

EL18SPS002

Avis Way Technical Review

Executive Summary

On the 22nd February 2018 CLEAR Sustainable Futures was contracted under Strategic Support Partnering Services to review the feasibility of relocating the Lewes District Council waste fleet depot and maintenance facility from its current location on Robinson Road to a plot on Avis Way. CSF have contracted AECOM to complete this review.

AECOM have been supplied with all of the records that LDC hold for a 2016 procurement exercise that proved un-economic due the expected cost of the ground strengthening work, this included a GI report, a FRA and 3 off contractors quotes and associated designs.

The attached report shows that the site can be made functional as a depot and maintenance facility with a much reduced cost for ground stabilisation for the parking areas and building foundation. The location of the building is on the north eastern corner of the plot of land which is the best suited location for founding and as such the site design has changed from the existant planning permission there would therefore be the need for a new planning application.

AECOM estimate that the cost of stabilisation would be circa £593,000, and by updating the 2016 estimates with the appropriate construction cost increases the they estimate that the construction cost, less professional fees, for the depot and maintenance depot would be in the range £2.3m - £3.5m. This equates to an approximate project budget in the range £2.7m - £4.1m. The detail evaluation is documented in the attached AECOM Technical Note.

If the above project budget is considered by LDC to be affordable, then sufficient information exists to draft a CLEAR Futures NPR and start the process of engaging with the CF supply chain.

Sam Mackilligin

12th April 2018

Technical Note

Project Title Avis Way	Job No. 60567662	Date 7 th April 2018	
Client Lewes District Council	Made by James Scott	Checker David Lee	Project Manager Martin Dunn

Avis Way –Maintenance Depot Design Proposal

Overview

AECOM has been asked by Lewes District Council (LDC) to review the 2016 proposal to relocate the Waste Vehicle Maintenance Depot in Newhaven and the Recycling Centre in Lewes to a new single location in Newhaven. It was concluded that the 2016 proposal to relocate the depot and recycling centre would not be economically viable due to the extent of the civil works required to improve poor ground conditions present across the proposed new site.

AECOM looked to further develop the currently proposals, with the ultimate goal being to reduce the overall construction costs, by reducing the ground improvement/stabilisation costs. To complete these works, AECOM undertook a review of existing information held by LDC to produce this Technical Note.

Information Reviewed

The information reviewed to produce this report is as follows:

- Drawing 4436-MBA-0-GF-DR-A-101-SO rev C;
- Drawing AD31 rev D Vehicle Workshops Building;
- H18800 – FRA2 Waste Transfer Station 10 Avis Way Newhaven BN9 0DH – Flood Risk Assessment;
- Kier – Newhaven Depot Submission;
- Morgan Sindall – Newhaven Depot Submission;
- Sunninghill – Newhaven Depot Submission;
- LW26383 Report LCH – Geotech and Ground Contamination Report – Feb 2016.

Deliverables

For this technical note AECOM delivered the following:

- Revised Site Layout Drawing;
- Updated ground stabilisation/improvement proposals;
- Risk Register, and;
- High-Level Cost Plan.

Revised Site Layout

The first step undertaken by AECOM was to update the current layout, as shown on drawing 4436-MBA-0-GF-DR-A-101-SO rev C, in line with LDC's revised requirements for the site. The revised layout is included in Appendix A and includes the following.

- Removal of the proposed recycling centre and associated works.

- One new vehicle workshop and operational depot.
- Seven daytime parking spaces for HGV's.
- Twelve overnight parking bays for HGV's.
- Four additional HGV parking spaces including a refuelling bay.
- Drive through vehicle washdown area.
- Thirteen spaces for LGV's.
- Fourteen car parking spaces including five disabled spaces and three EV charging points.
- Twenty cycle shelter spaces.
- Two works storage areas.

The new workshop has been positioned in the eastern corner of the site along with an additional pedestrian entrance for cyclists and foot traffic. The additional pedestrian access allows the larger HGVs and LGVs to be kept away from potential foot traffic and smaller vehicles such as cars and bikes. The larger HGV spaces are located near to the entrance and exit of the site. This allows the area of the site that required ground improvement / stabilisation to be minimised. Some smaller / lighter vehicle parking spaces are located at the northern end of the site as it is anticipated that this area may have poorer ground conditions compared to the southern end of the site.

By keeping the new site relatively close together and utilising possibly better ground to the east, the majority of the western side of the site has been avoided. This area is approximately 2,050m² which equates to around 37% of the total site. This area could potentially be used for landscaping purposes and or any other soft engineering purposes such as a sustainable drainage system and flood prevention measures. Space could also be kept for any future developed.

Updated Ground Stabilisation/ Improvement Proposals

The dynamic probe that Ashdown used for the Combined Geotechnical and Ground Contamination Risk Assessment report carried out in February 2016 is too heavy to get an accurate representation of the ground conditions. The probe is penetrating through the soft layers at the surface and providing little information as it does so. Furthermore, from the information provided it is unknown whether the site levels are changing and as such a detailed topographical survey would be required to help with the ground stabilisation proposals as well as applying the data provided in the flood assessment.

However, if the finished surface levels, after the development of the site, were to remain substantially the same, within 300mm of current ground levels, and further ground investigation, such as Dynamic Cone Penetrometer testing, was carried out across the full site, then essentially the following ground rational could be applied.

Geotechnical

The northwestern half of the site is covered in made ground varying in thickness from 0.7m to 1.0m, excluding the bund at the north edge of the site. This artificial "crust" should be trimmed and compacted to permit the new pavement construction to be constructed onto this. The finished design levels should be selected to avoid breaking through this crust. The pavement makeup should incorporate a 250mm thick capping layer of Class 6F4 or 6F5 selected well graded granular fill material.

The remaining southeastern half of the site appears to have no extensive crust of made ground, although some concrete slab cover is recorded in places which has been directly constructed onto the organic alluvial clay subgrade. In places, the clay subgrade is described as soft at the surface or becomes soft at depths of about 1m to 1.5m below the existing ground level at the time of the ground investigation (GI). This very weak subgrade will require the construction of a strong, flexible improvement layer in order to permit the pavement to be constructed and to perform without excessive deflection in service. Due to the organic content found during the initial ground investigation modifications of the ground utilising lime and cement is not feasible. Therefore, for the new workshop structure, it is anticipated it will need to be piled, and a detailed piling design carried out.

For the remaining area that will be used for HGV's and LGV's, the improvement works to the ground could be as follows. An improvement layer (subbase) could be formed by the excavation of the soft clay and the backfill of Class 6F4 or 6F5 material, taking cognisance of the high moisture content and shallow depth to groundwater reported in the GI. An alternative method could be the use of geocells in the subbase layer which could subsequently be filled with mechanical fill such as 6F2 or 1A.

If there is a requirement to build up the levels, then the recommended approach is to install the fill early and leave it for some time to allow for the early settlement. As the subgrade is so weak and the intention is to construct a rigid pavement, then it is anticipated that the improvement layer will need to be about 1m thick below the sub-formation level of the pavement design.

Pavement Construction

Taking into account that further investigation work is required before the pavement can be designed an indicative road make up on top of the subbase layer could be as follows. A layer of Cement Bound Granular Mixtures (CBGM) between 150-200mm followed by a reinforced concrete slab between 200-250mm. This makeup would only be used in areas where there would be increased traffic from larger vehicles such as HGV's. Other areas of the site could use a leaner design, however, as mentioned this would require further investigation works.

Risk Register

A high-level Risk Register is shown below in Appendix B.

Ground Improvement Costs

AECOM's high-level cost plan is shown below in Appendix D. The estimated ground remediation work is included in the substructure item in the cost plan. The substructure item has been expanded and is shown in Appendix C below. AECOM estimate that these works could cost between £480k and £718k. However, further investigation works, detailed design, and site requirements are needed.

To get to these figures, the following has been assumed:

- Demolition and removal of any existing structure have been included in the abnormalities item in the AECOM Cost Plan. This includes removal of any hazardous waste and concrete hard standings.
- Relevant rates have been taken from SPONS Civil Engineering and Highway Works Price Book, 2018.
- Excavation of material across the site has been estimated to be an average of 1m across the site. This area is estimated to be around 4,900m².
- Following removal of the material, it has been assumed that the ground would require to be consolidated. The exact technique that could be used is unknown, and it is anticipated that stockpiling and surcharging areas for a period could be sufficient. However, to cost the works a Dynamic Compaction method that has been assumed. Despite it being an unlikely technique due to the type of subgrade expected to be encountered.
- Following the consolidation works an engineered geotextile such as a tensor product have been used. The grade of tensor has been assumed to be SS40 Geogrid.
- For the mechanical fill it has been assumed that there will be an average of 0.5m of Class 6F fill across the whole site.
- The pavement construction has been assumed to be made up of a layer of Cement Bound Granular Mixtures or equivalent, then a layer of reinforced structural concrete for the running surface. It has been assumed that these could be 200mm and 260mm thick, respectively. The associated joints, shuttering, and other materials are deemed to be included in the miscellaneous item.
- The new workshop that is proposed to be constructed at the southeastern end of the site has been assumed that it will be piled. The price for these works is an estimate just now as a piling design and details of the building be required would be required.

High-level Cost Plan

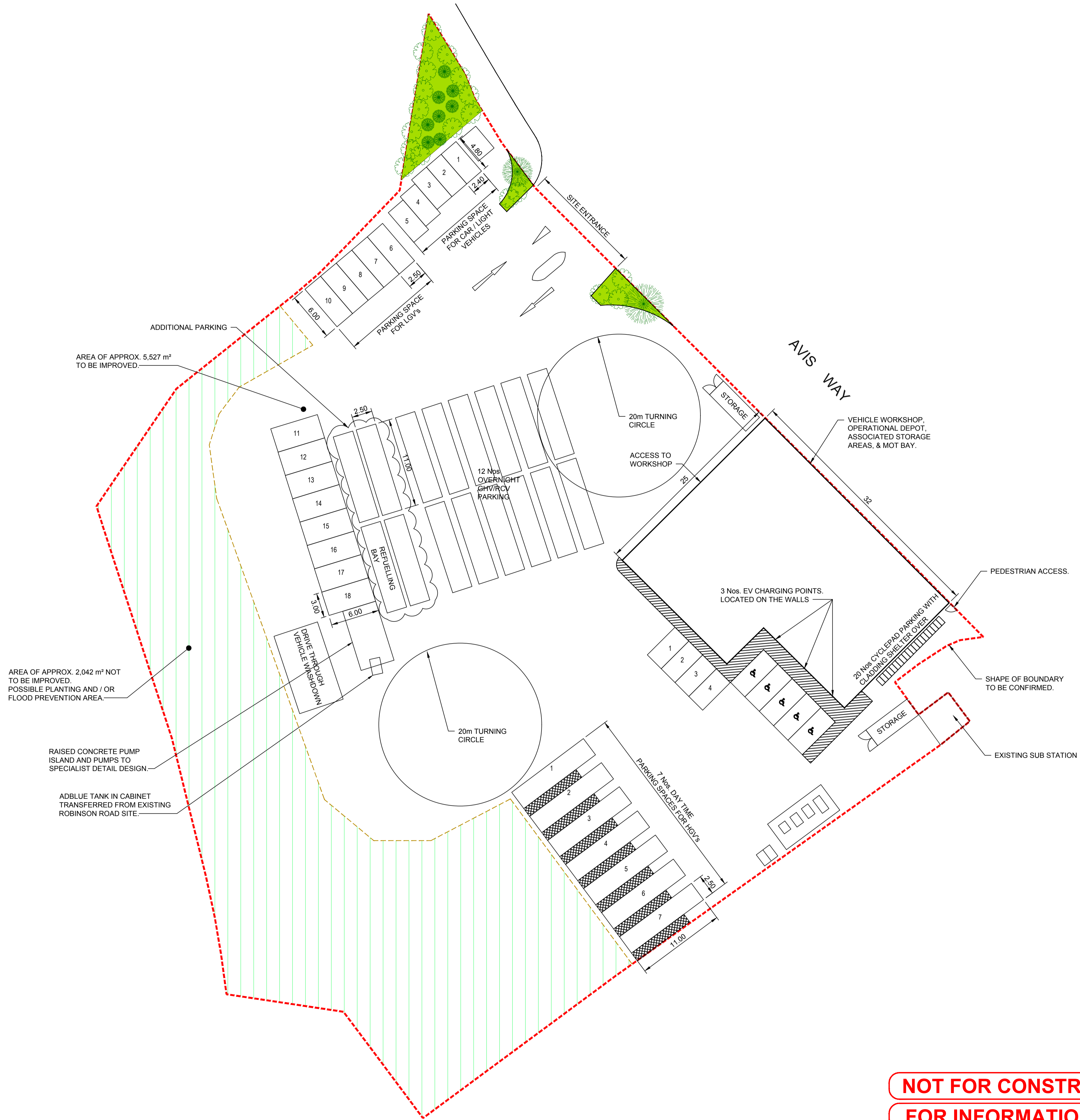
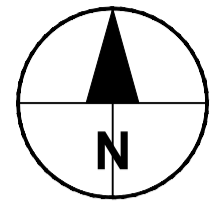
To assist LDC to assess the financial viability of the total project, AECOM have carried out a high level analysis of the total project cost. A breakdown of the cost plan can be found in Appendix D, below. From the information provided AECOM estimate that the total construction costs for the Avis Way site could be between £2.7m and £3.3m. To get to this estimated figure AECOM have assumed the following:

Assumptions

- No allowance has been made for any other construction costs and or professional fees for further design.
- Costs Rounded to the nearest £,000.
- Construction costs are based off the comparison between previous cost breakdowns provided by contractors. Each item was taken from each contractors cost plan and averaged.
- By using the costs provided by the contractors, it has been assumed that the level of specification from the original design has been kept the same.
- The cost of the construction of the recycling centre has been removed. From this it has been assumed that a 35% reduction would be applied to average of all other civil costs. Not included in this calculation is the recycling sorter and weighbridge, as these item are not applicable in the calculation.
- Changes in construction costs have been index linked using The Building Cost Information Service.
- The cost of the ground improvement works is included in the substructure costs. Further, GI is required to determine the cost of the works accurately.
- Abnormals are assumed to include demolition and removal of existing structures, and removal of contaminated waste.



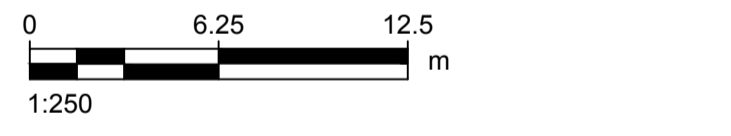
Appendix A - Drawing



LEGEND

	INDICATIVE SITE BOUNDARY
	PLANTING AREA
	FENCE
	PLANTING/FLOOD PREVENTION AREA

- NOTES**
- DRAWING IS FOR INDICATIVE PURPOSES ONLY.
 - DIMENSION OF WORKSHOP ARE UNCHANGED FROM ORIGINAL DESIGN.
 - ALL DIMENSION AND LOCATION OF COMPONENTS ARE INDICATIVE.
 - SPACE ARE DESIGNED FOR 12m x 2.5m 23t RIGID VEHICLE.
 - DRAINAGE HAS NOT BEEN CONSIDERED.
 - SITE BOUNDARY TO BE CONFIRMED.



APPROVED FOR ISSUE

2	AD	JWGS	DL
1	AW	JWGS	DL
I/R	DRAWN BY	CHECKED	APPROVED

ISSUE/REVISION

2	2018.04.10	FOR REVIEW
1	2018.03.29	FOR DISCUSSION
I/R	DATE	DESCRIPTION

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Appendix B – Risk Register

ID	Risk Owner	Cause	Risk Description	Effect	Raw Score		
					Consequence	Likelihood	Rating
1	Lewes District Council	Requirements for the redesign of the Avis Way depot.	The requirements of the redesign are not clear and or have been miss understood	Delerviables will need to be reviewed by the client.	Major	Possible	Medium (35)
2	Lewes District Council	Accuracy of the drawings and revised layout.	The original model for the original design were not provided by the client.	Inaccurate GA drawings.	Moderate	Likely	Medium (25)
3	Lewes District Council	Ground conditions	The exact ground conditions are currently unknown. Ground investigations have been undertaken. However, they are not detailed enough to provide an accurate picture of the ground condition.	Inaccurate representation of the anticipated works and costs assocaited.	Severe	Unlikely	High (80)
4	Lewes District Council	Survey Work	The exact boundary of the site is unknown and as such the original drawings showing the boundary can not be relied upon.	Incorrect design. Development outwith the landholding.	Severe	Possible	High (70)
5	Lewes District Council	Inaccurate technical note	Information provided by LDS, used to produce the technical note, was inaccurate.	Misrepresentation of the site.	Major	Unlikely	Medium (45)
6	Lewes District Council	Change of site requirements	Requirements of the site change and previous work is irrelevant.	Loss of time and money.	Moderate	Possible	Low (15)
7	Lewes District Council	Construction Costs	AECOM have provided high-level costs based off the inforamtion produce between 2015 and 2016. Costs prejections for the construction could be different.	Misrepresentation of the construction costs.	Severe	Unlikely	High (80)
8	Lewes District Council	Total Project Costs	AECOM have only provided costs for the construction part of the project. Other project costs are unknown and should be considered and updated for 2018.	Misrepresentation of the total project cost. Loss of time.	Severe	Possible	High (70)



Appendix C – High-level Breakdown of Ground Improvement Works

AECOM Estimated Ground Improvement Costs

Input from Geotechnical and Transport Team

Substructure Item Expanded

Scheme Element	Type Rate	Est Quant	Unit	Estimated Cost	Notes
Size Size est.		7600	m2		
Total ground Improvement Area est.		5500	m2		
Building Foot Print est.		720	m2		
Ground improvement area - Pavement est.		4780	m2		
Ground Works					
Removal of material down to est. formation level	est.	4780	m3	£ 60,000.00	around 1 m removal assumed. Est. unkown how far nearest tip is and or local haulage rates
Ground improvement works - Setup	36134.98	1	nr	£ 36,134.98	Site set up mobilising, demobilising and testing. SPONS Page 204.
Ground improvement works - Treatment	17.02	4780	m2	£ 81,355.60	Total treatment cost used/ m2. SPONS Page 204.
Ground improvement works - Geotextile	10.13	4780	m2	£ 48,421.40	Tensar SS40 Geogrid. SPONS Page 447.
Ground improvement - Mechanical Fill	41.56	2390	m3	£ 99,328.40	0.5 m fill.Class 6F. SPONS Page 445.
Miscellaneous	5000	1	nr	£ 5,000.00	est.
Pavement Construction					
Pavement Construction - CBGM or equiv.	54.89	956	m3	£ 52,474.84	200mm Wet Mix DfT Series 900, SPONS Page 458.
Pavement Construction - C30 Concrete	35.08	1242.8	m2	£ 43,597.42	260mm C30. SPONS Page 460.
Pavement Construction - Reinforcement	13.59	4780	m2	£ 64,960.20	Fabric Reinforcement B503. SPONS Page 460
Miscellaneous	30000	1	nr	£ 30,000.00	est.
Piling					
Piling Foundations for Building	60000	1	nr	£ 60,000.00	Est. No design.
Strip Foundations	10000	1	nr	£ 10,000.00	Est. No design.
Miscellaneous	2000	1	nr	£ 2,000.00	est.

Total £ 593,272.84

Total £ 593,000.00 rounded

Assumptions

Area that requires ground improving has been assumed to be around 4,780m2.

Cost of removal of material has been estimated as local suitable landfill in unknown.

No allowance has been made for flooding and or groundwater in excavations.

Rates Taken from SPONS 2018 CH

Demolition and removal of existing structures has already been accounted for. Including any contaminated waste.

The only works that have been priced are the ground improvement works



Appendix D – High-level cost plan

Avis Way - Cost Estimate Construction

Scheme Element	Type	Rate	Min Estimated Rate	Max Estimated Rate	Est Quant	Min Estimated Quantity	Max Estimated Quantity	Unit	Estimated Cost	Estimated Min Cost	Estimated Max Cost
Prelims											
Pre-construction	£	44,000	£ 39,600	£ 48,400	1.0	0.9	1.1	Nr	£ 44,000	£ 35,640	£ 53,240
Construction	£	185,000	£ 166,500	£ 203,500	1.0	0.9	1.1	Nr	£ 185,000	£ 149,850	£ 223,850
Site Prelims	£	115,000	£ 103,500	£ 126,500	1.0	0.9	1.1	Nr	£ 115,000	£ 93,150	£ 139,150
MSPLC Design Contingency	£	39,000	£ 35,100	£ 42,900	1.0	0.9	1.1	Nr	£ 39,000	£ 31,590	£ 47,190
Contingencies	£	146,000	£ 131,400	£ 160,600	1.0	0.9	1.1	Nr	£ 146,000	£ 118,260	£ 176,660
Sub Total	£	529,000							£ 529,000	£ 428,490	£ 640,090
Fees	£	224,000	£ 201,600	£ 246,400	1.0	0.9	1.1	Nr	£ 224,000	£ 181,440	£ 271,040
Surveys/ Planning	£	42,000	£ 37,800	£ 46,200	1.0	0.9	1.1	Nr	£ 42,000	£ 34,020	£ 50,820
Substructure	£	593,000	£ 442,800	£ 541,200	1.0	0.9	1.1	Nr	£ 593,000	£ 480,330	£ 717,530
Building	£	492,000	£ 442,800	£ 541,200	1.0	0.9	1.1	Nr	£ 492,000	£ 398,520	£ 595,320
Internals	£	75,000	£ 67,500	£ 82,500	1.0	0.9	1.1	Nr	£ 75,000	£ 60,750	£ 90,750
MEP	£	297,000	£ 267,300	£ 326,700	1.0	0.9	1.1	Nr	£ 297,000	£ 240,570	£ 359,370
Offices	£	136,000	£ 122,400	£ 149,600	1.0	0.9	1.1	Nr	£ 136,000	£ 110,160	£ 164,560
External Works	£	774,000	£ 696,600	£ 851,400	1.0	0.9	1.1	Nr	£ 774,000	£ 626,940	£ 936,540
Abnormals	£	332,000	£ 305,100	£ 372,900	1.0	0.9	1.1	Nr	£ 332,000	£ 274,590	£ 410,190
Statutory Undertakings	£	50,000							£ 50,000	£ 40,500	£ 60,500
Sub Total	£	3,551,000							£ 3,551,000	£ 2,876,310	£ 4,296,710
Specialist equipment											
Recycling sorter	£	-	£ -	£ -	1.0	0.9	1.1	Nr	£ -	£ -	£ -
MOT Bay	£	80,000	£ 72,000	£ 88,000	1.0	0.9	1.1	Nr	£ 80,000	£ 64,800	£ 96,800
Garage equipment	£	17,000	£ 15,300	£ 18,700	1.0	0.9	1.1	Nr	£ 17,000	£ 13,770	£ 20,570
Weighbridge	£	-	£ -	£ -	1.0	0.9	1.1	Nr	£ -	£ -	£ -
Insurance	£	22,000	£ 19,800	£ 24,200	1.0	0.9	1.1	Nr	£ 22,000	£ 17,820	£ 26,620
OH&P	£	112,000	£ 100,800	£ 123,200	1.0	0.9	1.1	Nr	£ 112,000	£ 90,720	£ 135,520
Sub Total	£	3,782,000							£ 3,782,000	£ 3,063,420	£ 4,576,220
Reduction Cost									£ 2,009,800	£ 1,627,938	£ 2,431,858
Total Cost Estimate									£ 2,889,000	£ 2,339,900	£ 3,494,900

Assumptions

No allowance has been made for any other construction costs and or professional fees for further design.

Costs Rounded to the nearest £,000.

Construction costs based off comparison between previous cost breakdowns provided by contractors.

Cost of the construction of the recycling centre has been removed.

The reduction cost is 35% of the sub total, excluding the following items: substructure, MOT Bay, and Garage equipment

Changes in construction costs have been index linked from using The Building Cost Information Service.

The index linked cost is of the of the total reduction cost item plus, the substructure, MOT bay, and garage equipment items

The cost of the ground improvement works are included in the substructure cost. Further GI is required to accurately determine the cost of the works.

Abnormal assumed to include demolition and removal of existing structures, and removal of contaminated waste