

SOIL PROBLEMS IN HOUSING DEVELOPMENT PROJECTS: ANALYSIS OF CAUSES IN LEGAL PERSPECTIVE

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Abstract - Soil problems are a pathetic occurrence in Malaysia's housing industry. Since Independence Day, the housing industry has expanded and spread across the nation, however soil problems have continued to plague the sector, which caused a negative trend. Although land, planning, building, and housing laws have been enacted in Parliament to control and regulate the Malaysian housing development industry, it is regrettable that these disasters are still common and persist today. Through its literature review, this paper elaborates on the causes of housing failures in relation to soil problems from a legal perspective, right from the outset of the development until the completion of the housing projects thereof. The discussion includes why and how the legal problems occurred and the stakeholders' and purchaser residents' grievances and losses. It aims to identify the current and possible legal problems and issues associated with and arising from the soil problems. The study also includes references to case laws subject to the availability of the reported cases. The study questions why and how the situations happen where justification is necessary throughout the discussion of these stages.

Keywords: landslide; slope failure; housing project; building collapse, construction; negligence; legislative; policy; soil test, Highland Tower, rainfall, disaster

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INTRODUCTION

Malaysia's economy snowballed from the early 1990s leading to the exploration of hilly terrains for development. To date, 429,985 residential units and 168,028 serviced apartment units have been targeted for construction as part of the Malaysian property market's 2020 supply plan (JPPH, 2021). However, the country's rising land and housing development demand over the past two decades has resulted in a shortage of suitable and appropriate locations for housing development (Rashid et al., 2015). Nowadays, such land, which is remote from cities are only available. Some houses built on hillslopes are opined to be unsafe, as numerous unpleasant incidents have occurred, including landslides, soil erosion, and soil movement.

Landslides are the downslope movements of soil or rock material caused chiefly by gravity and triggered by excessive rainfall, earthquakes, and human activity (Panek, 2020). High-intensity rain causes mudflow slides or similar slope failures in many parts of the world (Betts et., 2008). They are referred to as mudflows or mudslides, but they contain elements of both movement processes (Prior et al, 2017). In more temperate climates, severe storms can cause slope failures (Betts et al., 2008). On the contrary, some studies in other countries prove that geological conditions are the dominant factor

that triggers slope failure (Kazmi et al., 2017). However, most of the landslides in Malaysia occur due to improper construction, flawed design, and non-maintenance of slopes which are associated with human errors (Gue & Tan, 2007; Kazmi et al., 2017).

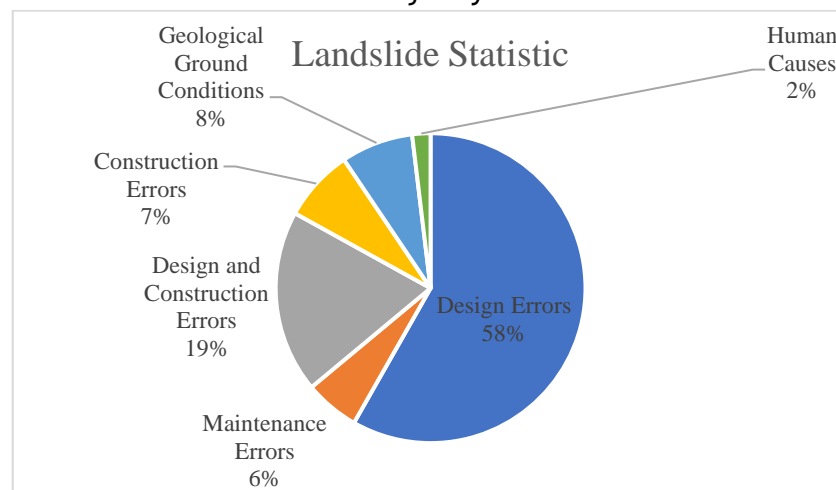
Between 1973 and 2011, Malaysia experienced several significant landslides, with a total death toll of over 600 people. In Malaysia, the absence of a database on slopes and landslides has made it difficult to effective land use planning, maintenance, and quantitative risk assessment (Abdullah, 2013). Further, of the 252 forensic cases, about 182 (or roughly 72% of them) are believed to be related to ground settlement, with the other 28% thought to be caused by other factors like vibration, erosion, and foundation failures (JKR, 2015). To overcome the issue, this study has been conducted concerning soil problems classified as landslides, corrosion, and settlement. The consequences of post-soil problems or post-building collapse are critical to house buyers, residents, and stakeholders. Due to land scarcity, new housing developments have shifted to problematic land types such as soft soil, abandoned mining land, and hill slopes (Alias, Ali, & Othman, 2014a).

Most of the studies are not based on a legal perspective; nevertheless, the information provided is invaluable for this research. Further, a few academic studies are being undertaken that cover the soil or geotechnical issues; however, the studies are not confined to soil problems as an issue in housing projects where data analysis is examined from a legal perspective. The study cross-examined management and law literature which question the occurrence of soil problems in the light of the parties' liability due to housing failure. Therefore, the classification of causes of soil problems found in management and law literature is given below.

1. Facts and Figures

In Malaysia, a critical sectoral report lists 49 landslide cases, of which 88% were attributed to artificial slopes (Abdul & Mapjabil, 2017). Landslides within the past 10 years, caused by various factors, are depicted in the pie chart below. In Malaysia, several housing projects built on hillslopes are vulnerable to landslides, which may also be attributed to soil problems in housing development projects. Much discussion has arisen among engineers and the community on the safety of buildings on hillsides. It becomes more severe every time a landslide occurs and is reported in the media, which typically takes place during monsoon season (Gue & Tan, 2000a).

Figure 2.1 JKR (2009) National Slope Master Plan. Sectoral report research and development, Jabatan Kerja Raya



However, in Malaysia, the causes of the landslide are a consequence of;

- a) Flawed design
- b) Improper construction
- c) Non-maintenance of slopes
- d) The human errors
- e) Geological ground condition

Further, human factors, legislative deficiency, soil conditions, natural disasters, and weather are the contributing factors that cause housing failure concerning soil problems. Teng (2018) opined that the current legislation protects local governments against such accusations. The local authority is exempted from liability under “Section 95” of SDBA 1974 (Act 133) for building failures or injuries. This legal deficiency is one of the causes of the Highland Tower apartment collapse that caused 48 deaths in 1991. The non-inclusion of rainfall patterns and hillslope factors in the EIA / geotechnical report has also contributed to landslides (Phuoc & Sharom, 2016). Ismail asserted that the enforcement on the Environmental Quality Act and its Regulations is a challenging task whereas environmental management through proper planning or the EIA process would be costly and shall only effective through a longer process (Ithnin, 2016). Further, some flaws need to be fixed in the EIA report as there is no requirement to submit to the local authority for housing less than 50 hectares (*ibid*), as some houses below the terms required may suffer soil problems (Too, et.al., 2015).

The development of dangerous slopes (20-30 degrees) or critical slopes (30 above degrees) is prohibited (Abdul & Mapjabil, 2017). Nonetheless, some housing projects have received approval despite having slopes that are higher than required, like in the case of Sunway City. Hill land development, according to Lim and Lee (1992), can have a big impact on the surroundings and the ecosystem further downstream. Furthermore, slope failure and landslides in Malaysia are primarily caused by rainfall and inadequate stormwater management, according to Mokhtar (2006). The main cause of the landslides at Kampung Pasir and Taman Zoo View is poor stormwater management. The same factors contributed to the Highland Towers disaster (JKR, 1994). Table 2.1 in Appendix A depicts key historical landslide events in Malaysia between 1961 and 2021.

2. Methodology

This research applied a legal research methodology which involved several approaches: socio-legal research methodology and comparative analysis. The fields and topics covered within socio-legal methodology include those related to law as a social institution, the impact of law, legal procedures, services, and institutions, as well as the impact of social, economic, and political elements on law and legal institutions ((SLSA), 2015). Hence, the study looked into the aspect of failure in engineering design, natural disasters, limitations in acts, and human error that caused the failure of housing projects involving soil problems.

This study used socio-legal research methods because it enables legal experts and academician to see how the law works. In the realm of doctrinal research, this is almost impossible. Socio-legal analysis avoids unnecessarily emphasizing legal norms, by focusing on the context of the issues that laws were designed to address, their intended functions, and the effects that they really have on a regular and consistent basis. This will shift the law’s perception of being conservative and disconnected from the social context in which it operates. The study linked the law to society through socio-legal research, which will functionalize it and make it an effective tool for achieving social, political, and economic goals (Mullane, 1998).

The research employed a qualitative social case study within real life (Yin, 2014), contemporary context or setting (Cresswell & Poth, 2018). In this regard, three (3) case studies are chosen to examine the social phenomenon and legal phenomena associated with soil problems about building failures in the selected housing development projects’ site location. The reasons for having three case studies of each area are due to the available data information. The location of soil problems concerning housing failures can be found in Selangor and Penang, which have been identified through some news available online. Nevertheless, interviews are most effective for qualitative research.

As the study involved a landslide phenomenon in the housing project, it is relevant to have data to be examined from a particular case study. A qualitative case study is a type of research methodology that uses a variety of data sources to analyse a phenomenon in a particular setting (Baxter & Jack, 2008). The study interviewed officers from the local authority of Majlis Perbandaran Sepang in Selangor and Penang. Data were obtained as primary sources concerning improving existing legislation concerning soil problems. For qualitative research, interviews are the most successful method, and they help in explaining, deeper understanding, and exploring the participants’ opinions, behaviour, experiences, phenomena, and so on. Interview questions are typically kept open-ended to get more information.

Finally, some legal problems of unreported cases can be investigated through accessible files in which data obtained is first-hand and reliable.

3. Classification of Causes of Soil Problems

This research has found five leading causes that contribute to the failure of housing projects about soil problems which have been classified as follows:

- 1) Legislative deficiency and legal problems (Dahlan, 2009; Phuoc & Sharom, 2016; Teng 2018)
- 2) Human negligence (Gue & Tan, 2000b; Kazmi, 2017)
- 3) Natural disasters (Betts et al, 2008; Pánek, 2020)
- 4) Soil Condition (Gue & Wong, 2009; Gue & Tan, 2003; Rashid et al., 2015)
- 5) Weather (Azmi, 2014; Phuoc & Sharom, 2016)

Several authors listed in Table 4.1 have conducted numerous studies on soil problems in the literature, including the work of Kazmi (2017), Phuoc & Sharom (2016), Turgay et al. (2016), Zhang et al. (2014), Joseph (2001), PAM (2008), Dahlan (2009), Srivastava A. et al. (2012), Sushma, (2010), Paulus, (2014), Hamzah et al., (2012), Hui (2005), Gue, Liew, and Tan (2000), Rahman & Mapjabil (2017) and Azmi (2014).

Table 4.1: Literature Based Analysis of the Causes

Author	Causes of Housing Failure in Relation to Soil Problems (articles, books, journal)														
	Loop hole s in the law	Incompliance with the law											Act of God		
	Section 95 of the SDBA Act EIA shortcomings	Poor construction practice Flawed design/	Unethical/ ethics issue	Inadequate boring/soil test	Negligence	Nuisance	Political interference	Loose approval	No enforcement by local authority	Adjoining properties	Financial constraint	Non-Maintenance of slopes	Natural disaster	Intensity of rainfall	Soil condition
Phuoc & Sharom, (2016)	X													X	
Turgay <i>et al</i> (2016)										X					
Zhang <i>et al</i> (2014)													X		
Joseph, (2001)					X										
PAM (2008)					X										
Dahlan, (2009)	X			X	X		X	X	X						
Srivastava A. <i>et al</i> (2012)		X	X												X

Sushma (2010)		X	X												X
Rehardjo (2014)		X			X										X
Hamzah <i>et al</i> (2012)															X
Leow, (2005)															X
Gue, Liew, & Tan (2000)		X		X											X
Azmi (2014)														X	X
Kazmi (2017)		X	X		X							X			
Rahman & Mabjabil (2017)		X	X		X	X						X			

4. The Legal Issues in Relation to Soil Problems in Malaysian Housing Projects with Reference to Decided Case Laws

Regarding the causes of soil problems in the management literature discussed in the previous chapter, the research compares the grounds with the legal issues based on the available decided case law by cross-checking the legislative deficiency. The causes of problems can be referred to as the “cause of action”. The “cause of action” determines the claimant’s legal right to sue. A “cause of action” is a type of fact that will justify a court awarding a legal remedy. When there is a “cause of action” on the pleaded case, the court can award a remedy (Hall Ellis Solicitors, n.d.). There are established classifications of causes of action, such as contract, tort, and statutory. Some examples include “breach of contract, trespass, conspiracy, fraud the tort of negligence, passing off, copyright infringement, breach of fiduciary duty, and conversion (*ibid*). In this sense, a cause of action is a substantive legal right. It is discovered that, based on the research and existing decided cases, arising claims, and disputes about soil problems’ literature among them are:

1. Legislative deficiency: Legal protection for state and local authority
2. Negligence: Planning permission approved with exceeding gradient
3. Negligence in carrying out proper soil condition
4. Negligence caused by adjoining properties
5. Non-maintenance of slope by local authority
6. Soil condition, weather, and natural disaster

Legislative deficiency: Legal protection for state and local authority

The Local Authority is exempted from liability under Section 95 of SDBA 1974 (Act 133) for building failures or injuries (Teng, 2018). Consequently, when endorsing a project, the Local Authority may omit certain essential requirements, resulting in building failures. Hence, this reflects some flaws and legal deficiencies in the existing law.

In the *Majlis Perbandaran Ampang Jaya (MPAJ) v. Steven Phoa Cheng Loon & Ors (2006) 2 CLJ* (Federal Court), under Section 95(2) of SDBA 1974 (Act 133), it was held that, the MPAJ, the local government, was not to blame for the Highland Towers’ collapse. In order to maintain the stability and safety of Towers 2 and 3, it was alleged that MPAJ had neglected to present a master drainage plan for the impacted area on the hillside behind the apartment towers pursuant to “Sections 53 and 54” of the SDBA 1974 (Act 133).

MPAJ was exempted from liability for its negligent acts and omissions before and after Block 1 of Highland Towers collapsed. The judges (Abdul H. M. and Ariffin Z. FCJJ) held that, “Section 95(2)” of the SDBA 1974 (Act 133), absolves the local authority’s liability taking into account public policy,

obligations, burdens and restrictions, and also local circumstances. Hence, it was unfair, unjust, and unreasonable to subject MPAJ to this burden of obligation.

The lack of a master drainage plan for Highland Towers apartments may endanger the public, hence the protection from liability at the building approval stage should not be granted. The defendant was required to carefully and thoroughly review the projects that were submitted in order to determine if the drainage and retaining wall designs are appropriate and reasonably suited for the intended purpose. Watercourses, streams, and rivers close to the Arab Malaysian Land and Highland Towers Site, as well as the surrounding lands, which were under the fourth defendant's control, have changed course as a result of badly engineered terraces, retaining walls, and drains.

Negligence: Planning permission approved with exceeding gradient

Apparently, harmful slopes (between 20 to 30 gradient) and critical slopes (over 30 gradient) should not be built (Rahman & Mapjabil, 2017). Lim and Lee (1992) state that hillslope development may have impacted on the immediate and downstream environment. However, in some practices, the local authority may have approved the development plan, which is dangerous for the proposed housing scheme. degrees. In the case of *Sunway City (Penang) Sdn Bhd v Lembaga Rayuan Negeri Pulau Pinang & Ors 2017 MLJ 755*, the legal issue that arose at this point was when Majlis Perbandaran Pulau Pinang (MBPP) approved the planning application and building plans for Sunway City, a massive project that consists of “600 high-rise apartments and bungalows on 80 acres of hill side”, with about 43% of those units located on slopes exceeding than a gradient of 25 degrees. However, because the proposal appeared to pose a risk to local residents, the decision became a national issue. The Appeal Board rejected the proposal, citing locals' concerns that it would cause significant harm to the surrounding neighbourhood and the environment.

According to Justice Lim C. F. decision in the High Court, the developer's project application should be processed by MBPP without needing a referral to the “State Planning Committee” since it falls within “Category Two of the State Planning Committee Guidelines for Special Projects”. The local planning authority had approved the project. Still, the High Court decided in favour of the developer and overruled the decision of the Appeal Board, which was unfortunate for the inhabitants. The learned court stated in that case that the “Penang Structure Plan does not have to be strictly adhered by the local planning authority. The issue is presented before the Court of Appeal.

Evidently, the trial judge did not take into account that if the proposal was carried out, it would constitute a possible risk to surrounding people because 43 per cent of the plan would be built on a gradient greater than 25 per cent, which was unquestionably risky. Since the project is located on slopes with angles of more than 25%, the court should evaluate the possible danger the construction may cause to the adjacent housing area.

Negligence in carrying out proper soil condition

The appellate court found in the case of *GJH Properties Sdn Bhd v Tribunal Tuntutan Pembeli Rumah, Kementerian Kesejahteraan Bandar, Perumahan dan Kerajaan Tempatan & Anor (2021) MLJU 1853*, that the appellant's claim that the learned High Court Judge committed legal error by failing to recognise that the first respondent's jurisdiction is limited to claims arising from the express terms of the SPA and that the first respondent had, in fact, made a decision on the second respondent's claim, which is based on the tort of negligence, actually exceeded the scope of its authority under Section 16N(2), “Housing Development (Control and Licensing) Act” of 1966. It should be mentioned that the appellant is a certified housing developer of the Taman Vista Kirana Fasa development project. It should be emphasised that the appellant is a licensed housing developer of the Taman Vista Kirana Fasa 3 development project in Melaka, the Housing Development (Tribunal for Homebuyer Claims) is the first respondent, and the second respondent is an individual buyer.

Nevertheless, the study looks into the causes of claims highlighted by the respondents. The 2nd Respondent complained under the title “Soil Settlement Problems Surrounding the House” in Form1 that the construction of the 2nd Respondent's double-storey semi-detached house was on an earth-filled site and that the earth compaction was not carried out properly, which resulted in some damage to the home and the alleged injury arose from the appellant's negligence. The claims subject to the appellant's

failure to carry out the compaction process properly, which had caused cracks in the walls and floor tiles, besides a concrete fence along the side and rear of the property on the house, as well as cracked pillars which amounting to MYR25,300.00.

Given the foregoing, the second respondent argued “that the appellant had been negligent in carrying out the earth compaction works, which had led to problems with soil settlement near the subject property and, in turn, resulted in the damage detailed in the aforementioned Form 1.

Negligence caused by adjoining properties

Adjoining Properties is defined as any real property or properties that share a boundary with the property, either entirely or partially, or that would have a border with the property, except for the presence of a street, road, or other public thoroughfare (Law Insider dictionary). In ***Lim Teck Kong v. Dr Abdul Hamid Abdul Rashid & Anor [2006] 3MLJ 213***, the 3rd defendant was accountable for negligence as well as created a public nuisance. This is evident by his interference with the rainwater by placing transverse drains way down the slope of Lot 3008. Obviously, each of them had an impact on how the water naturally flowed, which made the water concentrate and seep deeper into the ground, harming Lot 3007. According to the evidence presented, the third defendants had “breached their duty of care towards the plaintiffs in regard of negligence, caused nuisance to the plaintiffs, and were accountable in part under the rule of Rylands and Fletcher” by their actions.

In ***Eu Sim Chuan @ Eu Sam Yan & Anor v Kris Angsana Sdn Bhd (2007) 1MLJ 734*** (High Court), the plaintiffs were owners of a double-storey bungalow house. The defendant developed land adjacent to the bungalow, which he constructed “two (20-storey) condominium blocks. The piling activities carried out by the defendant for the construction of basement car parks which involved excavation and removal of soil, caused settlement and movement of the underground soil.” In turn caused damage to the plaintiffs’ bungalow where cracks developed in various parts of the building including the compound of the bungalow. In this action, the plaintiffs alleged that the “defendant had been negligent in carrying out the construction works.” The only question in this case was whether the defendant had been negligent in some way that had an impact on the plaintiff’s bungalow.

Non maintenance of slope by local authority

Failure to maintain an earth slope might result in a landslide at times. In ***Siew Yaw Jen v Majlis Perbandaran Kajang and another appeal in 2014*** (Appeal Court), the defendant rebutted the plaintiff’s claim by “claiming that the retaining walls would not have been required if Lot 1758 (which is located on higher ground than Lot 6504) had a proper drainage system and the earth slope was adequately maintained”. It is adequate with the earth slope designed, which was clearly the reason for the plaintiff’s approval and subsequent issue of the CFO. The inability of local authorities to preserve earth slopes was the source of soil erosion and landslides.

“Q: Can that earth slope then prevent landslides?”

A: Yes, if it is maintained properly. However, it was not maintained properly in particular on the other side located in Lot 1758 by the owner of the neighbouring lot.

Q: Can you please explain what do you mean by that?”

A: Upon inspection, I found out that the said drain was not maintained properly with slit (sic) and grass growing along the said drain and it was clogged with earth and stones which caused over flow of rainwater and landslides”

Puan Fadilah bt Razali, a plaintiff’s witness, said that if to construct the retaining walls on Lot 1758, the upper hill or slope had to be removed. In other words, the plaintiff had to believe that the problem with surface runoff from Lot 1758 was acceptable. Consequently, on December 28, 2001, the plaintiff had issued the CFO.

The court sought to examine whether the developer, the defendant, in the high court claimed that the Local Authority had waived the necessity for the installation of retaining walls by issuing a CFO and agreed the earth slope design as a sufficient substitute. The court seek to investigate in order to establish if it had been true. However, the appellate court could not identify any grounds to justify the High Court’s rejection of the first defendant’s claim. The first defendant’s failure to build the retaining walls constituted the basis for the claim, and the second defendant shared responsibility by falsely claiming

on the PJ form that the retaining walls were built when they were not. But the plaintiff was unable to show the appellate court that the CFO awarded was a conditional CFO.

The plaintiff had in the first place acknowledged that the earth slope was an appropriate substitute for the retaining walls when it was built and Permission was given following two inspections. To summarize, the judge took the plaintiff's waiver to construct a retaining wall since the issue of the CFO provided evidence that the plaintiff was aware of the earth slope that was constructed. Alternatively, as stated in the SDBA 1974, Act 133, and Local Government Act, the plaintiff should have maintained the earth slope and drainage system.

Soil condition, weather, and natural disaster case

In *Steven Phoa Cheng Loon & Ors V. Highland Properties Sdn Bhd 9 Ors [2000] 4 MLJ 200* (High Court), partly the reasons of the collapsed tower were due to soil conditions. In this case, the judges dismissed the geotechnical views of an expert in the geo-technology field, the defendant, known as Dr Weeks. He began his testimony by outlining the components that contribute to slope stability, where the local soil is primarily composed of sand or sandy materials. He said that the three factors governing slope stability. Continuous rainfall causes loosened soil structure or weakened soil, leading to slope instability. His theory on slope stability mentions the relationship between soils and water, which causes a slide in the ground. Sand or other sand-like elements make up the majority of the soil in the area. The three factors are: The first is the slope angle, or the angle of the slope; the second is the shear strength; and the third is the pore water pressure.

The occurrence of natural phenomena, such as constant rain, flooding, earthquakes, soil siltation, and soil erosion, poses risks that could lead to the collapse of housing developments, particularly those built on hillsides. Notably, the instances of building failure are brought on by "soil liquefaction", which occurs when saturated or partly saturated soil significantly loses strength and stiffness in response to an applied stress, usually earthquake shaking or other abrupt change in stress condition, leading it to behave like a liquid. Following the collapse of the Calaveras Dam in California in 1918, Hazen (1920) popularised the term "liquefied" in soil mechanics. Hazen claimed that the soil's strength and rigidity were lost as a result of liquefaction, which took place at various points below ground. Eastern suburbs of Christchurch sustained significant damage from the 2010 Canterbury earthquake. A tragedy like this is classified as a "natural disaster" or "force majeure" since it is an "act of God" and neither party can be held responsible (Zamalik et. al 2020).

In decided case *Atlantic Paper Stock Ltd. v. St. Anne-Nackwawic Pulp & Paper Co [1976] 1 SCR 580* in Canada, the judge concluded that a force majeure provision typically serves to terminate the contract and release the offending party when an unforeseen event, frequently supernatural, beyond the control of either party renders performance impossible. As such, it is unlikely that a plaintiff who brings a claim for damages will be successful. Hence, we cannot totally rule out damage brought on by a natural disaster or "force majeure," which is characterised as unanticipated events. Similar to natural disasters or acts of God, earthquakes, landslides, and soil erosion have no legal remedy to reinstate the claimant (Zamalik et. al. 2020).

However, in *GJH Properties* case, the judge took consideration of the inspection report by Geo-Excel Consultants Sdn.Bhd. Dated 22.2.2017 that it should be conducted during the rainy season, which will show how severe the slope state is and not when the terrain is dry and stable, and even then, the hill is still being classified as threatening. Table 3.1 below is the summary of legal literature that were divided in three categories that are loopholes in the law, human negligence/ incompliance with the law and Act of God.

Table 3.1: Summary of legal literature with cross examined from management literature


Loopholes in the law	Legislative deficiency: Legal Protection for state and local authority
Human Negligence/ Incompliance with the law	<ol style="list-style-type: none"> 1. Negligence: Planning permission approved with exceeding gradient 2. Negligence in carrying out proper soil condition 3. Negligence caused by adjoining properties 4. Non- maintenance of slope by local authority
Act of God	Soil condition, weather and natural disaster

CONCLUSION

The researcher underlined a few causes based on the available literature that is from legal literature, which triggered the problems. The reasons stem from negligence among local authorities, developers, adjoining properties, and partly due to soil conditions, weather and natural disasters. As described in the preceding paragraphs, the legal issues and problems concerning soil problems in housing projects that occurred in Malaysia illustrate the diverse legal topics: land, planning, housing and building law.

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- [7] *Sunway City (Penang) Sdn Bhd v Lembaga Rayuan Negeri Pulau Pinang & Ors and other appeals*. [2017] MLJ 755 (High Court)

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- [1] *Environmental Quality Act 1974*
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- [3] *Land Conservation Act 1960*
- [4] *Local Government Act 1976*
- [5] *Street Drainage Building Act 1974 (Act 133)*

APPENDIX A

Date	Location
1 May 1961.	A landslide occurred in Ringlet, Cameron Highlands, Pahang
21 October 1993	The man-made Pantai Remis landslide caused a new cove to be formed in the coastline
11 December 1993	48 people were killed when a block of the Highland Towers collapsed at Taman Hillview, Ulu Klang, Selangor. 30
30 June 1995	22 people were killed in the landslide at Genting Highlands slip road near Karak Highway.
6 January 1996	A landslide in the North-South Expressway (NSE) near Gua Tempurung, Perak. One death.
29 August 1996	A mudflow near Pos Dipang Orang Asli settlement in Kampar, Perak, 44 people were killed in this tragedy.
November 1998	Massive rockslide at Bukit Saujana, Paya Terubung, Penang.
January 1999	Shallow rotational slide. Heavy rain triggered landslide – buried a number of house/huts in squatters settlement, Sandakan, Sabah. 13 deaths.
15 May 1999	A massive landslide near Bukit Antarabangsa, Ulu Klang, Selangor. Most of the Bukit Antarabangsa civilians were trapped under the rubble. Only two victims survived - an Indonesian maid and a child.
January 2000	Debris flow from upstream landslide and erosion washed away worker squatters in vegetable farm, Cameron Highlands, Pahang. 6 deaths.
January 2001	Shallow rotational slide in Simunjan, Sarawak. Landslide occurred on vegetable farm – buried a number of houses at the toe of slope. 16 deaths.
December 2001	Debris flow in Gunung Pulau, Johor. Heavy rain triggered debris flow resulting from a number of small landslides along upstream of Sungai Pulau – washed away settlements along the river bank. 5 deaths.
20 November 2002	The bungalow of the Affin Bank chairman General (RtD) Tan Sri Ismail Omar collapsed due to an early morning landslide in Taman Hillview, Ulu Klang, Selangor, with a fatality in his family.
November 2003	A rock fall/rock debris in the New Klang Valley Expressway (NKVE) near the Bukit Lanjan interchange caused the expressway to be closed for more than six months.
November 2004	Debris flow in Taman Harmonis, Gombak, Selangor. Sliding/flowing of debris soil from uphill bungalow project-toppled the back-portion of neighbouring down slope bungalow after weeklong continuous rain. 1 death.
December 2004	Rock fall – buried back portion of illegal factory at the foot of limestone hill in Bercham, Ipoh, Perak. 2 deaths.
31 May 2006	Four persons were killed in the landslides at Kampung Pasir, Ulu Klang, Selangor. Buried 3 blocks of longhouses.
March 2007	Landslide at Precint 9, Putrajaya. Some 23 cars were buried under the debris.
26 December 2007	Two villagers were buried alive in a major landslide, which destroyed nine wooden houses in Lorong 1, Kampung Baru Cina, Kapit
2 February 2009	One contract worker was killed in a landslide at the construction site for a 43-storey condominium in Bukit Ceylon, Kuala Lumpur.
21 May 2011	16 people mostly 15 children and a caretaker of an orphanage were killed in a landslide caused by heavy rains at the Children's Hidayah Madrasah Al-Ta'wa orphanage in FELCRA Semunggis, Hulu Langat, Selangor.



29 December 2012	88 residents of bungalows, shophouses and double-storey terrace houses in the Puncak Setiawangsa, Kuala Lumpur were ordered to move out because of soil movement.
4 January 2013	Construction at the Kingsley Hill housing project at Putra Heights has been halted temporarily following a landslide at the site that caused several vehicles to be submerged in mud
11 November 2015	A landslide occurred at km 52.4 of the Kuala Lumpur-Karak Expressway between Lentang and Bukit Tinggi, Pahang and Gombak-Bentong old roads. The Lentang-Bukit Tinggi stretch of the expressway was closed to traffic
January 2016	A landslide has blocked all lanes in both directions on the Karak Highway, the main highway that connects the capital Kuala Lumpur to Genting Highlands and other parts of Pahang state. Four vehicles that were trapped in the landslide, but all passengers managed to escape unhurt.
September 2017	A landslide happened during the construction phase of Tanjung Bungah's Lengku Permai. Killed eleven construction workers.
January 2019	A bungalow at Jalan Kelab Ukay 2, Taman Kelab Ukay, Ampang, collapse due to soil movement.
5 January 2021	Two houses in Taman Gambang Damai in Kuantan collapsed, believed to be due to hillslope soil movements as a result of continuous rain.