

**QFCI**

Date: 25/10/11 *jm*

Exhibit Number: 869

## Statement of Maxwell Francis Winders

I, **Maxwell Francis Winders**, Managing Director of Max Winders & Associates Pty Ltd trading as MWA Environmental, of Level 15, 241 Adelaide Street, Brisbane, in the State of Queensland, state on oath as follows:

1. Attachment "MFW-01" is a copy of a notice from the Commission of the Queensland Floods Commission of Inquiry (**Commission**) dated 28 September 2011 requiring me to provide certain information to the Commission in the form of a Statement (**Notice**). This Statement is provided in response to the Notice.
2. For the purposes of responding to the Notice and preparing this Statement I have, in my position as Managing Director of Max Winders & Associates Pty Ltd trading as MWA Environmental (**MWA**), had access to the business records of MWA to obtain information to provide a response to the Notice. Unless otherwise stated, the matters set out in this Statement are based on my own knowledge and the information derived from the above sources.

### Qualifications and Background

3. My qualifications include a Bachelor of Mechanical Engineering (Honours), from the University of Queensland (1961).
4. I hold the following memberships:
  - (a) Fellow of the Institution of Engineers;
  - (b) Chartered Professional Engineer; and
  - (c) Registered Professional Engineer of Queensland.
5. I have been a qualified as an Engineer for fifty (50) years. My expertise is predominantly in the areas of:
  - (a) Environmental Impact Assessment;
  - (b) Environmental Management;
  - (c) Flooding and Tidal Hydraulics;
  - (d) Coastal Ecosystems;

  
**Maxwell Francis Winders**

  
**Witness**

- (e) Environmental Acoustics; and
  - (f) Intensive animal Husbandry and Aquaculture.
6. Attachment "MFW-02" is a copy of my Curriculum Vitae and a list of experience relevant to this Statement.
7. In 1987 I founded Max Winders & Associates Pty Ltd. In my capacity as Managing Director, I have directed projects and matters concerning areas such as:
- (i) environmental management
  - (ii) flooding and tidal hydraulics; and
  - (iii) water quality.

**Response to the Notice**

1. His findings pursuant to his commission by the Brisbane City Council to assess the backflow flooding experienced in the January 2011 flood and identify the feasibility of installing backflow prevention measures, including producing a copy of any report he has prepared in this regard.

8. MWA was commissioned by the Brisbane City Council (BCC) to prepare a Prefeasibility Study in response to a recommendation made by the BCC Flood Response Review Board report dated 24 May 2011 that:

*"Council investigate the feasibility of the installation of devices to prevent backflow from river flooding in locations such as in parts of the Central Business District (CBD) and in high rise buildings which would not have been flooded otherwise, where all those potentially affected by backflow flooding have responsibility for oversight of the maintenance of the device in working order; and*

*No backflow prevention device should be incorporated into the stormwater network system unless a complete risk based flood management analysis has confirmed that this is the best option."*

9. Attachment "MFW-03" is a copy of Minor Short Form Agreement dated 23 June 2011 which contains the scope of works for the Pre-feasibility Study, which comprised of two part:

Maxwell Francis Winders

Witness

(a) Investigation 1 - Brisbane river Review

Investigate areas along the Brisbane River (within Brisbane City Council's Local Government Area) affected by the January 2011 river flood (including river tidal affects) to identify and prioritise locations where the application of backflow prevention measures may warrant further detailed investigations; and

(b) Investigation 2 - Three case study areas

Concurrently with 1 above, investigate three case study locations, being Central Business District, Rosalie/Milton and New Farm, to determine whether the installation of backflow prevention measures might prevent river flooding and provide implementation options for each area. The investigation would include the assessment of risks, issues and opportunities associated with backflow prevention measures in the three case study areas. The investigation would include the assessment of whether they would have unacceptable impacts during other possible types of flood events and also consider maintenance requirements and cost/benefit analysis.

10. On 4 October 2011, MWA provided a Report to BCC titled "Brisbane Backflow Prevention Measures Investigation - Pre-Feasibility Study" (**MWA Report**) which contains my findings in relation to Investigations 1 and 2 as set out in paragraph 9 above. Attachment "**MFW-04**" is a true and correct copy of the MWA Report.

2.	<b>If he disagrees with any aspect of the report prepared by Dr Trevor Johnson of Cardno, titled Queensland Floods 2011 Stormwater Backflow, job number J11058, the aspect/s with which he disagrees and why he disagrees with same.</b>
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11. I have reviewed the report prepared by Dr Trevor Johnson of Cardno (Qld) Pty Ltd, titled "Queensland Floods 2011 Stormwater Backflow, Job Number J11058" dated 21 September 2011 (**the Johnson Report**). A copy of the Johnson Report is attached to the Notice which appears at annexure "**MFW-01**".

12. Attachment "**MFW-05**" is a copy of a summary of comments I have prepared on the Johnson Report.

I make this statement conscientiously believing the same to be true, and by virtue of the provisions of the Oaths Act 1987 (Qld).

  
Maxwell Francis Winders

  
Witness

**Dated 5 October 2011**

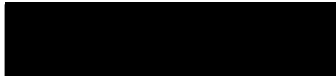
**Signed and declared by Maxwell Francis**

Winders at

in the State of Queensland

this 5th day of October 2011

Before me:



\_\_\_\_\_  
Signature of person before whom the declaration is  
made



\_\_\_\_\_  
Signature of declarant



\_\_\_\_\_  
Full name and qualification of person before whom the  
declaration is made

Our ref: 1736776

28 September 2011

Max Winders  
MWA Environmental Consultants  
Level 15/241 Adelaide St  
BRISBANE 4000

#### REQUIREMENT TO PROVIDE STATEMENT TO COMMISSION OF INQUIRY

I, Justice Catherine E Holmes, Commissioner of Inquiry, pursuant to section 5(1)(d) of the *Commissions of Inquiry Act 1950* (Qld), require Max Winders to provide a written statement, under oath or affirmation, to the Queensland Floods Commission of Inquiry, in which the said Max Winders gives an account of:

1. His findings pursuant to his commission by the Brisbane City Council to assess the backflow flooding experienced in the January 2011 flood and identify the feasibility of installing backflow prevention measures, including producing a copy of any report he has prepared in this regard; and
2. If he disagrees with any aspect of the report prepared by Dr Trevor Johnson of Cardno, titled Queensland Floods 2011 Stormwater Backflow, job number J11058 (report attached), the aspect/s with which he disagrees and why he disagrees with same.

In addressing these matters, Max Winders is to:

- provide all information in his possession and identify the source or sources of that information;
- make commentary and provide opinions he is qualified to give as to the appropriateness of particular actions or decisions and the basis of that commentary or opinion.

Max Winders may also address other topics relevant to the Terms of Reference of the Commission in the statement, if he wishes.

The statement is to be provided to the Queensland Floods Commission of Inquiry by 7 September 2011.

The statement can be provided by post, email or by arranging delivery to the Commission by emailing [info@floodcommission.qld.gov.au](mailto:info@floodcommission.qld.gov.au).



Commissioner  
Justice C E Holmes



# QUEENSLAND FLOODS 2011

## STORMWATER BACKFLOW

Job Number J11058

Prepared for Queensland Floods Commission of Inquiry

September 2011



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# **QUEENSLAND FLOODS 2011 STORMWATER BACKFLOW**

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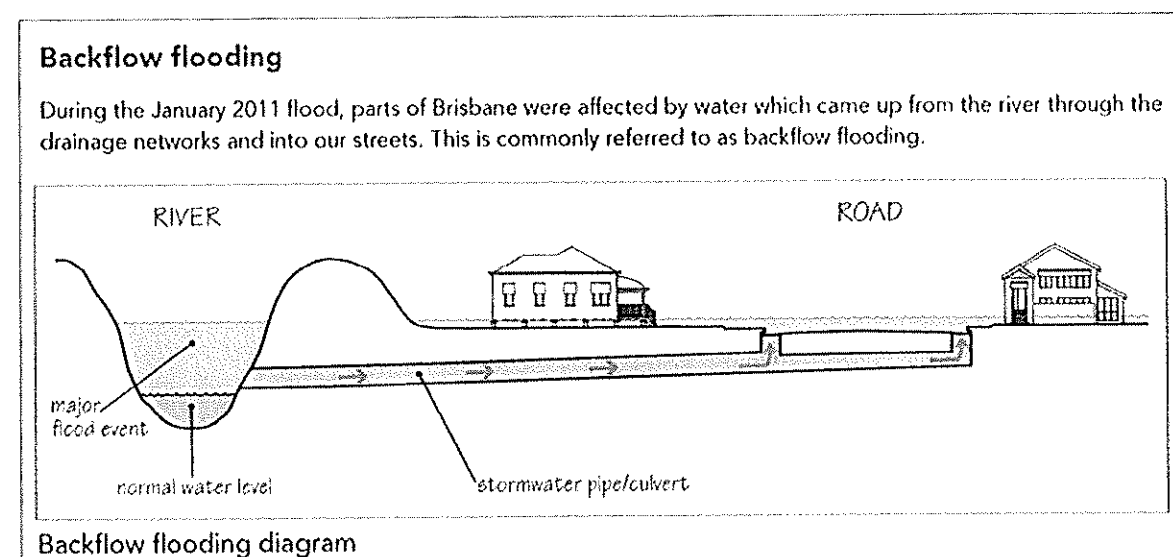
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## 1 INTRODUCTION

- 1 The Queensland Floods Commission of Inquiry was established by the Queensland Government on 17 January 2011 to examine and review the causes and impacts of the major flooding which occurred throughout Queensland in the 2010/11 wet season.
- 2 Dr Trevor Johnson of the consulting firm Cardno (QLD) Pty Ltd was engaged by the commission in September 2011 to provide technical advice on a range of matters relating to backflow issues in urban stormwater drainage systems. In particular, the following questions were posed:
  - Whether flooding can be caused or exacerbated by backflow of stormwater?
  - Is it likely to continue to be a problem? Is the problem only related to older infrastructure, or do local authority drainage design requirements still not address the issue?
  - Are there mechanisms to deal with and/or mitigate the impact of backflow in stormwater systems? What measures are available to minimise infrastructure and property impacts resulting from this type of flooding?
  - What are the advantages and disadvantages of each of these measures?
  - What should local authorities such as Brisbane City Council be doing in relation to this issue?
- 3 These questions are considered and answered in turn in the following sections.
- 4 I state that I am a civil engineer with over 30 years experience in the fields of hydraulics, water quality and engineering infrastructure. I am a Director of Cardno, and I hold the degrees of Bachelor of Engineering (Civil), Master of Engineering Science and Doctor of Philosophy, all obtained from the University of Queensland.

## 2 FLOODING CAUSED BY BACKFLOW OF STORMWATER

- 5 Flooding caused by backflow through the municipal stormwater drainage network has been identified as a significant cause of inundation experienced in some Brisbane suburbs such as Milton, New Farm and the CBD [Brisbane Flood 2011 Independent Review of Brisbane City Council's Response, Brisbane City Council, 2011]. Backflow from the Brisbane River was the initial source of flooding impacts in many cases, particularly in the inner urban areas noted above. However, in the majority of instances, higher flood levels were later caused by surface inundation when the River actually broke its banks.
- 6 Brisbane City Council has produced the following illustration which demonstrates how backflow flooding occurs.



- 7 Effectively, backflow flooding occurs only in those situations where there is a stormwater or other pipe connection between a source of flooding (in this case, the Brisbane River) and an area of land which is lower than the bank level of the watercourse. It can, of course, also occur with suburban creek flooding in Brisbane, although it is noted that this was not a cause of flooding in January 2011 because the local creek systems were not in flood at that time.
- 8 The Queensland Urban Drainage Manual [Department of Natural Resources and Water, 2007] has been formally adopted by all Queensland local authorities as the principal reference for stormwater management and design in this state. QUDM requires the underground drainage system to be designed to convey the discharge for the design minor storm with road flow limited to the point where it does not pose a risk to pedestrians. This can be approximately expressed as a requirement that the maximum depth of flow in the roadway during the minor event does not exceed the kerb level. According to QUDM, the recurrence interval of the minor storm should be between 2 and 10 years, depending upon the degree of urbanisation of the catchment being serviced (the greater the proportion of impervious area, the higher the recurrence interval). However, in many cases in Queensland, including older sections of Brisbane, the existing systems do not comply with the current design requirement.

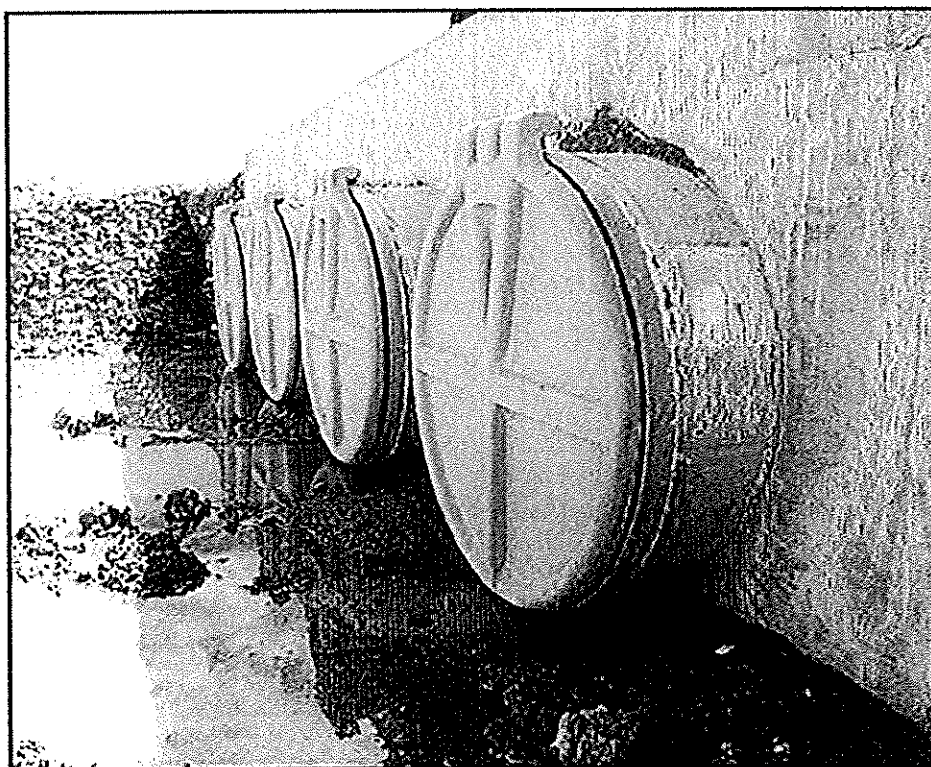
- 9 The underground stormwater drainage system is therefore intended to manage a minor storm event without causing inundation of allotments or building floors, while allowing limited inundation of roadways. Prior to the 1990s, historical engineering design required the stormwater drainage system to be as efficient as possible, since the primary motive was to move runoff downstream away from developed areas as quickly as possible. While design criteria have now altered to include the concept of a legal point of discharge from one property to another, efficient design still dictates that the drainage system should be as free of obstructions as possible. This makes the incorporation of backflow prevention devices problematic, as discussed in Sections 3 and 4 below.
- 10 There is one further key point which needs to be taken from the illustration on page 2. It is apparent that, if the flood level in the waterway exceeds the bank or levee level, the connection via the stormwater pipe system is irrelevant, since flooding will occur by surface inundation anyway. Although initial flooding may occur by backflow, the later and higher river flood will cause greater depth of flooding.
- 11 However, in circumstances where there is consistently higher land between the river and the affected property (ie there is no surface connection at a lower level), backflow flooding may certainly become an issue for smaller events.

### 3 OCCURRENCE OF THE PROBLEM

- 13 Backflow flooding will continue to be a problem for most near-coastal local authorities in Queensland, and will be significantly exacerbated if climate change predictions for sea level rise become reality. The Queensland Government has determined [Draft South East Queensland Climate Change Management Plan, Department of Local Government and Planning, 2009] that current sea levels will rise by approximately 0.3 m by 2050 and 0.8 m by 2100. The Highest Astronomical Tide (HAT) is the highest tide level predicted to occur under average meteorological conditions. For the Brisbane River at the Port Office Gauge in Edward Street, HAT is currently about 1.54 m AHD. While this maximum level is reached only about once per year on average, there are many tides which will generally approximate it. For example, in 2011 there will be 20 individual tides at the Port Office with a peak water level in excess of 1.44 m AHD. With the onset of climate change, HAT is predicted to increase to 2.34 m AHD by 2100.
- 14 Significant parts of Brisbane, particularly around New Farm, Milton and Rosalie, have existing ground levels which are lower than 2.34 m AHD. These areas will therefore be subject to increasing tidal inundation as sea levels rise. Flooding from this source is well recognised in lower-lying parts of Brisbane around the time of very high tides in December each year.
- 15 The rise in sea level will also increase flood levels, although generally by a lesser amount than the 0.8 m in static water level rise. Consequently, these areas will be far more prone to inundation than occurs currently. Even in the situation where steps are taken to prevent surface runoff inundation (eg by building low banks and levees along the river), the uncontrolled stormwater drainage system will allow backflow to occur. Backflow prevention devices will therefore need to be increasingly used to prevent this phenomenon from occurring.
- 16 Current drainage design practices do not include making allowance for backflow prevention. There are two reasons for this. Firstly, the inclusion of backflow prevention devices leads to increased head losses within the stormwater drainage systems, and therefore reduced capacity. Backflow devices therefore may increase the level and extent of flooding which occurs from local runoff. Secondly, the problem is primarily limited to existing areas and older drainage systems. New design practices would normally require higher ground levels for development purposes, therefore obviating the potential for inundation by backflow means.
- 17 In addition, it is also the case that backflow flooding generally does not result in inundation of habitable floors in residences. It is most often public infrastructure such as road, footpaths and parks which is adversely affected. While such impacts are obviously undesirable, they are significantly less important than the flooding of people's houses. Alleviation and management of this problem remains the principal focus of engineering drainage design. However, normal engineering design practices would identify the potential for an effect, and allow for suitable remediation processes to be adopted.

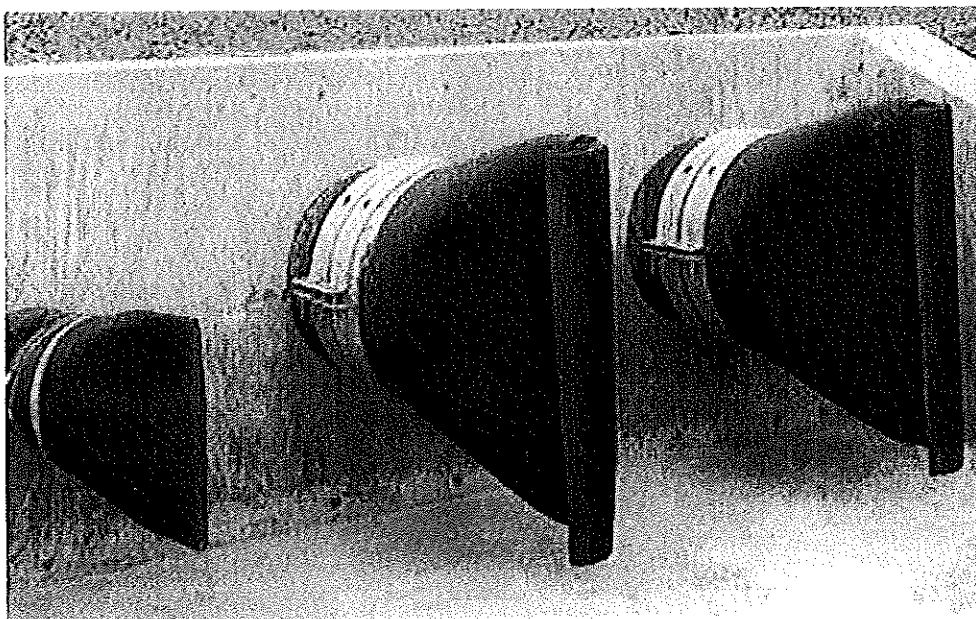
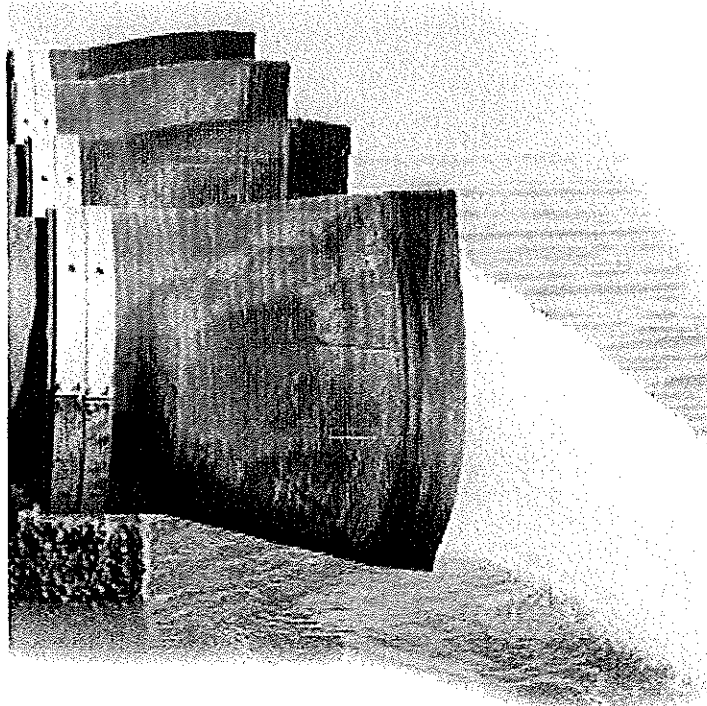
## 4 BACKFLOW CONTROL VALVES

- 18 Backflow prevention valves are in common use in water supply systems, particularly where there is the potential for cross-contamination of potable water from the use of recycled water in the domestic situation. While the use of such devices in stormwater drainage lines is less common, there are a number of valve designs which have been used for this purpose both within Australia and overseas.
- 19 The simplest valve used for backflow prevention is known as a flap gate. This generally consists of a circular plate which is connected to the pipe outlet at the river end with a hinged connection. When the river water level (known as the tailwater level) is low, the force of stormwater running through the pipe is sufficient to open the valve and maintain it in that state. When the tailwater level is above the invert level of the pipe and the pipe is not carrying stormwater, external water pressure and counterweights are sufficient to close the valve and thereby prevent backflow.
- 20 Flap gates (see below, made by Hume-King in Australia for example) are simple and inexpensive, but relatively prone to failure. Firstly, debris may jam open the gate, thereby allowing tidal waters to enter the pipe as the tailwater level increases. Secondly, many stormwater systems have outlets which are below HAT level, ie the outlets are submerged at some stage of the tidal cycle. In the marine environment, the flap gates are frequently fouled by intertidal marine organisms such as barnacles which prevent a watertight seal from occurring. This allows tidal waters to leak back into the stormwater system, significantly affecting the efficiency of operation. Thirdly, the gate imposes some additional head losses into the stormwater system, thereby reducing the capacity of the pipe and potentially increasing upstream water levels. The significant advantage of flap gates over other types of backflow prevention devices is that they are relatively cheap to purchase and simple to install.



*Floodgates - above 900mm*

- 21 The "duck bill" check valve (see below) is an elastomer rubber system which is again fitted onto the outlet end of the stormwater system. The valve has a vertical slot which is both flexible and stiff, such that the valve is closed in its relaxed position. The valve is designed to open and close under relatively low pressures, such that the head loss in the system is significantly lower than for the corresponding flap valve. The elastomer may also be treated to prevent fouling by barnacles for installations below tide level. Duck bill valves (Tideflex or Fuller brands for example) are considered to be significantly more reliable than flap gates, but they may also be prone to debris or silt blockage which keeps the vertical slot open when it should be closed. Duck bill valves are more expensive than flap gates.

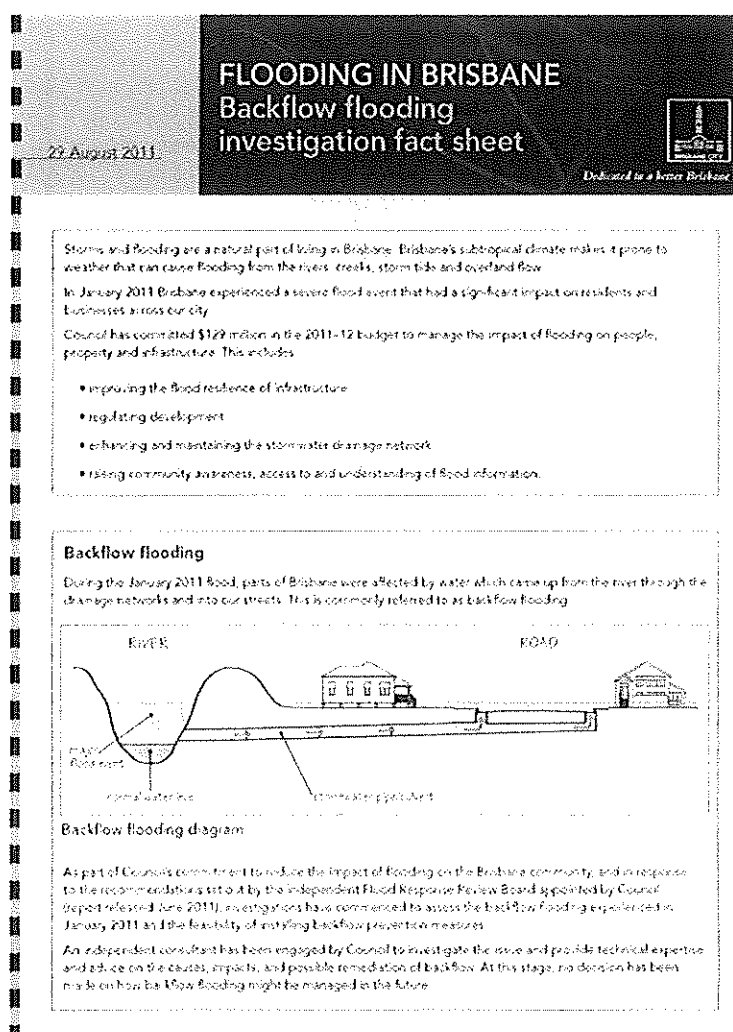




- 22 Other mechanical and electrically-actuated check valves can also be used to prevent backflow, but these generally rely on either direct human intervention to close the valve during a high tailwater level event, or sophisticated (and expensive) electronic level sensing devices. In general, valves which need the touch of a human operator are only effective in situations such as industrial installations or sewage treatment plants where operators are on site for 24 hours per day. Similarly, automatic electrically-actuated devices will be ineffective if power is lost for the local area, as sometimes happens during major flooding events. These valves are generally installed in-line (ie not at the outlet from the system), and are more expensive than duck bill valves to both supply and install.
- 23 Non-powered automatic internal backflow protection valves are used in some sewerage systems, to prevent sewage backing up into houses during severe flood events. Contamination from this source is a common problem in low-lying areas, where there may be extensive surface or groundwater infiltration into sewer lines which reduces capacity. These in-line valves are installed into the sewer house connection, and are activated if backflow is sensed by the device. While these systems are effective, they are somewhat susceptible to blockage and therefore require regular maintenance to keep them operational. In addition, sewerage pipes are much smaller than stormwater drainage pipes, and the effectiveness of such valves for large stormwater pipelines may be limited because of size and cost constraints.
- 24 Backflow prevention devices are effective at preventing/reducing inundation from backflow events. However, their major disadvantage is that they will tend to increase the level of flooding from local rainfall events. Since the inclusion of a backflow valve increases head losses in the stormwater drainage systems, their installation on existing stormwater pipes will cause upstream flood levels to increase when local storm events occur. While the amount of increase may be relatively low, any flood level increase in an area where significant flooding already occurs would be seen as significantly detrimental.
- 25 It would therefore be necessary for local authorities to undertake relevant risk assessments before determining to retro-fit backwash control valves. The increase in performance in relation to the prevention of backflow needs to be weighed against a potential increase in flood level for local catchment storm events.

## 5 RECOMMENDED ACTIONS BY LOCAL AUTHORITIES

- 26 As noted in paragraph 13 above, climate change impacts are likely to significantly exacerbate both the rate of occurrence and magnitude of backflow flooding events. Steps such as levee construction are likely to be taken to address the potential direct impact of sea level rise. However, the effectiveness of these solutions will be limited in areas subject to backflow inundation unless control systems are put in place to prevent reverse flow in the stormwater drainage systems.
- 27 It is noted (see below) that Brisbane City Council has already identified the backflow problem and is actively taking steps to determine the magnitude of the issue and the potential for it to be alleviated.



- 28 It is recommended that all near-coastal local authorities in Queensland should investigate for the potential occurrence of backflow, and undertake relevant assessments for alleviation of the problem if necessary. A detailed risk assessment should be undertaken in all instances to ensure that any proposed installation of backflow prevention devices will not unreasonably exacerbate existing local runoff flooding problems.

## CURRICULUM VITAE

**MAX WINDERS**

**MANAGING DIRECTOR**

### QUALIFICATIONS

Bachelor of Engineering (Mechanical) (Honours), University of Queensland, 1961  
F.I.E.Aust., C.P. Eng., R.P.E.Q

### TECHNICAL EXPERTISE

Environmental Impact Assessment  
Environmental Management  
Flooding and Tidal Hydraulics  
Coastal Ecosystems  
Environmental Acoustics  
Intensive Animal Husbandry and Aquaculture

### PROFESSIONAL EXPERIENCE

**Prior to Founding Max Winders & Associates Pty Ltd tas MWA Environmental  
(1961 – 1987)**

Following graduation with honours in 1961 from the University of Queensland in Mechanical Engineering, he was employed as Maintenance Engineer and then Operations Engineer until 1965 at the coal-fired Howard Power Station, on the Burrum River.

In these capacities he was particularly responsible for those aspects of power station operation which concerned the supply of condenser cooling water from the Burrum River and of raw water supply and treatment from a pumping station upstream.

These activities involved the operation and maintenance of pumps, valves, sluices, hydraulic actuating systems and control systems of significant capacities and under all weather conditions.

This was followed by post-graduate studies at the University of Queensland into the environmental aspects of thermal power stations, mainly into the steam turbine condensing systems and the environmental factors which affected turbine design and performance and included:

- studies involved applying systems design concepts addressing variations in environmental variables;
- undertaking a course in Operational Research in the Dept. Of Chemical Engineering which included the optimisation of design parameters based upon numerical simulation of what might appear to be random processes, e.g. environmental variables.

In 1969, as a director of both firms, he helped found Oceanics Australia Pty. Ltd. and Winders Barlow & Morrison Pty.Ltd... In that capacity until 1987, he had a major input into detailed studies of noise, air and water pollution, as well as being concerned with tidal and flood hydraulics and coastal engineering. He was also responsible for directing a number of multi-disciplinary environmental impact studies.

Major studies in which he made significant contributions include:

- Port Curtis Water Quality Study
- Gladstone Air Shed Study;
- Flooding and Tidal Studies of the Tweed, Richmond, Nerang, Coomera, Logan, Pine, Mooloolah, Maroochy Rivers, as well as of many creek systems;
- Coomera River Extractive Industry Flooding and Tidal Investigations;
- Currumbin Estuary Development Proposal;
- Major Development Proposal for Bribie Island and Pumicestone Passage;
- stream gauging under flood conditions of the Brisbane River (1974), Stable Swamp Creek and part of the Lockyer Creek floodplain;
- Environmental Impact Studies into coal-fired power stations at Toorbul Point, Gladstone, Swanbank & Colosseum Inlet, as well as coastal land development proposals along the whole eastern coastline of Queensland and Northern NSW.;
- investigations involving hydrological and hydraulic simulation of river and estuarine flows included flood studies into significant streams in SE Queensland and the Northern Rivers, including the Nerang, Coomera, Pine, Mooloolah and Maroochy Rivers, Oxley Creek, Lockyer Creek, Saltwater Creek, Currumbin Creek, Tweed River and the Richmond River, as well as in a number of estuaries;
- investigations involving estimating the potential changes in streams and water bodies due to development and natural processes included the Port Curtis Water Quality Study, thermal pollution studies in the Calliope River and several residential lake developments requiring management of the hydrological and hydraulic variables to achieve consistent water quality, e.g. Twin Waters, Lake Capabella, Lake Rosser.
- Environmental impact studies requiring hydraulics and water quality simulation for ecological consultants included proposed power stations at Gladstone and Toorbul Point and cement plants at Port Curtis and the Brisbane River.
- Brisbane Environmental Noise Study;
- Environmental Investigations Associated with Expansion of Pioneer's Keperra Quarry

#### **As Managing Director of Max Winders & Associates Pty. Ltd. (1987 to Present)**

In this capacity, his goal has been to provide a comprehensive, engineering and science-based environmental consultancy service to the development industry and to government agencies concerned with the provision of public infrastructure. To this end, he has acquired and trained competent staff in the required disciplines of engineering, ecology, environmental science and information technology.

With the support of the company's professional staff, he has been able to direct in excess of 2,000 investigations, the range of which might be gauged from the following major projects:

### Environmental Impact Assessment

With expertise across a wide spectrum of environmental issues and prior involvement in multi-disciplinary EIS preparation, as the principal of Max Winders & Associates he has either directed or had a major role in the preparation of environmental impact assessments for the following:

- Gold Coast Convention & Entertainment Centre
- Forest Glades residential development, Byron Shire
- Twin Waters resort development
- Queen Street Mall
- Bunning's Warehouse, Bundaberg
- Australia Zoo expansion, Sunshine Coast
- Gold Coast Cruise Ship Terminal proposal
- Proposed tourism, resort and residential development, Inskip Point
- Waterway residential development, Coomera River
- Aquaculture developments at Moresby River, Baffle Creek, Burnett River, Maryborough, Logan River
- Motor sports complex, Canungra Creek
- Sodium Cyanide Plant, Gladstone
- Titanium Alloy Manufacturing Plant, Gladstone
- Hard rock quarry, Withcott
- Hard rock quarry, Upper Ormeau
- Abattoir, Coominya
- Several cattle feedlots, Darling Downs and Brisbane Valley
- Road/rail freight depot, Moolabin
- Newmarket Shopping Centre
- De-inking Plant for paper tissue manufacturer, Carole Park
- Sheepskin Tannery, Narangba
- the more significant investigations requiring the results of hydrological, hydraulic and water quality modelling to be used for the assessment of ecological impacts and the subsequent development of environmental management plans included the aquaculture developments, the water way developments on the Coomera River (particularly Oyster Cove) the proposed resort development at Inskip Point, the further development of Twin Waters, the Forest Glades development and the development of the Gold Coast Convention and Entertainment Centre on Little Tallebudgera Creek.

### Environmental Management

Having an engineering background, he has a pro-active approach to environmental management which has enabled him to coordinate the preparation of environmental management plans to the satisfaction of the regulatory bodies for a wide range of environmentally relevant activities, including the following:

- Major building projects such as shopping centres, high rise residential developments, institutional buildings and others in the Brisbane CBD and Gold Coast.
- Transport terminals and heavy vehicle workshops in Brisbane and Nth Queensland
- Industrial plants including milk factories, tanneries, composting plants, secondary metals processors, concrete batching plants, hard rock quarries, abattoirs, sewage treatment plants and paper tissue plants.
- Construction and operational stage management plans for residential and resort developments, Brisbane, Gold Coast, Sunshine Coast and northern NSW.
- management of the hydrological, hydraulic and water quality impacts of development proposals has hinged principally upon the detailed development to the satisfaction of

the former EPA and local authorities of residential, resort, theme park, wastewater and effluent irrigation in southern and central Queensland.

### Flooding and Tidal Hydraulics

Recognising the value of computer models in the design of developments in floodplains and coastal areas, he was instrumental in maintaining his company's prominence in their use by the acquisition of appropriate software and professional staff for this purpose. Major studies in this regard include:

- Flooding studies for numerous developments in the floodplains of the Nerang, Coomera Rivers, Logan, Brisbane, Bremer, Mooloolah and Maroochy Rivers using MIKE-11 and RMA-2 flood hydraulics software.
- Flood studies of inland river floodplains at Narrabri and Goondiwindi.
- Detailed flooding studies of the effects of development and transport infrastructure of a number of smaller streams, including Eudlo, Cabbage Tree, Ithaca, Bullockhead, Canungra, Tallow, Baffle, Scrubby and Bulimba Creeks.
- Tidal studies associated with estuarine development on the Gold and Sunshine Coasts.
- Tidal studies associated with aquaculture development on the Logan, Maroochy, Burnett and Moresby Rivers, as well as Baffle Creek and in the Great Sandy Region.
- recent investigations concerning the interpretation of IQQM modelling outputs upon the environmental flow requirements of major Queensland rivers, include an investigation of the impacts of the proposed Traveston Crossing Dam upon the water quality of the Mary River below the Barrages and an assessment of the impact of proposed bauxite mining upon the riverine reaches of the Wenlock River in Cape York and the groundwater dependent ecosystems of the Coolibah Springs special feature area of the proposed Wenlock wild river area in Cape York.

### Water Quality

His principal area of involvement has been in the development of water quality models for the assessment of aquaculture proposals which rely to some extent on the ability of an estuarine ecosystem to accept nutrient loadings from aquaculture pond discharges e.g.

- Use of RMA-11 modelling to develop release management strategy from 70 ha prawn farm in the Great Sandy Region.
- Ecological assessment of Baffle Creek, later supported by water quality and ecological monitoring, together with RMA-11 analysis, for 63 ha prawn farm.
- RMA-11 modelling and detailed water quality assessment of a proposed aquaculture facility to discharge into the upper reaches of the Moresby River estuary.
- Modelling and water quality assessment for various prawn farms on the Logan River.
- modelling the impact of the proposed Traveston Crossing Dam on the Mary River estuary using RMA11 water quality modelling which was validated against the monitored impacts of the previously-constructed Mary River Barrage.

He has continued to design and monitor the performance of tidally-flushed lake developments on the Nerang, Coomera and Maroochy Rivers, e.g. Lake Capabella, Lake Rosser, Oyster Cove, Monterey Keys, Twin Waters.

He has supervised the use of stormwater quality models by MWA staff to design stormwater management systems for a large number of residential, resort and golf course developments in southern Queensland and northern NSW. He is experienced in the selection of effluent treatment systems and in the design and management of effluent irrigation systems for residential, industrial and intensive animal husbandry developments.

## **M.F. WINDERS BE (Hons) FIEAust RPEQ: EXPERIENCE RELEVANT TO BACKFLOW MANAGEMENT INVESTIGATION**

- Honours degree in Mechanical Engineering from the University of Queensland in 1961.
- Four years as Maintenance Engineer and Operations Engineer at Howard Power Station, responsible for the maintenance and operational performance of a large cooling water system which pumped water from the Burrum River and for the supply of water from a dam on the river upstream. Responsible for these issues during several periods of river flooding.
- Post-graduate studies in systems modelling
- Director of a Brisbane company which provided specialist services in modelling flood and tidal flows from 1969 until 1987. This included taking stream velocity measurements in the Brisbane River during the 1974 flood and other stream gauging exercises to validate the flood and tidal models.
- Formed Max Winders & Associates Pty. Ltd. in 1987, now trading as MWA Environmental. Have been using MIKE-11, MIKE-21 and RMA-2 flood modelling since then to design developments in floodplains to meet standards acceptable to government agencies. Have been assisted in this area by specialist engineers employed by MWA and the work is continuing.
- As emphasis increased upon the need to incorporate Water Sensitive Urban Design into developments, MWA developed an expertise in the conceptual design, rather than the detailed design of means of regulating the quantity and quality of runoff from areas proposed for development. MWA uses conventional drainage design software for this purpose. MW is therefore aware of the need to address potential head losses at the downstream end of drainage systems that could arise out of the use of BPDs.
- Developed a successful scheme by which tidal flushing of lakes in residential developments could be regulated by the use of flap-gates on tidal inlets and outlets to streams such as the Tweed, Nerang, Coomera and Maroochy Rivers. This involved simulating the head losses through the flap-gates in the overall water circulation model in a similar way to that which is likely to be required for the risk assessment of backflow protection.
- Specialist water engineering projects personally undertaken in recent years include:

Preparation of a report for the Council of Mary River Mayors against the proposed Traveston Crossing Dam because of its potential impacts on river freshes and other environmental flows downstream.



Investigating and reporting on the impact of inadequate fish transfer facilities at the Paradise Dam on the Burnett River to support an appeal by the Wide Bay-Burnett Conservation Council to the Federal Court for those facilities to be upgraded.

Development of a conceptual model of the hydrology of springs emanating from a bauxite plateau in the Wenlock Wild River Area and preparation of a submission to the Queensland Government to have the recharge area placed in the High Protection Area.

Preparation of a submission to a Senate Committee concerning have the impacts on groundwater arising from the extraction of coal seam gas could be offset by provisions made in the proposed Murray Darling Basin Plan.

"MFW-03"

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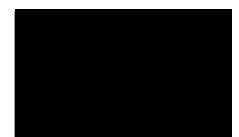
MINOR SHORT FORM AGREEMENT  
FOR  
CONSULTANCY/PROFESSIONAL SERVICES

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*Dedicated to a better Brisbane*

STRATEGIC PROCUREMENT OFFICE  
Level 22, 266 George Street, Brisbane QLD 4000





*Dedicated to a better Brisbane*

23 June 2011

Mr Max Winders  
Managing Director  
MWA Environmental  
GPO Box 3137  
BRISBANE QLD 4001

Dear Mr Winders

**Re: To investigate the feasibility of the installation of devices to prevent backflow from river flooding.**

**1. Provision of Services**

Subject to your signing and returning a duplicate of this letter, the Brisbane City Council through *Water Resources Branch* will engage *Max Winders & Associates Pty Ltd trading as MWA Environmental* to provide services in relation to *the feasibility of the installation of devices to prevent backflow from river flooding*.

These services are described in Section 2 of this letter.

The entire Contract between you and the Council for the provision of the Services is comprised of the terms of this letter together with the attached terms and conditions marked "Attachment A" and entitled "General Conditions for Services" and all other attachments to this letter ("the Contract").

When you sign the duplicate letter, you need to also initial each page of the attached documentation and return the document and its attachments to the Council Liaison Officer named at the end of this letter.

If you disagree with any of the attached terms, please do not unilaterally amend any of the terms and conditions of the Contract. Instead, please contact the Council Liaison Officer as a matter of urgency. Any unilateral amendment by you of the terms and conditions will not be construed by Council as an amendment or variation to this Contract unless the Council agrees in writing to such amendments.

**2. Nature of the Services**

The proposed scope of work for this study is for an independent consultant to lead the study and assist with the engagement of other experts as necessary, to investigate the feasibility of the installation of devices to prevent backflow from river flooding in two investigations as outlined below:

1. Investigation 1 – Brisbane River Review

Investigate areas along the Brisbane River (within Brisbane City Council's Local Government Area) affected by the January 2011 river flood (including river tidal affects), to identify and prioritise locations where the application of backflow prevention measures may warrant further detailed investigations.

2. Investigation 2 – Three case study areas

Concurrently with 1 above, investigate three case study locations, being Central Business District, Rosalie/Milton and New Farm, to determine whether the installation of backflow prevention measures might prevent river flooding and provide implementation options for each area. The investigation would include the assessment of risks, issues and opportunities associated with backflow prevention measures in the three case study areas. The investigation would include the assessment of whether they would have unacceptable impacts during other possible types of flood events and also consider maintenance requirements and cost/benefit analysis.

3. The above two investigations will include a level of community engagement in conjunction with Council.

2.1 The following documents:

- (a) a letter from the Brisbane City Council dated 23 June 2011 and headed Contract for Consultancy or Professional Services between Brisbane City Council and Max Winders & Associates Pty Ltd trading as MWA Environmental

*("the Documentation") describe the nature and extent of the Services to be provided under this Contract together with the fees to be paid by the Council for such services.*

*These services (including any reports, memoranda, recommendations or any other outcomes required of those services ("the Deliverables") and any variations pursuant to clause 3 of the attached General Conditions for Services) are referred to as "the Services" for the purposes of this Contract.*

3. Timing

The Contractor shall:

- (a) commence work on the Services on *Thursday 23 June 2011* and;
- (b) ensure that all of the Services are duly performed and delivered to the Council in accordance with this Contract on or before:
  - Investigations 1 & 2 completed by 31 August 2011
  - Community Engagement (Clause 2(3) above) by 30 September 2011
  - Final Report 30 September 2011

Specified Personnel

The Contractor shall ensure that the Services are performed by those noted within Clause A under the direct supervision of Max Winders ("the Specified Personnel"). If at any time:

- (i) any of the Specified Personnel are not available for any reason (whether within the control of the Contractor or not); or
- (ii) the Council is of the reasonable opinion that any Specified Personnel either does not have the capacity to undertake the Services to the level required or is responsible for any disruption in the delivery of the Services;

then the Contractor shall replace the Specified Personnel in question with another suitably qualified and experienced person who is acceptable to Council. Such person shall be included within the term "Specified Personnel" and the substitution shall be:

- A. undertaken at the earliest opportunity but not later than seven (7) days (or such later date as the Council may agree) from the date the Specified Personnel in question has ceased to be available; and
- B. at no additional cost to Council.

**Contract for Consultancy or Professional Services between Brisbane City Council and Max Winders & Associates Pty Ltd trading as MWA Environmental**

("the Specified Personnel"). If at any time:

- (i) any of the Specified Personnel are not available for any reason (whether within the control of the Contractor or not); or
- (ii) the Council is of the reasonable opinion that any Specified Personnel either does not have the capacity to undertake the Services to the level required or is responsible for any disruption in the delivery of the Services;

then the Contractor shall replace the Specified Personnel in question with another suitably qualified and experienced person who is acceptable to Council. Such person shall be included within the term "Specified Personnel" and the substitution shall be:

- A. undertaken at the earliest opportunity but not later than seven (7) days (or such later date as the Council may agree) from the date the Specified Personnel in question has ceased to be available; and
- B. at no additional cost to Council.

**4. Fees**

Subject to clause 5 of the General Conditions, the fees payable by the Council for the provision of the Services ("the Fees") shall be charged at no more than the following rates (which include all cost and expenses associated with the provision of the Services):

*Table of Fees*

Description of Service	Person to perform the Service*	Fee exclusive of GST
<i>Managing Director</i>	<i>Max Winders</i>	320
<i>Senior Engineer</i>		265
<i>Environmental Engineer</i>		210
<i>Senior Hydraulic Consultant</i>		210
<i>Project Engineer</i>		170
<i>GIS Manager</i>		170
<i>Environmental Consultant</i>		165
<i>Secretarial</i>		70

These Fees shall be charged per hour for a period of 3 months and one week and will not be charged on a pro-rata basis.

The maximum amount payable by the Council is \$50,000.00.

These Fees shall be payable by the Council in monthly instalments.

Please also note that:

- (a) these Fees shall be invoiced on a fortnightly basis and shall be only payable pursuant to clause 5 of the General Conditions. The provisions of clause 5 of the General Conditions also specify that these Fees will only be payable on the receipt by Council of a properly rendered invoice detailing staff member, work done and total hours. See clause 5 for what will constitute a properly rendered invoice and also for when Council will be paying these Fees; and
- (b) the amount of GST applicable to Services will be determined in accordance with the GST Laws as amended from time to time.

5. Assistance from the Council

The Council shall provide the following facilities without charge to the Contractor for the proper performance of the Services:

- (a) such normal office services and facilities as are reasonably required by the Contractor's personnel (such as access to the Council's word processing services and duplicating services) provided that all directions from the Council Liaison Officer as to such access and use are duly complied with by the Contractor and its personnel; and
- (b) such magnetic media (materials), storage facilities and messenger services as is reasonably required by the Contractor and agreed to from time to time by the Council Liaison Officer.

6. Indemnity

- (a) Upon demand being made by the Council, the Contractor shall fully indemnify the Council and its officers and employees:
  - (i) from and against any claim made by any of the Contractor's officers, employees, agents, Specified Personnel or its authorised sub-contractors (if any) in relation to the performance of the Services that they are employees (as commonly defined) of Council or "workers" of the Council under the *WorkCover Act 1996* of Queensland (as amended from time to time); and
  - (ii) from and against any loss or liability whatsoever (including, but not limited to, legal costs and expenses on a solicitor/own client basis) arising out of or in connection with any claim that the performance of the Services (including the creation, preparation or delivery of any Deliverable) has or is infringing (either wholly or partially, directly or indirectly) the Intellectual Property Rights of any person; and
  - (iii) in relation to any costs, losses, or damages of any kind suffered or incurred by the Council or its officers or employees where such costs, losses or damages arise in any manner out of:
    - A. any negligent, wilful, unlawful or wrongful act or omission by the Contractor or any of the Contractor's officers, employees, agents, Specified Personnel or its authorised sub-contractors (if any) in relation to the performance of the Services in relation to the provision of the Services; or
    - B. any breach of this Contract by the Contractor or any of the Contractor's officers, employees, agents, Specified Personnel or its authorised sub-contractors (if any).
- (b) Notwithstanding paragraph (a), the Contractor's liability for any claim arising out of any personal injury to or the death of any person or loss of or damage to property shall be reduced to the extent that such claim is a direct result of either any breach by the Council of any provision of this Contract which causes delay to the Contractor performing the Services as required by this Contract or any negligent act or omission of the Council, its employees, agents, contractors or sub-contractors.
- (c) If the Contractor fails to comply with its obligations under this Contract and fails to rectify such breach as and when requested to do so by the Council in accordance with this Contract, the Council may engage another Contractor to provide the Services in question and shall be able to recover such costs of engaging the other Contractor from the Contractor. The Council shall use its best endeavours to ensure that the Services in question are carried out in the most cost effective manner and shall provide the Contractor with written documentation of the actual costs incurred by the Council. The Contractor shall pay such costs to the Council within 14 days of being requested to do so by Council.

Contract for Consultancy or Professional Services between Brisbane City Council and Max Winders & Associates Pty Ltd trading as MWA Environmental

7. Notices

Please note that notices under the Contract may be delivered by hand, by mail or by facsimile to our respective offices. In the case of the Council, any such notices must be addressed to Santina Pennisi, GPO Box 1434 Brisbane, Q, 4001 facsimile 3334 0079.

In the case of the Contractor, any such notices must be addressed to Mr Max Winders, Managing Director, MWA Environmental, GPO Box 3137, Brisbane, Q, 4001 facsimile 3002 5588.

If there are any changes to a party's postal address, facsimile number and/or person to whom notices are to be addressed, these changes will only be effective as and from the date the other party receives written advice of such change.

Notices between Council and the Contractor shall be deemed to be given:

- (a) In the case of hand delivery – upon written acknowledgment of receipt by an officer or other duly authorised employee, agent or representative of the receiving party;
- (b) In the case of posting – 3 days after dispatch; and
- (c) In the case of a facsimile – upon receipt of the answerback transmission or other proof of completion of transmission.

8. Council Liaison Officer

The person holding, occupying or performing the duties of *Senior Officer, Engineer* shall be the Council Liaison Officer with responsibility for supervision of the Contract on behalf of the Brisbane City Council and shall have authority to act on behalf of the Council and issue and receive any written notification under the Contract. This person shall act reasonably in the exercise of this authority.

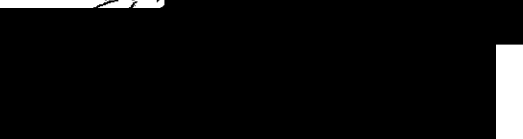
9. Workplace Health and Safety and Insurance

- (a) The Contractor shall be solely responsible for maintaining and adhering to all legislative requirements relating to workplace health and safety.
- (b) The Contractor shall at all times, keep and maintain a Public Liability Insurance policy for a minimum cover of \$10,000,000.00 (per occurrence) with a reputable insurer for each accident, claim or event including property damage, public risk and injury, suitable for the nature and capacity of the services to be provided under this Contract.
- (c) The Contractor shall at all times, keep and maintain a Professional Indemnity Insurance policy for a minimum cover of \$1,000,000.00 (per claim and in the aggregate) with a reputable insurer for each incident, claim or event including property damage, public risk and injury, suitable for the nature and capacity of the services to be provided under this Contract.
- (d) The Contractor shall maintain Workers Compensation Insurance to the extent required by the laws of the State of Queensland.

The Contractor shall produce to Council prior to Council signing this Contract, certificates of currency in evidence of the insurance policies referred to in this paragraph 10.

Attachments - Attachment A

Yours faithfully



Acting Manager  
Water Resources Branch  
CITY PLANNING & SUSTAINABILITY DIVISION

Dated this 24th day of June 2011

Contract for Consultancy or Professional Services between Brisbane City Council and Max Winders & Associates Pty Ltd trading as MWA Environmental

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FORM OF ACCEPTANCE TO BE SIGNED AND RETURNED BY CONTRACTOR

As a person duly authorised to act for and on behalf of Max Winders & Associates Pty Ltd trading as MWA Environmental, I agree on behalf of Max Winders & Associates Pty Ltd trading as MWA Environmental to the provision of the abovementioned Services in accordance with the terms and conditions set out in and attached to this letter.

Signed for and on behalf of Max Winders & Associates Pty Ltd trading as MWA Environmental by

[Redacted] ..... (print name and title of signatory)

*Director*

Signature

In the presence of: .....

(print name and title of Witness)

Signature of W

Date:

*23.6.11*



ATTACHMENT A

General Conditions for Services

1. Interpretation and Applicable Law

In the Contract, the definitions in the attached letter and the following definitions and rules of interpretation apply:

"the Contractor" includes the assignees of the Contractor.

"Contract Material" means the originals and copies of materials, papers, reports, books, memoranda, accounting records, files, texts, data, computer printouts, computer data (including, but without limiting the generality thereof, financial models of all types) however recorded, stored or embodied in any document or other form of media (electronic or otherwise) and being material etc that is *either* provided by the Council to the Contractor (or any of its staff, contractors or Specified Personnel (if any)) for the provision or the performance of the Services (including each and every outcome or Deliverable) *or* created or prepared by the Contractor or any of its staff or contractors in or incidental to the provision of the Services.

"Contractor's GST Liability" means the GST the Contractor is required by the GST Laws to pay or remit in relation to the supply of the Services to the Council under this Contract.

"Council's Consent" means prior written consent (which shall not be unreasonably withheld) of the Council which may be given subject to such terms and conditions as the Council may see fit to impose.

"GST" means the goods and services tax payable pursuant to the GST Laws.

"GST Laws" means the GST law (as defined by *A New Tax System (Goods and Services Tax) Act 1999* of the Commonwealth) together with all other laws and regulations which impose or regulate the implementation and operation of GST and all laws and regulations dealing with price exploitation and excessive profit taking as a result of the transition to the New Tax System.

"Intellectual Property Rights" means all forms of patent, copyright, trade mark (whether registered or not), trade name, trade secret, knowhow, discovery, invention, secret process, design, improvement in procedure, innovation or confidential information and any right to register or claim any type of intellectual property.

Words importing a gender include any other gender. Words in the singular number include the plural and works in the plural number include the singular.

This Contract shall be governed by and construed in accordance with the law for the time being in the State of Queensland and the parties submit to the jurisdiction of the courts of that State.

2. Provision of the Services

In providing the Services, the Contractor:

- (a) shall provide and complete the Services with reasonable care and skill and act professionally at all times in the performance of the Services and shall provide and complete the Services (including the Deliverables) in accordance with the requirements of the Documentation (including timetables (if any)) and the terms and conditions of this Contract;
- (b) shall consult regularly with and keep the Council Liaison Officer informed as to the progress and delivery of the Services;
- (c) shall comply with all laws, licences, industrial awards, permits and all other lawful requirements that from time to time are applicable to the proper provision of the Services by the Contractor, its staff, contractors, sub-contractors and assignees (including, but not limited to, the *Environment Protection Act 1994* (Qld) and the *Workplace Health and Safety Act 1995* (Qld);
- (d) shall, if the Services involve works that require excavation or boring (either manually or through the use of machinery), contact Dial Before You Dig ("DBYD") on telephone number 1100 (or such other number as is assigned from time to time to that service or its replacement service) to request utility plans of underground services in the areas requiring excavation and further, shall ensure that any excavation work undertaken as part of the Services does not adversely impact the proper operation of any utility services as identified by DBYD. All of the cost of contacting DBYD and any damages to such utility services as a direct result of the Contractor providing the Services will be the sole and absolute responsibility of the Contractor;
- (e) shall not assign, sub-contract or transfer any of its rights under this Contract without the Council's Consent. Such consent shall be subject to such terms and conditions as the Council deems appropriate to protect its interests;
- (f) shall at all times keep and maintain accurate records of the time spent in the provision of the Services. Where required by the Council to verify the fees and expenses invoiced by the Contractor, the Contractor shall provide the Council with free access to such records; and
- (g) shall ensure that at all times during the term of this Contract each member of its staff, contractors or sub-contractors (including Specified Personnel) does not take any step which will lead to the Contractor being in breach of its obligations under this Contract.

Contract for Consultancy or Professional Services between Brisbane City Council and Max Winders & Associates Pty Ltd trading as MWA Environmental

3. Variation of Contract

No variation to the nature or scope of the Services (including the manner of providing the Services) ("the Variation") shall be binding on either party unless and until agreed in writing by both parties. The prices applicable to any such Variation shall be as agreed to by the parties but cannot be proceeded with if the Fees and the prices for the Variation will, in aggregate, exceed \$100,000 (exclusive of GST).

4. Contract Material

4.1 The title to and ownership of intellectual property (including copyright) in all Contract Material shall vest in the Council immediately upon its creation. The Contractor shall do all things necessary to perfect the vesting of the intellectual property rights attaching to the Contract Material in the Council.

4.2 On the expiration or earlier termination of the Contract, the Contractor shall deliver all copies of the Contract Material (irrespective of the form in which such material has been copied, stored, written, recorded by any means whether electronic or encrypted) to the Council Liaison Officer.

4.3 The Contractor shall not use the Contract Material for any purpose other than performance of the Services. Further, the Contractor shall take all reasonable steps to treat and keep such Contract Material as strictly confidential and shall ensure no unauthorised persons or any third party (including any member of the public) have access to any part of the Contract Material during or after the completion of the Services without the Council's Consent.

4.4 Except as required by law, the Contractor shall:

- (a) treat and keep as strictly confidential all Contract Material in the possession of the Contractor and shall not disclose any of the Contract Material to any person including, but not limited to, the media (other than the Specified Personnel and/or such other staff, contractors and sub-contractors the Contractor is utilising in order to provide the Services); and/or
- (b) not make any statement or comment to the media nor issue any media release in relation to any matter concerning this Contract;

without first obtaining the Council's written consent. Any such application for disclosure must be sought from the Council Liaison Officer. Further, the Council may (in its sole and absolute discretion) impose such terms and conditions it deems appropriate in relation to the format and content of such disclosure and/or statement.

4A. ADDITIONAL PROVISIONS

4A.1 (Contract Material) in delivering, creating and finalising any Contract Material under this Contract:

- (a) (claims as to ownership of Intellectual Property Rights) when preparing any draft or final version of any Contract Material, the Contractor must not:

- (i) make any statement; or
- (ii) insert any symbol (such as the use of the copyright symbol);

In any such Contract Material which can reasonably be interpreted as the Contractor claiming that the Contractor owns the Intellectual Property Rights over all of the Contract Material. The Contractor can only claim ownership over the Contractor's Material and in doing so, the Contractor must clearly identify which parts of the Contract Material are comprised of the Contractor's Material;

- (b) (restrictions on Council's use of Contract Material) notwithstanding any other provision of this Contract in relation to Intellectual Property Rights, the Contractor must not seek to impose any limitation or restriction on Council's use of the Contract Material (including, but not limited to a requirement for Council to seek any consents or approvals from the Contractor or any third party before Council seeks to use such material) unless the exact nature and wording of such limitation or restriction is expressly agreed in writing with the either the Council's Chief Legal Officer or Council's Chief Procurement Officer (or their respective delegates/authorised officers) before this Contract is agreed between the parties; and

- (c) (disclaimers) the Contractor is not permitted to use disclaimers or other forms of qualification or reservation unless the exact nature and wording of such limitation or restriction is expressly agreed in writing with the either the Council's Chief Legal Officer or Council's Chief Procurement Officer (or their respective delegates/authorised officers) before this Contract is agreed between the parties.

4.2A (Personal Information) if at any time during the Term of this Contract, the Contractor collects or has access to Personal Information in order to provide the Services, the Contractor must:

- (a) fully comply with Parts 1 and 3 of Chapter 2 of the *Information Privacy Act 2009* (Qld) ("the Act") as if references to "agency" in those Parts of the Act were references to the Contractor;
- (b) not use any Personal Information other than for the purposes of providing the Services unless otherwise required or authorised by law;
- (c) not disclose Personal Information without the prior written consent of the Council's Contract Authority unless required or authorised by law;

Contract for Consultancy or Professional Services between Brisbane City Council and Max Winders & Associates Pty Ltd trading as MWA Environmental

- (d) not transfer Personal Information outside of Australia without the prior written consent of the Council's Contract Authority;
- (e) ensure that access to Personal Information is restricted to those of the Contractor's Staff who require access in order to perform their duties;
- (f) ensure that the members of the Contractor's Staff who have access to Personal Information comply with the obligations imposed on the Contractor under this clause;
- (g) fully co-operate with Council to enable Council to respond to applications for access to or amendment of a document containing an individual's Personal Information and to privacy complaints;
- (h) comply with such other privacy and security measures in relation to Personal Information as the Council reasonably advises the Contractor from time to time
- (i) if requested by the Council's Contract Authority, obtain from those members of the Contractor's Staff, an executed deed of privacy in a form acceptable to Council; and
- (j) immediately notify the Council on becoming aware of any breach of this clause 4A.2.

For the purposes of this clause, the term "Personal Information" has the meaning given in the *Information Privacy Act 2009* (Qld) and, where the context requires, means Personal Information in connection with this Contract.

5. Fees and Invoice procedure

5.1 The Contractor shall provide the Services for the Fees specified in the attached letter. The parties agree that the Contractor shall not charge the Council for any additional fees nor incur such additional fees without first obtaining the Council's Consent.

5.2 No monies shall be paid to the Contractor until such time as the Council Liaison Officer has received an properly rendered invoice that meets the requirements of clause 5.3 and the Council Liaison Officer has not exercised the provisions of clause 5.4.

All such invoices must be invoiced on the basis specified in the attached letter (unless otherwise agreed in writing with the Council Liaison Officer). Except where clause 5.4 applies, the Fees Invoiced shall be paid 30 days from receipt of a correctly rendered invoice by the Council.

5.3 An invoice will be deemed to not have been properly rendered unless it:

- (a) specifies the title of the Service, the name of the relevant business unit within Council, name of the Council Liaison Officer and the Contract number or purchase order number (if any); and
- (b) provides such details of the Fees invoiced as the Council Liaison Officer may from time to time require (and which may include the attachment of receipts, the number of hours involved and the amounts of GST (if any)); and

and is a valid tax invoice (as defined by the GST Laws) that also specifies the amount of GST payable in respect of the Services invoiced.

5.4 If at any time before the delivery of an correctly rendered invoice for Services or within 21 days of receipt by the Council Liaison Officer of a correctly rendered invoice, the Council Liaison Officer advises the Contractor that he or she is not satisfied with the standard and progress of all or any of the Services in question ("Disputed Services"), then:

- (a) the Contractor shall promptly re-perform or re-deliver such Disputed Services until such time as the Council Liaison Officer is satisfied that the Disputed Services have been satisfactorily performed or provided in accordance with this Contract; and
- (b) within 30 days of receipt of a correctly rendered invoice, the Council shall pay the Fees for the Services that are not Disputed Services.

The Council shall only be legally required to pay the Fees for any Disputed Services if the Council Liaison Officer is satisfied that the Disputed Services have been satisfactorily re-performed or re-provided to meet the requirements of this Contract. In such a case, payment shall be within 30 days of the Council Liaison Officer being satisfied with the re-performance and re-delivery of such Disputed Services.

6. Conflict of Interest

The Contractor warrants that, as of the date of entering into this Contract, no conflict of interest exists or is likely to arise in the performance of their obligations under this Contract. If during the term of this Contract, a conflict or risk of conflict of interest arises, the Contractor undertakes to notify the Council immediately in writing of that conflict or risk.

7. Negation of employment, agency and partnership

The Contractor shall not represent itself as being an employee, agent or partner of the Council and acknowledges that there is no relationship of employment, agency or partnership with the Council.

Contract for Consultancy or Professional Services between Brisbane City Council and Max Winders & Associates Pty Ltd trading as MWA Environmental

8. Termination of this Contract

8.1 The Council may:

- (a) suspend the scope of the Services at any time during the term of this Contract by the provision of a written notice to the Contractor specifying the extent to which the scope of the Services are to be suspended and the date from which such suspension is to take effect (a "Suspension Notice"); or
- (b) at any time terminate this Contract due to the Contractor:
  - (i) failing to comply with a Default Notice as required by clause 8.2;
  - (ii) having engaged in conduct or practice that is detrimental or harmful to the good name, reputation or interests of the Council;
  - (iii) entering into any form of insolvency administration or breaching any of its obligations under paragraph 7 of the attached letter or clauses 2.2(e) or 4 of these General Conditions; or
  - (iv) having offered or given any gratuity, bribe, bonus or discount of any sort to any member of the Brisbane City Council or any officer, employee or agent of the Council.

Such termination shall be effected by the Council giving the Contractor a written notice terminating this Contract and specifying the date of termination (a "Termination Notice").

8.2 Where the Contractor has failed to comply with the provisions of paragraphs 4, 6 or 7 of the attached letter or clauses 2, 4, 6 or 7 of these General Conditions, the Council may give the Contractor a written notice specifying the breach and requiring the Contractor to rectify the breach within the Specified Time ("Default Notice").

For the purposes of this clause, the "Specified Time" in relation to any breach of paragraph 6 of the attached letter or clauses 2, 4, 6 or 7 shall be 14 days from the date of the Default Notice (or such longer time period as specified by the Council in the Default Notice) and in relation to a breach of paragraphs 4 or 7 of the attached letter, shall be 7 days from the date of the Default Notice (or such longer time period as specified by the Council in the Default Notice).

8.3 Upon receipt of a Termination Notice or a Suspension Notice pursuant to clause 8.1, the Contractor shall immediately:

- (a) where the Contract has been terminated -- cease work in accordance with the Termination Notice; or
- (b) where the scope of work has been suspended -- suspend work in accordance with the Suspension Notice;

and take all steps necessary to minimise the loss suffered by it as a result of either notice and continue to provide Services that are not affected by any such notice. Any termination or suspension of all or part of the Services shall not affect any right or entitlement which either party is entitled to claim under this Contract.

8.4 Upon the termination or suspension of Services, the Council's liability (if any) to the Contractor shall be limited to:

- (a) in relation to termination -- payments for any Services (or any part) performed in accordance with the Contract before the date of termination as specified in the Termination Notice;
- (b) in relation to suspension of the Services -- payments for any Services (or any part) performed in accordance with the Contract before the date of suspension as specified in the Suspension Notice; and
- (c) any reasonable costs properly incurred by the Contractor which are directly attributable to the termination of the Contract or the suspension of Services (whichever is applicable) but which shall not include loss of prospective profits;

and payments for any Services not affected by either a Termination Notice or a Suspension Notice provided always that the maximum amount of the Council's liability to the Contractor under this clause shall be capped at the amount of the Fees (as varied pursuant to clause 3 or abated pursuant to clause 8.4(a)). The Contractor shall not be entitled to loss of profits.

8.5 This Contract can be terminated by mutual written agreement of the parties.

## **COMMENTS ON DR. JOHNSON'S REPORT**

### **1. WHETHER FLOODING CAN BE CAUSED OR EXACERBATED BY BACKFLOW OF STORMWATER?**

- In para 5 Dr. Johnson states "...in the majority of instances, higher flood levels were later caused by surface inundation when the River actually broke its banks". This was not the case in the three case study areas, except Auchenflower.
- The illustration in para 6 is too simplistic in that it does not show the extent of the stormwater drainage problem extending into the upper catchments.
- The explanation in para 7 is again too simplistic.
- Agree with the content of paras 8 & 9 but do not agree that the potential obstruction to stormwater flow by a BPD is so problematic that it cannot be managed by engineering design.
- Agree with paras 10 & 11 and that is why river bank augmentation and placing barriers across small creeks and drains need to be considered in some instances.
- It is considered that the investigations being undertaken for Brisbane City Council have addressed the complexities involved in answering this question, e.g. Figures 3 a,b & c.

### **2. IS IT LIKELY TO CONTINUE TO BE A PROBLEM? IS THE PROBLEM ONLY RELATED TO OLDER INFRASTRUCTURE OR DO LOCAL AUTHORITY DRAINAGE DESIGN REQUIREMENTS STILL NOT ADDRESS THE ISSUE?**

- Agree with comments in paras 13, 14 and 15 and provision for same should be considered in the subsequent stages of the investigation, including consideration of future case study areas in the lower reaches, e.g. Bulimba.
- Consider that para 16 overstates the head loss problem but understates the extent of areas that should be considered for backflow protection.
- Disagree with para 17 as there has been ample evidence given that habitable floors were inundated by backflow flooding in most case study areas.
- Local authority requirements to date have not addressed the backflow flooding problem.

### **3. ARE THERE MECHANISMS TO DEAL WITH AND/OR MITIGATE THE IMPACT OF BACKFLOW IN STORMWATER SYSTEMS? WHAT MEASURES ARE AVAILABLE TO MINIMISE INFRASTRUCTURE AND PROPERTY IMPACTS RESULTING FROM THIS TYPE OF FLOODING?**

- Agree in principle with paras 18, 19, 20, 21, 22 and 23.

- Agree in principle also with para 24 but not with the statement that *...any flood level increase in an area where significant flooding already occurs would be seen as significantly detrimental.*
- Agree with para 25 as that has been a major consideration of the investigation being carried out for Council.
- The investigations being carried out for Council are designed to provide detailed information on these issues.

**4. WHAT ARE THE ADVANTAGES AND DISADVANTAGES OF EACH OF THESE MEASURES?**

- These have not been considered at all adequately by Dr Johnson in Section 4 and certainly not in the detail required of a flood risk assessment.
- These issues are covered much more-comprehensively in the report prepared for Council.

**5. WHAT SHOULD LOCAL AUTHORITIES SUCH AS BRISBANE CITY COUNCIL BE DOING IN RELATION TO THIS ISSUE?**

- Agree with paras 26 and 28 that backflow flooding risk assessments should be investigated by all near-coastal local authorities.
- The next stage of the investigation is likely to include this in the further desktop review and in the selection of case study areas for preliminary assessment.
- I am satisfied with the manner in which Brisbane City Council is supporting the independent investigation into backflow flooding.

**M.F. Winders**

**4<sup>th</sup> October 2011**