

Ecological Offsetting Plan



May 2017

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Conservation Authority Resolution

At the LSRCA Board of Directors' meeting on May 26, 2017, the Ecological Offsetting Plan was approved by the Board of Directors through the following resolution:

BOD-078-17 **RESOLVED THAT Staff Report No. 22-17-BOD regarding the Ecological Offsetting Plan process be received; and**

FURTHER THAT the Ecological Offsetting Plan be approved. CARRIED

1.0 Introduction

The Lake Simcoe Region Conservation Authority (LSRCA) Strategic Plan (2016 – 2020) sets the groundwork for achieving a healthier watershed by 2041 than we have today. Through identified action items and goals, the LSRCA envisions a thriving environment that inspires and sustains the needs of generations to come. Goal one of the Strategic Plan is to support a safer, healthier and more livable watershed through exceptional integrated watershed management. The development and implementation of an Ecological Offsetting Plan supports this goal by providing a consistent approach to natural heritage protection, enhancement and restoration throughout the watershed.

A review of international ecological offsetting programs reinforces LSRCA’s current approach as it relates to the conservation of natural heritage features susceptible to impacts from development. A hierarchical approach is a common theme across ecological offsetting programs, which follows a series of steps that support the principle of “no net loss”. This mitigation hierarchy calls for the avoidance of impacts first, then minimization followed by mitigation, with compensation as a final option (refer to Figure 1).

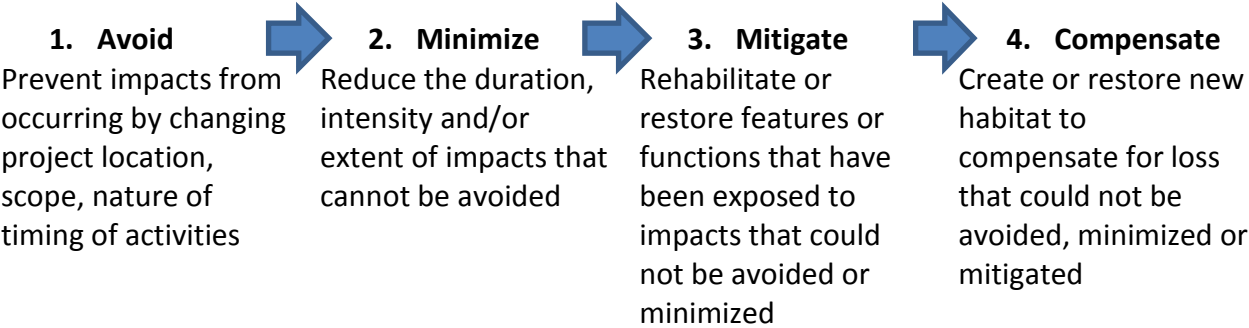


Figure 1 Mitigation Hierarchy¹

¹ Mitigation Hierarchy adapted from *Wetland Conservation in Ontario: A Discussion Paper*, MNRF, 2015

Some development proposals, however, despite having followed the first three steps of the mitigation hierarchy approach, result in a loss of natural heritage feature. Infrastructure proposals, such as new roads, are examples where the loss of features is sometimes unavoidable. Infill development within settlement areas in isolated natural heritage features is another example. In these situations, where compensation is the only option, a “net gain” in natural heritage features must be pursued. The LSRCA will work with the proponent or developer to ensure that any unavoidable loss of feature is appropriately compensated for.

2.0 Context

Ecological offsetting for the loss of natural heritage features and upholding the principle of “no net loss” is an important step towards achieving environmental sustainability in Ontario. The policies within the following provincial, municipal, and watershed documents provide the basis and justification for LSRCA’s Ecological Offsetting Plan for the Lake Simcoe watershed:

- ✓ Provincial Policy Statement (e.g. Sections 1.8 and 2.1.2)
- ✓ Lake Simcoe Protection Plan (e.g. 40% natural vegetative cover target)
- ✓ Regional and Local Official Plans
- ✓ Natural Heritage System for the Lake Simcoe Watershed (2007)
- ✓ Subwatershed Plans

To further support the implementation of LSRCA’s Ecological Offsetting Plan, recent publications such as *Key Issues in Biodiversity Offset Law and Policy, June 2015* by Ontario Nature, provide valuable context and background on the implementation of ecological offsetting, both locally and within an international setting. In addition, the *Lake Simcoe Basin’s Natural Capital: The Value of the Watershed’s Ecosystem Services, June 2008* report from The Friends of the Greenbelt Foundation provides an assessment of the value of ecological goods and services provided by ecosystems within the watershed. These values are essential for recognizing the comprehensive cost of impacts to natural heritage features.

3.0 Guidelines

3.1 General

Development proposals that will result in the loss of wetland and/or woodland natural heritage features, despite having followed the mitigation hierarchy as shown in Figure 1, will be required to compensate for the loss of these features. Certain exceptions may apply and are further described in sections 3.2.1, 3.3.1.1 and 3.3.2.1.

Recognizing that there are limits and certain natural heritage features may be irreplaceable, offsetting will not be considered for features that contain rare vegetation communities as defined by the Natural Heritage Reference Manual (MNRF, 2010) as well as bogs or fens. Generally, offsetting will also not be considered for watercourses, as defined by the *Conservation Authorities Act* or for the minimum vegetation protection zone abutting the Lake Simcoe shoreline.

3.2 Prerequisites for Ecological Offsetting

Prior to the approval of any development application proposing compensation for the loss of wetland or woodland feature, the following conditions must first be satisfied through an approved Environmental Impact Study (EIS), Natural Heritage Evaluation (NHE) or equivalent:

- ✓ Demonstrate conformity with applicable provincial, regional and local plans, including the Oak Ridges Moraine Conservation Plan, Greenbelt Plan, Lake Simcoe Protection Plan, and Official Plans
- ✓ Satisfy the “no negative impact test” for the loss of natural heritage feature to ensure consistency with the Provincial Policy Statement (PPS)
- ✓ Assess the impacts to natural heritage features such as wetlands, woodlands, and watercourses, as well as their associated vegetation protection zones

- ✓ Demonstrate that the mitigation hierarchy steps of avoiding, minimizing and mitigating have been followed and that compensation is the only viable option to address impacts to natural heritage features
- ✓ Include a preliminary Ecological Offsetting Strategy (EOS) that describes, in concept, how the loss of natural heritage feature will be compensated for. This would include identifying the feature to be removed, location where it will be replaced and general principles for feature creation

3.2.1 Exceptions

Applications under the *Planning Act* that facilitate permitted agricultural uses or the construction of an accessory structure (e.g. garage) or a single family dwelling on an existing lot of record will not be subject to ecological offsetting requirements. In addition, proposals requiring approval under Ontario Regulation 179/06 via the Conservation Authorities Act will not be subject to the requirements of this Ecological Offsetting Plan.

3.3 Ecological Offsetting Strategy

An Ecological Offsetting Strategy (EOS) will be required where compensation is the only viable option to address impacts to natural heritage features. It will be the responsibility of the developer or proponent to develop and implement this EOS. The EOS must demonstrate how the loss of natural heritage feature will be compensated for and that this offset will result in a “net gain” of natural heritage features. Ecological offsetting compensation projects must be both feasible and completed within a reasonable timeframe, preferably prior to the removal of the original feature. The EOS must also include a monitoring component to ensure the successful installation of compensation projects. The components of an EOS are further described in Appendix III.

To assist in determining an appropriate opportunity and location for ecological offsetting compensation projects, LSRCA will provide, upon request, a list of ecological restoration and natural heritage feature creation opportunities. In general, compensation projects should:

- be located within the same subwatershed as where the natural heritage feature is lost
- preferably be located on sites that are currently owned by or that may be transferred to a public agency, such as a municipality or LSRCA
- contribute to or expand the natural heritage system as defined by the municipalities in their Official Plans using the LSRCA approved document *Natural Heritage System for the Lake Simcoe Watershed (2007)* or its successor

In most instances, compensation projects will be required to recreate similar features to those that are lost. Offsetting requirements for both wetlands and woodlands are described in section 3.3.1 and 3.3.2, respectively. However, in some situations, it may be more appropriate for ecological offsetting to include alternative compensation projects that result in an equivalent ecological gain. If alternative compensation projects are being considered, the developer or proponent is encouraged to first consult with LSRCA to determine the appropriateness of the project.

3.3.1 Wetlands

All wetlands eligible for offsetting must be identified according to provincial standards such as the Ontario Wetland Evaluation System (OWES) or Ecological Land Classification (ELC). Ecological offsetting may be considered for the loss of wetland provided that the wetland is not a bog, fen or rare vegetation community as defined by the Natural Heritage Reference Manual (MNRF, 2010).

The loss of wetland and associated vegetation protection zone will be offset at a replacement ratio based on areal extent combined with the Ecosystem Services Values identified in Appendix I. The replacement ratio for the areal extent of the feature will be 3:1; the replacement ratio for the areal extent of the associated vegetation protection zone will be 1:1. This considers the replacement values from the perspective of form and function across spatial and time scales to ensure that the value of loss is supported with an appropriate net gain. The restoration of historically functioning wetlands and/or severely degraded wetlands may be considered as potential opportunities for offsetting. Consideration will be given for a lower replacement ratio,

provided that it is demonstrated that the functional improvement represents a net gain. Payment of Ecosystem Service Values will not be required when the replacement feature is in place prior to removal of the feature being replaced.

3.3.1.1 Exceptions

Ecological offsetting will not be required for wetlands that are smaller than 0.5 ha or manmade features where it can be demonstrated to the satisfaction of the LSRCA, that the wetland or feature does not provide any of the following features or functions:

- A significant groundwater hydrologic linkage to an adjacent key hydrologic or protected feature
- A significant component of or ecological linkage to an adjacent key natural heritage or protected feature
- A significant surface water hydrologic linkage (permanent or intermittent surface water connection) between the wetland and an adjacent key hydrologic or protected feature

Ecological offsetting will not be required for restoration programs such as dam removals to enhance fish habitat.

3.3.2 Woodlands

All woodlands eligible for offsetting must be identified according to provincial standards such as Ecological Land Classification (ELC) and the provincial criteria for defining woodlands. Ecological offsetting may be considered for the loss of woodland provided that the woodland is not a rare vegetation community as defined by the Natural Heritage Reference Manual (MNRF, 2010).

The loss of woodland and associated vegetation protection zone will be offset at a replacement ratio based on areal extent combined with the Ecosystem Services Values presented in Appendix I. The replacement ratio for the areal extent of the feature will be 2:1; the replacement ratio for the areal extent of the associated vegetation protection zone will be 1:1. This considers the replacement values from the perspective of form and function across spatial

and time scales to ensure that the value of loss is supported with an appropriate net gain. Consideration will be given for a lower replacement ratio, provided that it is demonstrated that the functional improvement represents a net gain. Payment of Ecosystem Service Values will not be required when the replacement feature is in place prior to removal of the feature being replaced.

3.3.2.1 Exceptions

Ecological offsetting will not be required for woodlands that are within municipalities that have tree by-laws with comparable compensation requirements and duplication of tree replacement will also be avoided. Ecological offsetting will also not be required for woodlands identified smaller than 0.5 ha where it can be demonstrated to the satisfaction of the LSRCA that it is a plantation managed for the production of fruits, nuts, Christmas trees, nursery stock or tree products or that it does not provide any of the following features or functions:

- Any woodlands wholly or partially within 30 m of a key natural heritage/key hydrological or protected feature
- Any woodland containing a provincially rare treed vegetation community with an S1, S2 or S3 in its ranking by the Ministry of Natural Resources and Forestry Natural Heritage Information Centre (NHIC)

Additional exclusions may be considered for communities that are dominated by the invasive non-native tree species buckthorn (*Rhamnus* species) or Norway maple (*Acer platanoides*), which threaten good forestry practices and environmental management. Such exceptions may be considered where native species cover less than 10% of the ground and are represented by less than 100 stems of any size per hectare.

3.3.3 Cash-in-Lieu Compensation

In certain instances, where it may not be feasible for the developer or proponent to independently compensate for the loss of natural heritage feature, cash-in-lieu or land purchase/securement may be considered as part of the Ecological Offsetting Strategy.

Offsetting for feature loss may also be accomplished through a combination of independent feature replacement as well as cash-in-lieu.

A properly administered cash-in-lieu system that is fair, consistent and transparent will ensure that a “net gain” is achieved. To support the success of compensation projects, partnerships between the proponent, Non-Governmental Organizations (NGO), and the LSRCA should be pursued where appropriate. NGO’s may include, but are not limited to:

- Ducks Unlimited (DU)
- Ontario Nature (ON)
- Ontario Federation of Anglers and Hunters (OFAH)
- Couchiching Conservancy
- Nature Conservancy of Canada (NCC)
- Local streams committees
- Local groups or clubs

The LSRCA, in consultation with its member municipalities, will administer the cash-in-lieu option for the loss of natural heritage features. Any funds collected through the cash-in-lieu compensation option will be directed towards the creation, protection and/or restoration of natural heritage features in the watershed to ensure that a net ecological gain is achieved.

3.3.3.1 Calculation

The cash-in-lieu amount will be determined based on the required area of feature replacement and cost to recreate that feature and its function, as well as the ecosystem service value for the area of feature lost. An example of how to calculate the appropriate amount of offsetting compensation is found in Appendix II.

4.0 Implementation

This Ecological Offsetting Plan will be primarily implemented through Ontario’s land use planning process under the *Planning Act*. For example, a preliminary Ecological Offsetting

Strategy (EOS) will be required for the loss of a natural feature as part of any EIS or NHE while a detailed EOS will be required as a condition of draft approval for the related plan of subdivision or plan of condominium. A detailed EOS will also be required as a condition of site plan approval or the granting of provisional consent to create a new lot. Other planning instruments that may be used to ensure implementation of an approved EOS include subdivision agreements, condominium agreements, development agreements, and site plan agreements under the *Planning Act* or *Condominium Act*, and conservation easements under the *Conservation Land Act*.

5.0 Effectiveness Monitoring

5.1 Compensation Project Monitoring

The developer or proponent responsible for implementing approved ecological offsetting compensation projects will also be responsible for demonstrating that the projects have been completed and the associated natural heritage features are functioning as anticipated. Any monitoring or reporting requirements should be determined through the Ecological Offsetting Strategy (EOS), in consultation with LSRCA, prior to the implementation of any ecological offsetting compensation projects. Where appropriate, financial securities may be collected to ensure the implementation and long-term success of these projects.

5.2 Cash-in-Lieu Monitoring

To ensure effectiveness and transparency, a record of the collection and allocation of funds received through cash-in-lieu compensation will be made available to the Building Industry and Land Development Association (BILD), watershed municipalities and other interested stakeholders, on an annual basis, in a report to the LSRCA Board of Directors.

Appendix I. Ecosystem Services Values

Ecosystem services are the beneficial goods and services provided by the natural environment on an annual basis. These goods and services include things like carbon storage and sequestration, flood attenuation, water purification, climate regulation, biodiversity, nutrient cycling and soil stabilization. The Ecosystem Service Values provided by woodlands and wetlands in the Lake Simcoe watershed are displayed in Table 1.

Table 1 Approximate Annual Ecosystem Service Values¹ by Land Cover Type

Land Cover Type	Total per ha (\$/ha) ²							
	2007	2010	2011	2012	2013	2014	2015	2016
Woodland (forest)	\$4,798	\$5,033	\$5,142	\$5,277	\$5,342	\$5,403	\$5,460	\$5,534
Wetland	\$14,382	\$15,087	\$15,413	\$15,818	\$16,013	\$16,196	\$16,366	\$16,588

¹ Ecosystem service values are extrapolated from *Lake Simcoe Basin's Natural Capital: The Value of the Watershed's Ecosystem Services*, Friends of the Greenbelt Foundation, 2008

² Inflation is reflected in the ecosystem service values and is based on the annual consumer price index applied by the Bank of Canada: <http://www.bankofcanada.ca/rates/related/inflation-calculator/>

Appendix II. Ecological Offsetting Analysis and Costing

To provide an example of how an appropriate ecological offset for the loss of a natural heritage feature and associated vegetation protection zone may be determined, consider the following scenario:

As part of a *Planning Act* application, a natural heritage feature was assessed and a section of the woodland is proposed for removal after demonstrating through an Environmental Impact Study that there will be no negative impact to the feature. Figure 1 shows a study area with an area of a natural heritage feature and vegetation protection zone (VPZ) that will be removed as well as a candidate location for feature replacement. It is important to note that the candidate feature replacement location is in addition to retained natural features and associated VPZ.

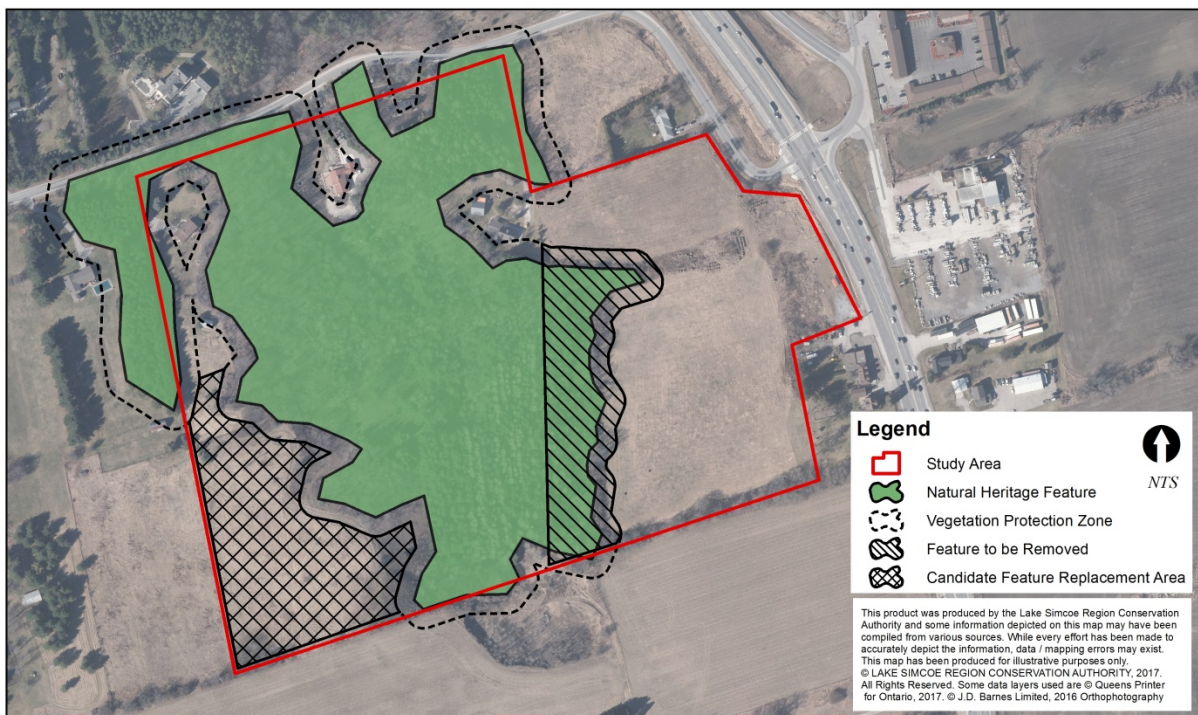


Figure 1 Study area showing where a feature has been removed and the areas where it could be replaced

Based on the Ecological Offsetting Plan, Table 1 presents two options to offset for the removal of 1.5 ha of woodland and 0.3 ha of vegetation protection zone (VPZ).

Feature Removal Proposed	Size
Woodland	1.5 ha
VPZ	0.3 ha
Total feature	1.8 ha

Table 1 Ecological offsetting options for the removal of 1.5 ha of woodland and 0.3 ha of vegetation protection zone

Ecological Offsetting Option #1 – Natural Heritage Feature Replacement
<p>Applicable replacement ratio 2:1 for feature and 1:1 for VPZ and Ecosystem Services Value</p> <p>= [(1.5 ha loss x 2) + (0.3 ha loss x 1)] and (1.8 ha x \$5,534/ha)</p> <p>= 3.3 ha of feature replacement and \$9,961.20</p>
Ecological Offsetting Option #2 – Cash-in-Lieu
<p>Appropriate replacement dollar value (feature creation cost) + Ecosystem Services Value + Land Acquisition Fund + Administration Fee</p> <p>= [(1.5 ha loss x 2) + (0.3 ha loss x 1)] x (\$36,850) + (1.8 ha x \$5,534/ha) + (15% of total feature creation cost + ESV) + (5% of total feature creation cost + ESV)</p> <p>= \$121,605 + \$9,961.20 + \$19,734.93 + \$6,578.31</p> <p>= \$157,879.44</p>

Table 2 Cash-in-Lieu feature creation costing for ecological offsetting¹

Wetland (1 ha)	
Planning and Design	\$13,000
Construction	\$27,600
Wetland Plant Material (1100 aquatic plugs), (1000 trees, shrubs)	\$36,000
Monitoring and Maintenance	(10%) \$7,660
TOTAL	\$84,260/ha

Woodland (1 ha)	
Planning and Design	\$5,000
Construction	\$6,000
Woodland Plant Material (2100 trees, shrubs)	\$22,500
Monitoring and Maintenance	(10%)\$3,350
TOTAL	\$36,850/ha

¹ Values are adapted from LSRCA restoration project costs and TRCA, NGO and private consulting estimates. Values may be subject to adjustment to account for inflation or fluctuations in service and/or material costs.

Appendix III. Components of an Ecological Offsetting Strategy¹

Through an agreed upon Terms of Reference, an Ecological Offsetting Strategy (EOS) may contain components that address the following:

- i) Location - comparable ecosystem values
- ii) Equivalency – quality and quantity of ecological functions
- iii) Additional benefits– opportunity for further enhancements
- iv) Timing – restoration/replacement to start in sequence with approvals process
- v) Duration – provide for longer term monitoring maintenance and contingency
- vi) Accountability – a formal written agreement between the relevant parties

An Ecological Offsetting Strategy (EOS) may form the basis of a Memorandum of Understanding (MOU) or Letter of Agreement that contains:

- i) Outline of the nature and extent of the work
- ii) Timing and duration of the work
- iii) Monitoring procedures to be undertaken
- iv) Performance measures and work milestones
- v) Securities for the MOU e.g. letter of credit

The EOS may also include a long-term management plan and a commitment to an endowment fund.

¹ Adapted from *Operational Framework for Use of Conservation Allowances*, Environment Canada, 2012

Appendix IV. Offset Programs

Canada (Fisheries Act, 1985)

The federal *Fisheries Act, 1985* is a Canadian example of an ecological offsetting program that has upheld the philosophy of no net loss of fish habitat since 1985. With the changes to the legislation in 2013, the prominence of ecological offsetting has been elevated through its inclusion in the text of the legislation itself rather than strictly within policy. The Fisheries Protection Policy Statement (2013) supports the application of the mitigation hierarchy of the Business and Biodiversity Offset Programme (2013) by stating that “It is much more difficult and expensive to repair or restore damaged ecosystems to maintain fisheries productivity than it is to avoid adverse impacts. For this reason the Department emphasizes avoidance and mitigation as the main steps in the hierarchy, followed by offsetting as a means of last resort”. This program is administered by Fisheries and Oceans Canada.

Ontario (Endangered Species Act, 2007)

The *Endangered Species Act (2007)* in Ontario protects specific species, as well as their habitat. In situations where avoidance and mitigation cannot be achieved, the *Act* provides the ability to obtain an overall benefit permit to conduct work as long as an overall benefit to the species in Ontario is demonstrated. This program is an example of an ecological offsetting program on a species specific basis. As such, achieving overall benefit is similar to the no net loss principle. In this case the objective is to increase the number of individual species living in the wild, increase the distribution of the species, remove threats to the species and increase the quality or amount of habitat for specific species in Ontario (www.ontario.ca). This program is administered by the Ministry of Natural Resources and Forestry.

Australia (Native Vegetation)

In 2000, the State of Victoria, Australia estimated that 66% of its native vegetation has been lost through development and population growth. The State’s intent was to reverse this trend and try to achieve a ‘net gain’ in the extent and quality of vegetation. As outlined in ‘Victoria’s Native Vegetation Management – A Framework for Action’ document (2002), the State moved forward to address these losses using the practice of biodiversity offsets. The implementation of ‘habitat hectares’ as currency metric was seen as an innovative approach to evaluating losses. It considered both the area lost and its quality rating and determined what the required offset would be. In 2007, the government established a credit trading system to help implement the biodiversity offsetting program.

United States (Wetlands)

The United States has had a history of using biodiversity offsets as the means for compensating for unavoidable loss of wetlands. Under the *Clean Water Act (1972)* provisions were made through a permitting process where proponents were expected to avoid and/or minimize impacts to wetland features or provide compensation for any losses. By 1988, a policy of no net loss of wetland values or functions was adopted where ‘like-kind’ replacement and ‘functional’ replacement of those values were emphasized as opposed to size.