



# Environmental Permit Application – Supporting Documentation

## Ellesmere Port Active Chemicals

### **Innospec Limited**

Oil Sites Road, Ellesmere Port, Cheshire, CH65 4EY.

Prepared by:

### **SLR Consulting Limited**

5th Floor, 35 Dale Street, Manchester, M1 2HF

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## Basis of Report

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## 1.0 Non-technical Summary

This application is for substantial variation of Environmental Permit (EP) number EPR/BU4112IK for the Ellesmere Port Active Chemicals.

The Operator is Innospec Limited, and the site is located on Oil Sites Road, Ellesmere Port, Cheshire, CH65 4EY.

The Installation name is 'Ellesmere Port Active Chemicals'.

The variation is to add a Listed Section 4.1 Activity under Schedule 1, Part A1 of the Environmental Permitting (England and Wales) Regulations (EPR) 2016 (as amended) for the manufacture of organic chemicals (Section 4.1 A(1)(a)(iv) – producing organic compounds containing nitrogen).

The variation is required due to the installation of new production equipment in the PC3 building which will include a new reactor with an associated wet chemical (caustic) scrubber emissions abatement system. The new plant will be operated as a multipurpose plant under a multiproduct protocol. However, initially it is proposed to produce two of the site's current raw materials, Arquad nitrate and P13PA, that are used in the existing permitted process to manufacture the product, Stadis. The production of the two existing raw materials onsite will also introduce a number of new raw materials to the site including epichlorohydrin.

The new production plant is proposed to be operated as a multipurpose plant under a multiproduct protocol. However, initially it is proposed to be used to produce two of the site's current raw materials (Arquad nitrate (Arquad 2C-Nitrite or Arquad 2C-70) and P13PA) that are used in the site's manufacturing of the product Stadis.

The addition of the new process plant will require use of an area of land currently within the installation boundary of a separate Environmental Permit also held by Innospec (EPR/BM0508IG). To facilitate this variation it is proposed that EPR/BU4112IK and EPR/BM0508IG be consolidated into a single sitewide EP.

Further information on the proposed consolidation of the 2 EP's can be found in Section 3.3 of the Technical Supporting Document.

A set of technical supporting documentation has been prepared which includes details of the proposed site changes supported by appropriate environmental risk and impact assessments as well as presenting details of the management controls that will be utilised to operate and control the new plant.

The application demonstrates that the operation of the new plant will not lead to any significant environmental impacts.

The new process plant has been designed to ensure that it will be fully compliant with the requirements of Best Available Techniques (BAT) and appropriate Environment Agency guidance.



## 2.0 Applicant Details

### 2.1 Applicant

**Table 1: Applicant Company Details**

Aspect	Applicant Details
Company Name	Innospec Limited
Company Number	00344359
Registered Office Address	Innospec Manufacturing Park, Oil Sites Road, Ellesmere Port, Cheshire, CH65 4EY
Date Of Incorporation	16 September 1938
Nature of Business (SIC)	20130 - Manufacture of other inorganic basic chemicals

**Table 2: List of Company Directors (as recorded at Companies House)**

Director Name (Last Name, First Name)	Role	Month of Birth	Appointed On
BAILEY, Gary David	Director	April 1974	29 January 2025
BLAIR, Graeme Thomas	Director	September 1982	15 January 2021
CLEMINSON, Ian Philip	Director	November 1965	24 June 2006
KAY, Graeme	Director	January 1976	1 February 2014
MOUNSEY, William Armstrong	Director	January 1969	29 January 2025
PARSONS, Christopher John	Director	July 1976	17 June 2016
TITHER, Keri Louise	Director	June 1981	14 November 2017

**Table 3: Applicant Site Contact Details**

Aspect	Applicant Details
Site Name	Ellesmere Port Active Chemicals
Site Address	Innospec Manufacturing Park, Oil Sites Road, Ellesmere Port, Cheshire, CH65 4EY
Approximate Grid Reference	SJ 41857 76614
Site Contact	Mark Wilson
Role	Site Process & Projects Manager
Email	Mark.Wilson@innospecinc.com
Telephone Number	+44(0)151 356 6223

## 2.2 Existing Environmental Permit Details

The existing facility is permitted under Schedule 1, Part A1 of the Environmental Permitting (England and Wales) Regulations (EPR) 2016 (as amended). The Environmental Permit



number is EPR/BU4112IK, Table 4 presents the details of the permitted activities as defined in Table S1.1 of the Permit.

**Table 4: Permitted Activities**

Activity Reference	Activity Listed in Schedule 1 of the EP Regulations	Description of Specified Activity and WFD Annex I and II Operations	Limits of Specified Activity and Waste Types
A1	Section 4.1 A(1)(a)(ii) – producing organic compounds containing oxygen	Production of a range of organic compounds as defined in the Application and the Multi-Product Protocol	From receipt of raw material to despatch of finished product within Facilities 1 and 2 and the Pilot Plant
A2	Section 4.1 A(1)(a)(iii) – producing organic compounds containing sulphur	Production of a range of organic compounds as defined in the Application and the Multi-Product Protocol	From receipt of raw material to despatch of finished product within Facilities 1 and 2 and the Pilot Plant
A3	Section 4.1 A(1)(a)(iv) – producing organic compounds containing nitrogen	Production of a range of organic compounds as defined in the Application and the Multi-Product Protocol	From receipt of raw material to despatch of finished product within Facilities 1 and 2 and the Pilot Plant
A4	Section 4.1 A(1)(a)(v) – producing organic compounds containing phosphorus	Production of a range of organic compounds as defined in the Application and the Multi-Product Protocol	From receipt of raw material to despatch of finished product within Facilities 1 and 2 and the Pilot Plant
A5	Section 4.1 A(1)(a)(vi) – producing organic compounds containing halogens	Production of a range of organic compounds as defined in the Application and the Multi-Product Protocol	From receipt of raw material to despatch of finished product within Facilities 1 and 2 and the Pilot Plant
A6	Section 4.1 A(1)(a)(vii) – producing organometallic compounds	Production of a range of organic compounds as defined in the Application and the Multi-Product Protocol	From receipt of raw material to despatch of finished product within Facilities 1 and 2 and the Pilot Plant
A7 (Directly Associated Activity)	Steam, heat transfer oil and electrical power supply		Includes oil receipt and storage, and demineralised water plant



## 2.3 Details of the Variation Request

This application for variation of the existing Environmental Permit (EP) is to add a Listed Section 4.1 Activity under Schedule 1, Part A1 of the Environmental Permitting (England and Wales) Regulations (EPR) 2016 (as amended) for the manufacture of organic chemicals (Section 4.1 A(1)(a)(iv) – producing organic compounds containing nitrogen).

The variation is required to incorporate a new reactor with an associated wet chemical (caustic) scrubber into the EP. The new plant will be operated as a multipurpose plant under a multiproduct protocol. However, initially it is proposed to be used to produce two of the site's current raw materials (Arquad nitrate (Arquad 2C-Nitrite or Arquad 2C-70) and P13PA) that are used in the site's manufacturing of the product Stadis.

The introduction of plant to manufacture these materials at site is required to ensure security of supply following production and supply issues with the current suppliers.

The variation is to add a new Section 4.1 Activity under Schedule 1, Part A1 of the Environmental Permitting (England and Wales) Regulations (EPR) 2016 (as amended) for the manufacture of organic chemicals. Hence, it is considered that this application variation of the environmental permit represents a substantial variation.

The new process plant will be located within, or adjacent to, the existing PC3 building which is within the extant Installation boundary. However, the new process plant also includes a containment / dump tank, and loading facilities to load the product into isotainers, and their associated pipework, containment systems and ancillary systems. These items of plant are all proposed to be located on land that is currently within the Installation boundary for the other site Environmental Permit (EPR/BM0508IG).

It is therefore proposed that to facilitate this variation it is proposed that EPR/BU4112IK and EPR/BM0508IG be consolidated into a single sitewide EP.

## 2.4 Communication with the EA in Relation to the Permit Variation

Innospec has had initial discussions with the EA Local Area Site Regulatory Officer (Daniel Gaskarth) with regard to the need for this variation. Innospec initially requested that these activities be permitted under a Minor Operational Change, but were clearly advised that a Variation was required.

The new plant is under construction and is proposed to commence operation at the beginning of February 2026, it is therefore requested that the EA bears this in mind when processing the application and determining the application so that a valid Environmental Permit is in place prior to commencement of operation.

## 2.5 Pre-application Engagement with the Environment Agency

A request for basic pre-application advice was submitted to the Environment Agency on 30<sup>th</sup> October 2025. The pre-application references provided by the Environment Agency are EPR/BU4112IK/P001 and P003. The pre-application advice was provided on 22/12/2025.

## 2.6 Supporting Documentation

The application package comprises the documents detailed in Table 7.



**Table 5: Details of the Documents Comprising the Application Package**

Document Reference	Content	Location
Form A	EA Application Form A - Application for an environmental permit - Part A – About you	Application Forms Folder
Form C2	EA Application Form C2 – general – Varying a bespoke permit	Application Forms Folder
Form C3	EA Application Form C3 – Variation to a bespoke installation permit	Application Forms Folder
Form F1	EA Application Form F1 – Charges and Declarations	Application Forms Folder
416.067515.00001	Technical Supporting Document	This Document
Appendix A	Figures	Appendix A
Appendix B	Site Condition Report Addendum	Appendix B
Appendix C	BAT Assessment	Appendix C
Appendix D	Air Emissions Risk Assessment	Appendix D
Appendix E	Qualitative Environmental Risk Assessment	Appendix E



## 3.0 Site Setting

### 3.1 Site Location

The site address is: Innospec Manufacturing Park, Oil Sites Road, Ellesmere Port, Cheshire, CH65 4EY

The site is located on Oil Sites Road, which provides access to the site. Surrounding land use is predominantly industrial properties and woodland surrounding the site. There are some open land and woodland areas surrounding the site, as well as the Manchester Ship Canal and River Mersey to the north. The M53 is also located to the west of the site.

The site is centred on grid reference SJ 41857 76614.

A site location map is presented in Appendix A – Figure 1.

### 3.2 Site Layout

The new process plant will be located within, and adjacent to, the existing PC3 building.

A site layout plan is presented in Appendix A – Figure 2.

The proposed plant and internal layout is shown in Appendix A – Figure 3.

### 3.3 Consolidation of Environmental Permits

The new process plant will be located within, or adjacent to, the existing PC3 building which is within the extant Installation boundary. However, the new process plant also includes a containment / dump tank, and loading facilities to load the product into isotainers, and their associated pipework, containment systems and ancillary systems. These items of plant are all proposed to be located on land that is currently within the Installation boundary for the other site Environmental Permit (EPR/BM0508IG) also held by Innospec.

To facilitate this variation, as the two permits are operated as an integrated installation by the same operator as it is proposed that EPR/BU4112IK and EPR/BM0508IG be consolidated into a single Environmental Permit.

We note that:

- Both Environmental Permits are operated by the same legal entity (Innospec Limited), so there would be no change in the 'operator' or the management systems and controls;
- The combination of the two permits into one means that there would be no break in the regulation of the land under EPR, or change in the soil or groundwater pollution liabilities to Innospec;
- The site condition reports and baseline condition records currently in place for each of the EP's would continue to apply.
- The site operational activities will continue to be split into Active Chemicals and Octane Additives (Lead Alkyls) production, with dedicated areas of the site for each and dedicated associated emission points as currently defined in each EP.
- There are no changes proposed as part of this variation application that relate to the Octane Additives (Lead Alkyls) activities currently undertaken under EPR/BM0508IG.

A revised overall Installation boundary plan for the consolidated permits is presented in Appendix A - Figure 7.

It is anticipated that as part of the consolidation of the EP's the EA may require some update of existing documentation to reflect the combined single permit e.g. preparation of a



consolidated Site Condition Report etc. and Innospec proposes that such requirements be addressed as Improvement Conditions to the consolidated permit in order to ensure that there are no unnecessary delays to the grant of permit for the proposed new activities requested under this Variation application.

## **Site Condition Report Addendum**

A Site Condition Report Addendum has been prepared and is presented in Appendix B.

This SCR addendum only covers the changes associated with the proposed new plant and includes a Relevant Hazardous Substances (RHS) assessment for the new raw materials and products produced using the new plant.



## 4.0 Plant and Process Description

### 4.1 Raw Materials

As the process plant is intended to operate as a multipurpose plant, the specific raw materials in being stored and used at the plant will vary depending on the production campaigns being undertaken. The raw materials detailed in the section below relate to those proposed for use during the manufacture of Arquad nitrate and P13PA. Any changes to the potential environmental risks posed by the storage and use of alternative materials in the process would be reviewed as part of the multi-product protocol prior to introduction to the site.

The pollution prevention measures applied to materials storage e.g. containment measures and management procedures will be the same for all materials stored and used, and will be used to prevent / minimise pollution risk.

The types of raw materials used in the Arquad nitrate and P13PA production processes and the indicative maximum inventory and pack size are summarised in Table 6.

It is not possible to estimate annual usage of each material at this time as this will vary significantly dependant on the product being manufactured and the operating hours of the plant.

**Table 6: Raw Materials**

Raw Material	Storage Type and Capacity of Largest Unit	Maximum Inventory	Storage Location
<b>Raw materials to produce Arquad nitrite and P13PA</b>			
<b>Adogen 462-75%</b>  Contains Quaternary ammonium compounds, dicocoalkyldimethyl, Chlorides and Propan-2-ol	Typically in liquid form stored in 1m <sup>3</sup> IBCs or 220 litre drums.	20Te Within existing site IBC /drum storage areas. Moved to production area (PC3) as required for use	Raw material storage area with impermeable concrete surfacing – fully bunded.  PC3 building has concrete hardstanding and is bunded
<b>Isopropyl alcohol</b>  Contains 2-Propanol	Typically in liquid form stored in 1m <sup>3</sup> IBCs or 220 litre drums.	15Te Within existing site IBC /drum storage areas. Moved to production area (PC3) as required for use	Raw material storage area with impermeable concrete surfacing – fully bunded.  PC3 building has concrete hardstanding and is bunded



Raw Material	Storage Type and Capacity of Largest Unit	Maximum Inventory	Storage Location
<b>Sodium nitrite</b>	Typically in solid form (granular solid) stored in 1m <sup>3</sup> FIBCs.	5Te Within existing site IBC /drum storage areas. Moved to production area (PC3) as required for use	Raw material storage area with impermeable concrete surfacing – fully bunded.  PC3 building has concrete hardstanding and is bunded
<b>Aromatic 150 Fluid</b>  Contains Solvent naphtha (petroleum), Heavy aromatic. naphthalene. Pseudocumene (1,2,4-trimethylbenzene).	Typically in liquid form stored in 1m <sup>3</sup> IBCs or 220 litre drums.	40Te Within existing site IBC /drum storage areas. Moved to production area (PC3) as required for use	Raw material storage area with impermeable concrete surfacing – fully bunded.  PC3 building has concrete hardstanding and is bunded
<b>DUOMEEN T</b>  Contains N-Tallow -1,3-diaminopropane	Typically in liquid form stored in 1m <sup>3</sup> IBCs or 220 litre drums.	35Te Within existing site IBC /drum storage areas. Moved to production area (PC3) as required for use	Raw material storage area with impermeable concrete surfacing – fully bunded.  PC3 building has concrete hardstanding and is bunded
<b>Epichlorhydrin</b>	Typically in liquid form stored in 220 litre drums.	12Te Within existing EP2 Chemical store. Moved to production area (PC3) as required for use	EP2 Chemical store with impermeable concrete surface – fully bunded. Located remote from production areas.  PC3 building has concrete hardstanding and is bunded



Raw Material	Storage Type and Capacity of Largest Unit	Maximum Inventory	Storage Location
<p><b>Proposed Products Produced by the New Plant</b></p> <p>Note that the material produced by the new process plant will be used as raw materials in the existing Stadis manufacturing processes on site.</p> <p>These 'raw materials' produced on site will be available as an alternate supply route to ensure security of supply following production and supply issues with the current suppliers. Once these 'raw material' products have been loaded into the isotainers, they will be transferred to the existing site infrastructure where they will be unloaded and the materials handled in the same way as would occur if the materials had been brought on to site in a road tanker. The isotainer offloading and subsequent bulk storage or repacking activities already form part of the existing site operations.</p>			
<p><b>P13PA</b></p> <p>Contains Solvent naptha (petroleum), heavy arom. Naphthalene. 1,2,4-Trimethylbenzene</p>	<p>Typically in liquid form loaded into Isotainer.</p> <p>Then transferred to existing site tanker offloading facilities for transfer into the existing P13PA bulk storage tank on MPFA for the Stadis production processes (Storage tank T8429).</p> <p>The use of the bulk tank for this purpose is already consented under the environmental permit.</p>	<p>Isotainer 26m<sup>3</sup></p> <p>Bulk Tank T8429 100 m<sup>3</sup></p>	<p>Isotainer loading area located over bunded loading area with impermeable concrete surfacing and blind containment sump. Constructed in line with CIRIA C736 requirements.</p> <p>Storage tank located in existing bunded tank farm (existing).</p>



Raw Material	Storage Type and Capacity of Largest Unit	Maximum Inventory	Storage Location
<p><b>Arquad 2c-nitrite LA</b></p> <p>Contains Quaternary ammonium compounds, dicoco alkylidimethyl,nitrites. 2-Propanol. Methanol. Dicocodimethylammonium chloride.</p>	<p>Typically in liquid form loaded into Isotainer</p> <p>Isotainer will be transferred to existing site tanker offloading facilities and fed into existing site systems to repack this material into IBC's or drums for use on the plant. Drums and IBC's will be stored within the existing site IBC /drum storage areas as would currently be the case for deliveries of this material from offsite.</p>	<p>Isotainer 26m<sup>3</sup></p>	<p>Isotainer loading area located over bunded loading area with impermeable concrete surfacing and blind containment sump.</p> <p>Isotainer emptying and material repacking will be undertaken in existing site facilities. Such activities are undertaken over impermeable surfacing with appropriate containment. Raw material storage area with impermeable concrete surfacing – fully bunded.</p>
<p><b>Arquad 2C-75</b></p> <p>Contains Dicocodimethylammonium chloride, 2-Propanol.</p>	<p>Typically in liquid form loaded into Isotainer</p> <p>Isotainer will be transferred to existing site tanker offloading facilities and fed into existing site systems to repack this material into IBC's or drums for use on the plant. Drums and IBC's will be stored within the existing site IBC /drum storage areas as would currently be the case for deliveries of this material from offsite.</p>	<p>Isotainer 26m<sup>3</sup></p>	<p>Isotainer loading area located over bunded loading area with impermeable concrete surfacing and blind containment sump.</p> <p>Isotainer emptying and material repacking will be undertaken in existing site facilities. Such activities are undertaken over impermeable surfacing with appropriate containment. Raw material storage area with impermeable concrete surfacing – fully bunded.</p>



## 4.2 Storage

All raw materials, products, and wastes are stored within dedicated storage areas with appropriate containment measures.

- Liquids are stored in IBCs and drums within the designated chemical / flammable materials storage areas on impermeable surfacing with bunding.
- Epichlorhydrin is stored in 220 litre drums in the EP2 chemical store, which is bunded and has an impermeable floor.
- Bulk liquid products (P13PA, Arquad 2c-nitrite LA, Arquad 2C-75) are filled into Isotainers located on bunded areas over impermeable concrete.
- All storage areas are designed to prevent uncontrolled releases, with no direct drainage to the environment.

Dry and solid materials will be delivered to site by road and will be contained within bags, sacks or other suitable smaller containers. All dry and powdered materials will be stored within dedicated warehouse storage areas which have impermeable concrete flooring.

Liquids or solutions will also be delivered to site via road vehicle and will be offloaded into the bunded storage areas. The maximum capacity of any single container supplied to site will be 1m<sup>3</sup>.

All drums, IBC's and FIBC's will be manufactured to appropriate ISO design standards or equivalent.

The Isotainers will also be manufactured to the appropriate ISO design standards.

All deliveries to site will be inspected on receipt to identify potential leakage or damage to the primary container.

Raw materials will be moved from the storage areas to the PC3 building as required to support production. The PC3 building has concrete hardstanding and is bunded.

## 4.3 Secondary Containment

As outlined in section 4.2, all chemicals storage on site will be within dedicated secondary containment systems e.g. impermeable appropriately sized bunds.

Bulk liquids will be stored within existing site tank farms with dedicated impermeable bunds.

Other liquid materials (in IBC's / drums etc.) will be stored over appropriately bunded areas in the form of impermeable concrete bunded areas.

All dry and powdered materials will be stored within dedicated warehouse storage areas which have impermeable concrete flooring.

The main process activities will all be undertaken within building PC3, and the reactor is located above an impermeable concrete bund. The flooring in building PC3 is impermeable concrete and there are raised doorway accesses and a central gully / sump to allow the building floor to act as additional containment for small losses. The largest single container within the PC3 building will be a 1m<sup>3</sup> IBC, and the bunding is sized to contain more than 1 IBC of material. The reactor is within its own dedicated bund.

Isotainer loading will be undertaken within a fully bunded loading area which has a containment capacity of 36m<sup>3</sup>.

The new Isotainer loading area containment bund has been designed in accordance with the requirements of CIRIA C736.

All site bunded areas that will be used in relation to the new production process have been appropriately sized to contain potential losses.



The secondary containment provisions are all subject to periodic inspection and maintenance to ensure that they remain in good functional order.

All storage areas will be subject to scheduled visual housekeeping checks and inspections to ensure that there are no leaks or losses into secondary containment systems and that the containment infrastructure remains in good condition.

Any spillages of dry or powdered materials will be cleaned up at point of spillage using dry techniques e.g. brush and dustpan.

Any spillages of liquids or solutions will be cleaned up at point of spillage using adsorbents, spill kits and other suitable clean up measures.

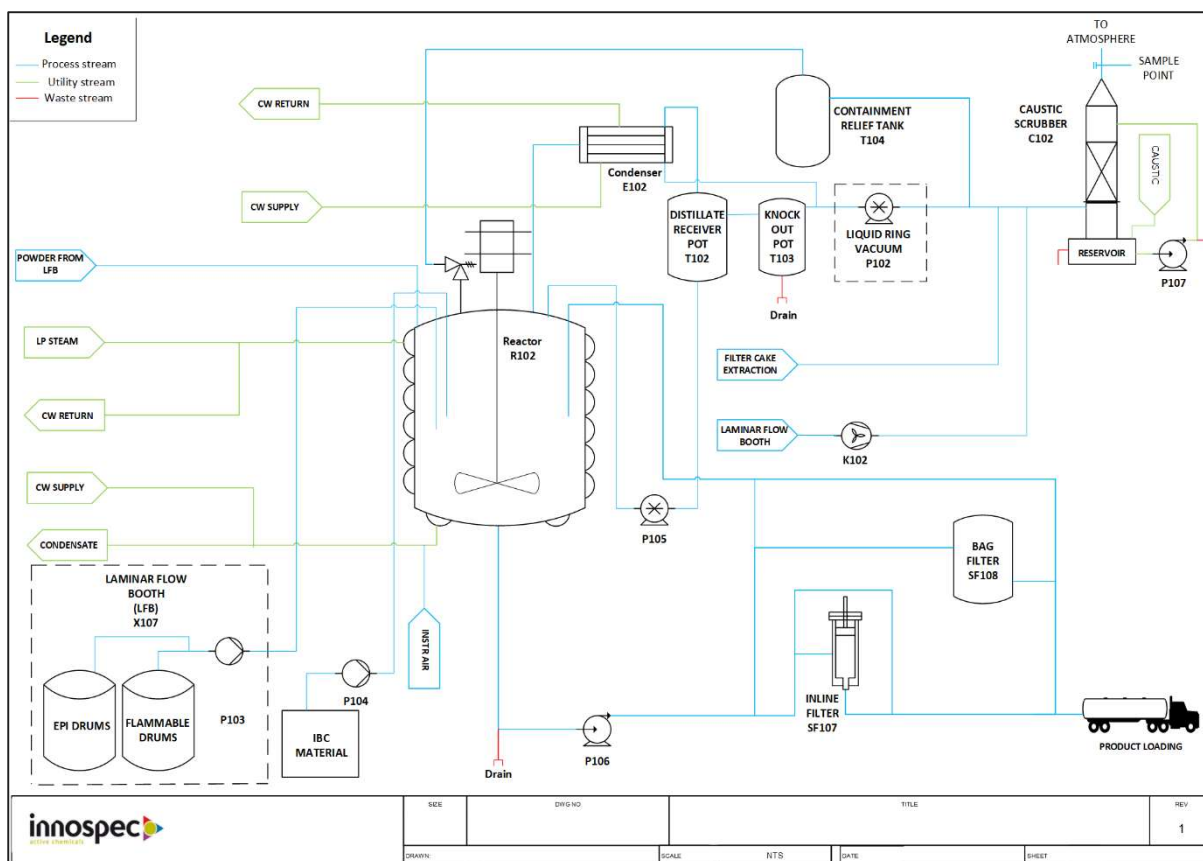
## 4.4 Process Description

The new production plant is proposed to be operated as a multipurpose plant under a multiproduct protocol. However, initially it is proposed to be used to produce two of the site's current raw materials (Arquad nitrate (Arquad 2C-Nitrite or Arquad 2C-70) and P13PA) that are used in the site's manufacturing of the product Stadis.

### Process Equipment

All production undertaken in the new plant will use the same process plant as shown in Figure 4:

**Figure 4: Process Flow Diagram**



### Raw Material Handling

Drums and IBC's containing liquid raw materials will be loaded onto a weigh scale for pumped addition to the process. There will be 2 systems, the first will be used to handle



materials with the potential to generate vapours / gases which could be harmful to operators or the environment. This will be located within a laminar flow booth with air extraction to the caustic scrubber (C102). The second liquid loading weigh scale will be for lower hazard materials and hence will not be located within a laminar flow booth / extraction system.

All powder additions from bulk bags etc. will also be made via a powder handling and dispensing system located within a laminar flow booth which will also be extracted into the caustic scrubber.

### **Reactor and Associated Systems**

All processing reactions will be undertaken in reactor R102 which is approximately 11m<sup>3</sup> in volume and is installed with a mixer and an external heating and cooling jacket which will be supplied from the site's existing LP steam or cooling water systems. Additional chilling can be supplied from a separate chiller package X110. The chiller is a 42.6Kw Air Cooled, Water/Glycol chiller (ic525 Packaged Air Cooled i-Chiller), from ICS Cool Energy Limited. The reactor (and associated plant) also has a connection into the site nitrogen supply header which can be used to provide inerting of the reactor and associated process plant as and when required.

Reaction materials can be filtered through bag filter (SF108) or inline filter (SF 107) and returned to the reactor during the process

Products can also be filtered through bag filter (SF108) or inline filter (SF 107) prior to being pumped over to the product loading bays for loading into Isotainers.

All air extracted from the reactor passes through a shell and tube condenser (E102) for recovery of organic materials into the distillate received pot (T102) for return to the process. The condenser is cooled using the existing site cooling water system. This condenser loop can also be used for reflux operation of the reactor.

The air from the condenser then flows through a knock-out pot and then to the caustic scrubber.

The reactor is also linked to a liquid ring vacuum pump system (P102) which allows a vacuum to be generated within the reactor. When this is operational, the air extracted from the reactor is drawn through the vacuum pump set before then being vented to the Caustic Scrubber.

The liquid ring vacuum pump system includes the vacuum pump (P102) a seal fluid cooler (E103) connected into the site cooling water system and a separator tank T107 which will be used to separate any liquid carry over from the reactor and to separate out any vapour / water condensed out.

Waste liquid from the liquid ring vacuum pump will be sent to the onsite effluent treatment plant before discharging to the Manchester Ship Canal.

The reactor is also installed with a pressure relief bursting disc which in the event of an overpressure event would vent into the 20m<sup>3</sup> containment tank (T104) to reduce the pressure. Air from the containment tank can then be vented into the caustic scrubber, and any liquid carry over would be contained in the tank. The containment tank is located within a concrete bund and is outside the PC3 building adjacent to the isotainer loading area.

### **Caustic Scrubber**

The caustic scrubber(C102) is located external to the PC3 building within an impermeable concrete bund and includes a liquid reservoir and a packed bed column.

The caustic scrubber has a single liquid pump for the scrubbing liquid and is installed with the following control systems:

- Flow monitoring on the scrubbing liquid feed line;



- pH monitoring on the scrubbing liquid feed line;
- Pressure monitoring on the scrubbing liquid feed line; and
- Liquid level monitoring within the liquid reservoir.

The scrubber operation will be managed using a site operating procedure which will include requirements to check the level and caustic content of the scrubbing liquid on a regular basis. The plant control and monitoring system will have a local HMI control panel with associated local alarm systems. The monitoring systems (pH and Level) will also be linked to a DCS control system with appropriate alarms being raised in the event of excursion from required operational conditions.

Waste liquid from the scrubber will be drained into an IBC for disposal offsite as waste.

Replenishment of the scrubbing liquors or addition of caustic will be undertaken by site operators as part of the routine management of the plant and a waste caustic liquors will be disposed of via the established waste disposal routes used for other caustic scrubber liquors onsite.

The emission point to air from the caustic scrubber represents the only emission point to air from the process.

### **Isotainer Loading Bay**

The products are loaded into Isotainers within a dedicated 2 bay loading area. This loading area is constructed with impermeable concrete hardstanding which slopes to the rear of the loading area and has concrete containment upstands to 3 sides, hence providing a fully bunded loading area. There is also a blind concrete sump to the rear of the loading area.

The bunded area is sized to contain the volume of a full isotainer, along with appropriate allowances for firewater / rainfall. The loading area will be accessed via the front of the loading bay when moving isotainers into, and out of, the loading area.

The loading bay is also installed with a fire protection system (sprinkler / deluge system). It uses alcohol resistant AFFF Foam concentrate (FOMTEC ARC 3X3 S).

Isotainer filling will be managed using an automated control system with associated operating procedures and operator interaction to minimise potential for losses.

Prior to commencement of isotainer filling, checks will be made to ensure that there is sufficient ullage in the isotainer to receive the full batch of product being made prior to commencement of transfer.

The isotainer loading system also includes a tanker overflow pot (T108). The overflow from the isotainer is connected into the overflow pot during filling, and should an overflow event occur, the level within the overflow pot would initiate an alarm and shutdown of the product transfer process.

The isotainers are sized such that they would receive the product from multiple batch reactions. Once full they would be sealed up and removed from the loading area and taken to a site tank farm for offloading into bulk storage tanks, or repackaging into smaller containers e.g. IBC's. All such activities would be undertaken using existing site infrastructure and systems and would be within bunded areas.

Air displaced from the isotainer is vented to the tanker overflow pot T108 and vented at a high level. This vented air will comprise air and nitrogen and will not contain any potential pollutants.

### **Process Reactions**

The new process plant is proposed to undertake the following types of chemical reactions / processes:



- Polymeric condensation;
- Ion exchange;
- Olefinic Co-polymerisation Malenisation;
- Polymerisation Methacrylate;
- Amidation;
- Propoxylation; and
- Esterification.

The new plant will be used solely to undertake batch reactions.

### **Reaction Controls**

The process reactions are all managed in accordance with a defined production 'recipe'.

The production recipe's define the raw materials, how and when they are added to the reactor, and how the reactor conditions e.g. temperature, pressure, mixing should be adjusted during the reaction process.

The reactor is installed with monitoring and control systems which are used to monitor and control the reaction processes. Monitoring is undertaken on the reactor and associated systems for:

- Pressure;
- Temperature;
- Level;
- Flow (within key pipework); and
- Mixer movement etc.

The monitoring output is fed into a centralised control system which is then used to control the operation of the process, raise alarms in the event of an excursion from required operational conditions, and provide an interface for the process operators to use in managing and controlling the process.

Two process and instrumentation diagrams (PID's) providing an overview of the control systems installed is presented in Appendix A – Figures 5 and 6.

#### **4.4.1 Ancillary Systems**

The new process plant will be tied into the existing sitewide utility systems for provision of:

- Electricity;
- LP steam;
- Cooling Water;
- Instrument air for Remote operated valves (ROV);
- Nitrogen.



## 5.0 Best Available Techniques

As the new Installation activities are considered to fall under Section 4.1 Part A(1) of the EPR for the production of organic chemicals, the BAT Guidance listed in Table 7 is considered to apply:

**Table 7: Applicable BAT Conclusions**

EU BAT Conclusions	Applicability to the Installation Activities	Comments	Location of Assessment
OFC - Manufacture of Organic Fine Chemicals August 2006	Applicable	Section 4.1 Part A activity. Assessed against Sector Guidance Note IPPC S4.02 - Guidance for the Speciality Organic Chemicals Sector	Appendix C Table A1
CWW Common Wastewater and Waste Gas Treatment / Management in the Chemical Sector May 2016	Applicable	Section 4.1 Part A activity	Appendix C Table B1
WGC Common Waste Gas Management and Treatment Systems in the Chemical Sector December 2022  UK Common Waste Gas Management and Treatment Systems in the Chemical Sector BAT Conclusions (UK WGC) – Formal Draft 2025	Applicable	Section 4.1 Part A activity  Assessed against Draft UK WGC BAT Conclusions	Appendix C Table C1

A detailed review of how the Installation will comply with each of the BAT requirements is presented in Appendix C.



## **6.0 Process Efficiency**

The process will operate as a single batch process.

The processing activities will be undertaken subject to the use of product 'recipe's' which will have specific operating procedures for operator interaction with the process, and be programmed into the control systems, to maximise yield and to minimise potential for off-specification batches or processing errors.

Quality assurance testing will be an integrated aspect of the production processes to monitor product quality.

Production campaigns will be planned in to manufacture a given number of batches of a particular product before switching to a different product.



## 7.0 Energy

Innospec is subject to a climate change agreement under the chemicals sector umbrella agreement (through CIABATA) under facility number CIA/F00155.

### 7.1 Predicted Energy Use and Greenhouse Gas Emissions

The new plant is expected to have an estimated electrical demand of 13.5kWh based upon the rating of the various pumps / fans / motors etc.

The low-pressure steam supply to the process is expected to vary between 700 and 900 kg/hour (estimated at <650 kWh (based upon 720kWh/tonne)) depending on the product being manufactured. This steam will be sourced from the existing site steam generation systems.

The specific annual energy usage by the Installation will vary significantly based upon a number of factors including:

- The product being manufactured;
- The number of batches being produced;
- The number of production campaigns over the year;
- The ambient temperature etc.

It is not therefore possible at this stage to advise exactly what the actual power usage at the site will be on an annual basis. This will be reviewed on commissioning and initial operations.

Table 8 presents an indicative estimate of the energy usage and greenhouse gas emissions (as CO<sub>2</sub> equivalent) per process batch

**Table 8: Indicative Energy Usage – Per Batch**

Energy Source	Estimated kWh per Batch	Conversion Factor <sup>(1)</sup>	CO <sub>2</sub> Equivalent kg
Electricity	324 <sup>(2)</sup>	0.22535	73
Gas	13,000 <sup>(3)</sup>	0.19553	2,542
			<b>2,615</b>

Notes:

1) CO<sub>2</sub> conversion factors taken from UK Government GHG Conversion Factors for GHG Reporting 2025 <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2025>:

- 0.20270 kg CO<sub>2</sub>e / kWh natural gas,
- 0.17700 kg CO<sub>2</sub>e / kWh grid electricity generated; plus
- 0.01853 kg CO<sub>2</sub>e / kWh grid electricity transmission and distribution losses.

2) Estimated based upon 13.5 kWh electrical use over a 24-hour batch.

3) Estimated based upon 900 kg/hour LP steam at 720kWh/tonne, steam use for up to 16 hours per batch and assuming an 80% steam generation and distribution efficiency.

### 7.2 Energy Efficiency

Energy efficiency will be managed as part of the EMS and energy usage and reduction will be reviewed periodically.



The following basic energy control measures have also been considered as part of the development of the plant design:

- The process recipes have been trialled and tested at lab scale to develop a high efficiency production process.
- The use of the process recipes will ensure high process yield, and optimal energy use throughout the production process.
- Electrical plant e.g. pumps, drives / motors etc. have all been selected to be energy efficient equipment.
- The reactor is insulated to minimise heat loss.
- The process plant will be switched off when not on use.
- Internal building lighting will be energy efficient.



## 8.0 Emissions

### 8.1 Emissions to Air

The only new point source emission point to air from the process activities will be from the caustic scrubber.

The caustic scrubber is located to the outside of the PC3 building alongside the northern wall of the building in the vicinity of grid reference SJ 41869 76587.

The scrubber emission point will be at a height of approximately 12.519m which is approximately 3.8m above the PC3 building roof height, and 3m above the roof parapet.

Table 10 below provides the information on the new emission point to air.

**Table 9: Point Source Emissions to Air**

Emission Point Number	Process Stage	Source of Emissions	Abatement Provided	Vent Contents	Vent Diameter
A14	Reaction	Reactor	Emission from process reactor via condenser and wet chemical (caustic) scrubber, which will have a venturi fitted on top to increase the emission velocity.	VOC	170mm

#### 8.1.1 Predicted Emissions

The initial estimates of emissions from the process are based upon the process calculation prepared as part of the design process.

The data presented in Table 11 includes currently calculated theoretical maximum emission data for VOC's for emission point A14.

Note that Toluene is not proposed for use in the production of Arquad nitrate and P13PA, but may be used in future production under the MPP, it has therefore been included.

**Table 10: Predicted Emissions To Air**

Emission Point Number	Process Stage	Flowrate	Pollutant Species	Predicted Maximum Emission Mass Emission Rate	Predicted Maximum Emission Concentration
A14	Reaction	1.2m <sup>3</sup> /s 4,320m <sup>3</sup> /hour Design extraction rate of the scrubber fan	Total VOC	<86.4g C/hour	<20 mgC/Nm <sup>3</sup> As carbon
			CMR 1 Substances (e.g. Epichlorhydrin)	<8.64 g/hour	<2 mg/Nm <sup>3</sup>
			Toluene	<4.32 g/hour	<1 mg/Nm <sup>3</sup>



### 8.1.2 Emissions Abatement

The emissions from emission point A14 are abated using a water-cooled condenser followed by the caustic scrubber as detailed in Section 4.4.

The system has been designed to achieve epichlorohydrin emissions of below the IED Annex VII Emission Limit Value (ELV) of 2mg/Nm<sup>3</sup> and to abate VOC's to below the relevant BAT-AEL's.

### 8.1.3 BAT- AEL Compliance for Emissions to Air.

Emissions of VOC via the new emission point will be required to meet the BAT-Associated Emission Limit (AEL) for each of the substances released where the mass emission rate exceeds the defined thresholds at which the BAT-AEL would apply.

Due to the low mass emission rates predicted, the BAT-AEL's for Total VOC and toluene are not expected to be applicable.

The BAT-AEL for 'Sum of VOCs classified as CMR 1A or 1B' of <1 – 5 mg/Nm<sup>3</sup> will apply as the calculated maximum mass emission of epichlorohydrin is 8.64 g/h.

The plant has been designed to comply with this BAT-AEL and achieve an emission concentration below 2mg/Nm<sup>3</sup>.

**Table 11: Applicability of BAT-AEL's**

VOC Classification	BAT AEL Range	Notes	Applicability
Total Volatile Organic Carbon (TVOC)  (VOC substances that do not have a Carcinogenic, Mutagenic, Reprotoxic (CMR) classification)	<20 mgC/Nm <sup>3</sup>  Limit is applied as a daily average, or average over the sampling period.  Note that TVOC is expressed in mgC/Nm <sup>3</sup> .	This limit does not apply to minor emissions i.e. where the TVOC mass flow is below e.g. 100 g C/hour – where no CMR substances are present in the waste gas stream.	Not applicable TVOC emissions <86.4g C/hour if emitting at BAT AEL.
Where VOC's classified as CMR substances are present, the following limits would apply to those substances			
Sum of VOC's Classified as CMR 1A or 1B  (Epichlorohydrin – H350)	<1 – 5 mg/Nm <sup>3</sup>  Limit is applied as a daily average, or average over the sampling period.	This limit does not apply to minor emissions i.e. where the mass flow of the sum of the VOC's classified as CMR1A or 1B is below 1g/hour	Applicable Calculated maximum mass emission of 8.64 g/hour at the IED Annex VII Emission Limit Value (ELV) of 2mg/Nm <sup>3</sup>
	2mg/Nm <sup>3</sup> (IED Annex VII)	Limit only applies where mass emission is >10g/h	Not applicable Calculated maximum mass emission of 8.64 g/hour



VOC Classification	BAT AEL Range	Notes	Applicability
Toluene	<0.5 – 1 mg/Nm <sup>3</sup>	This limit does not apply to minor emissions i.e. where the mass flow is below 50g/hour	Not applicable Calculated mass emission of 4.32 g/hour if emitting at BAT AEL.

### 8.1.4 Monitoring

The proposed monitoring of emissions from the plant will be undertaken in compliance with the requirements of:

- EU BAT Reference Document – Monitoring of Emissions to Air and Water from Industrial Emissions Directive Installations (ROM)- July 2008.
- Environment Agency Monitoring Stack Emissions: Environmental Permits (19 December 2019) (the formerly the EA’s M1 and M5 guidance notes).
- BS EN 15259.

This will include provision of suitable access routes and platforms as required and the siting and installation of suitable sample ports.

Prior to undertaking stack emissions monitoring a Site-Specific Protocol (SSP) will be prepared to ensure the monitoring is carried out in accordance with the EA guidance, referenced note outlined above, to ensure that representative samples are taken. Specifically, the SSP will consider the following aspects:

- Selection of the sampling position, sampling plan and sampling points.
- Access, facilities and services required.
- Safety considerations.

The SSP will ensure that a representative sample is obtained from the stack.

The sampling approach, technique, method, and equipment that are chosen will ensure:

- A safe means of access to the sampling position.
- A means of entry for sampling equipment into the stack.
- Adequate space for the equipment and personnel.
- Provision of essential services such as electricity.

Monitoring will be undertaken by an appropriately accredited third-party stack monitoring company, in compliance with the requirements of MCERTS as a minimum standard.

All of the emission points are anticipated to have VOC emission levels of below 2kg of Total VOC as carbon per hour. And so continuous monitoring of emissions is not required.

Periodic monitoring is proposed for Emission Point A14.

It is proposed that periodic monitoring will be undertaken at least once every 6 months for the first year of operation to confirm the emission levels.

The minimum monitoring frequency will then be reduced to once every 3 years if the emission levels are proven to be below the mas emission threshold at which the BAT-AEL for each parameter / substance applies.



Monitoring for each relevant parameter will be planned to align with the production schedule to ensure that representative data is collated for each of the products being manufactured.

Table 13 presents a summary of the proposed monitoring of emissions to air.

**Table 12: Proposed Monitoring of Emissions to Air**

Substance	Monitoring Required	Frequency Of Monitoring	Monitoring Test Method (Periodic Monitoring)	Data To Be Reported
Total Volatile Organic Compounds (TVOC)	Emission Point A14  The predicted mass emissions of TVOC from all of the emission points will be <2kg/h per emission point.  There is no requirement for continuous monitoring of any of the emission points, and periodic monitoring is therefore proposed.	Periodic monitoring will be undertaken at least once every 6 months for the first year of operation to confirm the emission levels.  The minimum monitoring frequency will then be reduced to once every 3 years once the emission levels are demonstrated to be <100gC/hour.	EN 12619 extractive sampling and FID analyser.  or EN ISO 13199. extractive sampling and a NDIR analyser equipped with a catalytic converter for the oxidation of VOCs to carbon dioxide.	Daily Average / Average over the monitoring period.
Sum of VOC's Classified as CMR 1A or 1B  (e.g. Epichlorhydrin – H350)	Emission Point A14	Applicable only whenever production is being undertaken that uses CMR substances e.g. epichlorhydrin.  Periodic monitoring will be undertaken at least once every 6 months for the first year of operation to confirm the emission levels.  The minimum monitoring frequency will then be reduced to once every 3 years if the emission levels are demonstrated to be <1g/hour.	CEN TS 13649 extractive sampling onto sorbent tubes, followed by solvent extraction and analysis.  Or US EPA method 18 extractive sampling and a portable gas chromatograph with an appropriate detector  Or CEN TS 17337. extractive sampling and a portable FTIR analyser	Daily Average / Average over the monitoring period.



Substance	Monitoring Required	Frequency Of Monitoring	Monitoring Test Method (Periodic Monitoring)	Data To Be Reported
Toluene	Emission Point A14	<p>Applicable only whenever production is being undertaken that uses toluene</p> <p>Periodic monitoring will be undertaken at least once every 6 months for the first year of operation to confirm the emission levels.</p> <p>The minimum monitoring frequency will then be reduced to once every 3 years once the emission levels are demonstrated to be &lt;50g/hour.</p>	As above	Daily Average / Average over the monitoring period.

## 8.2 Emissions to Water and Sewer

### 8.2.1 Emissions to Controlled Waters

There will be water emissions from the vacuum pump liquid ring system, where trace amounts of VOCs may potentially be present in the water collected in the separator unit. This water will be discharged into the site process drainage system for treatment in the onsite effluent treatment plant before discharging to the Manchester Ship Canal (MSC). The quantities of water expected to be discharged from this system are very low (as the main cooling duty is closed loop via the site cooling water system and a heat exchanger) so it is not anticipated that the new plant will create any identifiable change in the flow or composition of the effluent discharged to the MSC or cause the site to exceed its current discharge emission limit. No amendment to the consented discharge to the MSC is required.

### 8.2.2 Emissions to Sewer

There will be no discharge to sewer associated with the new process plant.

All process effluent will be collected into IBC's for disposal offsite as waste or for recycling where possible.



## 8.3 Waste

### 8.3.1 Waste Handling and Disposal

Waste materials from the process will be collected into suitable containers e.g. drums / IBC's etc. within the main processing area within the building and over impermeable concrete flooring.

Waste containers will then be stored within the existing bunded site waste storage areas pending collection from site for offsite recycling / disposal.

Waste collection, handling and storage will all be subject to management procedural controls as defined under the existing site Environmental Management System.

All wastes generated by the site activities will be removed from site by appropriate waste contractors for offsite recovery/recycling/treatment/disposal.

The routes for waste removal will be selected in line with the waste hierarchy to maximise reuse / recycling and minimise disposal.

## 8.4 Noise

The proposed new plant does not include any equipment likely to lead to any significant noise emissions. The only potential noise sources relate to the operation of pumps, fans, drives and motors and the operation of the caustic scrubber. And the potential for noise generation from these items has been minimised through appropriate design and plant selection.

The majority of the plant associated with the reaction activities will be located within the PC3 building, whilst the scrubber and the isotainer loading facilities will be external to the building.

The new process plant is expected to have relatively low noise levels which will have a similar noise profile to the existing activities undertaken at the installation and hence no particular change to the overall site noise profile is expected.

The new plant is located on an existing industrial site and in an area surrounded by other industrial sites and operations.

- The nearest residential property is located approximately 1.1km to the west of the site at Turing Avenue.
- The closest educational facility is Wolverham Primary & Nursery School which is approximately 1.3km to the southwest of the site.
- There are no hospitals within 2km of the site

The site has not received any historical noise complaints.

Given the nature of the new plant, the relatively low potential for significant noise generation and the surrounding land use, no significant noise impacts are expected as a result of the operation of the new plant.

## 8.5 Odour

The proposed new process operations at the installation are not expected to handle or produce any particularly odorous materials. The most odorous material would be epichlorhydrin. However, emissions of epichlorhydrin will be abated by the scrubber to below the BAT AEL of 2mg/Nm<sup>3</sup> and is not expected to lead to any offsite odour impacts given that the odour threshold is 0.93ppm.



## **9.0 Environmental Risk Assessment**

### **9.1 Air Emissions Risk Assessment**

An air emissions risk assessment has been undertaken and is presented in Appendix D.

### **9.2 Water Emissions Risk Assessment**

A water emissions risk assessment has been undertaken as part of the Qualitative Environmental Risk Assessment, in Appendix E.

### **9.3 Noise Impact Assessment**

Given the nature of the new process operations, their location on site, and the lack of nearby sensitive receptors, no significant offsite noise impacts are expected.

A detailed BS 4142 assessment of potential noise impacts and noise management plan, are therefore not considered to be required.

Qualitative assessment of the potential noise impacts associated with the proposed new process operations are presented in Section 4.6 of the Qualitative Environmental Risk Assessment (Appendix E).

### **9.4 Odour**

The proposed new process operations at the installation are not expected to handle or produce any particularly odorous materials. The most odorous material would be epichlorhydrin. However, emissions of epichlorhydrin will be abated by the scrubber to below the BAT AEL of 2mg/Nm<sup>3</sup> and is not expected to lead to any offsite odour impacts given that the odour threshold is 0.93ppm.

Qualitative assessment of the potential odour impacts associated with the proposed new process operations are presented in Section 4.4 of the Qualitative Environmental Risk Assessment (Appendix E).

A detailed quantitative odour impact assessment has not been prepared as part of this application.

### **9.5 Soil and Groundwater Pollution Risk Assessment**

The Soil and Groundwater Pollution Risk Assessment is presented in the Site Condition Report Addendum (Appendix B), highlighting the new raw materials and products that will be stored and used onsite.

### **9.6 Qualitative Environmental Risk Assessment**

A qualitative environmental risk assessment of other potential risks has been undertaken and is presented in Appendix E.



## 10.0 Management Systems

The Installation is operated in accordance with an existing Environmental Management System (EMS) aligned with the requirements of ISO14001 and includes protocols to implement the compliance requirements of the Environmental Permit and to ensure that the required assessments and reporting are undertaken. The management system will be updated to incorporate the operation of the new plant.

The EMS includes details on:

- Management structure and staff roles and responsibilities;
- Key operating procedures;
- Preventative inspection and maintenance;
- Emissions monitoring and reporting;
- Performance and efficiency monitoring and reporting;
- Competence and training;
- Accidents, incidents and Non-conformance – prevention, incident response etc.;
- Auditing;
- Reporting; and
- Record keeping.

The management systems will be applied to the commissioning and operational phases of the proposed new site activities.

## 11.0 Multi Product Protocol

The existing operations regulated under the Environmental Permit for the Active Chemicals Installation are operated under the control of a Multi-Product Protocol (MPP).

Innospec proposes to update the MPP to include the operation of the new plant to allow it to operate as a multi-purpose plant if required.

As the currently proposed operations to produce Arquad nitrate (Arquad 2C-Nitrite or Arquad 2C-70) and P13PA are well defined and have been fully assessed as part of this application, it is not considered that the MPP needs to be updated at this time to incorporate the operation of new plant to manufacture these products.

However, Innospec proposes that the MPP be updated to include the new production plant prior to the use of the plant to produce any other products. The revised MPP will be submitted to the Environment Agency for approval at least 3 months prior to the proposed commencement of production of other products.

## 12.0 Site Closure

A site closure plan was produced as part of the initial permit application, to cover the management of the cessation of operations and decommissioning of the site activities and removal of pollution risk to allow permit surrender. This will be updated to include consideration of the new process activities proposed under this variation.





# Appendix A Figures

## Environmental Permit Application – Supporting Documentation

Ellesmere Port Active Chemicals

Innospec Limited

SLR Project No.: 410.067515.00001

12 March 2026

**Figure 1 – Site Location**

**Figure 2 – Site Layout Plan**

**Figure 3 – New Plant Area and Internal Layout**

**Figure 4 – Process Flow Diagram**

**Figure 5 – Reactor PID**

**Figure 6 – Vacuum Set, Chiller and Scrubber PID**

**Figure 7 – Proposed Consolidated EP Installation Boundary and  
Emission Points**





# Appendix B Site Condition Report

## Environmental Permit Application – Supporting Documentation

Ellesmere Port Active Chemicals

Innospec Limited

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# Appendix C    BAT Assessment

## **Environmental Permit Application – Supporting Documentation**

**Ellesmere Port Active Chemicals**

**Innospec Limited**

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# **Appendix D Air Emissions Risk Assessment**

## **Environmental Permit Application – Supporting Documentation**

**Ellesmere Port Active Chemicals**

**Innospec Limited**

SLR Project No.: 410.067515.00001

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# **Appendix E    Qualitative Environmental Risk Assessment**

**Environmental Permit Application – Supporting  
Documentation**

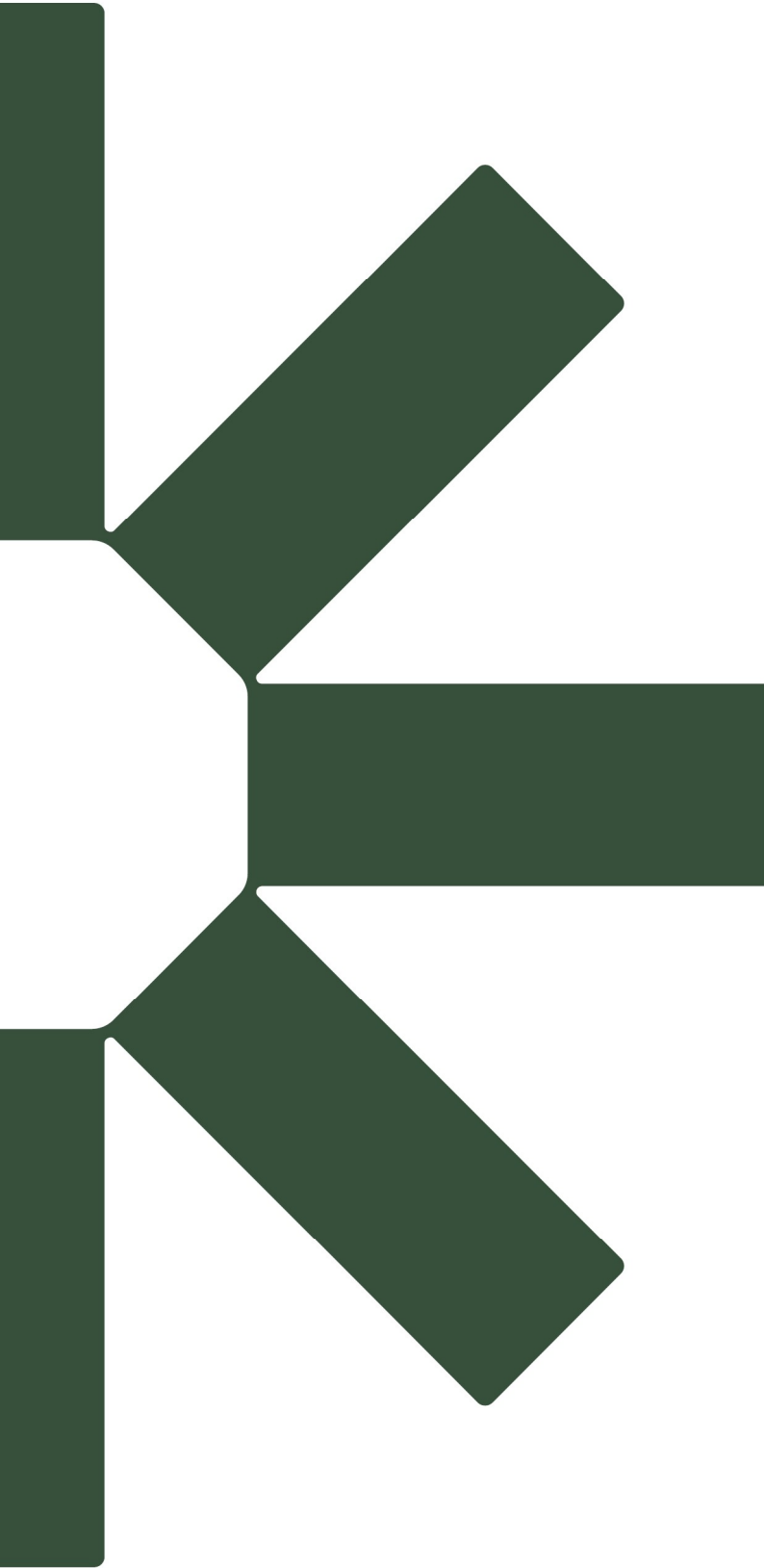
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