摘 要

南山截水溝上游坡地集水區主要範圍位於臺中市清水區、沙鹿區及龍井區等，屬市管區排-梧棲、安良港、山腳排水等上游山坡地集水區，本區近年來受氣候變遷、暴雨頻率提高以及土地開發使得不透水面積增加等種種影響，於颱風豪雨期間頻傳淹水災情。為解決本區水患問題，臺中市政府規劃南山截水溝興建計畫，以截流疏導之方式減緩下游豪雨水患災情。

本計畫主要目的係為掌握臺中市政府刻正辦理南山截水溝興建計畫之上游坡地水土保持現況及治理需求，本計畫區面積約 2,932 公頃，下游屬高度開發區域，保全人口約 216,000 人，區內水系縱橫交錯，近年更因極端氣候事件頻傳，下游市區常有淹水情形發生，為求徹底解決水患災害、保障人民生命財產安全，針對南山截水溝上游坡地集水區辦理整體規劃，以求整體性、安全性、生態性及人文性之整治，除做為短、中、長期治理計畫之依據外，並透過分年分期治理規劃，減少下游洪患發生頻率、抑止土砂下移、減低災損程度，帶動地方發展。

為順利進行南山截水溝上游坡地集水區內災害點位之保護治理工作，本計畫檢視本區歷年規劃，調查歷年災害狀況，蒐集歷年治理工程資料，並掌握南山截水溝治理沿革與最新執行進度等，以建置本區 2,932 公頃之地文、水文與人文基本資料。

為掌握區內之災害區位及災害特性，並整體掌握集水區之現況問題，本計畫於南山截水溝上游坡地集水區內，針對 102 年蘇力颱風、潭美颱風、康芮颱風、103 年梅雨期間與麥德姆颱風災害點位進行現況調查。經由現況調查，本區內共有 11 處崩塌地災害、24 處野溪坑溝災害、7 處道路水土保持問題，並有 6 處易淹水區位。本計畫根據本區現況問題，蒐集分析 37 年雨量、分析 6 個集水分區土壤沖蝕量與崩塌地土砂生產量、檢算 14 處近年易有淹水災害狀況之橋梁箱涵通洪斷面，並檢視近年災害水文事件特性，以掌握南山截水溝上游坡地集水區災害特性與原因。

根據本計畫針對南山截水溝上游坡地集水區內主要之災害類型與原因之分析，本計畫評估本區災害點位治理需求性屬優先處理與需要處理者共 24 處，以掌握集水區之保育治理需求。同時藉由檢視歷年規劃報告、歷年災情與歷年工程，並分析集水區地文、水文水理與土砂特性後，研擬本區保育治理基本方針，針對本區上、中、下游提出整體性保育治理對策，分別提出各災害點位之保育治理措施，進行本區既有構造物之安全檢討，作為本區未來治山防災工作執行之參考。

根據本計畫評估本區之保育治理需求性，與研擬之保育治理基本方針與保育治理對策，本計畫將南山截水溝上游坡地集水區內保育治理需求性屬優先與需要處理之災害點位，依其位置及類型編定共 21 件工程，總工程經費為 95,000 仟元，並順利與臺中市政府協調相關治理權責，期達到分工治理與提升治理效率之目標。南山截水溝上游坡地集水區治理計畫之總益本比約為 1.11，考量區域安全之重要性，具投資價值。

為達本計畫所規劃預期之治理成效，未來分年分期治理計畫執行時，除應整合各權責單位，針對各類別治理工作進行配合協調，以達到集水區整體治理之效。本計畫期間多次配合水土保持局臺中分局與臺中市政府大地工程科進行工程會勘，並積極參與臺中市政府所召開之「台中港特定區整體排水改善工程(含興建南山截水溝)」進度追蹤會議，協調相關治理權責與工程配置。根據本計畫治理權責整合與協調結果，本分年分期計畫治理權責屬水土保持局臺中分局共計有 11 件工程，臺中市政府計有 9 件工程，國道高速公路局則有 1 件工程，期以分工治理達政府一體與跨機關合作之成效，有利於後續相關工作之推行。

Abstract

The upstreams watershed of Nanshan Drainage Ditch is located in Qingshui District, Shalu District and Longjing District of Taichung City, is also belong to the upstreams watershed of Wuci Drainage, Anlianggang Drainage and Shanjiao Drainage. In this region, it has been impacted recently by climate changes and more frequent storms in addition the fact that the land development activity renders the increase for impermeable area, etc. Thereby during Typhoon and heavy rain season, flooding disasters are rampant. Hence in order to solve flooding problems, Taichung City government has come up with a plan to construct Nan Shan drainage ditches which rely upon draining and diverting approaches to alleviate heavy rain flooding at downstream area.

Main objective of this plan intends to control current statuses and governance requirements for water and soil conservation in upstream slope area within the scope of currently processed Nan Shan drainage ditches plan by Taichung City government. Total acreage of this plan encompasses 2,932 hectares whereas downstream region in this plan is a highly developed area with population of 216,000 projected to be protected by this plan. Nonetheless in this region characterized by crisscrossing rivers and streams in addition to rampant incidents resulted from extreme weather patterns, thus there have been frequent flooding incidents reported in city area as result. In order to ultimately and thoroughly resolve flooding disasters and protect the lives and properties of people, a comprehensive planning has been processed by targeting to the upstream slope land of Nan Shan drainage ditches with a governance subsequently planned in the perspective of integrity, security, ecology and human nature. This not only can serve as foundation for governance planning in short, mid and long-term perspective, but also lessen the occurrence of downstream flooding, suppressing sediment downshift, alleviating the damage level and serving as the locomotive for local development through a phased approach characterizing this governance planning.

This plan reviews the annual planned reports, investigates annual disaster

status in addition to collecting annual governance engineering information so as to establish and construct the basic physiographic, hydrological and humanities information covering area of 2,932 hectares.

In order to have a good grasp of the disaster location and disaster characteristics, this plan proceeds to onsite survey for both disasters occurred during 2013 and 2014. In this region there are a total of 11 landslide disasters, 24 locations suffered wild creek and ditch disasters, 7 locations with road water and soil conservation problems, 6 locations with high potential of flood.

Based upon the analyses targeted to major disaster types and causes of disaster in this plan, we find that the governance requirement for the disaster location in this region is characterized as high priority and there are a total of 24 locations needed to be processed. Hence this plan proposes conservation and governance countermeasure according to various types of disasters to serve as references during the work and execution for future disaster prevention in the hillside region.

Hence this plan adopts the watershed in Nanshan Drainage Ditch as the prioritized region as well as the location required processing. There are a total of 21 governance engineering projects with total engineering costs worth 95 million NTD with benefit-cost ratio (BCR) around 1.11 which is deemed as worthwhile for investment.