VARIATION NOTICE

Certified a true copy of a notice served by me. Attached as this copy.
By Recorded Deliv. Date 26.04.11
Name V.P. Addy Signature

IPSWICH BOROUGH COUNCIL

Pollution Prevention and Control Act 1999
The Environmental Permitting (England and Wales) Regulations 2010,
Regulation 20

PPC Permit Ref:	6.4/SR/1/06
Variation notice Ref:	WK/201011365
EP Permit Ref:	C/VPA/02/11

To:

Bradleys (Stowmarket), 49 Knightsdale Road, Ipswich, Suffolk, IP1 4JJ.

Ipswich Borough Council ("the Council"), in the exercise of the powers conferred upon it by regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 hereby gives you notice as follows:

The Council has decided to vary the conditions of permit reference 6.4/SR/1/06 granted under regulation 10 of the Pollution Prevention and Control (England and Wales) Regulations 2000 in respect of the operation of the installation at Bradleys (Stowmarket), 49 Knightsdale Road, Ipswich, Suffolk, IP1 4JJ.

The varied consolidated permit and the date on which it takes effect are specified in Schedule 1 to this notice.

Signed on behalf of Ipswich Borough Council

..... Date: 26/4/11

Sara Boyles
Principal Environmental Health Officer
An authorised Officer of the Council

Permit issued by:

Environmental Protection Services
Ipswich Borough Council
Floor 4 East
Grafton House
15-17 Russell Road
Ipswich
IP1 2DE

Telephone: 01473 433115
Fax: 01473 433062
Website: www.ipswich.gov.uk
Email: environmentalprotection@ipswich.gov.uk

Schedule 1

The conditions contained in the varied consolidated permit Ref C/VPA/02/11 overleaf come into effect immediately and supersede any previous permits.

Signed on behalf of Ipswich Borough Council

..... Date: 26/4/11

Sara Boyles
Principal Environmental Health Officer
An authorised Officer of the Council

Permit with Introductory Note

The Pollution Prevention and Control Act 1999
Environmental Permitting (England and Wales) Regulations 2010
The Solvent Emissions Directive

IPSWICH
BOROUGH COUNCIL

Bradleys (Stowmarket) Ltd
49 Knightsdale Road
Ipswich
Suffolk
IP1 4JJ

Environmental Permit
Reference: **C/VPA/02/11**

Detail	Date	Comments
LAPPC Application Duly made	12 June 2006	6.4/SR/1/06
Consultation Permit	14 August 2006	6.4/SR/1/06
Permit Issued	30 August 2006	6.4/SR/1/06
Consultation Permit	09 February 2011	C/VPA/02/11
Permit Issued	26 April 2011	C/VPA/02/11

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INTRODUCTORY NOTE
This introductory note does not form part of the permit

The following Permit is issued under Regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010 (S.I.2010 No. 675), hereinafter referred to as the EP Regulations, to operate a scheduled installation carrying out an activity, or activities covered by the description in section 6.4 and section 7 in Part 2 to Schedule 1 of the EP Regulations, to the extent authorised by the Permit.

Conditions within this Permit detail Best Available Techniques (BAT), for the management and operation of the installation, to prevent, or where that is not practicable, to reduce emissions.

The definition of BAT is 'the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole'.

In determining BAT, the Operator should pay particular attention to relevant sections of the Secretary of State's guidance for metal and other thermal spraying processes - Process Guidance Note 6/35(96), Secretary of State's guidance for coating of metal and plastic processes - Process Guidance Note 6/23(04) and Secretary of State's guidance for powder coating including sherardizing and vitreous enamelling dry – Process Guidance Note 6/31(04) and any other relevant guidance. Techniques include both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned.

Note that the Permit requires the submission of certain information to Ipswich Borough Council, hereinafter referred to as the Regulator, and in addition, the Regulator has the power to seek further information at any time under Regulation 60 of the EP Regulations provided that the request is reasonable.

Public Registers
Information relating to Permits, including the application, is available on public registers in accordance with the EP Regulations. Certain information may be withheld from the public registers where it is commercially confidential, or if it is in the interest of national security to do so.

Variations to the Permit
The Regulator may vary the permit in the future, by serving a variation notice on the Operator. Should the Operator want any of the conditions of the Permit to be changed, a formal application must be submitted to the Regulator (the relevant forms are available from the Regulator). The chronicle that forms part of this introductory note will include summary details of this Permit, variations issued up to that point in time and state whether a consolidated version of the Permit has been issued.

Transfer of the Permit or Part of the Permit
Before the Permit can be wholly or partially transferred to another Operator, an application to transfer the Permit has to be made jointly by the existing and proposed Operators. A transfer will not be approved if the Regulator is not satisfied that the

proposed Permit holder will be the person having control over the operation of the installation, or will not comply with the conditions of the transferred Permit. In addition, if the Permit authorises the Operator to carry out a specified waste management activity, the transfer will not be approved if the Regulator does not consider the proposed Permit holder to be a 'fit and proper person' as required by the EP Regulations.

Surrender of the Permit

Where an Operator intends to cease the operation of an installation (in whole or in part) the Regulator should be informed in writing. Such notification must include the information specified in Regulation 24(3) of the EP Regulations.

Responsibility under Workplace Health and Safety Legislation

The permit is given in relation to the requirements of the EP Regulations. It must not be taken to replace any responsibilities an Operator may have under the workplace health and safety legislation.

Appeal Against Permit Conditions

Any person who is aggrieved by the conditions attached to a Permit can appeal to the Secretary of State for Environment, Food & Rural Affairs. Appeals must be received by the Secretary of State no later than 6 months from the date of the decision (the date of the Permit).

Appeals relating to installations in England should be received by the Secretary of State for Environment, Food & Rural Affairs. The address is as follows:

The Planning Inspectorate
Environmental Appeals Administration
Room 4/19 – Eagle Wing
Temple Quay House
2 The Square
Temple Quay
Bristol
BS1 PN

The appeal must be in the form of a written notice or letter stating that the person wishes to appeal and listing the condition(s) which is/are being appealed against. The following five items must be included:

(a) A statement of the grounds of appeal;
(b) A copy of any relevant application;
(c) A copy of any relevant Permit;
(d) A copy of any relevant correspondence between the person making the appeal and the Council;
(e) A statement indicating whether the appellant wishes the appeal to be dealt with.

- by a hearing attended by both parties and conducted by an inspector appointed by the Secretary of State; or

- by both parties sending the Secretary of State written statements of their case (and having the opportunity to comment upon one another's statements).

At the same time, the notice of appeal and documents (a) and (e) must be sent to the Council, and the person making the appeal should inform the appropriate Secretary of State that this had been done.

- An appeal will not suspend the effect of the conditions appealed against; the conditions must still be complied with.
- In determining an appeal against one or more conditions, the Act allows the Secretary of State in addition to quash any of the other conditions not subject to the appeal and to direct the local authority to either vary any of these conditions or to add new conditions.

Copyright of any maps if provided with this Permit

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Talking to us

Please quote the Permit Number if you contact the Regulator about this Permit. To give a notification the Operator should telephone 01473 433012 or any other number notified in writing by the Regulator for that purpose.

~ End of Introductory Note~

Permit with Introductory Note

The Pollution Prevention and Control Act 1999
Environmental Permitting (England and Wales) Regulations 2010
The Solvent Emissions Directive

IPSWICH
BOROUGH COUNCIL

Environmental Permit Reference: **C/VPA/02/11**

Ipswich Borough Council in exercise of its powers under Regulation 13 of the **Environmental Permitting (England and Wales) Regulations 2010**, hereby authorises:

Bradleys (Stowmarket) Ltd

whose registered office is:

Bradleys (Stowmarket) Ltd
49 Knightsdale Road
Ipswich
IP1 4JJ

to operate an installation at:

Bradleys (Stowmarket) Ltd
49 Knightsdale Road
Ipswich
IP1 4JJ

to the extent authorised by and subject to the conditions of this Permit.

Signature: Date:

Sara Boyles
Principal Environmental Health Officer
The Authorised Officer for this purpose

Permit issued by:
Environmental Protection Services
Ipswich Borough Council
Floor 4 East
Grafton House
15-17 Russell Road
Ipswich
IP1 2DE

Telephone: 01473 433115
Fax: 01473 433062
Website: www.ipswich.gov.uk
Email: environmentalprotection@ipswich.gov.uk

PROCESS DESCRIPTION

This process is carried out by Bradleys (Stowmarket) Ltd, 49 Knightsdale Road, Ipswich, Suffolk, IP1 4JJ.

The processes carried out on site generally comprise of the following activities:

Substrates are degreased in an outdoor area using rags imbibed in solvents or sprayed with solvents. Solvent consumption exceeds 2T per year. This activity must be operated as per the requirements of the Solvent Emissions Directive.

Substrates are shot blasted prior to coating in one of the three shot blasting shops present on site.

The coating process may comprise of the application of molten zinc to the substrate by spray, and is generally referred to as thermal spraying. It is carried out by feeding a wire containing zinc into a spray gun in which heat is produced electrically. The electric arc melts the wire and the molten zinc is then sprayed onto the substrate in a zinc spray booth. More than 20T per year of zinc is sprayed. Coating is also by means of wet spraying (paint). Two wet spray booths are present on site. More than 5T per year of products containing volatile organic compounds are used for wet spraying and equipment cleaning. Wet spraying and equipment cleaning activities are required to comply to the requirements of the Solvent Emissions Directive.

Powder coating constituting predominantly of organic powders are applied onto the treated substrate. Two powder coating booths are present on site. More than 20T per year of powder coats are applied.

The process comprises treating, handling, storage of materials used and products and wastes produced by the process.

Attached Site Plan 1, Appendix A, shows the location of the premises.

Attached Site Plan 2, Appendix A, shows the layout of the premises.

Solvent Management Plan

1. A solvent management plan (SMP) shall be used by the operator to demonstrate compliance with the volatile organic compounds (VOCs) requirements set out in this Permit.

2. The Operator shall use the contained and fugitive emission limits compliance scheme for volatile organic compounds for the coating process (wet spraying and equipment cleaning).

   Under the requirements of the contained and fugitive emission limits scheme, the Operator shall submit a solvent inventory showing the organic solvent consumption in a 12-month period for the wet spraying and equipment cleaning to Ipswich Borough Council annually.

   The following limits shall also be met:

Emission limit - 100mg Carbon/Nm^3 (to be tested annually by manual extractive testing) and

Fugitive limit - 25% of solvent input (determined by calculation once only - except if the process is changed or the equipment is modified when the calculation shall be done again)

To demonstrate compliance with the fugitive limit, the fugitive emissions (F) shall be calculated from a solvent management plan:

$$F = I_1 - O_1 - O_5 - O_6 - O_7 - O_8$$

O_1 represents the emissions in waste gases

O_5 represents the quantity of organic solvents lost due to chemical or physical reactions

O_6 represents the quantity of organic solvents contained in collected waste.

O_7 represents the quantity of organic solvents, or organic solvents contained in preparations, which are sold or are intended to be sold as a commercially valuable product.

O_8 represents the quantity of organic solvents contained in preparations recovered for reuse but not as input into the process/activity, as long as not counted under O_7.

The value of F obtained above is then used to calculate its percentage of solvent input as follows:

Fugitive emission value (%) = 100 x (F/I)

where, I is calculated from the solvent management plan as the sum of I_1 and I_2.

I_2 represents the quantity of organic solvents or their quantity in preparations recovered and reused as solvent input into the process.

Thus, compliance to the fugitive limit is achieved if the fugitive emission value is less than or equal to 25% of solvent input.

The variables in the formulae above are as follows:

I stands for the inputs of organic solvents in the time frame over which the mass balance is being calculated.

I_1 stands for the quantity of organic solvents or their quantity in preparations purchased which are used as input into the process/activity (including organic solvents used in the cleaning of equipment).

I_2 stands for the quantity of organic solvents or their quantity in preparations recovered and reused as solvent input into the

process/activity (the recycled solvent is counted every time it is used to carry out the activity).

O stands for the outputs of organic solvents in the time frame over which the mass balance is being calculated.

A SMP inputs and outputs diagram showing the above variables is included in Appendix B for reference.

VOC control techniques – Application of cleaning/degreasing solvents

3. Application of cleaning solvents shall be dispensed by piston type dispenser or similar contained device, when used on wipes.

4. When organic solvents are used on wipes;
   (i) Pre-impregnated wipes shall be held within an enclosed container prior to use
   (ii) Where practicable, no organic solvent cleaning fluids or significantly less volatile organic solvents cleaning fluids shall be used.

VOC control techniques - Storage

5. All potentially odorous waste materials shall be stored in suitable closed containers or bulk storage vessels.

6. The exterior of bulk storage tanks for organic solvent storage shall normally be light coloured.

7. All new static bulk organic solvent storage tanks containing organic solvent with a composite vapour pressure that is likely to exceed 0.4KPa at 20°C (293K) shall be fitted with pressure vacuum relief valves. Pressure vacuum relief valves shall be examined at regular intervals for signs of contamination, incorrect seating and be cleaned and/or corrected as required. The normal minimum examination frequency shall be once every 6 months, but less frequent examination may be justified having regard for the tank contents and the potential emissions as a result of valve failure.

8. Delivery connections to bulk storage tanks for organic solvents shall be located within a bunded area.

9. Where the operator can not demonstrate to the satisfaction of the regulator that suitable management controls and training with regard to bulk storage deliveries of organic solvents and organic solvent containing materials are in place, along with adequate on-site security, then connections to bulk storage tanks shall be fixed and locked when not in use.

10. All fixed storage tanks shall be fitted with high-level alarms or volume indicators to warn of overfilling. Where practicable, the filling systems shall be interlocked to the alarm system to prevent overfilling.

11. Bunding shall:
   (i) Completely surround the bulk liquid storage tanks

(ii) Be impervious and resistant to the liquids in storage and
(iii) Be capable of holding 110% of the capacity of the largest storage tank

12. Coatings containing VOC shall be stored in closed storage containers.

VOC control techniques - Mixing

13. All measures shall be taken to minimise VOC emissions during mixing, i.e. the use of covered or closed mixing vessels.

14. Emissions from the emptying of mixing vessels and transfer of materials shall be adequately contained, preferably by the use of closed transfer systems. This may be achieved by the use of closed mobile containers, containers with close-fitting lids, or preferably closed containers with pipeline delivery.

VOC control techniques - Cleaning

15. Cleaning operations involving organic solvents shall be periodically reviewed, normally at least once every two years, to identify opportunities for reducing VOC emissions (e.g. cleaning steps that can be eliminated or alternative cleaning methods). The regulator shall be provided with a report on the conclusions of the review.

16. Where practicable, fixed equipment shall be cleaned in-situ and such equipment shall where practicable be kept enclosed whilst cleaning is carried out.

17. Where equipment is cleaned off-line, cleaning shall be carried out using enclosed cleaning systems, wherever possible. Enclosed cleaning systems shall be sealed to prevent emissions whilst in operation, except during purging at the end of the cleaning cycle.

18. Residual coating materials contained in parts of the application equipment shall be removed prior to cleaning.

VOC control techniques – Spillage

19. Suitable organic solvent containment and spillage equipment shall be readily available in all organic solvent handling areas.

VOC control techniques - Waste

20. All reasonably practicable efforts shall be made to minimise the amount of residual organic solvent bearing material left in drums and other containers after use. All organic solvent contaminated waste shall be stored in closed containers.

21. Prior to disposal, empty drums and containers contaminated with organic solvent shall be closed to minimise emissions from residues during storage prior to disposal and labelled, so that all that handle them are aware of their contents and hazardous properties.

22. Nominal empty drums or drums containing waste contaminated with VOC awaiting disposal shall be stored in accordance with the requirements for full or new containers.

23. Prior to disposal, used wipes and other items contaminated with organic solvent shall be placed in a suitable labelled metal bin fitted with a self-closing lid.

24. Empty powder packaging and dusty wastes shall be stored in closed containers and handled in a manner that avoids emissions.

Visible and odorous emissions

25. All emissions to air, other than steam or condensed water vapour shall be free from droplets and from persistent mist and persistent fume.

26. All emissions shall be free from offensive odour outside the process site boundary, as perceived an authorised officer of Ipswich Borough Council.

27. The introduction of dilution air to achieve emission concentration limits shall not be permitted. If emission concentration limits are already being met or do not apply, dilution air shall be permitted if necessary to render harmless a coloured or odorous emission. Exhaust flow rates shall be consistent with efficient capture of emissions, good operating practice and meeting the requirements of the legislation relating to the workplace environment.

Monitoring, sampling and measurement of emissions

28. The operator shall advise the regulator at least 7 days in advance of any periodic monitoring exercise to determine compliance with emission limit values of the provisional time and date of monitoring, pollutants to be tested and the methods to be used.

29. The results of non-continuous emissions testing shall be forwarded to the regulator within 8 weeks of the completion of the sampling.

30. Adequate facilities for sampling shall be provided on vents or ducts. Care is needed in the design and location of sampling systems in order to obtain representative samples.

31. Adverse results from any monitoring activity shall be investigated by the operator as soon as monitoring data has been obtained. The operator shall:
    (i) Identify the cause and take corrective action
    (ii) Record as much detail as possible regarding the cause and extent of the problem, and the action taken by the operator to rectify the situation
    (iii) Re-test to demonstrate compliance as soon as possible and
    (iv) Notify the regulator.

32. The following emission concentration limits shall apply to releases of particulate matter from contained sources arising from the activities specified in the table below:

Location	Pollutant	Emission limit	Monitoring standard	Frequency
Zinc spray booths discharge	Total particulate matter	20mg/m^3	BS9096:2003	Yearly
Paint spray	Total	50mg/Nm^3	Manual extractive non-	Yearly

booths discharge	particulate matter	as a 30-minute mean	continuous emissions monitoring to be carried out according to the main procedural provisions of BS ISO 9096:2003, with averages taken over operating periods excluding start-up and shut-down.	

33. The pollutant concentrations specified in the above table shall be expressed at reference conditions, 273K, 101.3 kPa, without correction for water vapour content.

Varying of monitoring frequency

34. The frequency of testing shall be increased as part of commissioning new or substantially changed activities or where emission levels are near to or approaching the emission concentration limits.

35. Consistent compliance shall be demonstrated using the results from at least three or more periodic monitoring exercises over a period of at least two years or sooner if supported by continuous indicative monitoring showing consistent compliance.

36. Any significant process changes which might have affected the monitored emission shall be taken into account before the monitoring frequency is varied.

37. Where emission limit values are consistently met without the use of abatement equipment, the monitoring requirement for those pollutants shall be dispensed with, subject to conditions 34 to 36.

Minimising dust emissions

38. Stocks of dusty, or potentially dusty, materials and wastes shall be stored in such a manner as to prevent wind whipping – for example, by covering or screening. All such materials shall be stored dry in covered containers or undercover.

39. All spray booths and shot blasting equipment shall be provided with adequate extraction to minimise the escape of fugitive emissions from the building. Such extraction shall be ducted to arrestment equipment where such equipment is necessary to meet the relevant emission limits stated in this permit.

40. Adequate provision shall be made for the containment of liquid and solid spillages. All spillages shall be cleared as soon as possible and in the case of solid materials this shall be achieved by the use of vacuum cleaning, wet methods, or other appropriate techniques. Dry sweeping shall not be permitted unless there are environmental or health and safety risks in using alternative techniques. A vacuum cleaning method or other appropriate techniques shall be used.

41. Abrasive blasting shall be carried out in a specifically designed booth and exhausts shall be vented to suitable dust arrestment plant.

42. The cleaning of the particulate matter arrestment plant, coating application plant and extract ductwork shall be carried out so as to minimise emissions to air.

43. Cleaning of powder application booths shall be carried out with the booth extract and arrestment kept running.

44. Flues and ductwork shall be cleaned to prevent accumulation of materials, as part of the routine maintenance programme.

45. Extraction equipment, booths and ductwork shall be inspected regularly and cleaned as necessary to minimise accumulation of material.

Abnormal emissions

46. Any malfunction or breakdown leading to abnormal emissions shall be dealt with promptly and process operations adjusted until normal operations can be restored. All such malfunctions shall be recorded in the log book. If there is likely to be an effect on the local community and/or in the event of the failure of key abatement plant, the local enforcing authority shall be informed without delay. The local enforcing authority may need to identify arrestment plant the failure of which shall be notified to them immediately.

Continuous monitoring

47. Operations likely to generate particulate matter shall be continuously monitored to indicate the performance of the abatement plant, by using equipment such as a pressure drop indicator.

48. Where continuous monitoring is required, it shall be on display on appropriately trained operating staff.

49. Instruments shall be fitted with audible and visual alarms situated appropriately to warn the operator of abatement plant failure or malfunction.

50. The activation of alarms shall be automatically recorded, where possible.

51. All continuous monitors shall be operated, maintained and calibrated in accordance to the manufacturer's instructions. The relevant maintenance and calibration shall be recorded and such records be made available for inspection by the regulator.

52. All new continuous monitoring equipment shall be designed for less than 5% downtime over any 3-month period.

Calibration and compliance

53. Calibration and compliance monitoring shall meet the following requirements as appropriate such that no results exceed the emission concentration limits specified except where either;

(i) data is obtained over at least 5 sampling hours in increments of 30-minutes or less; or

(ii) at least 20 results are obtained where sampling time increments of more than 30-minute are involved and in the case of A) or B)

(iii) no daily mean of all 30-minute mean emission concentrations shall exceed the specified emission concentration limits during normal operation (excluding start-up and shut-down) and

(iv) no 30-minute mean emission concentration shall exceed twice the specified emission concentration limits during normal operation (excluding start-up and shut-down).

54. Calibration and compliance monitoring for all substances shall be carried out using the methods below or methods which can be demonstrated to be equivalent to those stated.

(i) Stationary source emissions – determination of the mass concentration of total organic carbon in flue gases from organic solvent using processes. Continuous flame ionisation detector method. EN 13526.

(ii) Stationary source emissions – determination of mass concentration of individual gaseous organic compounds. EN 13649.

(iii) Non-continuous emissions monitoring of particulate matter shall be carried out according to the main procedural provisions of BS ISO 9096:2003, with averages taken over operating periods excluding start-up and shut-down.

Maintenance

55. A written maintenance programme shall be provided to the regulator with respect to pollution control equipment.

56. A record of maintenance of pollution control equipment carried out shall be made available for inspection.

Stacks, vents and process exhaust

57. Stacks or vents shall not be fitted with any restriction at the final opening such as a plate, cap or cowl, with the exception of a cone, which may be necessary to increase the exit velocity of the emissions.

58. A minimum discharge velocity shall be required in order to prevent the discharge plume being affected by aerodynamic downwash.

General records

59. The results of all periodic monitoring, inspections, visual and olfactory assessments and a summary record of continuous monitoring shall be recorded in a log book, retained by the operator for a minimum of two years and made available for examination by the local enforcing authority.

60. Adverse results shall be investigated immediately and in all cases shall be recorded in the logbook. The operator shall ensure that the cause has been identified and corrective action taken, and this action recorded in the logbook.

Management

61 Effective control of emissions requires the maintenance and proper use of equipment, the proper supervision of process operations, high housekeeping standards and, where appropriate, checking for visible and odorous emissions. Effective preventative maintenance shall be employed on all plant and the equipment concerned with the control of emissions to the air.

62. Essential spares and consumables shall be held on site or be available at short notice from suppliers in order to rectify breakdowns rapidly.

Training

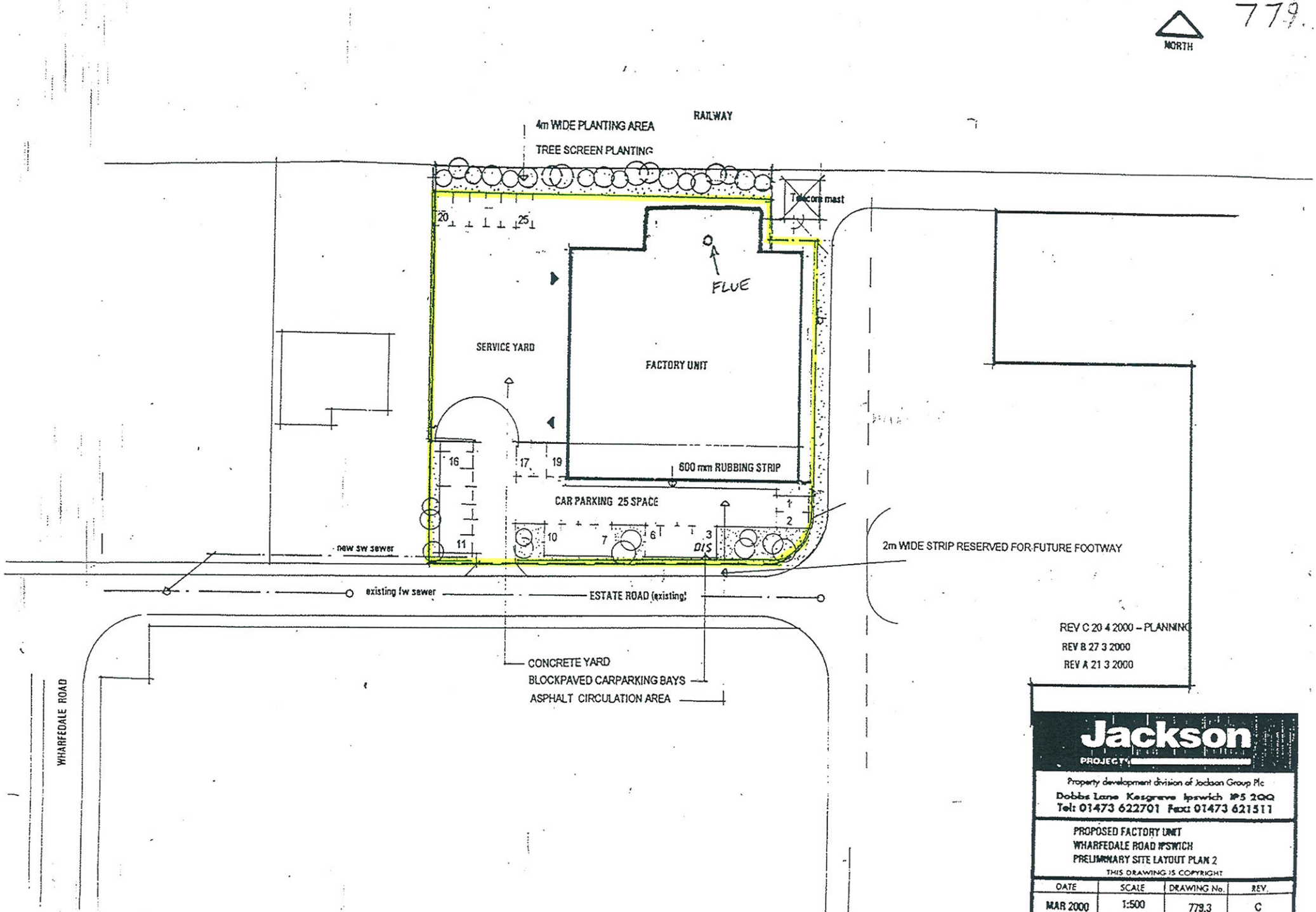
63. Training of all staff with responsibility for operating the process shall include:
   (i) Awareness of their responsibilities under the permit, in particular how to deal with conditions likely to give rise to dust emissions such as in the event of spillage.
   (ii) Minimising emissions on start up and shut down.
   (iii) Action to minimise emissions during abnormal conditions.

64. The operator shall maintain a statement of training requirements for each operational post and keep a record of the training received by each person whose actions may have an impact on the environment. These actions shall be made available to the regulator on request.

~ End of permit ~

Appendix A

779.



Jackson
PROJECTS

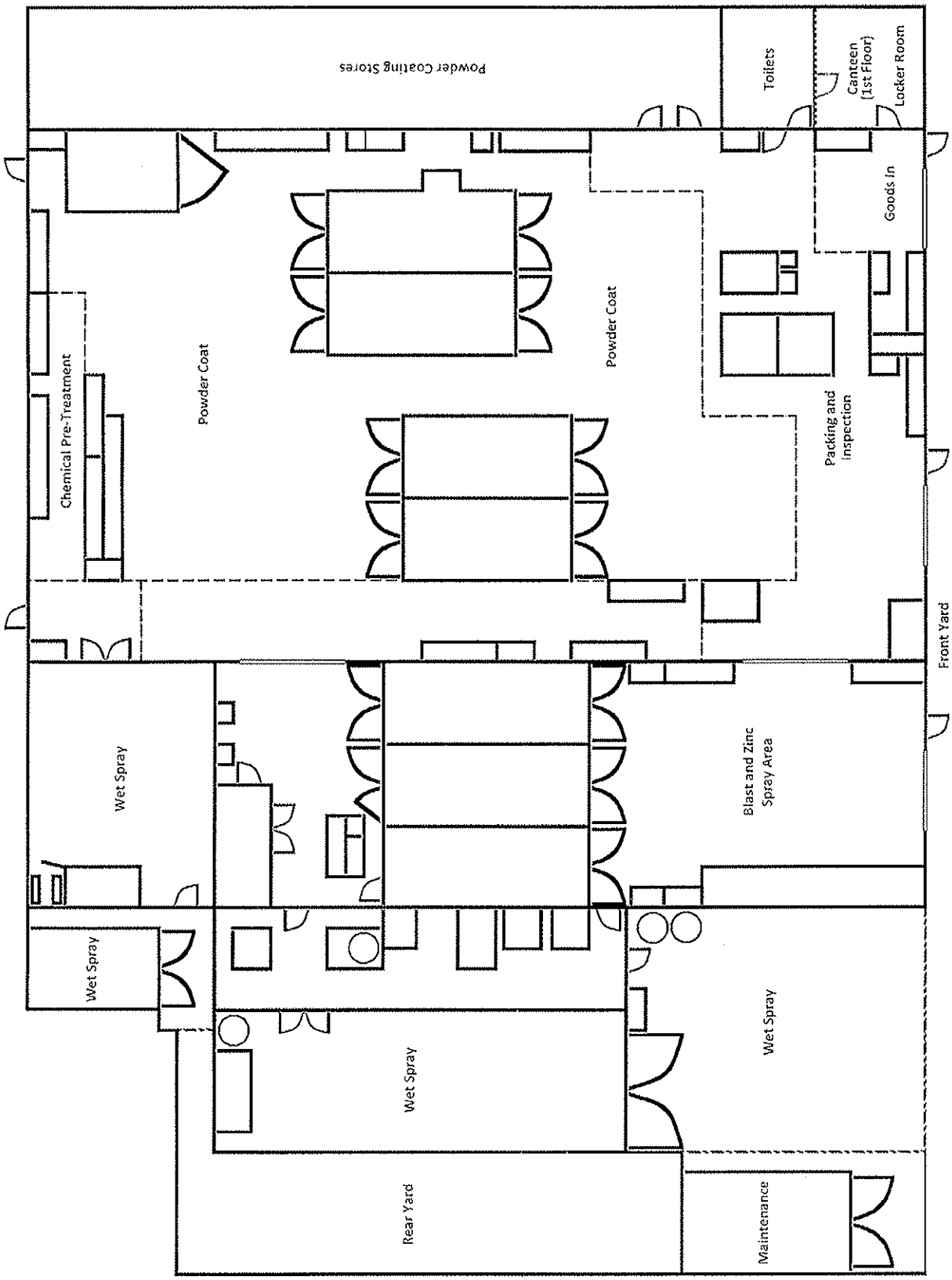
Property development division of Jackson Group Plc
Dobbs Lane Kesgrave Ipswich IP5 2QQ
Tel: 01473 622701 Fax: 01473 621511

PROPOSED FACTORY UNIT
WHARFEDALE ROAD IPSWICH
PRELIMINARY SITE LAYOUT PLAN 2

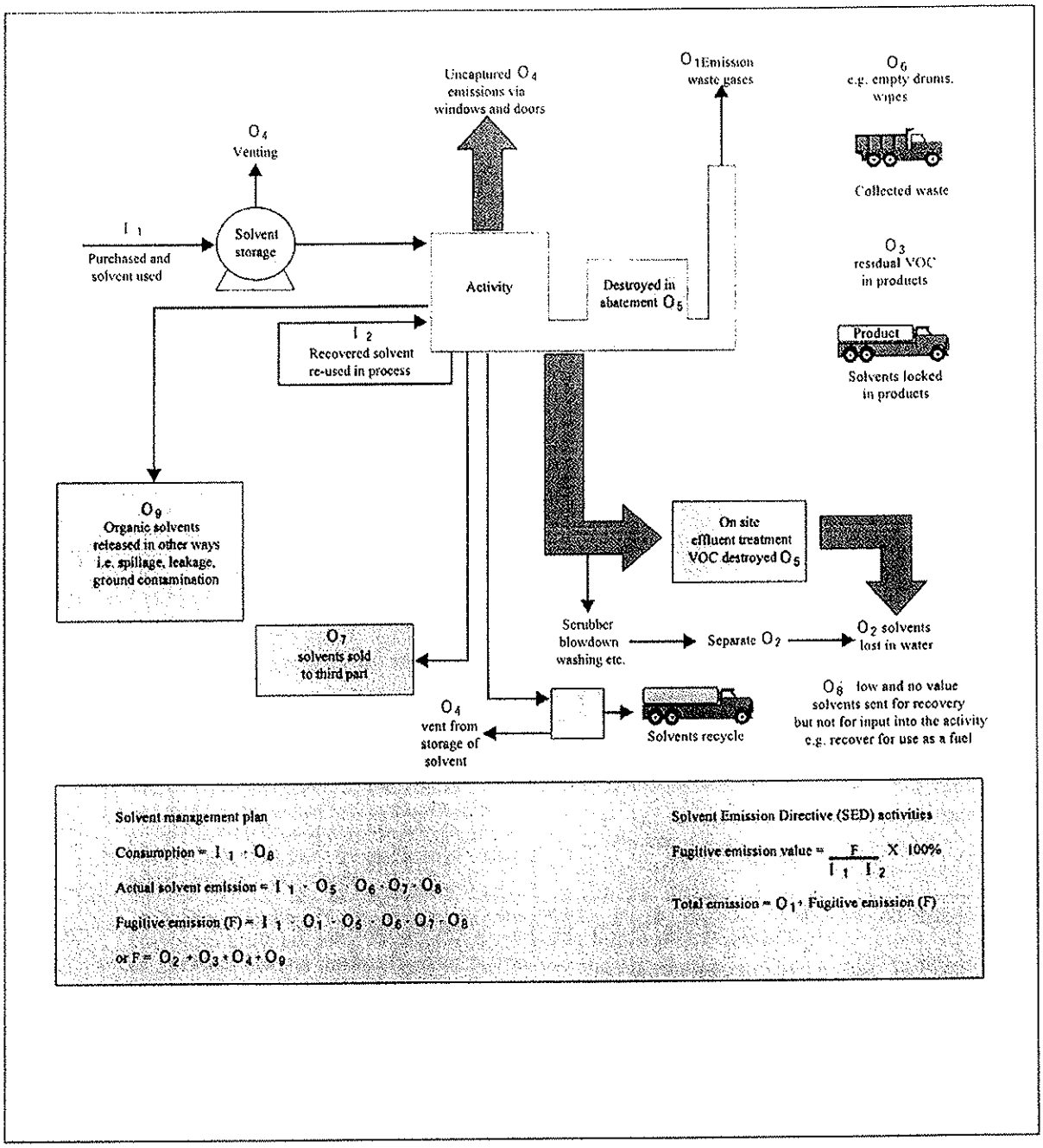
DATE	SCALE	DRAWING No.	REV.
MAR 2000	1:500	779.3	C

SITE PLAN 1 - LOCATION

SITE PLAN 2 - A4/A3



Appendix B



Solvent management plan

Consumption = $I_1 - O_8$

Actual solvent emission = $I_1 - O_5 - O_6 - O_7 - O_8$

Fugitive emission (F) = $I_1 - O_1 - O_5 - O_6 - O_7 - O_8$

or F = $O_2 + O_3 + O_4 + O_9$

Solvent Emission Directive (SED) activities

Fugitive emission value = $\frac{F}{I_1 - I_2} \times 100\%$

Total emission = O_1 + Fugitive emission (F)