

## Compliance Assessment Report CAR\_NRW0050040

**Permit being assessed:** BR9685IX.

**For:** Barry Silicone Plant, **held by:** Dow Silicones UK Limited

**At:** Cardiff Road, Barry, Vale of Glamorgan, CF63 2YL.

**Type of assessment:** Site Inspection,

**Reason:** Routine.

**On:** 16/10/2025 between 09:00 and 16:00.

**Parts of permit assessed:** 1.1.1 and 3.1.2 and 4.2.3.

**NRW Lead Officer:** Geraint Harris.

**Report sent to:** Environmental Manager , Environmental Manager , on 28/11/2025.

### 1. Summary of our findings (full details in section 4)

Part of permitted activity assessed (compliance criteria)	Assessment result	Permit condition
IR1A - Installations - Management - General Management	Assessed (A)	
IR3A(1) - Installations - Emissions and monitoring - Emissions to water	Assessed (A)	
IR3A(2) - Installations - Emissions and monitoring - Emissions to air	Assessed (A)	
IR3A(3) - Installations - Emissions and monitoring - Emissions to land	Action only (X)	
IR4B - Installations - Information - Reporting	Assessed (A)	

Result types are explained in more detail in the 'Important Information' section below.

Total non-compliances recorded	Total non-compliance score
0	0

How we use the non-compliance score to calculate your annual fee is explained in the 'Important Information' section below.

### 2. What action is required?

Criteria	Action needed	Complete by
IR3A(3)	Action 1: Please provide a copy of the inspection report for 2022. Due 31st December 2025.	31/12/2025

Compliance criteria codes are listed in the 'Important information' section below.

### 3. What will happen next?

Any non-compliance we have identified and recorded on this form is an offence. It can result in criminal prosecution and/or suspension or revocation of your permit.

**At this time, we do not intend to take any further action.**

This statement does not stop us from taking additional enforcement action if further relevant information comes to light or offences continue.

### 4. Details of our assessment

#### Dow Silicones

##### Q3 Monitoring Returns

Q3 monitoring returns were submitted on time. Data confirms Dow Silicones complied with all relevant permit emission limit values for the quarter, and no further action is required.

##### Bondstrand Chem Sewer

The most recent COMAH competent authority inspection report, undertaken on the 24<sup>th</sup> of April, states "Drainage inspection by CCTV report has been undertaken across most of the network, with limited gaps at the valve pits and adjoining pipes in W712 loading bay/pump area, and the frequency for some sections is quite low (>10 years). Some erosion of Bondstrand lining is indicated in one section and manhole C812 close to W809 spill pond had a full circumferential pipe fracture defect recorded in 2013. A patch repair was carried out in 2016 and follow-up inspection is required to ensure that no ground/groundwater contamination has occurred. This aspect will be followed up as an EPR16 matter." An additional ad hoc inspection of the Bondstrand chem sewer drainage pipework was recommended to ensure that deterioration of some lower-grade sections was not accelerating. An action was given to Dow to undertake a follow-up inspection to ascertain if there has been any ground/groundwater contamination in the immediate area.

During the site inspection on 16<sup>th</sup> October 2025, the Bondstrand chemical sewer drainage pipework was discussed. Dow representatives confirmed that a follow-up inspection was completed in 2022 and explained that the area is subject to a three-year inspection cycle, which will remain in place until the basic train is decommissioned. They also stated that the likelihood of ground or groundwater contamination in the immediate area is very low, as the area is used solely for containment and there have been no spills or loss of inventory.

**Action 1:** Please provide a copy of the inspection report for 2022. **Due 31<sup>st</sup> December 2025.**

##### Nitrogen Purge flow

During the latest **COMAH Competent Authority inspection** (report dated 24 April 2024), it was noted that the nitrogen purge flow meter (FI-222) to the 3601 vent was reading off the scale, with the ball valve fully open and the needle valve heavily corroded. The senior operator confirmed that a

maintenance note had been raised to address this issue.

The relevant P&ID does not indicate an orifice plate in the nitrogen supply to limit maximum flow, which could result in unnecessary nitrogen consumption if the actual flow rate significantly exceeds the design specification.

During the onsite meeting on the **21<sup>st</sup> August 2024**, these works were discussed. Dow confirmed that a permit to work for rectifying the seized valve was issued that day, and this was demonstrated during the meeting. Dow was assigned an action to provide an update at the next compliance meeting in 2025. During the site inspection on 16<sup>th</sup> October 2025, Dow confirmed that the work was now complete.

### **Solvent Separator**

W803 Solvent Separator receives effluent from the Finishing area and Areas 1 & 2. It separates siloxanes, oils, and solids before the cleaner stream passes through the discharge weir. Siloxanes and oils are skimmed via overflow and collected for off-site disposal. Solids from the W1205/6 Quench process settle in the separator and downstream tanks, which are periodically cleaned.

Dow reported the separator was recently cleaned and found full of solids, indicating the cleaning frequency may need review. Currently, the unit is cleaned monthly and skimmed weekly. However, Dow will decommission this plant and its upstream source by June 2026, so no further improvements are planned. In early 2026, Dow will clean the downstream E-tank, which will remain in use until at least 2029 during site decommissioning. As suspended solids have been effectively controlled without permit exceedances, NRW agrees there is little benefit in enhancing solids separation ahead of decommissioning.

### **Final Settlement Tanks (FSTs):**

Dow explained that they still intend to run a trial with the FST's. Their plan is to test a new coagulant skid along with a less viscous coagulant in Q4 2025/Q1 2026, as the current substance is difficult to pump. Dow will provide an update at the next compliance meeting.

### **Dow Bioreactor Update**

Dow previously overhauled their standby bioreactor, which now operates as the primary unit. This upgrade reduced the need for supplementary oxygen due to improved aeration from in-situ pumps and mixers, cutting raw material use (oxygen). Initially, Dow planned to overhaul the second bioreactor to improve plant resilience. However, during the compliance visit on 16<sup>th</sup> October 2025, they confirmed this will not proceed because the basics train will be decommissioned in June 2026.

Dow has since installed two new blowers in the active bioreactor. These blowers enhance removal of carbonic acid formed when microorganisms digest organics in the effluent, reducing pH. This improved aeration has consequently lowered Magmex demand for pH control therefore resulting in efficiency gain in the use of raw materials. The new blowers were also significantly quieter, reducing likelihood of noise beyond the site boundary.

**Dewatering Bio-sludge**

Dow has been trialling a screw press system to dewater excess sludge generated from their secondary treatment plant bioreactors. Currently, Dow sends three tankers per week for further treatment. The trial has demonstrated the effectiveness of the screw press, and Dow is confident that the new system will reduce bio-sludge removal requirements by up to 70%.

Dow intends to make this a permanent feature of their treatment plant. The proposed system will capture the dewatered sludge gravimetrically in a skip located beneath the screw press, which will then be disposed of at a non-hazardous landfill. This approach will significantly reduce the volume of water transported for further waste treatment, delivering both operational efficiencies and a lower carbon footprint.

**Action: Please provide an update at the next compliance meeting.**

**PCB's**

PCB's Update on whether Dow has any equipment contaminated with PCB's at a concentration >0.005% by weight and a volume greater than 5litres. Dow confirmed that they have checked their site and that no equipment contains PCB's at a concentration >0.005% by weight and a volume greater than 5litres.

**Site Walkaround**

A targeted walkaround was undertaken on 16<sup>th</sup> October to gain a deeper understanding of the upcoming site changes. The visit focused on key areas relevant to environmental permitting and operational changes, including:

- Remaining operational infrastructure following the closure of the basics train.
- The Effluent Treatment Plant (ETP) – current status, planned changes, and future management.

The primary objectives were to:

- Understand what infrastructure remains in operation and what is scheduled for decommissioning.
- Identify any risks or changes relevant to the Environmental Permitting Regulations (EPR).
- Support future planning and regulatory interventions.

**Effluent Treatment Plant (ETP) – Current Position and Future Plans**

Dow has confirmed their intention to maintain the current status of the ETP in the short term while they gather further information on future feed compositions and volumes. This approach reflects the significant changes expected across the site in the coming months and years. This may result in the consumption of additional raw materials as certain aspects of the treatment may need to be supplemented to maintain treatment efficiency.

Given previous issues with secondary treatment following extended shutdown periods, Dow has

implemented a notification and start-up system. This system requires the utilities department to be informed of any changes that could influence the receiving treatment process. The aim is to minimise potential upsets and ensure continuity of compliance during transitional phases.

### **Environmental Management System (EMS) & Closure Planning**

Poor control of plant changes has historically contributed to major industrial loss events. To prevent such incidents and maintain strong process safety, sites operating process plant must implement a robust Management of Change (MoC) process, especially during significant transitions like site closure.

On 16<sup>th</sup> October, a light-touch review was conducted at Dow to assess how MoC is integrated within their Environmental Management System (EMS) and applied to closure planning. The review covered:

- EMS structure and governance
- Identification and management of closure risks
- Integration of closure planning into EMS procedures
- Application of MoC to closure-related changes

#### Findings:

MoC is fully embedded within Dow's EMS and supported by a comprehensive policy aligned with corporate standards. The system demonstrates strong governance, clear roles, and effective risk management.

#### Key strengths:

- Clear definition of "change," covering plant, process, people, and control systems
- Robust handling of temporary and emergency changes
- Independent approval process with competent risk assessors
- Centralised tracking of MoC cases and actions
- Continuous improvement through lessons learned

#### MoC Integration Highlights:

- Policy defines applicability, including temporary/emergency changes, and links to hazard registers and P&IDs.
- Roles and responsibilities clearly assigned, with independent approvers and oversight by senior management.
- All changes undergo hazard and risk assessment by qualified personnel, validated independently
- Central system tracks MoC cases, actions, and updates to documentation

- Pre-Startup Safety Reviews ensure readiness; procedures and training updated accordingly
- Awareness and detailed training provided, with records linked to authorisation levels
- Post-implementation reviews incorporate lessons learned; leading and lagging indicators monitored.

Discussions with key personnel on the 16<sup>th</sup> October, alongside the review of the above areas, confirmed that Dow's Environmental Management System effectively integrates Management of Change into closure planning.

End.

If you have any queries about this report, or to discuss completion of any actions, please contact the NRW Officer named above.

## Important information

### Legal status of this report

Your permit is issued to you under the Environmental Permitting Regulations. You have a responsibility to comply with the conditions of your permit and prevent pollution/harm of the environment. You must also ensure that you comply with any other relevant legislation that may apply to your site's operations.

This report explains the findings of our assessment and any action you are required to take. We categorise non-compliance using our guidance for assessing non-compliance at regulated sites.

When we find potential non-compliance/s we will normally give you advice on how to maintain compliance.

To correct non-compliance, we may:

- require you to take specific actions
- issue a notice
- review the conditions of your permit.

Any advice and guidance we give will be without prejudice to any other enforcement response that we consider may be required.

### Assessment results and non-compliance categories (used in section 1):

Assessment result	Description
Assessed (A)	Assessed or assessed in part, no evidence of non-compliance found
Action only (X)	Action only relating to the activity assessment
Ongoing (O)	Ongoing non-compliance, not scored

Non-compliance category	Description	Score
C1 Major	Potential to have a major, serious, persistent and/or extensive impact or effect on the environment, people and/or property	60
C2 Significant	Potential to have a significant impact or effect on the environment, people and/or property	31
C3 Minor	Potential to have a minor or minimal impact or effect on the environment, people and/or property	4
C4 No environmental impact	Non-compliance at a regulated site that cannot foreseeably have any impact on the environment, people and/or property	0.1

### How we use assessment scores

The number and severity of non-compliances recorded in a year will affect your annual subsistence fee the following year. A non-compliance factor is added to your site's Operator

Performance Risk Appraisal (OPRA) score when we calculate your fee to reflect the additional resource we use to assess permit compliance.

**If your assessment result in Section 1 is suspended, what does this mean?**

In line with our guidance, we may suspend scores for up to six months to allow time for remedial action to be taken. Suspended scores will be re-instated if the action is not completed.

**Full list of Industry compliance criteria** (used in section 1 and 2):

**1. Management**

- IR1A – General management
- IR1B – Finance (only applicable to Landfill)
- IR1C – Energy efficiency
- IR1D - Efficient use of raw materials
- IR1E - Avoidance, recovery and disposal of wastes produced by the activities
- IR1F - Multiple operator installations

**2. Operations**

- IR2A – Permitted activities
- IR2B – The site
- IR2C – Operating techniques
- IR2D – Technical requirements
- IR2E – Improvement programme
- IR2F – Pre-operational conditions
- IR2G – Landfill engineering (only applicable to Landfill)
- IR2H – Waste acceptance (only applicable to Landfill)
- IR2I – Leachate levels (only applicable to Landfill)
- IR2J – Closure and aftercare (only applicable to Landfill)
- IR2K – Landfill gas management (only applicable to Landfill)

**3. Emission and Monitoring**

- IR3A – Emissions to water, air or land
- IR3B – Emissions of substances not controlled by emission limits
- IR3C – Odour
- IR3D – Noise and vibration
- IR3E – Monitoring
- IR3F – Pests
- IR3G – Air quality management plans
- IR3H – Monitoring for the purposes of the Industrial Emissions Directive (this heading includes Large Combustion Plants)
- IR3I – Fire

**4. Information**

- IR4A – Records
- IR4B – Reporting
- IR4C – Notification

**Enforcement response**

Any non-compliance with a permit condition is an offence and we may take legal action against you. Action we take can include prosecution, serving a notice on you and/or

suspension or revocation of your permit. See our Enforcement and Sanctions Guidance for further information.

### **Data protection notice**

You should make sure that anyone named in this report knows that the information it contains will be processed by Natural Resources Wales to fulfil its regulatory and monitoring functions and to maintain the relevant public register(s).

We may also use and/or disclose the report in connection with:

- offering or providing you with our literature or services relating to environmental matters
- consulting with the public, public bodies and other organisations (e.g. Health and Safety Executive, local authorities) on environmental issues
- carrying out statistical analysis, research and development on environmental issues
- providing public register information to enquirers
- investigating possible breaches of environmental law
- assessing customer service satisfaction and improving our service
- Freedom of Information Act or Environmental Information Regulations requests.

We may also pass it on to our agents or representatives to do these things on our behalf.

### **Disclosure of information – this report will be available to view on-line**

If you think this report contains commercially confidential information that should not be placed on our public register, you must contact your local Natural Resources Wales office within **fifteen working days** of receiving this report, using the contact details in the accompanying email or letter. You must give a full explanation of why it should not be added to our public register, including specifying which information is commercially confidential. We will assess your request and respond to you within twenty working days to let you know if we agree to your request.

### **What do I do if I disagree with the report or have a complaint?**

If you disagree with this compliance assessment report, you should contact the lead officer without delay to discuss your concerns.

If you are unable to resolve the issue with the lead officer or their line manager you should contact our Customer Contact team on 0300 065 3000 (Monday to Friday 08:00 to 18:00), or email [enquiries@naturalresourceswales.gov.uk](mailto:enquiries@naturalresourceswales.gov.uk) for details of how to raise your dispute further through our Complaints and Commendations procedure.

If you are dissatisfied with our response, you can contact the Public Services Ombudsman for Wales by phone on 0300 7900203 or by email at [ask@ombudsman.wales](mailto:ask@ombudsman.wales)

### **Welsh Language Standards**

We are committed to establishing Natural Resources Wales as a naturally bilingual organisation. We will provide compliance reports in your preferred language.