

**Environmental Protection Act 1990, Section 78H(7)
The Contaminated Land (England) Regulations 2006
(S.I. 2006/1380)**



**Remediation Statement for Denman Drive, Ashford, Middx, TW15 2AN
Prepared by Spelthorne Borough Council**

This remediation statement has been prepared by Spelthorne Borough Council (SBC) in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (the EPA 1990).

The location and extent of the Contaminated Land to which this Remediation Statement relates (the land) are set out in Schedule 1.

SBC, as the enforcing authority for the land, is precluded by section 78H(S) of the Act from serving a Remediation Notice, and has therefore prepared this Remediation Statement in accordance with section 78H(7).

The things which have been done by way of remediation are set out in Schedule 2.

Particulars of the substances and significant possibility of significant harm by reason of which the land is contaminated are set out in Schedule 3.

The current use of the land is informal public open space at a residential housing estate. The former use of the land was as a gravel pit used as an uncontrolled landfill.

The name and address of the person who has done each of things set out in Schedule 2 to this Remediation Statement are:

Spelthorne Borough Council
Environmental Health
Council Offices
Knowle Green
Staines upon Thames
Middx, TW18 1XB

Any communication should be directed to the contact name given below. Name and Position of person issuing the Statement on behalf of the Council:

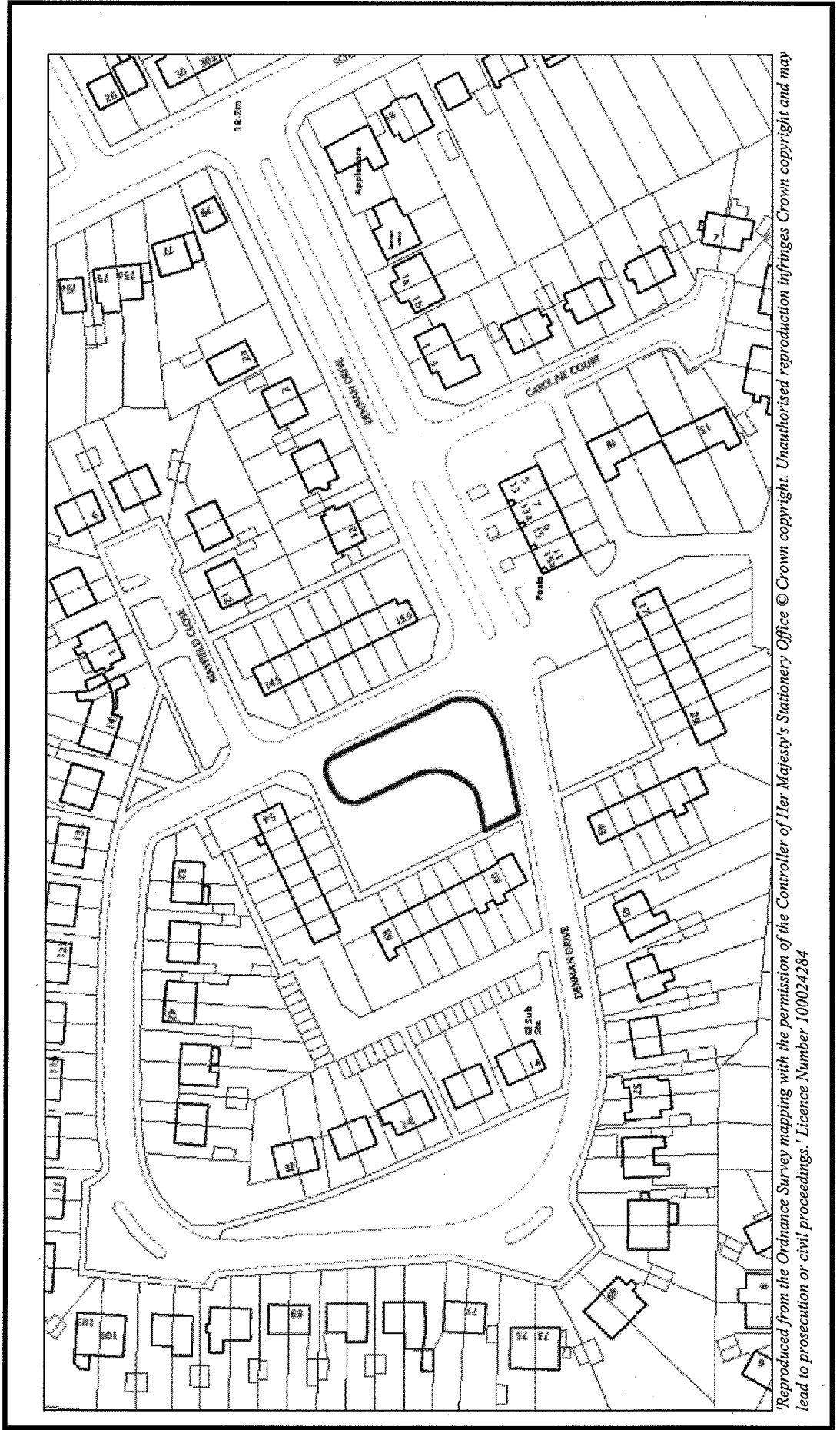
Lee O'Neil, Head of Environmental Health and Building Control

Signed  Dated *9 February 2012*

The contact name for the purposes of this remediation statement is: **Olivia Flint, Principal Pollution Control Officer, pollution.control@spelthorne.gov.uk, tel: 01784 446 251**

Schedule 1 - Location and extent of contaminated land to which this remediation statement relates

The location and extent of the contaminated land to which this Remediation Statement relates is known as public open space, Denman Drive, Ashford, Middlesex (National Grid Reference 507650, 170695), as identified on the plan below as land within the red boundary. The land is referred to as Zone 107b within previous site investigation reports.



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Schedule 2 – Things which have been done by way of Remediation

Spelthorne Borough Council appointed Soilfix Ltd as the principal contractor for remediation. Leap Environmental Ltd were engaged by the Council as it's engineer to undertake a supervision role. The CDM coordinator for works was Marcus Goddard of Goddard Consulting Ltd.

In summary, remediation has comprised:

- Soil excavated to a depth of 300mm across the site, removing approximately 210m³ of contaminated soil from site;
- Provision of a deter to dig geotextile membrane, placed over the underlying contaminated soils; and
- Capping of the membrane with a minimum of 300mm (approximately 240m³) of clean topsoil and turf.

The remediation project commenced on 28 July 2011. Groundworks took place on weekdays between 2 August and 12 August 2011. The site was re-opened to the public on 14 September 2011. The work included environmental monitoring and controls to reduce impacts from noise, dust, vapours or odours. The remediation is now complete.

Preparatory Works

The site contained four mature trees: two Horse Chestnuts; a Southern Beech; and a London Plane tree. A survey by the Council's Tree Officer identified an existing fault in one of the Horse Chestnut (conker) trees, T2, which was considered likely to cause a branch arm to fall off in high winds in the future. A decision was taken not to attempt to preserve the tree and remove it prior to commencement. The tree was cut down by a tree surgeon on 28 July 2011, leaving a stump for removal during groundworks.

The intention was therefore to retain the three remaining trees if possible, as these were found to be in good condition. Consequently, trial holes and sampling were undertaken within the tree canopy area for T1, T3 and T4. A total of 13 trial pits were excavated by hand to 0.3m within the tree canopy areas. No visual or olfactory evidence of the black ashy soils bearing the cyanide contamination were observed. Six samples were sent for analysis for lead, polyaromatic hydrocarbon and cyanide levels. Results of the analysis were compared against remediation targets prepared for the Council by WCA Environment.

Monitoring points were established at four locations around the boundary of the site. Baseline monitoring was completed for noise, dust and vapour.

Site welfare and decontamination facilities were located on a tarmac parking area to the west of the site, and temporary hoarding erected around the site. A small section of Denman Drive to the east of the site was closed, under a Temporary Road Closure licence from Surrey County Council to provide a loading and unloading area for transport.

Soil Excavation

The excavation was started at the western end of the site on 2 August 2011, using a 360° tracked excavator and the site was systematically excavated east to the trees on the south east corner and then northwards to the northern boundary. The soils were excavated to 300mm and segregated into hazardous and non-hazardous waste. Excavations were completed on 9 August 2011.

Both the results of the trial hole analysis and on-site observations during excavation indicated contamination to be present in the vicinity of the Horse Chestnut on the south east of the site, T3, and so a decision was taken to remove this tree as well.

The excavations extended into the canopy areas of the remaining trees: T1 the London Plane tree on the northern boundary; and T4 the Southern Beech on the southern boundary. The trial hole analysis results in these areas were below the remediation targets. No visual or olfactory evidence of contamination was encountered in and around T4. The existing turf and up to 0.05m of soil were stripped to further confirm the absence of near surface contaminated soils.

With regard to T1, the black ashy soils were present to the south and chased into the canopy area. This was expected from previous site investigation work in 2010 as part of Phase 4 to attempt to delineate the extent of this hotspot of contamination. The excavation was consequently extended into the tree canopy area by up to 20% of the total canopy area to remove all of these soils to 300mm depth. No tree roots were encountered during these excavations. Again the existing turf and up to 0.05m of soil were stripped to confirm the absence of near surface contaminated soils elsewhere under the tree canopy.

Two tree pits of approximately 1m³ were also excavated ready for replacement trees close to the locations of former trees T2 and T3 in the south of the site.

Validation Sampling (Excavation)

Validation samples were taken from the base of excavations on a 50m² sampling grid, generating 18 samples.

Reinstatement

An orange woven geotextile barrier layer was then placed on the formation level and imported topsoil placed on top to a minimum thickness of 300mm above the geotextile. Imported topsoil was sourced from stripping of a school playing field at Tiffin School, Queen Elizabeth Road, Kingston Upon Thames, KT2 6RL. One validation sample of the topsoil was sampled in-situ and a further 14 samples taken on delivery. A total of 24 loads of topsoil were imported to site from this source equating to approximately 240m³. Soils were imported and placed between 8 to 12 August 2011.

Results of the topsoil validation sampling were compared to criteria prepared by Leap Environmental Ltd as part of the remediation specification. This initially included a threshold value of 1 mg/kg for benzo(a)pyrene levels. With the final use of the site as public open space this criteria was relaxed to 3 mg/kg by Leap Environmental Ltd. The arithmetic mean of the 14 samples of imported soil was 1.76 mg/kg for benzo(a)pyrene.

Turf was laid across the completed areas and watered daily by Soilfix Ltd through to 12 August 2011. The Council's landscape contractors, Lotus Landscapes Ltd, then took over turf watering through to the end of August 2011.

Replacement Horse Chestnut trees were planted on 8 September 2011 by the Spelthorne Tree Wardens.

Off Site Transport and Disposal

Wastes generated by the remediation works included soils requiring off-site disposal as non-hazardous/ inert waste, hazardous waste, general waste and tree stumps.

Soilfix Ltd were responsible for the off-site removal of waste. A total of 18 loads, totalling 288 tonnes of non-hazardous material was taken off-site and a total of 3 loads of hazardous waste were removed from site and taken to Parkgate Farm landfill, Wiltshire.

Environmental Monitoring

Site monitoring for dust, noise, vapours and gases were carried out during the remedial works.

Noise monitoring was carried out prior to the commencement of the site work, on the 28 July to establish background noise levels and then four times during the site works, including when the welfare compound generator and mechanical excavator were in operation.

Dust concentrations were measured at four boundary locations between 28 July and 11 August. Baseline dust concentrations at the positions were between 25 mg/m²/day and 49 mg/m²/day. The boundary dust levels increased to between 56 and 156 during active site work. The highest recorded dust level of 156 was the only reading to exceed guidance levels. This reading was coincident with removal of topsoil in the south of the site, removed as non-hazardous waste, and visual observations on-site of dust generation that led to improved mitigation measures to damp down dust throughout the remainder of the excavation phase.

Soilfix carried out daily qualitative odour monitoring and quantitative vapour monitoring four times during the remediation works. A background sample was also taken on the 28 July 2011. Vapours did not exceed relevant workplace exposure limits during any sampling events, additionally daily semi-quantitative monitoring was completed using a Photo Ionisation Detector (PID). No results were recorded exceeding the PID detection limit of 0.1 ppm.

Conclusion

It is the opinion of Soilfix Ltd and Leap Environmental Ltd that the site has been appropriately remediated in keeping with the agreed remedial contract specification (as amended), and does not pose a significant possibility of significant harm to human health post remediation.

The groundworks contractor, Soilfix Ltd, prepared a remediation completion report. Leap Environmental Ltd have also prepared a Verification Report of the clean-up. The following reports can be viewed at the Council Offices at Knowle Green, Staines:

- Soilfix Ltd, 2 September 2011, Remediation Completion Report: Public Open Space, Denman Drive, Ashford. Prepared on behalf of Spelthorne Borough Council. Report reference C188.SBC/CR
- Leap Environmental Ltd, 30 september 2011, Interim Verification Report for Remediation Works carried out at Denman Drive, Ashford. Prepared for Spelthorne Borough Council. Report Reference LP 00284.

Spelthorne Borough Council is satisfied that the remediation work specified in this Remediation Statement has been carried out. The significant pollutant linkage which formed the basis of the site being identified as Contaminated Land has been removed.

Schedule 3 – Description of Significant Pollutant Linkage

A pollutant linkage is defined in the Statutory Guidance as a linkage between a Contaminant and a Receptor, by means of a Pathway. It is considered that the following significant pollutant linkage was present at the land in Denman Drive:

Contaminant	Pathway	Receptors
Complex cyanide in shallow surface soils	Direct soil and dust ingestion (oral)	Residents & visitors <i>Assessment based on a four to eleven year old female child, having an exposure frequency of one hour per day spent playing on the open space over 180 days per year. The open space is generally used by children unsupervised and older than four years of age.</i>

Based on this linkage, the site was identified as Contaminated Land on 27 May 2011 due to a significant possibility of significant harm to human health.

