APPENDIX 13.4 VALIDATION REPORT

APPENDIX 13.3 - VALIDATION REPORT

Babtie

Kenilworth Corby Ltd.

Site G – Shelton Road, Willowbrook Industrial Estate, Corby

Validation Report

BGE 200945.11 March 2002

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Kenilworth Corby Ltd.
Site G – Shelton Road, Willowbrook Industrial Estate
Validation Report

Contents

Introduction

1.1 Babtie Group Ltd (BG) was appointed by Kenilworth Corby Ltd. (KCL) to provide advice and observation services for remedial works at Site G – Shelton Road, Willowbrook Industrial Estate, Corby, Northants.

1.2 This report details the clearance and remediation carried out for the site, as observed by Babtie, and provides records of the monitoring that was undertaken. Validation was required to confirm that remediation works have been carried out in accordance with the relevant Remediation Statement[3].

1.3 Works were carried out by Weston Landfill Ltd (WLL) and commenced in October 2000. Babtie Group provided an engineer to observe and record the works on a limited part-time basis throughout the contract.

1.4 Due to previous open cast mining operations and infilling with poor quality materials, the site has a potential for settlement and drains poorly and is considered suitable for industrial use subject to capping with a layer of inert material and installation of adequate drainage. The design criteria for the works is specified in Austin Trueman Associates (ATA) Health and Safety Plan [1] and briefly comprises:

- The ground surface will be reshaped, balancing cuts and fills as far as possible.
- A zone of landscaping 17m wide will be provided along the top of the bank above Willowbrook Stream to allow for any possible future instability of the bank. On the east, south and west sides of the site a zone of landscaping of 4m wide will be provided. Suitable plants will be selected to both survive in the slightly contaminated soils existing on the site and to enhance the stability of the sloping ground surfaces.
- The finished surface of the parking area will have a minimum crossfall of 1:50. The site will be graded to fall towards a central valley where stormwater will drain through a system of gullies and oil separators into the existing piped stormwater drainage system within the site.
- Levels and gradients will be arranged such that if one part of the piped system becomes blocked or otherwise fails then the surface water would overflow to the next point of entry, or off site, without ponding to an unacceptable level.
- A drainage layer is to be incorporated beneath the Type 1 material laid down to intercept any waters that percolate through the surface.
- The existing deep drainage ditch is to be infilled.

1.5 Remediation works were based on information available from previous investigations.

1.6 Recommendations, remedial options and the procedures adopted during the remediation works are detailed in Frank Graham Consulting Engineers Ltd. Remediation Statement [3].

1.7 Work comprised:

- Clearance and disposal of all unwanted vegetation and contaminated topsoil to a suitably licensed landfill
- Regrading of the site to provide the required falls, with rolling of final formation.
- Breaking out of the concrete within the naphthalene pit area with subsequent chemical analysis prior to re-use of uncontaminated material.
- The central ditch was filled in with hard materials to form a haul road down the site.
- Placement of a 100mm drainage layer comprising clean chippings over a close weave polypropylene geotextile, Propex 6040 and Propex 6047, and in the area of the haul road topped with a geotextile separator Terram 1000.
- Construction of a 500 mm thick capping layer over the drainage layer to finished site levels.

Site Conditions

Site Description

2.1 The site is approximately rectangular in shape, being 350m long and 220m (max) wide, and covers an area of 6.7ha. The National Grid Reference for the site is SP 915 907 (Figure 1).

2.2 Willowbrook Stream bounds the site to the north, and Shelton Road and a low landscaped mound to the east. The site is bounded to the south by industrial units on Shelton and Pywell Roads and to the west by a large car park used for parking fleet vehicles. There are post and wire security fences on the northern and western boundaries.

2.3 At the initiation of works the site was undeveloped and overgrown. An east west depression approximately 1m deep ran through the centre of the site and there was a slight fall towards the east end of the site. A stormwater and foulwater sewer were laid on both sides of this depression through the site. Details of existing services can be found on ATA's Drawing No. 30550/02/P5.

2.4 A 3025m^2 bunded and fenced area indicated on historical maps as a 'Naphthalene pit' is present in the south west corner of the site. A moat lies on the inside of the fence with a concrete wall surrounding a square central area that is accessed by a concrete bridge.

2.5 Access to the site is via Shelton Road, located to the east of the site.

Site History

2.6 The historical development of the site has been extracted from Austin Trueman Associate's (ATA) Report [1] and Frank Graham Consulting engineers Ltd Report [3]. This is summarised below:

2.7 The site was extensively quarried for Northampton Sand Ironstone from 1904 up until 1948. This has resulted in depths of up to 19m of loosely compacted overburden.

2.8 Up until 1958 the site consists of open fields.

2.9 After this time, settlement ponds for waste slurry from the nearby steelworks were present along the eastern part of the site. The slurries were contained by a bund and allowed to find their own level over the backfilled opencast waste. Chemical analysis of the slurries carried out by British Steel Corporation describes it as "non-toxic inert fine dust made up of ore/sinter, coke, lime/limestone particles and blast furnace volatilisation products such as zinc and lead."

2.10 In the mid 1950's additional material was imported and the site was levelled to around 106.70m AOD. Following this, parts of the site were used for dumping flue dust and slag from the adjoining gas works. Drainage from the gas works was directed to a moated enclosure near the south west corner of the site, possibly now the area of the naphthalene pit.

2.11 Between 1964 and 1973 an area was constructed for the storage of naphthalene from British Steel's Dene Coke Works. It is believed that this 'naphthalene pit' may have been stripped out/removed on completion of this activity and backfilled with materials taken from the Shelton Road Site.

2.12 There are five known closed or open landfill sites in the immediate vicinity of the site. However, it is considered by Frank Graham Consulting Engineers Ltd [3] that there is negligible possibility for on-site migration of landfill gases from these landfills.

Ground Conditions

2.13 A summary of known ground conditions and contamination on site prior to remediation is detailed below.

2.14 The original geology of the site prior to open cast mining comprised [2]:

- Boulder Clay,
- Upper Lincolnshire Limestone
- Lower Lincolnshire Limestone
- Lower Estuarine Series
- Northampton Sand Ironstone
- Upper Lias Deposits

Previous Report No. CKG/590196/001 [3] describes drift deposits on the site as Glacial Till, underlain by Northampton Sand Ironstone. Soils on the site are depicted as restored ironstone workings, mainly fine loam over clayey soils. The same investigation [3] encountered coke production waste to a maxim depth of 1.4m bgl in localised discreet surface layers in certain areas of the site overlying the glacial till deposits which were encountered across the whole site. These deposits comprise low permeability stiff silty reworked clays, occasionally sandy and with chalk gravel to depths between 1.7m and 14.3m Within the reworked glacial till soft to very soft black silty steelworks waste up to 8.7m thick was encountered in parts of the site towards the north overlying up to 4.2m of glacial till at depth. The deep glacial till contained sand and ironstone pockets.

2.15 The Northampton Sand Ironstone (NSI), the limited remains of which underlie the site, is identified as a locally important minor aquifer. A worst case soil vulnerability classification i.e. high soil leaching potential, has been assumed for this area from the Groundwater Vulnerability Map of Northamptonshire and West Fens. However previous leachability tests indicate that the reworked boulder clay material has a very low leaching potential [3]. In addition most of the NSI has been mined from the site, and so the site no longer contains the potentially vulnerable water bearing stratum.

2.16 Test results indicated that there is a low potential for the vertical migration of compounds into any underlying water bearing strata due to the reworked glacial till surrounding the sludge, preventing lateral and vertical migration.

Obstructions

2.17 Prior to remediation works, site investigations identified that parts of the site had been used for industrial purposes for some time. As a result some historical and existing structures and services may be anticipated as potential obstructions.

2.18 Stormwater and foulwater drains have already been identified running through the site.

Summary of Prior Known Soil Contamination

2.19 ATA's Report [1] describes the soils as being relatively uncompacted and likely to settle over time. The soils also have a low permeability and will not drain well. Natural groundwater levels appear to be within or below the underlying ironstone, with limited perched water existing at a higher level. Chemical analysis indicates high levels of heavy metals, sulphate and sulphur. Other contaminants including PAHs, phenols, TPH, sulphide, cyanide and thiocyanate were found below ICRCL threshold trigger levels for public open spaces.

2.20 Contest Melbourne Weeks Ltd. investigation [2] encountered similar ground conditions and results from soil sample analysis show some evidence of contamination by zinc, ammoniacal nitrogen, sulphate and sulphide.

2.21 Previous reports have concluded that there is a minimal but recognisable risk as a result for the historical and current conditions on the site. Personal Protective Equipment (PPE) should be worn by site workers carrying out earthworks or construction in the ground.

2.22 Chemical analysis from a previous report No. CKG/590196/001 [3] has indicated elevated levels of contaminative substances generally within the black steelworks waste, where leaching tests have indicated that these compounds have limited mobility. Heavy metals (zinc, arsenic, lead, boron and nickel) were encountered at concentrations above the relevant ICRCL threshold trigger level in all the material found on site. However, they were concentrated within the steelworks sludge found at depths of between 4.8m and 15.65m bgl. Sulphur and

sulphates were found to be at elevated concentrations across the whole site in the near surface soil layer at concentrations ranging from 0.22 to 3.2%. Organic contamination, including PAHs, phenols and TPH, was found to be below the relevant ICRCL threshold trigger level and Dutch guideline values. Other determinants analysed were found to be generally at concentrations below the relevant guidelines. Leachability tests undertaken indicate that the quantities of contaminants leaching from the soil are below the Dutch Intervention levels.

2.23 It is concluded that the majority of the contamination is found within the steelworks wastes which are encapsulated in glacial till within the site. The near surface deposits are impacted but with contaminants which do not pose a risk to the users of the proposed 'industrial' development of the site as a car park, which in effect provides a barrier between site users and any contamination. The contamination found has been shown to be relatively insoluble and therefore immobile.

Summary of Prior known Groundwater Conditions

2.24 Previous investigations [3] have not encountered any significant groundwater. However, the steelwork waste encountered was found to be "very soft, loose and wet (saturated)". A perched water table was also thought to be encountered in the north west corner of the site.

2.25 Report No. CKG/590196/001 [3] indicates that groundwater was encountered at the site in five boreholes. Chemical analysis of this groundwater indicated that the water contained only elevated levels of sulphate above background levels. Depths of groundwater in existing wells on the site installed during previous investigations were noted between 7.0m and 20.0m bgl.

2.26 Contest Melbourne Weeks Ltd. investigation [2] encountered groundwater in the fill at depths of between 3.0m and 15.3m bgl and locally within the Northampton Sand Ironstone at depths of between 12.7m and 20.0m bgl. Levels measured in standpipes ranged from 2.63m to 19.0m bgl. Chemical analysis indicated that groundwater quality at the site was generally poor, being contaminated predominantly with ammoniacal nitrogen, cyanide (total), lead and sulphate.

2.27 Chemical analysis from surface water samples taken from Willowbrook and the moat surrounding the naphthalene pit for Report No. CKG/590196/001 [3] have indicated levels of contaminants below the Dutch guidelines for groundwater. Results from the sediment samples analysed were below the detection limit specified by the Engineers.

2.28 The available information suggests that there is evidence of contamination within perched water on the site, but that this affected water is contained within the site as no impacts have been recorded in the adjacent stream.

Gas Monitoring

2.29 The site is known to be producing limited landfill type gas in the form of methane and carbon dioxide from the limited sludge deposits buried deep within the waste.

2.30 Gas Monitoring reported in Frank Graham Consulting Engineers Ltd. Report [3] showed methane levels ranging from 0 to 5.9%, carbon dioxide levels ranging from 0 to 18.7% and oxygen levels falling to 0%. The report believes that the gases originate within the steelworks waste material which is sealed above and below by the reworked Boulder Clay, effectively providing a seal to major gas migration. Hydrogen sulphide monitoring during one visit indicated maximum levels to be 41.8ppm.

2.31 Corby Borough Council does not consider the site to be at risk due to landfill gas. Gas protection measures have not been required for development previously occurring in the vicinity of Site G.

2.32 A gas spike survey undertaken on the site encountered very low levels of carbon dioxide and no methane.

2.33 A low level gas risk has been identified, which may be magnified by capping the site. Therefore the remediation measures incorporate measures to mitigate such risks.

Liaison with Environment Agency and Local Authority

3.1 The findings of the site investigation and subsequent remediation statement have been discussed and agreed with the Environment Agency Groundwater Protection Officer and the local Environmental Health Officer at Corby Borough Council prior to the commencement of the site remediation works

3.2 The regulatory bodies require copies of all validation data to be supplied on completion of the site works as a record of the remediation carried out, and in compliance with the planning conditions attached to the site. A copy of the relevant planning conditions is presented in Appendix A.

Site Remediation

Scope of Works

4.1 Remediation Works were carried out in compliance with the Remediation Statement [3] and in accordance with the Contractors Method Statements.

4.2 The remediation works were carried out in accordance with the relevant requirements of the following legislation, as current at the time of the site works:

- Environmental Protection Act 1990;
- Control of Pollution Act 1974;
- Control of Substances Hazardous to Health (COSHH) Regulations 1994 as amended by COSHH (Amendment) Regulation 1996 and COSHH (Amendment) Regulation 1997;
- Health and Safety at Work Act 1974 and (Application to Environmentally Hazardous Substances) Regulation 1996;
- Construction (Design and Management) Regulations 1994;
- Water Resources Act 1991;
- Water Regulations 1999;
- Landfill Tax Regulation s 1996 (SI 1996, Nos. 1527, 1528, 1529);

4.3 The Remediation Works were carried out to provide a suitable site for redevelopment as car parking and above ground storage.

4.4 Material unsuitable for engineering purposes and obstructions were removed.

Project Management

4.5 Babtie Group Ltd was appointed to review the remediation design and drawings, liaise with the Environment Agency and the Local Authority, provide advice and validation services based on occasional site observation.

4.6 Weston Landfill Ltd. have undertaken the remediation works on the site, supported by an Environmental Specialist, Ken Rashbrooke, to carry out the necessary site inspections and validation sampling. Babtie Group Ltd were not present at all times when Mr Rashbrooke was on site.

4.7 Haulage of materials taken off site was undertaken by G. Webb Haulage Ltd., whose Waste Registration Number is CAM/105231. All materials were taken to Weldon Landfill Site in Northamptonshire. This site is operated by Shanks Waste Solutions under landfill licence number C/25. Copies of the waste transfer tickets and landfill licence are presented in Appendix B.

4.8 Analysis of soil and water samples were carried out by Eclipse Voelcker Science (EVS). This laboratory is UKAS accredited. A copy of the laboratory accreditation certificate is included as Appendix C. The results of chemical analysis of soils are presented in Appendix D.

4.9 Weston Landfill Ltd. was responsible for all site works including site clearance and demolition works, excavation, regrading, backfilling, and compaction of backfill. In addition Weston Landfill Ltd. was also responsible for site health and safety procedures, and fulfilling the role

of Principal Contractor under Construction (Design and Management) Regulations 1994 (CDM).

4.10 Austin Trueman Associates provided project management, structural design and planning supervisor services for the works.

Progress of Remediation

4.11 The progress of the works, as observed, and key issues are summarised in the following section. The full minutes of the site meetings are provided as Appendix E. Site visits were carried out by Babtie on 28/11/00, 19/01/01, 2/02/01, 30/03/01, 18/5/01, 6/7/01, 8/8/01, 31/8/01, 28/9/01, 19/10/01, and 21/12/01.

4.12 Works commenced October 2000 and were effectively complete on 21 December 2001.

4.13 The initial site works comprised setting up site accommodation and securing access. This was followed by clearance of existing site vegetation and any other obstructions.

4.14 A single surface water sample was taken from a location adjacent to the contractor's diesel fuelling site on 9th October 2000 (W1). The concentration of PAHs found to be present in the sample (0.38µg/l) was above the 0.2µg/l Water Supply (Water Quality) Regulations [3]. To remedy this situation the tanks were enclosed in bunds to prevent spillage and further testing of the surface water undertaken. The results of this and any other testing are presented in the Appendices and discussed in Sections 4.33- 4.39.

4.15 A site visit on 28th November 2000 noted that the site clearance was near completion and a fence had been erected around the perimeter of the site. Clearance of the area to the south-west of the naphthalene pit was still to be undertaken and the site had been partially regraded. Surplus material was stockpiled near the northern edge to form a landscape bund.

4.16 Breaking out of the naphthalene pit started on 8th January 2001.

4.17 The site had been cleared of all vegetation by the site visit on 19th January 2001, and the naphthalene pit was being broken out. The site had been further regraded and surplus material stockpiled near to the northern edge. All topsoil had been stockpiled separately on site. At this time only rubbish had been taken off site.

4.18 It was confirmed on Monday 22nd January 2001 that three samples had been taken from the naphthalene pit area. These samples consisted of concrete and soil under the concrete.

4.19 Works were being carried out in the naphthalene pit area on the site visit of 2nd February 2001. Black sludge from the moat around the naphthalene pit was being taken off site at this time to Weldon Landfill Site, operated by Shanks Waste Solutions and the concrete from the naphthalene pit was stockpiled within the area delimited by the moat. Surface water was

being collected in the ditch bisecting the site and discharged into the surface water drainage system, with a straw filter installed to prevent silt from entering the sewer.

4.20 On the 2nd February 2001, three soil samples were taken at surface level in the naphthalene pit area after spoil had been removed. Two water samples were also taken, one from the trench leading to the surface water drainage manhole (W3) and the second from the trench leading to discharge into the surface water drainage (W4).

4.21 The site visit of 30th March 2001 noted that the haulage road was being constructed and that the concrete from the naphthalene pit had been crushed and placed in the haulage road. The ditch around the naphthalene pit had not been drained at this time but the water from the ditch looked clear. The ditch previously running along the eastern boundary of the site had been backfilled and the area re-profiled. Profiles had been set up across the site, but it was noted that the set up of the profiles in the south-east corner of the site was incorrect. These were checked and modified accordingly.

4.22 On the site visit of 18th May 2001 it was noted that the ditch around the naphthalene pit had been drained and that the water, which had been tested (W2) and proven to be uncontaminated had been discharged into the foul sewer. Two soil samples were taken at the western end of the site, north of the haulage road, a further soil sample was taken in the middle of the site where topsoil was present, and one water sample was taken where the surface water discharges into the sewer (W5).

4.23 The backfilling of the ditch to form the haulage road had been completed by the site visit of 6th July 2001. In addition, the area to the south of the haulage road had been levelled and proof rolled and the area to the north of the haulage road was in the process of being proof rolled. Hardcore material had been stockpiled at the eastern extremity of the haulage road and a trial area of geotextile covered with backfill material had been prepared to the south of the haulage road. At this site meeting it was noted that elevated concentrations were recorded in soil samples G13, and that three additional samples in vicinity of G13 were taken (G14, G15 & G16). It was also noted that the area around G13 had been recapped. It was decided at this meeting that the trial backfill material was not suitable for the intended use and an alternative suitable source material was required.

4.24 A site visit took place on 8th August 2001 to undertake validation soil sampling of the area to the south of the haulage road (G17 to G26 inclusive). Two plastic sample bags were filled with surface material in ten different locations. A fax received from EVS confirmed that the use of plastic bags for sample collection would not affect the UKAS accreditation of the analysis.

4.25 At the time of the site visit of 31st August 2001 works were being undertaken on the haulage road and the area to the south of the haulage road. The area to the north of the haulage road had previously been levelled. Reinforcement bars were found to be sticking out of the ground

in a number of locations south of the haulage road. An alternative source of backfill, being local sandstone, had been secured.

4.26 The ProPex geotextile had been laid and subsoil was being laid and rolled in the area to the south of the haulage road at the time of the site visit on 28th September 2001. Also, drainage channels had been installed in part of the northern section of the site. It was confirmed on site that the reinforcement bars found to be sticking out of the ground previously were dealt with prior to the geotextile being laid down.

4.27 On the site visit of 19th October 2001 the stone layer was being laid in the area to the south of the haulage road and the northern section of the site was levelled and ready for the ProPex to be laid. Validation samples were taken consisting of two plastic sample bags each from 16 different locations (G27 to G42 inclusive).

4.28 An additional six validation samples were taken during a later site visit by Mr Rashbrooke. Samples G43 to G48 inclusive were taken in the area previously used as the site compound and along the Haulage Road.

4.29 The fencing around the site compound and two site cabins had been removed, and the stone layer was being completed in this section of the site at the time of the site visit on 21st December 2001. Weston Landfill confirmed that the perimeter venting trench comprising pea shingle had also been constructed. The diesel tank had been moved to the southern side of the haulage road. All except one manhole had been cut down to ground level and covered appropriately. The gas monitoring points had also been reduced to ground level and gas taps, concrete surround and approximately 250mm diameter circular access covers installed.

4.30 Figure 2 has been produced by Austin Trueman Associates and shows the site layout and construction details, including the drainage layout, formation levels, the surface construction and the venting trench. No specific 'as-built' drawings are available during production of this report. Photographs of the site progress are provided in Appendix F

4.31 At the time of writing, the landscaping details had not been finalised and remain outstanding. Future additional drainage such as the oil interceptor and any further surfacing works do not form part of the remediation stage of the works and are not covered by this report.

Soil and Water Testing

4.32 A total of 48 soil and 4 water samples were taken and analysed throughout the site works. A location plan of the samples is presented in Figure 3. Chemical test results are presented in Appendix D.

4.33 Once the ground had been levelled and proof rolled ten validation samples were taken from the area to the south of the haulage road and 16 samples to the north of the haulage road. A further 6 samples were taken in the area of the site compound and along the Haulage road.

These samples were taken from the surface material using two plastic bags.

4.34 Results from the soil samples analysed have been compared to ICRCL trigger levels for Landscaped areas, buildings and hard cover and Parks, playing fields and open space. Water analyses were compared to the UK Drinking Water Standard and in the absence of appropriate parameters, the Dutch Groundwater Intervention Concentrations.

4.35 Sample G13 taken close to the haulage near the western end of the site recorded a concentration of arsenic of 77mg/kg. This is above the ICRCL 40mg/kg threshold trigger level for parks, playing fields and open spaces. Due to this result three further samples were taken to clarify the contamination levels in this area (G14, G15 & G16). Concentrations measured in these additional soil analyses are below the remediation criteria for all determinants including arsenic. The area was therefore deemed to be satisfactory for the proposed end use of the site.

4.36 Analyses of all other soil samples did not record contaminant concentrations above the remediation criteria for contaminants that are hazardous to human health. However, phytotoxic contaminants (nickel and zinc) were found in some samples to be above the ICRCL threshold trigger value. Concentrations of zinc were generally found to be above the ICRCL trigger threshold value for sites where vegetation is to be grown in the western extremity of the site, with the majority being in the area of the naphthalene pit and its surroundings. G47 is the only sample found to be above the remediation criteria in the eastern part of the site. Table1 presents the samples that have recorded concentrations above the specific remediation criteria. However the presence of elevated concentrations of phytotoxic metals is not considered relevant to the proposed site usage as hardstanding.

Sample Reference	Determinand	Measured Value (mg/kg)	ICRCL threshold trigger level (mg/kg)
G4	Nickel	77	70
G5	Zinc	430	300
G11	Zinc	460	300
G13	Arsenic	77	40#
G13	Zinc	7600	300
G14	Zinc	360	300
G23	Zinc	320	300
G25	Zinc	850	300
G27	Zinc	300	300
G28	Zinc	310	300
G47	Zinc	310	300

Table 1: Soil Samples found to be above the remediation criteria.

G13 revalidated and found to be within acceptable limits.

All other determinants are phytotoxic metals and do not represent a risk to the site development.

4.37 All of the five water samples analysed contain high concentrations of sulphate above the UK Drinking Water Standard(DWS), as can be seen in Table 2. The levels are still relatively low and do not pose a risk to the proposed development. However sulphate protection measures may be required if concrete is ever to be placed in the ground in the future. A PAH concentration of 0.38µg/l was also measured in sample W1, which is above the 0.2µg/l UK Drinking Water Standard. This relates to conditions near the fuel tank before remedial bunding was implemented.

4.38 Phenols have been analysed to a detection limit of 0.1mg/l, which is actually above the UK DWS of 0.5µg/l. We, therefore, cannot determine if the levels of phenols in the water samples are above the DWS, however all samples recorded phenols levels below detection and phenols are not considered to represent an appreciable risk to the development or associated ground and surface water..

Sample Reference	Determinand	Measured Value	UK Drinking Water Standard
W1	Sulphate	403 mg/l	250 mg/l
W1#	PAHs	0.38 µg/l	0.2 µg/l
W2	Sulphate	701 mg/l	250 mg/l
W3	Sulphate	869 mg/l	250 mg/l
W4	Sulphate	427.5 mg/l	250 mg/l
W5	Sulphate	1668 mg/l	250 mg/l

Table 2: Water Samples found to be above the remediation criteria.
Sample taken adjacent to fuel tanks. Area subsequently bunded to prevent surface water contamination by spillages.

Conclusions

5.1 The remediation of the site, as observed by Babtie, has been carried out in accordance with the Remediation Statement and Contractors Method Statements.

5.2 The remediation of the site has been designed to reduce infiltration and direct any rainwater or runoff into the dedicated subsurface drains and surface water sewers. Remediation involved the reworking and levelling of the site, with validation samples taken of the surface soils to confirm soil concentrations were below the acceptable concentrations, prior to capping with imported crushed natural stone.

5.3 Venting of any underground gasses was facilitated by construction of perimeter granular trenches.

5.4 With the exception of zinc and nickel all validation samples taken from reworked and levelled ground had concentrations of contaminants below the remediation criteria. Zinc and nickel are phytotoxic contaminants only. Due to the proposed end use of the site being hardstanding the presence of phytotoxic contaminants is not considered to be a potential risk to the end use of the site and the presence of such metals is not relevant to the current land-use. Clean topsoil is to be provided in landscaped areas.

References

1. Austin Trueman Associates, Health and Safety Plan for the Remediation Works at Site G, Willowbrook Industrial Estate, Corby, Northants, April 2000, Report No. Sa/50211/815/AT/ptw,

   which includes:

   Austin Trueman Associates, Report on the Development Proposals for Light Vehicles Storage Area at Site G, Shelton Road, Corby, Northamptonshire, August 1998, Report No. SA/30550/765/NH/RF

2. Contest Melbourne Weeks Ltd., Report on Willowbrook Slurry Ponds, Corby, Northants, January 1993, report No. DS121, ATA's (July 200) Report No. SA/30550/819/RW/ptw.

3. Frank Graham Consulting Engineers Ltd., Commission for the New Towns, Shelton Road, Corby, Northamptonshire, Remediation Statement Report, August 1996, report No. CKG/590196/001.

4. Weston Landfill Ltd., Project Health and Safety Plan, Site G, Willowbrook Industrial Estate, Corby, Northants, April 200. Report No. SA/50211/815/AT/ptw.

Kenilworth Corby Ltd.
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Figure 1

Site Location Plan

Kenilworth Corby Ltd.
Site G – Shelton Road, Willowbrook Industrial Estate
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Figure 2

Site Layout and Construction Details

(ATA's Drawing No. 21, Revision B)

Figure 3

Validation Sampling Location Plan

(ATA's Drawing No. 21, Revision C)

Appendix A

Planning Conditions

Appendix B

Landfill Records

Appendix C

Eclipse Voelcker Science Accreditation Fax

Appendix D

Chemical Test Results

Appendix E

Minutes of Site Progress Meetings

Appendix F

Photographs

List of Photographs

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Plate 22:	View of the Naphthalene Pit Area looking North
Plate 23:	View of the Northern section of the Site looking North west
Plate 24:	View of the Southern section of the Site looking South east

Site Visit: 18/05/01

Plate 25:	View of the Haulage Road looking West
Plate 26:	view of the Haulage Road looking East
Plate 27:	View from the Western end of the Haulage Road looking North
Plate 28:	View from the Western end of the Haulage road looking South
Plate 29:	View from the Haulage Road looking South west
Plate 30:	View from the Haulage Road looking North

Site Visit: 06/07/01

Plate 31:	View from the Site Compound looking East along the Haulage Road
Plate 32:	View from the Haulage Road looking South west
Plate 33:	View from the Haulage Road looking South
Plate 34:	View from the Southern section of the Site looking South east
Plate 35:	View from the Haulage Road looking North
Plate 36:	View of the Trial Area in the Southern section of the Site

Site Visit: 08/08/01

Plate 37:	view from the Haulage Road looking West
Plate 38:	View of the Trial Area in the Southern section of the Site
Plate 39:	View from the Haulage Road looking South
Plate 40:	View taken from the Northern section of the Site looking East
Plate 41:	View from the Haulage Road looking North east
Plate 42:	View from the Southern section of the Site looking North east

Site Visit: 31/08/01

Plate 43:	View from the Haulage Road looking South
Plate 44:	View from the Haulage Road looking South west
Plate 45:	View from the Haulage road looking North west
Plate 46:	View from the Naphthalene Pit Area looking North
Plate 47:	View from the Haulage Road looking North west, showing the elevated manhole covers
Plate 48:	View of a Gas Monitoring Standpipe

Site Visit: 28/09/01

Plate 49:	View from the Haulage Road looking West
Plate 50:	View of the North east section of the Site
Plate 51:	View from the South east corner of the Site looking North west
Plate 52:	View from the South east corner of the Site looking North
Plate 53:	View of the geotextile and cover layer in the South east corner of the Site
Plate 54:	View from the Haulage Road looking North west

Site Visit: 19/10/01

Plate 55	View from the Haulage Road looking west
Plate 56:	View from the Haulage Road looking North east
Plate 57:	View from the Haulage Road looking South
Plate 58:	View from the Haulage Road looking South west
Plate 59:	View from the western end of the Haulage Road looking North
Plate 60:	View from the Northern section of the Site looking South east

Site Visit: 21/12/01

Plate 61:	View from the western end of the Haulage Road looking South east
Plate 62:	View from the western end of the Haulage Road looking East
Plate 63:	View from the Haulage Road looking West
Plate 64:	View from the middle of the Haulage Road looking East
Plate 65:	View from the North west corner of the site looking East along the boundary
Plate 66:	View of the protected groundwater monitoring point

Kenilworth Corby Ltd.
Site G – Shelton Road, Willowbrook Industrial Estate
Validation Report

Figure 1

Site Location Plan

LEGEND

SITE LOCATION

Babtie
Sheldon Court, Wagon Lane,
Coventry Road, Sheldon
Birmingham B26 3DU
Tel: 0121 700 1250
Fax: 0121 700 1251

Kenilworth Corby Ltd.

Site G – Shelton Road, Willowbrook Industrial Estate, Corby

SITE LOCATION PLAN

Scale:	1:50,000
Fig. No.:	1
Date:	Dec, 2001

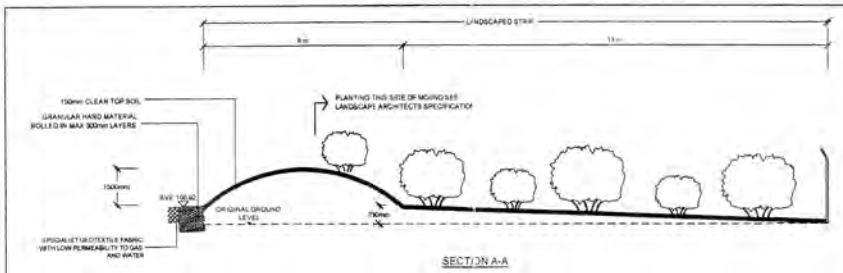
Kenilworth Corby Ltd.
Site G – Shelton Road, Willowbrook Industrial Estate
Validation Report

Figure 2

Site Layout and Construction Details

(ATA's Drawing No. 21, Revision B)

Do not scale. Work to figured dimensions only. Any discrepancies should be reported immediately. This drawing is to be read in conjunction with all other relevant documents.



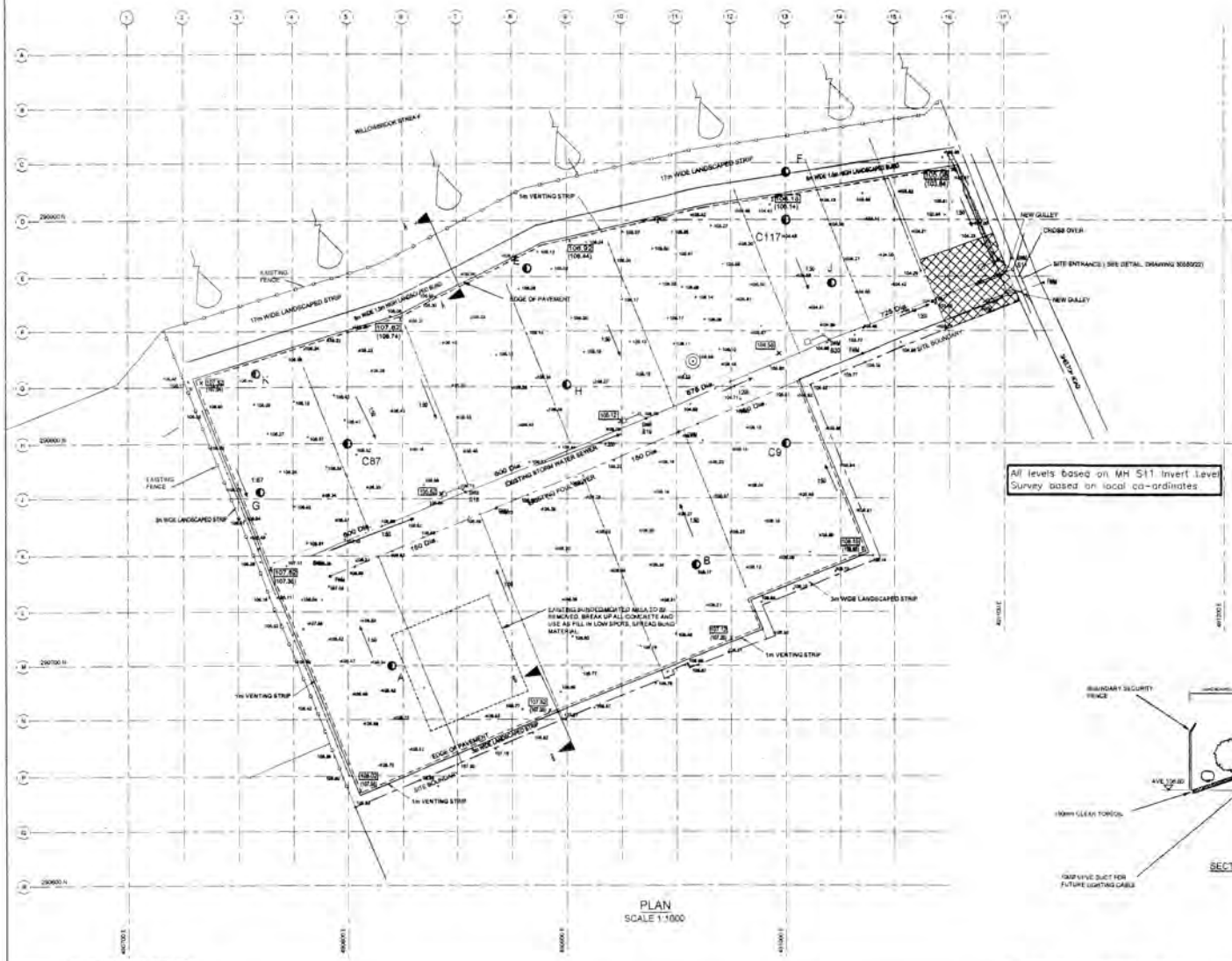
SECTION A-A

NOTES

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTS, INCLUDING ATA SPECIFICATION WHEREVER APPROPRIATE.
2. THE WORKS INDICATED ON THIS DRAWING HAVE, AS FAR AS REASONABLY PRACTICABLE, BEEN DESIGNED TO ENSURE THAT WHERE APPLICABLE THOSE BUILDING, MAINTAINING OR REPAIRING THEM WILL NOT BE SUBJECTED TO UNDUE RISKS TO THEIR HEALTH AND/OR THEIR SAFETY. CONSEQUENTLY, THE CONTRACTOR MUST ALSO ENSURE THAT NO SUCH RISKS EXISTS BEFORE PUTTING THE NECESSARY WORKS IN HAND.
3. 104.50 DENOTES RISK FORMATION LEVEL
4. + 66 DENOTES CROSSFALL
5. DENOTES CHEMICAL ANALYSIS AND BOREHOLE LOCATIONS FOR DETAILS OF COVERS SEE DRAWING No. 3055022
6. DENOTES 150 Ø PERFORATED PIPE, WITH VENT COWL AT TOP END.
7. [107.82] DENOTES AMENDED PROPOSED FINISHED LEVELS
8. (107.23) DENOTES ORIGINAL PROPOSED FINISHED LEVELS

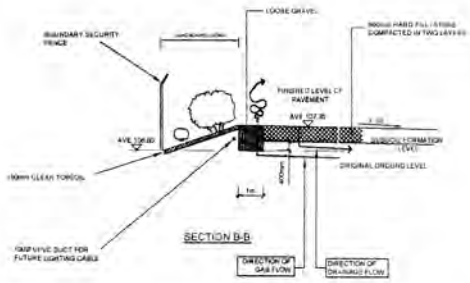
SPECIFICATION

1. PAVEMENT: REFER TO DRAWING 3055022
2. DRAINAGE: SURFACE DRAINAGE INLET TO CONSIST OF A BLOCK OF 6 No. 840x400 GULLIES DISCHARGING THROUGH A MANHOLE DISCHARGING INTO THE EXISTING STORM WATER SEWER SHOWN THUS: SEE DETAIL DRAWING 3055022



All levels based on MH S11 Invert Level
Survey based on local co-ordinates

PLAN
SCALE 1:1000



SECTION B-B

Ref	By	Date	Description
B	RW	22/01/01	FINISHED LEVELS AMENDED. REFERENCE GRID AND SURVEYED LEVELS ADDED
A	JMT	25/09/00	FOR CONSTRUCTION
P2	RW	05/09/00	SAFE AREA CHANGED
P1	RW	05/09/00	PRELIMINARY ISSUE

Project

SITE REMEDIATION
SITE G WILLOWBROOK INDUSTRIAL ESTATE
CORBY
NORTHANTS

Client

KENILWORTH CORBY LTD
THE BIRCHES
MEGG LANE
CHIPPERFIELD
HERTFORDSHIRE

Drawing Title

SCHEME A
SITE LAYOUT FOR REMEDIAL WORKS

Drawing Status

FOR CONSTRUCTION

Scales 1:1000, 1:200

Drawn RW	Job No	Dg No	Ref
Date 25/04/00	30550	21	B
Checked			
Passed			

Austin Trueman Associates

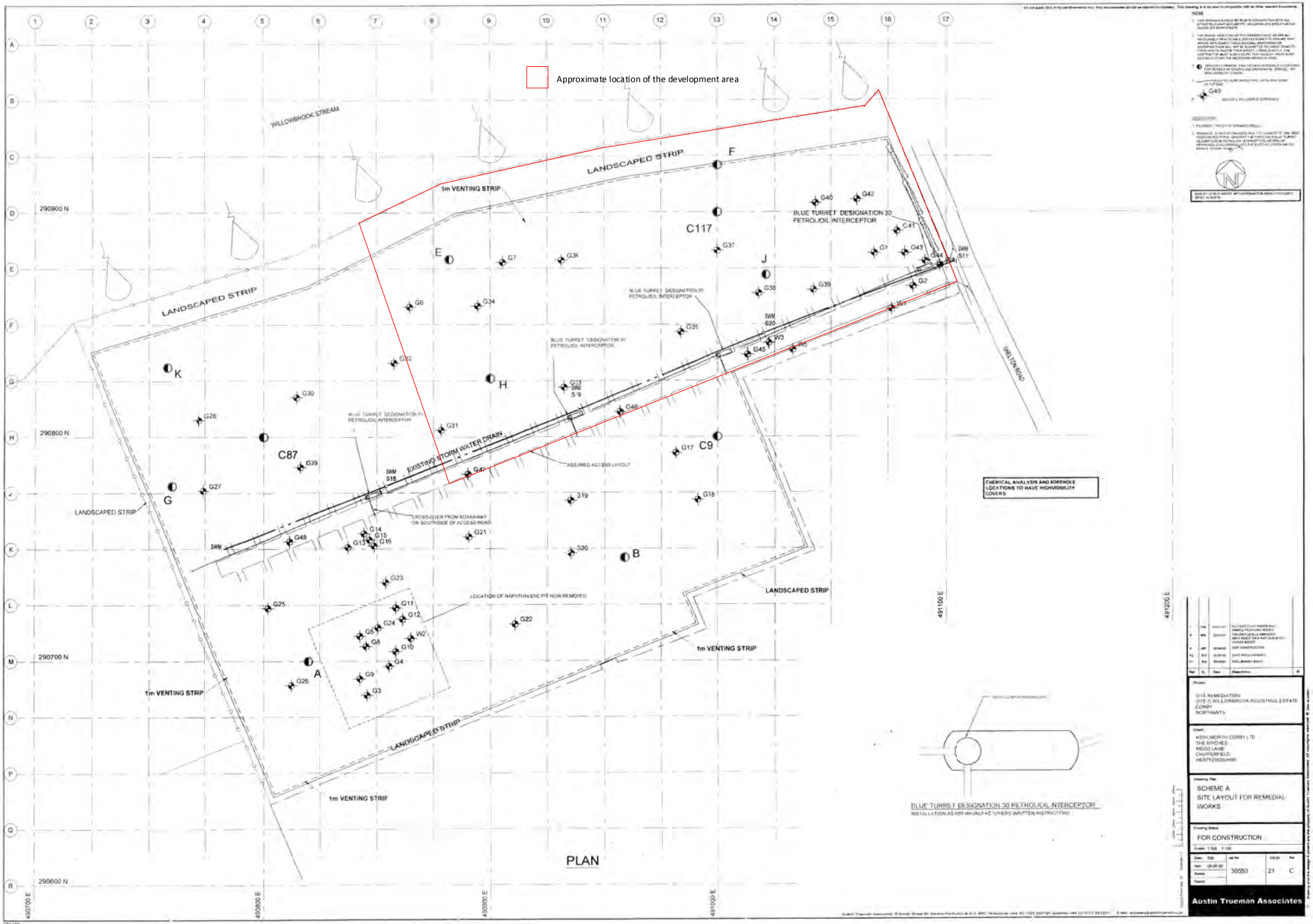
Austin Trueman Associates 9 Spicer Street, St Albans, Hertfordshire AL3 4PQ Tel/Answ: 01727 868732 Fax/Mtn: & 01727 852375 E Mail engineers@austintrueman.co.uk

Kenilworth Corby Ltd.
Site G – Shelton Road, Willowbrook Industrial Estate
Validation Report

Figure 3

Validation Sampling Location Plan

(ATA's Drawing No. 21, Revision C)


Approximate location of the development area
WILLOWBROOK STREAM
LANDSCAPED STRIP
1m VENTING STRIP
BLUE TURRET DESIGNATION 30 PETROLOIL INTERCEPTOR
C117
C87
C9
EXISTING STORM WATER DRAIN
ASSUMED ACCESS LAYOUT
CROSSOVER FROM SOAKAWAY ON SOUTHSIDE OF ACCESS ROAD
LOCATION OF NAPHTHALENE PIT NOW REMOVED
CHEMICAL ANALYSIS AND BOREHOLE LOCATIONS TO HAVE HIGHVISIBILITY COVERS
SHELTON ROAD
290900 N
290800 N
290700 N
290600 N
490700 E
490800 E
490900 E
491000 E
491100 E
491200 E
PLAN
BLUE TURRET DESIGNATION 30 PETROLOIL INTERCEPTOR
INSTALLATION AS PER MANUFACTURERS WRITTEN INSTRUCTIONS
SCHEME A
SITE LAYOUT FOR REMEDIAL WORKS
FOR CONSTRUCTION
30550
21
C
Austin Trueman Associates

Form P2
Town and Country Planning Act 1990

Corby
Borough Council

PLANNING PERMISSION

Name and address of applicant
Kenilworth Corby Ltd
"The Birches"
Megg Lane
Chipperfield
Herts. WD4 9JW

Name and address of agent (if any)
Austin Trueman Consulting Engineers
8 Spicer Street
St Albans
Herts. AL3 4PQ

Part 1 - Particulars of application

Date of application
24th June 1999

Application No.
99/00253/DPA

Particulars and location of development

Construction of car parking, fencing and landscaping at Site G, land at Shelton Road, Willowbrook Industrial Estate, Corby, Northamptonshire.

Part 11 - Particulars of decision

CORBY BOROUGH COUNCIL

hereby give notice in pursuance of the provision of the Town and Country Planning Act 1990 that *permission has been granted* for the carrying out of the development referred to in Part 1 hereof in accordance with the application and plans submitted subject to the following conditions:-

1. The development must be begun not later than the expiration of five years beginning with the date of this permission.

2. Use of the land shall be restricted to storage of vehicles.

3. No development shall take place until there has been submitted to and approved by the local Planning Authority a scheme of landscaping, which shall include indications of all existing trees and hedgerows on the land and details of any to be retained together with measures for their protection in the course of development. All planting, seeding or turfing comprised in the approved details of landscaping shall be carried out in the first planting and seeding seasons following the occupation of the buildings or the completion of the development whichever is the sooner and any trees or plants which within a period of 5 years from the completion of the development die, are removed or become seriously damaged or diseased shall be replaced in the next planting season with others of similar size and species unless the local Planning Authority gives written consent to any variation.

18 OCT 1999

Date:

Signed

Note: This permission refers only to that required under the Town and Country Planning Acts and does not include any consent or approval under any other enactment, byelaw, order or regulation.

4. Prior to discharge all surface water drained from impermeable vehicle parking areas for 50 or more spaces shall be passed through oil interceptors of design compatible with the site and in the case of areas of less than 50 spaces shall be passed through trapped gullies with an overall capacity compatible with the site being drained.

Reasons :-

1. Required to be imposed pursuant to Section 91 of the Town and Country Planning Act 1990.

2. To enable the Planning Authority to retain control of the use in the interests of safety and convenience in the highway.

3. To help assimilate the development, and to protect and enhance visual amenity in the area.

4. In the interests of protecting the environment of the area and the stream.

Notes :-

1. The proposed development is close to an existing Landfill Site and there is the possibility of Landfill Gas migrating from the Landfill Site into the strata below this proposed development. The responsibility for the safe development and secure occupancy of this development rests with the developer. The developer should obtain the advice of a consultant competent in investigation and assessment of potential Landfill Gas migration and incorporate any necessary remedial measures in the development.

2. The site is believed to have been contaminated. The responsibility for the safe development and secure occupancy rests with the developer.

Appeals to the Secretary of State

- If you are aggrieved by the decision of your local Planning Authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State for the Environment under Section 78 of the Town and Country Planning Act 1990.

- If you want to appeal, then you must do so within six months of the date of this notice, using a form which you can obtain from the Department of the Environment at Tollgate House, Houlton Street, Bristol BS2 9DJ.

- The Secretary of State can allow a longer period for giving notice of an appeal, but he will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

- The Secretary of State need not consider an appeal if it seems to him that the local Planning Authority could not have granted planning permission for the proposed development or could not have granted it without the conditions it imposed, having regard to the statutory requirements, to the provisions of the development order and to any directions given under the order.

- In practice, the Secretary of State does not refuse to consider appeals solely because of the local Planning Authority based its decision on a direction given by him

Purchase Notices

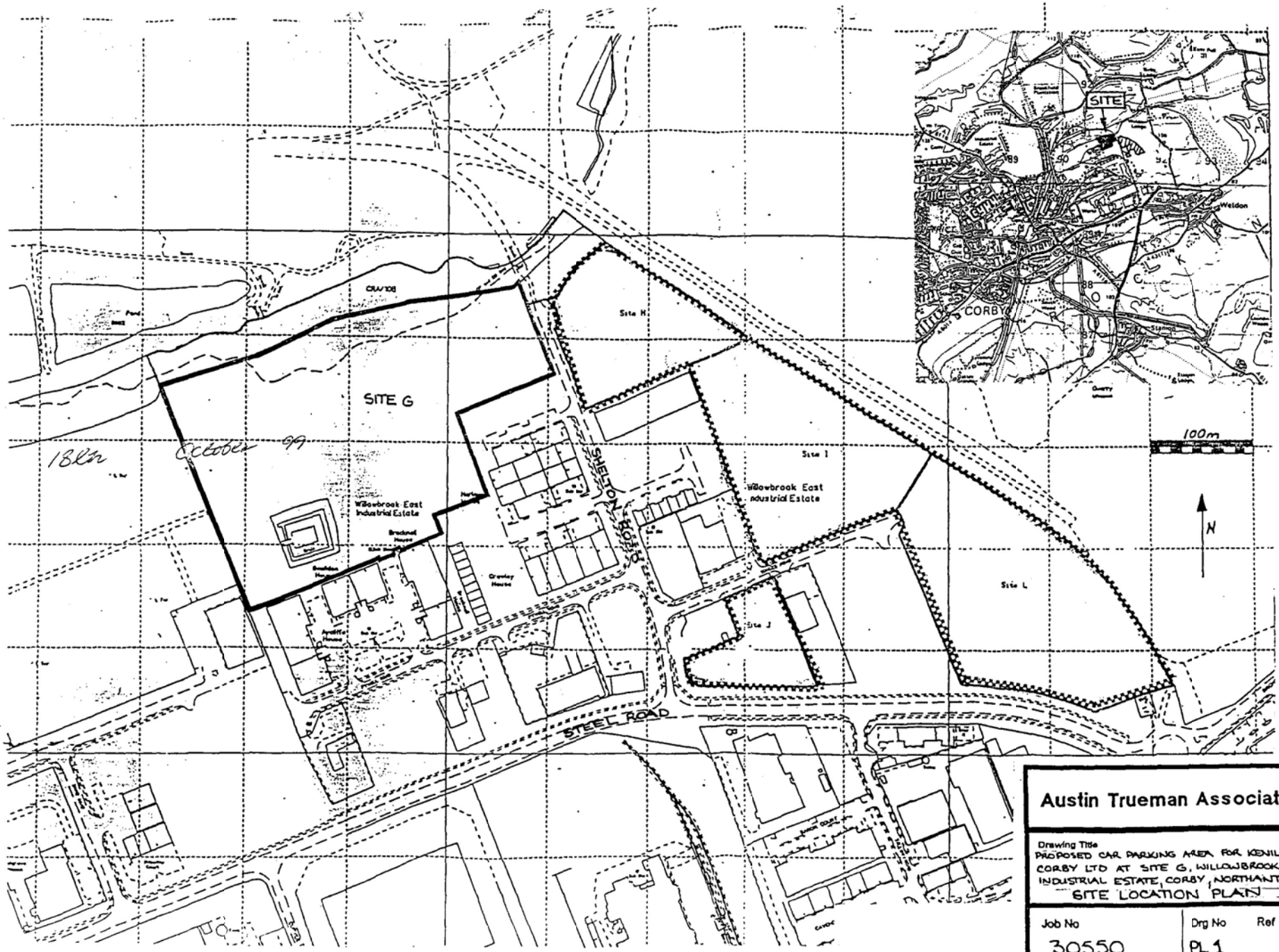
- If either the local Planning Authority or the Secretary of State for the Environment refuses permission to develop land or grants it subject to conditions, the owner may claim that he can neither put the land to a reasonably beneficial use in its existing state nor can he render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

- In these circumstances, the owner may serve a purchase notice on the Council (District Council, London Borough Council or Common Council of the City of London) in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provision of Part VI of the Town and Country Planning Act 1990.

Compensation

In certain circumstances compensation may be claimed from the local Planning Authority if permission is refused or granted subject to conditions by the Secretary of State on appeal or on reference of the application to him.

- These circumstances are set out in Section 114 and related provisions of the Town and Country Planning Act 1990.



Austin Trueman Associates

Drawing Title
PROPOSED CAR PARKING AREA FOR KENILWORTH CORBY LTD AT SITE G, WILLOWBROOK EAST INDUSTRIAL ESTATE, CORBY, NORTHANTS
SITE LOCATION PLAN

Job No	Drg No	Ref
30550	PL 1	

0121 122 0102. Veronyre.

Northamptonshire County Council
Environment Directorate

County Highways Officer
Michael Bordiss BSc DMS CEng MICE

Please reply to:-
Alan Capell BSc, CEng, MICE
Head of Road Maintenance
Highways Depot
Harborough Road
Brixworth
Northamptonshire NN6 9BX
Tel: Northampton (01604) 883400
Fax: Northampton (01604) 883456

2 AUG 2000
29

Mr P McDonagh
Kennelworth (Corby) Ltd
The Birches
Meg Lane
Chipperfield
Herts
WD4 9JW

2/8/00
BS E 300 945

Awarded for excellence in public service

Please ask for	Ext	Our ref	Your ref	Date
Mr Hadland	883400	RH/AW/17299		26.08.99

Dear Sir

AUTHORISATION FOR THE ERECTION OF TEMPORARY HOARDING WITHIN THE HIGHWAY UNDER SECTION 172 OF THE HIGHWAYS ACT 1980
CORBY: SHELTON ROAD
SITE: G/H WILLOWBROOK

Thank you for your recent enquiry dated 23rd August 1999 to erect a temporary hoarding within the public highway. Approval is hereby granted by the Highway Authority for the erection of a temporary hoarding at the above premises in accordance with Section 172 of the Highways Act 1980, subject to the following conditions:-

1. Approval is granted for the period of September 1999 to September 2000. Any extension to this period to be by arrangement.

2. A convenient platform and handrail shall be provided for use by pedestrains during the period if a footway is obstructed.

3. The hoarding, platform and handrail, or any other item related to the structure shall be maintained in a safe and good condition during the course of the works.

4. Adequate signing and lighting will be carried out to the satisfaction of the Highway Authority for the duration of the works, such traffic signs being in accordance with Chapter 8 of the Traffic Signs Manual.

Continued