

Chapter 6

ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

6.1 INTRODUCTION

The Environmental Management and Monitoring Plan (EMMP) represents the key mitigation and enhancement measures for major impacts, which are translated into concrete action programs/projects and defines the institutional framework and mechanisms for ensuring their appropriate implementation. It likewise provides the estimated investment requirements and commitments/guarantees to carry out the proposed plan.

The Environmental Management Plan shall be composed of the following components:

- Design and Construction Management Program
- Social Development and Institutional Plans
- Environmental Monitoring Plan

6.2 DESIGN AND CONSTRUCTION MANAGEMENT PROGRAM

Careful planning and adequate engineering design as well as observance of proper construction practices are expected to address the impacts predicted to occur during the construction and operation phases of the CALA project.

DPWH or its consultants shall prepare the appropriate engineering studies/plans and implement the construction program. To ensure that the roles and responsibilities of DPWH and its contractors in relation to the environment aspects are properly carried out, the Terms of Reference for such contracts should contain specific provisions pertaining to design criteria, safety considerations and observance of pertinent laws and regulations for civil works, safety and environment. Environmental provisions and conditionalities must be adequately stipulated in DPWH's manual of operation and the contractors' tender documents and construction activities. Compliance to these conditions will be closely monitored by DPWH in coordination with the DENR.

The critical component covered by the program refers to construction management since the key impacts are those generated during this phase of work.

During construction, the following should be closely observed:

- Location and set-up of construction quarters near the project site (for migrant workers only). These shall be provided with power and water supply and sanitary toilet and washing facilities.
- Provision of stockyard for construction materials such as aggregates, cement, reinforcing bars, among others.
- Identification of appropriate areas where excavated materials will be temporarily stockpiled.
- Coordination with LGU and DENR authorities in the identification of the disposal site for solid waste materials.
- Programming of land clearing and excavations during the dry season where practicable.

- Inevitable removal and cutting of trees must be undertaken with permit duly authorized by the DENR.
- Construction of temporary erosion ponds and silt traps as necessary around the work areas.
- Strict observance of proper cut - and - fills procedures to avoid or minimize any wastage or removal of excavated materials from the work areas.
- Placing of material stockpiles and spoil dumps as far away as possible from the waterways and provision of proper and adequate containment.
- Reduction of storage time of construction spoils and materials in the work areas.
- Observance of proper operational procedures in the use of heavy equipment for transporting, hauling and moving earth spoils from one area to another so as to avoid spills into the rivers or nearby waterways.

DPWH must require its contractors to implement a waste management program, which will include regular collection and disposal of wastes at a designated sites approved by the DENR. This program should include the following waste management practices:

- Provision of waste bins in various strategic points within the construction area for the workers to dispose their wastes. Wastes from these containers will be collected (dump truck of the contractor) regularly to be disposed at a designated dumpsite by the LGU.
- Placing of recyclable materials at local material recovery facilities (MRF).
- Conduct of a thorough orientation of workers on proper waste disposal practices.
- Re-use of excess excavated materials as aggregate or fill.
- Regular hauling of construction debris to the designated dumping area to prevent their accumulation on-site.
- Conduct of equipment/vehicle cleanup and maintenance as far away as possible from work areas and waterways. Collection of spent and placement of used oil placed in sealed containers and their proper disposal or sale to other users.
- Post construction clean-up and disposal of construction debris shall be a contractors responsibility

The following measures shall be observed by the Contractor to reduce the incidence of project related accidents:

- Designation of a safety engineer or its equivalent at the construction site at all times.
- Provision of rubber boots, safety gloves, dust masks, colored raincoat and other equipment for all workers as deemed necessary.
- Non admittance of technical staff, construction workers to work areas without the use of appropriate safety apparel.

Contractors of DPWH should be required to source most of their labor requirement from locally available and qualified labor force. Where practicable, construction and other locally available materials and supplies should also be locally sourced to provide business and livelihood to the host barangays, municipality and province.

The formulation of emergency response plan applies to projects whose failure will translate to loss of life and property. In the case of the CALA road project, the risk is essentially limited to vehicular accidents. Mitigation of these events shall be part of the implementation of traffic rules and regulations as required by the Department of Public

Works and Highways and the Department of Transportation and Communications (DOTC). The proposed road as in all major thoroughfares shall have a buffer on both sides which correspond to the established Right of Way.

The required rehabilitation plan shall be under the regular road maintenance activities which include among others the monitoring/maintenance of embankments, drainage systems and bridge abutments, among others.

6.3 SOCIAL DEVELOPMENT PROGRAM (SDP)

The SDP addresses the key socio-economic issues/concerns raised during the household and perception surveys and FGDs. It consists of the following components:

- Information, Education and Communication (IEC)
- Land Acquisition and Resettlement and
- Employment and Livelihood Development

6.3.1 Information, Education and Communication (IEC)

The IEC will be undertaken to encourage the participation and cooperation not only of the affected households but a broader sector of stakeholders and facilitate the establishment of support linkages in the implementation of the project. The IEC consists of the following:

- Information dissemination on the results of the EIA;
- Information on the final design of the proposed road alignments based on the detailed engineering study and consultation with the affected HHs; and
- Information on project implementation and monitoring.

(1) Information on Project Design and EIA Results

This will be done by means of a public presentation or distribution of information materials during the pre-construction phase of the project, which include the following information:

- Brief description of the project showing the proposed road alignment including a sketch map of the project location and vicinities;
- The environmental issues/concerns raised during the surveys and FGDs and the potential environmental impacts during the pre-construction, construction and operation/maintenance phases of the project;
- The recommended mitigation/enhancement measures that will address both negative and positive impacts, especially those related to ROW acquisition; and
- The participation/roles of the stakeholders in the implementation of the project.

The information materials will be in the form of flyers, fact sheets, posters, and pamphlets.

(2) IEC During Project Implementation and Monitoring

IEC will be undertaken during project implementation to generate participation and support of the community, especially the affected families, in the following activities:

- ROW acquisition;
- Project monitoring; and
- Employment of local labor and livelihood promotion.

While information dissemination were already conducted during the consultations with LGU officials, from the municipal to the barangay levels, and the FGDs conducted in all the affected barangays, more intensive campaign will be undertaken for the directly affected households especially in barangays where many households were still apprehensive about the project and were thus hesitant to participate in the sharing of information, such as those related to ROW acquisition, during the surveys.

The distribution of IEC materials will be done, therefore, to complement the continuing consultation with the affected households and other stakeholders in the project area. The IEC will be crucial in finalizing the Land Acquisition and Resettlement Plan (LARP), especially the compensation scheme and entitlements for the directly affected households.

The estimated cost of the IEC component of the SDP is P2.25 million, at average of P0.250 million per municipality/city.

6.3.2 Land acquisition and resettlement¹

(1) Preparation/finalization of the LARP

The detailed LARP will be prepared and finalized to come up with an appropriate and acceptable measure for mitigating the loss of land and other properties as well as income opportunities of project affected families and persons (PAFs/PAPs). To be finalized through series of consultations with the PAFs/PAPs during the detailed engineering phase of the project, the LARP will be comprehensive and provide details on the process and mechanics for the identification and profiling of PAFs/PAPs, inventory of losses (land, houses, other assets, income), valuation procedures and appraisal, estimation of costs and budget, resolution of complaints and grievances, and the different relocation stages and process (if relocation is considered as an alternative compensation package instead of cash compensation for loss of residential land and house).

(2) Entitlements and Compensation Scheme

The DPWH and the PAFs/PAPs will jointly determine and agree on the appropriate compensation in accordance with the following compensation scheme:

1) Productive lands and crops

PAFs/PAPs losing more than 20% or all of their agricultural land, or in cases when the remaining assets are not economically viable, are entitled to:

¹ *Resettlement* refers to all measures taken to mitigate any and all adverse impact of the project on PAFs/PAPs property and/or livelihood, including compensation, relocation and rehabilitation, where applicable.

- Full compensation at replacement cost² of the entire asset either through provision of equivalent land of equal productive capacity (if available and so desired by the displaced person) or through cash compensation;
- Displaced person who will lose their income will be provided opportunities for livelihood, job matching or business development assistance in the project area; and
- Appropriate transfer and subsistence allowances will be given during the transition phase.

PAFs/PAPs losing less than 20% of their productive assets, where the remaining assets remain viable for continued use, are entitled to cash compensation at replacement cost for the affected asset.

Replacement of damaged or lost crops will be compensated at full replacement cost for their net loss of income and/or damaged assets.

PAFs/PAPs whose land is temporarily taken will be compensated at full replacement cost for their net loss of income and/or damaged assets.

Verification of land titles and tax payments will be undertaken before land replacement or cash compensation.

2) Residential land house and other structures

- Full compensation at replacement cost of the entire asset either through provision of equivalent land of equal productive capacity (if available and so desired by the displaced person) or through cash compensation, and cash compensation reflecting full replacement cost of the structures, without depreciation;
- If the PAF/PAP so wishes and the remaining land is still a viable residential lot, cash compensation at full replacement cost will be provided;
- If after acquisition, the residential land and/or house are sufficient to rebuild the residential structure lost, then at the request of the PAF/PAP the entire residential land and structure will be acquired at full replacement cost, without depreciation;
- Tenants, who have leased a house or residential purposes, will be provided with a cash grant of three months rental fee at the prevailing market rate in the area, and will be assisted in identifying alternative accommodation.

3) Loss of business

- The provision of alternative business site of equal size and accessibility to customers, satisfactory to the displaced PAF/PAP;
- Cash compensation for the lost business structure reflecting full replacement cost without depreciation; and
- Cash compensation for the loss of income and opportunity during the transition phase.

² *Replacement cost* refers to the value determined to be fair compensation for real property based on its productive potential, replacement cost of houses and structures (as reckoned on current air market price of building materials and labor without depreciation or deductions for salvaged building materials), and the market value of residential land, crops, trees and other commodities.

(3) Voluntary Land Donations

Voluntary donation of land from community members who wish to do so in exchange of project benefit or for the sake of the community will be accepted. However, procedures will be in place to ensure that all donations are voluntary and freely given that the donor is the legitimate owner of the land and that the donor is fully informed of the nature of the project and the implications of donating the property.

The following safeguards will have to be applied, depending on their appropriateness to the cases being encountered:

- An assessment that the supposed donor does not suffer a substantial loss affecting his/her economic viability as a result of the donation;
- Certification from the LGUs and the DPWH that the land is free of claims or encroachments from any third party;
- Deed of Donation to the DPWH, as witnessed by LGU/government officials, and notarized by a registered lawyer, with copies of donation papers furnished the office of the municipal Assessor and the provincial Register of Deeds;
- Waiver of Rights/Quit Claim (for plants, trees, houses, structures claimed by tenants or informal settlers)

(4) Costs and Budget

The LARP will include detailed cost of compensation and other entitlement, with a breakdown of replacement or rehabilitation costs for agricultural and residential land houses and other structures, business and other assets, public facilities and services and utilities. The cost estimates will make adequate provisions for continuous consultation and information dissemination, surveys and project supervision under contingencies.

(5) Complaints and grievances

Complaint and grievances relation to any aspect of the resettlement entitlements and/or activities, including the determined areas and price of the lost asset, will be managed as follows:

- Grievances will be filed by the PAF/PAP with the Complaints and Grievance Committee (CGC) to be established by the project at the Barangay level to hear complaints and grievances regarding the acquisition of land and other assets, compensation, relocation, rehabilitation and other entitlements. Members of the CGC include the Barangay Captain, Barangay Secretary, a member of the Barangay Justice, as well as formal and informal representatives of the community, where applicable.
- The complaint, grievance and appeal shall have the following levels:

Level 1: PAF/PAP lodges complaints and grievances to the CGC. The CGC will have to document its investigation of the facts presented and provide a written response to the PAP within fifteen (15) calendar days upon receipt of the complaints.

Level 2: If the PAF/PAP is not satisfied with the decision of the CGC, the PAF/PAP may appeal the case to the DPWH Project Management Office (PMO)

within fifteen (15) calendar days upon receipt of the written decision/s from the CGC. The decision of the PMO shall be rendered within thirty (30) calendar days upon receipt of the appeal after validating the facts of the complaints.

Level 3: If the PAF/PAP is not satisfied with the decision of the PMO, the PAF/PAP may appeal the case to the DPWH Secretary, through the DPWH Regional Office, within fifteen (15) calendar days upon receipt of the written decision from the Office of the Secretary. The said decision shall be rendered within thirty (30) calendar days upon receipt of the appeal after validating the facts of the case.

PAFs/PAPs will be exempted from paying all administrative and legal fees. Resorting to courts without availing of this complaint and grievance process will make the appellant's action dismissible on the ground of non-exhaustion of administrative remedies.

(6) Implementation Arrangements, Supervision and Monitoring

The DPWH will implement the LARP in coordination and with the assistance of the respective LGUs and national agencies concerned such as the NHA and the Philippine National Police. The DPWH will be fully responsible for the preparation of the asset inventories and the compensation plans in consultation with the PAFs/PAPs, and the implementation of the LARP until the entire requirement has been completed.

Implementation of the LARP will be regularly supervised and monitored by the DPWH Project Office. Internal monitoring and supervision will constitute:

- Verification that the baseline information of all PAFs/PAPs has been established and that the valuation of lost or damaged assets and provision of compensation and other entitlements have been carried out in accordance with the policies and procedures adopted by the project;
- Record all grievances and their resolution and ensure that complaints are dealt with in a timely manner.

Payment of compensation for ROW acquisition will have to be completed as planned and issues pertaining to it likewise be resolved in accordance with the policies and guidelines governing acquisition of land for ROW. DPWH cannot proceed to the construction phase of the project unless these are accomplished.

(7) Relocation Phases and Processes

In case relocation is considered as an alternative mode of compensation preferred by PAFs/PAPs, the activities will be incorporated in the final LARP. It will be divided into three phases and undertaken in accordance with the humane approach as spelled out in RA 7279 and its applicable implementing guidelines.

1) Pre-relocation phase

This phase will consist of the following preparatory activities:

- Forging of inter-agency agreement, through a Memorandum of Agreement (MOA), among agencies that may be involved in the undertaking, namely, the DPWH,

- respective LGUs, and the NHA, and creation of relocation committee and action teams composed of representatives of these agencies;
- Selection, acquisition and development of the relocation site, which are among the first concerns of the committee and action teams;
- Conduct of social preparation activities, namely: consultations with community leaders and social preparations for PAFs/PAPs active participation in the various relocation processes; and
- Conduct of socio-economic survey, census and tagging.

2) Actual relocation phase

The actual relocation phase will include the following activities:

- Preparations prior to dismantling of houses and other structures;
- Dismantling of the houses and other structures;
- Loading and transporting of the families, dismantled and reusable housing materials, and other items to the relation site; and
- Assignment of home lots and/or housing units.

3) Post relocation phase

The activities to be undertaken after the actual relocation are the following:

- Establishing interaction linkage between the relocated families and the host community; and
- Facilitating job placement of PAFs/PAPs in the project or their engagement in available livelihood and business opportunities therein, subject to the employment and livelihood promotion policies and procedures adopted by the DPWH as discussed in the next topic.

6.3.3 Employment and livelihood promotion

In order to facilitate employment of qualified local labor to fill the work requirements during the construction phase of the project and, at the same time, enable the residents to enjoy the livelihood and business opportunities that will be generated by the project, a Manpower placement and livelihood promotion Committee will be organized for this purpose by the DPWH in each of the 9 municipalities/city. To be composed of representatives from the LGUs (Municipality and Barangay), affected households, and the DPWH, the committee will undertake the following with support coming from the respectively represented offices/groups:

Identify the job requirements of the project that can be filled by local labor through proper representation with the contractors, and math this with the skills of the existing labor force in the locality for subsequent placement;

Identify the livelihood and business opportunities to be generated by the project and promote these to the residents of the area and if necessary, extend assistance to those who are interested in terms of establishing contacts with clients/customers as well as suppliers.

6.4 INSTITUTIONAL PLAN

An environmental group exists within the DPWH which is responsible for the compliance of the agency to existing environmental rules and regulations. The same group shall be responsible for the overall implementation of the EMMP which will include among others:

- Overall planning and management of environmental mitigation, enhancement and monitoring measures
- Overseeing the finalization and implementation of the various proposed plans such as the LARP and Social Development Program.
- Organization of the MMT and secretariat support to the various committees of the MMT;
- Coordination with DENR, LGUs, IAs/FIA and local communities concerning the implementation of the various management plans
- Regular checking of the operation of the construction contractors regarding their compliance with environmental clauses/conditionalities in their contracts

6.5 ENVIRONMENTAL MONITORING PROGRAM

Environmental monitoring shall be undertaken to:

- To ensure that the recommended mitigation and enhancement measures as embodied in the EMMP and ECC conditionalities are being implemented;
- To undertake regular monitoring of specific parameters in compliance with existing environmental quality standards; and
- To determine the effectiveness of the EMMP and make recommendations for any corrective or additional mitigating measures.

6.5.1 Monitoring Plan

A monitoring plan shall be developed based on the mitigation/enhancement measures identified for significant environmental impacts and those that are moderately significant, but can have critical effects if not mitigated. The environmental monitoring plan proposed including the key parameters to be monitored is presented in Table 6.1. This covers both the pre-construction/construction and operation stages. Figure 6.1 indicates the proposed monitoring stations for air and noise.

The key parameters to be closely monitored are the following:

- soil erosion and sedimentation of water bodies during construction
- changes in water quality during construction
- air quality and noise impacts during both construction and operation
- tree planting and revegetation of critical areas

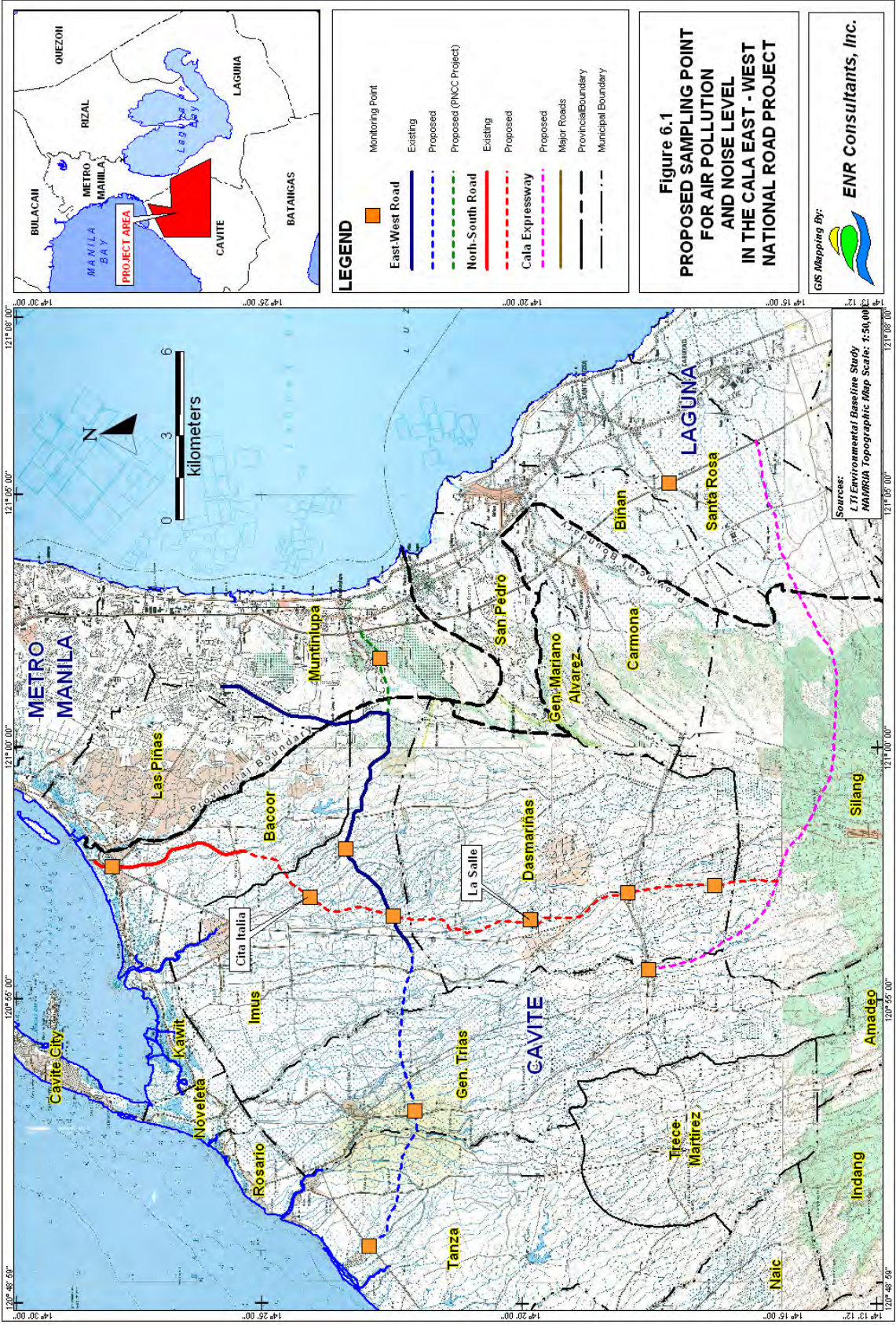
Based on the anticipated impacts, the frequency of monitoring by DPWH and the MMT will be more constant and rigid during the construction phase. Monitoring DPWH during the operation phase will be closely coordinated with the regional office of the DENR. The baseline information generated during the EIA will generally serve as the benchmark data. Additional measurements shall be made at stations near the proposed final alignment on the final road position as determined in the feasibility.

Table 6.1 Environmental Monitoring Plan

Project Phase	Method and Scope	Parameter	Location	Frequency	Responsibility	Cost (P)
1. Pre-Construction/ Construction Period						
Physical						
<ul style="list-style-type: none"> Right of Way Acquisition Vegetation clearing/tree cutting Excavation works Foundation works 	<ul style="list-style-type: none"> Monitoring of Earthmoving activities 	<ul style="list-style-type: none"> Contractor's material handling Program 	<ul style="list-style-type: none"> Construction sites especially at bridge sites 	Once a week during construction	DPWH	Part of DPWH supervision cost
	<ul style="list-style-type: none"> Engineering geological assessment of slopes 	<ul style="list-style-type: none"> Slope profile and signs of instability 	<ul style="list-style-type: none"> Abutments of bridge crossings, steep and high cuts 	Once a week during construction or after heavy rains or earthquake event	Construction Contractor	Part of CC cost
	<ul style="list-style-type: none"> Water quality tests (DENR Administrative Order No.34 (1990)) 	<ul style="list-style-type: none"> River water quality- DO, pH, TSS, BOD, total and fecal coliform 	<ul style="list-style-type: none"> Within 50 m downstream of bridge sites (only at the point where river water is used for some purpose downstream) 	Monthly during active construction periods	DPWH/DENR/ MMT	P750, 000/ year ~P 9,000.00 per point
	<ul style="list-style-type: none"> Geo-hazard assessment 	<ul style="list-style-type: none"> Erosion and siltation 	<ul style="list-style-type: none"> Waterways near construction sites 	Weekly	DPWH/DENR/ MMT	P240,000/ year
	<ul style="list-style-type: none"> Measurement of ambient concentrations (1999 Philippine Clean Air Act) 	<ul style="list-style-type: none"> TSP, SOx, NOx 	<ul style="list-style-type: none"> Construction areas near built up areas (12 points) 	Monthly during active construction period	DPWH/DENR/ MMT	P1,400,000/ year ~ P7, 500 per point
	<ul style="list-style-type: none"> Measurement of ambient level (1978 NPCC Rules and Regulations) 	<ul style="list-style-type: none"> Noise 	<ul style="list-style-type: none"> Construction areas near built up areas (12 points) 	Monthly during active construction period	DPWH/DENR/ MMT	P1,400,000/ year
	<ul style="list-style-type: none"> Monitoring of solid waste disposal 	<ul style="list-style-type: none"> Presence or absence of dumps, waste bins, collection system 	<ul style="list-style-type: none"> Construction sites and temporary quarters of workers 	Monthly	Contractor	
Biological						
	<ul style="list-style-type: none"> Site Inspection 	<ul style="list-style-type: none"> Tree cutting/ balling 	<ul style="list-style-type: none"> Vegetated areas with ROW 	Before construction	DPWH/DENR/ MMT	P240,000
Socio-Economical						
	<ul style="list-style-type: none"> Site inspection 	<ul style="list-style-type: none"> Worker health and safety 	<ul style="list-style-type: none"> Construction areas, worker's camp 	Weekly	Contractor	
	<ul style="list-style-type: none"> Site inspection 	<ul style="list-style-type: none"> Waste management 	<ul style="list-style-type: none"> Project site, worker's camp 	Daily	Contractor	

Table 6.1 Environmental Monitoring Plan

Project Phase	Method and Scope	Parameter	Location	Frequency	Responsibility	Cost (P)
2. Operation and Maintenance Period						
Physical						
<ul style="list-style-type: none"> Operation and Maintenance of roads 	<ul style="list-style-type: none"> Measurement of ambient concentrations (1999 Philippine Clean Air Act) 	<ul style="list-style-type: none"> TSP, SOx, NOx 	<ul style="list-style-type: none"> Selected sections of the completed roads (12 points) 	Yearly	DPWH/DENR/ MMT	
	<ul style="list-style-type: none"> Measurement of ambient level (1978 NPCC Rules and Regulations) 	<ul style="list-style-type: none"> Noise 	<ul style="list-style-type: none"> Selected sections of the completed roads (12 points) 	Yearly	DPWH/DENR/ MMT	
Biological						
		<ul style="list-style-type: none"> Tree Planting, Revegetation 	<ul style="list-style-type: none"> Critical Areas along ROW 	Weekly		



6.5.2 Implementation Monitoring

In compliance with the guidelines of DAO 96-37, a Multi-Partite Monitoring Team (MMT) will be established to take charge of the preparation of the final monitoring program and annual monitoring plan including the conduct of monitoring activities. The MMT is proposed to be composed of the following:

- DPWH Representative
- DENR Representatives (DENR Regional EMB and/or PENRO/CENRO)
- LGU designated representative(s)
- NGO/PO designated representative
- Barangay designated representatives

The constituted/organized MMT shall review and validate, among others, the following:

- coverage of monitoring
- frequency of monitoring
- standard procedures/method of monitoring
- schedule of monitoring
- manpower requirements
- logistics

The MMT shall implement the environmental monitoring action plan. A monitoring evaluation and reporting system shall be established to enable stakeholders to participate in the process. Where necessary, the system shall be reviewed and updated in relation to actual construction and site conditions.

This system may include the following elements:

- A system to properly coordinate, support and enhance the various monitoring activities of the MMT as well as its manner of information exchange for monitoring and evaluation.
- Identify institutional and other implementation issues or problem areas and identify processes/mechanisms in resolving such issues/problems.
- Identify capability building mechanisms to be able to sustain and institutionalize project monitoring.
- A system of reporting and utilizing monitoring and evaluation results for information dissemination and for consequent action.
- A capacity building and strengthening for those staff who will be responsible for the implementation of the environmental management and monitoring plan

The initial cost of the establishment of the MMT and finalizing the monitoring plan is estimated at P100, 000. Monitoring during construction and operation is initially placed at about P500, 000 and P700, 000 annually, respectively.

6.6 OVERALL EMMP IMPLEMENTATION AND RESOURCE REQUIREMENT

The overall EMMP summary including mitigation/enhancement measures, schedule of implementation, estimated investment requirements, institutional responsibilities and guarantees/agreements is shown in Table 6.2. The cost computations are rough estimates and need to be verified/ validated during the plan finalization.

6.7 ENVIRONMENTAL GUARANTEES, COMMITMENTS AND AGREEMENTS

To ensure the protection of the environment with the project, environmental guarantees, commitments and agreements for the implementation of the proposed EMMP are provided by the proponent along with the stakeholders of the project.

6.7.1 Environmental Guarantees

To ensure the protection of the environment with the project, environmental guarantees, commitments and agreements for the implementation of the proposed EMMP are provided by the proponent along with the stakeholders of the project.

A Memorandum of Agreement (MOA) was entered into by DENR and DPWH in 1999 setting down Rights and Obligations of both agencies for the protection of the environment and conservation of the country's natural resources. It is here that the Environmental Guarantee Fund (EGF), which is the usual provision of a fund source by the proponent for any work required to address damages brought about by projects, was replaced. This is stipulated in the MOA as follows:

- “10. As a replacement to EGF, the DPWH shall ensure that Contractor's All Risk Insurance (CARI) is provided to cover expenses for the following: indemnification/compensation of damage to life and property that may be caused by the implementation of the projects and abandonment/decommissioning of the project facilities related to the prevention of possible negative impact.”

Likewise, an Environmental Monitoring Fund shall no longer be established by DPWH to support the operation of the MMT and its various monitoring activities since the undertaking of monitoring activities shall be carried out through a “Bayahihan” approach. This is also stipulated in the MOA as follows:

- “12. The Multipartite Monitoring Team (MMT) will be formed through Bayanihan Approach, since there are no funds available for Environmental Monitoring Fund (EMF). The MMT will be formed on a voluntary basis (bayanihan) with members coming from the EIAPO, Planning Service, EIARO (DPWH Regional Offices), CENRO, PENRO, Local Government Units (LGU), Non Government Units (NGO), POs experts and other cause oriented environmental groups. In this regard, expenses of members of MMT in the performance of their official duties will be charged to appropriate funds of their respective offices.”

6.7.2 Project Commitments, Affirmations and Agreements

The commitment of the stakeholders responsible for the implementation of the environmental management plan is essentially bound by the ECC conditionalities that shall be issued by the DENR. This ECC shall be complemented by the contract of the contractors which shall contain the appropriate environmental management provisions and the memorandum of agreements which may be forged among the contractor, LGU and the MMT.

Table 6.2 Environmental Management Plan

Project Activities	Predicted Environmental Impacts	Degree /type of Impact	Mitigation/Enhancement Measure	Cost	Responsible Institution	Guarantees/Agreements
1. Pre-Construction/ Construction Period						
<i>A. Physical Environment</i>						
Land						
<ul style="list-style-type: none"> Detailed engineering design; clearing within ROW area; site grading, excavation, backfilling bored piling at bridge areas, hauling/stockpiling of excavated and construction materials 	<p>Terrain modification, soil and weathered rock displacement</p> <p>Erosion, siltation of local waterways particularly at bridge crossings</p>	<p>S, P (negative)</p> <p>S, T (negative)</p>	<ul style="list-style-type: none"> Clearing and excavation works to be planned during dry season where practicable and scheduled so as to allow speedy concreting/backfilling of excavated sections Use of temporary siltation ponds³ Excavated materials be placed on appropriate dumpsites or spoils area at some distance from structure sites and provided with adequate containment; re-use soil spoils for backfilling Stockpiles of sand and gravel be fenced or so located to reduce transport of sediments during heavy rains including reducing storage time in work areas Observance of proper materials handling and heavy equipment operations for transport, hauling and moving earth spoils to minimize spills into rivers and nearby waterways⁴ Immediate revegetation of exposed areas which will not be occupied by road structures Strict observance of proper cut and fill procedures and materials balance to minimize wastage of excavated materials from work areas Restoration or dredging of silted waterways upon completion of construction activities Use of temporary sumps for detention of bentonite used in drilling bored piles Use of tarpaulins or equivalent to cover exposed stockpiles of excavated and construction materials Monitor river quarrying for construction materials 	<ul style="list-style-type: none"> Part of construction cost 	<ul style="list-style-type: none"> Contractor, DPWH, DENR, MMT 	<ul style="list-style-type: none"> Part of contractor's contract and as input to the feasibility study

³ Siltation ponds correspond to sumps which temporary detain water pumped out of excavations. Detention will facilitate the settlement of sediments from the water prior to eventual release into the nearby waterway.

⁴ This refers to the observance of caution in moving loaders and trucks laden with loose materials so as to minimize spillage and likely siltation while crossing waterways.

Table 6.2 Environmental Management Plan

Project Activities	Predicted Environmental Impacts	Degree /type of Impact	Mitigation/Enhancement Measure	Cost	Responsible Institution	Guarantees/ Agreements
	Slope destabilization at new cuts	MS, T (negative)	within the project area. Sources of construction materials for the project will be identified and approved for quarrying by the Mines and Geosciences Bureau and/or the concerned LGU.	<ul style="list-style-type: none"> Part of Design Cost Part of construction cost 	<ul style="list-style-type: none"> Contractor and DPWH Contractor, DPWH, DENR, MMT 	<ul style="list-style-type: none"> Part of contractor's contract and as input into the design stage Part of contractor's contract
			<ul style="list-style-type: none"> Monitoring of earthmoving activities by a qualified geotechnical engineer or engineering geologist 			
			<ul style="list-style-type: none"> Undertake slope stability analysis supported by adequate geologic mapping, field tests and laboratory analysis for sections which will involve large cuts. Drilling accompanied by appropriate laboratory test may be undertaken. This is an option to be taken by the contractor should his designer require subsurface data for the proposed slope stabilization measure. Install as necessary slope protection measures such as shotcreting, rock bolts or soil nails. A soil nail anchors soil like materials which are likely to fail into more stable strata located farther into the slope. 			
			<ul style="list-style-type: none"> Regular road maintenance, restoration of roads original conditions after construction activities. As practiced, the roads used by the contractors that are degraded by the passage of heavy equipment are restored or repaired at the end of the project or upon completion of construction activities in the particular area. 			
	Degradation of national and provincial roads used for hauling construction materials and for movement of heavy equipment	MS, T (negative)	<ul style="list-style-type: none"> Provision of waste bins in various strategic points within the construction area for the workers to dispose their wastes. Wastes from these containers will be collected (dump truck of the contractor) regularly to be disposed at a designated waste disposal site. Re-use and recycling of scrap materials and containers such as bottles, cans, boxes and plastics as much as practicable or selling them to scrap buyers. Conduct of a thorough orientation of workers on proper waste disposal practices. Re-use construction spoils as aggregate or filling materials where practicable. Regular hauling of construction debris to the 	<ul style="list-style-type: none"> Part of construction cost 	<ul style="list-style-type: none"> Contractor and DPWH 	<ul style="list-style-type: none"> Part of contractor's contract

Table 6.2 Environmental Management Plan

Project Activities	Predicted Environmental Impacts	Degree /type of Impact	Mitigation/Enhancement Measure	Cost	Responsible Institution	Guarantees/Agreements
Air	Increase in particulates and gaseous emissions and noise levels	MS, T (negative)	designated disposal area to prevent their accumulation on-site resulting to negative effects on the landscape.			
			<ul style="list-style-type: none"> Conduct of equipment/vehicle cleanup and maintenance in only one designated area located as far away as possible from waterways. Spent and used oil should be collected and placed in sealed containers and disposed of properly to prevent draining into waterways or sold to used oil recyclers/buyers. Efficient housekeeping practices including the use of covered receptacles for refuse generated by workers and construction scrap/debris will ensure the proper handling and disposal of solid wastes. In order to minimize the need to dispose of earth materials, the contractor shall make use of excavated materials as much as possible for filling and as part of construction materials. For non-suitable materials, these are placed in low areas where the possibility of erosion is limited. 			
			<ul style="list-style-type: none"> Sprinkle water in exposed areas on regular basis especially during dry and windy periods Speed of vehicles used for construction should be regulated to minimize stirring up of loose materials sinks for dusts/spoils Proper handling and storage of spoil materials Proper maintenance of engines for efficient fuel burning to lessen gaseous emissions Schedule construction activities during daytime Installation of silencers or mufflers for as many vehicle engines and heavy equipments as possible Contractor to assign traffic aides at key road sections to assist in traffic management 	<ul style="list-style-type: none"> Part of construction cost 	<ul style="list-style-type: none"> Contractor, DPWH, DENR, MMT 	<ul style="list-style-type: none"> Part of contractor's contract
Water	Increased traffic at road intersections leading to construction areas	MS, T (negative)		<ul style="list-style-type: none"> Part of construction cost 	<ul style="list-style-type: none"> Contractor, DPWH 	<ul style="list-style-type: none"> Part of contractor's contract
	Changes in river water quality	S, T (negative)	<ul style="list-style-type: none"> Refer to mitigation measures on soil displacement, 	<ul style="list-style-type: none"> Part of 	<ul style="list-style-type: none"> Contractor, 	<ul style="list-style-type: none"> Part of contractor's

Table 6.2 Environmental Management Plan

Project Activities	Predicted Environmental Impacts	Degree /type of Impact	Mitigation/Enhancement Measure	Cost	Responsible Institution	Guarantees/ Agreements
			erosion and siltation of waterways <ul style="list-style-type: none"> Locate gravel crushing, screening areas and concrete batching operations as far away as possible from waterways Undertake regular monitoring of water quality focusing on DO, BOD, TSS and TDS Provide adequate temporary sanitary facilities with proper drainage to prevent leaching and wash water from reaching water courses, use of portalets Contractors to prepare and implement a materials handling program for construction spoils and solid waste management Contractor to observe proper equipment maintenance and operation to minimize spillage of oil and grease into waterways 	construction cost	DPWH, DENR, MMT	contract
B. Biological Environment						
Terrestrial						
Vegetation clearing, excavation and grading and other construction activities	Loss, disturbance and damage to existing vegetation; Habitat degradation of dependent species	MS, T (negative)	<ul style="list-style-type: none"> For every tree cut, the required replacements must be made⁵ Secure necessary permit from DENR for tree cutting Implement tree baling where practicable Immediate revegetation 	<ul style="list-style-type: none"> Part of construction cost 	DPWH	Part of ECC requirement
Freshwater						
	Local aquatic habitat alteration and temporary displacement of species	NS, T (negative)	<ul style="list-style-type: none"> Same mitigation for the control of soil erosion and sedimentation 			
C. Socio-economic Environment						

⁵ Cutting of trees is generally guided by the provisions of PD 705 – Revised Forestry Code of the Philippines (Section 23). In the case of trees located in private lands, guidelines for cutting are embodied in DAO-21 which refers to the Revised Guidelines in the issuance of Private Land Timber Permit/Special Private Land Timber Permit (PLTP/SPLTP). A 100 tree inventory is required and this must be undertaken by a registered forester or by the local DENR office.

Table 6.2 Environmental Management Plan

Project Activities	Predicted Environmental Impacts	Degree /type of Impact	Mitigation/Enhancement Measure	Cost	Responsible Institution	Guarantees/Agreements
<ul style="list-style-type: none"> Detailed engineering design; clearing within ROW area; site grading, excavation, backfilling bored piling at bridge areas, hauling/stockpiling of excavated and construction materials including ROW acquisition 	Total or partial loss of land/farm area, properties and crops, dislocation and loss of income due to ROW acquisition	S, P (negative)	<ul style="list-style-type: none"> Negotiate with PAFs/PAPs for an acceptable compromise on valuation and compensation Finalize the RAP incorporating therein the agreements reached during public consultations 	NA	DPWH	<ul style="list-style-type: none"> Commitment of DPWH via MOA
	Increase in employment opportunities	MS, T (positive)	<ul style="list-style-type: none"> Require contractors to source workforce from qualified locals Contractors to orient workers on desirable working relationship especially if there are non-resident workers 	NA	Contractor, DPWH	<ul style="list-style-type: none"> Part of contractor's contract
	Increase in livelihood and business opportunities	MS, T (positive)	<ul style="list-style-type: none"> Priority to be given to local subcontractors Priority to be given to local suppliers of construction materials and equipment Supply of food and catering to be preferentially awarded to local suppliers 	NA	Contractor, DPWH	<ul style="list-style-type: none"> MOA of LGU with Contractor
	Potential health, sanitation and safety problems	NS, T (negative)	<ul style="list-style-type: none"> Contractor to provide temporary housing facilities for workers equipped with adequate water and sanitation facilities Contractors to implement proper solid waste management in the work site, workers will be oriented to observe proper hygiene and sanitation practices and provided with appropriate protection gears while working Construction areas to be enclosed as necessary and provided with appropriate signage to avoid accidents 			
D. Land Use						
Land Use and Zoning						
	Change in land value	S, P (positive)	<ul style="list-style-type: none"> Property appraisal by the local government unit before construction 			

Table 6.2 Environmental Management Plan

Project Activities	Predicted Environmental Impacts	Degree /type of Impact	Mitigation/Enhancement Measure	Cost	Responsible Institution	Guarantees/Agreements
2. Operations and Maintenance Period						
<i>A. Physical Environment</i>						
<i>Land</i>						
	Erosion at major discharge points of the road's storm drains	NS, T (negative)	<ul style="list-style-type: none"> Installation of dissipators at major discharge points of the roads' storm drains 	Dissipators: P1,481,000		
<i>Air</i>						
Operation and maintenance of roads	Increase in particulates and gaseous emissions	MS, P (negative)	<ul style="list-style-type: none"> IEC to road users on the proper maintenance of engines for efficient fuel burning and minimization of gaseous emissions Tree planting along the roads Regular road cleaning activity such as regular water sprinkling should be done 	Tree Planting: P158,090,000	DPWH, Tollway operator	Part of ECC requirement
	Increase in noise levels	MS, P (negative)	<ul style="list-style-type: none"> Traffic controls (e.g. speed limits and traffic-volume restrictions) and Vehicle controls along the highway (e.g., truck bans) Tree planting along the roads Noise barrier panel should be installed along the roads which pass sensitive areas such as hospital and school. 	Tree Planting: P158,090,000 Sound Barrier: P6,459,000		
<i>B. Socio-economic Environment</i>						
Operation and maintenance of roads	Lessened traffic congestion and improved access to public utilities and services	MS, P (positive)	Enhance the accessibility by providing appropriate signage to guide traveling public to use shortest and most convenient route to reach the interior places from the highway via the existing access roads and vice versa	Part of operations cost	DPWH, Tollway operator	Part of ECC requirement and standard operation procedures
	Increased livelihood and business opportunities, and revenues for LGUs	MS, P (positive)	Encourage LGUs to use part of the increase revenues for promoting conducive for expanding business operation and establishing new livelihood activities, by maintaining peace and order and improving basic services and infrastructure and utilities	NA	Initiative of LGU	Initiative of LGU
	Increased migration and population	MS, P (negative)	Concerned LGUs (barangay and municipal/city) to regulate encroachment in watershed areas (forest-	NA	Initiative of LGU	Initiative of LGU

Table 6.2 Environmental Management Plan

Project Activities	Predicted Environmental Impacts	Degree /type of Impact	Mitigation/Enhancement Measure	Cost	Responsible Institution	Guarantees/Agreements
			land) through proper zoning and enforcement <ul style="list-style-type: none"> ▪ LGUs to adequately plan/provide for social services and infrastructures including health services, waste management and facilities and road network ▪ Encourage the LGUs to regulate or prevent the establishment of squatter colonies by strictly enforcing RA 7279 or the "Urban Development Housing Act (UDHA)" 			
	Regional severance	S, P (negative)	<ul style="list-style-type: none"> ▪ In order not to disturb human flow between communities, measures for crossing the road should be installed such as flyover, underpass, at grade intersection, and service road. 	<ul style="list-style-type: none"> ▪ Part of construction cost 	Contractor, DPWH	<ul style="list-style-type: none"> ▪ Part of contractor's contract and as input into the design stage
	Increased accidents	MS, T (negative)	<ul style="list-style-type: none"> ▪ Intersection signal and sign board installation 	<ul style="list-style-type: none"> ▪ Part of construction cost 	Contractor, DPWH	<ul style="list-style-type: none"> ▪ Part of contractor's contract and as input into the design stage
	Damage of landscape	MS, P (negative)	<ul style="list-style-type: none"> ▪ Revegetation of the exposed areas ▪ Tree planting along the roads 	<ul style="list-style-type: none"> ▪ Tree Planting: P158,090,000 	Contractor, DPWH	<ul style="list-style-type: none"> ▪ Part of contractor's contract and as input into the design stage
<i>C. Land Use</i>						
Land Use and Zoning						
	Change in land value	S, P (positive)	<ul style="list-style-type: none"> ▪ Regular property appraisal by the local government 			

Note: S - Significant impact, MS - Moderately significant impact, NS - Not significant impact

T - Temporary impact, P - Permanent impact

negative - negative impact, positive - positive impact

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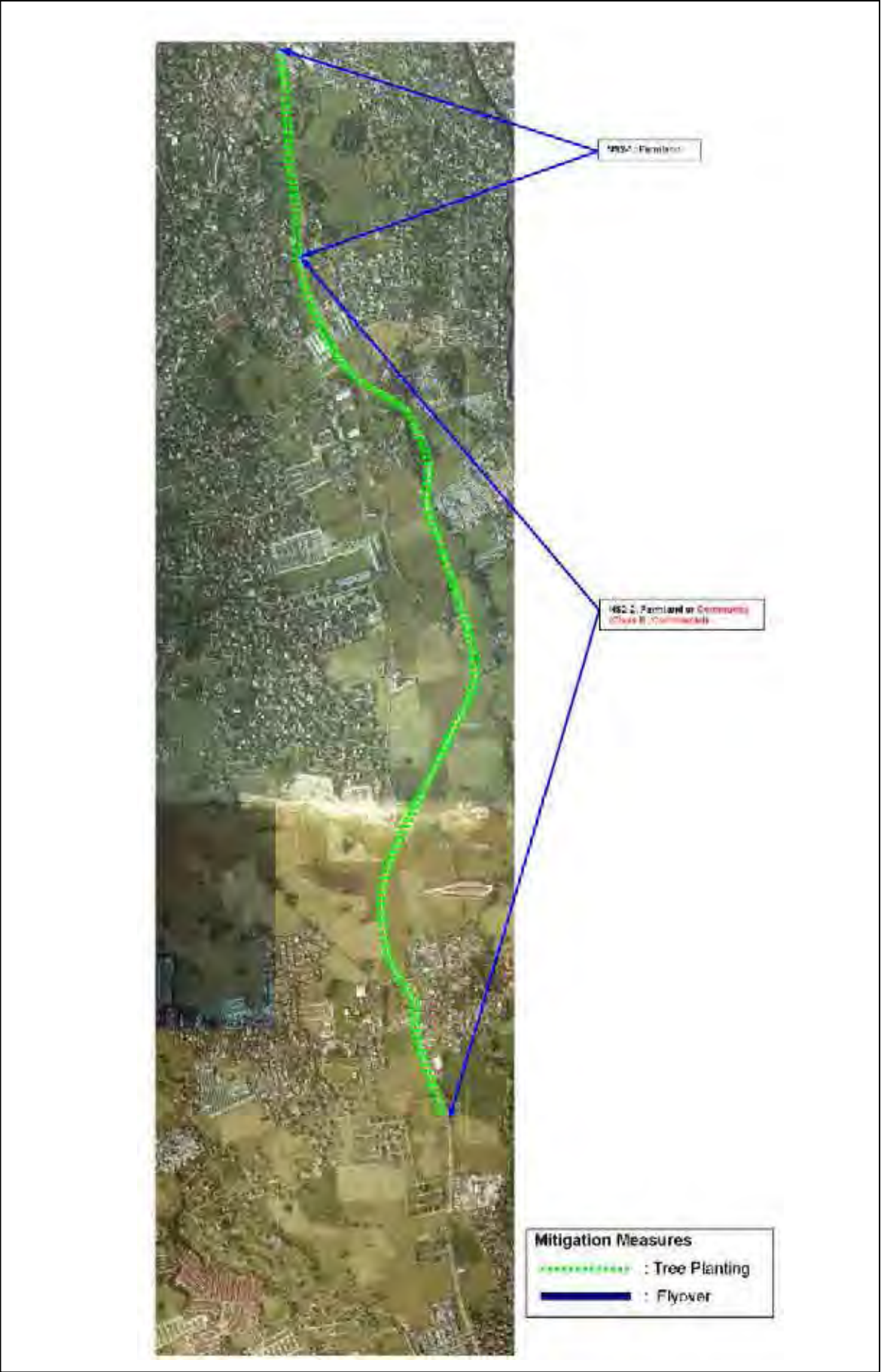
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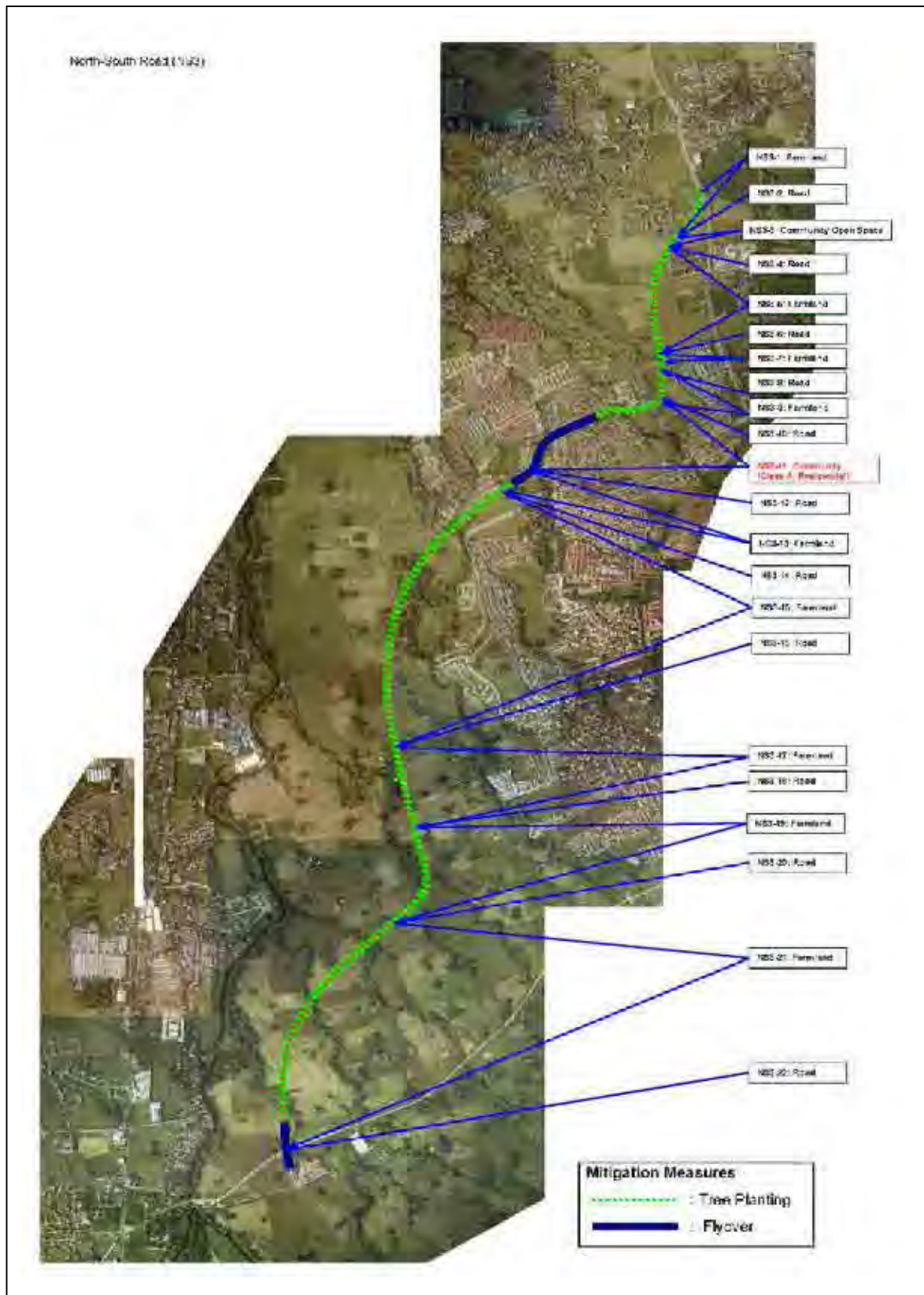
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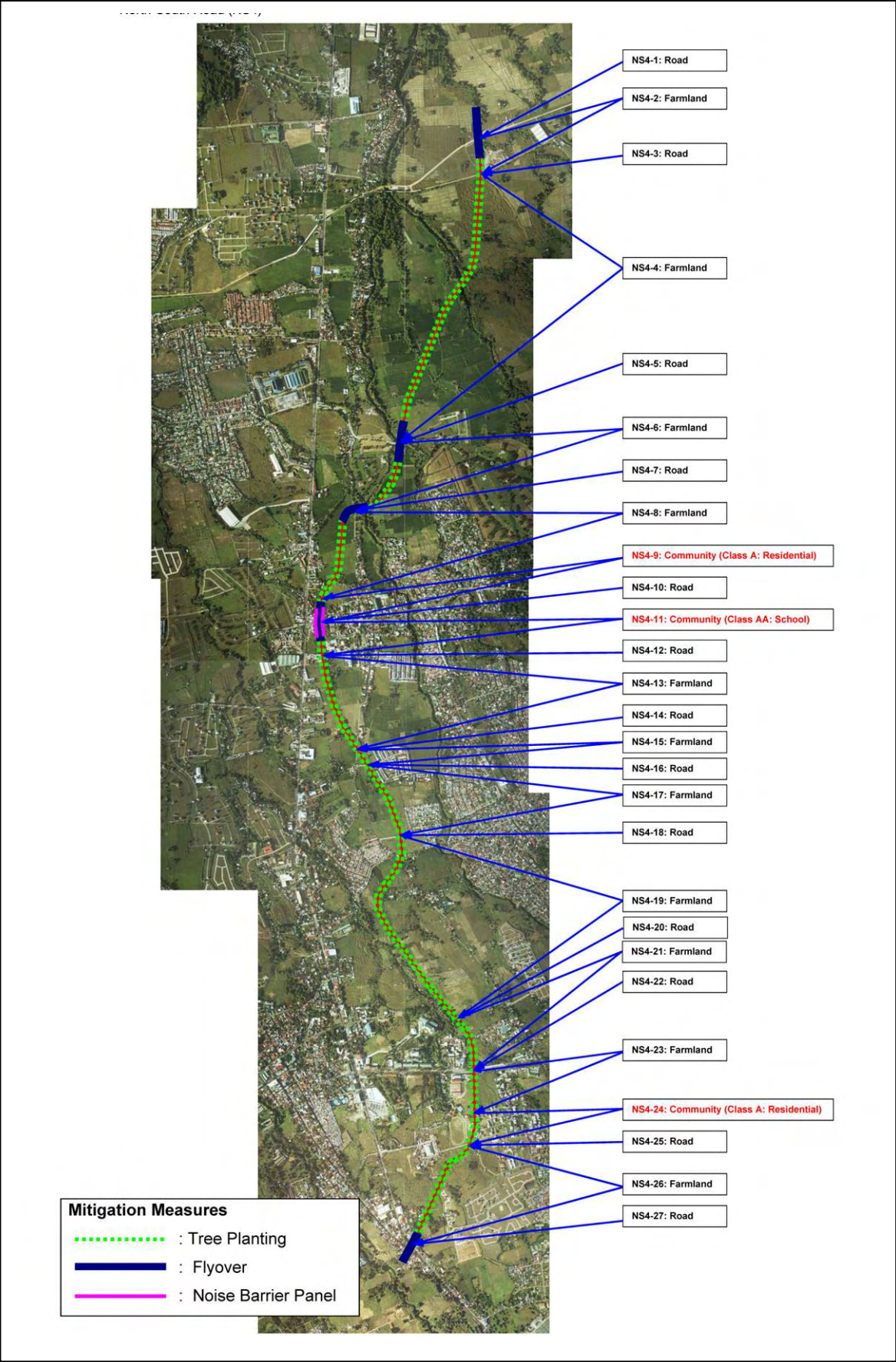
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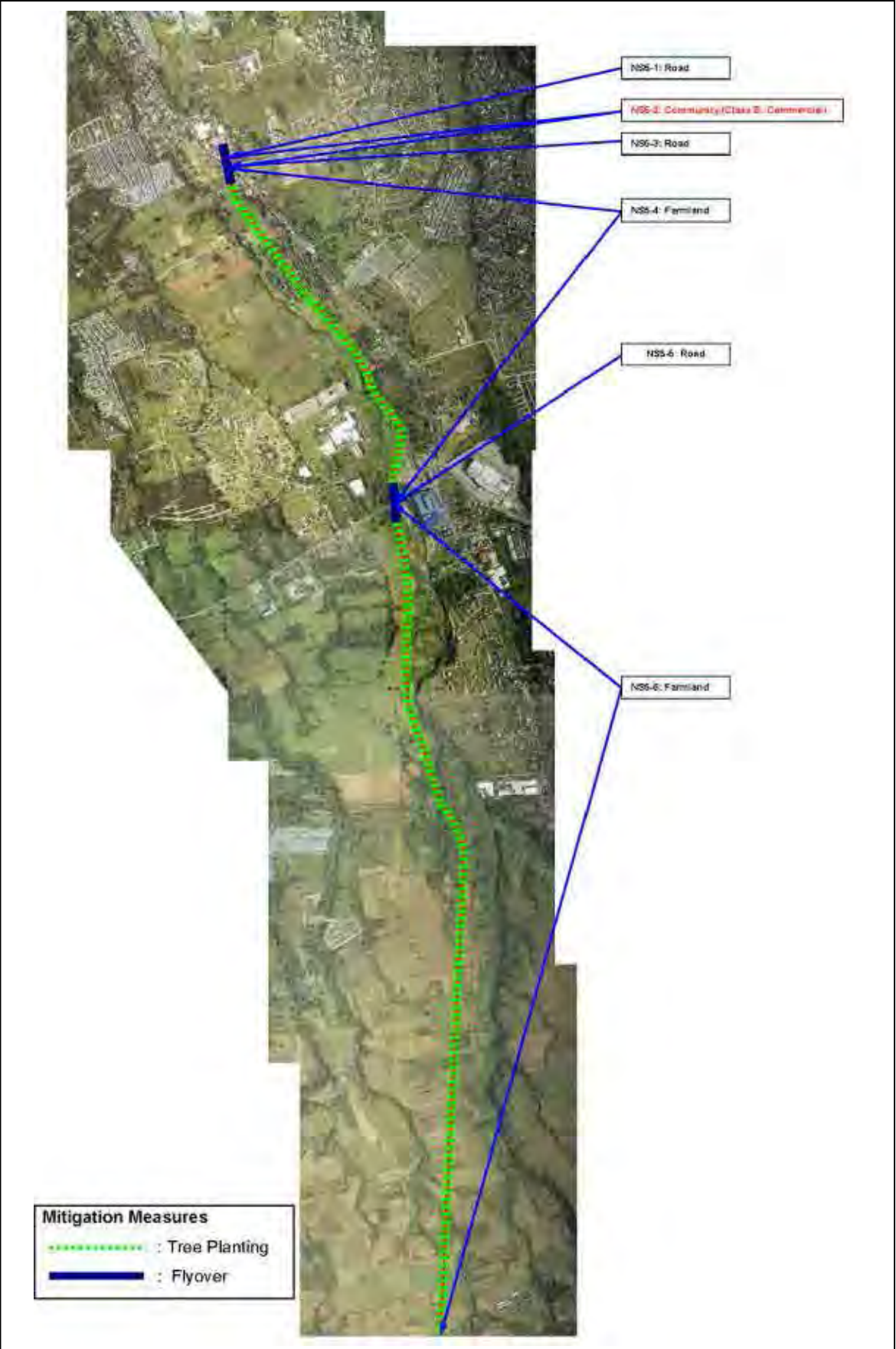
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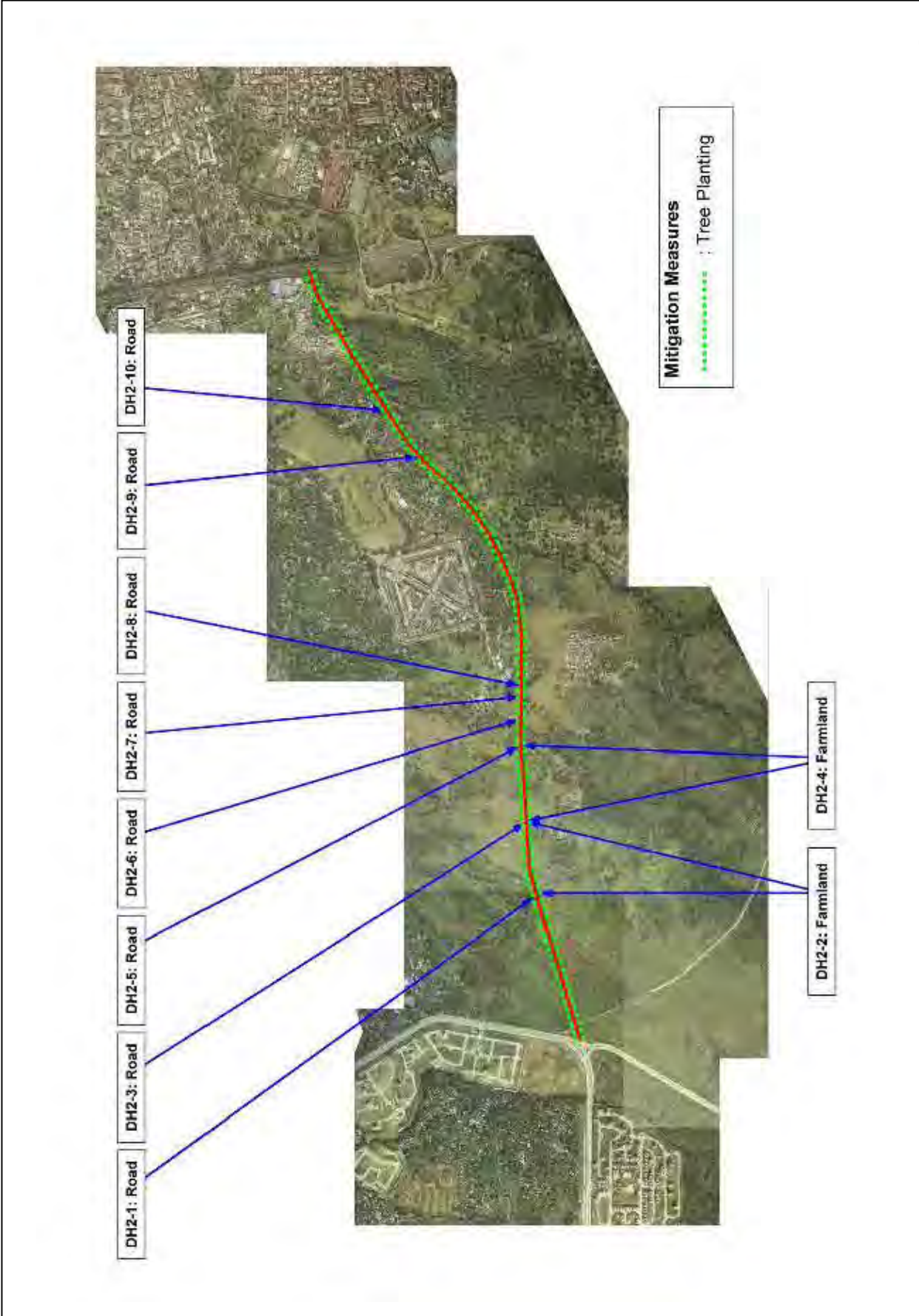


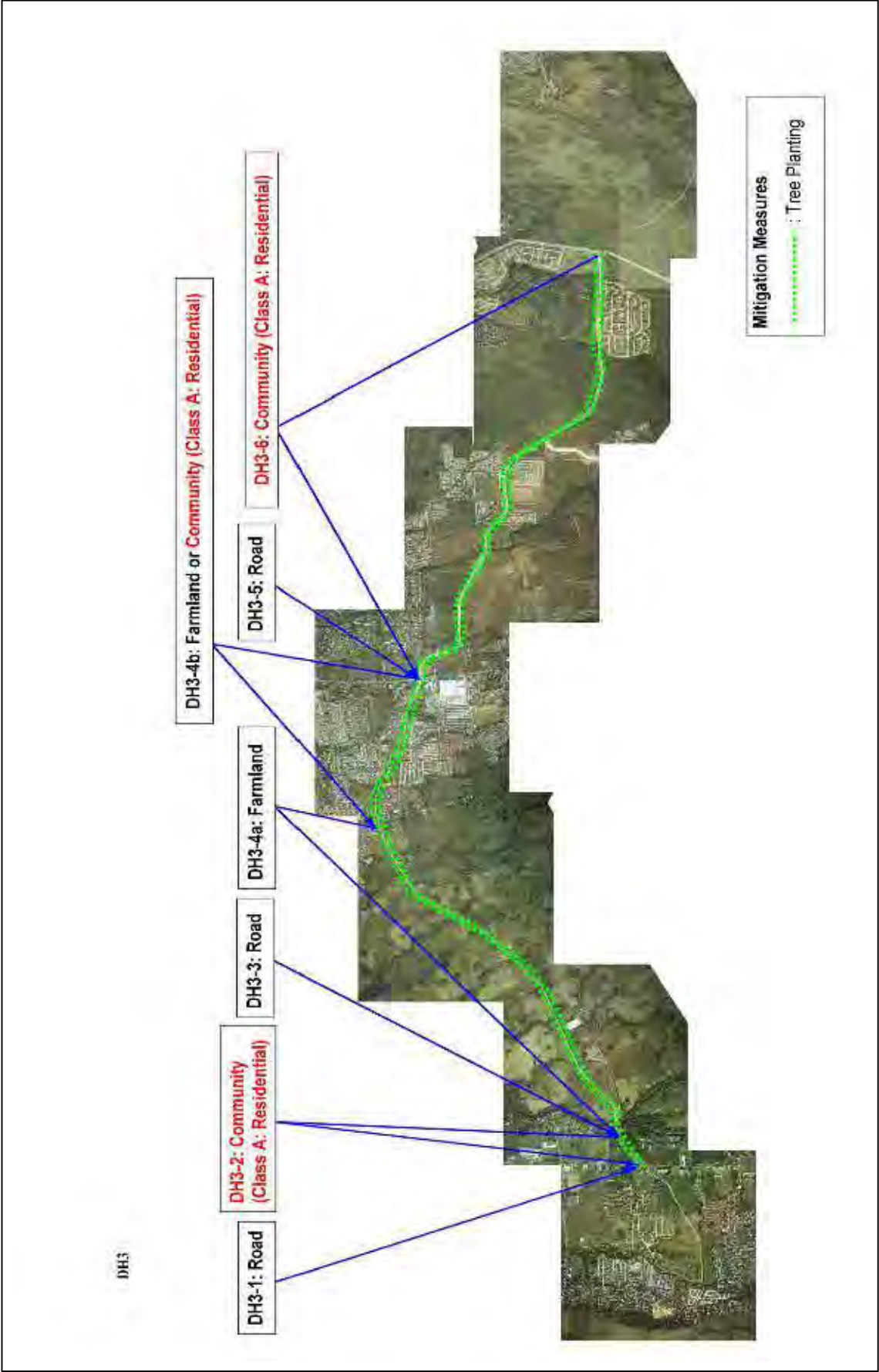


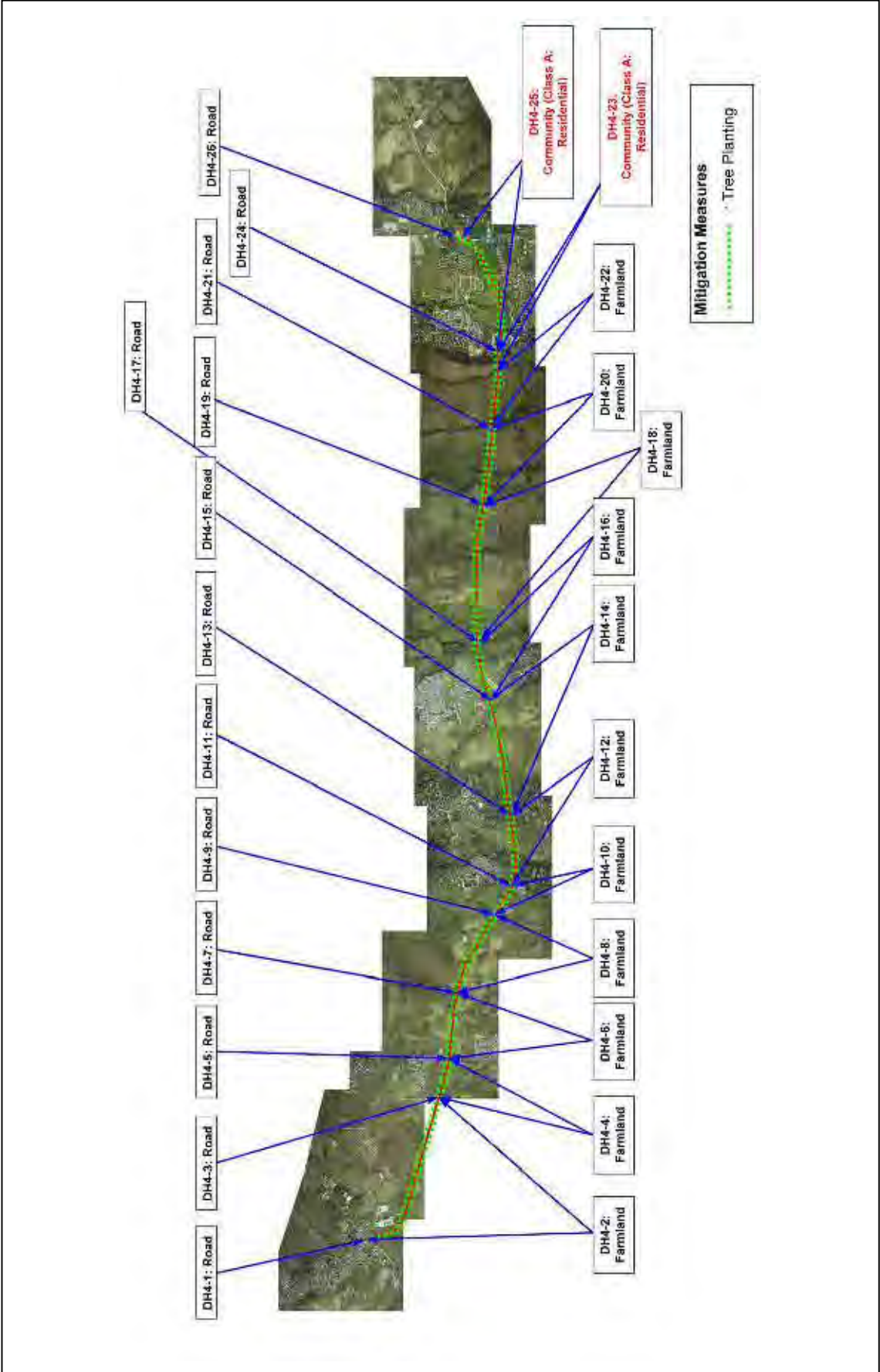


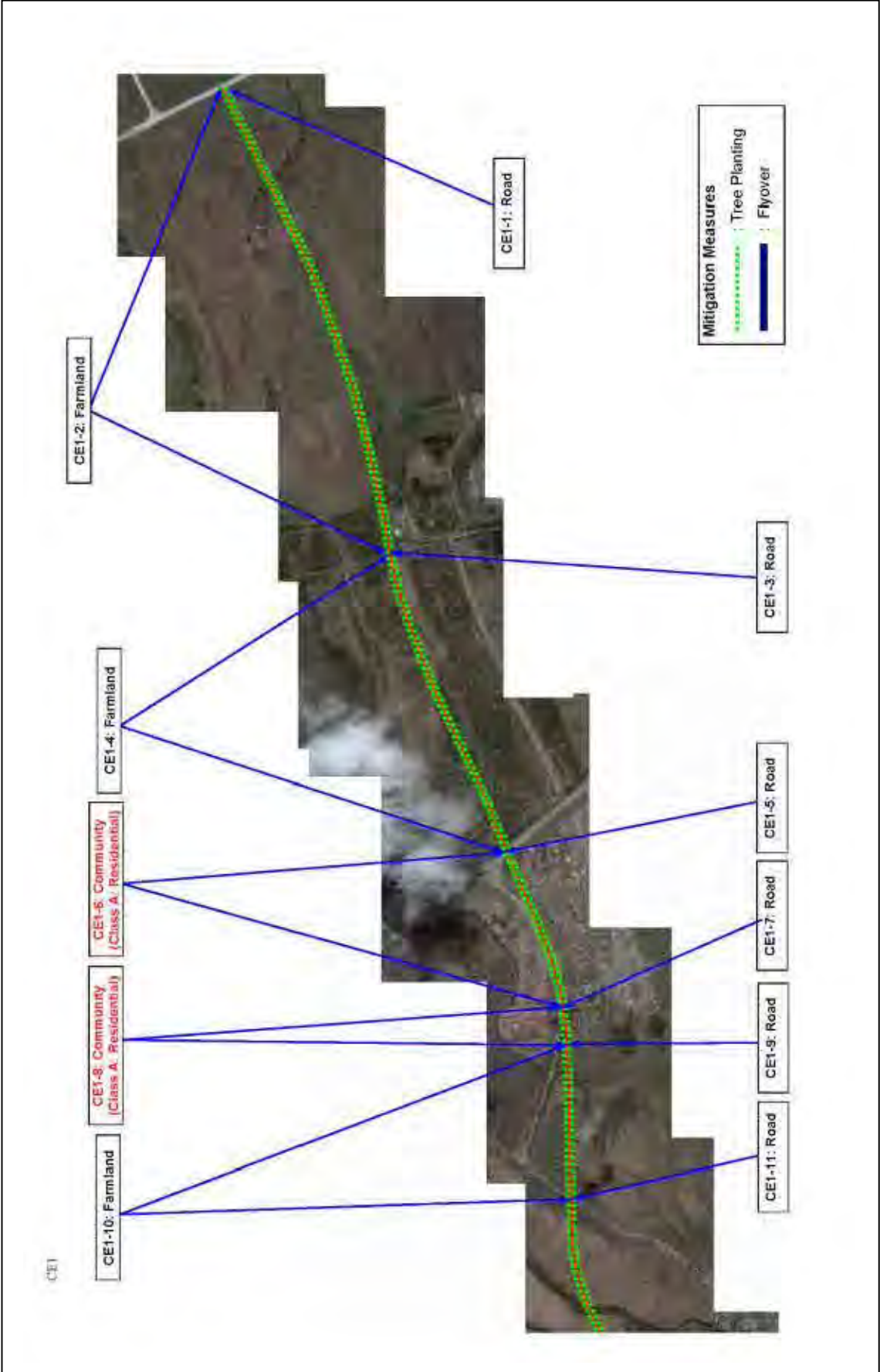


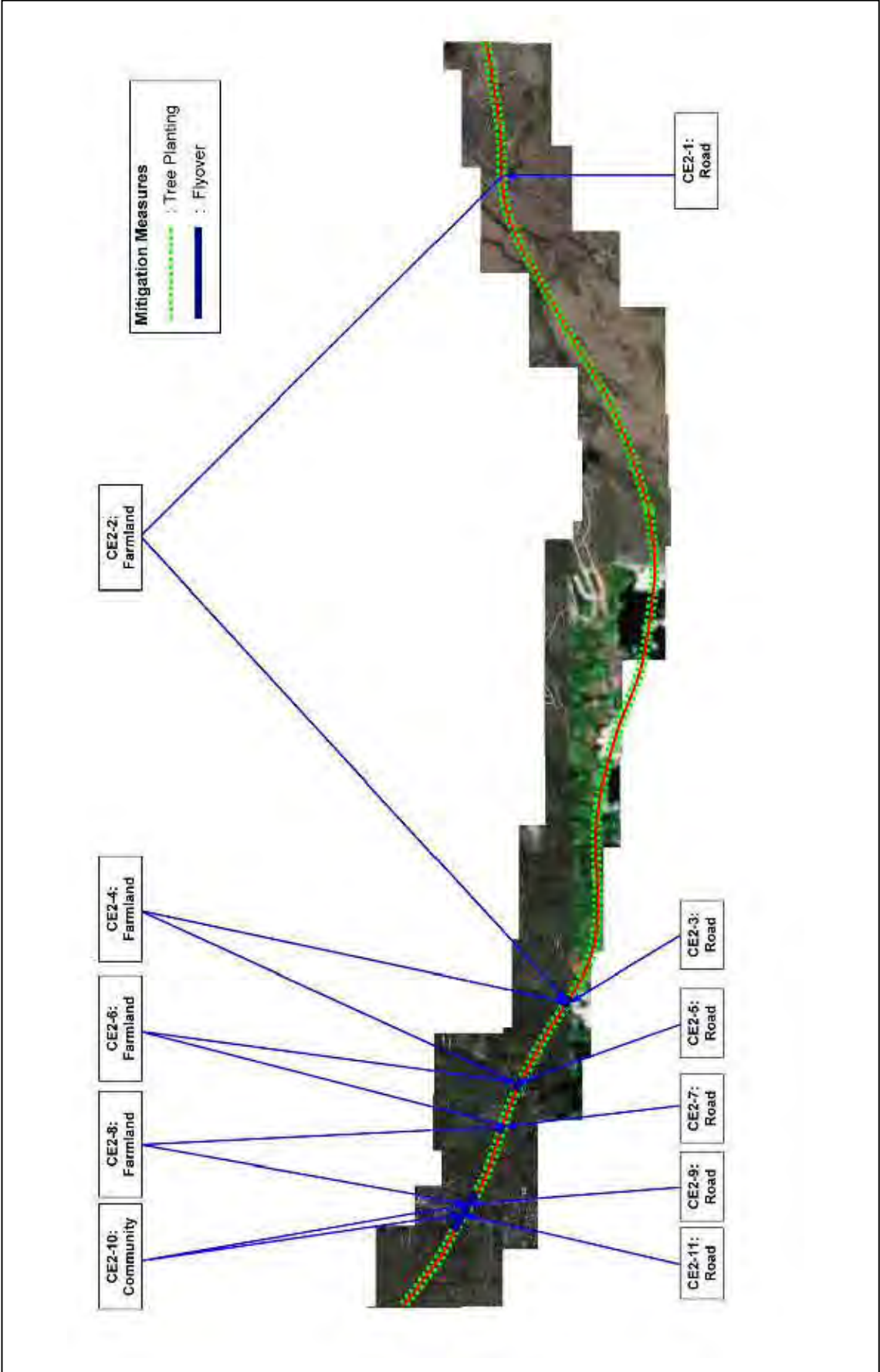


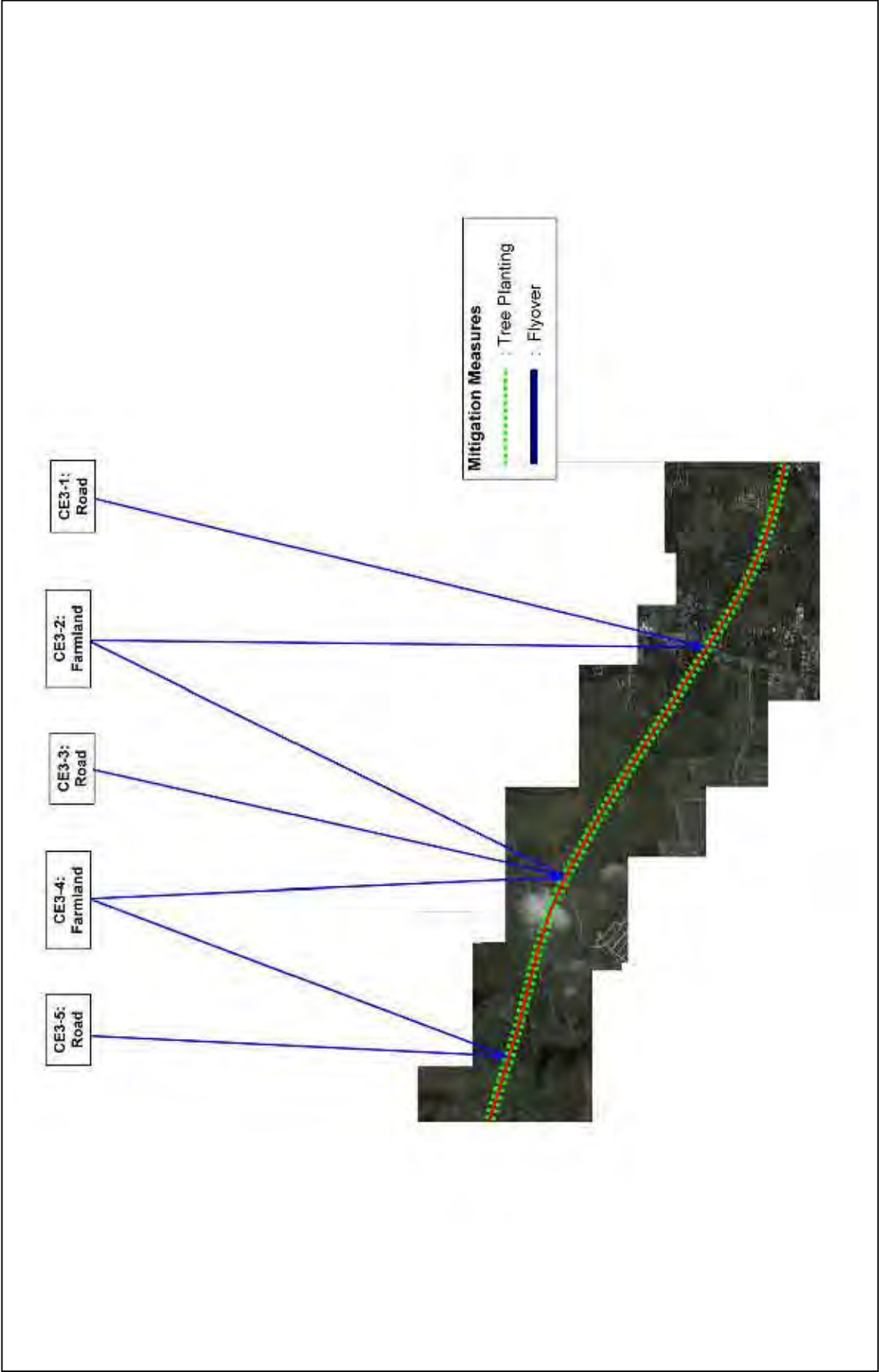


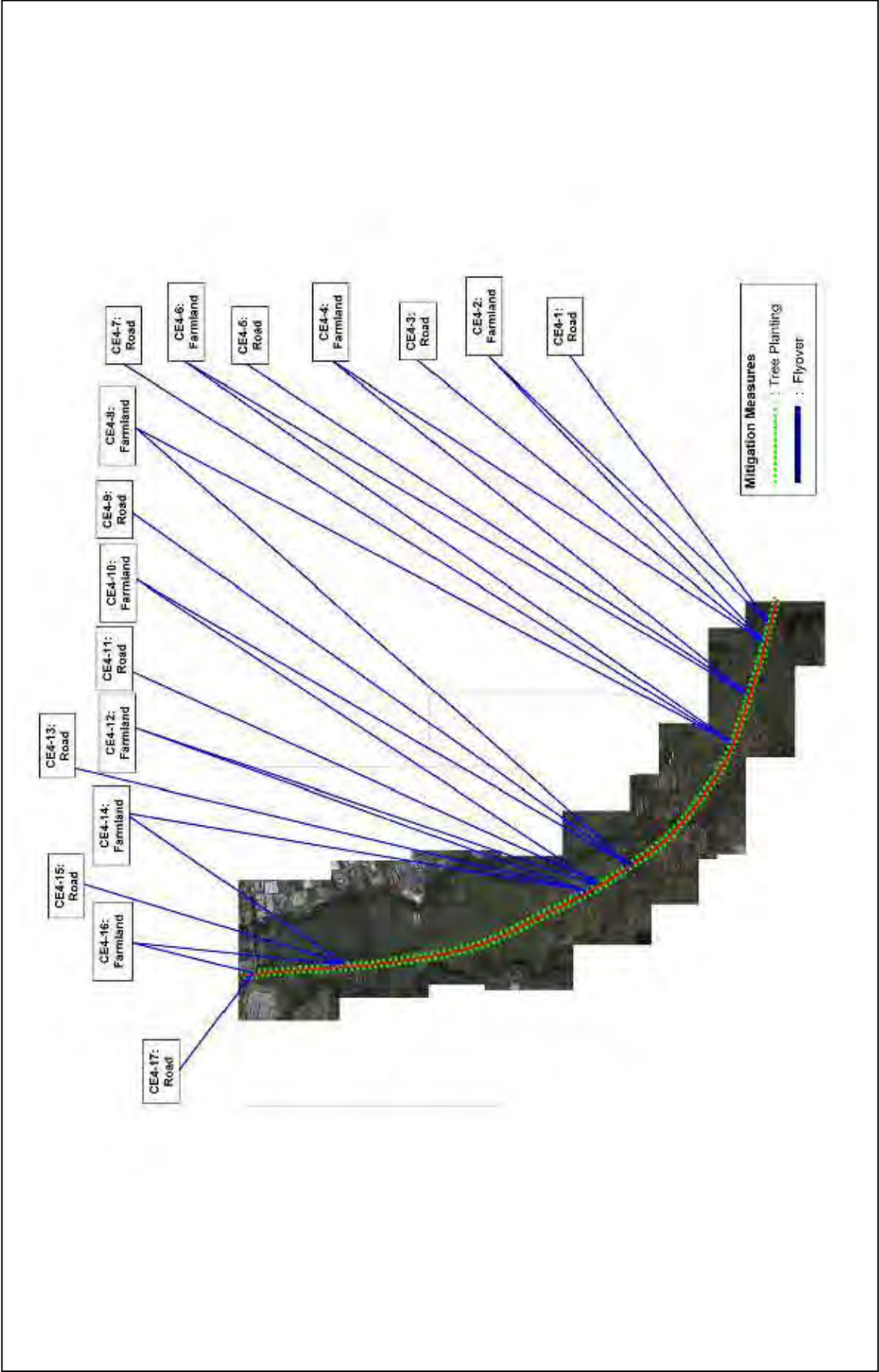












Cavite-Laguna (CALA) East-West National Road Project

APPENDIX 9.3

PRELIMINARY RESETTLEMENT ACTION PLAN

October 2006

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CALA East-West National Road Project

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Abbreviations

ADB	Asian Development Bank
ADRI	Agreement to demolish and remove improvements
AORSF	Action Office for Resettlement of Squatter Families
BIR	Bureau of Internal Revenue
CALA	Cavite-Laguna Expressway Project
COA	Commission on Audit
DAS	Deed of Absolute Sale
DEO	District Engineering office
DepEd	Department of Education
DO	Department Order
DOLE	Department of Labor and Employment
DPWH	Department of Public Works and Highways
DSWD	Department of Social Welfare and Development
DTI	Department of Trade and Industry
EA	Executing Agency
EIA	Environmental Impact Assessment
ESSO	Environmental and Social Services Office
EW	East-West Road
FGD	Focus Group Discussion
GOP	Government of the Philippines
ILA	Independent Land Appraiser
IO	Implementing Office
IROW	Infrastructure Right-of-Way and Resettlement
IRR	Implementing Rules and Regulations
JICA	Japan International Cooperation Agency
LAPRAP	Land Acquisition Plan and Resettlement Action Plan
LGU	Local Government Unit
M&E	Monitoring and Evaluation
MPDC	Municipal Planning and Development Coordinator
MRIC	Municipal RAP Implementation Committee
NGO	Non-Government Organization
NHA	National Housing Authority
NS	North-South Road
NSO	National Statistics Office
PAPs	Project-Affected Persons
PMO	Project Management Office
PO	People's Organization
RA	Republic Act
RAP	Resettlement Action Plan
RIC	Resettlement Implementation Committee
RO	Regional Office
ROW	Right-of-Way
SALED	Site Acquisition and Law Enforcement Division
TCT	Transfer Certificate of Title
UDHA	Urban Development and Housing Act

Executive Summary

1. Processing Issues

This preliminary Resettlement Action Plan (RAP) has been prepared by the Department of Public Works and Highways (DPWH) with technical assistance provided by the Japan International Cooperation Agency (JICA). A comparative study of various alternative routes involving (i) North-South Road, (ii) Cavite-Laguna Expressway, and (iii) East-West/Daan Hari Extension was undertaken in terms of land acquisition, number of households/structures to be affected, resettlement and other compensatory issues to determine the most viable, cost effective and acceptable option. The RAP started with an explanation of the various alignments and the evaluation made by stakeholders to filter the selected routes/sections. All discussions then focused on the affected persons within the right-of-way (ROW) of the selected road project. The RAP is based on the Perception and Socioeconomic surveys of the households and business owners likely to be affected by the project ROW. Both perception and socioeconomic surveys were carried out between October 2005 and February 2006. DPWH, the project executing agency will use the preliminary RAP as a planning tool and prepare a full inventory of land acquisition and affected households/structures based on parcellary survey during detailed design period. While the principles and the resettlement entitlements have been stipulated in this preliminary RAP, the compensation packages for the affected households/shops and enterprises, including budget, will be revised based on further detailed planning. Chapter 3 provides a list of outstanding planning and implementation tasks to be completed by the EA.

2. Project Description and Impacts

The project involves construction/and or widening of 69.2 kilometers of roads. The main physical component of the project consists of the following: (i) Daan Hari – 21.0 kilometers; (ii) North-South – 27.8 kilometers; and (iii) CALA Expressway – 20.35 kilometers. The area of influence of the project covers six municipalities and two cities. These municipalities/cities are in the province of Cavite, namely, Bacoor, Dasmariñas, Imus, Silang, Gen. Trias, and Tanza. In Laguna, Sta. Rosa will be affected by the CALA Expressway. The project will also affect the City of Muntinlupa in Metro Manila. These areas will experience varying degree of adverse impacts – from loss of agricultural land to housing and shops/businesses and industrial enterprises. The adverse impacts include acquisition of 204.3 hectares of land (excluding existing road sections) for the selected road sections. As a result, 605 households (2,500 persons) will be directly affected due to loss of land and structures. Of this, 395 households will require resettlement, including households who live on rental land and/or houses (i.e. without titles). In order to fully assess project impacts prior to implementation, the RAP impact data and cost estimates will be reviewed and amended as indicated earlier following the results of parcellary surveys.

3. Resettlement Policy Framework and Entitlements

The Project resettlement framework and entitlements concerning compensation for lost assets and resettlement benefits/assistance reflect existing legal framework in the Philippines that govern resettlement of people affected by development projects. These include national policies and local directives which are aimed to protect the PAPs. The

framework has also considered requirements as per JICA Guidelines and other “best practices” in donor-funded projects.

A key objective of the RAP is to ensure that all PAPs receive adequate compensation and assistance to restore their incomes in post-resettlement period. Particular attention has been paid to needs of the poorest and vulnerable groups to be resettled. Based on the principles and eligibility to entitlements, a resettlement entitlement matrix has been established to guide payments of compensation and RAP implementation. The matrix covers all types of losses – land, housing, shops/enterprises, temporary and/or permanent loss of income sources, transitional allowances, and provision for resettlement on project-sponsored and/or “socialized” housing by NHA. The RAP contains several relocation options. These include: (i) *balik-probinsya* where PAPs will be given financial assistance to return to their respective provinces; (ii) financial compensation equivalent to replacement value of structures (that is, without deducting depreciation and salvage value). In this alternative, the PAPs will be responsible for finding their own residential area. In other words, they will manage their own resettlement – i.e., “self-relocated”; and (iii) relocation to available government resettlement areas or within private socialized housing developments by NHA.

4. Stakeholder Participation, Disclosure of RAP and Grievances

Since the project will have significant impacts, due attention has been given to community views through a series of stakeholders’ consultation meetings. To date, DPWH has conducted eight stakeholders meetings involving all levels of stakeholders. Two stakeholders’ meetings were dedicated only to the disclosure of this preliminary RAP for feedback from stakeholders. The stakeholders meetings were held at the municipality level to involve more affected persons in the deliberation process. The outcomes of the workshops have been posted at the project website ([www. cala-ew.info](http://www.cala-ew.info)).

In addition to stakeholders’ meetings, barangay-level focus group discussions (FGDs) were conducted to cover residential-level stakeholders and to obtain their consensus on the project implementation. FGDs were attended by the barangay captains and councilors, project-affected persons including potential residents to be relocated by the proposed project, people’s organizations (PO), and non-governmental organizations (NGO). These barangay consultations were conducted in a total of 58 barangays, consisting of 49 barangays in Cavite Province, 7 barangays in Laguna Province and 2 barangays in Muntinlupa City of Metro Manila. In the barangay consultations, outlines of the proposed project were explained by DPWH officer(s) and local social expert hired by the JICA Study Team as well as coordination of the social surveys.

After the barangay consultations, concerned barangays issued resolutions endorsing the acceptance of the proposed projects. Over 60% reported their support to the project due to positive impacts – like easy access and time savings; new business opportunities; new employment opportunities; increased value of land and other properties. Concerns expressed include low compensation as per government policies, relocation, loss of livelihood and social network due to displacement and relocation, which have been addressed in the formulation of policy matrix for compensation purposes. Notwithstanding the amount of public consultation already carried out, the EA fully recognizes that additional consultative meetings would be required during the detailed design stage to measure and agree the final requirements for land, property and other acquisition, from each affected household/commercial enterprise.

DPWH has established procedures for dealing with disputes and grievances with regard to compensation and other resettlement benefits. Grievances that pertain to valuation of affected assets will be referred to an independent land appraiser or filed with the proper courts. All other grievances will be acted upon by the Resettlement Implementation Committee. If no agreement or amicable solution can be reached, the complainant can appeal to the Office of the DPWH Regional Director, through the ESSO. If still not satisfied with the decision or action of the DPWH Regional Director, the complainant can submit the complaint to the proper courts. The MRIC and the DPWH Regional Director are required to act on these complaints within fifteen (15) days. The complainant is exempted from any administrative or legal fee. The grievance procedures will also be explained to the PAPs through FGDs to be conducted during next detailed design period by ESSO prior to land acquisition and resettlement.

5. Implementation Framework and Budget

DPWH will be in charge of the implementation of the project and the execution and coordination of land acquisition and resettlement. The Environmental and Social Services Office (ESSO) will provide technical guidance and support in the implementation of the RAP and will be responsible for the following resettlement activities: (i) oversee the RAP implementation; (ii) submit of RAP budget plans (to include compensation, relocation costs, operation) for approval of allocation of needed resources by DPWH central office; (iii) ensure the availability of funds and the proper accounting of expenses; (iv) guide the RAP Implementation Committees (RICs) in their tasks, such as the verification of PAPs, final inventory of affected assets, and information dissemination; (v) amend and/or revise RAP in case of problems identified during the internal and/or external monitoring of its implementation; (vi) in collaboration with its counterpart in the region, following-up with concerned DPWH Regional Office the processing of compensation claims of PAPs; (vii) monitor the actual payment of compensation to PAPs; and (viii) prepare periodic supervision and monitoring reports on RAP implementation for submission to PMO and the funding institution. The estimated cost for land acquisition (for ROW) and resettlement is P 1,139.7 million pesos.

6. Monitoring and Evaluation

RP implementation will be monitored both internally and externally. The EA/ESSO will be responsible for internal monitoring. ESSO will prepare quarterly reports and submit to the funding agencies. The reports will contain progress made in RAP implementation with particular attention to compliance with the principles and matrix set out in the RAP. Independent monitoring expert/agency will be hired by the EA with donor(s) concurrence. The expert/agency will carry out external monitoring bi-annually. The EA will prepare a post-construction evaluation report on the resettlement process and detail the extent to which the compensation paid and other measures have enabled PAPs to maintain or enhance their pre-project social and economic living conditions. ■

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1. THE PROJECT

1.1 Introduction

This document examines the alternative routes proposed in the *Feasibility Study and Implementation Support for the Cavite-Laguna (CALA) East-West National Road Project* (the Project) and their potential impacts and contains a Preliminary Resettlement Action Plan (RAP) for mitigation of the adverse impact of the Project. The proposed routes are: (i) North-South Road, (ii) Cavite-Laguna or CALA Expressway, and (iii) East-West Road (referred to as Daang Hari Road elsewhere in this report). A comparative study of these alternative routes, in terms of their land requirements; number of structures and persons affected; resettlement and compensatory requirements; as well their respective necessary costs estimates have been conducted to determine the most viable, cost effective and acceptable option. The project executing agency – Department of Public Works and Highways (DPWH) will use the Preliminary RAP as a planning tool, prepare a full inventory of land acquisition, affected households, and detailed parcellary survey based on the detailed design. While the principles and the resettlement entitlements have been stipulated in this Preliminary RAP, the compensation packages for the affected households/shops and enterprises, including budget, will be revised based on further detailed planning. Chapter 3 provides a list of outstanding planning and implementation tasks to be completed by the executing agency.

1.2 Project Alternatives and Impacts

The proposed North-South Road is designed to have six (6) lanes with a ROW width of 30 meters. It is proposed to start at Bacoor and run southward until Dasmariñas. Similarly, the East-West or Daang Hari Road is proposed to be a 4-lane road with a ROW width of 30 meters, to allow for possible expansion. However, the Cavite-Laguna or CALA Expressway is proposed to have a 50-meter ROW with 6 lanes also. Table 1.1 below compares the specifications of the proposed roads.

Table 1-1 Main Specifications of the Proposed Roads

Proposed Road	Road Category	Road Length		Design Speed	Traffic Lanes	ROW Width
North-South	National Road	Alt1	27.8km	60km/h	6 lanes	30m
		Alt2	32.4km			
Daang Hari (East-West)	National Road	DH1	1.7 km	60km/h	6 lanes	30m
		DH2	2.20 km			
		Alt1 (DH4)	9.0 km	60km/h	6 lanes	30 m
		Alt2 (DH5)	10.0 km			
		Alt3 (DH6)	11.0 km			
Cavite-Laguna (CALA) Expressway	Expressway	Alt1a	19.55km	100km/h	6 lanes	50m
		Alt1b	17.95km			
		Alt2	20.35km			

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1.2.1 North-South Road

Project	Section	Length (Km)	
		Segment	Total
North-South Road	NS-1	1.39	-
	NS-2	4.61	-
	NS-3	5.10	-
	NS-4	7.50	18.60
	NS-5 (Alt. 1)	9.20	27.80
	NS-6 (Alt. 2)	13.80	32.40

The first four sections, namely NS-1, NS-2, NS-3 and NS-4 have common alignments. Total length of these four road sections is 18.60 kilometers. NS-1 starts from Radial 1 of the Manila-Cavite Coastal Road in Barangay Zapote 5, Bacoor, Cavite, proceeding to Barangay Niog, intersecting the Aguinaldo Highway at the St. Dominic Hospital area, then finally connecting to the Molino Boulevard. With a ROW of 30 meters and a length of 1.39 kilometers, this road will need an area of 4.17 hectares of land.

NS-2 adopts the existing Molino Boulevard alignment. There is, however, an unopened section in the Niog area that is still under construction. NS-3 is located east of Bahayang Pagasa area. It veers away from Molino Boulevard towards Aguinaldo Highway, in order to avoid developed residential areas. It is 5.10 kilometers long and requires an area of 15.30 hectares of land. NS-4, as an extension from Daang Hari, will pass Salitran Road, runs parallel to Aguinaldo Highway, then intersects it. This road is 7.50 kilometers long, requiring about 22.50 hectares of land.

NS-5 and NS-6 are the alternative alignments. NS-5 starts at the intersection of Aguinaldo Highway and Governor's Drive, traverses in a south-west direction, running almost parallel to Aguinaldo Highway, then connects to the CALA Expressway alignment. NS-6 utilizes part of Aguinaldo Highway as part of its alignment. Starting at Governor's Drive up to the Silang Junction, it travels a total of 13.80 kilometers. Having a total length of 13.80 kilometers, it will require an area of 41.40 hectares.

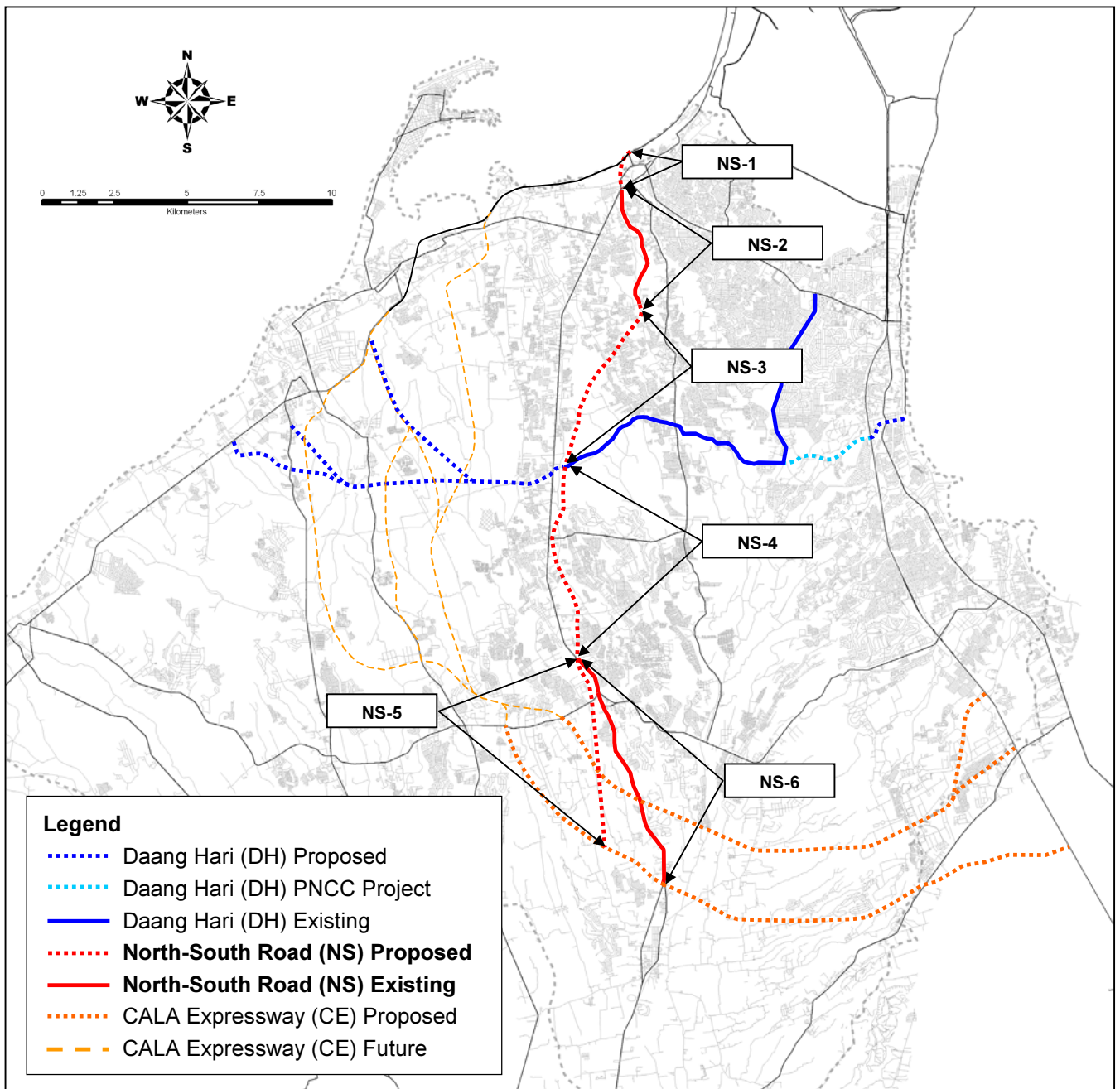
Alternative 1 of the North-South Road consists of NS-1, NS-2, NS-3, NS-4 and NS-5 while alternative 2 passes through NS-1 to NS-4 and NS-6. Alternative 1 has a total length of 27.80 kilometers while alternative 2 has about 32.40 kilometers. Alternative 2, uses the existing Aguinaldo Highway and has a longer route. This alternative alignment will require huge capital requirement for project implementation including environmental pre-requisites. It has the disadvantage of a difficult ROW acquisition in the process of widening the said existing alignment into six (6) lanes, requiring higher financial assistance to PAPs. Further, it will entail expensive ROW acquisition along the Pala-pala commercial district and require a spur connection with Aguinaldo Highway for alignment continuity and mitigation of adverse impacts to existing adjacent waterway during construction. Alternative 1 using NS 5, on the other hand, has a shorter route and is a new road construction. The area required for acquisition for alternative 1 is 83.40 hectares while alternative 2 is 97.20 hectares.

Alternative 1 was selected as the preferred alignment during the consultative meeting (December 2005) due to technical, environmental and regional development

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considerations. Table 1-2 provides the basis for the selection of Alternative 1. Aside from decongesting Aguinaldo Highway, it has the added advantages of (i) having better traffic management possibilities during construction; (ii) fewer disturbances and ease of construction since it will pass through open spaces; and (iii) accelerating development of open areas along its alignment.

Figure 1-1 North South Road Alignment



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Table 1-2 Evaluation of Alternative Alignments
North-South Road

Alternative Alignment	Traffic / Technical			Regional Development			Environment			Total
	Easiness during Construction	Adequacy of the Alignment	Magnitude of Capital Requirement	Network Efficiency	Support Growth Corridors / Industrial Areas	Tourism Devmt.	Magnitude of Disturbance	Easiness in ROWA	Less impact on Agriculture, Fisheries and Forestry	
NORTH-SOUTH ROAD	10	45%	20	10	20%	5	15	35%	5	100%
NS-5	Governors' Drive to Silang (on Aguinaldo Highway)									
	10	10	15	5	5	5	5	5	3	56
	10	10	11	7	5	5	1	1	5	63
	4	9	12	4	3	3	6	6	2	55
NS-6	Governors' Drive to Silang (new alignment)									
	8	15	20	10	5	5	15	15	5	92
	7	15	20	10	5	5	15	15	1	98
	8	12	16	8	4	4	15	12	5	93
										84

Source: 4th Stakeholders' Meeting of this Project.

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1.2.2 East-West Road (Daang Hari Road)

Project	Section	Length (Km)	
		Segment	Total
East-West Road (Daang Hari Road)	DH-1	1.70	-
	DH-2	3.20	-
	DH-3	10.00	15.30
	DH-4 (Alt. 1)	9.00	24.30
	DH-5 (Alt. 2)	10.00	25.30
	DH-6 (Alt. 3)	11.00	26.30

The common alignment for the East-West Road includes segments DH-1, DH-2 and DH-3 totaling 15.30 kilometers. It should be noted that DH-1 is identified as part of the entire network for the East-West Road of the Project but it is not included in the feasibility study as its implementation hinges on C6, which is part of the network of Metro Manila. DH-1 ranges westward from the Old National Road towards South Luzon Expressway (SLEX) near Susana Heights, traveling a distance of 1.70 kilometers, and requiring an area of 5.10 hectares for its 30-meter ROW. DH-2 stretches from SLEX near the Susana Heights Interchange westward to Daang Hari, for a total of 3.20 kilometers, requiring a total of 9.60 hectares of land.

Traveling a total of 10.40 kilometers, DH-3 uses the existing Daang Hari Road and intersects with Molino Road where the recently opened SM Mall is located. It then continues westward to connect to Aguinaldo Highway in Imus. DH-4, DH-5 and DH-6 are the alternative alignments. DH-4 continues from the Aguinaldo Highway in Imus, towards EPZA in Rosario, and intersecting with the Rosario-Noveleta Diversion Road. This segment measures 9 kilometers and requires an area of 27 hectares.

DH5, with a length of 10.0 kilometers, will occupy 10 hectares as it connects with Aguinaldo Highway and travels from Imus westward to Tanza, intersecting the Tanza-Gen. Trias Road. DH-6, on the other hand starts at the same point along Aguinaldo Highway, and ends in Tanza, but instead connects with the Tanza-Naic Caylabne Road. It is the longest of the alternative segments with 11.0 kilometers and a ROW area of 33.0 hectares.

Alternative 1 for the Daang Hari Extension will pass through the DH-1 to DH-4 alignments for a total length of 24.3 kilometers. It will cut across roadside residential areas as it connects with the existing diversion road in Rosario. Among its advantages are the following: (i) it will provide direct access to EPZA, Rosario; and (ii) serves as an alternate route to congested areas along Aguinaldo Highway from Rosario to the Bacoor-Imus area. It also has the shortest length among the three alternatives. However, it will likely to create more roadside disruptions during construction; require longer pipe networks for drainage; need more bends, ergo, more traffic safety devices, and might require a higher total project requirement than alternative 2.

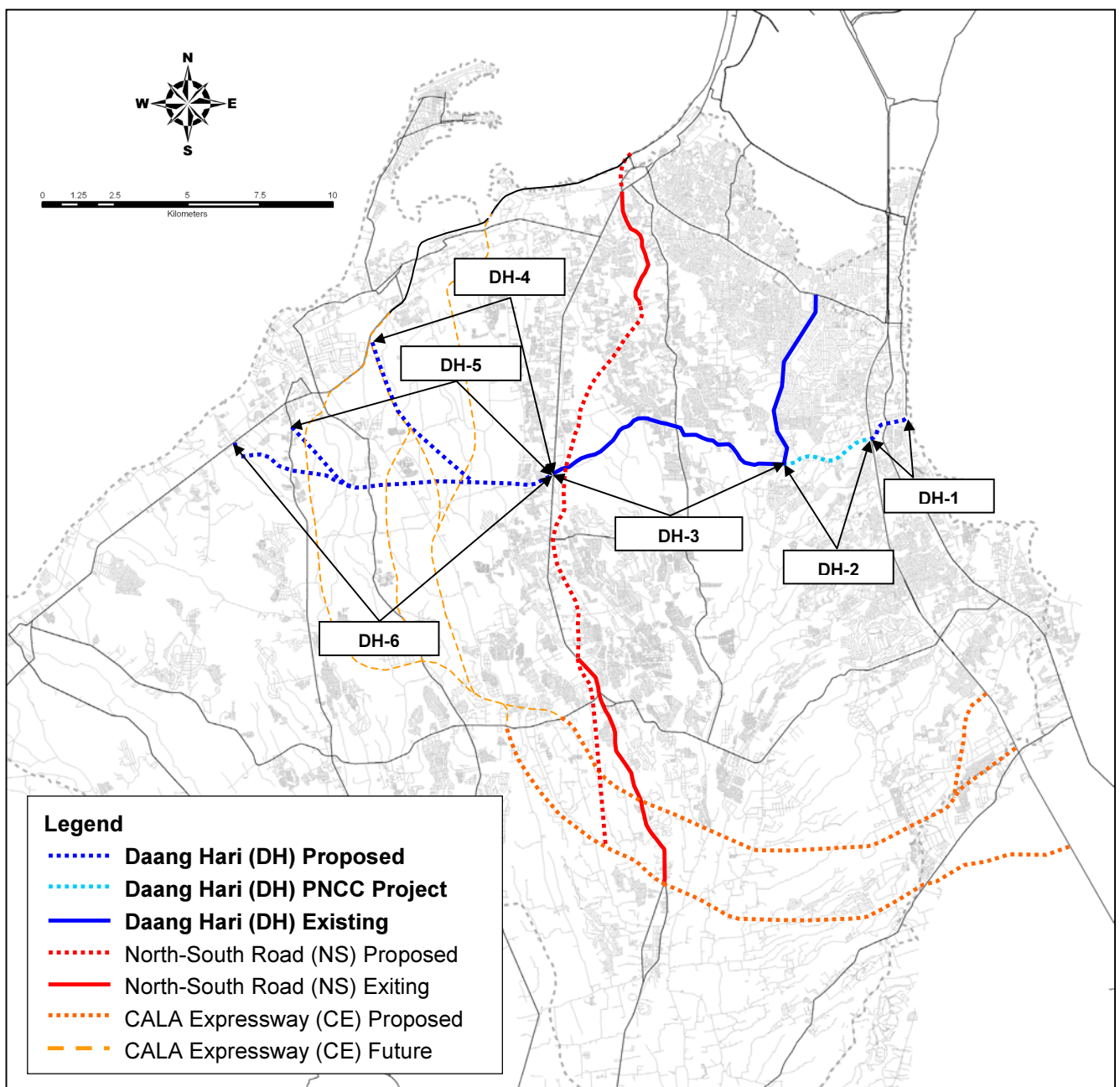
Alternative 2 passes through DH-1 to DH-3 plus DH-5, traveling a total of 25.3 kilometers. Its advantages are: (i) it offers linkages to existing road networks; (ii) it will serve generate more traffic, including those coming from EPZA; (iii) it will cause fewer disturbances to existing roads and developments, and, finally (iv) it will require the least in terms of project capital requirement. This option, however, will require

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improvement and widening of the short section of the existing Tanza-Gen. Trias Road to maintain traffic convenience and smooth traffic flow through the intersection.

Alternative 3 passes through DH-1 to DH-3, plus DH-6, spanning 26.3 kilometers. As in alternative 2, it also offers linkages to other road networks and will serve as a traffic generator catering to EPZA as well as other major developments in Western Cavite. Its disadvantages, however, are that it has the longest route among three alternatives and may entail a sharp bend while entering the Tanza-Naic-Caylabne Road. It also requires a higher capital investment than alternative 2. Again, despite the magnitude of its capital requirements and its low ratings in terms of easiness of construction, alternative 3 was chosen mainly because of its higher potential contribution to regional development and environmental enhancement.

Figure 1-2. Daang Hari Road Alignment



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**Table 1-3 Results of Evaluation of Alternative Alignments
East-West/Daan Hari Extension**

Alternative Alignment	Traffic / Technical			Regional Development			Environment			Total
	Easiness during Construction	Adequacy of the Alignment	Magnitude of Capital Requirement	Network Efficiency	Support Growth Corridors / Industrial Areas	Tourism Devmt.	Magnitude of Disturbance	Easiness in ROWA	Less impact on Agriculture, Fisheries and Forestry	
DAANG HARI	25%			40%			35%			100%
DH-4	5	5	15	15	15	10	10	20	5	
Imus to Gen. Trias (EPZA)										75
PROVINCE OF CAVITE	3	5	14	13	15	6	5	15	5	81
GENERAL TRIAS	5	3	11	8	12	8	10	20	5	82
IMUS	5	2	14	10	10	5	2	20	3	71
TANZA	5	4	14	8	9	5	4	12	3	64
DH-5										80
Imus to Tanza (Gen. Trias Road)										
PROVINCE OF CAVITE	5	5	15	14	14	8	8	18	5	92
GENERAL TRIAS	4	4	13	10	10	4	10	20	5	80
IMUS	5	4	15	10	10	5	3	20	3	75
TANZA	5	4	15	10	12	5	5	13	3	72
DH-6										89
Imus to Tanza (Tanza-Naic Road)										
PROVINCE OF CAVITE	4	5	13	12	12	10	10	20	5	91
GENERAL TRIAS	3	5	9	12	8	6	10	20	5	78
IMUS	5	5	13	15	15	10	5	20	5	93
TANZA	3	5	13	15	15	10	8	18	5	92

Source: 4th Stakeholders' Meeting of this Project.