Contents

1 Introduction

i) Aims and Objectives:

The overall aim of this research is to improve the dissemination of Lessons Learned in construction projects so that contractors' project teams have access to the most relevant lessons at the most appropriate time, in the most appropriate format. The outcome of the research will provide (1) an understanding of the different systems and tools used for recording Lessons Learned amongst major construction contractors; (2) an understanding of the needs in terms of what sort of lessons are required, the level of detail required and how best these should be made available; and (3) an approach on how best to disseminate Lessons Learned.

The key objectives of the research are to:
1. Investigate current practice for recording and disseminating Lessons Learned;
2. Identify potential barriers for successfully disseminating Lessons Learned; and
3. Identify key factors affecting company processes to encourage a more systematic dissemination of Lessons Learned.

The study was conducted in three phases. The first investigated contractors' current practices for recording and disseminating Lessons Learned through a questionnaire survey. The second phase identified key factors that would encourage the institutionalisation of Lessons Learned and also the factors that inhibit their use. The third phase examined how current processes could be adapted to develop a process that would embed the systematic dissemination of Lessons Learned within an organisation's existing practices.

This report focuses on the second stage of the project to identify from the end users those factors that would encourage the institutionalisation of Lessons Learned and also the factors that inhibit their use of Lessons Learned.

ii) Methodology:

Semi structured interviews were conducted with personnel from Head offices from ten construction companies who were responsible for driving Lessons Learned programmes. This was followed by three focus group interviews with project teams on site. The ten companies were selected from those who indicated willingness to participate in interviews in the online questionnaire survey that preceded this task. Eight of the larger companies who had established Lessons Learned practices in place and two of the smaller companies who were aspiring to develop Lessons Learned practices were selected for further interview. Their roles and designations are as follows.

Interviews with Head offices	
Company	roles
A	Knowledge improvement manager
B	Associate director
C	Business systems manager

D	Managing director	
E	Head of Value	
F	Technical services manager	
G	Regional director	
H	Chief Engineer	
I	Business systems manager	
J	Business development manager	
Interviews with Project Staff		
Company	roles	
A		
B		
C		

Semi structured interviews were based upon the answers given in the survey questionnaire about the company activities in Lessons Learned. However, at the start the interviewees were given the option to change any of the views expressed in the online questionnaire. The questions were based on further understanding the barriers to Lessons Learned and therefore how to encourage the institutionalisation. The focus group questions were based on the activities said to be done by the Head office to understand how the project personnel were engaged with the process in contributing to Lessons Learned and also sharing and usage of available lessons.

This report is divided into three sections. Section 1 introduces the research project and work package; section 2 and 3 presents the findings from the interviews with Head office and project staff. Section 2 describes the processes in Lessons Learned activities in the companies mentioned in the interviews; this section supplements the information the respondents provided in the questionnaire survey on Lessons Learned activities in their companies. Section 3 presents the data and analysis of the interviews grouped under several themes as: Needs/ requirements, Processes/ practice, Contents/ capture and storage, Communication/ dissemination, Enablers, Barriers. Under each of the themes the arising issues are highlighted together with suggested improvements.

2 Findings from Interviews

This section will describe the processes for conducting Lessons Learned activities in the ten companies interviewed. The activities have been grouped as those with a main focus on tacit sharing and explicit sharing. However, these activities may involve both tacit and explicit components but have been split into groups according to the primary mode of sharing Lessons.

TACIT	Activities	company
EXPLICIT	Activities	company

A	This takes the form of a workshop facilitated by externals. The outputs are Learned Work shop report or end of project report. These are done at various the end of a project. Those usually present are the senior team such as Pro manager, safety manager. The outputs are stored as electronic PDF files on personnel involved in the project and with the senior management team. Usua estimators, business development people, Knowledge management personnel have If it is a failed project then other teams are also called in to analyse th report.
B	Takes the form of workshop to tease out experiences to discuss what went we report. The report was considered to be good but was not disseminated and t the learning outcome is not effective, the company is now doing away with t business units but will continue for strategic projects that operate across
C	Post project reviews are now done as an audit 3 months after the project an documentation is in place. Whether any thing needs to be changed in the syst company believes that large PPR is of little value. The report sits in each Access is only to project staff of that job and regional managers therefore search. It is an externally hosted document management system therefore lot necessary.
D	This is called the Internal post contract review meeting. Data on health an targets achieved captured. Usually attended by estimators, planners, health involved in the job will fill in the review form. The session tries to coll information is archived.
E	Post project reviews or Lessons Learned exercises are conducted in some pro sends an agenda with the time line for the project and asks for negative an was well received as people They were not ready to spend time on it. It was lessons were learnt much earlier on in the project and were forgotten. The positives and also for 5 key things for improvements. Done for the benefits the next projects
F	The project team, as well as regional managers some times participates. The at these considering that as all these are reported in their monthly report inconvenience that is not of benefit to them. Project close out tend to glo known the background to the project, it was of the view that a 'glossed' ov presented in the PPR. People round the table said they were only interested The project staff thought that Project close out reports did not add any va consuming. Site teams said this information had already been submitted in m logs. However, it was mentioned that as others outside the site personnel s be important. As formal processes didn't work, it was felt that more corpor may be achieved with informal approaches.
G	The company use an ongoing process that replaces Post project reviews. Make identify problems and use a 'traffic lights' system. There is team on each monthly reviews. Creating taxonomy is the big challenge for the company bei operating all over the world. Therefore, better ways of visualising to arti depending on key words is being developed. The conventional Post project re because on going project review meetings try to capture knowledge and learn this being that Project Managers not wanting to record problems. However, w involvement, the company is moving away from an inward focus to become much Customers are not involved in the process as separate meetings with the cli important needs .The company then finds a process at the very start to get clients and measure progress along the way and use our matrix and have cont facilitator then feeds it back to the business.
H	The Post project reviews sit within projects on intranet and describes what The company is continuously striving to improve this process and PPR are on to look into. The recently developed feed back systems are starting to pic try to get them built in to the rest of the feedback system to be easily be However, some Project Managers, design managers, construction managers don'

		company therefore are trying to handle behaviours along with the developmen
		example, bringing in people knowledgeable with Health and Safety issues tal
		good impact on site as seen back from statistics.
I		Output available as minutes electronically but value is depend on the parti
		honesty. Meeting agenda will say that a post project review is coming up fo
		They can log in before hand and enter into the system before the meeting ha
		At the meeting they log in and look at pre filled minutes. Purpose of the m
		clarify and additional information. The meeting has some prompting questio
		this information has to be disseminated. There are questions on innovation
		project notification goes to the head of department to look at the database
		contract managers, Plant dept, HR as there are information for each of thes
J		Not mentioned in interview

B) Communities of practice

Company	Description of activity
A	Not mentioned in interview
B	The employees automatically become part of the group unless they elect to believes that it works well at a local level within the business units. The generation to buy it quickly as social networking is more commonly used. A connected unlike before COP is expected to work better.
C	This is called the Assistance web or COP, facilitated through the intranet expertise database) Usually project staff asks the questions, most of whic
D	Tried did not work being too small as a company.
E	Has been running for 6 years. There are 24 communities of practice divided groups; there is even a 'commercial' community of practice. This is facili facilitators across the globe operating in 3 time zones. The facilitator i a bank of knowledge. When someone submits a question, the facilitator sen COP. If the facilitator does not know where to send to, will be sent to se response from COP or from the facilitators' knowledge bank. If not goes ou knowledge once a week to UK, America and Australia to all employees The in the database is not well searched as it comes up with relevant and irrelev
	The main idea is to put people in touch with each other. As it is too diff exact answers through a search system it is important to put people in tou use this as part of day to day work practices. This is used well. Series of discussion threads continue where people ask topic.
	Facilitator sets up the alert system and sends an email to the relevant C up. Demonstrated questions that had been answered from those who with diff and construction background, hence input from both This was thought of as company is on its way to extract the technical aspects that have been logg other areas on the system for better dissemination.
F	Not mentioned in interview
G	There are quarterly meetings of the communities of practice. The company i Building Information Modelling. Developing the processes at the moment. Th simplify knowledge exchange from the use of visuals. They are building a n 50,000 people, who are company employees. Says that the company is good at tacit. Site agents will retire and young people will be learning the hard out.
H	Exists as technical experts list and professional contact lists on the co It is used well.
I	Not mentioned in the interview
J	Not mentioned in the interview

C) Project Meetings

Company	Description of activity
A	There are regular progress meetings on site at which lessons are learnt on... is a great deal of discussion among the team communicating experience and ... on an informal level across the project teams on site.
	The after tender meeting discusses how to make use of the knowledge in the ... it was mentioned that it takes a strong leader to make such processes effe...
B	There are Quarterly meetings held for senior management. One item in the ag... Learned. Discusses issues such as contracts, projects, finances etc. The o... notes and tacitly shared knowledge. A communication plan is agreed at the ... attendees are expected to disseminate to their own teams or can upload to ... allow for Lessons Learned to take place at different milestones rather tha... projects.
	Pre start meeting (hand over from bidding to site team) – The agenda force... think through a series of issues. There are informal comments on how it ha...
C	Not mentioned in the interview
D	Not mentioned in the interview
E	Meetings involving lessons learned are used by the bidding team to draw ou... to inform the bid. Client will look at Lessons Learned to be confident tha... handled.
F	Not mentioned in the interview
G	The bidding team meeting is organised as a facilitated workshop. They look... projects and gather information on good and the bad. Sometimes they even d... company thinks they are not experienced enough. Project managers share the... forums. The company recently brought together people from Hong Kong to con... a high rise the company are about to do. The use of Lessons Learned to decide how projects may go forward is highl... information is need to make decisions whether a commercial decision or som... that they need to have the information and lessons to be informed.
H	Consider the Design review meetings as an important event for Lessons Lear... stored in the intranet. After that they set up as an action in each design... to the manager before the lessons found in the data base are reported to t... be 'difficult because it is behavioural stuff '. People find shortcuts and... context sometimes, it was explained.
	Project closures have feed back loops built into it to identify Lessons. F... within the project records. Project director has to pass on information fo... others. All the members of the project can't do this as only the director...
I	Once a fortnight the contract delivery team get together. That is contract... safety team, quality personnel and planners. Discusses specific project is... and communicate across the business. Positive aspects such as performance ... subcontractors are disseminated. Minutes are circulated to the staff by in... the senior management identifies issues to pass through then the contract ... to their site managers.
J	Formal meetings are held to discuss strategic issues. Other issues for pro... informal. Mentions that interviewee is unaware to whom the employees would be talki... companies as this, if they are to find relevant Lessons.

D) Technical Forum

Company	Description of activity
A	These are described as situations in which project personnel from different together to discuss key issues of their work area across projects. These ca development to technical issues or as safety issues forum. The focus is to although there is an area in the intranet for presentations and minutes.
B	Not mentioned in the interview.
C	Not mentioned in the interview
D	Not mentioned in the interview
E	Not mentioned in the interview
F i	Not mentioned in the interview
G	Forums are held once a quarter; There is a continuous improvement represen organisation who operates as a separate operating company. Issues on Lesson couple days as all companies participate.- if teams want to explore it a c into action. A problem is that he company don't often interrogate the root cause of th No incentive as a financial reward but the company is trying to improve t good ones to replicate and how to avoid bad ones. For example, 'High tens that has been successful -so build a case study about it to cascade down t added value to the client' was the approach mentioned.
H	Not mentioned in the interview
I	Not mentioned in the interview
J	Not mentioned in the interview

E)Contacting individuals

Company	Description of activity
A	Not mentioned in the interview
B	Not mentioned in the interview
C	Telephone conversations for lessons learned can take place during the pre other sites performing soil stabilisation (through contractors who were to researched into the subjects required.
D	Face to face meetings are done as site visits. New teams sometimes spend a done by another team. The senior managers speak to the teams to push the During bidding and planning the teams involved are prompted by the three d Lessons Learned.
E	Not mentioned in the interview
F	Three months look ahead is a mechanism encouraged on sites. That is to lo of work and plan for foreseeable issues. Mainly works as a individual cont can turn to know any information or about technical issues. Works as a lin and technology section
	Tender teams are sent 'top tips' needed for tender, advice on suppliers an contacted at this stage. This information is then captured to the informat sheets. It is up to the quality auditors to pick it up. Responsibility is alert to change any procedures and check lists if necessary.
G	Not mentioned in the interview
H	Not mentioned in the interview
I	Not mentioned in the interview
J	Not mentioned in the interview

F) Conferences/ training

Company	Description of activity
A	Not mentioned in the interview
B	The intention of these was described as to get people talking to each othe presentation. The business units are competitive and this is encouraged bu share' therefore, was highlighted. Conferences are considered as a showca
C	Not mentioned in the interview
D	At the end of the project certain demonstrations are done prior to occupat of building manuals, training sessions are conducted and given to client. managers may change during operation but clients have all the information CPD sessions – Invited talks on a variety of subjects, from ground enginee structural solutions or range to a talk about a project to a forum of Proj Nearly all of the projects are Design and Build. However, a in-house Desig exist. The key design partners experience with other contractors on simila to learn.
E	Not mentioned in the interview
F	Not mentioned in the interview

Company	Description of activity
G	All are networks are fairly open. The company had to put in some process ov
	according to functions.
	The company spend lot of time educating staff. The younger teams are more
	collaborate as a result of social networking. Older teams are harder to sha
	want to be blamed.
	Over collaboration is just as bad, it was thought. Mentioned that Lessons
	sure that change cannot be as one individual decisions, therefore that a p
	sanity check.
H	Not mentioned in the interview
I	Not mentioned in the interview
J	Not mentioned in the interview

G) Brainstorming sessions

Company	Description of activity
A	Not mentioned in the interview
B	There is tacit knowledge exchange and notes produced. Referred to as the '
	policy. These sessions are usually targeted at particular aims for example
	money. Ideas in relation to the topic are discussed.
C	Not mentioned in the interview
D	These are called Lessons Learned workshop/ Design Charettes
	The aim is to brainstorm to draw the information and create an action plan
	the right questions, informal and formal meetings
	May occur during a tender period. Brings in people who have worked in a si
	Innovative solutions have to be pulled out from the teams who have experie
	that the discussions do not get recorded, therefore seen that the wealth o
	is never parted with.
E	Not mentioned in the interview
F	Not mentioned in the interview
G	There could be proposal from Lessons Learned to improve something – then
	taken as a demonstration project and goes for validation through a brainst
	reports to the board.
	A proposal is usually as a relationship with the supply chain as most wor
	contracted.
H	Brainstorming meeting discusses what are the company are doing, what have
	before. The Project team and other senior people within the organisation w
	of things in the company are the participants.
	If a session is needed, then the company tries to get this in as early as
	with bigger projects there is the budget for such activities and becomes p
	sessions for the benefit of the project.
I	Not mentioned in the interview
J	Not mentioned in the interview

Processes: Explicitly exchanged Lessons

A) Project Review Files

Company	Description of activity
A	Not mentioned in the interview
B	Not mentioned in the interview
C	Not mentioned in the interview
D	Project files are electronically available for reference. They can be us
	aspects of projects such as programme information, snagging sheets, non co
	and safety trends etc. for example ,
E	Not mentioned in the interview
F	Not mentioned in the interview
G	Not mentioned in the interview
H	Not mentioned in the interview
I	Not mentioned in the interview
J	Project files are much smaller than a larger company. People do refer to t
	a common practice - usually asks people than looking at the file

Company	Description of activity
A	Communicating lessons to targeted teams when it occurs on site by email – project staff.
B	Not mentioned in the interview
C	Knowledge bank, procedures, guidance, forms
D	Intranet exists as different systems and databases. The log- in screen and used as a notice board. Updated by a number of people who are working on d as quality manager, health and safety, customer care team
	Knowledge hub - to post a question and expect an answer was not used well. were used instead. This could be because being a small to medium sized comp knew each other. The attempt was to create records of knowledge exchange th hasn't worked.
	May look at previous performance of the supply chain such as non conforman performance Tried to use to extract knowledge but became a'IT nightmare.'
E	The available databases through intranet/ intranet are not used well, beca well.
F	Knowledge Management personnel or Head office personnel,, any one who has put in information. The system and operation is explained to the new start assurance to ask someone in confidence if necessary. Intranet is not being issue, therefore relying on the sub contractors to carry out the work to s tried to focus on the building elements and categorised in a simple form s super structure etc with further sub divisions within it. Effort was neede as a repository but not used very much. The company then tried categorising according to building elements. These were well received from site personn looking at how the company records information.
G	People use search facility to identify the people or information, Technolog teams together.
	During the project- there is opportunity manager who acts as part of oppor register and then Lessons Learned go into the knowledge portal
H	Not mentioned in the interview
I	
J	

C) Skills/ Expertise database

Company	Description of activity
A	Not mentioned in the interview
B	Not mentioned in the interview
C	The intranet holds a data base of individuals and experience. Employees tie knowledge areas. People can opt out of this system. Others can ask question The data base provides who knows what. Example; an email was sent by accide asking whether anyone has experience of such and such. Someone in the post that subject but The company had spent thousands of pounds. The head office quick way of transferring knowledge to others through the question and answer time 'who knows what' data base is also updated.
D	Not mentioned in the interview
E	Not mentioned in the interview
F	A database of skills and expertise exists but usually if site personnel nee defects avoidance team is contacted who then put them in to contact with of becomes necessary for the data base to be updated. For instance, the mater retiring; therefore information was extracted as much as possible and made intranet.
G	People finder database is in the intranet. Depending on the interests- and knowledge share, it will bring up 20 peop example. It is not mandatory to answer questions posed but people tend to share it. The company is starting to use LinkedIn for this purpose.
H	Not mentioned in the interview
I	Not mentioned in the interview
J	Not mentioned in the interview

D)Lessons Learned documents

Company	Description of activity
A	Lessons Learned cards are filled in by the project staff. These go to the decide on the action or nature of sharing. If such lessons that an individ sharing, they may be communicated further and goes through the annual comp likely to progress in the company. The quality managers on site keep a sit manager has the master, which are then fed into the intranet. Individuals categories required on the intranet. Such lessons could be an improvement, and need not be on putting right negative aspects of the project all the t. Activity sheets- Site team decides to produce activity sheets, decided at understanding what is different in the project. PM will tell certain peopl part of the Personnel Development Review activities. The activity sheets a intranet. At the start of a project, there is a meeting with Knowledge man knowledge areas on the intranet are communicated to the project team. Mont the heads of dept asking them to alert teams. These processes are linked t acts as a point of contact to find direction to other contacts or informat procedure to direct people to use lessons learned. Best practice sheets – Produces two a month as part of the contract with t captured for the month is decided at progress meetings. As the project pro practice it generates is uploaded on the intranet. The Best practice sheets, LL cards, tries to capture learning from the pro
B	Not mentioned in the interview
C	Project data capture forms are designed for sectors such as for education, construction. They are filled in electronically. With increasing complexity 200KPIs), this was done to address needs of bidding teams who wanted more simplified format to demonstrate experience that clients ask for. The form the project with access is available with text search within document manag projects will be self generating knowledge. KM team would tell people how There is also a Improvement Proposal system. Andy employee can suggest impr electronically, which goes through a validation process and if accepted ge
D	Not mentioned in the interview
E	Not mentioned in the interview
F	Not mentioned in the interview
G	Not mentioned in the interview
H	Not mentioned in the interview
I	Not mentioned in the interview
J	Not mentioned in the interview

E)Best Practice Sheets

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|Company      |Description of activity
|A            |Not mentioned in the interview
|B            |Best Practice library was in place for 20 years but was not used.
|C            |Not mentioned in the interview
|D            |Not mentioned in the interview
|E            |Sometimes the COP gets together if they feel necessary and builds a best pr
|F            |Not mentioned in the interview
|G            |Not mentioned in the interview
|H            |Not mentioned in the interview
|I            |Not mentioned in the interview
|J            |Not mentioned in the interview
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F)WIKIS

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|Company      |Description of activity
|A            |Not mentioned in the interview
|B            |Any employee can add experiences; give opinions on a real time basis which
|             |site owners. WIKI is divided into 20 construction elements. Employees foun
|             |changed was long winded. WIKI addressed the problem of how people could ea
|             |Lessons Learned. The head office believes that WIKI has been well adopted a
|             |capture a large number of lessons learned on many areas such as such as tr
|             |process, subcontractors in a very short time. However, the project staff d
|             |useful.
|C            |Not mentioned in the interview
|D            |Not mentioned in the interview
|E            |Not mentioned in the interview
|F            |Not mentioned in the interview
|G            |Not mentioned in the interview
|H            |Not mentioned in the interview
|I            |Not mentioned in the interview
|J            |Not mentioned in the interview
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G)Audits/ Defects avoidance

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|Company      |Description of activity
|A            |Not mentioned in the interview
|B            |Audits such as Considerate contractor are conducted that generate Lessons.
|C            |Defects avoidance group or knowledge transfer group. They generate a techni
|             |technical papers available on the intranet. The team also subscribes to ans
|             |phone, Team visit sites to take notes on site on every job. If anything new
|             |captured. If any problems are spotted on site, it is investigated and a rem
|             |agreed. Also provides information on how to avoid it through 'Read it', an a
|             |sites. .
|             |
|             |The use of hand held computers or PDA by project staff are increasingly pop
|             |They are linked electronically to the rest of the systems on the company we
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		snagging list so that they get recorded instantly on sites and remains as r
		possible to send a email to the sub contractor that night or take action imm
D		Not mentioned in the interview
E		Not mentioned in the interview
F		Instead of Post project reviews, The company therefore do a series of site
		services are responsible for the dissemination. The technical arm of the co
		was decided to collaborate with construction arm, and a liaison was brought
		sites to be involved before things go wrong.
		The site teams use point of contact in Head office who directs to other con
		learning. A database with different expertise is also built up from talking
		happen as informal discussions with anyone who is free on site. Different l
		obtained depending who is talked to. Note book gets recorded into spread sh
		for contact person's benefit.
		Internal auditors look at the Q and A procedures, looks at registers and a
		have been followed that is all they are interested in as raised ,actioned;
G		Not mentioned in the interview
H		Not mentioned in the interview
I		Not mentioned in the interview
J		Not mentioned in the interview

H) Feedback systems

```
|Company    |Description of activity
|A          |Not mentioned in the interview
|B          |Not mentioned in the interview
|C          |Not mentioned in the interview
|D          |Not mentioned in the interview
|E          |Not mentioned in the interview
|F          |Not mentioned in the interview
|G          |Not mentioned in the interview
|H          |QA system is now flow chart based to simplify it and interactive within it
|          |moment sits within it and not very helpful at the moment. Thinking of align
|          |of the system to improve usage. The company review them from design stage
|          |is built is right. Huge range of projects. buildability and risks associate
|          |Safety for example. They believe Lessons are about building up a system fo
|          |on any aspect of the company. The system asks why any change proposed is r
|          |comments etc.  The process does not differentiate between construction and
|          |the same system. It is difficult to get feedback from construction to feed
|          |and A system as there are feedback loops built in, this is much easier. Id
|          |failures 4 years ago and set up a system. Tendering processes start up and
|          |work, project closure basic blocks around work blocks are built up.
|          |Analysis generated with a score from the data built in for the project bec
|          |from the site as a spreadsheet. From each review general trends will be an
|          |identified and run training programmes, or feed in to design or quality sy
|          |only, this system owner uses  the feedback loops as it is early days but i
|          |the benefits.
|          |
|          |This system shows how design and construction is related. For example, mov
|          |inches. Design decisions carries into construction and commissioning stage
|          |to link up all the processes, Project work - back into project start up do
|I          |Not mentioned in the interview
|J          |Not mentioned in the interview
|          |
|          |
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Arising issues and suggested improvements

The ten interviews with head office personnel responsible for Lessons Learned
programmes in the companies and three focus group interviews with project staff were
tape recorded. The data were then analysed to understand whether there were any
common themes emerging out of the discussions. It was clear that there were common
issues; these were then grouped under several categories along with possible
improvements.

Needs/ Requirements

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|Feed back 1
|Lessons are commercially sensitive.
|The company want to resolve problems and then broadcast.
|Electronic databases can be called as evidence in court.
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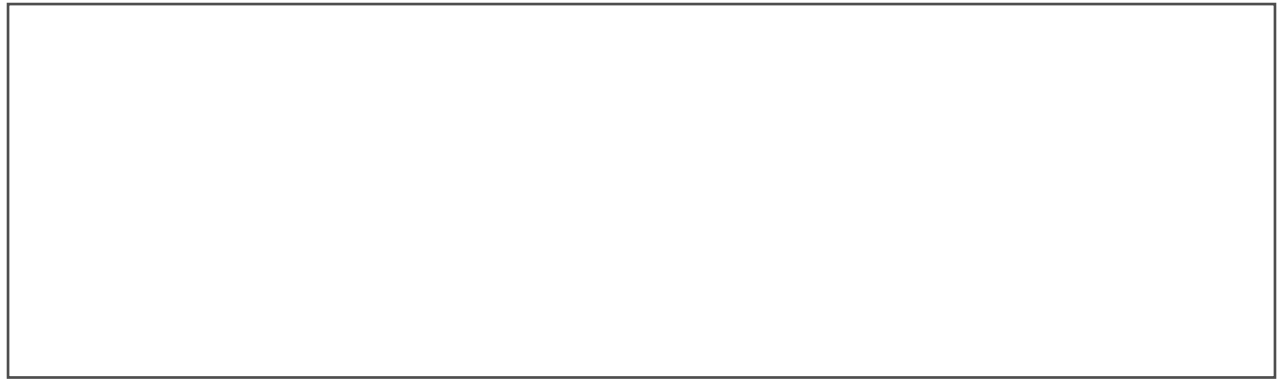
```
|Feed back 2
|Want to be able to tell clients that The company are good at such and such things
|Information in a simplified format to demonstrate experience.
|Clients are keen sometimes to conduct LL to get the learning extracted.
|Prequalification questionnaires ask for LL.
|Client did not know where to put the building even so consultancy, logistics, decision making pr
|provided. It was a different team then.
```

Processes/ Practice

Feedback 4

. Promoting on going lesson capture on projects

. Extracting lessons from information is important. Would the PM sit down to read a 45 page report and analyse lessons?

. Technical side tends not to be written down. Very little gets diverted back to the business.

. Using LL is not mandatory. Start of LL should be tender stage to identify key risks. Technical reviews also added more costs and in a way negative to the tender.

. Bid manager selects the team but how the decision is arrived at is in the head of the manager- knowing who the people with knowledge are would help the company

. Communicated LL by writing email to team. Would not have done if wasn't used in the same project. Teams adapted new processes on site immediately as recommended from the lesson

. Individuals have to find their way at start of the project by consulting colleagues. Sometimes only given a week or so to understand the project and depending on colleagues only can be a problem. There is not enough consultation with site managers about construction.

. Best practice manuals are there but they can't be tailor made to each individual task.

. Past experience suggests that The company work with bidding teams one or two days a month to share our experience
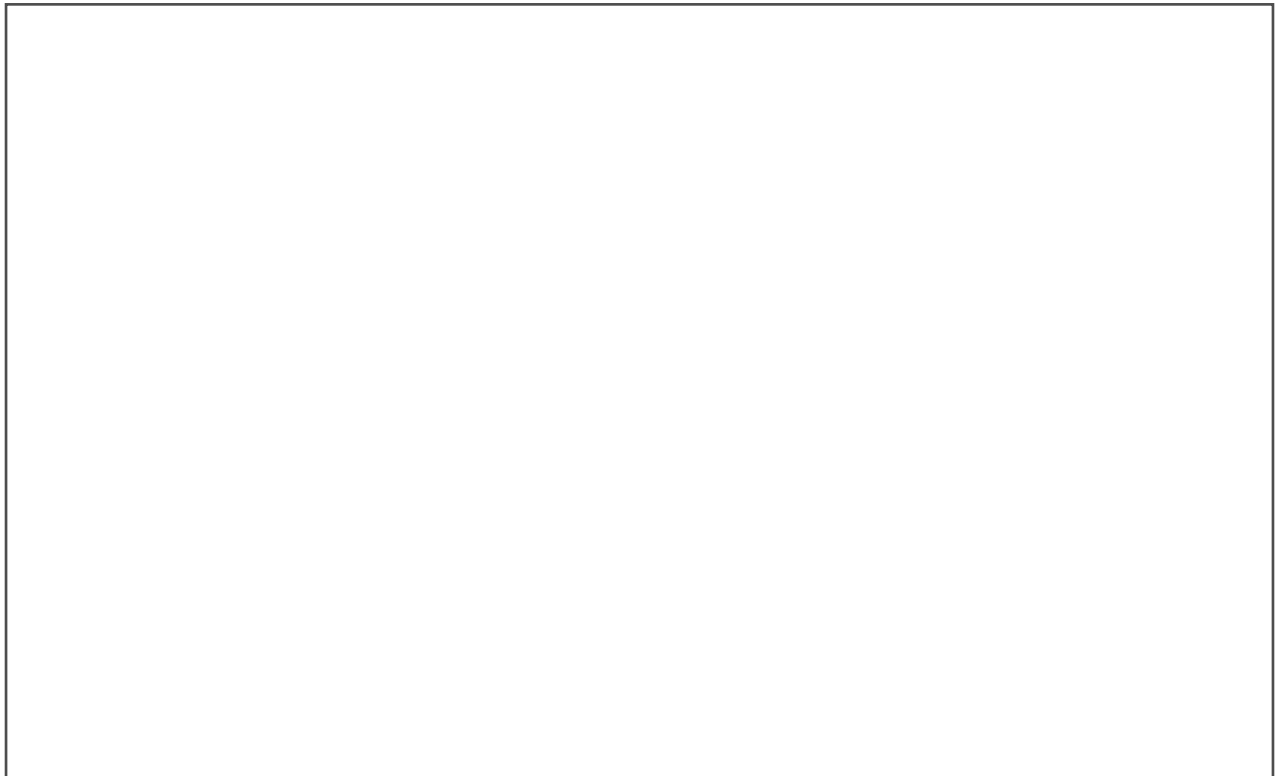
Feedback 5

. Most site teams are now supervisors and sub contractors do the specialist work. The attitude is that it is the responsibilities of the sub- contractor to know the technical details, if not The company sue them.

. Relies on the individual a great deal and who knows whom to contact.

. The technical team is disconnected in how to transfer the lessons further. If the same is being repeated, it is flagged may be linked to using the product for example. Happens in a very informal way.

. No time to read emails and alerts in high pressurised sites.

. PM has enough to deal with but for example may be speak to the design manager and 'fire off' about a few things.

. When a job is in tender there is not enough time to identify Lessons Learned.

. Lessons learned are trade secrets so not communicated. The industry is quite transient in how they employ their site staff, which affects LL learned.

. Responsible person for project close out in the team. - Information gathered throughout by attending meetings of other teams, following project progress no system in place.

. A lot of people learn from each other in this industry. They learn good practice and bad practice but it is up to the individual to weigh it up.
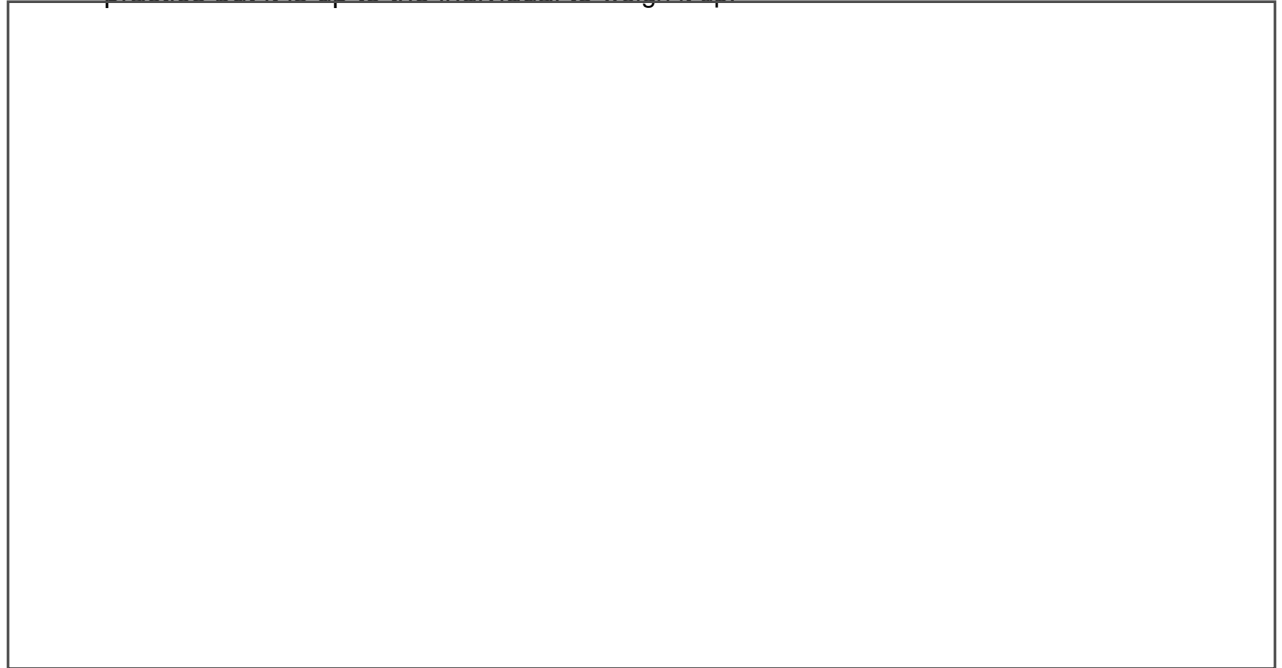
Content – lessons capture and storage

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|Feedback 6
|Knowledge becomes dated soon as needs change fast (construction methods, sustainability
|Look at technical risk register and look what has been allowed for.  The next stage mig
|Lessons against risks.
|Need to target specialist information to the appropriate time and to roles.
|Used as a way of gathering info for prequalification and demonstrable evidence.
|If there is any innovation, data sheets may be produced that would then fee into the ba
|All sites record lots of information electronically as site diaries. These records can
|can be generated but this does not happen.
|Why do The company want to learn lessons - don't waste money, increase profit, don't in
|those questions.
|LL workshops should take care that does not go into a 'black hole'. H&S alerts are wel
|the PM but not others.
|Different roles would find different lessons useful. - need for, lesson analysis (ex ta
|Site staff not always involved in tender, therefore need to link Lessons to early stage
|If staff knows what is to come on the project lessons can be applicable immediately, th
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staff is looking for.
CAD has turned out inexperienced designers who then create lot of problems on site. Al
with more and more changes that can be done easily. Such situation are not captured an
Learn how to get from one place to another. Critical path is what is needed.
Expectations are different in each projects and learning is about how to get things do
Learnt through common sense though first time hospital project. Every single job is di
going to know everything but to know what is needed.
Project review meetings generates lessons-contract managers can do a lot to share know
Senior management only want to know 'is the project on time and is it making money? 'T
there is a lot to do.
The company are focusing on getting from A to B other than anything else.
Need to have forums and case studies to record the learning when projects close out. P
up.
The conference and safety updates The company use (forums) need to be conducted in a b
the learning.
I was on a course, where a PM did a presentation of how he completed a project before
There could be a road show.
The company do a site diary anyway. The onus is up to you produce something for your s
is something being done for the first time.

Feedback 7
Project close out reports They were not effective as site teams do not see any value,
Others outside the site personnel see these 'forms', they may be important.
To get the site staff to understand that it is a lesson worth recording as they percei
consider as being of value to others. The company are encouraging them to understand
In current climates estimators are having to guess how to reduce time. Industry is so
penny that focus is lost.

The company need to get things right first time therefore Lessons Learned got a cost sa
benefits.
Try to promote - don't be afraid to test- communications manager and innovation manage
sites to encourage these.
Clients are asking more and more. How do you share information and how do The company
Lessons analysed at a higher level are not disseminated, if lessons are not of immedia
convince people
Attempt to capture lessons on a continuous basis. Attempt to identify innovation.
Project teams did not see the value. Emphasis on quantity than quality.
Role of Quality managers questioned - only that forms are filled in, processes are in
quality. LL to improve quality would be very useful but not done now.
No one has added any knowledge to the intranet. There is enough information it is up t
it.
Knowledge bank intranet - questions and answers posting questions on the intranet as a
not well used. It is a issue of time, easier to ask the site team or liaise with the a
subcontractors and solve the problems.
Project data capture forms - to be launched - expected to be useful to bidding teams
Limited benefits. General information but not specific to work. If specifics are neede
to the manufacturer and ask him questions. BS can be taken from WIKI.
Not well used. It is a issue of time, easier to ask the site team or liaise with the a
subcontractors and solve the problems.
Meetings such as pre start meeting /post tender - detailed format available - sometime
there Lessons Learned could be shared.
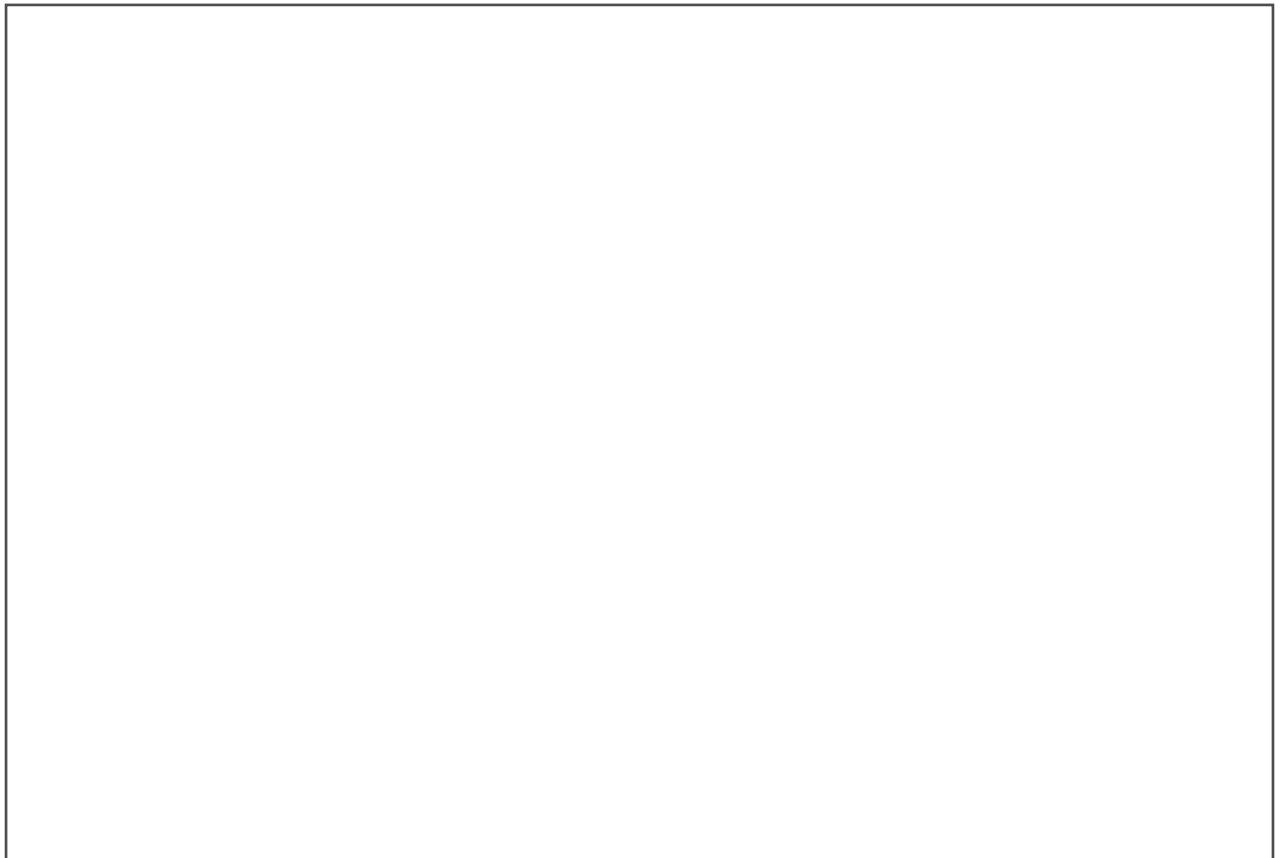
Communication/ Dissemination

|Feedback 8
|Finding common taxonomies in the company
|Finding ways to categorise captured lessons for consistency
|IT has not always been good. Too quick, produces drawings that have not been thought o
|still clash yet, though with all the tech. advancement the company have.

|Feedback
|Knowledge lost with people moving away
|Tries to trigger memory at Post Project Reviews after project - but all you get in the good poi
|Formal Lessons Learned are mostly about financial matters, and gets the information from the re
|Senior managers are interested in 'how do The company go from here?' but what happened before th
|no technical focus.
|How do you categorise information?, Project basis did not work. If you tagged it too there will
|information in different forms such as PDF or word docs.
|The information important for the next job is buried deeply and does not communicate to the next
|the post project review.
|Post project review copy given to draw out info on what happened, why it happened, certain contr
|should be reused, whether staff needs training.
|Lessons will be lost by waiting until the end of project as enthusiasm of project team will be l
|projects, forgotten
|Company is process driven, as long as the forms are filled in and are in the right place they ar
|is the important factor, what kind of forms needs to be filled is the question? Such forms are n
|

Feedback

. Tried running training courses that could be requested through HR. E.g. cladding expert from the company to come on and do a workshop. However, the uptake was Zero for these. It is all to do with how you get the message across. That is why The company have taken a very informal approach.

. Inform the team of all technical risks that The company can think of. When it goes to the bid manager he decides what to take into account.

. Late connectedness of sites creates difficulties to access lessons at the start

. Bid writing - whoever is writing it needs some research to gather information - done by formal methods and informal methods - and own experience, meetings with others to gather how similar work is carried out elsewhere

. The company have found that, communicator- chat type of things works best than documenting.

. The company looked at the hits on intranet. And Text service news and Top tips came high up.

. The company are trying to develop case studies at the end of the project

. More meetings on site across teams at least of Heads - end report should be available to at least all the project managers of the company.

. Good network generally within construction to make contact if necessary

. All alerts that are put in from sites such as Health and safety are not disseminated always. There is a procedure before deciding whether everybody needs to be alerted.

. Post project reviews are electronic and hard copies - more of an audit on commercial aspects such as where pricing went wrong. Where details might have been changed and that may have affected cost but that is not necessarily brought forward. Actually gets used by the individuals who were involved in it and gets through to other projects if they are part of the bidding teams in the future.

. Wiki sites / best practice library Intranet spend time for wiki usage training. The company
  have processes in this industry than most others. Wiki comes low down the agenda. They could do
  with a news letter to show case innovation.

. Managers come down and talks to the different people from their minutes.

. Learning from other contractors/ business is important. Construction techniques are not
  communicated as they are to your own advantage. Don't make competitors knowledgeable.

. The way business units are set up do not lend it self to knowledge sharing.

Enablers

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|Feedback 9
|When Lessons Learned was managed by people with little knowledge of construction they
|important and not important. Could not answer queries of projects staff, so provided a
|is there.
|Senior management are not interested in getting the projects to work properly but more
|is delivered and profits.
|Things are not put down as 'action', and then deleted after about a year, not followed
|Minutes are not implemented or followed on. Repeating such as 'make sure such and such
|happen' and that is repeated again and again that is all.
|Senior management at least need to say thank you.
|Getting clients involved in the design stages. Example of schools - peer to peer knowle
|and hospital projects will be very useful.
|Company operates as disconnected autonomies. Collaborating, integrating and to make su
|filters through is a major problem. Integrate- people, processes and lean process is w
|Vision for knowledge sharing is being developed.
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Encourage a culture, a new way of working together should be thought.
Institutes can work towards this knowledge sharing.
Need visionary at the top, Companies don't see it as a function and see it as a part o
unique in that there is a separate section for it to encourage it.
People have asked me for the end of project reports from certain ones before they begi
need to be more onuses by the project managers to actively look for Lessons Learned.
Changes always happen, which managers have to pick up and find ways to translate to Le
Conferences presentations to encourage innovation should be encouraged. Need people wi
although you propose new products they are not taken forward.
Find best practice to roll out through business units. It has to come through hierarch

Feedback

- Knowledge is in people's head and not on paper.

- Objective of Lessons learned discussed in meetings too broad

- People cant access information, even if you filter. If new, you wouldn't know any of these existed - no one trains you up, will go to the PM who will say you are better off talking to others on site and they know good practice and therefore use the site team.

- After 10 years of PPR there would be so many projects and if you are new to the company would not know which projects are relevant.

- The information will be gone with the individual. But there is information overload on the system. People have realised that an interface (individual) is needed between IT systems and getting it across to people.

- It is not what The company know but how The company get the information out to people.

- Everything is written somewhere but it is about how to find short cuts to get the information.

- Documents go into a 'black hole' that includes the knowledge area in the company intranet.

- They may be sitting in a folder in the improvement proposal system.

- Data gets fed into a master and what happens after that is not known.

- don't know how to get to reports somewhere on the intranet

- Post project reviews are taken by the contract manager. They don't disclose too much. Cant find any information after filled in and sent off. Contract managers are the link between these.

- Looked up but could not find information. Most of what is necessary can be asked from colleagues or go to the sub contractors. You build lot of contacts over the years to go to.

-

Barriers

|Feedback
|Silo mentality with regard to job roles, professions, and projects
|Human behaviour and mentality – considers lessons as extra work, don't like to follow

procedures, don't value lessons as likes learning from experience
Younger people want to learn through hands on experience, therefore Lessons not valued
Do not want to publish that you don't know, especially when you are inexperienced, the
ask.
Learning regarded as same with day to day job, do not think necessary to capture
No culture of 'looking back', this need to be natural work practice
If the problem has been solved on site, only a glossy overview is given to the Defects
Sharing not part of the UK construction climate unlike America.
Trying to be dictatorial would not work. Sometimes people don't want to be told how to
Managers don't like to upset site staff or rock the boat.
If people on site inform Head Office there is something of interest, somebody could be
report or Lesson.
Seen as time spent reducing their outputs, people want to work for the project and not
The silo mentality of construction means input from other disciplines are not easily t
When procedure is in place, everybody is needed to feed in to improve, but not everybo
Lessons Learned is away from their core activity – embed a culture to come forward with
Reluctance of those directly involved to record anything negative as seen as being aga
Processes are there but learning seems to mainly be tacit or involving people.
People are generally happy to talk about their projects. A few say knowledge is power l

Driven through economic necessities of the times.
Setting common time frame is the problem.
People should feel the need to share with team.
People like to hold on to the knowledge for career progression quick problem resolutio
time spent
Very weak usage. Done to satisfy company procedures rather than to extract a lesson.
 With the aging population it is not always the younger people coming into the industry
the culture change in construction industry as a whole. It is not easy to change their
Rang up people to learn but only once you've built up the relationship.
Higher the position it is difficult to ask for advice.
Would not want to go to a website for answers but would like to speak to people.
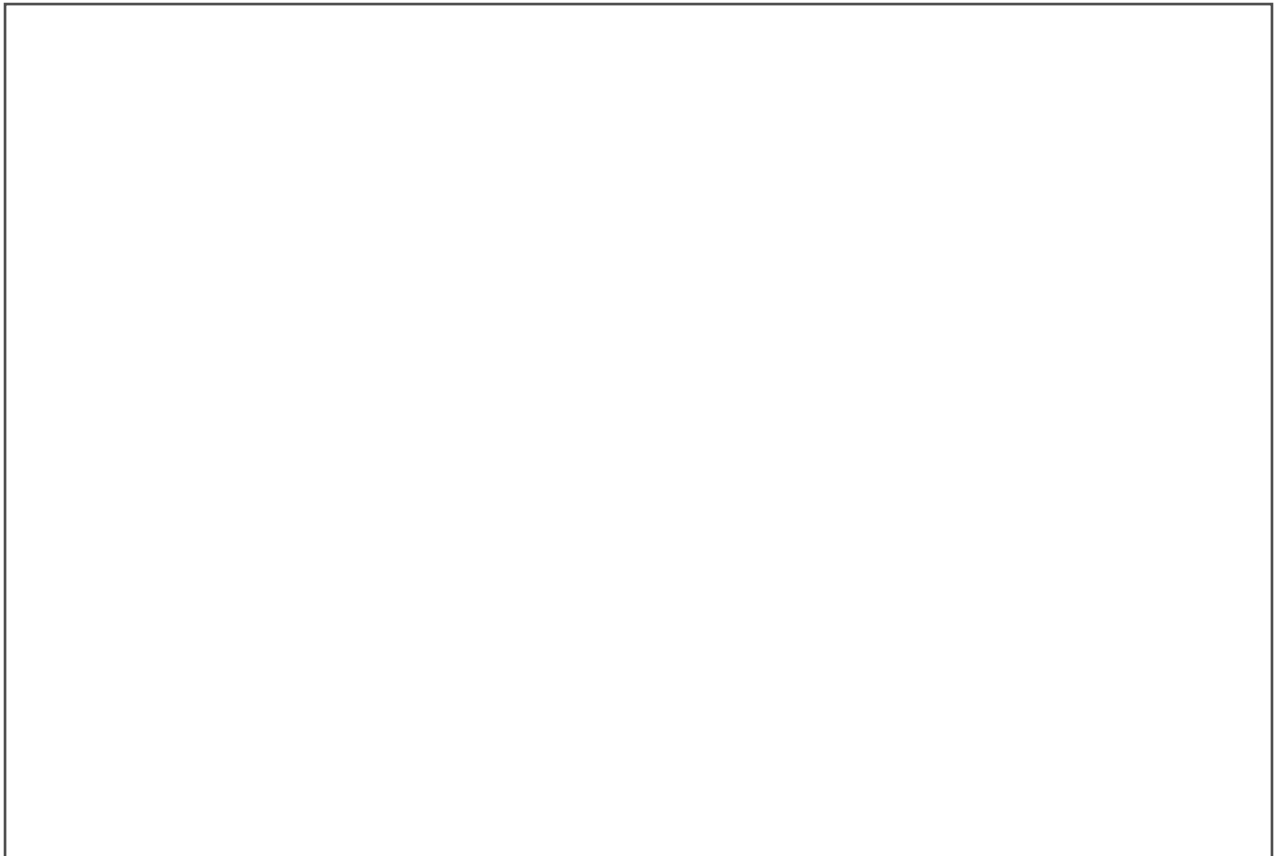
|Feedback
|Transient nature of employment does not allow for Lessons to be generated.
|Capturing lessons at end of project difficult as teams disperse
|Most of the workforce has worked for the company for 20 years or so. New people come i
|companies and introduce new ideas and innovation.
|Changed office design to create teams. Contracts manager with Qs and site managers (a
|unit is a team, more communication, relationships more informal chats - for one project
|Budgets in the project has people like me and others need to be involved are built in.
|that is fine otherwise he has to be booked in to the other projects.

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|Feedback
|Head office and project staff do not share same view of linking to personal development
|Objectives not clear therefore too broad to be useful
|Head office does not know which lessons are needed by projects at which time
|Site staff archives everything
|Project staff takes as Head office checking on them
|Not put enough resources to get people to use it. They set up WIKI and then leave peop
|isolated and The company do not know much about what is going on.
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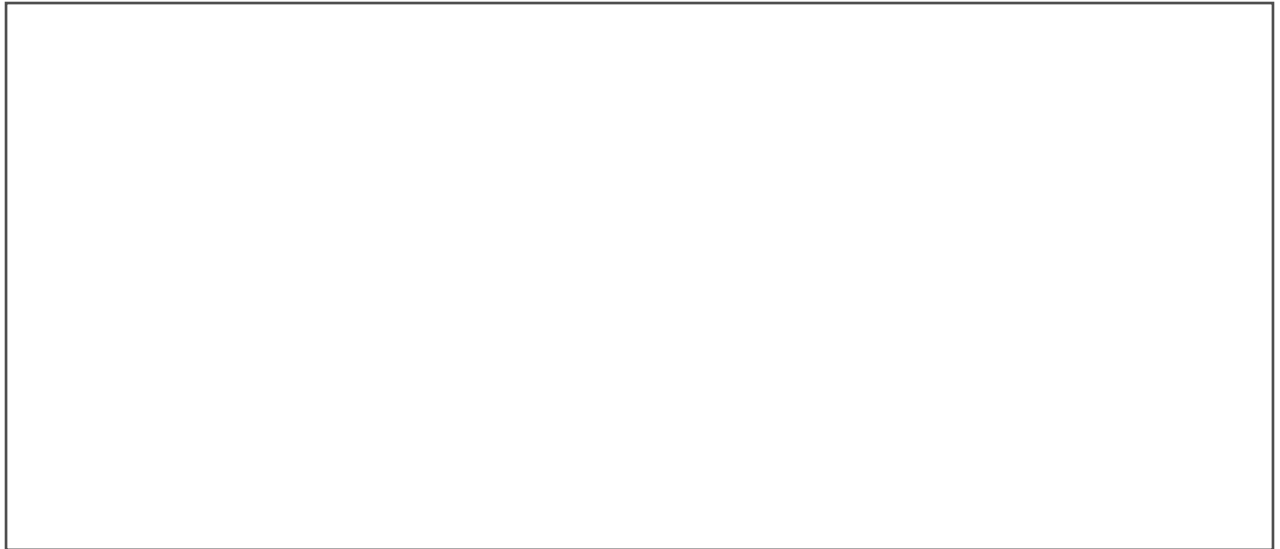

Conclusion

The aim of this work package was to identify key factors that would encourage the institutionalisation of Lessons Learned and also the factors that inhibit their use. This report focused on the second stage of the project to identify from the end users factors that would encourage the institutionalisation of Lessons Learned and also the factors that inhibit their use of Lessons Learned. The data and analysis presented in the previous section highlighted the following.

There are several factors that would encourage the institutionalisation of Lessons Learned. There seem to be increasing wanting for Lessons Learned by clients, a situation that drives companies to address Lessons Learned practices. Individual incentives could also create enthusiasm but the nature of incentives will have to be carefully thought out as both negative and positive consequences of incentives were apparent, Lessons would need to be targeted to roles, situations and the nature of outcome expected need to be better understood, The investment in IT systems for Lessons Learned should be worked out to maximise benefits as there seems to be several issues that need to be resolved with regard to ease of accessibility of information in a useful format. Nevertheless the importance of documentation for Lessons to be available for the future has been clearly highlighted. However, there is a gap in understanding what needs to be communicated for future use, which in turn informs what is to be documented, The leadership from the hierarchy in tackling these gaps are of clear importance.

There are several factors that inhibit the use of Lessons Learned. The confidentiality of issues documented is an area that needs careful thought because of the legal and commercial sensitivities involved. Work practices of the industry clearly inhibit the capture and sharing of Lessons Learned as highlighted in the analysis. The industry as whole and individual organisations would have to address difficulties brought about by collective working behaviours and individual behaviours that would need slow and steady change if more learning is to be encouraged. The restrictions on accessibility of lessons, organisational and individual cultures and changing teams/ staff that were previously known barriers to successful sharing have been reported in this exercise too. The Head office vs project staff conflicts is another issue that need to be addressed.

The objective for doing this study was to inform the third phase of this research that intends to propose strategies to develop a process that would embed the systematic dissemination of Lessons Learned within construction organisations. The issues highlighted in this report would be taken into consideration in the next phase of research for any improvements proposed.

When Will We Learn?

Work package 2 report

Key factors and potential Barriers

August 2011

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