



GUIDING SOLUTIONS IN THE
NATURAL ENVIRONMENT

Scoped Environmental Impact Study Meaford Highlands Resort Meaford, Ontario

Prepared For:

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Date: *Project:*

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Table of Contents

	page
1. Introduction	4
2. Policy Context	6
2.1 Provincial Policy Statement	6
2.2 County of Grey Official Plan	7
2.3 County of Grey – Official Pan Amendment 80 (OPA 80).....	7
2.4 Municipality of Meaford Official Plan	8
2.5 Grey Sauble Conservation Authority Regulations and Policies	8
3. Methodology.....	9
3.1 Background Review.....	9
3.2 Field Investigations.....	9
3.2.1 Vegetation Surveys	10
3.2.2 Amphibian Surveys	10
3.2.3 Breeding Bird Surveys	10
3.2.4 Reptiles	11
3.2.5 Aquatic Habitat Assessment	11
3.3 Natural Heritage Assessment	11
3.4 Constraint Analysis.....	11
3.5 Impact Assessment	13
4. Findings	13
4.1 Landscape Context.....	13
4.2 Physical Resources	13
4.2.1 Bedrock Geology.....	13
4.2.2 Surficial Geology	14
4.2.3 Soils.....	14
4.2.4 Hydrogeology	14
4.2.5 Hydrology	14
4.3 Biological Resources	14
4.3.1 Vegetation Communities	14
4.3.2 Flora	15
4.3.3 Amphibians.....	15
4.3.4 Reptiles	16
4.3.5 Mammals.....	16
4.3.6 Breeding Birds.....	16
4.3.7 Significant Wildlife	16
4.3.8 Aquatic Habitat Assessment	17
4.4 Landscape Connectivity.....	17
5. Natural Heritage Assessment.....	17
5.1 Significant Wetlands	17
5.2 Significant Habitat for Threatened and Endangered Species	18

5.3	Significant Areas of Natural and Scientific Interest (ANSI)	18
5.4	Fish Habitat	18
5.5	Significant Woodlands	18
5.6	Significant Valleylands	19
5.7	Significant Wildlife Habitat	19
6.	Constraints & Opportunities	21
7.	Description of the Proposed Development	23
7.1	Development Proposal	23
7.2	Storm Water Management	25
8.	Impact Assessment and Proposed Mitigation	25
9.	Policy Conformity Assessment	29
10.	Conclusions	31
11.	Literature Cited	34

Figures

Figure 1. Site Location.....	5
Figure 2. Existing Conditions	20
Figure 3. Preliminary Constraints Analysis.....	22
Figure 4. Preliminary Development Concept Plan.....	24

Tables

Table 1. Summary of Field Investigations	10
Table 2. NHIC Records of Species of Conservation Concern in Vicinity of Study Area.....	16
Table 3. Area of Proposed Land Uses	23
Table 4. Impact Assessment Matrix	26
Table 5. Conformity to Applicable Policies and Legislation related to Natural Heritage	29

Appendices

Appendix A. EIS Terms of Reference

1. Introduction

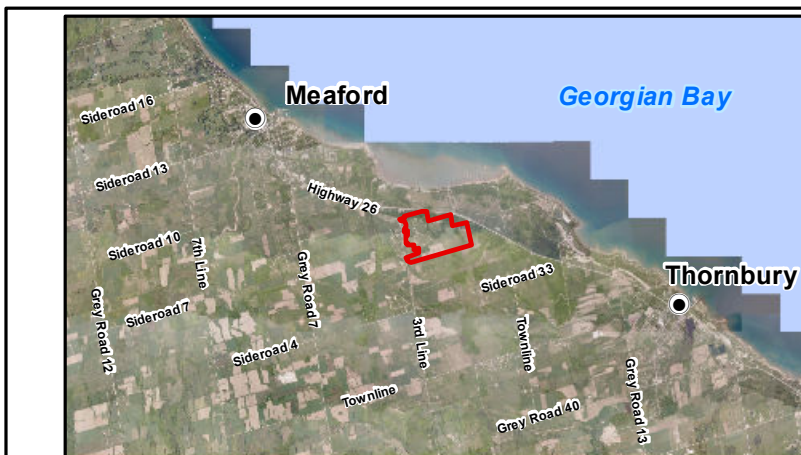
Beacon Environmental was retained by Meaford A2A Developments Inc. to prepare a Scoped Environmental Impact Study (EIS) for a 154.76 ha parcel of land located east of 3rd line and south of Hwy 26 in the southeastern corner of the Municipality of Meaford, Ontario. The legal description for the subject property is part of Lots 9 and 10, Concessions 1 and 2, Municipality of Meaford, Grey County. The southern portion of the subject lands (south of the unopened road allowance for the 10th Sideroad) lies outside the town limits (**Figure 1**). The lands will hereafter be referred to as the subject property.

The subject property is generally characterized as an agricultural landscape, with cultivated and idle fields covering most of the southern and central portions of the site. This tableland slopes from south to north towards Georgian Bay, with a fall of about 30 m from its southern limit to the edge of a steep shorecliff bluff, the base of which abuts Highway 26. This bluff, which for the most part is densely wooded, marks the old shoreline of glacial Lake Algonquin (now Georgian Bay). Several deeply incised gullies cut down the face of the bluff and contain watercourses that originate in the southern agricultural field portion of the study area.

The applicant is proposing to develop the site and create a fully integrated mix of resort, residential and commercial land uses that will incorporate best practices for sustainable development. Approximately one half of the property will be developed. The remainder will remain open space, consisting of golf course, parkland and environmental areas.

This Scoped EIS has been prepared to satisfy the environmental policies of the Grey County and Municipality of Meaford Official Plans as well as the Grey Sauble Conservation Authority (GSCA) regulations.

Terms of Reference were prepared for this EIS and were approved by the GSCA on March 9, 2012. A copy of the EIS TOR is included in **Appendix A**.



Site Location

Figure 1

Meaford A2A Developments Inc.

First Base Solutions
Web Mapping Service

UTM Zone 17 N, NAD 83

0 125 250 500 Meters



1:15,000



2. Policy Context

This section provides an overview of the applicable policies at the provincial, regional and local jurisdictional levels. An analysis of the conformity of this project to these policies is provided in **Section 8**.

2.1 Provincial Policy Statement

The proposed development is subject to the Provincial Policy Statement (PPS) (MMAH 2005) issued under Section 3.0 of the Planning Act. Decisions concerning planning matters must be consistent with the policy statements issued under the PPS. Section 2.1 of the PPS provides direction to regional and local municipalities regarding planning policies related to the protection of natural heritage resources. The PPS includes policies that address the following natural heritage system components: habitat of endangered and threatened species, wetlands, woodlands, valleylands, wildlife habitat, Areas of Natural and Scientific Interest (ANSI), and fish habitat.

Under Section 2.1 of the PPS, no development and site alteration is permitted within:

- a) significant habitat of endangered and threatened species;
- b) significant wetlands south of the Canadian Shield; and
- c) significant coastal wetlands

For the remaining features, listed below:

- a) Significant wetlands north of the Canadian Shield;
- b) Significant woodlands south and east of the Canadian Shield;
- c) Significant valleylands south and east of the Canadian Shield;
- d) Significant wildlife habitat; and
- e) Significant Areas of Natural and Scientific Interest (ANSI's)

Development and site alteration is not permitted within the features listed above unless it has been demonstrated (typically through an Environmental Impact Study or a comparable technical study) that there will be no negative impacts on the natural features or their ecological functions. Furthermore, consistent with Policy 2.1.6 of the PPS (2005), no development is permitted within 50 m of a significant woodland, significant valleyland or fish habitat unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

The PPS also states that development and site alteration are not permitted in fish habitat except in accordance with provincial and federal requirements.

Some of these features (i.e., provincially significant wetlands and ANSIs) are identified by the Ontario Ministry of Natural Resources (OMNR), while others are to be identified by the local area municipalities or planning authorities (i.e., significant woodlands, significant valleylands, significant wildlife habitat). Threatened and endangered species are designated at the provincial level, but their

habitat is typically not identified or verified until the site-specific level, and if present then confirmed by OMNR. It is expected that even where features have been identified at the provincial, regional or local levels that verification and some level of refinement will be required at the site-specific basis.

2.2 County of Grey Official Plan

The County of Grey Official Plan (Monteith Zelinka Priamo Ltd. 2000) was adopted by Council on May 6th, 1997, approved by the Ministry of Municipal Affairs on March 5th, 1998 and approved by the Ontario Municipal Board on August 16th and 30th, 2000.

Schedule A – Land Use Designations (Map 2 – Northeast Quadrant) of the Official Plan shows the open agricultural land in a Rural designation, with the major watercourse features and the shorecliff along the north side of the study area designated Hazard Lands. Policy 2.8.2 (1) defines Hazard Lands as “those lands having inherent environmental hazards such as flood susceptibility, erosion susceptibility, and dynamic beach hazards, and hazardous sites that exhibit instability, or poor drainage, or any other physical condition which is severe enough to pose a risk for the occupant, property damage or social disruption if developed” (p. 39).

In this case, the shorecliff and some watercourse segments have been identified as Hazard Lands by virtue of their erosion instability or flood (and possibly erosion) susceptibility.

Generally, no buildings or structures are permitted within the Hazard Land Designation, although exceptions are made for non-habitable buildings connected with public parks (e.g., picnic shelters). No development or site alteration is permitted within the floodplain of a watercourse.

Appendix A – Constraint Mapping (Map 2 – Northeast Quadrant) of the County Official Plan does not identify the shorecliff as a constraint, but does assign this label to the watercourse that crosses through the extreme southwest corner of the study area (Lot 9, Concession 2). The entire tableland portion is identified as a Special Policy Area due to the presence of shallow (generally less than 1.0 m) overburden with karst topography (fractured/fissured limestone bedrock with the potential for caves, sinkholes and springs).

Under Section 2.8.4 of the Official Plan, the proponent of any planning application in a Special Policy Area is required to prepare an EIS. Since the depiction of the Special Study Area on Map 2 (Appendix A of the County OP) is acknowledged to be very general, the initial objective of the EIS is to determine if, in fact, karst conditions exist within the study area. This involves the digging of test pits to investigate the depth of the overburden and the presence of bedrock at shallow depths. If karst conditions are present, the EIS will assess the potential impacts of the proposed development on surface and groundwater resources and recommend appropriate mitigation. The EIS shall be to the satisfaction of the County of Grey and the Municipality of Meaford. It should be noted that Karst Solutions (2010) did not identify karstic features on the site based on their preliminary review of the site geology.

2.3 County of Grey – Official Plan Amendment 80 (OPA 80)

The County of Grey has recently made amendments to its current Official Plan. County Council adopted Official Plan Amendment No. 80 (OPA 80) on March 3, 2009 and the Ministry of Municipal Affairs and Housing (MMAH) subsequently approved OPA 80 with modifications on February 14,

2011. OPA 80 has been appealed to the Ontario Municipal Board (OMB). Although not in force, OPA 80 proposes a new Section 2.8.4 to the Grey County Plan regarding Significant Woodlands, which are shown on Appendix B to the Plan. OPA 80 defines significant woodlands as woodlands that are greater than or equal to 40 hectares in size outside of settlement areas or greater than or equal to 4 hectares in size within settlement area boundaries. In addition, woodlands can also be considered significant if they meet any two of the following criteria:

- Woodlands of any size situated within 30 m of a significant woodland;
- Woodlands of any size that overlap with other recognized natural heritage features;
- Woodlands containing interior habitat of greater than or equal to 8 hectares with a 100 metre interior buffer on all sides.

2.4 Municipality of Meaford Official Plan

The Municipality of Meaford Official Plan was approved and modified by the County of Grey on December 15th, 2005. On the Land Use Schedule (Schedule A-1) of the Meaford Official Plan, the shorecliff and major watercourse features are designated Environmental Protection. These designations extend to the south onto that portion of the study area that falls outside the Town of Meaford “urban” boundary (Schedule B – Environmental and Resource Features). The area of “Karst Topography” is also identified, consistent with that shown on Appendix A (Map 2) of the County Official Plan.

Section B3.1.2 of the Meaford Official Plan defines the Environmental Protection designation as including any of the following components that comprise the Municipality’s Natural Heritage System:

- All wetlands evaluated by the Ministry of Natural Resources;
- Provincially Significant Areas of Natural and Scientific Interest (ANSIs);
- Floodplains;
- Hazardous slopes;
- Significant wildlife habitat and wildlife core areas;
- Significant portions of habitat of endangered, threatened or vulnerable species; and
- Any other areas that have been determined to be environmentally significant as a result of a development review process or detailed land use study, such as a Secondary Plan.

No buildings or structures are permitted within the Environmental Protection designated areas, nor is any site alteration, as defined by the PPS (MMAH 2005), permitted. Permitted uses on lands designated Environmental Protection are limited to conservation and passive recreational uses.

2.5 Grey Sauble Conservation Authority Regulations and Policies

The Grey Sauble Conservation Authority (GSCA) regulates hazard lands, including streams, valleylands, shorelines, and wetlands, under Ontario Regulation 151/06 (GSCA 2006). No development is permitted within valleys, wetlands or hazard lands and a permit is required from GSCA before any development located within 15 m of a watercourse, as well as within 120 m of all Provincially Significant Wetlands (PSWs), or within 30 m of any other wetlands can occur. An EIS is typically required in support of a permit application.

Generally, development within the flood limits of a watercourse is also not allowed. However, subject to conformity with the applicable Official Plans and the completion of appropriate studies and Conservation Authority permits, development may be permitted within the regulated area. However, GSCA generally requires that all watercourses remain in their natural state and that they be protected from adjacent development by a vegetative buffer that will be measured from the annual high water mark.

3. Methodology

Information about the natural heritage features on the subject property was gathered through a combination of background review of existing documents and field investigations.

3.1 Background Review

Background information was gathered and reviewed at the outset of the project. This included checking the Ontario Ministry of Natural Resources' Natural Heritage Information Centre on-line database for records of species of conservation concern on or adjacent to the study area. Other sources of information, such as the regulation mapping of the Grey-Sauble Conservation Authority, colour aerial photography and topographic maps, were also consulted prior to commencing field work.

The following information sources were reviewed to obtain background planning policy information and natural heritage data for the study area:

- Natural Heritage Information Centre (NHIC) Database
- Consultation with GSCA ecologists
- Ontario Breeding Bird Atlas
- historic and current aerial photography
- topographic mapping
- landform/physiography reports and mapping
- soil reports and mapping
- hydrogeological investigations
- natural heritage resources mapping
- MNR/GSCA fisheries data
- Karst Investigation (Karst Solutions 2012)
- Functional Servicing Plan (Cole Engineering 2012)
- Geotechnical Investigation (Terraprobe 2012)

3.2 Field Investigations

A number of ecological surveys were completed on the subject property and environs to obtain information on the subject property's natural heritage resources, identify and characterize natural heritage features, and establish limits to the proposed development. A summary of site visitations is provided in **Table 1**.

Table 1. Summary of Field Investigations

General Site Reconnaissance	October 26, 2010; December 13, 2011
Amphibian Surveys	April 10, 2012; May 22, 2012
Vegetation Communities and Flora	March 19, 2012; May 22, 2012; Summer 2012 surveys pending
Breeding Bird Surveys	Pending: May – June 2012
Stick Nest Survey	March 19, 2012
Aquatic Survey	Pending – Spring 2012

3.2.1 Vegetation Surveys

Vegetation resources on the subject property were documented by Beacon Environmental ecologists on March 19, April 10 and May 22, 2012. Vegetation communities were mapped and described according to the Ecological Land Classification (ELC) system for Southern Ontario (Lee *et al.*, 1998). Additional vegetation surveys are scheduled for summer to supplement the species checklist for the property. This information will be used to describe the vegetation communities and confirm the presence of any populations of significant plant species.

3.2.2 Amphibian Surveys

There are several wetland and aquatic features on the subject property that could potentially support breeding habitat for local amphibian populations. To verify the extent to which these features support amphibian breeding functions, we conducted nocturnal call surveys according to Marsh Monitoring Program Protocols (Bird Studies Canada). Three rounds of surveys were proposed to capture early and late breeding species. Surveys were conducted after dusk during appropriate weather conditions. Amphibians were identified by species and their calling levels recorded.

The first round of nocturnal call surveys was completed on April 10, 2012 to coincide with the breeding periods of Wood Frog (*Rana sylvatica*), Northern Spring Peeper (*Pseudacris crucifer*) and Western Chorus Frog (*Pseudacris triseriata*). The second round was conducted on May 22, 2012 to coincide with the breeding period of American Toad (*Bufo americana*) and Gray Treefrog (*Hyla versicolor*). The EIS terms of reference suggest a third survey be completed in early to mid-June to document later breeding species; however, we intend to confirm with GSCA if this third survey is necessary based on the observations to date.

It should also be noted that calling amphibians were also recorded during the daytime visits on March 19 and May 22, 2012, while conducting Stick Nest and ELC surveys.

3.2.3 Breeding Bird Surveys

The site supports a variety of habitat types for breeding birds. To confirm the composition of the avian communities associated with the site and to also confirm the presence/absence of habitat for significant species (i.e. SAR and Species of Conservation Concern), we propose to survey the site

twice during the breeding season. Early morning surveys will be initiated in late May 2012 under favourable weather conditions to optimize detection. The surveys will involve walking transects to ensure adequate coverage of the entire site. Species occurrences detected either visually or aurally will be documented. The location and observation details for confirmed or probable breeding species will also be recorded. This information will help determine whether the subject property supports habitat for any significant species that may present a constraint to the proposed development.

3.2.4 Reptiles

Reptiles were noted incidentally during other survey visits. When suitable cover objects such as logs, rocks and refuse piles were encountered, efforts were made to search for snakes. Pond habitats were surveyed for basking turtles from a distance using binoculars.

3.2.5 Aquatic Habitat Assessment

All aquatic features were assessed in terms of their flow and habitat characteristics, as well as their potential to support fish populations.

3.3 Natural Heritage Assessment

As discussed in **Section 2**, the PPS includes policies regarding the protection of natural heritage systems and their component features. These include:

- significant habitat of endangered and threatened species
- significant wetlands
- significant woodlands
- significant valleylands
- significant wildlife habitat
- significant Areas of Natural and Scientific Interest (ANSI)
- fish habitat

The findings of the background review and field investigations have been used to confirm whether the subject property supports any of the natural heritage components recognized under the PPS. Where information is lacking, the Natural Heritage Reference Manual (MNR 2011) was consulted to assist in with confirmation. A conservative approach was used for the evaluation.

3.4 Constraint Analysis

To assist in establishing ecologically appropriate limits to the proposed development, a constraint analysis was undertaken to identify environmentally sensitive features and their priority for conservation. The constraint analysis was applied to a combination of physical features (landforms such as bluffs, well defined valleys, and watercourses) as well as biological features (vegetation, fish and wildlife habitat) to assist with the spatial identification of potentially sensitive natural heritage features.

It should be noted that Beacon Environmental has identified valleyland limits on a preliminary basis as part of the constraint analysis. These features will also be evaluated from a geomorphological and

geothechnical perspective by Terraprobe who may identify additional constraints such as setbacks to hazard lands such as slopes.

Similarly, Beacon Environmental has identified watercourses as permanent, intermittent and ephemeral to identify constraints on a preliminary basis. The findings of a more detailed assessment of the watercourse is presently under review

The following section describes the criteria used to constraint categories to the various natural heritage features on the subject property. The constraint ratings are intended to inform the plan and its design by directing development to areas of low to moderate constraint. The assignment of a high constraint rating to a particular feature does not necessarily preclude development within the identified feature, but it does suggest that there will need to be additional considerations to the design to ensure any potential impacts can be mitigated.

Low Constraint Areas:

A low constraint rating was assigned to features that support diminished levels of ecological functions and do not contribute significantly to the natural heritage system. Such features typically have been degraded by past or ongoing land uses and/or activities and would require intensive management to restore and enhance them to a natural state that would contribute significantly to the natural heritage system. The ecological functions of such features can generally be replicated by incorporating Best Management Practices (BMP's) into the development. Development can generally occur in such areas without mitigation and/or compensation.

On the subject property, a low constraint rating has been assigned to areas supporting non-natural vegetation communities that are not associated with bluffs, defined valleys, intermittent and permanent watercourses or floodplains.

Moderate Constraint Areas:

A moderate constraint rating was been assigned to features that support a moderate level of ecological function and contribute functionally to the natural heritage system. Such features that exhibit a moderate set of ecological functions (habitat, water quality improvement, linkages) and likely have been partially impaired due to land uses and/or activities. Moderate constraint features generally provide supportive functions to the natural heritage system and require minimal management to restore and enhance. The integration and enhancement of moderate constraint features is encouraged. Where integration of these features within the development is not feasible, restoration and enhancement of other features should be considered to achieve a functional net gain.

On the subject property, a moderate constraint rating has been assigned to areas supporting natural and non-natural vegetation communities that are situated adjacent to bluffs, defined valleys, intermittent and permanent watercourses or floodplains.

High Constraint Areas:

A high constraint rating was been assigned to features that support a high level of ecological function and are integral to the natural heritage system. Such features that exhibit a high level of ecological functions (habitat, water quality improvement, linkages) and often supporting rare species (e.g., Species at Risk) and/or specialized vegetation and habitat cover. High constraint features generally

require protection and minimal management. High constraint features are typically regulated and protected by provincial, municipal, and regional policies. On the subject property, a high constraint rating has been assigned to high quality natural vegetation features, or lands that include bluffs, defined valleys, intermittent and permanent watercourses or floodplains.

Development is generally discouraged within high constraint features unless it can be demonstrated that the features and functions can be maintained without adversely impacting upon them. For example, road crossings of high constraint features may be possible, provided appropriate mitigation measures are applied. Also, some land uses such as stormwater management ponds and open space (i.e. golf course) may be complimentary to the high constraint feature provided that they can be designed to enhance the feature.

3.5 Impact Assessment

To assess potential impacts associated with the various components of the proposed development and to evaluate their effect on the physical and biological environment, an impact assessment matrix will be developed. The impact assessment matrix describes potential impacts of the development on the natural heritage features by identifying the development activity, mitigation requirements, the net impact and any additional monitoring or management needs. It should be noted that the impact assessment matrix has been completed on a preliminary basis as there is additional information pending from the field surveys and findings of other studies.

4. Findings

4.1 Landscape Context

The subject property is situated on the shale plains of the Beaver Valley physiographic region, within the Nottawassaga Bay watershed. The property is situated about 1 km south of Georgian Bay in a predominantly rural area. Agricultural lands and a small low density residential area lie to the west of the property. The property is bounded to the north by steep forested bluffs, which descend to Hwy 26. The bluffs extend beyond the property to the east and west. Agricultural lands and woodlands lie to the south and east.

There are seven watercourses on the subject property. Three of the watercourses flow west into Workman's Creek located approx 0.6 km west of the property, which flows north and enters Nottawasaga Bay approximately 1.5 km northwest of the subject property. The four remaining watercourses flow directly into Nottawassaga Bay approximately 1 km north of the property.

4.2 Physical Resources

4.2.1 Bedrock Geology

Bedrock geology mapping indicates that most of the property is underlain by the Queenston Formation with the northern edge of the property and lower bluff being underlain by the Georgian Bay Formation. The contact elevation between the two units is approximately 310 m a.s.l. Both formations

consist primarily of shale but also contain thin interbeds of siltstone, sandstone and limestone. Ontario Geological Survey drilling evidence (Armstrong and Sergerie 2002), identified the Queenston Formation as consisting primarily of shale with minor siltstone interbeds, and the Georgian Bay Formation to consist of shale with thin interbeds of siltstone, sandstone and limestone. While limestone interbeds were observed in the Georgian Bay Formation which may be susceptible to karstification, the beds are generally thin and separated by relatively thick intervals of low-permeability shale.

For additional information, please refer to the letter report prepared by Karst Solutions (2010).

4.2.2 Surficial Geology

Chapman and Putnam (1984) characterize the surficial geology of the study area as a shale plain with an adjacent shore bluff. Armstrong and Sergerie (2002) and Armstrong (2001) report that the bedrock is overlain by a thin (less than 1 m thick) layer of glacial drift.

4.2.3 Soils

According to Gillespie and Richards (1954), the bluffs along the northern portion of the subject property consist of Vincent Silty Clay Loam – Eroded Phase, which developed on fine textured greyish brown till. The eroded phase of the Vincent soils occurs mainly along the steep slopes of the Beaver Valley. The tableland of the subject property consists of Dunedin Clay, which developed on residual red shale of the Queenston formation. This soil is shallow; relatively well-drained is highly susceptible to erosion.

4.2.4 Hydrogeology

A detailed survey of the watercourses on the subject property will be completed this spring.

4.2.5 Hydrology

There are seven watercourses that originate on or pass through the subject property. These have been numbered for the purposes of this assessment as shown on **Figure 2**. During visits to the property, many of the watercourses were observed to have flowing water, suggesting that flow regimes are intermittent.

Additional discussion on the flow regimes and hydrology of the watercourses is provided in **Section 4.3.8**.

4.3 Biological Resources

4.3.1 Vegetation Communities

The vegetation resources on the property have been largely influenced and modified by agricultural activities. Much of the subject property consists of old field meadow and thickets (Units 1 and 3) and cultural/successional woodlands and savannahs (Unit 2). The cultural woodlands and thickets are comprised predominantly of Common Buckthorn (*Rhamnus cathartica*), apple (*Malus pumila*), Green Ash (*Fraxinus pennsylvanica*), and White Elm (*Ulmus americana*). A sizeable area of the property still

used as crop and pasture land (Unit 18). The locations of individual vegetation units are illustrated on **Figure 2**.

Much of the tree cover in the valleylands and on adjacent tablelands consists of conifer plantation (Unit 5a-5g). Plantation species include Eastern White Cedar (*Thuja occidentalis*), White Pine (*Pinus strobus*), Red Pine (*P. resinosa*), Scots Pine (*P. sylvestris*), White Spruce (*Picea glauca*), Norway Spruce (*P. abies*), Tamarack (*Larix laricina*) and European Larch (*L. decidua*).

The forested valley along the length of Watercourse #5 (Unit 10) is an intact, mid-aged to mature hardwood forest consisting of Ironwood (*Ostrya virginiana*) and White Ash (*Fraxinus americana*), with Sugar Maple (*Acer saccharum*), Red Oak (*Quercus rubra*), American Beech (*Fagus grandifolia*) and Eastern Hemlock (*Tsuga canadensis*). Much of this forest has been degraded by cattle grazing.

Two smaller forested communities are represented by Units 11 and 12. Unit 11 is a small deciduous forest path that is connected to a larger forest block south of the property. Sugar Maple and Green Ash are the dominant trees in the area. Unit 12 is a small patch of Sugar Maple forest situated along Watercourse 6.

The bluffs at the north end of the property are also forested, consisting primarily of deciduous forest comprised of White Birch (*Betula papyrifera*), Trembling Aspen (*Populus tremuloides*), and Green Ash (Unit 8). The bluffs also support patches of coniferous forests dominated by White Cedar (Unit 9). There are also several large open areas on the bluff that are actively eroding and support little tree or vegetation cover (Unit 7).

There are several small non-evaluated wetland features associated with the property's surface drainage features. Unit 13 is a narrow band of White Elm swamp situated along Watercourse 2. Unit 19 is a narrow band of Reed Canary Grass situated along Watercourse 7. Unit 15 is a small cattail marsh situated along Watercourse 3-1. A small patch of Red-osier Dogwood (*Cornus sericea*) (Unit 14) occurs along Watercourse 3-2. There are also two small on-line ponds on the property (Unit 16a and 16b), which are situated on Watercourse 3 and 5.

4.3.2 Flora

A preliminary checklist of vascular plants has been prepared for the site. A more comprehensive checklist will be prepared following summer season surveys and included as an Appendix. None of the species observed to date are Species at Risk or considered significant at the County level.

4.3.3 Amphibians

Exceptionally mild weather conditions in early 2012 resulted in amphibians calling at least one month earlier than normal. To capitalize on detecting early calling species, a daytime survey was completed on March 19, 2012 during warm conditions at a time when amphibians were audible from the surrounding landscape. Numerous full choruses of Chorus Frog were heard from adjacent properties at the base of the bluff, and in wetlands north of Highway 26, however no calling amphibians were detected from the subject property. Green Frogs were visually observed in ponds associated with ELC units 16a and 16b.

Nocturnal call surveys were conducted on April 10 and May 22, 2012. All potential breeding sites on the subject property were assessed. No calling amphibians were detected from the subject property on April 10.

On May 22, two (2) Grey Tree Frogs and two (2) Green Frogs were heard calling from ELC unit 16a. Two Spring Peepers were heard calling from ELC unit 16b. Numerous Spring Peepers and Grey Tree frogs were heard calling north of the property beyond the shorecliff/bluffs. Spring Peepers were also calling from a pond situated off the subject property to the west. In addition, two Green Frogs were seen (not heard) in a pool situation on a drainage features adjacent to ELC unit 2c.

4.3.4 Reptiles

To date, no reptiles have been observed on the property.

4.3.5 Mammals

To date, incidental wildlife observations included White-tailed Deer, Coyote, Raccoon, Grey Squirrel and Red Squirrel.

4.3.6 Breeding Birds

The results of the breeding bird surveys are pending.

4.3.7 Significant Wildlife

A review of the MNR's Natural Heritage Information Centre database revealed historical records of seven sensitive species (**Table 2**) from a 1 km² of the subject property.

Table 2. NHIC Records of Species of Conservation Concern in Vicinity of Study Area

Common Name	Scientific Name	S-Rank	COSEWIC Status	COSSARO Status	Last NHIC Record
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	S3?			24/12/1939
Milksnake	<i>Lampropeltis triangulum</i>	S3	SC	SC	01/06/1940
Eastern Ribbon Snake	<i>Thamnophis sauritus</i>	S3	SC	SC	07/09/1938
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	S3	THR	THR	1975
Shrubby St. John'swort	<i>Hypericum prolificum</i>	S2			19/08/1943
Scarlet Beebalm	<i>Monarda didyma</i>	S3			201/07/1942
Smith's Bulrush	<i>Scoenoplectus smithi</i>	S3			19/08/1943

COSEWIC = Committee on the Status of Endangered Wildlife in Canada

COSSARO = Committee on the Status of Species at Risk in Ontario

END = Endangered, **THR** = Threatened, **SC** = Special Concern

S-RANK (Provincial status from NHIC): S1 (extremely rare), S2 (very rare), S3 (rare to uncommon), S4 (common), S5 (very common) and SE (exotic, i.e., introduced)

Three of these species, all snakes, are considered Species at Risk in Ontario. Eastern Ribbon Snake (*Thamnophis sauritus*) and Milksnake (*Lampropeltis triangulum*) are Special Concern and Massasauga Rattlesnake (*Sistrurus catenatus*) is designated as Threatened. The precise locations for these records are deliberately not provided by NHIC so as to protect the species; therefore, these

records may not correspond with the subject property itself, although given the habitat requirements of these snakes they are likely associated with the shorecliff environment.

Furthermore, all three of these records are historical. The last known observation of a Massasauga Rattlesnake from this area dates from 1975, while the Eastern Ribbonsnake and Milksnake were last reported in 1938 and 1940, respectively. Therefore, the likelihood of these species occurring in the study area is low, particularly the Massasauga Rattlesnake, whose range in this part of Ontario is now restricted to the eastern shore of Georgian Bay and the Bruce Peninsula.

The four other species listed in **Table 2**, include three plant species and one mammal species, which are ranked as S2 or S3 in Ontario, meaning that they are rare, but not subject to either the *Endangered Species Act, 2007* or the PPS. As with the Milksnake and Eastern Ribbon Snake discussed above, all of these records date from the 1930s and 1940s. Furthermore, two of the three plant species are typically associated with shorelines and wet areas and were likely recorded along the shoreline of Nottawasaga Bay. It is improbable that these species would occur on the subject property due to lack of suitable habitat.

4.3.8 Aquatic Habitat Assessment

Aquatic habitats on the site are limited to the seven watercourse and several cattle ponds. Most of the watercourses are ephemeral to intermittent in character. With the exception of watercourses that traverse agricultural lands, most have some riparian cover associated with them. The findings of a more detailed assessment of aquatic habitats will be included as an addendum to this EIS.

4.4 Landscape Connectivity

The subject property contains portions of forested shorecliff habitat that extend off-site to both the east and the west of the study area. These forested bluffs function as a regionally significant corridor for wildlife. There are a number of valley features extending inland across the property that provide secondary connection to the regional corridor. Most of these valley features are relatively short and do not connect to natural areas further inland. As such, their connectivity functions are limited to supporting the primary corridor along the bluff. The eastern most valley feature associated with Watercourse 5 is the exception. It is forested and connects to a larger woodland block to the south of the subject property. As such, it provides for local scale connectivity between the forested habitats on the bluff and the large inland forest patch. While the valley supports native forest communities, it has been severely degraded by pasturing which had removed the understory vegetation and compacted the forest soils.

5. Natural Heritage Assessment

5.1 Significant Wetlands

Provincially Significant Wetlands (PSW) are identified and mapped by MNR. A review of the MNR databases indicates there are no PSW's on the or in the vicinity of the property. The property does

contain several very small wetland features, which are too small to be evaluated under the Ontario Wetland Evaluation System (OWES).

5.2 Significant Habitat for Threatened and Endangered Species

No threatened or endangered species have been observed on the subject property to date; however, additional field investigations are required including a breeding bird survey and a flora inventory in order to determine if the property supports habitat for threatened and endangered species.

5.3 Significant Areas of Natural and Scientific Interest (ANSI)

Provincially significant ANSIs are identified by MNR. There are no ANSIs on or in proximity to the subject property. There is an earth science ANSI (East Meaford Creek Shales) situated along a valley approximately 1 km to the west of the subject property.

5.4 Fish Habitat

To date, no fish were observed in any of the watercourses on the property; however, the physical attributes of several of the watercourses (i.e. ample water and a defined bed and bank with some riparian cover) suggest that they have the potential to provide fish habitat, although these reaches would likely be restricted to the flatter, tableland portions of the property. The gradient down the shorecliff at the north end of the property is far too steep for fish originating in Nottawasaga Bay to move upstream much beyond Highway 26; however, fish could potentially migrate down slope from the property, but would be unable to return.

An assessment of fish habitat will be conducted in spring 2012.

5.5 Significant Woodlands

The identification of significant woodlands is the responsibility of planning authorities. The Natural Heritage Reference Manual (NRHM) (MNR 2010) provides criteria and guidance for municipalities to identify significant woodlands. Criteria for assessing the significance of woodlands include size, woodland interior habitat, proximity to other woodlands, linkages, water protection, diversity, unique characteristics, and economic and social values. Neither the Municipality of Meaford nor the County of Grey have identified significant woodlands in their current planning documents.

Criteria for significant woodlands are however included in OPA 80, which is presently not “in-force”. Under OPA 80, all woodlands greater than 4 ha inside the settlement area, or 40 ha outside of the settlement area, are considered to be significant. Additionally, woodlands that satisfy two or more of the following criteria could also be considered significant:

- a) a woodland is within 30 metres of another significant woodland, or
- b) it overlaps with other natural heritage features (PSW, ANSI), or
- c) it contains Interior habitat of greater than or equal to eight (8) hectares with a 100 metre interior buffer on all sides.

The site support several woodland features. These are associated primarily with the shorecliff bluff and valley features. For the purpose of the impact assessment, we have assumed that the naturally forested portions of the property could satisfy the significance criteria of the NHRM and have assigned these woodlands a high constraint rating. Plantations and cultural woodlands however have been excluded, unless they are associated with other high constraint features. If OPA 80 criteria would be applied, then any wooded areas overlapping with significant valleylands would also qualify, irrespective of whether the area is plantation or not. Irrespectively, any woodlands that could potentially qualify as significant are identified as high constraint features (**Figure 3**).

5.6 Significant Valleylands

As with woodlands, the identification of significant valleylands is the responsibility of planning authorities. The NHRM outlines criteria to assist municipalities in identifying significant valleylands, including surface and groundwater functions, landform prominence, distinctive landforms, degree of naturalness, diversity, unique communities and species, habitat value, linkage function, and restoration potential.

It is our understanding that neither the Municipality of Meaford nor the County of Grey have undertaken an exercise to identify significant valleylands; however, the GSCA regulates all hazard lands, including valleylands, and these features have been mapped on the property (**Figure 2**). For the purpose of the study, rather than assess the valleylands on the property specifically according to the NHRM criteria, the hazard lands on the subject property, which includes the valleylands and areas of slope instability, were mapped as high constraint features. The development limit will be determined through the application of the stability, erosion and weathering, and access allowance setback as determined by TerraProbe. Where natural features overlap with the geotechnical setback, the greater setback will be applied to determine the limit of development.

5.7 Significant Wildlife Habitat

According to the NHRM, there are four categories of significant wildlife habitat, which include:

1. Habitats of seasonal concentrations of animals
2. Rare vegetation communities or specialized habitat for wildlife
3. Habitat for species of conservation concern
4. Animal movement corridors

Neither the Town of Meaford nor the County of Grey have identified significant wildlife habitat on the subject property. Based the background review and field investigations conducted to date, there are no habitats of seasonal concentrations of animals, rare vegetation communities, specialized habitats, or habitat for species of conservation concern on the subject property. These are preliminary findings as breeding bird surveys, additional amphibian surveys, and flora surveys are still required. As discussed in **Section 5**, the forested bluffs and the riparian corridors on the property may qualify as an animal movement corridor and could be recognized as significant wildlife habitat.



Existing
Conditions

Figure 2

Meaford A2A Developments Inc.

Legend

- Subject Property
- ELC Communities
- Watercourse

Unit	Ecosite/Vegetation Type	ELC Code
1	Dry-Moist Old Field Meadow/Cultural Thicket	CUM1-1/CUT1
2	Cultural Woodland/Cultural Savannah	CUW1/CUS1
3	Cultural Thicket	CUT1
4	Hedgerow	H
5	Coniferous Plantation	CUP3
6	Clay Barren	CBO1
7	Open Bluff	BLO
8	Dry-Fresh Poplar-White Birch Deciduous Forest	FOD3
9	Dry-Fresh White Cedar Coniferous Forest	FOC2-2
10	Dry-Fresh Sugar Maple-Ironwood Deciduous Forest	FOD5-4
11	Fresh-Moist Sugar Maple - Ash Deciduous Forest	FOD6-1
12	Fresh-Moist Sugar Maple - Hardwood Deciduous Forest	FOD6-5
13	White Elm Mineral Deciduous Swamp	SWD2-2
14	Red-osier Dogwood Mineral Thicket Swamp	SWT2-2
15	Cattail Mineral Shallow Marsh	MAS2-1
16	Open Water Aquatic	OAO1
17	Unvegetated (dirt and gravel roads)	UV
18	Agricultural fields	AG
19	Reed Canary Grass Mineral Meadow Marsh	MAM2-2

First Base Solutions
Web Mapping Service 2006
MAPCON 2010

UTM Zone 17 N, NAD 83

0 75 150 300 Meters



1:6,500



Project 211348
May 2012

6. Constraints & Opportunities

Natural heritage constraints and opportunities associated with the subject property and environs were identified using information obtained through a review of background resources, technical studies and field investigations. Constraints and opportunities were evaluated using criteria described in **Section 3.4**. The preliminary findings of the constraint analysis are presented below and depicted graphically on **Figure 3**.

Low Constraint Areas:

On the subject property, a low constraint rating has been assigned to areas supporting non-natural vegetation communities that are not associated with bluffs, defined valleys, intermittent and permanent watercourses or floodplains.

Moderate Constraint Areas:

On the subject property, a moderate constraint rating has been assigned to areas supporting natural and non-natural vegetation communities that are situated adjacent to bluffs, defined valleys, intermittent and permanent watercourses or floodplains.

High Constraint Areas:

On the subject property, a high constraint rating has been assigned to high quality natural vegetation features, or lands that include bluffs, defined valleys, intermittent and permanent watercourses or floodplains.

It should be noted that the results of the watercourse and slope stability assessments are not available at this time, and that the constraint ratings assigned to these features may be subject to change.



Constraints

Figure 3

Meaford A2A Developments Inc.

Legend

- Subject Property
- Watercourse
- GSCA Regulated Area

Constraints

- High Constraints
- Medium Constraints
- Low Constraints

First Base Solutions
Web Mapping Service 2006
MAPCON 2010

UTM Zone 17 N, NAD 83

0 75 150 300 Meters



1:6,500



Project 211348
April 2012

7. Description of the Proposed Development

7.1 Development Proposal

The proposed land uses on the subject property include a vacation resort, associated residential development, golf course and open space. The resort portion of the property is comprised of villas, an inn, a retail outlet, an aquatic centre, a wellness centre, and amphitheatre. Residential development on the property is a mixture of single family, semi-detached, and townhouse dwellings. A 9-hole golf course and nine parks are also proposed for the area.

The area of land dedicated the different land uses is shown in **Table 3**.

Table 3. Area of Proposed Land Uses

Land Budget	Hectares
Gross Site Area	153.9
Meaford Highlands Inn (inc. spa, retail, aquatics and wellness centre)	16.5
Low Density Resort Residential (net area, not including roads)	21.57
Resort Residential (net area, not including municipal roads)	24.26
Environmental Area	40.4
Park	5.14
Open Space / Buffer / Trail	1.76
Stormwater Management	6.06
Executive Nine Hole Golf Course (inc. Practice Facility & club house)	19.37
Roads	18.79

A conceptual plan is presented in **Figure 4**.

DEVELOPMENT CONCEPT
MEAFORD HIGHLANDS RESORT

LOTS 9 & 10 3RD LINE
MEAFORD
COUNTY OF GREY



WESTON CONSULTING
GROUP INC.

DEVELOPMENT STATISTICS

RESORT

Meaford Highlands Inn and Villas	16.53 ha
Spa / Retail/ Aquatic & Wellness Centre	
Golf Course and Club House	19.37 ha

RESORT RESIDENTIAL

Low Density Resort Residential	21.57 ha
Resort Residential	24.26 ha
Roads	18.79 ha
Environmental Area	40.42 ha
Open Space / Buffer / Trail	1.76 ha
Park	5.14 ha
Storm Water Management	6.06 ha

TOTAL SITE AREA 153.90 ha

ROAD LENGTH

26m ROW:	985 m
20m ROW:	3,295 m
18m ROW:	4,560 m
14m ROW:	540 m

LEGEND

	Property Boundary
	Meaford Highlands Resort and Villas
	Low Density Resort Residential (21m)
	Low Density Resort Residential (18.3m)
	Resort Residential Single Family (15.2m)
	Resort Residential Single Family (12.2m)
	Resort Residential Semi Detached (9m)
	Resort Residential Townhomes(7m)
	Resort Golf Course
	Environmental - High Constraint Area Source: Beacon Environmental, Nov. 2010
	Environmental - Medium Constraint Area Source: Beacon Environmental, Nov. 2010
	Park / Parkette
	Trail block / Buffer
	Storm Water Management

REVISIONS LIST

2012 APR 11	REVISE NW SWMP, REMOVE CUL-DE-SAC, REMOVE N SWMP.
2012 APR 5	REVISE LOCATION OF AMPHITHEATRE

	WESTON CONSULTING GROUP INC.
Vaughan Office: 201 Millway Avenue, Unit 19, Vaughan, Ontario, L4K 5K8 Phone: (905) 738-8080	Oakville Office: 1660 North Service Road E., Suite 114, Oakville, Ontario, L6H 7G3 Phone: (905) 844-8749
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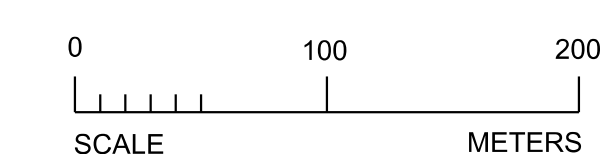
File Number: 5305-1	Date Drawn: 2012 MAR 27	Drawn By: SB	Planner: RG	Scale: see scale bar	CAD: 5305-1/concepts/C10rev for sub Apr 26_12.dgn
					Drawing Number: C10

NOTES:

1. The concept has not been updated based on geotechnical studies, borehole data or hydrogeological information. To be confirmed by a qualified professional.
2. The concept is based on a Karst Assessment completed by Karst Solutions.
3. Concept boundaries and topographic information is based on surveys completed by JD Barnes & Associates.
4. The concept has not been updated with results of any field work and/ or environmental analysis completed by Beacon Environmental in Spring of 2012.
5. Top-of-bank and other environmental constraints boundaries have not been confirmed.
6. Environmental Area boundaries are based on Beacon Environmental Preliminary Environmental Constraints Mapping dated November 2010 and include medium and high constraint areas.
7. Stormwater management pond location and sizing is based on the servicing information prepared by Cole Engineering, dated April 2012.
8. Proposed water supply and sanitary methods are based on servicing information prepared by Cole Engineering, dated April 2012.
9. Permits will be obtained for development on lands that fall within the Regulated Areas of GSCA under O.Reg. 151/06. Based on Environmental Impact Study prepared by Beacon Environmental.
10. Exiting Right-of-way width is assumed to be twice the distance from property line to hard surface centerline as shown on the topographic survey.
11. Areas are approximate between different land uses.



Topo information from survey by J. D. Barnes OLS., dated Nov 4, 2011



7.2 Storm Water Management

The Functional Servicing Report (FSR) for the subject property, prepared by Cole Engineering (2012), proposes that storm water will be managed by a dual drainage system designed to convey flows during major and minor storm events. A network of road side ditches will convey minor storm water runoff with the capacity to convey a 5-year storm event. A major drainage system will convey the 100-year storm event via the road network. Based on Cole Engineering's (2012) calculations, the roads have the capacity to convey the peak flows from a 100-year storm event.

All rooftop drainage will be conveyed to the front of the lots to be intercepted by the roads and roadside ditches. Where development backs on to a watercourse, drainage from the rear lots will be conveyed directly to the watercourse.

Drainage from the roads will be directed to storm water management (SWM) ponds. Four SWM ponds will be created, including three dry ponds and one wet pond. The dry ponds do not contain a permanent pool and provide quantity control only, while the wet pond will provide both quality and quantity control. The quality of the storm water runoff will be managed via a combination of the wet SWM pond and oil/grit separators.

For details regarding grading, servicing refer to the FSR prepared by Cole Engineering (2012).

8. Impact Assessment and Proposed Mitigation

The following section provides a description of impacts anticipated as part of the proposed concept plan and identifies mitigation and compensation measures to be utilized to avoid and minimize effects of the project. As discussed in the preceding section, the proposed development has been designed to limit impacts to natural features by restricting development to portions of the property support features of low and moderate ecological constraint. Areas of high constraint will remain undeveloped and protected.

To assess potential impacts associated with the various components of the proposed development and to evaluate their effect on the physical and biological environment, we have prepared an impact assessment matrix as described in **Section 3.5**. The matrix is presented in **Table 4** and will include a description of the various anticipated impacts by identifying the development activity, mitigation requirements, the net impact and any additional monitoring or management needs.

The Impact Assessment Matrix should be considered preliminary and may change as the results of additional field investigations become available.

Table 4. Impact Assessment Matrix

Environmental Parameter(s)	Development Activity	Potential Impact to Natural Features & Functions	Recommended Mitigation & Enhancement	Residual Effect
PHYSICAL RESOURCES				
Bedrock Geology	Grading and servicing.	Grading and servicing is not anticipated to affect the bedrock resources. Bedrock consists of weathered shale and is generally greater than 3.0 m below ground surface. There may be some areas of the site, depending on final grades, that will require some minor excavation into bedrock; however this will generally be avoided.	None	Neutral
Surficial Geology/ Physiography/ Topography	Grading and servicing.	Due to the rolling topography, grading requirements will be moderate. Finished grades will match existing grades at the limits of development. In areas where grades cannot be matched through slopes, retaining wall will be utilized. Preliminary grading plans suggest that the cutting and filling in the order of 1-2 m will generally be required across much of the property. Maximum cuts will be -10m and will be limited to the northwest corner of the site where road access to 3 rd Line is required.	Match grades at limit is development Restrict grading to areas outside the high constraint natural features	Neutral
Soils	Site preparation and grading.	Site preparation and grading activities will remove existing topsoil resources. This activity will result in the loss of soil resources, soil horizons and soil structure.	<ul style="list-style-type: none"> Stockpile topsoil resources for reuse in post-construction landscaping. Follow best management practices for handling and storing topsoil. Implement sediment and erosion control measures throughout the construction phase to minimize loss of topsoil from erosion. Monitor topsoil stripping and re-application to ensure topsoil resources are conserved. 	Neutral
Water Balance	Grading and development	Site preparation and development of these lands will result in compaction of native soils and will increase the overall imperviousness of the development area, thereby reducing surface water infiltration and increasing runoff which can potentially impact watercourses and other natural features.	<ul style="list-style-type: none"> Any deficits in infiltration can be reduced by incorporating mitigation measures that direct roof runoff towards lawns. Infiltration capacity of soils can be enhanced by increasing topsoil volumes. Refer to FDR (Cole Engineering 2012) for additional details on Low Impact Design (LID) measures and other water balancing recommendations. 	Neutral
Groundwater Flow Patterns	Grading and development	<p>Often, grading and servicing can affect shallow groundwater resources by interfering with natural groundwater flow patterns. Evidence of seepage or discharge conditions on the site was not observed; however could occur in the sand seams.</p> <p>Shallow groundwater flows generally follow the surface topography from high points to low points in the landscape towards the bluff and valleys. Groundwater monitoring by Terraprobe (2012) suggests a downward gradient for the overburden to bedrock based on the differential observed in borehole water level monitors. Evidence of localized artesian conditions was detected in borehole 9.</p> <p>The proposed development should not significantly impact groundwater flow patterns.</p>	Evaluate opportunities to implement LID measures during design. Use trench plugs or anti-seepage collars along installed services.	Neutral
Surface Water Features	Grading and servicing	<p>There are seven watercourses on the subject property. Most of these watercourses are associated with valley systems and will be retained in their current form. Most of the features exhibit ephemeral or intermittent flow regimes and do not support fish habitat. The proposed development has been designed around these features.</p> <p>All watercourses within a defined valley landform are being retained in a natural state under the current proposal. Only portions of the uppermost reaches of drainage features 1, 2, 3-1 and 5 will be affected by development.</p>	<ul style="list-style-type: none"> Maintain pre-development drainage patterns to the extent possible to ensure flow regimes are maintained. 	Neutral
Water Quantity	Servicing and development.	<p>The proposed development will introduce impervious surfaces to the subject property and increase overall runoff volumes to areas that are external to the development.</p> <p>This can potentially increase the quantity of water requiring treatment in the stormwater management facility.</p>	<ul style="list-style-type: none"> The stormwater management facilities have been sized to accommodate runoff from the site as per GSCA requirements. Post development runoff volumes can be reduced by infiltrating clean roof runoff to lawns and other open space areas to retain flows from larger events. Where feasible, post development runoff volumes to natural features should be maintained at pre-development levels. This will help maintain hydrological conditions in adjacent 	Neutral

Environmental Parameter(s)	Development Activity	Potential Impact to Natural Features & Functions	Recommended Mitigation & Enhancement	Residual Effect
		<p>It also has the potential to increase or decrease the quantity of runoff that presently flows to the valleys and associated natural features.</p> <p>A review of the pre-development and post development drainage areas, as illustrated in the FSR prepared by Cole Engineering (2012), suggests that the differential in catchment areas is nominal. The Stormwater Management Plan included in the FSR has been developed with the objective of matching pre-development flow conditions to satisfy GSCA and MOE criteria.</p>	<p>natural areas.</p> <ul style="list-style-type: none"> Refer to Table 7.10 in the FSR for additional recommendations for lot level conveyance BMP's. 	
Water Quality	Grading, servicing and development.	<p>Site preparation activities such as grading can increase the risk of erosion and sedimentation to the adjacent natural areas.</p> <p>Under the post-development scenario, contaminants such as oil, sand, salt and other debris may also affect the water quality of surface runoff.</p>	<ul style="list-style-type: none"> Implement sediment and erosion control plans to ensure that sediments are contained on the site. Direct clean roof runoff to pervious surfaces and to valleys via roof leader collection system (see FSR, Cole Engineering 2012). Runoff from roads and driveways will be directed to the stormwater management facilities for treatment. Refer to Table 7.10 in the FSR for additional recommendations for lot level conveyance BMP's. 	Neutral
BIOLOGICAL RESOURCES				
Woodlands	Grading, servicing and development.	The proposed development has been designed to avoid natural features such as woodlands and valleylands. No natural forest communities or significant woodlands will be affected by the proposed plan. Some development will occur adjacent to forested features, however the land uses selected are considered to be relatively compatible (i.e. SWM, Open Space, Park).	<ul style="list-style-type: none"> Where residential or resort development flanks natural forested features, a buffer of 10.0 m from the edge of trees should be established and the area maintained in a natural state. Where adjacent land uses include golf course, park or stormwater management, a 5.0 m buffer should be applied. 	Neutral
Wetlands	Grading, servicing and development.	<p>There are no PSW's on or adjacent to the property. There are only several small wetland features that have been identified on the property. None are evaluated and all are less than 0.5 ha. All are regulated by GSCA.</p> <p>Unit 13 is a small Elm dominated swamp feature associated with the upper reaches of Tributary 2. It's functions are limited primarily to storage and conveyance. It will be removed to facilitate development.</p> <p>Unit 14 is a red osier dogwood thicket swamp situated along tributary 3-2. It's functions are limited to conveyance and habitat for wildlife. This feature will be retained within the golf course.</p> <p>Unit 15 is a small cattail marsh situated along the upper reaches of tributary 3-1. It's functions are limited to storage. It will be also removed to facilitate development.</p>	None Required	Neutral
Tree Resources	Grading, servicing and development.	There are no significant tree resources associated with the portions of the site to be developed. Most of the tableland vegetation is successional and dominated by exotic species. Hedgerows mainly comprised of ash, elm and hawthorn which are generally poorly suited to integration as they are under threat from disease and pests.	None Required	Neutral
Wildlife Resources - Amphibians	Grading, servicing and development.	Amphibians have been noted as being associated primarily with the cattle ponds which represent the only suitable breeding habitats. The diversity and abundance of species observed does not suggest that the site supports significant amphibian breeding functions. None of the ponds supporting amphibians will be affected by the proposed development.	None Required	Neutral
Wildlife Resources - Birds	Grading, servicing and development.	To be determined following breeding bird surveys.	To be determined following breeding bird surveys.	To be Determined

Environmental Parameter(s)	Development Activity	Potential Impact to Natural Features & Functions	Recommended Mitigation & Enhancement	Residual Effect
Significant Species	Grading, servicing and development.	No significant species have been observed on the subject property to date. This will be confirmed once breeding bird surveys are completed.		
Linkages	Grading, servicing and development.	The subject property supports linear natural features that represent significant linkages at the local and regional scale. These include the shorecliff bluff that extends east-west across the northern portion of the site. This area will remain in its natural state under the proposed development, so no impacts are anticipated. Some of the valley features, and in particular the valley along watercourse 5, provides a natural connection between a large woodlot to the south of the property and the bluff. This linkage will be retained, with the exception of a road crossing.	Ensure that all road crossings of watercourses and valley features are designed to minimize the footprint requirements and to retain the fullest extent of natural cover to provide for wildlife passage.	Neutral

9. Policy Conformity Assessment

Table 5 provides a summary of how the proposed development and recommendations of the scoped EIS conform with applicable environmental policies and legislation.

To be completed.

Table 1. Conformity to Applicable Policies and Legislation related to Natural Heritage

APPLICABLE POLICY / LEGISLATION	EIS FINDINGS	CONFORMITY
Provincial Policy Statement (2005)		
1. Habitat for Threatened and Endangered Species	No Threatened or Endangered species have been recorded from the site to date. Additional field surveys are scheduled to confirm this.	YES
2. Significant Wetlands	There are no PSW's on or adjacent to the property.	YES
3. Significant Woodlands	None identified in OP's, but we consider the wooded bluffs and the natural forest communities associated with the valleylands along watercourse 5 to be potentially qualify as significant woodlands. These have been identified as high constraint features.	YES, the plan generally respects these features with the exception of the proposed golf course which will traverse these features at holes 9 and 4. The EIS will include recommendations to mitigate potential impacts to the affected areas.
4. Significant Wildlife Habitat	None identified in OP's. We have not identified seasonal concentrations areas, rare vegetation communities, specialized habitats, or habitat for species of conservation concern on the subject property to date. The wooded bluffs could potentially be considered animal movement corridors and qualify as SWH. We have identified this area as a high constraint to development.	YES. The proposed plan does not impact on Significant Wildlife Habitat.
5. Significant Valleylands	None identified in OP's. We consider the well defined valleys on the subject property as	YES, the plan generally respects these features with the exception of

APPLICABLE POLICY / LEGISLATION	EIS FINDINGS	CONFORMITY
	potentially significant. These features have been identified as high constraint areas.	existing road crossings and proposed golf course hole 9. The EIS will include recommendations to mitigate potential impacts to the affected areas.
6. Fish Habitat	It is unlikely that the watercourse on the property support fish populations and would constitute direct fish habitat. The watercourses are being assessed this spring to determine their function. Any watercourses that contribute significantly to fish habitat functions will be identified as high constraint features.	YES. The proposed plan will not impact on fish habitat and the functions of all watercourses will be maintained through appropriate design and implementation of BMP's.
7. Significant Areas of Natural and Scientific Interest	There are no provincial ANSI's on or adjacent to the subject property.	YES
County of Grey Official Plan	The proposed plan respects the environmental policies of the Grey County Official Plan	YES
Municipality of Meaford Official Plan	The proposed plan respects the environmental policies of Municipality of Meaford Official Plan	YES
Grey Sauble Conservation Authority Regulations	The proposed plan respects the regulated features on the subject property. All necessary permits will be obtained for works undertaken within or adjacent to a regulated feature.	YES

10. Conclusions

This EIS report was prepared in accordance with EIS Terms of Reference established with GSCA (ref. **Appendix A**). The EIS is based on information derived from review of available background resources, field assessments, analyses and supporting technical studies prepared by other members of the team.

Existing land uses on the subject property are largely reflective of its long agricultural history. Most of the site consists of active and idle agricultural lands. Natural heritage features are limited to the forested portions of the shorecliff bluff and larger valley features associated with the most prominent of the seven watercourses. There are only several small unevaluated wetland features on the site.

The background review did not identify any designated features such as PSW's or ANSI's on the property. The area has been identified as possible containing karst geology; however an independent study by Karst Solutions (2010) has confirmed that there are no significant karst features associated with the property.

The EIS includes an assessment of all natural heritage features on the subject property to identify the presence of any significant or sensitive natural heritage resources. Ecological surveys have confirmed that the site supports significant valleylands and significant woodlands. These are identified as EP. Our investigations have tentatively confirmed that the site does not support fish habitat, significant wildlife habitat or habitats of threatened or endangered species.

The EIS includes a constraint analysis to identify natural features of high conservation priority. This analysis was used to inform the site plan so that ecologically sensitive features could be avoided and that an ecologically appropriate limit to the development be established. The EIS can confirm that the proposed resort and residential development will avoid impacting on high constraint features.

The EIS also includes an impact assessment that considers the potential impact of development on the EPA. The assessment examines the effects of site preparation activities (clearing, grubbing, grading), construction (servicing, roads, buildings), and post construction activities on physical and biological resources of the property and designated natural area. The results of the assessment are outlined in a comprehensive matrix (**Table 4**) that identifies impact sources, impact effects, recommended mitigation measures, net residual effect, and recommended management and monitoring. The results of the impact assessment determined that the proposed development will have a net neutral effect on the natural heritage resources and functions contained within EP designated areas.

The proposed residential development will not encroach onto any of the EP designated areas, with the exception of road crossings and trails. Servicing the property will require grade modifications due to the gently rolling topography. The preliminary grading plan indicates that the entire site will need to be modified to match grades at the EP limits while adhering to municipal road and lot grading criteria. Some minor encroachment into EP buffers will be required to facilitate grading requirements for the stormwater management facilities; however any affected areas will be enhanced through naturalization plantings.

Anticipated impacts are limited primarily to loss of vegetation cover due to the removal of cultural meadow, cultural savannah and some small wetland habitats. None of the affected vegetation features are considered significant however they do support habitat for generalist wildlife species and some native flora. The loss of these features and associated functions (i.e. diversity) can be mitigated by naturalizing the buffer zones to the EP.

In summary, this EIS has:

- documented and described the site's natural heritage resources through information gathered through seasonal field inventories of key taxa – with the exception of breeding birds;
- identified the relative significance and sensitivities of natural heritage features and functions of the site and identified constraints to development;
- established ecologically appropriate buffers & established development limits;
- provided a detailed policy review at various planning levels;
- provided input into the water balance analysis, grading plan and development concept plan;
- assessed impacts associated with all aspects of the proposed development; and
- provided recommendations for avoiding or mitigating impacts.

It is our opinion that the proposed Development Concept Plan will not adversely impact on the natural features and ecological functions on the subject property. It is also our opinion that the proposal is consistent with existing environmental policies at the provincial, regional and local levels.

Respectfully Submitted: May 24th, 2012



Ken Ursic, B.Sc., M.Sc. (Senior Ecologist)
Beacon Environmental

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Appendix A

EIS Terms of Reference

March 9, 2012

BEL 211348

Tim Lanthier, Environmental Planning Technician
Grey Sauble Conservation
237897 Inglis Falls Road, RR 4
Owen Sound, Ontario, N4K 5N6
p: 519-376-3076 ext. 235
f: 519-371-0437

**Re: Final Terms of Reference for Environmental Impact Study (EIS)
Part of Lots 9 & 10, 3rd Line, Meaford, ON**

Dear Mr. Lanthier.

Beacon Environmental has been retained by Meaford A2A Developments Inc. to prepare an Environmental Impact Study (EIS) in support of a proposed development application on Part of Lots 9 & 10, 3rd Line, Municipality of Meaford, County of Grey. The purpose of this letter is to present Terms of Reference for the EIS for your consideration. Included in this letter is some background information relating to the site as well as an outline for the EIS.

Background

The subject property is located east of 3rd Line and south of Highway 26 (Figure 1). Schedule A – Land Use Designations (Map 2 – Northeast Quadrant) of the County of Grey Official Plan shows the open agricultural land in a Rural designation, with the major watercourse features and the shorecliff along the north side of the property designated Hazard Lands.

Appendix A – Constraint Mapping (Map 2 – Northeast Quadrant) of the County of Grey Official Plan does not identify the shorecliff as a constraint, but does assign this label to the watercourse that crosses through the extreme southwest corner of the study area (Lot 9, Concession 2). The entire tableland portion is identified as a Special Policy Area due to the presence of shallow (generally less than 1.0 m) overburden with karst topography. Under Section 2.8.4 of the Official Plan, the proponent of any planning application in a Special Policy Area is required to prepare an Environmental Impact Study.

On the Town of Meaford Land Use Schedule (Schedule A-1) of the Meaford Official Plan, the shorecliff and major watercourse features are designated Environmental Protection. These designations extend to the south onto that portion of the study area that falls outside the Town of Meaford “urban” boundary (Schedule B – Environmental and Resource Features). The area of “Karst Topography” is also identified, consistent with that shown on Appendix A of the County Official Plan.

The watercourses and shorecliff features on the property are regulated by the Grey Sauble Conservation Authority. There are no MNR-evaluated wetlands or provincially significant ANSIs on the property.

Terms of Reference

The following EIS Terms of Reference have been prepared to be consistent with the Municipality of Meaford Official Plan policy C6.2 and County of Grey Official Plan policy 2.8.6. The Terms of Reference were developed based on our preliminary review of the site's natural heritage resources and subsequent discussions with GSCA staff during a site visit on December 13, 2011. As you are aware, there are a number of environmental features associated with the subject property that could potentially be impacted by the proposed development. The key objective of the EIS is to demonstrate that sensitive environmental features and their associated ecological functions can be protected in the context of the proposed development and that any potential impacts associated with this development can be mitigated.

According to section C6.2 of the Meaford Official Plan, an EIS should include a description of:

- the proposed undertaking;
- the natural features and ecological functions of the area potentially affected directly and indirectly by the undertaking, and an assessment of their sensitivity to development;
- any lands that support environmental attributes and/or functions that may qualify the lands for designation within the Environmental Protection designation;
- the direct and indirect effects to the ecosystem that might be caused by the undertaking
- any environmental hazards (i.e. slope, flooding contaminants) that need to be addressed as part of the design and how they will be addressed;
- any monitoring that may be required to ensure that mitigating measures are achieving the intended goals;
- how the proposed use affects the possibility of linking core areas of the natural heritage system by natural corridors that may or may not be identified on the schedules to the Plan; and,
- a Management Plan (MP) identifying how the adverse effects will be avoided or minimized over the construction period and the life of the undertaking and how environmental features and functions will be enhanced where appropriate and describing the net effect of the undertaking after implementation of the MP. The MP shall also establish the limits of buffers and setbacks adjacent to watercourses, waterbodies, valleys, significant wetlands and vegetation to protect the natural feature and its attributes and/or function from the effects of development.

It has been our experience that EIS Terms of Reference can be effectively presented in the form of a report outline. This provides reviewing agencies with greater level of clarity on the scope of the study to ensure that their expectations are met. The following report outline contains description of the contents to be included for each report section.

Proposed EIS Report Outline

1.0 Introduction

The introductory section will include a description of the site (both historical and current), a discussion of its relationship to the broader natural heritage system, a summary of applicable environmental

policies. The need for an EIS and the objectives of the EIS will also be described within the context of current policies.

2.0 Policy Framework

This section will describe and discuss current municipal, provincial and federal policies that apply to the subject property including:

- Federal Fisheries Act
- Provincial Policy Statement (PPS)
- County of Grey Official Plan
- Municipality of Meaford Official Plan
- Grey Sauble Conservation Authority Regulations and Policies

3.0 Methodology

This section of the report will describe the approach used to characterize the site's natural heritage features and functions. A list of background information sources consulted as well as details of all field work and assessment will be included.

Background information sources to be consulted will include, but not be limited, to the following:

- Natural Heritage Information Centre (NHIC) Database
- consultation with MNR ecologist
- consultation with GSCA ecologists
- Ontario Breeding Bird Atlas
- historic and current aerial photography
- topographic mapping
- landform/physiography reports and mapping
- soil reports and mapping
- hydrogeological investigations
- natural heritage resources mapping
- MNR/GSCA fisheries data

A summary of proposed field investigations to be undertaken as part of this assignment is presented in Table 1 below. All field studies will be completed using standard protocols.

Table 1. Summary of Proposed Field Investigations and Meetings.

Timing	Description	Status
October 2010	Site reconnaissance and preliminary assessment	Completed
December 2011	Review of regulated features with GSCA (1 visit)	Completed
March/April 2012	Stick nest survey	Pending
April – May 2012	Amphibian surveys (3 visits) (nocturnal as per MMP)	Pending
May to June 2012	Fish habitat assessment (2 visits)	Pending

May-July 2012	Breeding bird surveys (2 visits)	Pending
May-August 2012	Vegetation inventory and ELC # 3 (3 visits)	Pending

Amphibian surveys will be conducted three (3) times in the spring of 2012: early April (April 1-15), early May (May 1-15), and early June (June 1-15) to coincide with different breeding times of various frog and toad species. Surveys will be carried out after dusk under suitable weather conditions as outlined in the *Marsh Monitoring Participant's Handbook for Surveying Amphibians* (Environment Canada, 2008).

Two rounds of breeding bird surveys will be conducted between mid-May and mid-June 2012, at least two weeks apart. The surveys will be conducted in the early morning under suitable weather conditions (low wind, no rain). The surveys will consist of walking the property such that all parts of the site are surveyed to within 50 m to 100 m.

4.0 Characterization of Existing Conditions

This section will characterize existing biophysical resources on the subject property, including landform, topography, soils, surface and groundwater drainage patterns, terrestrial resources (vegetation communities, flora and fauna) and aquatic resources using available information from technical studies and supplemental field work. Information will be presented using summary text descriptions, tables, figures, and appended data.

Hydrogeological and geotechnical investigations will be conducted by other members of the consulting team in conjunction with the EIS. These investigations will determine if karst topography occurs on the subject property, assess the potential impacts of the proposed development on surface and groundwater resources, and recommend appropriate mitigation. We will combine the findings of these parallel investigations in the EIS report.

5.0. Environmental Constraint Analysis

This section will summarize the scope and nature of the ecological features and functions on site that are considered sensitive or significant. This will include consideration for features and functions in adjacent lands off site where appropriate. Natural heritage features on site will be evaluated in terms of their relative significance and sensitivity to development by assigning constraint ratings to individual vegetation units. Each feature will be evaluated in terms of its ecological and hydrologic functions as well as the linkages among them.

6.0 Development Proposal

This section will describe the various components of the proposed development as well as activities required to prepare and service the area for development. Draft plans, grading plans, servicing, stormwater management and other plans will be referenced to provide a comprehensive description of the proposal.

7.0 Impact Assessment / Avoidance, Mitigation and Enhancement

This section of the report will identify and describe potential impacts of the proposed development on existing natural heritage features and ecological functions on the subject property. Pre- and post-development impacts will be assessed and recommendations for impact avoidance and mitigation will be provided. Mitigation measures to be considered will include buffers, site water balance, stormwater management, sediment and erosion control, tree preservation and edge management, and seasonal restrictions on activities based on wildlife sensitivities. Opportunities for habitat enhancement will be explored and identified where feasible.

8.0 Environmental Management and Monitoring Plan

This plan will identify steps and procedures needed to ensure that the protection, mitigation, and enhancement measures recommended in the EIS are implemented as specified and monitored to assess their performance.

9.0 Policy Conformity

This section will include a discussion of how the proposed Draft Plan complies with relevant municipal, provincial and federal environmental policies and legislation including the:

- Federal Fisheries Act
- Provincial Policy Statement (PPS): the PPS defines seven natural heritage features and provides planning policies for each. We propose to use the *Natural Heritage Reference Manual* (OMNR 2010) to assess the significance of all PPS natural heritage components.
- County of Grey Official Plan
- Municipality of Meaford Official Plan
- Grey Sauble Conservation Authority Regulations and Policies

10.0 Summary

The findings of the EIS will be summarized in a report. A draft report will be prepared that builds upon our previous study by including an impact assessment component. The draft will be circulated to the municipality and agencies for review and comment prior to completion of the field inventories. Once the field studies are complete, a final report will be prepared and submitted for further review and comment.

We believe that the proposed EIS Terms of Reference addresses all of the requirements outlined in Meaford Official Plan Policy C6.2 and reflect our discussions. We appreciate any feedback that you may have on the proposed terms for the study. Should you have any questions or points for discussion, please do not hesitate to contact the undersigned at (519) 826-0419 x23.

Yours truly,

Beacon Environmental



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Senior Ecologist

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J. McFarlane (Weston Consulting)
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