

ENVIRONMENTAL PROTECTION ACT 1990: PART IIA CONTAMINATED LAND
SECTION 78H(7)

REMEDIATION STATEMENT

THE FORMER BLACKDOG LANDFILL, BRIDGE OF DON, ABERDEEN
&
THE BEACH AND DUNES ADJACENT TO THE FORMER BLACKDOG LANDFILL

Prepared on behalf of WRG Waste Services Ltd

This remediation statement¹ has been prepared following determination of two areas of contaminated land by Aberdeenshire Council, namely the former Blackdog Landfill and the beach and dunes adjacent to the former Blackdog Landfill, under section 78B of the Environmental Protection Act 1990 (EPA 1990).


The location and the extent of the contaminated land to which this remediation statement relates are set out in Schedule 1 (The Land).

The things which have been, are being and are expected to be done by way of remediation and the time period within which each of these things have been, are being and are expected to be done are set out in Schedule 2 (Assessment Actions).


Particulars of the substances and the pollution of the water environment by reason of which the Land is contaminated land are set out in Schedule 3 (Pollutant Linkages).

The person who has, is and is expected to do each of the things in Schedule 2 is:

WRG Waste Services Ltd
Ground Floor West
900 Pavilion Drive
Northampton Business Park
Northampton
NN4 7RG

Signed; 
Name; Christopher John Ellis
Position; Director
Date; 26 March 2010

On behalf of WRG Waste Services Ltd.

Signed; 
Name; DAVID COOPER
Position; ENVIRONMENTAL HEALTH SPECIALIST OFFICER
Date; 20 APRIL 2010

On behalf of Aberdeenshire Council.

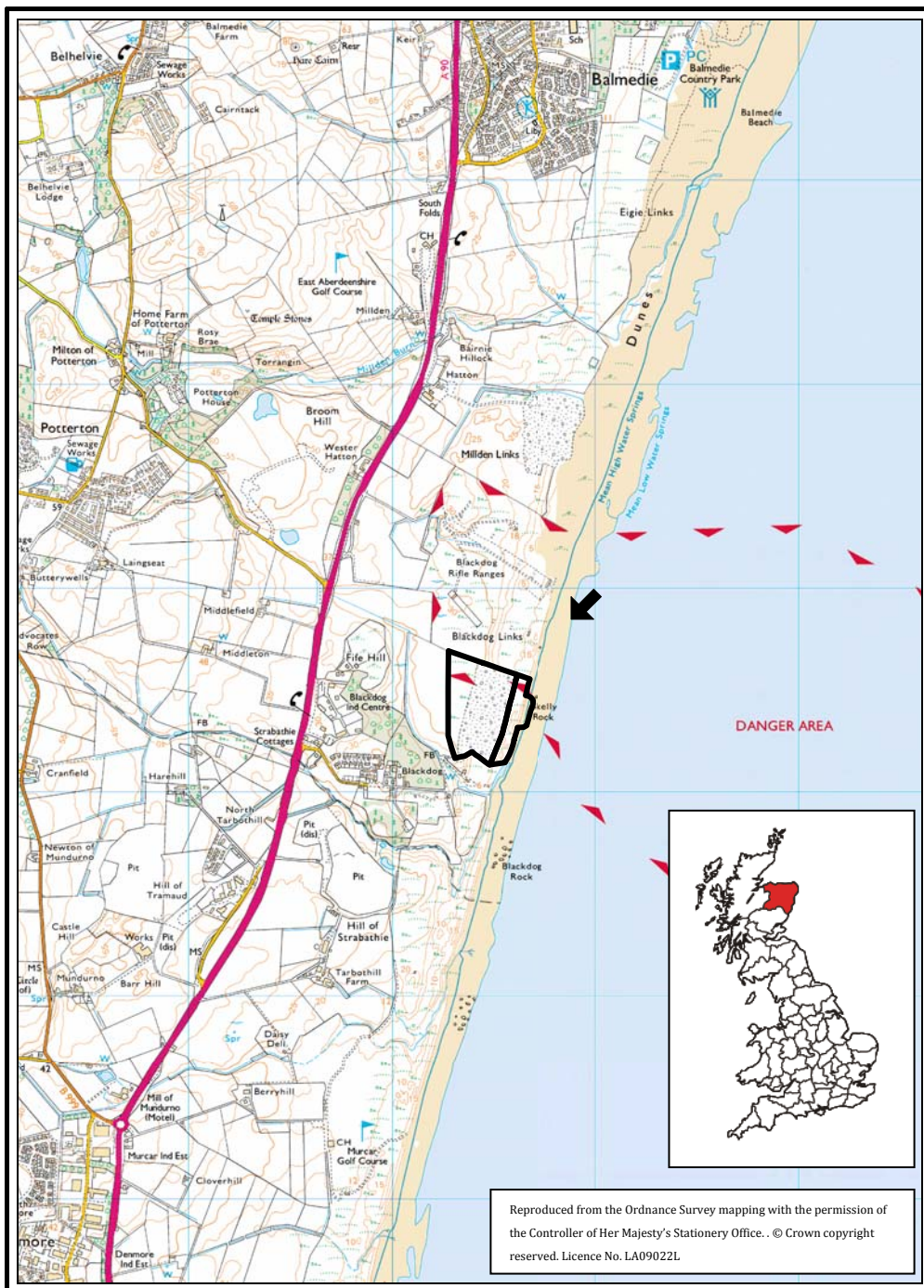
¹ This is the second remediation statement issued in respect of the Land

SCHEDULE 1

The Land

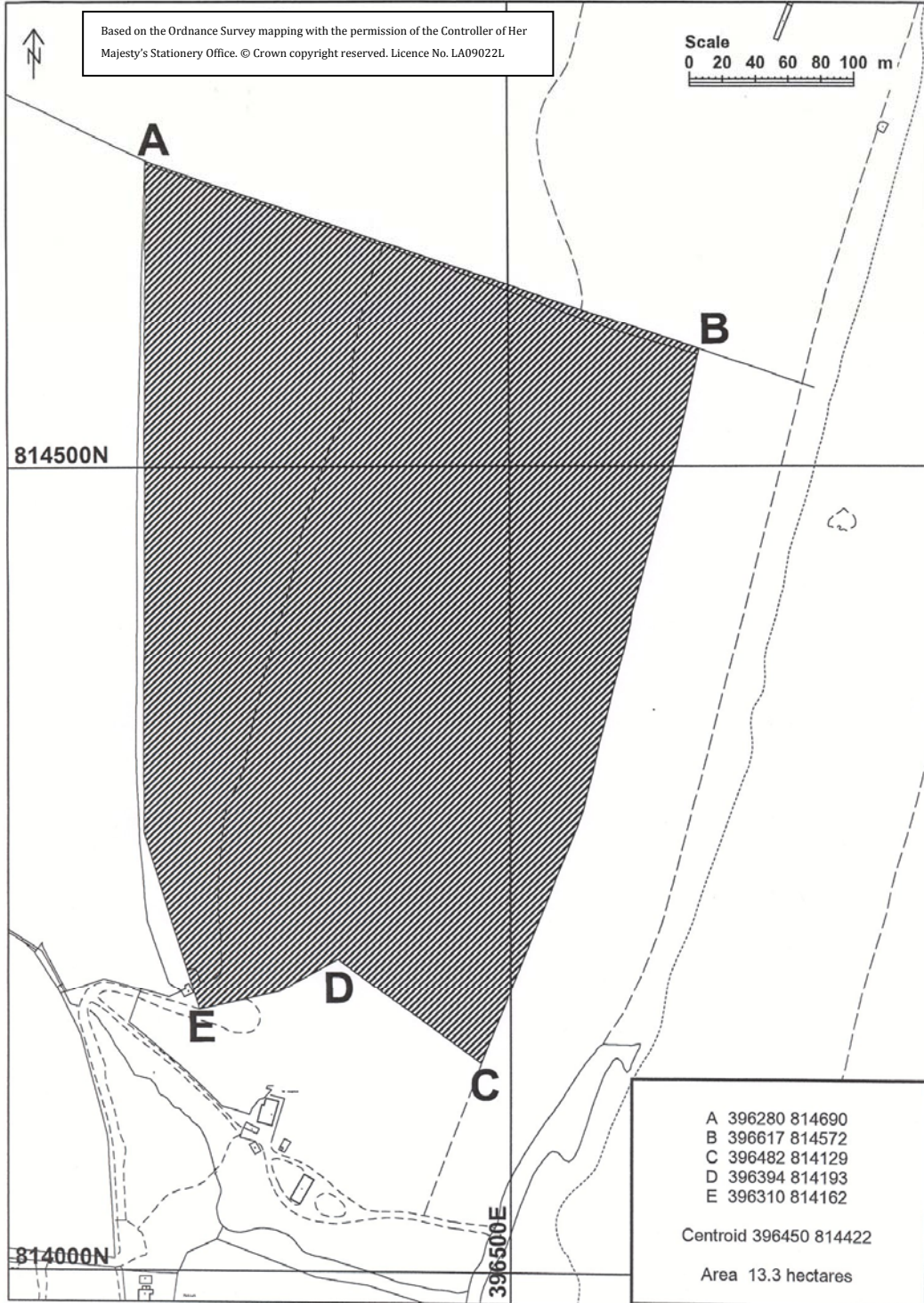
THE FORMER BLACKDOG LANDFILL, BRIDGE OF DON, ABERDEEN & THE BEACH AND DUNES ADJACENT TO THE FORMER BLACKDOG LANDFILL

Site Location Map



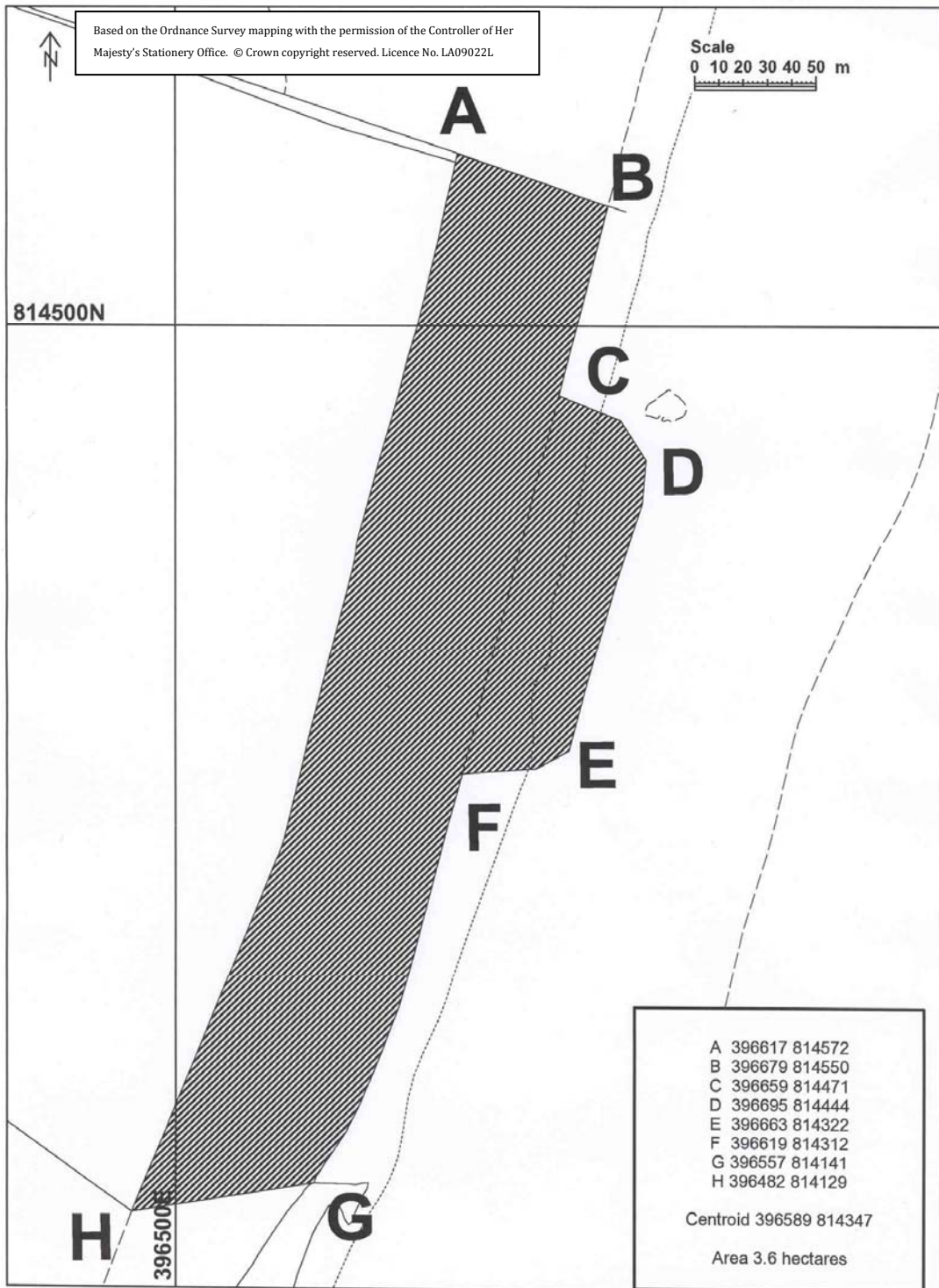
THE FORMER BLACKDOG LANDFILL, BRIDGE OF DON, ABERDEEN

Site Plan



THE BEACH AND DUNES ADJACENT TO THE FORMER BLACKDOG LANDFILL

Site Plan



SCHEDULE 2

Assessment Actions

- 1 The things which have been, are being and are expected to be done are designed to characterise in detail five remaining significant pollutant linkages referenced: 1, 2, 3, 4 and 6 (Schedule 3). These things are thereby assessment actions under Section 78A(7)(a) EPA 1990.
- 2 The assessment actions are expected to determine:
 - a) the extent to which dissolved phase hydrocarbons and PAH compounds are migrating, or have the potential to migrate, from the former Blackdog Landfill to adjacent water bodies;
 - b) and whether free phase hydrocarbons and PAH compounds are migrating or have the potential to migrate in significant quantities from the former Blackdog Landfill to the sands underlying the adjacent dunes and Blackdog Beach.
- 3 The assessment actions are expected to provide sufficient information such that subsequent to completion of some or all of the actions a decision will be justified in accordance with Part IIA EPA 1990 for each pollutant linkage to:
 - a) prepare a remediation declaration (78H(6));
 - b) carry out a monitoring action (78E(5));
 - c) or carry out a remedial action or actions (78E(5)).
- 4 The assessment actions have been agreed following preliminary site investigations and through discussion between representatives of WRG Waste Services Ltd and Aberdeenshire Council (Table 1; Schedule 4).
- 5 The assessment actions commenced in June 2009 and with the exception of the interpretative report will be completed by the end of June 2010.
- 6 The duration and frequency of some of the assessment actions is to be reviewed and agreed with Aberdeenshire Council following receipt of the interpretative report by Aberdeenshire Council in October 2010.
- 7 Aberdeenshire Council will not serve a remediation notice in respect of these assessment actions so long as the works are being completed in accordance with the specification in Table 1.
- 8 Significant Pollutant Linkages 5, 7 and 8 have been addressed by a remedial action carried out in November 2008. The Blackdog Burn has been diverted away from the contaminated area of the beach. The period of maintenance of the diversion is specified by Section 7.0 of the published Blackdog Burn Diversion Remediation Statement, April 2009.

Table 1 Assessment Actions

Initial SI Works	Completion Date	Notes
Installation of four permanent marker posts levelled to OD along the beach.	Completed June 2009	
Topographical Survey of new boreholes, landfill, burn diversion, beach to MHWS and marker posts. Accuracy .01m vertical and 1m lateral.	Completed June 2009	To be repeated annually for three years for burn diversion, beach and marker posts. Necessity for continuation beyond June 2011 to be reviewed.
Excavation of 5 trial pits on landfill site.	Completed June 2009	Ten waste samples analysed for speciated TPH and PAH
Inspect, repair and renew all borehole headworks as necessary.	Inspection completed July 2009.	Repair works scheduled for 2009. Completion of works in 2010
Install 5 new boreholes adjacent to eastern boundary of landfill site between landfill and primary dunes.	Completed July 2009	Borehole camera used to assess suitability of older boreholes for data collection. Five new boreholes completed by rotary drilling. Four terminated within the rockhead.
Analysis of 3 soil samples per borehole for TPH (speciated) and PAH (speciated) collected during drilling of 5 new boreholes. PID headspace testing and oil/water visual inspection.	Completed June 2009	
PSD testing of soils collected from new boreholes.	Completed July 2009	
Analysis of up to 10 samples of LNAPL for density and viscosity from on waste boreholes and particularly wells close to boundary.	Completed June 2009 where sufficient sample recoverable	Density and Viscosity analysis on LNAPL samples collected from across the site with focus on boundary wells (as information is to go into flux model).
'Slug Testing' in up to 10 wells including some of the new wells.	Completed July 2009	
Water level logging in 12 boreholes to determine tidal and meteorological influence.	Complete July 2009	Both 24 hr and 7 day duration

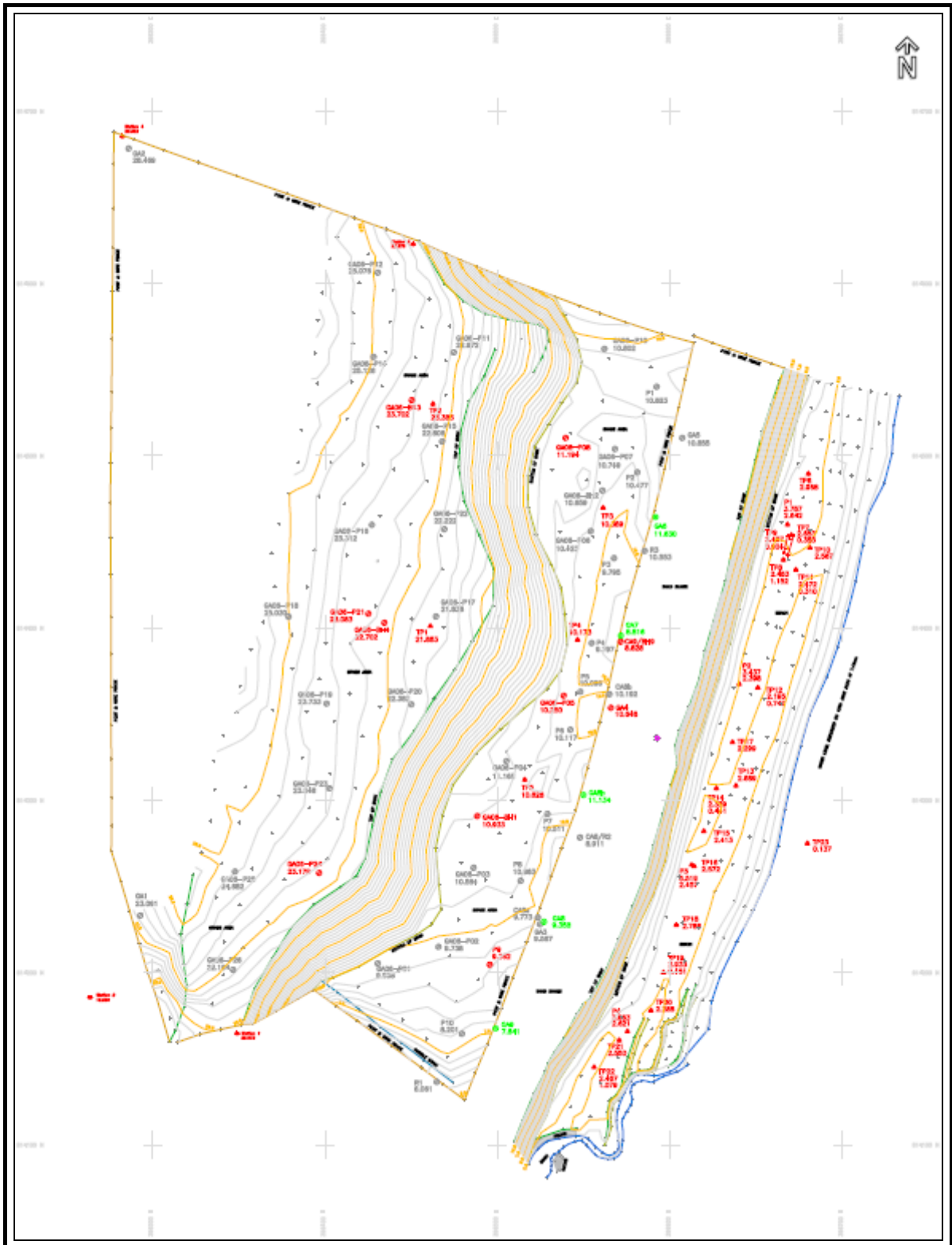
Periodic SI Works	No	Parameters To Be Measured/Analysed ²	Frequency W - Weekly M- Monthly Q- Quarterly A- Annually	Notes
GROUNDWATER				
Water quality from 5 new boreholes.	5	TPH (speciated), PAHs (speciated), anions, cations	Q	Boreholes to be selected to avoid those with free phase.
Water quality from 9 other boreholes.	6	TPH (speciated), PAHs (speciated), anions, cations	Q	Boreholes to be selected to avoid those with free phase
Assessment of water/NAPL level in on site and peripheral wells.	53	Water Level / NAPL thickness	M	Commenced July 2009
Conduct bail down tests in all boreholes where NAPL present			M	

BEACH SAMPLES				
Augering or excavation of beach to determine extent of hydrocarbon plume to the north, south and east. Accuracy to within 1m lateral and 0.1m vertical. Presence of hydrocarbons to be determined visually and by use of PID. Estimation of percentage of hydrocarbons in pore space of most highly contaminated beach sands	Transects as required	Mapping of the top of the hydrocarbon horizon beneath the beach both laterally and vertically referenced to beach level and OD.	Q	Commenced June 2009 Consider use of resistivity survey for future monitoring
Soil/sand samples taken during beach augering exercise			5	TPH (speciated) and PAH (speciated)

REPORTING				
Factual Report		Full methodologies and results of monthly and quarterly monitoring. Reports are to be concatenated.	Q	To be submitted to Aberdeenshire Council within 4 weeks of completion of quarterly site works
Interpretative Report		Data interpretation and modelling to address 2 and 3 above	A	To be submitted to Aberdeenshire Council within 10 weeks of completion of fourth quarter's site works

² Methodologies as agreed with Aberdeenshire Council

Figure 1 Location of boreholes and trial pits June 2009



SCHEDULE 3

Significant Pollutant Linkages

FORMER BLACKDOG LANDFILL

1. Leaching of hydrocarbons and percolation through the unsaturated zone to *groundwater*.
2. Migration under gravity of free phase hydrocarbon from wastes deposited in the unsaturated zone and floatation of free phase hydrocarbon to the water table from wastes deposited below the water table. Solution of hydrocarbons to *groundwater* from light non-aqueous phase layer.

BEACH AND DUNES ADJACENT TO THE BLACKDOG LANDFILL

3. Desorption and solution of hydrocarbons from impacted beach sediments and solution of localised free phase hydrocarbon to *groundwater*. Lateral migration of impacted *groundwater* within the aquifer.
4. Desorption and solution of hydrocarbons from impacted beach sediments and solution of localised free phase hydrocarbon to *coastal waters* within the intertidal sands.
5. Episodic erosion of sand dunes by Blackdog Burn causing impacted sands to enter *surface water*. Hydrocarbons and polycyclic aromatic compounds are released to *surface water* as a thin surface film.
6. Episodic desorption of hydrocarbons from beach sediment and mobilisation of free phase hydrocarbon by wave action following erosion of clean cover from the beach. Hydrocarbons and polycyclic aromatic compounds are released to *coastal waters* as a thin surface film.
7. Lateral surface flow and migration through the unsaturated zone of hydrocarbons and polycyclic aromatic hydrocarbons present on the surface of the Blackdog Burn to impact *groundwater* within the intertidal sands.
8. Lateral surface flow and migration through the unsaturated zone of hydrocarbons and polycyclic aromatic hydrocarbons present on the surface of the Blackdog Burn to impact *coastal waters* within and on the surface of the intertidal zone.

SCHEDULE 4

References

M J Carter Associates Ltd (1988a) *A Preliminary Hydrogeological Evaluation of the Blackdog and Tarbothill Sites*, Report No SM/BD/TH/01, July 1988.

M J Carter Associates Ltd (1988b) *A Hydrogeological Investigation of the Blackdog Landfill Site*, Report No SM/BD/02, September 1988.

Gordon District Council (1989) *Blackdog Landfill Site – Environmental Assessment and Statements*, Internal Report, June 1989.

Remedios Ltd (2001) *Environmental Assessment of the Blackdog Landfill Site and Adjacent Dune Area, Aberdeenshire*, Report 0100021, August 2001, Commissioned by Aberdeenshire Council, Reviewed/Revised July 2002.

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