APPROACHES TO BROWNFIELD DEVELOPMENT

Urban Dynamics and Regeneration (MRSS 1153)
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There are many definitions of brownfield site by different agencies. Brownfield site is possibly any land with potential or perceived contaminant or pollutant in any form, where those hazards (contaminant or pollutant) are complicating the process of redevelopment.

With certain legal exclusions and additions, US EPA defines `brownfield site' as ‘abandoned, idled or underused industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contaminant that can add cost, time and uncertainty to a redevelopment project.’

Generally, brownfield sites are tagged with: age/obsolescence, excessive vacancies, lack of ventilation, dilapidation, deterioration and abandoned.
Brownfields are a form of neighborhood blight which has negative economic and public health impacts to the hosting community.

Brownfields introduce the potential for exposure to toxic substances (chemical, bacterial, disease) and injury hazards, exacerbates problems with dumping and pests (vectors of disease), and depreciate properties surrounding them which has health consequences tied to socioeconomic status.
“…..real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contamination.” (EPA)

In laymen’s terms:
• A brownfield is a property that is difficult to develop because it is contaminated or believed to be contaminated
• Not a superfund site
• Hazardous, petroleum, asbestos, lead paint, mold, methlab contaminants and mine-scarred lands
Also among the negative social and economic impacts on the communities around where they are located, brownfields are often disproportionately located in under-served, low income areas in inner-cities.

Brownfield sites are appealing as development projects because they are cheaper overall to develop and located in highly desirable urban infill areas.

Example ex mining land, infill sites, ex dockyards, industrial sites etc.

Redevelopment of brownfield sites into a sustainable new development provides social and economic benefit to the community in an environmentally responsible
In Malaysia, Brownfield is defined as the area developed but abandoned, neglected or have obsolete development structure and development not fully completed and abandoned (Chun-Yang, & Talib, 2006).

It also has been classify by the Town & Country Planning Department of Peninsular Malaysia in the Guidance Identification for Brownfield Redevelopment (draft) shown in the following table.
## Table 1: Part of the Brownfield Legislation or Related Policy in Asia

<table>
<thead>
<tr>
<th>Country</th>
<th>Land Area (000 km²)</th>
<th>Population (million)</th>
<th>Agency Responsible</th>
<th>Brownfield Legislation</th>
<th>Status</th>
<th>Related Policy</th>
<th>Major Industry</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunei</td>
<td>5.8</td>
<td>0.34</td>
<td>DOE</td>
<td>-</td>
<td>-</td>
<td>Draft Environmental Order</td>
<td>Oil &amp; Natural Gas</td>
<td>-</td>
</tr>
<tr>
<td>China</td>
<td>9,326.4</td>
<td>1,261.8</td>
<td>EPA</td>
<td>-</td>
<td>-</td>
<td>Environmental Pollution Legislation</td>
<td>Heavy Industry &amp; Mining</td>
<td>-</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1,919.3</td>
<td>224.8</td>
<td>EMIA</td>
<td>-</td>
<td>-</td>
<td>Government Regulation no.20</td>
<td>Petroleum &amp; Gas, Mining</td>
<td>-</td>
</tr>
<tr>
<td>Japan</td>
<td>377.8</td>
<td>127.3</td>
<td>MOE</td>
<td>Basic Environmental Law</td>
<td>Enacted in 1991 &amp; amended 1994</td>
<td>Soil Pollution Control Law</td>
<td>Automobile &amp; Heavy Industry</td>
<td>-</td>
</tr>
<tr>
<td>Korea</td>
<td>98.4</td>
<td>48.6</td>
<td>MOE</td>
<td>Soil Environment. Preservation Law</td>
<td>Enacted in 1995 Revised 2001</td>
<td>-</td>
<td>Electronic, Automobile &amp; Chemical</td>
<td>-</td>
</tr>
<tr>
<td>Malaysia</td>
<td>329.8</td>
<td>23.1</td>
<td>DOE</td>
<td>-</td>
<td>-</td>
<td>Environmental Quality Act</td>
<td>Plantation, Automobile &amp; Petroleum</td>
<td>-</td>
</tr>
<tr>
<td>Philippines</td>
<td>298.2</td>
<td>84.6</td>
<td>DOE</td>
<td>-</td>
<td>-</td>
<td>Environmental Code (Presidential Decree 1152)</td>
<td>Light Industry &amp; Agriculture</td>
<td>-</td>
</tr>
<tr>
<td>Taiwan</td>
<td>36.0</td>
<td>22.7</td>
<td>EPA</td>
<td>Soil &amp; Groundwater Pollution Remediation Act</td>
<td>Enacted in 2000 with provision of Remediation Fund</td>
<td>-</td>
<td>Electronic, Petroleum &amp; Textile</td>
<td>-</td>
</tr>
<tr>
<td>Thailand</td>
<td>513.8</td>
<td>81.6</td>
<td>PCD</td>
<td>-</td>
<td>-</td>
<td>Natural Environmental Quality Act</td>
<td>Tourism, Mining &amp; Agriculture</td>
<td>-</td>
</tr>
<tr>
<td>Singapore</td>
<td>0.45</td>
<td>5.13</td>
<td>MOE</td>
<td>-</td>
<td>-</td>
<td>Environmental Protection Control Act</td>
<td>Electronic, &amp; Financial services</td>
<td>-</td>
</tr>
</tbody>
</table>
What are the potential benefits to redeveloping brownfields?

The redevelopment of brownfields can provide many benefits to a community, including an increased tax base, the creation of new jobs, the utilization of existing infrastructure, and the removal of blight.

The removal of contaminants in the area also helps to protect human health and the environment.
BROWNFIELD ASSESSMENT PROCESS
(US APPROACH)

• Identify Brownfields & Redevelopment Goals
• Investigate – Phase I/II site assessments (environmental due diligence – performed by contractors)
• Clean-up or Institutional Controls, if necessary
• Redevelopment
Brownfields are viewed by many as opportunities for revitalizing urban communities.

Redevelopment of brownfield sites may reduce health risks, create jobs, provide services, increase local tax revenues, and improve the overall livability of urban neighborhoods.

Brownfield site redevelopment will likely affect communities in different ways, depending on the nature of the land use (e.g., industrial, commercial, residential) and the needs of the community. Left undeveloped, however, brownfield areas remain unproductive, generate little or no economic benefits, and are environmentally and socially detrimental to the surrounding communities.
BENEFITS OF BROWNFIELD REDEVELOPMENT

Brownfield redevelopment have potential benefits to the economic, environmental, and social within the community, including:

- Improvements in environmental quality (soil, air, and ground water);
- Improvements to human health;
- Protection of groundwater resources, wetlands, and wildlife habitats;
- Reduction of urban sprawl;
- Reuse of using existing sewer, water, and road infrastructure;
- Economic growth, including the retention and creation of local jobs;
- Increased property tax revenues;
- Revitalization of neighbourhoods and employment areas; and
- Increased opportunities for affordable housing.
OBSTACLES TO IMPLEMENT BROWNFIELD REDEVELOPMENT

» Difficulties with obtaining project funding from traditional sources of capital;

» Potential civil and regulatory liability for environmental contamination that may remain on the site or migrate off-site;

» Community concerns and opposition that cause project delays; and

» Limited information, knowledge, and capacity about brownfield redevelopment

Local governments and community groups can take a proactive role in addressing many of these challenges and can help to promote responsible brownfield redevelopment and productive reuse of brownfield sites.
MALAYSIAN CONTEXT

Brownfield redevelopment is a still new field in Malaysia.

The main reason why the Brownfield development should be given priority is because it is a form of solution to the shortage of land, especially in the city for a compact city.

Brownfield redevelopment is said also create employment opportunities to them.

Redevelopment of Brownfield areas should be encouraged since it will reduce the impact in terms of exploration of new areas for new development.

There are three key actors in the development of Brownfield areas; they consist of the developers, the authorities and the buyer.

Brownfield redevelopment has a high demand at present time because of the scarcity of land.

Most of Brownfield areas are located in urban and developed areas. The developer is keen on develop Brownfield areas, but they faced financial problems in doing so. This is because redevelopment of Brownfield areas involves high costs as the first step in clearing the site.
# Table: Categories of Brownfield in Guidance Identification for Brownfield Redevelopment

<table>
<thead>
<tr>
<th>Picture</th>
<th>Types</th>
<th>Category</th>
<th>Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="https://via.placeholder.com/150" alt="Image" /></td>
<td>Former mining and quarrying</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td><img src="https://via.placeholder.com/150" alt="Image" /></td>
<td>The former landfill site that has full/ no longer in use on a</td>
<td>B</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>permanent basis</td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="https://via.placeholder.com/150" alt="Image" /></td>
<td>Areas of the plant/ business/ housing/ institutions that have left</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>more than 10 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="https://via.placeholder.com/150" alt="Image" /></td>
<td>Abandoned development projects that are not completed within the</td>
<td>D</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>implementation of more than 10 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="https://via.placeholder.com/150" alt="Image" /></td>
<td>Building/ row building lots that have been completed but abandoned</td>
<td>E</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>more than 10 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="https://via.placeholder.com/150" alt="Image" /></td>
<td>The former depot/ public transport station, infrastructure and utilities</td>
<td>F</td>
<td>X</td>
</tr>
</tbody>
</table>
The local authorities are an important pillar in Brownfield redevelopment in areas within their jurisdiction at the local level.

Local authorities must monitor Brownfield redevelopment projects through the Structure Plan and Local Plan, monitor and advice on Brownfield redevelopment projects involving aspects of architecture, urban design and heritage and provide an inventory of Brownfield areas ("National Physical Planning Framework,").

Among the major departments in the organization of LA that involved in Brownfield redevelopment are planning division, building division, the environment division and engineering division.
BROWNFIELD REDEVELOPMENT CASE STUDIES
A . REHABILITATING HISTORICAL FACILITIES

Tranquille on the Lake – Kamloops, B.C.

This health and wellness community is being built on the shore of Lake Kamloops, on the site of an old sanatorium and school. Coordination between the developer and the government has streamlined the permitting and cleanup processes.
SITE

A tuberculosis sanatorium was built on this site, which operated from 1909 and 1958. In 1959, this facility was converted into a training and residential institute for the mentally challenged, and continued to be supported by farming and agricultural operations on and around the site. The Province began actively marketing the site when the facility ceased to operate in 1985, and the Tranquille Limited Partnership (TLP) purchased a controlling interest in the land in 2005.
PROJECT VISION AND CONCEPT

The vision of this project is to use local ecological and agricultural resources and heritage to support a sustainable, affordable lakeshore community with a minimal environmental footprint.

The concept for the redevelopment is a residential community based on health and wellness, which will accommodate about 2,000 housing units for approximately 5,000 residents. More than 70% of the development is designated as multifamily housing, with a mix of unit pricing and layouts to attract both young families and seniors. The plans also include the development of the waterfront for public access and the reestablishment of the former agricultural areas (120 ha portion) of the site. The project is estimated to be completed by 2015.

Work is currently being completed on site assessments and planning, with some remediation being undertaken, including the demolition of many of the buildings and removal of aged infrastructure.
CHALLENGES

The site includes approximately 60 buildings in various stages of disrepair. The buildings were constructed at a time when asbestos, lead-based paints, and PCBs were standard construction and operational materials. The handling and disposal of these materials is very costly. Other environmental issues at the site include the former sewage lagoon which contains materials with elevate metals concentrations.

The existing utility infrastructure (including power, water, sanitary) was deemed unserviceable. The site had been incorporated into the Agricultural Land Reserve; this initially posed a conflict with residential development on-site, but this matter was resolved.
IMPLEMENTATION

The developer learned to ensure that comprehensive research and review was conducted every issue associated with the site. A clear level of understanding on legislative, environmental, and financial liabilities was necessary to enable the appropriate risk management of the project.

BUDGET

» Brownfield project completion is estimated to be in 2015 with build out of the project is estimated to be in 2030.

» Demolition/Remediation estimates of $4.5 – $7 million have been obtained.

» There's no final figure developed yet for full build out.
INTERIM GATHERING SPACE AND COMMUNITY ASSET

Greater Terrace Beautification Society Site – Terrace, B.C.

A former gas station site in downtown Terrace has been repurposed as an interim greenspace by a local community organization, working in partnership with the land owner, the local government, and the wider community. This project shows how pride of place can be important to project success.
Project Lead: Greater Terrace Beautification Society
Former Uses: Gas Station
Project Status: Redevelopment
INTRODUCTION

One common challenge for communities is with vacant gas stations, many of which occupy smaller parcels of land distributed along major roadways and intersections in neighbourhoods. These brownfield sites can be transformed into interim neighbourhood amenities, including “pocket” parks (small parks on small parcels) and “brightfields” (a temporary or permanent installation of solar panels). These interim uses of brownfields can provide short-term benefits to communities and manage the transition to more long-term solutions. More permanent solutions such as cafés or galleries are also possible.
In all cases communities have learned that successful interim and permanent redevelopment of these kinds of properties requires:

» Engagement of the community to explore a property’s reuse potential;

» A clear understanding and applying available financial and technical assistance resources;

» Strong partnerships among all stakeholders and regulatory agencies throughout the entire life of a project; and

» Identification of approaches to reduce costs, increase the value of properties, and be better stewards of the environment.
SITE

The property is about 0.12 hectares in area (4 city lots). The site was originally developed as a gas station in the 1940s, which continued to operate until 1998. The gas station was then demolished, the gasoline storage tanks removed, and a temporary fence was placed around the site.
PROJECT VISION AND CONCEPT

The Greater Terrace Beautification Society is committed to a long-term beautification program for their community. The vision for the former gas station site was the development of an Interim Community Green Space. For this project, the group is working to put the site back into use as an interim urban plaza. This site will have an information kiosk for tourists, rain sculptures, planters with native species, and potential exhibition space for local artists.

BUDGET

» Amount spent to date: about $25,000.

» Total estimated budget: $65,000.
OTHER EXAMPLES ...
CHILCOTIN TOURISM CENTRE
ALEXIS CREEK, B.C.

*Project Lead:* Alexis Creek Revitalization Committee (ACRC)

*Former Uses:* Gas Station

*Project Status:* Completed
PEACE VALLEY LOOKOUT
FORT ST. JOHN, B.C.

Project Lead: Peace River Regional District
Former Uses: Unused (Old Dumping Site)
Project Status: Site Assessment and Planning
MAPLE RIDGE GREAT CANADIAN CASINO SITE
MAPLE RIDGE, B.C.

Project Lead: Great Canadian Casinos
Former Uses: Vacant site with possible dumping
Project Status: Site Assessment and Planning