APPLICATION FOR AN ENVIRONMENTAL PERMIT VARIATION UNDER THE ENVIRONMENTAL PERMITTING (ENGLAND AND WALES) REGULATIONS 2016 (AS AMENDED)

APPLICATION REFERENCE PAN-012974

SCHEDULE 5 NOTICE RESPONSE

PRINCES SOFT DRINKS DIVISION - CARDIFF
PORTMANMOOR ROAD, EAST MOORS
CARDIFF, CF24 5HB

ECL Ref: PRIN.01.01/S5R
Version: Issue 1
January 2022

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ACRONYMS / TERMS USED IN THE TEXT

BAT	Best Available Techniques
BREF	Best Available Techniques Reference Document
EPTR	Environmental Permitting Technical Requirements
ERA	Environmental Risk Assessment
H_2O_2	Hydrogen Peroxide
HGV	Heavy Goods Vehicle
hl	Hectolitre
MCP	Medium Combustion Plant
NRW	Natural Resources Wales
Princes	Princes Limited
SCR	Site Condition Report
The Installation	Princes Ltd Soft Drinks Division

1. NATURAL RESOURCES WALES ("NRW") QUESTION 1

1.1. "With regards to odour, it is stated that "the proposed activities are not odorous in nature". However, the potential risk of odour from the addition of a 30,000 litre wastewater storage tank and periodic removal of wastewater from site for anaerobic digestion does not appear to have been considered. Please amend the risk assessment to identify this risk and, if appropriate, associated mitigation measures and provide an odour management plan."

Response

1.1.1. The Environmental Risk Assessment ("ERA") (ECL.046.01.01/ERA) has been updated to include the assessment of the risks related to the potential emissions to air (odour) from the wastewater storage tank and periodic removal of the wastewater off-site. The ERA includes details of all control measures to be implemented. Consequently, through the strict implementation of the control measures described within the ERA, it is considered that the overall risk is deemed insignificant and therefore, a standalone Odour Management Plan is not required as Best Available Technique ("BAT") 15 is only applicable to cases where odour nuisance at sensitive receptors is expected or has been substantiated.

1.1.2. Issue 2 of the ERA is provided as part of this Schedule 5 Notice response.

2. NRW QUESTION 2

2.1. "It is expected that the increase in production capacity would result in an increase in vehicle traffic on the site and that this may include HGVs with refrigeration units. Please amend the risk assessment to identify the risks from increased vehicle traffic (including noise) and, if appropriate, associated mitigation measures."

Response

2.1.1. The ERA has been amended to include the assessment of the risks related to the increase of vehicle traffic on the site. Of significant note, Princes considered the increase in site vehicle traffic and refined the site design and layout including the construction of the new industrial estate access and a separate private Heavy Goods Vehicle ("HGV") entrance and exit to the Princes Installation. The consideration in the expansion design and the associated control measures to be implemented are detailed in Issue 2 of the ERA (ECL.046.01.01/ERA) provided as part of this Schedule 5 Notice response.

3. NRW QUESTION 3

3.1. "Your Permit would be issued with a standard condition that states:

All liquids in containers, whose emissions to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or, where that is not practicable to minimise, leakage and spillage from the primary container.

In our 'How to Comply with your environmental permit' we reference two guidance documents that provide information on pollution prevention and appropriate measures associated with secondary containment i.e. CIRIA R163D (Concrete Bunds for Oil Storage Tanks Masonry Bunds for Oil Storage Tanks) and CIRIA R164 (Design of containment systems for the prevention of water pollution from industrial incidents).
However, both guidance documents have been superseded by CIRIA C736 (Containment systems for the prevention of pollution). Item Detail (ciria.org).

We will be updating 'How to Comply' in the near future. In the meantime, we expect you to follow CIRIA C736 in complying with the condition outlined above, typically condition 3.2.3 of your environmental permit. Please provide us with details of how your proposal meets these requirements.

Response

3.1.1. Princes has reviewed all liquid storage tanks containing potentially polluting substances and their associated bunding. A standalone document Containment System Review (ECL.046.01.01/CSR) has been prepared which includes details of how the proposal meets the CIRIA guidance requirements and the standard Permit condition. This document is contained in Appendix I.

4. NRW QUESTION 4

4.1. **"Please confirm the maximum capacity of the installation as proposed under the substantial variation using the same units from the relevant sub-section of Section 6.8, Part 2, Schedule 1 of the Environmental Permitting Regulations 2016 (as amended).**

Capacity is to be taken as the maximum possible capacity of the installation, not the maximum actual production.

This maximum capacity is used to determine whether there has been a change since the risk assessment was last revised. If there is an increase in the maximum capacity, what we call capacity creep, we ask Operators to review and update their risk assessment and submit to us for review. The maximum capacity would be recorded as a limit in Table S1.1 of the permit."

Response

4.1.1. Princes has confirmed that the maximum possible capacity of the Installation will be 121,600 litres per hour of fruit juice excluding packaging which equates to 2,918,400 litres per day based on 24-hour operation. Applying a typical fruit juice density of 1,060kg/m^3, Princes propose a maximum possible capacity of 3,094 tonnes per day.

4.1.2. At the time of preparing the application and subsequent submission in February 2021, Princes proposed the installation of six pasteurisers and ten filler lines. The number of pasterurisers acted as the limiting factor restricting the number of filler lines which could operate at any one time.

4.1.3. This equated to 70,400 litres per hour as detailed in Table 3 of the Environmental Permitting Technical Requirements Document ("EPTR") (ECL.046.01.01/EPTR Issue 1). However, significant investment has now been secured to enable Princes to install ten pasterurisers rather than six to allow all ten filler lines to operate at any one time.

4.1.4. Additionally, as part of this additional investment, the production capacity of filler line 8, known as the Galdi line, is to be expanded. Consequently, Princes now propose a maximum possible production capacity of 121,600 litres per hour equating to 3,094 tonnes per day. A breakdown of the filler lines and associated production capacity is provided in Table 1.

Table 1: Proposed Maximum Production Capacity

Filler	Format	Container per Hour	Maximum Capacity (l/hr)
Filler 1	Ambient laminated board carton 500ml – 1.1 litre	12,000 cartons per hour ("cph")	13,200
Filler 2	Ambient laminated board carton 500ml – 1.1 litre	12,000cph	13,200
Filler 3	Ambient laminated board carton 500ml – 1.1 litre	12,000cph	13,200
Filler 4	Ambient laminated board carton 125ml – 250 ml	24,000cph	6,000
Filler 5	Ambient laminated board carton 125ml – 250 ml	24,000cph	6,000
Filler 6	Ambient laminated board carton 150ml – 350 ml	12,000cph	6,000
Filler 7 (Federal)	2 litre HDPE bottle 1 litre PET bottle 330ml PET bottle	9,000 bottle per hour ("bph") – 2 litre 12,000 bph – 1 litre	18,000
Filler 8 (Galdi)	Chill laminated board gable carton 1.75 litre – 2 litre	9,000cph	18,000
Filler 9	Chill laminated board gable carton 500ml – 1 litre	14000cph	14,000
Filler 10	Chill laminated board gable carton 500ml – 1 litre	14000cph	14,000
Maximum Production Capacity (litres per hour)			**121,600**

4.1.5. In light of the proposed increase in maximum possible production capacity, the application submission has been reviewed, including the associated risk assessments.

4.1.6. The ERA (ECL.046.01.01/ERA) has been reviewed and updated accordingly.

4.1.7. It should be noted that the Air Dispersion Modelling Study (ECL.046.01/ADMS Issue 1) was undertaken based on 24/7 operation at full boiler load and therefore, the findings of the assessment submitted with the application remain accurate. During boiler maintenance which is likely to occur once or twice a year, Princes propose to use a mobile temporary boiler which will be subject to a separate Medium Combustion Plant ("MCP") Permit provided by the boiler supplier if applicable depending on the date of placing on market and operation.

4.1.8. Additionally, Princes has confirmed that the water consumption of 120m^3 per hour and proposed effluent discharge of 1,200 litres per day detailed in the application remain the maximum figures. Therefore, the H1 risk assessment (ECL.046.01.01/H1 – S1) is still accurate.

4.1.9. Princes propose an additional emission point for hydrogen peroxide ("H_2O_2"), totaling seven emission points for H_2O_2. The H1 Air Impact Assessment has been updated to include this additional emission point proposed (ECL.046.01.01/H1 – A10-A16) and is contained in Appendix II. There were no changes to the original findings.

4.1.10. It should be noted that an additional emission point for condensate is also proposed totaling seven emission points for condensate.

4.1.11. To incorporate the two additional emission points, the point source emission designations have been updated as following:

- A1 – existing boiler;
- A2 – proposed boiler;
- A3-A9 – condensate; and
- A10-A16 – hydrogen peroxide.

4.1.12. A Site Layout Plan (ECL.046.01.01-002) showing the point source emissions and main external storage areas has been prepared and is contained in Appendix III.

4.1.13. To account for the increased production, Princes propose additional external storage tanks. Table 2 provides an update to Table 8 contained in the ETPR document.

4.1.14. The external water tank will be located in the southern yard. The three additional juice silos will also be located in the southern yard in their own dedicated bund. The locations of the additional tanks are shown on the Site Layout Plan (ECL.046.01.01-002) contained in Appendix III.

Table 2: Proposed Storage Tanks

Vessel Name	Substance	Vessel Storage Volume (l)	Quantity	Volume (l)
Concentrate Silos	Fruit juice concentrate	67,000	6	402,000
Concentrate Silos	Fruit juice concentrate	60,000	3	180,000
Water Storage Tank	Water	60,000	1	60,000
Water Storage Tank	Water	90,000	1	90,000
Waste Tank (not raw material)	Process effluent	30,000	1	30,000
Bulk Caustic Tank (self bunded)	Caustic	20,000	1	20,000

Table 2: Proposed Storage Tanks (Cont.)

Vessel Name	Substance	Vessel Storage Volume (l)	Quantity	Volume (l)
CIP Tanks	Diluted caustic to 2% and recovered final rise water	15,000	4	60,000
		6,000	1	6,000
Glycol Header (self bunded)	Glycol	20,000	1	20,000

4.1.15. The anticipated energy consumed has also been reviewed. Table 3 provides the energy consumption breakdown based on the operation of ten filler lines and the expansion of Line 8.

Table 3: Anticipated Energy Consumption[1]

Energy Source	Estimated Annual Quantity		Primary Energy[2]	CO_2 Released (tonnes)[3]
	kWh	MWh	MWh	
Gas for steam	11,596,696	11,596.7	11,596.7	2,124.05
Electricity	25,200,000	25,200.0	63,000.0	5,350.72
Total	**36,796,696**	**36,796.7**	**74,596.7**	**7,474.77**

Note to Table:
[1] Figures provided by CR Plus Limited.
[2] Conversion factor for delivered energy to primary = 2.5 in line with current Primary Energy Factor ("PEF")
[3] 2021 CO_2 conversion factors used.

4.1.16. The estimated specific energy consumption will be 0.007MWh/hl (74,596.7MWh/yr final energy consumption / 10,652,160hl/yr). The environmental performance level of specific wastewater discharge is anticipated to be 0.04m^3/hl (438,000m^3/yr wastewater discharge / 10,652,160hl/yr). As demonstrated above, both specific energy consumption and wastewater discharge are more efficient than the indicative environmental performance level provided in the Best Available Techniques Reference ("BREF") Document (energy – 0.01-0.035 MWh/hl of products and wastewater discharge 0.08-0.20m^3/hl of products).

4.1.17. The Site Condition Report ("SCR") (ECL.046.01.01/SCR) has been updated as this is a standalone live document that will be updated throughout the life of the Permit. Section 3 and Section 4 in the SCR detailing the proposed activities have been updated and Issue 2 of the SCR is provided as part of this Schedule 5 Notice response.

APPENDIX I
CONTAINMENT SYSTEM REVIEW

APPLICATION FOR AN ENVIRONMENTAL PERMIT VARIATION UNDER THE ENVIRONMENTAL PERMITTING (ENGLAND AND WALES) REGULATIONS 2016 (AS AMENDED)

APPLICATION REFERENCE PAN-012974

SCHEDULE 5 NOTICE RESPONSE – CONTAINMENT SYSTEMS FOR POLLUTION PREVENTION

PRINCES SOFT DRINKS DIVISION - CARDIFF
PORTMANMOOR ROAD, EAST MOORS
CARDIFF, CF24 5HB

ECL Ref: PRIN.01.01/CSR
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January 2022

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ACRONYMS / TERMS USED IN THE TEXT

CSR	**Containment System Review**
NRW	**Natural Resources Wales**
Princes	**Princes Limited**
QSHE	**Quality, Health, Safety and Environment**
The Installation	**Princes Ltd Soft Drinks Division**

1. INTRODUCTION

1.1. Overview

1.1.1. As part of the Natural Resources Wales ("NRW") Schedule 5 Notice (dated 22nd December 2021) related to Princes Limited ("Princes") substantial Permit variation (application reference PAN-012974), question 3 stated:

"Your Permit would be issued with a standard condition that states:

All liquids in containers, whose emissions to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or, where that is not practicable to minimise, leakage and spillage from the primary container.

In our 'How to Comply with your environmental permit' we reference two guidance documents that provide information on pollution prevention and appropriate measures associated with secondary containment i.e. CIRIA R163D (Concrete Bunds for Oil Storage Tanks Masonry Bunds for Oil Storage Tanks) and CIRIA R164 (Design of containment systems for the prevention of water pollution from industrial incidents).
However, both guidance documents have been superseded by CIRIA C736 (Containment systems for the prevention of pollution). Item Detail (ciria.org).

We will be updating 'How to Comply' in the near future. In the meantime, we expect you to follow CIRIA C736 in complying with the condition outlined above, typically condition 3.2.3 of your environmental permit. Please provide us with details of how your proposal meets these requirements.

1.1.2. Consequently, this document has been prepared to detail the Princes containment systems for pollution prevention in accordance with CIRIA C736 to demonstrate how the proposals detailed in the variation will comply with the standard condition detailed above.

1.1.3. Secondary containment minimises the consequences of a failure of the primary storage by preventing uncontrolled spread of potentially polluting substances, referred to as an inventory. CIRIA states that relatively small proportion of incidents occur directly from catastrophic failure of tanks or vessels. Tertiary containment can also be in place as an additional level of protection such as containment from kerbing or use of flexible booms in the case of escape of liquid from the secondary containment.

1.1.4. The Containment System Review ("CSR") is structured as follows:

- risk assessment and classification of systems;
- secondary containment selection and capacity; and
- design and performance and maintenance of selected bunding.

2. RISK ASSESSMENT AND CLASSIFICATION OF SYSTEMS

2.1. Source-Pathway-Receptor Model

2.1.1. A risk assessment based on the source-pathway-receptor model has been undertaken to assess the likelihood and consequences of loss of containment in the absence of any containment.

2.1.2. The general framework involves:

- Step 1 – establishing a site hazard rating;
- Step 2 –establishing site risk rating; and
- Step 3 – applying the site risk rating to select the appropriate class of containment.

2.1.3. The outcome of the assessment supporting a three tier based classification system for containment has been used to develop the containment strategy based on the hazard of the inventory and the sensitivity of potential receptors should spillage occur. The containment strategy involves prevention (containment) as well as mitigation measures.

Table 1: Site Hazard Rating

Source (pose a hazard to environment if released)	Description	Source Hazard Rating	Pathway	Pathway Hazard Rating	Receptor	Receptor Hazard Rating	Overall Site Hazard Rating
Inventory of External Storage Silos	Caustic solutions, glycol and fruit juice concentrate	Moderate	Overland flow Via Drainage network	Moderate	Soils and groundwater - areas not benefitting from impermeable surfacing Welsh Water Treatment Plant and subsequent watercourse.	Moderate	Moderate
Rainwater contaminated by external storage inventory	Potentially mixed with above inventory	Moderate		Moderate		Moderate	Moderate
Inventory of Internal Raw Materials and Product	Fruit juice concentrate, finished product and oils/lubricants for maintenance activities	Moderate	Overland flow – internal areas to be isolated from drainage network	Low		Low	Low
Fire-fighting agents contaminated by inventory	Any of the above contaminating firefighting agents	Moderate	Overland flow Via drainage network	Moderate		Moderate	Moderate

Table 2: Site Risk Rating

Events Could Lead to Loss of Containment	Controls	Likelihood of Occurrence	Overall Site Risk Rating
Operational and/or Structural Failure	New plant and storage vessels purchased that have been manufactured conforming to relevant standards. Automated systems so human failure by operators is unlikely.	Low	External Storage Areas Moderate – design of the containment system should be an intermediate degree of integrity Internal Storage Areas Low – base level of integrity. Pathway between source and receptor has been sufficiently broken.
Shortfalls in Design	Alarm system is in place to alert of issues or failures with storage vessels and equipment. This includes SMS text messages to designated personnel and alarm in engineering workshop.	Low	
Abuse	Change of use procedure must be followed as part of Quality Safety Health and Environment ("QSHE") management system to prevent inappropriate change of use.	Low	
Impact from Vehicle	Barriers and high kerbing to prevent impact	Low	
Vandalism	Security fencing, lockable gates, security gatehouse and patrols.	Low	
Fire	Ignition sources kept away from storage vessels. Fire Risk Assessments undertaken annually as part of QSHE management system.	Moderate	

3. SECONDARY CONTAINMENT SELECTION AND CAPACITY

3.1. Local Containment Systems

3.1.1. Following completion of the risk assessment, Princes considered secondary local containment systems zone by zone was the most robust containment design so that the inventory could be captured at the source of the failure. Local containment systems have the highest relative reliability as they are usually the simplest system, they do not rely on operation of valves or intervention during an incident, maintenance is relatively easy, all parts are accessible and major defects and obvious leakage from the primary container into the bund can be easily detected.

3.1.2. There are four main zones at the Installation in regard to containment systems;

- external storage silo area;
- CIP external storage area;
- external three juice tank silo area;
- an external glycol tank storage area; and
- internal storage areas within the factory building.

3.1.3. Princes has applied the minimum containment requirement of 110% of the capacity of the largest tank or 25% of the total capacity of all the tanks within the bund, whichever is the greater.

External Storage Silo Area

3.1.4. The total tank capacity in the main external storage silo area is 512m^3. A caustic tank located within this area is self-bunded and therefore, this capacity is excluded from the maximum volume which must be captured by secondary containment. This equates to 492m^3.

3.1.5. A breakdown of the total tank capacity within this area is provided Table 3. Princes has designed a secondary containment bund providing a total capacity of 128m^3. Therefore, the external bund provides in excess of 25% of the total tank capacity (123m^3) as this is greater than 110% of the largest tank (74m^3). Princes have also incorporated a 100mm freeboard in addition to the 25% capacity requirement. Consequently, it can be demonstrated that the external tank bunding will conform to CIRIA C736.

Table 3: Main External Storage Silo Area

Vessel Name	Substance	Vessel Volume (m^3)	Quantity	Volume (m^3)
Concentrate Silos	Fruit juice concentrate	67	6	402
Water Storage Tank	Water	60	1	60
Waste Tank	Process effluent	30	1	30
Bulk Caustic Tank	Caustic		Self Bunded	
Total Tank Capacity excluding self-bunded caustic tank				**492**
25% of Total Tank Capacity excluding self-bunded tank				**123**
Bund Capacity (excluding 100mm freeboard)				**128**
Bund Capacity % of Total Tank Capacity				**26**

CIP External Storage Area

3.1.6. The total tank capacity in the CIP External Storage Area is 66m^3.

3.1.7. A breakdown of the total tank capacity within this area is provided Table 4. Princes has designed a secondary containment bund providing a total capacity of 19.44m^3. Therefore, the external bund provides in excess of 25% of the total tank capacity (16.5m^3) and also greater than 110% of the largest tank which is also 16.5m^3. Princes have also incorporated a 100mm freeboard in addition to the 25%/110% capacity rule requirement. Consequently, it can be demonstrated that the CIP External Storage Area bunding will conform to CIRIA C736.

Table 4: CIP External Storage Area

Vessel Name	Substance	Vessel Volume (m^3)	Quantity	Volume (m^3)
CIP Tanks	Diluted caustic to 2% and recovered final rise water	15	4	60
		6	1	6
Total Tank Capacity				**66**
Bund Capacity (excluding 100mm freeboard)				**19.44**
110% of Largest Tank				**16.5**
Bund Capacity % of Largest Tank				**129.6%**
25% % of Total Tank Capacity				**16.5**
Bund Capacity % of Total Tank Capacity				**29.45%**

External Three Juice Tank Silo Area

3.1.8. Three 60m³ juice tanks will also be stored in the southern external yard. As this is also a separate zone, an external bund has been designed to capture 70m³, therefore, the secondary containment will be capable of holding in excess of 110% of the maximum tank size of 60m^3 (66m³) or 25% of the total tank capacity (45m³). In addition, Princes will include a 100mm freeboard.

External Glycol Storage Tank Area

3.1.9. A 20m^3 glycol tank is stored adjacent to the boiler house and benefits from a self- bunded tank capable of holding 110% of the total tank capacity.

Internal Storage Areas – Main Factory Building

3.1.10. Fruit juice concentrate in drums and finished product will be stored within dedicated areas internally. All doors are closed and in the event of a spillage or loss of containment, the material would be held within the building, the isolation valve closed and the spillage held within the site's building and internal drainage network. The captured material would then be tankered off-site to an appropriately licenced facility or installation. There will be no risk of the potentially polluting material reaching the identified receptors.

3.1.11. For substances such as oils used for maintenance, these will be stored on dedicated bunding, such as sump pallets and the secondary containment will either be a minimum of 25% of the total volume stored, or 110% of the volume of the largest container, whichever is greater.

Tertiary Containment

3.1.12. External uncovered secondary containment bunds are to be inspected twice daily for rainwater and emptied immediately following any rainfall event. Therefore, the rainfall within the bund shall not jeopardise the available capacity within the bund. Both external bunds have also been designed to hold in excess of the 110% or 25% capacity rule and will benefit from 100m freeboard to also take account of rainfall that may be present prior to daily removal.

3.1.13. It should also be noted that Princes will also introduce tertiary containment in the form of booms which can be deployed to contain the firewater on site on impermeable hardstanding and also propose the use of an isolation valve to shut off the drainage network as it is stated in the CIRIA guidance that it would normally be impracticable to design the local containment with sufficient capacity to contain firefighting and cooling water used in a major fire as higher bund walls cause construction, operational and safety problems and also hinder the ability to fight fires. Princes will also consult with the Fire Rescue Service to determine if cooling water can be recirculated.

3.1.14. In accordance with the CIRIA guidance, Princes have introduced a 100mm freeboard to external uncovered bund areas. In addition to this, Princes is committed to introducing an additional 250mm for surge allowance.

4. DESIGN, PERFORMANCE AND MAINTENANCE OF SELECTED BUNDING

4.1. Design and Performance

4.1.1. Integrally self-bunded tanks will be carefully selected ensuring the tanks have been designed and manufactured to the appropriate specification and standards for the substance that will be stored within it. Interfaces with gauge levels and sensors will be included.

4.1.2. The external concrete bunds have been designed to BS EN 1992:2006 and consideration for the following;

- bund shape due to site constraints;
- impermeability;
- absence of drains within bunds;
- nearest proximity to primary storage whilst also accounting for jetting;
- leak detection on storage vessels;
- absence of pipework piercing walls;
- strength;
- shrinkage consideration;
- thermal expansion consideration;
- curing and crack control;
- durability;
- structural independence; and
- accessibility.

4.2. Maintenance Schedule

4.2.1. The monitoring and maintenance of bunds is considered an important factor. A daily maintenance schedule is proposed and will be adopted with the QHSE management system. The schedule will comprise:

- site walkaround/inspection of containment vessels and bunding;
- inspect external bunds for rainwater and action removal immediately – this shall also be undertaken following any rainfall event;
- note signs of any deterioration of tanks or surroundings;
- note any small leaks or spills, fix any leaks and clean up spills;
- inventory checks will be undertaken including level of product in containers (level check).

4.2.2. Princes also propose to commission external specialist engineers to attend site annually to undertake storage tank and bund integrity testing. Any findings will be actioned immediately.

5. CONCLUSION

5.1. Following completion of the risk assessment as detailed in the CIRIA C736, Princes has designed local secondary containment systems zone by zone for the storage of potentially polluting materials.

5.2. Princes will ensure that potentially polluting materials stored externally will benefit from local secondary containment that has a maximum capacity of 110% of the largest container or 25% of the total tank capacity within the bund, whichever is greater.

5.3. Integrally self-bunded tanks for caustic and glycol have been selected ensuring the tanks and bunding have been designed and manufactured to the appropriate specification and standards for the substance that will be stored within it. Interfaces with gauge levels and sensors will be included.

5.4. The external concrete bunds for the separate external storage areas have been designed to the appropriate standard and a number of factors have been considered, such as impermeability, strength, shrinkage, thermal expansion, crack control and durability.

5.5. Princes will implement a maintenance regime which will include a number of checks and inspections on both the primary container and secondary containment which will be fully documented within the sites' QHSHE management System.

5.6. As a tertiary measure, Princes will install an isolation valve to ensure potentially polluting material will not be discharged beyond the Installation boundary via the drainage network.

5.7. Consequently, it can be considered that Princes can demonstrate compliance with the standard Permit condition ensuring *"all liquids in containers whose emissions to water or land could cause pollution shall be provided with secondary containment unless the operator has used other appropriate measures to prevent, or where that is not practicable to minmise, leakage and spillage from the primary container."*

APPENDIX II
H1 AIR IMPACT ASSESSMENT

Princes, Cardiff - H1 Assessment of Emissions from H_2O_2 Extraction

Calculation of Effective Stack Height

H (m): 10.32
Uact (m): 12.32
*Ueff (m): 0.00

*Refer to note [c] under the Notes to H1 Calculation

Pollutant	Stack Height	H_2O_2 ELV (mg/m^3) [a]	Stack Gas Volumetric Flow Rate at Stack (m^3/s) [b]	H_2O_2 Discharge Rate (g/s)	Effective Stack Height (m) [c]	Dispersion Factor ($\mu g/m^3/g/s$)		Process Contribution (PCair) ($\mu g/m^3$) [d]		Environmental Assessment Level (EAL) ($\mu g/m^3$) [e]		Process Contribution as % of EAL		Process Contribution Significant? (>1%)	Process Contribution Significant? (>10%)
						Long-term	Short-term	Long-term	Short-term	Long-term	Short-term	Long-term	Short-term	Long-term	Short-term
H_2O_2	12.32	0.280	0.972	0.000237	0.00	148.00	3900.00	0.246	6.48	280	280	0.09%	2.31%	No	No

Notes to H1 Calculation:

(a) In the absence of any test data - the Environmental Assessment Level (EAL) suggested by NRW, for H_2O_2, has been used as the ELV (Emission Limit Value).

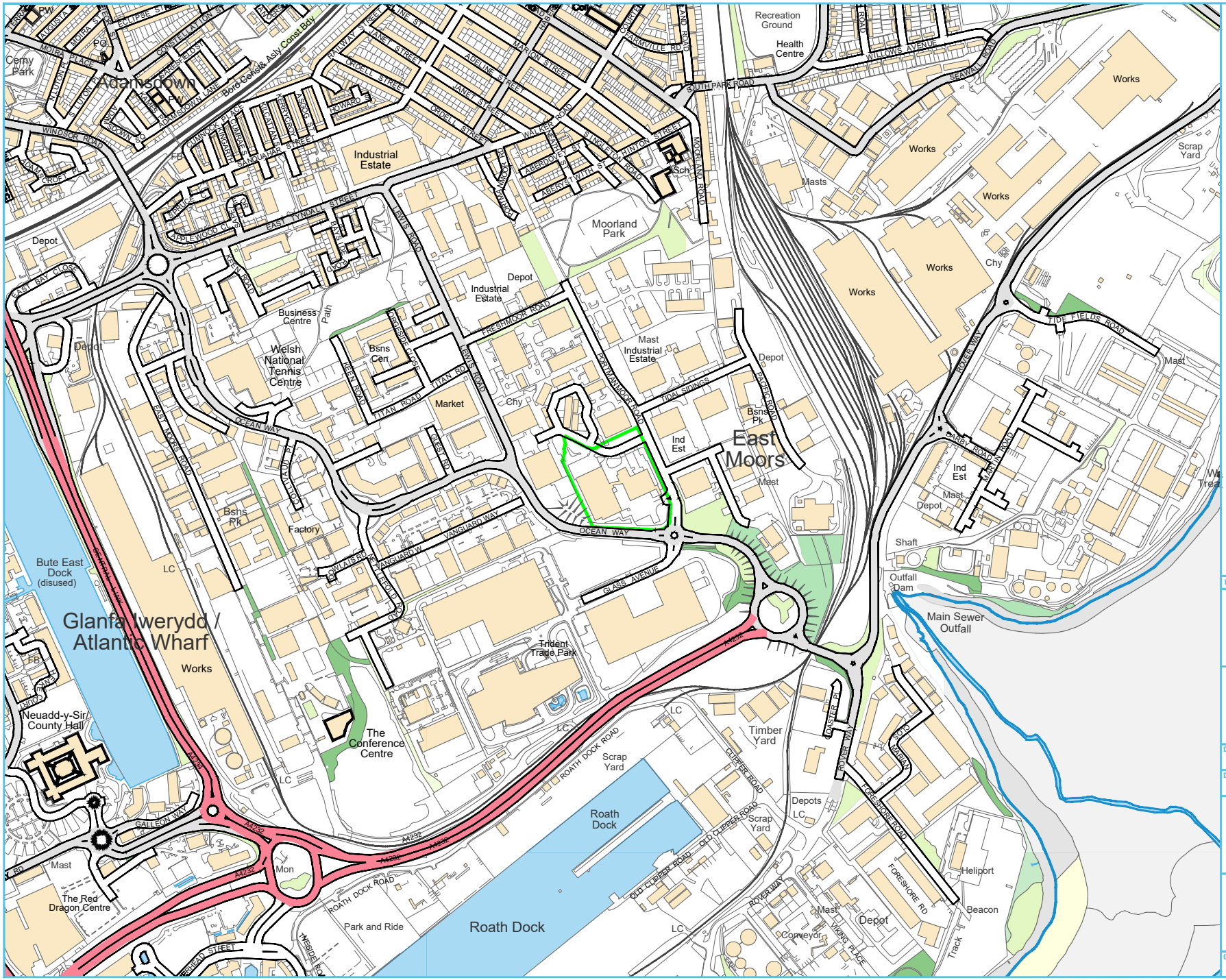
(b) As calculated from the actual volumetric flow rate provided by Princes for the exhaust fan (fan capacity 3500 m^3/h).

(c) The Environment Agency *Air emissions risk assessment for your environmental permit* guidance states to treat the effective height of release as 0 metres when the emission is actually released at a point that is less than 3 metres above the ground or building on which the stack is located.

(d) The Environment Agency *Air emissions risk assessment for your environmental permit* guidance states when a substance is released from more than one point, you must add up the substance's PC from each source to get the total PC for the substance. There are currently three existing and four proposed H_2O_2 extract points - all situated on the same building. As a result, both the long-term and short-term PCs are the sum of the seven emission points.

(e) EAL as suggested by NRW. Please note that, whilst a long-term EAL was not given for H_2O_2, the short-term EAL has also been utilised for the long-term EAL in the interest of being conservative and to demonstrate the significance criteria will not be exceeded for either long-term or short-term process contributions.

APPENDIX III
SITE LAYOUT PLAN



Rev	Date	Details	Chkd

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Client

PRINCES

Date	Scale	Drawn by	Checked by	Approved by
31/01/2022	1:10K @ A4	GTB	SM	SM

Drawing Status
FINAL

Project Title
ENVIRONMENTAL PERMIT VARIATION APPLICATION
PRINCES - SOFT DRINKS DIVISION
PORTMANMOOR ROAD
EAST MOORS
CARDIFF. CF24 5HB

Drawing Title
SITE LOCATION PLAN

Drawing Number	Rev
ECL.046.01.01-001	1

LEGEND

- ENVIRONMENTAL PERMIT BOUNDARY
- EMISSION POINTS TO AIR
- **A1** EXISTING BOILER 'YSX6000-47' STACK = 320446E; 175703N
- **A2** PROPOSED BOILER (NEW) 'YSX6000LN-102' STACK = 320451E; 175705N
- **A3-9** CONDENSATE
- **A10-16** HYDROGEN PEROXIDE
- **S1** EMISSION POINTS TO SEWER
- JUICE TANKS IN BUND (3x 60m^3)
- WATER TANK (90m^3)
- WATER TANK (60m^3)
- WASTE WATER TANK (30m^3)
- CAUSTIC TANK SELF BUNDED (20m^3)
- ASK TANKS (2x 67m^3)
- OSK TANKS (3x 67m^3)
- LIQUID SUGAR TANK (67m^3)
- GLYCOL TANK SELF BUNDED (20m^3)

PORTMANMOOR ROAD

Car Park

Service Yard

S1

SAMPLING CHAMBER

Offices

Engineering

Production

Warehouses

Process Area

Boiler House

Compressor Room

A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16

Service Yard

PORTMANMOOR ROAD

CIP EXTERNAL STORAGE AREA
(CIP TANKS 4x 15m^3 + 1x 6m^3)

OCEAN WAY

EXTERNAL BUNDED STORAGE TANK AREA

0m 20m 40m 60m 80m 100m

N

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Client: PRINCES

Project Title: ENVIRONMENTAL PERMIT VARIATION APPLICATION
PRINCES - SOFT DRINKS DIVISION
PORTMANMOOR ROAD
EAST MOORS
CARDIFF. CF24 5HB

Drawing Title: SITE LAYOUT PLAN

Rev	Date	Details	Chkd

Date	Scale	Drawn by	Checked by	Approved by
31/01/2022	1:1000 @ A3	GTB	SM	SM

Drawing Status: FINAL

Drawing Number: ECL.046.01.01-002

Rev: -