

2 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The proposed site for the reclamation and associated works is at Sham Tseng in the New Territories (*Figure 2.1a* refers). The site is bounded to the east by land reclaimed for the proposed Ting Kau and Sham Tseng Sewage Treatment Works (TKSTSTW) and to the west by Dragon Beach. To the north lies Sham Tseng township. The proposed reclamation area is about 15.2 ha.

2.2 DEVELOPMENT REQUIREMENTS, SCOPE AND BENEFITS

Section 1.1 describes the background to the Sham Tseng Development (STD) Project. The proposed reclamation of Sham Tseng is targeted to ease the housing supply shortfall after 2000/2001. In this regard, it is important that the development proposals optimise the development potential and supply of residential units without compromising the principles of sustainability and compatibility of adjacent land uses.

The scope of the proposed Project comprises the following:

- reclamation of about 15.2 ha of land using public filling materials and / or sand fill material supplied by the Contractors;
- construction of 1100 m seawall;
- construction of Sham Tseng Bypass (about 2400 m) including connections to the proposed widening of Castle Peak Road;
- construction of about 875 m long waterfront promenade integrated with and located above the Sham Tseng Bypass;
- construction of a government complex (as compension of existing Anglers' Beach) to accommodate a leisure centre, with swimming pool and other sports facilities, and social welfare facilities;
- construction of sewage treatment facilities with a flow capacity of about 4600 m³ per day based on chemically enhanced primary treatment;
- construction of a sewage pumping station and sewerage pipework;
- construction of about 450 m of nullah and infrastructure drainage works;
- construction of about 900 m of access roads;
- construction of a footbridge;
- construction of a stub pier to replace an existing 'kaito' pier;

- diversion of an existing 200 mm diameter submarine water pipeline and extension of a 300 mm diameter water main adjacent to Castle Peak Road;
- construction of a public transport terminus (PTT) and a public toilet; and
- construction of environmental mitigation measures, including roadside noise barriers.

It is estimated that the capacity of the planned TKSTSTW will not be able to handle the additional sewage discharge from the development above the STD. An expansion adjacent to the planned TKSTSTW is therefore proposed.

It is also estimated that a new sea front salt water pumping station will be installed in the new reclamation area to provide salt water for flushing to the development above the STD and also the existing Sham Tseng and Tsing Lung Tau areas.

2.2.1 *Development and Planning*

In April 1998, the Consultants commenced the Stage 1 Study for STD. In August 1998, a review of the findings of Stage 1 Study was held and it was concluded that the 16.3 ha reclamation layout was the preferred option, based on which planning of STD would proceed. In September 1998, a Working Group session was held among concerned departments to discuss the Bypass issues and agreed that the waterfront alignment was the preferred option pending resolution of the interface with the committed TKSTSTW. In December 1998, a Steering Group Meeting was held to discuss and finalise the Planning - Stage 1 Report, and the finalised Planning - Stage 1 Report was issued in December 1998.

Stage 2 of the Study commenced in April 1999. In October 1999, a Steering Group Meeting was held to discuss and finalize the Planning - Final Report, and the finalized Planning - Final Report was issued in January 2000.

In selecting the preferred options of the reclamation area and the Bypass alignment, the following main issues have been considered:

Reclamation

- marine safety of the Ma Wan Fairway; and
- the extent of environmental impact in terms of water quality, air quality, noise and marine ecology taking account of the size and scale of the reclamation.

Sham Tseng Bypass

- the engineering feasibility;
- the potential noise and air quality impacts and mitigation measures required for the Bypass;
- the planning constraints associated with the Bypass alignment; and
- the landtake of the reclaimed land that is reserved for TKSTSTW and Electricity Sub-station (ESS).

Figures 2.2a shows five reclamation layout options. The various options could provide an area of land varying from 6 ha to 25 ha. These options were evaluated during the Study in August 1998. The preferred option of the reclamation layout (Option 1) provides an optimum solution to satisfy the essential criteria including community acceptance, marine safety, land production, environmental and traffic impact, infrastructure issues and urban design.

Figure 2.2b shows the four bypass alignment options that were considered. While Routes 1A and 2A are the inland alignment options and Route 4A is the waterfront alignment option, Route 3A is a combined inland and waterfront alignment option. These options were evaluated after the preferred option of the reclamation layout had been determined. The preferred Sham Tseng Bypass (Route 4A) maximises the development potential of the reclamation site while minimises environmental and impacts.

As indicated in the Master Development Plan (MDP) in *Figure 2.2c*, STD will provide land for housing development. The potential environmental impact, including noise from road traffic and kaito pier, odour and industrial emissions from the TKSTSTW and the Garden Bakery have been considered. The environmental planning guidelines specified in the *Hong Kong Planning Standards and Guidelines* (HKPSG) have been observed in formulating the MDP. More than 50 m buffer distances between the planned Comprehensive Development Area (CDA) at Area 5 and the TKSTSTW Expansion at Area 6 have been reserved to minimise the potential TKSTSTW noise and odour impacts. A buffer distance of more than 100 m is also provided between the reprovisioned kaito pier at the Marine Basin and the residential towers at Area 2. In addition, the residential towers at the CDA sites at Areas 4 and 5 and the residential site at Area 2 are protected from adverse road traffic noise impact along the proposed Sham Tseng Bypass by the semi-enclosure formed by the promenade above the Bypass. This promenade will extend from the Open Space at Area 6 to the western end of the reclamation.

The target plot ratio for residential site is 5 in line with those adopted by the CDA site and the building height is restricted to 220 mPD. To address the existing shortfall of G/IC facilities, STD will provide land for the development of schools, water supplies facilities, social welfare facilities, a

public transport terminus, etc, together with a 1 ha reserve for Ting Kau and Sham Tseng Sewage Treatment Work Expansion (TKSTSTWX). STD will provide a Leisure Centre with swimming pools to compensate the loss of Anglers' Beach. In addition, STD will provide land to meet the shortfall of district open space.

In a review held in July 1999, the proposed reclamation area was reduced to 15.2 ha as shown in *Figure 2.2c* to provide an enlarged Marine Basin to allow for a better environment and proper manoeuvring of large katis. *Section 2.4* will further discuss the findings of Planning – Final Report. The development layout developed in Stage 1 has been refined in Stage 2 taking into consideration the findings of the more detailed technical assessments.

2.2.2 *Development Benefits*

The Project will achieve both economic, social and environmental benefits for the local population and the economy of the Hong Kong SAR, in particular the construction industry. These benefits include:

Economic and Social Benefits

- Meeting housing demand of the local area and the SAR;
- Provision of two primary schools and a secondary school on the reclamation to address the district shortfall;
- Provision of a total 1.76 ha of land to meet district open space requirements; and
- Provision of the proposed Bypass to relieve traffic conditions along Castle Peak Road and Sham Tseng Township.

Environmental Benefits

- Buffer distances between the planned sensitive receivers and the air pollution / noise sources have been reserved in the MDP to minimise the air quality / noise impact upon the sensitive receivers;
- A comprehensive and well integrated landscape and open space framework will be provided by the reclamation. This will enhance the image of Sham Tseng as a prestigious and vibrant residential area and improve the overall environment and quality of life of the township;
- The promenade semi-enclosing the proposed Sham Tseng Bypass will not only protect the residential towers (which are behind the promenade) from the road traffic noise along the Bypass, but also provide a waterfront public open space for leisure and better landscaping;

- The proposed Sham Tseng Bypass will remove through traffic from Castle Peak Road in the vicinity of Sham Tseng township and will offer a more pleasant environment to the existing local resident particularly on noise and air quality;
- Traffic noise impact may affect approximately 575 residential dwellings. However, around 250 dwellings would be protected and also around 250 dwellings would be benefited by the recommended noise mitigation measures;
- Noise generated by the fixed plant during their operation is restricted to comply with the EIAO-TM criteria at the relevant NSRs;
- Water quality mitigation measures for the construction of the reclamation were specified in terms of operational constraints (for example, limiting the rate of dredging and filling, defining the construction sequence for the reclamation and filling behind the seawall) to ensure no adverse impact;
- The Projects' reclamation will require a large amount of fill material and therefore offer a very good opportunity to utilise the public fill generated in the SAR. The use of public fill will not only alleviate the demand for virgin fill material but also reduce the pressure of disposing inert Construction and Demolition Material at the strategic landfills;
- Sewerage Impact Assessment carried out indicates that the committed Ting Kau and Sham Tseng Sewage Treatment Works (TKSTSTW) will have limited spare capacity to cater for future development on the proposed reclamation. In the circumstances, a 1 ha. site has been reserved for extension of the planned sewage treatment works, which is essential for providing additional treatment capacity to cater for the need of the future development of Sham Tseng and its adjacent area; and
- Currently, there is no salt water supply for the Sham Tseng area and fresh water is being used for flushing. This is considered to be a waste of our precious water resources. The reclamation will create land for provision of a salt water pumping station for supplying salt water to the Sham Tseng area.

2.3

STUDY AREA

According to the requirements of the *Brief*, various key environmental issues to be addressed have different definitions of the Study Area. They are:

- *Marine Water Quality Impact:* The Study Area covers the eastern part of Pearl River Estuary, East Lamma Channel, West Lamma Channel, and Tathong Channel (*Figure 2.3a*);
- *Noise Impact Assessment:* The boundary of the Study Area will be 300 m outside the boundary of the reclamation site (the Site) (*Figure 2.3b*);

- *Air Quality Impact Assessment*: The boundary of the Study Area will be 500 m outside the boundary of the Site (*Figure 2.3b*);
- *Landscape and Visual Impact*: The boundary of the Study Area for Landscape Impact Assessment should include all areas within 500 m outside the boundary of the Site, while the Study Area for the Visual Impact Assessment should be defined by the visual envelope;
- *Marine Ecological Impact and Fisheries Impact*: The boundary of the Study Area is the shaded region shown in *Figure 2.3c*.

2.4

PROJECT DESIGN

As shown in *Figure 2.2c*, the revised MDP accommodates the waterfront Bypass alignment. The revised MDP includes a main podium open space in the geographical centre of the STD and a major open space at the western portion of the reclamation.

The revised MDP has the following characteristics:

- three school sites south of the Lido Garden (Area 3);
- a government complex that include a Leisure Centre, social welfare facilities (such as a Hostel for Moderately Mentally Handicapped (HMMH) and a Hostel for Severely Mentally Handicapped (HSMH) and a Day Activity Centre) at the eastern portion of the proposed reclamation and adjacent to the TKSTSTW reclamation (Area 6);
- a TKSTSTW Expansion at Area 6;
- an open space at the western end of the proposed reclamation (Area 1);
- podium open space for public use (Area 4) adjacent to the school sites near the CDA at the former San Miguel Brewery (Area 5) site;
- a Residential Home Care for the Elderly at Area 5;
- a 30 m wide waterfront promenade above the proposed Bypass;
- decked nullahs in Area 4 and 5 for landscaping/recreational purposes connect to waterfront promenade;
- a salt water pumping station meeting the prevailing Water Supplies Department (WSD) standard located at the west of the reclamation near the waterfront (Area 1);
- an underground sewage pumping station at Area 4;
- a refuse collection point (RCP) at Area 6;
- open space in Area 6;

- two 30 m wide non-building areas, one for the proposed twin 300 mm diameter and another for the existing 200 mm diameter water mains, both of which will provide fresh water to Ma Wan;
- a Public Transport Terminus (PTT) below the podium of the residential development site at Area 4;
- a public toilet (PT) within the PTT at Area 4;
- commercial complex with post office in Area 4;
- a marine basin with katio pier (Area 1) at the west of the reclamation more than 100 m away from the nearest housing developments;
- about 4470 flats and 14 010 residents within the housing developments in Area 2, 4 and 5 of the STD.

2.5 CONSTRUCTION METHODS AND ENGINEERING REQUIREMENTS

2.5.1 Seawall Construction

The vertical blockworks seawall on sloping berm type seawall shall be adopted so that the navigation water area will not be reduced. The berm shall be formed to level - 5.5 mPD to -6.0 mPD.

Marine bottom mud dredging by grab dredger will be undertaken for seawall foundation works. This will be followed by rockfilling to form the seawall core by barges and installation of concrete blockwork. Placement of an armour rock layer will then be undertaken by crane lift on pontoon or derrick lighters. No sandfilling will be involved in the seawall construction.

2.5.2 Reclamation

The reclamation filling works process will commence behind the seawall and comprises sand filling to form a blanket of thickness of 2 m to 5 m by means of grab on pontoon and bottom tipping. The thickness of sand blanket required depends on the presence of marine mud underneath the seabed. The primary objective of forming the capping sand blanket by controlled thin layer placement is to avoid the disturbance in the marine deposits and to prevent the formation of 'mud wave'. Deposition of public fill will be commenced once the sand capping layer has been completed. To maximise the use of public fill in accordance with the prevailing guidelines of Public Fill Committee, the public fill is assumed to be placed up to the reclamation level.

To accelerate the consolidation time and reduce the long term settlement of the proposed reclamation, vertical drains with surcharge will be adopted for areas with the presence of marine deposits detected. The *Engineering - Final Report*⁽¹⁾ assumes that installation of vertical drains will be carried out after the formation of sand blanket.

(1) Agreement No. CE 93/97, Planning and Engineering Feasibility for Development on Sham Tseng Further Reclamation, Draft Engineering - Final Report, August 1999.

In view of environmental concerns regarding the disposal of marine mud from dredged reclamation, installation of vertical drains and application of surcharging will be adopted for ground improvement. These techniques will minimize the extent of dredging.

2.5.3 *Construction of Marine Basin, Pier Structure and Berthing Facilities*

Dredging will be undertaken to remove marine bottom sediment for the construction of the shore of the marine basin. Rockfill will then be placed to consolidate the foundation of the shore. Construction of marine bored piles for the Bypass in close proximity of the Marine Basin will be undertaken as an advanced work stage. The blockwork walls will then be constructed, followed by the construction of the stub pier structure and installation of pier / berthing facilities.

2.5.4 *Construction of West and East Nullahs and Decking*

The construction will begin with the placement of rockfill and sandfill to construct the foundation of nullah walls. The areas on both sides of the nullah will be filled to +2.5 mPD with a temporary drainage diversion path reserved. Bored piles for nullah decking structure will then be installed. Excavation down to the proposed nullah wall bed level will be undertaken for the nullah wall foundation. The nullah wall blockworks will then be installed, followed by the construction of superstructure of nullah deck. Afterwards, backfilling behind the nullah walls will be undertaken. Stormwater will then be rediverted to the completed section of nullah. Finally, the remaining section of nullah wall and deck will be constructed to connect the existing nullah and deck.

2.5.5 *Construction of Three Box Culverts for the Extension of Existing Outfalls*

The existing outfalls near Garden Bakery, west of Lido Garden and south of Sea Crest Villa Phase II will be extended after the box culverts are constructed. The construction will begin with filling the area on both sides of the culvert to +2.5 mPD with a temporary drainage diversion path reserved. Bored piles will then be installed for culvert structures. After the construction of culvert structures, the culverts will be backfilled. Stormwater will then be rediverted to the completed section of culvert boxes. Finally, the remaining section of culvert boxes will be constructed to connect the newly formed section with the existing outfall.

2.5.6 *Construction of the Elevated Bypass*

The construction of elevated portion of the proposed Bypass will include the installation of marine bored piles, abutment construction, and superstructure construction.

Marine Bored Piles

At the piling area, temporary staging / cofferdam with sheet-piling wall will be prepared. The founding level will then be established through predrilling by conventional rotary drilling rigs at the location of each pile. Marine bored piles will be constructed using a derrick lighter and flat top pontoon mounted with crawler crane. Excavation for marine bored pile construction will be carried out within a permanent casing with hammer grab working off a crane. Ordinary Portland Cement (OPC) / Pulverised Fuel Ash (PFA) concrete will then be placed by underwater tremie method to the installed reinforcement cage at the pile bore to fabricate the marine pile. This will be followed by installation of the prefabricated pile head sleeve, including a working platform around each sleeve over the pile by derrick barge. The reinforcement of the cap will also be fixed. Concrete will be supplied by concreting barge and placed by pump or crane and skip to fabricate the pile cap. Finally, the installed sheetpiles can be removed.

Abutment Construction

Bored piling will commence by excavation with hammer grab within a permanent casing. The pile will then be fabricated with reinforcement and OPC / PFA concrete. Backhoes will be used to excavate the materials down to the pile cap formation level. This will be followed by placing blinding concrete and cutting of bored piles. The base slab of abutment will be deployed and shutters will be erected. The base slab will then be fabricated with reinforcement and concreting by pump truck or by crane and skip. The formworks and falseworks for the abutment wall will be erected, followed by fabrication of the abutment by fixing reinforcement and concreting through pump truck or crane and skip.

Superstructure Construction

The falsework towers will be fabricated at pier heads and abutments. This will be followed by the erection of timber soffit and relevant formworks. The reinforcement, deviator tubes and any embedded components of surface drainage system will then be fixed. Concreting will be carried out using a crawler crane or a concrete pump. The external web and cantilever formwork will then be erected by launching method for spanning over the sea. Finally, the reinforcement and concreting will be fixed and the tendons prestressed.

2.5.7

Construction of Promenade and Bypass Underneath

Sub-Structure

The bored piling will be commenced by excavation with hammer grab within a permanent casing. The pile will be fabricated with reinforcement and OPC/PFA concrete. Excavation will then be carried out by backhoe down to the pile cap formation level. Blinding concrete will be placed and bored piles will be cut off. This will be followed by shuttering for pile caps, tie beams and base slab. Finally, the pile caps, tie beams, base slabs will be fabricated with reinforcement and concreting by pump truck.

Super-Structure

The construction will be commenced with shuttering and fixing reinforcement for the columns and wall which support the promenade. Concreting will then be carried out by crawler crane or concrete pump. The falsework and formwork for the roof slab will then be erected. The reinforcement and concreting will then be fixed by crawler crane or concrete pump.

2.5.8 ***Construction of Sewage Treatment Facilities for Sham Tseng Development (STFSTD)***

A typical construction method of the STFSTD is provided in the following paragraph. It should be noted that the actual construction activities required in future will depend on the detailed design of the proposed works.

The construction will be commenced with H-piling by vibration hammer. The reinforcement will then be fixed and in-situ concrete works carried out for the superstructures such as water tanks and buildings. Excavation will then be carried out for pipe laying. This will be followed by installation of the exposed steel pipes among the tanks for treatment process. Finally, the Electrical and Mechanical works and relevant installation will be carried out.

2.5.9 ***Construction of Sewage Pumping Station***

Typical construction methods for the sewage pumping station is provided in the following paragraph. It should be noted that the actual construction activities required in future will depend on the detailed design of the proposed works.

The construction will be commenced by installation of the sheetpiling wall around the location of station. Excavation will then be carried out for the underground structure of the station (approximately 5.5 m deep). This will be followed by carrying out the formwork and in-situ concrete work, and fixing reinforcement. Materials will be excavated to form the trench for steel pipes laying. The trench will then be backfilled. Finally, the pumping and relevant pipework within the station will be installed and the installed sheetpiles will be removed.

2.5.10 ***Construction of Salt Water Pumping Station***

Typical construction method of the salt water pumping station is provided in the following paragraph. It should be noted that the actual construction activities required in future will depend on the detailed design of the proposed works.

The construction will commence with H-piling by vibration hammer / pre-bored H-piling. The reinforcement will then be fixed and in-situ concrete works carried out for the building of the station. Excavation will then be carried out for pipe laying. Finally, the Electrical and Mechanical works and relevant installations, such as pumping systems, will be undertaken.

2.5.11 Construction of the Castle Peak Road Underpass

First, the bored pile retaining wall (north wall) will be constructed, which will be followed by part of the top slab. Then, the bore pile retaining wall (south wall) will be constructed. The fill within the proposed underpass will then be excavated. This will be followed by the construction of the masking wall and the remaining top slab, and then backfilling. Finally, the ramp down for slip road B will be constructed.

2.6 OPERATION OF THE PROJECT

Table 2.6a summarises the major activities undertaken above the STD during operation.

Table 2.6a Major Activities undertaken during the Operation of the STD

Facilities / Infrastructure	Nature of Activity	Potential Environmental Issue
Three schools	Education	Sewage discharge, refuse generation
Government Complex	Recreation	Sewage discharge
Bypass	Roadwork	Traffic noise and traffic exhaust gas emission
WSD salt water pumping station	Flushing water intake	Noise from pump house
Public transport terminus with public toilet	Public transport	Traffic exhaust gas emission and traffic noise
Marine basin	Katio and ferry services	Ferry noise
Residential development	Housing	Sewage discharge, refuse generation
Sewage Treatment Facilities for Sham Tseng Development	Sewage treatment	Operational noise, odour and water quality impacts
Sewage pumping station	Sewage diversion	Noise and odour from pump house
Refuse collection point	Refuse collection and waste loading of refuse collection vehicles	Noise, odour, sewage generation
Social Welfare Facilities (including HMMH, HSMH and Day Activity Centre)	Social welfare services	Sewage and waste
Commercial complex with post office	Commercial activities	Commercial waste and sewage
Residential Care Home for the Elderly	Social welfare service	Sewage and waste
Open space	Recreation and leisure	-

2.7 WORKS PROGRAMME

Reclamation is assumed to be carried out in four phases (Figure 2.7a). The proposed construction works programme, which has been revised to incorporate the recommended water quality mitigation measures (Section 3.7.1) is shown in Figure 2.7b. The reclamation is scheduled to be completed by December 2008. According to the Preliminary Implementation Programme for development on the STD, the construction of the proposed Sham Tseng Bypass will be completed by August 2012. The construction of the residential development in Area 2 will be completed by August 2012, while the private residential development will be completed in approximately 2013/2014.

In terms of community living, without the proposed reclamation at Sham Tseng, the Sham Tseng town will lack a comprehensive plan for balanced development and improved lifestyle. Without the STD in many common facilities will be absent from the local area such that the local residents are deprived of convenient access to community and recreational services as well as open space for relaxation. Without this Project, the recommendation of the "Task Force on Land Supply and Property Prices" for reclamation site in Sham Tseng to be developed for residential use to increase residential flat supply will not be fulfilled.

Additionally, not proceeding with the Project will have an adverse impact on achieving the SAR's flat production programme. Other consequences are:

- there will be a shortfall of primary and secondary schools in Tsuen Wan West if the Project does not proceed;
- there will be a shortfall of district open space in Tsuen Wan West if the Project does not proceed;
- without the provision of the proposed Sham Tseng Bypass, traffic conditions along Castle Peak Road in Sham Tseng Township will not be relieved;
- the development potential in the district cannot be optimised if land is not made available for the sewage treatment facilities; and
- a public filling site will not be made available if the reclamation does not proceed. This may lead to a shortfall of public filling capacity in the SAR.

The existing air quality and noise environments are likely to deteriorate as the traffic flows along the Tuen Mun Road and Castle Peak Road are increasing, particularly after the widening works of the Castle Peak Road. However, with the mitigation package recommended in the Castle Peak Road Widening EIA, the anticipated environmental impacts will be minimised to an acceptable level. The marine water quality near the Anglers' Beach is likely to remain poor until the commissioning of the Ting Kau and Sham Tseng Sewerage Scheme in 2003 that will eliminate most of the illegal connections at the existing Sham Tseng East and West Nullahs.

Table 2.10a summarises the external concurrent projects that will be undertaken simultaneously during the construction of the STD. Most of the projects are more than 500 m away from the Project and cumulative impact of air quality and noise from construction are, therefore, considered minimal.

Table 2.10a *Projects that May be Undertaken Simultaneously with the STD*

Project	Year of Construction	Nature of Project	Remark
Green Island Reclamation	2002 - 2012	Residential, infrastructural developments	Reclamation layout and programme being reviewed
Tsuen Wan Bay Further Reclamation	2008-2014 ⁽¹⁾	Essentially residential developments	-
Route 10	2001 - 2006	Roadworks	-
Castle Peak Road Widening	Sep 2001-Nov 2004 (Not including Extension of Time)	Roadworks	-
Container Terminal No. 9 (CT9)	2000 - 2004	Port development	-
North Lantau and South Tsing Yi Disposal Ground Backfilling	No fixed schedule	Backfilling of marine borrow areas	Backfilling works may concur with marine dredging works of other projects
Sand Borrowing of West Sulphur Channel	Under the construction schedule of CT9	Sand Borrowing (for CT9)	-
Penny's Bay Reclamation Stages I	2000 - 2002	Essentially for recreation and tourism	-
Penny's Bay Reclamation Stage II	2002-2005 ⁽²⁾	Essentially for recreation and tourism	-
Water Supply to the STD	2008 - 2012	Construction of service reservoir, salt water pumping station and water mains	Programme being reviewed

⁽¹⁾ Reclamation Programme being reviewed.

⁽²⁾ Based on the latest tentative construction programme of Penny's Bay Reclamation.