

Pete Wells

Software Developer / GIS Specialist

Profile

Peter is an engineer with nine years of experience and a strong background in software development, GIS and numerical modelling.

Peter works closely with clients to better understand their requirements and to develop solutions which best match their needs. Where software development is sought, he enjoys defining requirements together with the users and seeks to leverage the power of existing free and open source software (FOSS) technologies where possible.

Peter enjoys tackling analytical problems and has a particular interest in tackling large-scale GIS analyses in a parallel manner using PostGIS.

He has written a number of Python plugins for QGIS and enjoys teaching others to do the same. Peter runs Lutra's courses in PostGIS and Python.

Languages

English **Mother tongue**

Portuguese **Intermediate**

Education and Professional Membership

2004 **BEng (Hons)**, *University of Surrey*, UK.
Civil Engineering with Computing

2014 **Graduate Member**, *Chartered Institution of Water and Environmental Management*, UK.

Experience

2009–Present **Partner**, *Lutra Consulting*, UK.
Projects

- 2012-Present: TransparentForests (Forest Stewardship Council), Software developer and architect
 - Worked with users and other consortium members to develop system requirements, lead the design of the system architecture and investigated how such a service could be run in a secure and sustainable manner.

- 2013-Present: illuvis (Lutra Consulting), Software developer and architect
 - Managing the development and implementation of illuvis - an online flood risk mapping platform. Developing security systems, back-end services and desktop GIS tools / interfaces.
<https://www.illuvis.com>

- 2013-2014: PostGIS Consultancy (A multinational insurance company), Software developer and GIS consultant
 - Developed a set of tools for efficiently automating the processing of national-scale flood hazard datasets.

- 2013-2014: Remote Field Surveying Tools (Rainforest Foundation UK), Software developer
 - Developed an Android / QGIS-based field application to support participatory mapping in the Congo Basin.

- 2013-Present: QGIS plugin development (Various clients), Software developer
 - AutoTrace - provides MapInfo-style tracing in QGIS (various local authorities, 2014)
<http://plugins.qgis.org/plugins/autoTrace/>
 - Constraints Checker - quickly generate reports on planning constraints (Dartmoor National Park Authority, 2014)
 - CMaps Region Creator - generates custom business regions and territories (Centigon Solutions, 2013)
<http://centigonknowledge.com/cmmaps-analytics-region-creator/>
 - Crayfish (see below, 2012)
 - NFCDD Updater - automates the updating of Environment Agency National Flood and Coastal Defence Database (Halcrow Group, 2012)
<http://www.lutraconsulting.co.uk/casestudies/nfcdd-updater>
 - OS Translator - imports OS MasterMap into QGIS (Lutra Consulting, 2011)
<http://plugins.qgis.org/plugins/os2ogr/>
 - ANUGA-GAI - easily build ANUGA hydraulic models in QGIS (Lutra Consulting, 2009)
<http://sourceforge.net/projects/anuga-gai/>

- 2013: PostGIS Consultancy (Ordnance Survey), GIS consultant
 - Calculated the service areas for all libraries in the UK based on the drive-time through the complete UK road network.

- 2012: Crayfish plugin for QGIS (Lutra Consulting), Software developer

- Developed the Crayfish plugin which loads time-varying results from numerical models directly into QGIS. The plugin features a custom renderer for responsive animations. <http://www.lutraconsulting.co.uk/resources/crayfish/>
- o 2012: Benchmarking of ISIS 2D GPU (Halcrow Group), Software developer
 - Provided software developer and senior hydraulic modeller inputs for the benchmarking of Halcrow Group's ISIS 2D GPU package for inclusion in the Environment Agency's 2D Hydraulic Modelling Benchmarking report. Enhanced, extended and debugged ISIS 2D GPU to facilitate the running of benchmark models and provided critical review of test results.
- o 2012: Massively Parallel Modelling Platform (Halcrow Group), Software developer
 - Developed and provided ongoing support for Halcrow Group's MP2 tool which is used to automate the hydraulic modelling process for large national assessments of fluvial flood risk.
- o 2012: ISIS 2D GPU development (Halcrow Group), Software developer
 - Extended the GPU-based solver of ISIS 2D into a fully featured hydraulic modelling package, allowing it to be used as a commercial product. Development included, amongst other things, writing functionality to read model input files (using GDAL), control the simulation and write simulation results.
- o 2011: Catchment Finder (Lutra Consulting), Software developer
 - Developed Catchment Finder, an online hydrological catchment delineation tool. http://webgis1.lutraconsulting.co.uk/catchment_finder/
- o 2010: Rainforest Foundation UK Geo-database (Rainforest Foundation UK), GIS specialist and software developer
 - Planned and implemented a centralised GIS database for field survey data and developed associated user interface tools and web mapping application.

2008–2011 **Senior Hydraulic Modeller and Software Developer**, *Halcrow Group Ltd*, UK.
Projects

- o 2008-2011: ISIS and ISIS 2D, Software developer
 - Lead the ISIS 2D software development team and provided support for the development of ISIS.
- o 2008-2011: ISIS and TUFLOW UK Support.
 - Supported ISIS, ISIS 2D and TUFLOW customers in the UK.
- o 2010: Benchmarking of 2D Hydraulic Modelling Packages (Environment Agency), Senior hydraulic modeller.

- Supervised the development and assessment of ISIS 2D and ANUGA models for inclusion in the Environment Agency's 2D modelling benchmarking exercise.
- 2010-2011: National Hydraulic Appraisal of Risk from Canal Breach (British Waterways), software developer and senior hydraulic modeller.
 - Developed a series of scripts to semi-automate the building, running and post processing of 2300 ISIS 2D canal embankment breach models. Wrote guidance for the team of modellers tasked with reviewing the outputs from the automated modelling process.
- 2008-2009: National Reservoir Inundation Mapping (RIM) Pilot Study (Environment Agency), Senior hydraulic modeller
 - Tested and improved the draft modelling specification and guidance set out for participating consultants.
- 2008-2010: Environment Agency SFRM Model Review Contract, Senior hydraulic modeller
 - Undertook FRA model reviews on behalf of the Environment Agency.

2006–2008 **Senior Hydraulic Modeller**, *Buro Happold Ltd*, UK.
Projects

- 2006-2008: 2012 Olympic Village (Olympic Delivery Authority), Senior hydraulic modeller.
 - Lead a team of modellers to:
 - assess flood risk associated with the design of the park and associated construction works
 - propose and test flood mitigation options
- 2007-08: Olympic Village CCHP EIA (Olympic Delivery Authority), Senior hydraulic modeller
 - Determined the likely thermal plume associated with using the River Lea as a heat sink for a Combined Cooling, Heat and Power facility.
- 2003-05: Software optimisation, Software developer .
 - Optimisation of an in-house coastal modelling software.

2005–2006 **Hydraulic Modeller**, *WSP Ltd*, UK.
Projects

- 2002-03: Various flood risk assessments, Hydraulic modeller.
 - Provided hydraulic modelling support for a number of projects including the Swindon Southern Development Area.

2004–2005 **Graduate Hydraulic Modeller**, *Capita Symonds*, UK.
Projects

- 2003-05: Various CFMPs and SFRAs, Graduate engineer.
 - River Arun
 - River Cuckmere.
 - Pevensey Levels
 - North and Mid Somerset region

- 2007-09: In-house GIS software development, Graduate engineer
 - Developed a series of tools to automate the process of refining the edges of flood extents produced by TUFLOW.

Publications

Wells, P. (2009), Accuracy of the ISIS bridge methods for prediction of afflux at high flows: discussion from an ISIS user's perspective. *Water and Environment Journal*, 23: 166-167. doi: 10.1111/j.1747-6593.2009.00153.x

Environment Agency (2010), *Benchmarking of 2D Hydraulic Modelling Packages*

Reaney, S.M. & Wellsp, P. (2014), Enabling access to non-point source risk mapping tools using Open Source Software and Open Geospatial Consortium (OGC) standards : the development of the SCIMAP WebApp