



Site Audit & Risk Assessment

June 2011



Site address:	
Date and time of audit:	Date of previous audit:

The site audit has been compiled from the UK edition of the Eurobitume Guide to Safe Delivery of Bitumen.

Procedure

It should be remembered that the audit must be carried out as a joint exercise between the supplier's representative, the site manager or their appointed representative.

The procedure is in two parts. Firstly the physical site audit, followed by completion of the risk assessment form.

Site Audit

1. A suitably convenient date should be arranged. Allow at least 2 hours for the audit.
2. The audit must be carried out with both parties present.
3. The audit record form should be used to record conditions on the day of the audit, giving as much detail as possible. Guidance on completion of the audit is included.
4. All non-compliances must be discussed as they arise and noted.
5. For all non-compliances the risk assessment matrix must be applied to quantify the level of risk. Further action should then be agreed including a time period for the non-compliances to be addressed.
6. The site management must sign both the site audit document & the risk assessment. A copy should be kept on record by both the supplier and the site. Copies may be supplied to the Safety Manager/Officer for the company if necessary.
7. The site should be re-visited after the agreed time period has elapsed, to ensure that the agreed actions have been completed to the satisfaction of both parties. Supplier procedures should apply in event of reluctance to rectify a non-compliance, which will involve escalation within the customer's and supplier's organisations.

Risk Assessment

A risk assessment matrix and form for recording the information is given at the back of this guide. It is recommended that a risk assessment should be carried out on any non-compliance and for other aspects of the audit at the auditor's discretion.

The site audit and risk assessment process should be completed prior to any initial delivery, then at least every three years, or when there is a change to the plant, equipment, or procedures. One should also be considered following any incident.

The information in this document is given in good faith and belief in its accuracy at the time of publication, but does not imply any legal liability or responsibility by the Refined Bitumen Association. The Health and Safety at Work Act 1974 and The Management of Health & Safety Regulations 1999 require employers to provide safe systems of work to ensure the safety of their employees and the public. Health and Safety Law imposes duties on both the supplier and the customer to provide safe systems of work. This document is intended to help both parties comply with their respective responsibilities during the delivery of bitumen products and is not intended to vary the legal responsibility of either party.

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Site Audit

The audit booklet has been compiled from the UK edition of the Eurobitume Guide to Safe Delivery of Bitumen.

In the Rating column a **C** will be used for compliance, and an **N** will be used for non-compliance to the UK edition of the Eurobitume Guide to Safe Delivery of Bitumen.

1	CUSTOMER SITE	Audit findings	Rating
1.1	Clearly designated routes to and from the delivery points should be provided		
a)	If drivers are required to weigh in and out, a walkway must be provided to enable safe access to and from the delivery vehicle. Consider: <ul style="list-style-type: none"> • Is a walkway required and what form of safe access is provided? 		
b)	Customers are responsible for ensuring that drivers are aware of the site safety and emergency procedures. Consider: <ul style="list-style-type: none"> • Site induction process, how often are drivers reinducted? • Review procedure and mechanism for informing the driver. • Review past inductions, has the driver signed the induction? 		
c)	The customer is responsible for ensuring that the driver is in possession of a current RBA driver's passport.		
d)	Clearly designated safe routes to and from the delivery points should be provided including access to and from the weighbridge for both vehicles and personnel. Consider: <ul style="list-style-type: none"> • What signs are provided? Is there a camber, an incline, etc? • What is the road surface like; slippery, potholes, etc? 		
e)	There must be clear signage and directions for delivery drivers and all approach routes should well lit, during the hours of darkness. Consider: <ul style="list-style-type: none"> • Are site plans available for new drivers? • Have any lighting defects been previously reported by drivers? 		
1.2	A safe and readily accessible delivery point must be provided		
a)	In selecting the delivery point, due regard should be paid to nearby haul roads and traffic routes. The need for vehicle reversing must be kept to a minimum. Consider: <ul style="list-style-type: none"> • Is assistance provided? • Consider other vehicle movements that may impact on the driver. 		
b)	A flat even surface without gradient for the vehicle where the driver can discharge the load in safety and is protected from other traffic movements. Consider: <ul style="list-style-type: none"> • What is the surface (concrete, asphalt, etc)? • Is the surface flat or on a slope? 		
c)	Is there unrestricted movement around the vehicle? (2 metres around the vehicle is recommended).		
d)	No access within 6 metres of the delivery point to anyone not involved in the delivery operation. Consider: <ul style="list-style-type: none"> • The location of the nearest pedestrian route, signage and physical barriers. Site rules or safe systems of work. 		
e)	Is the lighting adequate in the discharge area? Consider: <ul style="list-style-type: none"> • Have any lighting defects been previously reported by drivers? 		

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1	CUSTOMER SITE (continued)	Audit findings	Rating
f)	The delivery area should be tidy and clear of obstructions.		
g)	Are there any surrounding or adjacent operations which could impair a safe delivery? Consider: • Dump trucks, fork-lift trucks, overhead activity, etc.		
h)	Is there a safe exit route in the event of an emergency?		
1.3	At least one emergency shower must be provided		
a)	An emergency shower must be provided with a minimum distance of 6 metres and a maximum of 20 metres from the discharge point, together with signs indicating its position. Advice on the treatment of bitumen burns must be displayed in the delivery area. Consider: • If within 6 metres a suitable screen must be provided. • Clearly signed and safe access to the safety shower. • Arrangements for extreme weather conditions. • Test the shower, is it alarmed? • Check it is fit for purpose, ref RBA guidance note on safety showers. • Check for controls against Legionella. • Review maintenance records. • Location and accessibility of shower.		
1.4	Instructions for the safe delivery operations should be posted in the delivery area		
a)	Are the safe delivery signs clear and easy to read? Consider: • Are the signs provided by the RBA, if not do they meet the standards of the RBA signs?		
1.5	All receipt facilities should be regularly cleaned and checked for serviceability with any defects recorded and rectified		
a)	All receipt facilities, including discharge points, tank gauges, vent pipes and any flexible hoses should be regularly cleaned, checked for serviceability and any defects recorded and rectified. Consider: • Reviewing physical evidence and maintenance records.		
1.6	Pipe drainings		
a)	A facility must be provided for the collection and disposal of all hose drainings. Consider: • Is it of adequate size, is it contaminated and it shouldn't be holding water.		
1.7	A dry powder extinguisher must be provided in close proximity to the delivery flange		
a)	At least one 6kg dry powder fire extinguisher must be provided in close proximity between 6 to 20 metres from the delivery flange. Consider: • Check the pressure gauge on the extinguishers. • Review positioning, physical evidence of serviceability and maintenance records.		
1.8	The customer is responsible for ensuring that all personnel involved in the delivery are aware of the site specific safety and emergency procedures		
a)	Site specific safety and emergency procedures should be tested and staff must be appropriately trained in the procedures. Consider: • Review evidence of testing of procedures and staff training.		

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2. PERSONAL PROTECTIVE EQUIPMENT

All drivers delivering bitumen products have been provided by their employer, Personal Protective Equipment (PPE) and have received training in its use and maintenance.

The drivers and company representative's PPE must comply with Appendix 1 of the UK edition of the Eurobitume Guide to Safe Delivery of Bitumen.

2	PERSONAL PROTECTIVE EQUIPMENT	Audit findings	Rating
a)	Driver's PPE Consider: <ul style="list-style-type: none"> If no delivery taking place then ask customer representatives if drivers are compliant with PPE requirements. 		
b)	Customer Representative's PPE Consider: <ul style="list-style-type: none"> Check if the site has the full PPE available and verify it complies with Appendix 1. 		

3	DELIVERY VEHICLE EQUIPMENT
	Refer to section 3 of the UK edition of the Eurobitume Guide to Safe Delivery of Bitumen

4	OPERATION & MAINTENANCE OF STORAGE TANKS AND PIPEWORK	Audit findings	Rating
4.1	Tank markings		
a)	Each tank and its associated delivery pipe must be independently and uniquely identified with both the tank number and grade. The safe working capacity must be displayed for each tank. Consider: <ul style="list-style-type: none"> Is there suitable signage for product details? 		
4.2	Tank gauges		
a)	Adequate and reliable means of gauging the tank contents and ullage must be available. Gauges must clearly identify which tank they refer to and should preferably be visible from the driver's position at the discharge point. Wherever possible a duplicate system should be provided in the plant control room. Consider: <ul style="list-style-type: none"> Are the gauges maintained under a service contract? If not what other process for maintenance of gauges are in place? Review physical evidence of maintenance records. 		
4.3	Tank alarms		
a)	A high level alarm (HLA) must be installed on each storage tank. Alarms must clearly identify which tank they refer to when activated. To avoid product spillage, whilst the delivery hose/line is being cleared, the HLA alarms should be set to trigger at the available capacity of the tank content less 10%. Consider: <ul style="list-style-type: none"> Activate the alarm test buttons to ensure operation of the warning beacon and klaxon. Are the HLAs maintained under a service contract? If not what other process for maintenance of the alarms are in place? Review physical evidence of maintenance records. Calculation of safe working capacity/HLA setting. Ref Appendix 3 of the Guide to Safe Delivery of Bitumen. How is the HLA activated, e.g. via a trigger on the level gauge? 		

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4	OPERATION & MAINTENANCE OF STORAGE TANKS AND PIPEWORK (continued)	Audit findings	Rating
b)	<p>An independent high high level alarm (HHLA) must be installed on each storage tank. The activation of the HHLA system must be independent of the content gauging system.</p> <p>Alarms must clearly identify which tank they refer to when activated.</p> <p>To avoid product spillage, whilst the delivery hose/line is being cleared, the HHLA alarms should be set to trigger at the available capacity of the tank content less 7½%.</p> <p>Consider:</p> <ul style="list-style-type: none"> • Activate the alarm test buttons to ensure operation of the warning beacon and klaxon. • Are the HHLAs maintained under a service contract? • If not, what other process for maintenance of the alarms is in place? • Review physical evidence of maintenance records. • Calculation of safe working capacity/HHLA setting. Ref Appendix 3 of the Guide to Safe Delivery of Bitumen. 		
c)	<p>Alarm beacons must be clearly visible and the klaxon audible to all those responsible for the safe receipt of bitumen. HLAs must be regularly tested and maintained.</p> <p>Consider:</p> <ul style="list-style-type: none"> • Review physical evidence of serviceability. 		
d)	<p>In the event of an alarm being triggered ground based pumps (GBP) should automatically shut-down and must not re-start until the cause of the alarm has been investigated and resolved.</p> <p>Consider:</p> <ul style="list-style-type: none"> • Means of draining delivery hose if unable to solve problem. • Is there an operating procedure? 		
4.4	Tank openings		
a)	<p>Vent pipes must be located where they do not pose a risk to personnel or vehicles and must be kept clear at all times.</p> <p>Consider:</p> <ul style="list-style-type: none"> • How far is each vent pipe located from the discharge point, driver and the access ways? • Are the vent pipes clearly identified? • What system is in place to ensure vent pipes are kept clear and is there evidence? 		
b)	<p>Tank lids must be kept closed at all times during the delivery.</p> <p>Consider:</p> <ul style="list-style-type: none"> • Verification that the tank lid is closed at all times. 		
c)	<p>Tanks should be fitted with a correctly designed drain valve to enable the safe emptying of the tank for cleaning and maintenance.</p> <p>Consider:</p> <ul style="list-style-type: none"> • What facility is fitted to each tank to enable it to be, emptied, cleaned and maintained? • If there is no drain valve is there a risk assessment for carrying out an uplift? 		
d)	<p>Should there be a requirement to take product samples, a purpose-designed valve should be permanently fitted to the tank or corresponding pipework. Under no circumstances should samples be taken from the delivery vehicle or hoses at the delivery site.</p>		

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4	OPERATION & MAINTENANCE OF STORAGE TANKS AND PIPEWORK (continued)	Audit findings	Rating
4.5	Tank pipework and flanges		
a)	<p>Customer delivery pipework must be of appropriate design, well supported and maintained and fitted with a standard delivery flange, 20 mm minimum thick, located 0.5 – 1.0 metre above ground level. All new installations should be fitted with flanges of the design, shown in Appendix 2.2 of the UK edition of the Eurobitume Guide to Safe Delivery of Bitumen. All existing non-compliant flanges should be replaced as soon as is practicable with this design.</p> <p>Consider:</p> <ul style="list-style-type: none"> • Measure the flange to ensure it complies with Appendix 2.2. • Check for defects, e.g. use a straight edge to identify any warping. • Does the flange have a shroud attached? • Is the pipework insulated? 		
b)	<p>Access to the customer’s delivery flange must be such as to allow for safe and easy connection of the delivery hose.</p> <p>Consider:</p> <ul style="list-style-type: none"> • The angle of the flange (should be vertical). 		
c)	<p>Distance between vehicle and the storage tank flanges must not be more than one hose length.</p> <p>Consider:</p> <ul style="list-style-type: none"> • The vehicle position and the distance to the storage tank flange. 		
d)	<p>A flange security system, such as padlocks, should be fitted to maintain control & prevent cross contamination and possible spillage. Each system should be robust, tank specific and fit for purpose.</p> <p>Consider:</p> <ul style="list-style-type: none"> • Test if the locks have individual keys. 		
4.6	Tank design and use		
a)	<p>Some customer tanks may have fill pipes that go to the bottom of the tank to minimise oxidation. Such fill pipes must be slotted, or fitted with an alternative device, to prevent siphoning.</p> <p>Consider:</p> <ul style="list-style-type: none"> • What arrangements are in place to prevent siphoning (where pipe goes to bottom of tank)? 		
b)	<p>All access ladders and walkways on tank roofs must be fitted with suitable guards to prevent falls.</p> <p>Consider:</p> <ul style="list-style-type: none"> • What means are there to prevent unauthorised access? 		
c)	<p>Where bitumen emulsion tanks are present, it is imperative that all supply, and return pipework are segregated from the bitumen pipework system. Fill point connections should be of the screw type, to prevent accidental connection.</p>		
d)	<p>Where bitumen tanks are being returned to service, clear procedures must be in-place to ensure that the tank is free of water (a checklist is available on the RBA website).</p> <p>Consider:</p> <ul style="list-style-type: none"> • Explaining to the customer the effects of hot bitumen mixing with water. • Is the customer aware of the RBA checklist? 		

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5	DELIVERY PROCEDURES	Audit findings	Rating
5.1	Pre-delivery		
a)	<p>The customer's representative is responsible for:</p> <ul style="list-style-type: none"> • Confirming that the grade and quantity of bitumen being delivered are correct. • Verifying connection to the appropriate tank and receiving flange for the delivery. • Certifying that there is sufficient ullage to receive the full vehicle load. • Signing the driver's documentation prior to delivery to confirm sufficient ullage. • Ensuring lines and valves are routed to correct tanks. <p>Consider:</p> <ul style="list-style-type: none"> • Is the BDP system being used? If it is, seek evidence of completed permits. • Review customer's procedures and risk assessments. 		
5.2	During delivery		
a)	<p>The customer is responsible for the driver's well-being whilst on their premises. Their representative must monitor the drivers safety during the discharge process by at least one of the following methods:</p> <ol style="list-style-type: none"> 1. Visually monitoring, e.g. line of sight or CCTV. 2. Regular checks made on the delivery process as per site risk assessment. 3. Attend the discharge process with the driver. <p>N.B. When the customer's representative is in the vicinity of the discharge point they must wear the appropriate PPE.</p> <p>Consider:</p> <ul style="list-style-type: none"> • Regular checks. • If the customer has CCTV check that it is working and the image is clear. 		
b)	<p>Where tanks are situated inside buildings, entry into that building must be restricted to authorised personnel only. During discharge, activities inside the building must be kept to a minimum.</p> <p>Consider</p> <ul style="list-style-type: none"> • What processes are in place to avoid unauthorised access? 		
c)	<p>The driver is solely responsible for the operation of the delivery vehicle and equipment throughout the discharge procedure, and must remain by the vehicle shut off valve whilst discharge is taking place. The driver must wear full PPE at all times during the discharge process.</p> <p>Consider:</p> <ul style="list-style-type: none"> • Ask the customer for their view on compliance and check if a delivery is taking place. 		
5.3	Split loads		
a)	<p>Split loads are not recommended and should be avoided. However, if the load is to be delivered into more than one tank, then each tank must be treated as a separate delivery point. If the vehicle needs to be moved, the delivery procedure must be repeated in full. This will require the removal of the delivery hose from both vehicle outlet and customer flange. Delivery documents must be endorsed by the customer to identify the additional tank(s) and in particular, that ullage and grade checks have been completed prior to delivery.</p> <p>Consider:</p> <ul style="list-style-type: none"> • Use of ATD forms. Site awareness of MPA WG7 and ATD's. • Check that a new BDP is used for the second part of the delivery (where applicable). 		

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5	DELIVERY PROCEDURES (continued)	Audit findings	Rating
5.4	Post delivery		
a)	On completion of delivery, the driver must clear all discharge pipework and disconnect the tanker hose. All hose drainings must be disposed of in the receptacle provided by the customer for this purpose. Consider: <ul style="list-style-type: none"> • Is there evidence of bitumen spills outside the receptacle? 		
b)	On completion of delivery, the customer’s representative shall complete and sign the delivery documents to acknowledge receipt of the load. The customer shall also confirm that the flange security system is re-instated. Consider: <ul style="list-style-type: none"> • Review procedures. 		
c)	Any deficiency in the tanker driver’s delivery procedures must be promptly reported to the bitumen supplier who will take corrective action. Consider: <ul style="list-style-type: none"> • Ask the customer for their view on compliance. 		
d)	Drivers are encouraged to report any defects that they identify at customers sites, firstly to the customer, secondly to the bitumen supplier so that joint corrective action can be taken. Consider: <ul style="list-style-type: none"> • Physical evidence of driver near miss forms reported and if they have been resolved. • Review procedures for dealing with a defect. 		

6. Bitumen specific training

All drivers employed in the transportation and delivery of bitumen products receive regular training under the following headings:

- ADR – European Agreement concerning the International Carriage of Dangerous Goods by Road.
- Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2011 U.K.
- RBA Bitumen Driver’s Passport.
- Employer specific training programmes.

6	Bitumen specific training	Audit findings	Rating
a)	During the audit if a delivery is being carried out, check if the driver is in possession of a current RBA Driver’s Passport and ADR.		
b)	Customer representatives must receive training on the safe handling, storage and receipt of bitumen products. Training requirements should be reviewed regularly. Consider: <ul style="list-style-type: none"> • Checking documentation and consider if additional training is required. 		

7	Bitumen safety documentation	Audit findings	Rating
a)	Comprehensive advice on the treatment of bitumen burns has been issued by the Eurobitume (European Bitumen Association). The RBA has published advice on the Safe Handling of Bitumen. Consider: <ul style="list-style-type: none"> • Check there are Eurobitume bitumen burns and Safe Handling of Bitumen posters in the delivery area. 		

Customer Representative
Name:
Position:
Signature:

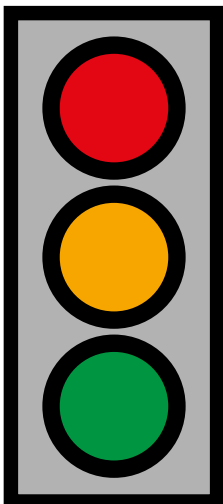
Supplier Representative
Name:
Position:
Signature:

CONSEQUENCE OR SEVERITY	PROBABILITY				
	Extremely Unlikely (Physically possible but not known to have previously occurred in the bitumen industry)	Unlikely (Could occur once in 20 to 30 years for 20 to 30 similar plants)	Likely (Could occur once during the plant's lifetime, i.e. 20 to 30 years)	Very Likely (Could occur several times in the plant's lifetime)	Extremely Likely (Could occur several times a year at the plant)
Minor Injury (First Aid treatment required)	L	L	L	L	M
Moderate Injury (Involving Medical Attention or restricted work injuries)	L	L	M	M	H
Serious Injury (Lost Time Accident with no permanent effect)	L	M	M	H	H
Major Injury (Single fatality, loss of limb or permanent disability)	M	M	H	H	H
Catastrophic (Multiple fatalities)	M	H	H	H	H

Risk Ratings:

H = Unacceptable risk, MUST agree additional controls to bring risk down to M or L. **M** = Tolerable (ALARP) further controls required, if possible, bring down to L. **L** = Broadly Acceptable Risk.

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RBA Customer Site Traffic Light System

RED: A red situation would mean bitumen delivery to the site is suspended.

AMBER: Site is not complying in certain areas of the UK edition of the Eurobitume Guide to Safe Delivery of Bitumen:

1. Identify actions necessary for the reduction of any risk highlighted within the non compliance.
2. An agreed action timescale between customer and supplier must be implemented.
3. Failure to complete actions within agreed timescale for compliance could lead to a RED situation.

GREEN: The site is in compliance with the UK edition of the Eurobitume Guide to Safe Delivery of Bitumen.

Site Rating:

On completion of this audit, this site has been rated. (Please write Red, Amber or Green)	
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