Application details

ABN 85 899 617 894

Application details

Application ID	APP016941
Application status	Submitted

Application type

Application type	New
Permission type	Development Licence
Estimated project cost	$54,000,000.00

Permission applicants

Applicant name	ADVANCED RECYCLING VICTORIA PTY LTD
Applicant type	Registered company
ABN	69653288209
ACN	653288209
Billing email address	Simon.Mathewson@licella.com
Registered office address	Level 7, 140 Arthur St North Sydney 2060 NSW Australia
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CEO name	Len Humphreys
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CEO contact number	(02) 9119 6050
Signatory name	Simon Mathewson
Signatory email	Simon.Mathewson@licella.com
Signatory contact number	0417266511
Key contact name	Michael Gaynor
Key contact email	mick.gaynor@licella.com
Key contact number	0418158730

Primary Applicant

Primary Applicant	ADVANCED RECYCLING VICTORIA PTY LTD

Suitability to hold a permission

Prohibited person declaration	No person or persons are identified as prohibited
I declare all prohibited person declarations have been attached	I agree

Fit and proper person declaration

I have attached all necessary information for EPA to perform a Fit and Proper assessment which is	I agree

true and correct to the best of my knowledge	

Prescribed permission activities

Scheduled activity	A: Waste treatment, disposal, transport and recycling
Scheduled category	A02a (Other waste treatment - incineration)
Description	Advanced Recycling Victoria Pty Ltd (ARV) proposes to establish and operate an Advanced Recycling facility at Altona using Catalytic Hydrothermal Reactor technology developed by Licella Holdings. End-of-life waste plastic will be cleaned and prepared for processing then injected into the Cat-HTR reactor where it will be manufactured into "Plasticrude" oil and Process Gas products. It is planned to sell the Plasticrude oil to customers who will manufacture new plastics. The Process Gas will be used on site for heating water and steam generation.
Is this activity at a fixed or mobile location?	Fixed
Activity location & unstructured address	541-583 Kororoit Creek Road Altona 3018

Waste information and treatment codes

Waste code	Amount & unit of waste	Waste form	Disposal category	Treatment code	Description
Z500	1000.0 Tonnes	Solid	Cat D	-	-

Scheduled activity	G: Chemicals including petroleum
Scheduled category	G01 (Chemical works)
Description	Advanced Recycling Victoria Pty Ltd (ARV) proposes to establish and operate an Advanced Recycling facility at Altona using Catalytic Hydrothermal Reactor technology developed by Licella Holdings. End-of-life waste plastic will be cleaned and prepared for processing then injected into the Cat-HTR reactor where it will be manufactured into "Plasticrude" oil and Process Gas products. It is planned to sell the Plasticrude oil to customers who will manufacture new plastics. The Process Gas will be used on site for heating water and steam generation.
Is this activity at a fixed or mobile location?	Fixed
Activity location & unstructured address	541-583 Kororoit Creek Road Altona 3018 ▪ 541-583 Kororoit Creek Rd Altona Vic 3018

Waste information and treatment codes

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Scheduled activity	G: Chemicals including petroleum
Scheduled category	G03 (Oil and gas refining)
Description	Advanced Recycling Victoria Pty Ltd (ARV) proposes to establish and operate an Advanced Recycling facility at Altona using Catalytic Hydrothermal Reactor technology developed by Licella Holdings. End-of-life waste plastic will be cleaned and prepared for

	processing then injected into the Cat-HTR reactor where it will be manufactured into "Plasticrude" oil and Process Gas products. It is planned to sell the Plasticrude oil to customers who will manufacture new plastics. The Process Gas will be used on site for heating water and steam generation.
Is this activity at a fixed or mobile location?	Fixed
Activity location & unstructured address	541-583 Kororoit Creek Road Altona 3018

Waste information and treatment codes

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Scheduled activity	G: Chemicals including petroleum
Scheduled category	G04 (Bulk storage)
Description	Advanced Recycling Victoria Pty Ltd (ARV) proposes to establish and operate an Advanced Recycling facility at Altona using Catalytic Hydrothermal Reactor technology developed by Licella Holdings. End-of-life waste plastic will be cleaned and prepared for processing then injected into the Cat-HTR reactor where it will be manufactured into "Plasticrude" oil and Process Gas products. It is planned to sell the Plasticrude oil to customers who will manufacture new plastics. The Process Gas will be used on site for heating water and steam generation. Product storage tanks will be installed on site that exceed 10,000 litres capacity and the facility will have capacity to store over 1 megalitre of oil products .

Is this activity at a fixed or mobile location?	Fixed
Activity location & unstructured address	541-583 Kororoit Creek Road Altona 3018 ▪ Dow Chemicals, 541-583 Kororoit Creek Rd, Altona 3018

Waste information and treatment codes

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Proposed activity

Process and technology

Summary of the background environmental condition.
Advanced Recycling Victoria Pty Ltd (ARV) will be leasing land at the Dow Chemical site located at 541-583 Kororoit Creek Rd, Altona 3018, Victoria. This is an industrial site that has been owned and operated by Dow Chemical since 1960. The site is zoned SUZ3 under the Hobson's Bay Planning Scheme and the land use is defined as follows: PETROCHEMICAL COMPLEX AREA Purpose To provide for the operation and expansion of the petrochemical industry in a manner that does not affect the safety and amenity of nearby areas. To provide for the minimisation of exposure to risk to health or life of persons working in or visiting the area. To provide for the orderly and proper development of the area and for adequate landscaping to reduce the visual impact of the petrochemical complex. Use of land For the purpose of this schedule, a petrochemical industry is an industry that includes processes for the use, manufacture and storage of: * Olefins or petrochemical aromatics; * methane; * chemicals or products wholly or partially derived from petroleum based feed stocks; or * other products associated with an industry which existed at the approval date. The Dow site has had petrochemical spills and leaks over the years and Dow are undertaking de-contamination works that are expected to continue for many years. The ARV Project will be built on top of the site with minimal activities requiring digging into the strata. Another company, EnviroPacific Solve, is already leasing land from Dow and has an operating business that carries out soil

decontamination. The surrounding area is or was an industrial area with: * Qenos owning and operating land to the east and south. Qenos is a plastics manufacturer. * Vacant land to the west. This site was owned by Australian Vinyls before the site was decommissioned and all infrastructure demolished. This site also has contaminated soil. ADDITIONAL INFO IN ATTACHMENT "EPA SUBMISSION - FULL NOTES"

Is this construction or installation of plant or equipment required?
Yes

Describe the required plant or equipment.

The site will have several buildings and industrial plant erected: •A large portal frame shed will be constructed at the north of the site. This shed will contain plant and equipment that will receive incoming feedstock waste plastic. Within this shed, the feedstock plastic will be shredded, cleaned and prepared for processing. • A second large shed at the centre of the site will contain plant and equipment that will take the prepared feedstock plastic and inject it into the Catalytic Hydrothermal Reactor (Cat-HTR™) module. • A Cat-HTR™ module will be erected next to the shed at the centre of the site. This is where "Plasticrude" oil and Process Gas will be manufactured. • Elsewhere on the site an Office Complex, Control Room, Training Room, Workshop, Laboratory and Water Treatment buildings will also be constructed. • Other industrial plant and equipment to be erected are a Product Storage Tank Farm, Elevated and Ground Pipe Racking and a Product Tanker Load-out Station.

Describe the processes or systems you will develop to perform the activity.

The processes and systems to be established at the Altona site are described in the accompanying document "Development Licence Application Supporting Documentation - Altona Advanced Recycling Facility Using Cat-HTR™ Technology" and "ARV Establishing Australia's First Waste Plastics Recycling Facility – Best Available Techniques & Technologies (BATT). ARV will be using Cat-HTR™ technology developed by Licella Holdings Ltd. Licella (https://www.licella.com) has spent over $120 million developing the Cat-HTR™ technology over the last 14 years. The manufacturing process that will be established at the Altona Project site is as follows: • ARV, in conjunction with several other partner entities, will be developing a supply chain for the collection of end-of-life waste plastic from throughout Victoria. This

plastic would normally be dumped into landfill or burnt in waste-to-energy plants. ARV will not be competing with plastic mechanical recyclers who are already processing hard plastics but establishing the collection and processing of predominately soft plastics and mixed plastics that cannot be recycled elsewhere. • Feedstock waste plastic will be delivered to site, cleaned and prepared for Cat-HTR™ processing. • The prepared waste plastic feedstock will be compressed and injected into Cat-HTR™ reactors where it will be mixed with superheated water at high pressure. • In the reactors the hydrocarbon chains within the plastic will be "snipped" and smaller hydrocarbon polymers manufactured. • When the reactor pressure is released, the compounds in the mixture will be separated into Product Gas, Plasticrude and water. Each of these products will be isolated. • The Product Gas will be used as a fuel for ongoing water heating and steam generation at site. • The Plasticrude will be pumped to holding tanks and then sold to customers for re-manufacturing back into plastics. This will be part of the emerging circular economy. ADDITIONAL INFO IN ATTACHMENT

Is this a new activity or a modification to an existing activity?
New activity

Outline your experience and competency in performing this activity.
ARV's main shareholding company, Licella, is a technology development company that has developed the Cat-HTR™ platform over the last 14 years at its Somersby NSW facility at an investment of over $120 million. The Somersby facility has three scale-up versions of Cat-HTR™ modules, the most recent being able to process 6,000 tonnes per year of feedstock. ARV is a newly formed subsidiary company that Licella and other shareholding industrial companies have established to commercialise the Cat-HTR™ technology for plastic in Australia. ARV will be supported by Licella in designing, constructing, commissioning and operating the Altona Cat-HTR™ facility.

Is the proposed activity a research, development or demonstration activity as part of a Pilot Project?
No

Summarise the scale, dimension, purpose and duration of the activity.

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Summary of measures used to comply with the general environmental duty.

ARV takes its general environmental duty very seriously. Our Altona Advanced Recycling Facility, when it is operating in 2024, will greatly assist Victoria to meet the government target to divert 80% of waste from landfill by 2030, with an interim target of 72% by 2025 by recycling end-of-life waste plastic and stopping it from being dumped into landfill. Based on current generation rates, a 72% recovery rate of plastics in Victoria (416,000 tonnes per year) would require an additional 360,000 tonnes of plastics recovery per year by 2025. An 80% recovery rate would require an additional 413,000 tonnes per year of onshore recovery by 2030. Our Altona Advanced Recycling Facility will commence Stage 1 operations by processing 20,000 tonnes per year of waste end-of-life plastic and can scale up as upstream plastics collection is organised. At the Altona site, ARV's Altona Advanced Recycling Facility will incorporate the following aspects as part of undertaking our general environmental duty: • "Green" electricity will be used for all electrical power at the site. ARV has signed an MOU with a Victorian electricity provider "Supercharged Energy Pty Ltd" to supply 100% green energy for the project. Solar panels will be installed by Supercharged Energy on site wherever possible, such as on the large industrial sheds that will be erected. Supercharged Energy will also supply our Altona site with green electricity from offsite generating locations. • All water used in the Cat-HTR™ process will be recycled industrial water supplied by Greater Western Water (GWW). • All wastewater discharged from the site will be treated and discharged into the GWW tradewaste line where it will be recycled back into recycled industrial water. • Product Gas that is manufactured during the Cat-HTR™ processing of waste plastic will be captured and used for onsite water heating. ADDITIONAL INFO IN ATTACHMENT "EPA SUBMISSION - FULL NOTES"

Summary of measures considered as best available techniques or technologies.

Included in this EPA submission is a document titled "ARV Establishing Australia's First Waste Plastics Recycling Facility – Best Available Techniques & Technologies (BATT)" that describes ARV's measures considered as best available techniques or technologies. A summary of the Altona Project's BATTs is: • Advanced Recycling is considered the best available technique and technology for recycling end-of-life waste plastic that can't be mechanically recycled. • The Altona Project will be: o Using 100% green electricity o Using 100%

recycled industrial water for the Cat-HTR™ processing o Discharging all site industrial wastewater into GWW's tradewaste line so it can be recycled into industrial water. o Recycling the Process Gas manufactured onsite for use as fuel for water heating and steam generation o Established on an industrial site zoned for the storage, use and manufacture of petrochemicals. o Scrubbing exhaust flue gasses to reduce site gas emissions. o Located in an industrial area with a substantial buffer zone to residential areas.

Summary of greenhouse gas emissions generated from this activity.
Included in this EPA submission is a document titled "Development Licence Application Supporting Documentation - Altona Advanced Recycling Facility Using Cat-HTR™ Technology". Chapter 5 of this document is "Energy Use and Greenhouse Gas Emissions" where anticipated greenhouse gas emissions are shown to be estimated at 3,571 t CO2e / year. This is a low output of greenhouse gas emissions because the largest use of energy in the project is electrical energy. The Altona Advanced Recycling Facility will be using green electricity and this will result in extremely low greenhouse gas emissions.

Summary of systems and processes to prevent or minimise greenhouse gas emissions.
A summary of systems and processes to prevent or minimise greenhouse gas emissions is as follows: • The ARV Altona Project will contract the supply of 100% green electricity for site use. • Most of the energy usage on site is electrical energy which will be free of greenhouse gas emissions. • Flue gasses emitted from using recycled Process Gas for water heating and steam generation will be scrubbed to reduce and remove noxious gas emissions.

Summary of potential impacts from climate change on the activity and related adaptation methods.
Included in this EPA submission is a document titled "Development Licence Application Supporting Documentation - Altona Advanced Recycling Facility Using Cat-HTR™ Technology". Section 4.3/Table 4.3 of this document considers potential climate change impacts and adaption methods. As seen in this section, the impacts of climate change will have little impact on the Altona Advanced Recycling Project: • Excessive hot weather will cause uncomfortable work conditions for staff. This can be managed through office air conditioning, staff training and PPE. It is not expected that excessive hot weather will have any adverse effects on plant or equipment. • Excessive cold weather will cause

uncomfortable work conditions for staff. This can be managed through office air conditioning, staff training and PPE. It is not expected that excessive cold weather will have any adverse effects on plant or equipment. • High intensity storms/wind could cause problems with plant and equipment. Engineering design will include allowing for high intensity storms/wind. Structures will be designed for high wind conditions and in accordance with Australian Standards. • Excessive rainfall will not cause problems with flooding as the site is elevated and sloped NW to SE with good drainage. The site is outside any flood planning overlays. • Abnormal drought will not cause operational problems as the water supply for processing will be from Greater Western Water's recycled industrial water supply which has sufficient water volumes even in drought conditions. • Rising sea levels will be highly unlikely to cause operational problems because the site it well above the provisional 0.8m sea level rise inundation planning allowance. The site is 15m above sea level.

Waste

Summary of how waste is managed in line with the waste management hierarchy.
ARV's Altona Advanced Recycling Facility is entirely focused on adherence to the waste management hierarchy. Our project will be recycling waste plastic that would normally be dumped into landfill. Our plastic feedstock will be cleaned and have contaminants such as glass, metals, wood and paper removed. The cleaned feedstock plastic will be shredded then injected into our Cat-HTR™ module that will manufacture Plasticrude oil and Process Gas from the plastic. The Plasticrude oil will be sold to customers who will recycle it into new plastic. The Process Gas will be used at site for water heating and steam generation. There will be some waste products arising from process activities: • Any contaminants removed from the plastic preparation process (such as glass, metals, wood and paper) will be captured and sent for recycling where possible. • All site wastewater will be initially treated at our site Water Treatment Plant then discharged into the GWW Tradewaste line. This water will then be pumped to the GWW Altona Water Treatment Plant and recycled into industrial water. • Garbage from people using the site (e.g. meal wrappings etc) will be recycled where possible or discharged into the council roadside garbage collection.

Detail the systems and processes used to minimise risks of harm to human health and the environment from the handling, storage, use and transportation of substance.
Risks to human health caused by the handling, storage, use and transportation of substances are minimised as follows: • Project risk assessments have been undertaken and are

presented in the attached "ARV Risk Management Plan" and Human Health Risk Assessment. These risk assessments will be reviewed prior to the commencement of operations and on a regular basis. All staff will be familiarised with these risk assessments. • All site infrastructure will be designed and built to Australian Standards and in accordance with WH&S requirements. • Consequence modelling will be carried out for the process facilities. • Incoming end-of-life waste plastic feedstock will be baled and delivered by trucks either in shipping containers or in B-Double tautliners. Bales will be moved within industrial sheds using electric forklifts. Staff operating forklifts will have appropriate WH&S forklift licences. •Upon waste plastic entering onsite processes then the feedstock will be moved by conveyors until such time as plastic is fed into the Cat-HTR™ module. From this point onwards all substance movement is by pumping and handling of liquids. • Storage of waste plastic will either be in shipping containers or in designated, purpose-built bunkers within industrial sheds. All plastic storage areas will be fitted with fire suppression/deluge systems. • Registered tanker-trucks will be used for the transportation of oil products to customers. • Any chemicals used on site such as cleaning aids will be stored and used in compliance with manufacturers specifications.

Risk Assessment

Human health and environment

Summary of the risk assessment identifying risks to human health and the environment.
ARV engaged the services of Environmental Risk Sciences Pty Ltd (Enrisks) to prepare a Human Health Risk Assessment for this project. The Enrisks report is given in Appendix 9 of the attached "ARV Establishing Australia's First Waste Plastics Recycling Facility – Best Available Techniques & Technologies (BATT)". Following are the outcomes of the Enrisks report: Based on the available data and the conservative assumptions adopted in this assessment, the following has been concluded: Air • Inhalation exposures: Risks to human health associated with acute or chronic exposures are negligible. This includes risks to pollutants presents as gases, particulate matter and pollutants bound to particulates. • Multiple pathway exposures: Risks to human health associated with chronic exposures to pollutants, bound to particulates, that may deposit to surfaces and be taken up into produce for home consumption relevant to surrounding areas where residential land use occurs are negligible. Noise • Based on the available information (i.e. noise from the site is not expected to be noticeable), the potential for noise from the site to result in adverse health impacts within the

community is considered to be low/negligible. Water • The potential for adverse health impacts within the off-site community associated with use of water at the site is considered to be negligible.

Summary of how identified risks are eliminated or reduced as far as reasonably practicable.
For the ARV Altona Project, risks to human health and the environment are eliminated or reduced as far as reasonably practicable in the following ways: • Project risk assessments have been undertaken and are presented in the attached "ARV Risk Management Plan" and Human Health Risk Assessment. These risk assessments will be reviewed prior to the commencement of operations and on a regular basis. All staff will be familiarised with these risk assessments. • All areas of environmental risk have been assessed. o Air emissions at the project will occur when the Product Gas manufactured during the Cat-HTR™ process is used as fuel in to heat water and generate steam. The flumes for exhaust gases will have scrubbing systems attached to them to minimize noxious gas emissions. o The plant and equipment used at this project will be electrically powered. All electricity used at site will be "green" electricity which has zero emissions. o All water used in the Cat-HTR process will be recycled industrial water. All industrial water, washdown water, water inside bunded areas and sewerage leaving the site will be discharged into the GWW tradewaste pipeline where it will be recycled back into industrial water. o All stormwater will be collected outside of the industrial catchment areas and discharged into stormwater drains. o Wherever waste can be recycled it will be collected and recycled. o Noise emissions will be negligible • People working on the site will be trained in safe work systems, risk assessment and risk management and issued with PPE.

Environmental management

Summary of environmental management systems used to prevent or minimise impact on the environment.
The following systems will be implemented at site to prevent/minimise the ARV Project impact on the environment: • ARV will work with suppliers of incoming waste plastic feedstock to have suppliers remove contaminants from the feedstock plastic. This will minimise plastic preparation problems. • Plastics stored on site will either be stored in shipping containers is designated areas or in purpose-built bunkers. All plastics storage areas will be fitted with fire-fighting deluge systems. • Air emissions from exhaust flumes will have scrubbers systems fitted to reduce and minimize emissions of noxious gasses. • The plant and equipment used at this project will be electrically powered. All electricity used at site will be green electricity,

which has zero emissions. • All water used in the Cat-HTR™ process will be recycled industrial water. All industrial water, washdown water, water inside bunded areas and sewerage leaving the site will be discharged into the GWW tradewaste pipeline where it will be recycled back into industrial water. • The site stormwater catchment system will ensure all stormwater collected outside of the industrial catchment areas will be discharged into stormwater drains. • Ongoing management reviews of site operations will ensure that wherever waste collected on site can be recycled it will be collected and recycled.

Will you undertake an environmental audit related to the activity?
No

Summary of environmental auditing requirements and implementation approach.
-

Summary of post-closure plans, including aftercare management, decommissioning and rehabilitation.
Dow Chemical Australia Ltd owns the Altona site. The site is known to have large areas of soil contamination caused by Dow since it commenced operations in 1960. Dow are in the process of demolishing their site buildings and infrastructure. As part of the lease agreement between Dow and ARV, Dow will carry out site contamination mapping that will show where soil contamination is present and what chemicals are present in the contaminated areas. Dow will continue carrying out de-contamination of designated areas of the site. The lease agreement for ARV is for 25 years with a 25-year option. ARV must give to Dow "as-built" plans of all the buildings, plant and equipment installed by ARV on the site. When ARV decides to cease operations at the Altona site the following actions are required by the lease agreement with Dow: • ARV will carry out site contamination mapping. Any changes to site contamination caused by ARV will be ARV's responsibility to decontaminate. • ARV is responsible for demolishing/removing all its buildings, plant and equipment on the site unless Dow requests certain items to remain at site.

Risk management

Air

Summary of the activity's emissions to air.
Air emission modelling (presented in attached "ARV Establishing Australia's First Waste Plastics Recycling Facility – Best Available Techniques & Technologies (BATT) Appendix 7)" shows that expected air emissions from the use of Product Gas for water heating without exhaust scrubbing are expected to be as follows: • NOx will be between 0.04% and 1.10% of

allowable limits • SOx will be between 0.01% and 0.06% allowable limits • NH3 will be between 0.01% and 0.00% EPA allowable limits

Summary of the systems and processes to prevent or minimise impacts from air emissions.
With the inclusion of an exhaust scrubber targeting the NOx emissions, air emission levels will be substantially reduced. The design and type of scrubber system is yet to be designed.

Noise

Summary of the activity's noise emissions.
Air emission modelling (presented in attached "ARV Establishing Australia's First Waste Plastics Recycling Facility – Best Available Techniques & Technologies (BATT) Appendix 7)" shows that expected air emissions from the use of Product Gas for water heating without exhaust scrubbing are expected to be as follows: • NOx will be between 0.04% and 1.10% of allowable limits • SOx will be between 0.01% and 0.06% allowable limits • NH3 will be between 0.01% and 0.00% EPA allowable limits

Summary of the systems and processes to prevent or minimise impacts from noise emissions.

Most processing activity that will cause noise will be carried inside industrial sheds and be of low to negligible noise levels outside. Most noise generation in open areas will involve truck movements. The ARV Altona site is surrounded by highways with thousands of truck movements per day so the ARV Altona site will have negligible impact.

Water

Summary of the activity's emissions to surface waters.
The ARV Altona site will have two distinct paths for surface water movement. General stormwater will be directed into site stormwater runoff channels which feed stormwater into a stormwater pipe at the southern end of the site. Any stormwater or runoff water that is collected inside bunded, sealed areas such as the tank farm or tanker load point will be directed into a pipe network that send water to the Water Treatment Plant. This surface water will be cleaned then discharged into the GWW Tradewaste line. If stormwater is contaminated, then sluice gates at the discharge point to the main stormwater drain can be closed and the contaminated water will be retained on site. The contaminated water can then be pumped into the Water Treatment Plant and then discharged into the GWW Tradewaste pipeline.

Summary of the systems and processes to prevent or minimise impacts to surface water.
All surface stormwater will be discharged int the council stormwater drains. All water captured inside bunded, sealed areas will be directed to the site Water Treatment Plant then into the GWW Tradewaste line.

Land and groundwater

Summary of the activity's emissions to land or groundwater.

There are no water emissions from ARV's site operations onto land or into groundwater. The only emissions to land or groundwater will be from rain that does not run-off into the stormwater system but seeps through the surface strata.

Summary of the systems and processes to prevent or minimise impacts to land and groundwater.
All industrial areas that are bunded will also be sealed to stop water seepage into strata.

Odour

Summary of the activity's emissions of odour.
ARV has visited a site in NSW owned and operated by iQRenew at Tuggerah, NSW. This facility processes end-of-life plastic. It has no noticeable odour.

Summary of the systems and processes to prevent or minimise impacts from odour emissions.
All processing of waste end-of-life plastic will be carried out inside industrial sheds. Experience to date has found that there is no noticeable odour.

Waste

Does your activity include management or control of industrial waste, priority waste and/or reportable priority waste?
Yes - it is unknown as to how the ARV Altona Project will comply with waste duties. ARV considers incoming waste plastic as "feedstock" whereas the EPA consider this as "waste material".

Detail the type, quantity and treatment of waste.
As defined in the EPA publication IWRG822.4, the feedstock end-of-life plastic entering the ARV Altona Project is defined as Z500 Industrial Waste. The ARV Project Stage 1 will process 20,000 tonnes per year of end-of-life waste plastic at the rate of 60.6 tonnes per day for 330 days per

year. As detailed in the attachments "Development Licence Application Supporting Documentation - Altona Advanced Recycling Facility Using Cat-HTR™ Technology" and "ARV Establishing Australia's First Waste Plastics Recycling Facility – Best Available Techniques & Technologies (BATT)", the manufacturing process that will be established at the Altona Project site is as follows: • ARV, in conjunction with several other partner entities, will be developing a supply chain for the collection of end-of-life waste plastic from throughout Victoria. This plastic would normally be dumped into landfill or burnt in waste-to-energy plants. ARV will not be competing with plastic mechanical recyclers who are already processing hard plastics but establishing the collection and delivery of predominately soft plastics that cannot be recycled elsewhere. • Feedstock waste plastic will be delivered to site, cleaned and prepared for Cat-HTR™ processing. • The prepared waste plastic feedstock will be compressed and injected into Cat-HTR™ reactors where it will be mixed with superheated water at high pressure. • In the reactors the hydrocarbon chains within the plastic will be "snipped" and smaller hydrocarbon polymers manufactured. • When the reactor pressure is released, the compounds in the mixture will be separated into Product Gas, Plasticrude and water. Each of these products will be isolated. • The Product Gas will be used as a fuel for ongoing water heating at site. • The Plasticrude will be pumped to holding tanks and then sold to customers for re-manufacturing back into plastics. This will be part of the emerging circular economy.

Is this proposed activity included in a relevant schedule of Regional Waste and Resource Recovery Implementation Plan?

Yes. P45 of the Metropolitan Waste and Resource Recovery Implementation Plan 2016 details Reprocessor Plastics infrastructure as having a shortfall capacity of 127,000tpa.:

Human health

Summary of the activity's potential human health impacts.

As detailed in the attachment "ARV Establishing Australia's First Waste Plastics Recycling Facility – Best Available Techniques & Technologies (BATT) Appendix 9 – Enrisks report Human Health Risk Assessment", the following are the outcomes of the Enrisks report: Based on the available data and the conservative assumptions adopted in this assessment, the following has been concluded: Air •Inhalation exposures: Risks to human health associated with acute or chronic exposures are negligible. This includes risks to pollutants presents as gases, particulate matter and pollutants bound to particulates. • Multiple pathway exposures: Risks to human health associated with chronic exposures to pollutants, bound to particulates, that may deposit to surfaces and be taken up into produce for home consumption relevant to surrounding areas where residential land use occurs are negligible. Noise • Based on the available information (i.e. noise from the site is not expected to be noticeable), the potential for noise from the site to result in adverse health impacts within the community is considered to be low/negligible. Water The potential for adverse health impacts within the off-site community associated with use of water at the site is considered to be negligible.

Summary of the systems and processes to prevent or minimise impacts to human health.
For the ARV Altona Project, ARV's systems and processes to prevent or minimise impacts to human health and the environment as follows: • Project risk assessments have been undertaken and are presented in the Attached ARV Risk Management Plan and Human Health Risk Assessment. These risk assessments will be reviewed prior to the commencement of operations and on a regular basis. All staff will be familiarised with these risk assessments. • All site infrastructure will be designed and built to Australian Standards and in accordance with WH&S requirements. • Consequence modelling will be carried out for the process facilities. • Site Emergency Services Systems will be designed for the site o Fire & Gas detectors layout review for the facility in terms of adequacy. o Fire-fighting system (I.e. Hydrant, fire extinguisher) review for the facility in terms of adequacy. o Life-saving equipment review for the facility. o Firewater demand assessment & firewater ring-main hydraulic modelling o Fire protection systems for the storage tanks (deluge and foam systems) • Air emissions at the project will occur when the Product Gas manufactured during the Cat-HTR process is used as fuel in to heat water and generate steam. The flumes for exhaust gases will have scrubbing systems attached to them to minimize noxious gas emissions. •The plant and equipment used at this project will be electrically powered. All electricity used at site will be green electricity, which has zero emissions. • All water used in the Cat-HTR™ process will be recycled industrial water. All industrial water, washdown water, water inside bunded areas and sewerage leaving the site will be discharged into the GWW tradewaste pipeline where it will be recycled back into industrial water. • Noise emissions will be considered at all times. • People working on the site will be trained in safe work systems, risk assessment and risk management and issued with PPE.

Community engagement

Have you engaged with the community and other third parties regarding this activity?
Yes

Summarise any planned or completed consultation, as well as concerns raised and the approach to address them.
As shown in the attached documents "Development Licence Application Supporting Documentation - Altona Advanced Recycling Facility Using Cat-HTR™ Technology – Chapter 13" and "Advanced Chemical Recycling of plastics in Altona Community and Stakeholder Engagement Report 22 December 2021" written by Capire Consulting Group, a community and stakeholder engagement program has been undertaken. ARV plans to continue with community and stakeholder engagement into the future. In Capire's "Advanced Chemical Recycling of plastics in Altona Community and Stakeholder Engagement Report 22 December 2021" report, the section titled "Summary of Findings" details community and stakeholder concerns raised and how they will be resolved.

Additional details

EPA permissions and compliance

Have you ever held a permission from EPA for this activity at the same location?
No

List the permission numbers for all previously held permissions.
-

Do you currently hold a permission or authorisation from EPA for this activity at the same location?
No

List the permission numbers for all currently held permissions and authorisations.
-

Do you currently hold an exemption for this activity at the same location?
No

List the permission numbers for all currently held exemptions.
-

Detail any engagement with other regulatory authorities, other than EPA, related to this activity.
ARV has engaged with Hobson's Bay City Council (HBCC) regarding site zoning and the suitability of Advanced Recycling using Cat-HTR™ technology for the site given its SUZ3 zoning. HBCC has agreed that ARV's Advanced Recycling Facility meets the SUZ3 zoning requirements. As such, there is no need for ARV to apply to HBCC for rezoning. ARV has also

contacted Worksafe Victoria and confirmed that the Altona Project, with the level of oil and gas storage planned for this EPA application, will NOT be a Major Hazard Facility.

Do you require any other planning permits or other approvals for this activity?
Yes

Do you currently hold a planning permit or any other approval for this activity?
No

Detail any planning permits or other approval held for this activity.
-

Have you received any notices from EPA related to this location or activity?
No

List the notice numbers for all notices issued by EPA.
-

Other approvals

Do you require a proof of performance (commissioning) testing plan in relation to this activity?
No

Summarise the proof of performance testing plan for this activity.
-

Do you require financial assurance for this activity at this location?
Yes

Summarise the proposed amount and type of financial assurance.
ARV's Altona Project is applying for several licences, one of which is "G04 – Bulk Storage", which is listed in the Licence Guidelines as being subject to financial assurance. EPA's document no. 2003.1 "Calculation of financial assurance for landfills, reportable priority waste management and waste and resource recovery facilities" does not address financial assurance for a facility like ARV's Altona Project facility. Given that the ARV lease with Dow Chemical includes a guarantee for remediating ARV's activity should ARV become insolvent, it can be argued that an EPA Financial Assurance is not warranted.

Summarise the profitability of the activity, investment at the site and likelihood of the site being abandoned.
The planned profitability of ARV's Altona Advanced Recycling Facility is confidential. This EPA Development Licence application is being made for Stage 1 of the ARV Altona Project. Capex for Stage 1 is $54,000,000. Dow Chemical Australia Ltd own the site. ARV will be leasing land at the site from Dow. Should ARV's Altona Project become insolvent and shut down, Dow will still own the site and it will not be abandoned.

Summarise the nature and costs of clean up for the activity.
The design of infrastructure for ARV's Altona Project is for a +50-year life expectancy. Given that Dow constructed much of its infrastructure in the 1960s and 1970s and it was operational until 2019, the ARV infrastructure life expectancy is reasonable. When the ARV facility does close down, site demolition works and clean up will involve: • Demolition of tow or three large industrial sheds • Demolition of numerous Cat-HTR™ modules. Most of this will be steel pipework which can be recycled. • Demolition of storage tanks. Most of this will be steel that can be recycled. • Demolition of an office/control-room/training room complex. • Demolition of numerous concrete slabs. An estimated cost for the demolition works would be $2 million.

Supporting Evidence
Attachments
- ARV Best Available Techniques - Technology June 2022.pdf
- ARV Credit Report_PSACR123638A.pdf
- ARV Risk Management Plan.pdf

- ARV Stage 1 Opex Est May 2022.pdf
- Community Engagement Report_Advanced chemical recycling of plastics in Altona_Dec21.pdf
- CONFIDENTIAL ARV Best Available Techniques - Technology May 2022.pdf
- Fit and Proper Person Questionnaire F1017-docx.pdf
- LIC-002-RPT-001_Altona Works Approval 091221_Rev 2_Issued.pdf
- Licella Brochure June2022.pdf
- Prohibited Person Questionnaire F1018.pdf
- Victorian Adv Recycling 2021_Feas. Study FINAL.pdf

Declarations

I declare that I have made all necessary enquiries and the information provided in this application (including any attachments) is true and correct. I understand that it is an offence to intentionally or negligently provide incorrect or misleading information to the Environment Protection Authority or to conceal information from the Authority.
I agree

I declare that I will perform my activity in accordance to the general environment duty.
I agree

I declare that I will perform my activity to ensure that all substances are handled, stored, used or transported in a manner that minimises risks of harm to human health and the environment from pollution and waste.
I agree