Infill development is frequently used as a means of cleaning up past brownfield areas and can help to fill gaps in urban areas. The City of Denver stands to benefit greatly from urban infill development because of its extremely low metropolitan density and resultantly high negative environmental impacts due to persistent car-dependency. Denver is considered to be the natural world of urban infill development is vital to a sustainable future for the mile high city.

**Background: defining infill suitability**

The concept of defining new development to already dense, built-up areas is relatively new in the American history of urban expansion, and is just starting to phase as a radical innovation. What research on the new dense for infill as a specific development technique, however, has done well to indicate a few key requirements for successful building to densely populated urban areas:  

1. Proximity to services and high-demand services have been used to be more effective if they provide residents access to the natural resources they would expect out of a suburban setting.  
2. Geographical sustainability: in all development, infill has a greater potential for success if built out of floodplains and other environmentally sensitive areas.  
3. Infill development is dependent on a local level to promote the use of compact development and infill for new lots in urban cores to increase urban density and reduce environmental externalities associated with sprawl. The City of Denver stands to benefit greatly from urban infill development because of its extremely low metropolitan density and resultantly high negative environmental impact due to persistent car-dependency. Denver is conscious of the natural world around it, urban infill development is vital to a sustainable future for the mile high city.

**Methodology: grading with LEED-ND**

To create a model for analyzing the suitability of brownfield and greyfield sites for infill development, a representative relationship between the variables had to be found for each. LEED for Neighborhood Development, an accreditation program through the U.S. Green Building Council that deals with such variables, was a good source for baseline classifications attributing relative importance to each variable. The relevant LEED-ND credits chosen for their respective point values (adding up to 23) are represented below, alongside the adaptive grading classifications used in the spatial analysis of available data.

<table>
<thead>
<tr>
<th>LEED-ND credits</th>
<th>Infill analysis variables</th>
<th>Access to quality public transit</th>
<th>Housing and jobs protection</th>
<th>Compact development</th>
<th>Access to Open Space &amp; Floodplain Avoidance</th>
<th>Land Use Diversity</th>
<th>Lined and Shared Streetscapes</th>
<th>Total possible points</th>
<th>Total points possible</th>
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</table>

**Analysis:**

**Compact Development: Structural Density**

LEED-ND requires that there are areas with more than 30 units per acre and includes a minimum density of 12 housing units per acre to achieve the required level of accessibility for a neighborhood. This results in a credit for the development of 20 points, with additional points rewarded for greater density. 2010 US Census block level data on dwelling units in the City of Denver was used to analyze housing unit density to determine the relative household density in areas.

**Compact Development: Residential Density**

For residential buildings, LEED-ND requires a minimum density of 12 housing units per acre to achieve the required level of accessibility for a neighborhood. This results in a credit for the development of 20 points, with additional points rewarded for greater density.

**Access to Open Space & Floodplain Avoidance**

Situated under LEED-ND, the credit for low-impact development, is to provide brownfield sites in the City of Denver. This rule was to ensure that the sites were used at least partially for brownfield sites. A set of variables was used to determine suitability of the site, including flood risk, the potential for contamination, and other environmental factors. The credit was awarded based on a scale of 1 to 5, with higher scores indicating greater suitability.

**Results & Conclusions**

The analysis of the quality and environmental sustainability of parcels suitable for infill development was determined and found that the City of Denver stands to benefit greatly from urban infill development due to its extremely low metropolitan density and resultantly high negative environmental impact due to persistent car-dependency. Denver is conscious of the natural world around it, urban infill development is vital to a sustainable future for the mile high city.

**New data and sources**


**Cherry Creek neighborhood indicate that with continued investment in reliable public transit and work to increase zoning flexibility, Denver can benefit from filling the gaps across the city.