

**University of Auckland  
& Landcare Research Ltd**

**LIUDD Research Programme**

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***Roadblocks in the land development process  
and the uptake of low impact urban design  
and development***

*March 2006*

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## **ACKNOWLEDGEMENTS**

Environmental Communications Ltd wishes to thank the following for the use of slides and for their willingness to be interviewed and offer suggestions:

- Auckland Regional Council
- Earl Shaver (ARC)
- Erosion Management Ltd
- Waiora Soil Conservation Ltd
- Environment BOP
- NIWA
- NZWERF
- Te Rūnanga o Ngāi Tahu
- Matthew Wallace and Daniel Williams, Wood and Partners
- Phil Rhodes and Howard Jury, Hopper Developments
- John Tik, Harrison Grierson
- Shane Hartley, Terra Nova
- Nick Lewis, Opus
- Nigel Mark-Brown, EBG
- Conway Stewart, EBG
- Judy McRae, EBG
- Alison Greenaway, Manaaki Whenua Landcare Research
- Viv Heslop, Vivacity Consulting

## **Section One The basis of this report**

This report is based on the presentation given by Clare Feeney of Environmental Communications in November 2004. Clare is part of the Low Impact Urban Design and Development (LIUDD) project and her presentation addressed the land development process with the specific aim of providing a critical path analysis from the developers' point of view, while also providing a general overview of the broader development context such as the regulatory structure and the key steps in the land development process from the regulators' viewpoint. Importantly the presentation addressed the 'the roadblocks' during the journey of land development. With such barriers limiting the uptake of LIUDD, the presentation also suggested possible ways forward with regard to overcoming those roadblocks.

## **Section Two Why this information is important**

The role of LIUDD is a vital one. LIUDD is capable of achieving development approaches that maintain the natural values of existing areas, minimise sediment runoff and impervious areas and allows urbanisation at varying densities.

This report addresses the roadblocks in the current land development process that limit the uptake of LIUDD and aims to act as a reference point to keep those of us working in the wider LIUDD project grounded in addressing how various roadblocks can be overcome while keeping in mind the practical realities of getting new ideas implemented.

## **Section Three The regulatory structure which shapes the land development process**

International, national, regional and district structures all influence land development processes. At the international level protocols, standards and agreements are instigated by groups such as the Organisation for Economic Co-operation and Development (OECD) and the United Nations Environmental Programme (UNEP).

Nationally the regulatory structure is governed by the Ministry for the Environment (MfE) including the Environmental Risk Management Authority (ERMA). Primary authorities and bodies that exist in relation to the MfE include the Parliamentary Commissioner for the Environment (PCE), the Environment Court, and Regional, City and District Councils.

Also present at the national level is legislation including the Resource Management Act (RMA), Local Government Act (LGA), and Building Act (BA) which exist in relation to various national standards, policies, orders and strategies that relate to land development in terms of urban design and biodiversity, including the Sustainable Development Programme of Action (SDPOA).

Regionally specific policy statements, coastal plans, iwi management plans and growth strategies also shape the land development process. Within particular regions various other plans come into force. In the Auckland area for example, the Auckland Regional Council (ARC) has a number of plans, rules, codes, standards and bylaws which impact on

land development including the Air Land and Water plan (ALW), Long Term Community Consultation Plans (LTCCPs), district plans and rules, catchment and asset management plans, engineering codes and utility connections standards, stormwater bylaws, and structure plans. Further along the chain is a variety of Department of Conservation (DOC), regional and territorial council resource consents and conditions that require compliance before any on-site operating procedures commence.

■ **The problem - too many documents**

Unsurprisingly, this mass of plans, strategies, codes and rules results in a high level of documentation. While documents at international and national levels are often too broad to be useful, documentation at the regional and district level can be contradictory. Further complications arise when new documentation is introduced without monitoring or evaluating the effectiveness of either previous or current documents. Changes and new requirements placed in statutory and non-statutory documents also place heavy burdens on councils and consent applicants. In this sense, developers do not start a new project with a clean slate, but with a complex and sometimes contradictory number of documents and issues to deal with.

## Section Four The journey to development - the developers' point of view

### ■ The process and the problems

The developer's journey is interlinked with other groups including regulators, financiers, utility organisations, iwi, legislators, policy makers and various community groups. The actual development process that the developer undertakes includes a number of steps, with particular steps in the land development process raising specific issues for developers. The table below outlines specific problems developers face during particular parts of the process. Following on from the table is a more detailed account of the land development journey, with further explanations of the problems developers encounter during the journey, following on from that.

**Table 1: Processes and Problems in the Land Development Journey for Developers**

The land development journey		The roadblocks
1. The land agreement		
2. Resource surveys		
3. Prepare concept plan/draft scheme plan		
4. Formally survey lots	▶	1. Too little communication
5. Development subdivision and lot servicing standards	▶ ▶	2. Lack of co-ordination 3. Lack of consistency
6. Scope utility requirements	▶ ▶	4. Infrastructure capacity lags behind growth 5. Inconsistent infrastructure policies
7. Resource consents and other permit applications	▶ ▶ ▶	6. Dealing with uncertainty in Assessment of Environment Effects (AEEs) 7. Timeframes and needlessly bureaucratic processes 8. Too hard to innovate
8. Bulk earthworks, site stabilisations, risk management	▶ ▶ ▶	9. Conflicting technical needs 10. Frustration 11. Sending the right signals
9. Install stormwater measures and mitigation	▶ ▶ ▶ ▶	12. Perverse outcomes 13. Ownership, operation and maintenance 14. Life-cycle and quadruple bottom line (QBL) cost-benefits 15. Equity
10. Build	▶ ▶	16. Enforcement on small sites 17. Links to new Building Code
11. On-site services	▶	18. Industry capacity
12. Sign-off		
13. Sale		

## ■ The land development journey for developers

### 1. The land agreement

Such agreements may be conditional on due diligence reports and other economic analysis. In some cases larger developers create land banks and buy land ten to twenty years or more in advance of development.

### 2. Resource surveys

Surveys often require the expertise of engineers and planners as well as ecological, geotechnical and roading specialists. Information may be needed in the areas of:

- topographical and key feature mapping
- geotechnical reports addressing soil types, slopes and stability
- landscape and hydrology surveys
- terrestrial and aquatic biodiversity reports
- archaeology surveys
- contamination reports

All these components affect and determine the feasibility of the development and expected returns.

### 3. Prepare concept plans/draft scheme plan

This is an iterative process involving first drafts, then further discussions with councils including:

- regional and district plan rules concerning reserves, stormwater requirements and Comprehensive Catchment Management Plans (CCMPs)
- council roading plans
- site opportunities and constraints

If a council has prepared a structure plan, it can take as long as ten years to get implemented into the district plan. Furthermore a council may not re-zone land in the district plan until they have money upfront from the developer, even though a structure plan may have been completed without reference to the economic viability of developing the land. While larger developers may be able to afford to be more innovative and roll out a development over twenty years, smaller developers or new entrants may be more likely to cut corners. Though developers view rules as necessary, clear and consistent rules are crucial. This underscores the importance of involvement between engineers and planners and a commitment to reviewing the catchment together in more detail, ideally with the involvement of developers.

### 4. Formally survey lots

This may require the consideration and inclusion of:

- shops and other services
- reserve areas and related financial contributions
- riparian and other stormwater management and mitigation areas

Surveys may highlight issues such as steep slope gradients that will cause problems with stormwater measures including swales, or demonstrate that existing or pre-planned paper roads will create difficulties in planning for good passive thermal efficiency in respect to the aspect and orientation of buildings.

## **5. Develop detailed subdivision and lot servicing standards**

Fundamental to the success of subdivision and lot servicing is the due consideration of a number of plans, rules, codes, standards and bylaws including:

- specific regional plans such the ARC air, land and water (ALW) plan
- detailed district plan rules
- catchment management plans
- asset management plans
- national standards
- local engineering codes
- local stormwater and other bylaws
- area specific design provisions (e.g. Long Bay)

Ideally, input from developers and contractors is sought during the creation of these provisions, to gain their perspectives and expertise in terms of the needs, risks and difficulties involved in changes in land use.

## **6. Scope utility requirements**

Utility requirements include water (supply, wastewater and stormwater), energy (electricity, gas, phone) and transport/access (regional roads, local roads, alternative access). Levels of service need to be decided, along with scoping of the connection standards, the mapping of the reticulation, quantity surveying of pipes and materials, and adherence to national standards.

## **7. Apply for resource consents and other permits**

Consents and permits require consideration of local district plans and legislation (e.g. the Local Government Act) and possible applications to territorial authorities in terms of zone changes, subdivision, and consents for land use, building, plumbing and drainage.

At the regional level, consent may be required under the RMA for bulk earthworks, stream works, stormwater and sewage. In coastal areas consultation with the Department of Conservation is also required in relation to the protection of coastal marine areas.

At various stages of the consent and permit applications, pre-consent meetings may be required, along with assessments of environmental effects (AEE), further consultation, greater time for the processing of the applications, Section 92 notifications for more information, Section 94 applications requiring public notification, the call for a council hearing, as well as further procedures should any of the decisions be appealed.

## **8. Bulk earthworks, site stabilisation and risk management**

Such activities include re-contouring to achieve level building platforms, the maximisation of lot yields, the suiting of lots to the topography and services, and the provision of lot density specified in the district plan. Retaining walls may be required, along with erosion and sediment control plans that may not only be part of the conditions of consent and require on-going monitoring, but also change as work progresses.

Many of the processes involved in this step require a strong understanding of diverse issues such as ecological science and the economics of stream restoration. If the piping of watercourses is undertaken, this requires the stream to be diverted while the watercourse area is reworked, dried, and then piped; all requiring significant amounts of expertise, time and financial resources.

## **9. Install stormwater measures and mitigation**

Stormwater measures require coherence between the Integrated Catchment Management Plan (ICMP), the district plan and the nature of the development. Fitting stormwater plans into the ICMP is a high priority task that ideally requires an ideal lead-in time of five years and underscores the importance of developers having a clear understanding of the wider planning context in relation to infrastructure and the nature of housing developments.

## **10. Build**

This part of the journey requires not only building consent but compliance during the building process. Co-ordination and education (particularly with the new Building Code) is required of builders and other trade professionals in terms of new measures relating to internal building, on-site and catchment measures and issues relating to the wider natural and built infrastructure, including planning around energy, water, biodiversity and transport.

## **11. On-site services**

As with the previous step, developers are dependent on the training, skill and co-ordination of trades professional with respect to getting on-site services correctly installed, connected and operating. The lack of industry capacity in terms of both trade professionals and compliance inspectors in recent times has resulted in considerable time delays during this step, leading to the postponement of sign-off dates.

## **12. Sign off**

During this stage a number of consents may require sign-off including building consents, plumbing and drainage consents and resource consents. Fees, bonds and other financial contributions are also made or returned at this stage. It is also possible for the sale of lots to proceed even though some work has yet to be completed (e.g. a missing street lamp or unfinished planting) with the retention of a bond from the developer.

## **13. Sale**

Though the final step in the land development journey for developers in many regards, the sale of property may also instigate a new set of responsibilities for developers in instances where collective regulations have been established in the development, to safeguard the ongoing maintenance and operation of collectively owned property (e.g. parks, roading, waste water treatment areas and stormwater measures) in the form of bodies corporate, incorporated societies or trusts. In these instances, the developer often remains involved and/or responsible for the set-up and running of such enterprises until all of the development is completely sold.

## ■ **Problems during the land development process for developers**

### **1. Too little communication**

Developers are often caught between regional and territorial council requirements. For instance regional council requirements regarding imperviousness may contradict local authority requirements concerning density, while divisions within local authorities may have conflicting requirements (e.g. geotechnical department provisions regarding water in soil versus stormwater department provisions regarding water out of soil).

### **2. Lack of co-ordination**

Lack of co-ordination may occur as a result of regional councils preparing Comprehensive Catchment Management Plans (CCMPs) and issuing comprehensive stormwater discharge consents, when territorial councils may not be able to keep up with them. Alternatively there may not be enough resources for regional councils and territorial councils to prepare CCMPs. Long planning lead times are essential and need to include credible land development engineering input that takes into account the developers and contractors perspective.

### **3. Lack of consistency**

While district plans promote LIUDD, engineering codes often prevent LIUDD. Though some Territorial Local Authorities (TLAs) are becoming more interested in LIUDD and requiring low impact measures, no detailed designs are provided, meaning the developer bears the risk on a case by case basis. In this sense there is LIUDD buy-in but insufficient technical and economical proof that such methods will work. This risks future buy-in by pushing too hard too soon before sufficient technical and design knowledge has been provided.

### **4. Infrastructure provision/capacity lags behind growth**

Though the TLA usually provides reticulated services and major roads, if growth is ahead of services, these are sometimes provided by the developer. However infrastructure contributions required from developers by the TLA can become problematic. A requirement for \$16,000 from the Rodney District Council (RDC) in 1992 has resulted in a ten-year court battle while in Coromandel a \$25,000 infrastructure contribution required from a developer is currently under negotiation

### **5. Inconsistent infrastructure funding policies**

While TLA's are answerable with respect to the general competence for infrastructure funding, under the RMA (as was the only option in the past) the funding required by the TLAs can be appealed. However under the LGA (a more recent provision) any appeal to

the High Court regarded regarding funding can only be contested on points of law (e.g. process or technical issues).

## **6. Dealing with uncertainty in Assessment of Environmental Effects (AEEs)**

Developers experience a lack of clarity from councils regarding the various on-ground issues that need to be dealt with and knowledge around the difficulties of managing the cumulative effects. Added to this, developers perceive a lack of confidence in council staff, including young staff with little experienced supervision. Compounding the problem can be the drip-feeding requests for information from councils, instead of just one section 92 to the developer. Developers also find that councils take an overly long time to send out section 94 letters, and often err too far on the side of caution in notifying consents when it is not justified; rather than just getting to yes – or no – QUICKLY!

## **7. Timeframes and needlessly bureaucratic processes**

Related to a number of the problems raised above, timeframes are further stretched out with consecutive rather than concurrent scrutiny of applications by different council departments, conflicting requirements by different departments or staff in the same department and staff turnover that can lead to new requirements from new staff.

## **8. Too hard to innovate**

As a result of district plans that often leave too little discretion to let a good innovative development 'get around the rules' developers become risk averse and build conventional developments even when they want to do better. With alternative ideas incurring cost penalties and the requirement for further expert evidence that results in time delays with closer scrutiny by council and external consultants, developers resort to taking the path of least resistance. The major impact of time delays, resulting in increased costs, time value of money and opportunity cost is a major road block which is insufficiently taken into account in the consent administration process.

## **9. Conflicting technical needs**

One of the main issues lies with the geotechnical need to prevent water getting in or under roading and into the basecourse, thereby destabilising the roading foundation. Running in opposition to this need are LIUDD practices that can have stormwater channelled or partially absorbed in areas that are very close to roading. The tension and conflict created by geotechnical requirements versus those of LIUDD are considerable and should not be underestimated.

## **10. Frustration**

Though the contractor's price for a project is locked into the tender contract, suppliers are unable to hold their prices for more than one month, and delays may result in as many as six price-rises before a project is given approval. In these instances the contractor bears the extra cost and in frustration developers will sometimes start work without all their

resource consents as they may already be losing \$2,000 a day in costs. Despite receiving abatement notices it can still be cheaper and quicker for the developer to continue with the on-site operations.

### **11. Sending the right signals**

Developers are encouraged by clear and straightforward scoring and indicator systems, industry-wide standards and a level playing field. In this sense the ARC scoring system for earthwork standards has had successful outcomes in terms of sending clear and straightforward signals. The system includes a score of 1 to 4 given for the aspects of planning, construction and maintenance of an earthworks project. The implementation of the scoring system has resulted in immediate improvement in performance due to the simplicity and straightforward nature of the scoring system. The use of a similar scoring system for design measures and other LIUDD issues is worth consideration.

### **12. Perverse outcomes**

Developers view LIUDD as a disincentive when they are required to contribute \$3500 per lot (Dannemora/Flatbush) for LIUDD measures (though it should be noted there are savings in infrastructure costs if there are fewer and smaller stormwater pipes, narrower roads and reduced impervious paving).

### **13. Ownership, operation and maintenance**

Though the ARC promotes the use of on-site stormwater management, there is reluctance by TLAs to permit on-site stormwater devices because of risks due to the lack of information on options for ongoing operation and maintenance (O&M) and a lack of consistent and comparable data in relation to the monitoring of costs. Another inconsistency lies in the ALW plan (ARC) that opposes the piping of perennial streams, though the maintenance of such streams in terms of weed clearance, erosion control, and debris and refuse clearance is seldom budgeted for. In other words maintenance costs become a cost to the developer/council or land owner rather than an externalised cost born by the environment.

### **14. Life cycle and quadruple bottom line (QBL) cost-benefits**

Developers view LIUDD as being 'put out of business' when a council demands up front payment of full life cycle costs of \$160,000 for a comprehensive detention system (CDS), with no transparent policy development process or contestability. Other cost-benefits rely on a 'horses for courses' approach - is a rain tank and garden on every site better than one big pond at the bottom? In some instances councils would rather have a large pond that can be monitored rather than individual systems on individual sites that may not be managed or maintained by future owners.

## **15. Equity**

If servicing is not carefully planned, landowners lose development opportunities because of where their land is situated. John Tik of Harrison Grierson argues that a more equitable situation would be to:

- ii. plan the natural and built stormwater infrastructure for the whole catchment and value those built and natural assets
- iii. estimate the market value of the average lot plus assets
- iv. pay land owners that value for the lots that can't be developed because they house the infrastructure that enables the rest of the catchment to develop

## **16. Enforcement on small sites**

In Sydney a local contractor charges \$6/metre to install, maintain and remove silt fencing on individual building sites – a similar set up in NZ would benefit both councils and developers, yet no market exists for such an opportunity because of the lack of enforcement on small sites.

## **17. Links to new Building Code**

The issue of how to co-ordinate internal building, on-site and catchment measures with wider natural and built infrastructure planning (water, energy, biodiversity, transport) means that builders and other trade professionals require regular education and updates regarding new materials.

## **18. Capacity and numbers**

A severe lack of industry capacity for both trades-people and council staff adds to existing delays. In mid-2004 one council had five compliance and monitoring vacancies and recently one developer was seeking to bring 85 tradesmen from China.

## **Concluding comments**

The above points have detailed firstly the process and then the problems of the land development journey that developers encounter during their land development journey. It is apparent that developers encounter a number of stumbling blocks during this journey. While later sections return to further discussion around these barriers, the immediate section that follows outlines the process and problems in the land development journey from the regulators' viewpoint.

## Section Five The regulators' point of view

### ■ The process and the problems

As with developers, regulators face a number of difficulties when it comes to the process of land development. The pressure for development has resulted in lengthy, expensive planning processes and soaring land values. There has been increasing pressure on infill and greenfield development and brownfield redevelopment compounded by demographic change, a lack of protection for productive soils or economic units, reversed sensitivity in rural areas and a loss of rural services for farms. Added to this is the complexity of the frameworks in which regulators operate. The following table outlines particular issues of importance for regulators in the land development process. These issues are discussed in further detail after the table.

**Table 3: Processes and Problems in the Land Development Journey for Regulators**

The land development journey for developers	The land development journey for regulators		The roadblocks for regulators
1. The land agreement	1. District Plan issues	▶	1. The framework
2. Resource surveys	2. Preparation of structure plans	▶	2. No logical links or flow
3. Prepare concept plan/draft scheme plan	3. Regulations	▶	3. Keeping on top it all
4. Formally survey lots		▶	4. Co-ordination
5. Development subdivision and lot servicing standards		▶	5. Information
6. Scope utility requirements	4. Process consent applications	▶	6. Internal co-ordination
7. Resource consents and other permit applications		▶	7. External co-ordination
8. Bulk earthworks, site stabilisations, risk management	5. Compliance, monitoring and enforcement	▶	8. Maintaining monitoring
9. Install stormwater measures and mitigation		▶	9. Too much change
10. Build		▶	10. Inadequate documentation by applicants
11. On-site services		▶	11. Professional capacity
12. Sign-off			
13. Sale			

## ■ The land development journey for regulators

### 1. District Plan issues

The wider context of the district plan involves consideration of the resources in the area that need to be managed and the objective, policies and methods that will be used to carry this out, along with sufficient reasoning and explanation that supports such actions. In terms of specific land development issues, regulators are required to take into account such issues as cross boundary development, anticipated environmental results and what procedures will be used to monitor the efficiency and effectiveness of policies, rules and methods.

### 2. Preparation of structure plans

As noted in the previous section, structure plans can take as long as ten years to be implemented into the district plan. Previously, structure plans have been completed with little public engagement or reference to issues concerning the economic feasibility of developing the land. Current discussions have raised the suggestion that there is a need for more external and transparent debate between councils, land owners, developers and the public in relation to structure plans, and that such a move would achieve better outcomes for all stakeholders.

### 3. Regulations

One way of looking at the development process in terms of the regulative framework is to view it in three time phases. The first phase (pre-RMA) was prior to 1991 when the key regulations were the Town and Country Planning Act and the Water and Soil Conservation Act along with the Resource Management Act. The second phase (RMA phase), which we are currently in, was billed as the one-stop shop in terms of the RMA being the key piece of regulation. In this phase we find we are still coming to grips with the RMA and discovering that the proliferation of documents and processes makes life difficult for developers, regulators and the community. Phase three requires the integration of the procedures and processes that we have under the RMA, in a way that allows the development process to deliver better outcomes in a more cost effective way. It's important to keep in the mind the considerable changes that have occurred over this time period; for instance under the Town & Country Planning Act, the vast majority of applications were not publicly notified. In comparison, after the instigation of the RMA we have witnessed double the amount of public involvement and a considerable amount of social and cultural change within New Zealand society, whereby there are greater expectations from the public that their views and opinions will be considered. These changes have affected the way in which the RMA has been implemented and have impacted significantly on the role of regulators.

#### **4. Process consent applications**

Processing consent applications involves not only knowledge on a micro-level, but requires an understanding of the macro-level and bigger picture. In this sense, for council staff to being able make decisions on consent applications, they require support and protection by senior managers and politicians. This relates to the need for council unity rather than a litigious environment where staff are not backed up in making decisions, become increasingly cautious and risk-adverse and send increasing amounts of Section 92 letters requesting more information from developers.

#### **5. Compliance, monitoring and enforcement**

The new building code is an example of the increasing responsibility place on regulators in terms of compliance, monitoring and enforcement. Such initiatives require significant lead times (the Ministry of Economic Development suggested five years), increased resources and the upgrading of skills for effective implementation. Issues of governance and the systematic integration of documentation are critical for the effective implementation and performance of both the processing and monitoring duties required of regulators.

■ **Problems in the land development journey for regulators**

**1. The framework**

The following table outlines the framework in which regulators operate and details the number of regulations, agencies, stakeholders and initiatives that regulators are required to consider.

**Table 2: Frameworks in which regulators operate**

Lots of regulations	Multiple agencies	Other stakeholders	Sustainability initiatives
<ul style="list-style-type: none"> <li>• Resource Management Act</li> <li>• Building Act</li> <li>• Local Government Act</li> <li>• Land Transport Management Act</li> <li>• Public Health Act</li> <li>• Regional and district plans</li> <li>• Engineering guidelines</li> </ul>	<ul style="list-style-type: none"> <li>• Ministry for the Environment</li> <li>• Department of Internal Affairs</li> <li>• Ministry of Economic Development</li> <li>• Energy Efficiency and Conservation Agency</li> <li>• Building Industry Authority</li> <li>• Regional councils</li> <li>• Territorial local authorities</li> </ul>	<ul style="list-style-type: none"> <li>• Communities</li> <li>• Developers</li> <li>• Maori</li> <li>• Consumers</li> <li>• BRANZ</li> <li>• REBRI</li> <li>• NZWWA</li> <li>• Land owners</li> <li>• and many more</li> </ul>	<ul style="list-style-type: none"> <li>• 19 national environmental strategies</li> <li>• 8 environmental legislation reviews</li> <li>• 6 national economic strategies</li> <li>• 5 national social strategies</li> <li>• Sustainable Development Programme of Action</li> <li>• Building Act review</li> <li>• New Building Code</li> <li>• Infrastructure stocktake</li> <li>• LTCCPs, water and sanitary assessments</li> <li>• LGA infrastructure policies</li> <li>• Urban design protocol</li> </ul>

**2. No logical links or flows**

As was evident from findings from the Planning Under Co-operative Mandates programme (PUCM), a weak logical flow exists between issues and documents.

The PUCM findings argued that an improved flow is dependent on better links as follows:

**The issues**

- Objectives and selection of indicators
- Policies and explanations
- Methods and reasons (plans, rules, consents, financial tools, education etc)
- Anticipated environmental results
- Verification of indicators
- Monitoring of efficiency and effectiveness of policies, rules, other methods and adverse environmental risk (AER) outcomes

**and consistency between**

- long term council/community consultations plans (LTCCPs)
- 10-year financial plans
- annual plans and reports
- regional plans
- district plans
- catchment management or integrated network management plans
- asset management plans
- national stormwater standards
- local engineering codes of practice
- local stormwater bylaws
- other provisions (e.g. Long Bay design provisions)
- water and sanitary assessments
- iwi management plans

**3. Keeping on top of it all**

As well as juggling the multiple frameworks and lack of logical flow or links, regulators face increasing demands from government, without increased resources to implement the demands, as well as little sharing of resources, costs and expertise between councils. Regulators also need to bear in mind that local government has political and technical arms, and that particular political groupings compete for council control. Added to this mix are councillors who reflect the mood of the community, meaning that if people think LIUDD is a good thing then so will their elected representatives

**4. Co-ordination:**

Related to the issues already listed, is the issue of poor co-ordination that regulators face in relation to structure plans and related regulations. This results in a lack of integration of the main instruments such as water and sanitary service assessments, asset and catchment management plans, geographical information systems (GIS), land information memoranda (LIM), rating databases, network consent applications, indicators etc.

**5. Information:**

The problems faced under the point above (Co-ordination) are further compounded when there is a failure to record what is known or failure to apply what is already known, or uncertainty with what is not known. Overland paths provide such an example. Though an integral part of the stormwater system, with floodplains, streams, and other natural assets, they are seldom provided for, even in new developments, or

mapped in catchment or asset management plans, GIS or LIM. This is hindered further by the reluctance by land owners for councils to record on LIM risks such as overland flow paths, 50 year floodplains, coastal inundation or erosion, land instability and contaminated soil.

## **6. Internal co-ordination:**

In terms of processing consent applications regulators face the issues of poor communication between planners and engineers. Function rather than resource-based administration also adds tension in terms of policy versus consent versus compliance issues, planning versus engineering versus roading versus reserve outcomes, and air versus water versus soil benefits.

## **7. External co-ordination:**

As mentioned in the previous section the ARC scoring system for earthworks standards resulted in an immediate improvement in performance because simple and easy to understand. This raises the question of what other incentives might improve matters. Also mentioned in the previous section was the example of Transit NZ and their incentive system of valuing environmental performance up to 10% of the project value (meaning a bid of \$8 million or more on an \$80 million project could be awarded, based on 'non-price' attributes) thereby valuing environment risk more than construction risk.

Further issues of external co-ordination relate to questions are what economic information councils need, who would be persuaded by economic arguments in the council and at what point? With infrastructure and staff resourcing costs increasingly important to councils, along with operation and maintenance costs, and risk reduction (eg. reducing liability in terms of flooding and pollution) it is important to source and co-ordinate what infrastructure managers and strategic planners need to know and at what point, in order for them to be informed ahead of providing infrastructure.

## **8. Maintaining monitoring**

With shortages in staff and skills in the area of compliance, monitoring and enforcement, regulators face increased instances of sub-standard workmanship, overcrowding of buildings, houses being built up against boundaries, excavations undertaken immediately next to boundaries, retaining wall faults, drainage problems, flooding, unauthorised building, and sewage overflows and dodgy construction work.

## **9. Too much change**

Changes to documents as a result of new requirements become a major burden, especially in short timeframes. The overview below of the Local Government (Auckland) Amendment gives an indication of the numerous changes required in documents due to new requirements and the workload this places on regulators.

## **Local Government (Auckland) Amendment Act 2004**

The Act gives effect to the government's transport governance, regulatory and funding proposals for Auckland and establishes two new entities as subsidiaries of the ARC; the Auckland Regional Transport Authority (ARTA) and Auckland Regional Holdings (ARH). While ARTA will plan, fund and develop Auckland transport infrastructure with Transfund and Transit, ARH will manage assets and investments on behalf of the Auckland Regional Council, initially including those assets that are transferred from Infrastructure Auckland.

Section 38ff of the Act is intended to give greater status to the intent of the Auckland Regional Growth Strategy (ARGS), while section 39 states that each Auckland local authority must, by 31 March 2006, prepare and publicly notify proposed land transport and land use changes to its Auckland planning documents.

In turn, schedule 5 of the Act aims to create more certainty in assessing resource consents, designations, and plan changes related to transport and urban form, improved alignment of transport and land use patterns to achieve sustainability, efficiency and liveability and integrated transport management.

[www.dia.govt.nz/diawebsite.nsf/Files/auckland/\\$file/auckland.pdf](http://www.dia.govt.nz/diawebsite.nsf/Files/auckland/$file/auckland.pdf)

### **10. Inadequate documentation by applicants**

Some applicants come forward with the bare minimum of documentation, or less, and expect action on it. In response, regulators are obliged to knock the application back by seeking more information to bring it up to the basic standard required.

### **11. Professional capacity**

For more than a decade councils have been experiencing a lack of an appropriate skill base that is able to deal with complex situations, together with few or no experienced mentors for staff to refer to. In this regard it appears that greater attention needs to be paid to retaining planning and engineering staff. While it's apparent that New Zealand is experiencing a skills shortage, it is also possible that an increased focus on providing career paths for such staff would lessen the problems related to high staff turnover.

### **Concluding comments**

This section has outlined the processes and problems in the land development journey from the regulators' viewpoint. It is apparent that the fragmented framework that regulators operate in, combined with the pressure for land to be developed, the rate at which change is occurring and the various downfalls in the land development process lead to poor results in terms of links, flow, co-ordination, information, internal and external co-ordination, and maintenance. The following section summarise these issues in the form of roadblocks that limit LIUDD during the land development process.

## **Section Six    Barriers that impact on the uptake of LIUDD**

This section synthesises the barriers put forward in the previous sections, and lists in summarised form the roadblocks that limit LIUDD and the land development journey.

### **1. Regulation**

- Engineering codes not conducive to a LIUDD approach
- Technical code barriers
- Structural/mindset barriers of officials
- Constraints on officials' resources
- Non-acceptance of LIUDD approaches
- Insufficient technical/professional education
- Inertia

### **2. Information gaps**

- Insufficient information on performance
- A large amount information on the technical and economic issues of LIUDD exists, but:
  - more is needed
  - and it needs to be better collated and communicated
- Even cost-effective techniques may be unattractive if there are risks and costs in adopting them
- Councils have difficulty attracting experienced staff and consultants
- Councils formerly were able to use their own experience as developers (e.g. Freemans Bay group housing), but now just assess other developers' work.

### **3. Specific LIUDD stormwater barriers**

- Thinking there isn't a problem
- Applying LIUDD in a piecemeal fashion
- Price/cost concerns isolated from benefits
- Regulatory and institutional inertia
- Practices not widely accepted
- Lack of local technical and hydrological data
- No holistic overview to make the compelling case for change
- Disconnected thinking
- Conflicting stakeholder needs and threat of litigation (developers/regulators)
- Price concerns, planning, institutional impediments
- Lack of locally based design, engineering, ecological, technical and economic data
- Conventional approaches to profit maximisation and lack of cost-benefit data on alternatives
- Lack of environmental, economic, social data to influence plans, practice and policy

## Section Seven            Pause for reflection

### 1. New Zealanders

- How to get them to see LIUDD is a good thing?
- Prove that it costs less money?
- Make it simpler?
- Incentives?

### 2. Regulation

- The RMA has meant the multiplicity and complexity of the Town and Country Planning, and Water and Soil Conservation Acts have done been piled into one Act
- What happened to the 'one stop shop' that the RMA was meant to be?
- And is it realistic to streamline?

### 3. Capacity building

- What is our focus – share learning across organisations and between them or target specific groups?
- How do different groups of people learn (council staff, developers, community groups, contractors)?
- How are skilled people attracted and retained?
- If the issue is capacity, how does a research programme meet those needs?

### 4. Getting from here to there...

- **Consultation** – who needs to be involved from the start? (stakeholder buy-in) – without all groups being more aware of the issues and benefits, the other strands are meaningless
- **Need** – do we need an urban sustainability indicator/accreditation system? And what are the drivers, costs and benefits?
- **Components** – what other information do we need to calibrate supporting standards, guidelines, criteria and specifications?
- **Feasibility** – what key regulations, processes and perceptions need to change to enable more sustainable urban development?

- **Implementation** – what are the key steps on the path to implementation?
- **Monitoring and evaluation** – how do we measure the uptake of new systems and their effectiveness at reaching identified objectives?

#### 5. Research implications

- If this is how urban development operates - how does the work we are doing align with this?
- How do these ideas and your research programme relate to:
  - Each other?
  - Other research programmes?
  - Other research needs or opportunities?
- What does this mean for the way the research is already focussed?
- What are the major gaps we should be addressing?
- Are we putting the most effort into the most important points?

#### AND IMPORTANTLY

What will the LIUDD programme findings look like from the point of view of councils, contractors, developers, financial institutions, consumers and end users?

## **Section Eight            Options for overcoming the roadblocks**

### **1. Addressing what needs to change**

- Driving documents (plans, rules, consents)
- Processes and procedures
- Staffing and resourcing (policy, consents and compliance)
- Education and training – political, technical, community

### **2. Where to after that:?**

- Skills and capacity building
  - Long lead times (3 – 5 years for building code changes)
  - Recruitment, pay, induction, staff turnover, retention in councils
  - Working with supply chains to provide new measures
- Sharing of good information and best practice
- Continual improvement of environmental management programmes
- Measurable progress towards sustainability

### **3. Capacity building**

- Recognising needs are right across the wider development sector including the public and commercial sectors and institutional, staff, training, organisational levels
- National Taskforce and Best Management Practice - identify best practice and help the transition to occur in the most cost-effective way

## **AND IMPORTANTLY**

Identifying specific needs -  
developers, builders, contractors don't want to read academic reports –  
they want a list of what can and can't be done

#### 4. Remembering the big picture

- Evaluating costs and benefits in economic, environmental and social terms:

<ul style="list-style-type: none"> <li>• Biodiversity</li> <li>• Neighbourhood amenity</li> <li>• Natural water</li> <li>• Stormwater</li> <li>• Water supply</li> <li>• Wastewater</li> <li>• Materials</li> </ul>	<ul style="list-style-type: none"> <li>• Energy</li> <li>• Waste minimisation</li> <li>• Social dimension</li> <li>• Multi-mode transport including walking</li> <li>• Indoor amenity</li> <li>• Health</li> </ul>
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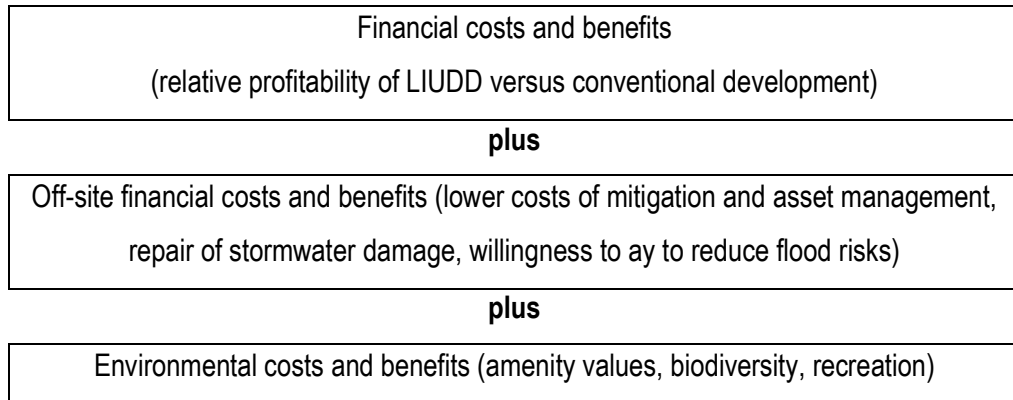
#### 5. Effecting the shift from:

Current	► LUIDD
<ul style="list-style-type: none"> <li>• Sprawl</li> <li>• Pollution</li> <li>• Stakeholder conflicts</li> <li>• Inconsistency</li> <li>• Institutional impediments</li> <li>• Conventional thinking</li> </ul>	<ul style="list-style-type: none"> <li>• Aesthetically pleasing housing with low energy</li> <li>• Waste and on-site management</li> <li>• Consistency in planning codes</li> <li>• Decentralised infrastructure/self-sufficiency</li> <li>• Policy, codes, incentives that work to encourage uptake</li> <li>• Joined-up thinking</li> </ul>

#### 6. Thinking about:

1. Decoupling economic viability from success
2. Changing values
3. Assessing the need for a lifecycle approach
4. Moving up the hierarchy

## 7. Recognising the total value of LIUDD

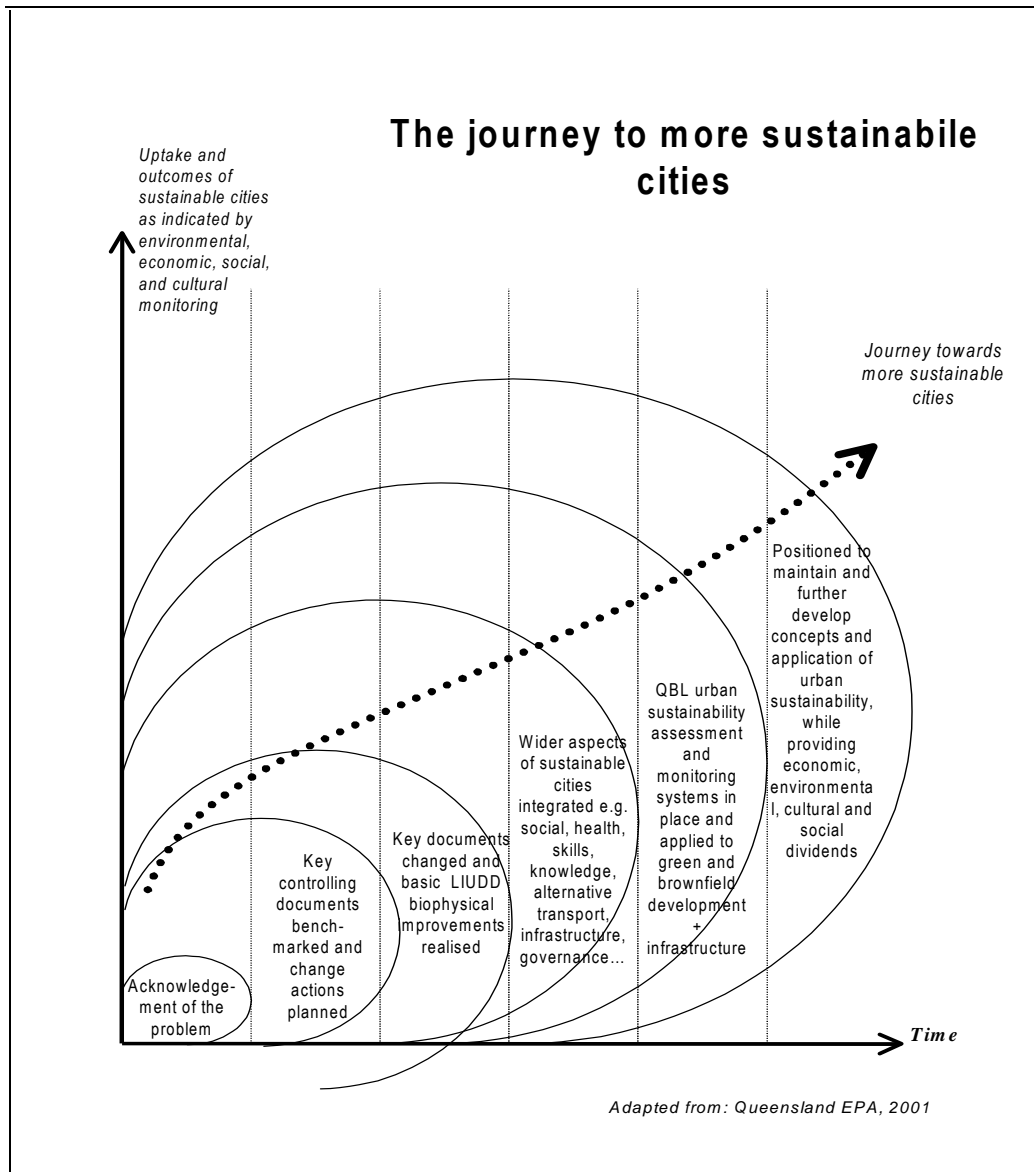


## 8. Tangible incentives and instruments for change

Reducing the relative costs of LIUDD versus conventional practices through credits, levies and charges to reflect external costs:

Menzies 2001 (US)	Portland City charges property owners for stormwater management services but provides 100% discount for LIUDD features
Local Government Rating Act 2002 (NZ)	Allows for levies on impervious surface areas through local rating
City of Seattle 2000 (US)	Incentive programme offering financial assistance to projects incorporating sustainable building goals and committed to gaining LEED™ certification
Bow River Basin Council 2002 (Canada)	Public education to increase willingness to pay
Thurston et al 2002 (US)	Stormwater credit rating

## 9. Understanding sustainability as a journey rather than a destination



Note: while businesses may be focusing on destination four or five, they will always be dealing with compliance issues, collecting data and working on achieving greater efficiencies

## 10. Keeping in mind how we are going to do it, e.g.

1. ⇒ getting buy-in
2. ⇒ demonstrating technical and ecological efficiency
3. ⇒ translating into financial terms at different scales
4. ⇒ rationalising plans and codes of practice

### **11. Addressing urban sustainability at all levels**

- regional and district plans, subdivision and building codes, RMA and LGA requirements, developer and community groups
- examining the economics of conventional versus low impact design
- measuring environmental performance of LIUDD at the development site and catchment scale
- underpinned by science: understanding source of entry, distribution, effects of stormwater sediment and pollution

### **12. Look to working examples – TRANSIT NZ**

- Leading the way in earthworks standards for major roading developments
- Innovative contractual standards: non-price attributes are an incentive for improved performance
- Trickle-down effect on earthworks standards for residential developments
- Trickle-down for other aspects?

### **13. And most importantly**

**KEEP GROUNDED**

*firstly* in the practical realities of getting new ideas implemented  
and  
*secondly* through addressing these realities in the LIUDD project