

EXECUTIVE COUNCIL

CONFIDENTIAL

Title of Report: Priorities for Roads Maintenance, Increased Funding for Grading, Capping and for Surfacing the MPA Road

Paper No: 39/12

Date: 25 April 2012

Report of: Roads Engineer/DPW

1.0 Purpose

To provide a new direction for the management, maintenance and improvement of the highways network outside of Stanley. By resetting and defining the Policy of PWD Highways it should provide clarity to Members and the public. To seek additional funding to progress certain aspects of the Highways Asset Management Plan (HAMP) as detailed within the paper.

2.0 Recommendations

a. That Members agree the principles as outlined in this paper for developing the HAMP.

b. That Members agree a revision to the policy for PWD Highways as follows:

‘To maintain a network that is categorised and maintained to meet the reasonable demands of all highway users within the annual budget allocation provided’

c. That Members approve the increase in posts funded from the recurrent budget for grading works **(Para. 6.2 Option B) this being three full time and two seasonal plant operator handymen.**

d. That Members approve the conversion of a seasonal foreman post to permanent

e. That Members approve the conversion of a plant operator handyman position to that of an assistant foreman position

f. That the request for additional funding for 0360 recurrent budget codes from 2012/13 onwards for salaries and related costs of £121,860 is referred to the Budget Select Committee.

g. That Members approve the proposal to remove the existing surfacing on the section of the MPA road at the location known as Sapper Hill and replace with asphalt in 2012/13 and refer the request for the following funding to Budget Select Committee:

- £546,000 of Capital funding in 2012/13
- operating funding of £17,000 for 0360 0310 Salaries from 2012/13 onwards to support the increased capping operation¹

h. That Members do not approve the progressive resurfacing of the MPA road for its whole length, as FIG has insufficient funds for this and additional funding would have to be found from the Recurrent Budget. **(Section 7.6)**

i. That the offer made by Colas Ltd not be progressed **(Section 4)**.

j. That Members approve additional capping to be undertaken **(Section 8.1)** and refer the request for the following funding to Budget Select Committee:

- additional capital funding of £2,845,000 to be provided over the period 2012/13 – 2017/18 **(Section 8.4)** for additional capping at identified locations as per 8.1; and
- additional operating funding of £77,000 be added to 0360 0310 Salaries over the same period.¹

3.0 Summary of Financial Implications

Increased funding of Staff for Grading Operations

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	Total Project Cost
	£	£	£	£	£	£	£
f) Operating Budget	Nil	121,860	121,860	121,860	121,860	121,860	609,300

Surfacing Sapper Hill Section of MPA Road

	2011/12	2012/13
	£	£
g) Operating Revenue	Nil	(17,000)
Operating Expense	Nil	17,000

And

	£	£
g) Capital Programme	Nil	546,000

¹ This money will subsequently be recovered as revenue under code 0360 – 0230, labour allocation to Capital projects therefore making no difference to the bottom line within the operating budget.

Additional Capping expenditure

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	Total Project Cost ² £
	£	£	£	£	£	£	£
j) Operating Revenue	Nil	Nil	(15,000)	(15,000)	(15,000)	(17,000)	(77,000)
Operating Expense			15,000	15,000	15,000	17,000	77,000
And							
j) Capital Programme	Nil	242,680	472,280	560,280	582,280	493,630	2,845,440

4.0 Background

Although grouped into a single paper in order to enable the various topics to be considered together and the various demands balanced, they are separate topics and decisions on each can be made in isolation.

The prioritisation (HAMP) proposal is aimed at determining or strongly influencing where the resources (including funding) will be directed and utilised and may lead to requests for significantly increased levels of funding for capping the wider road network, but will not in itself result in costs being incurred.

Ongoing grading/maintenance needs, surfacing of the MPA road and accelerated capping are really separate topics, and primarily only interdependent in terms of the overall resource and funding needs.

The proposal for additional funding for routine grading is aimed at trying to meet the very basic needs of the road network in improving the basic 'ride' by decreasing the interval between grading/maintenance on any given section of road, but this process can only work with the material that is in place on any given section of road, other than the small allowance made in the recurrent budget for some material for the MPA road, and without ongoing expenditure on capping will become increasingly ineffective over time.

The need for additional funding for capping the wider network is in order to seek to address the otherwise inevitable deterioration in the unsurfaced road network.

Surfacing the MPA road (other than the Sapper Hill Section) is a major undertaking and even the order of cost figures included in the paper are far from certain, with a very recent increase in bitumen cost having been established from Stanley Services from £750 per tonne to £1,280 per tonne and research carried out suggests that this

² Includes funding for financial year 2017/18 not shown on the summary

may worsen as the market trend for bitumen is upwards. The net effect of this increase is an additional cost of approximately £94,000 per kilometre. In terms of the overall project the cost of bitumen used for the first estimate for the road was £6.45 million, this recent price increase will add £4.55 million. This price change shifted the order of cost estimate from approximately £29.5 million to £34 million.

The offer from Colas indicates that if committed to they would hold the price for two years if it were done over a two year period, given the resource issues there would be for PWD to produce the aggregates which equate to a full years production even with no other material being produced, which is clearly impractical.

Balancing this though is the stark fact that if the project were committed to with Colas, there would be no going back other than by negotiated settlement if there was a reversal of fortunes. There would also be need for additional staff to be engaged – a contracts manager and a technician for the period of the project to ensure the works were undertaken to specification.

A way forward to progressively surface the MPA road if that is the desire of Members could be that of commencing some surfacing works with the existing plant supplemented by additional bitumen storage tank capacity, and some further modifications to the plant which would together cost perhaps £170,000 to £250,000 and additional staff for asphalt production (costs for which would be met from within the project), with the decision on purchasing larger output coating and laying plant being deferred unless or until there is more certainty on oil income.

It would however have to be accepted that this approach will be much more prone to delay and breakdown and therefore may well not achieve the agreed length of surfacing in any year, although it would reduce the initial capital expenditure by in the order of £1.2 to 1.3 million.

It would also not result in an earlier start due to the need to obtain and install the supplementary equipment and it should be noted that the existing plant would almost certainly not be able to complete all of the project so the replacement plant would still need to be purchased at some stage, should the progressive surfacing route be followed and the investment in the existing plant would for the most part not reduce costs for the replacement plant.

A table has been produced which seeks to show what the cumulative costs for surfacing and not surfacing are which is attached at Appendix A. The table is far from precise as there would need to be more detailed costing done before an absolute commitment were to be made to undertaking progressive surfacing, but it is considered to show the broad picture.

A life of 30 years is assumed for the surfacing, after which point there will need again to be significant capital investment in maintenance and/or renewal works and there will inevitably be need for some repair and maintenance to be carried out almost from the outset and which will steadily increase over time.

This suggests that the net cost of surfacing the road over the likely time period after which appreciable maintenance or overlaying will need to be done – 30 years – is in

the order of £15 million pounds (see Appendix A) without allowance for inflation, or the cost of capital.

5. Highways Asset Management Plan

The policy for Highways is ‘to maintain and improve roads within the funding allowed’. This Policy does not provide any defined goals and objectives over the long term by which the Highway network can be maintained and improved with targeted funding. It also does not define the network by usage or demand that can be reasonably met, which therefore implies that the whole network should function at the same standard. Given the variable nature of build and the uneven usage demands on the network it would be, and is, unrealistic for the Falkland Islands Government to provide the necessary funding to achieve this.

It is likely that the current network of roads constructed by FIG is highway maintainable at public expense under the provisions of the Highways Act 1980 which applies to the Falklands). Under that Act the government is under a duty to maintain the highway. **REDACTED**

At some stage without further significant investment, sections of road will deteriorate to such an extent that they will be dangerous for road users. As a last resort it is possible to close a road (although this may require legislation). **REDACTED**

Much of the road network is not subject to Road Traffic regulation and those sections which are – primarily Stanley to Goose Green tend to be better constructed and capped. The remainder of the network will potentially become subject to regulation other than a requirement to wear seatbelts with the implementation of the Road Traffic Bill scheduled to be progressively completed between now and April 2013. **REDACTED**

To achieve the principles of the revised policy the Highways network as an asset needs to be understood. Poor inventory records mean PWD Highways do not fully understand their asset today and this needs to change.

Budget allocations and targeted spending is done in an ad hoc manner so a return on investments both financially and for the greatest users is not always achieved.

It is proposed that a Highways Asset Management Programme (HAMP) is started to develop a number of key items that will form the process for improved management.

- 1) Develop our goals and objectives
- 2) Understand our inventory.
- 3) Assess the condition of our inventory
- 4) What are the aspiration demands
- 5) Identify options for improvement of the inventory
- 6) Budget the improvements
- 7) Develop a forward work programme
- 8) Measurement of the inventory following improvement
- 9) Develop a strategy for dissemination of the HAMP

A new working group should be formed to develop the HAMP with oversight and guidance provided by TAC.

5.1 Develop our goals and objectives

Goals and objectives would be dependant on the type of asset.

5.2 Understand our inventory

To help understand our inventory the highways network should be split into classification categories. This breakdown will help develop the level of service for each category, the aspiration demands and forward looking programmes.

	Definition
Class A Road	Primary Link Road between major population centres
	Primary link road between major national assets
	Greatest traffic use by volume and weight

	Definition
Class B Road	Link road between all Class A and C roads
	Major Tourist destinations
	Major supply route to the Abattoir

	Definition
Class C Road	All Other roads

The above classification can be seen on drawing No: HMD/016 and can be further identified as a percentage of the whole network as shown below.

Total length of Road East Falklands	489
	373
Total length of Road West Falklands	
% East Roads as A Road	14%
% East Roads as B Road	23%
% East Roads as C Road	20%
% West Roads as A Road	9%
% West Roads as B Road	10%
% West Roads as C Road	24%

The network can be broken down further into easily identifiable classes as follows:

- Cattle Grids, East Falklands
- Cattle Grids, West Falklands

- Culverts, East Falklands
- Culverts, West Falklands
- Bridges

5.3 Assess the condition of our inventory

Over the last 2 years detailed surveys of cattle grids and culverts have been made on Both East and West Falkland. This work on West Falkland has been completed and has already fed into a 4 year replacement and maintenance contract on West Falkland. The work on East Falkland needs to be completed.

Bridge inspections have been not been carried out on a regular basis and this needs to be corrected. When the first round of inspections is complete the condition and required works can be fed into any maintenance and improvement programme developed through the asset management system.

Historical records for the majority of the road network are severely lacking or non existent. No appropriate records of formation strength, construction specification, rock properties or as built records are available so an extensive and prolonged testing regime would need to be carried out to determine the improvement options. The extent of this testing would need to be curtailed to match the aspiration demands and budget available for each class of road.

5.4 What are the aspiration demands

It is suggested that TAC determine the aspiration demands of the highways network for consideration and possible consultation with the public and Members. It is suggested as a baseline for aspirations would be based on:

- Safety
- Condition
- Performance
- Importance

These could be weighted to highlight the most appropriate condition for each asset class.

5.5 Identify options for improvement of the inventory

Any surveys and testing undertaken on the network need to be accurately recorded, as well as the option analysis and works undertaken so that a thorough understanding of the network can be developed over time. This can be through the use of a computerized asset management system or through a simple paper based system. The computerised system can be utilised more effectively to identify needs and trends to suit the aspiration demands and condition as they change over time. This type of system would also be useful for developing forward work programmes with budget figures.

3 immediate areas for improvement have been identified for further consideration these are:

- Additional Personnel for Grading Operations
- Resurfacing the MPA road.
- Additional Road Capping

5.6 Budget the improvements

Much more work is required to develop the Asset Management process and further budgeting will need to be developed as each of the steps in the HAMP is developed further with buy-in and understanding from all concerned.

5.7 Develop a forward work programme

Utilising the work undertaken on the condition of the assets and budget process future programmes can be identified in priority order but it must be noted that under current financial regulations only annual budgeting will be able to be undertaken.

5.8 Measurement of the inventory following improvement

Recording the work undertaken, the cost and the time taken to complete the works help to refine and define future option estimating, budgeting and future work programmes.

5.9 Develop a strategy for dissemination of the HAMP

Without telling people what is being done now and what will be done in the next 1, 2 3 years time, then all concerned would still have near term thoughts and requirements that may simple not be met. Good Public Relations will be essential.

5.10 Conclusion

A better definition for the policy of PWD Highways will make it clear to all that the whole network will not be funded to a high or even the same standard but will be targeted for improvement based on Category, funding, aspiration demand and its current condition. With better information provision and forward looking programmes the public and Members would be much better informed going forward.

5.11 Financial Implications

Financial implications for the development of the HAMP and its individual objectives have not yet been undertaken. These will be developed further if the recommendations of this paper are agreed by Members.

5.12 Legal Implications

See section 5 Asset Management Plan above

5.13 Human Resource Implications

None

6. Additional Funding for Personnel for Grading Operations

6.1 Background

Following discussions with Members at the 'Away day' on the 29th August a review of PWD Highways operational structure has been undertaken to identify improvements in staff resources needed to meet the increasing maintenance demands of the network and users.

The higher level management structure has been covered separately in paper 68/12 which seeks to continue to provide adequate support for the Roads Engineer, but also provide a succession planning route for post.

However succession planning and management cover is currently not provided in the West gang because of the lack of an assistant foreman. It is proposed that an assistant foreman post is created to eliminate this shortfall.

This paper seeks to address the above situation and that with the end of the road building programme, the individual road gangs can and need to be reorganised to provide smaller, better equipped, teams to undertake a whole host of improvements works around the network.

The major shortfall in capacity and ability is within the grading teams. PWD Highways currently only have enough permanent staff posts funded from recurrent budget to ensure 2 grader teams are running during the summer months plus a foreman for the capping operation with the majority of posts effectively being funded through capital works.

In the winter months the works teams can only undertake small scale repairs and maintenance and cannot cope satisfactorily with grading the MPA road during the few short spells of good weather that might arise.

During the summer months they are too small to operate so as to include the application of water in the grading operations, a key requirement to ensure adequate compaction and thereby extended life between grades and thus reducing the cost of grading per kilometre of road as well as a better running surface.

As highlighted above, the approved staffing levels are in excess of what has been routinely funded within the recurrent budget and this paper seeks approval for sufficient funding to be provided on an ongoing basis within the Highways recurrent budget to enable more of the approved posts to be filled.

6.2 Options

Option A

To ensure enough adequate grading, capping and general maintenance is undertaken year round, funding for an additional 5.5 permanent staff is required as shown in the enclosed organisational charts.

During the winter months this would provide Highways with a gang of size that could undertake larger schemes or a number of small one off schemes whilst being able to better react to weather windows for grading.

During the summer this would allow 4 graders to be run, 3 with the water carrying and spraying capacity critical for adequate compaction of the material being graded and therefore reducing maintenance.

The 4th grader team would undertake seasonal (Capital funded) capping works. This capping set up assumes enough capacity exists within the private sector to undertake the haulage which is considered to be the case.

Total cost per annum- £133,310 salaries, £17,000 ancillaries cost i.e. fuel (including the Assistant Foreman)

Option B

As per Option A but it assumes that only 3 additional permanent staff posts would be filled and that 2 seasonal staff would be taken on to supplement the gangs during the summer months. The 5 posts in the Grader crew would provide the ability to undertake additional, more durable, grading and other works throughout the year. Option B provides the most cost effective solution for this, with additional ongoing recurrent funding for three more permanent posts and two seasonal posts.

Total cost per annum - £104,860 salaries, £17,000 ancillaries cost i.e. fuel (including the Assistant Foreman)

Option C

As per Option A however under this option the grading gangs are reduced by 1 each and not supplemented by seasonal staff, which would mean the funding of 3 additional full time staff only. This would however mean that water cannot be added to the grading operation, which will make it less effective as proper compaction cannot be achieved if the optimum water content is not achieved.

Total cost per annum - £57,350 salaries, £17,000 ancillaries cost i.e. fuel (including the Assistant Foreman)

6.3 Additional 0.5 Full Time Employee - Foreman

A post originally approved as part time in 2001/2 has been filled on an effective full time basis since 2006, due to workload. With capital works being done over each winter, the post has needed to be filled on an all year basis and the same individual has now been employed on a full time basis since January 2008.

Normally an increase from a 0.5 post to a fulltime post would be requested formally through ExCo. However records suggest that this has not been formally carried out. Honourable Members are therefore asked to approve the increase to retrospectively address the issue and allow the continuation of the appointment of the incumbent of this post without having to go to advert.

REDACTED

6.4 Conclusion for additional personnel

The proposed changes in the operational establishment and recurrent funding for PWD Highways provides the following:

The new Assistant Foreman for the West Maintenance gang provides succession planning for our Foreman, possibilities for our plant operators and the ability to maintain further management control and backup to the Foreman when the gang is split to undertake different tasks or the Forman is away.

The additional funding for posts in the Grader crew provides the ability to undertake additional, more durable, grading and other works throughout the year. Option B provides the most cost effective solution for this, with ongoing recurrent funding for three more permanent posts and two seasonal posts.

Conversion of the Foreman post from seasonal to a permanent position will have no financial implications as the post has been filled year round since at least 2006 and is included in the 2012/13 budget submissions already.

This will not address the overall resource shortfall, or all of the maintenance shortcomings on the un-surfaced road network, but without an increase of staff levels in the various areas identified then PWD Highways will continue to struggle to undertake even sufficient of the basic grading maintenance to the network that is required even without further increases in any Capital allocation or material coverage in the recurrent budgets.

6.5 Financial Implications

Financial implications for increased capping effort are as follows for option B, projected to 2025/26

Future profile of Financial Implications for Grading and Maintenance options identified (Para 6.2 B)

Additional Personnel Costs For Grading and Maintenance

	2011 /12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	Total Project Cost £
<u>Operating Budget</u>	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	
Salary costs	Nil	104,860	104,860	104,860	104,860	104,860	104,860	104,860	104,860	104,860	104,860	104,860	104,860	104,860	104,860	1,706,040
Ancillary costs	Nil	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	17,000	

6.6 Legal Implications

See Section 5, **REDACTED**.

6.7 Human Resource Implications

The Human Resource Implications for additional Personnel within PWD Highways would be as follows:

Should Option A be approved by Members there will be increases in funded staffing levels of 5.5 permanent plant operator/handyman staff, but not an increase in approved establishment. There will be a change in the establishment from Plant Operator Handyman for the Assistant Foreman post.

Should Option B be approved by Members there will be increases in funded staffing levels of 3 full time and 2 seasonal plant operator/handyman staff, but no increase in approved establishment. There will be a change in the establishment from Plant Operator Handyman for the Assistant Foreman post.

Should Option C be approved by Members there will be increases in funded staffing levels of 3 permanent plant operator/handyman staff, but not an increase in approved establishment. There will be a change in the establishment from Plant Operator Handyman for the Assistant Foreman post.

Should the 0.5 Foreman post not be increased retrospectively from 0.5 to 1 FTE then FIG will have to consider either redeployment of the individual or in the worse case scenario redundancy. This has arisen because on the death of the last seasonal foreman in 2008 the replacement was appointed as foreman and not on a seasonal basis in the letter of appointment, although in practice the seasonal person had been working all year for several years previously due to workload.

Appendices to 6.7

Highways organisational chart – New Structure
Highways organisational chart – Current Structure
Highways Salaries – Old Structure
Highways Salaries – New Structure Option A
Highways Salaries – New Structure Option B
Highways Salaries – New Structure Option C

7. Resurfacing the MPA road

7.1 Background

It is PWD Highways wish to start surfacing the MPA road in a phased approach as discussed with Members in the ‘away day’ on the 29th August 2011.

By surfacing the MPA road, future maintenance resources can be released to allow other areas of the network to be recapped, rebuilt and realigned where required,

although it will require resources to be committed to undertake the surfacing over a 10 to 14 year period, unless the 'big bang' approach offered by Colas Ltd is taken.

Over the years the number of vehicles, the weight of vehicles and the number of heavy vehicles has increased significantly having a bearing on the condition of road, particularly during winter months.

In April 2010 over 19 days 5,484 vehicles used the road of which 2% were HGVs. Avg. daily vehicle use was 3,38no (2% HGV, 7 number) vehicles up from 125no (12% HGV, 15 number) in 1998 and 90no (16.7% HGV, 15 number) in 1988, a 170% increase in the last 10 years for all vehicles.

Although it is the heavier traffic which causes the greatest damage to any road, sealed or unsealed. The levels of all types of vehicles using the road has increased disproportionately for a number of reasons:

- as a result of cargoes from the UK now all being transported in from Mare Harbour by road
- Movements to and from New Haven, including a significant increase in stock movements to the Abattoir
- General island wide movements by land rather than sea.
- Increased localisation of posts and works at MPA

If Members decide to fund asphaltting then new plant and equipment would be needed unless the works were to be done by an outside contractor such as Colas. All of the existing equipment is very old and worn and/or will not cope with the increased demand, speed, quality and quantity of asphalt required.

It is very important to note that a decision to asphalt the MPA road will also affect current capping proposals.

Should Members decide to asphalt the MPA road in sections then Port Harriet may have to be abandoned as a borrow pit for this works, unless the material only just reached at lower level is less plastic.

Capping material used would have to be suitable as both an unsealed road surfacing material and a sub base for asphalt, unless that capping material is either removed later or will have been lost by attrition before the section is surfaced, which is likely to be the case unless the road is surfaced in less than five years.

Material extracted to date from Port Harriet has been too plastic to lay asphalt on and although at the level just reached the material appears less so and blending from other sources may be possible this will need to be tested and verified.

Work was done with the agreement of FIC to undertake some small scale processing and testing at the Frying Pan quarry to see if material in the immediate area would be suitable (material extracted from this vicinity was not previously used for capping so was untested for that use).

If this is unsuccessful then we will have to use Canada Runde as our only known source of capping suitable to both schemes leading to an increase in capping costs due

to the much longer haul lengths. Initial indications are that the Frying Pan material is very abrasive and non plastic, which may suit use below asphalt surfacing although increasing process costs due to wear on plant.

The material used on a short section of road did not compact and hold at all well and it appears unsuited for use for capping but there is still further testing to be done.

7.2 Options

There are 3 options offered for consideration as outlined below:

Option 1 – No Asphalt

The MPA road is already due for re-capping which will improve the condition of the running surface and strength of the highway however PWD Highways will have to maintain the high maintenance cost of an unsealed road surface.

It should also be noted that the length of asphalt on the MPA road will continue to diminish as the existing asphalt comes to the end of its life and is removed.

Only the section over Fitzroy Ridge and possibly that at the Van Tan are viewed as having any appreciable remaining life.

Cost - £0 additional cost (capping costs already covered)

Option 2 – 100mm Asphalt Overlay

Remove existing asphalt and re-lay with new asphalt to a depth of 100mm thick. This option would add strength to the carriageway but would still not achieve the standard minimum design thickness and the possible life of the carriageway would not be known resulting in possible early life failure, thus reducing trouble free years to release resources, both capital and physical, onto other parts of the network. Although the previously laid 50mm layer has provided up to 15 years of life to date on sections completed, as noted above the level and composition of traffic has changed and this means that the same could not be expected again.

Because a 100mm thickness would be outside normal design parameters, it cannot be stated with any certainty how long the materials would remain robust before significant ongoing maintenance was required as a result of progressive failure.

- Total Estimated Cost - £18,698,555
- Avg. estimated cost per Km of road completed over 13 years - £345,361
- Cost of new plant and machinery £1,465,000
- Projected Capital cost per year per Kilometre based on above costs and an assumed life of 12 years (assumed) - £31,227
- Additional annual recurrent cost for higher level of salting needed £21,660

- Additional capital cost for purchase of new salt shed £130,000

Option 3 – 160mm Asphalt Overlay

Remove existing asphalt and re-lay with new asphalt to a depth of 160mm thick. A 160mm thick layer of asphalt is the minimum required thickness on a carriageway that handled significant HGV movement, as per current Design Guides. This option fulfils the minimum design thickness and utilises best practise for asphalt thickness for each layer. This option should achieve a 20 year design life, although in practice perhaps 30 years of useful life may be achieved, depending on traffic type and levels.

- Total Estimated Cost - £34,112,000
- Avg. estimated cost per Km of road completed over 13 years - £701,900
- Cost of new plant and machinery £1,465,000
- Projected Capital cost per year per Kilometre based on above costs and an assumed life of 20 years - £35,000
- Projected additional capital cost per year over not surfacing based on 30 year usable life £493,000
- Additional annual recurrent cost for higher level of salting needed £21,660
- Additional one off capital cost for new salt shed £130,000

7.3 Programme and Execution

When deciding what length of asphalt to undertake the following should be borne in mind:

The typical design life of any asphalt highway, without substantial reconstruction is 20 years, depending on traffic levels, quality of materials laid and the correct level of maintenance occurring.

Therefore to complete the whole length of the MPA road would require at least 2.5km completing year on year with the possibility of this work becoming ongoing.

To release funds and resources onto the rest of the network would require substantially more asphalt to be laid than 2.5km. Assuming 4km is completed each year then the road that should take **13 years** to complete resulting in 7 years of low maintenance, with potentially up to 30 years useful life with maintenance progressively increasing over the latter period.

It should also be noted that the wearing course of any highway i.e. the top layer, will typically need treating after 8-10 years to improve the residual life of the whole asphalt matrix, skid resistance of the running surface and sealing from water damage, although this has not been done on the existing surfaced sections other than some patch repairs and seam sealing. Over time the wearing course begins to reduce its

skidding resistance due to wear. It will also tend to start potholing and cracking resulting in a loss of strength. A number of systems can be used to overcome this depending on the state of the asphalt material. They may include:

- Plane and relay
- Overlay
- Retexturing
- Surface dressing
- Patching

The life of the carriageway should be tested annually to ensure skid resistance and strength are monitored and recorded. However it should be noted that this paper deals with the initial Capital cost of laying the asphalt, not the cost of repairs and maintenance although it must be highlighted that over time the level of maintenance funding will have to increase as will the winter maintenance costs for salting.

It is likely a bigger salt shed and additional salt will be required as more and more asphalt is laid and indicative costs have been shown in the options above, however costs for these would need to be developed further if an in principle decision were made that the road is to be progressively surfaced in order to better show full long term costs.

Of immediate concern is the length of asphalt around over Sapper Hill, as covered in detail in paper 199/11. This is a length of asphalt road approximately 1,300m long, from the junction with Stanley Bypass running west to where the un-surfaced section begins. The asphalt on this length of road has reached the end of its life and cannot be maintained adequately. If not resurfaced it will almost certainly have to be taken up within a year, at most two, capped and maintained as an unsealed section of road.

This length could be surfaced in 2012/13 using existing equipment. The Capital funding which would be needed for this, of £546,000, identified in Option 3 above is for the 160mm thickness as recommended in the conclusion.

In 2013/14 new equipment could be purchased and the remainder of asphalting would then be undertaken from 2014/15.

The actual timescale to complete the remaining surface would depend on the available funding agreed by Members and potentially the use of external contractors or not.

4km a year, from 2014/15, would take 12 years to complete thus effectively providing an eight year low/no maintenance window before progressively increasing maintenance would be expected to be needed.

7.4 Use of External Contractor

Alternatively an external contractor could be used with the whole road length being done over one or perhaps two or three years.

There has been communication with Colas Ltd in relation to orders of cost to surface the road, which had largely focused on their presence and that of some equipment in the Islands potentially effecting savings.

Their most (very) recent proposal suggests a figure of £12.4 million for surfacing all the currently unsurfaced sections which is 36 kilometers, but the total length likely to need surfacing if done immediately is 43 Kilometers, giving a likely total of £14.8 million and the proposal is based on a reduced thickness – 120mm.

Additional to this the proposal is for the surfacing only and there would need to be aggregates for both the asphalt to be produced and also the capping material would need to be produced and laid, which is likely to result in an overall cost of in the order of £17 Million for the reduced thickness surfacing, and in any event it will take perhaps three years for the aggregates to be produced, taking into account other likely demands.

Assuming the greater thickness recommended by PWD is used, this would bring the notional cost up to £23 Million, but the offer from Colas is very basic, with the probability being that as more detail is worked up additional costs would appear, not least of all because of the practical issues of aggregate production and the impact this would have on start-up and shut-down costs and their willingness to leave plant idle for several years, so although this looks superficially a much lower cost option than the £34 million suggested for progressive 'in house' surfacing the end cost arrived using an external contractor at may well be more.

The focus has been on the opportunist use of an external contractor as a possible way to get the road surfaced relatively quickly and perhaps with some cost savings. However even ignoring the costs and timescales for the production of aggregates and other works the question has to be asked as to whether best value would be achieved by going to a single contractor simply because they have equipment here, which will potentially saves the cost of shipping some of the plant needed in and out of the islands.

Given the indicative project cost of in the order of £23 million, and assuming a cost of perhaps £50,000 for plant shipment which represents only 0.2% of overall costs it would seem at least probable that cost reductions of at least that level might be achieved by taking more time and either going to open tender or negotiating with more than one contractor and on that basis it is suggested that the offer should be noted and declined.

Consideration had also been given to the purchase of the production plant Colas currently hold at MPA for use in progressively surfacing the road, but on balance it would appear that this, although suited to the surfacing of the road, would be much too large for other/later use and although Colas have indicated that the plant could be re-engineered so as to be used for lower output levels, this is likely to result in the plant operating inefficiently and resulting in higher ongoing operating costs for routine use and that investment (if this is to be made) would be better made in more appropriately sized plant.

7.5 Conclusion for resurfacing the MPA road

Option 1 – effectively maintaining the status quo, but with progressively more of the road capped instead of surfaced with asphalt as this is removed on failure. This is not seen as an ideal way forward considering the high expectation of road users for a good quality carriageway on the most used road in the Islands. It also does not solve the current maintenance issue Highways has or address the ongoing concerns and discontent of road users. It is however apparent that the cost to resurface the road is too high relative to the funds FIG has available.

Option 2 and 3 – Option 2 will add life and strength to the carriageway but best practise and design experience would indicate Option 3 would be the most suitable design.

Consideration has been given to a phased approach to the asphaltting by laying all the Base course material first (120mm) followed by a wearing course (40mm). Issues were identified with this.

- 1) Base course has a reduced skidding resistance compared with Wearing course therefore the risk of skidding accidents occurring increases,
- 2) A programme of this sort could result in wearing course material having a greater life than the Base course material it is laid on.

For these two reasons this option has been discounted.

Option three is therefore considered the most appropriate option and what is now needed is for the annual level of Capital funding which can be allocated, should Members wish the surfacing of the road to be progressed, in order that more detailed costing and planning can be done and a programme of works produced.

The use of an external contractor is an option which would not necessarily change the standard and may or may not result in cost savings due to their greater buying power, likely higher staffing costs due to the need for additional supervisory staff, but would potentially provide the fastest solution.

7.6 Financial Implications

Cost estimates are based on the purchase of new plant and equipment, undertaking 4km a year based on current prices and adding a further 5% contingency cost increase year on year with all works completed in 14 years.

If the work took less time the costs should fall. If 6km were completed each year total estimated costs would reduce by approximately 10% and 4 years less time to undertake the work (based on 160mm) resulting in reduced maintenance for 10 years approximately instead of 7, with little work expected, then gradually increasing.

If the work took more time costs would increase as material and other costs can be expected to rise and there would be some loss of working efficiency. If 2.5km were

completed each year (expected minimum to complete whole length before needing to start again), estimated costs would increase by perhaps approximately 20%.

It should be noted that the substantial increases in capital funding for this work will have a large effect on depreciation

The projected order of cost of £34 million would be partially offset by savings as set out in Appendix A, giving a net cost, against other options of approximately £15 million but as the costs for those other options are very long term and not necessarily committed to and the current draft Capital Programme effectively wipes out the Capital Equalisation Fund, the overall project cost, if fully committed to at this stage would impact on the operating budget transfer to in the region of £32 Million pounds.

If it were agreed in principle that the MPA road should be progressively surfaced, funding of £1,465,000 would need to be entered in the 2013/14 financial year to permit the purchase of new surfacing equipment and a suitable asphalt plant for larger scale and more secure production.

Total funding of £34,100,000 would need to be provided as set out in the table below from 2014/15 for 4km of asphalt, at 160mm thick, to be laid over 12 years.

Additionally £385,544 would need to be added to 360 0310 (Salaries) recurrent budget code to support the MPA Road surfacing operation over the 12 year period. (This would subsequently be recovered as revenue under code 0360 – 0230, labour allocation to Capital projects therefore making no difference to the bottom line within the operating budget.)

This would mean that if members were to approve the resurfacing of the MPA road for its whole length, FIG has insufficient funds for this and additional funding would have to be found from the recurrent budget.

MPA Road Resurfacing

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	Total Project Cost
	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
<u>Revenue Recharge</u>	Nil	17,000* (17,000)	30,000** (30,000)	24,222 (24,222)	25,433 (25,433)	26,705 (26,705)	28,040 (28,040)	29,442 (29,442)	30,914 (30,914)	32,460 (32,460)	34,083 (34,083)	35,787 (35,787)	37,576 (37,576)	39,455 (39,455)	41,427 (41,427)	385,544 (385,544)
<u>Operating Budget</u>	Nil	Nil	Nil	Nil	Nil	21,660	21,660	21,660	21,660	21,660	21,660	21,660	21,660	21,660	21,660	216,600***
And	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
<u>Capital Programme</u>	Nil	546,000*	1,465,000**	2,057,000	2,271,000 ****	2,251,000	2,344,00	2,441,000	2,543,000	2,650,000	2,763,000	2,880,000	3,005,000	3,136,000	3,760,000	34,112,000

* For resurfacing Sapper Hill only.

** For the purchase and installation of a new asphalt plant and new surfacing equipment if further asphaltting is approved

*** Ongoing Road Gritting costs even after completion of the asphaltting works

**** Includes £130,000 for new Salt Shed

7.7 Legal Implications

See Section 5. **REDACTED**

7.8 Human Resource Implications

Nil. No changes are anticipated with PWD Highways staffing levels, all works would be carried out using the current approved establishment levels, although funding levels would have to be change as set out in the paper.

8. Road Capping Options

Paper 154/11, previously submitted, outlines the current strategy for capping and the costs for increased capping of the unsealed road network. It is clear that additional funding is required to sustain the road network and this paper set out options.

Since the production and review of this paper additional knowledge of costs, timings and locations has been obtained and the following defines the scale of known immediate works required to bring the standard of the network up to a reasonable level. Further submissions will be made as the HAMP is developed over time.

8.1 Financial Implications

Category A roads – East Falkland

Funding for capping of the Category A roads as defined in 5.2 is covered by the annual Capital allowance made to PWD Highways.

Category A roads – West Falkland

Funding for capping of the Category A roads, as defined in 5.2, is covered by the annual Capital allowance made to PWD Highways except in 2012/13 where it is recommended that additional money should be allocated of £220,675.00

Category B roads – East Falkland

The following sections of road, identified as being Category B roads as defined in 5.1 are in desperate need of capping:

SECTION	VALUE
• MPA road to Estancia	REDACTED
• Estancia to TI	REDACTED
• Estancia to the Rincon road junction	REDACTED

To complete this work, as well as the planned work to the Category A roads, the mobile crusher and capping teams will have to work year round. Based on current outputs of 13km every 6 months approx. £2,141,420 of funding would be required over 5 years from 2012/13 to ensure this backlog is cleared as quickly as possible.

Category B roads – West Falkland

The following sites are considered dangerous and need capping to ensure the safety of all road users.

SECTION

- Carew Harbour

REACTED

Category C roads – East Falkland

The following sites are considered dangerous and need capping to ensure the safety of all road users.

SECTION

- Douglas Turnoff to Queens Brook

REDACTED

REDACTED

Category C roads – West Falkland

The following sites, which are Category C roads as defined in 5.2 are considered dangerous and need capping to ensure the safety of all road users at a cost of £396,000.

SECTION

- Wall stream
- Sound ridge
- Shallow Harbour road
- Dunnose head road
- Dunbar road

VALUE

REDACTED
REDACTED
REDACTED
REDACTED
REDACTED

8.2 Legal Implications

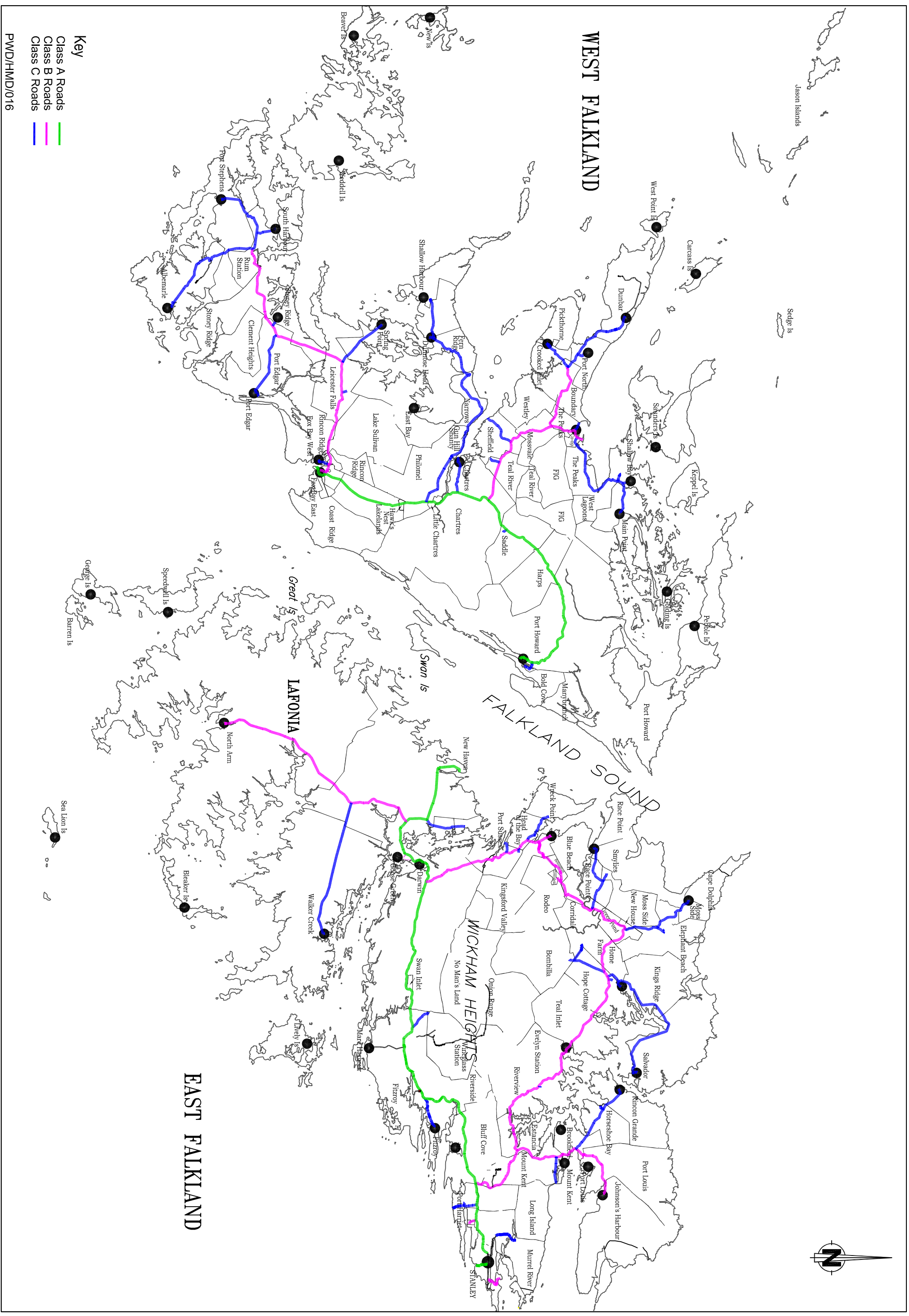
See Section 5. **REDACTED**

8.3 Human Resource Implications

Nil. No changes are anticipated with PWD Highways staffing levels, all works would be carried out using the current approved establishment levels, although funding levels would have to be change as set out in the paper.

8.4 Additional Capping expenditure over and above the normal Capital Allocation

	2011/12 £	2012/13 £	2013/14 £	2014/15 £	2015/16 £	2016/17 £	2017/18 £	Total Project Cost £
<u>Revenue Recharge</u>	Nil	Nil	15,000 (15,000)	15,000 (15,000)	15,000 (15,000)	17,000 (17,000)	15,000 (15,000)	77,000 (77,000)
<u>Operating Budget</u>	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
And								
<u>Capital Programme</u>	£	£	£	£	£	£	£	£
<u>East Cat A</u>	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
<u>West Cat A</u>	Nil	220,675	Nil	Nil	Nil	Nil	Nil	220,675
<u>East Cat B</u>	Nil	Nil	428,284	428,284	428,284	428,284	428,284	2,141,420
<u>West Cat B</u>	Nil	22,000	Nil	Nil	Nil	Nil	Nil	22,000
<u>East Cat C</u>	Nil	Nil	Nil	Nil	Nil	65,346	Nil	65,346
<u>West Cat C</u>	Nil	Nil	44,000	132,000	154,000	Nil	66,000	396,000
		242,675	472,284	560,284	582,284	493,630	494,284	2,845,441



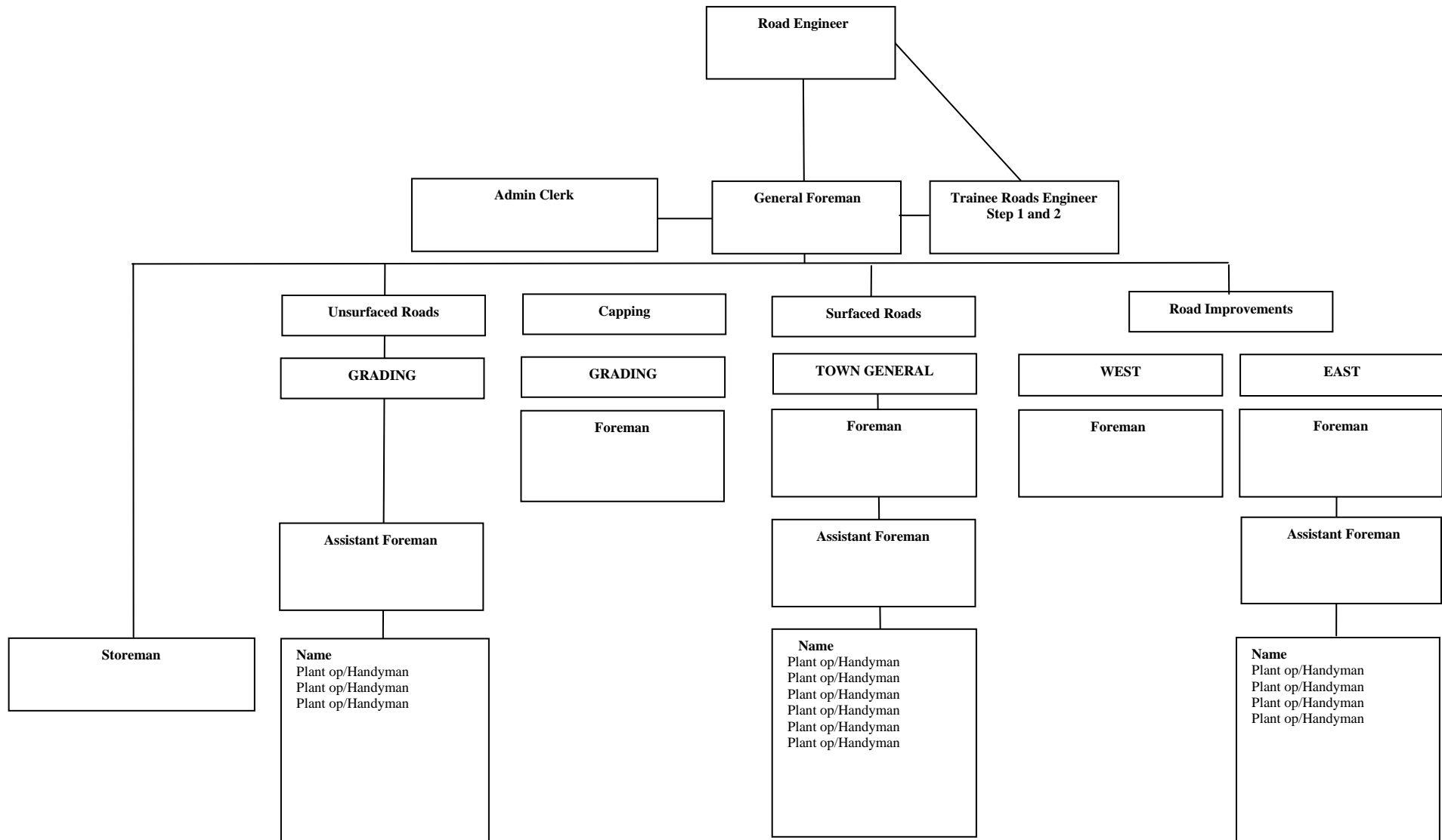
Appendix A

	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	Totals	2038/39	2044/45
Annual grading cost no surfacing (RECURRENT FUNDED)	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£2,712,108		
Annual capping cost no surfacing (CAPITAL FUNDED)	£470,000	£470,000	£470,000	£0	£0	£0	£470,000	£470,000	£470,000	£470,000	£470,000	£0	£470,000	£470,000	£470,000	£470,000	£470,000	£0	£470,000	£470,000	£470,000	£7,520,000		
Annual capping cost progressive surfacing	£470,000	£470,000	£470,000	£0	£0	£250,000	£470,000	£398,690	£333,862	£269,034	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£3,131,586		
Annual saving on capping if surfaced						£-250,000	£0	£-271,310	£-136,138	£-200,966	£-470,000	£0	£-470,000	£-470,000	£-470,000	£-470,000	£-470,000	£0	£-470,000	£-470,000	£-470,000	£-4,638,414	£-1,410,000	£-2,820,000
Annual grading cost, progressive surfacing	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£129,148	£73,926	£56,113	£38,299	£20,486	£0	£0	£0	£0	£0	£0	£0	£0	£1,351,155		
Annual saving on grading if surfaced										£-55,222	£-73,035	£-90,849	£-108,662	£-129,148	£-129,148	£-129,148	£-129,148	£-129,148	£-129,148	£-129,148	£-129,148	£-1,360,953	£-774,888	£-1,549,776
Annual surfacing cost (CAPITAL FUNDED)	£546,000	£1,465,000	£2,056,933	£2,270,980	£2,250,889	£2,343,550	£2,440,845	£2,543,004	£2,650,271	£2,762,902	£2,881,164	£3,005,339	£3,135,723	£3,760,271	£0	£0	£0	£0	£0	£0	£0	£34,112,871		
Additional bitumen cost		£0	£376,000	£376,000	£376,000	£376,000	£376,000	£376,000	£376,000	£376,000	£376,000	£376,000	£376,000	£432,400										
Annual winter maintenance cost (MPA Road)	£23,500	£23,500	£28,200	£32,900	£37,600	£42,300	£47,000	£47,000	£47,000	£47,000	£47,000	£47,000	£47,000	£47,000	£47,000	£47,000	£47,000	£47,000	£47,000	£47,000	£47,000	£564,000		
additional cost winter maint if surfaced								14100	14100	14100	14100	14100	14100	14100	14100	14100	14100	14100	14100	14100	14100	197400		
length of asphalt laid	1.3	0	4	4	4	4	4	4	4	4	4	4	4	4.6	0	0	0	0	0	0	0			
total length of asphalt laid	1.3	0	5.3	9.3	13.3	17.3	21.3	25.3	29.3	33.3	37.3	41.3	45.3	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9			
road left to asphalt	48.6	48.6	44.6	40.6	36.6	32.6	28.6	24.6	20.6	16.6	12.6	8.6	4.6	0	0	0	0	0	0	0	0			
Cumulative additional net cost of surfacing vs not surfacing	£546,000	£2,011,000	£4,067,933	£6,343,613	£8,594,502	£10,942,752	£13,388,297	£15,859,991	£18,124,124	£20,630,838	£22,968,967	£25,883,457	£28,440,517	£31,601,640	£31,002,492	£30,389,244	£29,804,196	£29,675,048	£29,075,900	£28,476,752	£27,877,604	£27,877,604	£16,735,915	£14,551,027
cumulative capping saving						£-250,000		£-71,310	£-457,448	£-658,414	£-1,128,414	£-1,128,414	£-1,598,414	£-2,068,414	£-2,538,414	£-3,008,414	£-3,478,414	£-3,478,414	£-3,948,414	£-4,418,414	£-4,888,414		£-6,298,414	£-7,708,414
cumulative grading saving										£-55,222	£-128,257.32	£-219,106	£-327,769	£-456,917	£-586,065	£-715,213	£-844,361	£-973,509	£-1,102,657	£-1,231,805	£-1,360,953		£-2,135,841	£-2,910,729

Annual Grading cost in 2012/13 equivalent to 1/3rd current maintenance money
no RPI/budget increases allowed for in grading and capping
capping cost is average for current unsealed road (29km) this would increase every cycle as more and more existing asphalt comes to the end of its life and is removed

2012
2044
32
£485,034.25

PWD HIGHWAYS ORGANISATION



PWD HIGHWAYS

