

December 7, 2020

Mayor & Council  
#1 Centennial Square  
Victoria, BC

Dear Mayor and Council:

**BG LUC comment on proposal for 2800 Bridge Street**

At a November 16, 2020 community meeting the Trio Ready mix / Ralmax Group presented a proposal for a cement materials receiving and storage facility at 2800 Bridge Street. There were no objections from the attendees following responses from the applicant to questions from the residents.

Trio Ready Mix and Ralmax Group have actively engaged the surrounding community in providing an opportunity for feedback comments over an extended time frame.

The proposal requires a height variance from the allowed 15m to 31.83m for a storage silo and a loading lift conveyor of approx. 44m in length at the shoreline. Although the height of the proposed material storage silo is double the zoning allowance there are no adjacent buildings directly affected as a result of shadowing or privacy. The proposal to include a discrete lighting option with restricted hours will reduce the apparent massing of the silo and add an interesting attraction in the industrial area. The applicant has addressed concerns over possible dust air pollution and Gorge waterway pollution as a result of the operations with a focus on detrimental environmental effects.

The Burnside Gorge CALUC has no objection to the requested height variance nor the proposal for an enlarged cement receiving and storage facility. We support this proposal as a positive addition to the industrial employment base of the City of Victoria.

Respectfully,



Avery Stetski  
Land Use Committee Chair Burnside Gorge Community Association

cc: Sustainable Planning and Community Development Department  
Kathi Springer, Ralmax Group

Mayor and Council  
City of Victoria  
One Centennial Square  
Victoria, BC V8W 1P6  
Canada

December 8, 2020

Dear Mayor Helps and Members of Council:

**RE:** Development Variance Permit Application #00139 /TRIO Ready-Mix Concrete Raw Materials Storage Facility 2800 Bridge Street

Thank you for this opportunity for public comment regarding our request for a height variance at TRIO's concrete batch plant at 2800 Bridge Street that would allow us to construct a raw materials storage silo on the existing footprint, an investment in environmental best practices that will change the way concrete is produced. It will be built to exceed all environmental and safety standards serving as a showcase for responsible industry. It will add visual interest in this area of the Victoria Harbour and provide strategic support to local businesses and civil development contributing to a strong and resilient economy now and for the future. The proposed TRIO silo and concrete plant is a strong demonstration of what can be achieved through innovation to balance the needs of the economy and the environment, and as such meets the goals of the City's economic action plan, Victoria 3.0 – Recovery, Reinvention Resilience, and aligns with the aspirations of Burnside Gorge Neighbourhood Plan.

The Ralmax Group, owner of Ralmax Properties Ltd, the applicant and parent company of TRIO Ready-Mix (TRIO), are champions of innovation and responsible industry on Victoria's upper harbour. Our application responds to the Burnside Gorge Neighbourhood Plan's call to update industrial practices that reflect today's needs and uses; it carefully considers the social, environmental and economic opportunities for the neighbourhood and the city. Through investments in the latest technology, facility design, and changing the way materials are shipped, *"TRIO's plant will set the standard for low-impact concrete production raising the bar and showcasing innovation in the industry."* (Synergy Enterprises, October 2019 report). Nineteen workers earning wages that sustain households will be employed at the new facility.

The strategic introduction of a storage silo enables barge access that will improve upon traffic flow in the area and reduce ground transportation and associated fuel and emissions. While more detail is included in this application summary, key environmental sustainability features include:

- Reduced land footprint through use of the silo *\*responds to short supply of employment lands*
- Waterfront access significantly reduces ground transportation requirements and associated fuel and emissions requirements
- Stormwater capture, treatment and re-use
- New reclaimer equipment that allows for recycling of waste concrete
- Lower carbon concrete through use of Carbon cure technology
- State-of-the-art emissions controls with a 'zero-discharge' goal from the owner (dust and noise abatement)

The property at 2800 is located in the Rock Bay neighbourhood and is recognized in the Official Community Plan (2012) and in the Burnside Gorge Neighbourhood Plan (2017) as 'the City's primary industrial land area.' The new TRIO batch plant is consistent with the existing zoning and is currently in operation. To achieve the full complement of these important environmental and community benefits, a height variance to accommodate the silo is necessary. Over the past year, we have been working with City staff and the neighbourhood to share information and to respond to concerns raised. Our proposal has generally been well received. A summary of our project follows along with a summary of questions raised and concerns shared (**page 5 and 6**)

### **Project Description:**

Our application refers to a parcel of marine industrial land that is 8,670m<sup>2</sup> upon which a modern concrete batch plant is located. It is zoned M-3 and has no residential adjacencies. The Development Variance Permit application is for a materials receiving and storage facility (silo) which would be built on approximately 300m<sup>2</sup> adjacent to the concrete batch plant.

This portion of the property is unoccupied and currently consists primarily of compacted road-base fill material and a roadside concrete barrier. At the property line and the edge of the protected migratory bird sanctuary area, a lock-block wall will be removed, along with concrete curb wall. The proposed silo will rise 31.8m to the high end of the single pitch roofline from an elevation above the harbour of 3m. The application does require a height variance. Under M-3 zoning, a maximum height allowance is 15m. There is precedent in the area for this requested height variance. The Lafarge concrete plant on Bay Street, also zoned M-3, includes a silo that stands 29.4 m in height at its base resides 2m above our proposed silo.

The TRIO silo is designed to accommodate 8,000 tonnes of raw materials (sand and gravel) that would be delivered by barge via Victoria harbour to support the existing TRIO concrete plant. The desired silo would be serviced by barge thereby removing more than 2,500 heavy trucks (fuel and emissions

reductions) from the roads per year and allow for optimal use of these employment lands that are in short supply in the city of Victoria and throughout the Capital Region (Synergy Enterprises report).

The proposed TRIO silo will utilize the existing barge ramp and water lot for receipt of materials that the TRIO batch plant utilizes. The TRIO silo will also utilize the same BC Hydro transformer installation that services the existing batch plant. The design of the silo allows for dust-control and sound-abatement for barge-delivered raw materials.

### **Our application considers the following:**

#### **Design**

The design of the TRIO receiving and storage facility (silo) is innovative and world-class with emphasis placed on optimizing functionality and minimizing impacts on the environment and neighbourhood. The design emulates numerous silos worldwide that enhance the visual interest of the industrial landscape with façades to soften the impact on their surroundings. Waterfront developments require specific considerations for weathering and maintenance. TRIO's silo design utilizes powder coating and galvanizing of perforated metal siding screens for aesthetics on this waterfront design. Through discussions with representatives from the Burnside Gorge Community Association, we heard support for investments in new technologies that better protect the environment. We also heard support for the opportunity to integrate a visually interesting industrial skyline into the neighbourhood. Incorporating early feedback, we have selected a LED lighting system consisting of 3,400 individually controlled LED lights on the North wall of the silo behind the perforated metal screen. This system is designed by Limbic Media, a Victoria company that specializes in high-tech interactive art light installations for public spaces. The light-art treatment on the silo allows for flexible timing and color treatments (similar to BC Place stadium).

For information, the plant's moving machinery, truck traffic and raw materials storage are not visible from the harbour and waterfront road and noise abatement is a design priority. The terminal runs at below 50db.

#### **Water Access:**

The regulation of the water is the responsibility of the Federal Government under Navigable Waters and Transport Canada. Ralmax has had a lease with Transport Canada which has included a barge ramp since April 1992. In June 2019, Ralmax received a Transport Canada Facilities Alteration Permit that approved the installation of piles for the head frame for the conveyor system as well as the approval of the conveyor system. The Songhees and Esquimalt Nations have also provided written support to Transport Canada (letters attached for information). Ralmax has discussed this proposal with the Harbour Master and has received favorable responses. In summary, those agencies responsible for overseeing all activities on Victoria harbour have no issues with our proposal.

In 2019 sixty-eight barges berthed at the Ralmax Ramp and in 2020 thirty-eight barges berthed at the facility. Due to ramp capacity berthing opportunities will be reduced when we are supplying the aggregate silo. It is our expectation that once the silo is operational there will be less barge activity in south bay than currently.

### Lighting Treatment

Our application includes a signed covenant with the City that restricts the use of the silo light. The lighting is only to be operated from dusk to midnight.

The lighting system consists of 3400 individually controlled LED lights that run through a preset program slowly changing the pattern and colours. When the lights are coloured and in flux the wall will generate 30-60 Lumens. This lighting system is located behind a perforated metal screen that will diffuse and limit the amount of light visible across south bay. Our lighting consultant calculates the impact to be 0.1-.17 Lux at Jutland Rd. With a desire to put these numbers into context, we were asked to provide comparable examples. For comparison the Lux value calculated at Jutland Road is similar to what a 60-watt incandescent bulb looks like when viewed from 22m. All 3400 lights are adjustable and can be dimmed to any level we choose. At 20% brightness the light measured at Jutland could be as low as .025Lux.

The intent of the lighting is to create an interesting visual for the local community. It is our intention to work with users of the harbor and change the colour and design to highlight different events such as the Victoria Dragon Boat Festival, Canada day or Christmas.

### Street Interface

Street access to the TRIO silo will share the same entry with the TRIO Ready-Mix plant, off David Street at the existing crossing at Turner Street. The TRIO plant is beyond the rise and turn in the road. It is anticipated that the TRIO silo will share the TRIO Ready-Mix David Street address.

While the logic of replacing heavy trucks with marine transportation is strong, **TRIO engaged a third-party consultant to undertake a traffic impact study (attached)**. The results indicate that the introduction of the silo improves traffic performance. This is simply a reflection of the road traffic reductions due to barge transport of raw materials.

### Environmental Leadership

Responsible industrial practices are of paramount importance to the Ralmax Group, owners of TRIO Ready-Mix. **TRIO engaged a third-party consultant to undertake a Sustainability Assessment of their business (Synergy Enterprises assessment report attached)**. This new ready-mix operation (silo and plant) changes the way materials are shipped and the way concrete is mixed. The proposed silo and plant operations enables TRIO to save over 2,000 tonnes of carbon equivalent per year.

- **Air Quality** – The TRIO silo and plant will employ state-of-the-art emissions controls with a ‘zero-discharge’ goal from the owner (Ralmax Group). The receiving and storage facility will have oversized air filtering and the silo is designed to contain any errant dust and arrest any possible dust output. The facility will be equipped with air quality alarms on a programmable logic controller to ensure compliance with all the designed dust containment and zero-discharge initiatives.
- **Harbour Water Quality** – The TRIO silo provides an improvement over current possibilities of raw material deposits being carried to the harbour by wind and rainfall. All surface and structure/roofline runoff water is directed away from the waterfront.

The Victoria Harbour Migratory Bird Sanctuary along with the salt water marsh will be preserved and protected with no water or contaminants discharged to this area. Working in partnership with Jacque Sirois (Friends of Victoria Harbour Migratory Bird Sanctuary/Naturehood) two eagle perches are included in the design, an osprey nest has been installed along with Purple Martin nesting boxes.

- **Surface Water Management** – The TRIO Ready-Mix operation (silo and plant) will collect rainwater from approximately 1,000 square metres of area and direct the surface water to the batch plant where it is collected for the purposes of concrete production.
- **Process Water** – There is no process water created, used or contained within the proposed TRIO silo.
- **Carbon Cure technology** – The TRIO plant produces lower carbon concrete to meet local demands – work that includes: street repair and maintenance, new road and highway construction, sidewalks, bike lanes, bridges, housing developments, etc.
- **Landscape** – The TRIO silo will not affect any existing trees.
- **Noise** – The Trio silo is sound-abated with minimal noise outside of its enclosures (<50db). The facility utilizes electric prime movers and electric over pneumatic actuation in its reclaiming of aggregate. All compressed air exhaust is silenced, and compressor machinery is fully enclosed and sound abated.

## ENGAGEMENT

### Groups:

Burnside Gorge Community Association – Land Use Committee: Presentation

Burnside Gorge Community Association – Membership meeting: Presentation

Jawl Properties – outreach and project information

Victoria Esquimalt Harbour Society – Membership meeting: Presentation

Media: Times Colonist article August 29<sup>th</sup>

2019 Point Hope Maritime Open House – Story Boards and Community Engagement

Small group tours (residents' inquiries and local businesses)

Outreach to adjacent property owner and tenant by Ralmax President: multiple offers to present were declined and neither commented on the project

**Summary: Questions and Answers Provided**

**WHAT ARE THE NOISE LEVELS FOR THE FINISHED, OPERATING PLANT (inside the building, but also off-loading to trucks or barges)?**

- **Noise** – The Trio silo is sound-abated with minimal noise outside of its enclosures (<50db). The noise bylaw is 70db. The facility utilizes electric prime movers and electric over pneumatic actuation in its reclaiming of aggregate. All compressed air exhaust is silenced, and compressor machinery is fully enclosed and sound abated.

**What are the total environmental costs of transport with the barge loads AND truckloads that will be moved? How many boat trips per-week are estimated to come and go up and down the gorge (and through the Johnston St Bridge)?**

Barge traffic will be one every three to four weeks. The Synergy report (provided) on the reduction of CO2 also took the emissions from the tug into consideration when calculating the reduction in CO2e. The barge traffic to the Ralmax ramp will be less than in previous years.

- **Air Quality** – The TRIO silo and plant will employ state-of-the-art emissions controls with a 'zero-discharge' goal from the owner (Ralmax Group). The receiving and storage facility will have oversized air filtering and the silo is designed to contain any errant dust and arrest any possible dust output. The facility will be equipped with air quality alarms on a programmable logic controller to ensure compliance with all the designed dust containment and zero-discharge initiatives.

**Will production of this new silo be greater than the old site? In which case, will this new silo create more pollutants coming from the processing and mixing of the cement? Are their 'tailings' or 'pollutants' left from the processing that need special disposal or consideration in the plans and the concerns of the health of the waterway?**

The production volumes of the concrete plant will not increase due to the aggregate silo.

The aggregate bins will allow us to store all aggregates in an enclosed space, eliminating the need for water-based dust suppression (water conservation). The silo is a large structure – for context, it is not as high as the Lafarge silo on Bay Street.

- **Harbour Water Quality** – The TRIO silo provides an improvement over current possibilities of raw material deposits being carried to the harbour by wind and rainfall. All surface and



structure/roofline runoff water is directed away from the waterfront. There will be no run off from the proposed silos, all surface water and water collected from the eaves will be reused in concrete production.

The Victoria Harbour Migratory Bird Sanctuary along with the salt water marsh will be preserved and protected with no water or contaminants discharged to this area. Working in partnership with Jacque Sirois (Friends of Victoria Harbour Migratory Bird Sanctuary) two eagle perches are included in the design, and Purple Martin nesting boxes were installed this spring.

- **Surface Water Management** – The TRIO Ready-Mix operation (silo and plant) will collect rainwater from approximately 1,000 square metres of area and direct the surface water to the batch plant where it is collected for the purposes of concrete production and recycling and treatment operations.
- **Process Water** – There is no process water created, used or contained within the proposed TRIO silo.
- **Carbon Cure technology** – The current TRIO plant produces lower carbon concrete to meet local demands – work that includes: street repair and maintenance, new road and highway construction, sidewalks, bike lanes, bridges, housing developments, etc.
- **Landscape** – The TRIO silo will not affect any existing trees.

In summary, this responsible industrial Development Variance Permit application meets the following Strategic Goals of the City of Victoria:

Meeting the Strategic Goals of the City of Victoria	
<b>Good Governance and Civic Engagement</b>	<p>Community engagement and outreach plans include:</p> <ul style="list-style-type: none"> <li>• Small group tours of the batch plant – summer 2020</li> <li>• Presentations to: Burnside Gorge Community Association Land Use Committee as well as the membership;</li> <li>• Victoria Esquimalt Harbour Society;</li> </ul>
<b>Reconciliation and Indigenous Relations</b>	<p>Salish Sea Industrial Services Ltd is owned jointly by the Songhees and Esquimalt Nations in partnership with TRIO's parent company, Ralmax. This partnership includes an Indigenous Employment Program that provides work experience and training opportunities for Indigenous workers across all Ralmax companies including TRIO.</p>



<p><b>Prosperity and Economic Inclusion</b></p> <p>There is growing recognition of the vital role that industry plays in sustaining a healthy, diversified economy.</p> <p>These are the City's employment lands and they are in short supply. Industrial lands spawn a vibrant supply chain of hundreds of local businesses that fuel more jobs for households and contribute important taxation that in turn help support the quality of life for all residents.</p>	<p>Employment lands are job-creating lands and Union wages contribute to the financial sustainability of households. TRIO Ready-Mix will create employment for 19 direct employees and 10 contractors. This plant sets a new industry standard for responsible business practices.</p> <p>Concrete is a high demand resource that is the foundation to the local and regional transportation network, construction industry and all infrastructure projects.</p> <p>Profits from TRIO Ready-Mix are reinvested in the company, in the employees and in the community.</p> <p>The Ralmax Group, owners of TRIO Ready-Mix responds generously to the needs of the local community. The General Managers of their industrial businesses assist with the cash distribution of more than \$200,000/year in local community initiatives.</p>
<p><b>Health, Well-Being and a Welcoming City</b></p>	<p>The Ralmax Group, parent company of TRIO Ready-Mix, has been investing the restoration of the health of the Salish Sea and Victoria's upper harbour for several decades through partnerships with local champions including Veins of Life Society and Peninsula Streams Society. This application has many environmental features and benefits which improve and protect the harbour. (Synergy report)</p> <p>The plant will have state-of-the-art emissions controls with a 'zero-discharge' policy and a zero-waste goal.</p> <p>The silo will also introduce new visual interest on the industrial skyline.</p>
<p><b>Climate Leadership and Environmental Stewardship</b></p> <p><i>By introducing more intense uses of industrial harbour lands, we create opportunities to make viable investments in new technologies that better protect the environment while creating industrial viewsapes that are visually interesting and integrated</i></p>	<p>TRIO receiving and storage facility (silo):</p> <ul style="list-style-type: none"> <li>• optimizes the limited amount of employment lands through responsible design and densification (reduced footprint)</li> <li>• The proposed silo and plant operations enables TRIO to save over 2,000 tonnes of carbon equivalent per year</li> <li>• Carbon Cure technology</li> <li>• New reclaimer equipment allows for recycling and reuse of waste concrete materials</li> </ul>

<i>into the cultural spaces of our neighbourhoods.</i>	<ul style="list-style-type: none"> <li>• Captures stormwater for concrete production, treatment and recycling purposes (prevents run-off of water into the harbour)</li> <li>• Barge accesses reduces ground transportation and associated GHG emissions and fuel use</li> <li>• Introduction of new bird habitat through collaboration with Friends of Victoria Harbour Migratory Bird Sanctuary</li> <li>• Third party review of environmental practices: Synergy Enterprise report (attachment)</li> <li>• Storage enclosures allow for noise and dust abatement</li> </ul>
<b>Sustainable Transportation</b>	<p>Barge access will remove more than 2,500 heavy trucks from the roads per year (reductions in emissions, fuel and wear and tear on the roadway)</p> <p>Traffic improvements in the neighbourhood resulting from barge access. (Traffic Impact study)</p>

Thank you for your thoughtful consideration of our application. Council's leadership in approving our application will set the new standard for low-impact concrete production raising the bar and showcasing innovation in the industry and helping achieve the goals as identified in the City's economic action plan, Victoria 3.0 – Recovery, Reinvention Resilience, and aligns with the aspirations of Burnside Gorge Neighbourhood Plan.

Respectfully,

*Stephen Hay*

Stephen Hay

General Manager

Cell: [REDACTED]

Attachments:

Synergy Enterprises – TRIO Sustainability Assessment

Letters: Songhees Nation and Esquimalt Nation

# Sustainability Assessment



## Concrete Plant at 2800 Bridge St.

Prepared For	Trio Ready-Mix
Name	Stephen Hay
Title	General Manager

Completed By	Heidi Grantner & Jill Doucette
Email	
Completed	24/9/2019



# Executive Summary

Trio Ready-Mix is constructing a new concrete plant at 2800 Bridge St. in the Rock Bay neighbourhood of Victoria. Cement, a key component of ready-mix concrete, is responsible for 7% of global man-made greenhouse gas emissions, making it the world's second largest industrial source of carbon dioxide, according to the International Energy Agency. Trio's move to a new site provides an opportunity to rethink and redesign the way ready-mix concrete is produced, and the company is implementing the latest technology that will reduce the environmental impact of their operations and products.

Synergy has conducted a review of operations at both the existing plant and the new, and has calculated the potential impact of the environmental initiatives at the new Trio site. This report summarizes the carbon, fuel, water and waste savings that will be realized each year the new plant is in operation. In total, Trio's new site is estimated to save over 2,000 tonnes of carbon equivalent (tCO<sub>2</sub>e). The analysis is broken down into sections that mirror the way ready-mix is produced, first examining changes to raw materials, then fuel and energy savings from more efficient transportation & storage. The impact of an improved layout and new equipment on production has been measured, as well as the material savings from recycling & reusing waste concrete using a reclamation system.

**Trio's plant will set the standard for low-impact concrete production, raising the bar and showcasing innovation in the industry.**

	Existing	New	Savings	Savings (%)
Embedded Carbon (tCO <sub>2</sub> e)	14,029	11,994	<b>2,034</b>	<b>14.5%</b>
Fuel for Transport (L)	93,243	8,957	<b>84,286</b>	<b>90.4%</b>
Total Water Use (L)	6,396,000	5,295,943	<b>1,100,057</b>	<b>17.2%</b>
Waste Concrete (mt)	8,930	857	<b>8,073</b>	<b>90.4%</b>

Table 1: Summary - Sustainability Assessment

## Key Sustainability Features at New Site



Reduced land footprint through use of silos



New reclaimer equipment allows for recycling of waste concrete



Stormwater capture, treatment & re-use



Lower carbon concrete through use of Carbon Cure™ technology



Waterfront access reduces ground transportation and associated fuel and emissions



Shoreline rehabilitation with EConcrete Blocks (pending approval)



**166,020**

Sqft Smaller



**3,047**

Fewer Trips



**8,073**

Less Waste (mt)

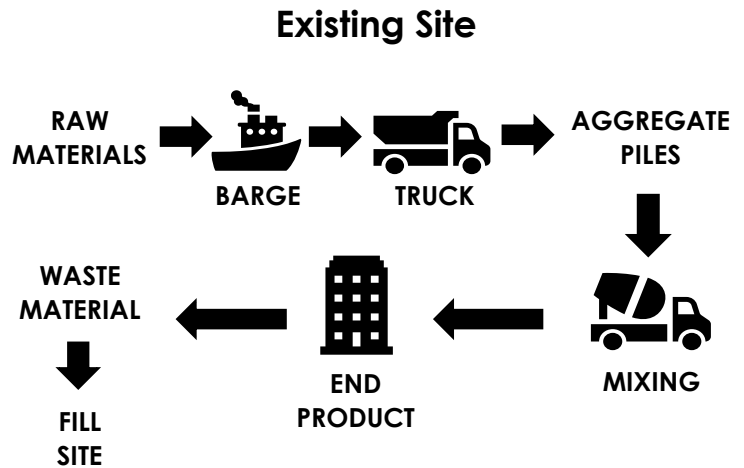


**2,348**

Less tCO<sub>2</sub>e

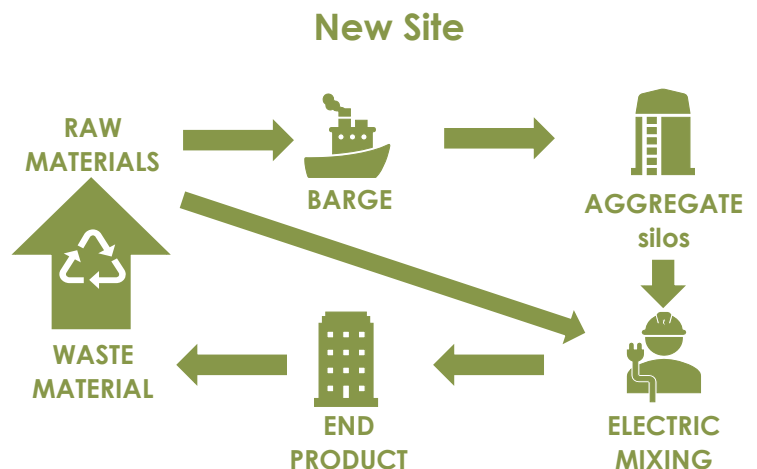


# Process Overview



The existing site, located at 1020 Hallowell Rd in Esquimalt, is a conventional concrete ready-mix plant. Raw materials, including sand, aggregate, cement and fly ash are barged from the mainland and trucked to the site. Raw materials are stored in open-air piles around the site; aggregate is regularly sprayed with water to keep the dust down and the material cool. Batches of concrete are mixed in the drums of concrete trucks running at their max rpm for 15 minutes per batch. When waste concrete is returned from client construction sites, the material is poured into pre-cast blocks or laid on the ground in strips where it hardens before being crushed and used for road fill.

**"The entire process will change when we move from the old site to the new.  
The way we ship our materials, how we use water, the way we deal with  
waste concrete... It will be totally different."  
- Stephen Hay, Trio General Manager**



The new site in Rock Bay is located on the Gorge Waterway. The direct barge access avoids shipping raw materials by truck, reducing fuel and associated emissions. Electric pumps and conveyor belts move raw materials from the barge directly into silos, where they are kept cool. A new Central Mixing Unit mixes the concrete more efficiently, and Carbon Cure™ technology reduces the amount of cement in each batch, which in turn reduces embedded emissions. Finally, a reclaimer processes waste concrete and recycles it for use in new batches. This reduces raw materials and saves water.

# Raw Materials

## Carbon Cure™

The new plant will allow Trio to use different raw materials and newer, more environmentally friendly techniques to make concrete. First, it will use injections of Carbon Cure's™ liquid (recycled) CO<sub>2</sub>, which reduces the amount of cement needed per ton of concrete produced. Cement is a crucial ingredient in any concrete mix, acting as the glue that holds it together. It is also the ingredient that has the largest embedded carbon footprint. Making cement requires superheating calcium carbonate, or limestone, which releases carbon dioxide into the atmosphere. Reducing cement use directly reduces emissions.

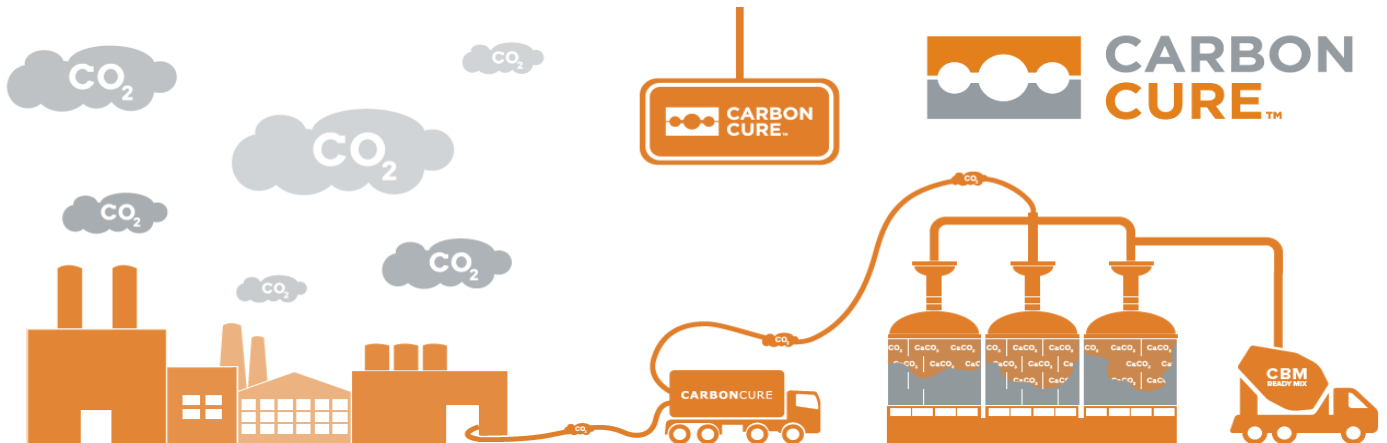


Image courtesy of Carbon Cure™

	Traditional	With Carbon Cure	Savings
Cement / Yr (mt)	14,924	14,178	746

## Portland Limestone Cement

In addition to using less cement, the new Trio plant will use a better kind of cement. The company will transition to General Use Limestone (GUL) cement, which is 10% less carbon intensive than General Use (GU) cement due to added limestone. This change is expected to save 1,403 tonnes of CO<sub>2</sub>e per year, based on Trio's yearly volume.

	tCO <sub>2</sub> e / ton	tCO <sub>2</sub> e / Year
GU Cement	0.94	14,029
GUL Cement	0.85	12,626
Savings	9.4%	1,403



Image courtesy of Canadian Consulting Engineer.com.



-5%

less cement



-746

less cement (mt)



-9.4%

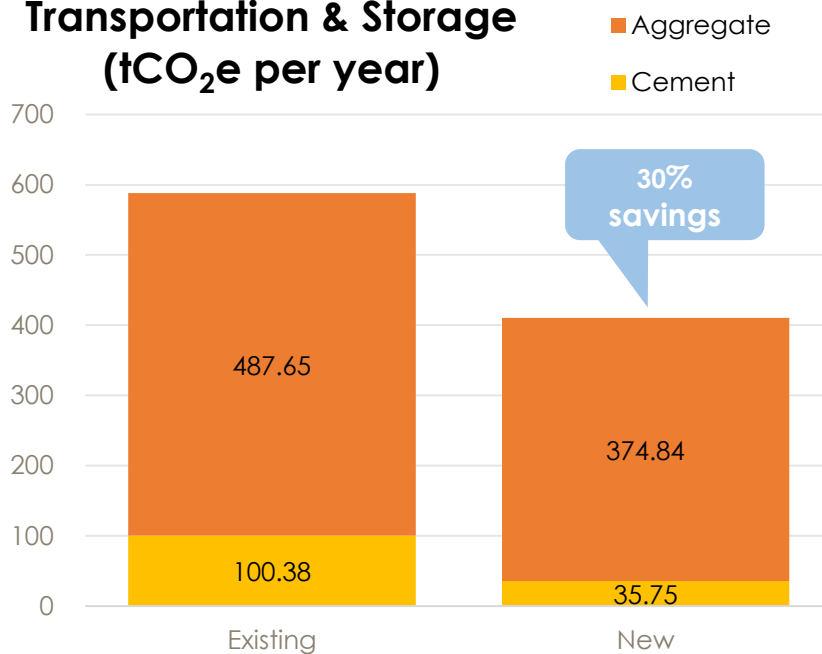
tCO<sub>2</sub>e / ton

tCO<sub>2</sub>e  
Savings/Yr

2,034

# Transportation & Storage


## Transportation & Storage (tCO<sub>2</sub>e per year)



The site's waterfront location will allow raw materials such as cement and aggregate to be shipped directly to the site on a barge. This will save on diesel fuel and the resulting carbon emissions from trucking raw materials, which were previously barged to various locations on Vancouver Island and then shipped to Trio in dump trucks and B-trains. Once at the site, the aggregate will be stored in silos rather than open air piles. These improved arrangements will avoid 3,047 dump truck deliveries per year.

The impact of these changes is significant and estimated to save 176 tonnes of CO<sub>2</sub>e per year.

Storing aggregates in silos will also eliminate the need to spray aggregate to keep it cool, saving over 1 million litres of water per year.

 **5,010**  
Baths / Yr



The new Trio site showing shipments arriving via barge. The large silo on the left will store aggregate and sand.

	Deliveries / Year	Diesel (L) / Year	Water (L) / Year	tCO <sub>2</sub> e / Year
Existing Plant	3,047	93,243	1,100,000	588.0
New Plant	0	8,957	0	410.6
<b>Savings</b>	<b>3,047</b>	<b>84,286</b>	<b>1,100,000</b>	<b>177.4</b>



**3,047**  
Fewer Trips



**84,286**  
Less Diesel (L)



**1,100,000**  
Less Water (L)

tCO<sub>2</sub>e  
Savings/Yr

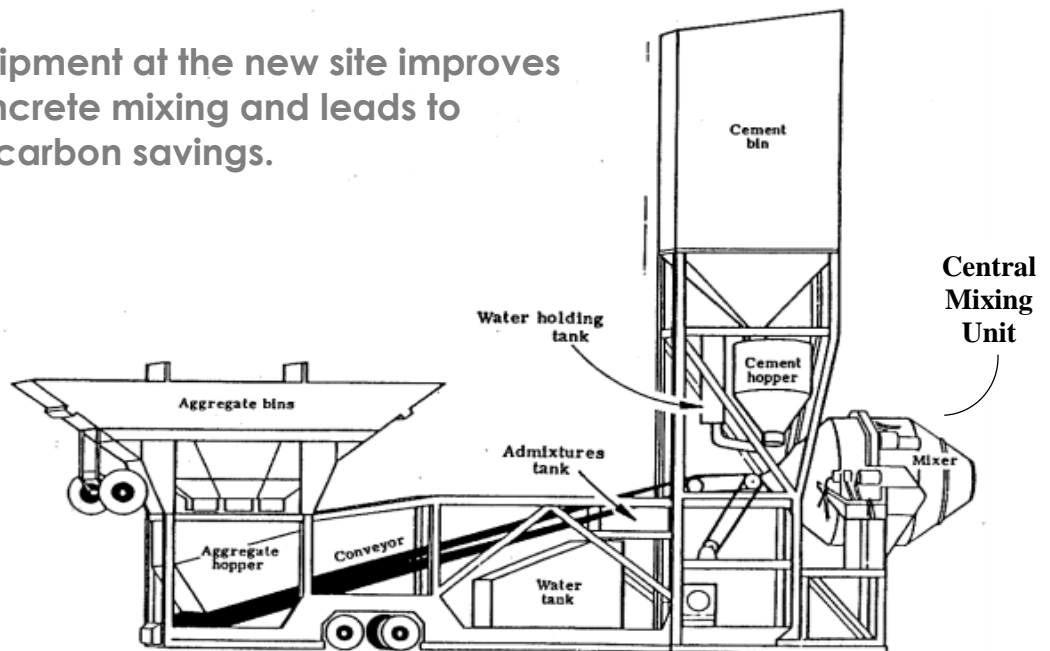
**177.4**



# Production

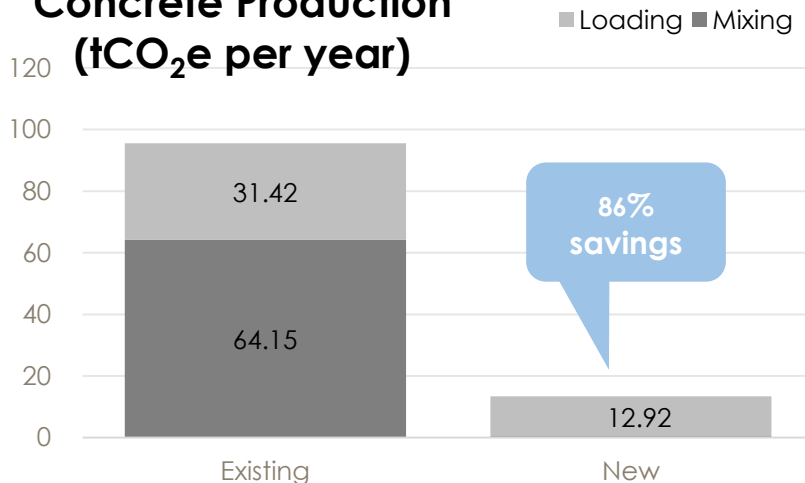
The layout and equipment at the new site improves the precision of concrete mixing and leads to energy, water and carbon savings.

By using a Central Mixing Unit (CMU), Trio avoids having to mix concrete in trucks - saving diesel fuel and associated emissions.



Typical Central Mixing Unit. Image courtesy of State of Minnesota Concrete Manual.

## Concrete Production (tCO<sub>2</sub>e per year)



Using conveyor belts instead of diesel-powered loaders will save...

 **11,617**  
Diesel (L) / Yr

 **18.5**  
tCO<sub>2</sub>e / Yr

At the existing site, when a batch of concrete is made, a diesel-powered loader picks up aggregate and sand in its bucket from stockpiles around the site. The ingredients are then funneled into the back of a concrete truck, which revs its engine to full speed to mix the batch. This process is fuel-intensive, because the ingredients are heavy and the loader must make many trips.

At the new site, conveyor belts powered by electric motors will deliver the ingredients from the silo to a Central Mixing Unit (CMU). Also powered by electricity, this piece of equipment improves the efficiency and precision of each concrete mix. In total, the new plant will save 121 tCO<sub>2</sub>e and 23,700 litres of diesel in the production process.



**500**

Fewer Hours



**35,336**

Less Diesel (L)



**-86%**

Less tCO<sub>2</sub>e

tCO<sub>2</sub>e  
Savings/Yr

**82.2**

# Recycle & Reuse

When Trio's clients order ready-mix, they often purchase a little extra to avoid the risk of running out. This means that approximately 9,000 metric tonnes of concrete is returned to Trio every year. At the existing site, Trio pours this waste into pre-cast concrete blocks, which are then sold. Any remaining concrete is laid on the ground in strips; once the strips harden, they are crushed and sent to be used as road base.

At the new site, Trio will be able to recycle the waste concrete into new batches, savings the fuel and emissions from operating the crusher and transporting waste concrete to the road base fill site.

The reclaimer, the new piece of equipment that recycles the concrete, uses a series of paddles and augers to remove aggregate and sand from the returned concrete. These raw materials can then be used as inputs in new batches. The process water that is left over is funneled into a tank, where it is agitated to keep the remaining solids in suspension until it can be re-used. If too many solids accumulate in this water, the liquid is fed through a filter press to remove the excess.

By re-using waste, Trio avoids having to purchase as many raw materials and saves fuel and associated carbon emissions from transporting them.

**Trio is estimated to save diesel fuel and carbon emissions from not having to crush and transport waste concrete strips.**



**Re-using recycled concrete will reduce the amount of raw materials purchased, saving fuel and carbon from shipping.**



**The reclaimer will save 96% of all returned concrete by weight, including 100% of the aggregate, 99% of the sand, and 100% of the water.**

	Aggregate	Sand	Cement	Fly Ash	Water
Waste (tonnes)	4,180	3,040	1,064	114	57
Recycled (tonnes)	4,180	3,010	798	86	57
Savings (%)	100%	99%	75%	75%	100%



**8,073**

Less Waste (mt)



**14,623**

Less Diesel (L)



**96%**

Reclaimed

tCO<sub>2</sub>e  
Savings/Yr

**53.9**

## Estimates & Assumptions

- Estimated 45 nautical miles between Delta & Bamberton (cement shipping distance) & 100 nautical miles from Sechelt to VMD on Bay St.
- 2015 MACK Granite with an MP8 engine gets 5 gal/mile (manufacturer specs, supported by historical fuel use from Trio).

## Emissions References

1. 2016/17 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions  
<http://www2.gov.bc.ca/gov/content/environment/climate-change/policy-legislation-programs/carbon-neutral-government/measure>
2. Environment Canada's National Inventory Report (1990-2015); Part 2 & 3.  
[http://unfccc.int/files/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/applications/zip/can-2017-nir-13apr17.zip](http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/applications/zip/can-2017-nir-13apr17.zip)
3. Intergovernmental Panel on Climate Change (Global Warming Potentials)  
[http://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/ch2s2-10-2.html](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html)
4. Cement Association of Canada Environmental Product Declaration  
[http://www.stmaryscement.com/Documents/Canada/CAC%20EPD%20\(GU,%20GUL\).pdf](http://www.stmaryscement.com/Documents/Canada/CAC%20EPD%20(GU,%20GUL).pdf)
5. Smart Freight Centre, GHG Emissions Factors for IWT (2018)  
<https://www.smartfreightcentre.org/pdf/GLEC-report-on-GHG-Emission-Factors-for-Inland-Waterways-Transport-SFC2018.pdf>

## Glossary of Terms

Term	Description
GHG	<b>Greenhouse Gas (emissions):</b> Atmospheric gasses contributing to the greenhouse effect, including Carbon Dioxide (CO <sub>2</sub> ), Methane (CH <sub>4</sub> ), Nitrous Oxide (N <sub>2</sub> O), etc.
tCO <sub>2</sub> e	<b>Tonnes of Carbon Dioxide Equivalent:</b> GHGs have different warming potentials, measured collectively as CO <sub>2</sub> equivalent (hence "e")
kWh	<b>Kilowatt-Hour:</b> Common unit for measuring electrical consumption
m <sup>3</sup>	<b>Cubic Meter:</b> Unit of measurement equal to 1,000 Litres
mt	<b>Metric Ton</b>
CMU	<b>Central Mixing Unit:</b> Electric-powered drum that mixes concrete in batches
GU	<b>General Use (cement)</b>
GUL	<b>General Use Limestone (cement)</b>
t-km	<b>Tonne-kilometer:</b> A unit of measurement used in shipping

Verified By	Heidi Grantner & Jill Doucette
Email	heidi@synergyenterprises.ca
Completed	24/9/2019

synergy



# ESQUIMALT NATION

1189 Kosapsum Crescent, Victoria, British Columbia, V9A 7K7 Phone: - [REDACTED]

July 18, 2019

Conal Kavanagh  
Navigation Protection Officer Transport Canada  
Suite 600-800 Burrard Street  
Vancouver,  
British Columbia  
V6Z 2J8

**Re: "Esquimalt Nation Support Letter NPP File # 2010-500015 South Bay"**

Dear Conal:

Please accept this letter, on behalf of Esquimalt Nation Leadership, in support of the "Ralmax Groups" application for aerial trespass at South Point.

Please feel free to reach out to our Executive Director, Katie Hooper at [REDACTED], should you require any further information.

Respectfully Yours-

HUY CH Q'U (Thank You!)  
Rob Thomas  
Lead Council  
ESQUIMALT NATION  
1189 Kosapsum Crescent  
Victoria, B.C,  
V9A 7K7  
Email- [REDACTED]  
[REDACTED]



# Songhees Nation

July 15, 2019

Conal Kavanagh  
Navigation Protection Officer  
Transport Canada  
Suite 600 - 800 Burrard Street  
Vancouver, British Columbia  
V6Z 2J8

**RE: SONGHEES NATION SUPPORT – NPP File #2010-500015 South Bay**

Dear Conal:

The Songhees Nation Chief and Council held a council meeting on July 10, 2019, and the agenda included the above application and request for support.

I am pleased to confirm that Songhees Nation Chief and Council unanimously support the Ralmax Group application for aerial trespass at South Bay.

If you have any questions, please feel free to contact me directly at [REDACTED]  
or [REDACTED]

Sincerely,

Karen Tunkara  
Councillor

pc: Songhees Nation Chief & Council  
Ian Maxwell, CEO, Ralmax Group

Victoria Cruise & Deep Water Terminal  
Ogden Point  
185 Dallas Rd.  
Victoria, BC V8V 1A1



December 9, 2020

To Whom It May Concern,

Please accept this as a letter of support of the variance application by the Ralmax Group/Trio Ready-Mix for Development Permit No. 00139.

Western Stevedoring operate the Cruise and Deep Water Terminal at Ogden Point, which supports both cruise and industrial marine activities. In order to strengthen the economic drivers of the Victoria area, investment in sustainable industry must be supported. There are many benefits of the increased height and capacity of Trio Ready-Mix's proposed aggregate silos, some of which are noted below:

- |                            |  |
|----------------------------|--|
| <b>Environment</b>         | - significant reduction in truck exhaust emissions                           |
| <b>Traffic Congestion</b>  | - significant reduction in vehicle traffic                                   |
| <b>Harbour Utilization</b> | - improve utilization of the currently underutilized harbour                 |
| <b>Local Industry</b>      | - better serve local construction and infrastructure projects                |
| <b>Land Usage</b>          | - optimizing land use, minimizing impact                                     |
| <b>Visual Enhancement</b>  | - the visual effects would offer value to the community and surrounding area |

Western Stevedoring strongly supports this variance application and Ralmax's/Trio Ready-Mix's overall contribution to both Victoria and the marine sector.

Yours truly,

Jordan Welch  
General Manager, Victoria Cruise & Deep Water Terminal





December 09, 2020

City of Victoria  
1 Centennial Square  
Victoria, BC, V8W 1P6

Re: Ralmax's Trio Ready-Mix Request for Zoning Variance, Aggregate Silo Proposal

The Victoria Esquimalt Harbour Society (VEHS) comprises an array of commercial, industrial and community stakeholders involved in Victoria and Esquimalt Harbours. Currently our membership represents over 50 companies operating around these harbours.

The Ralmax Trio Ready-Mix requested variance for zoning to increase the height of the planned aggregate silo is a unique opportunity for the City to support a harbour business project that succeeds on multiple levels. The project will significantly reduce environmental impacts, decrease land footprint needed, ease traffic, increase recycling and have a positive visual effect.

The VEHS strongly supports this application and looks forward to continuing to work with the Ralmax Group of Companies as we develop our sustainable working harbour.

Kind Regards,

A handwritten signature in black ink, appearing to read "L Soetaert".

Lyle Soetaert  
President, Victoria Esquimalt Harbour Society  
c.c. Victoria Esquimalt Harbour Society Members



## Pamela Martin

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**From:** Victoria Mayor and Council  
**Sent:** December 9, 2020 1:09 PM  
**To:** Public Hearings  
**Subject:** Fw: Application # 00139 - Development Variance Permit Application/TRIO Ready-Mix Concrete Raw Materials Storage Facility 2800 Bridge Street.  
**Attachments:** VHMBBS\_Logo.pdf

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**From:** Jacques Sirois [REDACTED]  
**Sent:** December 9, 2020 1:06 PM  
**To:** Victoria Mayor and Council <mayorandcouncil@victoria.ca>; pubichearings@victoria.ca <pubichearings@victoria.ca>  
**Subject:** Application # 00139 - Development Variance Permit Application/TRIO Ready-Mix Concrete Raw Materials Storage Facility 2800 Bridge Street.

Dear Mayor Lisa Helps and Victoria Council,

I support the construction of this new industrial facility on the shores of historic Victoria Harbour Migratory Bird Sanctuary (est. Oct. 27, 1923).

This area was degraded and modified by industry decades ago. This project offers opportunities for shoreline restorations, some of which (e.g. nesting boxes for Western Purple Martins, removal of invasive plants) have already been done by Trio Ready Mix/Ralmax Group.

This could become a model industrial site in our “naturehood” like nowhere else in Canada.

I am not qualified to comment specifically on the amount of light generated by 3375 LED lights and their impact on birds (and fish). This is a real concern as it was for the new Johnson Street Bridge. I trust that it will be addressed professionally and even go beyond accepted standards.

I like the sincere and serious efforts of the Ralmax Group over the years to improve water quality and wildlife habitat in Victoria Harbour. They show that a historic working harbour is not incompatible with a historic Migratory Bird Sanctuary. We must encourage them to continue to do so.

Yours truly,

Jacques Sirois  
chair, Friends of Victoria Harbour Migratory Bird Sanctuary, [vicharbourbirds.ca](http://vicharbourbirds.ca)  
partner, Greater Victoria NatureHood, [gvnaturehood.com](http://gvnaturehood.com)



**Pamela Martin**

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**From:** Zapco Welding and Fabricating Ltd. [REDACTED]  
**Sent:** December 9, 2020 7:57 AM  
**To:** Public Hearings  
**Subject:** Ralmax - requested variance to zoning

Dear Sir/Madam,

As a member of Victoria Esquimalt Harbour Society (VEHS) I would like to lend our support of Ralmax's request for a variance to zoning in regards to aggregate silos at Trio Ready-Mix. Ralmax is a huge contributor to our waterfront work with a proven safety record. Their plan to increase the storage capacity of aggregates in taller silos would allow them to barge the aggregate to their storage facility via the harbour rather than having large trucks carrying tons of aggregate driving through our city streets. We are in full support of Ralmax's request for a variance to zoning to allow the heightened silos. Thank you.

Tom Burns  
Owner/Operator  
Zapco Welding and Fabricating Ltd.  
[REDACTED]