

**Name:** Dr. William Atherton

**Current Position:** Principal Lecturer/HND/C Programme Manager

**Contact Information:**

Liverpool John Moores University  
Faculty of Technology & Environment  
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**Qualifications:**

2008, PhD, Liverpool John Moores University

2002, BEng (Hons) Civil Engineering – 1st Class, Liverpool John Moores University

1988, HNC Mechanical & Production Engineering, Liverpool Polytechnic

1985, ONC Civil Engineering Studies, Central College Liverpool

**Research Interests/Areas of Specialism:**

Health & Safety Executive Bund Wall Overtopping	2003 - 2005
Catastrophic failure of storage vessels	2003 - Current
Environmental damage from oil spills and land use planning	2007 - Current
Wave impact on structures	2008 - Current
Effect of global warming on rainfall	2010 - Current
Waste management and the effects of landfill leachate	2011 – Current
CFD modelling validation using physical Modelling	2011 - Current

### Areas of Specialism:

- Geotechnical analysis and design
- Engineering materials
- Structures
- Hydraulics

### Achievements:

Winner of the Institution of Civil Engineer's Prize for civil engineering students (2002).

Recognition for an outstanding contribution to Liverpool John Moores University - Staff Annual Dinner (2009).

Nominated for the outstanding teacher award - Liverpool Students' Union Teaching Excellence Awards (June 2010).

Nominated for the Amazing Teacher Award - Liverpool Students' Union Amazing Teacher Awards (June 2011).

### **Professional membership/involvement:**

Institution of Civil Engineers  
Junior Vice-Chair of ICE North West Merseyside Branch  
ICE North West Merseyside Branch Education Representative

### **Teaching and Research Activities:**

#### Level 4

Design Principles & Civil Engineering Technology  
Structures & Materials

#### Level 5

Materials

#### Level 6

Advanced Civil Engineering Materials

**Other Duties:**

Programme Manager for the suite of HND/C programmes in the School

Member of School Research and Enterprise Committee

Member of Student Experience and Enhancement Committee

Member of the Industrial Liaison Committee for Civil Engineering

Former member of the School Quality Committee

Director of Studies/Supervisor for PhD Research projects

**Current Research:**

In 2005, work was completed on a project funded by the Health and Safety Executive (HSE) to the tune of £87,000, conducting research into the catastrophic failure of primary storage tanks, secondary containment and overtopping with associated dynamic pressures.

Interest has recently developed in the physical modelling for the impact of waves on structures allowing the determination of dynamic pressures and global forces. This work has a number of applications ranging from dam-break applications to tsunami and coastal defences.

Contracted research for the validation of Computational Fluid Dynamics software is currently being undertaken on an international basis with findings to be used in the development of new regulations and guidelines for bulk storage operators.

**Other Research:**

Using photoelastic techniques identified significant cost savings in materials required to achieve resin-bonded anchorages (2002). This work has possibilities for further research leading to the development of a new system for producing safe anchorages requiring the injection of less resin.

**Enterprise Activity:**

Previous role of School Enterprise Champion (up to Dec 2010) - portfolio of work with a forward order book of approximately £366,000.

## **Topics for dissertation students:**

Use of sustainable materials in construction

Failure of materials in construction

Waste management on site

Geotechnical assessment and modes of failure

## **Grants obtained:**

Two faculty research grants

## **Recent Publications (2004-to date):**

### Publications:

Atherton W. (2005), 'An experimental investigation of bund wall overtopping and dynamic pressures on the bund wall following catastrophic failure of a storage vessel.' Research Report 333, HSE Books, ISBN 0-7176-2988-0. An electronic format is also available on the HSE website.

Thyer A.M., Jagger S.F., Atherton W., Ash J.W. (2009) 'A Review of Catastrophic Failures of Bulk Liquid Storage Tanks'. Loss Prevention Bulletin, issue 205, I. Chem. E., ISSN 0260-9576.

### Conference/seminar papers:

Industry Seminar – Atherton W, (2004), 'An Experimental Study into the Performance of Bund walls.' - Paper 1 - Construction of the Test Rig, Paper 2 - Experimental Results.

The Liverpool Conference in Built Environment and Natural Environment – first Annual Conference – Atherton W. (2006), 'Catastrophic Failure of Storage tanks & Secondary Containment.'

GERI Annual Research Symposium – Atherton W., Ash J.W. (2006), 'The Design & Manufacture of a Large Scale Test Facility for Modelling & Measuring the Losses Incurred in the Event of a Catastrophic Failure of a Bulk Storage Tank.'

The Liverpool Conference in Built Environment and Natural Environment – Second Annual Conference – Atherton W., Ash J. W. (2007), 'Review of Failures, Causes & Consequences in the Bulk Storage Industry.'

The Liverpool Conference in Built Environment and Natural Environment – Second Annual Conference – Ash J. W., Atherton W. (2007), 'Current Overtopping Data; its Implications for Industry, the Environment & the Need for Mitigation.'

I. Chem. E. 12th International Symposium – ‘Loss prevention & Safety Promotion in the Process Industries.’ Edinburgh 2007 – Atherton W., Ash J. W., Alkhaddar R. M. (2007), ‘An Empirical Study into Overtopping & Dynamic Pressures on a Bund Wall Post Catastrophic Failure of a Storage Vessel & Methods of Mitigation.’ ISBN 978-0-85295-508-6.

2008 International Oil Spill Conference, Savannah, Georgia, USA – Atherton W., Ash J. W. and Alkhaddar R. M. (2008), ‘The Modelling of Spills Resulting from the Catastrophic Failure of Above Ground Storage Tanks and the Development of Mitigation.’

The Liverpool Conference in Built Environment and Natural Environment – Sixth Annual Conference - Abdellatif M., Atherton W. and Alkhaddar R. (2011), ‘A Methodology for Downscaling Rainfall in North West of England under Climate Change using Hybrid GLM-ANN Model.’

The Liverpool Conference in Built Environment and Natural Environment – Sixth Annual Conference - Adegoke, B. P., Atherton, W. and Alkhaddar, R. M. (2011), ‘An experimental study of a new seawall design for the mitigation of Tsunami.’

The Liverpool Conference in Built Environment and Natural Environment – Sixth Annual Conference – Kennedy S., Atherton W. and Ross A. (2011), ‘The use of Spearman’s Ranking Coefficient as a Facilitator in the Development of an Environmental Performance Indicator.’

12th International Water Association UK Young Water Professional Conference - Adegoke, B. P., Atherton, W. and Alkhaddar, R. M. (2011), ‘Effects of Tsunami on Coastal Waters: A New Hard Engineering Approach of Mitigation.’ Extended Abstract Proceedings, The University of Edinburgh, 13th – 15th April, 2011, pp 15-16.

Papers due for publication:

Atherton W., Ash J. W. (2010), ‘An Empirical Approach to the Risk of Bund Overtopping in the Bulk Storage Industry.’ Submitted to the Journal of Loss Prevention in the Process Industries – Elsevier

Atherton W., Ash J. W. (2010), ‘Dynamic Loading on Bund Walls Post Failure of a Storage Tank.’ Submitted to the Journal of Process safety and Environmental Protection - IChemE.

Atherton W., Ash J. W. (2010), ‘The Management of Bulk Storage Facilities and the Consequences Accidents on the Urban Landscape.’ Submitted to the Journal of Urban Design International - Palgrave Macmillan.

Atherton W., Ash J. W. (2010), ‘Loss Reduction in the Event of Storage Tank Accidents.’ To be submitted to the Journal of Loss Prevention in the Process Industries – Elsevier

Atherton W., Ash J. W. (2010), 'The Catastrophic Failure of Bulk Storage Vessels and the Under Performance of Secondary Containment.' Submitted to IChemE Journal of Process Safety and Environmental Protection.

Atherton W., Ash J. W. (2010), 'Safety performance in the Bulk Storage industry.' Submitted to the Journal of Safety Science.

Adegoke, B. P., Atherton, W. and Alkhaddar, R. M. (2011), 'Effects of Tsunami on Coastal Waters: A New Hard Engineering Approach of Mitigation.' Journal of Water Science and Technology – Manuscript Number WST-WSTWS-EM11741 (under review).

Saghafi, B., Al Nageim, H. and Atherton, W. (2011), 'The Mechanical Behaviour of a New Base Material Containing High Volume of Limestone Waste Dust, PFA and APC Residues.', Journal of Materials in Civil Engineering (under review).

Abdellatif M., Atherton W. and Alkhaddar R. (2011), A Hybrid Generalised Linear & Levenberg-Marquardt ANN Approach for Downscaling Future Rainfall in North Western England. Submitted to the Journal of Flood Risk Management.

Abdellatif M., Atherton W. and Alkhaddar R. (2011), 'Climate Change Impacts on the Frequency of the Extreme Rainfall for Selected Sites in North Western England.' Due to be submitted.

Idowu I., Alkhaddar R., and Atherton W. (2011), 'A Prescriptive Study of the Impact of Landfill Leachate on Water Catchment Areas across North West England.' Due to be submitted.

Idowu I., Babajide A., Atherton W. and Alkhaddar R. (2011), 'Profile of Medical Waste Management in Three Tier Hospitals in Lagos, Nigeria.' Submitted to the Journal of Waste Management and Research.