potential to affect the sites and species has been carried out as part of the permitting process. We consider that the application could affect the features of the site and species.	✓

Aspect considered	Justification / Detail	Criteria met
	Operational controls have been included in the permit to mitigate against some of these effects. Please also see the key issues section of this document for more information. Formal consultation has been carried out with Natural England. No consultation response was received.	
Environmental Risk Assessment and operating techniques		
Environmental risk	We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is unsatisfactory and required additional Environment Agency assessment to make up the shortfall. Please see Key Issues section for further information. The assessment shows that, applying the conservative criteria in our guidance on Environmental Risk Assessment all emissions may be categorised as environmentally insignificant.	✓
Operating techniques	We have reviewed the techniques used by the operator and compared these with the relevant guidance notes. Guidance notes: • How to Comply with your Environmental Permit – additional guidance for Landfill (EPR 5.02) • LFTGN02: Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water • LFTGN03: Management of Landfill Gas have been the basis of the revised Monitoring Management Plan, Restoration Plan, Surface Water Management Plan and Leachate Collection and Extraction system proposals. The ICoP (Industry Code of Practice) Position Statement on perimeter soil and gas (August 2011) has been used to justify the removal of perimeter gas compliance limits for Carbon Dioxide. The operator's action levels, which we have agreed, can be found in the revised Monitoring Management Plan.	✓

Aspect considered	Justification / Detail	Criteria met
	Please see Key Issues for further details. Without Landfill Directive compliant engineering, emissions of landfill leachate cannot be screened out as insignificant. The Environment Agency has therefore assessed whether the proposed techniques are in accordance with the Landfill Directive (which represents BAT for landfill). Please see Key Issues for further details The proposed techniques for priorities for control depart from the benchmark levels contained in TGN: How to Comply with your Environmental Permit – additional guidance for Landfill (EPR 5.02). We have considered the operator's justification, if any, for departure from the guidance and do not accept it, with regards to the construction of a leachate drainage and extraction system in Area C, in the following respects: • Insufficient detail regarding leachate management, in particular points: 6, 10-12, 14, 16, 19-21 and 24 of EPR 5.02 and have therefore imposed additional requirements, we have done this as a pre-operational condition. Please see Key Issues for further details	
The permit conditions		
Updating permit conditions during consolidation.	We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation. The new conditions have the same meaning as those in the previous permit(s). The operator has agreed that the new conditions are acceptable.	✓
Use of conditions other than those from the template	Based on the information in the application, we consider that we do not need to impose conditions other than those in our permit template, which was developed in consultation with industry having regard to the relevant legislation.	✓

Aspect considered	Justification / Detail	Criteria met
Waste types	We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility. We have changed the waste types to be accepted in to Area C from “inert” to “non-hazardous” wastes. Please see key issues section for further details. The waste acceptance procedures have been revised accordingly. We made these decisions with respect to waste types in accordance with Landfill Directive and Waste Framework Directive.	✓
Pre-operational conditions	Based on the information in the application, we consider that we need to impose pre-operational conditions. Pre-operational conditions 3,4 and 10 have been included into the permit as a result of this variation. Please see the Key Issues section for further information.	✓
Incorporating the application	We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process. These descriptions are specified in the Operating Techniques table in the permit.	✓
Emission limits	We have decided that emission limits should be set for the parameters listed in the permit. It is considered that the numeric limits described below will prevent significant deterioration of receiving waters. We have imposed numeric limits because either a relevant environmental quality or operational standard requires this. A compliance limit of ‘1m above the top of the clay liner’ has been set for leachate head levels in monitoring points LMPC1, LMPC2 & LSC.	

Aspect considered	Justification / Detail	Criteria met

	Groundwater compliance limits for the following have also been amended following the assessment of a compliance limit review:
	• Ammoniacal Nitrogen has been revised from 3.27 mg/l to
	  ○ 0.29 mg/l (BH's 702 & 703)
	  ○ 0.38 mg/l (BH 704)
	  ○ 1.08 mg/l (BH 705)
	  ○ 0.6 mg/l (BH D)
	  ○ 0.58 mg/l (BH F)
	• Chloride has been revised from 250 mg/l to
	  ○ 76 mg/l (BH 702)
	  ○ 62 mg/l (BH 703)
	  ○ 45 mg/l (BH 704)
	  ○ 84 mg/l (BH 705)
	  ○ 16 mg/l (BH D)
	  ○ 86 mg/l (BH F)
	
	Please see the Key Issues section for further details.	

Monitoring	We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified. These monitoring requirements have been imposed in order to allow the extracted leachate from Area C to be disposed of at a suitable facility. We made these decisions in accordance with LFTGN02: Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water. The following monitoring requirements have been amended as part of the permit review: • Leachate levels must now be monitored Monthly rather than Quarterly • Leachate quality (certain parameters as shown in the permit) must now be monitored Quarterly rather than 6 monthly • Groundwater quality (certain parameters as shown in the permit) only need to be monitored Quarterly rather than Monthly	✓

Aspect considered	Justification / Detail	Criteria met
	• Groundwater quality (certain parameters as shown in the permit) only need to be monitored Annually rather than Quarterly • Groundwater quality (hazardous substances) still need to be monitored annually, however only for the first six years of operation • Compliance limits for Carbon Dioxide in perimeter boreholes have been removed • The requirement to monitor leachate levels in non-operational cells and phases has been included. The following monitoring requirements have been amended as part of the variation application: • Surface water quality shall now be monitored on a Monthly basis rather than Quarterly • Leachate quality (LSC) must be monitored Bi-Annually for Suite 3A (as shown in the submitted MMPv7.0, dated December 2016) • Leachate quality (LSC) must be monitored Annually for Suite 3B (as shown in the submitted MMPv7.0, dated December 2016) • Monitoring points for particulate emissions in Area C have been included (DM5 & DM6) • Leachate level monitoring points LMPC2 & LSC have been included into the permit Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate.	
Reporting	We have specified reporting in the permit. We have included the requirement to report monitoring data for point source emissions of leachate tankered off-site. We made these decisions in accordance with LFTGN02: Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water.	✓
Operator Competence		
Environment management system	There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was	✓

Aspect considered	Justification / Detail	Criteria met
	taken in accordance with RGN 5 on Operator Competence.	
Financial provision	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence. The financial provision arrangements satisfy the financial provisions criteria.	✓

Annex 2: Consultation and web publicising responses

Summary of responses to consultation and web publication and the way in which we have taken these into account in the determination process.

Response received from
Public Health England
Brief summary of issues raised
Thank you for consulting Public Health England (PHE) on the above Environmental Permit application on 23 May 2016. It is understood that the application is for a variation to the existing permit to allow for the deposit of non-hazardous waste into Area C of the landfill which is currently permitted for inert waste, although non-hazardous waste is currently allowed in Area A. The site is located approximately 2 km to the east of Farnham, 12 km west of Guildford and approximately 500m west of the village of Runfold. Area A is bounded to the north by the A31 and to the south by Area C. The two areas are separated by an area of unused agricultural land. The surrounding area is semi-rural and there are a number of domestic dwellings and other commercial activities within 500m of the site. Some receptors are located less than 10m from the site boundary, although the applicant notes that there are no residential properties with 75m of Area C. Barfield School and Moor Park House College are approximately 500m east and 200m southwest respectively from the landfill site. In addition, Moorpark, a site of site of special scientific interest (SSSI) is approximately 750m southeast and Long Barrow Nurseries are approximately 350m northeast from the landfill site. The main concern in relation to potential public health implications from the application are emissions of: landfill gas; leachate; and fugitive releases such as dust and odour from the delivery and landfilling of wastes. It is noted that the applicant has reviewed (and where necessary updated) the risk assessments completed (in 2009) as part of the original application for the site and completed a review of site and boundary monitoring data. The applicant proposes that readily biodegradable wastes will be excluded from the site, although the application documents suggest that the controls may not be as restrictive as those for Area A. The applicant has concluded that off-site receptors will not be adversely impacted. The variation application does not appear to contain information relating to potential accident hazards and risk or any mitigation measures in place. It is assumed that the Environment Agency will ensure that the applicant's accident management plan is sufficient and covers the changes proposed. Based solely on the information contained in the application provided, PHE has no significant concerns regarding risk to health of the local population from this proposed activity, providing that the applicant takes all appropriate measures to prevent or control pollution, in accordance with the relevant sector technical guidance or industry best practice. In relation to potential risk to public health, we recommend that the Environment Agency also consult the following relevant organisation(s) in relation to their areas of expertise: □ the local authority for matters relating to impact upon human health of contaminated land; noise, odour, dust and other nuisance emissions;

the Food Standards Agency, where there is the potential for deposition on land used for the growing of food crops or animal rearing; the Director of Public Health for matters relating to wider public health impacts. Any additional information obtained by the Environment Agency in relation to these comments should be sent to PHE for consideration. Such information could affect the comments made in this response.
Summary of actions taken or show how this has been covered
With regards to concerns of releases of landfill gas, leachate and fugitive emissions such as dust and odour have been addressed as follows: • Landfill gas – the waste types accepted at the site do not contain much biodegradable matter and thus the likelihood of landfill gas generation is low, condition 2.9 of the permit requires that any landfill gas produced by the site is managed to ensure emissions will not cause pollution. • Leachate – a pre-operational condition has been included into the permit which requires the applicant to submit a report which includes detailed designs and then install (once the designs are agreed, and prior to the placement of any waste) a leachate collection and extraction system into Area C, enabling the operator to manage leachate from this section of the site and prevent pollution to the underlying groundwater and surrounding surface water. • Fugitive emissions – the site has Odour, Dust and Management Plans in place which prevent emissions from causing pollution. Part of this variation proposes to infill Area C of the site with non-hazardous waste rather than inert, Area A is currently already permitted to accept non-hazardous waste and thus the accident management plan for this Area can be extended to include Area C. Confirmation that these amendments will be made has been sought and received. Amendments to the management plan can also be requested when necessary and approved by our compliance officer under condition 1.1.1 (a). The recommended consultees were already included in the consultation requests for this variation.

Response received from
Natural England
Brief summary of issues raised
No response received
Summary of actions taken or show how this has been covered
n/a

Response received from
Local Authority – Planning and Environmental Health Departments
Brief summary of issues raised
No response received
Summary of actions taken or show how this has been covered

n/a

Response received from
Fisheries and Aquaculture
Brief summary of issues raised
No response received
Summary of actions taken or show how this has been covered
n/a

Response received from
Publicising on Environment Agency website
Brief summary of issues raised
No response received
Summary of actions taken or show how this has been covered
n/a

This proposal was publicised on our website between 20/05/16 and 18/07/16 and no representations were received.