



TRANSPORT AND LOGISTICS

Managing critical infrastructure
and preparing for the energy future

The energy transition

Pressure on the transport and logistics sector has never been greater. Fuelled by the government's transport decarbonisation plan, the industry is committed to reaching Net-Zero by 2050.

Day to day, this means juggling ambitious emissions targets, environmental good practice, and public perception. Operators are fighting to maintain their hard-won reputations, while ensuring capacity for growth and expansion in a competitive market.

Transport currently represents roughly a quarter of global CO2 emissions from energy, of which 60% is from heavy-duty transport, including trucking, shipping, and aviation. While the future of surface transport appears to be electric, long-distance

shipping and aviation will likely look to low-emissions liquid fuels from bio or synthetic sources. Their paths to decarbonisation may differ, but all transport operators face shared challenges: to compliantly maintain critical assets and reduce risks to the environment, their operation, and their reputation.

Forward-looking infrastructure management can effectively tackle both, keeping the industry protected and productive – for today and tomorrow.



Road, rail, air, and water

Rail, water, and air transport are equally important to British transport and logistics and play a crucial role in moving passengers and goods to, from, and around the UK. In 2019*:

- Over **16 billion tonnes** of goods were moved by rail
- Over **2.5 million tonnes** of international and domestic freight was moved by air
- **49 million tonnes** of goods began or ended at a shipping dock
- **2 million tonnes** of goods began or ended at an airport
- **580 billion passenger miles** were covered across road, rail, air, and water

Road

Road transport and logistics organisations are currently at a crossroads, deciding whether to move to the erratic HVO market or electric and hydrogen fuelling, which requires higher upfront costs.





Rail

As passenger rail continues to occupy largely electrified routes, freight operators, who utilise a mix of electric and diesel, are looking at alternative fuels. These options include hydrogen, which, in certain circumstances, can be a relatively simple switch.

Air

In the air, proposals to develop Sustainable Aviation Fuels and Zero Emission Flights are being developed, helping the UK become a global hub for low-emission aviation.





Water

90% of goods coming into the UK arrive by sea and 15% of domestic freight is moved by water. We must continue to protect and expand our inland waterway freight infrastructure.

Methodology

In May and June 2022, Adler and Allan, along with Logistics UK, ran a number of polls on social media and at the Multimodal exhibition to gain insights into the transport and logistics industry's asset maintenance regimes.

Respondents were made up of operations, fleet, logistics, and transport managers with responsibility for asset maintenance. The results were processed internally by Adler and Allan.

Survey results

We asked people working in the transport and logistics sector about their asset maintenance regimes, specifically around their separators/interceptors.

Separators (or interceptors) can form an integral part of a tertiary containment strategy. They are designed to trap harmful light liquids before they enter the surrounding area.

Regular separator maintenance is essential to keep all pollution prevention equipment working at optimum efficiency. Separator maintenance, including cleaning, also provides the information needed for service log scrutiny during environmental inspections.

The current standard by which separators/ interceptors should be operated and maintained is BS EN 858-2:2003 Separator systems for light liquids (e.g. oil and petrol).

A pollution incident caused by a poorly maintained asset or inadequate containment is a strict liability offence and failure to adhere to standards and good practice guidance is a key factor in considering enforcement action, with potential **fines of up to 100% of an organisation's pre-tax profits.**

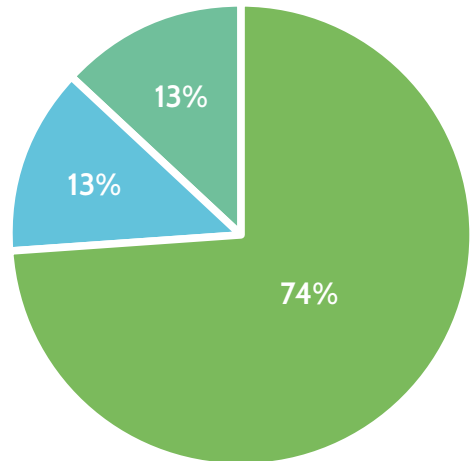
Asset maintenance

Respondents had a good understanding of risk on their critical assets, such as fuel tanks, bunds, and separators on their sites, with 74% knowing the condition of their assets and having a regular maintenance schedule for all of them.



Do you know the condition of critical assets, such as fuel tanks, bunds, and separators, and have a regular maintenance schedule for all of them?

- Yes
- No
- Don't know



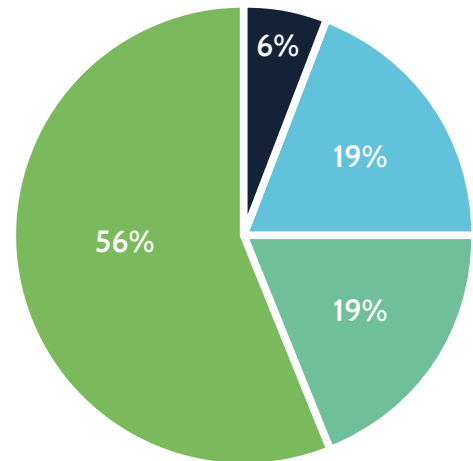
Separator maintenance standards

Respondents had a good understanding of the legislation surrounding separators/ interceptors. When asked what maintenance regime is required by BS EN 858-2:2003 for separators, just over half knew all were needed.



BS EN 858-2:2003 states that separators should have:

- An automatic warning device
- Six-month service and five-year integrity test
- Service records for inspection
- All of the above



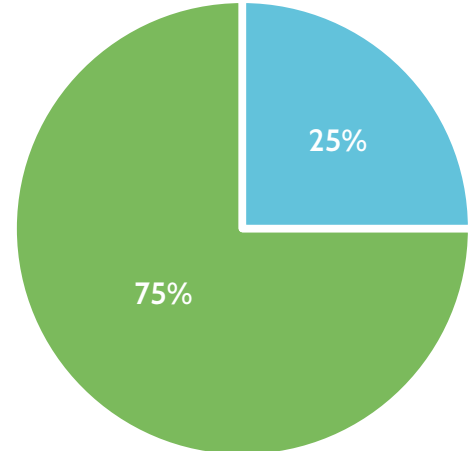
Separator maintenance standards

Respondents demonstrated a robust maintenance regime for their separators, with 75% ensuring their asset received a six-monthly service, an annual clean, and a five-yearly inspection.



What maintenance regime do you follow for your separators?

- Six-monthly service
- Annual clean
- Five-yearly integrity inspection
- All of the above



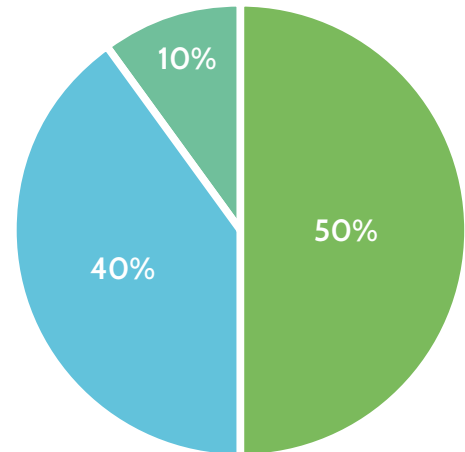
Automatic warning devices on separators

Respondents seemed unsure of the requirements to fit automatic warning devices to their separators, with only 40% reporting them as an existing system feature.



Do all your separators have automatic warning devices?

- Yes
- No
- Don't know



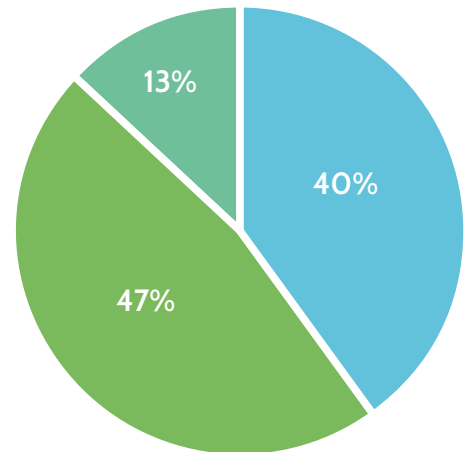
Five-yearly separator integrity tests

Awareness of the requirement to perform a five-yearly integrity inspection on their separators was relatively low, with only 40% of participants adhering to this guideline.



Do you perform a five-yearly integrity inspection on your separators?

- Yes
- No
- Don't know



Your first, second, and third line of environmental protection defence

Your primary (tank), secondary (bund), and tertiary (separator) containment systems are your first, second, and third line of defence against environmental pollution.

Regular asset maintenance is essential to keep all pollution prevention equipment working at optimum efficiency, safeguarding transport and logistics businesses handling and storing oil or other hazardous

materials. Partnering with a trusted environmental protection provider can help you implement the standards correctly to ensure your critical infrastructure remains compliant.

What does the law say?

There are several statutory instruments that could trigger punitive fines if you don't properly maintain your primary, secondary, and tertiary containment. However, the two most common pieces of legislation used are:

- **The Water Resources Act 1991**, which states: *'It is an offence to cause or knowingly permit any poisonous, noxious or polluting material, or any solid waste to enter any controlled water.'*
- **The Environmental Permitting Regulations 2016**, which state: *'It is an offence to cause or knowingly permit a water discharge activity or a groundwater activity without an environmental permit.'*





CIRIA C736 is the current good practice guidance documentation for the design, inspection, and maintenance of containment measures to prevent pollution.

It has been designed to assist operators meet the statutory obligation under the Control of Major Accident Hazards Regulations 2015 (COMAH) and the Environmental Permitting (England and Wales) Regulations and associated regulations.

It applies to the containment of a wide range of inventories and to all sizes of sites – from small commercial premises with a single storage tank through to large chemical or petrochemical sites, as well as warehouses storing hazardous substances.

A pollution incident because of a poorly maintained asset or inadequate containment is a strict liability offence. Prosecutors will review how an operation has adhered to standards and guidance, such as CIRIA C736, when considering enforcement action.

There has been a marked increase in fines over the last decade, especially for large companies. Businesses can be fined up to 100% of their pre-tax profits and, in certain circumstances, senior officers of offending businesses have been held personally liable. Beyond the obvious financial fallout, organisations must also deal with ecological, legal, and reputational damage.

The onus is on operators to demonstrate compliance with regulations to reduce the risk of a pollution incident. A robust asset maintenance programme is essential for providing the information needed for service log scrutiny in the event of an incident or during routine environmental inspections.

Primary containment (tanks)

Guidelines

Primary containment is the most important means of preventing major pollution incidents. It includes equipment in direct contact with stored substances, such as tanks, vessels, pipework, valves, and pumps, as well as equipment that prevents the loss of contaminants under abnormal conditions.

Tanks are subject to various regulations, standards, and good practice guidance, from CIRIA C763, COMAH, BS EN 14015:2004, EEMUA, API 650, and the Oil Storage Regulations, depending on the contents and tank material.

You should conduct routine inspection and maintenance of containers and keep a record of when and who carried out the work.

Inspections should highlight signs of damage or interference to your tank or pipework and be followed with immediate repairs by a competent, accredited engineer.

As well as a weekly visual check, you should use a qualified technician to perform a detailed annual inspection and service of your storage facilities, including:

- Checking the condition of tank surfaces and supports
 - for pipework
- Checking the condition and operation of pipework
 - and fittings
- Removing and disposing of any condensation water or sludge in your tank

You should receive a report detailing any faults that must be fixed before you can continue using your storage tank.

Your technician should be a member of a professional scheme for qualified tank installers, such as the Petroleum Equipment Installers and Maintenance Federation (PEIMF), Engineering Equipment and Materials Users Association (EEMUA), or the Oil Firing Technical Association (OFTEC).



Proactive maintenance

Tank audits and inspections

Using the latest high-pressure or ultrasonic technology, skilled engineers and specialist welders test for leaks and structural concerns, repair faulty tanks, and provide full follow-up documentation.

Inspection and reporting services should be compliant with EEMUA Level 2, API, and NDT standards and cover tanks used for fuel, water, chemical, and food storage. Adler and Allan's proprietary, ultra-sensitive, ATEX Zone 1 AdlerView™ camera can be used to remotely inspect and clean fuel tanks – both above and below ground – from a van positioned up to 50 metres away. You receive a full report and video of your inspection and a faster, more exact diagnosis of issues.

The cutting-edge approach also bypasses the cost of removing tank lids, as well as the health and safety risks of traditional man-entry inspections.

NDT testing against API standards

Non-Destructive Testing (NDT) analysis methods evaluate the quality of materials, fabrication, and integrity of tanks, pipelines, and wells, without destroying their serviceability.

Various techniques are employed, including fibre optic, ultrasonic, and magnetic flux leakage to scale tank walls and deliver clear views of confined spaces and hard-to-reach or remotely accessed areas. Degradation, corrosion, weaknesses, and welding defects are identified before damage occurs, avoiding unexpected repair costs.

Tank lining

Effective tank linings protect against deterioration and resist water and chemicals, keeping your assets performing for the long term. Glass-reinforced plastic is a resilient internal tank lining solution that offers a seamless, ceramic-like finish to confine even the most aggressive substances – ideal for bunded chemical tanks.

Tank cleaning

Specialist tank cleaners employ proven man-entry and non-man-entry techniques, including gamma jetting, 360° cleaning heads, and state-of-the-art robotic systems to tackle requirements such as changes of stored product, contamination, deterioration, decommissioning, transportation, or standard upkeep.

No more £750,000 surprises

How an expert fuel fix led to long-term compliance and cost reduction.

In the warehousing and logistics sector, reputations are built on reliability. So when water infiltrated a fuel tank at a leading nationwide distributor, our client faced losing valuable road miles – and vital customer confidence.

The contaminated fuel took 25 vehicles out of action. Service delivery was severely affected, and the price of repairs, recovery, and operational disruption totalled £750,000. Adler and Allan solved the immediate fuel issues and prevented future problems with a money-saving regime of planned cleaning and testing.

The situation

The cost of downtime was quickly ramping up, so our top priority was getting drivers back behind the wheel. Our teams worked onsite to clean the compromised tank and rid the fuel of water, microbes, and free sediment. By polishing – rather than replacing – the 30,000 litres of affected diesel, we saved our client over £30,000.

With the fuel restored and the fleet returned to the road, our customer asked us to identify further opportunities to extend tank life and cut long-term expenditure.

Case study

The solution

Our specialist engineers designed a bespoke planned preventative maintenance (PPM) programme to keep assets clean, active, and compliant.

For a cost-effective annual fee, we now regularly service and maintain interceptors and drainage infrastructure across all UK sites. In addition to routine maintenance, we provide ad hoc environmental work for the business's overground fuel storage, covering:

- Fuel sampling and analysis
- Tank testing
- General pipework maintenance
- Annual OFTEC oil storage audits

By reviewing asset performance on a rolling basis, our client stays confidently in control of cost management and compliance with tank and fuel health firmly in the hands of the experts.

The savings

- £750,000 Costs incurred by damaged vehicles and operational downtime
- £30,000 Cost for fuel polishing, rather than replacement
- £5,000 Average annual site fee for routine fuel cleaning and tank testing
- £745,000 Potential savings achieved through planned preventative maintenance

The added benefits

- Full visibility of expenditure for informed budget planning
- Proactive troubleshooting and issue resolution
- Consistently compliant assets
- Expert protection against fuel contamination, spillages, and environmental harm

Case study

Investigation and assessment

To address the initial contamination issue, we ran a full fuel and tank survey to gauge the extent of moisture damage and determine the most cost-effective course of action.

Diesel samples were evaluated for bacterial growth using an extensive range of British Standard tests, analysing appearance, water content, vapour pressure, distillation, and microbial contamination.

Our experts recommended fuel polishing over replacement, leading to significant savings.

Fuel was uplifted and polished to filter and eliminate micro-organisms, water, and free water sediment.

During the polishing process, tanks were cleaned and inspected for signs of structural weakness, deterioration, and corrosion.

Remediation

To head off future financial and environmental risks, we implemented a targeted service and maintenance programme for the interceptors and drainage systems across all sites.

Routine inspections and interceptor filter changes using our fleet of vacuum tankers, jetting tankers, and CCTV.

Remote tank cleaning and inspections for vehicle fuel storage, generator tanks, and gas oil tanks for sprinklers and boilers.

Innovative remote inspection technology, including AdlerView™, a non-man entry, ATEX Zone 1 device. Installation of above-ground fuel storage tanks to minimise fuel contamination risks.

Secondary containment (bund)

Guidelines

A bund is a facility (including walls and a base) built around an area where potentially polluting materials are handled, processed, or stored. Its purpose is to contain any unintended escape of material, until remedial action can be taken.

Bunds are subject to various regulations, standards, and good practice guidance, including, but not limited to, CIRIA C763, The Oil Storage Regulations 2001, COMAH Regulations 2015 to BS EN 14015:2004, depending on the tank contents.

CIRIA C736 covers maintenance, extension, and modification of an existing bund, as well as the construction of a new containment facility, and states:

“In summary, bunds should be designed and constructed to comply with a number of performance criteria that should take into account all credible:

- *Modes of escape of pollutant from the primary storage vessel*
- *Modes of failure of the bund*
- *Incident scenarios*
- *Loadings*
- *Chemical and physical exposure (particularly fire).”*

COMAH sites pose a higher risk to health and safety and the environment. Therefore, the Containment of Bulk Hazardous Liquids containment policy supporting guidance for secondary containment states that:

All above-ground Storage Tanks (ASTs) should be banded to provide secondary containment.

- Bunds shall be subject to a routine and periodic inspection and certification regime by a competent person regarding their condition and performance.



- During the inspection, operators would be asked to demonstrate inspection criteria and procedures. This should include both routine inspection and periodic detailed reviews that the structure remains fit for purpose.
- Bund wall and floor construction and penetration joints should be leak-tight. Surfaces should be free from cracks, discontinuities, and joint failures that may allow relatively unhindered liquid trans-boundary migration.
- As a priority, existing bunds should be checked, and any damage or disrepair that may render the structure less than leak-tight, should be remedied.

Preventative bund maintenance

Regular inspection and cleaning are key to an effective bund maintenance programme, ensuring that your secondary containment system is structurally sound and free of contaminants.

Bund audit

Working with a qualified person to train your engineers or carry out routine and periodic inspections of your bund's condition and performance means defects can often be identified at an early stage and addressed before they

become more significant and compromise integrity. Inspections should be conducted in line with CIRIA C736 Containment Systems.

Bund cleaning

Powerful vacuums extract water or leaked tank contents before the entire structure is jet washed to achieve a complete clean, even in the most confined, inaccessible spaces. All breached volatile or toxic liquids – such as acids, inflammables, and dangerous chemicals – should be safely removed and treated, leaving the bund clear, functional, and risk-free.

Bund lining

Because many bunds were constructed more than 20 years ago from porous brick or concrete, a high number require regular reinforcement to perform at their best.

Adler and Allan's polyurea AdlerCoat™ technology provides a cost-effective, durable, and hard-wearing bund lining, with water, chemical, oil, and solvent resistance protecting the environment and your assets against deterioration, degradation, and structural weakness.

Tertiary containment (separator)

Guidelines

Tertiary containment measures minimise the consequences of a major incident that causes the failure of or exceeds the storage capacity of secondary containment. They also enable additional safeguards to be deployed in time if an incident escalates.

Separators can form an integral part of a tertiary containment strategy as they are designed to trap harmful light liquids before they enter the surrounding area.

The current applicable standards and good practice are BS EN 858-2:2003 and GPP3 use and design of oil separators.

Regular separator maintenance is essential to keep all pollution prevention equipment working at optimum efficiency. Separator maintenance, including separator

cleaning, also provides the information needed for service log scrutiny during environmental inspections.

The current standard by which separators should be operated and maintained is BS EN 858-2:2003 Separator systems for light liquids (e.g. oil and petrol). It states that separators should:

- Be fitted with an automatic warning device / high-level alarm
- Be serviced and maintained as a minimum on a six-monthly basis
- Be subject to a maximum interval of a five-yearly integrity test
- Have full service and maintenance records available for inspection



There has recently been an increased number of pollution incidents either caused by failed separators or exacerbated by a loss of containment. Regulators are increasingly clamping down on poorly maintained and non-compliant operations.

Proactive separator maintenance

Separator alarms

A separator alarm system monitors oil, silt, and liquid levels within underground separators, ensuring they are operating correctly and preventing pollutants.

You should work with an experienced partner who can specify, supply, install, and service oil separator alarm systems and provide the necessary services to ensure your alarms work properly.

Separator inspection and maintenance

Look for an environmental partner that can provide a full 'peace of mind' service package, appropriate to the separator type and setting.

The six-monthly inspection should be a non-intrusive, 'in-service' inspection to check levels and functionality of key components.

The five-yearly integrity inspection is a critical service, as several faults can develop within the body of the tank. These include fractures, displacements, and groundwater ingress that can compromise the tank but are not possible to detect during a six-monthly inspection.

The five-yearly inspection is an 'out-of-service' survey. However, due to the adoption of cutting-edge technology and methodologies, the right partner will usually complete the service within a day, causing minimum disruption.

Operators are provided with complete records of inspection and testing to satisfy regulatory and standard auditing requirements.

Ensuring compliance in a changing energy landscape

Proactive risk reduction services and tailored, specialist support can significantly reduce the risk of an environmental emergency – and the penalties imposed following a pollution incident.

If a strict liability event should occur, enforcement action can be mitigated by demonstrating all reasonable endeavour was taken to implement proper prevention systems. This relies on detailed inspection and service records and ongoing maintenance of your primary, secondary, and tertiary containment systems.

Decarbonisation is a defining moment for the transport and logistics industry. Ensuring your critical assets remain compliant helps you rise to the Net-Zero challenge and shape a sustainable business strategy – through the energy transition and beyond.



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ENVIRONMENTAL RISK REDUCTION