

**AUDITOR GENERAL'S DEPARTMENT
PERFORMANCE AUDIT REPORT**

MANAGING THE MAIN ROAD NETWORK

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This report was prepared by the Auditor General's Department of Jamaica for presentation to the House of Representatives.



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Audit at a Glance

MANAGING THE MAIN ROAD NETWORK



Key Data

- NWA received and spent funding of \$27.41 billion to maintain its portfolio of main roads for financial years 2016-17 to 2021-22.
- Contract negotiations resulted in a reduction of US\$68.93 million, or 27 per cent on proposed sums for implementation of six MIDP projects.

Main Findings

- 5 of the 6 MIDP projects reviewed, experienced additional costs, based on project rescoping, delays and price variations.
- Costs associated with road and pipeline works for MIDP projects increased by 9 per cent and 97 per cent respectively, over the period April 2017 to November 2021.
- 2 of the 6 MIDP projects were not closed off, although the Defects Liability Period had passed.
- Costs to rehabilitate the Junction Main Road increased by \$882.13 million due to geotechnical issues, among other factors.
- Slow progress in achieving planned infrastructural works on some corridors impacted the timely completion of SCHIP.



Conclusion & Recommendation



Project plans and budgets were often revised, resulting in significant delays and additional costs. MEGJC and NWA should adopt a whole of Government approach for the implementation of major road infrastructure projects. Further, steps should be taken at the pre-contract stages of project implementation to ensure that designs consider all pre-requisites, infrastructure needs and terrain to minimise modification during the implementation stage. This could better inform budgetary requirements.

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Auditor General's Overview

The Government's vision for its road network is aligned to the United Nations Sustainable Development Goal #9 wherein, investment in infrastructure and innovation are crucial drivers of economic growth and development. The National Works Agency (NWA) recognizes that efficient and effective main road network are essential to the achievement of Vision 2030 National Outcome #9 "Strong Economic Infrastructure". Vision 2030 Jamaica National Development Plan (NDP) highlighted that periodic and consistent routine maintenance and rehabilitation is relatively more cost-effective when compared to new road construction¹.

We conducted a performance audit to determine whether NWA's management of Jamaica's main roads was cost-effective and agile in accordance with relevant policies and guidelines to achieve value for money and the National Strategic Vision for Jamaica's road and road infrastructure. The audit focused on selected programme/projects, namely, Major Infrastructure Development Programme (MIDP), and the Junction Main Road Rehabilitation which were substantially completed, as well as the Southern Coastal Highway Improvement Project which is in progress. We found that NWA generally adhered to the Government's Procurement Guidelines related to the bidding, evaluation, and award process. However, improvements were required in terms of due diligence at the works design stage, and the planning and monitoring of the sampled projects to maximise value from money spent.

I therefore urge the NWA and the Ministry of Economic Growth and Job Creation (MEGJC) to seriously consider and implement my recommendations to improve the management and implementation of road work projects, to deliver its mandate and achieve value for money.

Thanks to the management and staff of MEGJC and the NWA, for the cooperation and assistance given to my staff, during the audit.



Pamela Monroe Ellis, FCCA, FCA
Auditor General

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Executive Summary

Approximately 5,000 kilometres of Jamaica’s main roads classified as class A, B and C¹, fall under the responsibility of the National Works Agency (NWA). The NWA’s role is to plan, build and maintain a reliable, safe and efficient main road network, flood control system and related infrastructure. According to the NWA, it aims to achieve its strategic objectives through capital investment in road construction, rehabilitation, and recurrent expenditure in maintenance of the main road network; with management of the country’s main road network being its core function. This activity is not only essential to preserve the good condition of roads under its purview but contributes to road users’ safety including that of pedestrians and facilitates greater efficiency in the movement of vehicular traffic. The Government invested \$27.41 billion for road maintenance works between 2016-17 and 2021-22 and through the NWA engaged the services of contractors and consultants to carry out these and capital road projects. The efficient management of projects is necessary to achieve the desired objectives.

The performance audit was conducted to determine whether NWA has managed the implementation of capital projects effectively, efficiently, and economically to maintain the country’s main road network to achieve value for money.

The key findings and recommendations are outlined below:

Key Audit Question	Is NWA managing Jamaica’s main road network in an efficient and cost-effective manner?
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What We Found

1. **NWA fully implemented five of the six recommendations from our 2011 special audit report on the Jamaica Development Infrastructure Programme (JDIP), the precursor to the MIDP.**
 - i. NWA implemented the use of Public Procurement Commission (PPC) registered contractors for sub-contracted works utilising the limited tender methodology (LTM);
 - ii. NWA complied with the requirement for sub-contractors to be registered or contractually associated with a contractor with the PPC² on the Major Infrastructure Development Programme (MIDP) and the Southern Coastal Highway Improvement Project (SCHIP);
 - iii. NWA’s records detailed the negotiation of contract prices between the main contractor and the MEGJC for the MIDP. For instance, we noted that GOJ negotiations³ with the

¹ Arterial or Class A roads, Secondary or Class B roads and Tertiary or Class C roads

² Instructions to Tenderers ‘Eligibility Requirements’, “...Tenderers must be registered or shall be contractually associated with a contractor registered with the Public Procurement Commission (PPC) in Grade 1 of the “Pipe Laying” Category and must have a valid Tax Compliance Certificate (TCC)”.

³ GOJ negotiating team comprises NWA, MOFPS, MEGJC and MTM.

China Harbour Engineering Company Limited (CHEC) enabled a US\$68.93 million, or 27 per cent reduction on the initial proposed sub-contract sums for sampled projects;

- iv. The Cabinet-approved governance frameworks for MIDP and SCHIP outlined MEGJC/NWA’s adherence to specific conditions of their contracts, duration, and scope of works to be done. In addition, this framework outlines the Employer (MEGJC), Engineer (NWA), main contractor (CHEC) and sub-contractor obligations as reflected in the respective contract agreements;
- v. NWA established project steering committees for its major projects and prepared periodic monitoring reports and minutes, regarding deliberations on the progress and implementation status of major projects.
- vi. The NWA also provided clarification regarding applicability of the contractor’s levy in relation to the recovery of US\$24,000 and remittance to Tax Administration Jamaica (TAJ). NWA explained that during the JDIP project, CHEC utilized work products (maps, drawings, and studies; etc) that NWA had prepared, for which CHEC was expected to compensate the Agency. In settlement of its obligation, CHEC made refurbishment improvements at the agency's corporate office, procured the necessary services, completed the works, and paid for the contracted services directly. Hence, there was no outstanding contractor's levy, given the procurement of materials by CHEC and payment for works using third-party personnel.

2. **Based on feasibility studies and cost-benefit analyses, NWA recommended seven major roads for infrastructure development and rehabilitation under MIDP. Of the six road projects selected for review, we found that 5 experienced additional time and costs, based on project rescoping, implementation delays and price variations.** The Mandela Highway, Constant Spring Road, Hagley Park Road, and Ferris Cross to Mackfield all experienced significant rescoping during the construction and rehabilitation phases of works. Consequently, additional costs for four of the projects totalled US\$16.54 million, while NWA saved US\$351,860 (1.7 per cent) in respect of the Marcus Garvey Drive Improvement Project.

NO	Projects	Road Works		
		Original Contract Sum (US\$)	Increase Cost (US\$)	Additional Time (months)
1	Hagley Park Road	56,496,758	3,987,982	16
2	Constant Spring Road	19,065,913	5,193,958	13
3	Mandela Highway	63,997,883	3,200,237	16
4	Ferris Cross to Mackfield	24,983,130	4,510,874	3
5	Barbican Road Upgrade	4,351,130	-	15
	Subtotal	168,894,814	16,893,051	
6	Marcus Garvey Drive	20,499,060	(351,860)	8
	TOTAL	189,383,875	16,541,191	

Source: AuGD’s compilation and analysis of NWA’s information



3. **GOJ’s decision to replace water and sewer pipelines after the commencement of works to expand the Mandela Highway, Constant Spring, Barbican, and Hagley Park roads, contributed to additional project costs of US\$46.9 million.** NWA was responsible for determining the scope of road works and project cost, by negotiating the bill of quantities and prices with the main contractor, CHEC. The negotiations were undertaken during a two-year period, January 2016 to January 2018. The original scope which was limited to expanding the capacity of the existing road infrastructure, under the control of NWA, did not consider the impact of the National Water Commission (NWC) managed underground water and sewer lines. During the performance of the civil works, the project encountered leaking pipelines that would negatively impact the rehabilitated road infrastructure. As such, in October 2016 the GOJ required interested parties NWA, NWC, CHEC, MoFPS to explore options for funding these and other major works in which both the NWA and NWC had interest⁴. NWA indicated that the condition of existing utilities underground was unknown prior to commencement of construction however, based on the potential risk of pipeline failures due to aging infrastructure, and risk of digging up the road to rehabilitate these pipelines the Government took the decision to expand the road works to include ancillary (waterline and sewerage) works. In March 2018 MEGJC and CHEC entered into an agreement for US\$46.9 million (referred to above) to ensure that NWC’s infrastructure be replaced and of sound operation before the completion of the road construction.

4. **NWA incurred higher than anticipated costs of US\$3.9 million for boundary and ancillary works for the Constant Spring and Hagley Park Road projects.** NWA indicated that provisional costings were informed by ‘best estimates’ based on the length of the road, the type of wall and associated ancillary works. In the case of the Constant Spring and Hagley Park Road projects, there was a difference between provisional and actual measurement and costs, as the actual cost for boundary walls and the widening of roads was higher by US\$3.9 million (or 158 per cent) relative to the original contracted provision of US\$2.5 million.

Project	Financial Exposure (US\$M)			
	Provisional Sum as per contract	Excess above provisional sum	Actual Cost US\$	Increase as a % of Provisional Sum
Constant Spring Road	950,000	2,106,082	3,056,082	222%
Hagley Park Road	900,000	984,282	1,884,282	109%
	664,450	884,153	1,548,603	133%
Total	2,514,450	3,974,517	6,488,967	158%

Source: AuGD’s compilation of NWA’s information⁵

⁴ By way of **Cabinet Decision (#37/16)**, the Cabinet instructed that the National Water Commission (NWC), along with the NWA, the MOFPS and China Harbour Engineering Company, should explore options for funding these and other major works in which both the NWA and NWC had interest”.

⁵ All dollar amounts are denominated in Jamaican currency, unless otherwise indicated.



5. **Geotechnical, hydrological, and geological issues, additional excavation, construction of new retaining walls, additional drainage, among other factors, led to additional costs totalling \$882.13 million for the Junction Main Road rehabilitation works, relative to the original contract cost of \$597.8 million.** In 2013, NWA prepared design drawings for the project, which were utilised to prepare the scope of work for the contract awarded in September 2017, to carry out the road rehabilitation works. Also, in September 2017, NWA engaged an engineering consultant to review the 2013 drawings. The Consultant's report (October 2017) highlighted major shortcomings such as the absence of pavement structures, culvert drainage and noted that the existing rubble concrete retaining wall failed design check for bearing capacity and sliding. Additionally, the concrete wall reinforcement and footing flexure at Chovey area failed the design check for earthquake.

Two years after construction work started, Cabinet, in November 2019, gave approval⁶ for adjustment and variations to the works contract signed in September 2017. The adjustment to the contract was driven by the introduction of works which were not contemplated in the original design of the project. The geological conditions required extensive excavation of hard rock, which resulted in increased transportation costs. Also, NWA records indicated that during the implementation phase of the project, a truer picture of the hydrological conditions as it relates to the movement of water on the land through existing channels and subsurface was revealed. Consequently, the engineer consultant report identified the need for slope protection works (retaining walls), additional and improved drainage structures to protect the road from erosion and provide safety to motorists and residents.

- i. Based on subsequent adjustments to the design, to include works related to the construction of retaining walls and improved drainage, NWA paid an additional \$246.8 million. Other payments to the contractor amounted to \$273.20 million for compensable extension of time, increased labour and materials costs, while \$40.79 million was paid to the Consultant for supervisory costs.
- ii. The NWA also negotiated a separate contract in the amount of \$321.35 million, for additional slope stabilisation construction works (Chovey), which when combined with the additional costs incurred under the contract for **Tom's River to Agualta Vale - Package 1 (Agualta Vale to Broadgate)**, brought total payments to the contractor and consultant to \$882.13 million.

⁶ Cabinet Decision 37/19 dated November 25 ,2019

CONTRACT	COST INCREASE FACTORS	ISSUE	COSTS (\$M)
TOM'S RIVER TO AGUALTA VALE – PACKAGE 1	Project Implementation delays	Delay in land acquisition to enable construction works and unforeseen geotechnical and geological issues which resulted in delays (prolongation cost)	70.05
	Price variation of labour and material costs	Resultant price increases in labour and materials costs due extension of time up to July 2019.	203.15
	Design Changes	Construct new retaining walls for slope protection and improved /additional drainage structures to remedy unfavourable soil conditions, geological and hydrological conditions during the construction phase.	246.79
	Sub-Total		519.99
	Price variation of labour costs	Consultant's supervisory service cost from November 2018 to June 2020, due to time extension on the works contract.	40.79
	Sub-Total		560.78
	Chovey 'Slope Stabilization Works' contract	Contracted works (2021) involved construction of reinforced retaining wall and improved drainage to allow for construction of the roadway along the Chovey road section.	321.35
	OVERALL TOTAL		882.13

Source: AuGD's compilation of NWA's information

- iii. As at March 2022, approximately 39 months after the original completion date of January 2019, the contract was recorded at a 98.5 per cent overall completion rate with total expenditure of \$987.43 million⁷. The required 'Taking Over Inspection' was conducted on March 31, 2022, as evidenced by NWA status report (as of March 31, 2022). The works for the Chovey stabilization were recorded as 68 per cent complete as of March 31, 2023, with expected substantial completion by April 2023.

Details	TRAV (Toms River to Agualta Vale - Package 1) J\$	Chovey (Slope Stabilization Works) J\$	Total Cost Junction Main Road Rehabilitation Works J\$
Contract sum (Revised)	1,117,759,591	321,347,656	1,439,107,247
Expenditure to date -March 2023	1,021,132,714	148,140,735	1,169,273,449
Expenditure as % of Contract sum	91%	46%	81%
Percentage of Works completed	98.5%	68%	

Source: AuGD's compilation and analysis of NWA's information

⁷ Status Report as of March 31, 2022

Southern Coastal Highway Improvement Project (SCHIP)

6. **The SCHIP commenced approximately three years after the contract was signed.** This is in a context where GOJ had not satisfied all the conditions necessary to initiate the first disbursement under the loan agreement with China EXIM Bank, which would have made GOJ's contract with the contractor, CHEC, effective. The signed agreement between GOJ and CHEC gave SCHIP an initial duration of 36 months, with a revised completion date of October 2022. However, the revised completion date was missed due to the following:

i. Land Acquisition

The main contract stipulated that the Employer (MEGJC) hand over the Right of Way (ROW) to the Contractor (CHEC) free of encumbrances. NWA would be responsible for the coordination of land acquisition and relocation of utilities within the ROW, to allow the Contractor to proceed unhindered. Up to the date of our assessment (April 2023) NWA did not hand over 108 (19.5 per cent) of 553 parcels to the Contractor (CHEC).

ii. Relocation of Utility poles

NWA's records also revealed that the outstanding relocation of utility poles contributed to delays across the sub-contracts. This was exacerbated by delays experienced by the electricity utility provider in the sourcing of the requisite materials to relocate their assets along the project corridor. The slow approval of pipeline requisitions also contributed to delays. The NWA, in its response stated: "Pipeline material has to be imported as it is uneconomical to have such quantity in storage".

iii. Upgrading of NWC's water and sewerage pipelines

Cabinet approved the extension of project timeline to permit the upgrading of NWC's water and sewerage pipelines that ran along the project corridors and instructed that the related works be carried out in tandem with the road works. The project period was extended by 150 days and 90 days, to allow for the completion of the follow-on pipeline works.

7. **Based on the challenges, the pace of implementation of works along the Yallahs Bridge to Port Antonio Road and Morant Bay to Cedar Valley Road (Part B roads) was slower than anticipated.** The Harbour View to Yallahs Bridge component with planned completion date of October 2022, was reported as 92 per cent completed, as of March 2023. The five packages under Tranche 1 of the Yallahs Bridge to Port Antonio [Part B (iii)] component averaged 88 per cent completion, with time overrun ranging from 11 to 19 months when compared to the planned completion date. While the five packages under Tranche 2, which averaged 45 per cent completion rate, had time overrun ranging from 8 to 10 months (**Appendix 4**). Both road and pipeline works under Tranches 1 & 2 were sub-contracted by the main contractor to local contractors. Review of NWA records showed that delays in land acquisition, outstanding

relocation of utility infrastructure, combined with the COVID-19 pandemic and flood rains in 2020⁸, negatively impacted the progress of works. In April 2023, MEGJC indicated that the main contractor, CHEC, would continue to work with its subcontractors who are not performing in keeping with sub-contractual agreements, i.e., slow performance and may take over aspects of the works to ensure completion in a timely manner. Against this background, the portfolio Ministry of Economic Growth and Job Creation (MEGJC) informed Cabinet of a possible revised completion date of March 2024. Regarding Tranche 3, CHEC and GOJ modified (April 3, 2023) the contract agreement to allow CHEC to carry out the works itself, instead of mandating the subcontractor of the last 5 packages (Tranche 3).

OPPORTUNITIES TO IMPROVE

- Going forward, MEGJC and NWA should adopt a whole of Government approach for the implementation of major road infrastructure projects. In this regard, the strengthening of collaborative efforts with other executing agencies such as the National Water Commission and other major utility companies to plan and implement high risk road projects, can improve awareness of the major project risk and improve timely completion, hereby improving achievement of value for money.
- Further, both entities should take steps at the pre-contract stages of project implementation to ensure that designs consider all pre-requisites, infrastructure needs and terrain to minimise modification during the implementation stage. This could better inform budgetary requirements.

⁸ Cabinet Submission - Additional Budgetary Support for the SCHIP, item 2.5, page 2

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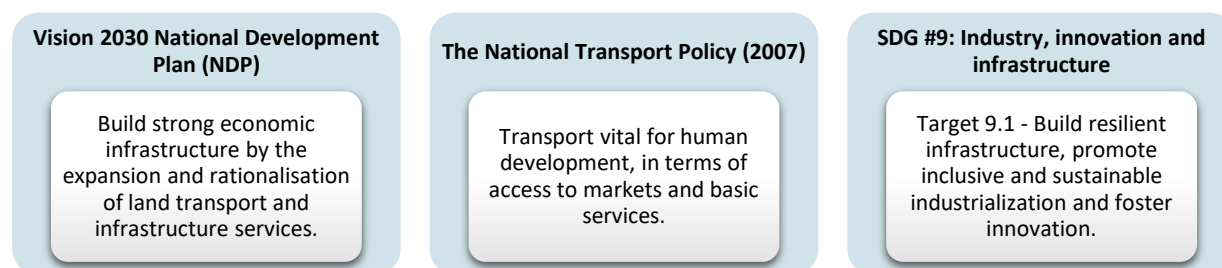


Background

GOJ's vision for the country's road network

1.1. Vision 2030 Jamaica National Development Plan (NDP) is implemented through updated Medium-Term Socio-Economic Policy Frameworks (MTFs) which identify the priority outcomes, strategies, and actions for each three-year period from 2009 and through to 2030. To date, five three-year Medium-Term Policy Frameworks have been prepared for the periods 2009-2012, 2012-2015, 2015-2018, 2018-2021 and 2021-2024. The Government's Vision for its main road network is also aligned to the United Nations Sustainable Development Goal #9 wherein, investment in infrastructure and innovation are crucial drivers of economic growth and development (**Figure 1**).

Figure 1 GOJ vision for main road network



Source: AuGD's compilation

1.2. The MTFs articulate the need for the expansion of economic infrastructure, which is dependent on the development of physical infrastructure. The portfolio ministry for works, Ministry of Economic Growth and Job Creation (MEGJC) is responsible for the formulation and implementation of policy relating to these subject areas. MEGJC also plays a monitoring role to ensure adherence to the policies, and that the operations of these entities are in accordance with the Government of Jamaica's guidelines and regulations. NWA is directly responsible for Jamaica's main road network, consisting of approximately 5000 km of class A, B and C roads⁹. The NWA also has 736 bridges on its main road network.

1.3. The GOJ's MTFs indicate the responsibilities of the Ministries, Departments and Agencies (MDAs), in terms of the planning, and execution of road projects. Road projects range in size from repair works to large road projects, and are funded from various sources:

- Consolidated Fund
- Loan financing with the Export-Import Bank of China (China EXIM Bank)
- Multilateral funding from international bodies

⁹ Arterial or Class A roads, Secondary or Class B roads and Tertiary or Class C roads

1.4. The Estimates of Expenditure for FY2018-19 to FY2022-23 highlighted the funding sources for the construction, rehabilitation, and maintenance for the seven road projects assessed in this audit (**Table 1**). Maintenance and reconstruction activities for MIDP and SCHIP were financed by a loan facility from China EXIM Bank and counterpart funding from the Government of Jamaica (GOJ) through the Consolidated Fund. The Junction Main Road rehabilitation was funded solely from the Consolidated Fund.

Table 1 Estimates of Expenditure for road works 2018 -2023

BUDGET	2022-23	2021-22	2020-21	2019-20	2018-19
	\$(‘000)	\$(‘000)	\$(‘000)	\$(‘000)	\$(‘000)
Construction and Repairs (Parochial & Main Roads)	31,646,115	34,804,388	17,557,616	26,989,524	36,222,717
Rehabilitation (Farm Roads)	670,000	650,000	1,350,000	752,000	800,000
TOTAL	32,316,115	35,454,388	18,907,616	27,741,524	37,022,717
National Budget (Capital & Recurrent)	912,003,440	893,048,002	850,329,299	859,071,631	802,563,141
<i>Road allocation as % of National Budget</i>	3.54%	3.97%	2.22%	3.23%	4.61%

Source: GOJ Estimates of Expenditure

1.5. The Government provides funding to NWA to maintain the main road network. NWA has an annual planning budget for routine and periodic maintenance, and emergency road work, which is defined by experts at the entity. However, over the review period, allocations for road maintenance were constrained by budget ceilings given Government’s limited fiscal space. For the six-year period examined (2016-17 to 2021-22), total subvention for road maintenance amounted to \$27.41 billion, while the annual maintenance budget approved for NWA by Ministry of Finance and the Public Service (MoFPS) amounted to \$27.52 billion. Although NWA received \$1.91 billion more than original budget requests, the excess largely related to additional funding through supplementary budgets to address emergencies such as land slippage and flooding caused by tropical storms (**Table 2**).

Table 2 Funding to NWA for maintenance of main road network

Fiscal Year	MoFPS Budget Ceiling	Approved Budget	Budget Request	Subvention Received	Difference (Shortfall)/Excess ¹⁰	(Shortfall)/excess as percentage of subvention received
	\$B	\$B	\$B	\$B	\$B	(%)
2021-22	4.80	7.20	7.20	6.80	-0.40	-5.88%
2020-21	3.30	4.50	6.20	4.30	-1.90	-44.19%
2019-20	2.80	5.80	8.00	6.30	-1.70	-26.98%
2018-19	2.80	5.40	3.00	6.40	3.40	53.13%
2017-18	0.60	3.90	0.60	2.90	2.30	79.31%
2016-17	0.52	0.72	0.50	0.71	0.21	29.58%
TOTAL	14.82	27.52	25.50	27.41	1.91	6.97%

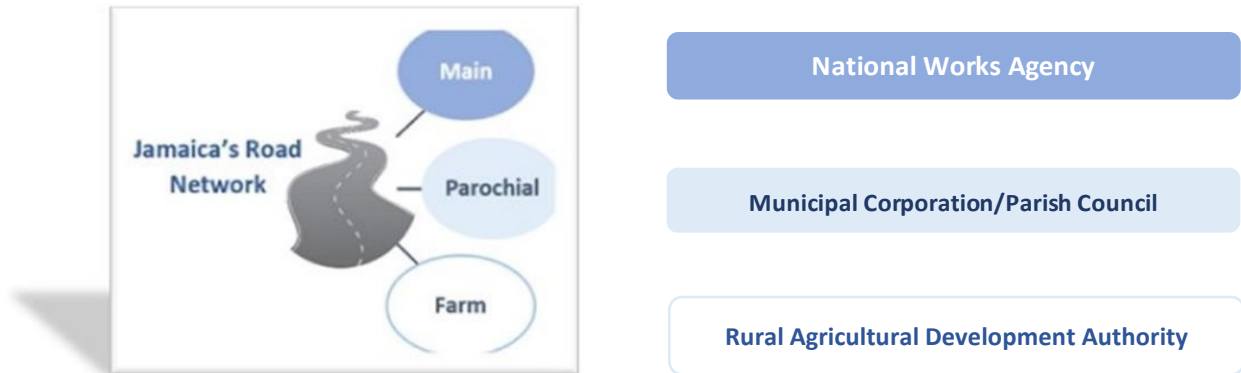
Source: AuGD’s compilation and analysis NWA information and GOJ Estimates of Expenditure

¹⁰ Difference between subvention received and budget requested.



Why we conducted this Audit:

1.6. The Government of Jamaica (GOJ) continued to implement major road repairs and rehabilitation projects over the review period, through various programmes managed by NWA from JDIP (August 2009) to MIDP (January 2013) to SCHIP (June 2016). This audit represents our final series on the management of Jamaica’s road network, having tabled reports on agricultural and selected parochial road networks in 2019 and 2020.



1.7. The audit sought to determine whether NWA was managing selected projects efficiently and effectively in accordance with relevant policies and guidelines, to achieve value for money and the National Strategic Vision for Jamaica’s road and road infrastructure. We also sought to assess MEGJC/NWA’s progress towards implementation of the recommendations in our 2011 special audit report on JDIP, the precursor of the MIDP.

Audit Objective, Scope, and Methodology

1.8. An important audit objective was to assess whether the National Works Agency’s (NWA) management of Jamaica’s main roads was cost-effective and agile. In this regard, this audit focused on the National Works Agency’s management of the MIDP and the Junction Main Road rehabilitation and a preliminary review of the SCHIP. We selected these projects for our audit given their economic and social impacts.

1.9. We planned and conducted our audit in accordance with standards issued by the International Organization of Supreme Audit Institutions (INTOSAI), which are applicable to Performance Audits. We gained knowledge of NWA’s operations through a review of internal and external information; interviews with management and staff; observations, and analytical reviews. We also conducted a risk assessment and developed an issue analysis with the questions that the audit should answer, to form our opinions and conclusions. The accounting and operational records were examined for the review period, April 2016 to March 2023; but augmented for completeness, by reviews of transaction beyond this period, where relevant.

1.10. This report was prepared in accordance with professional auditing standards and sought to inform Parliament and the public in their assessment of whether main roads were being rehabilitated/maintained in line with quality standards.

Part Two

Status of Implementation of AuGD's Recommendations - 2011 Special Audit Report of the Jamaica Development Infrastructure Programme (JDIP)

2.1 In 2011, the AuGD conducted a performance audit of the Jamaica Development Infrastructure Programme (JDIP), which identified that the Programme was not executed in a transparent manner. This was evidenced by inadequate capital project planning, monitoring and record keeping. The recommendations made in the Special Audit Report issued in 2011, were geared towards improvements in monitoring, accountability and strengthening of the procurement and contract management processes.

2.2 We found that five of the six recommendations were fully implemented.

- a) NWA implemented the use of Public Procurement Commission (PPC) registered contractors for sub-contracted works utilising the limited tender methodology (LTM);
- b) NWA complied with the requirement for sub-contractors to be registered or contractually associated with a contractor with the PPC¹¹ on the Major Infrastructure Development Programme (MIDP) and the Southern Coastal Highway Improvement Project (SCHIP);
- c) NWA's records detailed the negotiation of contract prices between the main contractor and the MEGJC for the MIDP;
- d) The Cabinet-approved governance frameworks for MIDP and SCHIP outlined MEGJC/NWA's adherence to specific conditions of their contracts, duration, and scope of works to be done. In addition, this framework outlines the Employer (MEGJC), Engineer (NWA), main contractor (CHEC) and sub-contractor obligations as reflected in the respective contract agreement;
- e) NWA established project steering committees for its major projects and prepared periodic monitoring reports and minutes, regarding deliberations on the progress and implementation status of major projects.

2.3 The NWA also provided clarification regarding applicability of the contractor's levy in relation to the recovery of US\$24,000 and remittance to Tax Administration Jamaica (TAJ). NWA explained that during the JDIP project, CHEC utilized work products (maps, drawings, and studies; etc) that NWA had prepared, for which CHEC was expected to compensate the Agency. In settlement of its obligation, CHEC made refurbishment improvements at the agency's corporate office, procured the necessary services, completed the works, and paid for the contracted services directly. Hence, there was no outstanding

¹¹ Instructions to Tenderers 'Eligibility Requirements', "...Tenderers must be registered or shall be contractually associated with a contractor registered with the Public Procurement Commission (PPC) in Grade 1 of the "Pipe Laying" Category and must have a valid Tax Compliance Certificate (TCC)".

contractor's levy, given the procurement of materials by CHEC and payment for works using third-party personnel.



Part Three

Major Infrastructure Development Programme (MIDP)

- 3.1** This Section focuses on the following:
- Economic feasibility (cost benefit analysis) of road major projects,
 - Design of major projects,
 - Selection and award of the main contractor and sub-contractors, and
 - Monitoring of contracted works.

NWA conducted a feasibility study to select roads for the MIDP.

3.2 In February 2013, the Ministry of Transport and Works and the National Works Agency conducted an engineering feasibility study on Jamaica's road projects for funding consideration by China EXIM Bank for Major Infrastructure Development Programme (MIDP). The feasibility study recommended seven roads based on established criteria¹².

No.	Recommended Roads
1	Mandela Highway
2	Marcus Garvey Drive
3	Hagley Park Road
4	Constant Spring Road
5	Barbican Road
6	Ferris Cross – Mackfield
7	Alexandria to Brown's Town

Loan financing and contract agreement

3.3 On January 19, 2013, contingent on the agreement to engage a contractor 'preferably' from China, the GOJ, through the Ministry of Economic Growth and Job Creation (MEGJC), entered into an agreement with CHEC¹³, to execute the Major Infrastructure Development Programme (MIDP).

3.4 Thereafter, in August 2013, the GOJ (represented by the Ministry of Finance and the Public Service) and the China EXIM Bank signed a loan agreement to finance the infrastructure programme. The terms of the agreement provided for a contract price of US\$352.94 million allocated as under:

- China EXIM bank - US\$300 million (J\$30.58 billion)
- GOJ counterpart - US\$52.94 million (J\$5.40 billion)

3.5 The contract required CHEC to design, rehabilitate, conduct island wide patching of roads, construct critical retaining walls and bridges, and conduct river training. The NWA, on behalf of the MEGJC is the project manager/engineer implementing the programme.

¹² Criteria: · Regional importance · Connectivity of route · Traffic Volume · Condition/ in need of critical intervention · Critical infrastructure affected · Corridors that will support the governments development objectives.

¹³ In February 2013, Cabinet approved the engagement of CHEC as the contractor for the MIDP as per Cabinet Decision No 8/13 dated February 25, 2013.

GOJ negotiation with CHEC resulted in reduction of US\$68.9mn. (27 per cent) of the initial proposal.

3.6 We selected for review, six of the seven major civil works projects (US\$189.4 million), which comprised 54 per cent of the combined contracted amount of US\$352.94 million. Based on GOJ's negotiations¹⁴ with CHEC which was undertaken during a two-year period (January 2016 to January 2018), there was a reduction of US\$68.93 million, or 27 per cent in the initial proposed contract sum submitted by CHEC (Table 3).

Table 3 GOJ's Negotiating Team for MIDP Contracts.

Project	CHEC Initial Proposal (US\$)	NWA Estimate (US\$)	Final Offer Price (US\$) ¹⁵	Contract Sum (US\$)	Difference between CHEC initial Offer and Contract Sum (Financial Impact)	
					US\$	%
Hagley Park Road	69,385,762	53,724,641	56,496,758	56,496,758	12,889,004	18.58
Constant Spring	20,698,441	19,175,000	19,065,913	19,065,913	1,632,527	7.89
Mandela Highway	98,479,895	74,509,337	63,997,884	63,997,884	34,482,011	35.01
Barbican Road ¹⁶	6,294,486	3,984,813	4,351,130	4,351,130	1,943,356	30.87
Ferris Cross to Mackfield	32,988,557	23,176,407	24,983,130	24,983,130	8,005,427	24.27
Marcus Garvey Drive	30,479,023	16,592,973	20,499,060	20,499,060	9,979,963	32.74
TOTAL	258,326,164	191,163,171	189,393,875	189,393,875	68,932,289	26.68%

Source: Extract from NWA's records

Economic Assessment of MIDP

3.7 A cost-benefit analysis was undertaken prior to determining specifications and timeline for works. NWA also conducted economic analyses of the identified roads, calculating the required improvement in Vehicle Operating Cost (VOC) from the completion and use of the rehabilitated roads and by extension supports economic growth. STATIN's¹⁷ Gross Domestic Product (GDP) Quarterly Reports disclosed that the construction industry contribution to GDP from the construction activities associated with the MIDP ranged from 1.1 per cent to 3.7 per cent over the period April -June 2017 to January-March 2020.

Ancillary Works – NWC waterline and sewer line installation

3.8 During the performance of the civil works, the project encountered leaking pipelines that would negatively impact the rehabilitated road infrastructure. NWA indicated that the condition of existing utilities underground would not be known prior to commencement of construction. In October 2016 the GOJ required interested parties NWA, NWC, CHEC, MoFPS to explore options for funding these and other major works in which both the NWA and NWC had interest¹⁸. The NWC, which is responsible for

¹⁴ GOJ negotiation team comprised of officials from MTM, NWA and the MoFPS.

¹⁵ Agreed to signed Statement of Negotiation. Total price includes direct costs, owner's contingency and indirect cost/overheads/profits ranging from 22.5% to 15%.

¹⁶ The final agreed offer price of US\$4,462,697.90 was further revised (discounted by 2.5%, US\$111,567.43) to US\$4,351,129.58 as per Cabinet Decision No. 23/17, dated June 05, 2017.

¹⁷ Statistical Institute of Jamaica

¹⁸ By way of Cabinet Decision (No. 37/16), the Cabinet instructed that the National Water Commission (NWC), along with the NWA, the MOFPS and China Harbour Engineering Company, should explore options for funding these and other major works in which both the NWA and NWC had interest".

the technical specifications and approval of estimates for water and sewerage pipeline works¹⁹ was unable to finance a project of this magnitude and based on the potential risk of pipeline failures due to aging infrastructure, and to prevent rehabilitated road works from deterioration, the Government took the decision to expand the road works to include ancillary waterline and sewerage works.

3.9 In March 2018 MEGJC and CHEC entered into an agreement for US\$46.9 million to ensure that NWC's infrastructure would be replaced and of sound operation before the completion of the road construction. This decision essentially transformed the project from a road-only agreement to one that incorporated ancillary (water and sewerage pipeline) elements. Accordingly, CHEC entered into sub-contract agreements with local contractors for ancillary works as a component of the MIDP projects. This was in accordance with section 3.2 (E) of the Cabinet- approved MIDP Governance Framework which enabled CHEC to select sub-contractors for the main component (Group A) works.



3.10 Further, NWA indicated that the changes to the agreement (introduction of water, sewerage pipeline works, and fibre optic ducting) enhanced the achievement of the project objectives and overall effectiveness of the MIDP as it effectively prevents rehabilitated road works from deterioration due to damage of the road structure by utility companies having to install underground utility conduits. This was in keeping with GOJ's thrust towards ensuring that necessary utilities are in place when new roads are being built.

MIDP Projects- time overruns of 3 to 16 months and increased cost of US\$16.5 million and J\$3.7 billion

3.11 The original contract covered the construction of roads, and in seeking to avert any adverse impact on the existing water supply infrastructure, the Government expanded the project's scope to include installation of new water supply, sewerage, and fibre optic cable. Consequently, NWA experienced net increased costs of US\$16.5 million for the road work contracts, nine per cent more than the original contract sum of US\$189.4 million. The increased costs of J\$3.7 billion for the ancillary works, reflected a 97 per cent increase above the original contract sum of J\$3.8 billion, over the period April 2017 to November 2021 (**Table 4**).

¹⁹ Funds are paid to CHEC for disbursement as per existing MIDP arrangements inclusive of mark-up.

Table 4 Increase in cost and time on road and ancillary works

NO	Projects	Road Works 			Ancillary/Pipeline Works 		
		Original Contract Sum	Increase Cost US\$	Additional Time (mths)	Original Contract Sum J\$	Increase Cost J\$	Additional Time (months)
1	Hagley Park Road	56,496,758	3,987,982	16	755,560,854	1,263,235,151	6
					99,565,500	127,582,333	9
2	Constant Spring Road	19,065,913	5,193,958	13	1,263,740,009	799,214,071	9
3	Mandela Highway	63,997,883	3,200,237	16	493,945,983	906,523,015	5
					505,928,973	329,912,793	5
					184,873,491	84,498,053	11
4	Ferris Cross to Mackfield	24,983,130	4,510,874	3	362,281,650	187,882,543	3
5	Barbican Road Upgrade	4,351,130	-	15	131,597,650	16,375,243	15
					40,364,680	4,680,427	-
Subtotal		168,894,814	16,893,051		-	-	-
6	Marcus Garvey Drive	20,499,060	(351,860)	8	-	-	-
TOTAL		189,383,875	16,541,191		3,837,858,790	3,719,903,629	
<i>Increase as percentage of original contract sum</i>			<i>9%</i>			<i>97%</i>	

Source: AuGD's compilation of NWA's information

The extension in the scope of Mandela Highway Project resulted in accompanying cost of US\$4.05 million (net)

3.12 NWA undertook additional roadworks (amounting to US\$4.05 million – (Table 5), through extension of the roadway from the Six Miles to Duhaney Park, as well as alignment of road connections in the Ferry area (Tom Cringle Road) and expansion of the Portmore entrance. NWA originally contracted the scope of works for the realignment, from Six Miles to Caymanas Toll Road Entrance at a cost of US\$63.9 million, in July 2016. NWA advised that the additional paving works from Duhaney Drive up to Six Miles was necessary due to damaged and leaking pipelines, while the Portmore Crossing required overlay works.

Table 5 Examples of factors contributing to increased project costs

Project	Issues on road works sub-contracts Additional road works, not in original project scope	Financial Exposure (US\$M)		
		Cost as per BQ	Increased cost	Total Cost US\$
Mandela Highway	Extending the roadway from Six Miles areas to Duhaney Park, Q ramp road connection to Ferry (Tom Cringle Road) and expansion to Portmore entrance.	0	4,053,162	4,053,162
Constant Spring Road	Changes due to new elevations of water, sewer and drainage resulted in the raising of the road level, and additional drainage and pipe works.	0	1,917,703	1,917,703
Hagley Park Road	Removal and replacement of boundary wall commercial signs and other associated electrical works, which were not included in the initial contract value.	0	1,033,289	1,033,289
Ferris Cross to Mackfield	Relocation of boundary walls and additional drainage works, etc. resulting in additional payment of US\$4.5 million to the contractor.	0	4,501,311	4,501,311
TOTAL		0	11,505,465	11,505,465

Source: AuGD's compilation and analysis of NWA's information

NWA relied on 'best estimates' to inform the initial costing of some items on the Bill of Quantities

3.13 NWA stated that provisional costings were based on the length of the road, the type of wall and associated ancillary works. In the case of the Constant Spring and Hagley Park Road projects, there was a difference between provisional and actual measurement and costs, as the actual cost for boundary walls and the widening of roads was higher by US\$3.9 million (or 158 per cent) relative to the original contracted provision of US\$2.5 million (**Table 6**).

Table 6 Underestimation of provisional costs

Project	Issues on road works sub-contracts	Financial Exposure (US\$M)			
	Increased work due to under-estimation	Provisional Sum	Increased cost	Total Cost	Increase as a % of Provisional Sum
Constant Spring Road	Increase (222 per cent) in costs to remove and replace boundary walls. NWA estimated a provisional sum of \$950,000.	950,000.00	2,106,082	3,056,082	222%
Hagley Park Road	Increase (109 per cent) in boundary wall relocation and associated road widening works. NWA estimated a provisional sum of \$900,000.	900,000.00	984,282	1,884,282	109%
	Increase (133 per cent) in the supply and installation of permanent (US\$747,522.65) and temporary traffic signals (US\$136,630.52).	664,450.00	884,153	1,548,603	133%
	Total Variation	2,514,450.00	3,974,517	6,488,967	158%

Source: AuGD's compilation and analysis of NWA's information

3.14 Notwithstanding, NWA generally attributed variations which resulted in increases in contract sums and time, to a need for additional works to address unforeseen, unavoidable difficulties encountered during the implementation of the contract. In the judgment of NWA, these works could not have been anticipated during the planning and pre-contract phase (E.g., leaking pipes on Mandela). Also, NWA indicated that in its opinion, there were changes that enhanced the achievement of the project/contract objectives and overall effectiveness (E.g., introduction of water and sewerage pipeline works to prevent rehabilitated road works from deterioration)²⁰.

Project closure

3.15 Up to one year after the Defects Liability Period had passed, two of the projects were not closed as the contractor had not completed all outstanding correction of defects (**Appendix 2²¹**). Notwithstanding, to protect the Government's interest no retention money was released.

Name of Project	End of Defects Liability Period
Hagley Park Road Improvement	September 2021
Constant Spring Road Improvement	May 2021

²⁰ Consistent with GOJ Handbook of Public Sector Procurement Procedures, Volume 2

²¹ Unsigned list of outstanding correction provided by NWA in April 2023

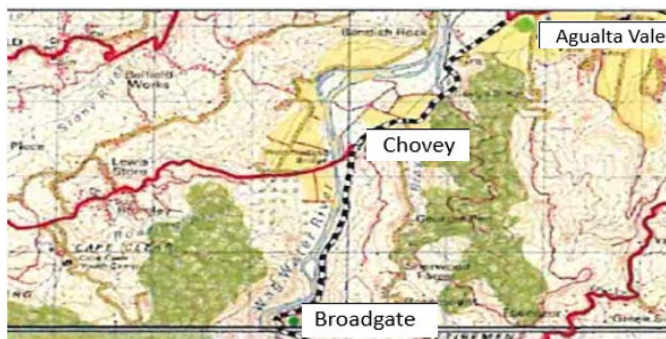
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Part Four

Junction Main Road Rehabilitation Project (Tom's River to Agualta Vale: Package 1 -Agualta Vale to Broadgate)

Project introduction and overview

4.1 In August 2016, Cabinet approved the award of a contract to Contractor **No. 6** for \$597.77 million, to undertake road rehabilitation upgrade along the corridor²² from Agualta Vale to Broadgate - Package 1 (4.8km) in the parish of Saint Mary²³. The value of the contract was almost in line with NWA engineer's estimate of \$598.6 million²⁴.



Source: Project Profile - Kuwaiti/GOJ Roads Rehabilitation Project Phase II – July 2014

4.2 The original approved drawings/design, prepared by NWA (July 2013) were utilized in preparing the Bill of Quantities (BQ) for issuance to prospective bidders in October 2015. The contractual agreement was limited to road realignment, widening and construction, drainage works and pavement upgrade. This was in a context where an NWA-collaborated geotechnical report (February 2008)²⁵, had recommended additional works such as the construction of retaining walls. However, NWA took the decision to defer these other works to a later date for consideration (see **Appendix 3 – Junction Road Rehabilitation - Background of Project Area, items 3 & 5**). In July 2017, consistent with sub-clause 13.2 of the Instructions to Tenderers), the Contractor, at NWA's request, extended the tender validity period for the eighth time to October 30, 2017. However, the contract amount of \$597.77 million approved by Cabinet in August 2016, and the amount at the signing of the contract agreement in September 2017, remained the same. The contracted works were to commence in October 2017, but was rescheduled to November 6, 2017, with expected completion within 14 months on January 6, 2019²⁶.

NWA Engineer's Estimate:

October 2015 -
\$598.6mn

Cabinet approved:

August 2016 -
\$597.77mn

Agreement signed:

September 2017 -
\$597.77mn

²² This is part of the corridor Tom's Rive to Agualta Vale, commonly called the Junction Main Road

²³ By way of Cabinet Decision No. 22/16, dated August 22, 2016

²⁴ Road realignment, Road widening and construction of shoulders, relocation of water, electricity and telephone utilities, construction of drainage works including surface and subsurface drains, Pavement upgrade including excavation, placement of sub-base, base and asphaltic concrete, installation of road furniture, road markings and traffic control devices.

²⁵ The report was prepared by geotechnical consultant, DIWI Consult International GmbH

²⁶ Cabinet Decision No. 22/16 dated August 22, 2016

4.3 In September 2018, following more detailed soil investigations and other geological issues, the original design drawings were updated by the Consultant and submitted to the Contractor²⁷. NWA assessed the geological conditions as being unforeseen and could not have been anticipated or identified by the geo-technical studies conducted during the planning and pre-contract phases. In accordance with sub-clause 4.12 (Unforeseeable Physical Conditions) of the contract agreement, NWA approved net (variation) costs of \$246.79 million or 41.28 per cent of the contract for rescoped drainage and other new works to include excavation, construction of new retaining walls and improved drainage structures.

4.4 Two years after construction work started, Cabinet, in November 2019, gave approval²⁸ for adjustment and variations to the works contract signed in September 2017. The adjustment to the contract was driven by the introduction of new works that were not contemplated in the original design of the project (see **Appendix 3 – Junction Road Rehabilitation - Background of Project Area, items b, 7**). NWA's submission to Cabinet indicated that the geological conditions required extensive excavation of hard rock, and soil information by Contractor's lab test revealed that cut material could not be used as fill as anticipated, which resulted in increased transportation costs. NWA also revealed during implementation of the project, a truer picture of the hydrological conditions relating to the movement of water on the land through existing channels and subsurface, was revealed. Consequently, there was the need for slope protection works (retaining walls), additional and improved drainage structures to protect the road from erosion and provide safety to motorists and residents.

4.5 As a direct result of the extension of time due to delays associated with increased scope of the works, the contractor sought a review of contract rates in accordance with the General Conditions of Contracts (GCC) Sub-clause 13.8 of the (Adjustment for Changes in Price), which allow for compensation for escalation in costs on the project. Vide correspondence entitled Delays and Disruption Claim dated January 28, 2019, the Contractor stated:

“actual commencement date was so remote, that some of the benefit and advantages the contractor would have enjoyed have amounted to naught....For example, While there is a fluctuation clause, this does not take into consideration that actual market conditions have changed affecting staff salaries, accommodation and basic standard of living including doing business that have increased” (i) subcontractor and equipment quotations used at the time of tender are not relative to today's buoyant construction market, where margins have inflated due to industry demand for scarce services”

4.6 NWA subsequently honoured the contractor's claim for \$70.05 million covering January 6 – July 31, 2019, for extension of time, losses, and expenses. The estimated price escalation of labour and materials (aggregate, cement, bitumen, and fuel) up to July 31, 2019, resulted in added fluctuation cost of \$203.15 million, after utilizing the full contingency of \$15.87 million for fluctuations²⁹.

²⁷ Redesigning was ongoing up to the 2019-20 financial year (Continue ongoing design work on the Tom's River to Aqualab Vale road corridor' was noted in NWA's 2017- 2020 & 2018-2021 Strategic Business Plan (SBP). The Chovey Final Geotechnical Report dated September 24, 2018, was submitted to NWA under cover letter dated October 2, 2018.

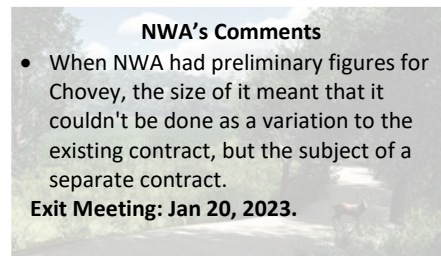
²⁸ Cabinet Decision 37/19 dated November 25, 2019

²⁹ Estimated price escalation to July 31, 2019, of \$219,017,674.14 (As per Item J – PS4 Contingencies (Fluctuation)).

4.7 In addition to \$29.47 million paid for consultancy services acquired September 15, 2017, NWA paid an additional \$40.79 million (or 138.41 per cent) for monthly labour costs for the Consultant’s team leader, deputy team leader and project coordinator for supervisory services covering the period November 26, 2018, to June 30, 2020, for extension of time on the works contract.

Slope Stabilization Works – Chovey

4.8 In November 2020, Cabinet³⁰ approved a follow-on contract to Contractor **No. 6** for \$321.35 million³¹ for stabilization work along the Chovey section of the project corridor. The corrective action involved the erection of a reinforced retaining wall for the embankment, to allow the roadway to be constructed. NWA utilised the single source/direct contracting procurement methodology³² with the justification that this method would reduce undue delays associated with bringing a new contractor onboard³³.



4.9 The contract was signed on June 17, 2021, with an original commencement date of July 16, 2021, and completion date of December 2021. However, works officially commenced on October 19, 2021, approximately three months later³⁴. The wait was due to outstanding design information and delay in the payment of 22 per cent mobilization advance³⁵. The project completion date was extended to April 2022. By way of correspondence dated July 18, 2022, NWA subsequently granted the contractor an interim extension of time (without cost) of 150 days, extending the project completion time to September 15, 2022. As of March 2023, a total of \$148.14 million was paid on the contract.

Additional cost associated with the rehabilitation of the Junction Main Road corridor.

4.10 Based on the prolongation, fluctuation and variations costs, the original contract of \$597.77 million was increased by \$519.99 million (87 per cent), taking the total project cost to \$1.1 billion., Additional costs associated with the rehabilitation of the corridor, Agualta Vale to Broadgate (Junction Main Road) totalled \$882.13 million (**Table 7**).

³⁰ Cabinet Decision No. 53/20 dated November 30, 2020

³¹ Negotiated contract sum of \$321,347,655.60; based on contractor quote of \$498,956,223.60 versus NWA’s estimate of \$304,962,403.20.

³² The application of this methodology complied with the criteria stipulated for a follow-on contract as outlined in the Handbook of Public Sector Procurement Procedures (Volume 2) Procedures for The Procurement of Goods, General Services & Works (page 6)

³³ The contractor was fully mobilized on site, familiar with terrain and hazards; urgency of slope stabilization works and the existence of insurance coverage for the project.

³⁴ NWA letter dated Aug 27, 2021 - commencement revised to Aug 30, 2021; NWA letter dated Oct 29, 2021, notified that commencement date was revised to Oct 19, 2021, with completion date of April 18, 2022

³⁵ Mobilization Advance of \$70,696,484.23 was paid September 28, 2021

Table 7 Break down of increase in costs.

CONTRACTS	COST INCREASE FACTORS	ISSUE	COSTS (\$M)
TOM'S RIVER TO AGUALTA VALE – PACKAGE 1	Project Implementation delays	Delay in land acquisition to enable construction works and unforeseen geotechnical and geological issues which resulted in delays (prolongation cost)	70.05
	Price variation of labour and material costs	Resultant price increases in labour and materials costs due extension of time up to July 2019.	203.15
	Design Changes	Construct new retaining walls for slope protection and improved /additional drainage structures to remedy unfavourable soil conditions, geological and hydrological conditions during the construction phase.	246.79
	Sub-Total		519.99
	Price variation of labour costs	Consultant's supervisory service cost from November 2018 to June 2020, due to time extension on the works contract.	40.79
	Sub-Total		560.78
	Chovey - Slope Stabilization Works contract	Contracted works (2021) involve construction of reinforced retaining wall and improved drainage to allow for construction of the roadway along the Chovey road section.	321.35
	OVERALL TOTAL		882.13

Source: AuGD's compilation of NWA's information

4.11 Approximately 39 months after the original contract completion date of January 2019, the roadworks for the designated section (*Package 1*) was recorded at 98.5 per cent overall completion rate with total expenditure of \$987.43 million³⁶. The required Taking Over Inspection was conducted on March 31, 2022, as evidenced by NWA status report (as of March 31, 2022). Further, review of the 'Taking Over Certificate' (TOC) showed that the value of works taken over as of March 2022 was \$898.74 million, resulting in a difference of \$88.69 million when compared to the total expenditure of \$987.43 million³⁷. By way of email correspondence dated April 11, 2023, NWA advised that "*the value of works taken over as of March 2022 is in fact \$987.43 million. The figure of \$898.74 million on the TOC is an error.*" We were not provided with a corrected TOC.

4.12 The works for the Chovey stabilization were recorded as 68 per cent complete as of March 31, 2023, with expected substantial completion by April 2023. **Table 8** outlines total expenditure as of March 2023.

³⁶ Status Report as of March 31, 2022

³⁷ Taking Over Certificate (TOC) signed by NWA CEO on June 09, 2022.

Table 8 Expenditure as of March 2023 – Junction Main Road rehabilitation works.

Details	TRAV (Toms River to Agualta Vale -Package 1) J\$	Chovey (Slope Stabilization Works) J\$	Total Cost Junction Main Road Rehabilitation Works J\$
Contract sum (Revised)	1,117,759,591	321,347,656	1,439,107,247
Expenditure to date -March 2023	1,021,132,714	148,140,735	1,169,273,449
Expenditure as % of Contract sum	91%	46%	81%
<i>Percentage of Works completed</i>	98.5	68	

Source: AuGD's compilation and analysis of NWA information

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Part Five

Southern Coastal Highway Improvement Project (SCHIP)

5.1 This section contains a preliminary review of the SCHIP which is still in progress. In response to our query regarding contractual arrangements, MEGJC indicated, that the Main Contractor, CHEC, will continue to work with its subcontractors who are not performing in keeping with the sub-contract agreement, and may take over aspects of the works to ensure completion in a timely manner.

Feasibility study and design of roads selected for Southern Coastal Highway Improvement Project (SCHIP)

5.2 A feasibility study³⁸ of SCHIP indicated the need for improvements on the stretch of roads along the south-eastern side of the country based on a combination of safety, physical and functional deficiencies that existed. Our review of STATIN's Gross Domestic Product (GDP) Quarterly Reports revealed that the SCHIP was also a major contributor to the growth in the GDP experienced through the construction industry.

5.3 NWA was required to develop the scope of works and estimated bill of quantities through a 'concept design'³⁹ and provide the contractor (CHEC) with the design⁴⁰ parameters. GOJ accepted the proposed sum and contracted amount of US\$384 million to design and construct a new toll road (Part A), and design and improve/rehabilitate roads (Part B). CHEC was engaged to design, execute, and complete the works in accordance with the contract agreement⁴¹.

Loan and contractual agreement for SCHIP

5.4 SCHIP is co-financed by the China EXIM Bank and GOJ as illustrated in (Table 9).

Table 9 Project Cost J\$49,205,913,000 = US\$ 384,000,000

FUNDING: Agency	Type	%	Amount US\$ (\$'000)	Amount J\$ (\$'000)	Exchange Rate
China EXIM	Loan	85	326,400	35,507,704	128.14
GOJ	GOJ	15	57,600	13,698,209	128.14
Total		100	384,000	49,205,913	

Source: SCHIP Loan Agreement

³⁸ Final study dated February 2015

³⁹ NWA engaged engineering consultants to carry out the design works the end results are contained in a Design Concept Report dated August 2018

⁴⁰ The design is a plan or set of drawings and details produced to show the look and function of the road before it is built. At this stage, specifications are set, and bills of quantities, cost estimates and tender documents are prepared.

⁴¹ General Conditions - Sub-Clause 4.1- Contractor's General Obligations; Sub-Clause 5.1 - General Design Obligations. (Once the contract is signed all responsibility regarding design and construction is transferred to the contractor)

5.5 The estimated design and construction cost for Part A⁴² and Part B were US\$188.55 million and US\$195.45 million, respectively (**Table 10**).

Table 10 Estimated project cost broken down by components/parts.

Part	Location	Details	(USD\$)	(USD\$)	(USD\$)
Part A	May Pen to Williamsfield	Design and construct of a new toll road			188,550,581
Part B					195,449,419
Part B (ii)	Harbour View to Yallahs Bridge	Design and construction of major improvement works to the main road		110,000,000	
Part B (iii)	Yallahs Bridge to Port Antonio	Design and construction of rehabilitation works to the main road	74,000,000 ⁴³		
Part B (iv)	Morant Bay to Cedar Valley	Design and construction of rehabilitation works to the roadway	11,449,419		
				85,449,419	
TOTAL					384,000,000

Source: Contract Agreement between GOJ and CHEC

5.6 The overall project cost, however, did not factor costs associated with the pipeline rehabilitation/replacement, and land acquisition⁴⁴, thereby understating GOJ's contribution to the overall cost of the project. Refer to paragraph 5.18 for details on project cost adjustments.

5.7 The contract with CHEC was signed in 2016, however, construction work did not begin until October 2019 (three years later), as GOJ had not satisfied all the conditions necessary to initiate the first disbursement under the loan agreement.

Upgrading of NWC waterlines

5.8 In May 2019, Cabinet granted approval for the upgrading of NWC's water and sewerage pipelines that ran along the project corridors and instructed that the related works were to be carried out in tandem with the road works. Two Follow-on Agreements were signed between MEGJC and CHEC for Pipeline Supply and Installation Works under the Part B component. 'Phase 1' contract, which related to Parts B(iii) and (iv) was signed on December 3, 2019, for US\$28.53 million and 'Phase 2' – Part B (ii) agreement was entered on 2022, May 18, at a cost of US\$67.38 million⁴⁵. Both contracts were for the provision and installation of water and sewerage works, with a contract timeline of three years.

⁴² Part A - not in the scope of this audit.

⁴³ The contract includes indirect cost of US\$16.26 million (22 per cent of contract sum) and contingency of US\$3.7 million (5 per cent of contract sum).

⁴⁴ This was not seen in the Bill of quantities and the exclusion was also supported by MOFPS' letter dated March 22, 2019, addressed to MEGJC indicating that no provision was made in project's scope to undertake pipeline and sewage works.

⁴⁵ Prices include material, equipment and labour.

Delay in construction due to land acquisition issues

5.9 There were delays in construction due to the slow acquisition of lands. From as far back as October 2020, land acquisition was reported as negatively impacting the progress of works. NWA informed that land acquisition to facilitate road construction has been a major challenge – “an endemic weakness” on the project.

5.10 Review of the consultant’s (March 2023) monthly progress reports showed that 98 of the required 218 parcels of land Part B (iii and iv) were handed over to the Contractor (CHEC). As it concerns Part B (ii), the number of parcels required increased from 335 to 347 and these were handed over to the Contractor (**Table 12**). Hence, as of March 2023, a total of 553 (335 + 218) parcels of land were required and a total 445 parcels were handed over.

Table 11 Land acquisition status as of March 2023

Part B (ii)

Section Notices	Total Parcels	Gazetted From NLA	Number Served	Parcels Handed Over
3 ⁴⁶	618	585	350	347
5 ⁴⁷	335	315	315	
9 ⁴⁸	N/A	N/A	N/A	

Part B (iii) and (iv)

Section Notices	Total Parcels	Gazetted From NLA	Number Served	Parcels Handed Over
3	218	98	98	98
5	218	98	98	
9	8	N/A	N/A	
TOTAL PARCELS HANDED OVER				445

Source: Monthly Report, March 2023 - NWA

NWA’s engineering role – monitoring

5.11 The governance framework created for SCHIP Part B works provided for NWA to be the engineer responsible for monitoring the execution of the Part B works by the CHEC. It also provided guidelines for selecting sub-contractors.

5.12 The sub-contractors entered into contracts with the main contractor, CHEC, who had responsibility for paying them. The sub-contractors were responsible for the actual construction of the roads, producing the contracted deliverables whilst managing their respective staff, materials, and equipment. While the sub-contractors performed their duties under the supervision of CHEC, NWA and its representative provided oversight of CHEC.

⁴⁶ Section 3 indicates that the given property/parcel of land is required for government use and grants the governments agents the power to enter and conduct preliminary investigations and surveys. Notices are served on all parcels along the project corridor that may be affected by the project. Effectively, all parcels along the project corridor

⁴⁷ Notices are only served on parcels that will be affected by the project based on final designs.

⁴⁸ Notices relates to parcels required that are acquired by way of Compulsory Acquisition

Progress of Part B works

5.13 In its monthly progress reports, NWA’s representative (engineering consultant), provided updates on the Part B (ii) and Part B (iii & iv), and the individual packages’ performance. The performance indicators that the engineering consultants reported on were a combination of activities, outputs, and some outcomes. In addition to delays related to the need to acquire parcels of lands that were needed for the construction/expansion of roads, and for related infrastructure (refer to 5.9 – 5.10). The COVID-19 pandemic, flood rains in 2020 also contributed to project delays. The March 2023 monthly progress report revealed performance as under (5.14 – 5.16 refer):

B (ii)

5.14 The civil and waterline works combined for Part B ii was rated as 92.32 per cent completed, with US\$106.1 million and J\$782.6 million disbursed to CHEC in relation to civil and pipeline works respectively (**Appendix 4**).

B (iii) & (iv) - Tranche 1

5.15 Overall completion to include roadwork and pipeline installation (averaging 87.8 per cent) was well advanced, with Package 10 being the most progressive of the five packages (**Appendix 4**).

B (iii) & (iv) -Tranche 2

5.16 The progress of all five projects was generally low, ranging from a rate of 25 to 70 per cent completed (an average of 45 per cent). (**Appendix 4**). Slow land acquisition and relocation of utilities factored heavily in the progress of the road works. As far back as October 2020, the acquisition of land was reported as negatively impacting the progress of works.

5.17 The completion of the overall SCHIP was scheduled for on or before October 15, 2022, 36 months from the Order to Commence of October 16, 2019. Cabinet approved ⁴⁹ the extension of the project timeline to allow for the upgrading of NWC’s water and sewerage pipelines that ran along the corridors and instructed that the related works be carried out in tandem with the road works. The project period was extended by 150 days and 90⁵⁰ days, to allow for the completion of the follow-on pipeline works. Allotted amount for pipeline works (‘Phase 1’ contract), which related to Parts B(iii) and (iv) was signed on December 3, 2019, for US\$28.53 and ‘Phase 2’ – Part B (ii) agreement was entered on 2022, May 18, at a cost of US\$67.38 million⁵¹. Based on the delays, MEGJC submitted to Cabinet a possible revised completion date of March 2024 and requested approval of a further US\$70.89 million (36 per cent more than the original contract sum US\$195.5 million) to finalize the construction component of Part B civil works (**Table 12**).

5.18 It was noted that the roadway design under Part B (ii) was adjusted at an additional cost of US\$4.95 million to include a concrete median barrier, widening of the road, and the building of bridge and drainage – which increased the contracted sum of US\$110 million to US\$114.95 million (**Table 12**).

⁴⁹ May 2019

⁵⁰ Part B (ii) and (Part B iii & iv)

⁵¹ Prices include material, equipment and labour.

Table 12 Part B Project Cost adjustments

	Part	Details	(USD\$)	(USD\$)
CIVIL WORKS	Part B (ii)	Harbour View to Yallahs Bridge		110,000,000
	Part B (iii)	Yallahs Bridge to Port Antonio	74,000,000 ⁵²	
	Part B (iv)	Morant Bay to Cedar Valley	11,449,419	85,449,419
		Total Original Project/Contract Sum		195,449,419
Additional amounts in excess of original contract sum:				
Variation #1	Part B (ii)	Construct median barrier, widening of road, building of bridge and drainage	4,600,000	
Variation #2	Part B (ii)	Construct underpass at the Costa Del Sol Development ⁵³	350,000	
Variation #3	Part B (iii) & (iv)	To complete the programme of civil works	70,885,472	75,835,472
		Revised Project/Contract Sum		271,284,891

ANCILLARY WORKS	Part B (iii) & (iv)	Phase I - Pipeline installation works (Tranche 1 and 2)		28,534,281
	Part B (ii) & (iv)	Phase II - Pipeline installation works (Part B ii, Tranche 3)		67,384,313
		Total Ancillary works		95,918,594

Source: AuGD's compilation of NWA data - SCHIP Loan Agreement; Cabinet Decision No. 15/22 dated April 25, 2022

5.19 Included in MEGJC's request for additional budgetary support was the sum of US\$1.7 million, earmarked for quality management activities such as engineering consultancy and project management services for the entire SCHIP.

5.20 Regarding Tranche 3 the Main Contractor, CHEC, and GOJ modified (April 3, 2023) the contract agreement to allow CHEC to carry out the works itself, instead of mandating the subcontractor of the last 5 packages (Tranche 3).

5.21 The outstanding relocation of utility poles also contributed to delays across the sub-contracts. This was exacerbated by delays experienced by Jamaica Public Service Company (JPS) in the sourcing of the requisite materials to relocate their assets along the project corridor. The slow approval of pipeline requisitions also contributed to delays. In response to our observation, NWA stated: "*Pipeline material has to be imported as it is uneconomical to have such quantity in storage*"⁵⁴. As noted at paragraph **5.17** the SCHIP is not yet completed, to enable a full assessment of value for money spent.

⁵² The contract includes indirect cost of US\$16.26 million (22 per cent of contract sum) and contingency of US\$3.7 million (5 per cent of contract sum).

⁵³ By virtue of agreement, NWA intends to recover the cost from the developer.

⁵⁴ Email dated July 13, 2022, from NWA, in response to AuGD's request.

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Appendices

Appendix 1: General Principles of Good Governance in Public Procurement to attain Value for Money

Creating Value

Effectiveness



Meeting the objectives is concerned with attaining specific aims or objectives and/or achieving the intended results.

Efficiency



Getting the most from available resources is concerned with the relationship between resources employed, conditions given, and results achieved in terms of quality, quantity and timing of outputs and outcomes.

Economy



Keeping the resource costs low is making resources available in due time, in appropriate quality and at the best price.

Good Practices

Fairness



Impartial and just treatment or behaviour without favouritism or discrimination.

Accountability



The obligation of an individual or organization to account for activities and accept responsibility.

Transparency



Information is available to everyone - service providers and the public at large unless there are valid and legal reasons to keep confidential.

Competition



Opportunity for eligible parties to be able to submit bids or proposals to provide the goods or services.

Appendix 2: List of outstanding works for Constant Spring and Hagley Park Road Improvement Projects

Constant Spring Road

Chainage	Description	Status
East Side-Right Hand Side (RHS)		
0+570	Cracks in asphalt at drain inlet. Concrete blocking water at kerb inlet. Steel to be removed	Outstanding
East -Right Hand Side (RHS)		
1+195-1+200	Cracking in asphalt surface	Outstanding
1+210-1+230	Depression and rut in asphalt, longitudinal joint	Outstanding
1+940	Cracking in asphalt surface	Outstanding
RHS		
2+680	Crack in asphalt at sewer manhole	Outstanding
RHS		
3+250-3+280	Asphalt surface rutting & cracks	Outstanding
3+770-3+780	Asphalt rutting & cracks	Outstanding
3+960	Concrete broken at kerb inlet	Outstanding
LHS		
2+900	Cracks around drain	Outstanding
2+940-2+945	Crack in asphalt surface	Completed
3+140	Install trash rack in drain	Outstanding
3+570-3+760	Cracks in asphalt surface	Outstanding
B-Ramp		
B0+040-0+050	Crack in asphalt surface	Outstanding
B0+100	Crack in asphalt surface	Outstanding
B0+140-0+160	Crack and rut in asphalt surface	Outstanding
G-Ramp		
G0+030, RHS	Repair kerb. Depression in asphalt	Outstanding
G0+145, LHS	Asphalt rutting (Oliver Road)	Outstanding

HAGLEY PARK IMPROVEMENT PROJECT, MIDP

Item #	Location	Scope of Works	Remarks
1	Hagley Park Main Road	Demolish existing manhole slab and deposit excavated material to an approve site	Outstanding
2	Opposite Delta Supply	Construct 100 mm thick 21 Mpa fibre reinforced concrete sidewalk	Outstanding
3	Budget Supply	Repair to grating along U-Drain	Outstanding
4	Spanish Town Road	Remove silts and debris from catch basin and dispose of debris at an approved dump site	Outstanding
5	North-South bridge	Reprofiling of the bridge approach on Hagley Park Rd side because of ponding in the left lane	Outstanding
6	227 Marcus Garvey Drive	Complete exit automated gate. Gate needs to be balanced and fitted with new track and wheels	Outstanding

Source: NWA documents prepared March 31, 2023



Appendix 3: Junction Road Rehabilitation - Background of Project Area

1. In August 2016, Cabinet approved the award of the construction contract to **Contractor No. 6** for \$597.77 million, to undertake road rehabilitation upgrade along the corridor (4.8km) from Agualta Vale to Broadgate (commonly called Junction Main Road) in the parish of Saint Mary.

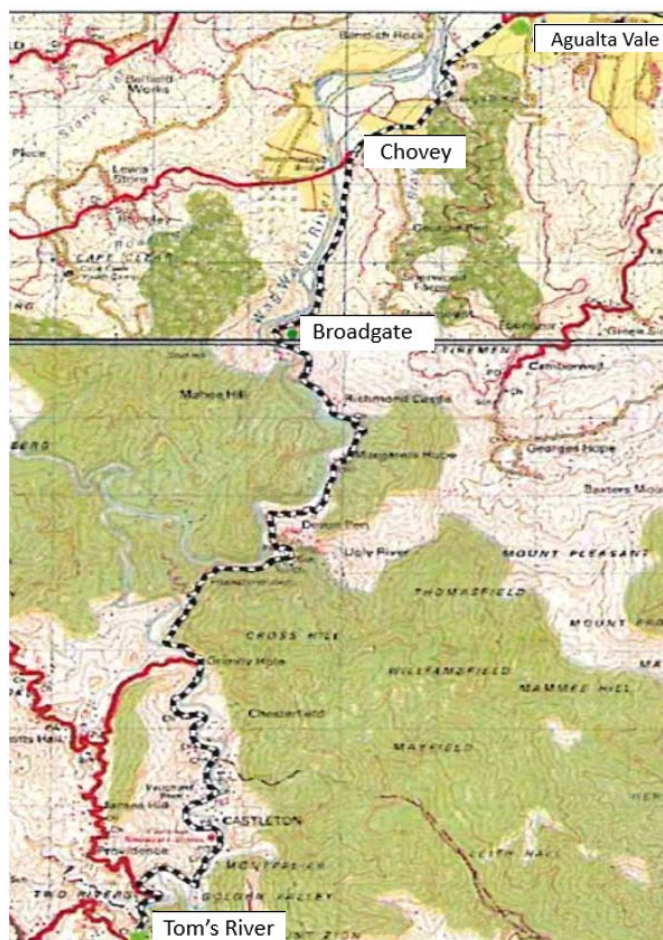
TRAV – Tom’s River to Agualta Vale:

Package 1 - Agualta Vale to Broadgate (4.8km)

Package 2 – Broadgate to Tom’s River (13.6km)

NWA’s Comments:

- a. Between Georgia and Broadgate, is where Chovey is located and along that section the initial programme was ordinary, the original contract. The total length from Agualta Vale to Broadgate is 4.8km; the Chovey section is 160 meters or 3% of the length, the other 97% of the corridor had no problem. - **Exit Meeting Jan 2023**
 - b. *“...the design solution for the Chovey Works was not included in the original Contract/Tender documents for TRAV¹, as the design was finalized in 2019, following the submission of the Chovey Final Geotechnical Report in October 2018. The TRAV Contractor was requested to submit a quotation for the Chovey Slope Stabilization Works in October 2019.”* **Email correspondence: April 11, 2023**
 - c. It is an established fact that that (Chovey) part of the country is susceptible to unstable soil. Further, the scope of the works for the TRAV contract was defined 2 years before, when it went to tender. **Exit Meeting: Jan 20, 2023**
2. NWA informed the Cabinet and the Ministry of Finance and the Public Service (MoFPS) that, as part of its pre-construction investigations, a geotechnical investigation of the project area was conducted. NWA presented the AuGD with a geotechnical report (February 2008) which indicated that one of the tasks for the Geotechnical Consultant was to make recommendations for appropriate retaining structures and foundations (in cooperation with the structural engineer). The report further stated that “all new retaining structures have to be designed according to a stability analysis proving the overall stability and the safety against sliding and overturning”.
 3. The original approved drawings/design, prepared by NWA and dated July 2013 were utilized in preparing the Bill of Quantities (BQ) for issuance to prospective bidders in October 2015.



Source: Project Profile - Kuwaiti/GOJ Roads Rehabilitation Project Phase II - July 2014

4. The geotechnical report also stated that the project area was landslip prone and recommended that:

The excavation and foundation work for new retaining walls in the riverbed will require groundwater control and possibly partly temporary diverting of the active stream channel (by a cofferdam). Existing retaining walls may remain, and the space between existing and new retaining walls has to be backfilled by suitable soil material. Before backfilling and compacting, all vegetation (including the roots) has to be removed.

5. Review of the Minutes of the pre-bid meeting held on November 12, 2015, with NWA and potential contractors' representatives: In response to a query from the contractors' representatives as to why the Bills of Quantities did not include details for retaining walls, NWA's representative stated that its absence may be subject to change later.

Extracted from Minutes of Site visit & pre-bid meeting held by NWA and prospective bidders on 2015 November 12
<p>Questions and Answers</p> <p>Question 7: The Design Drawing included details for retaining walls. There is no retaining wall item in the Bills of Quantities. Is retaining wall construction a component of the project?</p> <p>Answer: Not at the moment but this may change at a later time.</p>

6. AuGD's review of Pre-Construction Meeting Minutes held on October 24, 2017, with the Contractor No. 6, the Engineering Consultant and NWA representatives, also indicated that:

Contractor No. 6 was expected to complete the works for the slip area in Chovey. They further explained that the works should be completed within the 14 months for the project. Also, that the cost or quantities submitted by the contractor for Broadgate to Toms River did not include retaining Works for the Chovey area. It was mentioned that additional discussions about the works will be had during the coming weeks. **(Item 14. Any Other Business Chovey)**

7. The 2013-design drawings were reviewed by the engineering consultant, who was engaged on September 15, 2017, and the results reported to NWA in October 2017, approximately one month after signing of the contract agreement and approximately one month before construction commenced in November 2017. The Consultant's report detailed various design review comments based on the roadway drawings provided by NWA⁵⁵. The comments noted the absence of pavement structures, culvert drainage and noted that the existing rubble concrete retaining wall failed design check for bearing capacity and sliding and the Concrete wall reinforcement and footing flexure at Chovey area failed the design check for earthquake. NWA provided response to a few of the Consultant's comments extracted from the report.

Sample of Engineering Consulting Inc's Review Comments on Drawings and how they were subsequently addressed.				
Report Page No.	No.	Dag. / Pg.	Details	NWA Comment – August 2022
1		Chovey Area	Review comments of the preliminary design for stabilization of the Chovey Area were also provided. To complete this review, assumptions for soil characteristics were	All works related to Chovey have been included in the Chovey Slope Stabilization Works scope of works under a separate Contract.

⁵⁵ Dated October 13, 2017.



			made since limited geotechnical information was available. We look forward to the scheduled Design Meeting where further discussions may be had and we will be able to verify and quantify the BOQ and confirm the Project Budget.	
5 of 110	10	NWA.RD.3263	Plan has 1.5 m shoulder on the left and 2.4 m shoulder and a toe wall on the right between 13+100 and 15+200, however the cross-sections only show a 2.4 metre shoulder on both sides with no toe wall	This item has been included in the revised scope of Works for the project. Additional toe wall has been included on the project left side under item 7.53 of the original variation order.
	11	NWA.RD.3263 Plan and Profile	No details provided for drainage elements at 16+490, 15+880, 14+670, 14+630, 14+420, 14+290, 14+220, 14+170, 14+110, 14+010, 13+980, 13+940, 13+890, 13+820, 13+760, 13+700, 13+540, 13+490 – only a note saying it needs to be upgraded	This item has been included in the revised scope of Works for the project. 600mm and 900mm dia. HDPE pipe culverts have been included as seen in items 7.9 and 7.10 of the variation order. The accompanying headwalls are reflected under items 7.20, 7.21 and 7.21A.
	12	NWA.RD.3263 Plan and Profile	No culvert shown at 16+800 where alignment crosses a gully	This item has been included in the revised scope of Works for the project. A double 1200mm dia. pipe culvert is included at CH 16+780 under item 7.11. The accompanying headwall is included under item 7.22.
	13	NWA.RD.3263 Plan and Profile	No tie in with roundabout shown at 17+800	Bill items 33.01(b), 42.01(b) and 42.03 include additional roadworks which predominantly include granular base and asphalt.
	14	NWA.RD.3263 Plan and Profile	Existing intersection at Rosemount missing from design	This item has been included in the revised scope of Works for the project. Bill items 33.01(b), 42.01(b) and 42.03 include additional roadworks which predominantly include granular base and asphalt.
	15	NWA.RD.3263	Standard details missing (Typical U-Drain, Curb & Gutter, Reinforced Concrete Swales, and Proposed Retaining/Toe-Wall at edge of cut-slopes)	Drawings have been updated to include pavement structure. This did not necessitate an increase in the scope.
	16	NWA.RD.3263	Pavement structure missing	Drawings have been updated to include pavement structure. This did not necessitate an increase in the scope.

6-7 of 110	33	NWA.RTW.2631 Chovey Slope Rehabilitation	Concrete wall reinforcement and footing flexure failed design check for earthquake. Recommendation: <ul style="list-style-type: none"> • Increase stem thickness at top to 500mm • Increase stem thickness at bottom to 1250mm • Increase toe length to 3500mm Increase heel length to 1750mm. <ul style="list-style-type: none"> • Add 2 sets of toe face reinforcement in the stem – embed into footer at least 550mm <ul style="list-style-type: none"> o 20mm @ 400mm starting 3730mm from top o 20mm @ 400mm starting at 4025mm from top • Increase footing thickness to 1500mm • Increase footing flexure reinforcement to 36mm @ 150mm 	Included as separate follow-on contract (\$321.35M)
7 of 110	34	NWA.RTW.2631	Rubble concrete retaining wall failed design check for bearing capacity and sliding. Recommendations: <ul style="list-style-type: none"> o Increase stem thickness at top to 1100mm o Increase stem thickness at bottom to 1733m o Increase heel length to 300mm 	This wall is located in the Chovey slope stabilization area and is addressed under the Chovey Slope Stabilization Works scope of works.

Source: AuGD’s compilation of information obtained from NWA’s documentation



Appendix 4: Progress of works - Part B as of March 2023

Part B (ii) – Harbour View to Yallahs

	Contractor / Sub Contractor	Planned Start Date	Revised Start Date	Revised End Date	Contract Sum (US\$)	Revised Contract Sum (US\$)	Total Payment to Date	Per cent Works ⁵⁶ Complete
Civil Works (Road Construction)	CHEC	16-Oct-19	16-Oct-19	13-Mar-23	US\$110,000,000	US\$114,950,000	US \$106,126,661	92.32
Waterline Works	Contractor No. 4 / Contractor No.7	30-Aug-21	21-Aug-30	-	J\$1,342,913,906	-	J\$782,620,308	

Part B (iii & iv) Tranche 1 packages

Location/ Package	Roadwork Construction Cost (J\$)	Waterline Construction Cost (J\$)	Total Construction Cost (J\$)	Total Payment to Date (March 31, 2023) (J\$)	Revised Date for Completion	New Planned Completion Date	Performance as per March 2023 Progress Report
Morant River Bridge to Prospect 8.79km (4)	1,146,203,963	705,347,066	1,851,551,029	1,562,340,645	Jan 6 2022	Aug 31 2023	84 % of road works and pipeline works completed.
Hordley to Long Road 5.18km (8)	620,698,528	444,361,202	1,065,059,730	899,903,647	Sept 6 2021	May 31 2023	85% of road works and pipeline works completed.
Manchioneal to Fair Prospect 9.32km (10)	1,229,965,328	505,376,809	1,735,342,136	1,716,131,788	Dec 7 2021	May 31 2023	97% of road works and pipeline works completed.
Morant Bay to Georgia 14.45km (14)	1,311,092,122	887,798,142	2,198,890,264	1,910,596,207	Jan 6 2022	May 31 2023	85% of road works and pipeline works completed.
Georgia to Cedar Valley 12.02km (15)	1,729,384,503	677,797,585	2,407,182,088	2,124,768,958	Mar 10 2022	Aug 31 2023	88% of road works and pipeline works completed.
Total	6,037,344,444	3,220,680,804	9,258,025,247	8,213,741,245			

Part B (iii & iv) Tranche 2 packages

Location/ Package	Roadwork Construction Cost (J\$)	Waterline Construction Cost (J\$)	Total Construction Cost (J\$)	Total Payment to Date (January 2023) (J\$)	Revised Date for Completion	New Planned Completion Date	Performance as per March 2023 Progress Report
Yallahs Bridge to Loudon Hill (Salt Pond) 6.70km (1)	1,552,536,888	809,703,805	2,362,240,693	742,313,625	Jul 31 2022	Oct.31 2023	31 % of civil & pipeline work completed.
Loudon Hill (Salt Pond) to Pomfret 4.68km (2)	978,683,254	401,862,080	1,380,545,334	619,872,398	May 31 2022	Oct 31 2023	45% road works and pipeline works completed.

⁵⁶ Both road and waterline work.

Pomfret to Morant River Bridge 9.81km (3)	2,176,615,836	726,799,018	2,903,414,854	2,031,427,023	Nov. 30 2022	Oct 31 2023	70% road works and pipeline works completed.
Boston Area to Drapers 7.49km (12)	1,242,557,316	841,963,627	2,084,520,943	1,129,926,202	May 31 2022	Oct 31 2023	53% road works and pipeline works completed.
Drapers to Port Antonio 9.36km (13)	1,471,500,000	625,931,999	2,097,431,999	522,885,760	May 31 2022	Oct 31 2023	25% road works and pipeline works completed.
Total	7,421,893,293	3,406,260,530	10,828,153,823	9,727,954,049			

Source: AuGD's compilation of NWA's information



Appendix 5: Details of Sampled MIDP projects

Hagley Park Road Improvement Project

On February 22, 2018, MEGJC and the contractor signed an agreement for the rehabilitation of Hagley Park Road at a value of US\$56.5 million⁵⁷. The original road works included the widening of 3.75km to a 4-lane corridor, 90m and 400m overpass bridges, 7,500m of various diameter storm water drains, and approximately 12km of water mains of varying diameters, and improvement of seven intersections to include the installation of directional signs and stoplights. The works were scheduled to commence in March 2018 with expected completion in June 2019. However, the contracted works incurred additional cost of US\$3.99 million (7 per cent of the original contract sum) due to additional works related to road widening and boundary wall relocation, removal and replacement of advertising signs and installation of traffic signals. Notably, the project experienced approximately 16 months delay⁵⁸, due in part, to the introduction of a separate Ancillary Works/Water and Sewer lines contract. NWA explained that they had underestimated the challenges that the installation and maintenance of new underground infrastructure (water and sewer line) would cause, while keeping the corridors open to daily traffic⁵⁹. This was particularly evident in the case of Three Miles, the busiest intersection in Jamaica. Of the additional works, we sampled variation items totalling US\$3.4 million and found that bill/ invoices presented, substantiated works done.

NWC waterline and sewer line installation

On March 16, 2018, MEGJC and CHEC signed the MIDP Supplementary Agreement for Ancillary Works, at a budgeted sum of US\$46 million, which was developed through consultations between NWA, NWC and CHEC. We noted that the works for water supply pipeline and sewer installation for Hagley Park Road, were awarded to local sub-contractors No.1 & No. 2 as 'follow-on' sewerage pipeline contracts for J\$755.6 million⁶⁰ and J\$99.6 million respectively.

The works were scheduled to commence in March 2018 and October 2018 with expected completion in June 2019 and October 2020, respectively. However, both contracts experienced significant increase in cost totalling J\$1.4 billion (163 per cent of original contract) and additional time of six and nine months, due to weather and other underground utilities whose exact locations were unknown until works commenced.

Detour roads

To facilitate ease of traffic, as works progressed along Hagley Park Road, two alternate routes (Detour Roads) were established at a total cost of US\$4.9 million (22.9 per cent beyond the amount approved by MEGJC). The approved sums for the works were determined based on estimates developed by the contractor (CHEC) and the Engineer (NWA). We were not presented with contracts related to works associated with these detour roads as NWA indicated that there were no formal contracts for these works.

⁵⁷ Includes 22.5% mark-up (US\$9,429,881.22)

⁵⁸ Attributed to land acquisition activities.

⁵⁹ NWA's written response to first draft dated December 20, 2022

⁶⁰ Sub-Contract Amount includes Main contractor CHEC mark-up of 12.5%.

NWA indicated that the works were considered ‘necessary agreed works’⁶¹, instructed as part of the Hagley Park Road Improvement. The variation in cost related to the removal and addition of repair works along selected corridors, to accommodate additional funding for the Chesterfield Road.

Constant Spring Road Improvement Project

On December 5, 2017, MEGJC and the contractor signed an agreement for the Constant Spring Road Improvement Project valued at US\$19.07 million. The contract required earthworks, drainage, roads and pavement, culverts, traffic, lighting, and communication facilities. The works were scheduled to commence in February 2018 with expected completion in August 2019 (540 calendar days/18 months). However, at the contract end date (August 2019), major works were recorded at 72 per cent, and ancillary works 67 per cent complete⁶². Ninety-eight per cent of the road works were taken over in September 2020, a 13-month delay, due to scope changes, inclusive of water and sewer line works. Owing to the additional works, MEGJC paid a further US\$5.2 million (27 per cent of contract sum) up to May 2021⁶³.

The significant increase in the contracted sum resulted from the construction of boundary walls (US\$2 million), the raising of the road level between Shortwood Road and Dunrobin Avenue (US\$504,701.44), and additional drainage works (US\$1,413,001.26). The widening of the roadway involved the acquisition of lands, which required the demolition and construction of new walls, and as such, we expect NWA as part of the construction design, to properly measure the extent of the boundary walls necessary to widen the road in the initial design. NWA explained that ‘*necessary changes to the type of gates (swing to slide); removal of pits; reinstallation of electrical system in walls; relocation of business signs, etc. contributed to the increased cost.*’

NWC waterline and sewer line installation

Concurrently, with the main contractor performing road rehabilitation works in February 2018, the NWC Ancillary - Water Supply Pipeline and sewer installation works for Constant Spring Road was subcontracted by CHEC to local sub-contractor, Contractor **No.3**, for a contract sum of J\$1.26 billion. The MIDP Supplementary Agreement for Ancillary Works, provided for a budgeted amount of US\$11.84, for works (excluding material, mark up and contingency).

Mandela Highway Realignment and Reconstruction Project

On July 22, 2016, MEGJC and the contractor, CHEC signed a supplementary agreement for the Mandela Highway Realignment and Reconstruction Project valued at US\$63.998 million. The road construction works included extensive soft soil treatment, construction of 3.5km six lane corridor with a two-lane overpass bridge, two new three lane bridges at Fresh River, a two-lane service road adjacent to the main corridor to facilitate the development of Caymanas Estate and the upgrading of the Six Miles Interchange. The works were scheduled to commence in August 2016 with expected completion in December 2019.

⁶¹ Items of works that were not considered when the contract was signed (variation to the Hagley Park Road).

⁶² NWA Progress Meeting Minutes No. 64 - August 27, 2019

⁶³ Interim Payment Certificate dated May 28, 2021

However, the works experienced 16-month delay, with completion on December 16, 2019⁶⁴, due to project scope changes which resulted in additional road and drainage works. Consequently, MEGJC paid an additional US\$3.2 million (5 per cent of the original contract sum).

NWC waterline and sewer line installation

In April 2018, approximately 20 months after the main contractor commenced road rehabilitation works, CHEC subcontracted piling, water pipes installation and berm earth work to two local sub-contractors in three contracts, which according to the contract sum as per contract document, totalled J\$1.18 billion. The works were scheduled to commence in April 2018 with expected completion date in October 2018, but experienced extension of time amounting to 5 and 11 months, mainly due to the unavailability of materials.

Ferris Cross to Mackfield Project

On February 22, 2018, MEGJC and the contractor signed an agreement for the Ferris Cross to Mackfield Project valued at US\$24.98 million. The works were scheduled to commence in April 2018 with expected completion in October 2019 (540 calendar days/18 months). However, works were completed in December 2019 and reflected an increase of US\$4.5 million or 18 per cent above the contract sum. The increase resulted from the inclusion of boundary wall, grave relocation and additional drainage works.

Ferris Cross to Mackfield ancillary works (NWC waterline and sewer line installation)

In April 2018, approximately 2 months after the main contractor commenced road rehabilitation works, CHEC subcontracted water pipeline installation works to local sub-contractor works for \$362 million. The works were scheduled to commence in April 2018 with expected completion date in October 2018. However, the contract experienced additional cost of \$187.9 million (52 per cent of contract sum) and extension of time up to three months, due to defects identified within the pavement, showing water underneath the roadway⁶⁵.

Barbican Road Upgrade Project

In August 2017, MEGJC and CHEC signed a supplementary agreement for the Barbican Road Upgrade Project valued at US\$4.35 million. The road construction works involved demolition and site clearance, earthworks, drainage, roads and pavement, culverts, and traffic facilities along the corridor. The works were scheduled to commence in August 2017 with expected completion in February 2018 (180 calendar days/6 months). However, the works were completed in May 2019, with the delay attributed by NWA to slow response of the utility providers in relocating their infrastructure and the addition of water and sewer line works.

⁶⁴ TOC was signed on June 02, 2021, with value of work taken over was US\$63,997,883.63.

⁶⁵ NWA MIDP Progress Meeting Minutes # 66, 29 October 2019, Pg 3/6

NWC waterline and sewer line installation

CHEC subcontracted potable water and sewer pipeline works to local sub-contractor by way of two contracts in the amounts of \$131.6 million and \$40.36 million. One contract experienced variation costs of \$16.4 million and time extension of 12 months⁶⁶, while the other varied by \$4.7 million.

Marcus Garvey Drive Project

In February 2016, MTWH (now MEGJC) and CHEC signed a supplementary agreement for the Marcus Garvey Drive Upgrade Project valued at US\$20.5 million⁶⁷. The scope of works comprised the extension of a six-lane carriageway, two major box culverts, drainage improvements and other works inclusive of sidewalks and traffic signals. Our analysis showed the project cost was US\$351,859.93 lower than the original contract cost, due mainly to reductions in areas related to road pavement and traffic facilities, despite the addition of drainage enhancement works of US\$571,927.30, that were not originally scoped in the works to be done.

⁶⁶ Due to delays in access to property required for the project and completion of boundary walls. (NWA MIDP Progress Meeting Minutes, dated January 2019)

⁶⁷ Between East Avenue and Pechon Street.

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Acronyms and Abbreviations

CEO	Chief Executive Officer
CHEC	China Harbour Engineering Company Limited
GOJ	Government of Jamaica
INTOSAI	International Organization of Supreme Audit Institution
ISSAI	International Standards of Supreme Audit Institutions
MEGJC	Ministry of Economic Growth and Job Creation
MIDP	Major Infrastructure Development Programme
MoFPS	Ministry of Finance and the Public Service
MTWH	Ministry of Transport, Works and Housing
NDP	National Development Plan
NWA	National Works Agency
NWC	National Water Commission
SCHIP	Southern Coastal Highway Improvement Project