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Regional District of  
**Kitimat-Stikine**

*Solid Waste Management Plan*

**DRAFT Technical Memo 6:**

**Building Deconstruction vs. Demolition**

APRIL 5, 2019

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## REVISION TRACKING

Revision	Date	Revision by	Purpose	Changes made
Rev. 0	April 4, 2019	Authored by S. Wilmot and M. Daly; Reviewed by R. Tooms and N. Veikle	Initial authoring of document	
Rev. 1	To be completed following PTAC meeting on April 16, 2019	N. Veikle	Integrate feedback from PTAC prior to presenting to RDKS Board	

The Regional District of Kitimat-Stikine (RDKS) is developing a new Solid Waste Management Plan (SWMP; the Plan) to provide direction for how to reduce, reuse, recycle and dispose of our waste for the next decade. The SWMP will be developed in consultation with stakeholders; a Public and Technical Advisory Committee (PTAC) will advise the Regional District Board on the development of plan targets and strategies. The primary focus of the SWMP will be to improve the operational efficiency of existing programs, services and facilities. Multiple topics have been identified for discussion and development of a management strategy within the Plan. Each topic requires scope and context, problem formulation, and identification and preliminary evaluation of options. This information will be presented to the PTAC to confirm initial content is sufficient to engage stakeholders. Stakeholder engagement will provide an opportunity for additional topics and options to be identified and evaluated. Stakeholder and PTAC feedback will help the technical team prioritize topics and identify preferred option(s).

This technical memo presents information on the practice of building deconstruction in contrast with traditional building demolition.

## 1. Scope and Context

Demolition of buildings can generate large quantities of waste often destined for landfilling. Building deconstruction is the systematic dismantling of a building so the resulting materials can be reused or recycled (Habitat for Humanity, 2019). The methodical approach to deconstruct building results in many materials being repurposed or managed through established alternative streams, such as used building material stores. A typical home contains about 50 tonnes of potential waste material. Deconstruction salvages reusable materials and segregates recyclable materials. Commonly salvaged materials from deconstructed buildings include structural beams, dimensional lumber, wood flooring, cabinetry, casework, doors, architectural details, hardware, plumbing and electrical fixtures, brick and stone. Salvage operations can range from selective removal of high-value elements to full-scale deconstruction.

The City of Vancouver adopted a green demolition bylaw in 2014 requiring at least 75% of the material in homes built before 1940 to be recycled; the diversion requirement is 90% for heritage or character homes. It has resulted in the diversion of approximately 10,000 tonnes per year of demolition waste. The percentage requirements take into account recycling of plaster, drywall and asphalt roofing shingles (City of Vancouver, 2014). These diversion streams are not currently available in northern BC.

The Local Government Act provides for local governments to regulate construction, alteration, repair and demolition of buildings. However, this section only applies to local governments which provide a building inspection service, which the RDKS currently does not. Within the Regional District, the City of Terrace and the District of Kitimat provide demolition permits.

Under Metro Vancouver's model, the average diversion rate for pre-1940 homes has been 86%, which is significantly higher than the typical rate of 40% to 50% per cent for traditional residential demolitions (City of Vancouver, 2018). This recycling rate is calculated exclusive of any hazardous waste materials. Asbestos drywall, insulation, tiles, and lead paint materials are not counted in the total materials generated from the home demolition; therefore, their disposal does not negatively affect the recycling rate quoted.

Within member municipalities of the RDKS, deconstruction may be supported by adding a new permit category for “advance deconstruction permits,” which are issued before building permits. Demolition and building permits are typically issued simultaneously, which encourages builders to demolish buildings as quickly as possible. By issuing an advance deconstruction permit, builders can take the time necessary to deconstruct, rather than demolish. These types of permits were offered in Vancouver before the green demolition bylaw was introduced (City of Vancouver, 2012). With the green demolition bylaw, a building permit for construction will not be issued until the City receives a report detailing how the demolished home was recycled and/or reused. This applies to all homes built before 1950 (City of Vancouver, 2018).

Deconstruction can also be supported by making a deconstruction permit significantly less expensive than a demolition permit. The savings from the deconstruction permit can be used to offset any additional costs associated with the reuse and recycling of building materials. However, the City of Terrace and District of Kitimat each charge only \$50 for their respective permits (City of Terrace, 2004) (Metro Vancouver, n.d.), with the District of Kitimat also requiring a \$1000 deposit to ensure full clean up of the site (District of Kitimat, 2018). The fee for demolition would have to be significantly increased to realize any offset for the effort to voluntarily choose deconstruction.

## 2. Problem Formulation

**No alternatives to disposal exist for most of the materials that would be generated by deconstruction.**

**How can the RDKS most effectively support the transition to some level of deconstruction?**

### 2.1. Alternatives to Disposal

In order for demolition materials to be diverted from disposal, alternatives to disposal must exist. Requiring deconstruction will not increase diversion if the deconstructed materials cannot be reused or recycled.

In some larger jurisdictions, waste processors can receive mixed loads of construction and demolition waste and sort the waste into its constituent streams for recycling. While this is preferable to disposal, it is less preferable than deconstruction, as many of the materials will be damaged during demolition and the opportunity for reuse is lost.

The RDKS does not host many of the alternative streams found in other areas of the province, particularly the Metro Vancouver area. For example, drywall and asphalt shingle recycling are not available within the RDKS. Within larger centres, the commercial sector often fills gaps in the reuse market. Enterprises such as the “Habitat for Humanity Re-Store” chain offer a warehouse for a wide range of construction materials, from electrical switches and outlets to doors and wood frame windows, to be resold and diverted from the landfill (Habitat for Humanity, 2019). This commercial market does not exist to any measurable degree in the RDKS.

### 2.2. Affordability

The building industry may resist the idea of more expensive demolition permits and/or deconstruction requirements and may need assistance in finding markets for reusing and

recycling salvaged materials. If implementing deconstruction initiatives, the RDKS must consult local builders to understand barriers (and perceived barriers) to deconstruction. Increased labour costs may prove the largest barrier to overcome. While a team of two people can demolish a typical home with large equipment in two days, it may take 10 semi-skilled workers as much as two weeks to methodically deconstruct the same structure.

If opting to promote deconstruction under the new Plan, the RDKS will need to work with building construction and private waste reuse industries to overcome barriers. This will likely include incentivizing deconstruction for builders, as well as ensuring that there are sufficient reuse opportunities to support diversion of building materials.

### 2.3. Authority

Universal implementation of a deconstruction permit is not possible across the entire Regional District. In the absence of a building inspection service, the RDKS does not have the authority to issue demolition permits. Member municipalities which employ a building inspection service may incorporate a demolition or deconstruction permit process. A universal template or sample bylaw may be created to assist with this; however, ultimately, each member municipality must undertake this process on their own if they choose.

One area which may be addressed by the Regional District is the disposal of “clean wood”. Clean wood refers to wood that is not plywood, painted, treated or laminated material. Building materials, such as roof trusses and framing material, are categorized as clean wood. Currently the Regional District encourages the separation of clean wood from the general waste stream; however, it is not identified as a restricted material, nor is there a separate or reduced tipping fee for its disposal. Per Metro Vancouver’s model, the Regional District may choose to identify this as a restricted material and require its separation from the refuse stream.

## 3. Stakeholders

The following organizations and categories of individuals will be impacted by measures taken to increase deconstruction and reduce demolition:

- RDKS
- Member municipalities
- Construction and demolition industry
- Residents
- Industrial, Commercial and Institutional (ICI) sector

## 4. Options Analysis

### 4.1. Pilot Program

Many local governments run a pilot program for deconstruction before launching a full-scale program. The pilot program enables an evaluation of the viability of the market for reusing and recycling salvaged materials. The pilot program could be as small as a few buildings that go through the deconstruction process voluntarily. The anticipated barriers to implementing this pilot program within the RDKS would be the lack of incentive for builders. Without incentivizing deconstruction over demolition (i.e., through lower permit fees for deconstruction, or similar), it is anticipated with few builders would voluntarily participate.

## 4.2. Increase Tipping Fee Differential

The RDKS can play a more active role in encouraging separation of demolition materials by charging significantly more than the standard tipping fee for mixed loads of demolition waste. Sorted loads of demolition waste can be charged the standard tipping fee or a reduced tipping fee, depending on the cost of managing the materials. Another alternative that may have the same result is levying a surcharge on mixed loads. This is the practice at the Glenmore Landfill in the Regional District of Central Okanagan, where mixed loads of demolition waste are charged an additional \$125 per tonne. If the load contains gypsum, which is designated as an item that must be recycled, the surcharge is \$150 per tonne. Their standard tipping fee is \$95 per tonne (Regional District of Central Okanagan, 2019) The RDKS could employ a similar method aimed at eliminating clean wood from the disposal stream.

## 4.3. Management Options

Currently, the anticipated barriers to implementing a regulatory approach to require deconstruction of buildings include:

- The RDKS does not hold building permits to regulate builders within the RDKS. Member municipalities would be responsible for the implementation of deconstruction permits;
- There are currently very few options for diversion of construction wastes. In the absence of a used building supply center or recycling options for many building materials, it is currently counterproductive to require diversion of these materials from the waste stream.

Despite these barriers, the RDKS may evaluate a phased approach to promoting deconstruction over the next 10 years. This approach may include:

- Developing a pilot program by working with local residential contractors to explore the viability of the deconstruction model, including evaluating the additional energy expenditure required for deconstruction and resulting diversion rates;
- Supporting and/or working with private sector or non-profit organizations to establish a used building supply store(s) and/or building materials (i.e., asphalt) recycling options within the RDKS; and/or
- Develop an increase tipping fee differential (i.e., decrease the fee for clean wood and introduce a surcharge for demolition loads containing clean wood).

## 5. References

City of Terrace. (n.d.). "Building Regulations.

City of Terrace. (2004). Building regulations bylaw No. 1810, 2004. Terrace, BC.

City of Vancouver. (2012). *Vancouver Voluntary Advanced Deconstruction Permit*. Retrieved from CR&D Case Study 3: Waste Diversion, Voluntary Mechanism: [https://www2.gov.bc.ca/assets/gov/environment/waste-management/zero-waste/case-studies/cs\\_vancouver.pdf](https://www2.gov.bc.ca/assets/gov/environment/waste-management/zero-waste/case-studies/cs_vancouver.pdf)

City of Vancouver. (2014). *Green Demolition Bylaw (No. 11023)*. Vancouver.

City of Vancouver. (2018, April 20). *Green Demolition By-law Update*. Retrieved from Home, property and development - Demolition Permit: <https://council.vancouver.ca/20180516/documents/pspc2c.pdf>

District of Kitimat. (2018, January). Demolition Application. Kitimat, BC.

Habitat for Humanity . (2019). *What is a Habitat ReStore and how does it help my community?* Retrieved from ReStore: <https://www.habitat.ca/restore>

Habitat for Humanity. (2019). *Deconstruction: a definition*. Retrieved from Building deconstruction: <https://www.habitat.org/stories/how-milwaukee-restores-build-community-with-building-deconstruction-services>

Metro Vancouver. (n.d.). *Metro Vancouver solid waste - deconstruction versus demolition*. Retrieved from <http://www.metrovancouver.org/services/solid-waste/business-institutions/construction-waste/deconstruction-demolition/Pages/default.aspx>

Regional District of Central Okanagan. (2019). *Glenmore Landfill Rates and Fees*. Retrieved from <https://www.regionaldistrict.com/your-services/waste-reduction-office/disposal-locations/glenmore-landfill.aspx>