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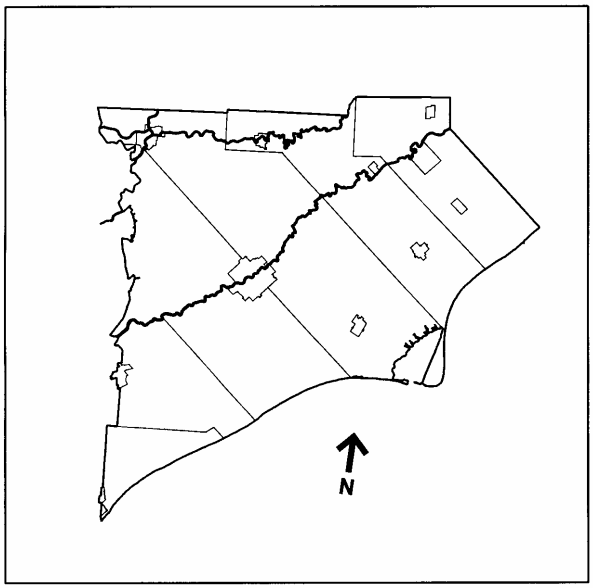
TO: Mayor and Members of Council

FROM: Storey Samways Planning Ltd.

DATE: June 29, 2004

SUBJECT: Planning Services Report

GENERAL FILE INFORMATION AND KEY MAP



Application: i) comprehensive official plan amendment (OPA 101) introducing minimum distance separation policies regarding livestock operations into all former township official plans;

ii) a comprehensive zoning by-law amendment implementing the new policies of OPA 101;

iii) the revised nutrient management by-law, amended to take into account regulations under the Nutrient Management Act describing the provincial role in regulating livestock operations;

iv) the Terms of Reference for a Local Advisory Committee, to be formed to assist the Municipality in resolving livestock operation issues, established under the Nutrient Management Act;

v) the process for selecting members to the Local Advisory Committee.

Applicant: Planning Services

Location: All of Chatham-Kent

RECOMMENDATIONS:

It is recommended that:

1. Council approve Official Plan Amendment 101 which introduces minimum distance separation policies regarding livestock operations throughout the rural areas of Chatham-Kent.

2. Council approve amendments to the comprehensive zoning by-laws of the former Townships which, in effect, serve the following purposes;

   i) establish the Minimum Distance Separation I (MDS I) formula for determining the setback requirements for new or expanding buildings from existing livestock operations on separate lots;

   ii) establish the Minimum Distance Separation II (MDS II) formula for determining the setback requirements for new or expanding livestock operations from existing uses/buildings on separate lots.

3. Council approve the amended Nutrient Management by-law, which has been revised to be consistent with the Nutrient Management Act and its regulations, ensuring that there are no gaps or duplications in the regulation of the livestock industry, an authority which is now shared between the Municipality and the Province.

4. Council approve the Terms of Reference for the Local Advisory Committee, a group established under a regulation of the Nutrient Management Act to assist the Municipality in resolving livestock operation issues, as set out in Schedule “A” to this report.

5. Council approve the process proposed for selecting members for the Local Advisory Committee, as set out in Schedule “B” to the report.

6. Council authorize the Mayor and CAO to seek funding from the province for the Local Advisory Committee.

7. Funding for the Local Advisory Committee be referred to the 2005 budget.

BACKGROUND

Purpose

The purpose of this report is to bring several documents, what are described in more detail below, for approval by Council, namely:

- Official Plan Amendment 101, introducing Minimum Separation Distance policies;
- a comprehensive zoning by-law amendment, implementing OPA 101;
- an amended version of the Nutrient Management By-law necessitated by the Nutrient Management Act and its regulations;
- the Terms of Reference for a Local Advisory Committee, established under the Nutrient Management Act, to assist in livestock and nutrient management operational issues;
- the process for selecting members to the LAC.

Chronology

In September of 2000, at the advice of the Ministry of Agriculture, Food and Rural Affairs (OMAFRA), Council approved an interim control by-law (ICBL) subjecting new and expanding livestock operations of over 150 livestock units to a new regulatory environment pending provincial legislation. At this time Council also directed that a process be undertaken to establish a nutrient management by-law for the Municipality. One year later, with no Provincial guidance as yet forthcoming, the ICBL was renewed, and in August of 2002, a formal nutrient management by-law (NMB/L), in addition to other related initiatives, was adopted. This by-law was based on an extensive public consultation process and a comprehensive background report. Although this by-law was modelled on similar by-laws in other communities, it contained one distinctive and important feature – the Environment Evaluation Protocol or EEP. The purpose of the EEP was to ensure that protection measures for ground and surface water were included as part of any evaluation of nutrient management plans, now required by the NMB/L. Important influences in the preparation of the by-law were the findings and recommendations of the Walkerton Inquiry, and applications under the ICBL for the expansion of 3 hog operations.

At the provincial level, the Nutrient Management Act was given Royal Assent on June 27, 2002 and implemented by O. Regulation 267/03 (as later amended by 447/03 and 154/04), taking effect Sept. 30, 2003. Under the regulation, the Province has assumed responsibility for all new livestock operations, and existing operations seeking expansion above 300 Nutrient Units (as discussed below). In July 2005, the authority will be expanded to include all existing livestock operations over 300 N.U.'s. Since the Fall of 2003 fall administration has consulted with a number of parties, including OMAFRA, and has determined that the comprehensive package being brought before Council for consideration represents the best way of meshing municipal regulation of livestock operations in Chatham-Kent with the new provincial legislation.

Minimum Distance Separation Formulae (MDS I and II)

The Minimum Distance Separation is a tool developed by OMAFRA to determine the appropriate distance between a livestock facility and another land use, usually a neighbouring dwelling, so as to prevent land use incompatibility based on odour. It forms an integral part of the Provincial Policy Statement and is used when considering development applications in rural areas. MDS I sets out the minimum distance a proposed non-agricultural use should be set back from an existing livestock operation, and MDS II sets out the minimum distance a new or expanding livestock operation should be located from a non-agricultural use.

In the MDS formula, all different animals and poultry type are reduced to a common unit of measure, known as a livestock unit, to which various factors are applied related to the method of manure storage and the type of non-agricultural use, resulting in the calculation of a specific separation distance. In addition to its use in reviewing development applications, OMAFRA also advocates that MDS be an integral part of zoning by-laws. In Chatham-Kent, only the former Township of Camden actually applies MDS with it's zoning by-law as intended by the MDS drafters. All other former townships have differing setback requirements varying from no special distance separation (Harwich), to double the MDS II requirement (Howard).

Nutrient Management Act and Regulations

The purpose of the NMA and its regulations is to provide a reasonable and consistent set of standards regarding nutrient management practises across the entire province, ending the patchwork of local by-laws and inconsistent regulation.

In so doing, it relies on a unit of measurement known as the Nutrient Unit. NU's are based on the fertilizer replacement value for a certain type of manure of the lower of nitrogen or phosphate content, while the livestock unit used in MDS, is based on nitrogen alone. The result is that NU's and LU's are similar, but not equivalent, for most animal types. Table 1, provides, an example of the difference between the two different measurement systems. An important part of the NMA is that it supercedes any municipal by-law which covers the same subject matter found in the Act or one of its regulations.

The regulation has been applied, since Sept. 30, 2003, to all new livestock operations over 5 NU's, and to all existing operations expanding to 300 NU's or greater. In July, 2005, it will apply to all existing operations over 300 NU's whether they are considering expansion or not. The principal requirements of the regulations are that all affected livestock operations must prepare nutrient management strategies (NMS) and nutrient management plans (NMP), which must meet the standards and protocols of the regulation. There are different levels of approval.

Table 1

Comparison of Nutrient Units and Livestock Units and the effect on Animal Numbers

Nutrient Units	Animal	# of Animals	Livestock Units
300*	Beef Cows	300	300
300	Beef Feeders	900	450
300	Large Frame Dairy Cows	210	210
300	Large Frame Heifers	600	300
300	Medium Frame Cows	255	255
300	Medium Frame Heifers	720	360
300	Horses	300	300
300	Poultry – Layer	45,000	360
300	Poultry – Broiler	60,000	300
300	Sheep – Meat	2,400	240
300	Sheep – Dairy	1,800	450
300	Swine – Feeders	1,800	450
300	Swine – Weaners	6,000	300

*Note: 300 NU's is the threshold above which all livestock operations - existing, new or expanding - will fall under provincial jurisdiction as of July, 2005

A NMS is a document prepared for a livestock operation which projects the amount of material subject to management which will be generated over a 5 year period, its method of storage, and its ultimate disposition.

A NMP is a document prepared for a livestock operation, which addresses in detail the nutrient storage and the application rate to the land base, based on best construction and spreading practises.

Local Advisory Committee

An important part of the regulations is the creation of a committee at the discretion of local council to advise on livestock operational issues, with membership mainly from the local agricultural community. The primary role would be that of mediation of complaints, which are not a violation of other legislation (such as the Environmental Protection Act).

Some municipalities have already established such committees as part of their local nutrient management by-laws with a role and authority very similar to that proposed in the regulations.

OTHERS CONSULTED:

Technical Advisory Committee

TAC has consulted at regular intervals with the Building Department in particular playing a key advisory role. TAC supports the documents placed before Council.

Agricultural Task Force / Nutrient Management Advisory Committee

OPA 101, the proposed amending zoning by-law, proposed options for amending the Nutrient Management By-law, and the Terms of Reference for the Local Advisory Committee were all discussed at a special meeting with representatives of the two committees on May 24/04. The final version of these documents reflects the consensus of committee members.

Ontario Ministry of Agriculture, Food and Rural Affairs

Mr. John Turvey and Mr. Dean Donaldson, rural planning and nutrient management experts with OMAFRA, were consulted at various times in this process. In that these documents implement or support provincial legislation and planning policy, these gentlemen have no objection to our general approach.

Fraser Consulting

Barry Fraser has acted as liaison with OMAFRA regarding the progress of the nutrient management legislation and provincial budget. Mr. Fraser has also been responsible for developing the Local Advisory Committee Terms of Reference and committee selection process.

Walstedt Renick

Jim Renick has provided legal advice on various aspects of the legislative maze which affects nutrient management and livestock land use policy and zoning. He has prepared the amended version of the Nutrient Management By-law based on the approach agreed to internally and supported by the Agricultural Task Force.

Dillon Consulting

Mr. Gintas Kamaitis, P. Eng, was retained in the fall of 2003 to compare the Chatham-Kent Nutrient Management By-law with the provincial regulations. His findings are discussed in the Analysis.

Analysis:

Community Strategic Plan

The recommendations support the vision statement regarding nutrient management and the livestock management and the livestock agricultural business in Chatham-Kent.

> The community of Chatham-Kent will encourage its livestock industry to grow and develop in an environmentally sustainable, ethical way.

In particular, the following objectives are being served:

- Creating awareness of best practises with respect to nutrient management
- Identifying mechanisms to address issues related to environmental management.

Provincial Policy Statement

The recommendations support 2 policies found under Section 2.1 Agricultural Policies, namely:

> 2.1.4 New land uses, including the creation of lots, and new or expanding livestock facilities will comply with the minimum distance separation formulae.
>
> 2.1.5 In prime agricultural areas, agricultural uses and normal farm practises will be promoted and protected.

In addition, the proposed amendments to the nutrient management by-law are designed to complement the provincial regulations, and the establishment of a Local Advisory Committee, although not required, is strongly recommended by the Province.

Official Plan

None of the official plans in Chatham-Kent presently have policies, which explicitly call for the use of MDS formulae. Presently the Nutrient Management By-law requires all applications to conform to MDS II, although the provincial regs are silent on this matter, in essence a land use issue best dealt with under the Planning Act. However, when existing zoning regulations require greater separations than MDS II, then these regs take precedence.

Clearly, new standards are required which are consistent and equitable, not only within the communities of C-K, but also with other rural municipalities in Ontario. While MDS is acknowledged to have flaws, it is widely used and there is no other superior method of providing separation regulation. Also MDS is a reciprocal formula requiring the separation of new or expanding livestock facilities from existing dwellings, and new or expanding dwellings from existing livestock facilities. To be equitable MDS I and II need to be applied together.

However, in applying MDS I and II, it must be recognized that under existing zoning regs, landowners of both livestock and non-livestock uses have development rights which will be reduced or removed by the adoption of MDS. These rights need to be accounted for in some way.

The approach taken to OPA 101 reflects these concerns. Similar to OPA 100 (the Agricultural consent policies) all existing rural official plans are amended simultaneously by the introduction of MDS as the method of determining distance separation between new or expanding livestock facilities and other uses in agricultural areas.

However, for lots of record, we have included policies of exception to the MDS I and II requirements, whereby relief from setbacks may be granted by way of minor variance, based on different conditions and features. These may be summarized as follows:

- the variance will reduce environmental impacts
- the variance will result in better compliance with MDS requirements
- there is no reasonable alternative
- any nuisance effects resulting from the reduced setback can be mitigated on-site
- the use of site plan control, if necessary
- input from the Local Advisory Committee will be sought, if necessary.

Zoning By-law Amendment

Generally, we reviewed in detail the zoning by-laws of the 10 rural communities to get a sense of the regulations which would be affected by the introduction of MDS I and II, and also to determine the best way of introducing a comprehensive amendment. The specifics are as follows:

i) MDS I and II are introduced as additional sections to the General Provisions of each by-law, with reference being made to Schedule “Y” (MDS I) and

Schedule “Z” (MDS II). A common section number, 301, is used, similar to the greenhouse by-law which used 300.

ii) Each by-law is amended in alphabetical order as necessary to do the following:

a) Delete key definitions, which are affected by the use of MDS. In particular we had to remove references to “intensive” livestock. The definition of agriculture now clearly includes “livestock”, which is also separately defined. We have left the restricted agricultural classification in those by-laws which have such zones today, and simply stated that livestock not be a permitted use in those zones. However, if we are going to use MDS, then the restricted agricultural zones will not be required in the new comprehensive zoning by-law. In Camden and Howard, we have also excluded mushroom farms as permitted uses in agricultural zones, this being a specific provision unique to these by-laws. Mushroom farms need to be addressed in the new OP and zoning by-law as well.

b) Ensure that regulations regarding lots of record, non-conforming and non-complying uses all take MDS into account.

c) Delete any specific setbacks required between dwellings and livestock facilities.

d) Add in a new common set of definitions regarding MDS related items.

e) Two schedules reflecting MDS I and II, with subschedules, are added. It should be noted these schedules have been redrafted to reflect the actual circumstances of the C-K situation (i.e. various existing zoning categories).

Schedule “Y” – MDS I

Schedule “Y sets out the MDS requirement for certain zones which are listed in a subschedule “Y1”. Essentially, MDS I will apply in agricultural zones and residential zones found in rural areas. These residential zones are typically the result of an agricultural consent. This schedule also applies to agriculturally related commercial zones. It will not apply to lots of record in any other zone.

Schedule “Z” – MDS II

Similar to Schedule “Y”, Schedule “Z” sets out the MDS required for new and expanding livestock operations from neighbouring buildings and zone boundaries, as listed in 2 subschedules, “Z1” and “ Z2”. “Z1” lists those zones where the MDS is to be measured to the actual dwelling. “Z2” lists those zones where the MDS is measured to the actual zone boundary, usually a lot line, rather than the building.

Nutrient Management By-law Amendments

In the consideration of any potential revisions to the nutrient management by-law, a necessary first step was a comparison of the O. Reg. 267/03, a highly complex document, with the C-K by-law. As noted earlier, Mr. Gintas Kamaitis of Dillon Consulting, was retained to review both documents. In broad terms, he described 4 main areas of difference.

1. The O. Reg. is far more detailed and comprehensive in its consideration of administrative oversight.

2. The O. Reg. is based on a unit of measurement known as a nutrient unit whereas the C-K By-law is based on livestock units, as discussed earlier in this report.

3. The O. Reg. applies as follows:

   - at present, all new livestock operations over 5 NU’s;

   - at present, all expanding livestock operations, which will exceed 300 NU’s;

   - as of July 2005, all existing livestock operations which exceed 300 NU’s.

By comparison, the NMB applies as follows:

   - all new or expanding livestock operations exceeding 150 LU’s or operations of 50 LU’s or greater where the ratio of LU’s to land base exceeds 5.0 LU per tillable acre;

   - for new or expanding livestock operations over 450 LU’s approval of the Nutrient Management Plan by Council is required.

4. The O. Reg. does not consider the risk to groundwater aquifers to the same extent as the C-K NMB.

Also, in order to assist in a redraft of the by-law, we reviewed model by-laws prepared by the Counties of Huron and Oxford in response to the regulations. Essentially they

have simply adopted the O. Reg approach, but extended the application of its requirements to cover all new or expanding livestock operations of 150 NU's or 50 NU's with the tillable hectares ratio provision of 5.0 NU's. OMAFRA will continue to provide 3rd party review of all nutrient management plans.

Based on the input from Mr. Kamaitis, and the review of the model by-laws, we identified 4 possible options in our approach to the C-K by-law:

1. *Do nothing*

   In this option, the existing by-law would continue to be in force, except for those provisions, which would be superceded by the O. Reg. With the different measurement units (NU vs LU), and the variations in enforcement and administration, there would be gaps, inequities and inconsistencies associated with this approach.

2. *Amend C-K By-law similar to Huron and Oxford*

   This would result in a consistent approach, dovetailed with the Provincial approach, ensuring each livestock operation is treated equitably. However, the comprehensive approach to groundwater protection, a distinguishing and important feature of the C-K NMB, will have to be addressed in other legislation, such as the proposed Source Protection Act.

3. *Include groundwater protection requirement for all livestock operations, regardless of jurisdiction*

   This approach would provide equitable and consistent regulation of all livestock operations within Chatham-Kent and maintain the groundwater source protection provision. However, 2 concerns exist:

   - C-K livestock operations would be subject to more stringent regulation than that required for other livestock operations in Ontario;

   - Such a provision may contravene the "superceding" provision of the Nutrient Management Act.

4. *Continue the groundwater requirement for all livestock operations under the Chatham-Kent jurisdiction*

   This approach would avoid contravention of the "superceding" provision of the Nutrient Management Act and maintain the groundwater source protection, at least in part. However, it would result in the application of 2 levels of requirements, according to the different jurisdictions within Chatham-Kent, an inconsistent and inequitable situation.

The by-law before Council represents the approach described in Option 2. It was selected as it conforms with the vision statement for nutrient management, and will maintain a level playing field for the C-K livestock producers, within the Municipality and within the province.

Local Advisory Committee

The Terms of Reference, outlined in Schedule "A", reflect similar ToR's of other similar LAC's in Ontario and specifically, the provisions in Part XII of O. Reg. 267/03. Furthermore, it should be noted that the Terms of Reference, and the committee selection process of Schedule "B", are in substantial conformity with a recommendation adopted by Council at its Aug. 6, 2002 meeting, with regard to many nutrient management issues, which stated:

> *Council direct administration in cooperation with the agricultural community to establish a Peer Review/Environmental Response Team , with recommendations for committee membership and mandate, the responsibilities to include:*
>
> *i) monitoring of the efficacy of the Nutrient Management By-law and protocol;*
>
> *ii) recommend amendments to the by-law and protocol from time to time;*
>
> *iii) assist producers in implementing nutrient management plans;*
>
> *iv) assist producers in preparing and implementing farm environmental plans;*
>
> *v) review and resolve complaints regarding manure management.*

Conclusion

The proposed OPA 101, comprehensive zoning by-law, nutrient management by-law amendment and Local Advisory Committee Terms of Reference in effect complete a process started in the fall of 2000 with the passage of the first Interim Control By-law of livestock operations. These documents respond both to local needs and provincial legislative initiatives. For these reasons I support their approval.

Financial Implications:

1. Local Advisory Committee – it is the opinion of administration and the Agricultural Task Force that funding for the committee be provided by the Province. However, at this point, it is unclear whether any of the funds set aside for nutrient management in the provincial budget are for this particular purpose. Sorting this situation out therefore should be our first step. In the meantime, funding for the committee can simultaneously be referred to the 2005 budget. These approaches are reflected in the recommendations.

2. Staff resources – any budget requirement for nutrient management by-law enforcement has been included in the 2004 budget. As passage of the Nutrient Management Act and its regulations should serve to reduce the Municipal enforcement role, there should be no budget impact.

3. For Council's information, originally, the full costs associated with this project were to be covered by the Planning Services base budget. Because of other funding commitments, namely those associated with the appeal to Official Plan Amendment 100 (OPA 100) and expenses associated with the development of the Community Improvement Plan, base budget amounts have been exceeded. All costs are not yet known, however, all budget lines are presently under review to find funds sufficient to cover all expenses. We will also be requesting the Ontario Municipal Board to award costs associated with the OPA 100 appeal. Council will be kept informed of the status of accounts through future reports.

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GUIDANCE DOCUMENT FOR COMPLETING THE ENVIRONMENTAL EVALUATION PROTOCOL MUNICIPALITY OF CHATHAM-KENT

INTRODUCTION

The Environmental Evaluation Protocol (EEP) recently enacted by the Municipality of Chatham- Kent, is designed to provide an evaluation of the ground and surface water in the vicinity of new or expanding livestock operations, rank the potential risk to these resources, and provide suitable mitigation to ameliorate the risk. The risks are to be addressed for both the livestock operations (particularly in the vicinity of manure storage) and for the manure spreading areas. The EEP is required for any regulated livestock operation which exceeds 150 livestock units or 50 or more livestock units located on a site where the ratio of livestock units to land base exceeds 5.0 livestock units per tillable hectare or feedlots where the ratio of livestock units to land base exceeds 6.5 livestock units per tillable hectare.

The EEP's fundamental focus is water resource protection. As such, it is tied to the Nutrient Management Plan developed by the proponent to identify the farming practices to be utilized. The EEP is an evaluation of how the activities, as defined in the Nutrient Management Plan, will impact the local water resources. The EEP is completed in concert with the development of the NMP with the end result being an Enhanced Nutrient Management Plan.

The EEP's fundamental goal is the ***reduction*** toward a low rating of potential risk to local and regional water resources. An integral portion of the EEP is the recommended mitigation options it proposes as additions to the Nutrient Management Plan to substantively reduce the risk potential.

PROTOCOL COMPONENTS

The EEP has three primary components:

1. data collection
2. risk assessment
3. risk mitigation

These components are discussed below. Appendix A contains a checklist form to be utilized to guide the data collection and presentation process.

1. Data Collection

In order to complete the EEP, existing information on the project, site, site conditions, manure storage, and planned manure utilization are necessary. The intent of the EEP is to

utilize existing data, which resides in a large number of venues. The following provides some guidance on the collection of this data.

Project Background & Location

The principle source for the project background information is the Nutrient Management Plan. The proponent and his agricultural consultant will have identified this information, which shall be reviewed by the EEP consultant for comprehensiveness.

The livestock operations site and spreading fields should be located on a map, which provides a reference for the local physical features. It is suggested that an OBM (Ontario Base Map) map be utilized as it is easily obtainable through the Provincial Government and contains the features requested in the EEP, such as natural areas, heritage sites, and public areas. An aerial photograph of the sites would be helpful, but not mandatory.

Project Site Conditions

The information in this portion provides the scientific data required to make the risk assessment. The primary source of this data will be the Groundwater Resource Study to be completed by the Municipality in March 2003. Until that time, the data is fragmented among numerous sites, principally with the Ministry of Environment.

Manure Storage & Utilization

The Nutrient Management Plan prepared by the proponent will contain extensive documentation of the manure storage facilities at the livestock operations site and the agricultural perspective of manure utilization in spreading areas. This information shall be reviewed by the EEP consultant to assess specific aspects of how these relate to water resource protection.

Site Visit

The consultant completing the EEP shall visit the proposed site to meet with the proponent, visually inspect the area of the proposed development, and verify the presence of key water related factors, such as nearby wells, local water ways, topography, and other physical characteristics.

2. Risk Assessment

The EEP Consultant will determine the operation's risk potential, based upon the data collected above. Each risk classification must be defined either by map or reference. The EEP seeks to determine the potential risk (low, moderate, or high) for nine environmental risk classifications. The identification of a low risk requires no mitigation by the proponent. The identification of a moderate or high risk requires the EEP consultant to address the risk and provide a methodology for reducing that risk. As the program's goal is to reduce the potential risk to the equivalent of a low rating, it is expected that the more

significant risks would require more stringent mitigation. It is expected that a high risk classification, which cannot be mitigated, may result in a denial by the Municipality.

A checklist to guide the data collection and assessment process is attached (see Appendix A). This form should be used as a template for completing the EEP.

The following provides a brief discussion of the risk classifications and some basic guidelines for assessing the risk as detailed in Schedule A of the Municipal Nutrient Management Bylaw.

a. Topographic Slope

The information regarding the topography of a site is available from numerous locations, particularly OBM maps and the nutrient management plan being prepared. The determination of risk is interpreted to relate to the parcel as a whole. Therefore, small areas which may exceed a particular risk ranking may have no discernable affect on water flow patterns will not require mitigation. Significant areas which have distinctly different soil types with a higher risk rating may be identified and treated separately as a mitigation item.

b. Soil Permeability

The information regarding the soils present and their respective permeability may be found in several locations, such as the Soil Map of Municipality of Chatham-Kent. As with topographic slope, the determination of risk is interpreted to relate to the parcel as a whole. Therefore, the risk ranking is based upon the parcel as a whole. It may be that areas which have distinctly different soil types with a higher risk rating may be identified and treated separately as a mitigation item.

c. Groundwater Depth

This component is meant to determine the depth to the water table in the shallowest unit down gradient from both the facility and spreading area. This information is available from the assessment of local wells available from the MOE database. As with Soil Permeability, the determination of risk is interpreted to relate to the parcel as a whole, although significantly different areas within a parcel may be addressed by specific mitigation.

d. Depth of Bedrock

This component is meant to determine the depth to the lithified rock unit surface. As much of the Municipality is covered with unconsolidated glacial deposits, the ground and surface water flow patterns can be significantly controlled by the presence of these much less porous bedrock units. This information is available from the assessment of local wells. It is presumed that the bedrock depth throughout the Municipality may exceed the

30 metre limit for low risk, however, local occurrences of shallow bedrock may require specific mitigation requirements.

e. Depth to Regional Aquifer

This component is designed to protect large scale aquifers that provide significant quantities of water to public water supply systems. This information will be available from the Municipality upon completion of the Essex/Chatham-Kent Regional Groundwater Study.

f. Lateral Distance from Drilled Wells

The primary source for this information is the MOE well record data base. The key to evaluating the risk from drilled wells is a determination of lateral distance, presence of a surface seal and presence of confining layers at depth. Wells with good surface seals, significant depth, and low permeability layers above the well screened zone will require little mitigation. However, wells which have no surface seals and are shallow will need to be addressed in the mitigation section.

g. Lateral Distance from Dug Wells

The primary source for this information is the MOE well record data base. Since dug wells are typically shallow and generally have no surface seal, special attention must be paid to preclude raw manure from the area surrounding the well.

h. Lateral Distance from Surface Water

This information can be collected from many sources including the OBM mapping or the Essex/Chatham-Kent Regional Groundwater Study. The key aspect to this risk factor is the identification of a process to limit the potential for raw manure to flow directly into a surface watercourse.

i. Presence of Tiled Fields

The source of this information is the Nutrient Management Plan and direct interviews with the land owners. The presence of tiling rates an immediate moderate risk. There are advantages to tiling, such as the lowering of the groundwater table and disadvantages, such as potential rapid outflow to surface waters. The proponent must be fully aware of these factors and tailor the manure spreading process, including rates and method of incorporation.

3. Risk Mitigation

The Risk Mitigation portion of the EEP contains several components:

Risk Mitigation Options
Spill Contingency Plan
Odour Control (MDS)
Water Monitoring

Risk Mitigation Options

The EEP consultant shall develop mitigation options for each classification identified as having a Moderate or High risk factor. As noted above, high risk factors shall be addressed by an appropriately more stringent level of mitigation. The following sections provide some insights into the mitigation options available.

Liquid Manure Application Procedures

1. Seasonal Aspects

    a. Spring spreading: a plan to apply before planting most valued crop,
    b. Summer: a plan to sidedress to growing new crops, on cereal (wheat) stubble or between cuts of forage,
    c. Fall: a plan for applications to winter cereals (wheat), summer planted forages or cover crops and post harvest land with appropriate incorporation,
    d. Winter: winter spreading shall only be accomplished with special care:
        - No spreading should occur onto frozen, bare (no cover crop) lands,
        - Spreading shall only be accomplished in a manner to minimize runoff, such as with mild temperatures and when precipitation is not forecast for the next 48 hour period,
        - Select the most level fields and increase the distance away from watercourses,
        - Till the soil immediately prior to and following spreading. If soil cannot be tilled, no spreading should occur.

2. Inspect fields prior to manure application to ensure tile system is in good repair.

3. Delay manure application until field tiles stop flowing due to normal drainage patterns.

4. Do not apply liquid manure when the soil is already saturated from rain or snow.

5. Consider the installation of special catch basins on tile outlets to allow for observation of tile discharge during manure applications.

6. Notify, in writing, the municipality and residents within 500 metres of intent to apply based on a developed relationship before hand with emphasis on sensitivity to needs.

7. Avoid spreading if rainfall has occurred shortly before planned application or heavy rains are forecasted within 12-24 hours of application.

8. Have a contingency plan in place to deal with any negative occurrence that may occur as a result of application.

9. Till the field prior to application to break-up the macropore pathways that could carry the liquid manure to the tiles.

10. Take time to monitor tiles before, during (within 30 minutes of each application), and after the application (for at least for 24 hours) to ensure manure is not migrating. Water sampling, at an easily accessible location, may be part of this procedure.

11. If problems develop go to contingency plan defined in Schedule A.

12. To manage odour and maximize nutrient value, incorporate manure directly and/or incorporate within 24 hours following application.

13. Develop an "Enhanced Nutrient Management Plan" to outline the timing and placement of manure applications to maximize nitrogen and phosphorus utilization by crops and minimize nutrient loss to the environment.

Manure storage contingency procedures:

1. Ensure adequate manure storage (at least 240 days) to allow flexibility in application due to unexpected/unpredictable weather occurrences.

2. Ensure the manure storage; whether below barn, concrete or earthen, has a trench dug to intercept and disconnect all existing field tiles.

3. Monitor the level of manure in storage for unusual fluctuations.

4. Take proper care in construction of all types of manure storage facilities. The procedures are outlined in "manure storage" construction schedules D, E, F, and G as part of the Municipality Nutrient Management By-Law.

5. In the event of a spill moving over the ground surface, an earthen berm would immediately be built with available equipment to temporarily stop the flow, following the contingency plan in Schedule A.

Proximity of Surface Water Bodies and Wells

1. Prevention of surface water flow directly from a barn, manure storage area, or spreading field directly into a surface water body.

2. Prevention of surface waters from ponding around a wellhead

3. Determination of adequate surface seals and aquitards for wells

4. Wells may be decommissioned

5. Maintenance of buffer zones along surface water bodies and around wellheads

Spill Contingency Plan

The Nutrient Management Planning Guidelines require the development of an emergency spill contingency plan. If appropriate, the EEP should identify additional aspects to this plan designed to protect the local and regional water resources. Attachment A to this guideline provides some additional details regarding such planning.

Odour Control

The EEP dictates the development of odour control measures if the proposed operation is within 2 km of a residence or business. While the odour control program envisioned by the EEP is ***not an odour elimination*** program, the program should identify the proximity and number of neighbours, and have increasing levels of odour control depending upon these factors. For remote, sparely populated areas, a lower degree of odour control is envisioned as opposed to an operation in close proximity to a heavily populated area. Appendix A of the EEP document provides some suggestions and options for developing these plans.

Water Sampling

Personnel from the Municipality of Chatham-Kent will annually collect water samples from designated sites to monitor water quality for both the livestock operations and manure spreading areas. The proponent will assist in locating and accessing the monitor sites and pay for the required analytical procedures. The EEP shall identify water sampling sites in the following order of preference:

1. On-site wells
2. tile drain outlets
3. down-gradient wells
4. surface waters draining the site

It is highly likely that the water monitoring can be accomplished without the drilling of a dedicated monitor well in most cases. However, should a high risk situation exist that necessitates close monitoring, this option may be pursued.

Attachment A
Spill Contingency Planning

The purpose of a contingency plan is to mitigate the environmental risks and impacts of a spill, minimize the potential for a spill, and possess an action plan if one were to occur. The following contacts, with phone numbers, should be posted in the barn by the phone and/or in the tractor so that there would be quick action in case of a spill.

Spills Action Centre	1-800-268-6060
Ontario Ministry of Environment	1-800-387-7784
Names of Neighbours	
Bulldozer/Backhoe Operator	
Municipality of Chatham-Kent	360-1998

To Avoid a Spill:

- Calibrate manure spreader equipment each year to estimate the application rates and adjust that rate to meet the recommendations set out in this plan.
- Avoid spreading manure closer than 30 feet to a watercourse or farther if indicated by the P-index calculation.
- Have marked all tile outlets and catch basins for application and inspection purposes.
- Monitor all tile outlets for at least 24 hours during and after application and supervise all operations at home base for possible quick shutdown.
- Carry phones in tractors and have someone assigned to do odd jobs around the pump at the storage tank on spreading days so that they may be called for quick pump shut off.
- Till the soil prior to application to break it up and increase soil absorption when necessary.
- Don’t spread manure on a steeper field section by watercourses and plan not to winter spread on frozen ground or before predicted rain events.

To Clean Up a Spill:

- Eliminate the source of the spill where possible.
- Shut down the appropriate pumps and valves
- Make sure the system cannot be restarted
- Immediately contact the 24 hour Spills Action Centre and/or the Municipality of Chatham-Kent

To Contain the Spill:

- Plug the tile at its outlet and pump the liquids from the tile to a field.

- Build an earthen berm with the equipment available on the farm or from a neighbouring farm(s) based on an agreement(s) to temporarily stop the flow if the spill is moving over the ground surface.
- Monitor wells down gradient for any developing contamination should a spill be determined.
- Notify downstream neighbours.

To Clean Up the Spill:

- Field spread the manure (according to NMP) or stored for later application.
- Re-evaluate the contingency plan to determine what could be done better, identify unanticipated aspects, and make changes accordingly.

APPENDIX A
ENVIRONMENTAL EVALUATION PROTOCOL
RISK ASSESSMENT CHECKLIST

The following checklist identifies the Environmental Risk Classifications and the respective risk ranking (low, moderate, high) for the:

Proposed Project Name: _____
Project Owner: _____
Project Proponent: _____
Project Location: _____
_____
Project Manager: _____

Project Assessment

Proposed Project Size: _____

New Construction or Expansion: ___New Construction ___Expansion

Manure Storage Structure: ___Earthen ___Concrete ___Steel ___Other

Distance to Nearest Home or Business: ___Less than 2 km ____Greater than 2 km
(Livestock Operation & Spreading Areas)

Source of Water: ___On-Site Well ___Nearby Well ___Other

Quantity of Water Used: _____Max/day _____Ave/day

Date of Site Visit: _____

Environmental Risk Classification	**Low Risk**	**Moderate Risk**	**High Risk**
Topographic Slope			
Soil Permeability			
Depth to Groundwater			
Depth to Bedrock			
Depth to Regional Aquifer			
Distance from Drilled Well			
Distance from Dug Well			
Distance from Surface Water			
Presence of Tiled Fields			

1. EEP Evaluation Notes

2. Environmental Risk Mitigation Plans

3. Odour Control

4. Water Monitoring Plan

5. Spill Contingency Planning