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Curriculum Vitae

Andrew Norris, *BSc (Hons), MEngSc, MAWA*

PERSONAL

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OVERVIEW

Andrew Norris is a Director and Principal Engineer at the consulting engineering firm Martens & Associates Pty Ltd. His specialist areas of expertise are in the fields of:

- Stormwater management and reuse, flooding management and control.
- Soil management including issues of land contamination, sedimentation and erosion control and land capability analysis.
- Surface and groundwater resources and their protection and use.
- Water and wastewater treatment, reclamation, reuse and disposal processes.
- Water quality / pollution control and public health engineering.
- Civil and environmental engineering.

ACADEMIC

1999 Master of Engineering Science (Wastewater Management, River, Estuarine and Wetland processes, Hydrology and Hydrogeology)
(University of New South Wales, Sydney)

Fields of specialisation included water and wastewater treatment, environmental engineering, surface and groundwater resources.

1996 Bachelor of Science (Geomorphology) Honours and Chemistry Major
University of Sydney, Sydney

Fields of specialisation include environmental assessment, management and design and organic, applied and environmental chemistry.

1992 Higher School Certificate
James Ruse Agricultural High School, Sydney

MEMBERSHIPS AND AFFILIATIONS

AWA	Australian Water Association
NOSSIG	National On-site [wastewater] Systems Interest Group

EMPLOYMENT

2006 - present Director and Principal Engineer, Martens & Associates Pty Ltd

Responsibilities include the management and implementation of major engineering projects including land contamination assessment and remediation strategies; civil and environmental engineering design and assessment; stormwater and effluent reclamation and reuse projects, water cycle management plans / strategies and river rehabilitation and improvement schemes. Mr Norris' specialist expertise is use by both private and public sector clients. In addition to an extensive list of private client Mr Norris is regularly engaged by NSW NPWS and by various Councils to provide independent reviews of development applications and management strategies.

Company management responsibilities include the day to day management of operations, the various teams within Martens & Associates; project management; and human resource allocation and management.

2004 - 2006 Group Manager, Martens & Associates Pty Ltd

Responsibilities include the management and implementation of major engineering projects including effluent and stormwater reclamation and re-use projects, river rehabilitation and improvement schemes, water cycle management plans / strategies, land contamination assessment and remediation strategies, bushfire management strategies and general civil and environmental engineering design and assessment. Mr Norris' specialist expertise is use by both private and public sector clients with extensive experience providing Councils with independent reviews of development applications and management strategies.

Responsibilities include the day-to-day management of various groups within the Martens & Associates group of companies and project and human resource allocation and management.

1999 – 2004 Engineer and Senior Engineer, Martens & Associates Pty Ltd and Ecowerks Engineering Pty Ltd

During this period Mr Norris was involved in the development and detailed design of major sewage treatment and reclamation systems included tourist and residential development where effluent is reclaimed for beneficial reuse through irrigation and internal nonpotable reuse.

Mr Norris has undertaken extensive works in the field of environmental and civil engineering including bushfire management, land contamination assessment, remediation and verification and stormwater management and reclamation. Works included the detailed design and construction of over 20 000 linear metres of sub surface irrigation, 5 major sewage treatment and re use schemes and numerous small sewage treatment and re use systems.

Mr Norris has a wide range of interrelated engineering skills which have been applied to ensure the design and construction of ecologically sustainable and economically viable developments. In this time he developed a thorough understanding of relevant state and federal planning and environmental legislation and policies which is crucial in the development of sustainable and acceptable engineering solutions.

As a senior design and construction Engineer of Ecowerks Engineering responsibilities include the completion of / or supervise of design and construction of sewage and stormwater treatment facilities including [for example]: conventional activated sludge; IDEA treatment plants; constructed wetlands; sand filtration systems and the design construction and operation of domestic and commercial effluent reuse schemes.

1997 - 1999 Environmental Scientist, Martens & Associates Pty Ltd

In this time Mr Norris was involved in the first major review of geomorphic literature for the Hawkesbury Nepean (HN) Rivers for the HN Catchment Management Trust and the preparation of the first major compilation publication regarding geomorphology of the Hawkesbury Nepean Catchment.

Other major works included the development of major effluent reuse schemes and management plans for a range of private and government organisations including numerous Council Sewage Management Strategies.

MANAGEMENT AND COMMUNICATION EXPERIENCE

- Extensive project management
  Mr Norris has coordinated and managed more than 2000 independent environmental and engineering projects including concept / detailed design, construction and operation of major civil projects including stormwater and effluent reclamation projects.
- Coordination and management of subcontractors
  Mr Norris has extensive experience in the co-ordination and management of sub-contractors for a range of civil works.
- Expert Witness / Review
  Mr Norris have acted as an engineering / scientific expert witness on numerous NSW Land and Environment Court cases for state and local government, land owners and developers. Mr Norris acts for various Councils as an expert reviewer for development applications for which Council has insufficient in-house expertise. The range of matters for which these services have been provided include contaminated land management and hazardous ground gas management, effluent management, stormwater management, flood assessment and management and soil and water management.

MAJOR RECENT WORKS & PROJECTS

The following is a brief summary of a small number of recent significant projects and their scope of works. Site names are descriptive only for client confidentiality purposes:

Wollondilly Region Contamination Projects

Mr Norris is the project Director, Principal Engineer and appointed land and environment expert witness for a serious of contaminated sites in the Wollondilly area. Those sites have been contaminated through the importation of asbestos impacted material and through historical uses as poultry farms which have led to both asbestos and hazardous ground gas impacts. Mr Norris directed investigations and assessment of each site and managed the preparation of remedial action plans. Those solutions were relied on in Land & Environmental Court proceedings, with Mr Norris' evidence being accepted by the court as reliable and appropriate. Presently a number of the site are in the process of being redeveloped for future beneficial uses, as part of those redevelopment Mr Norris continues to provide advice on the managed of both asbestos and hazardous ground gases and design advice for the remediation measures required.

Tweed Heads Residential Subdivision

Mr Norris is the project Director, Senior Engineer and appointed expert witness for a 55 lot subdivision at Tweed Heads. This project involved a range of complex challenges relating to stormwater quality and quantity impacts, drainage constraints caused by low lying flood liable land and major land contamination issues relating to previously unauthorised and uncontrolled importation of fill. Mr Norris provided expert witness support to achieve a court ordered approval, this advice addressed matters of stormwater and flood management and land contamination.

Fill Remediation

Mr Norris has been the technical lead and managing Director on a number of large asbestos impacted soil remediation projects in western Sydney. These projects have included a range of remediation and management strategies including excavation and offsite disposal, entombment in-situ, relocation and entombment on-site and site treatment and material reuse. A number of recent projects have required the preparation of a site audit statement or have been approved through the land and environment court. Management of remediation of former and current poultry farms (Oakdale and Camden) have included the management of asbestos impacted soil / fill materials resulting from historical site use and poor demolition practices as well as the importation of uncontrolled, or poorly controlled, fill.

Australian Capital Territory Mobil Service Station Remediation

Mr Norris managed and provided technical supervision and oversight for these large service station remediation projects. Works over a 5 year remediation project included the management of groundwater, soil vapour and soil remediation including both offsite disposal and land farming of soils and the multiphase extraction of contaminated from the groundwater systems. Long term monitoring of groundwater hydrocarbon plumes and soil vapour contamination allowed for the development of a site remediation plan to address the proposed future commercial and residential uses of the sites.

Culburra Residential and Golf Course Developments

Mr Norris managed the development of the water cycle management solutions for a major urban land release and associated golf course (separate development applications) at Culburra on the NSW South Coast. The developments drains to ecologically and economically sensitive receiving waters being a RAMSAR lake and an oyster production area. Mr Norris has coordinated stakeholder consultation and engagement to achieve a water management system to address the concerns and requirements of numerous and diverse stakeholders including: NSW Office of Environment and Heritage, NSW Food Authority, Shoalhaven Council, local oyster farmers and the Catchment Management Authority.

National Parks & Wildlife (NPWS)

This ongoing engagement by the National Parks and Wildlife Service involves the development of management strategies for the range of sewage and water management solutions currently in use across the NPWS estate. This engagement provides both strategic and system / site specific advice to NPWS to allow for the management of deployed sewage systems in accordance with best practice.

Ongoing services to NPWS include the site specific assessment and design of solutions for sewage management in difficult and environmentally sensitive sites and for water supply systems where town water is unavailable. Recent specific projects include:

- Assessment, options review, design and tender management of renewal of Bents Basin Camp Group sewage management solution.
- Assessment, options review, design and tender management of renewal of Barrenjoey visitor precinct sewage management and water supply solutions.
- Preparation of standard operating procedures for 70 NPWS sewage management systems in the greater Sydney basin.
- Assessment options review and detailed design of Wattamolla Beach tourist precinct wastewater management solution.
- Assessment options review and detailed design of Fitzroy Falls wastewater and water supply system.
- Assessment options review and detailed design of Garie Beach wastewater management solution.
- Assessment options review and detailed design of Abercrombie Caves Camp Ground wastewater management solution.
- Assessment options review and detailed design of water and sewage management systems at Cattai campground.
- Assessment options review and detailed design of sewage management systems at The Basin campground.
- Provide specialist wastewater and water supply advice for numerous NPWS sites including – Gentleman's Halt Camp Ground, Duckholes Visitor Entry Station, Sydney Harbour Island NPWS tourist facilities, Weemalah Cottage, Cattai and Mitchell National Parks and Illawong Bay.
- Provide engineering design and tender specification and inspection services for the construction of 'Elco Rock' geotextile reinforced coastal protection walls at The Basin (Pittwater) and Bonnie Vale (Port Hacking) for NPWS picnic and camp ground facilities.

Wastewater Management Solutions

Mr Norris has, over the last 25 years, been involved in the site assessment, design, construction management and operation of hundreds of wastewater management systems ranging from individual houses, through to community systems and large tourist resorts and industrial wastewater produces.

Nudgee Golf Course

9 ha of the Nudgee Golf Couse, located in the north of Brisbane, was resumed by Qld TMR for highway upgrade works. Mr Norris has provided extensive advice to the club regarding the impacts of the highways works on the flood affected site. Works included review of TMR's consultants' flood modelling and impact assessment works and review of water quality and quantity assessments. Further to the resumption of the land the club is rebuilding large area of the course. Mr Norris is responsible for the flood impact assessment, acid sulfate soil assessment and stormwater management elements of the application for these works to Brisbane City Council.

Northern Beaches Christian School

Mr Norris's involvement with this site has included concept design, detailed design and implementation of a range of works associated with a number of phases of this site's redevelopment. Works have included major redevelopment of the site sewage management solution, implementation of landscape irrigation with effluent and the successful remediation of a large area of asbestos contaminated waste within the school's oval.

Mundamia Urban Release Area

Mr Norris has been involved in the development of the water cycle management solutions for a major urban land release at Mundamia on the NSW South Coast. The developments drains to ecologically sensitive environments containing threatened and endangered species and groundwater dependent ecosystems. Mr Norris has been engaged by both the local Council and the land owners to develop an integrated surface and groundwater management solution for the area to ensure both economically viable development and the protection of sensitive and endangered receiving environments. The solution developed has achieve Commonwealth approval and is presently under assessment by NSW DOPI. The assessment to date indicates the strategy developed by martens is wholly acceptable and shall achieve the conservation aims of the sensitive site.

This project included assessment and management of issues of land contamination as a result of past landuses (agricultural) and landfilling as well as the management of and acid sulfate soils.

North Arm Cove

Mr Norris acted for Council in a LEC matter and, through consultation, assisted the land owner in developing a wastewater management solution for a small subdivision which achieved both protection of the sensitive oyster growing areas immediately adjacent and achieving an economically viable solution. Discussions with NSW Food Authority indicate that the solution developed is now considered the benchmark for other similar proposals.

North Turramurra Golf Course

Mr Norris has managed the development of the civil engineering solutions for the ongoing North Turramurra golf course project for Ku-Ring-Gai Council. This project involves the development of new golf course holes on an existing landfill site. Works completed as part of this engagement include the development of civil engineering solutions for contaminated landfill capping, site drainage (including pit and pipe and open riparian zones, wetlands and dams) and retaining solutions for previously placed unstable landfill materials. Design and supervision of the implementation of a ground gas management system was undertaken by Mr Norris to ensure that the golf course works did not result in unacceptable off site GG impacts.

Strathfield Golf Course

Mr Norris has managed the flooding and stormwater assessment for golf course redesign works for this golf course located on the Cooks River floodplain. The impact assessment required the iterative redesign of course earthworks to ensure no determinately impact son the major drainage structures beneath Centenary Drive and no detrimental impacts on adjacent flood impacted residential areas.

Quarry Projects

Mr Norris has extensive experience and understanding of the requirements for the appropriate management of quarry project. Mr Norris is presently involved in the redevelopment of a number of major sand, gravel and hard rock quarry sites in NSW for quarry operators including Hanson Construction Materials, a major supplier of construction materials. Services provided for these projects include civil and geotechnical engineering, earthworks specification and design; surface and groundwater management and quarry rehabilitation planning and implementation. Mr Norris is further involved in other Hanson assets which are completing their operating life and are presently being rehabilitated prior to the company divesting itself of these assets.

Mr Norris has also been recently involved in L&EC proceedings relating to enforcement measures for a northern NSW private friable sandstone quarry. Works completed as a part of these proceedings have addressed matters of wastewater and water management as well as sediment and erosion control and quarry rehabilitation.

Mar Narsai School

Mr Norris has been involved in the development of this school proposal from its inception stage in 2006. This school development site has been approved by Fairfield Council for a site on Horsley Road. Matters considered and addressed by Mr Norris in this project include effluent; land contamination; riparian zone; and flood management together with general civil engineering design.

This ongoing project is presently moving in to Stage 4 of the development. Mr Norris is also involved in a range of other school projects and provides specific project advice on water cycle and land contamination management as well as managing the overall delivery of detail civil, geotechnical and environment engineering service of Martens for these projected.

HNSW NJBP Sites

Under the Nation Building Jobs Plan Housing NSW redeveloped hundreds of NSW sites. Mr Norris was involved in this process from the site selection through to detailed design and implementation stage. Works included the initial appraisal of Gosford and Wyong LGA sites to assess their compatibility with HNSW redevelopment in terms of land contamination risk, geotechnical conditions, bushfire constraints and drainage and flooding issues. Following site selection detailed site specific works include land contamination and geotechnical appraisals and preparation of remediation action plans, bushfire assessments, water quality assessments and designs.

Roseville Golf Course Stormwater Reclamation Project

This project involved the development of a stormwater harvesting and storage strategy for a major Sydney Golf Course. The scheme includes the harvesting and pretreatment of stormwater from Moores Creek and its transfer to a new 26 ML storage dam. The dam shall satisfy the majority of the site's future irrigation water demands permit self sufficiency from the Sydney Water scheme and achieving a range of catchment and Harbour water quality improvements.

This project involved discussions and negotiations with NSW Department of Natural Resources (including surface water licensing), NSW Dam Safety Committee and the local Council.

This project included the management of extensive buried contaminated soils placed during the construction of the golf course. Management of this material was achieved through the entombment of the asbestos contaminated material within a cell in the foundation of the dam wall.

Hunter Valley Wineries

The close proximity of tourist, residential and industrial (winery) developments in the Hunter present a range of unique engineering and planning issues. The scarcity of water in this region and costs associated with its supply necessitate the careful integration of water cycle management systems to optimise the re-use of water. Mr Norris has been involved as the principle engineering consultant for a number of major Hunter Valley wineries engaged to assess and manage winery wastewater management scheme. These schemes have included the design and operation of winery wastewater treatment systems and the design and implementation of wastewater re-use systems.

North Bridge Golf Course Stormwater Reclamation Project

This project involved the development of a stormwater harvesting and storage strategy for a major Sydney Golf Course. The scheme includes the harvesting of runoff from approximately 12 ha of urbanised land and golf course lands, the transfer of harvested water through treatment systems to a 22 ML storage dam. The dam shall satisfy the majority of the site's future irrigation water demands permit self sufficiency from the Sydney Water scheme and achieving a range of catchment and Harbour water quality improvements.

This project involved discussions and negotiations with NSW Department of Natural Resources (including surface water licensing), NSW Dam Safety Committee and the local Council.

Sutton Caravan Park Project

This project involved the development of a detailed water cycle management strategy for a major enlargement to an existing caravan park in the hydraulically strained Sutton area of NSW. This region has highly over utilised surface and groundwater resources making innovative solutions critical to the project success. Completed works included the development of a fully integrated water supply, stormwater management and sewage treatment and reclamation scheme for the development. A wide range of issues where addressed in this study including the regulatory implications of the Water Act, Farm Dams Policy, and Groundwater and Surface Water licence embargos in the region.

Ancillary works on this project included bushfire management, land contamination and geotechnical design considerations. This project is typical of recent projects in the wide range of works completed and issues addressed.

Snowy Mountains Tourist Resort

Management of effluent and associated public health and environmental risks in the sensitive alpine region of NSW is critical for the successful operation of major tourist infrastructure. This ongoing project initially involved an assessment of existing site infrastructure and preparation of documentation for Council approval. Subsequently major sewage management infrastructure upgrades have been designed and approved including major sewage treatment and storage reservoir upgrades and the detailed design of a major new golf course effluent irrigation scheme.

Cromer Golf Course

This two stage project involved the removal of approximately 200 m of stormwater pipe and the design and construction of new open channel systems. These works required extensive hydraulic and hydrological assessment as well as consultation and approval for 'waterfront lands' works.