WHITEWATER
— R E G I O N —

2022

Building Service Delivery Review

WSCS Consulting
Think Beyond

Building Service Delivery Review

Building Service Delivery Review

BUILDING SUCCESS

EXECUTIVE SUMMARY

Municipalities are under immense pressure to improve client service in development, planning and building permit processes. This pressure comes both from the public, developers, consultants, municipal councils, and internal staff. The Township of Whitewater Region (the Township) is no different. As a municipality experiencing growth in recent years, Whitewater Region is under pressure in terms of volume and resources to review and complete complex planning and building applications. The last two years have been particularly challenging. COVID-19 has provided a great opportunity for many to leave large urban centres in favour of the beauty and wide-open spaces. The Township is particularly attractive with its waterfront and proximity to several cities.

In terms of building services, the focus of this review, the Township has seen a significant increase in activity in building permit applications (average 16% annual increase) with over 33% increase in permit revenues over 5 years. The last two years has seen significant increases in residential development (63% increase in 2021).

Building services are complex. In order to protect the public as well as property owners, Ontario, like all jurisdictions, are governed by several pieces of legislation, the most important being the Building Code Act (the Act) in Ontario. The Chief Building Official is appointed by Council and must meet professional qualifications and exercise power under the Act. Municipalities may set fees for building permits in order to

cover the costs of administering the program. In theory, those who wish to develop should pay for development as opposed to the general taxpayer. Therefore, it is important that fees be analyzed on a regular basis to determine the appropriate amount to cover the costs. In the case of the Township, fees have not typically covered the cost of administration, but recent changes and growth approaches cost recovery. It is crucial that the Township undertake regular fee studies which includes tracking of costs against applications.

In most cases, the cost of building services arises from the need to review complex and multiple drawings and the performance of inspections throughout the building process. These processes are very costly both in terms of time, transportation, and materials/printing. We noted that for a new building, there are 15-18 inspections required with an average cost of $670 (12.6 hours with travel) per permit. In 2021, this equated to a total of 3,800 hours for application plan reviews and inspections alone (or 2.1 full time equivalents). This does not include the additional 350 hours (0.2 FTEs) for other services such as commenting on planning applications, kennel permits and responding to inquiries. It was clear that the sole CBO was unable to handle the workload particularly without new processes and support. This, together with some complaints with respect to response time, prompted the Township to contract the services of an additional inspector for 2.5 days a week in 2021. The Township also contracts out inspection services for Part 3 – Large Buildings given the specialized nature of these

requirements on a casual basis. These decisions have been seen as very effective and allow for better service and back up for the CBO. The Township recognized that many of its processes need to be transformed through a combination of business process changes and technological change. Over the last 15 years, technology has advanced in electronic plan reviews. To this end, the Township engaged WSCS Consulting Inc. (WSCS) to assist in the assessment of its building processes with the view to better utilize its current technologies, improve its processes, and explore electronic based system for applications, plans and drawings submission and review. While the focus is currently on the building permit processes, planning applications also suffer from the same challenges. Further, the CBO provides input into planning applications where needed.

Any electronic application and plan review system must integrate seamlessly with other related business systems that are utilized to manage applications and workload (Vadim). As well, it is desirable to deploy the best available technology given its size and number of applications. The market is quite broad in terms of functionality and price. Clearly, the Township needs to balance the cost with the functionality and usability. We know that not all developers/contractors in the area are necessarily 'tech savvy' and so, any implementation needs to be cognizant of the change management process. Further, the Township staff itself will need training, processes and technological tools to make any change effective.

This review revealed that, overall, the Building Department delivers good service and the staff are well respected. For the most part, there are few issues with respect to meeting the standards set out in the Building Code but we found it difficult to 'prove' that with evidence. This appears to be primarily a process issue and a lack of knowledge and tracking in the permitting module of Vadim. We also noted that, the lack of documented processes has likely led to variation in service as well as 'incomplete' applications. It is clear that the volume of work with only one staff (the CBO) for many years made it very difficult to 'step back' and create efficient, effective procedures and training of the administrative staff. Now that there are some additional resources, we believe that there are significant opportunities for improvement for building permit application processes as well as drawings/plan markups and circulation. Currently, all of the processes are paper based and manual. While Vadim, the financial/permitting system is utilized for permit issuance, its functionality it significantly underutilized. We also noted that the website needs a complete overhaul when it comes to building services information. There is a myriad of forms in different formats but few fillable forms, no error proofing or plain language instructions. Because front line staff have had little training in the Building Code or Vadim, they often are unable to assess if a permit is complete. Much of this type of customer service rests with the CBO. There are also opportunities to improve interdepartmental cooperation to ensure that all relevant Township requirements are reflected in plan approvals.

WSCS undertook interviews, system walkthroughs, documentation reviews involving staff and management from the Township. We also analyzed data and performance measures in order to understand the results of the various processes and identify areas of improvement. Our survey/interviews with developers/contractors and Councillors was helpful to gain a customer perspective of the services as well as the desire for technological change. Staff and management were also canvassed for their improvement recommendations and system requirements which have been incorporated in this report.

PROJECT OBJECTIVE

The objectives of the Building Service Delivery Review were identified as follows:

1. Improved building permit process flow and elimination of any waste. A review of the website and online services was identified as a key objective.
2. Optimization of existing resources, including human and technological.
3. Increased customer satisfaction with timely inspections.
4. Continued ability to meet increasing demand.
5. Streamlining and integration of other development approvals, including planning.
6. Greater technological integration.

FIGURE 1: SERVICE DELIVERY REVIEWS - KEYS TO SUCCESS

Figure 2: 10 CRUCIAL QUESTIONS for Service Delivery Reviews were explored as part of the analysis of each Township service. These questions provided for both internal and external view of the services and how they currently perform in relation to the expectations from the Township's stakeholders.
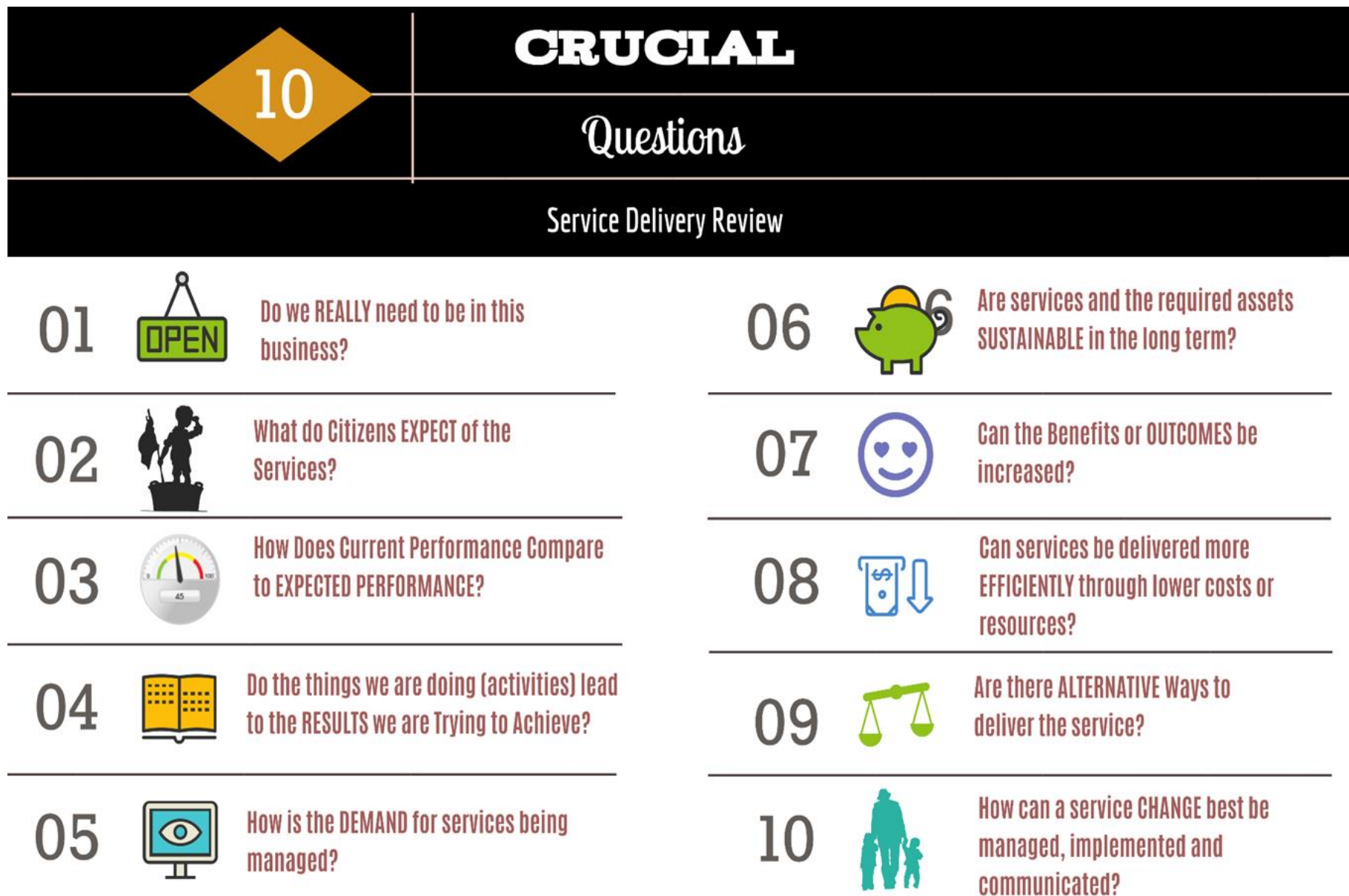

CRUCIAL
10
Questions
Service Delivery Review

01 Do we REALLY need to be in this business?

02 What do Citizens EXPECT of the Services?

03 How Does Current Performance Compare to EXPECTED PERFORMANCE?

04 Do the things we are doing (activities) lead to the RESULTS we are Trying to Achieve?

05 How is the DEMAND for services being managed?

06 Are services and the required assets SUSTAINABLE in the long term?

07 Can the Benefits or OUTCOMES be increased?

08 Can services be delivered more EFFICIENTLY through lower costs or resources?

09 Are there ALTERNATIVE Ways to deliver the service?

10 How can a service CHANGE best be managed, implemented and communicated?

FIGURE 2: 10 CRUCIAL QUESTIONS

1. **Do we REALLY need to be in this business?**

   This question arises through the evaluation of mandatory and discretionary services. The determination of how a mandatory service is delivered is addressed as part of question 9.

   FINDING: Yes, municipalities must provide opportunities for growth and building services. However, staff do not have to be municipal employees. The Township has engaged outside assistance to improve its service delivery.

2. **What do citizens expect of the service and what outcomes does council want for the service?**

   While we did not have wide ranging consultations, a survey was administered with some key stakeholders and Councillors were interviewed.

   FINDING: Customers expect timely, accurate advice in building services. Generally, the Township provides good service but response time was a problem in the past. Further, the front-line staff have had limited training leading to some dissatisfaction with the advice received.

3. **How does current performance compare to expected performance?**

   Like Question 2, we utilized the performance data that the Township currently collects in order to assess the degree to which the current performance meets the expectations. Where performance measures were not available, we made recommendations for new or

updated key performance metrics to be collected and monitored in the future.

FINDING: This is problematic as the systems utilized do not have consistent data.

4. **Do the activities logically lead to the expected outcomes?**

   The review of each service included an assessment of the processes and practices utilized to deliver the services. In terms of building services, the goal is to ensure that inspections lead to good buildings and satisfied customers.

   FINDING: Customers indicated that the CBO and new inspector provide timely inspections and do not hold up construction. They provide good advice and welcome alternatives in light of supply chain issues (COVID). The Township has had little legal issues with respect to building services.

5. **How is demand for the service being managed?**

   This question points to the management practices and systems to anticipate workload demand, assign resources and report on results.

   FINDING: Because the processes are paper based, manual and not planned, workload is primarily reactive. Further, little is captured in Vadim and so it is difficult to plan long term. Recently, the Township has added additional resources to assist in the demand but is not full time. Workload remains relatively reactive. By improving front-end processes, the Township can

better plan its inspection workload, including the requirement for deposits. This will be an 'incentive' to close permits.

6. What are the full costs and benefits of the service?

Full cost entails the assessment to deliver the service including utilizing assets. The ability to assess these costs is directly related to the way the municipality collects and assigns costs to the service. Benefits, points to the determination of "who is better off" as a result of the services provided.

FINDING: Recent changes in fees have moved the Township to cover its costs. However, time is not tracked against individual applications nor is it monitored. Further, we noted that administration staff do not record their time against building services so the costs are likely undervalued. We recommend that, with the implementation of a new permitting application system, that time be tracked against applications.

7. How can benefits and outputs of the service be increased?

By looking at how services are delivered, we can assess opportunities for increased benefits, perhaps through improved service delivery mechanisms to reach more people or added results. Outputs can generally be increased with improved processes or alternative mechanisms to produce more results.

FINDING: Implementation of online submissions with error proofing at the front end of the application process as well as customer tracking and payments

online will reduce the amount of time spent on reviews and errors. This will allow for the CBO to spend time with customers.

8. How can the number and cost of inputs be decreased?

Inputs include staff time, materials and supplies, as well as utilization of assets to deliver services. Becoming more efficient means decreasing inputs but producing the same or more results. That is, lower costs per unit produced. Typically, this is achievable through elimination of non-value-added activities (duplication, errors, inventory, waiting, extra/over-processing) in processes (LEAN), better management of assets and life cycle costs. Technology is one way in which the cost of inputs can be reduced. Improved maintenance practices for assets will also reduce costs, including loss due to downtime.

FINDING: Reimplementation of Vadim to capture all information, moving to mobile technology and paperless applications/drawings will eliminate duplication of effort and improve processes.

9. What are the alternative ways of delivering the service?

Alternative service delivery is the process of looking to other ways to provide services including outsourcing, and or private/public partnerships.

FINDING: Septic re-inspections are being considered by the Township. It is clear that this is a 'specialty' and a large workload that could not be handled by the current or expanded complement. This is particularly problematic since septic re-inspections must be done in the summer, the busiest season for building inspection services. It was also noted that lot grading is a 'pinch point' in terms of time and resources. The Township may wish to consider outsourcing septic re-inspections if it were to adopt such a program. Similarly, lot grading for regular permits may better be served with an outsourced contract. Deposits may be an incentive to ensure re-inspections are undertaken and lot grading for all applications.

knowledge in this area. There will be a significant amount of change management required to assist the transition.

As we recommended in the other reviews, the PROSCI ADKAR[1] model as it provides a good framework that focuses on the individual as well as the organization

10. **How can a service change be best managed, implemented and communicated?**

Managing the "PEOPLE SIDE OF CHANGE" is critical to business transformation. Without an effective change management strategy, the Township will not be able to successfully implement the recommendations contained in this report.

The Township's staff utilization of technology is low. Some customers have also indicated a lack of

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[1] https://www.prosci.com/adkar/adkar-model

PROJECT SCOPE

1. **Project Initiation:** Met with the Building Service Delivery Review Steering Committee to clarify expectations, refine lines of inquiry, and develop a subsequent work program for the engagement.

2. **Scope Limitation:** It is important to note that the scope of this review was limited to Building Services. However, some corporate service areas were reviewed as they affect building services. We did experience limitations due to a lack of information provided for analysis.

3. **Council Consultations**: Interviews with 5 of Councillors. All Councillors were provided the opportunity to meet with the consultants but 2 declined indicating that they were satisfied with the services.

4. **Staff Consultations**: Interviewed Building Staff and Senior Management.

5. **Surveys –** While not extensive, we received 3 developer responses to our survey and undertook one additional interview.

6. **Review of Current Service Delivery Model:** Developed an inventory of services and processes provided by Building staff.

7. **Documentation Review and Analysis:** Reviewed Undertook analysis of data and financial results based upon available information.

8. **Opportunity Identification:** Identified potential opportunities to achieve the most efficient and operationally effective approach to service delivery and address the 10 key questions.

9. **Final Report & Presentation:** Develop and present a draft report with recommendations for Council in January 2022. Final report due on January 31, 2022.

METHODOLODY

Our methodology included a combination of documentation reviews, consultations, interviews, system walkthroughs, benchmarking, and data analysis (Figure 3). This work was undertaken over a four-month period commencing October 2021 with an interim report delivered to Council in January 2022.
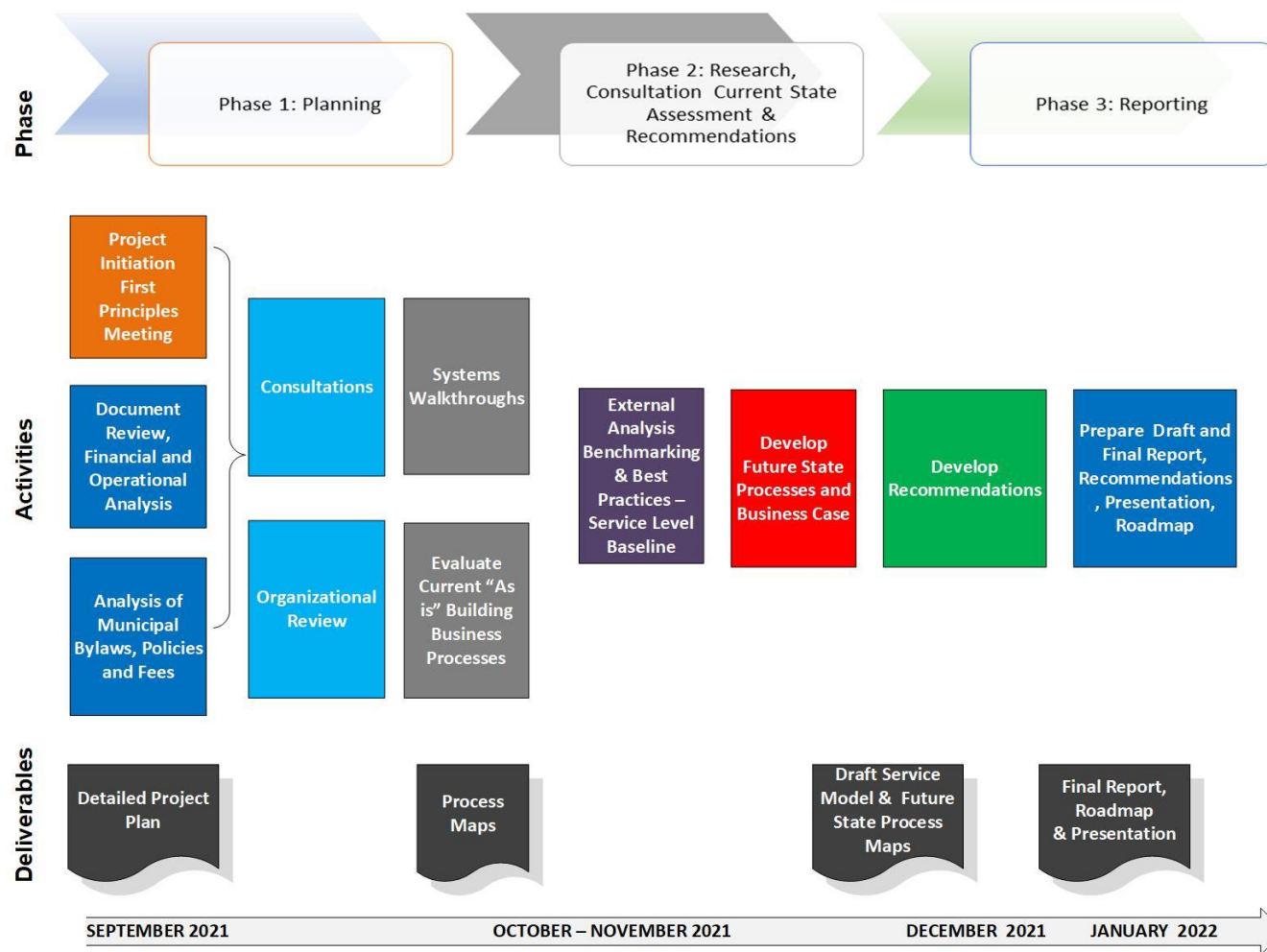
Phase

Phase 1: Planning

Phase 2: Research, Consultation Current State Assessment & Recommendations

Phase 3: Reporting

Activities

Project Initiation First Principles Meeting

Document Review, Financial and Operational Analysis

Analysis of Municipal Bylaws, Policies and Fees

Consultations

Organizational Review

Systems Walkthroughs

Evaluate Current "As is" Building Business Processes

External Analysis Benchmarking & Best Practices – Service Level Baseline

Develop Future State Processes and Business Case

Develop Recommendations

Prepare Draft and Final Report, Recommendations, Presentation, Roadmap

Deliverables

Detailed Project Plan

Process Maps

Draft Service Model & Future State Process Maps

Final Report, Roadmap & Presentation

SEPTEMBER 2021   OCTOBER – NOVEMBER 2021   DECEMBER 2021   JANUARY 2022

FIGURE 3: PROJECT METHODOLOGY

FINDINGS, RECOMMENDATIONS AND OPPORTUNITIES

In assessing services and processes, WSCS utilized LEAN Six Sigma (LSS) methodologies which *focus on the customer* with the view *to eliminating non-value-added activities (waste)* and decreasing variation in services which lead to service expectation gaps. As will become evident in this report, we found that there are many opportunities for the Township to improve its customer services and reduce cycle time and cost of delivering those services. This will not come without a concerted effort and some investment. It will also require a change management strategy and corporate oversight.

FIGURE 5 provides a high-level summary of our findings where there are opportunities for improvement. It is imperative for Council, staff and management to understand that these findings are in no way meant to indicate that the Township is not doing a good job. It is apparent that staff have done their absolute best with the tools, training and resources available.

To be sustainable, the Township needs to modernize and improve operations and services. That is the essence of Lean Six Sigma – to continuously strive for excellence.

In summary, this report identifies 20 high level recommendations that require an investment of approximately $200k over 5 years with dedicated project management. Many of the opportunities require a 'one-time' investment in people, technology and planning but ultimately, savings will result. We have made a conservative estimate of $266k over 10 years in capacity savings that will allow for more proactive approach to work, planning and data analysis.

Opportunities have been grouped into the following categories:

1.   Technology and Processes – Leveraging technology to increase knowledge and capacity for change. In particular, the implementation of a cloud-based application portal for building permits and plan reviews. Documented standard operating procedures and training.

2.   Organization – Ensuring adequate, trained, human resources and change management strategies are in place for success in the long-term including succession planning.

3.   Customer Service – Strategy to better serve the customers and eliminate errors at the front end.

4.   Planning and Performance – Key performance indicators and proper reporting to make evidence-based decisions.

5.   Alternative Service Delivery– Exploring efficiencies through different service models, outsourcing, shared services to improve the customer experience while reducing costs through elimination of duplication of effort.

The Report is in the hands of Council and management to determine which opportunities will be pursued and when. While we have provided a recommended road map, we know that some areas must be done sequentially and others in parallel. We also know that momentum is important for success so it needs strong project management oversight.

COMMENDATIONS

While many of our findings in this report focus on areas for improvement, the Township has many commendations that will set it up for success:

1. The staff are knowledgeable, dedicated, competent and have a desire to change.

2. The new organizational structure and recent additions of inspection resources are already yielding positive results and a sense of optimism and improved service delivery.

3. Relationships with the development community is excellent and there is a willingness to assist in improvements to the application/inspection processes through technology.

4. The Township has many opportunities to utilize its current technology better. For example, Vadim provides a solid foundation for building permitting and tracking as well as document management but it is underutilized. Because it is a SQL database, integrations with other systems is relatively easy. New technologies for applications and plans review provide a great opportunity for the Township to move to online, mobile, paperless processes.

5. The Township is seeing extensive growth which will support the cost recovery of new processes and systems. Its

relationships with its neighbours provides shared service opportunities to reduce cost and increase services.

6. Council support and strong leadership lends itself well to change.

FIGURE 4:COMMENDATIONS

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BUILDING SDR FINDINGS

1. Technology & Processes

- Technology use is low
- Non integrated Systems - some unsupported
- VADIM significantly underutilized.
- No online submissions or plan reviews.
- Payments are all in person.
- Paper Manual processes/many spreadsheets - time consuming processes
- Inspections are done with files and paper then re-entered upon return to office
- Underutilized functionality
- Lack of Mobile Solutions
- Lack of Workflow
- Limited IT Application support
- Lack of documentation/SOPs for building processes, Development Charge calculations, document management.

2. Organization

- Planning Manager has assisted in lifting the burden for the CBO
- New contract inspector has allowed better response - but part time- risk if this is not solidified - more difficult to plan work - Growth expected to continue.
- Large Building inspector - Casual - new inspector being trained
- No Succession Planning
- Unclear Accountabilities
- Limited Administrative Support -
- Detailed Training in Building Code, requirements and VADIM is needed.
- More defined roles are needed particularly to allow Admin to better support and CBO
- Time not tracked so building expenses may be too low.

3. Customer Service

- Website is not customer centric - Need strategy
- Access E11 - Customer Service Strategy not linked to VADIM (Building Permit Software)
- Response time appears to be a challenge - not tracked effectively
- Front Counter staff attempt to assist but most customer service queries handled by the Chief Building Official.
- Website and instructions are poor - results in incomplete applications

4. Planning, Performance & Reporting

- Work is primarily reactive - over 200 open files to close - No deposits
- No time tracking against applications or inspections
- Reactive, Verbal Work Planning
- No performance framework - monitoring against legislative requirements is not tracked nor measured.
- Reporting is a challenge. MPAC and Stats Can Reporting has had errors. Could be a set up or training issue.
- Fees, while recently increased, are not quite cost recovery.

5. Alternative Service Delivery

- Growth is demanding new service delivery - Remote applications and plan reviews/mark ups.
- Opportunities for additional shared services with other municipalities and specific types of inspections
- Lot Grading is a pinch point for staff - consider outsourcing
- Possible outsource Septic Re-Inspections - too large a workload for complement - After new technology
- Fee differences will hinder sharing.

Note: Overall there is satisfaction with the quality of work and response from the Building Department. However, growth is impacting the ability to meet demands without new processes.

FIGURE 5: SDR FINDINGS

RECOMMENDATIONS

BUILDING SDR RECOMMENDATIONS

1. Technology& Processes

1.1 Procure and Implement a Cloud Based Permitting, Inspection and Applicant Tracking System (preferably with municipal neighbours). Online scheduling of inspections and mobile technology will eliminate the need for paper files in the field.

1.2 Reimplement Vadim and ensure permitting application software is integrated with payment options. This involves detailed instructions and changes to base information and attaching all inspections and documents.

1.3 Digitize processes, move to full electronic document management with associated training. All forms should be error proofed with detailed instructions in plain language.

1.4 Hire Software implementation and Training Consultant to assist in implementation and documentation.

2. Organization

2.1 Train front line Admin staff on building and planning technical information to reduce questions being handed off to CBO.

2.2 Refocus Admin Staff to assign specific time allocation to Building. Time should be tracked and captured as building services (more accurate costing). Most online permitting systems provide for this as well as Vadim time sheets.

2.3 Insource Inspector - Convert to full time $30k including benefits - meet demand and reduce risk of loss of expertise. Offset by increased permit fees. Once trained, move 'large building' inspections to this position as opposed to casual position.

2.4 Consider backup/Succession for CBO (either current inspector or neighbouring municipality).

2.5 Provide Vadim Training and Excel for staff to better assist in performance monitoring.

3. Customer Service

3.1 Integrate Access E11 and Vadim - tracking of customer requests and responses. Training in Access E11 is likely required with associated processes to integrate information with Vadim.

3.2 Undertake a Deep dive change to website for building services with consistent touch and feel. This should be done in consultation with the development community.

3.3 Consider utilizing a booking system for meetings with staff when customer needs additional support for building information.

4. Planning, Performance & Reporting

4.1 Create a more formal work planning approach and estimation of required inspections. Implement Deposits to encourage closing of building permits.

4.2 Redefine the fields and processes in Vadim to track date of application, number of 'returns' for incomplete applications and completion date. This reporting should be included in the quarterly reporting.

4.3 Upon implementation of the new cloud software and mobile technology, consider tracking time against each application. The time spent by administrative staff should also be tracked and charged to building services. From this data, undertake fee study and for permits applications. Consider 'discount' for online, completed applications.

4.4. Engage outside assistance to resolve the reporting processes for MPAC and Stats Canada.

5. Alternative Service Delivery

5.1 Consider outsourcing lot grading to relieve internal work - fee recovery - perhaps with other municipalities.

5.2 Consider sharing inspector with other municipalities (make full time).

5.3 Consider septic re-inspection system but outsourced on a fee for service basis, perhaps a shared service with other municipalities.

5.4 Develop a long term strategy to share specialized building services with other municipalities starting with fee harmonization, implementing 'one' building permitting and inspection system.

FIGURE 6: SUMMARY OF RECOMMENDATIONS

SUMMARY OF OBSERVATIONS AND RECOMMENDATIONS

TECHNOLOGY & PROCESSES

i. **Technology use is low. Systems are not integrated and underutilized. Most customer facing building processes are manual and paper based.**

The Township's primary software, Vadim, is utilized for issuing permits and accepting payments. It is solely used by staff and not accessible online by customers. Currently, all applications are received via paper or, in some cases, PDF files sent by email. Permits are printed and provided to the customer once payments are received (mostly made at the front counter). This means that the customer is required to attend the Township office, which, in COVID, is not ideal. In fact, COVID has heightened the need for better systems and processes to manage remotely. The developers that we interviewed indicated their desire to be able to submit their applications and drawings as well as pay online. This is the trend in the industry. Further, if the Township had this type of software, it may encourage developers from outside the region to build in the Township. Municipalities are 'in competition' for development and developers in other jurisdictions have indicated that online submissions is a key incentive to look to the municipality for future development. It significantly reduces the time and cost for both the customer and municipal staff. Further, it is

considered to be environmentally friendly by being paperless and reducing greenhouse gases with trips to the Township.

In terms of Vadim, while it is the primary software used by the Township, its functionality is limited but what is available is underutilized. The Township has not implemented the VadimOpen portal for permits for automation, mobile access with GIS and customer engagement. While this module does not allow for some of the functionality seen in new electronic plan review software, it does allow for online applications, payments and mobile access.

In particular, the software allows for full tracking of applications from the outset to deemed completion and associated reporting. Currently, the practice is to track applications in separate spreadsheets. These spreadsheets are not secure nor do they contain full information to determine if the approval of the permit meets the Building Code requirements. Further, it is a duplication of effort and subject to manipulation.

In terms of setup, Vadim has the ability to create different fees and workflow. While this is in place and works well, changes were made in recent years to fee structures causing data analysis issues. We would also suggest that standardization does not exist in terms of data entry and key fields.

We also noted that Vadim has the ability to attach documents, a feature that is not used and would simplify

processes and access. Currently, documents are scanned after the fact to separate folders on the Township's shared drives. These are not attached to the file in Vadim. We noted that the electronic files provided did not contain all the information contained in the paper files. We also consider this a risk for the Township. Paper files have a tendency to get lost, destroyed, fade and often duplicated. This not only adds time and cost, from a records retention perspective, the final corporate record may be unknown or unavailable.

In terms of inspections, the process currently is that the customer would contact the CBO to arrange an inspection. These are then scheduled manually between the inspector and the CBO as opposed to an online scheduler.

The type and date of the inspections are included in Vadim but the details are not captured. Further, the workflow, automated notifications and expected requirements are not utilized. This has led to permits being open for a long period of time and results in a requirement to manually follow up. According to the CBO, there are about 200 permits that are currently open. The typical process is that the CBO runs a report of the open permits and mails individual letters to arrange the outstanding inspections. This is both time consuming and costly. Because of the volume, the CBO does not send all of these letters at once, with fear that they would all respond at the same time and not be able to arrange inspections due to a lack of resources. The root cause may be that the Township does not take deposits on permits and therefore, there is no

incentive to close out the permits. We consider this to be a risk for the Township as occupancy may occur before a permit is issued.

When building inspectors go to the site, they continue to carry the paper files and then enter information after the fact. This is also a duplication of effort and may result in a delay. The staff do not have access to mobile technology to enter the information and delivery the inspection reports at the site. We also noted that, while deficiencies were followed up, the release was not contained in Vadim.

In terms of reporting, Vadim has the ability to report in a variety of ways including customized queries. We determined that few staff have the training to report on the activities or monitor performance. Regardless of the move to a cloud-based application software, we believe the first step is an investment required to 're-implement' Vadim with detailed description of each field as well as training. This will set a foundation for a new system to be integrated for the customer-facing portal recommended in this report. Without this good foundation, an implementation will not be successful.

ii. **Some Processes Are Not "Lean", time consuming paper-based processes are prevalent leading to excessive administrative time and management. Few Standard Operating Procedures (SOPs) exist.**

In reviewing processes and practices, it was revealed that improvements through LEAN would not only increase efficiency but provide better customer service. For example, the building application processes are paper based, many of the forms and website instructions are inconsistent and difficult to follow. No error proofing occurs before the application is filed. In some cases, applications are simply dropped off at the Township office requiring follow up. The CBO indicated that approximately 80% of applications are incomplete upon first filing but this is not tracked. The issuance of the permit is via paper upon manual payments. All inspections are paper based which requires the inspectors to 're-enter' information from the inspection when returning to the office in Vadim. The lack of training and improper implementation of Vadim has also led to duplication of tracking outside the system.

Most processes in Building Services are undocumented which has resulted in variation of service. Some SOPs have been created but have not been vetted or adopted. We noted that these do not include responsibilities or expected performance. This is challenging as administrative staff do not have documents to follow and have not received sufficient training. If the CBO is unavailable, staff often do not know how to proceed.

	1. Technology and Processes Recommendations					
Findings	**Rec #**	**Opportunity/ Recommendation**	**Opportunity Detailed Description**	**Benefits/Outcome**	**Quadrant**	**Year Start**
Technology use is low. Desire from the community to apply online. All paper-based processes currently. No online payments.	1.1	**Procure and Implement a Cloud-Based Permitting, Inspection and Applicant Tracking System (preferably with municipal neighbours). Online forms (error proofed) scheduling of inspections and mobile technology will eliminate the need for paper files in the field.**	There are several cloud-based software products available to municipalities. For the Township, likely the best options include: Cloudpermit, Citywide, Citizenserve, Idtplans, Eplan soft. Others such as Cityworks, Amanda and AVOLVE, offer better functionality but price point is much higher. Best to implement with neighbouring municipalities. Internal benefits are also significant. Reduce the number of incomplete, incorrect applications, missing information. Mobile technology would be needed to best implement such a solution to eliminate the need for paper files at inspections.	Ability to capture all information in one place with customer request and work flow management.	**HIGH EFFORT, HIGH IMPACT**	2022

			1. Technology and Processes Recommendations			
Findings	**Rec #**	**Opportunity/ Recommendation**	**Opportunity Detailed Description**	**Benefits/Outcome**	**Quadrant**	**Year Start**
•VADIM significantly underutilized.	1.2	**Reimplement Vadim and ensure permitting application software is integrated with payment options.** **This involves detailed instructions and changes to base information and attaching all inspections and documents.**	Vadim, the Township's financial system has been used for some time. However, most of the functionality is not utilized or incorrectly implemented. For example, each key field has not been defined, so tracking of response time is not possible. Spreadsheets are used to track permits outside the system for no apparent reason. Inspection information is not entered nor are documents attached to the system. Rate codes are not consistent making it difficult to do proper queries and updates. Vadim Open has not been implemented nor for payments, the inspection module to set available times. Data is also 'messy' and different codes used between years making analysis difficult. Training is also required to improve utilization and reporting.	Expand the use of Vadim, eliminate paper-based processes.	**HIGH EFFORT, HIGH IMPACT**	2022

1. Technology and Processes Recommendations						
Findings	**Rec #**	**Opportunity/ Recommendation**	**Opportunity Detailed Description**	**Benefits/Outcome**	**Quadrant**	**Year Start**
Implement paperless permitting	1.3	**Digitize processes, move to full electronic document management with associated training. All forms should be error proofed with detailed instructions in plain language.**	Currently all documents submitted and inspection documents are paper. The forms on the website are not error proofed. Some can be entered into; others are non fillable pdfs. Documentation is not in plain language nor do they provide enough information to eliminate the need for the CBO to communicate with customers.	Elimination of paper and access to information in the field.	**HIGH EFFORT, HIGH IMPACT**	2022
Internal staff do not have capacity or training to make these changes.	1.4	**Hire Software implementation and Training Consultant to assist in implementation and documentation.**	With the implementation of a new cloud-based permitting system, move to paperless workflow including work management, payments. Digitizing is not simply scanning documents – it is about workflow. There will need to be an investment of software, hardware and training to make this happen.	Reduced costs, improved service and access to pertinent documents (more important with COVID).	**LOW EFFORT, HIGH IMPACT**	2022

	TECHNOLOGY AND PROCESSES IMPLEMENTATION PLAN														
			2022				2023				2024				2024+
#	Opportunity/Recommendation	Year Start	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
1.1	Procure and Implement a Cloud-Based Permitting, Inspection and Applicant Tracking System (preferably with municipal neighbours). Online scheduling of inspections and mobile technology will eliminate the need for paper files in the field.	2022	▓	▓	▓	▓	▓	▓	▓	▓					
1.2	Reimplement Vadim and ensure permitting application software is integrated with payment options. This involves detailed instructions and changes to base information and attaching all inspections and documents.	2022	▓	▓	▓										
1.3	Digitize processes, move to full electronic document management with associated training. All forms should be error proofed with detailed instructions in plain language.	2022			▓	▓									
1.4	Hire Software implementation and Training Consultant to assist in implementation and documentation.	2022			▓	▓									

			Year 1	Year 2	Year 3		Total	Comments/ Assumptions

TECHNOLOGY AND PROCESSES INVESTMENT AND SAVINGS

#	Opportunity/Recommendation	External Cost (3 years)	Year 1 Internal Costs (Savings)	Year 2 Internal Cost (Savings)	Year 3 Internal Cost (Savings)	Total 3-year Internal Costs(savings)	Total Cost/Savings _Internal + External	Comments/ Assumptions
1.1	Procure and Implement a Cloud-Based Permitting, Inspection and Applicant Tracking System (preferably with municipal neighbours). Online scheduling of inspections and mobile technology will eliminate the need for paper files in the field.	$78,000	-$33,000	-$49,500	-$49,500	-$132,000	-$54,000	Elimination of paper reviews and re-submissions. Software will require set up and ongoing maintenance. Staff time savings from reduced duplication of effort and reconciliations. Modernization funding? Purchase mobile technology. Annual saving of 0.5 FTE'S
1.2	Reimplement Vadim and ensure permitting application software is integrated with payment options.	$15,000	-$5,000	-$5,000	-$5,000	-$15,000	$0	One time consulting costs of $15000 but savings of duplication of effort will cover.
1.3	Digitize processes, move to full electronic document management with associated training. All forms should be error proofed with detailed instructions in plain language.	$0	-$5,000	-$5,000	-$5,000	-$15,000	-$15,000	No requirement for configuration, internal process. Historical data will need to be attached at some point but go forward has little cost.
1.4	Hire Software implementation and Training Consultant to assist in implementation and documentation.	$25,000	$0	$0	$0	$0	$25,000	Consultant to assist with training and implementation.

ORGANIZATION

i. Many workload issues have put a strain on Building Services over the past few years but recent organizational changes are having positive results.

The Township has seen a significant increase in workload over the past few years which was impacting service delivery. Complaints about response times were received and the Township realized that, not only did it need to support the CBO with additional resources, its planning functions need attention. With the appointment of the Manager of Community Development, the CBO has been relieved of some of the planning functions as well as attending Council meetings. This allowed the CBO to concentrate on building services. However, the increase in permit applications continue and, with this comes increased required inspections. As shown in the background section, each application results in several inspections ranging from 1 (for demolitions) to 18 (for new commercial properties). Residential inspections, being the most prevalent, include 15-17 inspections, all of which take time (about 12 hours per application). In 2021, the number of permits increased by more than double from 2016 resulting in an increase of an additional 1,962 inspection hours (over 1 full time equivalent).

The Township recognized that this was not sustainable and the CBO needed assistance. To this end, an additional inspector with 1,000 hours was approved in June 2021. This has made a tremendous difference in the ability to serve the customers and response times are improving. However, it is important to monitor the volume on a go forward basis and make adjustments. Because this role is a contract, the Township is always at risk that it is not available in the long term. As growth continues, the Township needs to monitor this workload and adjust as necessary. Since fees follow applications, cost recovery is likely.

ii. No formal Succession Planning in Place

The role of CBO is one that many municipalities are experiencing the 'grey tsunami". There are few qualified CBO's in the marketplace and it is continuing to be difficult to attract and retain in smaller municipalities. The Township is no different. Its current CBO has no successor in place and should he move on, there will be a significant loss in terms of knowledge and connection with the development community. The recent hiring of an additional inspector may help, particularly if the incumbent solidifies CBO qualifications. However, in the interim, there is no succession plan. We consider this a risk to the Township, particularly because a lot of the knowledge is not necessarily captured in procedures and history. In anticipation, it is critical for the Township to start a succession plan. This may be an opportunity for shared resources with other municipalities.

iii. Limited Administrative support is available for Building Services.

While on paper, the Community Development Coordinator provides support to the Building Department, this was relatively recent. The position description dated 2021 includes support for Recreation, Building and Planning as follows:

> *"Receives and coordinates planning and building applications, ensuring accuracy and completeness, including receiving applications, recording fees, issuing receipts, setting up and coordinating building and planning files.*
>
> *Receives and coordinates entrance permits and civic addressing requests."*

This implies that the position needs to have knowledge of the Building Code and Planning Act. However, this requirement is not specifically identified in the qualifications section of the job specification. Further, the job description does not identify the percentage of time dedicated to the building/planning services. We understand that this position is stretched particularly due to the seasonal nature of the Recreation support. Front counter staff also provide some support with applications are filed but, not being trained in the Building Code and a lack of procedures makes it difficult to provide good service. In the responses from the development community, it became apparent that the advice received at the front end as well as the website could be improved. This was acknowledged by management and that

training is needed but time has been an issue. It was also acknowledged that the Community Development Coordinator role is quite busy with Recreation, front counter and splitting the time is a challenge. We suggest that the roles be evaluated and time be tracked against building services. Since permit fees are intended to cover the costs, it may be that additional resources are needed, at least until new software solutions are implemented.

Clear accountabilities and responsibilities should be developed for each role.

 iv.   **Training plan is needed.**

An investment in training is needed to enable front line administrative staff to add more value and be able to assist the CBO more effectively. We heard that the CBO spends approximately 90 minutes per day reviewing applications for completeness, responding to inquiries as opposed to delivering inspection services. We know that the Township is committed to providing training. However, it appears that Building staff do not have the time to delivery said training. We encourage the Township to look for external training in the Building Code for administrative staff and Vadim for all staff. Training should follow the development of SOPs for all staff involved in building services and advice.

2. ORGANIZATION RECOMMENDATIONS

Findings	Rec #	Opportunity/ Recommendation	Opportunity Detailed Description	Benefits/Outcome	Quadrant	Year Start
Administrative Support Detailed Training in Building Code, requirements and VADIM is needed. More defined roles are needed particularly to allow Admin to better support and CBO	**2.1**	**Train front line Admin staff on building and planning technical information to reduce questions being handed off to CBO (eg. OBOA)**	Current staff have had little training leading to incomplete information. CBO spends 60-90 minutes every morning simply addressing questions (customer related issues). Currently the Admin's duties are shared with Parks for recreational bookings.	Improved service, morale and reduced cost.	**LOW EFFORT, HIGH IMPACT**	2022

2. ORGANIZATION RECOMMENDATIONS

Findings	Rec #	Opportunity/ Recommendation	Opportunity Detailed Description	Benefits/Outcome	Quadrant	Year Start
Limited dedicated Admin support – too many roles without defined time for building.	2.2	Refocus Admin Staff to assign specific time allocation to Building. Time should be tracked and captured as building services (more accurate costing). Most online permitting systems provide for this as well as Vadim time sheets.	Admin staff time is 'pulled' between Parks and Rec/Building. This makes it difficult to support the CBO or learn. New cloud-based permitting may help but needs to be clarified. As well, admin staff do not currently track time against building so the expenses are undervalued.	Improved accountabilities and services.	HIGH EFFORT, HIGH IMPACT	2022
Recent hiring of part time inspector has helped but not a permanent solution.	2.3	Insource Inspector - Convert to full time $30k including benefits - meet demand and reduce risk of loss of expertise. Offset $15k by increased permit fees. Once trained, move 'large building' inspections to this position as opposed to casual position.	Consider increasing inspector hours and make full time - perhaps share with other municipalities if permit activity declines? Once systems are in place and depending upon growth, reassess possible shared services. This will reduce risk of expertise loss, provide full time back up, improved services and access as well as provide possible succession plan for current CBO.	Back up and improved service.	LOW EFFORT, HIGH IMPACT	2022

2. ORGANIZATION RECOMMENDATIONS						
Findings	**Rec #**	**Opportunity/ Recommendation**	**Opportunity Detailed Description**	**Benefits/Outcome**	**Quadrant**	**Year Start**
Succession Planning is an issue for the CBO as well as workload.	**2.4**	**Consider backup/Succession for CBO (either current inspector or neighbouring municipality).**	The CBO does not have a long term back up/successor. Given the relationship with the community, it is important that this be considered well before any vacancies.	Reduced risk of loss of knowledge.	**HIGH EFFORT, HIGH IMPACT**	2023

ORGANIZATION IMPLEMENTATION PLAN														

#	Opportunity/Recommendation	Year Start	2022				2023				2024				2024+
			1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
2.1	Train front line Admin staff on building and planning technical information to reduce questions being handed off to CBO.	2022	▉	▉											
2.2	Refocus Admin Staff to assign specific time allocation to Building. Time should be tracked and captured as building services (more accurate costing). Most online permitting systems provide for this as well as Vadim time sheets.	2022	▉	▉											
2.3	Insource Inspector - Convert to full time $30k including benefits - meet demand and reduce risk of loss of expertise. Offset $15k by increased permit fees.	2022		▉	▉	▉									
2.4	Consider backup/Succession for CBO (either current inspector or neighbouring municipality).	2023									▉	▉	▉	▉	▉

ORGANIZATION INVESTMENT AND SAVINGS

#	Opportunity/Recommendation	External Cost (3 years)	Year 1 Internal Costs (Savings)	Year 2 Internal Cost (Savings)	Year 3 Internal Cost (Savings)	Total 3-year Internal Costs(savings)	Total Cost/Savings _Internal + External	Comments/ Assumptions
2.1	**Train front line Admin staff on building and planning technical information to reduce questions being handed off to CBO.**	$5,000	-$5,000	$0	$0	-$5,000	$0	Costs of training – either internal or external will result in reduced errors and time by CBO.
2.2	**Refocus Admin Staff to assign specific time allocation to Building. Time should be tracked and captured as building services (more accurate costing). Most online permitting systems provide for this as well as Vadim time sheets.**	$0	$0	$0	$0	$0	$0	Internal allocation. Perhaps Financial Assistant can take on more role in Parks and Recreation?
2.3	**Insource Inspector - Convert to full time $30k including benefits - meet demand and reduce risk of loss of expertise. Offset $15k by increased permit fees, reduced casual hours.**	$0	$15,000	$15,000	$15,000	$45,000	$45,000	Move to full time $30k, offset by $15k in permit fees.
2.4	**Consider backup/Succession for CBO (either current inspector or neighbouring municipality).**	$2,000	$0	$0	$0	$0	$2,000	Possible succession planning with inspector or neighbours.
2.5	**Provide Vadim Training and Excel for staff to better assist in performance monitoring.**	$0	$7,800	$0	$0	$7,800	$7,800	120 hours internal

CUSTOMER SERVICE

i.   Website is not Customer Centric.

The website has been updated for most areas but the building services appears to be a bit haphazard and lacks consistency and structure. The instructions are not intuitive and document standards are all over the map. Most of the forms are PDF but not fillable. Some documents are linked as single document but for example one is set at 50% original size whereas the other linked to it, is 100% in size. No particular workflow exists leading to the requirement for customers to contact the Township for clarification and assistance. As mentioned above, customers are unable to file or pay online. There is no error proofing to ensure that the application is complete. While there are forms on the website, there are no instructions on how to fill them out, which forms are required.

While there is a checklist, it is not necessarily filled out nor is it validated and included in the Township file. An additional checklist is created by the CBO but is not the same as the one completed by the administrative staff.

In terms of the plans and subsequent inspections required, no samples are provided (with the exception of the septic plan) on the website nor the process that will be followed nor the response time to be expected.

ii.   Customer Service Request Strategy not linked to Building Services.

The Township implemented AccessE11 which is used to log customer requests and complaints. Some building service requests are logged here but are not included in Vadim. While it is true that Vadim is only currently used for permits that have been filed, any complaints regarding the process is not captured. A customer service strategy is needed to capture the information from AccessE11 and Vadim with key performance indicators including but not limited to:

- Number of complaints by property time
- Response time to requests
- Time to approve building permit from deemed completion
- Number of resubmissions of applications due to incomplete information
- Accuracy of advice/number of repeat questions

In order to better serve the customers, the types of questions should be captured so that new instructions can be developed. As well, a detailed process map with all the required documents should be created as part of the implementation of an online customer portal. This portal should allow the customer to track their own applications online. A repository of 'frequently asked questions' and responses should be made available to customers and front-line staff to reduce the number of queries forwarded to the CBO.

We also noted that the response to requests is reactive and not 'booked' which often results in multiple interactions.

3. CUSTOMER SERVICE RECOMMENDATIONS						
Findings	**Rec #**	**Opportunity/Recommendation**	**Opportunity Detailed Description**	**Benefits/Outcome**	**Quadrant**	**Year Start**
Complaint and Service Requests in AccessE11 is not integrated with Vadim – may be duplicated.	3.1	**Integrate AccessE11 and Vadim – tracking of customer requests and responses. Where a permit is created the issues should be captured in Vadim. Training in Access E11 is likely required with associated processes to integrate information with Vadim.**	Customer Service Policy should include values, performance indicators and included in staff performance plans. Indicators should include turnaround time expectations as well as quality. If there are complaints for building services, they should be entered into Access E11 – Vadim does not allow for this information until there is a permit.	Customer Focussed Strategy with clear objectives and measures.	**HIGH EFFORT, HIGH IMPACT**	**2022**
Website is not customer centric – Need strategy to be more customer friendly and ensure continuity of experience.	3.2	**Undertake a Deep dive change to website for building services with consistent touch and feel. This should be done in consultation with the development community. See Appendix B for examples from other municipalities.**	Website for building services needs special attention prior to launching the cloud-based system. Consistency of documents, processes and messaging as well as error proofing is needed.	Customer focussed – should include the community.	**LOW EFFORT, HIGH IMPACT**	**2022**

3. CUSTOMER SERVICE RECOMMENDATIONS						
Findings	**Rec #**	**Opportunity/Recommendation**	**Opportunity Detailed Description**	**Benefits/Outcome**	**Quadrant**	**Year Start**
Customers interact through email, walk ins, on the street. There is no specific time set aside for more complex matters.	**3.3**	**Consider utilizing a booking system for meetings with staff when customer needs additional support for building information. Should be part of the online portal. Could include public information sessions or online instructional videos.**	By booking online either through the cloud based permitting software or BookKing, staff would be in a better position to assist customers and gather information ahead of time where possible. May result in a reduced need for the CBO to be involved.	Improved customer service, reduced time spent after application filed.	**HIGH EFFORT, HIGH IMPACT**	2022

			2022				2023				2024				2024+
CUSTOMER SERVICE IMPLEMENTATION PLAN															
#	**Opportunity/Recommendation**	Year Start	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
3.1	Integrate AccessE11 and Vadim – tracking of customer requests and responses. Where a permit is created the issues should be captured in Vadim. Training in Access E11 is likely required with associated processes to integrate information with Vadim.	2022	▨	▨	▨	▨	▨	▨	▨						
3.2	Undertake a Deep dive change to website for building services with consistent touch and feel. This should be done in consultation with the development community.	2022						▨	▨	▨	▨				
3.3	Consider utilizing a booking system for meetings (online permitting portal) with staff when customer needs additional support for building information. Could include public information sessions or online instructional videos.	2022				▨									

CUSTOMER SERVICE INVESTMENT AND SAVINGS

#	Opportunity/Recommendation	External Cost (3 years)	Year 1 Internal Costs (Savings)	Year 2 Internal Cost (Savings)	Year 3 Internal Cost (Savings)	Total 3-year Internal Costs(savings)	Total Cost/Savings _Internal + External	Comments/ Assumptions
3.1	Integrate AccessE11 and Vadim – tracking of customer requests and responses. Where a permit is created the issues should be captured in Vadim. Training in Access E11 is likely required with associated processes to integrate information with Vadim.	$0	$5,200	$0	$0	$5,200	$5,200	Internal resources – 80 hours -
3.2	Undertake a Deep dive change to website for building services with consistent touch and feel. This should be done in consultation with the development community.	$10,000	$0	$0	$0	$0	$10,000	External Consultant assistance may be needed to revamp wording, forms and workflows.
3.3	Consider utilizing a booking system (online permitting portal) for meetings with staff when customer needs additional support for building information. Could include public information sessions or online instructional videos.	$0	$0	$0	$0	$0	$0	Internal savings. No new software needed.

PLANNING, PERFORMANCE AND REPORTING

i. Work is primarily reactive resulting in a large backlog of open permits.

The workload is generated from the customer and is 'pushed' on the Building Staff which is not 'LEAN'. Best services are based upon the 'pull principle' or a proactive approach. Currently, permit applications arrive at the Township by a variety of means. Inspection requests come in daily. The CBO then manages the work by separating locations with the other inspector on the days he is working. To some extent, building services cannot anticipate its work. However, the Township has the ability to create a listing of outstanding inspections, and create follow-up plans. Because there are no deposit requirements, permits remain open for long periods and no incentive to close them off.

As new people plan a move into the area, the Township would see the sales of land and properties. Developers start their processes long in advance of building permit issuance. As part of these processes, the Township could consider getting 'in front' of these applications through communications and tracking of requests. Growth forecasts indicate that the Township will grow about 19% by 2039. In anticipation, it should be monitoring the workload and ensuring it has the flexibility to meet this demand. In any event, a much more proactive approach to inspections should be undertaken starting with deposits, reminders (online) through the new portal so customers do not allow the permits to continue to be open. Online scheduling will allow customers to see

availability of inspectors and better plan their time as well.

ii. Time is not tracked against applications. Fees recently reviewed but not quite cost recovery.

A fundamental concept of user fees is that user pays. User fees should be set based upon the cost of the service so that the regular taxpayer is not saddle with development costs. There are some municipalities that, as part of their economic strategy, have kept their fees low to encourage development. While this may be a good policy and based upon full information and a very deliberate business case. The Township has recognized this fact and has increased its permit fees as well as introduced development charges over the last year. Based upon the financial results, the Township is nearing cost recovery for building services. However, currently, there is no tracking of time/cost against applications, nor overhead and administrative support which means that the Township does not know if particular applications or types are more costly than others. One will note from the analysis in this report that, it would appear, that, on average, residential inspection costs are higher than the average billing amount.

Tracking of time and costs against individual applications does two things: Firstly, it demonstrates if the fees are covering the cost of the application. Secondly, on an individual basis, it may illustrate issues with instructions, particular areas or contractors which will assist the

Township in developing better communications and guidance.

iii.   Reporting is a challenge.

The building department provides good performance reporting on the basic data to Council on a regular basis. However, as explored above, there is much duplication of effort due to the lack of set up in Vadim. For example, the time from application to approval is not easily captured. In fact, the term Response Date in Vadim is self-generated and caused some issues with determining if the Township was meeting its compliance requirements for the 'Period within which Permit Shall be Issued or Refused" as found in Table 1.3.1.3 of O.Reg. 350/06.[2]

As mentioned in the customer service section, there is also no tracking of requests or calls that do not result in an application or response time for advice or inspections. These can be built into the existing systems but, should the cloud-based application software be implemented, it would automatically track this information.

In terms of the reporting, all municipalities in Ontario must provide Municipal Property Assessment Corporation (MPAC) and Statistics Canada with reports on a monthly basis including building permit activity and construction values. These standard reports are built into Vadim software and should be relatively easy to generate. However, we heard that the Township has had issues with these reports and received queries from these agencies with errors. This may be a training or a configuration issue that should be addressed if it has not already.

Improvements to the setup and implementation of Vadim will assist in all reporting requirements. During the review, it was evident that staff have not been trained or do not have access to reports that would make tracking much easier and eliminate duplication.

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[2] https://www.ontario.ca/laws/regulation/060350

4. PLANNING AND PERFORMANCE RECOMMENDATIONS

Findings	Rec #	Opportunity/Recommendation	Opportunity Detailed Description	Benefits/Outcome	Quadrant	Year Start
Work is primarily reactive – over 200 open files to close – No deposits	4.1	**Create a more formal work planning approach and estimation of required inspections. Implement Deposits to encourage closing of building permits. (See Appendix B for examples from other municipalities.**	Work load has increased causing a backlog. Now that additional resources are available, consider a workplan to eliminate backlog as well as deposits. Requests to complete permits could be produced with specific dates for an inspection as opposed to simply following up requesting a date. Or, allow for a booking online based upon availability.	Sets out a performance and work plan to better plan long term.	**HIGH EFFORT, HIGH IMPACT**	2022
No current documentation in place to support business planning or assessing the types of 'returned' applications. Monitoring time from original application, resubmissions to approval will provide indication of the issues.	4.2	**Redefine the fields and processes in Vadim to track date of application, number of 'returns' for incomplete applications and completion date. This reporting should be included in the quarterly reporting.**	Create a data dictionary of all fields in Vadim and how they are used, expectations including file naming convention for attached documents. Workflow for each part of the path to completion should be included. All letters sent to the customer should also be included. Monitoring time from original application, resubmissions to approval will provide indication of the issues.	Allows for improved reporting and business case analysis.	**HIGH EFFORT, HIGH IMPACT**	2022

4. PLANNING AND PERFORMANCE RECOMMENDATIONS						
Findings	**Rec #**	**Opportunity/Recommendation**	**Opportunity Detailed Description**	**Benefits/Outcome**	**Quadrant**	**Year Start**
No time tracking against applications or inspections. Estimates were created in this report but not specifically validated. Admin staff time is not charged to building services on time spend.	**4.3**	**Upon implementation of the new cloud software and mobile technology, consider tracking time against each application. The time spent by administrative staff should also be tracked and charged to building services. From this data, undertake fee study and for permits applications. Consider 'discount' for online, completed applications.**	Time tracking against applications will better serve for fee setting by type. The Township is close to 'break even' but uncertain if certain types of applications are 'subsidizing' others. When cloud permits online and training provided to the public, it should reduce administration time. Consider a discount for online completed applications.	Better fee setting, business case analysis.	**HIGH EFFORT, HIGH IMPACT**	**2023**
Errors have been reported by both MPAC and Stats Can causing frustration with staff and rework. It is unclear if this is a system or interpretation issue.	**4.4**	**Engage outside assistance to resolve the reporting processes for MPAC and Stats Canada.**	Assistance is needed to help staff create the proper queries for these reports and resolve issues that have arose lately.	Performance management framework with indicators linked to business plans.	**LOW EFFORT, HIGH IMPACT**	2022

	PLANNING AND PERFORMANCE IMPLEMENTATION PLAN		2022				2023				2024				2024+
#	Opportunity/Recommendation	Year Start	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
4.1	Create a more formal work planning approach and estimation of required inspections. Implement Deposits to encourage closing of building permits.	2022				■	■	■							
4.2	Redefine the fields and processes in Vadim to track date of application, number of 'returns' for incomplete applications and completion date. This reporting should be included in the quarterly reporting.	2022	■	■	■										
4.3	Upon implementation of the new cloud software and mobile technology, consider tracking time against each application. The time spent by administrative staff should also be tracked and charged to building services. From this data, undertake fee study and for permits applications. Consider 'discount' for online, completed applications.	2023							■	■	■	■	■	■	■
4.4	Engage outside assistance to resolve the reporting processes for MPAC and Stats Canada.	2022		■											

	PLANNING AND PERFORMANCE INVESTMENT AND SAVINGS							
#	Opportunity/Recommendation	External Cost (3 years)	Year 1 Internal Costs (Savings)	Year 2 Internal Cost (Savings)	Year 3 Internal Cost (Savings)	Total 3-year Internal Costs(savings)	Total Cost/Savings _Internal + External	Comments/ Assumptions
4.1	Create a more formal work planning approach and estimation of required inspections. Implement Deposits to encourage closing of building permits.	$0	$0	$0	$0	$0	$0	Will require internal resources to create workplan.
4.2	Redefine the fields and processes in Vadim to track date of application, number of 'returns' for incomplete applications and completion date. This reporting should be included in the quarterly reporting.	$0	$1,000	$0	$0	$1,000	$1,000	Internal resources. About 20 hours
4.3	With new cloud software and mobile technology, consider tracking time against each application. The time spent by administrative staff should also be tracked and charged to building services. From this data, undertake fee study and for permits applications. Consider 'discount' for online, completed applications.	$0	$0	$0	$0	$0	$0	Included in cost of cloud permit software and implementation.
4.4	Engage outside assistance to resolve the reporting processes for MPAC and Stats Canada.	$1,000	$0	$0	$0	$0	$1,000	1 day – External consultant.

ALTERNATIVE SERVICE DELIVERY

i. Growth is demanding new service delivery – Remote applications and plan reviews/mark ups.

As discussed in this report, the world of building permits and plans is evolving. Growth is demanding more time from CBOs and inspection staff. Plans and requirements continue to change and supply chain issues have required contractors to do things differently than in the past. COVID has had a significant impact on processes and the ability to apply, track, review plans online is becoming the norm, not the exception. Those municipalities that have embraced technology, eliminated paper and implemented mobile solutions have fared better through COVID than others. Consultations internally and externally indicate that there is an appetite for this transformation. However, it must be planned properly with appropriate resources to be successful. Alternative service delivery models such as online applications and plan mark-up, mean that customers from around the world can apply remotely. Staff can work anywhere to access information while onsite. Succession planning and shared services can only be successful with new approaches. While technology cannot totally eliminate onsite inspections, the ability to provide real time inspection information, access plans and produce electronic permits and inspection reports, will significantly reduce time and cost for inspectors. Accessing sites virtually is also possible for some small items or simply to provide 'onsite' advice through 'zoom'. Uploading pictures and plans with

real-time markup will eliminate multiple versions and copies of plans.

ii. Shared Services provides more options for the Township.

As the Township modernizes its building services and new development comes to the region, demands for specialists increases. Other parts of Renfrew County are also growing but not necessarily at the same rate. As opposed to hiring additional staff to meet demands, the Township should seek shared building services. Not only does that provide more flexibility, it will allow for back up and succession planning.

In 2021, the Township contracted for additional services for inspections of Part 3- large buildings as well as regular inspection services. Consideration should be given to sharing these resources across neighbouring municipalities making it more attractive to potential candidates. Full time positions tend to draw more interest from qualified staff and/or retain current staff.

That being said, in order to explore shared services, fee harmonization and common software solutions would make it easier to implement and manage. Currently, the neighbouring municipalities have similar fee structures but slight differences. As well, few have software to support the building permitting functions/online applications. If all were on the same

platform, with the same bylaws/processes and systems, assignment processes and inspections would be simplified. It may also result in better sharing of CBO expertise and possible increase in inspection resources.

iii. **Lot Grading is a pinch point for staff – consider outsourcing.**

Lot grading is a challenge for the Building staff. Consultations revealed that currently lot grading is about 40% of the current new home builds (30-40 new homes are built each year) so between 12-16 will require lot grading. This is a time-consuming exercise and quite specialized. Other municipalities have expressed similar challenges and the trend is to outsource the municipal portion of this review to a consultant on record.

iv. **Septic Re-Inspections – Consider implementation but outsource.**

The Township currently issues 60 septic permits on average per year for installation and replacement in total or in part. Clearly, there are sound environmental reasons for such permits. A properly functioning septic system minimizes impact on water quality in surrounding lakes, rivers, streams and wetlands. Many municipalities on rural Ontario have also implemented septic inspection programs to ascertain if septic systems are functioning properly. During consultations, staff indicated that this was an area that Council is considering. However, there was concern about the workload this would bring as well as the specialized nature of the work. Most municipalities have outsourced this process given that, the season to undertake septic inspections coincides with the busiest building season. Should the Township decide to implement septic inspections, it should consider an outsourced contract.

5. ALTERNATIVE SERVICE DELIVERY RECOMMENDATIONS						
Findings	**Rec #**	**Opportunity/Recommendation**	**Opportunity Detailed Description**	**Benefits/ Outcome**	**Quadrant**	**Year Start**
Lot grading is a pinch point for the municipality both from the perspective of grading plan submissions, reviews and inspections.	5.1	**Consider outsourcing lot grading to relieve internal work – fee recovery – perhaps with other municipalities.**	Outsourcing of this function could be advantageous. Currently lot grading is about 40% of the current new home builds (30-40 new homes are built each year) so between 12-16 will require lot grading.	Possible reduction in costs and improved services.	**HIGH EFFORT, HIGH IMPACT**	2022
Growth is impacting the entire County. The current inspector is part time – may be opportunity to expand role with other municipalities and/or reduce turnaround time of response.	5.2	**Consider sharing inspector with other municipalities (make full time).**	Growth is demanding new service delivery – Remote applications and plan reviews/mark ups. Opportunities for additional shared services with other municipalities and specific types of inspections	Improved services, retain qualified staff.	**HIGH EFFORT, HIGH IMPACT**	2023

5. ALTERNATIVE SERVICE DELIVERY RECOMMENDATIONS						
Findings	Rec #	Opportunity/Recommendation	Opportunity Detailed Description	Benefits/ Outcome	Quadrant	Year Start
Septic re-inspections are common in many municipalities outside urban areas. The Township is considering septic inspections but likely does not have the internal capacity to handle this volume. Most have outsourced this service to others.	5.3	**Consider septic re-inspection system but outsourced on a fee for service basis, perhaps a shared service with other municipalities.**	Septic re-inspections are important for many rural municipalities. Once the cloud permit inspection system is in place, best to consider outsourcing. Other municipalities may be interested in sharing this resource.	Likely revenue neutral but important environmental issue.	**HIGH EFFORT, HIGH IMPACT**	2023

5. ALTERNATIVE SERVICE DELIVERY RECOMMENDATIONS						
Findings	**Rec #**	**Opportunity/Recommendation**	**Opportunity Detailed Description**	**Benefits/ Outcome**	**Quadrant**	**Year Start**
Some shared services exist in IT – all municipalities have been looking at online permitting. Makes sense to share- but does not appear to be a strategy in place. While fees are not that much different, there are different rates making sharing opportunities difficult.	5.4	**Develop a long-term strategy to share specialized building services with other municipalities starting with fee harmonization, implementing 'one' building permitting and inspection system.**	Strategy should include a long-term view with the neighbours to eliminate fee disparity and allow for one place to make applications. Starts with fee harmonization.	Possible reduction in costs and improved services.	**HIGH EFFORT, HIGH IMPACT**	2023

#	Opportunity/Recommendation	External Cost (3 years)	Year 1 Internal Costs (Savings)	Year 2 Internal Cost (Savings)	Year 3 Internal Cost (Savings)	Total 3-year Internal Costs(savings)	Total Cost/Savings _Internal + External	Comments/ Assumptions
	ALTERNATIVE SERVICE DELIVERY INVESTMENT AND SAVINGS							
5.1	**Consider outsourcing lot grading to relieve internal work – fee recovery – perhaps with other municipalities.**	$40,000	-$27,000	$13,000	$0	-$14,000	$26,000	Fleet time -200 hours. Long term Savings and increased utilization will cover costs
5.2	**Consider sharing inspector with other municipalities (make full time).**	$0	-$9,000	$0	$0	-$9,000	-$9,000	120 hours internal
5.3	**Consider septic re-inspection system but outsourced on a fee for service basis, perhaps a shared service with other municipalities.**	$0	$0	$0	$0	$0	$0	Fees to offset costs.
5.4	**Develop a long-term strategy to share specialized building services with other municipalities starting with fee harmonization, implementing 'one' building permitting and inspection system.**	$40,000	-$40,000	$0	$0	-$40,000	$0	Inhouse and consultant. Cost avoidance to offset.

RANKING THE OPPORTUNITIES

FIGURE 7 Prioritization matrix provides the Township with an assessment of the effort and impact of each of the 20 recommendations. The numbers contained in the diagram identify the recommendation number by category in the legend to the right.

We have included only recommendations where the impact will be high but the effort may be low or high. There are many 'sub opportunities' that will naturally result in the improvements. The order that opportunities should be implemented would be:

(1)   bottom right quadrant (low effort, high impact),

(2)   top right (high effort, high impact).

This analysis of the recommendation provides the Township with "quick wins" to reap the

benefits of enhanced capacity for the recommendations requiring high effort. Further, "quick wins" will provide the incentives for staff to continue to improve customer satisfaction.
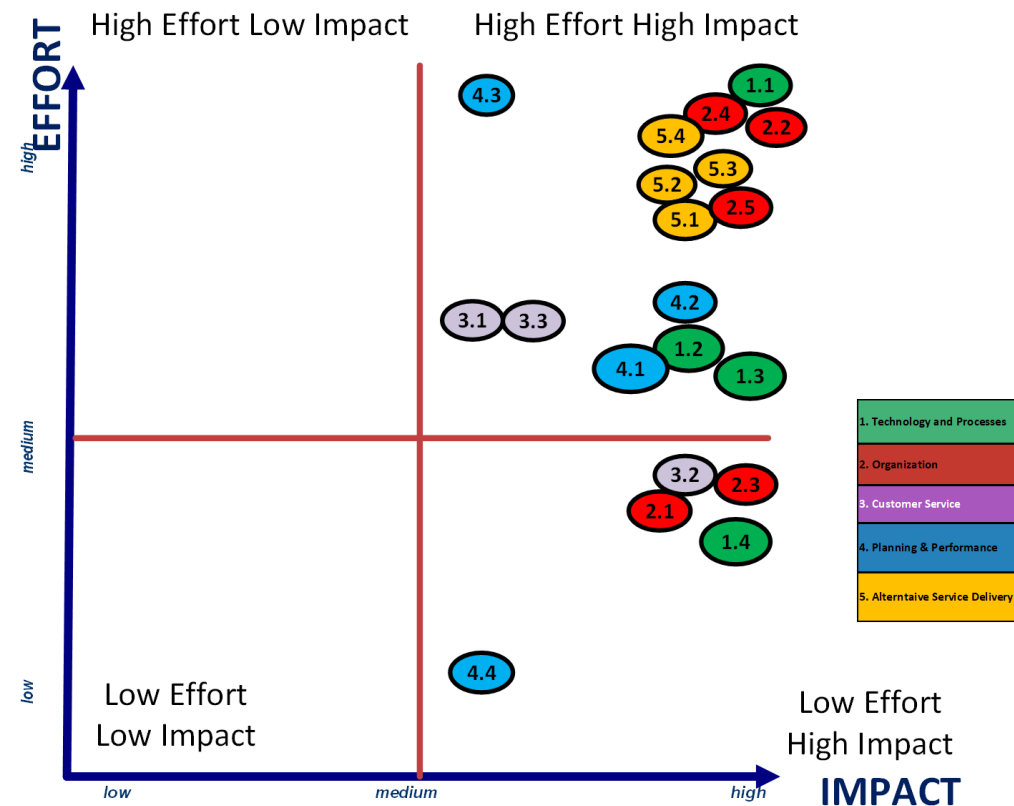
FIGURE 7:RANKING OF OPPORTUNITIES

SUMMARY OF COST (SAVINGS) BY RECOMMENDATION CATEGORY

Table 1 shows the detailed external costs and internal cost/savings estimates by recommendation category. It is important to note that there is about $118k investment in technology and associated training that we believe would take approximately two years to implement and result in long term savings. We have provided conservative estimates of savings from the shared services recommendations as it will require Whitewater Region and other municipalities to buy-in to make these work. However, we do believe that, in 5 years, all of the investments made will be more than recovered. We do not think that the Township has the internal capacity to lead some of these changes and have recommended outside assistance for the implementation, particularly with respect to the cloud-based Building Permit Application and E-plan software as well as the improvements to Vadim. There may be additional funding opportunities in the near future that would reduce this impact. The Township should commit to review the organizational structure with respect to Building Services, particularly with respect to administrative and inspection support.

TABLE 1: SUMMARY OF COST (SAVINGS) BY RECOMMENDATION CATEGORY

Category	External Cost (3 years)	Year 1 Internal Costs (Savings)	Year 2 Internal Cost (Savings)	Year 3 Internal Cost (Savings)	Total 3-year Internal Costs(savings)	Total Cost/Savings _Internal + External	Years to payback	Estimated Savings/Cost Avoidance over 10 years
1. Total Technology and Processes	$118,000	-$43,000	-$59,500	-$59,500	-$162,000	-$44,000	2.0	-$460,500
2. Total Organization	$7,000	$17,800	$15,000	$15,000	$47,800	$54,800	1.0	$159,800
3. Total Customer Service	$10,000	$5,200	$0	$0	$5,200	$15,200	1.0	$15,200
4. Total Planning & Performance	$1,000	$1,000	$0	$0	$1,000	$2,000	1.0	$2,000
5. Alternative Service Delivery	$80,000	-$76,000	$13,000	$0	-$63,000	$17,000	2.0	$17,000
Total	$216,000	-$95,000	-$31,500	-$44,500	-$171,000	$45,000		-$266,500

Background and Benchmarking

BACKGROUND

The Township of Whitewater Region is a beautiful, growing municipality with dedicated, professional staff.   Being close to the Nation's Capital and other urban centres, Whitewater Region is attracting more and more people to live the rural lifestyle with access to great amenities. Whitewater Region is one of the fastest growing municipalities in Renfrew County with estimates of an increase to 8,333 by 2039, an increase of 19%.[3]

Planning and Building processes in municipalities in Ontario (and elsewhere) are highly regulated and impacted by so many different government organizations at different levels for different purposes. To add to the challenge, the general public or neighbouring public have a keen interest in the activities and development around them. Any development activity, regardless of size, can become extremely political/complex and controversial. It is hardly surprising, therefore, that frustration on the part of applicants, councils, interest groups and consultants/builders about how the current applications processes operate and, to varying degrees, about how slow, unpredictable, and costly it can become for all involved. Research across municipalities show that many projects encounter substantial problems, such as significant blockages and delays, during the processing of their planning and building applications. The Township has seen significant growth in the last two years, partly due to COVID, the ability to work remotely and the population's desire to move out of cities to wide open spaces. This is change from the trend we say in the prior decade where many people were moving to the urban areas. This growth has put strain on the Township's building services. With its outdated paper-based processes and lack of technology utilization, growth has emphasized the need to modernize. In 2016, the Township issued 186 building permits which more than doubled to 384 in 2021. As volumes increase, the stakeholders/population/developers/applicants   have expectations that these processes will be streamlined, efficient and effective in order to meet demand.   Of course, the Township has seasonal fluctuations which impacts building service workload in the summer months.

Historical and Forecast Total Population to 2039, High Case (metroeconomics, January 2020)

Scenario	Total Population by Year		2016-2039	
	2016	**2039**	**Net Change**	**Growth Rate**
High Case	7,000	8,333	1,333	19%

Source: Exhibit 8, Growth Prospects to 2041 (metroeconomics, January 2020). Figures are rounded.

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[3] Township of Whitewater Region, Development Charges Background Study, Watson and Associates, 2020

All Township building application processes involve the filing of forms, printing multiple copies and delivery of drawings and plans which need to be reviewed, sometimes more than once. As far as submission, these are all currently done on paper and in some cases by email with pdf versions of forms and plans. In most cases, the applications are incomplete and require resubmission or clarification, all of which is time consuming. This can occur several times during the process and delays the approval of the permit. This can be frustrating for all parties involved. Procurement and implementation of an electronic permit application and plan submission solution would significantly improve efficiency of reviewers as well as inspection staff not to mention client service. Errors, transportation and turnaround times would be reduced and ultimately, all staff will have more time to address the workload in a more timely fashion. Although much information is stored in the Township's permitting software (VADIM) as well as the Geographic Information System (GIS), these products do not provide for review and markup of plans. Further, it does not allow for customers to

apply online, although Vadim has some functionality in this regard with its customer portal.

This report primarily focuses on the business processes for building permits and recommended procurement of an electronic permitting and plan submission software to assist the Township in addressing some non-value-added process steps in the building permitting processes. It should be noted that the focus was on building as opposed to planning processes but most recommendations apply to both types of applications.
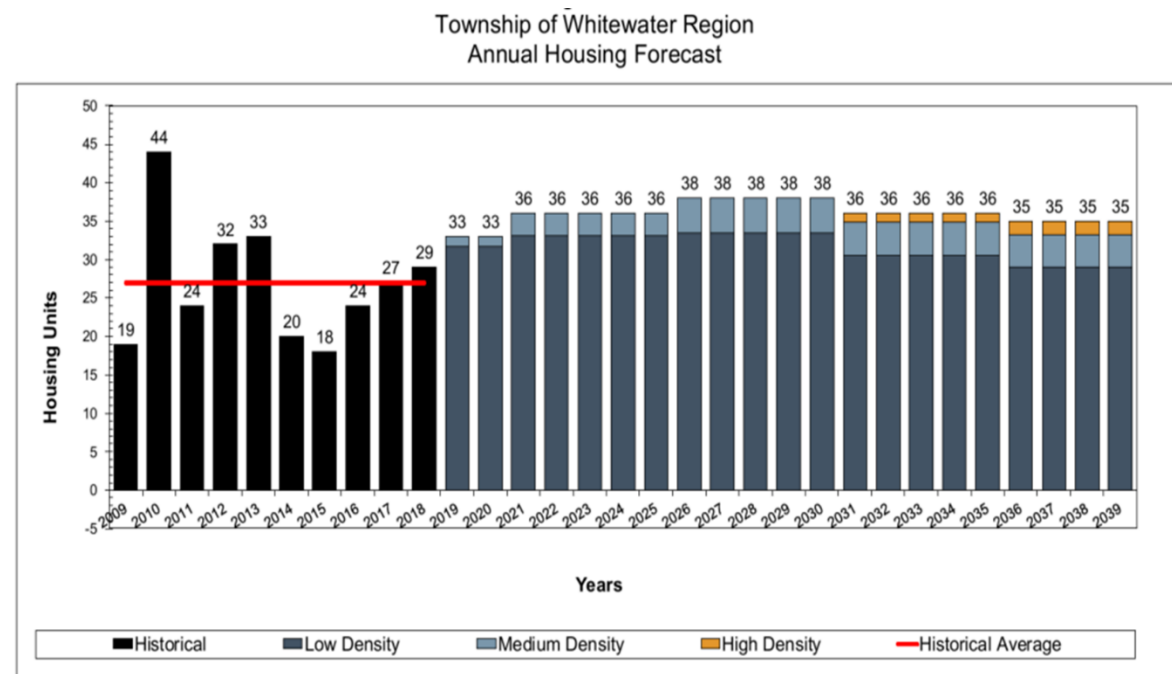
Source: Historical housing activity derived from Township of Whitewater Region building permit data, 2009 to 2018, by Watson & Associates Economists Ltd., 2020.

BENCHMARKS

For the purposes of the project, neighbouring communities were selected as municipal comparators given that there the 'competition' is primarily in Renfrew County. As can be seen by the financial information, WWR building revenues have not matched expenses over the last 6 years. However, 2021 appears to have solved this issue. All other municipalities with the exception of Renfrew have recovered their building expenses. The information from

seen significant increase in the building permit values but not in number of permits. We would caution the reader on this information as it appears that the number of building permit figures are not in line with other information from the Township. The methodology reported in the FIR should be reviewed. We have provided this information as it is important to note that this is a key report relied upon by the province. The Township needs to revisit its results reported in Schedule 80D.

TABLE 2: BUILDING EXPENSES AND REVENUES 2015-2020 FINANCIAL INFORMATION RETURN

Municipality	2015	2016	2017	2018	2019	2020	Grand Total
Whitewater Region NET	$69,380	$92,307	$50,026	$84,492	$69,675	$25,666	$391,546
Revenues	-$51,748	-$45,283	-$53,487	-$66,924	-$58,476	-$116,324	-$392,242
Expenses	$121,128	$137,590	$103,513	$151,416	$128,151	$141,990	$783,788
Arnprior NET	-$226,811	-$127,773	-$29,558	$115,227	-$131,521	-$86,940	-$487,376
Revenues	-$226,811	-$156,208	-$176,856	-$33,965	-$276,078	-$259,094	-$1,129,012
Expenses		$28,435	$147,298	$149,192	$144,557	$172,154	$641,636
Greater Madawaska NET	$89,181	$20,635	-$921	-$12,026	$5,474	-$16,310	$86,033
Revenues	-$14,399	-$53,690	-$68,393	-$82,533	-$66,135	-$95,374	-$380,524
Expenses	$103,580	$74,325	$67,472	$70,507	$71,609	$79,064	$466,557
Renfrew NET	$47,076	$73,188	$79,269	$65,103	$34,648	$1,980	$301,264
Revenues	-$39,556	-$43,752	-$40,227	-$53,939	-$84,516	-$118,451	-$380,441
Expenses	$86,632	$116,940	$119,496	$119,042	$119,164	$120,431	$681,705
Admaston Bromley NET	-$18,972	-$20,449	-$14,668	-$18,478	-$4,719	-$21,662	-$98,948
Revenues	-$49,841	-$46,123	-$41,326	-$46,585	-$31,365	-$49,076	-$264,316
Expenses	$30,869	$25,674	$26,658	$28,107	$26,646	$27,414	$165,368

the Financial Information Return (FIR) shows that WWR has

Construction Values - 2016-2020 FIR by Municipality

	Admaston Bromley Tp	Arnprior T	Greater Madawaska Tp	Horton Tp	Renfrew T	Whitewater Region Tp
2020	$5,805,500	$20,677,580	$15,068,680	$7,339,000	$10,863,625	$19,975,292
2019	$2,742,700	$47,399,130	$12,384,125	$6,181,000	$10,554,504	$22,708,331
2018	$6,137,000	$15,266,620	$12,891,580	$7,057,600	$6,783,745	$22,096,413
2017	$5,784,000	$15,120,055	$11,772,600	$5,575,750	$7,778,316	$10,422,632
2016	$5,081,580	$14,238,020	$8,687,524	$8,189,371	$9,904,394	$8,922,628
2015	$7,002,500	$15,973,130	$11,366,500	$9,489,500	$10,402,595	$9,813,239

FIGURE 8:CONSTRUCTION VALUES BENCHMARKS- FIR

# of Complete Building Permits
2016-2020 FIR by Municipality

	Admaston Bromley Tp	Arnprior T	Greater Madawaska Tp	Horton Tp	Renfrew T	Whitewater Region Tp
2020	11	226	122	76	103	33
2019	54	243	119	58	98	14
2018	56	200	115	66	93	57
2017	75	175	90	38	27	43
2016	70	200	89	68	15	33
2015	73	150	70	61	102	49
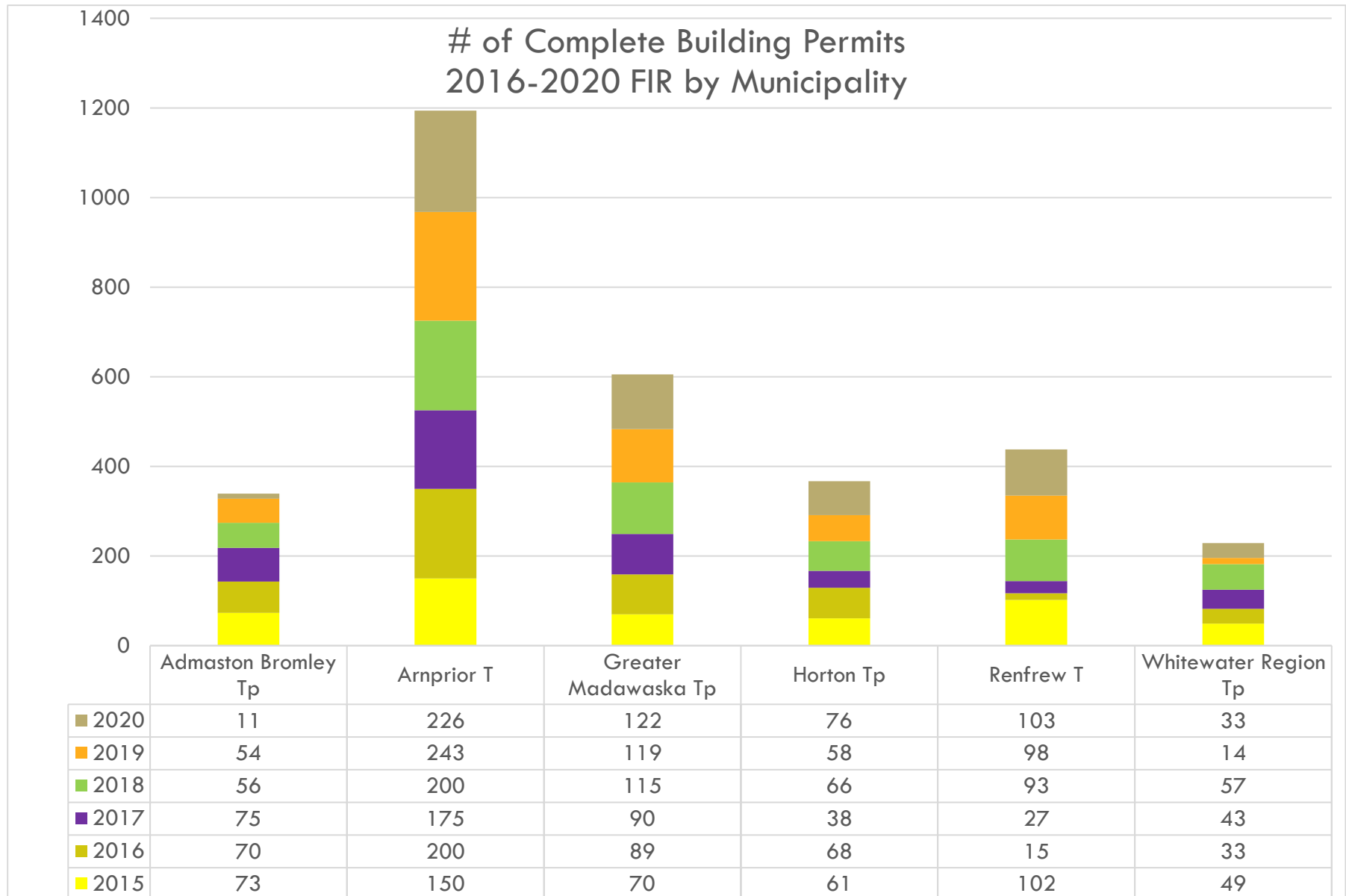
FIGURE 9:BUILDING PERMITS BENCHMARKS - FIR

THE DESIRED STATE

VISION

The Township is a progressive municipality with dedicated, professional staff. Both Council and Senior Management have recognized that the building permit processes are time consuming, costly and lengthy. The Economic Strategy and strategic plan 2020-2030 clearly articulate the Township's desire *"to foster economic development by encouraging the redevelopment and improvement of business and commercial corridors throughout the township."* With this development, comes well-educated younger residents, many of whom are 'tech savvy'. In order to continue to attract business and growth, the Township will need to be on the leading edge when it comes to client service and supporting development. A look at other jurisdictions in North America show that electronic application, plan submittal, review, tracking and storage is one of the fastest growing areas of interest to building and planning departments and their customers for applying information technology (I.T.) to building permit and planning processes. Jurisdictions using I.T. for these processes are reducing plan review and tracking times by 30 to 40 percent. Due to the Township's growth and the demographic trends, Whitewater Region needs to move in this direction. However, it must do so at a pace and implementation that makes sense for the Township. Our review revealed that the Township is in good position to roll out an E-Plan solution as it has embraced technology in many areas. The Township's permitting software (VADIM) provides some functionality but it is not well configured and staff lack training. We found that there was inconsistent use of VADIM and it is underutilized. The overall vision was articulated by senior management in our first consultations that it wanted to move to better use of technology and improve customer service, reducing or eliminating paper and fewer revisions.

Upon review of the processes, a more expansive, long-term vision could be considered, in particular, to eliminate the number of steps in the overall processes and non-value-added activities. Technology has allowed for much more innovative approaches to managing workflow, in particular, with respect to assessing completeness of applications, documents and code compliance. Implementation of E-plan submission and reviews can yield additional benefits that have been explored in the business process reviews contained in this report.

Speed and ease of submission & review – Starting the process on the right foot.

One of the biggest time-consuming activities that adds to lead time in processes is the lack of complete information and understating of requirements. To reduce lead time and eliminate waste, utilize technology to help eliminate the three major problems associated with the paper application and plan process. The first step is to reduce the tendency of

applicants to submit incomplete information and plans. Electronic application and plan review tools are available to both the customer and Township staff that allow firms to run a check of their own applications and plans for both completeness and accuracy prior to submission to the Township. At Whitewater Region, there are some tools available for staff and applicants to assess information about the property in question, such as zoning, official plan information. With integration between VADIM, GIS and an Electronic application/plan solution, these "checks" and information could be part of the application process online and redirect information based upon the criteria.

The second step is the elimination of the slowness of and both financial and environmental costs associated with delivering applications, plans and payments to the Township. While most developers are relatively local, distances may be deterring others from considering WWR as an opportunity simply due to the distances to travel. The third step is the reduction or elimination of the paper based duplicated processes through mobile technology.

Technology allows for improved building permit processes through online permit submissions which also runs checklists to improve completeness of documents. Ready access to building codes and Township By-laws allow for improved compliance. Currently, many Township processes require a step to ensure completeness which leads to clients "dropping in" to the Township and waiting for available advisor. Technology can allow for assessment of such criteria and then scheduling of meetings and inspections online.

Other savings have come in reduced travel time and costs. In the case of Whitewater Region, travel time can be high given the distances. By putting information in the hands of the inspectors in the field, there is no need to return to the office to enter data into Vadim.

Submission of plans in an electronic format also significantly facilitates the ability of the Township to conduct plan reviews where the customer can see all the changes at ones. This shortens the review and approval process significantly. Further, building inspectors would have access to these plans in the field without having to carry file folders and papers, all of which have the risk of being lost. Not to mention the fact that the files are not located in the Township office for access should an inquiry be received.

Existing electronic application and plan review tools also facilitate the documentation that travels with the single electronic plan that denotes what changes have been made, by whom and when within the plan review process. The systems then retain the final approved drawings.

A tool to measure productivity of staff and ability to perform plan review and inspections from remote locations

Electronic application, plan submittal, review and tracking allows for ease of calculations, accurately measure and get update reports on the amount of time it takes each application to be reviewed and approved as well as inspections. Some processes at the Township involve 18 inspections at different stages of the building process. Understanding the amount and length of time it takes for each type of inspection by application provides important

planning information as well as an understanding of resource requirements. Further, by tracking where an application is in the process, staff and management can easily respond to inquiries from the public or others.

Inspection processes coupled with remote field inspection technologies (laptops, tablets, smartphones', etc.) are significantly enhanced as inspectors can conduct remote field inspections using electronic devices. This has allowed quick completion of the field inspection and issuance of the inspection reports, at the site, at the time.

New technologies and processes (3D & 4D designs and SMARTCodes)

3D designs have seen their breakthrough in recent years. Some municipalities (eg. Vancouver) have undertaken a 3D view of the Township (similar to Google Map) for infrastructure. SMART Codes is the next iteration whereby codes and by-laws are embedded and can do the first "sweep" of review prior to application submission.

Reduced Lead Time Increases revenues by getting buildings on the tax roll faster

Estimates are, that by using electronic application, plan review and submission software that lead time is reduced by approximately 40% the amount of time that it currently takes to go through all the reviews required. Therefore, buildings are being built and are approved for occupancy faster than they were using paper plan submittal. The earlier the building is on the tax roll, the sooner taxes are assessed and collected.

In effect, it is possible to implement E-plan software with portal integration that will perform data checks against the Township's by-law/official plan and zoning requirements prior to populating VADIM and the E-Plan review product. Through business process flow, systems can undertake basic checks to ensure that applications meet core requirements prior to submission. Although this will not replace the professional judgment required in evaluating applications, drawings and plans, it can eliminate the basic requirement to ensure that the required documents are filed in the format required. Once the application is "accepted", the system could allow for assessment of requirements and scheduling of any advisory services needed. Some of these reviews can be conducted through web based online meetings. This will allow for globalization of consultancy and reduction of travel requirements. Constituents that travel for business or pleasure would be able to "attend" meetings without physical presence. Although this could replace many onsite meetings, it cannot replace all face-to-face interactions, nor should it. However, the amount of time and resources saved using this technology is significant and should be considered.

COVID has shown that online meetings can work and reduce time and cost.

An overall vision can be depicted as follows:
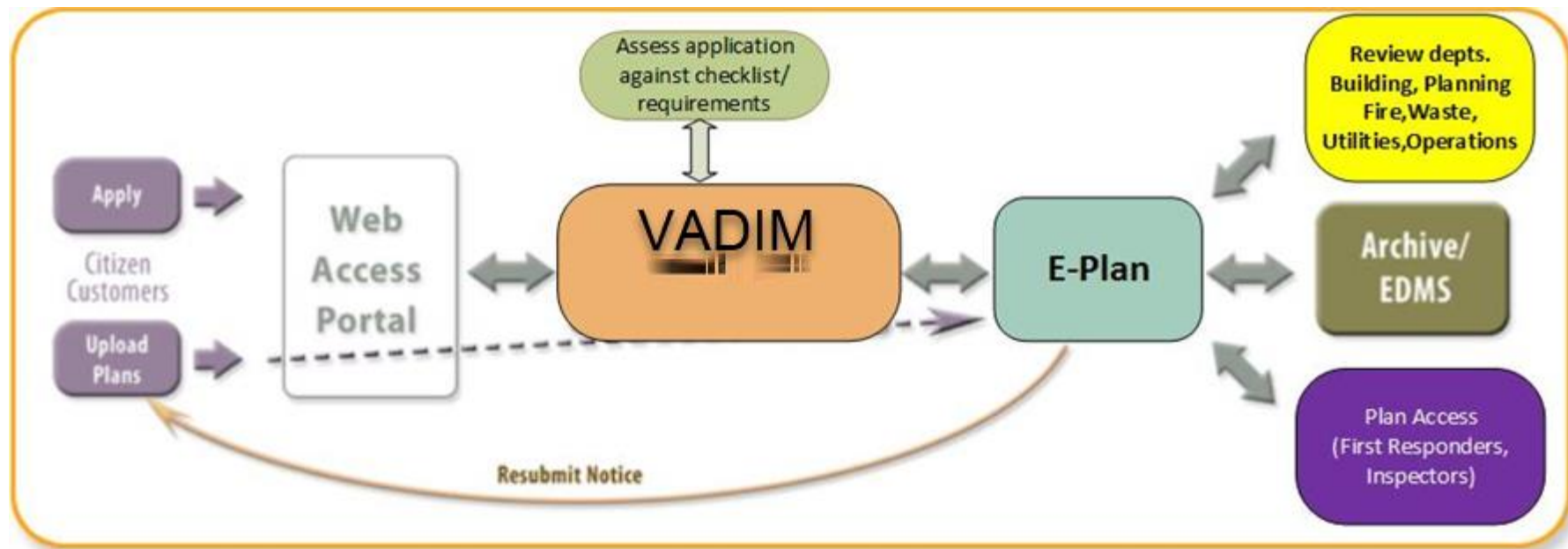
As far as the Township is concerned, it is important for the Township to consult with its customers in this type of undertaking. We also recommend that it partner with its neighbours to look for savings by implementing the same system.

The success of many of these initiatives is contingent on a change management strategy, internally and externally. Success will only be realized with an appropriate and strategic communication strategy. Internally, electronic application and plan reviews needs to be embraced which can only occur with management direction and support. External customers are no different. We believe a pilot approach is best. This allows for both internal and external stakeholders to adjust to change, provide feedback, make changes and adjust processes through lessons learned. The pilot should be designed to include a specific application type that typically does not take significant time to complete but involves clients that are relatively sophisticated. The pilot should be undertaken internally first with gradual inclusion external customers.

ANALYSIS OF CURRENT STATE OF BUILDING PROCESSES

This section describes the current state of processes within the Township with an analysis and definition of the issues. In order to improve customer service, one must analyze what is

current state and determine which activities add value to processes and which do not.

Focusing on the Process - SIPOC

In order to frame the analysis, we have illustrated the entire development and building process utilizing SIPOC which is a high-level picture of the process that depicts how the given process is servicing the customer. It is an acronym for Suppliers - Inputs - Process - Outputs - Customers. The definition of each of these SIPOC entities is given below.

In more formal terms, SIPOC can be seen as a high-level process map. It is typically used during the define phase of a process improvement project, as it helps to clearly understand the purpose and the scope of a process. It is a starting point in identifying the voice of the customer (VOC). It gives us initial insight into the vital inputs of a process that have significant impact on critical outputs. It also becomes a primary input to detailed process map construction. A SIPOC diagram quickly and easily captures the current or "as is" state of the organization and processes in question. The SIPOC diagram of the building processes from application to occupancy is shown below. We have not included the appeal processes as part of this review as it was considered to be out of scope.

•Suppliers: Significant internal/external suppliers to the process. This can include funding/revenues or providers of information.   In this case of Township, suppliers of information developers, contractors, applicants, taxpayers and internal departments. Certainly the pressure to increase efficiencies and financial sustainability has been the focus of these suppliers.

•Inputs: Significant inputs to the process like material, forms, information, and requests. In the Township's case, the initial input is the application followed by various types of drawings, and plans which are reviewed and potentially resubmitted. Customers can contact the Township via telephone, email, walk-in or online.

•Process: The overall process at a high level is illustrated to "frame" the process analysis. There are many sub-processes within each process which will be further analyzed in this report in order to assess value added and non-value-added activities that are affecting continuous flow of service as well as the root causes of the issues.

•Outputs: Significant outputs to internal/external customers include public notices, agreements, approvals, plans, permits, orders among others.

•Customers: Significant internal/external customers to the process and include the "next" person in any process as well as applicants. The public and taxpayers are also customer and may become part of the process.

We have provided a SIPOC in this manner as it is important to illustrate the entire process and the interactions. Any issues that arise in processes that are not addressed at each stage could impact the next in line process.

FIGURE 11: SIPOC

SIPOC Diagram – Building

Suppliers	Inputs (Information, materials or Services)	Process (High Level)	Outputs (Final Service of Process)	Customers (Receives an Output)
External Agencies	Forms		Permits	Developers/Builders
Consultants	Drawings/Plans		Notices	Owners
Internal Departments	Studies		Approvals	Consultants
Applicants	Comments		Inspection results	External Agencies
Taxpayers	Zoning Certificates		Orders	Applicants
				Contractors

High Level Process of Building Services

Application for Building Permit → Departmental reviews of plans/ drawings, site visits → Review for completeness → Permit Issued update Vadim → Client requests inspection → Inspections undertaken update VADIM → Approvals → Occupancy Permit → Update systems – reports to MPAC, STATS CAN, CMHC

TOWNSHIP BUILDING PROCESSES

Township processes that were analyzed, as part of this review, included applications, building permits and municipal inspections. In order to structure the report, we have organized the processes on this basis.

The general steps include:

Application   Enter into Vadim   Inspections   Final Inspections   Close

Review for Completeness – Await Response   Review and Approve   Update Vadim   Occupancy
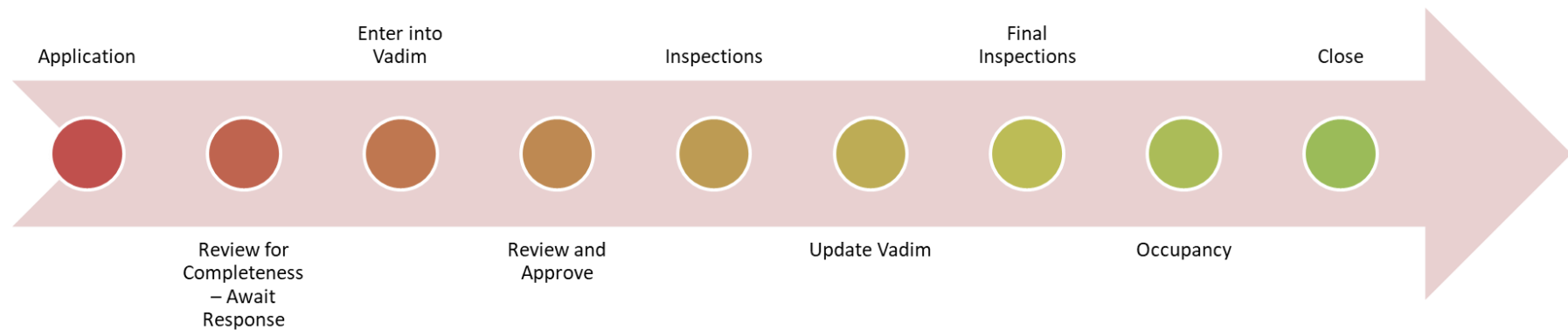
Critical to Quality Requirements and Voice of the Customer

In order to understand a business process and the ability to meet customer requirements, the critical to quality requirements must be understood and form the basis for improvement. Critical to Quality is an attribute of a part, assembly, sub-assembly, product, or process that is literally critical to quality or more precisely, has a direct and significant impact on its actual or perceived quality. The Township has, on occasion, undertaken satisfaction surveys for specific purposes as well as general. According to the developers we interviewed, overall the community is satisfied with the quality and timeliness of the decisions in the building department with a few exceptions. Some of the findings with respect to the Critical to Quality Requirements are as follows:

- Staff Attributes: knowledge, accessibility, deal effectively with inquiries, proactivity, project management and service delivery attitudes were all considered to be very important. In general, the survey indicates satisfaction.

- Process Attributes: description of steps, timelines, understanding of required documents, outside agency requirements and timing, tracking of process steps and streamlined revision processes were all very important. Overall, the survey indicates satisfaction, less so for timelines than for quality.

Other interesting findings with respect to customer satisfaction included that staff did not always provide consistent information. In particular, the customer requests and information are not all captured. As well, the spreadsheet used for tracking the applications does not have complete information to track how long it takes to get a complete application. Currently, Vadim does not have all the information to calculate permit issuance date to approval or the situations where plans are returned and resubmitted.

Overall, the critical to quality factors from the customer (internal and external) include the following:

- Design of process based upon customer/service provider requirements
- Simplified instruction, policies, procedures and documentation
- Reduction in cycle time and lead time for responses, approvals and steps
- Reduction of process time variation
- Reduction of decision variation
- Reduction in number errors
- Minimization of bottlenecks, movement and changeover times
- Reduction in various forms of waste (e.g. Errors, Rework, delays, waiting, underutilized talent, inventory)
- Provision of cost-effective delivery methods
- Improved understanding of requirements and decisions – early in processes
- Timely response to questions

CREATING VALUE FOR THE CUSTOMER

The analysis of processes contained in this study has utilized the concepts of LEAN Six Sigma, a proven management philosophy, originally designed by Motorola and adapted by the Japanese and large companies such as GE, to improve processes based upon data driven analysis and customer value. The fact that the Township has already embraced some technology, indicates that it wants to become more LEAN and focus on the customer. LEAN has been adapted to the service sector based upon the uniqueness of services as opposed to manufacturing and significant, quantifiable results are being realized in many sectors including healthcare, education, non-profits and public sector. In particular, LEAN has resulted in some significant savings and improved quality in many public sector (or public funded sectors) organizations including healthcare in Ontario, several state governments in the US[4] and municipal governments.

Of course, in these sectors, customers/stakeholders are more complex and varied, ranging from the general public, internal staff and management, to the direct recipient of the service. In this study, the primary customers are considered to be applicants, and internal customers, including the staff member who is next in line in any given process.

Category	Definition	Our Goal and Focus
Customer (Service Provider) Value Added	• Physical Transformation of the Service • Adds detail, feature or form to move towards a decision • Customer is willing to pay for the transformation • Source/enabler for better, faster or cheaper service • Done Right the First Time (no errors or defects)	• Improve the efficiency and effectiveness of the task by eliminating waste • Improve the flow of value to the customer • Monitoring to assure we are meeting customer evolving requirements – continuous improvements
Organization Value Added	• Required by law or regulation • Reduces financial risk • Critical to avoiding process breakdown • Required by Township policy	• Verification that it is truly required • Reduction and/or elimination of requirements • Redesign tasks to meet requirements more efficiently or effectively
Non-Value Added	• Everything else that is not customer value added or business value added	• Total and complete elimination of waste

Value is defined by the customer, the business and anything that does not add value is considered waste and should be removed from the process. Customers are varied and include internal and external customers and anyone who is the recipient of the process, including contractors, developers and consultants working on their behalf. Studies show that in any given process, whether in the private, non-profit or

[4] http://lean.iowa.gov/, www.asq.org, www.erie.gov/exec/?reform-government/lean-six-sigma-initiative.html

public sector, that non-value-added activities amounts to approximates 75-90% and has been found to be as high as 97%. By eliminating lead time and non-value-added time, services can be delivered in a continuous flow with reduced

cycle time and costs while increasing customer satisfaction. Value added activities are defined as:

Steps To Creating Value and Eliminating Non-Value-Added Activities From Processes

In order to create value for clients, several steps should be followed. In this report, we reviewed several processes with a focus on significant applications.

In order to create value for the customer, the following steps are undertaken:

1.   Define Customer (Process) Demand for Services

This is the definition of demand for services from the point of view of the customer. The nature of demand includes: what is demanded, how much, how frequently, by whom, where and when. In the next section, these elements are explored with respect to Township processes. FIGURE 12, Table 3 and Table 5show that building services is seeing significant growth in number of permits and associated inspections.

About the Township's Building Permit Activity

2006-2021 WWR BUILDING PERMITS AND NUMBER OF FEES
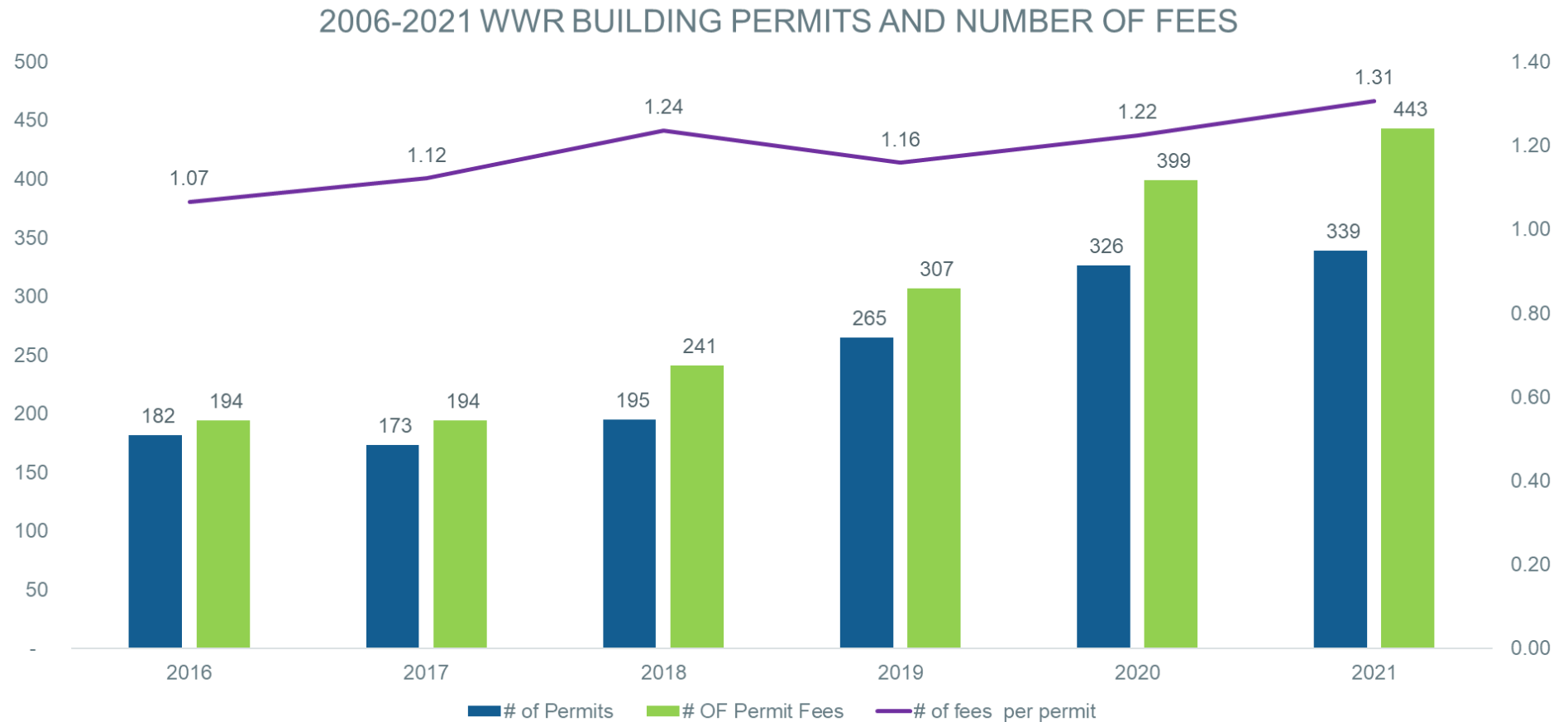
FIGURE 12: TOWNSHIP'S BUILIDNG PERMIT ACTIVITY - SOURCE: WWR TOWNSHIP

# of permits refers to the number of applications. The # of permit fees reflects that one permit may have several application fees (eg. Residential permit and a Civic Address Application)

TABLE 3:TOWNSHIP PERMIT FEES WITH VALUES AND ESTIMATED PROPERTY TAXES

Year	# of Permit Fees with Value	Project Values	Estimated Annual Property Taxes Attributable to permit
2016	179	$9,462,618	$81,424
2017	180	$13,235,347	$102,552
2018	196	$23,781,413	$309,062
2019	273	$16,938,831	$193,802
2020	315	$20,758,793	$247,782
2021	539	$64,922,602	$885,835
Grand Total	**1682**	**$149,099,603**	**$1,820,456**

2. Extend Customer (Process) Demand Lead Time

The sooner that the customer demand (client requirement for planning or building permit services) is known to the supplier (the Township), the sooner that the resources can be deployed to provide the services to the customer. Customer demand lead time is the period between the time when customer demand is known and when it is communicated to the supplier. This is particularly challenging for the Township does not know what demand will be at any particular time.

This can be managed by pulling requests for inspections ahead of time and managing the workload.

3. Match Supply with Customer (Process) Demand

Matching supply with customer demand is challenging when things change or there are undue influences on the demand. Table 4 shows that, for each application, the Building Department must provide plan reviews, inspections or commentary. The table also shows the number of hours and cost in 2021. It is essential to perform continuous monitoring of the demand and adjust resources to respond. In the case of Township, the number of resources is often fixed but with the additional inspector time, it can be managed. According to the demand in 2021, it would appear that the Township staff would be required to work over 3,800 hours or 2.1 FTEs (Table 5)to manage the applications and inspections required based upon the per application volume. As mentioned earlier, there are currently 1.5 FTEs and over 200 open

applications. The CBO and inspector also provide other services such as inquiries, commentary on planning applications as well as some bylaw requirements/permits (eg. Backyard chickens, kennels). It is estimated that this other workload accounts for about 350 hours or 0.2 FTEs (Table 6). Consequently, it appears that the Building Department's current workload is about 2.3 FTEs and its current complement is about 0.8 FTEs short for the demand. Table 7 shows, that with a moderate growth of 3% in permits, the Township would need 2.5 FTEs to manage applications alone.

TABLE 4:WORKLOAD (PLAN REVIEWS AND INSPECTIONS BY SERVICE TYPE)

Service or Fee	Workload (Plan Reviews, Inspections)	Sum of Estimated time	Sum of Estimated travel	Sum of 2021 Cost per inspection/plan review or inquiry
COM1	19	395	450	$756
COM2	19	395	450	$756
AGR1	17	395	450	$756
RES1	18	390	450	$752
RESADD	16	375	420	$712
AGR2	10	235	270	$452
GARAGE	10	235	270	$452
Planning	5	190	120	$278
RES2	5	135	150	$255
FILTER	4	75	120	$175
SP	4	75	120	$175
LEACH	4	75	120	$175
REPLAC	4	75	120	$175
POOL	3	60	90	$134
PLUMB	3	60	90	$134
ACCBLD	3	55	90	$130
DEM	2	40	60	$90
Kennels	1	60	30	$81
Chickens	1	60	30	$81
Rec Vehicles	1	60		$54
Compliance	1	30	30	$54
Inquiries	1	15		$13

TABLE 5: WORKLOAD FROM 2016- 2021: SOURCE: TOWNSHIP

Year	Fees	Plan Review/ Inspection Costs	Plan Review/ Inspection Hours	FTE'S REQUIRED
2016	$56,117.91	$75,079.08	1,580	0.9
2017	$68,193.91	$76,641.24	1,581	0.9
2018	$84,970.15	$77,698.76	1,588	0.9
2019	$82,437.87	$117,970.07	2,348	1.3
2020	$165,524.58	$133,517.86	2,939	1.6
2021	$203,033.36	$178,922.45	3,802	2.1
Grand Total	$660,277.78	$659,829.45		

TABLE 6: BUILDING SERVICE WORKLOAD - FROM TOWNSHIP 2021

Service	Type	2021 Volume	# Hours	Cost	# of FTE'S
Planning	Karst investigations	3	4.5	$242	0.00
Planning	Septic File Search	20	10	$537	0.01
Planning	Severance Comments	40	60	$3,223	0.03
Compliance	Compliance Reports	55	55	$2,954	0.03
Chickens	Backyard Chickens	2	3	$161	0.00
Rec Vehicles	Rec Vehicles	22	22	$1,182	0.01
Kennels	Kennels	2	3	$161	0.00
Inquiries	Inquiries	780	195	$10,474	0.11
Total Other Services		924	352.5	$18,934	0.19

TABLE 7: FORECASTED BILLINGS AND HOURS – 2022 TO 2026 (AT 3% YEAR OVER YEAR)

Fee	2022			2023			2024			2025			2026		
	# OF Permits	Estimated Billings	Estimated Review and Inspection Hours	# OF Permits	Estimated Billings	Estimated Review and Inspection Hours	# OF Permits	Estimated Billings	Estimated Review and Inspection Hours	# OF Permits	Estimated Billings	Estimated Review and Inspection Hours	# OF Permits	Estimated Billings	Estimated Review and Inspection Hours
RES1	220	$112,474	3,178	227	$118,165.64	3,274	234	$124,145	3,372	241	$130,427	3,473	248	$137,026	3,577
FILTER	41	$18,540	138	42	$19,478.12	142	44	$20,464	146	45	$21,499	151	46	$22,587	155
COM1	9	$17,552	134	10	$18,440.05	139	10	$19,373	143	10	$20,353	147	10	$21,383	151
RES2	41	$14,628	202	42	$15,368.22	208	44	$16,146	214	45	$16,963	220	46	$17,821	227
AGR1	3	$13,934	45	3	$14,639.54	46	3	$15,380	48	3	$16,159	49	3	$16,976	50
LEACH	28	$12,360	93	29	$12,985.42	96	30	$13,642	99	30	$14,333	102	31	$15,058	105
AGR2	16	$9,886	143	17	$10,385.74	147	17	$10,911	152	18	$11,463	156	19	$12,043	161
COM2	1	$1,978	15	1	$2,077.67	15	1	$2,183	16	1	$2,293	16	1	$2,409	17
DEM	14	$1,720	25	15	$1,807.14	25	15	$1,899	26	16	$1,995	27	16	$2,096	28
REPLAC	10	$1,133	34	11	$1,190.33	36	11	$1,251	37	11	$1,314	38	12	$1,380	39
POOL	8	$824	21	8	$865.69	22	9	$909	23	9	$956	23	9	$1,004	24
PLUMB	2	$78	5	2	$82.24	5	2	$86	6	2	$91	6	2	$95	6
Grand Total	396	$205,107	4,034	407	$215,485.79	4,155	420	$226,389	4,280	432	$237,845	4,408	445	$249,880	4,540
Number of Inspectors Required			2.22			2.28			2.35			2.42			2.49

4.   Eliminate Waste

WASTE DEFINED

Waste is defined as any activity that does not create value for the customer or the organization as described above. In particular, the public of customer is extremely interested in ensuring the tax dollars are not wasted. Waste only adds cost and time. There are three key things to remember about waste:

- Waste is a symptom rather than a root cause of a problem
- Waste points to problems within the system at both the activity and the value stream levels
- In order to eliminate waste, the root causes of waste must be found and addressed.

There are essentially 8 types of waste in processes as follows:

8 Types:
- D efects – specifications not met
- O verproduction – too many transactions
- W aiting – inactivity
- N on-utilized Talent – lack of cross training
- T ransport – work in progress
- I nventory – too many applications in queue
- M otion – inefficient process layout
- E xtra Processing - rework

Value added services do not include waste but do include those value creating activities such as information technology and human resources. In order to eliminate non-value-added activities, the following steps were undertaken:

a.   Analyze the Current State
b.   Process Analysis – Looking for the Hidden Processes
c.   From Initial Assessment to Root Causes
d.   Find Solutions – Draw the Future State

Possible Solutions:
- Work on the "One is Best" Principle
- Investigate all Checks
- Eliminate the Need for Checks
- File Only Once, In Only One Place, Electronically
- Process Ownership
- Get the Job done as soon as you start (eliminate changeover time)
- Eliminate handoffs where possible
- Look at Team Work
- Risk Analysis

We found that, due to processes and duplication and lack of system utilization, many items were not on the 'ONE IS BEST' principle. A few examples include the following:

- Applications are submitted in person or email by paper – not error proofed.
- Spreadsheet is updated to track that the application has arrived but awaiting information

- Documents sit in inboxes until documentation complete
- Data is then entered again in Vadim for the same information in spreadsheet.
- CBO reviews application again for completeness and potentially request more information.
- Paper files are created with duplicate checklists
- Application information is entered in Vadim, Permit is printed and awaits customer payment, must be in person.
- Inspections are identified. Customers must call in to schedule inspection.
- Inspector carries paper file to inspection and fills out paper inspection form. Provides to client.
- Inspector returns to office to enter inspection date and some details.
- If customer does not request final inspection, CBO sends letter to remind the customer of outstanding inspections.
- 200 open files at the moment.
- Documents scanned after the fact into a file but not attached to Vadim.

5. Reduce Supply Lead Time

Supply lead time is the total time it takes to complete a series of tasks within a process in order to meet customer demand. Reducing lead time is one of the most effective ways to reduce waste and lower total costs. Lead time can be broken down into three basic components:

- Cycle time – The time it takes to complete a single task in a work process (such as the review of drawings).

- Lead time – The time it takes to complete an entire process from start to finish and any time in between process steps (such as the amount of time from plan of subdivision application to the time that a draft plan is approved).
- Process delay – the lag time during which one process ends and next one begins (approvals by other levels of management such as review of the reports).

Process and value stream maps are effective illustrations of lead times, cycle times and delays.

We noted that supply of inspection time is driven by the customer and takes additional time. All of the steps listed above indicate waste and additional time. There have been some complaints about the response time but most have been addressed. However, moving to electronic submissions and approvals will reduce overall cost and lead time.

6. Reduce Total Costs

In economic terms, the reduction of waste and delays results in significant reduction in costs. By eliminating unnecessary checks, over-processing and handoffs, less resources are needed to complete the tasks. The true cost savings in the Township can be realized by reducing approvals and handoffs, requiring accountability at each stage and analyzing the types of reviews undertaken. As well, improving tracking of time and resources dedicated to each step and further understanding the steps that can

be eliminated. Not only does this result in savings, it will result in improved customer service.

BUILDING PROCESSES ANALYZED

ROOT CAUSE ANALYSIS

The root causes of wastes found in these processes have resulted in excessive lead time in processing applications and defects requiring resubmissions of applications and plans. This has resulted in lower than desired client satisfaction and frustration on the part of applicants. As well, to improve turnaround time in order to allow growth and increase revenues in line with the Strategic Plan. The root causes can be summarized in the cause-and-effect diagram (fishbone diagram) below.
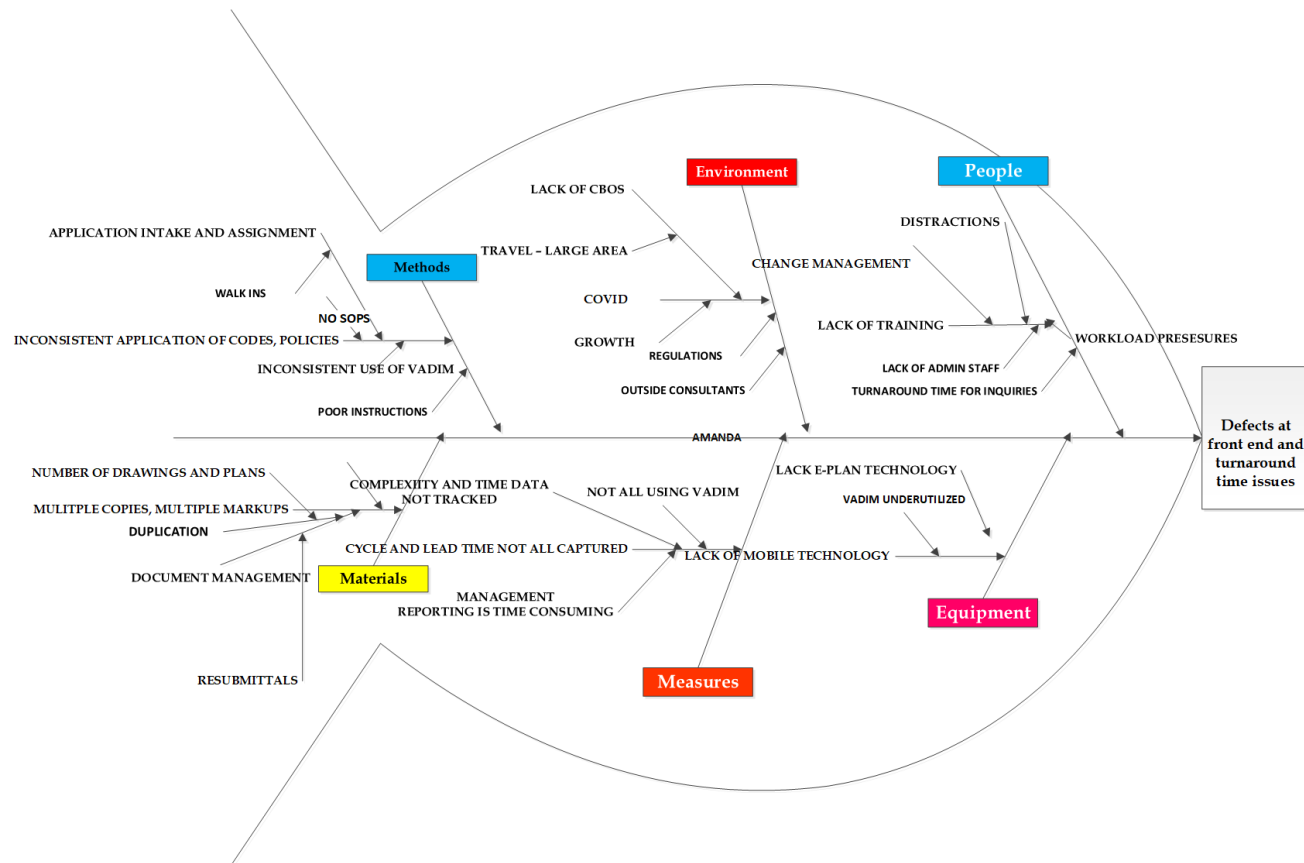
FIGURE 13:ROOT CAUSE ANALYSIS - TURNAROUND TIME OF APPLICATIONS AND DEFECTS

BUILDING PERMITS AND INSPECTIONS

As indicated above, the key focus of this report surrounds the submission of plans, and drawings that support applications and the subsequent review by Township CBO.   In most situations, applications have errors or omissions are not deemed complete on the first round. This adds time and cost to each application, the fee of which is not taken at the time of submission.

TOO MUCH PAPER, NO STANDARD PROCESSES

The Township's application and inspection processes require different plans and requirements all of which are paper based. Although the Township has an orderly flow of those applications for internal reviews, there are many scenarios that could be avoided with proper error proofing and advice at the front end. Inspection processes are handled by the CBO and assigned based upon workload and location. Although the Township has implemented VADIM for tracking the status of those applications, it has duplicated this with spreadsheets and has not set up VADIM for workflow or tracking of multiple submissions. All inspections are done by paper and reentered into VADIM upon return to the office. Documents are not electronic nor accessible in the field. They are only scanned in after the fact and not in VADIM.

We also noted that, within a permit process, there are no standard practices, workload or procedures so the documents are not consistent. The data in VADIM is not the complete picture, often requiring staff to retrieve the paper file. This represents risk to the Township as it may not know if it has a full corporate record.

Eliminate non-value added activites/waste

The 8 wastes are further defined with some examples of waste in processes within the Township building services.

TYPES OF WASTE	DEFINITION	TOWNSHIP WASTES DISCOVERED
Defects / Process Errors/Rework	Defects, errors, skipped process steps that cause rework.	Missing or incomplete information- Applicants often do not have the appropriate information when filing an application Documents are in files – come into the Township office in a variety of means – paper based and files lack structure Comments from inspectors with respect to plans or deficiencies are in paper only, did not see the follow-up inspection in any of the files provided. Rework required several times by internal reviewers due to a lack of compliance to requirements.
Over-Production/Duplication	Producing more, sooner, or faster of one component than is required for next step.	Producing, printing, and over dissemination of reports compared to need/use – Documents printed when not necessary. Excessive number of copies filed many times. Excessive paperwork trails and approvals. Affects accountability. Follow up letters for open permits – time consuming.
Waiting	Time or interruption in the process where team members are waiting for something to happen before doing the next step. Process idle time.	Waiting for decisions and required follow ups. Many small process steps taking little time but not addressed in a timely fashion. Waiting for client information due to lack of instruction at front end. Clients wait for application/intake process due to lack of scheduling.

TYPES OF WASTE	DEFINITION	TOWNSHIP WASTES DISCOVERED
Non-Utilized Talent	Underutilizing people's knowledge and creativity Uneven work flow resulting with some team members overburdened while other underutilized	Duplication of effort – spreadsheets, emails, templates that do not populate. Staff reported performing "scanning" duties (after the fact as opposed to directly to Vadim). Copies and files created and moved throughout the organization,
Transportation/Conveyance	Unnecessary handling or transportation, multiple handling. Steps where work is moved from one role to another, one location to another, etc. Office design and layout does not flow of decision making.	Transferring data files between computer and paper. Moving files between staff without knowledge of file location Paper-based versus electronic transfer
Inventory	Producing, holding, or purchasing unnecessary inventory or materials. More inventory than is required to meet 1 or 2 days of work.	Stacks of files sitting idle – intake Excessive backlog or work to be processed – 200 open files. Too much paper to be handled, processed or to be filed
Motion	Unnecessary movement to access information, files, materials, to equipment to complete a task.	Walking to pick up documents and deliver paperwork or accessing needed tools - inspections paper based. Excessive walking to and from printers, files etc. Time chasing information and data – reporting issues.

TYPES OF WASTE	DEFINITION	TOWNSHIP WASTES DISCOVERED
Extra-Processing / Redundancy	Activity that doesn't add value or transform the product/service. Steps that repeat another step in the process – multiple roles doing similar tasks. Checking work of others already completed for accuracy or completeness.	Unnecessary steps and handoffs – Several versions of applications/plans. Resubmittals Documents copied, entered in multiple places (eg. Checklists). No error proofing of applications results in rework and review by the CBO when likely unnecessary.

FIGURE 14: EIGHT WASTES

TECHNOLOGY AND PROCUREMENT

MOVING FORWARD

Although the Township has been utilizing VADIM, GIS and document management, online submissions are not prevalent and applications and plan reviews are undertaken via paper and memos. Over the past ten years, many municipalities have been accepting plans and drawings electronically online and are using software programs that allow them to track plans, either in hardcopy blueprints or in electronic format. The Township has been moving forward to some extent with email applications. However, the inconsistency of VADIM utilization and implementation is problematic. Further, status of applications is only available to internal staff and requires the applicant to call to determine where their application is in the process. Applicants should be able to access their project information seamlessly without calling the Township.

Technology can help. There are now several software programs that allow for applications and plans to be submitted electronically in a variety of formats and enable review and mark-up electronically submitted plans for bylaw and code compliance. In addition, these technologies allow for the storage of plans electronically and elimination of paper. This will improve service, reduce turnaround time and reduce errors. Implementation of an electronic application and plan submission solution will have significant impact on quality and service for both clients and staff. We recommend, however, that the appropriate procurement process be undertaken. Likely a pre-qualification process would make sense to ensure that certain "must have" requirements are met as outlined below. We also believe that a pilot should be undertaken which starts with an application type (non-residential building permits) internally, expanded to developers before the general public. This should be analyzed, processes modified and then expanded Township wide.

VADIM INTEGRATION

It is imperative that work not be duplicated and an integration with VADIM be part of the requirements.

REQUIREMENTS AND FEATURES

As a result of the consultations and analysis of the business processes, some needs and requirements have been identified. Others may be nice to haves given the size of the municipality and summarized as follows:

Software

- Integration with VADIM and GIS
- Online submission and lookup
- Automatic version control prevents version conflicts and makes sure that all users are using the most recent document versions.
- On-Screen measurement capabilities and calculations.
- Central repository for all project information.
- Automatic email notifications of changes to ensure that all users are notified of changes.
- Customizable e-forms.
- Customizable reports.
- Fully Configurable workflow
- Concurrent markup
- Resubmission markings and display of all changes
- Redline documents.
- Comment library.
- Overview provides reviewer workload transparency and makes it easy to identify and correct bottlenecks.
- Configurable comment letter
- Time tracking
- Customize own stamps and save them toolbar.
- Comparison of different file formats
- Support multiple file formats
- Electronic Plan Review application are time stamped and tracked by user ID
- Error checking at every stage
- Counting of different attributes
- Tracking of every comment, plan, submission by type
- Unlimited storage and access
- Project page – access to all processes on a given project

- Scheduling of inspections
- Automatic creation of letters - reminders
- Ready access – web based, mobile
- Internal and external circulation
- Code and bylaw lookup, checking
- Drawing Overlay and Drawing Side-by-Side comparison tools to allow plan reviewers to compare multiple versions of drawings and entirely different drawings (nice to have)
- Allow for plan layering from conception to final occupancy (ensure final plans are stored)

Hardware

In general, access remotely and mobile with GIS and data ability. Given that some areas to not have data access, there needs to be an 'offline' version so information can be downloaded and uploaded when return to the office.

APPENDIX A: ELECTRONIC PERMITTING, PLAN SUBMISSION AND INSPECTION SOFTWARE

As part of the review, WSCS undertook evaluations of potential software solutions. We have extensive experience from other municipalities and provide the following summary: We have information from several products: (Cloud Permit, Citywide, City Works, Citizenserve). We have also provided information form IDTPlans, E-PlanSoft, Avolve and SIRE which WSCS had engaged to do demos in the past and evaluated several others (CSDC, SpaceDox). It is important to note that pricing will vary between all of these products and this is provided as information only based upon our research. A full evaluation based upon requirements was not undertake to date and should be reserved for the appropriate procurement activity. As well, the products are not ranked in order of preference or rating. The listing of solutions below follow is in no particular order.

Cloudpermit

FEATURES:
- Store data online within American borders
- Manage access with role-based permissions
- Remove worry about computer crashes or network connectivity loss
- Submit, track, and pay for permits
- Request and schedule building inspections
- Conduct on-site mobile building inspections
- Review, approve, and issue building permits online
- Use software that has regular feature updates
- Set up within weeks, not months, without costly integrations or IT projects
- Interact with maps that integrated with GIS (geographic information system)
- Gain insight with reporting
- Only hit 'submit' on complete permit applications
- Communicate in one place with time-stamped messages
- Track, monitor, and receive notifications on permit and inspection status
- Use interactive maps to find their property's location
- Understand what is needed for their permit

- Pay for permits online
- Access Cloudpermit on any mobile device, browser, or operating system
- Use interactive maps to find permit locations
- Filter and search applications by type, status, date, name, address, etc.
- Receive only complete permit applications
- Accept fees and payments online
- conduct on-site mobile inspections
- Easily plan inspection routes
- Schedule inspections
- Send automatic inspection status updates
- Keep all inspection information in one place
- Manage simple inspections and re-inspections remotely
- Easily select permit location
- Display property information and various layers
- Plan and navigate inspector routes
- Calculate property size
- Change and modify workflows
- Set up notifications
- Build and modify document templates
- Add stakeholders to review and approval processes
- Planning Application processes
  - Submit pre-consultation requests
- Conduct pre-consultations with relevant staff and external agencies
- Manage meeting dates and agendas for upcoming council and planning commission meetings
- Schedule applications to an upcoming meeting to create and share relevant documents
- Comment and provide feedback on planning proposals
- Request and circulate comments, documents, and data to any internal or external departments
- Collaborate with others
- Enable online and over-the-counter payments
- Use interactive maps with GIS to easily find property information

citizenserve®

FEATURES:

- Online applications
- local contractors can apply, pay for, and upload plans—as well as any accompanying documents through the online portal.
- Automatic permit routing to the correct departments and staff, based on your workflow process. Plan Review
- Incoming applications are automatically routed to the appropriate department and staff based on your requirements. Reviewers can easily view electronic plans and specifications, and then quickly enter comments from the online glossary of common corrections to create the plan review report. Contractors can view application status and resubmit through the online portal.
- Inspections
- Contractors can request inspections online, which are automatically routed to the correct inspector for scheduling and review. Inspectors can view inspections due in calendar format, or on a map. They can also create custom inspection checklists to mimic current inspection process, and even generate inspection reports from the field.
- Online Requests
- Citizens can submit requests through the Citizenserve online portal on your municipal website. Upon location selection and property data input, a street view image of the property is automatically imported from your parcel data. Requests are then automatically routed the appropriate department and staff based on the request type and specific location.
- Allow for online permit applications, processing and payments from citizens and contractors at a distance.

psdcitywide

FEATURES:

- Online applications and submission portal
- Manage fees with updates
- Integration with Assets and GIS
- Centralized permit management
- Manage all documents digitally in one place. Eliminate paper documents or spreadsheets & connect your teams remotely for optimal collaboration.
- Staff can access all permit information in the field, including task lists, property records, and past results.

Cityworks
A TRIMBLE COMPANY

FEATURES:

- Online applications and submission portal
- Track Permits and Work Activity – integration with asset management
- Maps to catalog and visualize location data.
- Visualize Your Data
- Using ArcGIS as the authoritative system of record, City works supports spatial analysis of permit applications, code inspections, work activities, and operational insights. Map layers can display current projects as they are tied to a parcel or building, and public dashboards improve transparency and accountability

IDTplans is based in Tuscon Arizona and is solely a provider of Electronic Plan Review software. The features are as follows:

FEATURES:

- Unlimited users and data storage.
- Automatic version control prevents version conflicts and makes sure that all users are using the most recent document versions.
- On-Screen measurement capabilities.
- Central repository for all project information makes finding projects and plans quick and easy.
- Automatic email notifications of changes makes sure that all users are notified of changes.
- Customizable e-forms allows collection of data
- Customizable reports feature allows one to create standardized reports.
- Fully Configurable workflow allows you to route projects to the proper authority and setup automatic alerts.
- Concurrent markup feature allows all reviewers to work simultaneously.
- Redline documents for clarity.
- Comment library automatically stores commonly used comments for easy accessibility and reference.
- Overview provides reviewer workload transparency and makes it easy to identify and correct bottlenecks.
- Configurable comment letter feature allows you to collate and compile reviewer comments quickly and easily into a standardized pdf document with links to the drawings.
- Robust permission matrix provides full control of site privileges by user or group.
- Optional fee collection module.
- Optional time tracking module.
- Customize stamps and save them to the toolbar.

Administrators

Quickly view what projects are currently under review and check their status.

Customize workflows to automatically route projects, notifications, and instructions to reviewers and owners.

Automatically create and email correction letters complete with links to the plan sheet mark-ups.

Reviewers

Each plan reviewer has their own overview page that displays all assigned projects along with current status and due dates.

Reviewers measure, compare, and mark up plan sheets on-screen and utilize their own comment library to quickly select and edit standardized comments that require corrections.

Applicants

Submit plan review applications and upload documents in minutes from any computer.

Receive automatic e-mail notification when a resubmittal is required or a project is approved.

Manage all projects from one central location. New submittals, resubmittals, and approved projects are all located in one place.

FIGURE 15: IDT PLANS APPROACH

Security   (hosted)
- 128 bit SSL Encryption
- PCI Compliant
- Password Encryption
- Keycard Only Access to Servers
- Hardware Firewall
- Anti-Virus Protection
- Security Updates Installed Daily

Reliability (hosted)
- All files and data are stored on multiple hard drives set up in a RAID configuration.
- All files and data are backed up nightly.
- Servers monitored 24-7 by a staff of trained professionals.
- Redundant fiber optic connections to the Internet backbone via multiple carriers.
- Power supplied from two separate substations and backed up with diesel generators.
- Servers stored in a secure, air conditioned, & humidity controlled environment.
- 10 year record of 0 power outages.
- 10 year record with 0 files lost.
- 10 year record with 0 data loss.

INTEGRATIONS:

- Could be done by iDtPlans developers with VADIM and GIS

ASSESSMENT:
- Full featured, Simple interface, low hardware overhead

CASE STUDIES (CLIENTS)
- San Francisco, CA
- Bakersfield, CA
- San Bernardino, CA
- Moreno Valley, CA
- Colton, CA
- Patterson, CA
- Phoenix, AZ
- Tucson, AZ
- Sacramento, CA
- Rohnert Park, CA
- San Joaquin County, CA

SAMPLE SCREENSHOTS

IDTPlans has a simple interface that is user friendly. It allows for applicants to log on and review the project at any stage and determine actions required as shown in the screenshots below.

FIGURE 16: IDT PLANS PORTAL EXAMPLE

FIGURE 17: IDT PLANS - WORKFLOW

FIGURE 18: IDT PLANS WORKFLOW
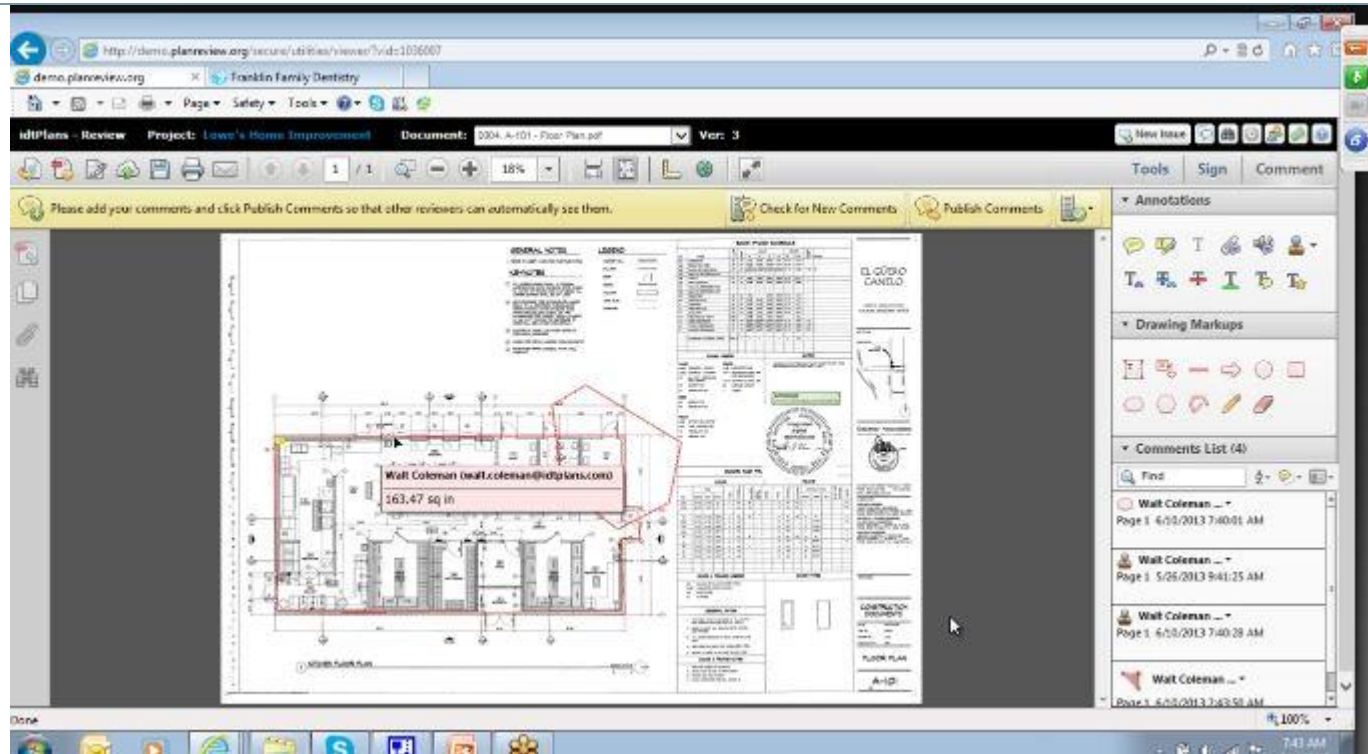
FIGURE 19: IDT PLANS - MARKUP TOOL
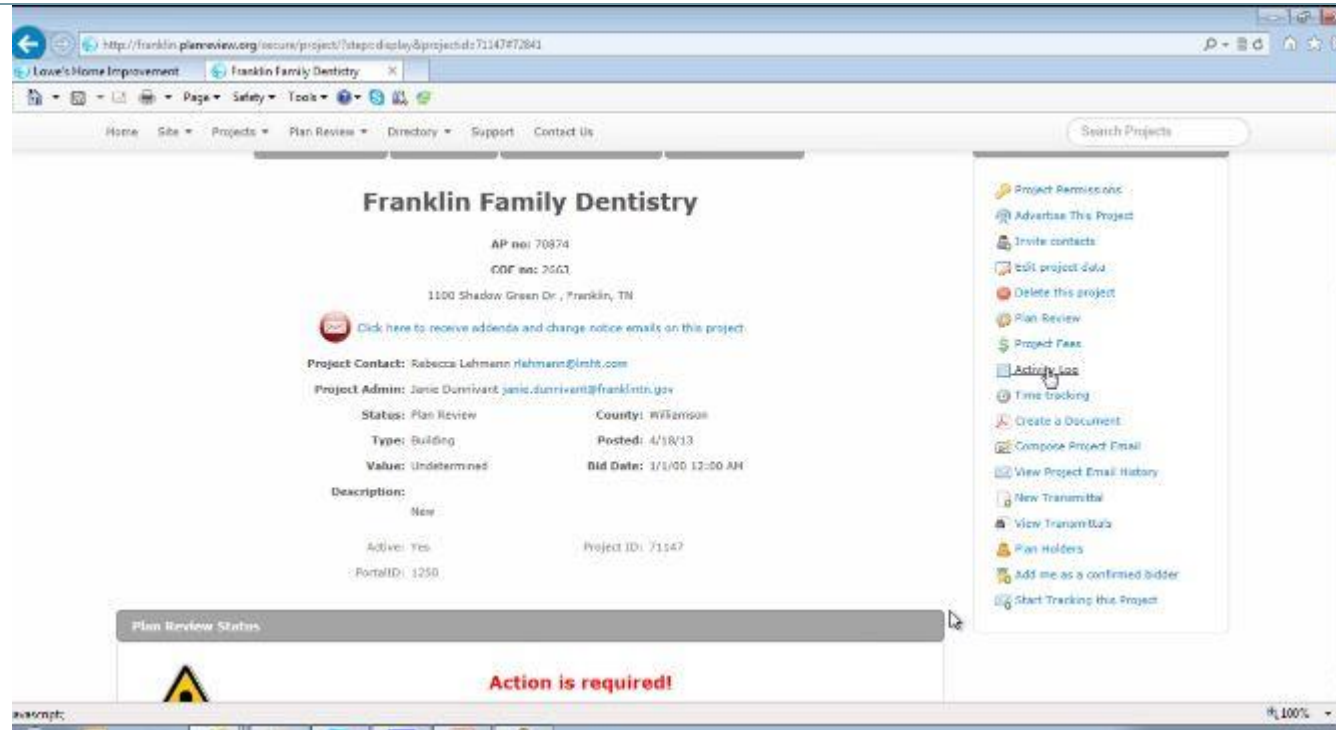
FIGURE 20: IDT PLANS ACTION PORTAL

FEATURES:

E-PlanSoft has both and E-plan review product and E-plan check product which are separated for planning and building as follows:

e-PlanReview®

- enables concurrent plan reviews by allowing multiple users to review plans simultaneously in real time
- Drawings can be marked-up and commented on online using e-PlanReview® where these are instantly viewable by all team members
- The built-in e-PlanReview® Standard Comment Database function allows users who have a library of frequently used comments to store these in the system for easy, efficient re-use
- e-PlanReview® automatic versioning allows teams to track drawing changes and revisions over time and multiple phases with ease
- Built-in Drawing Overlay and Drawing Side-by-Side comparison tools allow reviewers to compare multiple versions of the same drawing – and entirely different drawings – much more effectively than paper documents
- e-PlanReview® can help reduce or even eliminate time-consuming, difficult-to-schedule coordination meetings through the use of fully collaborative, inter-agency online review
- All Activities in our Electronic Plan Review application are time stamped and tracked by user ID
- Every activity in the system is recorded in an easily searchable database
- E-plan system includes a variety of single-click ready reports right out of the box which can be customized for management

e-PlanCheck®:

- Simple simultaneous collaboration between multiple departments in real-time
- Drawings can be annotated (marked-up) and commented on online using e-PlanCheck and changes can be viewed instantly
- The built-in e-PlanCheck Standard Comment Database function allows agencies with a library of frequently used comments to store these in the system for easy, efficient distribution and re-use by reviewers

- e-PlanCheck Standard Comment Database is shared agency-wide, cutting down on individual reviewers' commenting time while still allowing them the freedom to edit and specify as needed
- e-PlanCheck automatic versioning allows agencies to track permit drawing changes and revisions over time and across multiple submittals with ease
- Built-in e-PlanCheck Drawing Overlay and Drawing Side-by-Side comparison tools allow plan checkers to compare multiple versions of drawings – and entirely different drawings – much more effectively than paper documents
- e-PlanCheck Electronic Plan Review solution provides custom one-click Corrections Reports that are specific to each permit for delivery
- A wide variety of standard or customizable reports for Management to review
- All activities are time stamped, identified by the user ID, and recorded in a searchable database

FIGURE 21: E-PLAN SOFT PRODUCTS

INTEGRATIONS:

- Could be undertaken by e-PlanSoft developers with VADIM and GIS

ASSESSMENT:

- 2 packages required to provide internal and external reviewers access and tracking.

CASE STUDIES (CLIENTS)

- None submitted

SAMPLE SCREENSHOTS
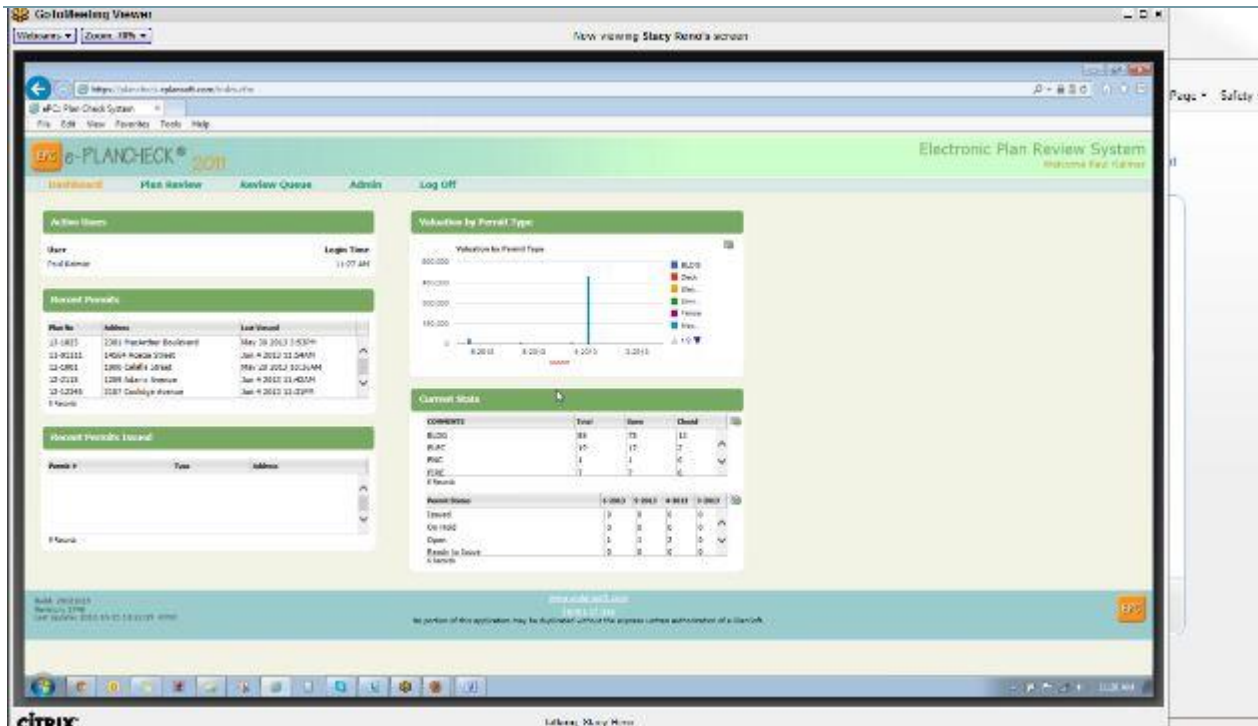
FIGURE 22: E-PLAN SOFT - DASHBOARD
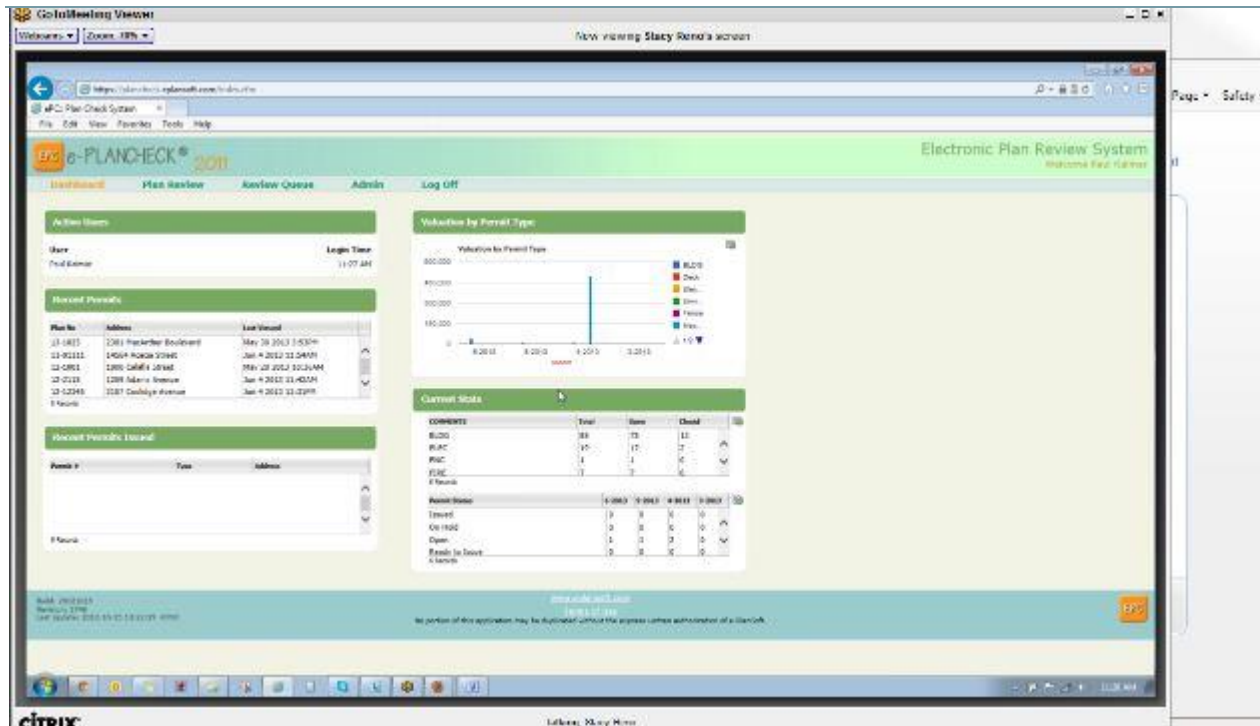
FIGURE 23: E-PLAN SOFT WORKFLOW
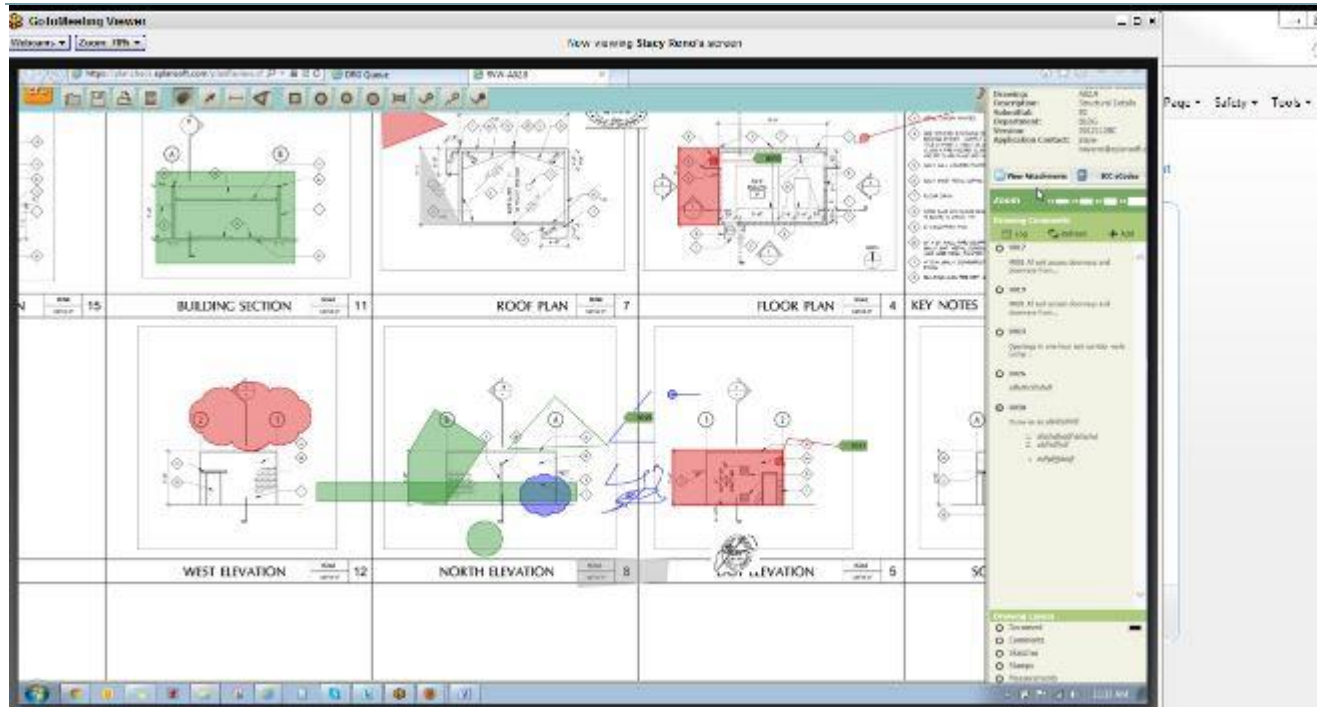
FIGURE 24: E-PLAN SOFT – MARKUP TOOL
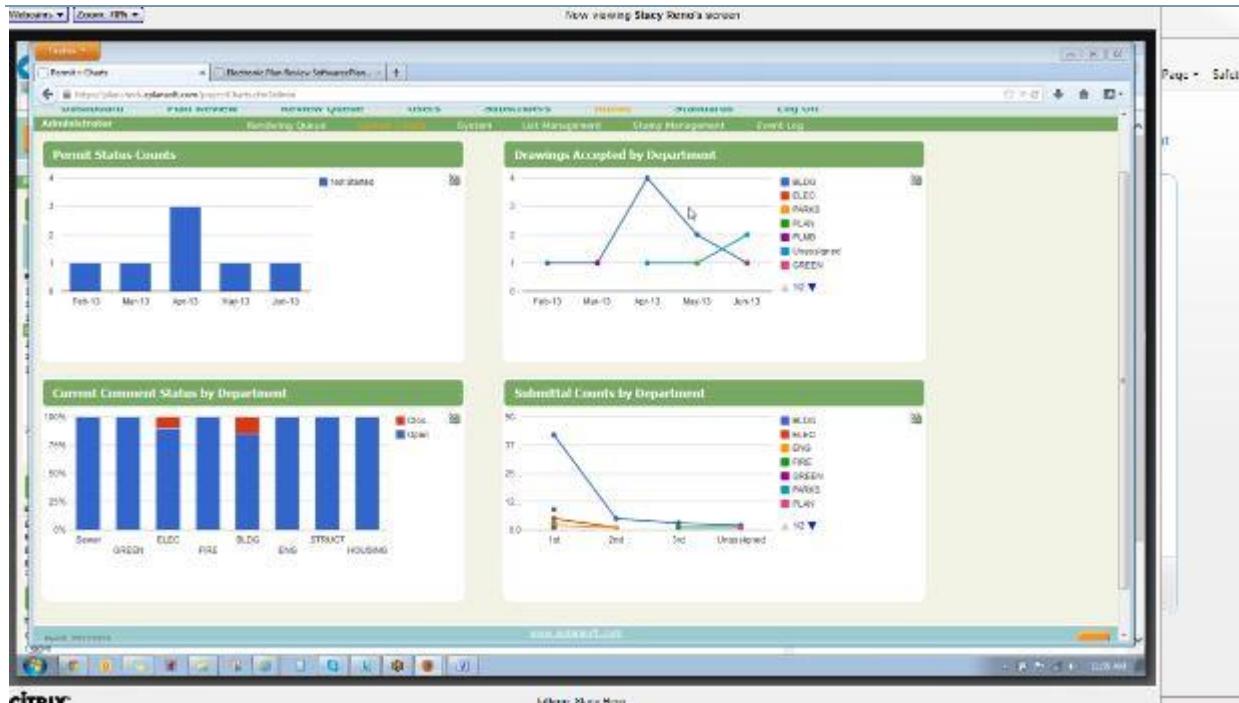
FIGURE 25: E-PLAN SOFT: METRICS

Avolve Software Corporation develops, markets and sells project information management and collaboration solutions and is the leading provider of automated electronic plan (ePlan) submission, review and tracking solutions to government and is based in Scottsdale, Arizona.

FEATURES:
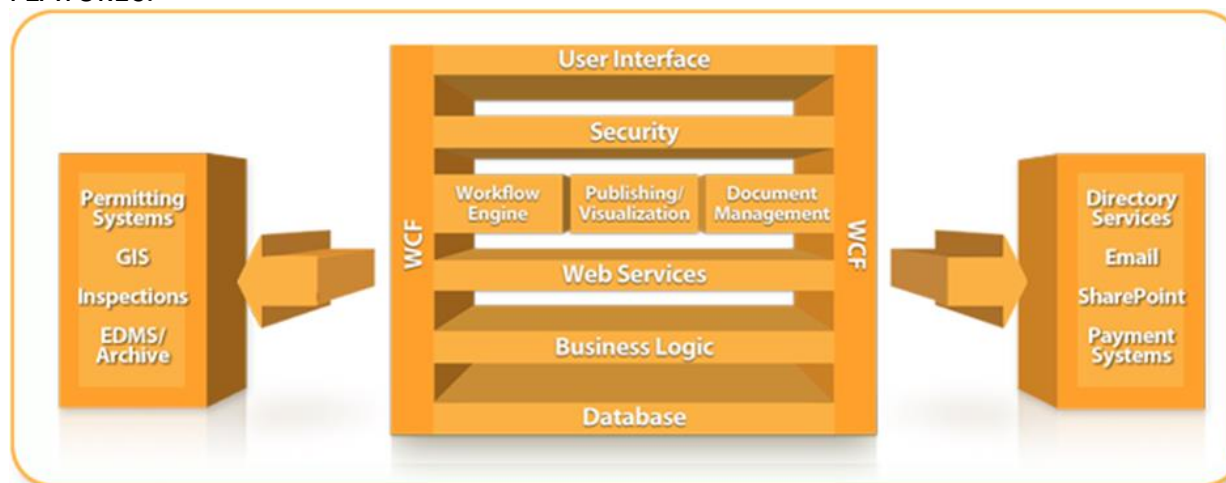
FIGURE 26:PROJECTDOX SOFTWARE TECHNOLOGY STACK

ProjectDox Eplan Review Software is a web-based, enterprise-class application that is hosted at the facility or onsite for maximum versatility, flexibility and control. It can run as a stand-alone system, but typically ProjectDox is integrated with permitting and other government software applications and databases.

The ProjectDox core is built on the Windows .NET 2.0 development platform, making ProjectDox an open standards application that can be integrated with a wide-range of support programs and their services.

ProjectDox licensing allows for an unlimited number of projects, users and plans/documents,

User Interface

- ProjectDox is accessible to everyone via a web browser. Currently supports Internet Explorer v6 and greater, with ActiveX controls enabled and cookies disabled during a secure session.

- ProjectDox was designed to present tools and data fields, with minimal panning, scrolling, drilling or toggling – making it easy for staff personnel and citizens to use regardless of their skill level.

Security
- Security is accomplished at several levels within ProjectDox.
- As a matter of process, users must be invited to a ProjectDox project in order to access the application. Temporary login credentials are initiated by the municipality and sent to authorized users.
- ProjectDox uses secure web communication protocols used in online banking services when sending and receiving data over the Internet. ProjectDox supports LDAP and Active Directory credential verification services.
- ProjectDox supports standard port assignments between servers placed in the DMZ and across firewalls. Optional port assignments are also supported for increased security.
- ProjectDox can be configured according to the PCI Data Security Standard (PCI DSS), which prevents any direct connection to databases behind the firewall from the DMZ.
- ProjectDox employs the concept of Users and Groups, which is used by ProjectDox administrators to manage and control application and folder-level security permissions. File-level security is controlled at the folder level.
- ProjectDox never uses original files for display, markups or annotations. Screen renditions are created and then managed during work activity. Original files are never opened but remain in storage after initial publishing, free from any modification by users.
- Access to file folders can be "locked down" according to pre-defined workflow activity. This keeps folder content free from alteration/modification during critical review phases.
- Detailed logs and activity audit-trail provide data for security-related inquiry and analysis

Workflow Engine
- Built on Microsoft Windows Workflow Foundation (WF) – A component of the .NET Framework, WF is a standard part of the Windows platform for developers. It provides a common foundation for building workflow-based applications on Windows, whether those applications coordinate interactions among software, interactions among people, or both.
- ProjectDox Standard Workflow for Electronic Plan Review.
- Fully customizable workflow and e-forms development for any business process.
- Multiple levels of authorization for granular access control. Intelligent e-forms present information based on the viewer, task, current status and permission level.
- Fully customizable notification triggers for any specified task or action
- Access to designated project review files directly from the workflow
- Application functions can be governed by workflow business rules – file access, view, mark-up, download, print and other functions.
- Standard tasks can be created using GUI, any complex task with additional scripting and programming
- If/then scenarios and decision trees are supported
- Error-checking is supported

Publishing & Visualization
- ProjectDox supports screen-rendition publishing for over 150 document formats**.** Screen rendition files are used during all ProjectDox view and review processes. Original files are stored and not modified by ProjectDox users. All markups occur on virtual layers optimized for process and file management.

- Users need a browser to view all published file formats.
- All files are represented by a thumbnail view for quicker identification.
- The browser-based view and markup functions are easy to access and use. Markups can be color-coded to match review functions and/or departments.
- Changemark® feature provides numbered markup index with automated scroll, pan and zoom to markup coordinates. Dynamic, intelligent hyperlinks to specific markups/annotations can be sent to users via email.
- Annotations are saved in a non-proprietary, open XML format, permitting import/ export of annotations and pre/post processing as a part of a workflow.
- The consolidate feature allows you to select annotation/markup files from multiple reviewers to combine into a single file.
- Accurately snap measurement points to end, mid and center coordinates in vector (CAD) files. When measuring, users get a magnified view of the sensed point of interest – to select measurement points with higher accuracy, even when working on large drawings and long distances.
- Overlay and side-by-side compare features provide immediate feedback on sanctioned and unsanctioned changes to plan drawings. Alignment function allows users to select alignment coordinates on disparate sheets.
- Print/Save to PDF, TIFF and DWF. Print interface allows for complete control and presents a thumbnail print-preview. When publishing to PDF, annotations are conveyed as PDF comments.

Document Management
- Upload single or multiple files in batch mode. Folder upload is also supported. Since folder creation in ProjectDox is permissions-driven, recreating subfolder tree structures is not currently supported. All files located in subfolders will be uploaded into a single folder.
- Drag and drop files to designated ProjectDox folders
- User and Group-level permissions govern document access. Folder and subfolder-level security control. Individual files can be locked to prevent additional markups and annotations.
- CAD files X-Refs are fully supported.
- Hyperlinks to other document files can be added to existing files
- Public and private discussion threads for individual documents is supported
- Email comments directly to specific files in ProjectDox.
- All files uploaded into ProjectDox are "fingerprinted" to establish audit trail for verification support. ProjectDox tracks a vast number of metrics including date, time, user, and event (upload, download, modify, view, markup).
- Application functions can be governed by workflow business rules – file access, view, mark-up, download, print and other functions.
- Multiple metadata field are supported for file identification through ProjectDox full-search feature.
- Full versioning support including Check-In and Check-Out. Files checked-out can be modified off-line and re-synced upon reconnect. Files are versioned whenever file change or resubmit occurs.
- Prior file versions can be activated by permission.
- Documents can be exported to archive and use in other EDMS systems.

Windows Communication Foundation (WCF) / Web Services
- Windows Communication Foundation (WCF) and Microsoft Web Services is a part of the .NET Framework that provides a unified programming model for rapidly building service-oriented applications that communicate across the web and the enterprise.

- ProjectDox utilizes Web Services and WCF extensively within the application and to facilitate interoperability with other software applications, such as permitting software and other government business management tools. Therefore, ProjectDox is a service-oriented application that supports open computing best-practices in enterprise environments.
- The Avolve Engineering Development Team can quickly provide integrations and plug-n-play modules extending ProjectDox functionality, especially when target applications share in Web Services/ WCF. Existing functions and service calls can be re-used efficiently in different variations.
- ProjectDox services can scale for distributed and load-balanced configurations

Business Logic
- The ProjectDox Business Logic layer works in conjunction with all other components to govern access to the Database and the presentation of data to the user. It comprises the bulk of the core ProjectDox application code base.

Database
- ProjectDox is designed to run on the Microsoft SQL 2005 database platform.
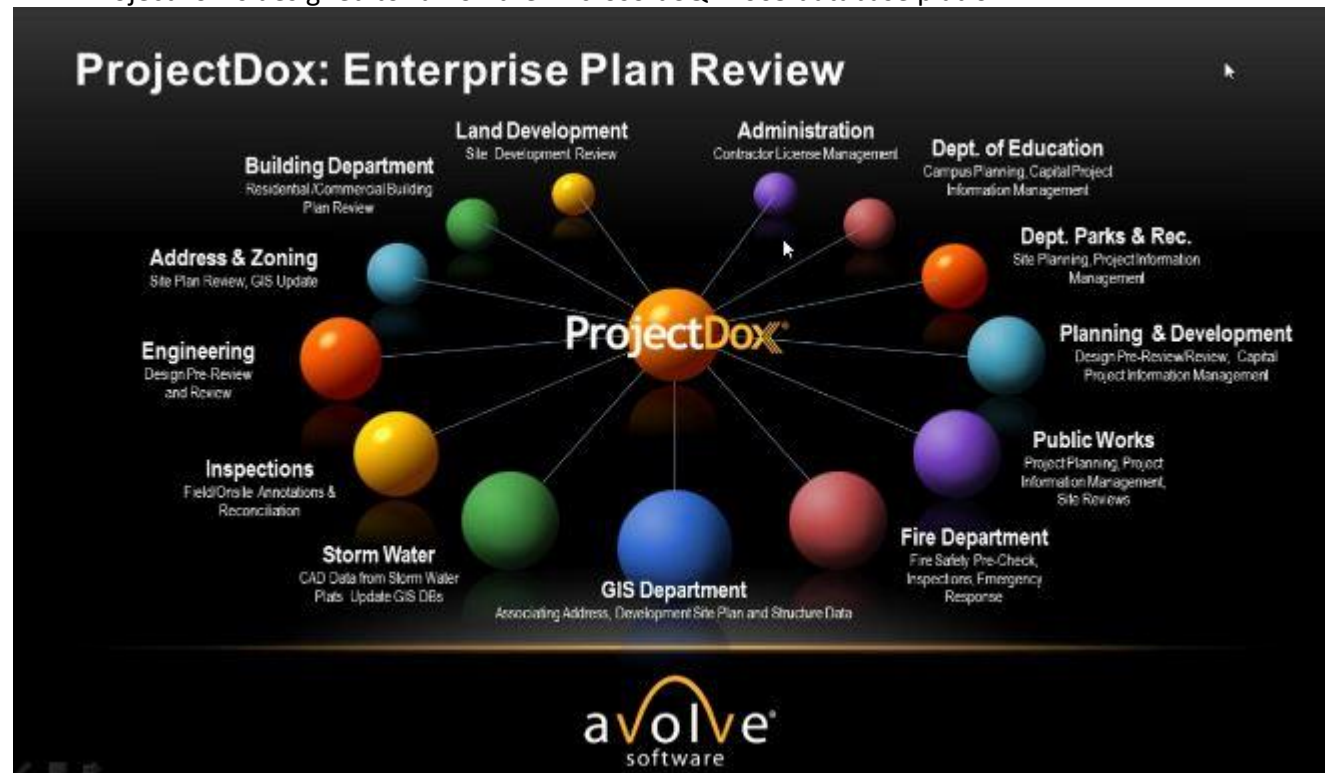
FIGURE 27: AVOLVE SOLUTION

INTEGRATIONS:

- AMANDA, ESRI GIS, Hansen

ASSESSMENT:
- Full featured with future vision

CASE STUDIES (CLIENTS)
- City of Markham, ON
- State of Idaho
- City of Boise, ID
- City of Albuquerque, NM
- City of Santa Monica, CA
- City of Miami Beach, FL
- City of Bend, OR
- City of Goodyear, AR
- City of Vancouver, BC
- City of Edmonton, AB

SAMPLE SCREENSHOTS

FIGURE 28: AVOLVE PROJECT PORTAL
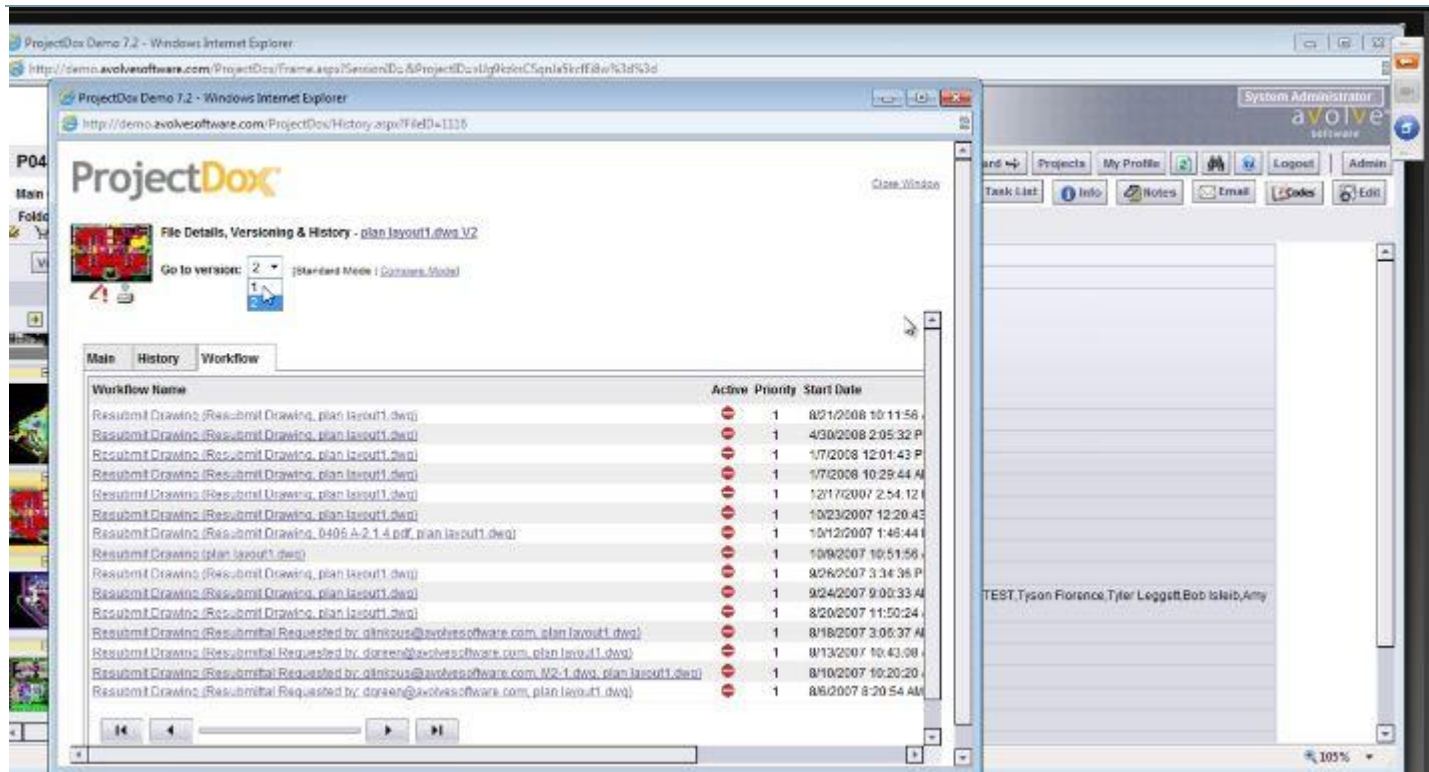
FIGURE 29: AVOLVE WORKFLOW
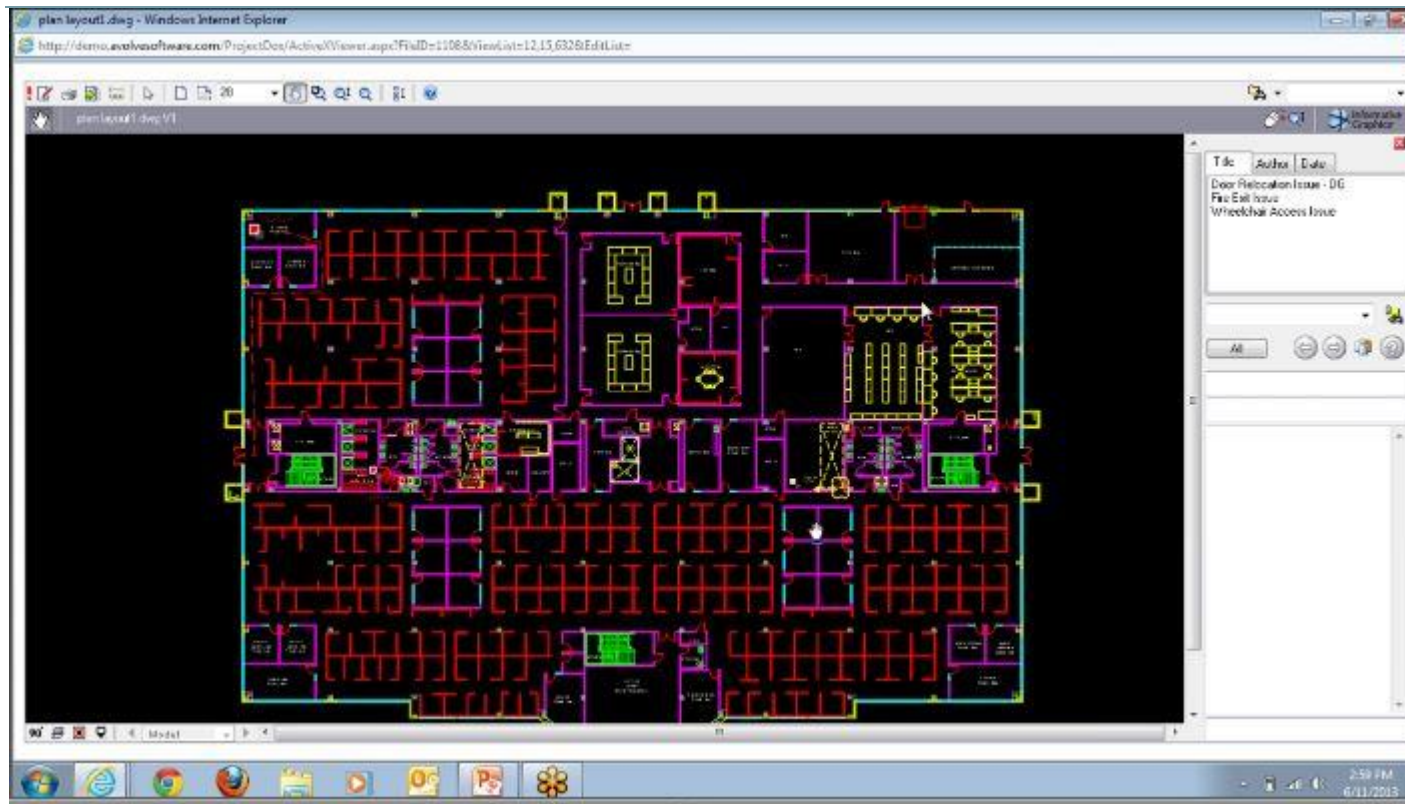
FIGURE 30: AVOLVE - MARKUP TOOL
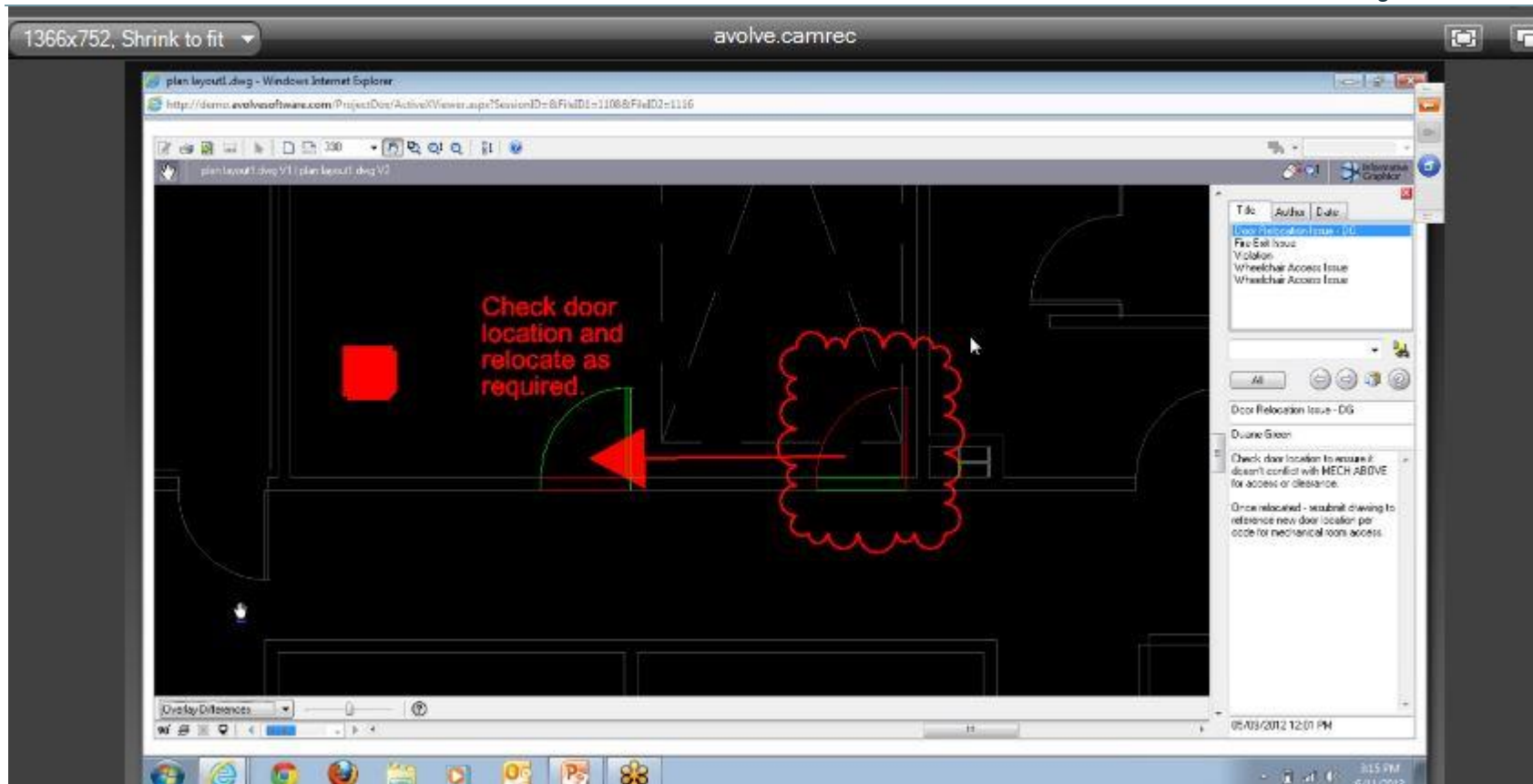
FIGURE 31: AVOLVE MARKUP TOOL
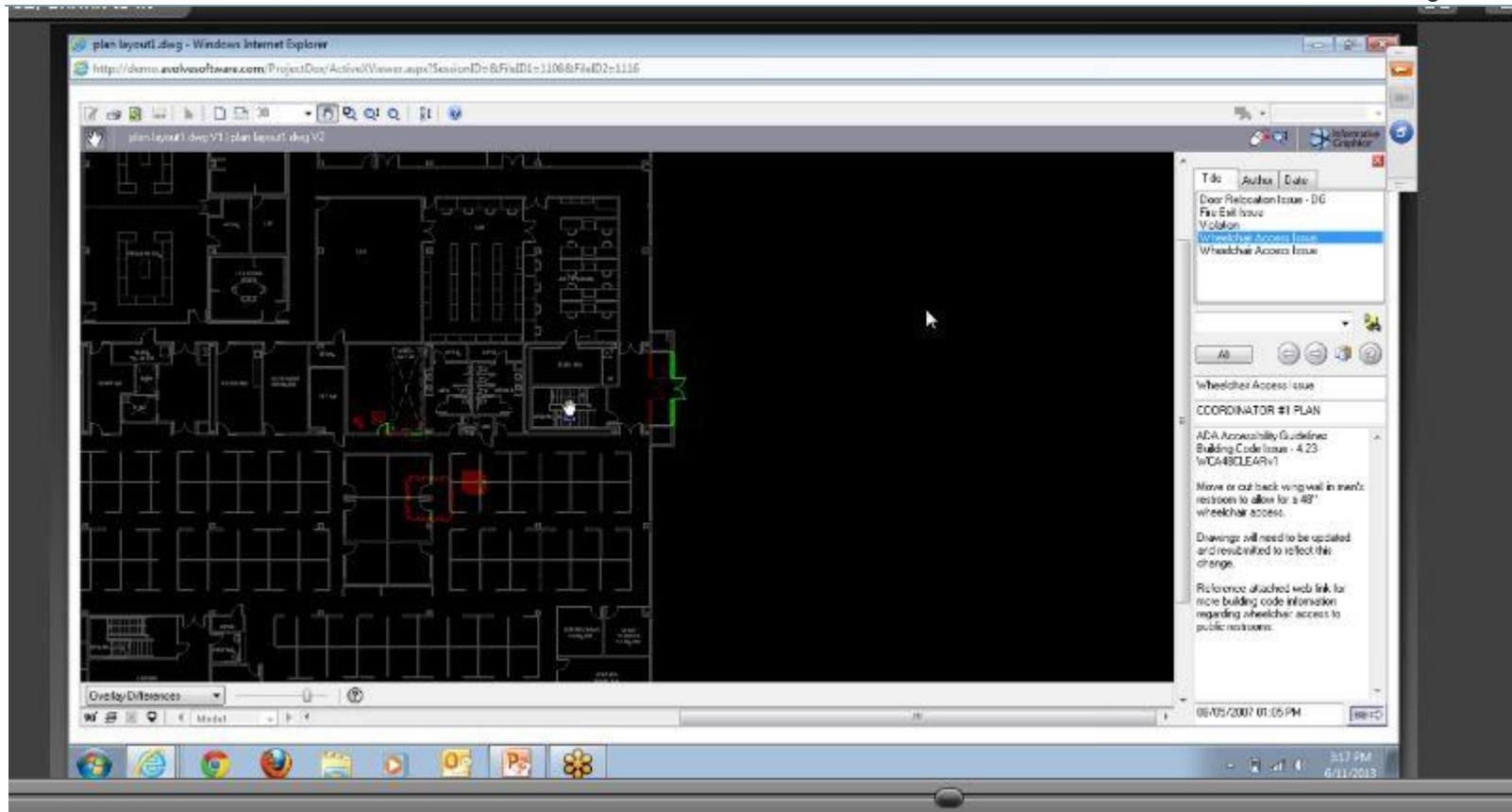
FIGURE 32: AVOLVE; COMPARE TOOL

FIGURE 33: AVOLVE: VERSIONS AND PLAN ICONS
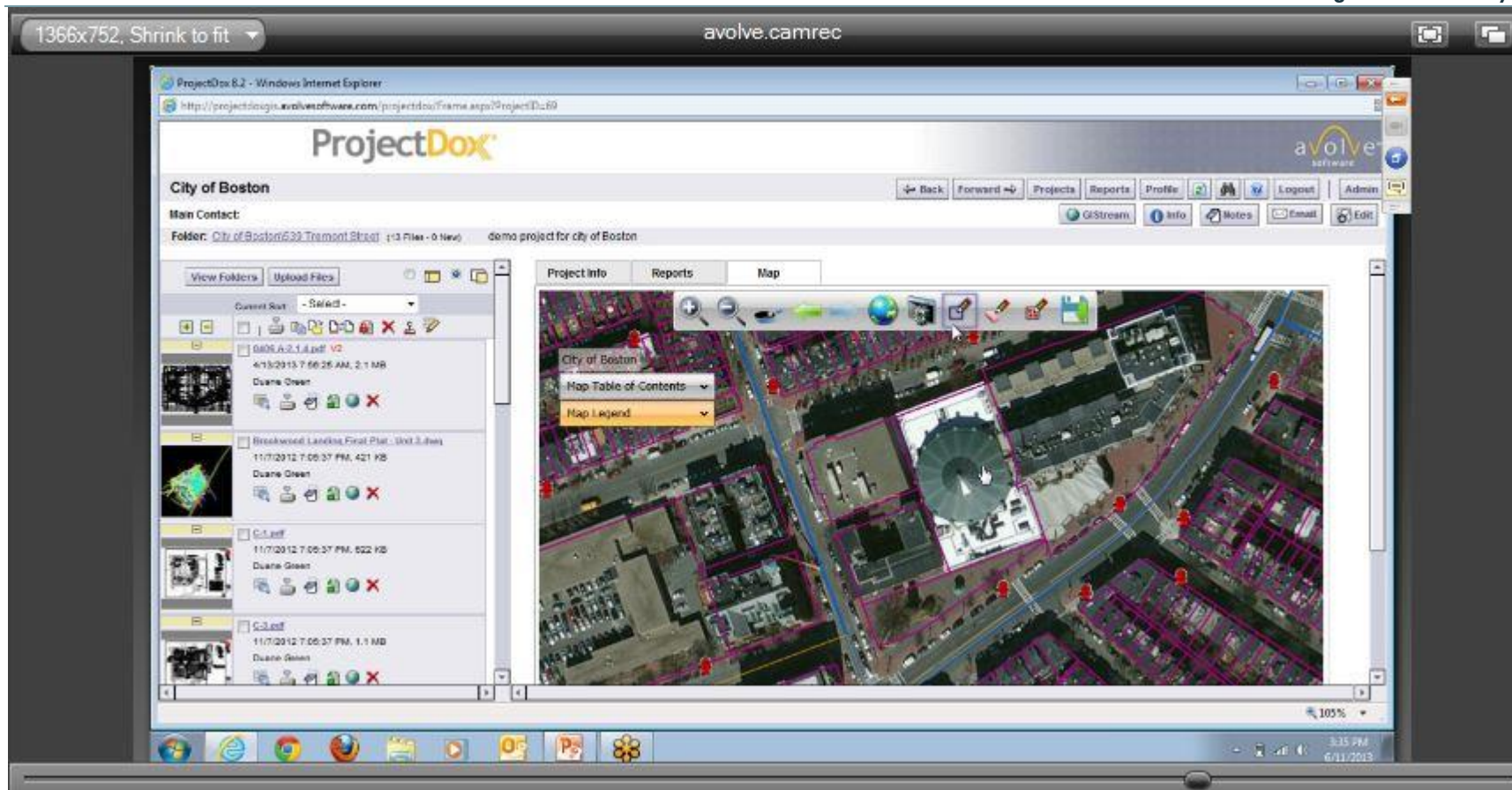
FIGURE 34: AVOLVE GIS INTEGRATION

CSDC is best known for its government solutions in the permitting and licensing areas (AMANDA). Its Canadian Corporate office is located in Mississauga, Ontario with US Corporate offices in Fort Worth, Texas. WSCS was unable to arrange a demonstration of the CSDC solution known as EMMA (Electronic Mark-up Management Application) at the time of this report. However, research into its features, discussions with the Township of Toronto as well as a telephone interview with a CSDC representative revealed its capabilities as described below.

FEATURES:
- Electronic Review Tool utilizing PDF
- Integrated module of IBMS/VADIM software
- Facilitates Electronic Issuances, Email and web portal submissions, Electronic circulation to partners
- Merging of two documents in VADIM
- Make changes to files in VADIM
- Calibration of measurements
- Private comments
- Discipline related comments with colours
- Auto Stamping
- Examiner recorded review in assigned processes
- Attached drawings with multiple layers (public, private, stamp, drawings)
- Standardized building notes attached to drawings
- Resubmissions date and permit stamped

INTEGRATIONS:

- AMANDA integration

ASSESSMENT:

- The EMMA product is intended primarily for internal municipal use with the AMANDA product. Currently, there is no external markup tool. It was developed for the Township of Toronto and is license based. The long term licensing of the module is in question.
- PDF markup only at this point
- Concurrent markup is only done internally. Overlays are possible but not interactive.

CASE STUDIES (CLIENTS)

- City of Toronto

SAMPLE SCREENSHOTS (FROM CITY OF TORONTO)

FIGURE 35: CSDC - PORTAL

Permit Issuance	** Closed by Issuance **	Closed	08/31/2012 0			08/31/2012 0	North District Is	☑
NH Application Intake		Closed	08/30/2012 0		08/30/2012 1	08/30/2012 1	Song, Maria	☑
Applicable Law		Open	08/30/2012 0					☐
Permit Delivery Process		Closed			09/07/2012 1	09/07/2012 1	North District Is	☑
Folder Administration								
Create Child Same Applicant		Open	08/30/2012 0					☐
Administration Process		Open						☐
Create Child Different Applicant		Open	08/30/2012 0					☐
Building Permit Review								
NH Zoning Review		Closed	08/30/2012 0	09/14/2012 0	08/30/2012 1	08/30/2012 1	Song, Maria	☑
NH Code Review		Closed	08/30/2012 0	09/14/2012 0	08/30/2012 1	08/30/2012 1	Song, Maria	☑
NH Building Inspection		Open					Forte, Guiseppi	☑

FIGURE 36: CSDC: PROJECT STATUS
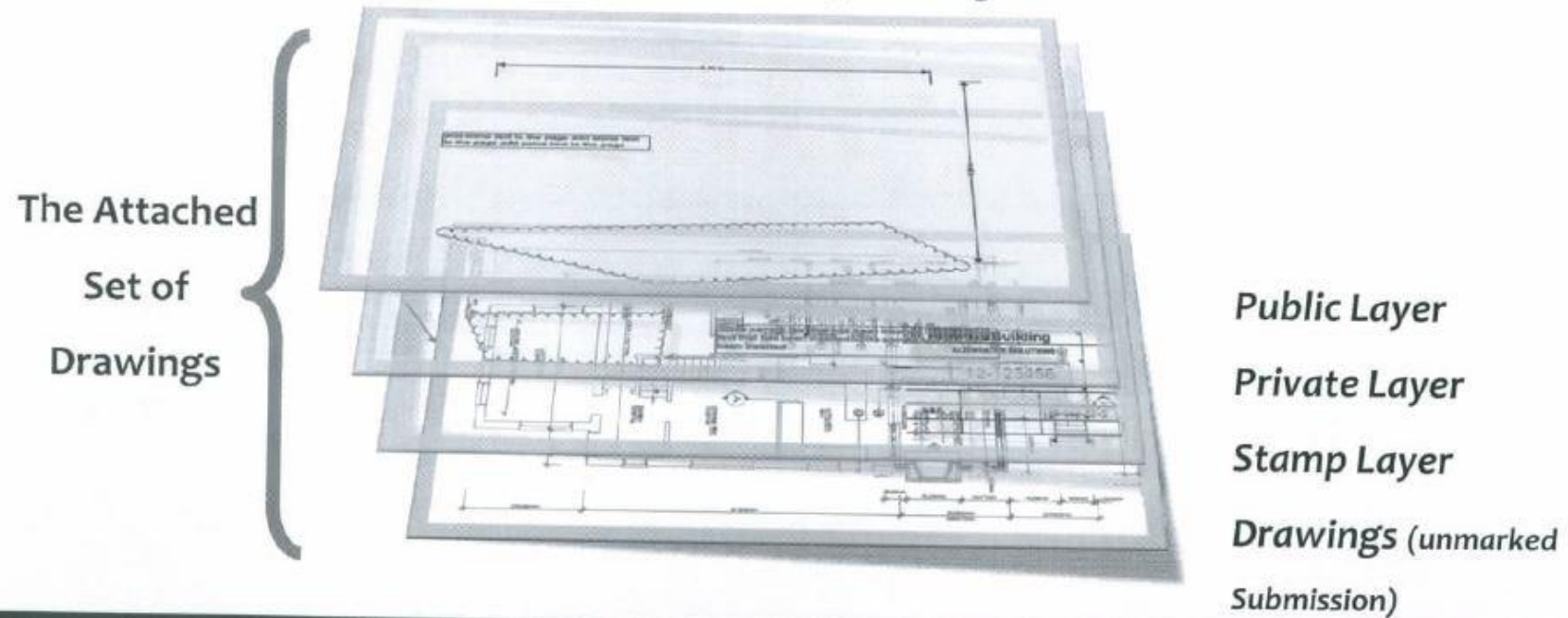
FIGURE 37: CSDC: DRAWING LAYERS
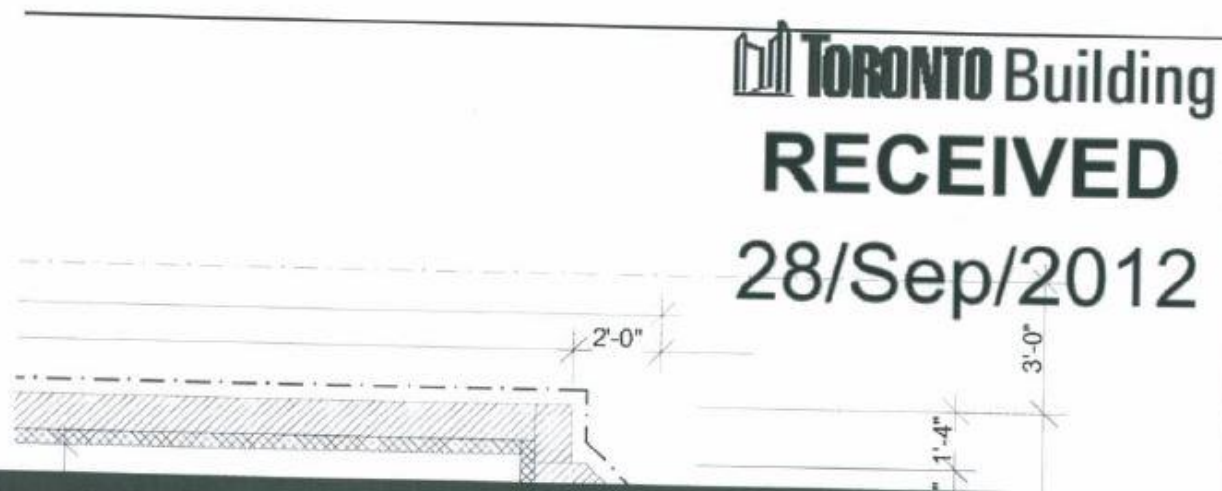
FIGURE 38: CSDC - RESUBMISSIONS

SIRE Technologies is based in Salt Lake City, Utah and is owned by Hyland Software. It has been successful in the development and deployment of Agenda management software. In 2010, it unveiled its Electronic Plan Review Software in the US. It recently added some Canadian clients to its customer list.

FEATURES:

SIRE Active Review is one product of many and is integrated with many other modules including agenda management and workflow.

Sire Active Review is a web-based, enterprise-class application that can be hosted or in house.   It can run as a stand-alone system or integrated with permitting and GIS software.
SIRE ActiveReview licensing is based upon concurrent users within the organization but unlimited outside the organization. It allows for an unlimited number of projects, and plans/documents,

FIGURE 39:SIRE SOLUTIONS

User Interface
- SIRE ActiveReview is accessible to everyone via a web browser.

Security
- Security is accomplished at several levels within SIRE.
- As a matter of process, users can log in and request an account and then submit as many projects as it wishes.
- SIRE allows for security to be granted and suspended/turned off for clients. It employs the concept of Users and Groups, which is used by administrators to manage and control application and folder-level security permissions.

- SIRE does not use original files for display, markups or annotations. Screen renditions are created and then managed during work activity.
- Access to file folders can be "locked down" according to pre-defined workflow activity. This keeps folder content free from alteration/modification during critical review phases.

Workflow Engine

- Workflow is configurable and customizable for ActiveReview.
- Customizable workflow and e-forms development for any business process.
- Multiple levels of authorization for granular access control. Intelligent e-forms present information based on the viewer, task, current status and permission level.
- Customizable notification triggers for any specified task or action
- Access to designated project review files directly from the workflow
- Application functions can be governed by workflow business rules – file access, view, mark-up, download, print and other functions.
- Standard tasks can be created using GUI, any complex task with additional scripting and programming

Publishing & Visualization

- SIRE ActiveReview supports screen-rendition publishing for all major file types (DWG, PDF, TIFF)**.** All markups occur on virtual layers optimized for process and file management.
- Users need a browser to view all published file formats.
- All files are represented by a thumbnail view for quicker identification.
- The browser-based view and markup functions are easy to access and use. Markups can be color-coded to match review functions and/or departments.
- Versioning control feature provides numbered markup index with automated scroll, pan and zoom to markup coordinates. Notes can be sent to any reviewer or public and can be marked for view.
- Snap measurement points include lines, polygons and other shapes.
- Overlay and side-by-side compare features provide immediate feedback on sanctioned and unsanctioned changes to plan drawings.

- **Document Management**
- Upload single or multiple files in batch mode. Folder upload is also supported.
- Drag and drop files to folders set by the user.
- User and Group-level permissions govern document access. Folder and subfolder-level security control. Individual files can be locked to prevent additional markups and annotations.
- Hyperlinks to other document files can be added to existing files
- Public and private discussion threads for individual documents is supported
- All files uploaded into SIRE are "stamped" to establish audit trail for verification support.
- Application functions can be governed by workflow business rules – file access, view, mark-up, download, print and other functions.
- Full versioning support
- Documents can be exported to archive and use in other EDMS systems.

CASE STUDIES (CLIENTS)

- MESA County CO
- City of Lewisville, TX
- Placer County, CA
- City of Mission Viejo, CA
- Clark County, WA
- City of Camarillo, CA
- City of Yucaipa, CA

SCREEN SHOTS

FIGURE 40: SIRE INFRASTRUCTURE
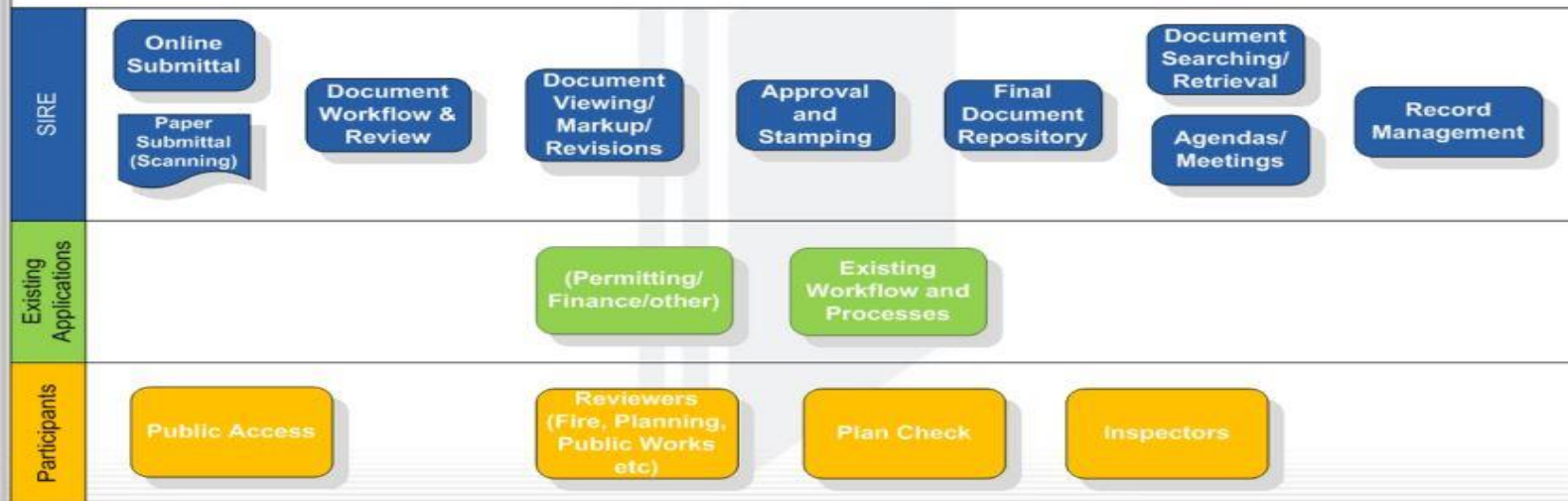
FIGURE 41: SIRE ACTIVE REVIEW

FIGURE 42: SIRE FEATURES

FIGURE 43: SIRE INTEGRATIONS

FIGURE 44: SIRE AGENDA MANAGEMENT INTEGRATION

FIGURE 45: SIRE PORTAL

FIGURE 46: SIRE WORKFLOW

FIGURE 47: SIRE DOCUMENT MANAGEMENT
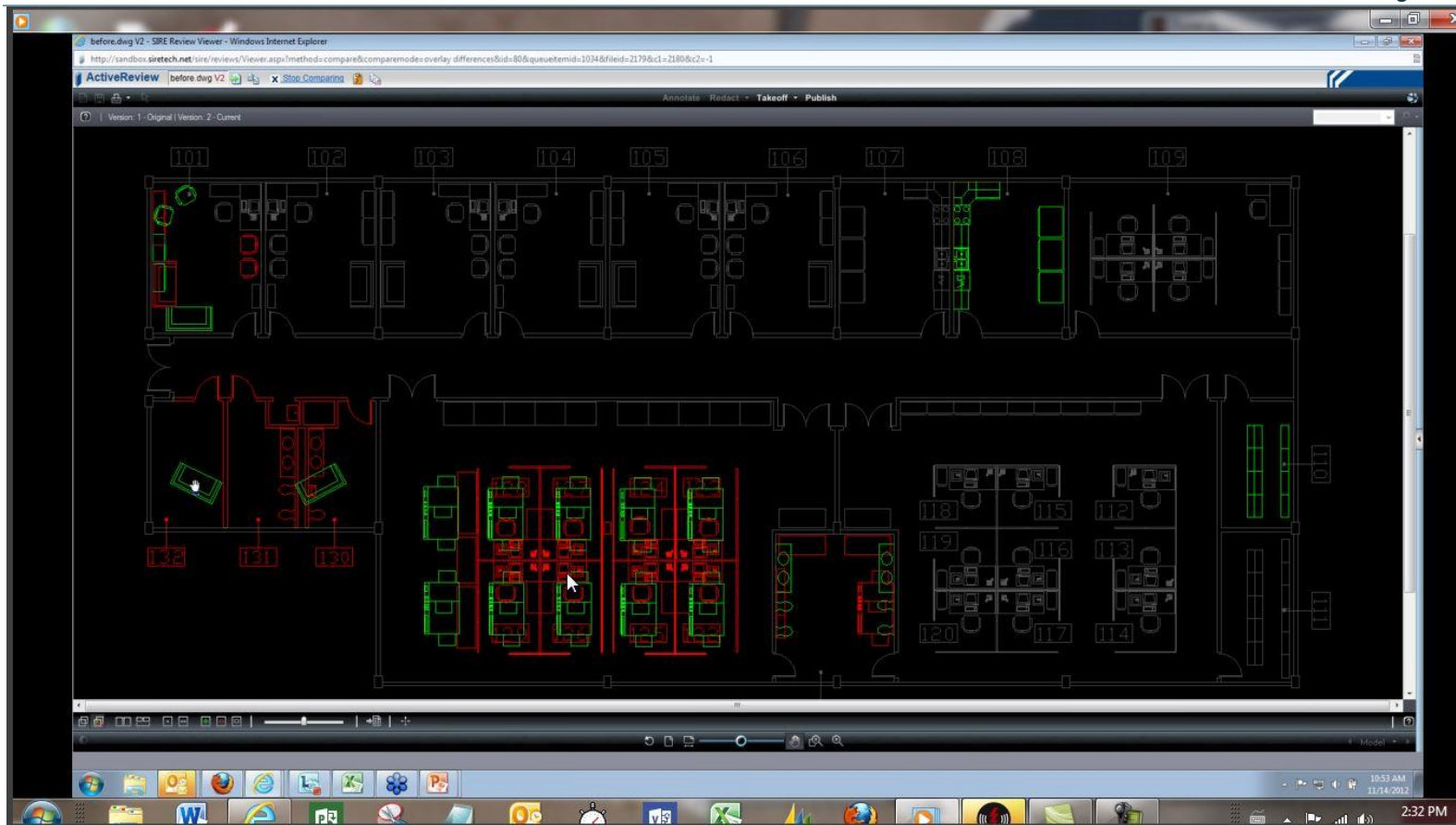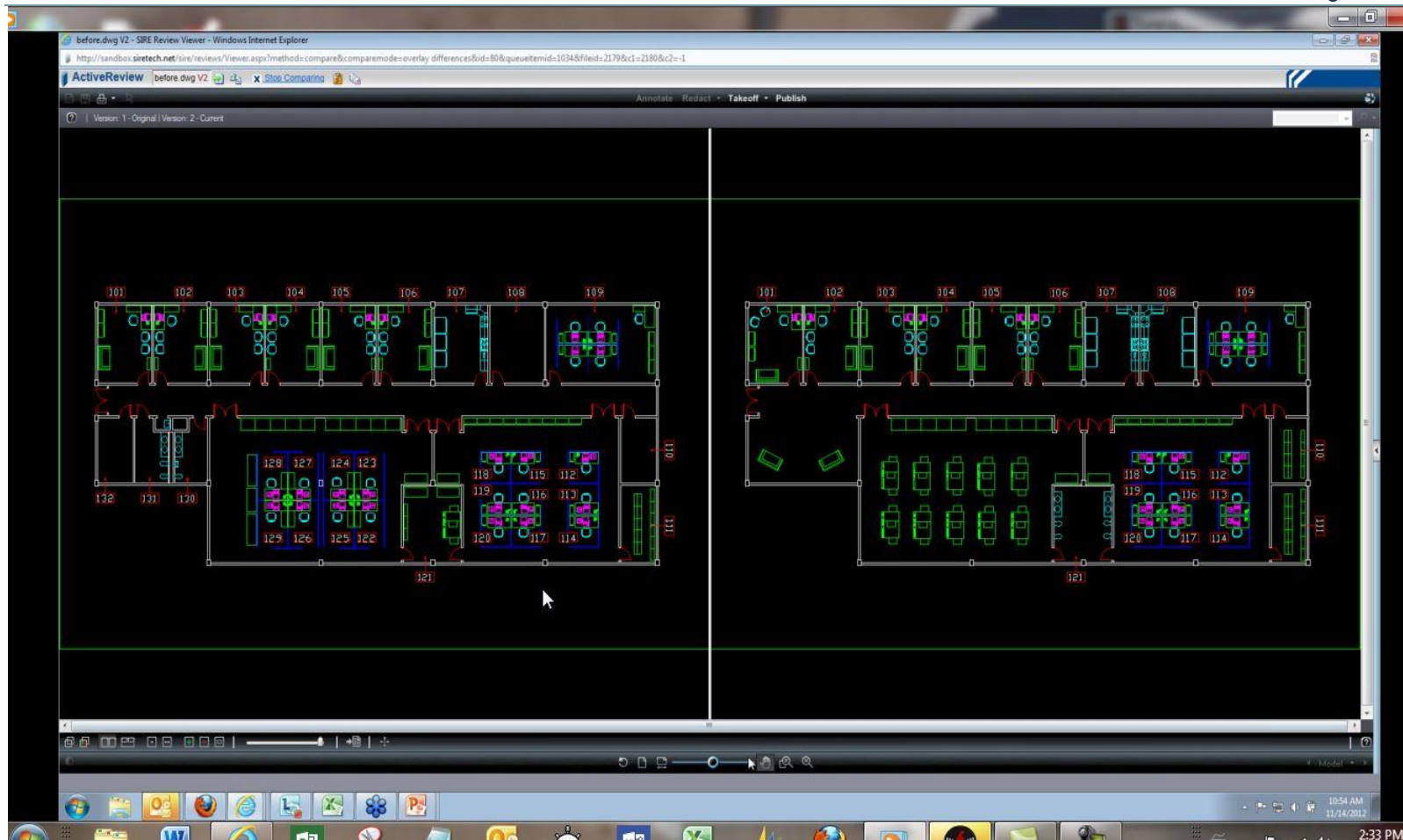
FIGURE 48: SIRE MARKUP TOOL

FIGURE 49: SIRE COMPARISON TOOL

APPENDIX B: EXAMPLES OF DEPOSITS, WEBSITE DESIGN AND BUILDING GUIDES

Municipality	Specific Practice	Details	Website/URL
Tay Township	Inspection Deposits and Revisions	Revisions A $360.00 inspection deposit is required for most projects and a $90.00 inspection fee will be deducted from this deposit when more than one re-inspection is required, the remainder will be refunded. A material change or revision to an approved plan will be a minimum fee of $60.00.	www.tay.ca/en/
Armstrong Township	Building Deposit per application	Upon submission of building permit application, require an $85.00 deposit. Submission of the building permit application does not mean that you may begin your project. The project cannot be started until the application and deposit have been paid and the permit picked up from the Municipal Office.	https://armstrongtownship.com/en/municipal-services/building-and-planning-services/submission-for-building-permits
	Good website with information.		http://www.tembuild.com/
Meaford	Building Guide	Well documented processes and instructions.	https://www.meaford.ca/en/living-here/resources/Documents/A-Guide-to-Building-2020.pdf
	Deposits Paved Road	If a property is located on a municipal hard surfaced road, a deposit is collected at the issuance of a Building Permit. This deposit covers the costs of repairs to the road should it be necessary. If no damage has been done to the road during the construction period, the deposit is refunded to the applicant after a passed Final Inspection.	
	Pre-Occupancy Deposit	A deposit is collected for all new dwellings at the time of Building Permit issuance. This deposit will be refunded to the applicant after the Final is granted as long as the building is not occupied prior to Occupancy being granted by the Municipality of Meaford's Building Department.	
	Grading Deposit	A grading deposit is collected on all Residential, Development, Commercial, Industrial, Institutional,	

Municipality	Specific Practice	Details	Website/URL
		Harbour, Open Space and Environmental Protection zoned lots for any construction that exceeds 60 square meters. This deposit will be refunded to the applicant after a passed Final Inspection and the Municipality of Meaford's Building Department has received the final grading certificate.	
	Entrance Permit Deposit	An entrance permit fee may be applicable for those properties on municipally owned roads. The deposit portion of this fee is refundable after the entrance has been installed to the Municipality of Meaford's Transportation Services satisfaction.	
Nation	Website	Easy to read and reasons to follow building code.	https://nationmun.ca/en/doing-business/building-planning#permits
	Performance Deposit	A performance deposit or "bond" is charged for each permit issued. The amount of that deposit is based on the value of the building project. The full amount of the deposit is refunded if the project is completed within 1 year of the date the permit was issued. After that period, and without any further notice, an amount equal to 25% of the original deposit is retained for administrative purposes each year thereafter. If the owner or agent abandons their project prior to the issuance of the building permit the administration performance deposit shall be retained in full by the municipality.	
Lambton Shores	Website instructions	Good guide for permits and instructions.	https://www.lambtonshores.ca/en/invest-and-build/resources/Documents/Building-Permit-Application.pdf
	Building Inspection Security Deposit	This fee is required to be paid at the time the building permit is issued. For major construction the deposit is $750.00 and for minor projects, the deposit is $250.00. This bond will be refunded to the property owner once a final inspection has been completed by the Building Inspector.	
Zorra Township	Lot Grading Deposit	$1000	http://www.zorra.ca/Home/Our-Services/Building-and-Drainage/Building

Municipality	Specific Practice	Details	Website/URL
	Final Inspection Deposits	$500	
Central Elgin	Online Instructional Video	Cloud Permit – Good instructions and workflow. Online inspection booking	https://www.centralelgin.org/en/building-and-development/building-and-construction.aspx
Oro-Medonte	Getting Started Guide	Step by Step Cloud Permit walkthrough guide.	https://www.oro-medonte.ca/municipal-services/building-information
Niagara Falls	Performance Security Deposits	The performance / security deposit is collected by the City to provide securities for any potential damage that may occur to municipal property through the course of the permitted construction. The deposit is also held for the assurance that all necessary inspections are completed through the duration of construction and finally to ensure that the permit file can be appropriately closed at the conclusion of the works. Where an applicant regularly submits more than seven (7) building permit applications per year, the applicant shall be eligible to submit a multiple permit deposit as specified below which, in turn, would exempt the applicant from the submission of the single permit deposits. In the case of multiple permit deposits: (1) where fees are incurred by the applicant through the course of the construction process, these fees shall be deducted from the submitted deposit; (2) upon the submission of permit applications, the value of the multiple permit deposits shall be validated and where the remaining deposit does not satisfy the full value as required below, the difference shall be submitted with the permit.	https://niagarafalls.ca/pdf/by-laws/Building_permit_by-law.pdf
Grey Highlands	Pre-Occupancy Deposit	$500	
	Deposit for Final Inspection	$250	