Appendix A. BIM learning outcomes for the tertiary levels in NZ (adapted from BAF UK, 2013)

Level (NZ)	Knowledge and understanding	Practical skills	Transferable skills
	Undergraduate		
5	BIM Concepts - construction processes I Importance of collaboration The business of BIM Need for open BIM to enable interoperability	Introduction to technology used across disciplines	BIM as a process/technology/ people/policy
6	BIM concepts – construction processes II Stakeholders' business drivers Supply chain integration BIM frameworks for interoperability and collaboration	Use of visual representations BIM tools and applications Attributes of a BIM system	Value, lifecycle and sustainability Software as service platforms for projects Collaborative working Communication within interdisciplinary teams
7	BIM across the disciplines Contractual and legal frameworks/regulation People/change management Limitations of current BIM approaches	Technical know-how: structures and materials Sustainability	Process/management: how to deliver projects using BIM Information and data flows BIM protocols/Project BIM Brief, BIM Execution Plan (BEP)
	Postgraduate		
8-9	Collaborative working, BIM, information management and its application in the built environment Commercial implications – contractual/legal etc. De-risking projects through BIM and risk management Understanding nature of current industry practice Client value – soft landings Business value – RoIe/ value proposition Understanding supply chain management (stakeholder integration & management) Lifecycle management of BIM – asset, performance in use etc.	Demonstrate ability to adopt different platforms Critically judge/evaluate various BIM tools/applications, protocols/ interoperability/ standards Capability evaluation Change in way projects are to be delivered Visualisation of large data sets Lean principles and links to BIM Use of BIM enabled technology e.g. palm devices	Project level application Cross discipline and team working Importance of effective communication and decision making – human interaction! Process mapping and Business Process Re-engineering (BPR) Change management and cultural gap Masters level thinking – strategic/technical/ managerial Ability to assess barriers to BIM at various levels e.g. corporate/project