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Ipswich City Council Development Assessment

Streamlining the Process

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ABSTRACT

Ipswich is one of the fastest growing regions in Queensland, and as such, Ipswich City Council has had to deal with a rapid increase in Operational Works Applications. The aim of this dissertation is to investigate ways of streamlining their Operational Works Assessment process.

A new process was developed in the preliminary stages, based on Risk Management principles. The process was analysed and underwent extensive changes to ensure maximum effectiveness resulting in the use of checklists and incentives to streamline the development process. Once the process was finalised, analysis was carried out to ascertain the potential benefits.

Risk Management excelled as a tool for the reduction of all types of risk, and in this case has resulted in major potential time savings for the Assessment of Developments. In addition the use of time based and financial incentives have been found to provide further indirect timesaving for the application assessment process which complement pre-lodgement checklist and site inspection checklist and meetings developed as part of the risk management .

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

NOMENCLATURE AND ACRONYMS (OR ABBREVIATIONS)

The following abbreviations have been used throughout the text and bibliography:

ICC	Ipswich City Council
USQ	University of Southern Queensland
CCTV	Close Circuit Television
IPA 1997	Integrated Planning Act 1997
SPB 2009	Sustainable Planning Bill 2009
IDAS	Integrated Development Assessment System
DA	Development Application
OPW	Operational Works
AS	Australian Standard
NZS	New Zealand Standard
LCC	Logan City Council
BCC	Brisbane City Council
GCCC	Gold Coast City Council
RPEQ	Registered Professional Engineer of Queensland

1 INTRODUCTION

1.1 Background and Outline of Study

Urban development is controlled in Queensland by the Integrated Planning Act. The Development Approval process consists of several phases, including Reconfiguration of a Lot, Material Change of Use of a Lot, and Operational Works, when the construction and commissioning processes occur.

The Operational Works phase extends from submission of an application to carry out works on a site, through to final handover of any municipal infrastructure that may be constructed as part of the development. It involves technical and engineering staff who set standards and conditions, oversee works and approve the "On Maintenance" and "Off Maintenance" stages required to ensure that fit for purpose infrastructure is delivered to the community. While the phase tends to be drawn out and involves the expenditure by developers of large sums of money on construction works, it tends to be less well resourced than the planning approval phases, due to the perception that all the work has already been completed in the Planning Approval stages.

The need to conduct a review of Ipswich City Councils Operational Works approval process was identified by Ipswich City Council management due to the strain on the current system caused by an increase in applications. This study investigates methods of streamlining processes and transferring tasks from the regulator to the customer by means of an On/Off-Line Development processing system. The purpose and scope of this study is detailed in Section 1.4 - Research Objectives.

1.2 Introduction

Over the last decade, South East Queensland has experienced a high demand for new development to support an increasing population. New developments also require greater amount of information to be assessed as part of application and it follows that a greater amount of time is required for assessment for each development. This increase in application volume and complexity has placed pressure on the development application processing systems that have served the requirements of Ipswich City Council since the inception of the Integrated Planning Act 1997.

1.3 The Problem

Despite the efforts of Ipswich City Council to deal with the increase in application volume and complexity, the workload has placed an unmanageable strain on the existing processes and caused delays for Operational Works applications.

Other effects which have occurred as a result of this increase in assessment complexity and volume, which will be addressed in Chapter 2, are:

(i) A reduction in quality of applications submitted by consultants.

(ii) An increase in less experienced contractors.

(iii) A reduction in quality of workmanship of developments.

1.4 Research Objectives

This research consisted of identifying the issues within the existing Operational Works Assessment process and analysing possible streamlining measures with the intention of improving timelines while maintaining or improving the quality of assessment, inspection and construction techniques.

The research methodology was divided into six subparts. These are:

(a) Define problem and scope of investigation
(b) Review relevant literature relating to planning, specifically Operational Works Assessment processes, and group the literature into:
    i. History of the process
    ii. Acts and legislation surrounding the process
    iii. Problems identified with the process
    iv. Solutions being trialled by different Australian councils
(c) Identify areas of the process that show a need for this research
(d) Develop preliminary methodology based on reviewed literature
(e) Conduct review of methodology with staff and revise as required
(f) Finalise methodology and conduct analysis to gauge impact on timelines and identify any further issues with the process
(g) Compile results for review

1.5 Conclusion

This dissertation aims to identify areas of the Operational Works application process that are open to streamlining by means of Risk Management or other systems.

A review of literature for this research will set the scene and investigation will concentrate on those areas identified as having had insufficient attention to date. The research is expected to yield a series of recommendations for submission to Ipswich City Council, who will review and implement them at their discretion.

2 LITERATURE REVIEW

2.1 Introduction

The field of Town Planning covers a vast array of topics and the literature is just as expansive due to the subjective nature of the issues involved. An extensive review of the issues that the Town Planning field faces is beyond the scope of this chapter and is not required for the purpose of this review.

The aim of this chapter is to provide a picture of the current state of the Town Planning field in general and of Operational Works in particular, through reviewing a selection of literature detailing the history of Town Planning and the current situation and issues and the efforts that have been made to deal with the issues and improve the processes. The Operational Works Assessment field will be examined from both an engineering and a planning perspective.

The first section sets the scene by giving a brief history of Town Planning in Australia and the second section gives some background on the role of Engineering in Development. The third section covers the Integrated Planning Act that applies to Queensland's local governments, while the fourth reviews the systems being used by a selection of local governments around Australia to address the problems. The final section introduces the Risk Management approach and identifies those problems that warrant further investigation by this project.

2.2 Planning as Part of the Development Process

Streamlining of the development process must be informed by knowledge of the history and culture of planning in Australia. Process amendments that are in line with historical and existing systems and practices tend to be more readily adopted.

The breadth of Town Planning as a subject is such that a precise and comprehensive definition is hard to come by. Planning Australia attempts to define planning and the role of planners as follows:

"Planners develop strategies and design the communities in which we live, work and play. Balancing the built and natural environment, community needs, cultural significance, and economic sustainability, planners aim to improve our quality of life and create vibrant communities. As well as assessing development proposals and devising policies to guide future development, planners … specialise in areas of planning that include:

- *urban planning*
- *regional and rural planning*
- *development assessment and land use*
- *social and community based planning*
- *urban design*
- *environmental planning and natural resources management*
- *transport planning*
- *heritage and conservation*
- *place, project and major events planning"* (Thompson 2008)

This definition applies to the contemporary role of the town planner which has evolved over time and is a far broader role than that of planners and planning schemes when the profession first emerged in the early 1900's.

2.2.1 History of Town Planning in Australia

The earliest evidence of Town Planning in Australia is in a paper presented by John Sulman at the Australian Association for the Advancement of Science in 1890 titled *"The Laying Out of Towns"* (Thompson 2008). By the 1910s the practice had been well established, and voluntary town planning associations were formed in every major city between 1913 and 1916.

In 1925 the new, expanded (Greater) Brisbane City Council was formed by the amalgamation of all or part of 20 smaller local authorities. It was created after 70 years of poorly designed, ad hoc systems of local government and was part of a world-wide trend towards larger, more comprehensive units of local government. Over the following 40 years there was a continuous evolution in approaches to Town Planning in Queensland as new plans were enacted and replaced in 1928, 1944 and 1952.

In 1997 the Queensland Government enacted the Integrated Planning Act 1997; a major reform to the planning laws of Queensland (Queensland Government, 1997). The Act states that its purpose is to achieve ecological sustainability by coordinating planning at the local, regional and State levels, to manage the process by which development occurs and to manage the effects of development on the environment (including managing the use of premises).

2.2.2 The role of Engineering in Development

The Integrated Planning Act s1.3.5 defines Operational Works assessment as: *"The* operational works stage of the development assessment process allows for the assessment of development applications from an engineering prospective. " Engineers have been part of the town planning process from the start with Richard Kirby identifying Hipodamus of Miletus as the pioneer of modern civic planning, both an engineer and an architect. (Kirby 1990)

The appointment of Town planners to role in council was only established in Queensland in 1932. Unlike town planners in other states of Australia, in Queensland the final decisions on appeals and dispute is not made by planner but lawyers. (Day 2008)

The only part that engineers are currently involved in is the operational works assessment process. (Evans 1993) There is little documentation available for the role of engineers in the operational works process, searches were carried out on several databases and search details have been included in Appendix D.

2.2.3 Integrated Planning Act 1997

The Integrated Planning Act 1997 (The Office of the Queensland Parliamentary Counsel 1997) is implemented by means of the Integrated Development Assessment System (IDAS) which is used for assessing Queensland Development Applications for State and local government purposes. The IDAS process is made up of four stages, as per Figure 1.

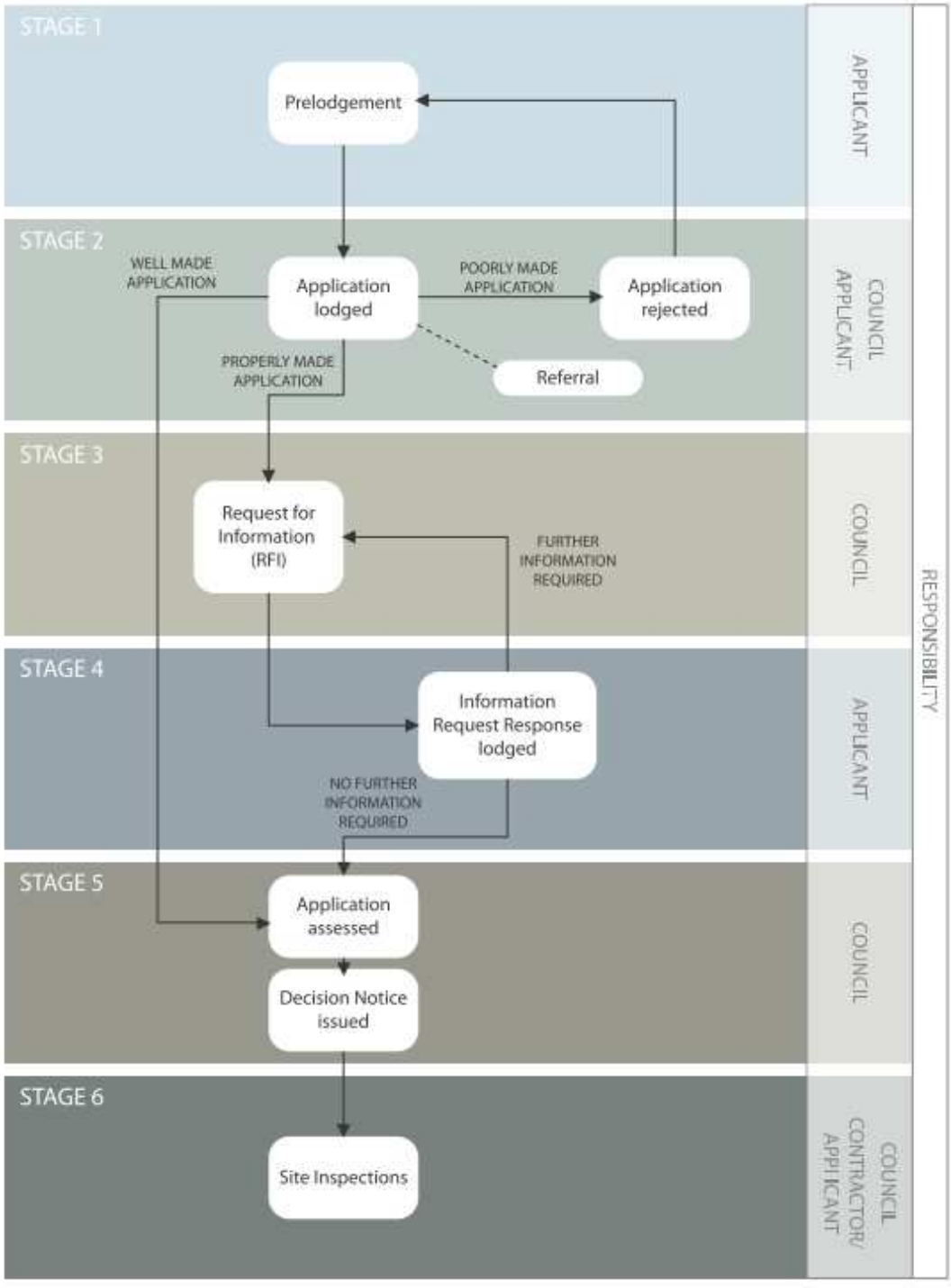

Figure 1: Operational Works Assessment Process

All assessments is broken down to six stages with council involved in 4 stages. The stages are as follows:

Stage 1 – Pre-lodgement: Applicants prepare and compile documentation for submission of an Operational Works Application. Council has no direct control of the application at this stage.

Stage 2 – Application Lodgement: Applicant submits Operational Works application to council, council assesses the application for whether it is poorly, properly or well made. Poorly made applications are rejected and require resubmission, properly made application have enough information to be accepted but may require further information supplied, and well made application are full documented and can proceed directly to assessment. Also at this stage the application is checked to be if there are any concurrent agencies. Concurrent agencies are external stakeholder in the application who may also have to assessment the application, ie Main Roads.

Stage 3 – Request for Information: Once a properly made application has been accepted a list is compiled of the further information that will be required to complete the assessment, this list is sent out the applicant in the form of a Request for Information letter. Further information requested may include an extra report or just a greater level of detail on plans.

Stage 4 – Information Request Response: The applicant is then required to prepare the requested documentation and send a response to council, depending the quality of this information council may elect to request another information request, this cycle continues until council is satisfied with the information supplied.

Stage 5 – Assessment of Application: Once the application is fully documented to a level acceptable to council the assessment will occur. When assessment is complete a Decision Notice will be issued to the applicant.

Stage 6 – Site Inspection: Site Inspections are required to be carried out on certain project on various hold points.

Appendix F shows the IDAS standard timeframes for Code and Impact assessable applications.

"Integrated Planning Act–Is it Too Complex?" (Reynolds 2008), re-examines the issues raised in a 1990 discussion paper by the Queensland Department of Housing which was instrumental in bringing about legislation reform in 1997. The discussion paper reviews the 1952 Act and its faults, such as an unnecessary delay in issuing decisions, and sets objectives for the new Act (1997), including an improvement in the efficiency of Development Assessment processes.

Reynolds' 2008 paper finds that a significant negative consequence of the detail of response required by the Integrated Planning Act 1997 has been a shift towards "checkbox planning". Not only does the checkbox planning method reduce the quality of applications, but both the cost for completing an application and the times required for decision-making have risen.

Streamlining of the Development Application process will help to reduce the time required for the assessment of an application and thereby provide potential for an increase in the quality of assessment.

"Bureaucracy and Mediocrity–Development Assessment Under IPA" (Reynolds 2007), states that while the IPA Planning Scheme is well suited to preventing poor outcomes, it also tends not to encourage innovative solutions that may be better than the "acceptable solution". The "acceptable solution" is designed to be broadly applicable across many different contexts, and so is generally only marginally acceptable for specific solutions. Reliance on "acceptable solutions" has been further entrenched by excessive workloads, and it is expected that the streamlining effort will assist in alleviating it.

Reynolds' 2007 paper recommends, amongst other things, changes to Internal Local Government Management Procedures to better foster innovation and excellence as well as significant increases to funding and training for Development Assessment (DA) in local government. While an in depth discussion of these recommendations is outside the scope of this dissertation, the procedural changes being investigated here are expected to yield similar results.

"Development Assessment–The Inside View" (Colliers International Consulting Services 2007) was a study commission by the Planning Institute of Australia to examine the resourcing of Development Assessment teams, the processing of development applications and the issues arising from analysis of the process. One of the recommendations that arose from the study was to improve the efficiency and timeline of the Development Assessment process, with an initial focus on improving the quality of inputs and streamlining the processes of minor applications.

Although this recommendation and those of some other reports focus on the Application stage, the findings are applicable to the full assessment process and the Operational Works Assessment will benefit greatly from ensuring the initial applications are well prepared.

The papers that have been reviewed in this section outline a series of issues with the present development process from the Development Assessment to the Operational Works Assessment. They also indicate possible avenues of attack to deal with these issues.

2.2.4 Operational Works Streamlining

Increases in complexity of Development Applications under the Act and the rapid increase in population in South East Queensland has exacerbated the timeline issues with the development process. According to the Australian Bureau of Statistics, Queensland was the fastest growing state in Australia for the period 2004–2009. In the year to June 2008, Ipswich recorded a growth of 4.1%, the fastest growth in South East Queensland (Australian Bureau of Statistics 2009). This rapid increase in population has placed a strain on the Development Assessment infrastructure in Ipswich and throughout Queensland. A number of councils have dealt with this issue by instigating schemes to streamline the Development Assessment process.

For example, Brisbane City Council (BCC) has initiated the RiskSmart program (Brisbane City Council 2008) to expedite low-risk Development Assessments (Brisbane City Council, 2008). The RiskSmart system uses accredited consultants to flag applications as high- or low-risk and ensure that applications are prepared properly. To become an accredited consultant, a professional must be suitably experienced in the council's Development Assessment process, undergo training in the BCC RiskSmart process and its online tools and enter into a Memorandum of Understanding with council.

Accredited consultants are authorised to give an application conditional approval, thereby reducing the work required by council to complete the assessment. This process is largely successful in simplifying the process for developers who submit many applications and are familiar with the standardised system. Generally, applications submitted by amateur developers are assessed using the council's normal longer process, even when their applications would fall into the low-risk category assessable using RiskSmart.

The City of Ballarat Pre-Certification Contractors also uses a pre-lodgement certification system for reviewing of the plans and documentation to ensure that the proposal complies with the policies and requirements of the planning scheme. The City of Ballarat varies from Brisbane City Council in that they engage a sole private certifier by contract to complete any external assessment (City of Ballarat 2008).

This contract is tendered every 12 months. This allows for the private certifier to build up experience in the certification of development and ensures a higher standard of assessment. Unfortunately this may also result in the process becoming a “Closed Shop” with only one certifier having the skills to fill the contract.

The City of Greater Dandenong has a similar scheme called “Priority Paid”. Only applications that have been certified by approved consultants are eligible for the system in which the assessment of developments is outsourced to reduce processing times. This allows most decisions to be issued between 5 and 20 days after receiving feedback from referral authorities. This system allows for a greater number of consultants to undertake Pre-Lodgement with a more limited role, since all developments still require final approval by senior council planners. (City of Greater Dandenong 2008)

All of these schemes have concentrated on the Development Application process and not on the Operational Works Approval process. Ipswich City Council has an online process to assist applicants with submission of Development Assessments, but no processes to expedite their Operational Works Applications. In a similar approach to other Australian local councils, Ipswich City Council is looking to streamline its processes by outsourcing low-risk applications to external consultants. Preliminary assessments of the applications are made to assess the risk profile of each development before referring them to external consultants or to council assessors as appropriate.

By outsourcing the assessment of low-risk applications, particularly of residential works, council will be able to concentrate its resources on other more complex applications, and is thereby expected to reduce turn-around times and improve quality of service. As part of this transition, Ipswich City Council will be required to train local consultants to carry out inspections and approvals for low-risk applications. This dissertation will analyse the benefits of process and investigate alternative approaches.

A secondary objective on the dissertation involves finding common construction issues among municipal works and investigating ways to reduce their occurrence. By increasing the quality of the works carried out, there will be a reduction in the frequency of maintenance. This in turn is expected to have an impact on the primary project by affecting the risk of those activities and reducing their risk profile.

2.2.5 Risk Management Approach

For the preliminary methodology of the Operational Works Approval process, the streamlining will be based on the principles of Risk Management. This was chosen based on feedback from Ipswich City Council. The Australian Standard on Risk Management AS4360 defines the principle as *"the cultural processes and structures that are directed towards realising potential opportunities whilst managing adverse effects".* (Standards Australia 2004)

Figure 2 gives an overview of the procedure for developing a process based on Risk Management principles. Each step of the existing process will be evaluated in context and the risks involved will be analysed to identify not only the level of risk but also the opportunities to mitigate or outsource the risk.

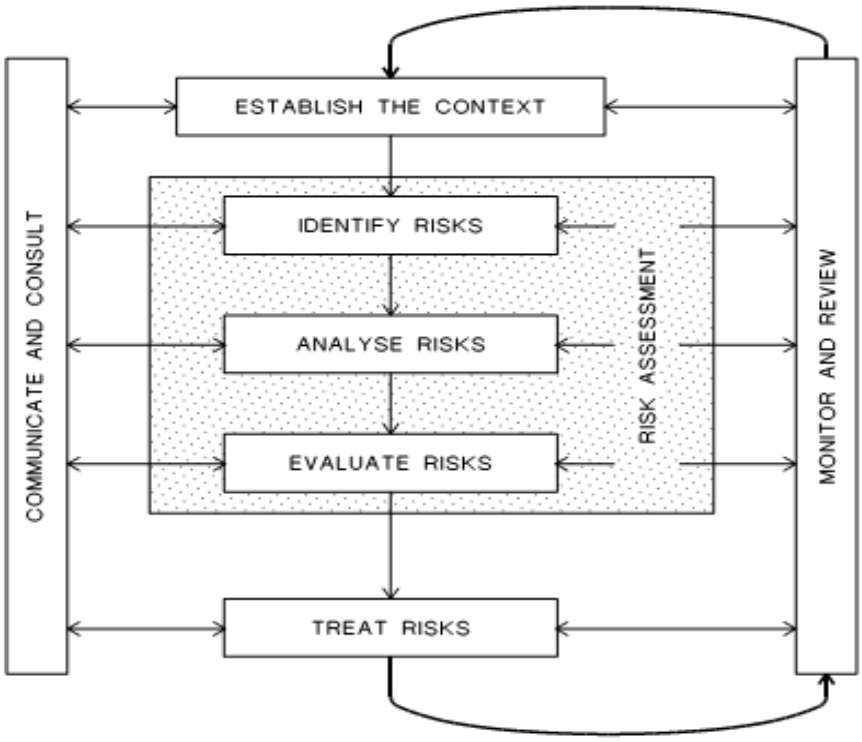

Figure 2: Risk Management Process *(Standards Australia 2004)*

These principles have been successfully applied to wide range of risk areas. Peter Tufano wrote in his report "*Who Manages Risk? An Empirical Examination of Risk Management Practices in the Gold Mining Industry"* (Tufano 1996) that almost three-fourths of corporations in the United States have adopted at least some "financial engineering techniques" (risk management practices) to control financial threats such as fluctuations in interest rates, foreign exchanges rates, and commodity prices.

The Queensland Disaster Management Act 2003 defines disaster management as:

"arrangements for managing potential adverse effects of an event, including, for example, arrangements for mitigating, preventing, preparing for, responding to and recovering from a disaster". (Office of the Queensland Parliamentary Council 2008)

While risk management is predominantly associated with financial arrangements, the Disaster Management Act is based on the risk management principle with respect to preserving life and ensuring a community's quick recovery from potential disasters.

In the context of this study, the risk management principle will be used with respect to potential adverse affects of an Operational Works Application. It will assist in the identification of streamlining opportunities in the assessment process whilst ensuring the quality of assessment remains high to prevent and manage potential adverse affects of medium- to high-risk applications

2.3 Conclusion

The scope of town planning has evolved continually over the decades since 1890, from the roots of the Garden Cities Movement which sought to increase the green house and living spaces, through to the Greater City Movement of recent years which saw the amalgamation of inefficient local authorities.

In Queensland, the Integrated Planning Act 1997 is representative of this evolution. However, its complexities with respect to Development and Operational Works Assessments, combined with an influx of developments in South East Queensland has caused a backlog of applications in council Development Assessment offices.

Such challenges have been addressed by local councils around Australia using various strategies with mixed success. The vast majority of these strategies have been implemented at the Development Application level, based on outsourcing to certified contractors. Risk is managed by limiting contractors' authority to assessment of low-risk applications. At the present time there remains very limited implementation of such strategies at the more specific Operational Works level of assessment.

The background and context covered in this chapter provide a foundation for the development of a strategy to streamline the Operational Works section of Development Assessment processes. This will be achieved through the use of Risk Management principles to improve construction and service quality while reducing risk.

3 GATHERING AND MANIPULATING DATA

3.1 Introduction

The establishment of a new process for the assessment of operational works application is long process that involves much review and revision, this chapter will only contain minor refinement and will require further work before it can be used.

The aim of this chapter is to -design a methodology for the operational works application and proceed to gather information as its effectiveness and manipulate the methodology as a result of this information. The chapter is split into five key parts.

The first section establishes a preliminary framework for the process based on the Risk Management structure detailed in Chapter 2. The second section involves collaboration with staff from Ipswich City Council and other Councils to review the proposed process and identify any issues. The third section explores all of the issues identified in detail, and the fourth section finalises the structure of the proposed process. The final section reviews non-assessment issues identified during staff interviews conducted during the second section.

3.2 Primary Methodology/Process

This review was conducted in order to determine the possible methods and techniques that can be used to streamline the Operational Works Assessment process. Based on an examination of existing practices and streamlining techniques (Chapter 2), it was decided that the preliminary methodology for the process would be based entirely upon the Risk Management procedures outlined in AS/NZS 4360:2004. Other major constraints on the process come from the existing Operational Works procedure and the requirements and limitations of the Integrated Planning Act 1997.

In order to carry out this Risk Management procedure, all of the activities that are to be assessed under the Operational Works Application must be identified, and each assessed against a risk matrix to establish individual level of risk. A preliminary Risk Assessment strategy has been devised to determine the consequences and likelihood of the risk. This analysis considers the range of potential consequences for each activity within the operational works assessment process and how these could occur. The data for the assessment is shown below in Table 1 and 2:

Table 1: Risk Likelihood

Description	Frequency
Almost Certain	Once a Day
Likely	Once a Week
Possible	Once a year
Unlikely	Once a Decade
Rare	Once a Century

Table 2: Risk Consequence

Consequence	Maintenance	People	Property/ Amenities	Information
Insignificant	Asset requires inspection	Near Miss	Property inspection required	Information requires audit
Minor	Asset requires maintenance	Minor Injury	Property requires minor maintenance	Information requires loss corrections
Moderate	Asset requires major maintenance	Major Injury	Property requires maintenance	Information requires major corrections
Major	Asset requires replacement	Fatality	Property requires major maintenance	Information requires recovery
Severe	Asset has Failed	Multiple Fatalities	Property requires replacement	Information Loss

The likelihood from Table 1 and the consequences from Table 2 are combined to produce a level of risk by using the matrix in Table 3

Table 3: Risk Matrix for Analysis

	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	M	H	H	H	H
Likely	M	M	H	H	H
Possible	L	M	M	H	H
Unlikely	L	M	M	M	H
Rare	L	L	M	M	H

Table 4 gives a legend for the application of the risk levels identified in Table 3.

Table 4: Risk Level

Risk Indicator Colour	Risk Level
	Low – Maybe be outsourced
	Medium – Requires further analysis
	High – To be assessed by council staff to ensure a high level of assessment

This identification of the level of risk for each activity will allow a preliminary assessment of the risk of the project to be made by council's clients and non-technical council staff. From this point onwards, the assessment process is to be divided up into three paths: Low Risk, Medium Risk and High Risk.

Since high risk activities require full assessment and inspection by council technical officers, they are to be treated as per the existing application process. Low risk activities form the basis for the majority of this project and assessment will be carried out using prequalified external consultants and other risk mitigation techniques. Medium risk project will be assessed by technical staff to see if they can be conditioned or mitigated to move them into the low risk category. If not, they will be treated as high risk assessments. Figure 3 shows the preliminary flowchart for the Operational Works Assessment procedure.

The Operational Works Assessment procedure must be completed first. Once it has been completed, the documentation for the Pre-Lodgement, assessment and site inspection procedure is to be completed. This documentation has to be prepared both for the clients and for council staff. The secondary objective of the dissertation is to reduce the instance of construction faults identified during the Operational Works inspections. This requires the identification and collation of common construction faults by searching council records and interviewing council inspectors. In addition to this, interviews with council inspectors will identify possible improved construction procedures to reduce the instance of faults. Once this aggregate information has been collected, a series of procedures and standard drawings can be developed for inclusion in future Operational Works Approval packages and to be checked at the time of inspection.

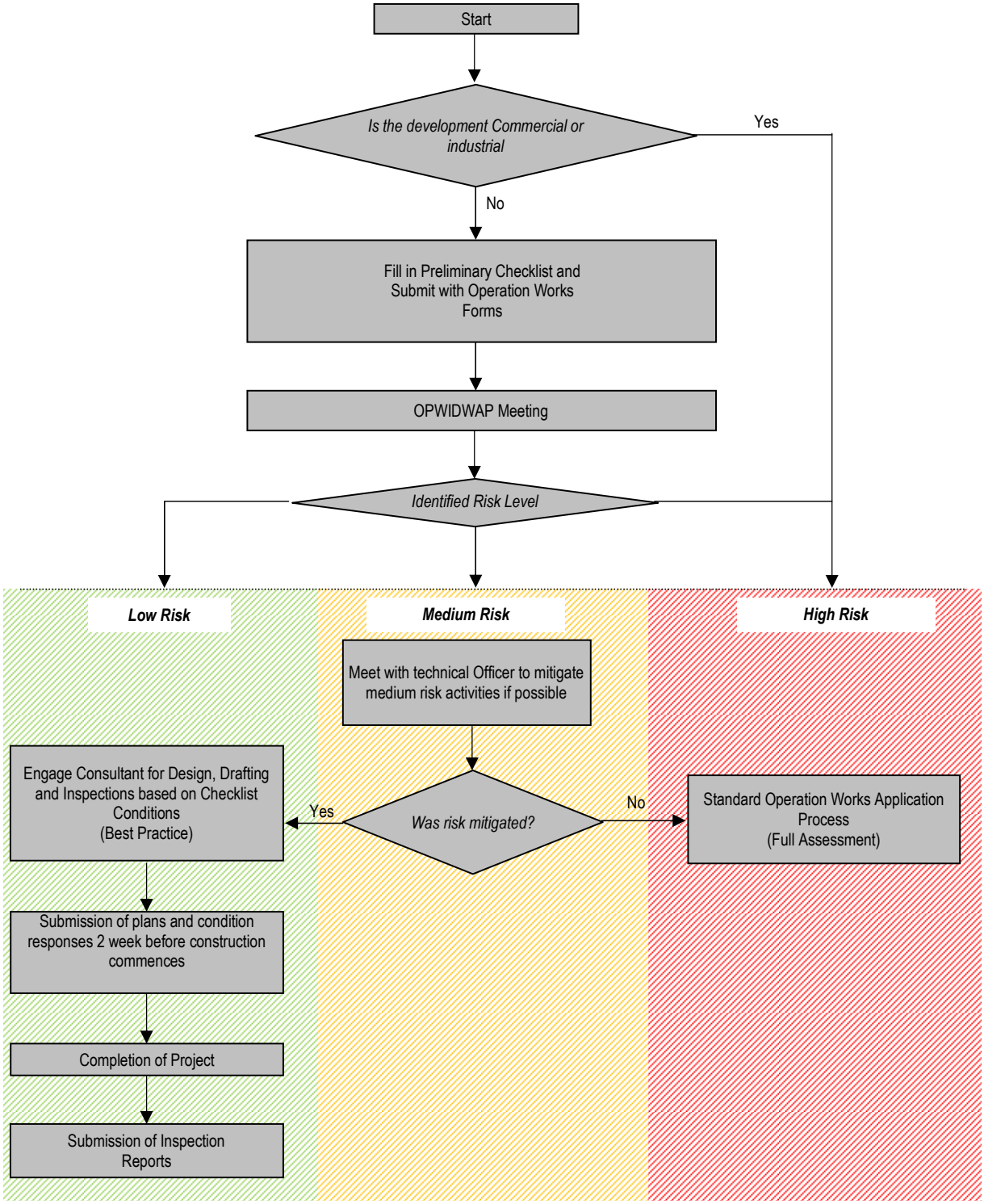

Figure 3: Preliminary Operational Works Assessment Process

The preliminary methodology to be analysed for use in the primary project is as follows:

- Break down Operational Works Assessment Activities into their individual sections;
- Carry out the risk management process to assess each activity as low, medium and high risk, based on the process outlined in AS/NZS 4360:2004, confirming the results and assessment process by comparing to existing council conditions;
- Low risk activities to be mitigated through outsourcing of assessment and inspection;
- Medium risk activities to be reclassified on the basis of preliminary assessment process by council technical officers: to low risk if they can be conditioned or mitigated and to high risk if that cannot be achieved;
- High risk activities to be assessed according to the existing development assessment process.
- Guidelines to be produced for clients to assist in making an application, and for staff to assess the application.

The methodology for the secondary projects is as follows:

- Assess common Operational Works construction issues;
- Mitigate frequency of the issues by integrating quality control measures and create more detailed standard drawings and procedures if required.

This information will be handed over to council for review and evaluation.

3.3 Staff Interviews and Feedback

Once the methodology for the project was complete, interviews with staff from various levels of Ipswich City Council, from technical staff to management, were carried out. The purpose of these interviews was to gauge the appropriateness of the process outlined in Section 3.2 and the potential effect of the amendments on the efficiency of present workflow processes.

Interviews were carried out with the following staff:

- Development Team Coordinator
- Senior Engineering Officer
- Development Engineer
- Technical Officer X 3

In addition, interviews were carried out with staff from other councils operating under the Integrated Planning Act 1997 to investigate and assess the processes being undertaken around the region. Those approached include:

- Development Manager, Logan City Council

The preliminary methodology for the assessment of Operational Works Applications was reviewed with staff, using a process in which the practical application of the system was examined and a step-by-step approach was used to quantify the areas of improvement and issues that would probably arise.

The results from the interviews have greatly influenced the overall direction of the streamlining efforts, with a number of new potential avenues for streamlining being identified and new areas of focus being uncovered. The results from the interviews are included in Table 5.

Table 5: Summary of Interview Results

SOURCE OF COMMENTS	COMMENTS
Ipswich City Council	
Development Team Coordinator Senior Engineering Officer Development Engineer Technical Officer X 3	Problems with thesis: • Lack of beneficial outcomes from the project. • The main focus of the project was residential applications for small low risk applications. The volumes of these projects will be significantly reduced as of June 1 due to the new headworks charges. Issues for investigation for future Streamlining: • Amendments of IDAS in October. • Resourcing - Inspection Vehicle for Technical Staff. • Budgetary restraints. • Processed applications not delivered, awaiting payment of compulsory QLeave premiums. • CCTV Inspections to remove need to physically inspect sewers and stormwater drainage.
Logan City Council	
Development Manager	Issues of investigation for future Streamlining: • Rewards system for Well Made assessments.

As a result of the information gathered, it was deemed appropriate to amend the methodology of the streamlining process to provide greater overall effectiveness with a reduced emphasis on Risk Management. The next section will expand on the major issues that affect the methodology.

3.4 Investigation of Issues Arising from Feedback

This section will detail the major issues that arose during staff interviews and investigate subsequent amendments to the methodology. Minor issues identified during the review that do not affect the structure of the methodology or process area will be investigated in a separate section. Major issues arising from the investigation will be addressed to create the final methodology which will be used for benefit analysis.

Major issues have been identified as:

- Lack of time gains from proposed process
- New headworks charges for 1 into 2 subdivisions
- Effect of the introduction of the Sustainable Planning Bill 2009 on the process

3.4.1 Lack of time gains from proposed process

It was found that the activities which the staff were able to class as low-risk and therefore able to mitigate through conditioning of the approval or being outsourced constituted such a small percentage of all applications received that the probable gains were minimal for the amount of work required to implement such a plan.

3.4.2 Residential Headwork's Charges

The scope of developments that were affected by the preliminary methodology was further reduced by the introduction of a Headworks Charge for one into two subdivisions. This problem was identified in the new Additional Development Application Fees (Ipswich City Council, 2009-2010 Fees and Charges, 4.1.1 Type 1 Development, Section (a)) to be charged for the development of single residential lots mainly for the purpose of one into two subdivisions.

This fee targeted the main area of focus for the low-risk developments which would result in a significant drop in the number of applications that would be lodged due to the increased development cost for a small development.

3.4.3 Sustainable Planning Bill 2009

One of the major possible implementations that has been uncovered during the course of this research is the soon to be instigated Sustainable Planning Bill 2009 which will become the Sustainable Planning Act 2009 once it has been enacted.

On 19 June 2009 the Sustainable Planning Bill 2009 was introduced to Parliament. It is part of the implementation of the IPA/IDAS Reform Project, which was established on February 2006. The Bill will supersede the Integrated Planning Act 1997 (IPA) with a goal of improving and streamlining Queensland's planning and development framework. It maintains many of the aspects of the Integrated Planning Act but has been modified to correct the shortfalls identified by key stakeholders during public consultation for the Reform Project. It is expected that this will solve many of the issues detailed in the review in Chapter 2.

Some changes that have been made to the IDAS process are:
Properly made applications are more prescriptive under the Bill. As part of the Bill, if the application is not properly made notice must be given within 10 business days of receipt of the application. The assessment manager is responsible to give the applicant a notice stating the reasons why the application is not properly made and the action required to be taken to rectify the deficiency.

In the instances that the assessment manager or referral agency is required to make an information request, the applicant has up to six months to respond to the application else it will lapse unless it is extended by agreement. This period was previously 12 months under the Integrated Planning Act 1997.

There is ability within the Sustainable Planning Bill for applicants who have failed to comply with the time limits with set by the legislation to revive an applicant that has lapsed. This action must be taken within a short time frame to be effective.

If no decision or action is made by the assessment manager within the decision-making period, the application is deemed to have been approved. It is the responsibility of the applicant to send a deemed approval notice to the assessment manager prior to the application being decided. The assessment manager must then send a decision notice to the applicant approving the application or approving the application subject to conditions.

This means in effect, that the assessment manager cannot refuse the application but may set conditions for it.

Once enacted the bill will repeal the Integrated Planning Act. In general applications made or approved under the Integrated Planning Act will continue to be honoured under the Bill. Appeals made under the Integrated Planning Act will continue to be dealt with under the Integrated Planning Act.

The Sustainable Planning Bill 2009 is expected to impact heavily on the practical assessment process, with its major impact being in the introduction of Deemed Approvals. Deemed Approval is a clause that gives approval to any application which council has not assessed in the legislated timeframe. This clause is in line with the objectives of this dissertation, since it reinforces the importance of reducing timeframes for application turnaround. However, it places pressure on the local government assessor to process applications, and a potential outcome is that quality of assessment, and conditions of approvals, may be affected.

As a result of the Sustainable Planning Bill, the preliminary process with its limited scope would not provide the overall timeline reductions required to reduce the risk of Deemed Approvals, and major amendments are required.

3.5 Final Methodology/Process

The final methodology was created as a result of the review of the preliminary methodology. As a result of issues identified, the final methodology is greatly changed in comparison to the preliminary methodology. These issues have been addressed and the final methodology has been formed.

The process will consist of 3 parts:

- Pre-Lodgement Stage – Checklist
- Assessment Stage – Rewards for properly prepared submissions
- Construction/Inspection Stage – Inspection checklists

The following sections will outline the process and benefits of the final methodology. Some potential non-structural amendments will be discussed in Section 3.6. Individually, these amendments have only marginal potential to improve the assessment process, but collectively will have a noticeable effect.

3.5.1 Pre-Lodgement

The process outlined on this section has been devised with consideration of the following factors and influences:

- Use of the well/properly prepared application system.
- Consultants who are unaware of the requirements of a properly prepared application, as identified in staff consultation.
- Promoting the submission of properly prepared applications and the requirements involved.

The Integrated Planning Act gives definitions for poorly, properly and well made applications. Based on the information supplied in the application and what further information will be required.

The Pre-Lodgement strategy works on the Risk Management principle of mitigation by providing greater assistance to applicants at the Pre-Lodgement stage to reduce the frequency of poorly prepared applications proceeding to the assessment stage. This is to be implemented by means of a Pre-Lodgement checklist to communicate the requirements of a properly prepared application more clearly and in more detail than is done in the IDAS Checklist.

Draft copies of the proposed checklist and auxiliary data are attached in Appendix B along with the existing IDAS checklist for comparison. A copy of the new proposed checklist is to be included as part of new submissions to promote a higher standard of application. Increased standards of applications will also help technical staff at the assessment stage.

3.5.2 Assessment

Staff interviews and review found that the existing assessment processes are well managed with little scope for improvement so that the potential for direct streamlining is limited. As a result, the Risk Management approach was abandoned and a more indirect approach was investigated to streamline the assessment stage.

In investigating potential approaches, it is worth noting that outsourcing the entire assessment process to external consultants was previously trialled at Ipswich City Council with limited success. The commercial aspect of the limiting of time spent on each assessment lead to a reduction in the quality of assessment and an increase in overall risk to the community. This is of course contrary to the first of Engineers Australia's Code of Ethics which states:. (The Institution of Engineers, Australia 2000)

"Members shall place their responsibility for the welfare, health and safety of the community before their responsibility to sectional or private interests, or to other members"

Instead, the following parameters were considered in identifying potential approaches:

- Restrictions of the IPA on penalising of poorly prepared applications.
- Ensuring changes would be readily accepted by developers, thereby ensuring flow-on benefits of changes for the developer and for council.

Two options have been identified to improve the application quality and reduce the delays associated with poorly prepared applications and double-handling involved. These options are:

<u>Option 1 – Reduced Turnaround Times for Well Made Applications</u>

As statutory maximum timeframes are set by legislation, the only possibility for the use of timeframe as incentive is to offer shorter timeframes for turnaround of properly prepared applications.

It is important to recognise the value of reduced timeframes to a developer and the immense savings that can be made as a result. Every day that a project is delayed equates to extra cost in servicing the development's loan. In this way, a timeframe incentive translates to an indirect financial incentive. This cost/time relationship can be leveraged by Council to encourage the submission of properly prepared applications.

Based on the properly prepared application model detailed in the Pre-Lodgement stage, preference can be given to properly prepared applications with shorter timeframes.

Option 2 – Pre-payment of Bond and Reimbursement for Well Made Applications

This option is based on a direct financial incentive to ensure quality of an application and works in two steps:

In the first step, a security or bond amount is added to the overall fee for application processing, equivalent to a specified proportion of total fees (for the purpose of this review we will use 25%).

In the second step, applicants whose submissions are properly prepared receive a refund of the 25% bond. This encourages greater effort on the part of the consultant and developers to prepare applications properly.

In adherence to legislation, neither of the nominated options directly uses penalties to promote properly prepared applications. Implementing either one or a hybrid of the two options will benefit the timeline of the assessment process. Based on the investigations carried out as a result of the staff interviews, it is better to base streamlining on a rewards scheme rather than a Risk Management approach.

3.5.3 Construction/Inspection Meeting

The investigation at the inspection stage of the review was based on the following requirements identified by staff in the interview process:

- Reduce the requirement to repeat a site inspection.
- Ensure higher quality of inspected works.

Based on these two requirements, a two-pronged approach was developed and the following systems chosen for investigation:

- Pre-construction Inspection Checklist/Meeting
- Construction Quality Assurance Program

These systems will now be discussed in detail:

Preconstruction Inspection Checklist/Meeting

Depending on the size and complexity of a project, it is presently the practice of Ipswich City Council staff to conduct pre-construction meetings. This process is to be expanded so that all new projects begin with either a meeting or a checklist depending on the size of the development, to be established by the technical officer at the time of assessment and conditioned within the approval.

The checklist is to cover the procedures for each kind of development, listing each one of the standard hold points, where developers are required to stop work until an inspection has been carried out and approval to continue given by council officers. At these hold points, the checklist will detail the procedures for preparing a site for inspection. A properly prepared site needs only one inspection, and so there will be a reduced requirement for repeat inspections.

For example, the checklist should include the hold point for pavement proof rolls, including requirements for the setup of the truck for the proof roll as well as specifying the standard of compaction (amount of movement allowed) that is required.

Construction Quality Assurance Program

As part of the inspection process, a more formal quality assurance program is required to keep records of poor workmanship and identify patterns for future action and mitigation.

At present, such records are not readily available, making further investigation difficult at this juncture.

Once this database has been constructed the areas of poor quality construction can be identified and strategies formulated to mitigate the issues found.

It is expected that the instigation of these processes will result in an improvement to the timeline for council officers, and increase quality of workmanship.

3.6 Additional Minor process changes research

There are several of secondary issues which arose during the staff interviews. These issues will be addressed briefly in this section along with potential courses of action. These issues are:

- Requirement for an inspection vehicle
- Shortage of staff
- Use of CCTV for all projects
- QLeave delays
- Budget and Resource Allocation

Although the savings achieved through investigation of each of these is minor the overall streamlining may be worthwhile.

3.6.1 Inspection Vehicle

Current practice at Ipswich City Council is for technical officers to borrow vehicles from senior staff when conducting site visits. In addition to this, technical officers have a large load of equipment to carry to each inspection, which needs to be transferred from vehicle to vehicle.

On a number of occasions, technical officers have had to conduct repeat site inspections because the vehicle they had at the first inspection did not contain the required equipment. By allocating a dedicated vehicle with all necessary equipment to technical staff for inspection purposes, Council would reduce the requirement for repeat inspections due to lack of correct equipment.

3.6.2 Staff Numbers

As much as the focus of the this study is on the streamlining of process to ensure lower work load for staff, it is recognised that the staffing levels within the Operational Works Assessment area are low and that an increase in staff would result in instant decreases in workload and timeframes as well as allowing for greater depth of knowledge within the office which is critical in time of high staff turnover.

3.6.3 CCTV For All Sewer Projects

At present not all new sewers are required to have CCTV inspections completed, thus technical staff are required to conduct mirror inspections which are less effective and more time consuming than CCTV. The extension of the CCTV requirement to all applications would be beneficial to staff for both reducing time spent on inspections and removing the requirement to carry the equipment involved therefore reducing the issue identified in section 3.6.1.

3.6.4 QLeave Delays

In 2001 the Queensland Government introduced a Portable Long Service Leave scheme to protect the Long Service Leave entitlements of workers in the building and construction industry regardless of whether they work on different projects for one or more employers.

The legislation requires that, for any project with a value of $80,000 or more, Operational Works Approval cannot be issued until the Local Government is provided with evidence that the developer has paid a premium to the QLeave scheme.

A factor that is presently out of staff hands in regards to the throughput of assessments is the payment of Qleave fees. Failure of developers to pay this premium is a common issue causing the application process to stall and incomplete assessments to build up. Some approved assessments have been withheld for up to two years, awaiting a developer's advice.

3.6.5 Budget and Resource Allocation

The budget of Ipswich City Council Development Engineering Team is presently not directly linked to the quantity of Operational Works Applications assessed by the team. The increase in the number of Development Applications has not led to a proportional increase in spending, resulting in an imbalance in allocation of resources for the assessment of Operational Works Applications. Dealing with this issue is beyond the scope of this dissertation.

3.7 Conclusion

The gathering and manipulation of data in this chapter has concentrated on finalising a methodology for streamlining the assessment of Operational Works Applications.

The initial proposed methodology was found to have little impact on the existing application process and timelines. With considerable input from staff of Ipswich City Council and other Councils, the methodology underwent amendments to ensure its effectiveness on the assessment process. In addition to refining the methodology on which the report is focused, a number of minor issues were identified during the interviews. These have been investigated and recommendations made.

Thus this chapter provides a methodology to be analysed and evaluated in Chapter 4. This will be achieved by carrying out simulations of the assessment process in the context of various selected development types.

4 ANALYSIS AND EVALUATION

4.1 Introduction

The purpose of this chapter is to analyse the assessment framework identified in Chapter 3 of this report. This chapter will setup a methodology for the analysis and evaluate the existing process and the effects of the proposed changes. The results that this analysis produces will then be reviewed.

4.2 Analysis Approach

In order to assess the proposed approach a methodology for analysis was required. The initial approach that was assessed was to trial the proposed process at Ipswich City Council.

This approach was briefly investigated but was found to be too difficult to implement due to the constraints that apply when working with real applicants and the potential legal issues that may arise. For example,

The approach that was decided upon was firstly to complete an assessment of the existing data from Ipswich City Council records, examining it for trends and patterns; and secondly to analyse the potential impact of each part of the proposed process on the timeframes.

4.3 Theoretical Scenarios

The analysis will be based on four different theoretical scenarios which represent a cross-section of the types of development that are dealt with by the Development Assessment department:

- 1 into 2 Residential Subdivisions
- Large Subdivision – Rural
- Commercial Development – Urban
- Heavy Industrial Development

In the next section a brief summary each of the scenarios has been included to help with the analysis.

4.3.1 1 into 2 Residential Subdivisions

1 into 2 residential subdivisions are generally carried out by a non-professional developer looking to sell part of a lot. Consultant assistance is generally minimal, and the complexity of the Development Application is low.

4.3.2 Large Residential Subdivision - Rural

Applications for large residential subdivisions in rural areas are often completed by a non-professional developer with assistance from a consultant. These are generally simple developments with and Development Assessment requires only minor information requests.

4.3.3 Commercial Development - Urban

Urban Commercial Developments are normally completed by a professional developer with extensive experience in the field and therefore also usually the ability to complete more complex Development Applications. It is expected that these Development Assessments will be completed with only minor information requests.

4.3.4 Heavy Industrial Development

Heavy Industrial Developments are normally completed by specialist industrial developers with a lot of experience in the field and therefore also usually the ability to complete industrial Development Applications without problems. However, because of the complexity of issues involved in such a development, Development Assessment may require more than one information request.

4.4 Council Supplied Data

The Operational Works data supplied by Ipswich City Council includes 87 entries covering all submissions made in the period January to July 2009, and has been included in Appendix E. The applications cover Code and Impact Assessable assessments. Figure 4 shows the breakdown of application types made, and Figure 5 shows the average time required for assessment.

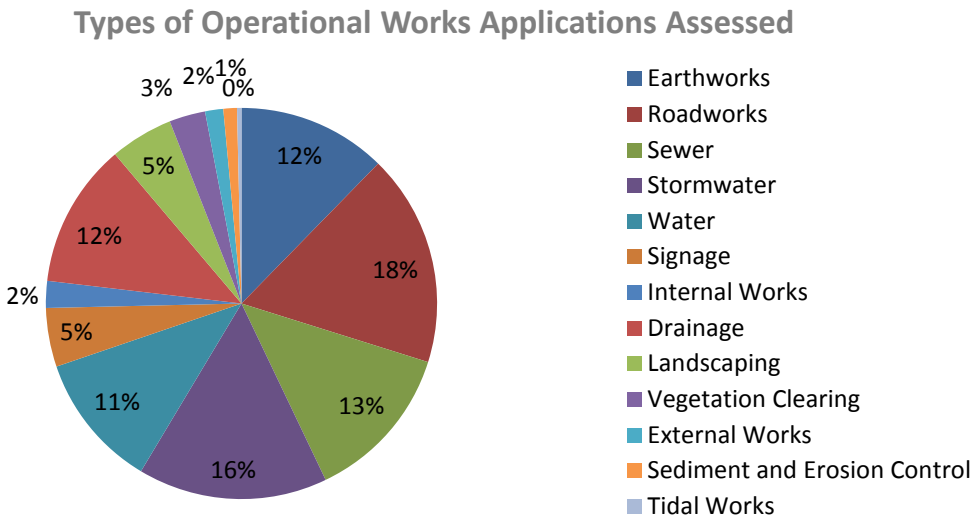

Figure 4: Types of Operational Works Applications Assessed

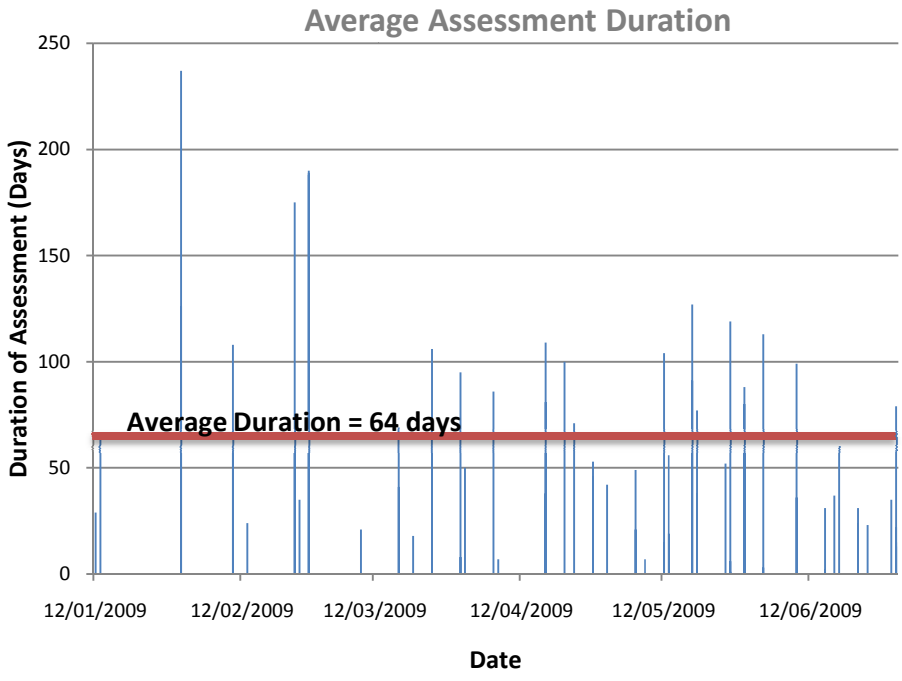

Figure 5: Average Time required for Assessment

4.5 Proposed Process Effects

4.5.1 Pre-lodgement Checklist

Analysis of the proposed Pre-lodgement Checklist's effect on the Operational Works Assessment process has been shown on Figure 6. The main effects being the reduction of rejected approvals (poorly made applications) and an increase in properly made applications and less comprehensive Requests for Information. This will allow for more time to be spent on assessment of applications resulting in a greater quality of assessment and a reduction in the timeframes for Applications to be assessed. Large developments with consultant support are generally well versed in the application requirements and have little need for a checklist.

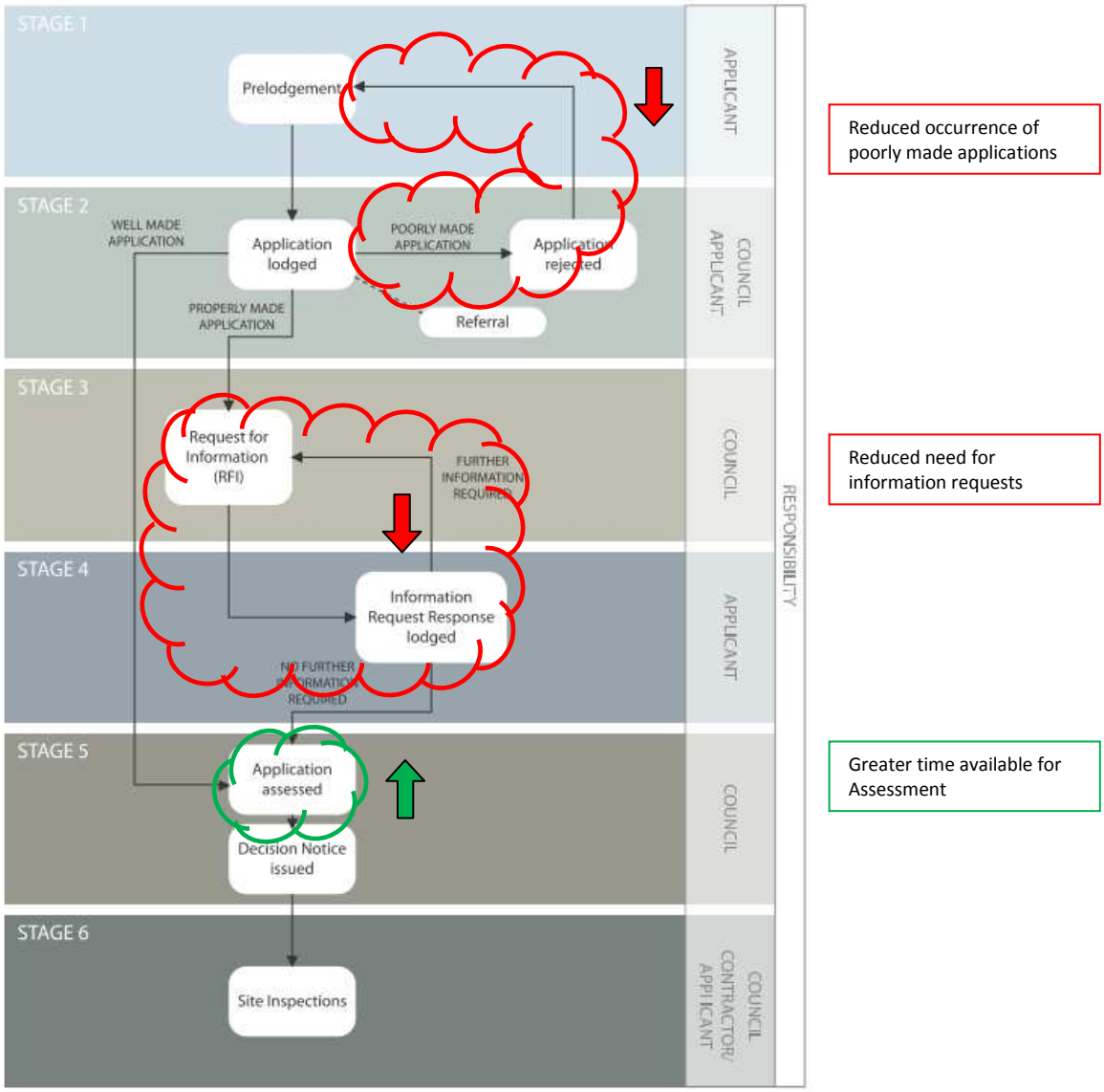

Figure 6: Pre-lodgement Checklist Effects

4.6 Time Based and Financial Incentives

Analysis of the proposed Time Based and Financial Incentive's effect on the Operational Works assessment process has been shown on Figure 7. The main effects are the increase in well made applications by applications that are made by larger development application for whom the incentive are most profitable. This increase in well made applications will mean a reduction in time spend on Requests for Information associated with properly made applications allowing greater focus in more through assessments and reduced assessment timeframes.

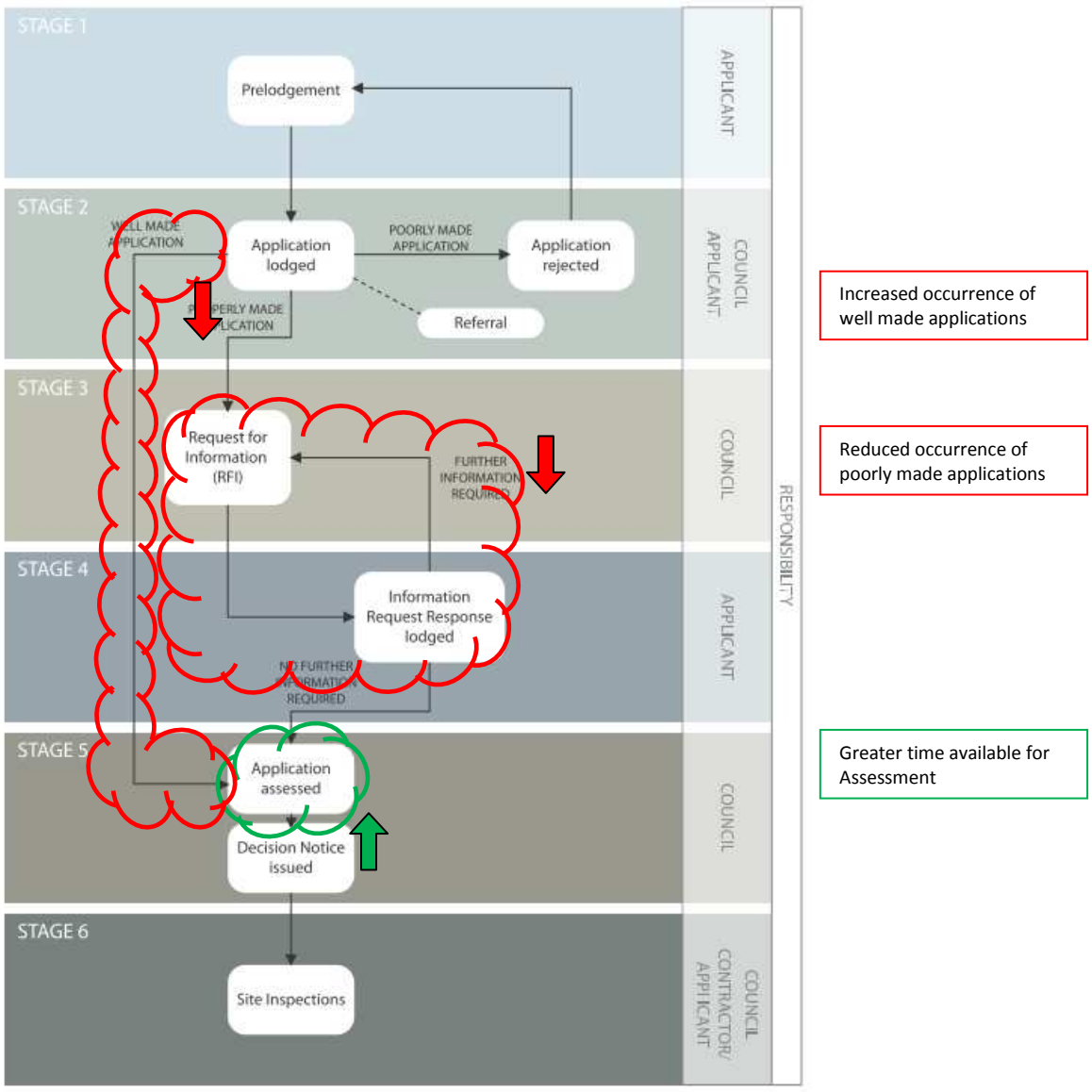

Figure 7: Time/Financial Based Incentive Effects

4.6.1 Site Inspection Checklist

Analysis of the proposed Site Inspection Checklist's effect on the Operational Works assessment process has been shown on Figure 8, with the main effect being the reduction in time spent conducting site inspections. This allows for greater time to be spent in the office carrying out operational works assessments.

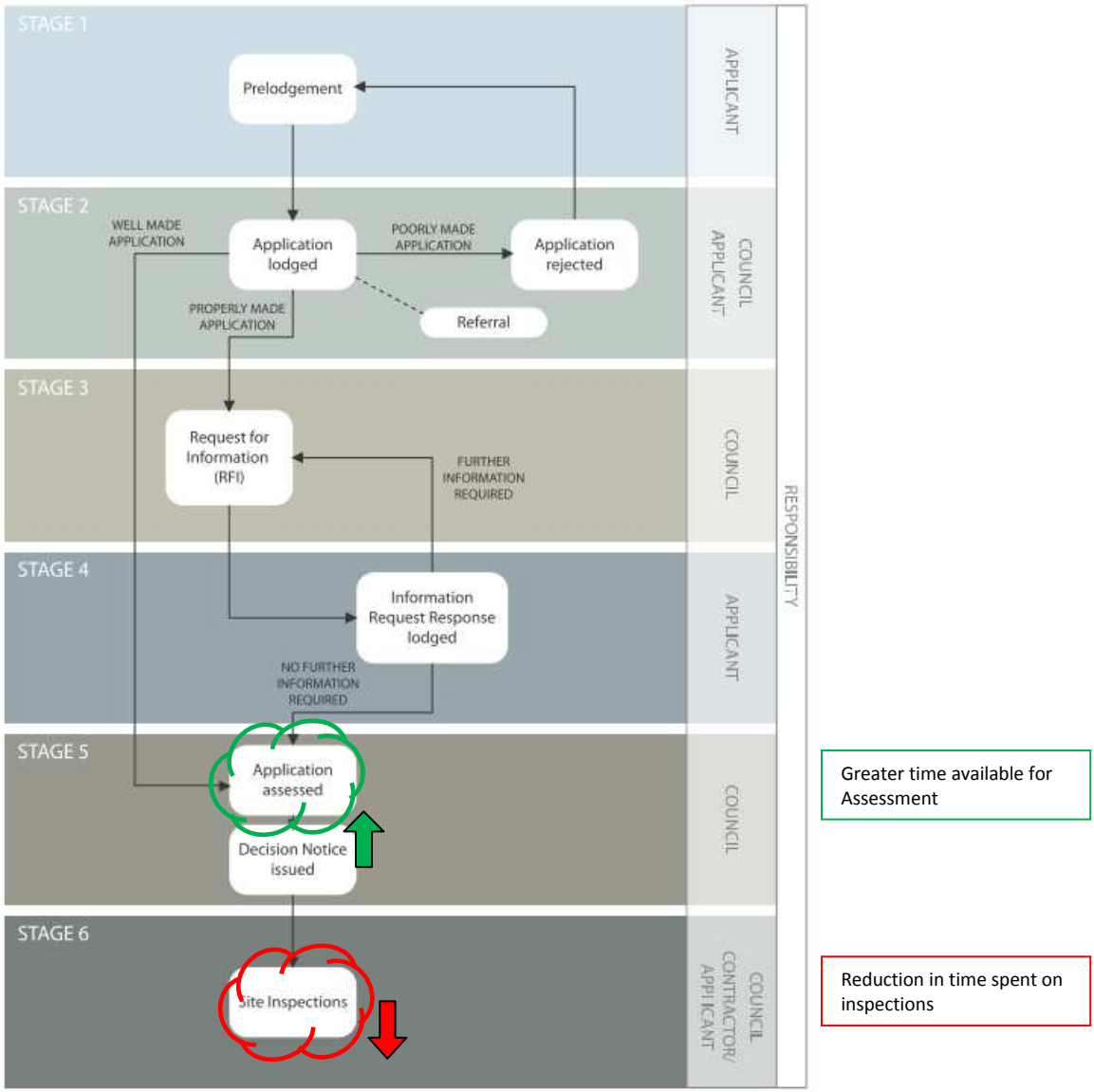

Figure 8: Site Inspection Checklist Effects

4.7 Analysis Results

By combining the effects that were identified during the analysis of each of the aspects of the proposed assessment process, the overall benefits have been identified. Figure 9 shows the combined effects from each of the previously analysed assessment processes. The overall benefit of the proposed assessment process varies for each of the four different development types.

The timelines of 1 into 2 subdivisions, reap the greatest benefit from the pre-lodgement and site inspection checklist processes, as they ensuring the Development Application is properly made and that the assessment can be carried out efficiently without the time-consuming delays associated with poorly made submissions and the applicant being un prepared for site inspections.

The rest of the larger development types which include large residential subdivision, commercial and industrial projects that include consultant support have fewer problems in preparation of applications as they have the experience to carry them out. For assessment of such developments, the greatest timeline benefits are gained from the increase in well made applications that result from the implementation of time based and/or financial incentives.

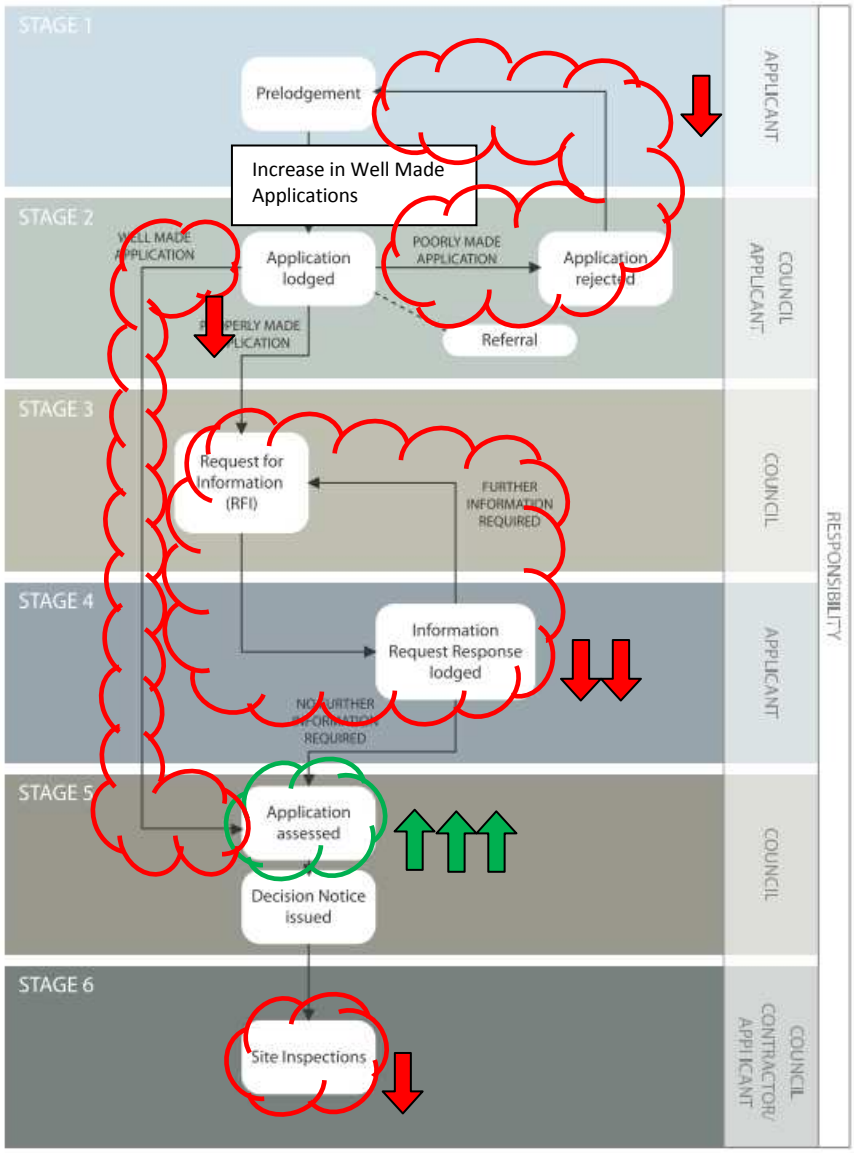

Figure 9: Combined Effect of Processes

5 CONCLUSIONS

5.1 Introduction

In this chapter the conclusions will be drawn as the overall benefits of making each of the proposed changes to the Operation Works Assessment process. The results identified within the analysis will be summarised and measured against the goal outlined at the beginning of the dissertation to ensure they were achieved and if they weren't the reasons and there possible implications on the process. The chapter will be broken down to:

- Risk Management
- Time/Financial Based Incentives
- Concluding Statements
- Further Research and Recommendation

5.2 Risk Management as an Assessment Tool

The initial brief for this dissertation was based on the use of traditional Risk Management principles to achieve the proposed outcomes. The use of Risk Management concentrated on the assessment stage (Stage 5) and varying the level of assessment of different activities. However as a result of a staff review, it was discovered that that the use of this process would not yield any benefits as the amount of activities that were low risk which could be streamlined or outsourced were minimal and no significance timeline reduction would occur.

While the tradition approach of looking at risk management for the assessment of activities was not of value for this project it was found that the principles could still be applied. By looking at the full development assessment process and assessing the areas that were of greatest risk of timeline blow outs and developing mitigation measures for targeting those areas the great potential savings were able to be made for the full process. These changes are well suited for the present situation of the industry as they don't directly impact on the assessment process and therefore can be setup immediately without being inhibited by the enactment of the Sustainable Planning Act.

The use of Risk Management in this way shows the continued value of Risk Management as a tool for the reduction of all types of risk, and in this case has resulted in major potential time savings for the Assessment of Developments.

5.3 Time Based and Financial Incentives

In addition to Risk Management principles, an incentive system was identified as a potential method of time reduction with the use of both monetary and time-based incentives being used to encourage the submission of more well made applications. This strategy is highly effective for reducing the time required to complete the assessment of applications. Without making any changes to the structure of the application assessment the use of incentives will increase the number of well made application being submitted which will improve quality of the input to the assessment stage reducing the time required for assessment.

The use of incentive was purposely chosen over the use of penalties for this project. Penalties would be used for those who frequently make poorly made assessments which result in wasted timed has not been considered. This decision is supported by both Ipswich City Council and current management opinion which believes negative reinforcement is generally thought to be less effective than rewards at promoting change. There are also potential conflicts with the Integrated Planning Act 1997 and future Sustainable Planning Bill 2009 which would require further investigation if this option were considered.

For the streamlining of the development assessment process the use of time based and financial incentives have been found to provide further indirect timesaving for the application assessment process which complement pre-lodgement checklist and site inspection checklist and meetings.

5.4 Conclusion

This aim of this dissertation was to identify the potential techniques to be used to streamline the Operational Works assessment process. This aim was achieved not only by identifying the uses and benefits of risk management principles as part of the process but their limitations as well.

To counter these limitations a number of other strategies used as part of the process. This dissertation has demonstrated the use of these principles and has shown the benefits they have had on the assessment process.

The further task of looking into the common issues identified during inspections and investigating possible avenues of dealing with them either through changes of construction practices or greater regulation and inspection was not completed. Based on the data available for this task it was judged that significant trends could not be properly identified.

5.5 Further Research and Recommendations

The research carried out in the dissertation clearly show the scope for improvement within the operation Works Assessment field with many councils presently making moves in that direction.

The true effect of the Sustainable Planning Bill on the process will not be known for some time and at that point the dynamics of the process may have altogether changed. It is recommended that after a period of adjustment, further analysis of the process be carried out to investigate any further possible changes. As such it as also recommended that any issues identified for change in this report be held off until that time to assess their effects on the amended process.

As part of the changes that are expected to take place after the instigation of the Sustainable Planning Act 2009, a review of the role of the engineers within the development process as a whole is required. This will need to look not only at the current responsibilities of engineers but also at other possible responsibilities.

In relation to the secondary task of the project, it is recommended that a database of issues identified during site inspections be established. The role of the database will be to distil the relevant information for quality analysis and to allow for future investigations to have a data point available for completion of this task.

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Ipswich City Council

Ipswich City Council, Ipswich City Square, 117 Brisbane Street (Cnr Bell Street) Ipswich

APPENDIX A

Project Specification

University of Southern Queensland

FACULTY OF ENGINEERING AND SURVEYING

ENG4111/4112 Research Project
PROJECT SPECIFICATION

FOR: *Travis Smith*

TOPIC: *Ipswich City Council Development Assessment – A Risk Management Approach*

SUPERVISOR: *Dr David Thorpe*

SPONSORSHIP: *Ipswich City Council / Faculty of Engineering and Surveying*

PROJECT AIM: Investigate methods of streamlining processes and transferring tasks from the regulator to the customer by means of an On-Line Development Processing system.

The On-Line system would use a checklist approach combined with risk management to filter development applications so that simple ones can be processed automatically with standard requirements. More complex applications would be accepted for review by Council engineers and planners.

PROGRAMME: **(Issue A, date)**

1. Research background information and literature relating to the Integrated Planning Act (IPA) and the Integrated Development Assessment System (IDAS) as implemented in Ipswich City Council;

2. Review of current development assessment processes for Internal Operational Works Applications, including Tidal and Landscaping Works to determine the impact of these on Council's workloads, areas of risk, and the potential benefits of streamlining;

3. Liaison with Council staff to develop a process flowchart for Internal Operational Works Applications, including Tidal and Landscaping Works, and to determine decision points and critical issues;

4. Development of a forms system to determine the level of risk of the development through a query process, and provide a decision-making framework, as well as reviewing the form tracking system, to assess levels of access for all staff;

5. Submission of the system for integration into Council's PD OnLine system;

6. Compilation of a final report discussing the impact of customer-driven processes on workloads and efficiency, considering potential advantages and disadvantages.

7. Submit dissertation in the format required by the University of Southern Queensland.

As time permits:

8. Exploration of the use of a preferred supplier approach for engineering consultants, with an audit program to ensure ongoing quality of workmanship;

9. Analysis of common issues (failures) of contractor workmanship that occur during the construction of council assets, and assess the best way of improving construction quality.

AGREED _____ (student) _____ (supervisor)

Date: 28 / 10 / 2007 Date: 25 / 10 / 2009

Co-examiner: _____

APPENDIX B

Outline of Pre-Lodgement Checklist for Future Refinement

OPERATIONAL WORKS REQUIREMENTS CHECKLIST

Type of Development

- Making a Material Change of Use of Premises ☐
- Reconfiguring a Lot ☐
- Carrying out Operational Works ☐
- Carrying out Building Works ☐
- Carrying out Plumbing and Drainage ☐

Level of Development Assessment

- Exempt from Assessment ☐
- Self Assessable ☐
- Code Assessable ☐
- Impact Assessable ☐

Mandatory Requirements for a Properly Made Application

- Correct application fee as prescribed by current Council budget ☐
- All parts of relevant IDAS application forms complete including IDAS assessment checklist ☐
- Ensuring that all completed IDAS forms are the current version number ☐

Additional requirements for a 'Well Made' application

- Correct number of application copies including all forms and supplementary information ☐
- Supporting information:
    - Outlining the development proposal ☐
    - Addressing the relevant codes and constraints ☐
    - Including all necessary information as detailed in this form ☐

Building and construction industry (portable long service leave) Act 1991

- Provide evidence of one of the following:
    - Payment of levy, or ☐
    - Payment of the first instalment of levy, or ☐
    - An exemption from payment of levy, or ☐
    - An exemption from immediate payment of levy ☐

OPERATIONAL WORKS APPLICATION REQUIREMENTS

	Roadworks	Internal Drainage Works	Earthworks	External Stormwater	Signage	Water Infrastructure	Sewerage Infrastructure	Sediment and Erosion	Landscaping	Clearing Vegetation	Water Quality
Forms											
Form 1 Development Application Part A											
Form 1 Development Application Part E											
Application for Operational Works											
Supplementary Information Sheet - OPW											
Appendix D Application for Street Lighting											
Report											
Covering Letter											
Proposal											
Conclusion											
Prior Planning Approvals											
Copy of Approved MCU,ROL											
Codes											
Domain											
Specific Development											
Constraint											
Hydraulic, Water Quality and Geotechnical											
Flood Search Report											
Hydraulics Report											
Stormwater Management Plan											
Geotechnical Report											
Dewatering Management Plan											
Lake Management Study											
Waterway Study											
Water Quality Management Plan											
Any other relevant hydraulic and water quality											
Environmental Open Space and Landscaping											
Vegetation Management Plan											
Ecological Assessment											
Acid Sulphate Soils Investigation and											
Open Space Management Statement											
Statement of Landscape Intent											
Bushfire Management Plan											
Arborist Reports											
Any other relevant environmental, open space											
Transport and Traffic											
Covering Letter											

	Roadworks	Internal Drainage Works	Earthworks	External Stormwater	Signage	Water Infrastructure	Sewerage Infrastructure	Sediment and Erosion	Landscaping	Clearing Vegetation	Water Quality
Plans and Drawings											
Layout Plan											
Section Plans											
Erosion and Sediment Control Plan											
Stormwater Management Plan											
Excavation and Fill Plan											
Access and Parking Plan											
Waste Management Plan											
Details of any proposed retaining walls											
Detailed landscape plan											
Electrical Drawings											

ACKNOWLEDGEMENT

I acknowledge that the omission of any items in the mandatory requirements for a 'properly made' application checklist may result in the refusal of Council to accept the lodgement of this application as 'properly made' in accordance with the provisions of the Integrated Planning Act 1997. ☐

I acknowledge that I have attached a proposal report and supporting documentation. ☐

I acknowledge that I have not supplied all the information for in the 'additional requirements' checklist and that this may incur a surcharge. ☐

PLAN REQUIREMENTS

SITE PLAN

- Must be legible and drawn to scale of 1:100, 1:200, 1:500 multiple of 500 or appropriate scale
- North point, Title, Date, Scale and Scale Bar, Drafting Company, Drawing Number and Sheet Number, Address and Real Property description
- Contours (existing and proposed)
- Location of any common property, easements, or other encumbrances
- Lot boundaries and dimensions, roads (including pavement and verge width) and watercourses
- Location of existing and proposed structures
- Dimensions of boundary setbacks to proposed building work
- Structures to be removed (preferably on a separate plan)
- Existing infrastructure (eg sewer pipes and bus stops)
- Location of buildings on adjoining lots
- Location of existing and proposed noise mitigation measures
- Location, dimensions and area of any proposed land dedications
- Existing building footprints including number of dwellings, number of bedrooms and total use area (commercial/industrial)
- Proposed building footprints for new building work
- Proposed site cover
- Location of bin storage areas
- Location, dimension and area of proposed communal open space areas
- Location of ingress and egress points
- Car parking layout, with spaces numbered and dimensioned, and disabled spaces clearly shown
- Location and dimensions of vehicle loading areas
- Manoeuvring templates/curves if involving heavy vehicles

INTERNAL LAYOUT PLAN

- Drawn to scale of 1:100, 1:200, 1:500 or multiple of 500 must include dimensions and area of internal building spaces.
- Room layout
- Tenancy layout
- Floor area - the floor area and layout of individual rooms/tenancies and the existing and proposed gross floor area stated in square metres.

BUILDING ELEVATIONS (FOR NEW BUILDING WORK)

- Coloured views from north, south, east and west and streetscape perspectives

SHADOW DIAGRAMS

- Must be provided for three or more storeys where shadows will project beyond the boundaries of the site

SCHEDULE OF COLOURS

- Must be provided for Material Change of Use applications proposing 20 or more dwellings/units or where creating/increasing 3000m2 or more of Gross Floor Area for an industrial or commercial use

SUBDIVISION PROPOSAL PLAN

- Drawn to scale of 1:100, 1:200, 1:500 or multiple of 500
- North point, Title, Date, Scale and Scale Bar, Drafting Company, Drawing Number and Sheet Number, Address and Real Property Description
- Allotment layout showing proposed lots, road reserves, roads and watercourses, open space common property and easements. All allotments are to be numbered, fully dimensioned and include lot areas
- Contours, gully lines, areas of flood inundation and areas of proposed cut and fill Existing and future roads (including pavement and verge widths), open space and drainage linkages to adjoining sites
- Any existing improvements on the site
- Existing structures to be retained and structures to be removed (structures to be removed should be indicated on a separate 'Demolition Plan')
- Location, area and dimensions of any proposed building envelopes
- Location, dimensions and area of any proposed land dedications
- For industrial subdivisions - location and dimensions of any proposed Heavy Vehicle turnaround area If creating easements or common property for access purposes - dimensions and area as well as dimensions of sealed area
- Indicative use/building layout plan indicating probable future layout of buildings, parking areas and the like.

TOWN PLANNING REPORT

- Must address all applicable codes
- Must clearly indicate where an acceptable/probable solution has been complied with
- Must demonstrate compliance or otherwise with all of the performance criteria of the applicable codes (eg. specific outcomes, overall outcomes). (Note - It is not sufficient to simply state 'complies' when assessment against a Specific Outcome/Performance Criteria or higher order provision is required).
- Must address other details relevant to the proposal and relevant to the site (eg. previous approvals, constraints etc.)

STORMWATER QUANTITY MANAGEMENT PLAN

- Submit a scaled catchment layout plan.
- Submit hydrology calculations (and model if applicable) including catchment areas, soil types, vegetation cover, times of concentration, rainfall intensities, peak flow rates and/or runoff hydrographs up to and including the defined flood event
- Submit a pre development Stormwater Layout Plan including contours, overland flow paths, pipe stormwater drainage network, culverts, dams, existing detention systems, services, easements, drainage reserves, and lawful point(s) of discharge
- Submit a post development Stormwater Layout Plan including contours, overland flow paths, pipe stormwater drainage network, culverts, dams, detention systems, services, inter allotment drainage, easements, drainage reserves, and lawful point(s) of discharge
- Submit the hydraulic calculations (and model) including the proposed detention system. (Note - if the approximate methods in QUDM are used for the sizing of the detention storage system then the onus will be on the applicant to demonstrate the required detention storage volume can be physically accommodated on the site at the detailed design stage)

FLOOD/HYDRAULIC STUDY - MUST BE PROVIDED WHEN:

- Development proposes filling below the defined flood level (the applicant must submit detailed earthworks calculations demonstrating no loss of flood plain storage up to the defined flood level which shall be obtained from Council).
- Development proposes filling in a flood conveyance zone (the applicant must submit a Hydraulic Impact Report demonstrating no adverse flood impacts external to the subject site)
- The site does not have flood free access during the defined flood event

LANDSCAPE WORKS PLAN

- Detailed Landscape Plan/s. Landscape plans are to be prepared by a landscape architect or a suitably qualified and experienced landscape design professional
- Landscape drawings should include the following general information:
    - North point
    - Location of proposed plant species to be shown graphically
    - Specification
    - Plant schedule indicating common and botanical names, pot sizes and numbers
    - The nature of existing development adjoining the site
    - Planting bed preparation detail including topsoil depths, subgrade preparation, mulch type and depth, type of turf, pebble, paving and garden edge
    - Reduced levels across the site
    - The type and height of any retaining walls
    - A maintenance period

APPENDIX C

Sample from Proposed Site Inspection checklist

PROOF ROLL CHECKLISTS

Location of Work _____

Developer _____

Contractor _____

Reference _____ Relevant Line Numbers Covered Below _____

No	Activity	Method	Frequency	Quality Requirements	Test Confirmation				Remarks	Council Sign Off
					Contractor		Engineer			
					Sign	Date	Sign	Date		
1	Subgrade Proof Roll by Contractor	Fully Loaded 8t Truck or Equivalent	Following Compaction	No vertical or horizontal displacement or rebound						
2	Subbase Compaction Tests	In accordance with AS1289	As detailed in Specification	Minimum of 100% RDD MRS 11.05						
3	Base Proof Roll by Engineer and Council	Fully Loaded 8t Truck or Equivalent	Following Compaction	No vertical or horizontal displacement or rebound						

APPENDIX D

Database Searches for Role of Engineers in Planning

Databases Searched:

1. Compendex – Engineering Village 2
2. Academic Library
3. Geobase
4. Jstor
5. Sage Journal

Search Terms:

1. “engineer”
2. “development assessment”
3. “role”
4. “trend”

<RECORD 1>
Civil engineers in public-private partnerships and as master planners for infrastructure development
Ricaurte, Jorge L. (Civil and Environmental Engineering Department, University of Illinois, Urbana-Champaign); Arboleda, Carlos A.; Peña-Mora, Feniosky Source: Leadership and Management in Engineering, v 8, n 4, p 276-286, 2008
Database: Compendex

<RECORD 2>
The role of humanities and social sciences in the civil engineering body of knowledge
Evans, Jeffrey (Bucknell University); Lynch, Daniel; Lange, David Source: ASEE Annual Conference and Exposition, Conference Proceedings, 2007, 2007 ASEE Annual Conference and Exposition
Database: Compendex

<RECORD 3>
The role of geology in landslide risk assessment for civil engineering purposes
Hearn, G.J. (Scott Wilson Kirkpatrick and Co Ltd, Scott House, Basingstoke, Hampshire, RG21 4JG, United Kingdom) Source: Advances in Geotechnical Engineering: The Skempton Conference - Proceedings of a Three Day Conference on Advances in Geotechnical Engineering, organised by the Institution of Civil Engineers, p 1316-1329, 2004, Advances in Geotechnical Engineering: The Skempton Conference - Proceedings of a Three Day Conference on Advances in Geotechnical Engineering, organised by the Institution of Civil Engineers
Database: Compendex

<RECORD 4>
The Role of the 3D Parametric Building Model in the Future Education and Practice of Civil Engineering and Construction
Salazar, Guillermo F. (Department of Civil Engineering, Worcester Polytechnic Institute, 100 Institute Rd., Worcester, MA); Polat, Ismail H.; Almeida, Joao C. Source: Towards a Vision for Information Technology in Civil Engineering, p 429-442, 2003, Towards a Vision for Information Technology in Civil Engineering: Proceedings of the Fourth Joint International Symposium on Information Technology in Civil Engineering
Database: Compendex

<RECORD 5>
Assessing the impact of case studies on the civil engineering and engineering mechanics curriculum
Delatte, Norb (Cleveland State University); Sutton, Rosemary; Beasley, William; Bagaka's, Joshua Source: ASEE Annual Conference and Exposition, Conference Proceedings, 2007, 2007 ASEE Annual Conference and Exposition
Database: Compendex

<RECORD 6>
Digital publishing, indexing, and ethics: Implications in civil and hydraulic engineering and research
Chanson, Hubert (Univ. of Queensland, Brisbane QLD 4072, Australia) Source: Journal of Professional Issues in Engineering Education and Practice, v 135, n 4, p 117-121, 2009
Language: English
Database: Compendex

<RECORD 7>
A balanced view of sustainability in civil engineering and construction
Klotz, Leidy (Department of Civil Engineering, Clemson University, 208 Lowry Hall, Clemson, SC 29634, United States); Grant, Denise Source: Building a Sustainable Future - Proceedings of the 2009 Construction Research Congress, p 1338-1347, 2009, Building a Sustainable Future - Proceedings of the 2009 Construction Research Congress
Language: English
Database: Compendex

<RECORD 8>
Aspects of concrete bridges in sustainable development
Martin, A.J. (Arup, United Kingdom) Source: Role of Concrete Bridges in Sustainable Development - Proceedings of the International Symposium - Celebrating Concrete: People and Practice, p 379-388, 2003, Role of Concrete Bridges in Sustainable Development - Proceedings of the International Symposium - Celebrating Concrete: People and Practice
Database: Compendex

<RECORD 9>
Development of quasi-static loading protocols for drift-sensitive nonstructural building components
Shafei, Behrouz (University of California, Irvine, CA 92697, United States); Zareian, Farzin Source: Proceedings of the 2009 Structures Congress - Don't Mess with Structural Engineers: Expanding Our Role, p 1201-1208, 2009, Proceedings of the 2009 Structures Congress - Don't Mess with Structural Engineers: Expanding Our Role
Language: English
Database: Compendex

<RECORD 10>
Polish structural mechanics at the turn of the 20th century
Kaczkowski, Z. (Faculty of Civil Engineering, Warsaw University of Technology); Rakowski, G.; Waszczyszyn, Z. Source: Archives of Civil Engineering, v 51, n 4, p 431-470, 2005
Database: Compendex

<RECORD 11>
Enhancing public participation in local air pollution assessment: A citizen participation prototype from Zarqa governorate, Jordan
Bdour, Ahmed N. (Department of Civil Engineering, Faculty of Engineering, Hashemite University, Zarqa 13115, Jordan); Hamdi, Moshrik R.; Shawaqfeh, Moayyad S.; Al-Hussinat, Mohammad M. Source: Environmental Engineering Science, v 25, n 4, p 451-459, May 1, 2008
Database: Compendex

<RECORD 12>
Building ecosystems: A civil look at coastal zone engineering
Daborn, Graham R. (Acadia Centre for Estuarine Research, Acadia University, Wolfville, NS, Canada) Source: Proceedings, Annual Conference - Canadian Society for Civil Engineering, v 2003, p 467, 2003, CSCE 31st Annual Conf. Proceedings: 2003 Building our Civilization - 5th Construc. Specialty Conf., 8th Environ. and Sustainable Eng. Specialty Conf. and Offshore Engineering Specialty Conference
Database: Compendex

<RECORD 13>
The role of geomorphology in flood risk assessment
Thompson, Alan; Clayton, Jamie Source: Proceedings of the Institution of Civil Engineers: Civil Engineering, v 150, n 1 SPECIAL ISSUE, p 25-29, May 2002, Floods - A New Approach
Database: Compendex

<RECORD 14>
Innovation in Engaging Learning and Global Teamwork Experiences
Fruchter, Renate (Project Based Learning Laboratory, Department of Civil Engineering, Stanford University, Stanford, CA 94305-4020) Source: Towards a Vision for Information Technology in Civil Engineering, p 99-111, 2003, Towards a Vision for Information Technology in Civil Engineering: Proceedings of the Fourth Joint International Symposium on Information Technology in Civil Engineering
Database: Compendex

<RECORD 15>
Transportation investment in rapidly urbanizing China: Best practices for supporting balanced regional economic returns
Miles, Cheang (Jacobs Edwards and Kelcey, Department of Planning, Morristown, NJ, United States); Xiaobo, Liu; Minghua, Huang Source: Transportation and Development Innovative Best Practices 2008 - Proceedings of the 1st International Symposium on Transportation and Development Innovative Best Practices 2008, TDIBP 2008, v 319, p 27-32, 2008, Transportation and Development Innovative Best Practices 2008 - Proceedings of the 1st International Symposium on Transportation and Development Innovative Best Practices 2008, TDIBP 2008
Language: English
Database: Compendex

<RECORD 16>
Safety assessment of construction site layout using geographic information system
Karan, Ebrahim Parvaresh (Graduate Research Assistant, Dept. of Civ. And Environ.Engrg., Amirkabir Univ., 424 Hafez Ave., Tehran, Iran); Ardeshir, Abdollah Source: Proceedings of the AEI 2008 Conference - AEI 2008: Building Integration Solutions, v 328, 2008, Proceedings of the AEI 2008 Conference - AEI 2008: Building Integration Solutions
Language: English
Database: Compendex

<RECORD 17>
Seismic vulnerability of bridges susceptible to spatially distributed soil liquefaction hazards
Aygün, Bayram (Rice University, Houston, TX, United States); Dueñas-Osorio, Leonardo; Padgett, Jamie E.; DesRoches, Reginald Source: Proceedings of the 2009 Structures Congress - Don't Mess with Structural Engineers: Expanding Our Role, p 305-314, 2009, Proceedings of the 2009 Structures Congress - Don't Mess with Structural Engineers: Expanding Our Role
Language: English
Database: Compendex

<RECORD 18>
Role of Project Delivery Systems in Infrastructure Improvement
Garvin, Michael J. (Dept. of Civil Eng, Columbia University, MC 4709, 500 W. 120th St., New York, NY 10027, United States) Source: Contruction Research Congress, Winds of Change: Integration and Innovation in Construction, Proceedings of the Congress, p 665-672, 2003, Construction Research Cogress, Winds of Change: Integration and Innovation in Construction, Proceedings of the Congress
Database: Compendex

<RECORD 19>
Implementing sustainability through strategic environmental assessment: Indications from the experience of the Autonomous Province of Trento, Italy
Diamantini, C. (Department of Civil Engineering, University of Trento, Italy); Geneletti, D. Source: Sustainable World, v 6, p 203-211, 2003, Sustainable Planning and Development
Database: Compendex

<RECORD 20>
Identifying and assessing influence factors on improving waste management performance for building construction projects
Cha, Hee Sung (Dept. of Architectural Engineering, Ajou Univ., Suwon 443-749, Korea, Republic of); Kim, Jeehye; Han, Ju-Yeoun Source: Journal of Construction Engineering and Management, v 135, n 7, p 647-656, 2009
Database: Compendex

<RECORD 21>
Transportation investment in rapidly urbanizing China: Best practices for supporting balanced regional economic returns
Miles, Cheang (Jacobs Edwards and Kelcey, Department of Planning, Morristown, NJ, United States); Xiaobo, Liu; Minghua, Huang Source: Transportation and Development Innovative Best Practices 2008 - Proceedings of the 1st International Symposium on Transportation and Development Innovative Best Practices 2008, TDIBP 2008, v 319, p 27-32, 2008, Transportation and Development Innovative Best Practices 2008 - Proceedings of the 1st International Symposium on Transportation and Development Innovative Best Practices 2008, TDIBP 2008
Database: Compendex

<RECORD 22>
Safety Assessment of European Rail Rules for Operating ERTMS
El Koursi, E. (INRETS-ESTAS (F), 20 rue Elisée Reclus, 59650 Villeneuve d'Ascq, France); Flahaut, G.; Zaalberg, H.; Hessami, A. Source: Proceedings of the International Conference on Automated People Movers, p 811-820, 2001
Database: Compendex

<RECORD 23>
Strategic characterization of water system infrastructure and management
Garvin, Michael J. (Dept. of Civil Engineering, Columbia Univ., New York, NY 10027) Source: Journal of Management in Engineering, v 19, n 4, p 138-146, October 2003
Database: Compendex

<RECORD 24>
Interferometric imaging: Involvement in civil engineering
Jacquot, P. (Dept. of Civ. Engrg., Stress Analysis Lab., Swiss Fed. Inst. Technol., CH-1015 Lausanne, Switzerland); Facchini, M. Source: Journal of Computing in Civil Engineering, v 13, n 2, p 61-70, Apr 1999
Database: Compendex

<RECORD 25>
The development of cognitive models for constructability assessment in steel frame structures
Ugwu, O.O. (Department of Civil Engineering, Ctr. Infrastruct./Constr. Indust. D., University of Hong Kong, Pokfulam Road, Hong Kong, Hong Kong); Anumba, C.J.; Thorpe, A. Source: Advances in Engineering Software, v 35, n 3-4, p 191-203, March 2004
Database: Compendex

<RECORD 26>
Assessing infrastructure project innovation potential as a function of procurement mode
Tawiah, Paul A. (Shell Canada, 400-4th Ave. S.W., Calgary, AB T2P 0J4, Canada); Russell, Alan D. Source: Journal of Management in Engineering, v 24, n 3, p 173-186, 2008
Database: Compendex

<RECORD 27>
Foundation engineering
Burland, John B. (Dept. of Civil Engineering, Imperial College London) Source: Structural Engineer, v 86, n 14, p 45-51, July 21, 2008
Database: Compendex

<RECORD 28>
Structural identification of various constructed systems to inform decisions
Moon, Franklin (Drexel University, Philadelphia, PA 19104, United States); Aktan, A. Emin; Lowdermilk, David; Egan, Lawrence Source: Proceedings of the 2009 Structures Congress - Don't Mess with Structural Engineers: Expanding Our Role, p 416-421, 2009, Proceedings of the 2009 Structures Congress - Don't Mess with Structural Engineers: Expanding Our Role
Language: English
Database: Compendex

<RECORD 29>
Development of a modelling tool to quantify faecal indicator levels in Cardiff Bay
Harris, Emma (Envrn. Water Management Res. Centre, Cardiff University, United Kingdom); Falconer, Roger A.; Kay, David; Stapleton, Carl Source: Proceedings of the Institution of Civil Engineers: Water and Maritime Engineering, v 154, n 2, p 129-135, June 2002
Database: Compendex

<RECORD 30>
Public involvement in Fairfax County's watershed management program: The little hunting creek watershed project
Shirey, Paul (Watershed Planning and Assessment Branch Fairfax County, Department of Public Works and Environmental Services, 12000 Government Center Parkway, Fairfax, VA 22035); Rose, Fred; Frie, Shelly Source: Proceedings of the 2005 Watershed Management Conference - Managing Watersheds for Human and Natural Impacts: Engineering, Ecological, and Economic Challenges, p 903-912, 2005, Managing Watersheds for Human and Natural Impacts: Engineering, Ecological, and Economic Challenges - Proceedings of the 2005 Watershed Management Conference
Database: Compendex

<RECORD 31>
Some recent developments in civil engineering NDT in the UK
Bungey, J. (Department of Civil Engineering, The University of Liverpool, Liverpool L69 3GQ, United Kingdom) Source: Insight: Non-Destructive Testing and Condition Monitoring, v 45, n 12, p 796-799, December 2003
Database: Compendex

<RECORD 32>
Enhancing the capstone design experience in civil engineering
Nambisan, Shashi (Iowa State University) Source: ASEE Annual Conference and Exposition, Conference Proceedings, 2007, 2007 ASEE Annual Conference and Exposition
Database: Compendex

<RECORD 33>
Interdisciplinary graduate experience: Lessons learned
Watkins, Steve E. (University of Missouri, Rolla); Eller, Vicki M.; Corra, Josh; Molander, Martha J.; Konz, Bethany; Hall, Richard H.; Chandrashekhara, K.; Belarbi, Abdeldjelil Source: ASEE Annual Conference Proceedings, p 6203-6212, 2002, 2002 ASEE Annual Conference and Exposition: Vive L'ingenieur
Database: Compendex

<RECORD 34>
Spotlight on young engineers
Source: Structural Engineer, v 82, n 2, p 14-15, January 20, 2004
Database: Compendex

<RECORD 35>
Evaluation of past audits of project development on California state highway system
Hecht, Harry (Dept. of Civil and Environ. Eng., University of California, Davis, Davis, CA 95616, United States); Niemeier, Debbie Source: Transportation Research Record, n 1817, p 1-10, 2002
Database: Compendex

<RECORD 36>
Observations from a project to encourage multiple-year, international collaboration on research for undergraduates
Silliman, Stephen (University of Notre Dame) Source: ASEE Annual Conference and Exposition, Conference Proceedings, 2007, 2007 ASEE Annual Conference and Exposition
Database: Compendex

<RECORD 37>
Building a construction engineering program
Currin, Thomas (Southern Polytechnic State University); Zeigler, Timothy Source: ASEE Annual Conference and Exposition, Conference Proceedings, 2007, 2007 ASEE Annual Conference and Exposition
Database: Compendex

<RECORD 38>
A new approach for the characterisation of hazards and the evaluation of vulnerabilities of life support networks (Une nouvelle approche pour la caractérisation des aléas et l'évaluation des vulnérabilités des réseaux de support à la vie)
Petit, Frédéric (Centre Risque and Performance, Dept. Genies Civil Geol./des Mines, Ecole Polytech. de Montréal, Montréal, QC H3C 3A7, Canada); Robert, Benoît; Rousselle, Jean Source: Canadian Journal of Civil Engineering, v 31, n 2, p 333-344, April 2004
Language: French
Database: Compendex

<RECORD 39>
Designing facilities management needs into infrastructure projects: Case from a major hospital
Edum-Fotwe, Francis T. (Dept. of Civil Engineering, Lough Univ., Lough, Leics, LE11 3TU, United Kingdom); Egbu, C.; Gibb, A.G.F. Source: Journal of Performance of Constructed Facilities, v 17, n 1, p 43-50, February 2003
Database: Compendex

<RECORD 40>
Role of transportation in regional economic efficiency in Bangladesh: Data envelopment analysis
Alam, Jobair B. (Department of Civil Engineering, Bangladesh Univ. Eng. and Technol., Dhaka, Bangladesh); Sikder, Saiyid H.; Goulias, K.G. Source: Transportation Research Record, n 1864, p 112-120, 2004
Database: Compendex

<RECORD 41>
Establishing the linkages between structural engineering and risk management
Brunsdon, D.R. (Kestrel Group Ltd., Wellington, New Zealand) Source: Bulletin of the New Zealand Society for Earthquake Engineering, v 37, n 2, p 89-97, June 2004
Database: Compendex

<RECORD 42>
Acoustic emission monitoring of slope instability: Development of an active waveguide system
Dixon, Neil (Department of Civil/Building Eng., Loughborough University, Loughborough, United Kingdom); Hill, Roger; Kavanagh, John Source: Proceedings of the Institution of Civil Engineers: Geotechnical Engineering, v 156, n 2, p 83-95, April 2003
Database: Compendex

<RECORD 43>
Geotechnical aspects, options evaluation and safety analyses for assiut barrage, Egypt
Morsy, U.A. (Department of Civil Engineering, Cairo University at Fayoum, Hamza Associates, Giza, Egypt); Hamza, M.M.; Rae, E.A.; Nashed, N.F. Source: Proceedings, Annual Conference - Canadian Society for Civil Engineering, v 2002, p 381-390, 2002, CSCE 30th Annual Conference Proceedings: 2002 Challenges Ahead - 4th Structural Specialty Conference, 4th Transportation Specialty Conference and 2nd material Specialty Conference
Database: Compendex

<RECORD 44>
Effects of accounting and budgeting on capital allocation for infrastructure projects
Wooldridge, S.C. (Dept. of Civ. Engrg., MIT, Cambridge, MA 02139, United States); Garvin, M.J.; Miller, J.B. Source: Journal of Management in Engineering, v 17, n 2, p 86-94, March/April 2001
Database: Compendex

<RECORD 45>
Sulfurous strategies
Source: Ground Engineering, v 35, n 2, p 32-34, February 2002
Database: Compendex

<RECORD 46>
A participatory approach to development of a decision support tool
Langsdale, Stacy (Institute for Resources, Environment and Sustainability, University of British Columbia, 2029 West Mall, Vancouver, BC V6T 1Z2, Canada); Lence, Barbara; Carmichael, Jeff; Cohen, Stewart Source: Proceedings of the 2004 World Water and Environmetal Resources Congress: Critical Transitions in Water and Environmetal Resources Management, p 2688-2689, 2004, Proceedings of the 2004 World Water and Environmetal Resources Congress: Critical Transitions in Water and Environmental Resources Management
Database: Compendex

<RECORD 47>
Application of sustainability indicators in decision-making processes for urban regeneration projects
Hunt, D.V. (University of Birmingham, United Kingdom); Lombardi, D.R.; Rogers, C.D.; Jefferson, I. Source: Proceedings of the Institute of Civil Engineers: Engineering Sustainability, v 161, n 1, p 77-91, March 2008
Database: Compendex

<RECORD 48>
Sustainable flood defence in England and Wales
Harman, John; Bramley, Mervyn E.; Funnell, Mark Source: Proceedings of the Institution of Civil Engineers: Civil Engineering, v 150, n 1 SPECIAL ISSUE, p 3-9, May 2002, Floods - A New Approach
Database: Compendex

<RECORD 49>
Dredging Operations and Environmental Research Program: Building Tools for Objective Determination of Environmental Windows
Clarke, Douglas (U.S. Army Engineer Res./Devmt. Ctr., 3909 Halls Ferry Road, Vicksburg, MS 39180, United States); Ault, Jerald; French, Deborah; Johnson, Billy Source: Dredging, Key Technologies for Global Prosperity, p 45-57, 2002, Dredging 02, Key Technologies for Global Prosperity: Proceedings of the Third Specialty Conference on Dredging and Dredged Material Disposal
Database: Compendex

<RECORD 50>
Owner's role in construction safety: Guidance model
Huang, Xinyu (Intel Products (Shanghai) Ltd., No. 999 Ying Lun Rd., Pudong, Shanghai 200131); Hinze, Jimmie Source: Journal of Construction Engineering and Management, v 132, n 2, p 174-181, February 2006
Database: Compendex

<RECORD 51>
Structural robustness in the light of risk and consequence analysis
Maes, Marc A. (Univ. of Calgary, Calgary, Canada); Fritzsons, Kathleen E.; Glowienka, Simon Source: Structural Engineering International: Journal of the International Association for Bridge and Structural Engineering (IABSE), v 16, n 2, p 101-107, May 2006
Database: Compendex

<RECORD 52>
Dynamic conflict management in large-scale design and construction projects
Ng, Helen S. (ASCE); Peña-Mora, Feniosky; Tamaki, Tadatsugu Source: Journal of Management in Engineering, v 23, n 2, p 52-66, 2007
Database: Compendex

<RECORD 53>
Trends of skills and productivity in the UK construction industry
Abdel-Wahab, Mohamed S. (Centre for Innovative and Collaborative Engineering (CICE), Loughborough University, Loughborough, United Kingdom); Dainty, Andrew R.J.; Ison, Stephen G.; Bowen, Patrick; Hazlehurst, Guy Source: Engineering, Construction and Architectural Management, v 15, n 4, p 372-382, 2008
Database: Compendex

<RECORD 54>
Knowledge Discovery in Maintenance Databases: Enhancing the Maintainability in Higher Education Facilities
Ng, Helen S. (Department of Civil Engineering, Univ. Illinois at Urbana-Champaign, 807 South Wright Street, Champaign, IL 61820); Soibelman, Lucio Source: Contruction Research Congress, Winds of Change: Integration and Innovation in Construction, Proceedings of the Congress, p 803-811, 2003, Construction Research Cogress, Winds of Change: Integration and Innovation in Construction, Proceedings of the Congress
Database: Compendex

<RECORD 55>
Fostering innovation and entrepreneurialism in a value-driven organization
Salwen, Peter (Salwen Business Communications, New York City) Source: Leadership and Management in Engineering, v 3, n 3, p 153-158, July 2003
Database: Compendex

<RECORD 56>
Assessing barriers to sustainable UK urban transport solutions
Hull, A.D. (Centre for Environment and Planning, University of the West of England, Bristol, United Kingdom); Tricker, R.C. Source: Proceedings of the Institute of Civil Engineers: Engineering Sustainability, v 158, n 3, p 171-180, September 2005
Database: Compendex

<RECORD 57>
Introducing the visual language and process of design to beginning architectural engineering students
Bilbeisi, Suzanne (Oklahoma State University) Source: ASEE Annual Conference and Exposition, Conference Proceedings, 2006, 2006 ASEE Annual Conference and Exposition
Database: Compendex

<RECORD 58>
Third-party pipeline integrity program/construction management
Pioli, Christopher A. (Jacobs Consultancy, 1111 South Arroyo Parkway, Pasadena, CA 91105, United States); Smith, Mark P. Source: New Pipeline Technologies, Security, and Safety, v 1, p 727-736, 2003
Database: Compendex

<RECORD 59>
Pipeline Planning Utilizing C/I ASCE 38-02
Ryan, Philip K. (CH2M Hill, 2525 Airpark Drive, Redding, CA 96001, United States); Anspach, James H. Source: Proceedings of the ASCE International Conference on Pipeline Engineering and Construction: New Pipeline Technologies, Security, and Safety, v 2, p 1406-1414, 2003
Database: Compendex

<RECORD 60>
Dynamic modeling for construction innovation
Park, Moonseo (Dept. of Building, School of Design and Environment, National Univ. of Singapore, 4 Architecture Dr., Singapore, 117566); Nepal, Madhav Prasad; Dulaimi, Mohammed Fadhil Source: Journal of Management in Engineering, v 20, n 4, p 170-177, October 2004
Database: Compendex

<RECORD 61>
A visionary future for beach management
Pickel, Bradley H. (Beaches of SWTDC, PO Box 1248, Santa Rosa Beach, FL 32459, United States) Source: Solutions to Coastal Disasters 2002, p 750-759, 2002
Database: Compendex

<RECORD 62>
Institutional reforms in Lebanon's commercial ports: Opportunities and challenges
Baaj, M. Hadi (Department of Civil Engineering, American University of Beirut, Lebanon) Source: Water Studies, v 12, p 51-60, 2002, Maritime Engineering and Ports III
Database: Compendex

<RECORD 63>
Systems model of construction accident causation
Mitropoulos, Panagiotis (Arizona State University, Del E. Webb School of Construction, Tempe, AZ 85287-0204); Abdelhamid, Tariq S.; Howell, Gregory A. Source: Journal of Construction Engineering and Management, v 131, n 7, p 816-825, July 2005
Database: Compendex

<RECORD 64>
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<RECORD 65>
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Wilson, Jeffery W. (Joint SIAP System Engineering Organization, Arlington, VA); Stein, James; Munjal, Sunita; Dwivedi, Anurag Source: Proceedings - IEEE Military Communications Conference MILCOM, v 2005, 2005, MILCOM 2005: Military Communications Conference 2005
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Desai, Satish B. (Institution of Structural Engineers (IStructE), Association of Building Engineers, Faculty of Building, United Kingdom); Limbachiya, Mukesh C. Source: Indian Concrete Journal, v 80, n 7, p 17-23, July 2006
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Miller, Tri Huu (Department of Civil Engineering and Engineering Mechanics, University of Arizona, Tucson, AZ, United States); Yanagita, Tamaki; Kundua, Tribikram; Grill, Julian; Grill, Wolfgang Source: Proceedings of SPIE - The International Society for Optical Engineering, v 7295, 2009, Health Monitoring of Structural and Biological Systems 2009
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Gerhart, Andrew (Lawrence Technological University); Carpenter, Donald Source: ASEE Annual Conference and Exposition, Conference Proceedings, 2008, 2008 ASEE Annual Conference and Exposition
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Smits, A.J.M. (Centre for Water and Society, Radboud University, P.O. Box 9010, 6500 GL Nijmegen, Netherlands); Nienhuis, P.H.; Saeijs, H.L.F. Source: Hydrobiologia, v 565, n 1 SPEC. ISS., p 339-355, July 2006
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Haransky, Steve (FMI Corp, Raleigh, United States) Source: Civil Engineering, v 70, n 4, p 66-67, 2000
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Aibinu, Ajibade Ayodeji (School of Design and Environment, Dept. of Building, National Univ. of Singapore, 4 Architecture Dr., Kent Crescent, Singapore 117566, Singapore); Odeyinka, Henry Agboola Source: Journal of Construction Engineering and Management, v 132, n 7, p 667-677, July 2006
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Grasso, S. (Department of Civil and Environmental Engineering, University of Catania, Viale A. Doria, 6, 95125 Catania, Italy); Maugeri, M. Source: Soil Dynamics and Earthquake Engineering, v 29, n 6, p 1034-1045, June 2009
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Information on micro-enterprises involved in cassava and palm oil processing in the Osun and Ondo states of Nigeria
Osunbitan, J.A. (Dept. of Agricultural Engineering, Obafemi Awolowo University (OAU), Ile-Ife, Nigeria); Olushina, J.O.; Jeje, J.O.; Taiwo, K.A.; Faborode, M.O.; Ajibola, O.O. Source: Technovation, v 20, n 10, p 577-585, October 2000
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Reeve, D.E. (Department of Civil Engineering, University of Nottingham, United Kingdom); Spivack, M. Source: Environmental Studies, p 55-64, 2001, Coastal Engineering V: Computer Modelling of Seasons and Coastal Regions
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Schauenburg, Axel (Sir Lawrence Wackett Centre for Aerospace Design Technology, School of Aerospace, Mechanical and Manufacturing Engineering, RMIT University, GPO Box 2476V, Melbourne, Vic. 3001, Australia); Sinha, Arvind K. Source: Annual Forum Proceedings - AHS International, v 2, p 1490-1499, 2007, AHS International 63rd Annual Forum - Proceedings - Riding the Wave of New Vertical Flight Technology
Database: Compendex

APPENDIX E

Ipswich City Council Operational Works Timeframes

Application Number	Description	Lodged Date	Decision Date	Decision	Approval Timeframe
137/2009/OW	Earthworks, Internal Roadworks, Sewer, Stormwater and Water (13 lots) for Stage 1 of Unit Development	9/01/2009			0
983/2009/OW	Roadworks, Stormwater, Water Infrastructure, Sewerage Infrastructure, Earthworks (Springfield Technology Park Stage 1)	23/02/2009			0
1548/2009/OW	Clearing vegetation not associated with MCU	23/03/2009			0
1950/2009/OW	Roadworks, Stormwater, Water Infrastructure, Sewerage Infrastructure (50 lots) - Grandview Estate Stage 4	6/04/2009			0
2338/2009/OW	Earthworks (Retaining Wall)	23/04/2009			0
2404/2009/OW	Clearing Vegetation (Citiswich Stage 6)	27/04/2009			0
2431/2009/OW	Roadworks, Stormwater, Water Infrastructure, Drainage Works, Earthworks, Sewerage Infrastructure (31 lots)	28/04/2009			0
2750/2009/OW	Design Review (4 multi-units) - Stormwater	12/05/2009			0
3217/2009/OW/A	Landscaping (new McDonald's Ipswich Restaurant and Drive-Thru) REFER ALSO TO 3217/09/OW (Stormwater, Drainage Works)	4/06/2009			0
2784/2009/OW/A	Streetscaping and Public Open Space - The Springs Stage 1 - REFER ALSO TO 2784/09/OW AND 2784/09/OW/B	9/06/2009			0
3489/2009/OW	Design Review - Roadworks, Stormwater, Earthworks, Drainage Works and Signage (connected with upgrades to existing carpark area) - Ipswich Golf Course	9/06/2009			0
3643/2009/OW	Design Review - Stormwater (Carpark - Springfield Technology Park)	18/06/2009			0
3644/2009/OW	Engineering Design Review - Roadworks, Stormwater, Water Infrastructure, Drainage Works, Sewerage Infrastructure and Landscaping (Truck Depot) - Perry Dreams Pty Ltd	18/06/2009			0
3950/2009/OW	Roadworks, Stormwater, Water Infrastructure, Earthworks, Signage (Construction of Alawoona Street) - Mountview Estate	30/06/2009			0
4003/2009/OW	Design Review - Stormwater (St Peter Claver College Stage 2)	30/06/2009			0
4013/2009/OW	Internal Civil Works (associated wtih the establishment of a new store, and not associated with reconfiguration of lot) - Aldi Stores	30/06/2009			0
4016/2009/OW	Roadworks, Stormwater, Water Infrastructure, Sewerage Infrastructure, Earthworks and Drainage Works (70 lots) - Mountview Estate Stage 2	30/06/2009			0
4018/2009/OW	Roadworks, Stormwater, Water Infrastructure, Sewerage Infrastructure, Earthworks, Drainage Works and Signage (95 lots) - Six Mile Creek Village Stages 1 and 2 - REFER 4018/09/OW/A AND 4018/09/OW/B ALSO	30/06/2009			0

Application Number	Description	Lodged Date	Decision Date	Decision	Approval Timeframe
9503/2008/OW/A	Landscaping & Engineering Assessment - Ipswich Golf Course Redevelopment - Heritage Links Stage 1	26/05/2009	27/05/2009	Cancelled	1
3569/2009/OW	Roadworks, Stormwater, Earthworks, Signage, Erosion and Sediment Control (Redevelopment of Existing Taven) - Racehorse Hotel	15/06/2009	17/06/2009	Cancelled	2
3301/2009/OW	Stormwater Treatment (Hide Processing Facility)	2/06/2009	5/06/2009	Approved	3
3131/2009/OW	Drainage Works, Earthworks, Roadworks (2 lots)	26/05/2009	1/06/2009	Approved	6
1998/2009/OW	Sewerage infrastructure (2 lots)	7/04/2009	14/04/2009	Approved	7
2619/2009/OW	Roadworks (temporary road) - Citiswich	8/05/2009	15/05/2009	Approved	7
1795/2009/OW	Design Review (Roadworks, Stormwater, Water Infrastructure, Clearing Vegetation, Drainage Works, Earthworks, Sewerage Infrastructure) - The Springs Sales Office	30/03/2009	7/04/2009	Approved	8
4006/2009/OW	Drainage Works and Earthworks (2 lots)	30/06/2009	13/07/2009	Approved	13
2743/2009/OW	Roadworks and Drainage Works (2 lots)	12/05/2009	27/05/2009	Approved	15
3998/2009/OW	Roadworks, Stormwater, Earthworks, Water Infrastructure and Sewerage Infrastructure (2 lots)	30/06/2009	15/07/2009	Approved	15
1528/2009/OW	Bulk Earthworks, Landscaping & Stormwater (Reject Shop) Citiswich	20/03/2009	7/04/2009	Approved	18
2785/2009/OW	Stormwater, Water Infrastructure, Sewerage Infrastructure (2 lots)	13/05/2009	1/06/2009	Approved	19
1268/2009/OW	Internal works, Roadworks, Stormwater, External (foothpath)	9/03/2009	30/03/2009	Approved	21
2558/2009/OW	Roadworks (2 lots)	6/05/2009	27/05/2009	Approved	21
3960/2009/OW	Sewerage Infrastructure (2 lots)	30/06/2009	22/07/2009	Approved	22
3789/2009/OW	Stormwater, Water Infrastructure and Sewerage Infrastructure (3 lots) - Rosewood Heights	24/06/2009	17/07/2009	Approved	23
828/2009/OW	Sewerage Infrastructure (2 lots)	13/02/2009	9/03/2009	Approved	24
3715/2009/OW	Stormwater, Water Infrastructure, Sewerage Infrastructure and Access Driveway (2 lots)	22/06/2009	16/07/2009	Approved	24
164/2009/OW	Roadworks (3 lots)	12/01/2009	10/02/2009	Approved	29
3570/2009/OW	Roadworks, Stormwater, Earthworks, Signage, Erosion and Sediment Control (Redevelopment of Existing Taven) - Racehorse Hotel	15/06/2009	16/07/2009	Approved	31
3713/2009/OW	Engineering Design Review (Roadworks/Road Widening and Stormwater Drainage)	22/06/2009	23/07/2009	Approved	31
2175/2009/OW	Roadworks, Water, Drainage, Sewerage, Erosion & Sediment (2 lots)	17/04/2009	19/05/2009	Approved	32
1019/2009/OW	Earthworks (Retaining Wall)	24/02/2009	31/03/2009	Approved	35
3936/2009/OW	Roadworks, Drainage Works and Earthworks ((Industrial Development - Concrete Batching)	29/06/2009	3/08/2009	Approved	35

Application Number	Description	Lodged Date	Decision Date	Decision	Approval Timeframe
2784/2009/OW/B	Linear Open Space Landscaping - The Springs Stage 1 - REFER ALSO TO 2784/09/OW AND 2784/09/OW/A	9/06/2009	15/07/2009	Approved	36
3609/2009/OW	Sewerage Infrastructure and Stormwater (2 lots)	17/06/2009	24/07/2009	Approved	37
2172/2009/OW	Roads/Drainage, Water, Sewerage (15 lots) - Brentwood Rise Estate Stage 2C	17/04/2009	25/05/2009	Approved	38
3354/2008/OW/A	Landscaping & Engineering Assessment Fernbrooke Stages 6A & 6B	19/05/2009	26/06/2009	Approved	38
1434/2009/OW	Drainage Works, Sewerage Infrastructure and Water Infrastructure (2 lots)	17/03/2009	27/04/2009	Approved	41
2485/2009/OW	Municipal Works - Footpath; Internal Works - including Roadworks and Drainage	30/04/2009	11/06/2009	Approved	42
2402/2009/OW	Prescribed Tidal Works Application - Six Mile Creek Crossing (Ipswich Motorway Upgrade Dinmore to Goodna)	27/04/2009	12/06/2009	Approved	46
2564/2009/OW	Earthworks (Fernbrooke Estate Stage 6 Benching)	6/05/2009	24/06/2009	Approved	49
1843/2009/OW	Roadworks, Sewerage Infrastructure, Water Infrastructure (2 lots)	31/03/2009	20/05/2009	Approved	50
3072/2009/OW	Design Review - Stormwater Drainage (Extension Cabanda Aged Care - 7 units)	25/05/2009	16/07/2009	Approved	52
2403/2009/OW	Water Infrastructure and Drainage Works (4 lots)	27/04/2009	19/06/2009	Approved	53
2784/2009/OW	Roadworks, Stormwater, Water Infrastructure, Sewerage Infrastructure, Earthworks, Drainage Works, Signage, Clearing Vegetation (91 lots) - The Springs Stage 1 - REFER ALSO TO 2784/09/OW/A AND 2784/09/OWB	13/05/2009	8/07/2009	Approved	56
3217/2009/OW	Stormwater, Drainage Works (new McDonald's Ipswich Restaurant and Drive-Thru) REFER ALSO TO 3217/09/OW/A (Landscaping)	29/05/2009	24/07/2009	Approved	56
3642/2009/OW	Roadworks (Road Widening - Concrete Batching Plant)	18/06/2009	17/08/2009	Approved	60
726/2009/OW	Roadworks, Landscaping, Internal Works	10/02/2009	15/04/2009	Cancelled	64
977/2009/OW	Internal Operational Works (proposed Concrete Plant)	23/02/2009	28/04/2009	Approved	64
201/2009/OW	Roadworks and Stormwater (Extension to St Peter Claver College)	13/01/2009	20/03/2009	Approved	66
3221/2009/OW	Roadworks, Sewerage Infrastructure, Water Infrastructure (2 lots)	29/05/2009	3/08/2009	Approved	66
1437/2009/OW	Drainage Works, Sewerage Infrastructure, Roadworks (2 lots)	17/03/2009	25/05/2009	Approved	69
1562/2009/OW	Earthworks, Design Review (Dual Occupancy)	24/03/2009	1/06/2009	Approved	69
2336/2009/OW	Drainage Works (2 lots)	23/04/2009	3/07/2009	Approved	71
2984/2009/OW	Design Review - Roadworks, Stormwater (church building and car parking) - Vietnamese Christian Church (Brisbane)	19/05/2009	4/08/2009	Approved	77
3940/2009/OW	Roadworks, Stormwater, Water Infrastructure, Sewerage Infrastructure, Landscaping, Earthworks, Drainage Works, Signage, Clearing Vegetation under the Planning Scheme (45 lots) - Ipswich Golf Course Redevelopment - Heritage Links Stage 3	30/06/2009	17/09/2009	Approved	79

Application Number	Description	Lodged Date	Decision Date	Decision	Approval Timeframe
2173/2009/OW/A	Landscaping - Ipswich Golf Course Redevelopment - Heritage Links Stage 2	29/05/2009	17/08/2009	Approved	80
2174/2009/OW	Sewerage, Drainage (2 lots)	17/04/2009	7/07/2009	Approved	81
1949/2009/OW	Roadworks, Stormwater, Water Infrastructure, Drainage Works, Earthworks, Sewerage Infrastructure and Landscaping (2 lots)	6/04/2009	1/07/2009	Approved	86
3196/2009/OW	Stormwater, Landscaping, External Works (Factory)	29/05/2009	25/08/2009	Approved	88
3218/2009/OW	Signage (Junction Road Frontage - Median Islands, Signs and Line Marking)	29/05/2009	25/08/2009	Approved	88
2916/2009/OW	Earthworks, Internal Carpark (associated with new industrial building)	18/05/2009	17/08/2009	Approved	91
1798/2009/OW	Design Review - Stormwater Drainage, Roadworks, Muti Units (34 units) - Stages 2A and 2B Melaleuca Drive, Brookwater - REFER ALSO TO 1798/09/OW/A	30/03/2009	3/07/2009	Approved	95
1798/2009/OW/A	Streetscaping and Public Open Space - Stages 2A and 2B Melaleuca Drive, Brookwater - REFER ALSO TO 1798/09/OW	9/06/2009	16/09/2009	Approved	99
2289/2009/OW	Design Review - Roadworks, Stormwater, Water Infrastructure, Sewerage Infrastructure, Landscaping, Earthworks and Drainage Works (Riverlink Medical Centre)	21/04/2009	30/07/2009	Approved	100
2749/2009/OW	Design Review (carpark extension) - Roadworks and Drainage Works	12/05/2009	24/08/2009	Approved	104
1579/2009/OW	Roadworks, Stormwater, Water Infrastructure, Drainage Works, Earthworks, Sewerage Infrastructure (21 lots) - Barclay Park Stage 1	24/03/2009	8/07/2009	Approved	106
729/2009/OW	Roadworks, Stormwater, Drainage works, Earthworks (Industrial Warehouse and Associated Hardstand area)	10/02/2009	29/05/2009	Approved	108
2173/2009/OW	Roadworks, Water, Sewerage (27 lots) - Ipswich Golf Course Redevelopment Stage 2	17/04/2009	4/08/2009	Approved	109
3303/2009/OW	Earthworks (Unilinks Village Apartments)	2/06/2009	23/09/2009	Approved	113
3130/2009/OW	Roadworks, Stormwater, Water Infrastructure, Sewerage Infrastructure, Earthworks & Signage (26 lots) - Augustine Heights Estate Stage 8	26/05/2009	22/09/2009	Approved	119
529/2009/OW	Roadworks, Drainage works and Sewerage Infrastructure (2 lots)	30/01/2009	5/06/2009	Withdrawn	126
2918/2009/OW	Design Review (carpark)	18/05/2009	22/09/2009	Approved	127
982/2009/OW	Roadworks, Stormwater, Earthworks	23/02/2009	17/08/2009	Approved	175
1076/2009/OW	Roadworks, Stormwater, Water Infrastructure, Sewerage Infrastructure, Earthworks, Drainage Works, Signage, Vegetation Clearing (29 lots) The Outlook Estate Stage 3	26/02/2009	2/09/2009	Approved	188
1073/2009/OW	Roadworks, Stormwater, Water Infrastructure, Sewerage Infrastructure, Earthworks, Drainage Works, Signage, Vegetation Clearing (25 lots) The Outlook Estate Stage 2	26/02/2009	3/09/2009	Approved	189
1075/2009/OW	Roadworks, Stormwater, Water Infrastructure, Sewerage Infrastructure, Earthworks, Drainage Works, Signage, Vegetation Clearing (29 lots) The Outlook Estate Stage 1	26/02/2009	4/09/2009	Approved	190
532/2009/OW	Roadworks, Drainage, Signage, Earthworks, Water & Sewerage (91 lots) - Fernbrooke Estate Stage 8	30/01/2009	24/09/2009	Approved	237

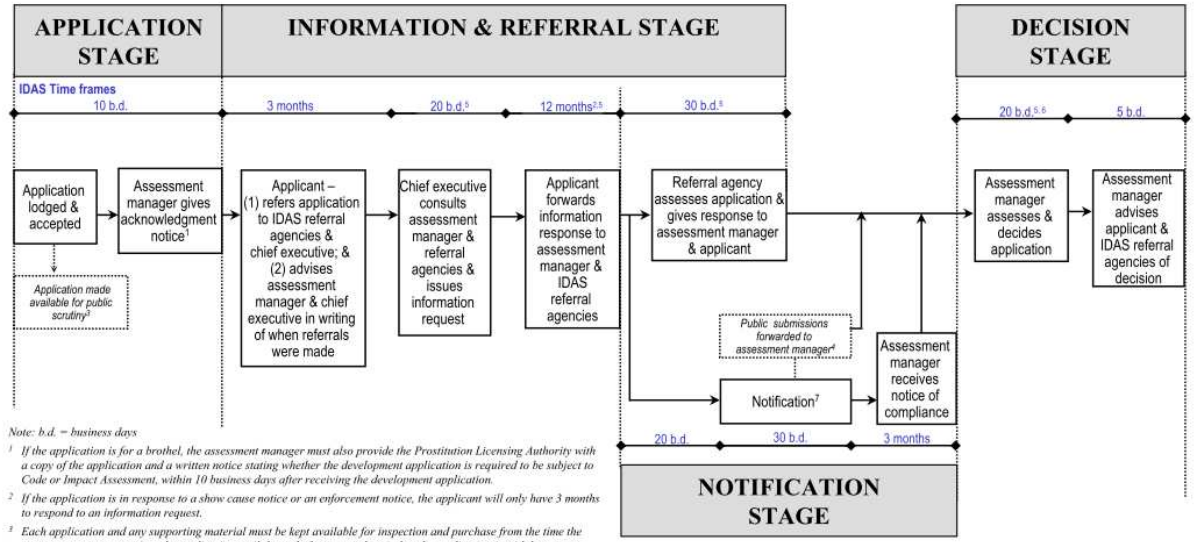
APPENDIX F

IDAS Timeframe Flowcharts

IDAS FLOWCHART 1

As at Tuesday 12 July, 2005

For an application involving – • Impact assessment • Referral coordination • IDAS Referral agencies • Information request issued



Note: b.d. = business days

[1] *If the application is for a brothel, the assessment manager must also provide the Prostitution Licensing Authority with a copy of the application and a written notice stating whether the development application is required to be subject to Code or Impact Assessment, within 10 business days after receiving the development application.*

[2] *If the application is in response to a show cause notice or an enforcement notice, the applicant will only have 3 months to respond to an information request.*

[3] *Each application and any supporting material must be kept available for inspection and purchase from the time the assessment manger receives the application until the end of any appeal period or the application is withdrawn or lapses.*

[4] *For a submission to be properly made (and attract 3rd party appeal rights) the submission must be received in writing on or before the last day of the notification period.*

[5] *This period may be extended.*

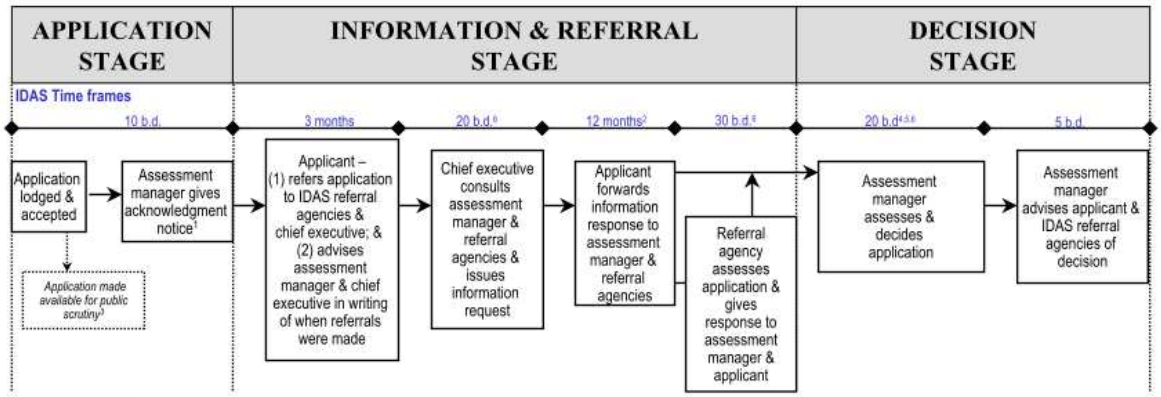
[6] *While the assessment manager may start **assessing** the application at any time, they may not **decide** the application during the first 10 business days after the day the decision making period commences, unless the applicant has given the assessment manager written notice that they do not intend to take action under Section 3.5.9 or 3.5.10.*

[7] *This period must not include business days between 20 December and 5 January of the following year.*

IDAS FLOWCHART 9

As at Tuesday 12 July, 2005

For an application involving – • Code assessment only • Referral coordination • IDAS referral agencies • Information request issued



Note: b.d. = business days

[1] *If the application is for a brothel, the assessment manager must also provide the Prostitution Licensing Authority with a copy of the application and a written notice stating whether the development application is required to be subject to Code or Impact Assessment, within 10 business days after receiving the development application.*

[2] *If the application is in response to a show cause notice or an enforcement notice, the applicant will only have 3 months to respond to an information request.*

[3] *Each application and any supporting material must be kept available for inspection and purchase from the time the assessment manger receives the application until the end of any appeal period or the application is withdrawn or lapses.*

[4] *While the assessment manager may start **assessing** the application at any time, they may not **decide** the application during the first 10 business days after the day the decision making period commences, unless the applicant has given the assessment manager written notice that they do not intend to take action under Section 3.5.9 or 3.5.10.*

[5] *An applicant may choose to stop the decision making process to make representations to a referral agency about the agency's response under Section 3.5.9 of the IPA. Alternatively, an applicant may choose to stop the decision making period to seek the Chief Executive's assistance under Section 3.5.10.*