

Decision Report

Application for Works Approval

Part V Division 3 of the Environmental Protection Act 1986

Works Approval Number W6770/2023/1

Applicant ACN	Buildtech Solutions Pty Ltd 654 129 521
File number	DER2023/000011
Premises	Buildtech Solutions 13 Glassford Road, Kewdale, WA
	Legal description Lot 322 Plan 10233 Certificate of Title Volume 1358 Folio 210 As defined by the [premises maps] attached to the issued works approval
Date of report	27/06/2023
Decision	Works approval granted

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of a concrete batching and polymer plant. Compliance with the *Environmental Protection (Concrete Batching and Cement Products Manufacturing) Regulations 1998* (Concrete Batching Regulations) which apply to the operational aspects of the premises were assessed. As a result of this assessment, works approval W6770/2023/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) has considered and given due regard to its regulatory framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Application summary

Buildtech Solutions Pty Ltd (applicant, Buildtech) submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act). The application submitted on the 29 December 2022 is to seek a works approval to construct and operate the Buildtech Solutions concrete and polymer plant at 13 Glassford Road, Kewdale, Western Australia (premises) that is situated within a general industry zoned area. The premises is approximately 124 northwest of the City of Belmont residential area.

The premises relates to the categories 77 concrete batching or cement products manufacturing and 72 chemical manufacturing with a design capacity of 4,870 tonnes/year and 83.2 tonnes/year respectively under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6770/2023/1.

The concrete batching and polymer plant are expected to be used 5 days a week, 45 weeks a year. Taking into consideration the proposed operating hours, the proposed plant prototype operations (for low volume and use), the applicant proposes a production throughput of 2,146 tonnes/year for concrete batching operations and 24 tonnes/year for polymer production.

The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in works approval W6770/2023/1.

2.3 Overview of premises

2.3.1 Construction

The proposed leased building was previously fitted out for chemical manufacturing of adhesives and silicon sealants. All external mechanical dust collection system and emission points have been removed. The building has five 2 m * 1.8 m large screened louvered vents located on the north side of the building (opposite to the geopolymer and concrete plant). The roof has a ridge vent along the full apex with10 vents running perpendicular to the ridge to allow natural airflow.

The existing building has a concrete and bitumen hardstand with 150 mm concrete bunded perimeter with internal bunded bays throughout the building. Each bay drains to existing internal concrete sumps sized 360 L and 1,200 L with electric pumps. The entire bunded area including the sumps are within the existing trade waste concrete pit catchment that has an additional holding capacity of 18,000 L.

Key infrastructure and equipment assembled and operated on the premises for the purpose of concrete batching and chemical manufacturing are as follows:

- 200 L concrete mixer
- 2,000 L cement hopper with auger and built-in bag splitter, filters and attached localised dust extractor.
- 2,000 L aggregate hopper (flyash and expanded poly styrene (EPS)) with auger and built-in bag splitter, filters and attached localised dust extractor.
- 1,000 L water delivery and measuring tank
- pumps, valves, and hoses
- vacuums, sweeper
- 300 L tank wastewater and sediment collection.
- 2x 1,000 L IBC's wastewater tanks
- 1,000 L stainless steel mixing container
- mixing motor and blades
- 5,000 L cleaning container
- internal dust collection system (existing)
- enclosed building with concrete/bitumen hardstand, bunding, sumps and trade waste pit (existing)

The applicant has indicated that construction works is minimal and is merely assembling the equipment within the existing enclosed building. The applicant expects assembly of equipment will be completed within a few weeks.

2.3.2 Operation

The applicant proposed to operate intermittently for 4 hours a day between 8 am to 8 pm 5 days a week. The intended activities within the premises involve the following key processes. Items 1 and 3 below will not be assessed under this works approval but listed as information only. Items 2 and 4 related to the concrete batching and polymer production respectively and assessed within this works approval.

- 1. Expanded poly styrene (EPS) foam beads and EPS foam sheets. Process involves expanding EPS granules to polystyrene bean bag beans through heat and pressure.
- 2. Manufacture EPS concrete structurally insulated panels (SIPs) (like Styrocon).
- 3. Use EPS beads to create EPS sheets to manufacture EPS SIPs, which involves gluing and sandwiching the EPS SIPs sheet with two cement fibre sheets (create a master wall).
- 4. Manufacture low volume Geopolymer concrete binder for use in concrete EPS SIPs and prototype concrete moulds.

Hoppers and mixers are all powered by electricity; thus, no hydrocarbons storage or management controls required.

Wash down of equipment for both processes occurs within the washdown area that is bunded with drainage access to existing internal sumps and trade waste pit. A 5,000 L cleaning container on a 1 m raised steel platform will be in the washdown area and used to high pressure clean equipment. Up to 300 L a day of recycled wastewater will be used to clean the mixers and other equipment. After cleaning, the wastewater within the cleaning container flows into the 300 L tank and sediments are allowed to settle. Wastewater is then pumped and stored in two 1,000 L recycled wastewater holding tanks (IBC) for use on the next operational day. No wastewater will be discharged to the

internal collection trade waste pit. It is estimated that 500 grams of sediments may be captured after each cleaning day in the 300 L tank.

Concrete batching

Portland cement, flyash, and aggregates are imported into the enclosed building in sealed bulka bags and stored within bunded storage bays. Portland cement, flyash, and other aggregates are mixed with the EPS beads via a sealed hopper that has built in auger, bag splitter and attached dust extractors. During the transfer of any material the dust extractor with filters and waste bag operates to pick up any airborne dust. Catchment bunds are underneath the hopper and mixer activities where dust can be captured and swept. The mixed aggregate EPS is poured and sandwiched between two fiber cement sheets within a bunded process area to create a structurally insulated panel (SIPs). The SIPs are placed within a bunded rack and dried. Once dried the SIPs are glued to two cement fibre sheets to create the final product, EPS SIPs (master wall). The panels are transported immediately after curing. Only water vapors are released from the curing process.

Polymer _____

Chemicals sodium silicate, sodium hydroxide, fly ash, sand, and aggregates (gravel) are imported into the enclosed building and stored in IBCs and bulka bags in bunded areas. The geopolymer process is completed in a fully automated system within a plastic inner and concrete outer bunded area. The geopolymer binder is created by mixing sodium silicate, sodium hydroxide and water in a sealed stainless-steel mixing container for 48 hours. This mixing is not a chemical reaction but a polymerization of the material to produce a binder. Fly ash, sand, and other aggregates are added into the mixing container to create a geopolymer concrete. The geopolymer concrete is poured into molds and stacked to dry. Any spills of geopolymer liquid will be captured within the bunded area and reused. Furthermore, the geopolymer concrete binder will also be trialed and added as a replacement to Portland cement in the production of EPS concrete sips (concrete batching).

2.3.3 Compliance with the Concrete Batching Regulations

The applicant advised that the premises will be compliant with the Concrete Batching Regulations. A summary of the applicant's proposed design and operational controls relating to the requirements of the Concrete Batching Regulations is included in Table 1**Error! Reference source not found.**. The delegated officer reviewed the proposed controls and determined the concrete batching operation as proposed in the application is likely to comply with the Concrete Batching Regulations.

Concrete Batching Regulations Requirements	Applicant controls
Regulation 3: Minimisation of dust	 Internal dust collectors with bags attached to hopper. Floors are swept every day. Waste bin onsite for any non-recyclables waste. Fly ash, portland cement stored in bags within bunded areas Hoppers are fully sealed with built in augers and bag splitters Mixers are fully sealed.
Regulation 4: Control of dust from trafficable areas	A hard stand (concrete/bitumen)All process to occur within enclosed building.Floors are swept every day.
Regulation 5: Storage of aggregate and sand	 The material is stored within an enclosed building within bunded areas. Material will be stored in bulka bags or within IBCs. All unloading occurs inside an enclosed building

Table 1: Applicant	t controls c	ompared to	Concrete	Batching	Regulations.
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Concrete Batching Regulations Requirements	Applicant controls
Regulation 6: Storage of cement	 All cement will be stored in bags within a hardstand bunded area within an enclosed building.
	All unloading occurs inside an enclosed building
Regulation 7: Air cleaning	No cement silo. Cement stored in bags.
system for cement storage silo	Bag to hopper to mixer direct, no filters or gauges used.
Regulation 8: Level indicator	No cement silo. Cement stored in bags.
system or relief valve for cement storage silo	Hopper and/or storage uses less than 2 tonnes.
Regulation 9: Movement of materials on premises and loading of agitators	 All hoppers and transfer points, or areas used to load concrete mixer will be within an enclosed building with a bunded areas with the dust extraction system operating.
	All mixers are fully sealed.
	 Dust prevention measures fitted to the concrete plant will be maintained in good working order to ensure compliance with the regulation
Regulation 10: Cement product manufacturing premises to be cleaned	 The premises will be visually monitored during the hours of operation, and loose materials removed by being swept, hosed, or otherwise cleared.
Regulation 11: Control of wastewater	 All wastewater from the concrete batching plant process area and washout water from cement mixer and hopper will be directed into the plant's water management system (wastewater tank). The process area will be graded to drain to the internal wastewater tank.
	All wastewater from the concrete plant will be recycled for reuse.
	 The premises has been designed to contain all wastewater with perimeter concrete bunds and internal compartment bunds. The process and storage areas are within an internal wastewater trade pit catchment area.
	 No contaminated stormwater as the process and storage is within an enclosed building.
Regulation 12: Slurry pits,	 No slurry pits, settling ponds, silt traps and oil interceptor.
settling ponds, silt traps and oil interceptors	 Process is within an enclosed build with internal wastewater catchment to a 18,000 L wastewater trade waste pit.
	 Both processes involved all equipment washdown within bunded areas and wastewater collected and stored in tanks to be recycled back within the processes.
	No hydrocarbons used only electric equipment.
	Washing of vehicles will occur offsite.
Regulation 13: Disposal of waste	 All waste generated during the concrete batching process will be either recycled in the concrete batching process or stored within a bin for disposal at an appropriately licensed facility.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk Assessments* (DWER 2020).

To establish a risk event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this decision report are detailed in Table 2 below. Table 2 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Emission	Sources	Potential pathways	Proposed controls							
Construction	Construction – no emissions, assembly only.									
Operation										
Dust / beads	Unloading, pouring, mixing of material of	Air / windborne	All hopper processors have local internal dust extraction							
	stored aggregate	pathway	All raw materials are sealed and always bagged.							
	cement, flyash, sand gravel and polymer).		Loading and processing undertaken inside enclosed building and bunded areas.							
			Sweepers that clean the floors daily.							
			Vacuums, cleaning equipment and dust extractors throughout the delivery and loading, and manufacturing process where bead, and dust activity occurs.							
			Any spills will be cleaned up immediately.							
			Building has mesh and louvred air vents for natura circulation, that can catch beads.							
			See Table 1							
Noise	Unloading, loading	Air /	Operations within an enclosed building.							
	and polymer and concrete operational processors.	windborne pathway	Normal plant operating level is under 65 dB.							
			All mixers, hoppers and operations occur within enclosed building using electric motors.							
			Leach Highway occurs on the north-western boundary of the premises and has a 2.1 m solid sound wall, stacked panels with noise absorbing barriers to reduce noise to the residential suburb.							
			Operations will only occur between 8am and 8 pm 5 days a week.							
Odour	Polymer and concrete operational	Air / windborne	Operations within an enclosed naturally vented building.							
	processors.	paniway	All manufacturing processes including mixing are within sealed vessels.							
Wastewater	Leaks and spills	Seepage to	Existing building has:							
	from storage containers and runoff from washdown water	soil and groundwater	• 150 mm concrete bund within the building to prevent water leaving the building.							
			Concrete hard stand area within enclosed building.							
			Secondary containment consisting of							

Table 2: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls			
			bunded concrete floors that drain to sealed collection sumps			
			 Tertiary containment – building directs all contaminants to a sealed 18,000 L trade waste collection pit made of concrete. 			
			All water and particulates caught in the containments are recycled into the process.			
			No contaminated wastewater is discharged to local stormwater outlets.			
			Primary containment - All liquids including IBCs stored using spill pallets with bunding greater than the raw materials volume.			
			Cleaning of equipment is done in a large plastic bunded container and wastewater pumped to holding tanks.			
			See Table 1			

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020), the delegated officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Table 3 below provides a summary of potential human and environmental receptors that may be impacted because of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental Siting* (DWER 2020)).

Table 3: Sensitive human and environmental rec	eptors and distance from	prescribed activity
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Human receptors	Distance from prescribed activity
Residential Premises (Belmont suburb)	124 m northwest from the premises boundary
Industrial premises	Adjacent to the premises on the north and south boundaries and 30 east from the premises boundary.
Environmental receptors	Distance from prescribed activity
Proclaimed Perth Groundwater Area managed under the <i>Rights to Water and Irrigation Act 1914</i> (RIWI) Perth – superficial aquifer 6 down gradient bore users (500 – 820 m)	Observations of aerials from nearby wetlands indicated groundwater is likely 5 metres below ground level (15 m AHD seasonal annual maximum).

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and considers potential source-pathway and receptor

linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 4.

Works approval W6770 that accompanies this decision report authorises construction of the premises. The conditions in the issued works approval, as outlined in Table 4 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015). A registration is required following construction to authorise emissions associated with the ongoing operation of the premises i.e. concrete batching and chemical manufacturing activities. A risk assessment for the operational phase has been included in this decision report.

The conditions in the issued licence, as outlined in Table 4 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Risk events			Risk rating ¹	Applicant	Conditions ²					
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood	controls sufficient?	of works approval	Justification for additional regulatory controls		
Construction – no emiss	Construction – no emission, assembly of equipment only.									
Operation										
 Delivery including loading, unloading and operation of the manufacturing processing including Manufacture EPS concrete insulated panels Manufacture Geopolymer concrete binder and concrete molds. 	Dust	Air / privindborne ac pathway pricausing the impacts to sc	Residential suburb124 m northwest and industrial premises adjacent to the premises on the north and south boundaries	Operations and storage within enclosed building, mixers, and hoppers fully sealed. All material in bags in bunded area. Dust collection system captures and recycles dust back into process. Refer to Section 3.1	Low level local scale impact to amenity C = Minor The risk event may only occur in exceptional circumstances L = Rare Low Risk	Y	Condition 1	The delegated officer considered that the applicant's proposed controls were likely to comply with the relevant requirements of the Concrete Batching Regulations and given that the operations occur within an enclosed building, with sealed process equipment and storage product, with no external air emission points, dust emissions would only occur in exceptional circumstances to impact the amenity of the industrial and residential receptors. Condition 1 of the works approval specifies the location of the infrastructure on the premise and imposes infrastructure controls aligned to those proposed by the applicant to ensure compliance to the Concrete Batching Regulations during ongoing operations and to minimise dust emission from chemical processing as proposed by the applicant.		
	Odour		and 30 m east from the premises boundary.	Chemical manufacturing s with a sealed container within an enclosed building. Refer to Section 3.1	Onsite impact minimal C = Slight The risk event may only occur in exceptional circumstances L = Rare Low Risk	Y	Condition 1	The delegated officer considered the enclosed building, the size of the building and its natural ventilation, the nature of the chemicals used and determined that odour emissions would only occur in rare circumstances to impact the amenity of the industrial and residential receptors. Condition 1 specifies, the location of the batching and manufacturing plant on the premises to ensure operations occur inside an enclosed building as proposed by the applicant to minimise the risk of amenity impact from odour.		
	Noise			Operations within	Onsite impact	Y	Condition 1	Given the applicant's proposed siting of the		

Table 4: Risk assessment of potential emissions and discharges from the premises during construction and operation

Works approval: W6770/2013/1

Risk events			Risk rating ¹	Annligent	Conditions ²			
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood	controls sufficient?	of works approval	Justification for additional regulatory controls
				enclosed building. Refer to Section 3.1	minimal C = Slight The risk event may only occur in exceptional circumstances L = Rare			plant with a general industry zoning with a sound barrier wall (leach Highway) separating the residential receptors, the proposed operational hours (daytime/ evening) and operation of electric equipment within an enclosed building, the delegated officer considers noise emissions are likely to comply with the Noise Regulations.
					Low Risk			batching and manufacturing plant on the premises to ensure operations occur inside an enclosed building as proposed by the applicant to minimise the risk of amenity impact from noise. The applicant will be required to meet the assigned levels specified in the Noise Regulations whilst operating the premises.
	Spills and leaks from chemical and waste containments.	Surface runoff contaminating soils and groundwater.	Perth	Operations within fully enclosed building with bunding.	Onsite impact minimal C = Slight			The delegated officer considers the premise building has been appropriately designed to capture liquid spills, leaks and runoff from process and non-process areas, and that the proposed water management infrastructure will comply with relevant requirements of the Concrete Batching Regulations. The design also appropriately minimises the risk of impacts associated with contaminated water runoff.
			groundwater and 6 down gradient bore user within 800m.	Primary, secondary, and tertiary management for runoff for spills and leaks. Refer to Section 3.1	The risk event may only occur in exceptional circumstances L = Rare Low Risk	Y	Condition 1 Condition 3	Condition 1 of the works approval imposes infrastructure controls aligned to those proposed by the applicant to ensure compliance with the Concrete Batching Regulations during ongoing operation and to prevent surface runoff emissions from chemical processing entering local stormwater systems as proposed by the applicant.
								Furthermore, a certified plumber will be required to survey all internal drains that connect to the sumps and trade waste pit to verify that internal drainage is not discharged to stormwater management system.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Guideline: Risk Assessments (DWER 2020).

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department. Works approval: W6770/2013/1

4. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 1 February 2023	None received	N/A
City of Belmont was advised of proposal on 1 February 2023	The City of Belmont replied on 17/2/2023 providing the following: That under Local Planning Scheme No 15 (LPS15) the proposal meets the definition of an industry with an 'A' use in the Kewdale Industrial zone. An 'A' use is not permitted unless local government has exercise discretion by granting a Development Approval (DA). The applicant has a DA pending a decision. The City requests that the internal sumps and trade waste pit is not connected to the stormwater system managed by the City of Belmont, and that a certified plumber completes a site survey identifying that the existing drainage services are not connected to onsite or offsite stormwater drainage systems. The City of Belmont replied on the 26/06/2023 indicating that the City had granted development approval on 31 March 2023.	The delegated officer notes the City of Belmont's stormwater management requirements and has addressed this in the works approval conditions.
Applicant was provided with draft documents on 22 February 2022	The applicant responded on the 22 February 2023 with no comments	The delegated officer notes this information.

5. Decision

The delegated officer has determined the proposal to construct and operate a concrete batching facility with a production capacity of 2,146 tonnes/year and chemical polymer manufacturing plant with a production capacity of 24 tonnes/year at the premises does not pose an unacceptable risk of impact to public amenity, health, or the environment. This determination is based on the following:

- the location of the concrete batching and polymer facility within an enclosed building in a general industrial zoned area;
- the applicant's proposed operation of the premises being during daytime and early evening hours,

- the applicant's proposed design and operation controls being expected to comply with the Concrete Batching Regulations and
- the verification that the existing internal drains that connect the sumps and trade waste pit does not connect to stormwater management systems.

Based on this assessment the works approval has been granted for a period of three years from date of issue, subject to conditions commensurate with the applicant's proposed controls relating to noise, dust, and potentially contaminated water, and conditions necessary for compliance, administration, and reporting requirements.

The conditions of the works approval require the applicant to demonstrate compliance with the specified design and construction requirements, when construction works are complete, through submission of a compliance audit report. Upon submission of the compliance report the applicant may apply for Registration of the premises under Regulation 5A of the *Environmental Protection Regulations 1987*.

The applicant will be required to operate the premises in a manner which complies with the Concrete Batching Regulations, Noise Regulations, and the *Environmental Protection* (Unauthorised Discharges) Regulations 2004.

6. Conclusion

Based on this assessment, the delegated officer has determined to grant a works approval, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

- 1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
- 2. DER, 1998, Environmental Protection (Concrete Batching and Cement Product Manufacturing) Regulations, Perth, Western Australia.
- 3. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
- 4. DWER 2020, Guideline: Risk Assessments, Perth, Western Australia.
- 5. Buildtech Solution Pty Ltd, 2022, *Application for a works approval and supporting documents,* Perth, Western Australia