



# Construction Material Salvage and Recycling Market Assessment

October 2021

Prepared for the City of Victoria, by  
Light House Sustainability Society



We would like to thank Sheila Molloy for her immense contribution to this work. We would also like to acknowledge and thank a number of individuals for agreeing to speak with us and provide input, either directly or through their posted information.

GFL Environmental (formerly Alpine Disposal & Recycling)	DBL Disposal Services Ltd
ABC Recycling	Duncan Paving
Blue Star Transport	Earthwise Architectural Salvage
Brod Demolition	Emterra / ReFuse Recovery
DemXx Deconstruction Inc	Enviro Pallet Recovery
DTG Recycling	Evergreen Demolition
Ecowaste Industries Richmond	Free Cycle
Ellice Recycling	GFH Junk Removal
Forwood Timber Salvage	Hall It Up
H.L. Demolition & Waste Management Ltd	Harmac Pacific
Habitat for Humanity & Restore	Haul a Day Junk Removal
Hartland Landfill Facility	Haul This
Lafarge Canada / Geocycle Canada	Island Junk Solutions
Lehigh	Malahat Metal
New West Gypsum Recycling	Millinear Lumber
Northstar Clean Technologies	Milner (Is BROD)
PAC Recycling	Nanaimo Regional Landfill
QM Environmental	New Concept Hauling
RAI Contracting	Nickel Bros
Ralmax	Pacific Group Developments
Republic Services/Rabanco	Pacific Wood Waste
The Re-Use People	Paninsula Disposal
UnBuilders / Heritage Lumber	Quadra Appliances Buy, Sell, and Repair
Vintage Woodworks Inc	Refuse Sam
Waste Management (C&D division)	Regional Recycling
Williams Scrap Iron & Metals	RG Excavating
BlzBiz BC Marketplace	Riverside Recycling And Aggregate Sales
Craigslist	Rockridge Industrial Services
Facebook Marketplace	Royal Paving Ltd
Kijiji	Saanich Junk Solutions
RemoveAndReUse.Com	Salvage Vancouver
Salvage Vancouver Online Site	Salvation Army
Used Victoria	Save a Lot Hauling and Bins
Vancouver Island Salvaged Wood Supply	Super Save Group
A&P Disposal & Recycling	Tervita/Secure Energy
All-Haul.com	The Junk Box
Atlas Junk Removal & Bin Rental	Waste Connections of Canada
BC Pallets	Western Environmental Solutions
Belton Bros Structural Movers	Western Reclaimed
Bin There Demolition.	Williams Architectural Salvage
Brentwood Auto & Metal Recyclers	DL Bins/ Fisher Road Recycling
Capital City Recycling	DL's Recycling Centre
Cloverdale Fuel	Schnitzer Steel
	The Recycle Shop

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## 1. Introduction

This report assesses the current and future market capacity for recovered building material reuse and recycling on Vancouver Island and to a lesser extent, the Lower Mainland. The information in this report provides City of Victoria staff with data and information that is intended to help to inform the development of a bylaw that will encourage the reuse of wood and other building components, and the recycling of materials from single-family dwellings and duplex demolitions.

Overall, the reuse and recycling market for construction material is an interconnected system of formal and informal networks on the Island. This report describes this system, provides valuable information about how demolition materials are managed within the network, and identifies opportunities to increase landfill diversion for key materials.

In a smaller market where services have developed organically over time, the participants may have multiple roles, interact with different agents at various times for the same materials, and may wish to protect some information, such as their client lists. As such, detailed quantification of market capacity was not possible.

## Methodology

### Identification of organizations that haul and receive recovered building materials

Businesses and organizations operating on Vancouver Island and Metro Vancouver that accept building deconstruction and demolition materials were identified through the *Coast Waste Management Association's* (CWMA) directory and cross checked against the *Watching Our Waste* database (hosted internally by Light House) and the list of organizations provided by the City of Victoria. Other organizations were identified by internet research and the interview process.

### Interviews

Interviews were conducted with representatives from the identified organizations to gather data to assess their current and expected capacity in the future. Due to the large number of businesses and organization in the Lower Mainland, the priority for interviews was based on their capacity to take C&D waste from future demolition projects in Victoria. This included their ability to accept, store, process and/or resell materials that are projected to be produced by demolition activity in the City of Victoria. The selection of the interviewees and the interview process included the following:

- Creation of a working list of Salvage and Recycling organizations in and around the City of Victoria, Vancouver Island, geographically proximate mainland BC and the U.S..
- Secondary research of each organization included website review and search for press releases, news, and social media posts to help verify services and work.
- Primary interviews would then include verification of this secondary information, revision, or expansion as needed.
- Primary interviews were also used to verify other companies' information as many of the recyclers accept their waste. When this was the case, a primary interview was not done for the other company.
- The working list focused on south Vancouver Island overall and those who were specifically mentioned in interviews as part of any organization's "network".
- We have used the term "network" in these notes to describe the various ways any organization may move items to salvage, recycle or landfill.
- This Technical Memo was used to transcribe these answers to questions on capacity, value, and destination with notes.

### Online Marketplaces

A “snapshot” of online marketplaces was taken from September 1 to September 15, 2021 using searches to determine the current activity on these sites with respect to recovered building material and the future role of these marketplaces in supporting the reuse and recycling of these materials. Where possible, the categories searched were restricted to building materials. Where this wasn’t possible, generic building material search terms were used (such as “flooring”, “sink”, “lumber”, etc.). If the site was able to restrict searches to “used” materials, this filter was set in order to exclude new material posts, however, not all platforms had this capability, in which case the numbers were estimated based on taking a sampling of ads, and determining the ratio of how many were for used versus new material.

### Limitations of this assessment

- Interviews with the individual organizations gave us most of the data that is included in this report, however, the information requested had never previously been considered by most of the organizations. This led to some of the information being unavailable and the organizations being unsure of how to provide what was available. The City of Victoria has the opportunity to engage further with industry and we have included this in the *Recommendations* section of the report.
- This assessment cannot capture the “person-to-person” transactions where those transactions are based on established relationships and do not rely on intermediaries such as used building supply stores, service providers or online marketplaces.
- Furniture was excluded from the assessment as the “turn-over” of used furniture is much higher than the demolition and replacement of homes. Additionally, furniture often accompanies the previous owner to their new location, and a building being demolished would be emptied of furnishings.
- Fully quantifying capacity was not possible based on the information received.

## 2. Capacity Analysis

Various stakeholders were identified and through interviews we were able to assess what materials they handle.

### General Findings

#### *Logistics:*

- The logistics of transporting demolition materials from the Island is straightforward for the larger recyclers. Economies of scale and on-going efficient processes ensure the system is viable. They have space to bank items but generally the system moves consistently regardless of fluctuations in material volume.
- Many items salvaged for reuse are moved around the Island to where they are needed. Although much of the recovered building materials leave the Island, items that have resale value to individual homeowners (quality salvaged wood and architectural pieces) stay on the Island as part of building projects or retail market.
- For some items, like insulation, plastic, and generally un-recyclable items, the larger recyclers/transfer organizations will store and transport to U.S.-based landfills as the cost of transportation plus tipping fee is lower than Hartland Landfill. There are more options on the mainland for a more efficient “network” for organizations i.e. private landfills, proximity of and quantity of recycling options like use as fuel, aggregate crushing for paving and back fill, etc.



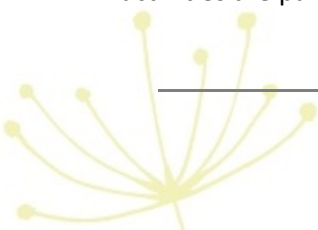
- GFL works with *GeoCycle* to divert their wood and anything that can be used as fuel for the Lafarge kiln.
- The larger local builders/developers/demolition companies use four main organizations: *GFL, HL Demolition & Waste Management, Ellice Recycling* or *DL Bins*. The “network” for smaller companies varies and are both formal (*metal goes to the same metal collector*) and informal (*heard of someone looking for salvaged wood for a project*).

#### *Economic considerations:*

- Getting paid for materials salvaged for resale is at the top of the network hierarchy and the top materials include metal, high-quality wood and valuable architectural elements. All items need to meet certain criteria and if not, then the next best alternative is used if it is cost effective, with the landfills (local or U.S.) being the final resort. Sorting for value is a function of experience and market knowledge. The decision to send material to the landfill does not take long and in some cases the sorting or assessment of mixed waste is not worth the time and the landfill becomes the most efficient and cost-effective choice. More formal material “audits” are done by organizations that specialize in deconstruction as a way of breaking down the cost of the time it will take to deconstruct and to help organize where they will send items, as well as for reporting for green building certification.
- Most demolition organizations would look to their networks for resale/giveaway of high-quality material and some mentioned they focus on convincing builders/homeowners to reuse the material back into the project. Most of the interviews mentioned that reuse was only important to architects and some builders whose marketing interest was related (green branding).
- The sale of salvaged materials and income tax deductions for homeowners from donated materials help to offset the cost of deconstruction. Currently, the use of deconstruction relies heavily on the interest of homeowners.

#### *Deconstruction/demolition industry:*

- Commercial operators currently managing wood salvage and reuse in Victoria focus on commercial and industrial size jobs. Commercial / industrial salvage businesses rely on volume and quality for efficiency in their salvage process. This aligns with our experience with other regions, where large volumes help to facilitate diversion, as there are more options for reselling and recycling. Wood floors in a demolition project for a school, for example, would be assessed by a salvage business as part of the builder’s RFQ process. The salvage business will buy the wood based on their current established market need. Once deconstructed they would grade, sell as-is, re-saw, or sell for fuel as the final option.
- There is a lot to learn from the efficiency of the commercial wood salvaging organizations that can be applied to the volumes of material from single-family home demolitions, from nail removal techniques to correct wood storage temperatures.
- *Unbuilders* sees great potential in managing the volumes of quality salvaged wood from single-family homes (the model *Unbuilders* has in the Lower Mainland is to consolidate the wood from all of its deconstruction projects in a retail location, which together achieves the larger volumes that provide the advantages noted above). The lumber in these dwellings is a mix of aesthetic wood products such as doors, siding and windows that can be sold as salvage on or from the Island, or structural wood that can be re-tested, graded and reused as structural wood again, or turned into another product.
- From all the interviews, it is apparent that *selective deconstruction* already occurs in the demolition industry on the Island. Companies that identify as “Demolition” contractors are not constrained to this type of work and still participate in deconstruction practices. It may be divisive to refer to companies that “demolish” versus companies that “deconstruct”, as both activities are part of every demolition and deconstruction project. In the interviews with



demolition and deconstruction organizations, it was evident buyer connections were informal, built over time and part of a structure of personal and professional networks.

- According to those interviewed, and through secondary research of local company websites, companies doing waste pick up/hauling, bin service, small renovation demolitions, large demolition projects or building projects will recycle or salvage high-value items and have a general goal to reduce waste weight by diverting what they can at the lowest costs.
  - e.g. Broken brick (used as aggregate) brought to *Lehigh* or to *GFL* (then *Lehigh*) is less expensive per tonne than sending it to Hartland Landfill
  - e.g. mixed bins of demolition waste will be sorted at owner facilities, or metal and other items that have specific value are removed from the waste stream onsite.

#### *Habitat for Humanity ReStore:*

- There are six *ReStores* located on Vancouver Island. Each are paired and work together in their geographic areas. In Victoria locations include Uptown and Westshore, Mid Island locations are Nanaimo and Duncan, and North Island locations include Courtenay and Campbell River.
- Victoria: The *ReStores* in the Victoria area have limited space and are looking to expand to meet demand. They are establishing relationships with Mid Island *ReStores* on Vancouver Island to help distribute products due to their lack of space. The two *ReStores* in Victoria take different materials, Westshore accept and sells more building material than Uptown. The *ReStores* accept new and salvaged material from builders, general contractors and salvage contractors.
- Mid Island: They have space and capacity and send trucks to Victoria to pick up deconstruction materials and could on a biweekly basis if there was more material. They accept most things except for used toilets, tubs and carpet. They have a lot of demand for salvaged lumber. They used to see more lumber being donated, however, they are finding that contractors are finding more ways to use the salvaged wood in their own projects. They have a dedicated space to upcycle donated products.
- North Island: They have their own kitchen deconstruction service where homeowner can donate their kitchen for a tax receipt. The cabinetry is removed by a team of volunteers and the kitchen can be resold in the *ReStore* or could be used in a Habitat for Humanity home build. This location serves the Courtenay and Campbell River region.
- Online sales: All the *ReStores* use either Instagram or Facebook to do online sales.
- Overall, the *ReStores* have capacity (except as noted) and community support to manage deconstruction materials. The demand for additional deconstruction materials exists within the market. With space management, and efficient distribution of goods *Restores* could process additional volume..



### Engagement:

- There was a lot of reception and overall interest from the businesses and organizations that were interviewed to be contacted again by the City of Victoria for further engagement. Companies are eager for more stakeholder engagement related to the diversion of construction and demolition waste.

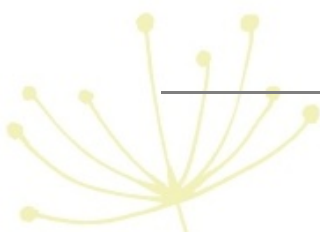


1. Photo credit: City of Victoria

### Limiting factors:

There are a number of limiting factors with conducting “business-as-usual” that currently impede materials from being salvaged for reuse or recycling:

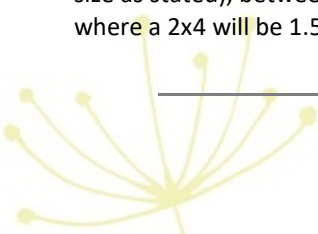
- A common theme throughout the interviews was the importance of builders and developers allowing enough time for demolition to ensure the proper management of materials in order to realize their full salvage potential. *Two 30 year+ veterans of the construction industry pointed out that decades ago, they would be given over a week for the process to take down a house. Back then many items were salvaged. Now, you are given one or two days to drop a house and haul it away.*
- Quality of salvaged items can be a barrier to reuse or recycling. Some of the wood in houses tends to be painted, have holes in it, and years of various actions can reduce the quality and may make it difficult to re-process.
- Current trends in architectural styles may not be compatible with the styles of salvaged items, particularly cabinets and finishes, and can limit the demand for these materials.
- Contamination and inability to separate multi-layered material causes recovery to be more difficult.
- Market value – the cost of disposal in landfill is often lower than recycling cost per tonne, especially for the smaller demolition contractors.



- Local storage of salvaged building materials can be a challenge depending on the inventory already available at local facilities. To incorporate salvaged materials into new buildings, availability is required both during design (with the exception of items that are standard sizes, like brick or lumber<sup>1</sup>) and at the point when they are needed for construction. Unless stockpiled, it becomes logistically difficult to incorporate salvaged building components such as cabinets, doors, windows, etc. into new homes or buildings.
- As identified above, it can be more difficult to find buyers for smaller volumes.
- Gaps exist in the system where it is difficult to divert materials, such as glass and carpet. This is an industry-wide issue and is not specific to Victoria.
- For recycling it was evident from the interviews that most organizations would simply find a way to manage excess. *e.g. Ellice Recycling would simply add shifts to manage the sorting and movement of items through their current processes.* Capacity for any individual organization is part of the speed to process items and find alternatives within their network. For recycling organizations, most have specific secondary organizations that they transfer to exclusively and whose capacity will manage an increase.

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<sup>1</sup> Lumber from different eras are different dimensions. Pre-1920 lumber sizes are true or full dimension (actual size as stated), between roughly 1920 – 1945 are near-true, and post 1945 are “modern nominal dimension” where a 2x4 will be 1.5”x3.5”.



## Key Materials - Wood

### Wood (primarily dimensional lumber)

#### *Clean wood:*

*Salvaged for reuse:* Eight case studies<sup>2</sup> of single-family home deconstruction projects from the Lower Mainland reported a range of 6.22 tonnes to 15.48 tonnes of wood salvaged for reuse (with total demolition waste of 76.5 tonnes and 94 tonnes respectively). There is demand for salvaged wood, especially heritage, wide-plank, and high-quality wood on the Island. Wood for resale is currently transported to locations on the Island that have storage capacity – if this storage capacity was available in Victoria, it's reasonable to assume that there is sufficient local demand to absorb the resulting salvage wood supply, based on the demand that has been demonstrated elsewhere on Vancouver Island.

The larger commercial salvage organizations already in operation in Victoria generally prefer higher volumes from commercial demolition projects. *Unbuilders* is a local company that focuses on wood salvaged from single family home demolitions, as do *The Reuse People* from the United States. While their preference is also toward high-quality heritage wood, *Unbuilders* are currently building capacity to take wood that may not be as valuable, with a plan to develop this wood into building products

#### *Wood used for fuel:*

Key recyclers will send this to pulp mills or organizations like *GeoCycle* and *LaFarge*. This collaboration is much better for the bottom line than paying for disposal at the Hartland landfill.

#### *Painted or treated wood:*

Painted and treated wood has two paths, but ultimately the same destination. For individual house demolitions it would most likely be sent to the local landfill directly. If the builders have a relationship with large recycling facilities, it would be sent there first, however, its final destination would be the landfill, as recycling facilities do not process painted wood. *Note that Unbuilders is currently looking at technology to strip painted wood so that it can be reused, so some innovation is potentially coming available.*



#### CAPACITY

Market capacity exists for salvaged wood reuse on the Island, there is capacity for use as fuel.



#### DESTINATIONS

Vancouver Island, Mainland, U.S. High-quality Wood for re-sale moves globally.

<sup>2</sup> Vancouver Economic Commission, 2020. Five case studies are included in *The Business Case for Deconstruction Industry Whitepaper July 2020* Authors Kinsey Elliott Erica Locatelli Carl Xu Economic and environmental impacts of a demolition-deconstruction shift in Metro Vancouver. [online] Available at: [https://www.vancouvereconomic.com/wp-content/uploads/2020/07/387304d5-demolition\\_metrovancouver\\_industrywhitepaper\\_web\\_july2020.pdf](https://www.vancouvereconomic.com/wp-content/uploads/2020/07/387304d5-demolition_metrovancouver_industrywhitepaper_web_july2020.pdf).

And

City of Vancouver, 2018/2019. Three deconstruction case studies for “Dunbar”, “Grandview Woodland” and “Riley Park” are available at <https://vancouver.ca/home-property-development/demolition-permit-with-recycling-requirements.aspx>

## Key Materials - Other

### Drywall

Drywall that has a date stamp or has asbestos negative testing results is sent to *New West Gypsum* on the Mainland to be recycled. Contaminated asbestos drywall is required to be sent to a landfill, which may be on the Island, the Mainland or the United States when it is less expensive to do so. Feedback from stakeholders indicate that there are competitive fees, and in some cases, it is often cheaper to landfill potentially contaminated drywall than to go through the process of testing. *Blue Star Transport* on Vancouver Island is responsible for processing and moving a majority, if not all, of the clean drywall off Vancouver Island.



#### CAPACITY

*This is primarily a flow-through to either landfill or receiving facilities off-island.*



#### DESTINATIONS

*Clean drywall Mainland, other drywall Island, Mainland or U.S. landfills*

### Carpet

Our findings have indicated that there is one facility in British Columbia, *PAC*, that sends carpet to be recycled. Nylon carpet collected by *PAC* is sent to California (via *DTG Recycle* in Washington) where it is processed to create recycled material. The recycled material can be used to make a variety of products including carpet<sup>3</sup>. PET carpet is used as fuel and sent to *Blue Planet Recycling* in Langley, BC, all other carpet is sent to the landfill. Through the interview process, the California recycling facility was shared with other stakeholders and there was an interest in diverting this material.



#### CAPACITY

*Capacity has not been quantified.*



#### DESTINATIONS

*Nylon carpet is sent to California for recycling, PET carpet goes to the Mainland for use as fuel. All other carpet goes to landfill on the Island, Mainland or the U.S.*

### Aggregate

Crushed concrete, brick, some tile and asphalt predominantly go to *Lehigh*, or builders will reuse the material within the development where fill is required. There are capacity constraints for receiving materials for use as aggregate. Only *Lehigh* accepts and processes aggregate locally for their own use, for projects they supply such as roadworks and for their affiliated organizations. They are currently operating at, or over-capacity but made mention that if more crushed aggregate were used in local government roadworks and similar projects, as is already done by the City of Victoria, it would help substantially in their ability to process more.



#### CAPACITY

*At capacity for processing locally without increased demand. Information about off Island capacity was not available.*



#### DESTINATIONS

*Vancouver Island, Mainland, national, and U.S.*

<sup>3</sup> Carpet America Recovery Effort, 2019. "Recycled Carpet Products." [online] Available at: <https://carpetrecovery.org/recovery-effort/innovation/>.

## Glass

The stakeholders that were interviewed that handle glass, send glass to the landfill because there is no alternative option on the Island. Some remove glass from window frames to recycle the metal, though it is a challenging process to handle the material safely. There is also no recycling for tile on the Island except to be crushed for aggregate/used as fill and only in some cases depending on the type of tile (e.g. *Hourigans Flooring* takes back all extra/broken product from their jobs which then goes to Hartland landfill). Glass shortage is on the horizon in Canada, and window recycling could be an opportunity to prevent this shortage and build the local circular economy.<sup>4</sup> Another possibility would be to use waste glass for sand blasting, as is done currently by the Regional District of Fraser-Fort George.<sup>5</sup>



### CAPACITY

None



### DESTINATIONS

Vancouver Island, Mainland or U.S. landfills

## Porcelain (plumbing fixtures)

Newer fixtures; bathtubs, vanities and toilets that have resale value are reused. *Restore* accepts newer fixtures, and there are private online sales as well. *DEMx* will take some designer, high quality pieces. Older toilets and other porcelain plumbing fixtures that do not have resale value have no recycling avenue in the current system, resulting in these items being disposed of in the landfill. *Restore* does not take older toilets because they need to be tested before they can be re-used and that can be an expensive process.



### CAPACITY

Limited reuse (demand) for newer fixtures, no capacity for recycling



### DESTINATIONS

Reuse on Island, disposal to landfill

## Architectural Salvage (Cabinets/Doors/Windows/Architectural Details):

Demolition and deconstruction contractors and resellers like *DemXx*, *Restore*, *Syd's*, and private and online sellers are the current avenues for reuse of architectural salvage. For commercial level reuse and industrial size architectural projects, some organizations will refurbish and reuse back into the same project. (e.g. Victoria City Hall windows).



### CAPACITY

Additional capacity and market demand exist on the Island



### DESTINATIONS

Reuse on Island, disposal to landfill

## Metal

There are many different metal collectors on the Island. Metal has a lot of value and will be accepted free by many of the collectors and sold to the metal recyclers. Because this material has value, it is typically always recycled. As seen in the interviews, many will even take apart mirrors or windows to sell the metal. There are two dominant metal recyclers on the Island - and many metal collectors essentially act as transfer stations for them. Most metal goes to these two recyclers or to the Mainland where it is shipped globally depending on demand for the material.



### CAPACITY

Large capacity.



### DESTINATIONS

Global market for metal recycling.

<sup>4</sup> King County Window and Glass. 2021. Glass Shortage: It's A Real Issue. [online] Available at: <https://www.kcwindowandglass.com/post/glass-shortage-its-a-real-issue>.

<sup>5</sup> As confirmed by Laura Zapotichny, Manager of Waste Diversion · Regional District of Fraser-Fort George

## Appliances

Most appliances are treated as metal and recycled. The Capital Regional District participates in the MARR stewardship plan that recycles large and major appliances. They provide a number of drop off locations for various types of appliances<sup>6</sup>. There are a very few companies to re-sell appliances, online resale is an option. Although there are local repair/resell stores listed, the market does not appear very large for used appliances.



### CAPACITY

Reuse is limited by market demand, there is large capacity for recycling.



### DESTINATIONS

Reuse is on the Island, with a global market for metal recycling

## Asphalt Roof Shingles

Asphalt Shingles are either recycled or sent to the landfill. *Northstar Clean Technologies* is a new company on the Mainland, but already leading the way in recycling asphalt shingles. *Northstar's* website provides detailed information on what they do with the recycled material and where it is sent. Currently, they have a large amount of test material to recycle once they are fully operational, but will be accepting new materials in 2022. Other entities on the Mainland and in the U.S. accept asphalt shingles with varying final destinations for landfill disposal, but they do not recycle.



### CAPACITY

Medium capacity, but expected to grow in the future for local recycling options



### DESTINATIONS

Recycle on the Island, Mainland or U.S.  
Landfill on the Island

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<sup>6</sup> CRD. 2021. Products. [online] Available at: <https://www.crd.bc.ca/service/waste-recycling/recycle/myrecyclopedia/products/Appliances--large-or-major->.

## Online Marketplaces

See Appendix 2 for the online marketplace “snapshot” of a sampling of building material listings, gathered during September, 2021. This snapshot is an ‘impression’ of the quantities of materials on offer that are fairly typical of the ads on these platforms. The quantities of the materials posted generally indicate that these result from renovations and overages (over ordering on new projects) rather than demolitions or deconstruction. Regardless, we have heard from some interviewees that online markets are important for reuse (as opposed to recycling) and are used for valuable items. Interviewees also indicated that the use of online markets can lead to more established relationships, where subsequent person-to-person transactions would then take place. The platforms looked at are listed in the order of highest number of building material ads to lowest number. The use of online platforms typically evolves somewhat over time. Due to the type of ads with smaller quantities, it appears that these online platforms are currently used in Victoria primarily for ‘business to consumer’, and ‘peer to peer’ transactions as opposed to ‘business to business’ where you would see higher quantities/volume of materials. *Unbuilders, Restore* and others however all use some form of online sales. Another trend we are seeing is that users are gravitating towards platforms that have some form of accountability and are not anonymous. The “Craigslist no-show” is a known phenomenon, and membership-based platforms are a means of reducing this.



**Used Victoria** has a “Building Supplies” section where materials are split into three subcategories of ‘Aggregates’, ‘Housing Components’, and ‘Raw Materials’. It appears to be the most popular platform with *Approximately 500 to 700 ads*.



**Facebook Marketplace** is a classified ad service of Facebook. Marketplace technically has the highest number of building material listings under its ‘Home Improvement Supplies’ section, however ads will be included that don’t necessarily meet the search criteria (floor lamp ads when searching flooring for example). Many of the listings are informal and lack price or quantity in the descriptions. *Indeterminant, but hundreds of building material ads.*



**Kijiji** has hundreds of items available in their ‘Home Renovation Materials’ section. This section ranges from building materials to building services, to retailers advertising new materials. Of these listings, used materials make up only a small proportion. *There are less than 100 ads ‘by owner’ under ‘Home Renovation Materials’.*



craigslist

**Craigslist** has the least number of used building material offerings of the platforms that are in use. The anonymity of the transactions may have something to do with this. *There were less than 50 ads for used building materials.*



**Remove and Reuse** ([www.removeandreuse.com](http://www.removeandreuse.com)) is a website specific to Greater Victoria and is set up for building materials. It has not been populated with any ads and appears to be abandoned (last blog post in 2015), but does hold potential since the basic infrastructure is in place (building categories and subcategories). *There are currently no ads posted on this site.*



### 3. Documentation

*“How is the industry ready to demonstrate compliance and proof that they can display these materials are going somewhere other than landfills”*

Each interviewee was asked the question above. Most have business receipts for transactions, but these receipts lack the details on quantities, types of materials and final destinations that would be needed to demonstrate bylaw compliance (exceptions in the U.S. where larger receiving facilities have accommodated the reporting required for LEED™ and other green building certifications). Most were open to the idea of receipting with quantities of materials to fulfill reporting requirements provided the reporting did not divulge margins. Recycling and disposal fees are commonly determined by weight and material so having haulers pass on this information on in their invoices to the contractor/owner should not be onerous.

Salvage for reuse receipts are typically “by item”, “by unit” (such as board feet) or “by cost”. In these instances, the quantities would either need to be converted to weight or volume, or the bylaw would need to specify targets for reuse in units other than weight or volume. At least one deconstruction practitioner, *Unbuilders*, is already capable of providing weight measurements for wood salvaged for reuse. This is likely due to having to report these quantities to other municipalities - but most should be capable of reporting in board feet (12”x12”x1”) for wood salvage. The City of Vancouver allows reporting by board feet to demonstrate compliance with its ‘reuse’ targets.

Informal transactions (person-to-person) typically have no receipt, or very minimal documentation; the buying and selling of material through online marketplaces such as Kijiji or Used Victoria for example.

### 4. Recommendations

#### **Bylaw Recommendations:**

- If the goal is to increase reuse to the greatest extent possible, then a separate bylaw target could be set for reuse, as opposed to “diversion”. There are different methods for this, in addition to recycling targets, the City of Vancouver has put in place a minimum reuse target of 3,000kg of wood for older homes (with ‘heritage’ wood). Additionally, the items that are salvaged for reuse, with documentation, can claim 5 times the estimated weight on the recycling compliance report (for example: 100kg of salvaged doors can be claimed as 500kg towards the recycling threshold). LEED™ also uses a “multiplier” for the purpose of incentivizing different material characteristics, such as ‘being local’, this doubles a material’s contribution to credit achievement.
- Much of the documentation for reuse/recycling currently in use will not suffice for the purposes of proving compliance to the new bylaw due to the lack of material measurements in consistent units. However, as noted above, if specific guidance is given on what information receipts would need to provide (material, weight or volume, receiving facility, and end-use for example), businesses would be willing to revise their current processes and documentation.
- For informal transactions, where quantities are not specifically listed we would recommend that photo documentation accompany receipts and/or copies of ads. Before and after photos could potentially document reuse on the project site.



**Other Recommendations:**

- **Education:** Most interviewees mentioned that education would be needed for the demolition industry to learn deconstruction methods, site-sorting, as well as ways to build up networks and markets for salvaged material. Organizations like *The ReUse People*, who already have education programs, would be helpful in building this capacity. Some of the current BC-based organizations like *Sea to Sky Removal* who are considered experts in source separation also hold a wealth of knowledge and can assist to find recycle option for building site material and deconstruction.
- **Further engagement:** To add to the engagement the City of Victoria already has underway since summer 2020, there are additional key individuals that have a very deep understanding of Vancouver Island's building material reuse and recycling 'ecosystem' that should be contacted beyond the interview process of this report. Some of the individuals we contacted reported they had been asked to discuss this in past efforts, but the majority have not been contacted previously on the topic of demolition waste diversion. We recommend contacting these individuals directly for further engagement. Without exception, the interviewees were willing to have further discussion on the bylaw and would appreciate the open conversation with the City of Victoria. Additional stakeholders include those that play a receiving role in the circular wood reuse cycle post-demolition. This includes contractors, carpenters, and home renovators that may provide valuable ancillary insight into the reuse system as a closed loop.
- **Additional interviews** would be beneficial with pulp mills and other landfills – these were outside of the scope of this report. In our interview process, we were unable to speak with anyone from *Syd's Salvage* but their input would be valuable moving forward. If additional information for aggregate capacity is also desired, *Butler Concrete* could be contacted.
- **Tipping fees:** We heard from many of the interviewees that the low landfill tipping fees make recycling less attractive. Based on this information we would recommend working with the Capital Regional District to adjust the landfill tipping fees to disincentivize sending materials to the landfill as the default.
- **Procurement/policy:** Where market demand has been identified as an issue for recycled materials, such as aggregate, encouraging local governments to add requirements for recycled content to their procurement policies and contracts to create more demand, for example for road and other infrastructure work, would help to increase capacity.
- **Logistics:** As noted under 'Limiting Factors', in order for designers and builders to incorporate salvaged materials into new construction and renovations there needs to be a reliable and consistent supply of these materials (typically windows, doors, flooring and cabinets – items where specific sizes or quantities are required). Contractors can't risk delays due to building materials being unavailable, so the ability of vendors or builders to stockpile materials will be a factor in scaling up the adoption of reuse. The City may have some role in facilitating this through land use planning and zoning, designating areas as "light" or "medium" industrial zoning for this purpose, or subsidizing facilities where the industry can store these materials. A comparable, though not identical, example of this would be the City of Vancouver's *Zero Waste Demonstration Hub*<sup>7</sup>.

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<sup>7</sup> City of Vancouver, nd., *Zero Waste Demonstration Hub* [online]. Available at: <https://vancouver.ca/green-vancouver/zero-waste-demonstration-hub.aspx?>

## 5. Conclusion

Based on the research conducted in this report, there appears to be capacity in the market in Victoria to accept a significant increase in salvaged building materials. No obvious barriers to the introduction of a demolition / deconstruction bylaw were identified during the interviewing process. While changes would need to be made to current processes, such as documentation of recovered material, there are already organizations that are providing receipts that would demonstrate compliance. There are currently gaps in some recycling capabilities (glass, tile) and limitations in others (carpet, aggregate) but there is sufficient recycling infrastructure and systems already in place to accommodate recycling most of the major materials. Additional capacity for reusing recovered building material exists and can be further developed by addressing logistics and education as noted under the 'Other Recommendations' section.

The companies that were interviewed overall are receptive to a bylaw that will increase materials that will go to their facilities as long as there is communication and engagement in the process.

We have attempted to accurately represent and credit the papers, reports, websites, individuals and other sources referenced in this report. If there are any errors in citation these should be brought to our attention and we will correct them.



## **APPENDIX 1:** Glossary of Terms

## Glossary

Term	Definition
Building Deconstruction / Deconstruction	describes the selective dismantling or removal of materials from buildings prior to (or instead of) conventional demolition. It is an approach to building removal that can convert this waste stream into highest-value resources in a manner that retains their original functionality as much as possible for reuse in future buildings. <sup>8</sup>
C&D waste / mixed waste	Includes waste and recyclables generated from construction and from the renovation, demolition, or deconstruction of pre-existing structures. It does not include land-clearing debris, such as soil, vegetation, and rocks. <sup>9</sup>
Diversion / waste diversion	a management activity that processes waste through methods other than incineration or landfilling. Examples include reuse and recycling. <sup>10</sup>
Demolition	deliberately destroying a building or portion of a building, often in order to build something else in its place.
Demolition waste	refers to wastes and material debris that are derived from the process of demolishing existing structures. <sup>11</sup>
Recycling	is the collection, reprocessing, marketing, and use of materials that were diverted or recovered from the solid waste stream.
Reuse	materials: The reemployment of materials in the same or a related capacity as their original application, thus extending the lifetime of materials that would otherwise be discarded. Reuse includes the recovery and reemployment of materials recovered from existing building or construction sites. Also known as salvage. <sup>12</sup>
Salvaged material	a construction component recovered from existing buildings or construction sites and reused. Common salvaged materials include structural beams and posts, flooring, doors, cabinetry, brick, and decorative items. <sup>13</sup>
Source separation	is when recyclables such as clean wood, cardboard and scrap metal, are separated on-site and either put into separate bins, a dual (or multi) compartment bin, or stored in piles on the site. <sup>14</sup>
Use[d] as fuel / waste-to-energy	the processing of waste into other fuels that can be used in industrial processes, such as cement kilns. Also known as energy from waste (EfW) or waste to energy (WtE), it is a process that recovers energy from waste materials. EfW/WtE may include direct combustion, the collections of emissions and by-products from waste such as biogas. <sup>15</sup>

<sup>8</sup> Canadian Council of Ministers of the Environment, 2008. *Guide for Identifying, Evaluating, and Selecting Policies for Influencing Construction, Renovation, and Demolition Waste Management*. Available at: <https://www.ccme.ca/en/res/crdguidance-secured.pdf>

<sup>9</sup> LEED, 2009. *LEED Canada Reference Guide for Green Building Design and Construction 2009*.

<sup>10</sup> USGBC. 2021. Based on "Waste Diversion" *Glossary* | U.S. Green Building Council. [online] Available at: <https://www.usgbc.org/glossary#waste-diversion>

<sup>11</sup> Metro Vancouver, 2021. *DLC Waste Management Toolkit: A Guide for the Building Construction Industry*. [online] Greater Vancouver Regional District. Available at: <https://www.vrca.ca/wp-content/uploads/DemolitConstructWasteToolkit.pdf>

<sup>12</sup> USGBC. 2021. *Glossary: U.S. Green Building Council*. Available at: <https://www.usgbc.org/glossary#reuse>

<sup>13</sup> USGBC. 2021. *Salvaged material, Glossary: U.S. Green Building Council*. Available at: <https://www.usgbc.org/glossary#salvaged-material>

<sup>14</sup> Metro Vancouver, 2021. *DLC Waste Management Toolkit: A Guide for the Building Construction Industry*. [online] Greater Vancouver Regional District. Available at: <https://www.vrca.ca/wp-content/uploads/DemolitConstructWasteToolkit.pdf>

<sup>15</sup> Canadian Council of Ministers of the Environment, 2008. *Guide for Identifying, Evaluating, and Selecting Policies for Influencing Construction, Renovation, and Demolition Waste Management*.

## **APPENDIX 2: Online Marketplace Snapshot** Sampling of Building Material Ads, September 2021



Digital Platform Snapshot: Craigslist					
Location	Ad Description	Type	Quantity	Price/Unit	Date Accessed
Bowen Island	Galvanized steel sheet metal roofing and flashing	Roofing	1000ft	\$1.20/ft <sup>2</sup>	2021-09-10
Victoria	Salvaged lumber forms	Lumber	70 units	\$92/4'x8'	2021-09-13
Campbell River	Used metal roofing	Roofing	1 unit	\$25/21'x36"	2021-09-13
Langford	Double pane white vinyl windows	Windows	6 units	misc.	2021-09-13
Victoria	Interior solid core salvaged door	Doors	1 unit	\$40	2021-09-13
	unavailable	Flooring			
	unavailable	Bricks			
	unavailable	Pavers			
	unavailable	Baseboard			
	unavailable	Bathtub			
Sooke	White sink	White sink	1 unit	\$25	2021-09-13
Victoria	Used Kenmore French Door Refrigerator	Fridge	1 unit	\$490	2021-09-13
Victoria	Used Kenmore electric stove	Stove	1 unit	\$270	2021-09-13
	unavailable	Dishwasher			
Brentwood Bay	Used large capacity Maytag top loading washer and dryer	Washer/Dryer	1 unit	\$100	2021-09-13

Digital Platform Snapshot: Kijiji					
Location	Ad Description	Type	Quantity	Price/Unit	Date Accessed
North Saanich	Wood fence Panels	Lumber	18 units 8'x36"	by contact	2021-09-13
	unavailable	Roofing			
Nanaimo	Various windows	Window	various	\$100	2021-09-13
Victoria	Used door	Door	1 unit	\$25	2021-09-13
Gibson	Brazilian Cherrywood flooring	Flooring	750ft <sup>2</sup>	\$2/sq2	2021-09-13
Victoria	Used bricks	Brick	30-40 units	free	2021-09-13
	unavailable	Pavers			
Courtenay	Baseboard moulding	Moulding	94'	\$188	2021-09-13
Campbell River	Used Bathtub	Bathtub	1 unit	\$125	2021-09-13
Victoria	Counter with faucet	Sink	1 unit	\$150	2021-09-13
Nanaimo	Stainless black fridge	Fridge	1 unit	\$225	2021-09-13
Cobble Hill	GE Gas Range	Stove	1 unit	\$650	2021-09-13
Nanaimo	Kenmore dishwasher	Dishwasher	1 unit	by contact	2021-09-13
Nanaimo	Kenmore front loading washer in good working condition	Washing Machine	1 unit	\$335	2021-09-13
Nanaimo	Samsung front loading dryer	Dryer	1 unit	\$250	2021-09-13

Digital Platform Snapshot: Facebook Marketplace					
Location	Ad Description	Type	Quantity	Price/Unit	Date Accessed
Esquimalt	Free wood of various sizes	Lumber	various	free	2021-09-15
Victoria	Denailed lumber 2x4x92	Lumber	various	50	2021-09-15
Colwood	Mixed wood 2x4, 2x2, 2x6, 2x8, 2x10, 2x12	Lumber	various	1900-03-20	2021-09-15
Langford	Heavy gauge metal roofing	Roofing	various	\$3/ft <sup>2</sup>	2021-09-15
Saanich	Used window in good condition	Window	1 unit	\$195	2021-09-15
Victoria	Painted door	Door	1 unit	\$60	2021-09-15
Saanich	Embossed vinyl plank flooring	Flooring	275ft <sup>2</sup>	\$275	2021-09-15
Saanich	Free brick for masonry or fill	Brick	various	free	2021-09-15
Langford	Tiles	Pavers	various	free	2021-09-15
Victoria	Moulding trim	Moulding	various	by contact	2021-09-15
Sooke	Molding	Molding	various	\$40	2021-09-15
Saanich	Jacuzzi Tub	Bathtub	1 unit	\$75	2021-09-15
Saanich	Dual sink	Sink	1 unit	\$40	2021-09-15
Victoria	Inglis White Fridge	Fridge	1 unit	\$200	2021-09-15
Victoria	Stove Maytag Glass Top	Stove	1 unit	\$350	2021-09-15
Esquimalt	Dishwasher	Dishwasher	1 unit	\$99	2021-09-15
Victoria	Inglis extra large capacity washer	Washing Machine	1 unit	\$100	2021-09-15
Victoria	Samsung Dryer	Dryer	1 unit	\$100	2021-09-15

Digital Platform Snapshot: Used Victoria					
Location	Ad Description	Type	Quantity	Price/Unit	Date Accessed
North Saanich	Lumber fir beams	Lumber	4 units	varied	2021-09-14
	unavailable	Roofing			
Colwood	Misc windows removed prior to demolition	Window	7 units	1000	2021-09-14
Victoria	Hollow core bypass doors, primed and painted	Door	8 units	100	2021-09-14
Victoria	Vinyl planks	Flooring	100ft <sup>2</sup>	80	2021-09-14
Victoria	Salvaged red premier bricks	Brick	75 units	free	2021-09-14
Langford	Sand brown paver stones	Pavers	172 units	100	2021-09-14
Saanich	MDF Moulding	Moulding	2 units	free	2021-09-14
Saanich	Complete 3 piece bathroom with sink, bathtub, toilet	Bathroom	3 units	100	2021-09-14
Victoria	counter with faucet	Sink	1 unit	150	2021-09-14
Saanich	Family size frigidaire fridge	Fridge	1 unit	265	2021-09-14
Saanich	Kitchen appliance package with fridge, range, dishwasher	Kitchen	3 units	500	2021-09-14
Saanich	GE Washer in good working order	Washing Machine	1 unit	245	2021-09-14
Victoria	Kenmore stacking dryer	Dryer	1 unit	123	2021-09-14



Image Snapshot Photo Appendix

Digital Platform Snapshot: Kijiji

<b>Location</b>	Nanaimo
<b>Ad Description</b>	<a href="#">Various windows</a>
<b>Type</b>	Window
<b>Quantity</b>	various
<b>Price/Unit</b>	\$100
<b>Date Accessed</b>	2021-09-13
<b>Appendix</b>	1

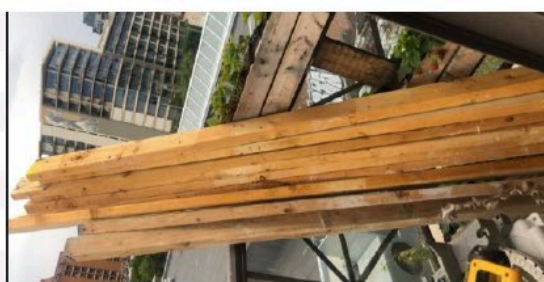


Digital Platform Snapshot: Facebook Marketplace

<b>Location</b>	Esquimalt
<b>Ad Description</b>	<a href="#">Free wood of various sizes</a>
<b>Type</b>	Lumber
<b>Quantity</b>	various
<b>Price/Unit</b>	free
<b>Date Accessed</b>	2021-09-15
<b>Appendix</b>	2



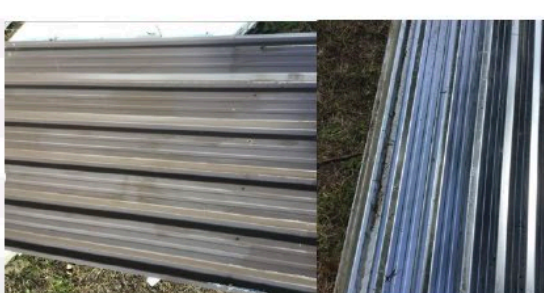
<b>Location</b>	Victoria
<b>Ad Description</b>	<a href="#">Denailed lumber 2x4x92</a>
<b>Type</b>	Lumber
<b>Quantity</b>	various
<b>Price/Unit</b>	\$50
<b>Date Accessed</b>	2021-09-15
<b>Appendix</b>	3



<b>Location</b>	Colwood
<b>Ad Description</b>	<a href="#">Mixed wood 2x4, 2x2, 2x6, 2x8, 2x10, 2x12</a>
<b>Type</b>	Lumber
<b>Quantity</b>	various
<b>Price/Unit</b>	\$80
<b>Date Accessed</b>	2021-09-15
<b>Appendix</b>	4



<b>Location</b>	Langford
<b>Ad Description</b>	<a href="#">Heavy gauge metal roofing</a>
<b>Type</b>	Roofing
<b>Quantity</b>	various
<b>Price/Unit</b>	\$3/ft2
<b>Date Accessed</b>	2021-09-15
<b>Appendix</b>	5



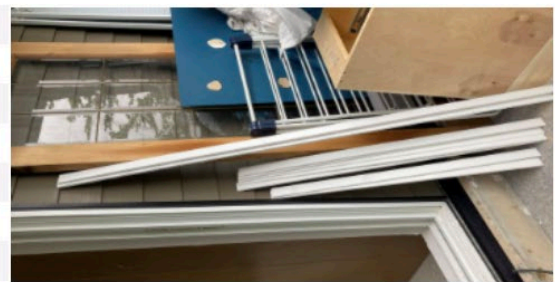
<b>Location</b>	Saanich
<b>Ad Description</b>	<a href="#">Free brick for masonry or fill</a>
<b>Type</b>	Brick
<b>Quantity</b>	various
<b>Price/Unit</b>	free
<b>Date Accessed</b>	2021-09-15
<b>Appendix</b>	6



<b>Location</b>	Langford
<b>Ad Description</b>	<a href="#">Tiles</a>
<b>Type</b>	Pavers
<b>Quantity</b>	various
<b>Price/Unit</b>	free
<b>Date Accessed</b>	2021-09-15
<b>Appendix</b>	7



<b>Location</b>	Victoria
<b>Ad Description</b>	<a href="#">Moulding trim</a>
<b>Type</b>	Moulding
<b>Quantity</b>	various
<b>Price/Unit</b>	by contact
<b>Date Accessed</b>	2021-09-15
<b>Appendix</b>	8



<b>Location</b>	Sooke
<b>Ad Description</b>	<a href="#">Molding</a>
<b>Type</b>	Molding
<b>Quantity</b>	various
<b>Price/Unit</b>	\$40
<b>Date Accessed</b>	2021-09-15
<b>Appendix</b>	9



## **APPENDIX 3:** Estimated Demolition Waste



## Estimated Demolition Waste

### Methodology

The number of demolition permits issued by the City of Victoria in 2020 was used to estimate demolition waste for single-family houses and duplexes. The median square footage for existing building stock was provided by City of Victoria staff (based on BC Assessment data). The number of units demolished was multiplied by the median size of each type of unit to produce the total square footage of demolished space. The total square footage was then entered into Metro Vancouver’s “Demolition Waste Generation Rates Calculator”<sup>16</sup> to provide an estimate of the waste produced by weight, as the following equation shows:

$$Total\ Waste_{demo} = Units_{demo} \times Median\ Living\ Area\ (sqft) \times Waste\ Generation$$

Where,

<i>Total Waste<sub>demo</sub></i> :	<i>total demolition waste generated in 2020 (tonnes)</i>
<i>Units<sub>demo</sub></i> :	<i>number of units demolished in 2020</i>
<i>Waste Generation</i> :	<i>Demolition Waste Generation by Material (tonnes/sqft)</i>

For the percentage of all types of the demolition waste, Metro Vancouver’s Waste Generation Calculator was used. The conversion of weight to volume was based on the density figures from Light House’s *Watching our Waste* report, Appendix B<sup>17</sup>. Metro Vancouver’s calculation combines concrete and asphalt into one number, however, this number was divided into two separate quantities with concrete at 95% and asphalt at 5% of the total weight based on data from Light House’s *Watching our Waste* database.

### 2020 SFD/Duplex Demolition Waste Estimates, Victoria

Based on the number of Single-Family Dwelling (SFD) and duplex demolition permits issued by the City of Victoria from January to December 2020<sup>18</sup>, we have estimated the amount of demolition waste that could be generated in a given year. City staff note that fewer demolition permits were issued in 2020, perhaps due to the COVID 19 pandemic. The purpose of this estimate is to provide material quantities that can be used for comparison with the relative capacities of the service providers who are potentially recycling and reusing the recovered building materials.

<sup>16</sup> Metro Vancouver. 2021. *Demolition Waste Generation Rates Calculator*. [online] Available at: <http://www.metrovancouver.org/services/solid-waste/wte-and-disposal/construction-waste/Pages/Calculator.aspx>.

<sup>17</sup> Lighthouse, 2021. *Watching our Waste: A National Construction Waste Analysis In Canada Using LEED™ Certified Project Data*. [online] Available at: <http://www.nzwc.ca/Documents/WatchingOurWaste-Analysis.pdf>.

<sup>18</sup> City of Victoria. 2021. *Monthly Statistics*. [online] Available at: <https://www.victoria.ca/EN/main/residents/planning-development/development-services/monthly-statistics.html>.

Table 1: City of Victoria 2020 Demolition Permits and Median Home Size Information

Type of Units	Number of permits	Median size (ft <sup>2</sup> ) <sup>19</sup>	Total area (ft <sup>2</sup> )
<i>Single-Family Dwellings</i>	21	1,255 ft <sup>2</sup>	26,355 ft <sup>2</sup>
<i>Duplexes</i>	5	1,958 ft <sup>2</sup>	9,790 ft <sup>2</sup>
<b>TOTAL</b>	<b>26</b>		<b>36,145</b>

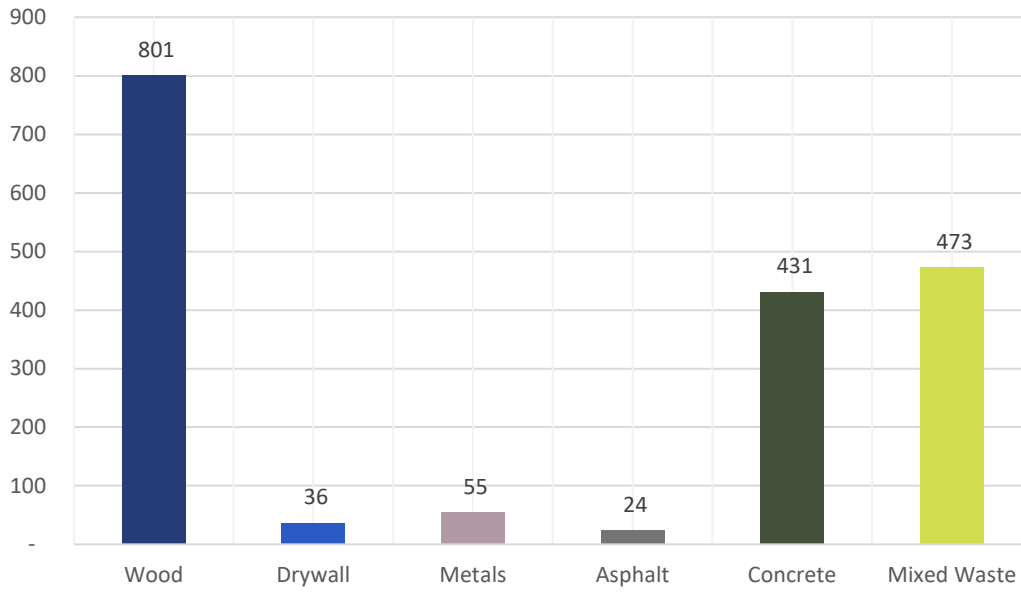
Table 2: City of Victoria SFD and Duplex Demolition Waste Estimate, 2020

	Weight (tonnes)	%	Volume (m <sup>3</sup> )	%
<b>Wood</b>	801	44%	4,449	57%
<b>Drywall</b>	36	2%	121	2%
<b>Metals</b>	55	3%	91	1%
<b>Asphalt</b>	24	1%	55	1%
<b>Concrete</b>	431	24%	845	11%
<b>Mixed Waste</b>	473	26%	2,253	29%
<b>TOTAL</b>	<b>1,820</b>		<b>7,814</b>	

The demolition of single-family homes and duplexes in the City of Victoria produced an estimated 1,820 tonnes of demolition waste in 2020. Wood is expected to represent the largest weight and volume of waste, followed by mixed waste (which likely contains more wood) and concrete.

<sup>19</sup> Provided by City of Victoria staff, based on BC Assessment data

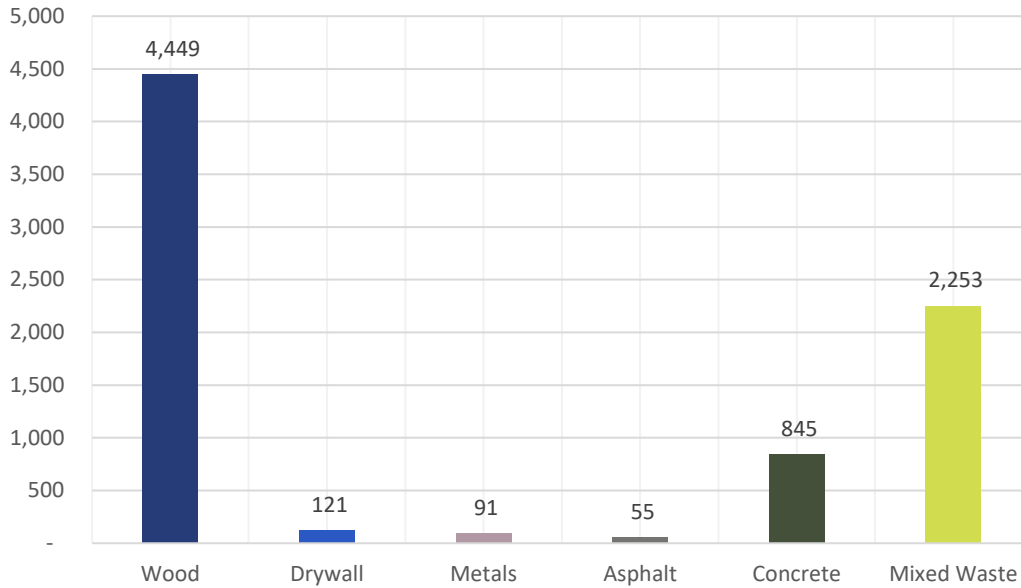
**Chart 1: 2020 SFD and Duplex Demolition Waste Estimate by Weight (tonnes)**



*Total Weight 1,820 tonnes*



**Chart 2: 2020 SFD and Duplex Demolition Waste Estimate by Volume (m<sup>3</sup>)**



*Total Volume 7,814 m<sup>3</sup>*

