Major Projects Ideas Summary Overview (Last updated DECEMBER 2013)

This document provides a quick reference to the ideas that have been submitted to the Verification Group for approval and are available for use by all schemes where appropriate. **N.B** Ideas are shared with other projects in good faith, with an assurance that they have been found to work and have demonstrated good value for the initiating project. However, when ideas are considered for re-use by another project, it is the responsibility of the re-using project team to assess the applicability, risks, departures, costs and benefits of the idea for their project.

To see the original pro-forma for each idea that has been approved please go to the Knowledge page where they are listed by scheme.

Notes on column details:
(i) Column 4 **Detail of Impact of Action on Project** records the selectivity criteria information i.e. Cost (C), Time (T), Journey Time Reliability (JTR), Health and Safety (H&S), Reputation (R) and Sustainability/Environment (Sust/Env) and the weighting given to the criteria.

(ii)Column 7 **Repeatability/Links to other ideas or the HA Toolkits Evidence of re-use by other schemes** – This is the Evidence Coordinators' (ECs') assessment on whether the idea is a one off for the scheme or if there is potential for wider cost benefits if used on successive projects, whether the idea has links to other approved ideas within the Knowledge Bank or the HA Toolkits. This is also an assessment by the MP Knowledge Team where evidence of re-use has been found through efficiency registers and other sources.

This spreadsheet also includes details of ideas that were not considered suitable for re-use across all schemes. Non-approved ideas are highlighted in grey to differentiate them.

Abbreviations used within the Spreadsheet:
DfT = Department for Transport
EC = Evidence Coordinator
ERA = Emergency Refuge Area
HA = Highways Agency
HSR = Hard Shoulder Running
J = Junction
KB = Knowledge Bank
MDCT = Managing Down Cost Toolkit
MM = Managed Motorway
MMDO = Managed Motorway Delivery Office
MP = Major Projects
NDD = Network Delivery and Development
TM = Traffic Management
VG = Verification Group

Ref No **&** **Scheme Idea relates to**	**Idea/lessons Learnt Title**	**Idea/lessons Learnt Summary**	**Detail of Impact of Action on Project (i)**	**Verification Group Comments**	**Which PCF Stage should this be considered at?** **Which PCF Stage should this be used at?**	**Repeatability(ii)** **Links to other ideas or the HA Toolkits** **Evidence of re-use by other**

					Is it for Development, Construction or Maintenance stage? **Key Words**	**schemes**
L01 M1 widening J21 to J30 - Contract 1 J25 to J28	Use of high pressure water jetting system to remove road markings	Existing and temporary road markings have successfully been removed by using a high pressure water jetting system.	C - Cost savings resulting from reduced repairs to running surface. (H) T - no effect. (N) JTR - Reduced damage to running surface (H) Sust/Env - Minimises air pollution (H)	This use of a high pressure water jetting system was approved as an alternative way of working and should be considered along with all other proprietary products as a method of removing road markings.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Traffic Management, road marking removal	This idea has been re-used by M62 J25 – J30 who also considered it to be business as usual. A46 Newark to Widmerpool regularly uses this as other methods break up the wearing course matrix. M4/M5 MM use this but consider it to be standard practice. A1 Dishforth to Leeming used this idea but found it not to be successful when used during the winter months. M40 J15 Longbridge By Pass scheme has used this idea but consider it to be standard practice.

L02A M1 widening J21 to J30 - Contract 1 J25 to J28	Use of temporary steel barriers instead of cones	To establish the best solution for systems used to separate live traffic from work area in traffic management schemes.	C- A Temporary Steel Safety Barrier is a more expensive system than using cones. (AI) T - Longer to install. (AI) JTR - N/A. (N) H&S - The vast increase in safety outweighs the additional cost. (H) R - Enhanced due to the provision of a safer work place. (H)	There is no objection to this being agreed and entered onto the database. It is not new. To be used as part of a range of solutions based on what is most appropriate on each site has always been allowed.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Traffic Management, Temporary steel barriers	M62 J25- J30 scheme has used this idea but it is considered to be business as usual. A46 Newark to Widmerpool uses an approved system of this type. M4/M5 MM use this but consider it to be standard practice. A1 Dishforth to Leeming has used this. Risk of damage to surface course unless well padded. Newer barrier had pads at 1m centres. M40 J15 Longbridge By Pass scheme has used this idea but consider it to be standard practice.

L02B M1 widening J21 to J30 - Contract 1 J25 to J28	Use of steel instead of concrete barriers	To establish the best cost effective solution for temporary safety barriers used to separate live traffic from work area in traffic management schemes without any compromise to safety.	C - Cheaper to hire and transport than concrete barrier. (H) T - Speed of installation brought time savings in set-up times. (H) H&S - No reduction in safety. (N) Sus/Env - Saving in carbon footprint as a steel barrier, when compared to concrete barrier, requires less road transport to bring to site and also to move around site. (H)	There is no objection to this being agreed and entered onto the database. It is not new. To be used as part of a range of solutions based on what is most appropriate on each site has always been allowed.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Traffic Management, Temporary steel barriers	M62 J25- J30 scheme has used this idea but it is considered to be business as usual. M4/M5 MM use this but consider it to be standard practice. A1 Dishforth to Leeming has used this idea.
L03 M1 Widening J21 to J30 Contract 1 J25 to J28	Not Environmentally Worse Than (NEWT) Assessments			The VG considered that this idea should be incorporated into standard practice. The Environment Group consider this to be a good idea, but further follow-up needs to be done.		
L04 A14 Ellington to Fen Ditton	Internet Project Portal Communication	First used on the A282/M25 Dartford project and now used on the A34 Wolvercote and A14 Ellington projects. The Project Portal allows team members to share and see project- specific information they require in one place.	C - Difficult to quantify but significant in terms of increased productivity by enabling home workers, less travel, reduced office space, storage and more efficient working. On A14 estimated at £100,000. (H) T - Saves searching time. (M) JTR - increases the likelihood of pertinent up-to-date data being used. (H) H&S - Gateway to H&S systems, reports and performance data. (H) R - Enhances project visibility and sense of purpose. (H) Sus/Env - Helps reduce travel carbon footprint by enabling home working. (H)	There is the technical ability within the Highways Agency to set-up a website that can be used to communicate with Teams working remotely. Further information can be obtained from the Manchester Team working on M60/M62.	Considered at PCF Stage 3 Used in PCF Stage 5 & 6 Development and Construction Keywords: Communication, Comms, Information, Data,	M62 J25- J30 scheme has used business collaboration to share information quickly and accurately M4/M5 MM use this but consider it to be standard practice. A SharePoint site has been used by Atkins on the scheme since 2009 and the DP's Business Collaborator is currently being used.
L05 M1 widening J21 to J30 -	Use of narrow lanes without contra flow for motorway widening works	History indicates that Contra flows in TM systems increase traffic delays. Is it possible to	C - More expensive TM system but overall cost savings due to shorter programme. (M) T	To be used as part of the options for road works.	Considered at PCF Stage 3 Used at PCF	M62 J25- J30 scheme has used this idea to create workspace

Contract 1 J25 to J28		construct the works using a TM scheme that does not use Contra flows?	- Overall programme of work was shorter. (H) JTR - No change. H&S - Use of a steel barrier made the work place a safer place. (H) R - Enhanced by provision of a safer work place. (H)		Stage 5 & 6 For Development & Construction Keywords: Traffic Management, Contra flow, steel barrier	M4/M5 MM use this but consider it to be standard practice for MM schemes
L06 M1 widening J21 to J30 - Contract 1 J25 to J28	Local seed initiative	Local seed initiative was instigated involving collection and trees from local origins and then sending them to growers to 'bring on' ready for planting at the end of the scheme.	C - Some early investment needed. (AI) T- No Change. (N) H&S - No change. (N) R - Enhanced as project team is seen to protect local habitat. (H) Sus/Env - Use of locally sourced seeds and trees. (H)	Chapter 4 of DMRB Volume 10 Section 3 Landscape Management promotes use of locally sourced materials. Environment Group state that there are advantages and disadvantages, not least cost, but they are coming under pressure to make the advice more robust. See pro-forma for links to guidance.	Considered at PCF Stage 3 Used at PCF Stage 6 For Development & Construction Keywords: Environmental, Environment, Sustainability, Landscaping	Potential for this to be used on M4/M5 MM. Further consideration of feasibility will be given.
L07 M40 Junction 15 (Longbridge) Bypass	Use of motor cycles in roadworks dispatched to breakdowns and accidents			Health and Safety do not support this method of working because of concerns for the safety of the motor bike rider.		
L08 M40 Junction 15 (Longbridge) Bypass	Use of red warning triangles in drawings to highlight risks					
L09 M1 Widening J21 to J30 – Contract 1 J25 to J28	Reduced cross section design			The VG would not want to see this as standard practice. There needs to be a benchmark standard at which to start. This was a very specific solution to specific problem/project issue which had a strong business case.		

L10 M40 Junction 15 (Longbridge) Bypass	Site speed limit			There is insufficient evidence to suggest that this is anything other than a short term novelty. It was felt that the limit signs may distract drivers on the main carriageway.		
L11 A46 Newark to Widmerpool	Statutory Undertakers			More evidence required to support this idea in order for the VG to make a decision. This has not been supplied.		
L12 A46 Newark to Widmerpool	Environmental Management Site Clearance			The Environment Group commented as follows: it is recommended that in its current form this paper should not be published, the justification for this is given below. While application of this technique appears to have the potential for cost savings, the paper does not, demonstrate sufficient consideration of the limitations of hawking or potential legal compliance issues associated with its use. In its current form it presents a site clearance strategy which has an unclear legal basis and is in any case unlikely to have wide application within Highways Agency.		
L13 A46 Newark to Widmerpool	Interface with public and workforce			More evidence required to support this idea in order for the VG to make a decision. This has not been supplied.		
L14 A46 Newark to	Insitu preservation of archaeological remains	A large area of the site required archaeological investigation prior to	C - There was a direct saving of £30,000 for not having to dispose of surplus topsoil as	It has been agreed that this idea should be placed on the KB	Considered at PCF Stage 5	

Widmerpool Improvement		stripping topsoil and constructing embankments. The nature of potential finds in this area meant it would be necessary to hand sieve about 6000cu m of topsoil. A costly and lengthy operation with associated health and safety risks.	there is an overall surplus of topsoil on the project. More significant though is the avoidance of the need to hand sieve topsoil for finds, estimated at £2M (H) T - There was a direct time saving of 1 week but as above we avoided the risk of a 3 month delay. (H) JTR - No Impact (N) H&S - Manual handling risks of sieving were eliminated together with the risks of people working near to earthworks plan (L) R - No change to Highways Agency reputation (N) Sust/Env - Reduced quantity of earthworks reducing environmental impact during (L)	following the receipt of comments from the Environment Group, who have highlighted some risks, which have been included in the Associated Risks section.	Used at PCF Stage 6 For Construction Keywords: Earthworks, Archaeology, Topsoil	
L15 A46 Newark to Widmerpool	Statutory Undertakers Services			More evidence required to support this idea in order for the VG to make a decision. This has not been supplied.		
L16 A46 Newark to Widmerpool Improvement	Minimising working at height on structures	At Red Lodge and Syerston over bridges the substructure excavations have been backfilled to create a working platform 150mm below the deck soffit. This meant the maximum possible height of fall was reduced from 7.7m down to 1.2m.effectively eliminating the risk of falls from height.	C - Additional cost of £30K and £45K per bridge (out of a total cost of £2.1M for both bridges) (AI) T - Additional time of 1 week per bridge (AI) H&S - Significant improvement (H) R - Neutral impact (N) Sust/Env - Neutral Impact (N)	This is a good example of adopting a safe method of working, but is a solution to a specific site problem rather than a general idea. The VG recommended this idea was put onto the KB.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Bridges, Safety, Structures, work at height	
L17 A46 Newark to Widmerpool	Public and workforce safety			More evidence required to support this idea in order for the VG to make a decision. This has not been supplied.		
L18 A46 Newark to Widmerpool	Installation of utility ducts			More evidence required to support this idea in order for the VG to make a decision. This		

				has not been supplied.		
L19 A46 Newark to Widmerpool	Traffic sign faces			More information required and then idea is to be forward to NSD Traffic Signs Team		
L20	Lane warning system Not Known			Health and Safety Team commented that the trials team has reviewed the product and sees little value in its use.		
L21 M1 widening J21 to J30 - Contract 1 J25 to J28	Work space booking system	Segregation of works traffic and pedestrians in the very narrow work site on the M1 was a serious safety issue due to the limited space the haul road was also the work area. To address this a work space booking procedure was put in place.	C - Additional cost of TM team to implement signing (N) T - Improved efficiency due to avoidance of clashes in work areas (M) H&S - Improvements due to better segregation of vehicles/plant and pedestrians in work areas (H) R - Enhanced as seen to support improvements in safety (H)	This should be Best Practice, particularly on restricted sites. The idea will be shared by the VG with the Managed Motorways Delivery Office.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Traffic Management, Safety, Segregation of works	M62 J25-J30 scheme has used this idea successfully M4/M5 MM use this M40 J15 Longbridge BP considered using this idea, but the scheme was too far advanced for this system to be beneficial.
L22 M1 widening J21 to J30 - Contract 1 J25 to J28	Signing at height restrictions	To effectively make drivers on the site haul road aware of approaching height restriction to avoid accidents a system of coloured cones were added. Blue for structures and red for overhead cables to the signage on the approaches, thus increasing the 'Human Signals' to make drivers more aware of the height restriction.	H&S and R - Improvements in H&S of workforce have been achieved as drivers are more aware of any height restrictions on the haul site. (H)	The VG expressed concern about the number of different coloured cones on sites. This idea was referred to the Temporary Traffic Signs Team, who is aware of a similar system being used on MACs. Consensus that a standard needs to be developed and guidance provided and issued. Idea referred to National H&S Team for inclusion on H&S Toolkit as an idea for future development. This is an idea that has	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Traffic Management, H&S, Signing	Check the H&S Toolkit. M62 J25- J30 scheme has used this idea This idea is under consideration by the M4/M5 MM scheme who also believe this to be standard practice. A1 Dishforth to Leeming scheme introduced this idea after the incident on the M1. Blue for head

				been used in practice.		height restrictions. Note: a green cone was also put either side of site accesses to mane it easier to identify the openings.
L23 M1 widening J21 to J30 - Contract 1 J25 to J28	Collaborative Planning	Works completion dates were continually slipping thus the objective was to establish a system to improve achievement of programmed events. The Lean Construction process of Collaborative Planning was adopted involving key personnel to discuss/plan construction activities, agree programme dates, discuss and drive improvements.	C - Savings to overall Scheme Cost by cutting out wasted time (H) T - Improved programme stability that meant that key programme dates were achieved or bettered and this has contributed in securing the opportunity to reduce the construction programme by around 14 weeks (H) JTR - Improvement as motorway will be opened to travelling public 14 weeks early (H) H&S - Improvements due to better co-ordinated work operations (H) R - Enhanced as project completed earlier than announced (H)	This idea is to be promoted as Best Practice	Considered at PCF Stage 3 and 5 Used at PCF Stage 5 & 6 For Construction Keywords: Lean, planning, programme, collaborative	This idea has links to L54 Collaborative working charter from A3 Hindhead improvement and L104 from A53 Bidston Moss Viaduct. M62 J25- J30 scheme has used this idea A46 Newark to Widmerpool use this every day. M4/M5 MM use this collaborative planning is being informally implemented at present during the Development Phase as the team is co-located. This will be developed further as the scheme moves towards the construction phase. M40 J15 Longbridge BP scheme has used

						this idea but consider it to be standard practice.
L24 M1 widening J21 to J30 - Contract 1 J25 to J28	Use of Tar Planings	To mitigate the high disposal cost of tar planings the challenge was to establish an acceptable proposal for the re-use of this waste material on site. Following a Value Engineering Workshop a proposal to re-use the tar planning as the aggregate for the Wet lean Concrete which forms part of the construction in central reserve was developed. The methods used demonstrated the minimal environmental risk and gained approval by the Environment Agency. This is the first time this type of material has been re-used in this way.	C - Had the proposals not been approved it would have cost circa £4M to dispose of the hazardous waste as the nearest tip is Middlesbrough 120 miles from site. (N) R - Enhanced as seen to support improvements in sustainability. (H) Sust/Env - By avoiding transportation of the tar planning's to a tip and also of imported materials the project reduced vehicles on local roads and saves circa 140te of carbon emissions. (H)	This Idea to be considered where appropriate.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Tar planings, aggregate, sustainability, waste material	There is potential for the reuse of this idea on the M4/M5 MM scheme
L25 M1 J25-J28 Widening	Use of VMS on works exits			This has highlighted a need but the VG felt that the solution was not quite appropriate. The idea to be referred to Signs Group. The Signs Group offered their point of view, which is that they do not recommend this use of VMS, as there is a need for a consistent approach in the signing used across the network so that road users are familiar with the signs and comprehend them.		
L26	Joints in concrete safety barriers			The VG considered that this idea was really to		

M1 J25-J28 Widening				do with the proprietary product design, which should be dealt with via the product design owner. Recommendation was not to place this idea on the KB and to share the information from the product company with the EC.		
L27						
L28 M4 J19-J20 M5 J15-J17 MM	Project Control Framework (PCF) Product Flowcharts	PCF Product preparation, consultation and approval processes prolonged due to lack of guidance on interaction and interdependency between products, consultation and ownership by consultees and Approver. Difficulties experienced in obtaining (timely) sign-off of certain products.	C- Low (L) T - Process maps would potentially provide significant savings in time as end-to-end process and resources required more defined. (H) JTR - No impact (N) H&S - No Impact (N) R - Low Benefit (L) Sust/Env - No Impact (N)	This idea is an example of good practice. This is a process improvement and it is for individual project teams to decide the way to work on their scheme.	Considered at PCF Stage 1,2,3,4,5,6 Used at PCF Stage 1,2,3,4,5,6 For Development & Construction Keywords: PCF, Products, Flowcharts	M62 J25- J30 scheme has agreed a programme of document delivery dates with the Agency for the Stage 6 gateway review.
L29 M1 J25 – J28 widening	Safe lifting system for large gully gratings			The VG were surprised that the lifting points are not part of the original design and that this could be a particular issue with the proprietary product. The product should be designed with a safe installation method in place to British and Health and Safety standards. It was considered that the idea was vague on the true benefits and there were no real facts to demonstrate why it is an improvement. The recommendation is that this idea is not placed on the KB, as it is a proprietary issue		

				that should be covered by BS and H&S requirements.		
L30 M4 J19-20/M5 J15-17 HSR	Carbon calculation			The VG considered that the report provided should be forwarded to the Sustainable Development and Climate Change Team. The HA has a requirement in its business plan to reduce Carbon emissions by 1%. Benchmarks are needed to compare against for front end design, maintenance and construction. Recommendation - Refer this idea to Sustainable Development and Climate Change Team and ask if there is going to be an HA way of doing this reporting? If there is no standard yet could the report provided be used as an example of good practice?		
L31 M40 Junction 15 (Longbridge) Bypass	Skid resistance	Scheme has two roundabouts with slip roads needing lots of anti skid approaches and Traffic Management was complicated. The surface course manufactured with a high PSV (skid resistant) stone aggregate. This provides the same skid resistance as a separate high friction surfacing coating, which was originally specified. There are associated risks and departures from standards were required	C - Approximately £50K which is the difference in cost + reduction in TM costs, but includes the extra SCRIM testing requirements and grit application. Whole life cost is reduced also because of the reduced maintenance interventions. (M) T - 18 nights of separate TM. (M) JTR - Improved due to 18 nights of TM saved during construction and the increased design live requiring less maintenance from 5 - 10 years. (M) H&S - Reduction in TM and separate operations on site	The VG members considered that this idea was a sustainability issue. The Pavement Team has stated that anti-skid surface ideas are likely to be supported if submitted through the departures process. It was noted that the supplier of the surface material had supplied a warranty as this reduces the risk for HA.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Traffic Management, skid resistance, anti-skid	

		for this idea.	improves H&S. (M) R - No benefits (N) Sus/Env - No enhancement (N)			
L32 M40 Junction15 (Longbridge) Bypass	Concrete admixture	Inclusion of a waterproofing admixture into the wet concrete during the manufacturing process negated the need to paint the rear of the pre cast panels with bitumen paint.	Cost - Labour and bituminous paint cost is offset by the cost of the admixture. However there was an overall cost saving. (M) Time - Approximate time saving of two weeks (H) Quality - Denser concrete giving a better finish, no bituminous paint marks on the outside face and the added rebar protection against salt attack (M) Safety - The removal of an in-situ operation while panels are temporarily supported therefore eliminates the hazard of trips and falls of the workforce or material (H) Sustainability - Completing the work in the precast plan as opposed to on site would make the environmental management of the process better. (M)	The departure for this idea has been accepted on a trial basis. The reason for this is because this type of product had not been used before and therefore its durability is unknown. Recommendation - The idea is to be placed on the KB with the caveat that if used on another scheme the project team would need to use the departure for standards process and check out results from the trial.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Concrete, concrete panels, waterproofing,	
L33 A421 Improvements M1 Junction 13 to Bedford	Use of SPEC cameras			The VG considered that the situation of the road works was somewhat unique and that whilst this solution should be considered on a case by case basis the VG could not be seen as promoting the use of SPEC cameras as a general rule.		
L34 M4 J19-2o/M5 J15-17 MM	Use of 3D modelling with VIS SIM traffic model			The VG considered that this idea was already standard practice although it is worth investigating if there is anything new here and to seek the opinion of TAME. Not to be put onto KB at the moment.		

				Feedback to EC the question about whether there is anything new here; consult TAME		
L35 A1 (M) Dishforth to Barton	Use of a Betonite liner for ponds	Use of betonite liner for ponds instead of a butile liner. The alternative material is cheaper and can be installed by the JV workforce instead of a specialist contractor.	C - approx £500,000 (M) T - 2 or 3 days per pond (L) JTR - No Impact (N) H&S - No benefits (N) R - No benefits (N) Sust/Env - No Contribution to (N)	This idea was favourably received with lots of discussion with the EC who attended the meeting. The idea will be passed to the drainage section to liaise with ES as necessary.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Drainage, balancing ponds, environmental	
L36 A1 (M) Dishforth to Barton	Redesign of the surface water channel	All the surface water channels were originally designed 1.550m wide. Cost savings were envisaged by reducing the width. The drainage design was remodelled to take account of the different channel widths; this resulted in the channel width being 1.275 and 1.550m. Proposal will result in a reduction of concrete, increased production of surface water channel and a reduction in the number of concrete deliveries to site (approx. 150 reduction). The standard design has an outlet to a catch pit every 100m, additional intermediate gully outlets are to be installed between the catch pits with a Y junction connection to the carrier drain. No departures required as outlets in accordance with HA Standard HCD F23.	Costs - Approx £200,000. (M) Time - savings are expected (L) JTR - No impact (N) H&S - No benefits (N) HA Reputation - No benefits (N) Sust/Env - Slight enhancement due to reduced concrete production and less concrete deliveries to site (L)	The VG considered that this was potentially a very good value engineering idea, but did have some concerns about the decision that no departure was required particularly in relation to its capacity to handle the heavy rainfall predicted for future years. Recommended that EC explores the issue of departures and if this can be resolved. N.B please view comments about departures on pro-forma or in summary note.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Drainage, surface water channel	Manchester MM schemes are considering this idea as part of the optimisation of the drainage design with potential savings of £200k. A556 Knutsford to Bowdon has used this idea. Efficiency register number 77.

		There are associated risks.				
L37 A1(M) Dishforth to Leeming	Use of combined kerbs formed from recycled materials			Concerns were raised about there only being one manufacturer for these products. This market is competitive and complaints have been received about the selection of one product over another. It was recommended that this idea is not placed on the KB.		
L38 A1 (M) Dishforth to Barton	Review electrical locations to minimise cost and wayleave risks	The usual procurement method for new motorway electrical supplies involves the Regional Electrical Company designer producing suitable connection schemes via desktop survey. A provision is made at the stage for legal costs in obtaining any wayleaves required to cross private land. No other provision is made to accommodate wayleaves. The solution is to coordinate the design of the motorway electrical system and the design of the new supplies at an early stage. Four key points need to be considered (please see form). Each supply point can then be optimised by either minimising wayleaves or choosing routes and designs which are more readily acceptable to landowners.	C - Re-design and wayleave legal costs reduced (L) T-Wayleave secured quicker or eliminated (H) JTR - No impact (N) H&S - No benefits (N) R - No benefits (N) Sust/Env - No enhancement (N)	The group thought that this was good practice. It was noted that the idea linked to work the MP Knowledge Team are carrying out to improve working practices with statutory undertakers. A link to the Lessons Learnt Report on Statutory Undertakers and Mini Guide has been placed on the idea pro-forma for reference purposes.	Considered at PCF Stage 3 Used at PCF Stage 5 For Development & Construction Keywords: Statutory Undertakers, Electrical locations, wayleave	M62 J25- J30 scheme has used this idea. Early discussions with YEDL have taken place to ensure wayleave costs are included in the overall estimate for the new power supply. Manchester MM being looked at by Technology leads and a procedure has been produced by the DNO which will be followed to procure new power connection points M4/M5 MM The review of electrical locations to reduce costs and wayleave risks has been an ongoing process on the M4 M5

						scheme since the commencement of the Development Phase in 2009. A556 Knutsford to Bowdon has used this idea. Efficiency register number 78.
L39 A1 Disforth to Leeming Improvement	Non treatment of invasive weeds			Idea was forwarded to Environment Group for comment, which has not been received		
L40 A1 Dishforth to Leeming Improvement	Relocation of duct crossings			It was considered that this idea went back to basics and is therefore not to be placed on KB.		
L41 Birmingham Box managed Motorway Phases 1&2	Gantry erection			This idea is more appropriate for the Lean project.		
L42 A46/A45 Toolbar End Improvement	Document Issue Time Register			The VG did not recommend this idea for the KB. It was felt it was a quality assurance system which is labour intensive and not always easy for the site teams to undertake		
L43 A421 Improvements M1 Junction 13 to Bedford	Promote early discussions with MAC Teams	The initiative was to install the same Road studs as currently used on the network. From our discussions with the Managing Agent and reviewing the data sheet for these Road studs it became apparent that the studs used are quite	C - Longer life than conventional studs (H) T - No Impact (N) JTR - No impact (N) H&S - Working during the day (H) R - Same studs as used by the maintaining agent (H) Sust/Env - No enhancement (N)	The VG considered that finding out what road studs the MAC contractor used on the network was a good idea. The Senior Technical Advisor Safer Roads Team advised that any road studs that comply with traffic	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords:	M62 J25 – J30 had held early discussions with MAC on a variety of issues to get their buy-in to the design and any proposed materials

		initiative in their own right. It would be worthwhile to also discuss early with the MAC Team what hardware/materials they are using to maintain their section of the network		regulations can be installed. The particular stud used on this scheme is on trial at the moment by DfT, if it does conform to regulations then it can be used. This idea is a lesson learnt in good practice to coordinate early on with the MAC Team.	Managing Agent Contractor, MAC, Road studs, handover	M4/M5 MM discussions with the MAC Team have been ongoing since the commencement of the scheme. This is considered to be standard practice. A1 Disforth to Leeming did not consult on road studs. However we have been having meetings with the MAC for some time regards the handover process and documentation. Sample handover packages have been submitted to the MAC to get their acceptance of the final format. Good progress with this and handover packages are now at 30% complete and we still have at least 12 months to go to completion.
L44 A421 Improvements M1 Junction 13 to Bedford	Torsional assist manhole covers	Manhole cover used is torsionally sprung so that only one operative required to raise the cover. Once the covers were raised there was a second level of safety mesh so that the opening was still protected until the mesh was raised.	C - Re-design and wayleave legal costs reduced (H) T - Easy to fit (H) JTR - No impact (N) H&S - eliminated manual handling, added safety benefit (H) R -Consideration to D4M (MAC Team scheme will be handed over to) (H)	The VG recommended that the idea be put on to the KB. As well as H&S benefits the group saw maintenance benefits too.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords:	

		Once the pumping system is operational there is no requirement to enter the pumping well and the pumps can be removed by the incorporation of a service gantry over the well.	Sust/Env - No enhancement (N)		Pumping station, manhole covers, Health and Safety	
L45 A421 Improvements M1 Junction 13 to Bedford	Use of smaller piling machine	The use of a smaller piling rig (in this case a Martello rig was used) allowed the piling working works to be carried out during the day, reduced the piling costs significantly. Removed the need for significant piling platform and extensive temporary works. Network Rail was happy with this proposal. Reduced possession costs	C - £200K (H) T - Scheme remained on programme (H) JTR - No impact (N) H&S - Work during the day (H) R -Enhanced as this is seen as innovation (H) Sust/Env - No enhancement (N)	The use of a smaller piling rig machine allows work to be done in tight spaces. The rig employed on the scheme uses lever and rotation technology. The diameter of piles that can be installed has increased from 600mm – 900mm. This method of installing piles in tight spaces is not a new idea but is not well known.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Piling rig, piling platform, temporary works	M62 J25-J30 have used a similar idea Due to the limited working space on the verges a large piling rig was unsuitable thus a lorry mounted piling rig is being successfully used for piles of 600mm, 750mm and 900mm of depths up to 25m.
L46 A421 Improvements M1 Junction 13 to Bedford	Trapezoidal Channel	The initiative is to use slip form surface water channel. However the channel shape was changed from the conventional V shape to trapezoidal and the base made wider to accommodate the covers. This change has allowed the surface water channel to be laid continuously without the need for transition sections (which are insitu) at the chamber locations. With the covers in the base of the channel this allows the slip form operation to be continuous as the paver can pave over the top of the covers. Thus the channel is to the correct	C - Savings of £100K (H) T - Slip forming 700m/day (H) JTR - No impact H&S - No insitu operation, slip forming in one continuous operation. No stop start (H) R -Cost saving, maintenance (H) Sust/Env - No enhancement (N)	This is a good idea, but only worthwhile if long sections of channelling required.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Drainage, water channel,	

		level and no additional work is required.				
L47 A421 Improvements M1 Junction 13 to Bedford	Use of tyre bales in embankment			It was recommended that this idea was forwarded to the Managing Down Cost Toolkit team as good evidence of use of recycled materials.		Forwarded to MDCT Team
L48 A3 Hindhead Improvement Scheme	A3 Primary lining			It was requested that the benefits to savings in cost and time are reviewed.		
L49 A3 Hindhead Improvement Scheme	Insitu Pile Testing	In an effort to avoid a conservative design the piled foundations at the springing point to Miss James' arch bridge were designed using assumed horizontal stiffness parameters which needed to be verified on site by in-situ testing. The original proposal for verifying the horizontal stiffness was to undertake lateral load pile tests; in addition vertical load pile testing was also required to confirm vertical load capacity. The programming of site works meant that the pile testing could not be undertaken during the same mobilisation as other piling works elsewhere on the site as originally envisaged. It was recognised that a significant programme advantage could be gained if an alternative method for verifying the ground parameters could be used. It was also	C - £120K (H) T - 4 weeks programme saving (H) JTR - No impact (N) H&S - Reduced heavy plant and lifting operations on site (H) R - No impact (N) Sust/Env - No enhancement (N)	VG considered it was unusual to do in-situ testing as in this case. It was considered that the solution used was good if such testing required. Add to KB as a good solution for the problem.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: in-situ pile testing,	M62 J25-J30 the piles will have integrity testing as part of the approval process

		considered that a considerable cost saving could be made if the test piles and reaction piles could be eliminated				
L50 A3 Hindhead Improvement Scheme	Soil Nail – geo – grid connection detail	The issue arose as a result of the inter-dependency of the limitations set by the site boundary and local topography, the required temporary excavation at the tunnel portal, and the desired aesthetics of the permanent earthworks slopes adjacent to the tunnel portal hoods. The permanent earthworks slopes were to be 45 degrees and therefore required geo-grid reinforcement to be stable. However, because the reinforced earth was to be placed as a narrow wedge in front of a 70 degree cut slope there was insufficient space for the required anchor length of geo-grid. A detail was therefore developed to transfer the load from the geo-grid layers to the soil nails; the soil nails effectively acting as the anchor length to the geo-grid. This was achieved by attaching a horizontal steel tube to the head of each soil nail which the geo-grid wraps around before tying back on itself using a full strength connection (e.g. Bodkin joint with Tensar geo-grids). To achieve the same end result without this connection detail	C - £1M (H) T - Neutral (H) JTR - Neutral (N) H&S -Neutral (N) R - Neutral (N) Sust/Env - Avoidance of a hard engineering solution enabling the desired landscaped finish to be achieved and full utilisation of on-site materials with geo-grid. (M)	It was considered that this was a specific problem, but a very good idea because projects don't always think of hybrid ideas. The VG recommended that this idea go on to the KB	Used at PCF Stage 6 Considered at PCF Stage 5 For Construction Keywords: tunnel portal excavation, soil nail	

		would have required a much larger excavation extending beyond the site boundary and was therefore not an option. The desire for a vegetated finish in keeping with the surrounding landscape prevented adoption of a hard engineering solution.				
L51 A421 Improvements M1 Junction 13 to Bedford	Tensar walls			This idea is already on the MDCT and should be standard practice. The project has a lot of structures and the use of TW3 block panels came out of the value engineering discussions. The use of tensar walls depends on being put forward by the design organisation and could be missed.		Ideas forwarded to MDCT Team as a good example of idea re-use.
L52 A421 Improvements M1 Junction 13 to Bedford	Recording dips on a hand held device	CHECK THE PDF FORM	C - dipping time and the removal of errors (N) T - saving as not having to transfer hand written information into electronic spreadsheet (N) JTR - No Impact (N) H&S - Working during the day (N) R -No Impact (N) Sust/Env - No Impact (N)	The VG considered this was a really good idea as it saves time and gets accurate results first time. It is a quality improvement and therefore not easy to measure benefits.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: data transfer,	
L53 A3 Hindhead Improvement Scheme	Road Studs	Regular maintenance activities require the implementation of a contra flow system in the Hindhead Tunnel. By implementing a switchable road stud configuration there are no operators required on site to enforce contra flow in the tunnel. The system reduces the time required to implement a	C - Reduction in tunnel bore size equates to approx £2M cost reduction. (H) T - save approx 2Hrs installing contra flow on night time closures (H) JTR - Maximises maintenance on night time closures, therefore optimising closures and improved journey time reliability. (H) H&S - Significant safety benefits by eliminating the	The VG recommended that this go onto the KB for use where SCADA is available. Departures for standards are required and details have to be sorted out for each case.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Traffic Management, Contra flow, tunnels	

		shutdown of a tunnel bore allowing increased working time during planned closures and therefore reducing the overall duration of a closure. The switching of the road studs from normal operation to a contra flow configuration is via the SCADA system and is implemented manually by following set plans from COBS TSS. This also assists in minimising the tunnel bore size by avoiding the requirement for a hard strip to provide sufficient space for traditional contra flow using cylinders	requirement for installation of cylinders (H) R - Fast efficient switches of contra flow will have good reputational effects for the HA (H) Sust/Env - Minimal equipment required for contra flow switch, crash cushion not required for cylinder installation. (L)			
L54 A3 Hindhead Improvement Scheme	Collaborative Working Charter	Verge details are becoming increasingly congested due to numerous services, drainage, street furniture and fencing within a limited land space. This has often lead to clashes with details and sequencing/interface issues with the various sub-contractors, all of which have often lead to re-work and possible programme delay.	C - £35K (L) T - No time saving, but reduced the risk of delay/overrun.(L) JTR - Neutral (N) H&S - safety risks associated with numerous activities in a restricted area are reduced. (H) R - Public observe well organised verge construction as they drive nearby. (N) Sust/Env - No impact (L)	The VG recommended that this be described as a Collaborative Working Charter and put on to the KB as an idea that works. It will also form part of the Lean project	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Verge, drainage, sub-contractors	This idea has links with L23 Collaborative planning from M1 Widening J25 - J29 and L104 Collaborative planning from M53 Bidston Moss Viaduct. M62 j25-J30 has used this idea Collaborative Planning was successfully used on the M1 widening project (L23) and similar meeting with all trades and our supply chain to manage the work interface in the congested verge sites to minimise clashes and

						improve efficiency M4/M5 MM scheme has implemented a collaborative verge workshop. The BBCEL Design Integration Manager on the M4 M5 scheme was previously based on the A3, info is being transferred.
L55 A3 Hindhead Improvement Scheme	Dirt Glue	To reduce high silt content water run-off from the extensive earthworks undertaken on the project.	C - Neutral (N) T - Neutral (N) JTR - Neutral (N) H&S - Neutral (N) R - Reduced risk of silt run-off from the project and visual discolouration of nearby watercourses to the public. (H) Sust/Env - Reduced risk of silt run-off from the project and visual discolouration of nearby watercourses. (H)	The VG recommended that this go onto he KB but with the branding removed	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Earthworks, soil works, environmental	M62 J25-30 will consider this idea if the problem arises. A556 Knutsford to Bowdon will use this idea. Efficiency register number 80.
L56	PCC Beam Installation Lessons Learnt Report			The VG considered that this was something that should be provided as standard		
L57 A1 Dishforth to Leeming Improvement	Statutory Undertakers Diversions Mitigations Report			The VG considered that this was something that should be provided as standard		
L58 M4 J19-J20 M5 J15-J17 HSR	Reducing height of advanced direction signs (ADS) on gantries	The overall strategy for this idea is to reduce the visual impact of gantry signs in areas close to properties.	C - Neutral (N) T - Neutral (N) JTR - Neutral (N) H&S - Neutral (N) R - If the visual impact of the gantries and signs were an issue for the first time on such a scheme then this may attract only local, or at most,	Idea to be placed on the KB after the Sust/Env impact is increased from neutral to medium. Place the Safe Roads Team's comments with the submission sheet (which has been done).	Considered at PCF Stage 3 Used at PCF Stage 6 For Construction	This has been successfully reused on the M62 J25- J30 scheme

			regional media interest. If it did occur on this scheme then s it would not be the first time it my attract national interest as the story would be that the Highways Agency has not learnt lessons from previous schemes and associate bad press (H) Sust/Env- The reduction in gantry height would also reduce the environmental impact (M)	N.B. It is important that each location is assessed independently to see if this idea is appropriate.	Keywords: Gantries, ADS, Signs, visual impact	
L59 M4 J19-J20 M5 J15-J17 HSR	Non-conventional commencement of dynamic hard shoulder running	The site constraints on two sections of the M4 M5 scheme do not permit dynamic hard shoulder running to be implemented in accordance with IAN 111/09. Due to the need to implement DHSR on the sections considered in order to relieve congestion and improve JTR, the proposals for the scheme were developed to include DHSR commencement along a link rather than a junction, based on the physical constraints.	C - The need to amend existing infrastructure removed Link D. (M) T - Time saving related to the above (L) JTR - Provision of DHSR provides JTR benefits as part of the overall scheme. If DHSR was not implemented on the sections where non-conventional commencement required them for Link D in particular the performance of the scheme and specifically M5 J16 would be impacted upon. (H) H&S - Neutral (N) R - Neutral (N) Sust/Env- Neutral (N)	This is a good example of original work. The Team have used a design to work around the geometry on site. A submission to depart from the standards set in IAN 111/09 submitted in February is still awaiting approval. Conclusion - place on KB with the caveat that departures from standards are required and as yet the submission for this scheme has not yet been approved.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Dynamic Hard Shoulder Running (DHSR),	
L60 M4 J19-20/M5 J15-17 HSR	Sign/signal cantilever gantry spanning D3M			This is a good idea but not to be placed on KB until technical approval has been given		
L61 M4 J19-J20 M5 J15-J17 HSR	Three phase electricity supply	Higher power requirements are needed for Super span gantries compared to conventional gantry sites. As a result a single phase electric supply may not be practical. Supply companies are installing 3 - phase supplies to the boundary	C - A number of gantries required greater than 15KW and the supply locations were restricted. Procurement of additional supply location could be significant. Estimate £25K to £50K for each supply. (M) T - Agreement with the DNO is critical. It is normal to experience several months of	It was recommended that this idea is forwarded to the Technology Team and Network Delivery and Development to assess the implications for maintenance on the MAC contractors. A note is to be prepared for the MMDO to inform	Considered at PCF Stage 5 Used at PCF Stage 6 For Development and Construction Keywords: Super	This has been successfully reused on the M62 J25- J30 scheme

		electric cabinets where loads exceed 20KW. Departure for variance from MCX0164 sought	delay if the DNO is not fully committed to the proposal. (H) JTR - Not relevant in this case (N). H&S - Use of 3 Phase is good practice and industry standard, but is not desirable for Motorway technology supplies (N). R - Improvement with DNOs. In-line with commonly accepted practice (M) Sust/Env - Reduction in number of fence line cabinets (L).	all projects that implementation of a 3 phase electricity supply can be used. This idea was seen as an opportunity.	Span gantries, electricity supply, structures	
L62 M4 J19-20/M5 J15-17 HSR	Lane specific signing for lane drops and bifurcations			EC required to re-word the submission to make it clearer and provide supporting drawings. Consider linking this idea with L58 as a combination of the two might be more useful.		
L63 M4 J19-J20 M5 J15-J17 HSR	HSM camera location tool design	The placement of HSM cameras is complex and has many factors that affect their location. A mathematical method of calculation location based on relevant factors was developed.	C - Key savings are Site surveys which can be repeated multiple times when obstructions (new gantries or ERAs) are moved. (M) T - Early confirmation of HSM CCTV usage (M) JTR - Not relevant to tool. (N) H&S - Removal of Site surveys and mobile CCTV usage. (M) R - Making better use of resources. Available for other schemes. (M) Sust/Env- Site survey reduction in carbon emissions. (L)	This is a good design aide that can be used where 3D modelling is unavailable or funding is not available early on. Advisor from DfT has commented that the tool seemed fine and is most appropriate for small/medium sized projects. The intellectual property rights (IPRs) for this product need to be checked with Atkins. Conclusion - This idea can be placed on KB once IPRs have been checked. Update – it has been confirmed that there is not an issue with others using this product, refer to e-mail linked to pro-forma.	Considered at PCF Stage 5 Used at PCF Stage 6 For Development and Construction Keywords: HSM Cameras, 3D modelling,	

L64 M4 J19-20/M5 J15-17 HSR	Cable over gantries			This is a potential idea. The Technical Specialist's comments have been forwarded to the Evidence Coordinator so that the wording on the submission can be tightened. Re-submit for further consideration once done.		
L65 A46 Newark to Widmerpool Improvement	GPS setting out	Key is to keep workers safe by eliminating conventional setting out. The Project set a policy of minimising risks to staff by utilising remote GPS systems for controlling plant. Production was also increased as no down time due to damaged/missing setting out.	C - Reduced number of surveyors required, estimate saving £200,000 (M) T - For earthworks assume 1% increase in productivity (M) JTR - Unaffected. (N) H&S - Significant benefit by removing people from areas of operating plant a known hazard (H) R - Potential for positive media coverage in technical papers/seminars etc. Good to be seen at the forefront of technical innovation (M) Sust/Env- Reduces waste from setting out materials and keeps our people safe (L)	It was considered that this idea was the way forward and is an extension of Building Information Modelling (BIM) into linear development. There are positive gains in getting control in the use of materials and getting things right first time. There are good benefits in the use of a GPS system and designers should be encouraged to put its use into the design process, so that the use becomes more wide spread. Loss of signal was not an issue on this scheme, because the signal used was satellite and not GPS.	Considered at PCF Stage 3 Used at PCF Stage 6 For Development and Construction Keywords: GPS, setting out,	A1 Disforth to Leeming have used GPS machine guidance extensively on the project for trimming batters, box cuts, placing and trimming capping layers and placing and trimming sub base. Used TPS for sub base that provides a greater accuracy +/- 5mm.
L66	This number not used as Idea duplicate of L74					
L67 A46 Newark to Widmerpool Improvement	Management of lab data	The key issue is to manage material test data to ensure that all materials compliance is maintained. Balfour Beatty Major Civil Engineering (BBMCE) has a policy of establishing UKAS accredited material laboratories on all their schemes. A common	C - There is no additional cost in implementing this proposal. There are potentially significant cost savings in eliminating non-compliance. (L) T - There is no direct time saving (N) JTR - No impact. (N) H&S - No direct impact (N) R - There is a huge benefit to Highways Agency	It was verified that the reporting system used is not a bespoke one, but is an excel spreadsheet with formatting that would be transferable to other contractors. It was considered that the neutral/no impact choice for cost benefits should be changed to	Considered at PCF Stage 6 Used at PCF Stage 6 For Construction Keywords: material	This idea is being used by M4/M5 MM schemes as it is standard policy in Balfour Beatty. Although it is unlikely that there will be a lab on site, the management of material lab data will be

		spreadsheet based reporting system is used across all BBMCE labs. Conditional formatting immediately alerts staff if compliance drops below 95%. Trend analysis is carried out on the project's data, but also on data from all BBMCE labs. A formal monthly reporting cycle ensures senior managers are aware of trends and can take appropriate action.	reputation and the best practice achieved on the A46 can be shared with other projects. (M) Sust/Env- Delivering a quality product right first time, eliminating waste, are all sustainable objectives. (M)	low, as this idea has no effect on cost. Conclusion - This idea is to be placed on the KB as an example of good practice.	compliance, trend analysis, materials testing, Laboratory/Lab, Data	undertaken using the same principles. A1 Disforth to Leeming have installed a UKAS lab on site - tests are conducted and test result spreadsheets are uploaded fortnightly into the 4 Projects extranet to be viewed by all. Materials Manager on site manages any testing trends and non compliances
L68 A46 Newark to Widmerpool Improvement	Zero waste to landfill	In line with Government, Highways Agency and Balfour Beatty sustainability objectives waste generated by the project has been managed such that nothing is sent to landfill. With the help of the supply chain a hierarchy of measures have been implemented to reduce waste.	C - The direct additional cost of processing and using the residual waste as a fuel is calculated as £570 per month. The on sites reuse of materials results in an overall saving to the project easily offsetting the small cost processing residual waste. (M) T - Local onsite reuse of bulk materials is more efficient than off site disposal involving haulage (N) JTR - No impact, no additional journeys created by the process. (N) H&S -The discipline of segregating waste encourages a tidy site, which reduces risk of injury from slips trips and falls (N) R - There is a huge benefits to Highways Agency reputation, and the best practice achieved on the A46 can be shared with other	The VG considered this to be a very good example of best practice, which should be reinforced across the Highways Agency. It was recommended that this idea is forwarded to the HA lead on sustainability issues. Conclusion - Place idea on KB to show what can be achieved.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: waste, re-use, sustainability, environment.	This has been successfully reused on the M62 J25- J30 scheme Similar principles will be adopted on the M4/M5 MM scheme. A1 Dishforth to Leeming to date 92% of material has been recycled. On site hard materials are crushed and re-used within the works. No material is sent direct to landfill. We have employed a waste contractor to manage the skips on site - all

			projects, other government departments and other infrastructure clients. (H) Sust/Env- The HA Procurement Strategy sets a goal of reducing waste to landfill by 50% by 2012. This project demonstrates that with good management this can be achieved, and exceeded, at no detriment to the project. (H)			material go to recycling stations.
L69 A3 Hindhead Improvement Scheme	Development of Proximity Alarm Mechanism	To reduce the risk of collision of scissor lifts with the tunnel roof a simple proximity alarm mechanism was perceived to be attached to the top of a pole fixed to the side of the cage, so that the top of the pole was at an appropriate height above the cage. The alarm was constructed from an IP67 proximity switch and 9volt alarm sounder, wired together and sealed by a site electrician. The parts are readily available at electronic part suppliers.	C -Neutral Impact (N) T - Neutral Impact (N) JTR - None (N) H&S - The risk of collision of the MEWP cage with the roof and other equipment is reduced, thus risk of damage to permanent works and the need for rework is prevented, risk of injury to personnel is reduced, risk of collapse of MEWP is reduced. (H) R - This will enhance the Agency's reputation (H) Sust/Env- Neutral Impact (N)	This is not a new problem. Representation has been made to the industry to do more about the safety of their machinery. There is reluctance within the industry to do anything, because if they provide a safety mechanism this highlights an issue with the design and would make them at risk of being sued for damages that have occurred. Concerns were raised about adding the safety mechanism to machinery, because if an accident occurred the claim could be made invalidated due to the changes made. At the February meeting it was reported that this issue had been raised in the Principals Group and a director from Skanska had been given the challenge to get the industry to change. It was agreed by the VG that this idea goes back to the Principles Group who	Considered at PCF Stage 6 Used at PCF Stage 6 For Construction Keywords: Worker safety, MEWP, Mobile Platform Elevated Platform	

				should consider how best to take this issue forward with the industry, as the Agency does not have direct routes to manufacturers. Conclusion - It is seen that this idea has good merits and should be placed on the KB.		
L70 M62 J25 to J30 MM and M4/M5 HSR Schemes	Managed Motorways (MM) Design Recommendations	Recommendations from the M62 and M4/M5 design stage, specifically on the prelim design process, use of schematics, developing a 3D model at the earliest opportunity and gantry rationalisation.	C - £11.6M gantry rationalisation savings (H) T - Saving on abortive work through design certainty brought by 3D model. (H) JTR - None (N) H&S - 3D model can be used for road safety audits (M) R - Fewer gantries will reduce disruption during construction. 3D model will save on abortive work or clashes. 3D model can be used to minimise visual intrusion and used at public exhibitions to allay people's fears about the scheme (M) Sust/Env- Less gantries will reduce site works and associated environmental impacts (M).	This idea shows good savings on rationalising gantry spacing. Good mechanism for looking at design and getting things right first time.	Used at PCF Stage 3 Considered at PCF Stage 3 For Development Keywords: Preliminary Design, gantries, gantry, structures	Manchester MM this idea will be developed following appointment of a new design agent.
L71 M62 J25 to 30 MM Scheme	Drainage Survey	Consider faster, safer, more appropriate and affordable options for obtaining drainage survey information. This could include a method of survey that involves using a camera mounted fibre optic pole operated from pavement level. Cameras with a focal range of up to 30m to 40m could provide sufficient level of detail for MM schemes. Because the alternative method is quicker, less	C - Reduce need for Traffic Management (TM) would bring significant savings (M) T - Reduce need for Traffic Management (TM) would bring significant savings (M) JTR - Avoiding TM could improve JTR (M) H&S - Less time spent on the network would have a positive impact. Would eliminate the need for confined space entry (M). R - Less TM, less hard shoulder closure and associated disruption would have a positive impact (M)	This idea has got support and approval from Network Services, who have done some work on trailing new surveying techniques. A guidance note has been issued to NDD colleagues about this technique. VG members considered this was a good step forward, as surveys can be very expensive and this was seen as a shortcut.	Used at PCF Stage 5 Considered at PCF Stages 3 and 5 For Development Keywords: Drainage survey, traffic management,	Manchester MM will use this idea when surveys are required. A556 Knutsford to Bowdon has used this idea. Efficiency register number 81.

		time would be spent in the hard shoulder and would reduce Traffic Management requirements. An Impact Vehicle Protection unit (as opposed to coning off the hard shoulder) to follow the drainage team could also be considered as an efficient way of working.	Sust/Env- None (N).			
L72 M62 J25 to J30 MM Scheme	Gantry Rationalisation			The VG commented that the Project Teams should be challenging standards early on at the initial design stage, so that benefits can be maximised. The VG members agreed that this idea is similar to issues rose in L70 and that the two ideas should be combined. This has subsequently been done.		This idea is linked to L70
L73 M62 J25 to J30 MM Scheme	Sub-surface drainage review	At the commencement of the original Managed Motorway drainage design meetings were held with NetServ to agree the drainage philosophy to be adopted for the scheme. In order to achieve a leaner design the drainage philosophy has been changed and a review of the original drainage design has been carried out. This has resulted in re-evaluation of the additional paved areas, departing from DMRB standard HD33/06 and accepting certain maintenance liabilities. Note: This proposal was endorsed at the Project	C - £8M outline Estimate (H) T - Programme savings not calculated yet (H) JTR - None (N) H&S - Neutral (N) R - None (N) Sust/Env- Saves on materials and construction work associated with the original proposal (N) .	The VG considered that this was an example of what cost benefits could be achieved when standards are challenged and agreed that this idea should be placed on the KB.	Considered at PCF Stage 5 Used at PCF Stage 6 For Development Keywords: Drainage, design, paved areas	When considering if this idea is appropriate to be reused on another scheme please also refer to ideas L74 Drainage under hard shoulder and L75 Retention of Kerb Gully Manchester MM will use this idea when surveys are required. Reuse of the existing drainage system , assuming that it is fit for purpose,

		Safety Control Review Group on 10 Dec 2010. Departure from DRMB standard HD 33/06 is required for potential rise in surcharging above that currently experienced bases on a one in one year design storm.				has been the approach on the M4 M5 HSR scheme from the outset (although also see L75).
L74 M62 J25 to J30 MM Scheme	Drainage under hard shoulder	Solutions developed to avoid having to relocate the carrier drain and associated manholes from the hard shoulder. Where the hard shoulder becomes a live running lane as part of the MM proposals, the original design for the M62 scheme removed all carrier drains that currently run under the hard shoulder with a carrier drain in the verge. The reason for relocating these drains was predominantly to remove manhole covers from the running lane to avoid the possibility of a manhole cover failing and causing an incident and associated delays while the cover is rectified. Note: This proposal was endorsed by the Project Safety Control Review Group on 10 Dec 2010. It has been agreed with NetServ that two types of departures are required.	C - £3M outline Estimate (H) T - Programme savings not calculated yet (H) JTR - None (N) H&S - None (N) R - None (N) Sust/Env- Saves on materials and construction work associated with the original proposal (L) .	Network Services has confirmed that the departures to standards for this idea will be approved. This idea is to be placed on the KB	Considered at PCF Stage 5 Used at PCF Stage 6 For Development and Construction Keywords: Drainage, design, manhole covers,	When considering if this idea is appropriate to be reused on another scheme please also refer to ideas L74 Drainage under hard shoulder and L75 Retention of Kerb Gully This idea is being used by M4/M5 MM scheme.
L75 M62 J25 to J30 MM Scheme	Retention of kerb gully	Key issue is to retain the existing kerb and gulley in most cases; introduces additional gullies and combined kerbs drains where necessary; and save on long sections of concrete	C - £1M outline Estimate (H) T - Programme savings not calculated yet (H) JTR - None (N) H&S - Maintenance regime to be fully established which will utilise MM technology measures. (N)	Placed on the KB as a good example of what can be achieved when the standards are challenged.	Considered at PCF Stage 5 Used at PCF Stage 6 For Development & Construction	When considering if this idea is appropriate to be reused on another scheme please also refer to ideas L74

		drainage channel. The original design provided a robust design in line with current design standards which would future proof the motorway from the effects of climate change. Generally with the exiting edge of carriageway drainage detail being kerb and gully the decision was taken to provide surface water channels (SWC) for significant lengths of carriageway. Note: This proposal was endorsed by the Project Safety Control Review Group on 10 Dec 2010. Departure required for providing no more than 200mm of encroachment of water flow for the one in five year storm.	R - None (N) Sust/Env- Saves on materials and construction work associated with the original proposal (L).		Keywords: drainage, drains, kerbs, gully	Drainage under hard shoulder and L75 Retention of Kerb Gully. This idea is being reassessed for use by M4/M5 MM scheme.
L76 M4 J19-20 M5 J15-17 Hard Shoulder Running	Peer Review by Birmingham Box managed motorway schemes	M4 M5 MM design and construction planning being undertaken by Consultant/Delivery Partner Team who has not implemented a Managed Motorways scheme previously. The design and construction planning would benefit from a peer review by a team who has delivered a Managed Motorways Scheme previously	There are no quantifiable benefits available, but please see the comments in the repeatability section if a peer review was done on other schemes. C – (M), D – (M) JTR – (M) H&S – (L) R – (M) Sust/Env – (M)	This is a resubmission from the evidence coordinators for the M4 J19-20/ M5 J15-17 MM scheme, who have provided the final report following the peer review carried out with the Birmingham Box Team. **Conclusion –** It was considered that this idea should be included in the Knowledge Bank, as the report validates it.	Considered as early as possible – use from Options Phase onwards Used at PCF Stages 5 & 6 For Development & Construction Keywords: reuse of ideas from other projects which are further through the processes, peer review, planning, partner	There is a potential for wider benefits, including costs, across the MM programme if the learning from the peer review are used early by other schemes and also if further similar Peer Reviews are held with the schemes recently constructed or now in construction e.g. M4 M5 MM, M62 MM. Each point raised in the review (and further reviews)

						will need to be individually assessed against each criteria and quantified. There may be some which can be put forward for the various toolkits. Peer reviews with schemes further through the process should be viewed as business as usual. Consider links to the MDCT for individual ideas contained in the review, and also possibly the H&S Toolkit.
L77 M4 J19-20 M5 J15-17 Hard Shoulder Running	Traffic Management Phase Layout Schematics			It was considered that this idea has commonality with Idea L70 and it has subsequently been combined with L70.		
L78 A1 (M) Dishforth to Leeming	Use of Low Maintenance Grass Alternative Central Reservation			The VG members considered that the situation to have two stepped concrete barriers was a bit odd and there was uncertainty about why the central reserve was designed in this way. The design solution is sound. . Information received from Safe Road Design Team and Environmental specialists that it is considered this idea has low benefits. There are also concerns		Idea forwarded to MDCT Team

				about the height of the cutting slope being a hazard that needs to be assessed within the RRRAP.		
L79	Cardboard Column Forms A46 Newark to Widmerpool Improvement Scheme			It was considered that this is a common solution for building columns, but not bridge works.		This is a good idea that has been forwarded to the MDCT Team.
L80 M4 J19-20 M5 J15-17 Hard Shoulder Running	FTMS Guidance Note			This idea was considered in conjunction with L62 Lane Specific signing for lane drops and bifurcation. Opinion sought from Safe Roads Design Team.		This idea has links with L62.
L81 M4 J19-J20 M5 J15-J17 HSR	Extended pile cap at Pagwell Brake Footbridge			It was considered that this idea is a good engineering solution to a problem, which encourages thinking and demonstrates what is going on. EC to provide details of forecast cost and time saving and a drawing or photograph of the bridge to better demonstrate the idea. Once received the idea to be placed on the KB and forwarded to the Managing Down Costs Toolkit Team.		Forwarded to the MDCT Team.
L82 M4 J19-J20 M5 J15-J17 HSR	Reduced emergency refuge area (ERA) pavement thickness	The standard HD24/06 paragraph. 2.15 states that all new carriageway construction including hard shoulders should be designed to the same standard as the heaviest loaded lane. As the ERA will only take a small fraction of the design traffic as the heaviest loaded lane it is proposed to use a design	C - This departure will offer savings in the cost of materials due to the bound materials being more expensive than unbound materials. By implementing the design approximate savings of £5,500 can be achieved per ERA. Although a relatively small figure, for a MM scheme with a number of ERAs the cumulative saving would be higher and if used	The departures for standards have been approved by NetServ. The idea has already gone to the M62 Team for them to use. Forward this idea to the MDCT Team. A note is to be prepared about this idea for the MMDO.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: ERA, Emergency Refuge Area, pavement,	This idea forwarded to MDCT Team. This has been successfully reused on the M62 J25- J30 scheme

		traffic loading of 5msa. This would reflect an OGV2 loading of over 45 vehicles a day for 40 years for an ERA. This has lead to a pavement construction that would be less than that of the existing hard shoulder. A departure from standard required and approved for this idea.	across MM programme could be significant (M) T - As above for Cost savings (M) JTR - None (N) H&S - Neutral R - None (N) Sust/Env- Less use of bituminous material (M) .			
L83 M1 Jct 10 - 13 Improvements (HSR)	Temporary galvanised steel stairway	Working near the verge or motorway there are many activities that require people to work at the top or bottom of a steep batter slope. On the M1 the Project Team are using galvanised steel temporary staircases to provide access to the top and bottom of steep slopes on the verge or next to the carriageway.	C - Galvanised steel temporary staircases are cheaper in comparison to rustic timber, brick and concrete alternatives. (L) T - Neutral (N) JTR - None (N) H&S - Assembled correctly the stair case provides a safe method of access up and down steep batter slopes (H) R - None (N) Sust/Env- (L) .	The VG considered that this is a good all round temporary structure, as its use provides good time savings. Its re-usability provides longevity. Graham was asked to investigate the cost savings that can be realised due to the time savings gained from assembly. Forward to Health and Safety Toolkit Team.	Considered at PCF Stage 6 Used at PCF Stage 6 For Construction Keywords: verge, carriageway, safety, stairway	Health and Safety Toolkit. Idea 248 entitled 'Prefabricated Access Stairways for Roadside Infrastructure and Equipment' on the MDCT should also be referred to. M62 J25- J30 scheme has re-used this idea. Efficiency register number 02. A46 Newark to Widmerpool use this as standard Manchester MM will consider use later in the construction methodology M4/M5 MM will use collapsible stairway systems within excavations. This is considered to be standard practice.
L84	Use of preformed plastic	On the M1 project 24 km	C - The slender shape of the	The EC was asked to	Considered at	Note: This Idea

M1 Jct 10 - 13 Improvements (HSR)	shuttering	of carriageway is being upgraded, which involves installing 48 km of ducting. The ducting is being installed at a shallow depth and subsequently encased in concrete as part of the narrow verge solution. Where existing ground conditions do not favour an excavated ridged channel, pre-formed plastic shutters are being used to contain the ducts. This method has proved to be very efficient allowing long lengths of ducting to be installed accurately and rapidly.	pre-formed plastic shuttering units means the size of an excavation can be kept to a minimum, thus a reduction of excavated material and associated spoil removal costs. (L) T - Pre-formed plastic shuttering units is light weight and can be easily positioned manually without using cranes. The units can be installed accurately and rapidly using unskilled labour. (M) JTR - None (N) H&S - (L) R - None (N) Sust/Env- (L).	provide information on the departure from standard and business case for this use. The VG considered that this idea should be placed on the KB.	PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Ducting, ducts, communication, cables, shuttering	should be used in conjunction with L88 Combining Communication Ducts and Footpaths. M62 J25- J30 scheme will consider this idea if applicable Manchester MM will review use at detailed design. A556 Knutsford to Bowdon has used this idea. Efficiency register number 82.
L85						
L86 M62 J18-20, M60 J8-12 & M60 J12-15 MM Schemes	Excessive signage MM with short link length			It was considered that this idea is a value engineering solution that is very site specific and bespoke for the scheme. It has already been covered on the M4/M5 scheme. Consideration is to be given whether a general guidance note on this issue should be sent to Project Managers.		
L87 M62 J18-20, M60 J8-12 & M60 J12-15 MM Schemes	Changes to how cost estimates are produced			This idea is to be referred to the Cost Estimating Team. It was considered that the KB is not the appropriate place for this idea.		
L88 M62 J25 to J30 MM Scheme	Combining communications ducts and footpaths	Longitudinal ducts to accommodate the communications equipment and footpaths for maintenance access	C - £120K outline Estimate (L) T - Programme savings not calculated yet (M) JTR - None (N)	Concern was raised about the provision of footpaths for maintenance purposes. It is the Agency's	Considered at PCF Stage 5 Used at PCF Stage 6	Note: This Idea should be used in conjunction with L84 Use of Pre-formed Plastic

		are required in the verge through the majority of a Managed Motorway (MM scheme. Original design was for separate longitudinal ducts and footpaths. The opportunity was identified to combine the 2 items to bring efficiencies and cost savings. Currently the design shows that 67% of maintenance footpaths within the scheme are combined with communication ducts.	H&S - Leaner design will limit time spent on site (N) R - None (N) Sust/Env- Saves on materials and construction work associated with the original proposal (L) .	stance that footpaths should not be provided for maintaining agents for health and safety reasons.	For Construction Keywords: Communication ducts, footpaths,	Shuttering. Manchester MM will review use at detailed design M4/M5 MM scheme are reviewing the use of this idea.
L89 M4 J19-J20 M5 J15-J17 HSR	Detailed local operating agreement between the area service provider and delivery partner during construction	Ensuring that the working arrangements between the Service Provider, NDD Area Performance Team, the Delivery Partner and the HA Major Projects is clearly defined and effective during a lengthy construction period.	C - Neutral (N) T - Neutral (N) JTR - Efficient and coordinated management of the network in and around the works area that will ensure consistent journeys and minimise any disruption that may be caused (H) H&S - Efficient, effect and agreed protocols and working arrangements will naturally result in clear improvements in H&S requirements as uncertainty will be removed. (H) R - The reputation of the HA will be enhanced as it will clearly display a joined up and effective approach to network management and ensure that the network will be managed efficiently during the construction of a major scheme (H) Sust/Env- Neutral (N).	The Group considered that this form of agreement can only help to provide a clear understanding of roles and responsibilities between everyone. MP Teams may not be aware of the implications their work has on the maintaining agent. Conclusion - Consider where the agreement can be placed in the Project Control Framework as a good working example. Consider how to distribute this information through the MMDO.	Considered at PCF Stage 5 Used at PCF Stage 5 For Construction Keywords: collaboration, Service Providers, closer working, agreement	This can be repeated for any HA scheme. With regards to the M4/M5 scheme this DLOA will be part of a suite of agreements that will develop amongst the following stakeholders: The Traffic Officer Service, NRTS, The 2 Local Authorities in the Area, All Emergency Services. The M62 J25-30 MM scheme is also adopting a similar mechanism with the MAC, TechMAC and DBFO. M62 J25- J30 scheme have used this idea A556 Knutsford to Bowdon

						scheme has used this idea. Efficiency register number 83.
L90 A46 Newark to Widmerpool Improvement	Use of elevated (PH) tar planning	During site investigation areas of the existing A46 carriageway were found to contain PAHs. Rather than dispose of this material off site, which is hazardous waste attracting a large landfill tax, a methodology was developed to test, classify and re-use in the permanent works in bound and unbound materials. This was done by testing, grading and designating stockpiles with varying levels of PAH for use in sub-base (57,000t) or HBM material (11,000t)	C - Estimate to re-use 68, 00 tonnes of tar planings. Disposal off site would cost in the order of £180/T (Landfill tax is about £60/T, then there are tip and haulage costs) (H) T - as long as testing and designation can be done ahead of installation there should be no effect on programme. The reduced haulage distances aid programme and resource constraints (N) JTR - Reduced off site road movements therefore contributing to improved JTR (L) H&S - Reduced road miles decreases the risk of incidents between site traffic and public. Proven leachate results for long term (L) R - Reduced cost, zero waste to landfill, more sustainable solution (M) Sust/Env- Reduced raw material and therefore more sustainable. Reduced transport and landfill therefore less CO2 emissions. Maintained the commitment to zero waste landfill. Solution developed wit the EA Agreement (H).	The VG liked this idea as anything that re-uses waste that is toxic is good for sustainability. The Environment Agency has changed its requirements so Tar Planning is not categorised as toxic. It is understood that this idea was used on the M25 Holmesdale Tunnel and saved £3M. Conclusion - idea to be placed on KB	Considered at PCF Stage 6 Used at PCF Stage 6 For Construction Keywords: toxic substances,	This method of classification and designation can be applied to other projects where PAH's are present in existing road construction and there is a requirement to remove all or part of the road construction. Linked to L24 Tar planings used as an aggregate in concrete
L91 A46 Newark to Widmerpool Improvement	Protective overlay film for temporary signage on permanent signs	A temporary overlay film (known as Protective Overlay Film (POF)) was used as an alternative to traditional greying out spray. This self adhesive material is applied to the sign face in the factory to mask the incorrect destinations on the sign	C - There is a slight increase in cost when using this product. A high rate was paid for this solution, because final quantities could not be provided to the supplier at an early stage. If use of product included in the design from the start better rates could be negotiated. (N)	The VG consider that this idea could be cost beneficial. A neat and tidy solution that gives the HA credibility. Safe Road and Design Team have completed their investigations with the product supplier about durability problems that	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: temporary signs,	This solution is repeatable across all projects. If included at the early stages of design, more attractive price rates could be attained. The

		faces. In addition to incorrect directions, new directions can be added to represent the routing required in the temporary state.	T - There is a saving on time to be realised in that the permanent works signage can be installed offline from traffic at an earlier stage. If the sign faces were to be installed later, from within traffic management, activity durations would have increased. (M) JTR - By reducing the requirement to use traffic management to install sign faces the impact on JTR has been reduced giving slightly improved JTR. (L) H&S - Working offline from live traffic and reduces man hours on a live carriageway. As the patches are applied in the factory there is no extra activity for site operatives to carry out. (M) R - A better quality sign for the travelling public. A better image of the site presented to the public. Can be used to demonstrate ongoing commitment to JTR. Contributes to improved road safety. (L) Sust/Env- Reduced temporary signage and a saving in the amount of temporary sign face material used. Reduced man hours and TM means reduced vehicle emissions. (M).	have been resolved satisfactorily.	traffic management,	product has been available for nearly 10 years, but is still not widely known about or used consistently across the UK. This idea does not have links to any others. M62 J25- J30 scheme will consider this idea if applicable M4/M5 MM scheme is reviewing the use of this idea.
L92 M1 J19 Catthorpe Viaduct Replacement	Use of incinerator bottom ash aggregate material			This idea is to be passed to the MDCT Team once information about where the material was sourced from and what regulatory process was used is known.		
L93 M1 Jct 10-13	Holding gates			The VG considered that this idea is a good H&S idea if sat in		

Improvements (HSR)				conjunction with others about on site safety. This idea has been submitted to the H&S Toolkit Team in the format they require.		
L94 M1 Jct 10-13 Improvements (HSR)	Traffic management notice boards			This idea is appropriate for inclusion in the Health and Safety Toolkit and has been submitted to the H&S Toolkit Team.		
L95 M1 Jct 10-13 Improvements (HSR)	Piling rig Innovations			This idea is appropriate for inclusion in the Health and Safety Toolkit and has been submitted to the H&S Toolkit Team.		
L96 M1 Jct 10-13 Improvements (HSR)	Temporary steel barrier markers			This idea is appropriate for inclusion in the Health and Safety Toolkit and has been submitted to the H&S Toolkit Team.		
L97 A11 Fiveways to Thetford Improvement	Overall reduction in pavement construction	To realise 20% saving on the scheme budget, 5 standard pavement departures have been combined to reduce the overall depth of the pavement		Feedback had been received from the NetServ Pavement Team who has stated that the departures from standards submitted for this idea will be approved soon. The Team also stated they are happy for this idea to be placed on the KB. The VG members raised concerns about the whole life cost implications whereby this idea uses a 20 year design life instead of the usual 40 years. Conclusion - VG asked for further questions to be raised with NetServ about the reduced		The approach of combining departures to reduce pavement thickness could be tested on any highways scheme which requires new pavement construction. This idea does not have links with any others.

				design life of this idea and whether this will have implications for the future. Once this point has been answered this idea is to be placed on the KB.		
L98 A46 Newark to Widmerpool Improvement	Installation of utilities ducts by principal contractor	Agreement by Balfour Beatty to install statutory undertakers ducting (BT and Virgin Media) and water pipes (portable and sewage) to ensure they retained control and removed certain aspects of these works from the critical path. This allowed a cost saving on overheads that would normally be paid to the providers. Cost saving has not been confirmed, as the final accounts are being prepared.	C - Not confirmed but could be up to £750K. As all works were processed under the New Roads & Street Works Act (NRSWA), an 18% rebate is attainable by the HA (M) T - Difficult to assess, but is in the region of several months and no delay was caused to the critical path. (H) JTR - The utilities contractors use their special powers to work during PSA hours. Balfour Beatty (BB) undertook ducting works at night to ensure that they complied with their JTR target. (M) H&S - Control and management of operations was more rigorous with the use of an approved contractor to install all BT, Virgin Media, Severn Trent Water and Severn Trent Sewage pipes.(L) R - All supply chain partners happy with the outcome and open door policy adopted by BB together with various workshops(L) Sust/Env- Future use and access to utilities by others has been aided by the introduction of maintenance bays and the use of the old A46 (carbon) (L).	The VG considered that how Balfour Beatty had worked with the Statutory Undertakes (SUs) brought obvious benefits to the scheme. They would like to have been provided with more information about how the expected benefits of cost and time against the overall programme were achieved. This idea is seen as good working practice.	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Keywords: Utilities, Statutory Undertakers, ducts, ducting	This idea is considered to be repeatable on all future HA schemes where there are utilities diversions required. This idea is not considered to be linked with other ideas. Manchester MM will review when compiling the construction methodology
L99 A46 Newark to Widmerpool Improvement	Electronic defects and outstanding work list and safety inspections	The solution was to provide an electronic means of capturing the data during the DOWL and Safety inspection. This has been achieved	C - 10 reports completed each week (combined DOWL and Safety). Assume 1 hr pre report. 1hr = £25 = £250/wk = 1,200/yr (M) T - 10 hrs saved each week	The VG considered that this idea was a small part of a much bigger topic area of collecting electronic information. There is currently a	Considered at PCF Stage 6 Used at PCF Stage 6	This is a trial of a system which could be widely used, not just for recording inspections, but

		by developing the relational database software in Business Collaboration (BC). The teams use Smart phones on site to take photos of the issues and complete an online form. The information is immediately available to view by account holders on BC. Inspections takes no longer on site, but on return to the office the information already presented in a standard format ready for editing and then disseminating to the appropriate parties.	on non value adding activity. This is time freed up to complete value adding activities (H) JTR - None (N) H&S - Inspections completed on time, accurately and information accrued for analysis (H) R - HA seen as intelligent client promoting the use of technology in pursuit of streamlining the work. (M) Sust/Env- Saves paper, approx 10 A4 sheets per inspection = 100/wk = 4,800/yr or 9.6 reams. There is also fuel/carbon saving as multiple trips to site are eliminated. (L).	project going on to find out how MP can provide scheme information in an electronic form that will integrate with the HA asset database that has been introduced by Network Delivery and Development. Conclusion - Although the use of the Smart Phones to collect information from inspections is a small part of the picture it was considered that the idea should be placed on the KB to share with others as a good way of working.	For Construction Keywords: Data Capture, DOWL,	in the application of Building Information Management or BIM as it is commonly known. The system can be used as remote server for operatives in the field to have all the information necessary to make informed decisions in real time and then record progress. The cost benefits can easily be multiplied across projects and implementation of this system at the start of the project will embed the technology in their processes. Therefore all inspections - ERs, TQs, NCRs, MSRs, MQRs, DOWLs etc can be set up and run electronically enabling central data management and assimilation of data. This idea does not have links with any others. M4/M5 MM will definitely use a variation of this

						idea using Ipads
L100 A1 (M) Dishforth to Leeming	Handover Documentation on time	To establish early what is required at handover regards documentation, clarify issues, involve adopting bodies and manage the collation of these records as the project develops to enable timely handover at completion.		It was considered that the Knowledge Bank is not the most appropriate place for this idea. It was recommended that Paul Unwin working on the Birmingham Box Phase 1&2 MM scheme is requested to test the tracker out on the scheme. Adam Bennett the Evidence Coordinator for the A53 Bidston Moss scheme was asked to see if his company adopts a similar process for collecting and recording handover information. The process used in this idea has been included in the 'Scheme Handover to Area Teams Guidance', which is currently being drafted by Richard Cook in the MP Knowledge and Capability Team. Once finalised this guide will be linked to the Handover Schedule product in the Project Control Framework.		
L101 A53 Bidston Moss Viaduct	Behavioural Safety			It was considered that it is more appropriate that this idea is sent to the Health and Safety Toolkit Team to go through their submission process. Verification Group members stated that a similar way of working is in place on other schemes.		
L102	Bsafe Scaffolding Installation			It was considered that it		

A53 Bidston Moss Viaduct				was more appropriate to forward this idea to the Health and Safety Toolkit team to go through their approval process. The Verification Group members recommended that this idea is forwarded to Peter Smith/Mike Evans of Network Delivery and Development as this idea may be more relevant to MAC contracts.		
L103 A53 Bidston Moss Viaduct	Considerate Construction Scheme (CCS) Working Group			Verification Group members considered that for the top 10 construction companies this is business as usual, both Carillion and Balfour Beatty aim for scores of over 35 on their schemes. Nick Hopcraft asked Quentin Leiper to do some work to find out what other companies do to follow the Considerate Construction Scheme and report this back to the Principals Group. This idea is not to go on the Knowledge Bank as it needs to be communicated via the Principals Group.		
L104 A53 Bidston Moss Viaduct	Collaborative Planning	Through extensive early involvement with the Highways Agency it was identified the project could take advantage of Lean construction and collaborative planning techniques. The idea was developed to hold weekly meeting with the	The project has attributed over £2.3m worth of savings due to the lean implementation techniques used and developed from the collaborative planning environment. (H) The project has attributed 2 weeks savings specifically to collaborative planning	It was considered that this approach could be adopted for schemes in design. It was recommended that this idea is placed in the Knowledge Bank with a direct link to the Lean pages on the HA Website where users	Considered at PCF Stage 5 Used at PCF Stage 5 For Development Keywords: Lean, planning,	The solution is very simple to implement and is highly repeatable. However a slightly tailored approach is required to suit each individual application. The

		designers, daily production meetings and weekly collaborative meetings. This would harness communication and enhance collaborative planning in running smooth site operations to ensure seamless integration and significant interface management and trade separation.	however with the environment created on site the removal of a critical weight restriction was completed 3 months early. (H) Through being able to understand different trades, areas of work and access locations significant benefits can be seen through raised awareness. The meeting also allows the forum to voice and resolve any major safety issues and successes in the period Benefits to the Highways Agency include the image of being on the leading edge of industry transformation and reducing the money being spent on government funded schemes.(M) Minimising waste allows a reduction in the amount of materials used amongst other sustainable benefits (L)	can find the knowledge transfer pack for this scheme.	collaborative	wider benefits are inherent however very difficult to quantify, especially with the 'softer' benefits that can be seen through implementation such as pride, relationships, trust and removal of blockers. This idea has links with L23 Collaborative planning from M1 widening J25-J20 and L54 Collaborative Working Charter from A3 Hindhead Improvement. M62 J25- J30 scheme have re-used this idea. A46 Newark to Widmerpool use this daily. Manchester MM intends to use this. M4/M5 MM scheme are using a variation of this system. This idea is considered to be standard
L105 A53 Bidston Moss Viaduct	Inertia reel twin lanyards			It was considered that it was more appropriate to forward this idea to the Health and Safety Toolkit team to go		

				through their approval process.		
L106 A53 Bidston Moss Viaduct	Action Tracker			This idea needs referral to the next VG meeting in February 2012.		
L107 A53 Bidston Moss Viaduct	Plastic baler	In the disposal of the first section of encapsulation, 8 skips were filled. This was not a sustainable way of removing plastic from site. The baler was purchased to compress the plastic and reduce skip numbers.	The main benefits of using the baler would be the cost; it cost £10,000, in the first two months of use they have saved £7,140 on not having to bring 42 wagons out at £170 a time. (L)There is a further six months left on the contract. Originally 227 skips would have been required to remove the plastic which accounts for 38 bails weighing 19 tonnes which can be removed on a single 20t lorry. In total this will save 452 lorry journeys as a result of removing the 226 skip wagon journeys originally envisaged. Time savings are achieved from not having to deal with multiple skip exchanges. Loading the bailer takes a similar amount of time to loading a skip but as you can get more in the baler than a skip. (M) No impact on journey time reliability; (N) Health and Safety benefits are gained from fewer vehicle movements collecting and delivering skips. (H) Benefits to Highways Agency reputation can be gained from the public seeing materials are being recycled. (H) Contribution to sustainability/the environment by diverting materials from landfill providing segregated waste that can be sent	It was recommended that this idea is placed on the Knowledge Bank, but indicating that it has low repeatability and low cost benefits.	Considered at PCF Stage 6 Used at PCF Stage 6 For Construction Keywords: waste plastic, disposal, baler	Savings are projected to be in excess of £10000 based on savings of over £20000 minus initial cost of £10k. There is still asset value in the baler at the end of the project so this could be sold or moved to another project which large quantities of plastic to gain further benefit. The use of the baler was bespoke for the scheme therefore it has low repeatability across other schemes. It may possibly be considered by MAC operators.

			straight for recycling with a resulted 1,356m3 of plastic being avoided from landfill from the 226no. 6m3 skips. (H)			
L108 A53 Bidston Moss Viaduct	The use of battery powered impact wrenches			It was considered that this idea is more appropriate for the Health and Safety Toolkit and will be forwarded to the toolkit team for their approval.		
L109 A53 Bidston Moss Viaduct	The use of coloured scaffolding-tag entry			It was considered that this idea is more appropriate for the Health and Safety Toolkit and will be forwarded to the toolkit team for their approval.		
L110 A53 Bidston Moss Viaduct	The use of MEWP permits			It was considered that this idea is more appropriate for the Health and Safety Toolkit and will be forwarded to the toolkit team for their approval.		
L111 M25 Sections 1 and 4 Managed Motorway	Pile retaining wall system			It was agreed that this idea could be shared with those who attended the Evidence Coordinator and Project Manager Round Table, but due to proprietary issues it can not be added to the Knowledge Bank. The Agency cannot be seen to promote an individual product.		
L112 M1 Jct 10 – 13 Managed Motorway	Earthworks solutions hierarchy	The project required multiple earthworks designs along 24km of motorway verge for the installation of gantry foundations, ERA's, drainage and communications. To reduce repeated and	C - There are potential cost savings by reducing the design time. (L) T – Potential time savings from using a standard template (L) JTR – No impact (N) H&S – No impact (N) R – Potential benefit to the	A question was asked on how sensitive the process was to changing ground conditions. Graham explained that the design was done in advance of ground investigation and that it	Considered at PCF Stage 3 Used at PCF Stage 6 For Design and Construction	This idea can easily be used on other projects. There are potential cost savings, but these are not quantifiable at the moment.

		time consuming designs a standard list of solutions was created ranging from LTT (local toe treatment), standard earthworks, earthworks with soil nails and contiguous piles.	Agency's reputation by reducing design time and cost. (L) Sust/Env – Neutral impact (N)	can be tweaked as necessary. **Conclusion** - VG members considered that there is a need for the Agency to have a standard set of earthwork solutions. This idea was approved and is to be placed on the Knowledge Bank.	Keywords: earthworks, solutions, standard.	This idea does not have links to others on the KB. M4/M5 MM scheme are using this idea as it is considered to be standard practice
L113 M1 Jct 10 – 13 Managed Motorway	Fibre optic isolation and cables over gantries	On the M1 project, the constraints of the heavily trafficked live carriageway, limited verge space, and the requirement of a traditional cable to feed a super span gantry needing to be very large, prompted the consideration of an alternative method. Fibre optic cables were used and laid across the gantry for local communication connections. No directional drilling is required, which mitigates the associated health and safety risks and logistical challenges, particularly with limited verge space available. The method is also beneficial for future maintenance and upgrading of the cable and connections.	C - Lower cost versus directional drilling and traditional cable method (approx £30k per crossing). (H) T - High savings on time for installation versus directional drilling and traditional cable method. (H) JTR – No impact (N) H&S - Benefits to workforce due to safer method of installation (no sheet piling, drilling or welding required, less time spent at side of motorway and less time as opposed to using copper cables). (M) R - Potential benefit to Highways Agency reputation in utilising future-proof technology (L) Sust/Env - Benefit to carbon, waste and noise versus directional drilling. (M)	A departure for standard was required because the cabling is being put across the gantry instead of under the carriageway, which has been approved by NERTS. This idea was not considered to be new, but fresh as is has been used on the Birmingham Box and M24 schemes. A concern was raised because it is believed that a standard was being issued by NetServ that is to be followed. It was reported that the M62 scheme team were using this idea and were in the process of getting the departure from standards approved. **Conclusion** - A check is to be made with NetServ to find out if this idea is business as usual. The idea was approved and is to be placed on the Knowledge Bank.	Considered at PCF Stage 3 Used at PCF Stage 6 For Design and Construction Keywords: Fibre, optic, communication, cable, connections, gantry, verge space	There is potential for use on other projects. Potential benefits due to standardised installation and future maintenance. This idea has links to L61 - Use three phase instead of single phase electricity supplies; provides maintenance benefits M4/M5 MM have been involved with the development of this proposal. It is being utilised on the scheme. **Warning:** The Birmingham Box (BB) Phase 3 scheme have reported that they will not use this idea, because the other BB phases had encountered problems whereby gantries

						were erected during weekend night closures with the cables attached, but before there was an opportunity for them to be connected they were subject to vandalism where the cables were cut and removed.
L114 M1 Jct 10 – 13 Managed Motorway	Project internet portal	Project information and data exists on individual computers and on the projects collaborative information and knowledge management system. The portal page brings all of the key information together in an easy to navigate structure, saving individuals' valuable time searching for documents.	C – No impact (N) T - Potential time savings by reducing individuals searching for documents (L) JTR – No impact (N) H&S - No impact (N) R - No impact (N) Sust/Env - No impact (N)	There is a draw back to this idea, because staffs needs an individual user name and password to access some areas of the portal, because not all of the information is within the public domain. **Conclusion** - this idea is to be placed on the Knowledge Bank and linked back to idea L04. This is a good working example of an idea being re-used.	Considered at PCF Stage 3 Used at PCF Stage 3, 5, 6, 7 For Design and Construction Keywords: information, portal, internet	Can be easily setup on other projects. Neutral cost benefits This idea is linked to L04 Internet Project Portal Communication M4/M5 MM scheme are using this idea as it is considered to be standard practice.
L115 M1 Jct 10-13 Managed Motorway	School and youth group visits – safety message			The visits were educational for the children as they were informed about motorway construction and road safety issues. It was considered that this type of initiative is common place and should already be done. **Conclusion** - This idea is not to be placed onto the Knowledge Bank. It is to be forwarded to the MP Communications Team to ensure that this initiative is included in scheme		

				communication plans.		
L116 M62 J25 to J30 Managed Motorway	Visual management boards	The Motivating Success Toolkit (MST) is the Highways Agency's method of measuring our performance on a monthly basis with 7 main Areas of Measurement. It was felt that Visual Management could be used to improve the project team's awareness of the MST performance and drive continuous improvement	Improvements are expected in all the 7 Areas of Measure in the MST. Please go to the idea form to view a table of the benefits. C - (M) , Delivery (D) - (H), JTR - (M), H&S (H), R (H), Sust/Env (N)	The boards are available to everyone to raise concerns. They are reviewed every two weeks. This brings issues out into the open. It was considered that the use of the boards is a wider spectrum of management. **Conclusion –** This idea is a good working example and is approved to go on the KB with a link to the LEAN Knowledge Transfer Packs. Consider if appropriate to be included in the Project Control Framework as a tool that can be used under the Project Management Plan product	Considered at all PCF Stages Used at all PCF Stages For Design and Construction Keywords: motivating success toolkit	This initiative can be adopted on any HA project where the MST is being used. There are direct links to the Motivating Success Toolkit as the initiative is intended to drive improvements in all areas the MST M4/M5 MM scheme are using this idea as it is considered to be standard practice.
L117 M62 J25 to J30 Managed Motorway	Zero road crossings for installing temporary traffic management	Concern about the risk of injuries to traffic management personnel caused by having to cross a live carriageway on foot to install and maintain temporary traffic signs in the central reserve as part of a temporary Traffic Management scheme. The system was developed as part of the forward planning of the Bam Nuttall/ Morgan Sindall JV (bmJV) team to deliver Highways Agency's objectives for achieving targets for the next level of 'zero exposure' which they	C - No cost savings expected, but also no increase in cost to implement the initiative (N) D - No overall programme benefit anticipated although some benefit is expected to be gained from the efficiency savings in time for installing lane closures (L) JTR - will benefit from Quicker installation TM schemes (H) H&S - Safety of road user and TM personnel greatly improved by having zero road crossing significantly reduces the exposure of traffic management operatives to the live traffic. (H) R - System meets the Agency's safety objectives	It is expected that the scheme will be able to eliminate 70,000 road crossings during the construction phase. VG members questioned the cost for this process. This has been priced into the contract. This idea brings a lot of benefits especially to programme reliability and surety at neutral cost. **Conclusion –** This idea is to be placed on the KB and forwarded to the Health and Safety Toolkit for inclusion on their database	Considered at PCF Stage 5& 6 Traffic Management Plan Used at PCF Stage 6 Traffic Management Plan For Design and Construction Keywords: zero road crossings, traffic, management schemes	The Five Point Plan was implemented on the M62 at the start in September 2011. It has a proven track record and so far has already eliminated the need for 4,700 road crossings on foot by road workers. Expected to eliminate the need for any road workers to cross the live carriageways with an estimated

		have set for 2016.	targeted for 2016 in 2011 (H) Sust/Env – No impact (N)			saving of 70,000 crossings in order to erect, maintain and dismantle temporary traffic signs along with any reactive road crossings. This initiative can be shared across HA Major Projects and used on all projects that require Traffic Management schemes and/or lane closures This initiative has links to the managing success toolkit and the Agency's 'Aiming for zero' initiative. M4/M5 MM scheme are using this idea and have provided a report describing how they have implemented this. The report will be attached to the idea for information purposes
L118 M62 J25 to J30 Managed Motorway	Incident management workshop initiative	The detail for this idea will be added once the plan has been used.		The VG members would like to know how effective the plan had been following an incident. **Conclusion –** It was requested to resubmit this idea when there is evidence of the plan		

				being put into use then place on KB and forward to H&S Toolkit Team.		
L119 A46 Newark to Widmerpool	Automated drainage information	Drainage had been installed out of tolerance and a method was required for checking the drainage schedules against the road and ground profile. This information could then be used to set out correctly and record as-built information. An Excel based automated system was developed which used the design schedules and 3D model information to check chamber installation levels and position. From here the setting out information was derived, including type and number of rings and risers. This was integrated into the QA check sheets, materials ordering, reconciliation and as-built information.	C - All chambers constructed with the new system have been built "right first time" with minimal snagging items. The link to materials ordering and reconciliation has prevented over ordering of materials and provided accurate, timely forecasting data. (M) D - Manual calculation of each chamber used to take between 10 and 20 minutes. It can now be done in one minute, including printing of setting out information and QA check sheets. Virtually no re-work/snagging. (M) JTR - No re-work = no future lane closures to rectify non-conformities (L) H&S - Engineering time has been freed up to allow more supervision time and no re-work has optimised working hours. (L) R - Nobody likes to see roads being dug up after they have just been laid. This innovation will contribute towards driving down costs in line with the Agency's core objectives. (L) Sust/Env - "Right first time" means material, plant and labour usage is optimised. (M)	This idea ensures that drainage is right first time on the scheme. This system works. **Conclusion** - This idea was approved and is to be placed on the Knowledge Bank.	Considered at PCF Stage 6 Used at PCF Stage 6 For Construction Keywords: automated, drainage	This system has the potential to be used on all projects small or large. The key to making it work on future schemes would be setting up the drainage schedules in the same format so that they can be fed directly into the database without change to the formulae/calculations. This idea does not have links to any others on the KB. This idea is being considered for use on the M4/M5 MM scheme
L120 A46 Newark to Widmerpool	Tablet PC and van for behavioural based safety			This was seen to be a valid way of briefing staff and helping to change culture. This process has also been used on the M62 J25-J30 managed motorway (MM) scheme to get the		

				safety message across. **Conclusion** - This idea is to be forwarded to the Health and Safety toolkit team.		
L121 A46 Newark to Widmerpool	Visual standards for behavioural based safety			This idea complements Idea L120. This idea was implemented as a lesson learnt following a near miss incident. It is important that teams consider how to tackle near misses. **Conclusion** - This idea is to be forwarded to the Health and Safety toolkit team.		
L122 Manchester Managed Motorways (M60/M62)	The application of Project Control Framework (PCF) to single option projects			It was good to see a scheme team helping with the development of a process. Conclusion - This idea is not be included on the Knowledge Bank, because it is already within the processes. It was recommended that the process is tested by the Project Control Framework (PCF) team and the Delivery Hub to make sure it is working.		
L123 M62 Jct 25 – 30 Managed Motorway	Use of Site marshal on site access points to narrow areas on motorways i.e. hardshoulder working	As part of the Logistics Plan a procedure to properly control the entry to site was required. The Site Marshals are stationed in a serviced cabin at all site access points. Entry to site is controlled using a barrier system with the barriers being kept in the closed position at all times until entry has been approved by the Site Marshal.	C - The cost of implementation this initiative needs to be included in initial costings. Savings are accrued through minimising the risk of disruption to the construction operations arising from unplanned disruption on the access route. (M) D - Anticipated to support project delivery by minimising unplanned disruption to the work operations. (M) JTR - Minimal impact although efficient management of the site	As a result of having site marshals there has only been one RIDDOR where a worker slipped down the bank. The site marshal works with the logistics manager. It was noted that the site marshal uses a barrier at site access points to stop unauthorised personnel and the public from entering narrow work areas. **Conclusion** – This is a good idea showing work in practice that	Considered at PCF Stage 6 Health and Safety Plan product Used at PCF Stage 6 For Construction Keywords: site marshal, access point	Cost benefits will come from minimising the risk of unplanned delays to the work operations. Reviews are planned to establish what are the specific costs and benefits to the project The benefits of this initiative are currently under

			access points will ensure that the live traffic is not delayed around these access points. (N) H&S - Benefits are:- • Only authorised and inducted personnel allowed on site • Improved safety to the public as they are prevented from entering the site and then safely escorted back to the live carriageway. • All new delivery drivers are made aware of site rules for delivery drivers • Pedestrian / Vehicle Segregation which site marshals perform a fundamental role was scored an 8 in the Highways Agency Major Projects Independent Health & Safety Audit undertaken on the 18th January 2012 (H) R - The Agency's reputation will be enhanced by the improved public image of the controlled access and will support the Agency's 'Aiming for Zero' initiative'. The initiative of using Site Marshals has been commended by the police. (H) Sust/Env - By establishing a procedure for planned and efficient deliveries to the work place will help to reduce waste. (L)	has been successful. This idea is to be included on the Knowledge Bank and forwarded to the H&S Toolkit.		review by the Highways Agency however at a bi-annual Police Conference held in Sheffield in November 2011 Sergeant Wright of West Yorkshire Police made reference to the use of site marshals by bmJV on the M62 scheme. He has stated "The use of marshals is an innovative idea and obviously works well….to improve the safety of roadworkers….it creates a control measure to assist with site safety. I would commend the use of site marshals and see it as being a positive step….and assists in the prevention of incidents that would otherwise escalate and require a response from other agencies" Site Marshals can be deployed to good effect on any motorway scheme which has limited access,

						narrow/confined work areas This idea has a link to the following: JTR Toolkit, Managing Success Toolkit and the Agency's 'Aiming for Zero' initiative for safety of personnel This idea is being used on the M4/M5 MM scheme
L124 M1 Jct 10-13 managed motorway	Autonomous flying sensor	The Autonomous Flying Sensor is an un-manned electronic powered flying camera which takes high resolution images based on the users defined GPS coordinates. You don't need to be a pilot to fly the device; it takes off, flies and lands by itself.	C – Savings <u>Autonomous Flying Sensor</u>: £11,000 (Plane, Laptop & Software) £1,500 (Training & Licensing fees Per person) £12,500 one of payment <u>Helicopter Operations:</u> £3,000 per year (4 visits) In the near future modifications to the Autonomous Flying Sensor will make it possible to fly at varying gradients. Savings can then be made because the monthly walk through progress photographs currently costing £7,200 per year can be taken using the Autonomous Flying Sensor.	The flying sensor was primarily used to take progress photographs. It does not fly over the motorway to reduce potential incidents. It can fly low. A VG member asked if the device had Civil Aviation Authority (CAA) clearance. The EC did not know and said that he would find this out. The device is reusable and could be loaned on other contracts or even hired out. MACs could make use of it. **Conclusion –** The Evidence Coordinator to find out if this device has CAA clearance. Forward the idea to the Sustainability Team as it may be of interest to them.	Considered at PCF Stage 3 Used at PCF Stage 6 For Design/ Construction Keywords: flying sensor, plane	This initiative can be used on any construction project where there is a need for aerial / site photographs. This idea does not have links to any others.

			Some quite substantial saving can be made especially on construction projects lasting many years. (L) D - By implementing the Autonomous Flying Sensor you can capture data anywhere, any time, without complex infrastructure or long preparation time. You can also Create Geo-referenced high resolution maps and Digital Elevation Models (DEM) in a matter of a few clicks. Auto CAD and MX data can be overlaid on the photo images, making it quicker and easier to determine offsets from fence lines etc. (N) JTR – No impact. (N) H&S - Potential health and safety risks during operation(s) are eliminated because the Autonomous Flying Sensor functions without onboard personnelThe Autonomous Flying Sensor can operate in places where a real helicopter cannot access safely. It can also fly closer to subjects and perform shots too dangerous for a full size aircraft. .(L) R – No impact .(N) Sust/Env - The Autonomous Flying Sensor is a very eco friendly method of taking photographs in comparison to the alternative manned operations. Being an electronic device there are significant reductions in noise			

			levels when compared to the manned helicopter operation. There are no Co2 emissions produced via this method. (M)			
L125 M1 Jct 10-13 Managed Motorway	Narrow verge detail	Items contained within the verge have been repositioned in order to reduce the width of the verge to 1.61m from 2m. By reviewing the layout of all items included in the verge, it was possible to reduce the width to 1.61m along main lengths with local step outs at chamber locations. Ducts have been installed shallower then standard and as such been concrete encased. If the standard (2m) motorway verge width had been used, the project would have required retaining structures along a considerable length of the scheme or additional land take would be necessary resulting in a greater cost. A departure for the reduced set back was needed.	C - The extra over cost of using ST4 concrete in lieu of Sand / pea gravel is £25/m (allowing for the use of the permanent plastic formwork). If the standard (2m) motorway verge width had been used, the project would have required retaining structures along a considerable length at a cost of £1,550 per linear meter. The cost incurred by encasing ducts in concrete is much outweighed by the cost saving from the retaining structures. (M) D - No impact (N) JTR – No impact (N) H&S – No impact (N) R, D&I – No impact (N) Sust/Env – No impact (N)	The evidence coordinator was asked to find out the detail for the departure from standards. Once this information is provided this idea is to be included on the Knowledge Bank. 4/05/2012 NetServ has provided the details for departure from standard number 60673 the details of which can be found with the submission form.	Considered at PCF Stage 3 Used at PCF Stage 6 For Design/ Construction Keywords: narrow verge, reduce width	There were significant cost savings in terms of reduced retaining wall heights, or deletion of retaining walls. It was the correct decision for our scheme, but only because the soil conditions were so poor and batter slopes had to be kept to as shallow an angle as possible - in other locations where soil strength is better, then the use of a wider verge and steeper batters would be available. This idea does not have links to any others
L126 M62 Jct 25 – 30 Managed Motorway	Permanent repairs to joints in old existing surfacing that will now be trafficked in the revised road layout for Managed Motorway schemes	The risk that further deterioration would occur in the joints located in areas of old existing surfacing was identified during the Development Phase. It was not part of the scheme requirements to	C - The cost of implementing this initiative needs to be included in initial costings. Savings are accrued through :- • minimising the cost risk of having to carry out unplanned extensive repairs	This solution has reduced the risk of having to go back and do unplanned repairs to the surface joints during construction or at the end of the contract at an extra cost. This therefore reduced the	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction	Use of permanent proprietary joint systems has already been implemented on the M4/M5 managed motorway

		repair any of these joints. To address this risk bmJV decided to instigate risk mitigation by undertaking permanent repairs to these joints using a proprietary repair system. The repairs were completed immediately after the removal of the lane lines as part of the installation process for the temporary traffic management scheme.	to joints in old surfacing during the construction phase • minimising the cost risk of disruption to the construction operations arising from these unplanned repairs to these joints • Minimising the cost risk of having to carry out unplanned full scale resurfacing work at the end of the project to address to areas where the joints cannot be successfully repaired. (H) D - Anticipated to support project delivery by minimising disruption and the impact on public journeys as a result of having to carry out unplanned repairs joints or to carry out any full scale resurfacing which would result in an increase to the programmed project durations. (H) JTR - Main impact will be as a result of an extension to Traffic Management schemes and additional lane closures required to allow either repairs to joints or full carriageway resurfacing. (H) H&S - The initiative to repair the joints early at the start of the project will - • Eliminate the safety risk to the travelling public of injuries/damage caused by loose surfacing material/stones coming from the deteriorating joints. Eliminate the risk to the TM workforce installing, maintaining and removing additional TM. (H) R - The Agency's reputation	risk allocation costs. The VG considered that this way of working should be part of the works information at the start of the contract. **Conclusion –** This is a good solution and is to be included on the Knowledge Bank	Keywords: repairs, joints, existing, surfacing	scheme. This is considered to be standard practice.

			will be enhanced by the improved public image of achieving project within the planned timescales and also reducing the risk of any embarrassment of having to return to the site if unplanned full resurfacing is required (H) Sust/Env - Reduction of waste production by reducing the need for an unplanned removal existing surfacing. Reduction in carbon footprint by not having to transport materials (both old and new) and also not having to batch the new surfacing material. (H)			
L127 A11 /A556/A23 ECI Collaboration	Sharing lessons learnt from A46 Newark to Widmerpool by adopting lean practices within the supply chain.			This idea was not put to the Verification Group as the initiatives have been produced as Lean Knowledge Transfer packs.		
L128 A11 Fiveways to Thetford Improvement in collaboration with A556 and A23	Reducing the ecological and environmental scope. Reducing the number of badger tunnels and simplifying the bat wires design.	The Environmental Statement for the A11 was written in 2008 by Jacobs and an Addendum in 2009. Requiring up to date information, in 2011/2012 Middlemarch undertook subsequent activity surveys and proposed slight changes to the bat wire locations and a reduction in the number of badger tunnels, enabling savings to be made. By reviewing the Environmental Statement and questioning the decisions made, undertaking further studies, savings where	Through negotiation with Environmental teams the number of badger tunnels were reduced to three and the scope of the bat bridges simplified. C - The cost saving of reducing badger tunnels from 6 to 3= **£100,000** The cost saving of simplifying the bat bridges= = **£680,000** A total saving of = **£780,000** (M) D - The reduction of work to be done reduces the programme time(M) J – No impact (N) H&S – No impact (N) R/D&I - low impact (L) Sus/Env – We are considering the impact of the scheme on the local habitat	The EC is to breakdown this idea to identify more specific elements. There is a lot of good stuff in the proposal which requires more work to determine how it can be shared. A mini working group is to be set-up to develop this idea further.		

		made	(M)			
L129 A11 /A556/A23 ECI Collaboration	Sharing earthworks constraints			The EC is to breakdown this idea to identify more specific elements. There is a lot of good stuff in the proposal which requires more work to determine how it can be shared. A mini working group is to be set-up to develop this idea further.		
L130 A11 /A556/A23 ECI Collaboration	Traffic management constraints			The EC is to breakdown this idea to identify more specific elements. There is a lot of good stuff in the proposal which requires more work to determine how it can be shared. A mini working group is to be set-up to develop this idea further.		
L131 A11 /A556/A23 ECI Collaboration	Utilities constraints and impact programme			The EC is to breakdown this idea to identify more specific elements. There is a lot of good stuff in the proposal which requires more work to determine how it can be shared. A mini working group is to be set-up to develop this idea further.		
L132 M1 J10 – J13 Managed Motorway	Rigid temporary barrier poles			It was recommended that this idea is forwarded to the Health and Safety Toolkit Team for analysis before a decision is made to include it in the databank.		
L133 M1 J10 - J13 Managed Motorway	Plastic piles			This idea shows reuse of Idea 137 in the Managing Down Cost Toolkit.		
L134	TD22 Junction layout design			It was recommended		

Birmingham Box Phase 3 Managed Motorway	tool			that the Evidence Coordinator is asked to extract greater benefit possibilities that could be used for managed motorways as a design tool.		
L135 A45/A46 Tollbar End improvement	QR Codes	Consultation documents should be made as accessible as possible to all members of the public; A QR Code could be put on any documents that are being released to the public. If the image is on the front of a consultation document in a library it can be scanned with a Smartphone or a tablet thus bringing the pdf up and the document could be read later at home. This would also be suitable on leaflets et cetera.	C – No impact (N) D - No impact (N) JTR – No impact (N) H&S – No impact (N) R, D&I – This idea enhances the agency's and supplier's reputation through providing information via up-to-date technology. (H) Sust/Env – Information is provided in a more sustainable way. (H)	Good benefits, but concerned that this does not compromise other QMS systems and then leave "holes" elsewhere?	Considered at PCF Stage 1 Used at PCF Stage 2 For design Key words: QR Codes, consultation, documentation	This idea could be used on all projects. This idea does not have links to any others.
L136 M1 J32 – J35a Managed Motorway				More details needed on savings. Comparisons with current system required. Why is this better than the system already in operation? Recommend to target at pre-construction stage. **Hold decision for these answers**		
L137 M1 J32 – J35a Managed Motorway	Project programme reports	Reviewing an updated programme line by line as part of a monthly review meeting basis was seen as a time	C – No impact (N) D - The Programme Progress Report lists the changes to key milestones dates, changes to other key tasks	Can save time, so a welcome approach. Check if other schemes are using their own templates and forms of	The report can be used at all stages of PCF governance at both design and	This idea could provide efficiencies in programme management

		consuming process with little benefit in term of actually managing the programme. The programme progress report was developed to provide a quick update to the programme and to highlight any issues to allow targeted discussions to take place during the meeting to resolve any problems.	against the baseline, the critical path along with tasks close to entering the critical path, and also any potential opportunities to accelerate the programme. It provides a record of the current state of the programme on a monthly basis and can be distributed to the wider HA / Design team to get their input. Previously when programmes are distributed they are rarely reviewed fully and changes to key dates are often lost within the numerous task lines. The benefit in this report is in the quality of delivery. There is no direct saving; however there will be efficiencies in management of the programme to ensure any delays or acceleration opportunities (M) JR – No impact (N) H&S – No impact (N) R D&I – No impact (N) Sus/Env – No impact (N)	reporting or if this is being done in another way. Re-use may be low. **Add to Data Bank as example of good practice.**	construction Key words: Programme progress report, tracker	across all schemes. A consistent approach to programme management through use of standardised reporting also allows comparison across schemes centrally by the HUB. This idea does not have links to others.
L138 M1 J28 to J31 Managed Motorway	Methodology for road worker safety analysis for managed motorway all lane running (MM – ALR)	MM-ALR is not currently operational on the HA network and is a significant change to the way a motorway is operated and maintained. It is a legal requirement that all reasonably practicable measures to reduce risk to road workers are incorporated in the design. A hazard risk assessment for maintainers has been conducted to determine the M1 J32 to J35a specific hazard log scores. Please review the idea pro-forma to	Health & Safety has been selected as highly beneficial. (H) MM-ALR is not currently operational on the HA network and is a significant change to the way a motorway is operated and maintained. An auditable approach to ensuring the road worker safety maintenance objective is required. The methodology must result in the production of a design and associated maintenance repair strategy statement that will deliver the road worker safety objective and contribute to the 'aiming for zero' initiative. Monetary Savings (H)	Good idea, one for H&S toolkit. A good concept and design tool to design out road-worker hazards. **Yes for Data Bank** **Yes for H&S toolkit**	This idea should be considered and implemented at Stage 2 and also used at Stage 5. For construction. Key words: road worker safety objective, hazard analysis, safety requirements.	This methodology could be used on all MM schemes. Wider programme savings are indicated within the benefits. There are no other apparent links to other ideas.

		view the methodology used.	If it cost say £20K just to establish a methodology and gain PSCRG endorsement and this task needed to be done on 10No. Other MM-ALR schemes, a saving of £200K could be realized. Significant monetary savings could also be made if a less robust approach is taken to the assessment of road worker safety and that the design has to change at a late stage (potentially during construction) to meet the safety objective. This is difficult to quantify but could extend to £millions. D – medium benefits (M) JR – No impact (N) R D&I – No impact (N) Sust/Env – No impact (N)			
L139 M1 J28 to J31 Managed Motorway	Risk progress reports	Reviewing an updated risk register as part of a monthly review meeting was seen as a time consuming process which does little to assist in risk management. It was identified that a method of summarising the current status of risk was needed to allow discussions to be targeting to relevant / current risks. Too often risk reviews can focus on the 'Top' risks which can neglect other important issues more relevant to the current stage of the project.	C – No impact (N) D - (M) The Risk Progress Report lists the risks which have changed score along with reasons, the risks where mitigation measures have been changed, risks raised previously which have been newly scored, new risks, closed risks, and also risks that are considered better managed centrally. The report provides a record of the current state of risk on a monthly basis shows that risk is being actively managed on the project. It can be distributed to the wider HA / Design team to get their input. Previously when risk registers are distributed they are rarely reviewed fully and changes are often lost within the numerous risks on the register.	Highlights risks that have been changed and speeds up processes. However, there may be similar versions already being used on other schemes. Possible low re-use **Yes, to add to Data Bank**	The report can be used at all stages of PCF governance at both design and construction Key words: Risk progress report, tracker, project management	This idea could provide efficiencies in programme management across all schemes. A consistent approach to risk management through use of standardised reporting also allows comparison across schemes centrally by the HUB. The report has already been praised by the HUB Risk Team during scheme risk reviews; a copy was requested by the

			The benefit in this report is in the quality of delivery. There is no direct saving however there will be efficiencies in management of risk as issues can be dealt with and minimised early. JR – No impact (N) H&S – No impact (N) R D&I – No impact (N) Sus/Env – No impact (N)			team for their consideration for use on other schemes. This item links to number L137
L140 M62 J25 – J30 MM	Lean visual management techniques	A more open and visible process was developed to ensure accurate and timely information was quickly available to all which led to the implementation of the **Lean Visual Management Techniques (LVMT)**	Costs – getting thighs right first time keeps cost done, as work is done effectively. (M) Delivery – this is improved because the project team have information available to them quickly (H) JR - Public are informed of the project progress at all times (M) H&S – benefits to work force as they are aware of potential risks (H) R D&I – The supplier's and Agency's reputation enhanced Sus/Env – Information is provided from one source negating the need of many paper copies (H)	This idea highlights where visual management can add benefit to a team's work. The idea also shows good working practice on how to communicate with the public effectively. **Recommendation –** The Lean Team are to consider this use of visual management techniques with all the others they have seen and produce information on how teams can maximise them to benefit their work.	Considered at all PCF Stages For construction Key words: Lean, Visual management, techniques	This idea has links to L116 Visual Management Boards and Lean Project Tracker Numbers: 209, 191, and 168.
L141 M4 J19-J20 M5 J15-J17 MM	3D Safety model for high risk/safety critical plant and people interface activities			This is another good use of 3D modeling for a specific area of work. It was considered that some work needs to be done to examine how 3D modelling can be used to enhance delivery and what other benefits it can bring in analysing processes. A request was made that the Evidence Coordinators are asked to provide an overview of where benefit can be		

				brought to a scheme from using 3D techniques. It was suggested that this subject could be discussed at the Knowledge Share Community Group to get an overall view. **Recommendation –** Once the requested work is completed this idea is to be amalgamated with all other 3D model ideas and then placed on the KB as one explaining the various circumstances using 3D modelling is an appropriate option. This idea has also been forwarded to the H&S Toolkit Team for possible inclusion in their database.		
L142 M4 J19-20 M5 J17-15 MM	80 inch Interactive Electronic White Board for daily collaboration/programme review meetings and 3D model review.	The interactive white board was considered a good visual method for engaging the team in discussions at the end of the shift to discuss technical issues and programming. It also immediately captures the output of the meeting in a format that can be immediately E-Mailed at the end of the meeting.	C - It is extremely difficult to place a cost saving to this solution (M) D - It is extremely difficult to demonstrate specific time saved specifically associated to the use of this tool. (H) H&S - It is assisting with programme interfaces and avoiding clashes between different disciplines. (H) JR – no impact (N) R D&I – Low impact (N) Sust/Env – Low impact (N)	VG Group considered this is a good idea that supports a larger initiative to support construction practices. This is another example of an option that can be used for building information management (BIM). **Recommendation** – This idea is to be added to the KB. The M4/M5 MM scheme will also be submitting this idea to be included in the Lean Tracker.	Relates to Stage 5 Considered at Stage 5 Construction Collaboration, Interaction, IT, BIM	Links to Collaborative planning ideas L23 and L104.
L143 Birmingham Box Phase 3 MM	Incident reporting matrix			This idea is to be forwarded to the Health and Safety (H&S) Toolkit Team for them		

				to review for possible inclusion in the toolkit		
L144 Manchester MM schemes	Compensation events form/change protocol			The VG members did not consider that the KB was the appropriate place for this idea. This is an example of good working practice for contract management. **Recommendation –** This idea is to be forwarded to the Commercial Division to test it for possible inclusion into future contract documents		
L145 Manchester MM schemes	CDM hazard elimination schedule			It was reported that the A556 Team are looking at this idea as well. **Recommendation –** It was considered that this idea is best placed with the H&S Team. This idea is to be reviewed by the design group within the Delivery Hub.		
L146 Manchester MM schemes	Review comments sheet			VG members considered that this idea was part of a scheme's quality assurance and should be business as usual. **Recommendation -** The KB is not the appropriate place for this idea. This idea is a good example of work in practice. It was considered that it should be forwarded to the Project Control Framework (PCF) Manager for possible inclusion		

				in the PCF.		
L147 Manchester MM schemes	Early involvement of the delivery partner			VG members considered that this idea was business as usual. A member stated that the Agency should be promoting getting all Delivery Partners including sub-contractors involved with schemes as early as possible. **Recommendation –** This idea is not to be included on the KB. It is to be used as a working example of good practice through Lessons Learnt.		
L148 A11 Fiveways to Thetford improvement scheme	ECI (early contractor involvement) collaboration of 3 sites the A11, A556 and A23	The issue was that different companies were working in isolation, trying to reach the 20% saving so Construction Phase could begin. The idea was to get sites at a similar stage together to share potential areas to make savings. It was put into practice by getting the Project Director/Manager and Designer of 3 different sites (3 different companies) into the same room at the same time, once every eight weeks to share new ideas/lessons learnt. Each meeting was followed up with a 2 hr telephone conference to make sure agreed actions were completed.	Varies – See Buildability Schedule showing potential savings achieved and remaining savings to be identified. C – (H) & D – (H) - The A11 scheme is investigating lean intervention including programme durations and phasing strategies which could save 10 weeks in time on construction and a possible cost saving of £1M. J – (H) H&S – (H) R D&I – (H) Sus/Env (H)	VG members considered this to be a very good idea. It was pointed out that this idea mirrors what is being done on the MM (managed motorway) schemes. The terminology being used in the delivery hub where several schemes are working together is cluster schemes. This idea demonstrates to those who are sceptical what can be delivered when schemes collaborate. **Recommendation –** It was recommended that the task group outputs on the buildability form are updated to show the actual cost savings when these are realised. This idea is to be put on the KB as	Considered at PCF Stage 3 and 5 Used at PCF Stage 6 For Construction Key words: 20% efficiency, buidlability, savings, collaboration, ECI, sharing	Further sites or companies could use this process.

				another example of collaboration working in practice.		
L149 A23 Handcross to Warninglid improvement scheme	Offsite recovery service with local police authority	Cost of having site base recovery service was deemed to be very expensive, due to the logistics of the scheme. Initially looked at off site recovery, which would be on standby in case of incidents. Further suggestions led to advise that the police already use a recovery service which we may be able to utilize.	C graded highly beneficial due to the ease of reusability of this product. To have an onsite recovery service would cost in the order of £1.2 million for the duration of the project. A cost saving of 806k was given to the HA for operating an off site recovery service which Carillion finally contracted with Sussex Police. (H) D – no impact (N) J, R D&I and Sus/Env – Police are involved earlier on more serious incidents and can apply a speedier recovery, improving on journey time reliability, reputation and less carbon emissions. (L)	VG members considered this to be a good idea that is challenging what is normally done and finding a cheaper option. **Recommendation –** This idea is to be placed on the KB as a good option to be considered where appropriate	Considered at PCF Stage 3/5 Used at PCF Stage 6 For construction Key words: cost saving, recovery service, meetings, accident	This idea could be used on other schemes. If this was to be utilised on other schemes the following would need to be considered: Availability and location of local off site recovery Current Local Authority / Police contracts in place
L150 M1 J32 – J35a MM	Methodology for the assessment of MM-ALR temporary traffic management (TTM) advanced signing			VG members considered that this was another option available for temporary traffic management signing, as long as it meets the requirements of Chapter 8. **Recommendations –** This idea is to be forwarded along with the comments received from Network Services Safe Road Design to the MM Group in the Delivery Hub, and to the H&S Team for their comment.		
L151 M4 J19-J20 M5 J15-J17 MM	Cable identification board			VG members considered this another example of a visual management technique		

				and should be amalgamated with similar ideas. **Recommendation –** Forward to the H&S Toolkit Team for possible inclusion in the database. Amalgamate with other visual management ideas as highlighted for idea L140.		
L152 M4 J19-J20 M5 J15 – J17 MM	Use of QR Codes to manage safety critical information that has the potential for change during construction and ensure that the latest up-to-date information is utilised.	Extensive existing underground cables (Live/Redundant) have been encountered around the Almondsbury Interchange, consisting of a combination of Street Lighting, Power and communications cables (1600 Trial Holes undertaken). The site service drawings are constantly being updated, with cable diversions and stats info from the trial holes. Temporary works piling drawings have also been required to be updated to accommodate the as-built location of stats. As a consequence the use of QR codes to ensure the latest drawings are utilized and interconnect other key data was investigated.	C – there is a minimal cost (L) D - Helps to improve the time workers can react to a situation they find (M) J – no impact (N) High for Safety has been selected. Access to the latest safety critical documents subjected to potential change is of high importance, this is a good way of managing high quantities of data that are subject to change or need interconnecting. (H) R/D&I – No impact (N) Sus/Env – No impact (N)	A VG member informed the group that he is aware that this idea has been used successfully elsewhere in the rail industry. **Recommendation**- This idea is to be linked to Idea L135 as an example of another use for QR Codes with the caveat that schemes should apply applicability criteria before there use	Considered at PCF Stage 5 Used at PCF Stage 6 For Construction Key Words: Safety, underground cables QR Codes	This idea has links to L135. Scheme teams should apply applicability criteria before there use. This idea could be re-used on any civils project. It has many re-uses
L153 M62 J25 – J30 MM	Multi text sent out to inform managers/supervisors of any incident/emergency on the project			VG members considered this was a good idea, but had concerns as there are a lot of restrictions where mobile phones should not be used on construction sites. There was also concern		

				of miss-communication if people are relying on technology only. **Recommendation –** This idea needs some further testing. Go back to the Evidence Coordinator and ask how they overcame restrictions and guaranteeing that calls would be picked-up effectively when needed.		
L154 M1 J28 to J31 MM				**Recommendation –** It was considered that the KB is not the appropriate place for this idea. This idea should be issued by the Technical Approval Group (TAG) in the Delivery Hub so that all schemes see it.		
L155 M4 J19-J20 M5 J15-J17 MM	3D visualisation utilising Google Sketch-up to plan high risk activities, undertake peer reviews and liaise/communicate with external stakeholders, NDD, RCC, Utilities etc			VG members considered this is a good idea to communicate the method statement on how to manage a bridge demolition process. **Recommendation –** This idea is to be amalgamated with idea L141 and be part of the work to produce an overview of all situations where 3D modelling is appropriate during design and construction.		
L156 M4 J19-J20 M5 J15-J17 MM	Air pick trial holding			Verification Group (VG) members raised concern about the use of the air pick, as it was		

				considered a large exclusion zone may be required to stop stones and other debris being thrown into the path of oncoming vehicles due to the large amount of air pressure. There would be a need for a skilled operator to use this equipment. **Recommendation –** This idea is to be sent to the Health and Safety (H&S) Toolkit team for their review and possible inclusion in the toolkit.		
L157 M1 J10-J13 MM	Eco-friendly static welfare units	Due to the length of the project and the demand for welfare units to be on site for operatives' use, self contained welfare units have been researched. Providing this kind of units delivers environmental and economical benefits to the client. Due to the incineration of the trade effluent from the welfare unit toilets, the need for waste carriers to access site to empty the toilets is eliminated. Water consumption within the unit is reduced due to the rain harvesting unit, therefore reducing water costs for the welfare / toilet areas.	• **Savings (£)** - Approx £2k annual saving using the battery powered welfare unit compared to fuel used on a conventional generator - Approx £2k annual saving on service costs - Potential saving of £1,200 on breakdown costs (L) • **Programme:** No impact (N) • **Journey Time reliability:** No impact (N) • **H&S:** Has good H&S benefits for staff welfare, as providing a clean environment (M) • **Reputation** Positive impact as the idea contributes to sustainability, H&S benefits and provided clean welfare facility. (M) • **Sustainability**	This idea has links to H&S Toolkit reference 0124 Site welfare vehicles. **Recommendation –** This idea is to be forwarded to the Procurement Function in the Delivery Hub for them to consider if it is worth investing in some units that could be used across the programme. This idea is to be put on the Knowledge Bank (KB).	Considered at PCF Stage 5 Construction preparation Used at PCF Stage 6 Construction Keywords; environment, welfare, H&S (health and safety)	Depending on the size of the project the cost savings can be multiplied by the number of units required on a project. This idea has links to the H&S Toolkit reference 0024 Site welfare vehicles.

			Annual saving of over 15,000kg CO2 (M)			
L158 M1 J10-J13 MM	Multi task unit for vegetation clearance.	On the M1 J10-13 Improvement scheme clearance/controlling vegetation is required to allow the improvement works to commence. The multitasking unit can complete the clearance operation much quicker and safer than by using operatives with strimmers alone.	• **Savings (£)** Neutral (N) • **Programme:** Considerably faster than traditional strimming method. (M) • **Journey Time reliability:** No impact (N) • **H&S:** Significant benefit. Eliminates walking on slops. Minimal risk of slips, trips and falls incidents occurring (H) • **Reputation** Positive impact as the idea contributes to sustainability, H&S benefits. (M) • **Sustainability** Neutral (N)	It was considered that using this equipment could be expensive. The equipment has a use in areas where extensive undergrowth needs to be cleared. **Recommendation** - This idea is to be referred to the H&S Toolkit Team and placed on the KB removing the proprietary details	Considered at PCF Stage 5 Used at PCF Stage 5 For Construction Stage Keywords: H&S, clearance, vegetation	Could be used on schemes where extensive undergrowth needs to be cleared.
L159 M1 J10 –J13 MM	Innovative Taper method for lane closures			This idea is already recognised across the industry and won the Highways Agency (HA) supply chain award some time ago. Advice on the use of this method is already available in IAN 163/12 which describes how and when it can be used. **Recommendation** – This idea is not to be placed on the KB as it is already described within the Agency's interim advice notes. Innovative taper can also be found on the H&S Toolkit at		

				reference numbers 0024 and 0025.		
L160 M1 J10- J13 MM	Plant Nappy	Plant Nappy® retains the oil / diesel from spillages / leakages but let's water pass through them, thus ensuring environmental protection. There is therefore no need for them to be emptied and are lightweight so can be easily moved for use with different plant and machinery.	• **Savings (£)** Involves additional cost for procuring the equipment, however, potentially will save costs associated with cleaning the spilled oil/diesel in case of leakage. (A) • **Programme:** Reduces the need for cleaning leakages and delays. (L) • **Journey Time reliability:** Neutral (N) • **H&S:** Reduces the risk of the oil/diesel being on the surface and therefore reduces the risk of slips and contact with hazardous liquids. The Nappy's are lightweight and easily moved from different work areas, unlike heavy drip trays reducing the safety issues of using them. (H) • **Reputation** Positive contribution as the H&S and environmental risks are reduced. (M) • **Sustainability** There is no need to empty water – as water is able to pass through the material of the Plant Nappy®. The risk of any environmental incidents to sensitive areas on the scheme is reduced with the use of the Plant Nappy®. (H)	VG members considered this to be a proprietary product. Ella Hall (EH) informed the meeting that the use of the plant nappy had been mandatory on the Abberton reservoir scheme she had worked on due to the highly environmental nature of the work. **Recommendation –** E-mail idea to EH who will investigate the use of the plant nappy on the Abberton reservoir scheme. Investigate if there are other suppliers of this device, if so place on KB. Follow up – Several suppliers for the Plant nappy have been found on the internet	Considered at Stage 6 Construction implementation For construction stage Key words: H&S, plant, spill kit, environment	Plant Nappy® is supplied in three sizes. • 685mm x 500mm - Approx cost £70 • 1000mm x 685mm - Approx cost £125 • 2000mm x 1370mm - Approx cost £290 & other sizes can be manufactured. Ordering in bulk across a company could reduce prices. Can be used for any plant if considered appropriate. This idea was used on the Abberton Reservoir scheme with successful results as reported by the EC for Birmingham Box Phase 3 scheme, who worked on the scheme and used the device.

L161 M1 J10-J13 MM	Combined grout silo mixer and pumping unit	Grout powder silo, grout mixer and pumping are the three activities that were historically separate. The amount of space taken up by the operations was large. Reducing the size of the plant units and therefore creating more room was a critical concern when working in the narrow environment of an existing highway improvement project.	• **Savings (£)** Indirect significant savings associated with programme duration reduction and H&S benefits (L) • **Programme:** By taking less space, safety is improved and possible disruption to others is minimised therefore reducing any programme impacts. (H) • **Journey Time reliability:** Neutral (N) • **H&S:** Reduction in dust levels in the works is positive in health terms for our workforce. Any reduction in manual handling is a positive improvement for the health of our workforce. (M) • **Reputation** Positive contribution as the H&S and environmental risks are reduced. (M) • **Sustainability** Reduction in dust generated by the project is positive for the communities living near the project. The reduction in packaging previously used / wasted is positive for the environment. (M)	VG members considered this to be a compact piece of machinery. **Recommendation –** Investigate if there are other manufacturers to check that this is not a proprietary product. Once investigation completed this idea can be placed on the KB so that others are aware and can consider its use where appropriate. Follow up – On investigating the internet there are other systems available from other suppliers.	Considered at PCF Stage 5 Used at PCF Stage 6 For construction Key words; H&S, plant, piling, grout powder, silo, grout mixer, pumping	Can be used on any project where the activity is required. This idea has links to L45 Use of smaller piling machine.
L162 M1 J10-J13	Message posters in toilets			VG members considered that placing posters in toilets was standard practice. The difference here is that the M1 J10-J13		

				scheme had been very good at ensuring that messages are meaningful and updated regularly. **Recommendation –** This idea is to be forwarded to H&S toolkit team to show good practice in action.		
L163 M1 J10-J13	Training centre			VG members considered this was expensive and nice to have on large sites. Useful if could be moved from site to site. More information is required on how often the centre is used and the actual cost savings. **Recommendation –** Forward to the Procurement Function within the Delivery Hub, who are doing work on standardising equipment that can be moved from project to project?		
L164 M1 J10 – J13 MM	TSCO (Traffic safety and control officer) vehicle cameras			VG members considered that this idea was not anything particularly new, as the use of cameras in vehicles is common place. This is a good piece of equipment for checking that signs are in place in case members of the public make a challenge. Area 2 has used cameras with a real time link. **Recommendation –** Forward to H&S toolkit team for their review and possible inclusion		

				in their toolkit.		
L165 M4 J19-J20 M5 J15-J17 MM	Use of a Freeviewer (Free software) to access and interrogate the 3D Model during Construction Phase. **ALL** Construction/commercial/health and safety team members have access to the 3D model on all site desktops **NOT JUST 3D DESIGN SPECIALISTS, MODEL MADE USER FRIENDLY.**			VG members considered that this was another example of BIM (building information models). Other schemes could be using a better model. There is also concern that all schemes may not have access to 3D modeling. Andrew Watson (MP North Divisional Director) is setting up a working group to discuss MPs BIM requirements. **Recommendation –** Forward the details of this idea to Adam Bennett (AB) who will take it to the BIM Workshop and then report back on how this idea will be handled. This can also be treated in the same way as the 3D modeling ideas considered at the VG meeting of 15 November 2012.		
L166 M4 J19-J20 M5 J15-J17 MM	Use of IPad technology to reduce driver exposure/improve quality of records and optimise access/communication of information to resolve issues in a more efficient way			This idea is to be treated in the same way as L165. **Recommendation –** Forward the details of this idea to Adam Bennett (AB) who will take it to the BIM Workshop and then report back on how this idea will be handled.		
L167 A453 M1 J24 to	Re-use of lighting columns and traffic signs			VG members considered that this is		

Nottingham				not a tried and tested idea and that it was really for the efficiency register. **Recommendation –** This idea is to be forwarded to the Efficiency Manager in the Delivery Hub for inclusion in the register.		
L168 A453 M1 J24 to Nottingham	Precast modular manhole system			VG members considered that this is not a tried and tested idea and that it was really for the efficiency register. **Recommendation –** This idea is to be forwarded to the Efficiency Manager in the Delivery Hub for inclusion in the register.		
L169 A453 M1 J24 to Nottingham	Dual 2 all purpose (D2AP) cross section reduction	D2AP – reduction in offside lane to 3.5m from 3.65m, and reduction in offside hard strip to 0.3m from 1.0m, giving an overall pavement width reduction of 0.85m on each carriageway. Covered by A453 Departure 25 (DAS ref 65087) Approved with comments. Covers various aspects relating to cross section and interface with existing structures etc	C - Savings £0.9m, contributing to overall efficiency savings. (H) Disbenefits noted as ALARP in Departure submission D – savings in time (M) JTR – No impact (N) RD&I – No impact (N) Sus/Env – No impact (N)	VG members considered that this was a good idea. Concerns were raised about future maintenance issues due to the reduction of lane widths. It is possible that this idea is scheme specific. The message is that the recommended lane width can be challenged. **Recommendation –** Find out if the departure document refers to future maintenance issues if not go back to Network Services and ask if this was considered. This idea is to be placed on the KB.	Considered at PCF Stage 3 Used at PCF Stage 5 Scheme in design Key words: Cross section	Could be considered as a possible re definition of the standard cross section for D2AP in the long term Re-Use - It is believed that this idea has been used on other schemes.
L170	Omission of fin drains			It is considered that the		

A453 Widening M1 J24 to Nottingham				KB is not the appropriate route for this idea, because the Evidence Coordinator is seeking approval for the use of this technique. **Recommendation –** This idea has been forwarded to the Efficiency Manager requesting that it is reviewed by the appropriate TAG unit and it should also be forwarded to the appropriate Team in Network Services for an opinion.		
L171 Birmingham Box Phase 3 (M6 J50-J8) MM	Semi permanent fixing of safety fencing	The need to maintain temporary pedestrian safety fencing / delineation, ensuring safe walking routes are not disrupted due to high winds, theft or other interference. Secured lightweight, pedestrian safety barriers to the ground using M8 'shield eye anchors' and reinforcing tying wire.	**Cost and time –** • The fixing method discourages theft and eliminates the need for securing by sandbags. • The semi permanent nature of the system minimises maintenance needs. (L) **D –** No impact (N) **JR** – No impact (N) **Health and Safety –** • Pedestrian routes are clear and secured without the need for continious maintenance. • People can't disconnect the system to take short cuts (L) **Reputation –** • The system delivers a high quality appearance and performance thus improving visitors	VG members considered this to be a good idea that is cheap to do and effective. It ensures that the pedestrian area looks tidy and that fencing does not get moved around. Difficulties would be encountered when not being used on a hard surface. **Recommendation –** This idea is to be placed on the KB and to be used where appropriate.	Considered at PCF Stage 5 Used at PCF Stage 6 Scheme in construction Keywords: Health and safety, fencing, pedestrian route, delineation	Per fence panel: The cost of 2No. M8 'shield eye anchors' VS minimum 4 sandbags + maintenance (two operative's at least twice a week as well as a responsive team prior and post windy weather) and the replacement of sandbags and panels. This idea has no limit to the number of times it can be re-used.

			perception of the site as they enter and use the facility. (L) **Sus/Env –** No impact (N)			
L172 Birmingham Box Phase 3 (M6 J50-J8) MM	Proximity of GI (ground investigation) for the design of Helical piles		A Lean Project has been carried out to ascertain when ground investigations should be done on managed motorway schemes. The Lean Knowledge Transfer Pack will be forwarded to the Evidence Coordinator. It was reported that work was being done within the Delivery Hub by the efficiency review group on how to standardise this process along with others. The group is close to announcing their recommendations. Schemes using Helical piles need a departure from standard. This idea shows evidence of not making best use of a good product. **Recommendation –** Forward this idea to the Efficiency Manager so that it can be taken forward in the Delivery Hub. The Evidence Coordinator was asked to provide some more information.			
L173	**Oil absorbent sponge for pollution control**		This product is to prevent oil contaminants entering the watercourse. It was noted that the diagrams didn't demonstrate the idea fully. It was also noted that there was a risk of the sponge clogging with particles. Had the	**Conclusion**: Take back to Richard Jones for answers to these questions and re-submit		

			drainage authorities given this approval? Confirmation was required if all water has to pass through the sponge? There was a concern about ongoing maintenance costs. What is the life of the sponge, how can it be checked to see if it is full? Is it easy/cost effective to change it? What happens if it is not changed in time and becomes full /sodden? How would the old sponges be disposed of, as they must be deemed as contaminated waste? It was felt that this idea does have a place and could be used in lay-bys and where there is a known risk of oil spillage.			
L174	**Water treatment plant**		To solve problem connecting to the sewage discharge point at site compound. This is not considered as a new idea, as many schemes have used this for some time. However, if this was for the re-circulation of water it would be innovative.	**Conclusion**: Can this be re-worked for re-circulation of the water to enhance environmental credentials? Then re-submission		
L175	**"You said – we did" boards**		It was agreed that even though this was in fact rather old hat, it was none-the-less a good idea. Examples already exist, other "vis" boards and "don't walk by" cards. These should be linked together for use by the Safety Action Groups.	Give to Phil Farrar for feedback from H&S good practice. **Conclusion** NOT for data bank		
L176	**Vacuum excavation**			The group discussed this item but wanted more evidence on cost benefits as vacuum excavation is very expensive. A point was also raised regarding H&S risks.		

				Conclusion: Pass to Phil Farrar for advice paper from H&S Toolkit		
L177	**Determine power supply requirements early for DNO liaison**			The group decided that this was a basic, business as usual idea. Very similar items have been discussed with the Knowledge Share Community. The recently updated Statutory Undertakers guidance notes would also cover this. **Conclusion**: NOT for data bank		
L178	**Use of filament polypropylene fibres in the concrete access track, instead of anti-cracking reinforcement**			This was deemed as business as usual, not a new idea. **Conclusion**: NOT for data bank		
L179	**Advance works on behalf of utilities companies, (eg combined trenching)**			The group agreed this was a useful tool for better scheme delivery and could be used as an aide memoir at the beginning of a scheme when we can sometimes do it cheaper. In short, anything we can do to help the process is a good thing. Phil Goodlad is leading on this for the Hub Lean function **Conclusion** – Pass to Andrew Wingrove and Lean to look at this with Phil Goodlad for the Hub Lean function.		
L180	**Reduction of the A11 construction programme from 102 to 89 weeks, including overhead costs**			The 1.1 million saving is very impressive. Group wanted to know *how* this was done, or if		

				it was just cutting away the “fat” from the programme. What was this saving based on and what evidence is there to show this. The group needed more information on process, but agreed this was a good example of good practice, based on outcomes. **Action** Ask for more details on how this was achieved **Conclusion -** Re-submit to next meeting.		
L181	**Use of N2W4 safety barrier beam for temporary road restraint and then re-use beam for permanent works**			The group agreed that this idea was too scheme specific to work with other projects. **Conclusion**: NOT for data bank		
L182	**Combining electrical statutory bodies division shut down)**			The group wanted clarification of what “combined” referred to. **Action** – Link to Statutory Undertakers guidance as good practice **Conclusion** – More detail from Nicole and re-submit		
L183	**Construction of new right turn lanes to reduce journey time/carbon emissions**			The group was concerned that this was too site specific and that other schemes are actually doing the opposite. It would need way too much risk assessment and would course concern for H&S. Had the issue of removing the lane been costed into these figures?		

				Conclusion - NOT for data bank		
L184 A23 Handcross to Warninglid Widening	**Reduced central reserve widths**	By reducing the width of the central reserve and the verges a cost saving can be produced. The reduced central reserve width saved £296,000 Departures from standards were required to allow the widths to be reduced. Departure 62285 is included as evidence.	The scheme had considerable physical constraints due to the topography site. After the 2010 spending review we were asked to try and identify 20% savings. By the central reserve widths considerable savings could be made.	Concerns regarding maintenance and safety of workers. Group commented that the concept of challenging central reserve widths was good but that 3 metres is not a good default width. Each departure would have to be considered on its own merits with different central reserve widths being decided each time without compromising future maintenance costs and road workers. Maybe a compromise of 3.2 mtrs could be considered, which would still mean a substantial saving. **Action:** Steve Davy will take this up with departures. **Conclusion**: YES add to data base		This could be repeated on any scheme.
L185 (L172)	**Helical Pile design**		These submissions provided a 'work-around' solution to the tendering and procurement issues which are the real problem in getting Helical Pile designs agreed at the right point in the scheme. It is really these issues which need to be tackled. Verification members required confirmation between the two submissions. It was confirmed that L172 was the ground investigation and L185 was the design of Helical Piles. It was suggested that design in advance, through tender	VG like this idea, but the procurement and tendering issues need to be resolved. **Actions:** LEAN Transfer Pack should be linked to L172 on the Data Bank and the issue passed to LEAN team for comment. **Conclusion**: Not for data bank at present		

			should happen, but who holds responsibility? And how long would this take and what time was needed. It was confirmed that the process had so far taken 11 months and that a standardised approach was necessary. Good idea, but feels the issues need tackling, instead of using a "sticking plaster" to proceed. Specialist designers have to be used, as each one is different and cannot use a standard product. In short, our own processes are stopping us using this product. Confirmed that using Helical Piles was too difficult for both time and procurement issues.			
L186 BB phase 3 (M6 J5-J8)	**Setting the standard – communications chamber construction**	Previous schemes have encountered problems when chambers for communication ducting have been constructed out of specification or not to the satisfaction of authority adopting the completed works. With prior agreement and understanding from all parties to what is required, rework and potential programme delay can be avoided.	Prior to constructing the permanent chambers on site, example chambers were constructed to provide a physical reference of what a completed chamber should look like. After gaining the approval of all relevant parties that this was to the standard required, the chambers were used to brief the workforce on how to construct the permanent works and provide a reference of the standard required. Constructing the chambers within the compound meant that they could be inspected easily by all parties and in a safe environment. (Also used to agree chamber security arrangements – see separate Idea Form) Photographs of the chambers could be taken out onto site	Ella will find out if these can be moved from site to site, or have to remain in situ. It was agreed that this is a good idea as snagging is always an issue for maintenance and this would be an advantage		**Action:** Pass to Alex Bywaters **Conclusion**: YES to data base, a great example of good practice

			so the gang had a reference to hand for the standard and requirements of what they were building.			
L187	**Permanent formwork of concrete surrounds to drainage chambers**	A 150mm concrete surround around chamber rings is specified for new catchpits. The use of traditional formwork requires lifting operations and open excavations. A limited number of surrounds can be concreted before the shutters are stopped and moved on and damage/cleaning costs can be incurred on return of the proprietary metal formwork.	**Cost:** Less concrete wastage both for oversize formwork and mass backfill. Fewer part load concrete charges as more surrounds can be a cast at once. Reduced labour requirements to remove shutters / excavator lifting time. **Delivery:** Labour removal of shutters, programme flexibility, cleaning / application of releasing agent. **Health & Safety:** The lightweight properties of the material remove the requirement or lifting operations. Having a permanent formwork allows immediate backfilling of open excavations. Removes the requirement to move reusable formwork to the next location. Reduces the need for daily concreting operations / delivery vehicles **Sustainability:** Less delivery vehicle movements, less concrete used. The permanent formwork used at BB3MM was manufactured from recycled materials.	The whole group thought this idea had great potential. This product is made by a number of manufacturers. However, they were not content with cost figures, these needs to be clarified with more than just a basic calculation. Ella will produce updated costing. **Conclusion** Re-submit to next meeting with new costing. **From 9 July meeting** It was agreed that the Health and Safety score had been under valued and the submission form will be changed to “medium beneficial” to show this. The major benefits are H&S related because of the reduction in risks associated with open excavations, a reduction in the lifting and material handling activities, and in vehicle movements on site. **Conclusion** - YES, add to data bank		
L188 BB phase 3 (M6 J5-J8)	**Gantry lifting lug**	Traditionally the use of rolling blocks has been used to install gantry booms spanning both	Idea cuts by half the number of rolling blocks required to install a super span gantry. Overall reduces total	This was liked by the whole group, however, before it is added to the data base, more		This idea can be reused on any scheme currently planning to install

		motorway carriageways. A crane cited in a full closure in one direction lifts a gantry boom over the live carriageway in the opposite direction during a short rolling block provided by the police. There is generally one block for the lift and installation of the boom, followed by a second to remove the lifting tackle. The duration taken to remove the lifting tackle is the key issue preventing the works being completed in a single block, as traffic would generally be held for too long, causing unacceptable lengths of stationary traffic.	stationary traffic time by 40-45% The largest advantage comes from the significant additional assurance that tight possessions of the network can be achieved with the removal of the "waiting window" between the rolling block No1 being removed and the installation of rolling block No2 No departures are required	illustrations and photos should be available. **Conclusion**: YES add to data base after pictures have been added		super span gantries in the future. Whilst recognising the Managed Motorways schemes are reducing gantry numbers and using more super cantilevers, the use of the super span gantries is still likely to be needed. In excess of 10 schemes in the medium term are envisaged as having use for this idea, including the M25 works outside of the MM Framework, and maintenance schemes.
L189 Birmingham Box Phase 3 Managed Motorways (BB3MM)	Production of photo montages of new infrastructure for neighbouring residents	The BB3MM scheme wished to provide a visualisation to targeted residential properties near new infrastructure, to make them aware of the forthcoming installation of the equipment, to allow any concerns to be raised and considered in a timely matter.	The main benefit of this is in the potential reduction of reputational damage if residents were to adversely react to gantry/infrastructure installation near their properties (as experienced on other schemes). This method shows willingness from the scheme to communicate and work with residents to ensure all parties are considered.	While it was agreed that this is not a new idea it was praised for proactively "going the extra mile" to reach out to the local community and provide clarity on detail. Acting on lessons learned with previous issues from BB Stage 2 this was seen as being very beneficial to the HA reputation by evidencing transparency and is an example of the HA mitigating reputational risks and		This method of communicating information to residents is repeatable on all schemes if required. Consideration should be given at the design stage as to the impact on local residents of the scheme. Areas identified as being impacted should be considered for a similar method of

				being seen as a good neighbour. This will work well for schemes needing to submit applications to PINS in demonstrating that adequate consultation and engagement has taken place. However, the question was asked as to how cost and resource intensive this may be and did it work with our Spending Controls? **Conclusion** - YES		delivering information.
L190 Birmingham Box Phase 3 Managed Motorways (BB3MM)	Over Parapet Equipment Cabinets for us on elevated sections of carriageway	The carriageway between J5 and J6 of the M6 is elevated. Cabinet space at existing sites was not sufficient to allow MM to be implemented plus additional cabinets were required to allow hardshoulder fixed CCTV cameras to be installed. Proposals to provide cabinets at ground level were rejected due to maintainer and equipment safety concerns. To allow sufficient space to be provided for equipment a new bespoke cabinet design was required	A bespoke cabinet, similar in size to the HA type 600 cabinet was designed for use on elevated sections of carriageway. A number of variants were designed, allowing different equipment, including NRTS equipment, to be installed either at stand alone cabinet sites or at gantry locations 2No. departures were submitted for the use of non HA standard cabinets (Das Ref 64287 and 64277). Both have been approved with comment. Due to vibration levels there was a risk that equipment installed within the cabinets would have a reduced life span. To mitigate this vibration testing was carried out on prototype cabinets to help understand the effect of vibration on the equipment. Further to this pull out	This was thought to have limited specialist application, but a useful example of a solution so that programme and safety benefits of “develop once, use many” can be gained should future cabinet installations be required on viaducts/gantries. It was noted that this should be worked in conjunction with NERTS, TTD and TMD. **Action -** for James Connor. Some further clarification was requested regarding the consequences of an impact on the parapet which would be likely to result in the cabinet being destroyed. Is the post		The cabinet would only be beneficial for use on future schemes where cabinets are required on elevated sections of carriageway. The bespoke design has passed TR1100 and TR2130 inspections/tests so a small number of cabinets could be ordered from a manufacturer with minimal associated costs reducing design fees. There is a possible link to the underslung gantry design as

			equipment racks have been used to improve maintenance access to the equipment.	supporting the cabinet passively safe, to ensure that damage will not occur to the gantry/gantry support beam? **Conclusion** - YES, add to data bank		the cabinets at gantry locations are mounted on the same underslung beams to minimize disruption to the viaduct parapet.
L191 Birmingham Box Phase 3 Managed Motorways (BB3MM)	Production of presentation material and literature specifically for Operative staff (Traffic Officer Service and Vehicle Recovery Operators)	The BB3MM scheme wished to increase on road operative staff awareness about the project and build strong internal relationship to encourage a two way communications to improve the ultimate overall success of the project. To create awareness of the new design and road layout, forthcoming installation of the equipment, to allow any concerns to be raised and considered in a timely matter.	The main benefit of this is in the increase in relations with the operations teams and may even identify potential risks, which may be more obvious from an operations point of view, before they become issues. This method shows willingness from the scheme to communicate and work with the ultimate end users to ensure views are considered.	It was considered that this filled a communications gap with TOs and vehicle recovery operatives who are public facing during works Because of their interface with the public the information they give must be up-to-date and the risk of a leaflet becoming out of date must be taken into account and there could be high cost implications with printing. The slide show presentation was considered to be an excellent idea. **Conclusion** - YES, add to data bank, but be aware of duplication and cost efficiency.		This method of communicating information to staff is repeatable on all schemes if required. More consideration should be given at the design stage as to the impact on operation of the end product. Areas identified as being impacted should be considered for a similar method of delivering information.
L192 Birmingham Box Ph 3 (M6 J5–J8)	Site Safety Access Gate	Working in narrow areas between traffic management and existing or new infrastructure requires management of passing vehicles and pedestrians. Original gate systems used on different managed motorway schemes did not satisfy	We designed double sided signage to suit four different situations. The current gate frame was modified to be able to display the sign most applicable for the situation, whilst also storing the signs which were not in use. An example of each signs intended use is described below: **Sign 1** – It is unsafe to pass,	Though thought to be very site specific, it was agreed this was a useful development providing more proactive access control and signage to secure safety hazard mitigation benefits. This is only one option for site safety measures and		This is repeatable but a cost benefit analysis cannot be done on a health and safety initiative. However the more frequently the signs are used the significance of the initial cost

		all situations and were often flimsy or too heavy. This resulted in frustration, they would not be used or they would be ignored.	wait behind gate until the gate is removed. **Sign 2** – The sign is left in the verge over break, there is no issues with passing the work area, please remember the speed limit. **Sign 3** – Sign is placed at last works exit. There is no through route and traffic should exit the works at this point. (This prevents the need to reverse) **Sign 4** – The workforce are aware you may be passing; it is safe to pass but please proceed with caution.	it should be linked to other ideas to give the best solution. *NOTE* idea **L123** from M62 - Use of Site Marshals on Site Access Points to Narrow Work Areas on Motorways i.e. Hardshoulder Working. **Recommendations** - refer to Phil Farrar for comment **Conclusion** - YES, add to data base		(approximately £50 per sign including manufacture of wooden frame) will reduce. Linked to number L123 A development of site marshals controlling works within narrow verge sites.
L193 Birmingham Box Ph 3 (M6 J5–J8)	Communications Chambers Security Measures	Throughout the network generic covers are used for communication (comms) cable chambers and are therefore accessible via a set of man hole keys that can easily be purchased at a builders merchants. To prevent cables from being stolen from chambers and mitigate incidents where flammable liquids have been poured into comms chambers and set the cables alight (both disrupting the comms network), the chambers are filled with pea gravel and concrete capped. This hinders maintenance and the ability to utilize any spare ducts.	New protective measures - MCX 0815 with sub security cover and Norinco turnbuckle locking system cover. A trial site was used within the BB3MM site compound to illustrate the locking mechanism of external cover and extinguish the worry that road grit would get into and fill the apertures of the cover.	This appears to offer an approved solution to cable theft and, therefore a potential good saving. These trial chambers could set the standard and support “right first time” construction. However, the boxes do not have a standard locking system, so there could be a problem finding the right keys for authorized access. A suggestion was made that it would be simple to adapt this to the HA standard padlock. **Recommendations** - refer to Gordon Adams Hub Group for comment and resolution of the non standard locking system		This idea has the ability to be used throughout the network to reduce cable theft and vandalism. It would be especially beneficial in areas with a history of theft (either road or rail network) and in areas where the covers are not in plain sight of the carriageway. This idea has already been shared with 4 Way Consulting, to disseminate to further Managed Motorways schemes. The system proposed has

				Conclusion - NOT for data base		been accepted by NRTS and the WM TECHMAC for use on the BB3 scheme.
L194 M1 Junction 19 Improvement	Use of IAN 149 for future provision requirements for central reserve widening	Project brief requires M6 to A14 link to be constructed as D2M but enable the provision of a minimum of D3AP in the future. The alignment for this link is in substantial cutting, resulting in an earthworks imbalance. Reducing the excavated material is desirable.	Whilst IAN 149 cannot be applied to the overall junction improvement, when the proposed M6 to A14 Link is determined to need upgrading to 3 lanes, this would fall within the scope of IAN 149. By taking advantage of the narrow cross-section permitted by IAN 149 and the reduced visibility requirements and relocating the central reserve VRS within the widened central reserve, a 3 lane cross-section can be fully accommodated within the D2M cross-section along the section where central reserve widening is required for the D2M visibility requirements. This eliminates the need for additional verge width beyond that required for the D2M design and so reduces the volume of excavated material and reduces the span of Structure S1.	**Ideas L194 & L195 were discussed together :** Some evidence that IAN 149 had been successful was requested. A similarity to idea **L184** Reduced central reserve widths for A23 Handcross to Warninglid Widening Scheme was also noted. **Action -** Ask Steve Davy to add this to the discussion with departures along with the L184 idea. Gordon Adams will also look at this as he has other similar ideas on the efficiency register **Conclusion** - NOT for data base		This idea could be repeated on any project with a requirement for future provision where the amendments necessary for that future provision fall within the scope of IAN 149.
L195 M1 Junction 19 Improvement	Use of IAN 149 for future provision requirements	**Details given as above**	**Details given as above**	**Ideas L194 & L195 were discussed together :** Some evidence that IAN 149 had been successful was requested. It should be emphasised that the new structures will meet current standards for the currently proposed road layout (D2M) and IAN149		**Details given as above**

				would only be used to achieve the future provision (D3AP). IAN149 is not intended to be used for design of new structures to meet current layouts. **Action -** Gordon Adams will also look at this as he has other similar ideas on the efficiency register **Conclusion** - NOT for data base		
L196 M1 Junction 19 Improvement	Publication of new information as Supplementary Notes to a previously published Environmental Statement	The environmental assessment was updated, only where required, to address the issues above. The changes identified were reviewed against the ES to confirm its continuing validity and reported in a series of Supplementary Notes for each environmental topic and updated NTS.	There is no formal guidance in the DMRB for dealing with this situation and the approach was developed in consultation with the design team, the HA's Regional Advisor and Counsel. Cost Saving: The targeted approach of only dealing with necessary changes minimised the amount of survey and assessment work required and ensured that the new information could be published within a short programme, preventing further delay to the implementation of the scheme.	After discussion,this was thought to be standard practice on reducing the number of schemes delayed under the Highways Act after the SR10 review. Following business as usual to keep scheme details updated as it progresses through the statutory process. However, it must be remembered that if the change is "materially significant" it will need to be consulted on and there is potential for the planning system to need to start again. **Conclusion** - NOT for data base		This approach could be implemented on other similar projects where an ES has been published but there has been a delay to the programme. It was a development of an approach used on the A5/M1 project.
L197 M1 Junction 19 Improvement	Positional Check of Holding Down Bolts	The M1 Junction 19 Improvement requires the construction of 34 gantry bases (portal and cantilever) which	Skanska's surveying department proposed the fabrication of a special holding down surveying nut . A 2mm plate is welded to the	A cheap, bright idea that could provide significant gantry installation efficiency benefits. Used on the		The solution is inexpensive and straightforward to fabricate. As long as bolt sizes are

		incorporate cast in holding down bolts. A tie across survey is essential to ensure that both gantry bases are perpendicular to each other to allow the fitting of the gantry boom. The method used to verify the bolt positions usually involves a surveyor taking a series of measurements with a total station. The measurements are taken to a mini prism held vertically plumb by an assistant on the centre of each bolt on the opposite side of the carriageway. The main problem with this method is that horizontal and vertical inaccuracies arise as the prism is not held vertically level for the duration of the readings. These inaccuracies are further exaggerated when the height of the prism is increased. Inaccurate positional data for these bolts caused by the errors outlined above defeat the object of the quality check and may also lead to potential problems with the position of the bolts not being identified. This could result in major cost and time implications for the project when fitting the gantry boom across the carriageway.	top of a standard nut, a hole is then drilled into the centre of the plate and a specialist threaded bolt welded in place. This allows a prism to be wound onto the nut and then the nut wound onto the holding down bolt. This results in the prism being fixed in place and held perfectly center to the bolt.	M25 DBFO widening project, it demonstrates evidence of “right first time” application, mitigating the need for re-works and abortive jobs. It shows good H&S impact for the work crew with reduced exposure time to hazards and risk. **Conclusion** - YES, add to data base		the same, the nut could be used repeatedly on the project and can be used on successive projects. This solution will improve the quality assurance process through accurate and reliable checking and reduces the risk of major time and cost implications associated with the fitting of the gantry boom across the carriageway under traffic management conditions. The idea could be easily applied to the checking of other cast in bolt assemblies such as parapet bolt cages, cast in sockets etc.
L198	To negotiate with plant suppliers the use of a new	The use of the E Series Caterpillar plant	Initial costs to hire equipment were more expensive.	t was agreed that the suggestion to change to		Definitely an option for

A23 Handcross to Warninglid Widening Scheme	hybrid 360 backactor (and any other plant using Cat E series and which meet European Union Stage iiiB diesel engines requirements) that reduces fuel consumption by 50% compared to traditional machinery. This would result in the reduction of fuel costs and carbon footprint.	machinery within the construction industry. The improved economical engine provides significant fuel savings along with further reductions in emissions. This machinery is EU Emission compliant. Suggest the introduction in the use of EU rated Caterpillar machinery to reduced fuel consumption, costs and carbon footprint. The Caterpillar E Series conforms to the rigorous EU Emission Standards.		heavy plant using this European Standard will provide savings on fuel costs and noise reduction. It is already being tested by Carillion on the A23. Although the rental costs were higher, the savings were greater. We should also involve other delivery partners along the supply chain. H&S may be undersold at medium with these benefits and the aiming for zero initiative. **Action -** from A23 to show savings made in £ and what is the reduced decibel level for noise. **Conclusion** - YES, add to data bank after these answers.		repeatability
L199 A23 Handcross to Warninglid Widening Scheme	The option of purchasing, rather than the hiring, of survey equipment required for site.	A cost benefit analysis was carried out to determine that it was efficient to buy instead of hiring equipment which provides a saving on net cost and also time costs saving due to equipment always being readily available. Raised as an opportunity for the weeklyRisk Management Review.	Cost efficient. Calculated as a £15k saving over rental of equipment. Equipment is transferable from one project to the next. Sustainability/ environment. Greater carbon emission savings than delivery vehicle bringing equipment to site on demand. Health and Safety. No interim journeys, vehicle to site from site.	The option to purchase survey equipment (by Carillion) instead of hiring when required should be considered for future projects. There could be many pitfalls for example safe storage, maintenance etc. **Action** - More information is required from (PM) (GE), perhaps relating to collaborative working for several schemes. **Conclusion** – Revisit		This would be cost efficient over any long term project. All long term projects could benefit from this initiative as off carriageway survey equipment is required on the majority of culverts etc. It is repeatable and scalable and relevant to every construction site even where automated methods are

				From 9 December 2013 Although this is a viable option it does need to be looked at on a scheme by scheme basis as hiring can be a better option. New Conclusion – Yes – for consideration by schemes		used,
L200 The M1 Junction 19 Improvement	Individual Land Interest and Notice to Treat Plans were drafted in ArcGIS. This approach led to an increase in quality and more efficient drawing production.	The process utilizes information, which was illustrated at an earlier stage of the project in the Land Reference and Draft Compulsory Purchase Order [CPO] plans. Both sets of plans are created in ArcGIS. Due to the automated nature of illustrating map information in GIS software, and unless changes are carried out at Made Orders Stage, much of the drawing content would have been checked previously and should therefore be correct.	Journey reliability: No impact Health & Safety: No impact Reputation: High impact – Mistakes at Made Orders can lead to significant programme delays, which could be of national interest and reported in newspapers. Therefore an increase in quality will contribute to eliminating errors. Sustainability / Environment: Low Beneficial – Proportional to the task in question. Some sustainability and environmental savings were achieved through a reduction in internal check	It was thought that this application was already used? With GIS model employed elsewhere. How does this stand with holding information with our asset data base (BIMS) and guidance via IAN for next March 2014? **Action –** is Adam McKenzie (or others) able to answer these questions before this is put forward again to the next meeting. **Conclusion** – Revisit with L201		This method could potentially be applied to the majority of projects. A document has been created, which outlines the process, and could be formalised and circulated.
L201 The M1 Junction 19 Improvement	Scheduling and mapping of site clearance information was carried out in ArcGIS. The method led to an increase in quality of deliverables, and more efficient production.	A key feature of ArcGIS software is the information attributed to map features. For every feature drawn on a map, there is a line in a database, which can be populated with pertinent information. The information attached to each map feature can then be used to define how the information is	Journey reliability: No impact Health & Safety: No impact Reputation: Low Beneficial – Mistakes in Site Clearance, or uncertainty of what action is required for existing features, could lead to small programme delays. Small programme delays could be reported at a local media level and recognized by scheme stakeholders.	It was thought that this application was already used? With GIS model employed elsewhere. How does this stand with holding information with our asset data base (BIMS) and guidance via IAN for next March 2014? **Action –** is Adam McKenzie (or others)		This method could potentially be applied to the majority of projects. A style template, containing standard symbols for site clearance drawings, has been created. The template could quite easily be used on other

		illustrated, i.e. shape, colour and number. Critically the same information is reported and used as input for schedules. This means that drawings and schedules are always consistent, as one is a product of the other. Unlike previous methods, where one item is produced independently of the other.	Sustainability / Environment: Low Beneficial – Proportional to the task in question. Some sustainability and environmental savings were achieved through a reduction of internal check prints, and number of issues to the client (a process which requires 3 copies of each drawing).	able to answer these questions before this is put forward again to the next meeting. **Conclusion** – Revisit with L200		projects
L202 A46 Tollbar	Finger print readers	Finger print readers are located at the outside entrance to the site cabins. Staff and subcontractors are registered with all their information required at induction and their finger prints are logged. Each member of staff then simply logs in and out using the readers. This information is held on the reception computer and is instantly accessible. At tool box talks and briefings all attendees will sign in using the mobile finger print reader.		Not thought to be a new idea and many concerns that this could cause security implications. Alternative ideas were discussed by the group. It is understood that the M1 J10-13 use transponders located in the hard hats and these can be located at anytime with limited security risks. **Conclusion** - No, not for data base		The idea can be used on any project.
L203 The M1 Junction 19 Improvement	Establish WIFI lines of sight using Google Earth	Using Google earth and Street View the highest and lowest points of the WIFI potential positions was determined. Viewing the ground profile within Google earth no line of sight could be found. A suitable position where a relay point could be installed was determined so that the ground	**Savings** Cost of survey team £400 per day. **Safety** Less people at risk **HA benefits** Less workers on the network until a optimal site is found. **Sustainability** Desk top surveys and optioneering remove the carbon footprint of a site visit.	The group thought this had a limited application. There were concerns at how accurate this would be and if information was updated regularly. Concerns also regarding the WiFi interface on our Network.		This method could potentially be applied to the majority of HA projects using Google and Street View mapping and information. The same process could be

		contouring would not affect the signal. Then using Goggle Street View we established that there was a gantry close to the optimum location which could supply power for the potential WIFI relay point. By not leaving the office to look at the potential options, this was a safer and more cost effective way of working. The software is free and requires no extra plug in's and can be run on the most basic computer, tablets, smart phones with a internet connection.		**Recommendations** - refer to Robert Stewart in the technology team for his comments **Conclusion** - NOT for data base		used for examining sight lines for camera placement for optimum 360 degree observation and determining if street lighting will be a nuisance to residents
L204 Birmingham Box Ph 3 (M6 J5–J8)	**Side Winder to Place Asphalt**	A side winder paver was proposed by our subcontractor. This was loaded from the side and then placed the material quickly to level using an adjustable, hydraulic blade. The side winder clamped on to the delivery wagons rear wheels whilst a conveyor emptied the material from the hopper in front of the blade which levelled the material prior to compaction.		This was considered by the group to be standard practice and business as usual and they could not think of any other way to perform this task. This has been used on other sites, for further information it was suggested that the pavements team (Nazia Sheik) could comment. **Conclusion** - NOT for data base		This provides a safer, quicker and higher quality alternative to hand lay. The cut outs do limit its operational efficiency as it relies on the wheels running very close to the edge of a hole in a straight line. This method can also be used to place aggregates such as sub base or cement bound material.

						The machine is regularly used for filter drain media to great effect
L205 M1 J28-31 Managed Motorway	Attenuation design to mitigate paved area for installation of RCB	Attenuation can be designed by developing an empirical method for the scheme if full hydraulic modelling is not possible due to time or budget, however the methodology allows for modelling if the scheme allows		The group did not understand the idea in this format and would ask for a description in plain English with reference to £ and numbers to understand the benefits and initiative fully. Does this go further than the departure mentioned? It could be the solution to a serious problem? **Action –** Peter Greatbanks should answer these questions to clarify the idea, it can then be passed to Alex Bywaters for his comments. **Conclusion** – Revisit if considered suitable after clarification From 9 December 2013 Following on from the last meeting Peter has sent another submission form		The report has been sent to all other consultants working on MM-ALR schemes including M4, and is applicable to all MM-ALR schemes which include paving of the central reserve. The methodology in the report has been incorporated into IAN161/13 section 11.

				covering these items. BW and AJ asked for copies of the original paperwork. New Conclusion – It was decided by the group to send this to Alex Bywaters and Lucy Wickham for comment.		
L206 A23 Handcross to Warninglid Widening Scheme	Replacement of Steel Road Pins	The use of steel road pins for setting out is an industry standard, however due to the possibility of power cable strikes this can pose some considerable danger to the operative. On the A23 Carillion have championed the use of pins manufactured from fibreglass and resign which are non conductive therefore eliminating the risk to the user."	This is a cost neutral safety initiative that eliminates the risk to life and limb that could result from a cable strike	The data attached to this idea was comprehensive and informative, though a specification should be added and the group agreed it had a high H&S benefit. Carillion has already banned the use of steel pins and now uses non-conductive fiberglass. This has only minimal cost savings and there is a worry regarding their fitting, if traditional tools are used will they shatter? **Action –** Refer to H&S **Conclusion** - YES for data base		This is a cost neutral initiative that could be adopted by any construction site with a requirement to drive pins into the ground.
L207 A23 Handcross to Warninglid Widening Scheme	"Thumbs UP" safety initiative"	The initiative requires any operative who needs to walk past an operational piece of plant to ensure that the driver has seen and acknowledged him/her by giving the thumbs up.	This has proved to be an excellent safety initiative that has been readily embraced by the site operatives and plant drivers.	A cheap, easy idea to make instructions visible to all. Carillion has enforced the use of Thumbs UP and Don't Walk By to ensure the safety of their drivers and		This idea is cost neutral and be easily adopted by any construction site using plant.

		The operative then reciprocates and walks by. The initiative has been rolled out a toolbox talks and is included in the site induction. It has also been given a high profile by placing large graphic “Thumbs Up” signs on all plant. This concept may be mentioned in existing entries in the bank but Carrillion have executed these to very high standard and effect, and we describe the methodology here as a dedicated B entry		plant. This has good H&S impact. It may already be used in slightly different formats by other schemes. **Action** – Check the visibility of this on the H&S toolkit. It should be discussed with Phil Farrah **Conclusion** - YES, add to data base		
L208 A23 Handcross to Warninglid Widening Scheme	Don’t Walk By safety initiative	All personnel working on the Project are encouraged to identify safety related issues and if possible sort them out there and then and follow this up by completing a Don’t Walk By Card and posting them in boxes that are provided at various locations on the site. These cards are collected by the IMS team who record them and, if the action to close out the issue was not done at the time it is passed on to someone who can resolve it. Once the item is resolved the person who identifies it is advised of the action taken. All issues are passed on to the Safety Action Group who recommend actions to ensure the issues do not repeat. This concept amy be	This initiative has been embraced by all members of the site team including sub-contractors. It encourages the site operatives to become really involved in their own site safety.	A cheap, easy idea to make instructions visible to all. Carillion has enforced the use of Thumbs UP and Don’t Walk By to ensure the safety of their drivers and plant. This has good H&S impact. It may already be used in slightly different formats by other schemes. **Action** – Check the visibility of this on the H&S toolkit. It should be discussed with Phil Farrah **Conclusion** - YES, add to data base		This initiative is cost neutral and be readily adopted by any construction site

		mentioned in existing entries in the bank but CArrillion have executed these to very high standard and effect, and we describe the methodology here as a dedicated B entry				
L209 M1 J32-35a Managed Motorway All Lane Running	**MM-ALR Determining Fixed Taper Positions and Associated TTM Signage**	The associated paper reference 1043319/HWY/DOC/010 revision 2 outlines the design approach that was undertaken in the design of FTP and the associated sihn locations for M1 J32 – J35A		Lack of guidance. Once professionally addressed this must be kept informed. **Action** – give to Alex Bywaters for comment. **Conclusion - NO**		Fixed taper points are a requirement for the implementation of MM-ALR. The design approach undertaken on J32 – J35A can be considered for all future MM-ALR schemes
L210 L211 Birmingham Box Phase 3 Managed Motorways (BB3MM)	**Number not used in error** The use of Departure Comments Forms to provide an audit trail for comments received from HA NetServ in relation to submitted departures.	It was agreed with the HA Project Sponsor to produce comments forms to record any comments provided by the HA NetServ specialist against departures submitted for the scheme. These forms provided an auditable record of the comments received and also any residual actions resulting from the comments allowing a complete record to be retained and, where required, actioned.	The comments form allows the designer to copy the comments received from the HA NetServ specialist and to provide a suitable response to the HA Project Sponsor. Any residual actions are also recorded on the comments form. Once completed the comments form is issued to the Project Sponsor for review and as a record of the response/required actions.	Business as usual **Conclusion - NO**		The use of the comments forms is easily repeatable. The form could be available as an electronic download from WebDAS so the costs associated with implementing the idea are minimal. No known links on the knowledge sharing back.
L211 (A) Birmingham	Underslung gantries for use on viaducts, and other similar structures, to ensure equipment can be located in	This idea is to help the installation of gantries on viaducts and other locations where land is	There are no gantries installed on the Midlands Links Viaducts that utilize the existing structure as a	The idea is not innovative as Atkins has constructed gantries in this way.		The design could be reused in similar locations however full

Box Phase 3 Managed Motorways (BB3MM)	accordance with the Managed Motorways Guidelines	an issue	foundation for the gantry. Due to various constraints it was concluded that the only viable option was to support new gantries from the existing steel deck beams.	Although a solution to a very particular set of circumstances it should be considered as a last resort rather than as a preferred option. The group wanted to know if the options report had been accepted and to know whether the gantries impacted on the articulation of existing structures. Action – More information required from James Connor and Ella Hall Conclusion – Revisit		assessments of each location would be required prior to this decision being made.
Ref No **&** **Scheme Idea relates to**	**Idea/lessons Learnt Title**	**Idea/lessons Learnt Summary**	**Detail of Impact of Action on Project (i)**	**Verification Group Comments**	**Which PCF Stage should this be considered at?** **Which PCF Stage should this be used at?**	**Repeatability(ii)** **Links to other ideas or the HA Toolkits** **Evidence of re-use by others**
L212 M1 Junction 32-35a MM all lane running	Design Temporary Power Distribution System to optimise installation by strategically locating CCTV & SPECs cameras in relation to existing EI's	To optimize time taken to install temporary CCTV camera system	By strategically locating the temporary CCTV cameras in relation to existing EI's, allowed the redesign of the temporary power distribution system enabling shorter trenching routes which decrease time taken for installation **NOTE : EI stands for**	After some discussion it was decided that this was actually business as usual and common practice already. Conclusion – Not for data bank		This could be used on any HA project where temporary CCTV is required.

			Electrical Interface This is a cabinet on the side of the motorway where we get the mains from to power all the technology on the motorway. In essence it's a bit like the meter point in your home, and yes, some of these cabinets do have electrical meters in them!! So if we can keep the temporary kit as close as possible, then we will have less cable to install from the 'EI' to the kit and thus reduce material costs			
L213 and L214	**These were duplicate submissions and not discussed**					
L215 M1 Junction 32-35a MM all lane running	Use sub-duct in place of multiple duct runs (new or existing)	To reduce the construction effort where 4 duct runs are required through a structure and only 1 exists. Reconstructing the structure is both costly and time consuming.	Utilizing a 'sub duct' allows 4 smaller ducts to be installed in a single duct and thus relieve the requirement to reconstruct the structure. This opportunity can be realized due to developments in communications which have lead to reduced cable dimensions. This physical reduction in cable size ensures the reduced duct capacity does not affect the communication network or capacity for future up-grades.	This was considered by the group to be standard practice already and used by most schemes Conclusion – Not for data bank		This could be used on any HA project where ducting through structures is required
L216 M1 Junction M1 J28-31	Dainage outfalls	Need to install drainage outfalls faster Accelerated programme delivery	Revises drainage outfalls to shallow drainage under a dished channel with vertical outfalls directly onto the carrier drain Speeds up delivery of a critical part of the scheme	The group liked this idea but needs more information regarding maintenance and time saving qualities. Action – More information required		It can be used anywhere there is the ability to install shallow drainage under a dished channel.

			Revised the outfalls to become a bespoke unit	from Graeme Hall. Conclusion – Revisit		
L217 M1 J28-31	Foamed Asphalt	Cheap recycled material available from supplier Negotiations with Supplier	Substitute for roadbase More information available in supporting documents Better environmental considerations	More information about this idea is required. Comments have been sought from the pavements team (Nazia Sheik). Departures will be required. If this is to considered at design stage we must be careful not to "over design". Action – Await comments Nazia Sheik in the pavements team. Next step con be considered in light of these comments. Conclusion – Revisit		It can be used anywhere there is a cheap source of recycled aggregate
L218 M1 Junction 32-35a MM all lane running	Installing temporary ducting on CSB, maintaining the benefit of running interrupter cable down the central reserve.	More and more crash barrier has been replaced by Concrete Step Barrier (CSB). CSB is also the preferred central reserve barrier for Managed Motorway up-grades, which are being rolled out across the network. This has removed the ability to install the interrupter cable at the base of the central reserve barrier, as it would no longer be protected against vehicle strikes, thus removing one of the main benefits of this solution.	To maintain the benefit of running interrupter cable down the central reserve, a solution for attaching the temporary ducting to the CSB has been developed.	The group thought that this was already widely used, as evidence had been spotted on both the M1 J28-31 and on the M6 J10a to 13. It was agreed that this should be added to the data bank. However, before it is copied over, the reference to fiscal stimulus must be removed. Action – Remove wording as above RB (this has now been corrected) Conclusion - YES for data bank		This could be used on any HA project where CSB is either existing or to be constructed.

L219 M1 Junction 32-35a MM all lane running	Installing continuous 150m length of communication ducting in place of traditional 6/7m sections	A proposal has been developed where CSJV have investigated how these savings can be realised by moving away from the traditional 6 metre length of twin walled ducting to a 150 meter High-density polyethylene (HD PE) duct	The A1(M) Dishforth to Leeming scheme investigated and implemented a 9m section of ducting, which although proven to add benefits did not fully exploit the reduction in time spent 'air testing'. Introducing a 150m length of ducting substantially reduces the number of joints and thus the number of air tests required, speeding up installation time 3 fold	The group during discussion realized that this was such an obviously good concept, that why had it not been used before? Departures to standards would be needed, but there is already a trial in progress. It was pointed out that there could be maintenance and installation problems, this should all be re-visited after the conclusion of the trial when this information is available. Action – Ask GH to let the group know when the trial is due to finish and when reports have been finalized. Conclusion – Revisit at a suitable date after trials		This could be used on any HA project where communications ducting is required
L220 A23 Handcross to Warninglid widening	No reversing on site – unless authorised	This idea was piloted as a result of a near miss situation, and the company Carillion took the robust and immediate step to exclude all risk in the first instance, regardless of impact to their program or cost. It worked for the better in that an excellent mitigating system developed.	It was decided risk of injury in this case was to be entirely avoided. Initially a blanket ban on reversing vehicles and plant on site was imposed. This has proved to be an excellent move in terms of safety. A swift decision and clear message to everyone raised strong awareness. Against this background a more flexible but equally effective full methodology has developed.	This has now been adopted as standard by Carillion and although hard to say how many accidents it has reduced, there is no evidence to show any since the last incident before this was introduced. There is also no evidence that it has resulted in delays. A simple philosophy in place, if a driver does not have authorization to reverse, he doesn't reverse. Distance to		This idea is used repeatedly as a matter of course

				reverse (if authorized) is calculated by the size of the vehicle and the turning circle. Action – This should be linked to the H&S toolkit. and sent for discussion with Phil Farrah and H&S team Conclusion - YES, add to data bank		
L221 A23 Handcross to Warninglid widening	Daily “Dawn” 4C’s meeting – full procedure	This idea was submitted by a member of the site team using the Suggestion Box Scheme. One of the major points is that ALL key supervisors including Sub Contractors attend Daily and before works starts.	The specific timing, discipline and format of the Carillion “4C’s” has proven to be very effective. it has established the concepts of **Coordination, Communication, Cooperation, Collaboration** The C’s become a mantra, for ensuring the best efforts for safety and efficiency. It is all inclusive so everyone must attend. It is a default platform first thing in the morning, for relaying ‘breaking news’ such as latest health and safety, delivery schedules and so on. Carillion have executed this to a very high standard and effect and we describe the methodology here as a dedicated KB entry. The meeting is clear, focused and swift.	This is a simple and easy way to get across the crux for all information H&S / general / whatever and to the maximum audience of subcontractors and staff. It is mandatory within Carillion, but by keeping the meeting to a maximum 30 or 40 minutes it doesn’t eat into the day. Covering weather conditions to abnormal loads it is time well spent. The 4C’s document form shown with the submission is concise and easy to action. Conclusion - YES add to data bank		This idea could be used repeatedly and the cost benefits are easily scalable. (assuming the correct level of discipline is used)
L222						